C2.2 BILL OF QUANTITIES

PART 1

Item No		Quantity	Rate	Amount

BILL NO. 1

PRELIMINARIES AND GENERAL

MEANING OF TERMS "TENDER / TENDERER"

Any reference to the words "Tender" or "Tenderer" herein and/or in any other documentation shall be construed to have the same meaning as the words "Bid" or "Bidder"

PRELIMINARIES

The JBCC® General Preliminaries (June 2024) for use with the JBCC® Principal Building Agreement, Edition 6.2 (June 2024) are deemed to be incorporated herein. The tenderer is deemed to have referred to these documents for the full intent and meaning of each clause. These clauses are referred to by number and heading only. Where standard clauses or options are not applicable to the contract such modifications or corrections as are necessary are given under each relevant clause. Where an item is not relevant to this specific contract such item is marked "N/A" signifying "Not Applicable"

PRICING OF PRELIMINARIES

Should Option A, as set out in clause B10.3.1 hereinafter be used for the adjustment of preliminaries then each item priced is to be allocated to one or more of the three categories Fixed, Value Related or Time Related and the respective amounts entered in the spaces provided under each item

Items not priced in these Preliminaries shall be deemed to be included elsewhere in these Bills of Quantities

Carried Forward R

	Brought Forward		R	
	SECTION A: JBCC PRINCIPAL BUILDING AGREEMENT			
	DEFINITIONS			
1/1/1	**A1.0 DEFINITIONS AND INTERPRETATION**			
	Clause 1.0			
	Clause 1.1 Definition of "**Commencement Date**" is added:			
	"**COMMENCEMENT DATE**" means the date that the **agreement**, made in terms of the Form of Offer and Acceptance, comes into effect			
	Clause 1.1 Definition of "**Construction Guarantee**" is amended by replacing it with the following:			
1/1/2	**"CONSTRUCTION GUARANTEE"** means a 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 **schedule**	Item		
	Clause 1.1 Definition of "**Construction Period**" is amended by replacing it with the following:			
	"**CONSTRUCTION PERIOD**" means the period commencing on the **commencement date** and ending on the date of **practical completion**			
	Clause 1.1 Definition of "**Corrupt Practice**" is added:			
	"**CORRUPT PRACTICE**" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution			
	Clause 1.1 Definition of "**Fraudulent Practice**" is added:			
	Carried Forward		R	

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	"**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 practice 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 Clause 1.1 Definition of "**Interest**" is amended by replacing it with the following: "**INTEREST"** means the interest rates applicable on this contract, whether specifically indicated in the relevant clauses or not, will be the rate as determined by the Minister of Finance, from time to time, in terms of section 80(1)(b) of the Public Finance Management Act, 1999 (Act No. 1 of 1999) Clause 1.1 Definition of "**Principal Agent**" is amended by replacing it with the following: "**PRINCIPAL AGENT**" means the person or entity appointed by the **employer** and named in the **schedule**. In the event of a **principal agent** not being appointed, then all the duties and obligations of a **principal agent** as detailed in the **agreement** shall be fulfilled by a representative of the **employer** as named in the **schedule** Clause 1.1 Definition of "**Security**" is amended by replacing it with the following: "**SECURITY**" means the form of security provided by the **employer** or **contractor**, as stated in the **schedule**, from which the **contractor** or **employer** may recover expense or loss Clause 1.6 is amended by replacing the words "prepaid registered post, telefax or e-mail" with "prepaid registered post or telefax" Clause 1.6.4 is amended by replacing it with the following:			
	Carried Forward		R	

	Brought Forward		R	
	No clause Fixed:_____ Value related:_____ Time related:_____	Item		
	OBJECTIVE AND PREPARATION			
1/1/3	**A2.0 OFFER, ACCEPTANCE AND PERFORMANCE** Clause 2.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/4	**A3.0 DOCUMENTS** Clause 3.0 Clause 3.2.1 is amended by replacing"14.1" with "14.0" Clause 3.7 is amended by the addition of the following: The **contractor** shall supply and keep a copy of the **JBCC** Series 2000 Principal Building Agreement and Preliminaries applicable to this contract on the **site**, to which the **employer, principal agent** and **agents** shall have access at all times Clause 3.10 is amended by replacing the second reference to "**principal agent**" with the word "**employer**" Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/5	**A4.0 DESIGN RESPONSIBILITY** Clause 4.0 Clause 4.3 is amended by replacing it with the following: No clause Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/6	**A5.0 EMPLOYER'S AGENTS** Clause 5.0 Clause 5.1.2 is amended to include clauses 32.6.3, 34.3, 34.4 and 38.5.8 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/7	**A6.0 SITE REPRESENTATIVE** Clause 6.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/8	**A7.0 COMPLIANCE WITH REGULATIONS** Clause 7.0 Note: A separate clause has been included in Section C : Specific Preliminaries of the **bills of quantities / lump sum document** for the **contractor** to have the opportunity to price for all the requirements of the Occupational Health and Safety Act, Construction Regulations and Health and Safety Specification Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/9	**A8.0 WORKS RISK** Clause 8.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/10	**A9.0 INDEMNITIES** Clause 9.0 Fixed:_____ Value related:_____ Time related:_____	Item		
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1/1/11	**A10.0 WORKS INSURANCES**			
	Clause 10.0			
	Clause 10.0 is amended by the addition of the following clauses:	Item		
	10.5 Damage to the Works			
	(a) Without in any way limiting the **contractor's** obligations in terms of the contract, the **contractor** shall bear the full risk of damage to and/or destruction of the **works** by whatever cause during construction of the **works** and hereby indemnifies and holds harmless the **employer** against any such damage. The **contractor** shall take such precautions and security measures and other steps for the protection and security of the **works** as the **contractor** may deem necessary			
	(b) The **contractor** shall at all times proceed immediately to remove or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works**			
	(c) The **employer** shall carry the risk of damage to or destruction of the **works** and materials paid for by the **employer** that is the result of the excepted risks as set out in 10.6			
	(d) Where the **employer** bears the risk in terms of this contract, the **contractor** shall**,** if requested to do so, reinstate any damage or destroyed portions of the **works** and the costs of such reinstatement shall be measured and valued in terms of 32.0 hereof			
	Carried Forward		R	

	Brought Forward		R	
	10.6 Injury to Persons or loss of or damage to Properties			
	(a) The **contractor** shall be liable for and hereby indemnifies the **employer** against any liability, loss, claim or proceeding whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever arising out of or in the course of or caused by the execution of the **works** unless due to any act or negligence of any person for whose actions the **employer** is legally liable			
	(b) The **contractor** shall be liable for and hereby indemnifies the **employer** against any liability, loss, claim or proceeding consequent upon loss of or damage to any moveable or immovable or personal property or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person, arising out of or in the course of or by reason of the execution of the **works** unless due to any act or negligence of any person for whose actions the **employer** is legally liable			
	(c) The **contractor** shall, upon receiving a **contract instruction** from the **principal agent,** cause the same to be made good in a perfect and workmanlike manner at his own cost and in default thereof the **employer** shall be entitled to cause it to be made good and to recover the cost thereof from the **contractor** or to deduct the same from amounts due to the **contractor**			
	(d) The **contractor** shall be responsible for the protection and safety of such portions of the premises placed under his control by the **employer** for the purpose of executing the **works** until the issue of the **certificate of practical completion**			
	Carried Forward		R	

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(e)	Where the execution of the **works** involves the risk of removal of or interference with support to adjoining properties including land or structures or any structures to be altered or added to, the **contractor** shall obtain adequate insurance and will remain adequately insured or insured to the specific limit stated in the contract against the death of or injury to persons or damage to such property consequent on such removal or interference with the support until such portion of the **works** has been completed			
(f)	The **contractor** shall at all times proceed immediately at his own cost to remove or dispose of any debris and to rebuild, restore, replace and/or repair such property and to execute the **works**			
	10.7 High risk insurance In the event of the project being executed in a geological area classified as a "High Risk Area", that is an area which is subject to highly unstable subsurface conditions that might result in catastrophic ground movement evident by sinkhole or doline formation the following will apply:			
	10.7.1 Damage to the works The **contractor** shall, from the **commencement date** of the **works** until the date of the **certificate of practical completion** bear the full risk of and hereby indemnifies and holds harmless the **employer** against any damage to and/or destruction of the **works** consequent upon a catastrophic ground movement as mentioned above. The **contractor** shall take such precautions and security measures and other steps for the protection of the **works** as he may deem necessary When so instructed to do so by the **principal agent**, the **contractor** shall proceed immediately to remove and/or dispose of any debris arising from damage to or destruction of the **works** and to rebuild, restore, replace and/or repair the **works**, at the **contractor's** own costs			
	Carried Forward		R	

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	10.7.2 Injury to persons or loss of or damage to property The **contractor** shall be liable for and hereby indemnifies and holds harmless the **employer** against any liability, loss, claim or proceeding arising at any time during the period of the contract whether arising in common law or by statute, consequent upon personal injuries to or the death of any person whomsoever resulting from, arising out of, or caused by a catastrophic ground movement as mentioned above The **contractor** shall be liable for and hereby indemnifies the **employer** against any and all liability, loss, claim or proceeding consequent upon loss of or damage to any moveable or immovable or personal property or property contiguous to the **site**, whether belonging to or under the control of the **employer** or any other body or person whomsoever arising out of or caused by a catastrophic ground movement, as mentioned above, which occurred during the period of the contract **10.7.3** It is the responsibility of the **contractor** to ensure that he has adequate insurance to cover his risk and liability as mentioned in 10.7.1 and 10.7.2. Without limiting the **contractor's** obligations in terms of the contract, the **contractor** shall, within twenty-one (21) **calendar days** of the **commencement date** but before commencement of the **works**, submit to the **employer** proof of such insurance policy, if requested to do so **10.7.4** The **employer** shall be entitled to recover any and all losses and/or damages of whatever nature suffered or incurred consequent upon the **contractor's** default of his obligations as set out in 10.7.1; 10.7.2 and 10.7.3. Such losses or damages may be recovered from the **contractor** or by deducting the same from any amounts still due under this contract or under any other contract presently or hereafter existing between the **employer** and the **contractor** and for this purpose all these contracts shall be considered one indivisible whole Fixed:_____ Value related:_____ Time related:_____				
			Item		
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1/1/12	**A11.0 LIABILITY INSURANCES** Clause 11.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/13	**A12.0 EFFECTING INSURANCES** Clause 12.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/14	**A13.0 *No clause***	N/A		
1/1/15	**A14.0 SECURITY** Clause 14.0 Clauses 14.1 - 14.8 are amended by replacing them with the following: 14.1 In respect of contracts with a **contract sum** up to R1 million, the **security** to be provided by the **contractor** to the **employer** will be a payment reduction of five per cent (5%) of the value certified in the **payment certificate** (excluding VAT) 14.1.1 The payment reduction of the value certified in a **payment certificate** shall be *mutatis mutandi* in terms of 31.8(A) 14.1.2 The **employer** shall be entitled to recover expense and loss from the payment reduction in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the payment reduction **security** or portions thereof to the **contractor**			
	Carried Forward		R	

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	14.2 In respect of contracts with a **contract sum** above R1 million, the **contractor** shall have the right to select the **security** to be provided in terms of 14.3, 14.4, 14.5, 14.6, or 14.7 as stated in the **schedule**. Such **security** shall be provided to the **employer** within twenty-one (21) **calendar days** from **commencement date**. Should the **contractor** fail to select the **security** to be provided or should the **contractor** fail to provide the **employer** with the selected **security** within twenty-one (21) **calendar days** from **commencement date**, the **security** in terms of 14.7 shall be deemed to have been selected			
	14.3 Where **security** as a cash deposit of ten per cent (10%) of the **contract sum** (excluding VAT) has been selected:			
	14.3.1 The **contractor** shall furnish the **employer** with a cash deposit equal in value to ten per cent (10%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date**			
	14.3.2 Within twenty-one (21) **calendar days** of the date of **practical completion** of the **works** the **employer** shall reduce the cash deposit to an amount equal to three per cent (3%) of the **contract value** (excluding VAT), and refund the balance to the **contractor**			
	14.3.3 Within twenty-one (21) **calendar days** of the date of **final completion** of the **works** the **employer** shall reduce the cash deposit to an amount equal to one per cent (1%) of the **contract value** (excluding VAT) and refund the balance to the **contractor**			
	14.3.4 On the date of payment of the amount in the final **payment certificate**, the **employer** shall refund the remainder of the cash deposit to the **contractor**			
	14.3.5 The **employer** shall be entitled to recover expense and loss from the cash deposit in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the cash deposit **security** or portions thereof to the **contractor**			
	14.3.6 The parties expressly agree that neither the **employer** nor the **contractor** shall be entitled to cede the rights to the deposit to any third party			
	Carried Forward		R	

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	14.4 Where **security** as a variable **construction guarantee** of ten percent (10%) of the **contract sum** (excluding VAT) has been selected:				
	14.4.1 The **contractor** shall furnish the **employer** with an acceptable variable **construction guarantee** equal in value to ten per cent (10%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date**				
	14.4.2 The variable **construction guarantee** shall reduce and expire in terms of the Variable **Construction Guarantee** form included in the invitation to tender				
	14.4.3 The **employer** shall return the variable **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring				
	14.4.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the **employer** shall issue a written demand in terms of the variable **construction guarantee**				
	14.5 Where **security** as a fixed **construction guarantee** of five per cent (5%) of the **contract sum** (excluding VAT) and a five per cent (5%) payment reduction of the value certified in the **payment certificate** (excluding VAT) has been selected:				
	14.5.1 The **contractor** shall furnish a fixed **construction guarantee** to the **employer** equal in value to five per cent (5%) of the **contract sum** (excluding VAT)				
	14.5.2 The fixed **construction guarantee** shall come into force on the date of issue and shall expire on the date of the last certificate of **practical completion**				
	14.5.3 The **employer** shall return the fixed **construction guarantee** to the **contractor** within fourteen (14) **calendar days** of it expiring				
	14.5.4 The payment reduction of the value certified in a **payment certificate** shall be in terms of 31.8 (A) and 34.8				
	Carried Forward		R		

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	14.5.5 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the **employer** shall be entitled to issue a written demand in terms of the fixed **construction guarantee** or may recover from the payment reduction or may do both				
	14.6 Where **security** as a cash deposit of five per cent (5%) of the **contract sum** (excluding VAT) and a payment reduction of five per cent (5%) of the value certified in the **payment certificate** (excluding VAT) has been selected:				
	14.6.1 The **contractor** shall furnish the **employer** with a cash deposit equal in value to five per cent (5%) of the **contract sum** (excluding VAT) within twenty-one (21) **calendar days** from **commencement date**				
	14.6.2 Within twenty-one (21) **calendar days** of the date of **practical completion** of the **works** the **employer** shall refund the cash deposit in total to the **contractor**				
	14.6.3 The payment reduction of the value certified in a **payment certificate** shall be *mutatis mutandi* in terms of 31.8(A)				
	14.6.4 Where the **employer** has a right of recovery against the **contractor** in terms of 33.0, the **employer** may issue a written notice in terms of 33.4 or may recover from the payment reduction or may do both				
	14.7 Where **security** as a payment reduction of ten per cent (10%) of the value certified in the **payment certificate** (excluding VAT) has been selected:				
	14.7.1 The payment reduction of the value certified in a **payment certificate** shall be *mutatis mutandi* in terms of 31.8(B)				
	14.7.2 The **employer** shall be entitled to recover expense and loss from the payment reduction in terms of 33.0 provided that the **employer** complies with the provisions of 33.4 in which event the **employer's** entitlement shall take precedence over his obligations to refund the payment reduction or portions thereof to the **contractor**				
	Carried Forward			R	

	Brought Forward		R	
	14.8 Payments made by the guarantor to the **employer** in terms of the fixed or variable **construction guarantee** shall not prejudice the rights of the **employer** or **contractor** in terms of this **agreement**			
	14.9 Should the **contractor** fail to furnish the **security** in terms of 14.2, the **employer**, in his sole discretion and without notification to the **contractor**, is entitled to change the **contractor's** selected form of **security** to that of a ten per cent (10%) payment reduction of the value certified in the **payment certificate** (excluding VAT), whereafter 14.7 shall be applicable			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	EXECUTION			
1/1/16	**A15.0 PREPARATION FOR AND EXECUTION OF THE WORKS**			
	Clause 15.0			
	Clause 15.1.1 is amended by replacing it with:			
	No clause			
	Clause 15.1.2 is amended by replacing it with:			
	The **security** selected in terms of 14.0			
	Clause 15.1 is amended by the addition of the following clause:			
	15.1.4 An acceptable health and safety plan, required in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), within twenty-one (21) **calendar days** of **commencement date**			
	Price in accordance with the specifications and pricing conditions contained in the **employer's** health and safety specification. C2.1 - Pricing Instructions - Item 13 - Pricing Instructions for Health and Safety			
	Fixed:_____ Value related:_____ Time related:_____	Item		
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	Clause 15.2.1 is amended by replacing it with the following clause: Give the **contractor** possession of the **site** within ten (10) **working days** of the **contractor** complying with the terms of 15.1.4 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/17	**A16.0 ACCESS TO THE WORKS** Clause 16.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/18	**A17.0 CONTRACT INSTRUCTIONS** Clause 17.0 Clause 17.1.11 is amended by deleting the words "and the appointment of **nominated** and **selected subcontractors**" Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/19	**A18.0 SETTING OUT OF THE WORKS** Clause 18.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/20	**A19.0 ASSIGNMENT** Clause 19.0 Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/21	**A20.0 NOMINATED SUBCONTRACTORS** Clause 20.0 Clause 20.1.3 is amended by replacing it with the following: No clause Note: See item B9.1 hereinafter for adjustment of attendance on **nominated subcontractors** executing work allowed for under provisional sums Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/22	**A21.0 SELECTED SUBCONTRACTORS** Clause 21.0 Clause 21 is amended by replacing it with: No clause Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/23	**A22.0 EMPLOYER'S DIRECT CONTRACTORS** Clause 22.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/24	**A23.0 CONTRACTOR'S DOMESTIC SUBCONTRACTORS** Clause 23.0 Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
	COMPLETION			
1/1/25	**A24.0 PRACTICAL COMPLETION**			
	Clause 24.0			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/26	**A25.0 WORKS COMPLETION**			
	Clause 25.0			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/27	**A26.0 FINAL COMPLETION**			
	Clause 26.0			
	Clause 26.1.2 is amended by inserting "#" next to 26.1.2			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/28	**A27.0 LATENT DEFECTS LIABILITY PERIOD**			
	Clause 27.0			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/29	**A28.0 SECTIONAL COMPLETION**			
	Clause 28.0			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/30	**A29.0 REVISION OF DATE FOR PRACTICAL COMPLETION** Clause 29.0 Clause 29.2.5 is amended by replacing it with: No clause Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/31	**A30.0 PENALTY FOR NON-COMPLETION** Clause 30.0 Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
	PAYMENT			
1/1/32	**A31.0 INTERIM PAYMENT TO THE CONTRACTOR**			
	Clause 31.0			
	Clause 31.5.2 is amended by replacing "14.7.1" with "14.0"			
	Clause 31.8 is amended by replacing it with the following two alternative clauses:			
	Alternative A			
	31.8(A) Where a **security** is selected in terms of 14.1; 14.5 or 14.6, the value of the **works** in terms of 31.4.1 and **materials and goods** in terms of 31.4.2 shall be certified in full. The value certified shall be subject to the following percentage adjustments:			
	31.8(A).1 Ninety-five per cent (95%) of such value in interim **payment certificates** issued up to the date of **practical completion**			
	31.8(A).2 Ninety-seven per cent (97%) of such value in interim **payment certificates** issued on the date of **practical completion** and up to but excluding the date of **final completion**			
	31.8(A).3 Ninety-nine per cent (99%) of such value in interim **payment certificates** issued on the date of **final completion** and up to but excluding the final **payment certificate** in terms of 34.6			
	31.8(A).4 One hundred per cent (100%) of such value in the final **payment certificate** in terms of 34.6 except where the amount certified is in favour of the **employer**. In such an event the payment reduction shall remain at the adjustment level applicable to the final **payment certificate**			
	Alternative B			
	Carried Forward		R	

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	31.8(B) Where **security** as a payment reduction in terms of 14.7 has been selected, the value of the **works** in terms of 31.4.1 and **materials and goods** in terms of 31.4.2 shall be certified in full. The value certified shall be subject to the following percentage adjustments: 31.8(B).1 Ninety per cent (90%) of such value in interim **payment certificates** issued up to the date of **practical completion** 31.8(B).2 Ninety-seven per cent (97%) of such value in interim **payment certificates** issued on the date of **practical completion** and up to but excluding the date of **final completion** 31.8(B).3 Ninety-nine per cent (99%) of such value in interim **payment certificates** issued on the date of **final completion** and up to but excluding the final **payment certificate** in terms of 34.6 31.8(B).4 One hundred per cent (100%) of such value in the final **payment certificate** in terms of 34.6 except where the amount certified is in favour of the **employer**. In such an event the payment reduction shall remain at the adjustment level applicable to the final **payment certificate** Clause 31.12 is amended by deleting the following: Payment shall be subject to the **employer** giving the **contractor** a tax invoice for the amount due Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/33	**A32.0 ADJUSTMENT TO THE CONTRACT VALUE** Clause 32.0 Clauses 32.5.1, 32.5.4 and 32.5.7 are amended by the addition of the following at the end of the sentence: "due to no fault of the **contractor"** Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/34	**A33.0 RECOVERY OF EXPENSE AND LOSS** Clause 33.0 Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/35	**A34.0 FINAL ACCOUNT AND FINAL PAYMENT** Clause 34.0 Clause 34.1 is amended by removing "#" next to 34.1 Clause 34.2 is amended by inserting "#" next to 34.2 Clause 34.8 is amended by deleting the words "where **security** as a fixed **construction guarantee** in terms of 14.4 has been selected or where payment reduction has been applied in terms of 14.7.1" Clause 34.13 is amended by replacing "seven (7) **calendar days"** with "twenty-one (21) **calendar days"** and deleting the words "subject to the **employer** giving the **contractor** a tax invoice for the amount due" Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/36	**A35.0 PAYMENT TO OTHER PARTIES** Clause 35.0 Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

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	Brought Forward		R	
	CANCELLATION			
1/1/37	**A36.0 CANCELLATION BY EMPLOYER - CONTRACTOR'S DEFAULT** Clause 36.0 Clause 36.1 is amended by the addition of the following clauses: 36.1.3 refuses or neglects to comply strictly with any of the conditions of contract 36.1.4 estate being sequestrated, liquidated or surrendered in terms of the insolvency laws in force within the Republic of South Africa 36.1.5 in the judgement of the **employer**, has engaged in **corrupt** or **fraudulent practices** in competing for or in executing the contract Clause 36.3 is amended by removing the reference to "No clause" and replacing the words "**principal agent"** with "**employer"** Clause 36.0 is amended by the addition of the following clause: 36.7 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor**; or for any reason whatsoever, the **contractor** shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the **site**. The **contractor** shall not be entitled to refuse to withdraw from the **works** on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/38	**A37.0 CANCELLATION BY EMPLOYER - LOSS AND DAMAGE** Clause 37.0 Clause 37.3.5 is amended by replacing "ninety (90)" with "one hundred and twenty (120)"			
	Carried Forward		R	

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	Brought Forward		R	
	Clause 37.0 is amended by the addition of the following clause: 37.5 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor**; or for any reason whatsoever, the **contractor** shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the **site**. The **contractor** shall not be entitled to refuse to withdraw from the **works** on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/39	**A38.0 CANCELLATION BY CONTRACTOR - EMPLOYER'S DEFAULT** Clause 38.0 Clause 38.5.4 is amended by replacing "ninety (90)" with "one hundred and twenty (120)" Clause 38.0 is amended by the addition of the following clause: 38.7 Notwithstanding any clause to the contrary, on cancellation of this **agreement** either by the **employer** or the **contractor**; or for any reason whatsoever, the **contractor** shall on written instruction, discontinue with the **works** on a date stated and withdraw himself from the **site**. The **contractor** shall not be entitled to refuse to withdraw from the **works** on the grounds of any lien or right of retention or on the grounds of any other right whatsoever Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R		
1/1/40	**A39.0 CANCELLATION - CESSATION OF THE WORKS**				
	Clause 39.0				
	Clause 39.3.5 is amended by the addition of the following at the end of the sentence:				
	"within one hundred and twenty (120) **working days** of completion of such a report"				
	Fixed:_____ Value related:_____ Time related:_____	Item			
	DISPUTE				
1/1/41	**A40.0 DISPUTE SETTLEMENT**				
	Clause 40.0				
	Clause 40.2.2 is amended by replacing "one (1) year" with "three (3) years"				
	Clause 40.6 is amended by removing the reference to:				
	No clause				
	Clause 40.7.1 is amended by replacing "(10)" with "(15)" and by the addition of the following:				
	Whether or not mediation resolves the dispute, the parties shall bear their own costs concerning the mediation and equally share the costs of the **mediator** and related costs				
	Fixed:_____ Value related:_____ Time related:_____	Item			
	SUBSTITUTE PROVISIONS				
1/1/42	**A41.0 STATE CLAUSES**				
	Clause 41.0				
	Fixed:_____ Value related:_____ Time related:_____	Item			
	Carried Forward		R		

	Brought Forward		R	
	CONTRACT VARIABLES			
1/1/43	**A42.0 THE SCHEDULE**			
	Clause 42.0			
	Tenderers are referred to C1.2 - Contract Data for variables pertaining to this contract			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	SECTION B: JBCC PRELIMINARIES			
	B1.0 DEFINITIONS AND INTERPRETATION			
1/1/44	***B1.1 Definitions and interpretation***			
	See also clause A1.0 of Section A for additional and/or amended definitions which shall apply equally to this Section			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B2.0 DOCUMENTS			
1/1/45	***B2.1 Checking of documents***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/46	***B2.2 Provisional bills of quantities***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/47	***B2.3 Availability of construction documentation***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/48	***B2.4 Interests of agents***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/49	***B2.5 Priced documents***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/50	***B2.6 Tender submission***			
	Clause 2.6 is amended by replacing "JBCC Form of Tender" with "C1.1 - Form of Offer and Acceptance"			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B3.0 THE SITE			
1/1/51	***B3.1 Defined works area***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/52	***B3.2 Geotechnical investigation***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/53	***B3.3 Inspection of the site***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/54	***B3.4 Existing premises occupied***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/55	***B3.5 Previous work - dimensional accuracy***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/56	***B3.6 Previous work - defects***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
1/1/57	***B3.7 Services - known***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/58	***B3.8 Services - unknown***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/59	***B3.9 Protection of trees***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/60	***B3.10 Articles of value***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/61	***B3.11 Inspection of adjoining properties***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B4.0 MANAGEMENT OF CONTRACT			
1/1/62	***B4.1 Management of the works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/63	***B4.2 Programme for the works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/64	***B4.3 Progress meetings***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/65	***B4.4 Technical meetings***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

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	Brought Forward		R	
1/1/66	***B4.5 Labour and plant records***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B5.0 SAMPLES, SHOP DRAWINGS AND MANUFACTURERS' INSTRUCTIONS			
1/1/67	***B5.1 Samples of materials***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/68	***B5.2 Workmanship samples***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/69	***B5.3 Shop drawings***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/70	***B5.4 Compliance with manufacturers' instructions***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B6.0 TEMPORARY WORKS AND PLANT			
1/1/71	***B6.1 Deposits and fees***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/72	***B6.2 Enclosure of the works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/73	***B6.3 Advertising***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

			R	
	Brought Forward			
1/1/74	***B6.4 Plant, equipment, sheds and offices***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/75	***B6.5 Main notice board***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/76	***B6.6 Subcontractors' notice board***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B7.0 TEMPORARY SERVICES			
1/1/77	***B7.1 Location***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/78	***B7.2 Water***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/79	***B7.3 Electricity***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/80	***B7.4 Telecommunication facilities***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/81	***B7.5 Ablution facilities***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B8.0 PRIME COST AMOUNTS			
1/1/82	***B8.1 Responsibility for prime cost amounts***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward		R	
	B9.0 ATTENDANCE ON N/S SUBCONTRACTORS			
1/1/83	***B9.1 General attendance***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/84	***B9.2 Special attendance***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/85	***B9.3 Commissioning - fuel, water and electricity***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	B10.0 FINANCIAL ASPECTS			
1/1/86	***B10.1 Statutory taxes, duties and levies***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/87	***B10.2 Payment for preliminaries***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/88	***B10.3 Adjustment of preliminaries***			
	Clauses B10.3.1 and B10.3.2 are amended by replacing "within fifteen (15) **working days** of taking possession of the **site**" with "when submitting his priced **bills of quantities / lump sum document"**			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/89	***B10.4 Payment certificate cash flow***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

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	Brought Forward		R	
	B11.0 GENERAL			
1/1/90	***B11.1 Protection of the works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/91	***B11.2 Protection / isolation of existing / sectionally occupied works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/92	***B11.3 Security of the works***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/93	***B11.4 Notice before covering work***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/94	***B11.5 Disturbance***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/95	***B11.6 Environmental disturbance***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/96	***B11.7 Works cleaning and clearing***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/97	***B11.8 Vermin***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
1/1/98	***B11.9 Overhand work***			
	Fixed:_____ Value related:_____ Time related:_____	Item		
	Carried Forward		R	

	Brought Forward			R	
1/1/99	***B11.10 Instruction manuals and guarantees***				
	Fixed:_____ Value related:_____ Time related:_____		Item		
1/1/100	***B11.11 As built information***				
	Fixed:_____ Value related:_____ Time related:_____		Item		
1/1/101	***B11.12 Tenant installations***				
	Fixed:_____ Value related:_____ Time related:_____		Item		
	B12.0 SCHEDULE OF VARIABLES				
1/1/102	***B12.1 Schedule of variables***				
	Fixed:_____ Value related:_____ Time related:_____		Item		
	This **schedule** contains all variables referred to in 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 these **Preliminaries**				
	Spaces requiring information must be filled in, shown as "not applicable" or deleted and 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				
	12.1 PRE-TENDER INFORMATION				
	12.1.1 **Provisional bills of quantities** *[2.2]* The quantities are provisional *YES*				
	12.1.2 **Availability of construction documentation** *[2.3] Construction documentation is complete* *NO*				
	Carried Forward			R	

	Brought Forward		R	
	12.1.3 ***Interests of agents*** *[2.4]* Details: NIL			
	12.1.4 ***Defined works area*** *[3.1]* Details: As per Architect's detail			
	12.1.5 ***Geotechnical investigation*** *[3.2]* Details: Available on request from the Engineer			
	12.1.6 ***Existing premises occupied*** *[3.4]* Specific requirements: Not Applicable			
	12.1.7 ***Previous work - dimensional accuracy*** *[3.5]* Details: Building Platforms, Retaining Walls and Bulk Infrastructure by Others			
	12.1.8 ***Previous work - defects*** *[3.6]* Details: As above item			
	12.1.9 ***Services - known*** *[3.7]* Details: Details available on request from the Engineer			
	12.1.10 ***Protection of trees*** *[3.9]* Specific requirements: Not applicable			
	12.1.11 ***Inspection of adjoining properties*** *[3.11]* Specific requirements: Contractor carry out their own inspection and report if they identify any concerns			
	12.1.12 ***Enclosure of the works*** *[6.2]* Specific requirements:			
	Carried Forward		R	

	Brought Forward		R	
	12.1.13 ***Offices***			
	[6.4.3] Specific requirements: The **contractor** shall provide, maintain and remove on completion of the works an office for the exclusive use of the **principal agent**, minimum size 4 x 3 x 3m high internally, suitably insulated and ventilated, provided with electric lighting and fitted with boarded floor, desk, chair, drawing stool, drawing board and lock-up drawers for drawings. The office shall be kept clean and fit for use at all times			
	12.1.14 ***Main notice board***			
	[6.5] Specific requirements: The **contractor** shall provide, erect where directed, maintain and remove on completion of the **works** a notice board size 2.4 x 2.4m as type Drawing GEN 063, constructed of suitable boarding with flat smooth surface and with edging bead 19mm thick round outer edges and projecting 12mm from face of boarding and rounded on front edge. The board shall be securely fixed to hoarding, where hoarding is provided, or fixed to and including a suitable supporting structure of timber or tubular posts and braces. The board is to be painted ivory white and the bead and 12mm wide dividing lines dark green. All wording shall be inscribed in dark green as per the coat of arms for SA. All wording shall be inscribed in dark green painted sans serif lettering			
	12.1.15 ***Subcontractors' notice board***			
	[6.6] A notice board is required *YES* Specific requirements: Drawing to be issued			
	12.1.16 ***Water***			
	[7.2] Option A (by **contractor**) *YES*			
	Option B (by **employer** - free of charge) *NO*			
	Option C (by **employer** - metered) *NO*			
	Carried Forward		R	

	Brought Forward		R	
	12.1.17 ***Electricity***			
	[7.3] Option A (by **contractor**) *YES*			
	Option B (by **employer** - free of charge) *NO*			
	Option C (by **employer** - metered) *NO*			
	12.1.18 ***Telecommunications***			
	[7.4] Telephone - BY CONTRACTOR *YES*			
	Facsimile - BY CONTRACTOR *YES*			
	E-mail - BY CONTRACTOR *YES*			
	12.1.19 ***Ablution facilities***			
	[7.5] Option A (by **contractor**) *YES*			
	Option B (by **employer**) *NO*			
	12.1.20 ***Protection of existing/sectionally occupied works***			
	[11.2] Protection is required NO			
	12.1.21 ***Special attendance***			
	[9.2] Not Applicable			
	12.1.22 ***Protection of the works***			
	[11.1] Specific requirements: Not Applicable			
	Carried Forward		R	

	Brought Forward		R	
	12.1.23 ***Disturbance*** *[11.5]* Specific requirements: The **contractor** shall keep the site, structures, well watered during operations to prevent dust and shall provide and erect and remove on completion of the **works** all necessary temporary dust screens all to the satisfaction of the **principal agent**			
	12.1.24 ***Environmental disturbance*** *[11.6]* Specific requirements: See Environmental Management Plan available upon request from Zutari Consulting Engineers			
	12.2 POST-TENDER INFORMATION			
	12.2.1 ***Payment of preliminaries*** *[10.2]* Option A (prorated) *NO* Option B (calculated) *YES*			
	12.2.2 ***Adjustment of preliminaries*** *[10.3]* Option A (three categories) *NO* Option B (detailed breakdown) *YES*			
	12.2.3 ***Additional agreed preliminaries items*** Details: NIL			
	SECTION C: SPECIFIC PRELIMINARIES			
	Section C contains specific preliminary items which apply to this contract except where N/A (Not Applicable) appears against an item			
	Carried Forward		R	

	Brought Forward		R	
1/1/103	**C1.0 CONTRACT DRAWINGS** The drawings issued with the tender documents do not comprise the complete set but serve as a guide only for tendering purposes and for indicating the scope of the work to enable the tenderer to acquaint himself 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 understood by the tenderer he shall, before submitting his tender, obtain clarification in writing from the **principal agent** Fixed: _____ Value related:_____ Time related:_____	Item		
1/1/104	**C2.0 GENERAL PREAMBLES** Specification of Materials and Methods to be used hall be read in conjunction with the **bills of quantities /lump sum document** and be referred to for the full descriptions of work to be done and materials to be used Fixed: _____ Value related:_____ Time related:_____	Item		
	<u>GENERAL PREAMBLES</u> *The General Preambles for Trades 2017 published by the Association of South African Quantity Surveyors is designed to support and extend the abbreviated descriptions utilised in these bills of quantities by inter alia referring to SANS construction standards.* ***<u>Where such preambles are not applicable</u>*** *(eg where BS or Euro construction standards are applicable or the design consultants provide other preambles/specifications for insertion), users are to ensure that the abbreviated descriptions when read in conjunction with the Standard System of Measuring Building Work (seventh edition) for works within South Africa or the Standard Method of Measuring Building Work for Africa 2015 (first edition) for works elsewhere in Africa, represent the full description by extending the abbreviated bills of quantities descriptions and/or by inserting appropriate preambles or specifications*			
	Carried Forward		R	

	Brought Forward		R	
1/1/105	**C3.0 TRADE NAMES** Wherever a trade name for any product has been described in the **bills of quantities / lump sum document**, the tenderer'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 tenders If prior written approval for an alternative product is not obtained, the product described shall be deemed to have been tendered for Fixed: _____ Value related:_____ Time related:_____	Item		
1/1/106	**C4.0 IMPORTED MATERIALS AND EQUIPMENT** Where imported items are listed in the tender documents, the tenderer shall provide all the information called for, failing which the price of any such item, materials or equipment shall be excluded from currency fluctuations. (refer to Schedule of Imported Materials and Equipment to be completed by tenderer) Notwithstanding any provisions elsewhere regarding the adjustment of contract prices, the price of any item, material or equipment listed in terms of this clause shall be excluded from the Contract Price Adjustment Provisions (if applicable) Fixed: _____ Value related:_____ Time related:_____	Item		
	Carried to Final Summary		R	

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Item No		Quantity	Rate	Amount

BILL NO. 1

ALTERATIONS (PROVISIONAL)

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 102 for Contract Price Adjustment Provisions

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

All demolitions are to be done by hand and no explosives whatsoever may be used for demolition purposes unless otherwise stated

General

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

Carried Forward R

	Brought Forward		R	
	Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the principal agent			
	Doors, fanlights, fittings, frames, linings, etc which are to be re-used shall be thoroughly overhauled before refixing including taking off, easing and rehanging, cramping up, re-wedging as required and making good cramps, dowels, etc, and easing, oiling, adjusting and repairing ironmongery as necessary, replacing any glass damaged in removal or subsequently and stopping up all nail and screw holes with tinted plastic wood to match timber, unless otherwise described. Re-painting or re-varnishing is given separately			
	Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc			
	Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc and making good floor and wall finishes to match existing			
	With regard to building up of openings in existing walls, cement screeds and pavings, granolithic, tops of walls, etc, shall be levelled and prepared for raising of brickwork			
	Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary			
	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)			
	Salvaging			
	The contractor is to note that all removed salvagable building materials are to remain the property of the user client			
	Carried Forward		R	

	Brought Forward			R	
	All salvaged building materials are to handed over to user client and the remaining building rubble and demolished waste is be removed from site by the contractor and rates should allow for carting away of such rubble and waste.				
	TEMPORARY BARRIERS, SCREENS, ETC				
	Temporary barriers, screens, etc including removal				
2/1/1	Temporary construction site barriers suitable to prevent enchroachment of pedestrians and vehicles onto the site	m	548		
	REMOVAL OF EXISTING WORK				
	Breaking up and removing reinforced concrete, including cutting off and removing reinforcement				
2/1/2	85mm Thick surface bed, aprons and slabs	m2	238		
2/1/3	110mm Thick surface bed	m2	59		
2/1/4	Reinforced concrete	m3	10		
2/1/5	500 x 250mm Thick concrete footing	m	51		
2/1/6	Copings, channels, etc not exceeding 300mm girth	m	9		
	Breaking down and removing brickwork etc				
2/1/7	Mass brickwork	m3	58		
2/1/8	Half brick walls	m2	50		
2/1/9	One brick walls	m2	174		
2/1/10	274mm Cavity walls of two half brick skins	m2	14		
	Taking down and removing roofs, floors, etc				
2/1/11	Gypsum plasterboard ceilings	m2	297		
2/1/12	Gypsum plasterboard bulkhead ceiling 1000 x 8600mm high including support framework	m	125		
	Carried Forward			R	

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	Brought Forward				
	Taking out and removing doors, windows, etc from walls to be demolished				
2/1/13	Timber single door and frame not exceeding 2,5m2	No	20		
2/1/14	Timber double door and frame exceeding 2,5m2	No	4		
2/1/15	Glazed steel window and burglar proofing not exceeding 2,5m2	No	8		
	Taking out and removing doors, windows, etc including thresholds, sills, etc (altering or building up openings elsewhere measured)				
2/1/16	Timber single door and frame not exceeding 2,5m2	No	5		
2/1/17	Timber double door and frame exceeding 2,5m2	No	5		
2/1/18	Glazed steel doors and burglar proofing exceeding 2,5m2 and not exceeding 5m2	No	7		
2/1/19	Glazed steel window and burglar proofing not exceeding 2,5m2	No	5		
2/1/20	Glazed steel window and burglar proofing exceeding 2,5m2 and not exceeding 5m2	No	4		
	Taking out/off and removing sundry metalwork				
2/1/21	Single hospital beds bolted to floors and refixing into new position by bolting to wall as pointed out by Architect	No	10		
2/1/22	Burglar bars above low walls at ablutions	m2	14		
	Taking down and removing roofs, floors, panelling, ceilings, partitions, etc including carting away rubble off site				
2/1/23	Prefabricated roof trusses complete including wall plates, permanent bracing, etc. measured on floor plan as per Engineer's detail	m2	645		
2/1/24	Roof covering and timber purlins	m2	839		
	Carried Forward			R	

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	Brought Forward				
	Hacking up/off and removing granolithic, screeds, plaster, tiling, etc and preparing floors by scarifying screeds, etc				
2/1/25	Ceramic tiles from walls	m2	87		
2/1/26	Ceramic tiles from floors	m2	297		
2/1/27	Damaged internal plaster from walls	m2	442		
2/1/28	Coved fillet skirtings 100mm high	m	221		
	Taking up and removing vinyl floor coverings, carpeting, etc and preparing floors by scarifying screeds, cleaning, etc to receive new floor coverings				
2/1/29	Vinyl floor sheeting and skirtings from floors	m2	152		
	Taking out and removing ironmongery				
2/1/30	Curtain track fixed to walls not exceeding 2,5m	No	5		
2/1/31	Toilet roll holder	No	2		
2/1/32	Soap holder	No	1		
2/1/33	Liquid soap dispenser	No	2		
2/1/34	Liquid soap bottle holder	No	2		
2/1/35	Paper towel dispenser	No	2		
2/1/36	Hat and coat hooks	No	6		
2/1/37	Notice board not exceeding 2,5m2	No	1		
	Taking off/out and removing sundry metalwork				
2/1/38	Steel supports and brackets to timber shelving	m	48		
2/1/39	Steel walkway complete	m2	38		
	Taking out and removing sundry joinery work				
2/1/40	Bumprail plugged to wall	m	96		
	Carried Forward			R	

				R	
	Brought Forward				
2/1/41	300 x 220mm High cabinet fixed to walls	No	6		
	Taking out and removing joinery fittings, etc				
2/1/42	Wall cupboard 880 x 550 x 2100mm high	No	2		
2/1/43	Wall cupboard 2000 x 550 x 1000mm high	No	3		
2/1/44	Timber shelving from steel support brackets	m2	12		
2/1/45	Stainless steel shelving 1500 x 600mm wide with splashback	No	4		
2/1/46	Electric stove	No	1		
	Taking out and removing piping, sanitary fittings, valves, etc and hand over to client				
2/1/47	Existing plumbing water pipes from walls including cartaway		Item		
2/1/48	Existing plumbing waste pipes from walls including cartaway		Item		
2/1/49	Stainless steel double bowl wash trough with splashback including all taps and mixers mounted on it	No	1		
2/1/50	Stainless steel single bowl wash kitchen sink with splashback, including stainless steel counter and cupboards attached to it	No	1		
2/1/51	Stainless steel single wash hand basin including two taps attached to it	No	1		
2/1/52	Stainless steel toilet pan	No	2		
2/1/53	Vitreous china wash hand basin	No	2		
2/1/54	Enamel bath	No	1		
2/1/55	Urinal/toilet flush valve	No	2		
2/1/56	Taps, shower arms and mixers	No	4		
2/1/57	Instant water heater	No	2		
	Carried Forward			R	

Section No. 2
Bill No. 1

				R	
	Brought Forward				
	PLUMBING SUNDRIES				
2/1/58	Cleaning of existing sewer drains, ducts and pipes		Item		
	CUTTING THROUGH FLOORS AND CEILINGS				
	Cutting through				
2/1/59	110mm Thick unreinforced concrete surface bed for new brick walls	m	5		
	Sundries				
2/1/60	Chasing in plaster and brickwork for pipes, conduits, etc 210mm wide average with and including making good cement plaster, etc	m	12		
	PREPARATORY WORK TO EXISTING SURFACES				
2/1/61	Making good defects in existing screeded floors by chipping, scaryfying and applying a self levelling screed in patches to receive new floor coverings (floor coverings elsewhere)	m2	210		
2/1/62	Strip old paint in bad condition from grano floors to receive new epoxy or vinyl flooring elsewhere measured	m2	62		
2/1/63	Making good cracks in existing brickwork by fixing with expanded metal lathing to receive cement plaster	m2	132		
2/1/64	Cleaning and pointing of existing facebrick facades	m2	288		
	MAKING GOOD OF FINISHES, ETC				
	Remedial works to existing foundations				
2/1/65	Clear vegetation and debris from existing trenches	m2	1 158		
2/1/66	Re-trim and prepare existing trench bottoms and sides	m2	1 115		
2/1/67	Removal of collapsed, loose and unsuitable material from existing excavations, including loading, carting away and disposal off site	m3	47		
	Carried Forward			R	

				R	
	Brought Forward				
2/1/68	Inspect existing foundation reinforcement, clean, prepare and fix, including exposing reinforcement where necessary, removal of rust and contaminants, sandblasting where required, straightening, cutting, lapping, welding, tying and re-fixing of reinforcement, replacement of damaged bars where instructed, application of approved anti-corrosion treatment, and all associated labour, plant, materials and incidental works necessary to render the reinforcement suitable for incorporation into the permanent works.	t	6.00		
	Making good internal two coat plaster with gypsum finish				
2/1/69	Damaged edges to concrete aprons	m2	173		
	Altering of openings with and including necessary temporary support and buidling in precast concrete lintels				
2/1/70	Alter opening in 274mm cavity wall from 480 x 1020mm high to form two new openings for window 460 x 920mm high including building up brickwork, necessary precast concrete lintols, making good plaster on both sides, reveals, cutting tooth and bonding brickwork to existing (New window and make good paintwork elsewhere)	No	1		
2/1/71	Alter opening in 274mm cavity wall from 3072 x 1200mm high to form two new openings for window 460 x 920mm high including building up brickwork, necessary precast concrete lintols, making good plaster on both sides, reveals, cutting tooth and bonding brickwork to existing (New window and make good paintwork elsewhere)	No	1		
	Breaking out for and forming plain openings through brick walls, with and including necessary temporary support, buidling in prestressed concrete lintels, making good brickwork and cement plaster on both sides (making good paintwork elsewhere)				
2/1/72	Opening 600 x 2125mm high through one brick wall	No	1		
2/1/73	Opening 1482 x 2125mm high through one brick wall	No	1		
2/1/74	Opening 2118 x 2125mm high through one brick wall	No	1		
	Carried Forward			R	

Section No. 2
Bill No. 1

				R	
	Brought Forward				
	Breaking out for and forming openings through brick walls for new doors and frames, with and including necessary temporary support, buidling in prestressed concrete lintels, making good cement plaster on both sides and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (new doors and frames and making good paintwork elsewhere)				
2/1/75	Opening for door with steel/aluminium frame 762 x 2100m high overall through half brick wall	No	1		
2/1/76	Opening for door with steel/aluminium frame 813 x 2100m high overall through half brick wall	No	1		
2/1/77	Opening for door with steel/aluminium frame 813 x 2100m high overall through one brick wall	No	1		
2/1/78	Opening for door with steel/aluminium frame 1100 x 2100m high overall through 274mm cavity wall	No	1		
	Breaking out for and forming openings through brick walls for new windows, with and including necessary temporary support, buidling in prestressed concrete lintels, making good cement plaster on both sides and into reveals (new windows and making good paintwork elsewhere)				
2/1/79	Opening for window 1000 x 1500mm high through 274mm cavity wall	No	1		
	BUDGETARY ALLOWANCE				
2/1/80	Allow an amount of **R100,000.00** (One Hundred Thousand Rand) nett for architectural and structural assessments of existing decant facilities, including inspection, evaluation, testing where required, to be measured and priced in accordance with this Bill of Quantities and omitted in part or whole as instructed by the Principal Agent.			SUM	
	Carried Forward			R	

Section No. 2
Bill No. 1

	Brought Forward		R	
2/1/81	Allow an amount of **R350,000.00** (Three Hundred and Fifty Thousand Rand) nett for structural assessments of existing abandoned foundation and substructure works, including inspection, evaluation, testing where required, verification of structural integrity and suitability for incorporation into the permanent works, to be measured and priced in accordance with this Bill of Quantities and omitted in part or whole as instructed by the Principal Agent.		SUM	
	Carried to Final Summary		R	

Section No. 2
Bill No. 1

Item No		Quantity	Rate	Amount

BILL NO. 1

EARTHWORKS (PROVISIONAL)

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 104 for Contract Price Adjustment Provisions

SUPPLEMENTARY PREAMBLES

Nature of ground

A soils investigation has been carried out on the site by the engineer and the report is annexed to these bills of quantities.

Carting away of excavated material

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

Filling

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

Testing

Prices for filling are to include for all necessary density tests in accordance with SABS 1200D

SITE CLEARANCE ETC

Carried Forward R

				R	
	Brought Forward				
	Site clearance				
3/1/1	Digging up and removing rubbish, debris, vegetation, hedges, shrubs, bush, etc and trees not exceeding 200mm girth	m2	595		
3/1/2	Stripping average 600mm thick layer of top soil and depositing material in prescribed stock piles on site	m2	595		
	REMOVAL OF TREES ETC				
	Taking out and removing, grubbing up roots and filling in holes				
3/1/3	Tree exceeding 200mm and not exceeding 500mm girth	No	2		
	EXCAVATION, FILLING, ETC				
	Excavation in earth not exceeding 2m deep in confined spaces				
3/1/4	Trenches	m3	16		
	Excavation in earth not exceeding 2m deep				
3/1/5	Trenches	m3	316		
3/1/6	Holes	m3	10		
	Extra over excavations in earth for excavation in				
3/1/7	Soft rock	m3	41		
3/1/8	Hard rock	m3	27		
	Extra over all excavations for carting away				
3/1/9	Surplus material from excavations	m3	36		
	Risk of collapse of excavations				
3/1/10	Side of trenches and holes	m2	390		
	Keeping excavations free of water				
3/1/11	Keeping excavations free of all water		Item		
	Carried Forward			R	

Section No. 3
Bill No. 1

				R	
	Brought Forward				
	Earth filling obtained from the excavations and/or prescribed stock piles on site stabilised with 3% cement per volume, compacted to 98% Mod AASHTO density				
3/1/12	Under floors, steps, pavings, etc	m3	179		
	Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 98% Mod AASHTO density				
3/1/13	Backfilling to trenches, holes, etc	m3	171		
3/1/14	Under floors, steps, pavings, etc	m3	141		
	Compaction of surfaces				
3/1/15	Compaction of ground surface under floors	m2	708		
	Soil insecticide with				
3/1/16	Under floors, steps, pavings, etc	m2	708		
3/1/17	To bottom and sides of trenches	m2	1 159		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 1

Item No			Quantity	Rate	Amount
	BILL NO. 2				
	CONCRETE, FORMWORK AND REINFORCEMENT (PROVISIONAL)				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 110, 111 and 114 for Contract Price Adjustment Provisions				
	REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES				
	15MPa concrete				
3/2/1	Blinding,etc	m3	16		
	25 MPa Concrete				
3/2/2	Aprons ,etc	m3	18		
3/2/3	Strip footings	m3	95		
3/2/4	Bases	m3	18		
	30MPa concrete				
3/2/5	Surface beds, plinths,etc	m3	81		
3/2/6	Columns	m3	4		
3/2/7	Slabs and inverted beams	m3	36		
	Finishing top surfaces of concrete smooth with a wood float				
3/2/8	Surface beds, slabs, etc	m2	595		
	Carried Forward			R	

				R	
	Brought Forward				
	Test blocks				
3/2/9	150 x150 x 150mm Deep concrete cube test	No	28		
	Expansion joints with bitumen impregnated softboard between vertical concrete and brick surfaces				
3/2/10	10mm Joints not exceeding 300mm high	m	448		
	Saw-cut joints sealed with two part flexible polyurethane joint sealant				
3/2/11	6 x 30mm Saw-cut joints in top of concrete	m	158		
	ROUGH FORMWORK (DEGREE OF ACCURACY III)				
	Smooth formwork to soffits				
3/2/12	Slabs propped up exceeding 1,5m and not exceeding 3m high	m2	40		
	Rough formwork to sides				
3/2/13	Inverted beams above concrete not exceeding 300mm high or wide	m	200		
3/2/14	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	100		
	Steel reinforcement				
	High tensile steel				
3/2/15	12mm Diameter bars	t	6.00		
	Fabric reinforcement				
3/2/16	Mesh ref 193 fabric reinforcement in concrete surface beds, slabs, etc	m2	100		
3/2/17	Mesh ref 245 fabric reinforcement in concrete surface beds, slabs, etc	m2	495		
3/2/18	Mesh ref 395 fabric reinforcement in concrete surface beds, slabs, etc	m2	90		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 2				

Item No		Quantity	Rate	Amount

BILL NO. 3

MASONRY

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 118 for Contract Price Adjustment Provisions

Sizes in descriptions

Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick

Hollow walls

Descriptions of hollow walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole

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

FOUNDATIONS (PROVISIONAL)

Carried Forward R

				R	
	Brought Forward				
	Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar				
3/3/1	One brick walls	m2	290		
	SUPERSTRUCTURE				
	Brickwork of NFP bricks in class II mortar				
3/3/2	Half brick walls	m2	327		
3/3/3	One brick walls	m2	746		
	Brickwork reinforcement				
3/3/4	75mm Wide reinforcement	m	1 680		
3/3/5	175mm Wide reinforcement	m	2 779		
	Turning pieces				
3/3/6	110mm Wide turning piece to lintels	m	66		
3/3/7	230mm Wide turning piece to lintels	m	60		
	Galvanised wire ties etc				
3/3/8	4mm Diameter roof tie 2m girth bent double, with one end built into brickwork and other end fixed to timber	No	60		
	Corobrik 20-30MPa FBX clay face brick (Type A), size 222 x 106 x 73mm, manufactured in accordance with SANS 227:2007, (or similar approved).(Colour: Golden Wheat Travertine - to be confirmed); bedded and jointed in Class II mortar and pointed with 10mm square recessed vertical and horizontal joints on 85mm brick courses,				
3/3/9	Extra over brickwork for face brickwork	m2	81		
3/3/10	Extra over brickwork for brick-on-edge header course lintel pointed on face and 230mm soffit	m	8		
	Carried Forward			R	

Section No. 3
Bill No. 3

				R	
	Brought Forward				
	Corobrik 20-30MPa FBX clay face brick, size 222 x 106 x 73mm, manufactured in accordance with SANS 227:2007, (or similar approved).(Colour: Golden Wheat Travertine - to be confirmed); bedded and jointed in Class II mortar and pointed with 10mm square recessed vertical and horizontal joints on 85mm brick courses,				
3/3/11	Coping on top of one brick wall including fair raking cutting	m	8		
3/3/12	Extra over brickwork for brick-on-edge header course lintels one course high, pointed on face and soffit	m	4		
3/3/13	Corobrik FBX 106mm single bullnose solid pointed with recessed vertical and recessed horizontal joints (Colour: to match masonry FBX walls).	m	12		
	Corobrik 20-30MPa FBX clay face brick (Type B), size 222 x 106 x 73mm, manufactured in accordance with SANS 227:2007, (or similar approved). (Colour: Country Classic Travertine - to be confirmed); bedded and jointed in Class II mortar and pointed with 10mm square recessed vertical and horizontal joints on 85mm brick courses,				
3/3/14	Extra over brickwork for face brickwork	m2	409		
3/3/15	Extra over brickwork for brick-on-edge header course lintel pointed on face and 230mm soffit	m	65		
	Corobrik 20-30MPa FBX clay face brick, size 222 x 106 x 73mm, manufactured in accordance with SANS 227:2007, (or similar approved). (Colour: Country Classic Travertine - to be confirmed); bedded and jointed in Class II mortar and pointed with 10mm square recessed vertical and horizontal joints on 85mm brick courses,				
3/3/16	Coping on top of one brick wall including fair raking cutting	m	65		
3/3/17	Extra over brickwork for brick-on-edge header course lintels one course high, pointed on face and soffit	m	52		
3/3/18	Corobrik FBX 106mm single bullnose solid pointed with recessed vertical and recessed horizontal joints (Colour: to match masonry FBX walls).	m	56		
	Carried Forward			R	

Section No. 3
Bill No. 3

				R	
	Brought Forward				
	SUNDRIES				
	Everite Nutec window sill, size 150mm x 15mm thick, manufactured in accordance with SANS 803:2005 and installed below window with window sill lug screwed to underside of sill at 400mm centres, minimum of 75mm from end of window sill and bedded in Class II mortar at end of sills at plaster reveals. Sill to be cut flush with wall face. Sill to be primed according to manufacturer instruction and painted enamel paint to match wall colour, all in accordance with the manufacturer`s recommendations.				
3/3/19	Internal Sills	m	126		
	Precast concrete sills to be Modcon Concrete 215 x 115x 60mm (EV) pointed with flush joints on all exposed faces (or similar approved).				
3/3/20	Sills (precast concrete)	m	96		
	Precast concrete sills to be Modcon Concrete 290 x 65 x 1500mm (H profile) bedded and jointed in Class II mortar and pointed with flush joints on all exposed faces (or similar approved).				
3/3/21	Sills (precast concrete)	m	30		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 3

Item No			Quantity	Rate	Amount
	BILL NO. 4				
	WATERPROOFING				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 120 for Contract Price Adjustment Provisions				
	SUPPLEMENTARY PREAMBLES				
	Waterproofing				
	Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs				
	One layer of 375 micron Approved embossed damp proof course				
3/4/1	In walls	m2	93		
	One layer of 375 micron Approved waterproof sheeting sealed at laps with a pressure sensitive tape				
3/4/2	Under floors, rafts, plinths, pavings, etc	m2	782		
	Silicone sealing compound				
3/4/3	In joints between window frames and brickwork	m	27		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 4				

Item No		Quantity	Rate	Amount

BILL NO. 5

CARPENTRY AND JOINERY

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 126 for Contract Price Adjustment Provisions

SUPPLEMENTARY PREAMBLES

Fixing

Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins, or to be shot-pinned, to brickwork or concrete

Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 500mm centres, and where described as "bolted", the bolts have been given elsewhere

Joinery

Descriptions of frames shall be deemed to include frames, transomes, rails, etc

Descriptions of hardwood joinery shall be deemed to include sinking and pelleting heads and nuts of bolts

Decorative thermosetting plastic laminate covering

Laminate covering shall be glued under pressure and edge strips of same shall be butt jointed at junctions with adjacent similar finish

FACIAS, BARGE BOARDS, ETC:

Carried Forward R

				R	
	Brought Forward				
	NUTEC fibre cement faschia & barge boards (or similar approved), size 10 x 300mm to be primed 1 coat and painted 2 coats enamel paint. To be fixed to proper support structure with bolts within a straight line with aluminium joiners on corners and joints. (Colour: according to the architect)				
3/5/1	Fibre cement fascia/barge drilled and brass screwed and including steel jointing strips between lengths.	m	210		
	BUMP RAILS				
	PVC Bumper rails				
3/5/2	Pre-formed rigid PVC bump-rails fitted over aluminium retainers with rubber inserts. PVC covering to be scratch-resistant with a textured surface. Rails to be flush-mounted against walls with an overall thickness of about 20–35 mm. The bump-rail height approx. 90mm. Injection- moulded plastic joiners and end-caps in matching colours to be provided. Side profile of bumper rail to exhibit a shadowline. (Colours to be confirmed and to the staisfaction of the architect)	m	423		
	DOORS, ETC				
	Commercial standard semi-solid heavy duty door				
3/5/3	Swartland Kayo HB STD H12 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. (D1)	No	7		
3/5/4	Swartland Kayo HB STD H12 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. (D2)	No	2		
	Carried Forward			R	

Section No. 3
Bill No. 5

				R	
	Brought Forward				
3/5/5	Swartland Kayo HB STD H12 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. To include safety glass viewing panel with aluminium frame. (D4)	No	6		
3/5/6	Swartland Kayo HB STD H12 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. To include safety glass viewing panel with aluminium frame. (D5)	No	1		
3/5/7	Swartland Kayo HB STD H12 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. (D6)	No	7		
	Medium duty semi-solid door				
3/5/8	Swartland Kayo or MD UNSAPM12 or similar approved, with veneer over concealed edges (Sapele veneer). Finish with atleast (x2) coats clear satin varnish. (D3)	No	1		
3/5/9	Swartland Kayo or MD UNSAPM12 or similar approved, with veneer over concealed edges (Sapele veneer). Finish with atleast (x2) coats clear satin varnish. (D7)	No	1		
	Framed ledge and braced exterior door				
3/5/10	Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009. (D8)	No	3		
	Carried Forward			R	

Section No. 3
Bill No. 5

				R	
	Brought Forward				
3/5/11	Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009. (D8)	No	2		
3/5/12	Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009. (D11)	No	1		
	FITTINGS				
	RUFFLETTE: Powdercoated aluminium Forwin hospital track for suspension from ceiling (or similar approved), complete with all relevant track pieces, hanger tube, splicer, brackets, end caps, runners, gliders, dome ceiling cover, spacers, nuts and bolts. (Colour: White) All to be installed according to the strict specifications and recommendation of the manufacturer at a hight of 2.5m from finished floor level. (Curtains allowed elsewhere)				
3/5/13	Hospital track	m	144		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 5

Item No			Quantity	Rate	Amount
	BILL NO. 6				
	ROOF COVERINGS				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	A written and approved five year guarantee of water-tightness shall be issued after on completion & approval of roofs by the manufacturer, installed complete with all relevant flashings (to match colour of wall cladding sheeting) by a specialist contractor all in accordance with the manufacturers specifications.				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 124 for Contract Price Adjustment Provisions				
	PROFILED METAL SHEETING AND ACCESSORIES				
	Roof sheeting shall be Klip-Tite profile roll-formed in continuous lengths from Chromadek Z200 (Colour: according to the architect),0.58mm ISQ 550 fixed to steel / timber purlins using KL700 clips and class 3 fasteners, in strict accordance with manufacturer's specifications by a GRS Approved Contractor.				
3/6/1	Roof covering with pitches not exceeding 25 degrees	m2	939		
	Wall cladding shall be Klip-Tite profile roll-formed in continuous lengths from Chromadek Z200 (Colour: according to the architect),0.58mm ISQ 550 fixed to steel / timber purlins using KL700 clips and class 3 fasteners, in strict accordance with manufacturer's specifications by a GRS Approved Contractor.				
3/6/2	Wall cladding	m2	150		
	Carried Forward			R	

				R	
	Brought Forward				
	Wall cladding shall be of a flat profile sheet with Chromadek Z200 (Colour: according to the architect),0.58mm ISQ 550 fixed to steel purlins using KL700 clips and class 3 fasteners, in strict accordance with manufacturer's specifications by a GRS Approved Contractor.				
3/6/3	Wall/roof cladding at entrance	m2	27		
	ROOF AND WALL INSULATION				
	ISOVER: Lay 135mm non-combustible Factorylite composite insulation with (reinforced foil/ white metalized foil) facing on galvanised wire at 300mm centres. Affix to the roof apex and unroll the blanket with the foil facing down. Overlapping foil edges to be stapled all according to the sitrict recommendations and specifications of the manufacturer and according to NBR & SANS standards.				
3/6/4	Insulation blanket laid taut over purlins	m2	625		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 6

Item No		Quantity	Rate	Amount

BILL NO. 7

CEILINGS, PARTITIONS AND ACCESS FLOORING

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 129 for Contract Price Adjustment Provisions

SUSPENDED CEILINGS

Proprietary suspended ceilings

Hangers, suspension grids, "lay-in" panels, etc are to be in accordance with the manufacturers' recommendations

Flush plastered gypsum plasterboard suspended ceilings

Ceilings shall comprise 12,5mm gypsum plasterboard boards screwed to and including screw-up suspension grid consisting of main tees at 1 200mm centres and galvanised steel capped cross tees at 400mm centres and with tape fixed over joints and the whole finished with gypsum plaster trowelled to a smooth polished surface

The grid shall be suspended by means of galvanised steel L-section hangers at suitable centres, securely shot-pinned or screwed to concrete, steel or wood

Carried Forward R

				R	
	Brought Forward				
	Flush plastered gypsum plasterboard suspended bulkheads Bulkheads shall comprise galvanised steel studding of 63,5mm top and bottom tracks with vertical studs at maximum 400mm centres, pop-riveted to the top and bottom tracks with similar additional vertical studs as necessary at abutments, ends, etc and covered as described with plasterboard screwed to studding with drywall screws at maximum 300mm centres. Boards shall be butt jointed and finished with tape and jointing compound and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer. Descriptions shall be deemed to include any additional studs at ends and intersections, corner beads, cornices at junctions with ceilings, jointing compound, tape, etc **Bulkheads shall comprise galvanised steel studding of 63,5mm top and bottom tracks with vertical studs at maximum 400mm centres, pop-riveted to the top and bottom tracks with similar additional vertical studs as necessary at abutments, ends, etc and covered as described with plasterboard screwed to studding with drywall screws at maximum 300mm centres. Boards shall be butt jointed and finished with tape and jointing compound and the whole finished with gypsum plaster trowelled to a smooth polished surface to the thickness recommended by the manufacturer.** **Descriptions shall be deemed to include any additional studs at ends and intersections, corner beads, cornices at junctions with ceilings, jointing compound, tape, etc**				
3/7/1	Flush plastered gypsum plasterboard bulkheads	m2	160		
	Suspended grid vinyl clad exposed T ceiling tiles (combination sizes; 600 x 600mm fissured texture & 1200 x 600mm ripple white texture)				
3/7/2	Flush plastered ceiling (WC CUBICLES ONLY)	m2	38		
	Carried Forward			R	

Section No. 3
Bill No. 7

				R	
	Brought Forward				
	CAPCO or similar approved CEILTEX vinyl clad gypsum aluminium foil backed ceiling tiles, size 12 x 600 x 600mm with fissured texture finish laid onto CKM T38/24W pre-painted white exposed tee grid system. Main tees suspended by means of 19 x 0,5mm G.M.S. strap hangers at 1200mm centres.				
3/7/3	Suspended grid vinyl clad exposed T ceiling tiles (combination sizes; 600 x 600mm fissured texture & 1200 x 600mm ripple white texture)	m2	56		
	CAPCO or similar approved CEILTEX vinyl clad gypsum aluminium foil backed ceiling tiles, size 12 x 600 x 600mm with white ripple texture finish laid onto CKM T38/24W pre-painted white exposed tee grid system. Main tees suspended by means of 19 x 0,5mm G.M.S. strap hangers at 1200mm centres.				
3/7/4	Suspended grid vinyl clad square edge ceiling tiles (size 600 x 600mm)	m2	130		
	600 x 1200 x 15mm ARMSTRONG BIOGUARD tegular white mineral suspended ceiling boards in suspension system; tegular metal prelude XL/TL. 24mm white runners and tegular shadowline perimeter finishes. Runners to be secured to vertical 2.5mm wire spaced minimum 1250mm. All to ceiling layout.				
3/7/5	Suspended grid mineral beveled tegular ceiling tiles (size 600 x 1200mm)	m2	154		
	OWAcoustic Constellation Premium biologically absorbable mineral wool ceiling tiles, NRC - 0.70, size 1200 x 600 x 15mm with reveal-edge and white painted finish, laid on fire rated OWAconstruct S3a exposed demountable T24 suspension system, comprising galvanised main tees and cross tees with main tees suspended by means of galvanised hangers at centres not exceeding 1200mm, and all installed to manufacturer's instructions.				
	OWAconstruct Shadowline W-trim, plugged and screwed at centres not exceeding 200mm.				
3/7/6	Suspended grid vinyl clad beveled tegular ceiling tiles (size 600 x 1200mm)	m2	160		
	Carried Forward			R	

Section No. 3
Bill No. 7

	Brought Forward			R	
	Cornices, perimeter trims, etc to suspended ceilings				
3/7/7	Ceiling perimeters to be finished with pre-painted white 47x35 mm SM 25 recessed shadow line wall angle plugged and screwed to the wall. Installation should be done in strict accordance with the manufacturer's specification	m	618		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 7				

Item No		Quantity	Rate	Amount

BILL NO. 8

FLOOR COVERINGS, WALL LININGS, ETC

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

Sheeting is to be laid in pressure-sensitive or acrylic adhesive (as approved by flooring manufacturer), with a notched trowel at the rate of 5.5 to 6.5 m2/litre on a previously prepared Class 1 sub-base The sheet is to be rolled in both directions with a 68 kg three-sectional metal floor roller, during the course of the installation, immediately after the sheeting is laid in the adhesive. Factory edges of vinyl sheeting are to be removed before laying if recommended by manufacturer (10 to 20 mm) . Joints are to be butted, grooved to about half the depth of the sheet, (about 1 mm) and heat welded, with a welding rod. The finished width of the weld should be a width of 3 mm, and ensure a minimum 70% bond with the sheeting – all in accordance with the manufacturer's spec. No concave or convex joints allowed – the joints must finish flush with the sheeting. No open joints will be accepted. All welds to be glazed and checked prior to polishing. No cross-joins allowed. (Note: No stripping to PuR finished floors as this will damage the sheeting.)

Welding between 2 coloured vinyls to be neatly done and according to the strict recommendations and specifications of the manufacturer. All in accordance to the floor finish layout.

Skirting to be finished with extruded capping strip (or clip-on capping strip with backing) to be supplied and fixed with manufacturer approved contact adhesive spread evenly and quickly onto both material and wall surface. Ensure that no gaps remain between the wall, the skirting and the floor.

Carried Forward R

				R	
	Brought Forward				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 130 for Contract Price Adjustment Provisions				
	FLOOR COVERINGS				
	Supply and fix BELGOTEX: NEPTUNE (Colour: according to the architect), (or similar approved) 2 mm thick fully-flexible, nondirectional manufactured in accordance with SANS 786:2007,) vinyl floor-sheeting with polyurethane reinforcement and surface treatment - abrasion group T/P (select group), and manufactured to EN 649. Installation all in accordance to the layout plan and sample board. Screed to be checked and certified. Level of floortile finish to align with finished level of vinyl floor sheeting.				
3/8/1	Vinyl floor covering	m2	418		
3/8/2	Extra over for Vinyl pattern inlays (PROVISION TO BE MADE FOR DARK COLOURED VINYL INLAYS)	m2	135		
	FLOORWORX: Supply and fix approximately 9.0mm thick x 2.0m wide coral® Welcome/Duo polyamide fibre-based entrance matting system (Colour: to be confirmed), (or similar approved), manufactured in accordance with EN14041, with sheets cut and joined as per manufacturer's instruction to fit the required space. It is recommended that the mat be countersunk in a purpose-designed mat-well, adhered using FloorworX No. 71 contact adhesive. (INLCUDE TRANSITION STRIP AS RECOMMENDED BY THE MANUFACTURER - TO THE SATISFACTION AND APPROVAL OF THE ARCHITECT).				
3/8/3	Walk-off mats	m2	50		
	SKIRTINGS, NOSINGS, ETC				
	Carried Forward			R	

Section No. 3
Bill No. 8

				R	
	Brought Forward				
	Extruda vinyl edging strip (Colour: to be confirmed) width 25mm and height 2.5mm to be installed all according to the instructions and recommendations of the manufacturer.				
3/8/4	Vinyl edging strip	m	160		
	M•Trim brushed stainless steel edging strip to be installed all according to the instructions and recommendations of the manufacturer for vinyl floor finish.				
3/8/5	Stainless steel edging strip	m	160		
	M•Trim stainless steel 30 x 9mm high carpet gripper capping strip trim, plugged and counter sunk screwed into cement screed with stainless steel screws all in accordance with the specifications and recommendatiuons of the manfacturer.				
3/8/6	Vinyl to carpet transition strip	m	136		
	Coved floor-sheet skirting: Matching floor vinyl sheeting coved 150 mm high against walls to form coved skirting, and welded to floor-sheet. Coved skirting to be laid over preformed 20 x 20 mm cove former – with ends sealed with glue. Allow for butterfly corner method at all corners including at thresh-holds, all in accordance with manufacturer's specifications.				
3/8/7	Vinyl skirting	m	162		
	POLISH, SEALERS, ETC				
	Sweep, clean with detergent complying with SABS 825, rinse and apply three coats of water emulsion polish (matt texture) complying with SABS 1042, including buffing after application of each coat of polish. **by the manufacturer prior to the installation of the sheeting. All work to be carried out in accordance with manufacturer's specifications.**				
3/8/8	Vinyl polish/ sealant	m2	418		
	Carried Forward			R	

Section No. 3
Bill No. 8

				R	
	Brought Forward				
	WALL LININGS				
	Decorative vinyl based wallpaper (PC R180.00 per m² EXCL VAT, LABOUR, DELIVERY, ETC)				
3/8/9	On walls	m2	17		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 8

Item No			Quantity	Rate	Amount
	BILL NO. 9				
	IRONMONGERY				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 132 for Contract Price Adjustment Provisions				
	SUPPLEMENTARY PREAMBLES				
	Finishes to ironmongery				
	Where applicable finishes to ironmongery are indicated by suffixes in accordance with the following list: BS Satin bronze lacquered CH Chromium plated SC Satin chromium plated SE Silver enamelled GE Grey enamelled AS Anodised silver AB Anodised bronze AG Anodised gold ABL Anodised black PB Polished brass PL Polished and lacquered PT Epoxy coated SD Sanded				
	HINGES, BOLTS, ETC				
	Approved				
3/9/1	Stainless steel adjustable roller bolt (Code: QS6001)	No	17		
3/9/2	Stainless steel surface mounted WC indicator bolt (Code: QS4446)	No			
	HANDLES				
	Approved				
3/9/3	Solid stainless steel lever handle on rose with escutcheons (Code: Molo)	Sets	17.0		
	Carried Forward			R	

Section No. 3
Bill No. 9

				R	
	Brought Forward				
3/9/4	Stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle	Sets	15.0		
3/9/5	Stainless steel narrow stile escutcheons (Code: QS4405)	Sets	3.0		
3/9/6	Escutcheon (Code: QS4403)	Sets	3.0		
	CATCHES, CABIN HOOKS, ETC				
	Approved				
3/9/7	FRANKE: Double robe hook for wall mounting, 304 stainless steel, round cover to conceal the fixing of screws, incl. stainless steel screws and dowels, all in stainless steel satin finish. (Code: Hooks: MEDIUS)	No	6		
	LOCKS				
	"EN-SUITE" LOCKS				
	NOTE : The following locks are to be suitable for master key operation				
	Approved				
3/9/8	Stainless steel cylinder lock with latch & deadbolt to fit with 55mm backset 60mm centre (Code: QS 6055/1) (master keyed)	No	17		
3/9/9	Appropriate cylinder lock to fit (master keyed)	No	3		
	NOTE : The following locks are not master keyed				
	Approved				
3/9/10	Stainless steel disabled WC thumb turn (Code: QS4406 & QS4409) with stainless steel bathroom lock 58mm c/c (Code: QS0055/5)	No	2		
3/9/11	Stainless steel WC thumb turn (Code: QS4410)	No	7		
	PUSH PLATES AND KICKING PLATES				
	Carried Forward			R	

				R	
	Brought Forward				
	1.5mm Thick stainless steel				
3/9/12	150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width).	Sets	24.0		
	DOOR CLOSERS, FLOOR SPRINGS, ETC				
	Approved				
3/9/13	QS700 door closer fitted pull side on door leaf with delayed action for disable	No	2		
3/9/14	QS700 door closer fitted pull side on door leaf	No	7		
	NUMERAL AND NAMEPLATES, ETC				
	5mm Perspex name plate with blue coloured backing and white back engraved 25mm high lettering fixed with chrome capped mirror screws				
3/9/15	Suitable size plate with letters **"Multi-purpose kitchen"**	No	1		
3/9/16	Suitable size plate with letters **"Multi-purpose WC"**	No	1		
3/9/17	Suitable size plate with letters **"Pharmacy"**	No	1		
3/9/18	Suitable size plate with letters **"Consultation room (TB)"**	No	1		
3/9/19	Suitable size plate with letters **"Sputum room"**	No	1		
3/9/20	Suitable size plate with letters **"Consultation room"**	No	4		
3/9/21	Suitable size plate with letters **"Counselling room"**	No	2		
3/9/22	Suitable size plate with letters **"Vitals"**	No	1		
3/9/23	Suitable size plate with letters **"Specimen collection"**	No	1		
3/9/24	Suitable size plate with letters **"Emergency/treatment room"**	No	1		
3/9/25	Suitable size plate with letters **"Breast feeding & baby changing facility"**	No	1		
3/9/26	Suitable size plate with letters **"Kiosk"**	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
3/9/27	Suitable size plate with letters **"Staff change room & WC"**	No	1		
3/9/28	Suitable size plate with letters **"Staff kitchen"**	No	1		
3/9/29	Suitable size plate with letters **"Cleaner store"**	No	1		
3/9/30	Suitable size plate with letters **"Dirty utilities"**	No	1		
3/9/31	Suitable size plate with letters **"Public gents"**	No	1		
3/9/32	Suitable size plate with letters **"Public ladies"**	No	1		
3/9/33	Suitable size plate with letters **"Public assisted"**	No	1		
3/9/34	Suitable size plate with letters **"Security"**	No	1		
3/9/35	Suitable size plate with letters **"Security WC"**	No	1		
	Stainless Steel				
3/9/36	Stainless steel square engraved signs, 100x100mm indicative of male & female	No	6		
3/9/37	Stainless steel square engraved sign, 100x100mm indicative of paraplegic WC	No	1		
	BATHROOM FITTINGS				
	Approved				
3/9/38	FRANKE: Stainless steel satin finish wall mounted soap dispenser (Code: RODX619) with approx. 1 litre volume holder, size 132(d) x 140(h) z 200(w)mm e 132(d) x 140(h) z 200(w)mm	No	13		
3/9/39	FRANKE: Stainless steel satin finish wall mounted waste bin (Code: RODX605) with approx. 23 litre bag holder, size 168(d) x 460(h) z 355(w)mm	No	11		
3/9/40	FRANKE: Set Franke waste bin (Code: STRX 607) and hinged lid (Code: STRX 608) for surface mounting. Stainless steel stratos waste bin with hinged lids. Both are finished with a layer InoxPlus to avoid fingerprints and to facilitate cleaning (easy to clean)	No	1		
	Carried Forward			R	

				R	
	Brought Forward				
3/9/41	FRANKE: Double toilet roll holder with spindle system for wall mounting, stainless steel, surface satin finished, material thickness 0.8 mm, folded front cover, cylinder lock with Franke standard key, for 2 rolls with max. Ø 120 mm, second roll will be released after consumption of first roll, with spindles, reserve roll not visible, incl. stainless steel screws and dowels. (Code: RODX672)	No	7		
3/9/42	FRANKE: 0,8mm Stainless steel with satin finish sanitary towel and disposal bin for wall mounting, size 130(d) x 469(h) x 350(w)mm, approx. 6 liter capacity with integrated bag holder and self closing lid (Code: RODX612). Cylinder lock with Franke standard key, incl. stainless steel screws and dowels.	No	4		
3/9/43	FRANKE: Paper towel dispenser, waste bin combination (Code: RODX602) for wall mounting, stainless steel, surface satin finished, material thickness 0.8 mm, folded front cover, cylinder lock with Franke standard key, loading capacity 500 - 800 pcs. of paper depending on convolution, waste bin with approx. 23 liter capacity, incl. stainless steel screws and dowels	No	5		
3/9/44	FRANKE: Stainless steel angle Bar 135° (Code: CNTX700A), size Diameter: 32(ø) x 256(h) x 618(w) x 91(d)mm. Fine grip surface that complies with European safety standards to prevent slipping. WC HANDRAIL	No	2		
3/9/45	FRANKE: Stainless steel cistern back grab rail (Code: CNTXBR) Diameter: 32(ø) x 750(w) x 260(d) mm	No	2		
	SUNDRIES				
	Carried Forward			R	

				R	
	Brought Forward				
	Approved as per details appendid to the back of these bills of quantities				
3/9/46	TCSHYGIENE: PART No: (Code: PDFOLD STAINLESS STEEL RV) 430 Stainless steel lockable folded hand paper dispenser, size: 397(h) x 294(w) x 105(d)mm Fully enclosed - paper stays clean and dry. Lid slot shows paper status at a glance. Made of tough Stainless steel. Bottom hinged lid for ease of loading folded hand paper towels. 430 Stainless Steel (304 to specification)	No	10		
3/9/47	Stainless steel wall mountable broom- & mop rail designed for a healthcare environment	No	1		
3/9/48	MEDICARE HOSPITAL EQUIPMENT: Bowman PPE Protection System Dispenser (Code: LD-007 LD-007), size 422 x 641 x 114mm	No	1		
3/9/49	FRANKE: BBR bedpan & bottle rack (Code: BBR4)	No	1		
3/9/50	FRANKE: Model Z-series adjustable modular solid shelving manufactured from grade 18/10 stainless steel 1.2mm thick. One piece shelf and integrated bracket with a 25mm apron to front and sides with 30mm turn up at back and safety edge on corners. FRANKE: Model Z-modular series wall bands manufactured from grade 18/10 stainless steel 1.2mm thick, to be double slotted to allow (x2) shelves to be lined up next to each other on a single wall band.	No	2		
	Approved				
3/9/51	Door stop (Code: QS4421)	No	32		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 9				

Item No			Quantity	Rate	Amount
	BILL NO. 10				
	STRUCTURAL STEELWORK				
	NOTE: Tenderers are advised to study the "Specification of Materials and Methods to be used" (OOG-001E) before pricing this bill.				
	STEEL COLUMNS AND BEAMS				
	THE FOLLOWING IN WELDED AND BOLTED CANOPIES, WALKWAYS, ETC				
	Welded beams in single lengths with flat section bearer and connection plates.				
	GALVANISED STEEL COLUMNS AND BEAMS				
	Welded section hollow columns and beams in single lengths with flat base, cap, bearer and connection plates, bolted to concrete				
3/10/1	203 x 203 x 46kg/m universal column section (ST1)	t	6.38		
3/10/2	152 x 152 x 23kg/m universal column section (ST2)	t	2.00		
	Welded square hollow section columns in single lengths with flat base, cap, bearer and connection plates, bolted to concrete or steel				
3/10/3	100 x 100 x 4mm square hollow section (ST3)	t	2.88		
	BEAMS AND RAFTERS				
3/10/4	203 x 203 x 46kg/m universal column section girder beams	t	2.18		
3/10/5	254 x 146 x 31kg/m universal beam section rafters	t	2.00		
	PURLINS				
	Carried Forward			R	

				R	
	Brought Forward				
	Cold formed lipped channel purlins, including cleats, laps and splices, bolted to steel				
3/10/6	150 x 75 x 20 x 2.5mm cold formed lipped channel purlins	t	3.11		
	BRACING				
	Welded angle section bracing in single lengths with flat gusset and connection plates, bolted to steel				
3/10/7	60 x 60 x 6mm angle section tension bracing	t	1.95		
3/10/8	60 x 60 x 4mm angle section knee bracing	t	2.00		
	CONNECTIONS				
	Bolts, nuts, washers and holding down bolts				
3/10/9	High tensile Class 8.8 bolts with Class 8 lock nuts and washers	No	210		
3/10/10	Holding down bolts complete with nuts and washers	No	100		
	LIGHT STEEL FRAME ROOF TRUSSES				
	Proprietary light steel frame roof trusses designed and manufactured by approved specialist, including all necessary bracing, cleats, plates, bolts and connections and erected complete				
3/10/11	Light steel frame roof trusses to roofs indicated on structural drawings	m2	1		
	This should remain a specialist measured item/allowance, because the drawing says the truss sections are indicative and are to be designed and supplied by the approved manufacturer.				
	PROTECTIVE TREATMENT				
	Carried Forward			R	

	Brought Forward			R	
	Prepare and apply corrosion protection to structural steelwork for Environmental Class C3 Industrial in accordance with ISO 12944				
3/10/12	On columns, beams, rafters, purlins and bracing	t	13.26		
3/10/13	On angle bracing	t	2.06		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 10

Item No		Quantity	Rate	Amount

BILL NO. 11

METALWORK

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 136 and 149 for Contract Price Adjustment Provisions

SUPPLEMENTARY PREAMBLES

General

Screens shall be the Window Wall system as supplied by HBS Aluminium Systems.

Manufacture shall be in accordance with the current manuals as provided by HBS Aluminium Systems All aluminium work must comply with the latest edition of publications of Messer AAAMSA An AFSA Certificate of Conformance in respect of product finishes must be obtained.

Materials

Material shall be of 6063T6 aluminium alloy with a minimum structural wall thickness of 1.8mm. Outer frame to infill panels will be a nominal depth of 166 or 111mm.

Carried Forward R

	Brought Forward		R		
	Construction Outer frame to consist of a single part compensating head and jamb and continuous sub-Sill. Infill panels are to be constructed from double cavity tubular profiles, forming a wet cavity with drainage slots to allow for transom drainage to the exterior. All glazing rebates to be 25mm. Joints of the infill panels shall be notched and screwed to spigots with No 8 stainless steel screws. Where required, a 111mm or 166mm Split mullion assembly must be used to couple infill panels together, still making allowance for all thermal and dynamic movement. Door panels within the screens to have a 4-edge door rebate with gasket seal all round. **Installation** All aluminium work to be done in strict accordance to the manufacturers specifications by a specialist firm. All openings to be checked on site before any materials are ordered or manufacture of window and door frames. Panel-by-panel installation from Inside or from Outside the building. All aluminium frame works to be provided with a continuous silicone seal around all construction openings. **Hardware** All sashes to have mechanical Corner Connectors, wind locks and multi-point locking handles. Sashes not to exceed 1700mm wide by 1200mm high as per specification. Friction stay to suit max weight and size of Sash. Door hardware shall be compatible with the system and will take cognisance of the finish specification of the applicable area. See Hardware Schedule for door.				
	Carried Forward		R		

	Brought Forward			R	
	Finish				
	Sections will be painted in accordance with SABS1578, parts1 & 2. Powercote, and anodised aluminium, should be protected to prevent any damage or stain by cement, etc. All powder coating to be 25 micron thick and shall be executed in strict adherence to sabs 999				
	Glazing				
	Glass thickness should be in accordance with SANS 10400 and deigned by a competent person. Glazing is to be carried out in accordance with SABS 0137, with particular attention to size limitations, packing and setting blocks. Thicknesses from 6-28mm.				
	Structural Perfomance				
	System shall meet or exceed the requirements of SANS613 and the design loading determination by SABS 0160 for this application. Deflection of structural members shall not exceed L/175 or L/240+6mm as applicable.				
	Thermal Perfomance				
	System shall comply with SANS204 in applications where Fenestration makes up more than 15% of Floor area.				
	U-value with Air filled glazing units = 3.36				
	For U-values below 3.38 use Argon or Krypton gas filled glazing units.				
	STEEL GATES, SCREENS, ETC				
	Burglar bars for glass & aluminium windows				
3/11/1	TRELLIDOR: BURGLAR GUARD powder coated electro-galvanised steel oval shaped non-retractable burglar bar for windows (Colour: to the satisfaction of the architect) to be fitted inside the reveal of the window	No	10		
	Carried Forward			R	

Section No. 3
Bill No. 11

				R	
	Brought Forward				
	Window dressing: Aluminium venetian blinds				
3/11/2	0.2mm thick and 50mm wide high tensile aluminium alloy powdercoated slats (venetian blind) with system to include headrail that is U-shaped zincalume steel roll-formed and stove-enamelled incorporating the tilt/raise and lowering mechanism and bottom rail from similar finish. (Colour: to the satisfaction of the architect). Blind to be installed inside the reveal.	No	10		
	STRONGROOM, RECORD ROOM DOORS, VENTILATORS, ETC				
	NOTE				
	The rates for strongroom doors, wall safes and ventilators shall include for fixing in position complete				
	_____				
	BITCON steel double door, overall size; 1830(w) x 2135(h)mm (Code: Type G) with fully louvred vents. Frame to be pressed from 1.6mm steel sheeting fully welded in a double rebated profile, to be primed with (x1) coat red oxide & finished with (x2) enamel paint (Colour: according to the architect). Door to be fitted with l00mm heavy duty flanged stainless steel hinges. Door to include pull handle, padlatch and barrel bolts to double doors as a standard. Door to be installed square true and plumb with the door/s in the closed position. The bottom leading edge/s or the door/s must be wedged to support the vertical load of the door on the frame. The wedge/s should not be removed until the brickwork is satisfactory cured. Louvre vents to be lined on the inside with vermin proof mesh screen size 560mm x 560mm (AV.) manufactured fully louvred with rebated frame surround for installation in walls.				
3/11/3	1830 x 2220mm D10	No	1		
	Natural anodized aluminum door grill 325x625				
3/11/4	325 x 625mm door grill	No	6		
	Carried Forward			R	

				R	
	Brought Forward				
	DOOR FRAMES, DOORS, WINDOWS, ETC				
	ALUMINIUM WINDOWS				
	Purpose made powder coated windows including glazing and ironmongery complete plugged to brickwork or concrete				
3/11/5	1695 x1190mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x2) fixed panels. (W2)	No	1		
3/11/6	2700 x 1190mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panels. (W3)	No	1		
3/11/7	2000 x 1190mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel (W6)	No	4		
3/11/8	1500 x 1190mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel (W7)	No	3		
3/11/9	770 x 1360mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel (W10)	No	5		
	Carried Forward			R	

	Brought Forward			R	
3/11/10	770 x 680mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panelAs supplied by specialist (W11)	No	3		
3/11/11	2000 x 1105mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel (W12)	No	1		
3/11/12	800 x 1105mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panels (W13)	No	1		
3/11/13	2090 x 1105mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel (W15)	No	4		
3/11/14	920 x 1580mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel (W17)	No	2		
3/11/15	1695 x 1190mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x2) fixed panel (W19)	No	1		
	Carried Forward			R	

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Bill No. 11

	Brought Forward			R	
3/11/16	2365 x 610mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) fixed panel (W20)	No	1		
3/11/17	1520 x 610mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel (W21)	No	1		
3/11/18	3565 x 850mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (W22)	No	1		
3/11/19	7160 x 425mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) fixed panels (W24)	No	1		
3/11/20	4685 x 1020mm Custom aluminium window frame powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) fixed panels (W25)	No	1		
3/11/21	1853 x 1057mm Custom aluminium window frame with (x1) fixed panel; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W26B)	No	1		
	Carried Forward			R	

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				R	
	Brought Forward				
3/11/22	1842 x 765mm Custom aluminium window frame with (x1) fixed panel & (x1) top hung; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W33)	No	1		
3/11/23	450 x 1020mm Custom aluminium window frame with (x1) fixed panel & (x1) top hung; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W34)	No	1		
3/11/24	500 x 1360mm Custom aluminium window frame with (x1) fixed panel & (x1) top hung; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W35)	No	1		
3/11/25	4645 x 2380mm Custom aluminium window frame with (x1) fixed panel & (x1) top hung; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W36)	No	1		
3/11/26	2255 x 1455mm Custom aluminium sliding window frame with (x2) sliding panels & (x2) fixed panels; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval. (Colour according to the architect). (W38)	No	1		
3/11/27	533 x 2040mm Custom aluminium window frame with (x2) fixed panels & (x1) top hung; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W39)	No	1		
	ALUMINIUM DOORS				
	Powder coated sliding doors complete with subframes, ironmongery, glass, sealing, etc and fixing to brickwork or concrete				
	Carried Forward			R	

	Brought Forward			R	
	Purpose made powder coated aluminium shopfronts, doors and frames glazed with 9,52mm laminated safety glass, hinges, sealant, ironmongery, etc. plugged to brickwork or concrete				
3/11/28	8780 x 4983mm Custom aluminium shopfront powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W1)	No	1		
3/11/29	8780 x 2510mm Custom aluminium shopfront with INTERPON anodised finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). Doors should open 180 degrees. (W23)	No	1		
3/11/30	4207 x 3060mm Custom aluminium doorframe powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). Custom aluminium shopfront with powdercoated INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W32A)	No	1		
3/11/31	1865 x 2210mm Custom aluminium doorframe powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). Custom aluminium shopfront powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).(W32B)	No	1		
	Carried Forward			R	

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	Brought Forward			R	
	Powder coated aluminium frames				
3/11/32	1783 x 2380mm Custom aluminium double doorframe; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W4)	No	1		
3/11/33	1783 x 2380mm Custom aluminium double doorframe; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W5)	No	1		
3/11/34	1200 x 2380mm Custom aluminium doorframe and sidelight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W8)	No	1		
3/11/35	1630 x 2550mm Custom aluminium door- & (x1) sidelight & (x1) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W9)	No	1		
3/11/36	1630 x 2550mm Custom aluminium door- & (x1) sidelight & (x1) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W14)	No	1		
	Carried Forward			R	

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	Brought Forward			R	
3/11/37	879 x 2125mm Custom aluminium doorframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W16)	No	1		
3/11/38	1177 x 2600mm Custom aluminium door- & (x1) sidelight & (x1) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W18)	No	1		
3/11/39	3712 x 2380mm Custom aluminium doorframe with (x1) sidelight; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W26A)	No	1		
3/11/40	3237 x 2380mm Custom aluminium doorframe with (x2) sidelights & (x1) toplight; all powdercoated in INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W27)	No	1		
3/11/41	877 x 2380mm Custom aluminium doorframe powdercoated with INTERPON finish according to specialist subcontractor specification (colour according to the architect). (W28)	No	1		
3/11/42	1445 x 2380mm Custom aluminium door- & (x1) \sidelight powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect). (W29)	No	2		
	Carried Forward			R	

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				R		
	Brought Forward					
3/11/43	1600 x 2380mm Custom aluminium door- & (x1) sidelight & (x1) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).(W30)	No	2			
3/11/44	1177 x 2380mm Custom aluminium door- & (x1) sidelight & (x1) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).(W31)	No	3			
	PRESSED STEEL DOOR FRAMES					
	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish over edge (Colour: according to the architect). Frame to accommodate for screeded floor finish.					
3/11/45	Frame for door 870 x 2380mm high (D1)	No	6			
3/11/46	Frame for door 870 x 2380mm high (D2)	No	1			
3/11/47	Frame for door 870 x 2380mm high (D3)	No	8			
3/11/48	Frame for door 870 x 2380mm high (D4)	No	3			
3/11/49	Frame for door 870 x 2380mm high (D5)	No	3			
3/11/50	Frame for door 870 x 2380mm high (D7)	No	1			
3/11/51	Frame for door 870 x 2380mm high (D8)	No	3			
3/11/52	Frame for door 870 x 2380mm high (D9)	No	1			
	Carried Forward			R		

				R	
	Brought Forward				
	Standard heavy duty double rebated pressed steel doorframe with (x1) shop coat red oxide, size of opening 813 x2032mm high for 110mm wall (check doorswing and wall thickness on plan). Frame painted (x2) coats enamel paint (Colour: according to the architect). Frame to accommodate for screeded floor finish.				
3/11/53	Frame for door 870 x 2061mm high (D6)	No	6		
	BUDGETARY ALLOWANCE				
3/11/54	Allow an amount of **R500,000.00** (five Hundred Thousand Rand) nett for burglar proofing to be priced and priced in accordance with this Bill of Quantities and omitted in part or whole as instructed by the Principal Agent.			SUM	
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 11

Item No			Quantity	Rate	Amount
	BILL NO. 12				
	PLASTERING				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 142 for Contract Price Adjustment Provisions				
	SCREEDS				
	The screed mix must consist of 1 part cement to 3 parts sand. Both sand and stone must comply with SABS 1083. Cement must comply with SANS 50197-1:2000 and achieve strength of 25mPa. No dry mix is permitted. The screed must be laid to a minimum of 25mm thick (preferably 40mm thick) with a wood trowelled finish where self-levelling compound is to be laid. Cube samples of the screed mix must comply when tested in accordance with SANS 5861-3:1994. The dry, cured (min. 14 days) screed must also be tested using a BRE screed tester, with one test per 20 to 25m² and to 3 to 5m intervals on corridors. **Strength category A: max 3mm indentation.**				
3/12/1	30mm Thick on floors and landings	m2	782		
	GRANOLITHIC				
	30mm thick with steel trowel finish, untinted granolithic screed on concrete floors and landings; skirtings to be 75mm high (only applicable to interiors). Install 150 x 150mm Triangular fillets against walls, kerbs, etc.				
3/12/2	Smooth granolithic screed	m2	20		
3/12/3	Skirtings 75mm high	m	20		
	Carried Forward			R	

				R	
	Brought Forward				
3/12/4	150 x 150mm Triangular fillets against existing walls, kerbs, etc cast including preparing existing surfaces to receive	m	20		
	EXTERNAL PLASTER				
	Apply one coat Permacrete (Marmoran) 1,5mm (Product code: AS003), (or similar approved), (Colour: according to the architect) when the coating has fully cured, seal with Marmoran Universal Glaze according to SANS ISO 1514:2004. The system must be applied in strict conformance to the manufacturer's instructions, Application to be done by approved applicator and guarantees should be submitted on completion.				
3/12/5	On walls	m2	300		
3/12/6	On narrow widths	m2	23		
	Class 1 cement/ sand plaster with steel trovel finish to comply with SANS 2001 - EMI: 2007 on 85mm brick wall				
3/12/7	On walls	m2	24		
3/12/8	On narrow widths	m2	2		
	INTERNAL PLASTER				
	Plaster interior walls with 1:4 cement sand plaster with steel trowel finish and approved plastersand. Plaster Gyproc Rhinoglide rough coat according to the instructions of the manufacturer.				
3/12/9	On walls	m2	2 061		
3/12/10	On narrow widths	m2	124		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 12

Item No		Quantity	Rate	Amount

BILL NO. 13

TILING

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 144 for Contract Price Adjustment Provisions

SUPPLEMENTARY PREAMBLES

Fixing

Unless described as "fixed with adhesive to plaster (plaster elsewhere)" descriptions of tiling on brick or concrete walls, columns, etc shall be deemed to include 1:4 cement plaster backing and descriptions of tiling on concrete floors etc shall be deemed to include 1:3 plaster bedding

Tiling described as "fixed with adhesive on power floated concrete" shall be deemed to include for approved tiling key-coat

Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts as recommended by the manufacturer of the tiles

WALL TILING

Carried Forward R

				R	
	Brought Forward				
	Ceramic wall tiles up to ceiling level. (Colour: according to the architect) to be laid in accordance with and to the approval of the material supplier with appropriate tinted grout. M • Trim natural anodised 10mm high Elite aluminium straight edge trim (Code: AESE100.NA), laid in tile adhesive while wall tiles are being installed or similar approved. Ceramic tiles (min. 10mm thick)				
3/13/1	On walls in isolated panels, splashbacks, etc	m2	442		
3/13/2	On narrow widths	m2	36		
	Mosaic tiles fix and treated according to manufacturer's specifications with M•Trim 8 x 12mm high polished stainless steel square edge trim (Code : SQE120.N), bedded in tile adhesive while tiles are laid.				
3/13/3	On walls	m2	263		
	FLOOR TILING				
	Full body porcelain tiles (CPI R400/m² EXCL VAT) (min. 10mm thick) fixed and treated according to manufacturer's specifications with M-Trim aluminium movement joints (Code : AMJ100) horizontal and vertical where indicated by supplier, over joints beyond area of 25m² in any direction colour to match grout. Level of floortile finish to align with finished level of vinyl floor sheeting.				
3/13/4	On floors	m2	100		
	Full body porcelain tile skirting (min. 10mm thick) to be laid in accordance with and to the approval of the material supplier at height of 150mm from FFL with stainless steel tile trimming on top				
3/13/5	150mm High skirting	m	56		
	Mosaic ceramic tiles (PC R 400/m2) fixed with adhesive to plaster (plaster elsewhere) and flush pointed with tinted grout				
3/13/6	On floors	m2	12		
3/13/7	On walls	m2	6		
	Carried Forward			R	

Section No. 3
Bill No. 13

	Brought Forward			R	
	SUNDRIES				
	Brushed stainless steel corner tile trimming (to be approved by the architect) for all reveal corners of tiled door- & window openings in tiled walls				
3/13/8	Corner tile trims	m	48		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 13				

Item No		Quantity	Rate	Amount

BILL NO. 14

PLUMBING AND DRAINAGE (PROVISIONAL)

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 146 and 148 for Contract Price Adjustment Provisions

SUPPLEMENTARY PREAMBLES

Polypropylene pipes:

Polypropylene pipes 54mm diameter and under shall be seamless copper coloured class 16 pipes jointed with "Fast-fuse" heat welded thermoplastic or brass compression fittings as designed for use with copper pipes as stated

Pipes shall be firmly fixed to walls etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions

All pipe diameters are nominal external

Polypropylene pipes:

Polypropylene pipes 63mm diameter and over shall be class 12 pipes jointed with cast iron "Supraclamp" running joints

Fusion welded bends, once or twice mitred as necessary, and tees shall be factory manufactured

Fusion welded bends and tees shall include jointing to pipes with PVC rubber ring double Z joint couplers

Carried Forward R

	Brought Forward			R	
	Branch tees shall include flanged and bolted joints to "Polycop" branch pipes in addition and for brass compression male iron to copper straight couplers Reducers shall include jointing to pipes with PVC rubber ring double Z joint couplers and reducers shall be of sufficient overall length to accommodate same All pipes shall be jointed and fixed strictly in accordance with the manufacturer's instructions All pipe diameters are nominal external **Vitrified clay pipes:** Pipes shall rest on solid ground and, where necessary, pockets of sufficient size shall be cut around joints to enable the jointing to be properly performed or, alternatively, pipes shall be bedded full length on and including unreinforced concrete laid in a semi-dry state immediately before pipes are laid Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings **uPVC pipes and fittings:** Soil, waste and vent pipes and fittings shall be solvent weld jointed				
	SOIL DRAINAGE				
3/14/1	110mm Pipe and including excavation not exceeding 1m deep	m	165		
	Extra over uPVC pipes for fittings				
3/14/2	110mm Bend	No	20		
3/14/3	110mm Access pipe	No	5		
3/14/4	110mm Access junction	No	33		
	Carried Forward			R	

				R	
	Brought Forward				
	Precast concrete circular inspection chambers including precast concrete cover slabs (covers elsewhere) and channels and benching				
3/14/5	1000mm Diameter inspection chamber not exceeding 2mm deep internally	No	3		
	Precast concrete covers etc				
3/14/6	350 x 350mm Double seal manhole cover and frame	No	3		
	SUNDRIES				
3/14/7	Extra over excavation for excavation in soft rock	m3	19		
3/14/8	Extra over excavation for excavation in hard rock	m3	10		
3/14/9	Extra over excavation for carting away surplus material to a dumping site to be located by the contractor	m3	65		
3/14/10	Extra over backfilling to pipe trenches	m3	130		
	Sundries				
3/14/11	15Mpa/19mm Mass concrete encasing around 110mm raking drain pipe to cleaning eye	No	4		
3/14/12	15Mpa/19mm Mass concrete encasing around 110mm raking drain pipe to cleaning eye	m	6		
3/14/13	Precast concrete inspection eye marker block set flush with the ground or paving	No	15		
3/14/14	100mm Cast iron "ABC" cleaning eye	No	3		
3/14/15	Cutting into existing 160mm drain pipe for and forming junction with 160mm pipe	No	1		
3/14/16	Cutting into side of existing inspection chamber for and connecting 160mm pipe including inserting 160mm channel junction and making good concrete benching	No	1		
3/14/17	Testing drainage pipe system		Item		
	Carried Forward			R	

Section No. 3
Bill No. 14

				R	
	Brought Forward				
3/14/18	Break up and remove existing septic tank complete, including all associated concrete, pipework, connections and fittings; cart away debris; backfill void with approved material in layers, compact and make good, complete.		Item		
	RAINWATER DISPOSAL				
	0,6mm steel rainwater disposal system (incl. rectangular gutters & rainwater downpipes), of dimensions to accommodate for effective channeling of rainwater; all to be coated with Chromadek Z200 to match colour of roof sheeting.				
3/14/19	100 x 100mm Eaves gutters	m	178		
3/14/20	Extra over square eaves gutter for outlet for 75mm pipe	No	8		
3/14/21	75mm Diameter rainwater pipes	m	42		
3/14/22	Extra over round rainwater pipe for bend	No	12		
3/14/23	Extra over round rainwater pipe for shoe	No	8		
	SANITARY FITTINGS				
	Vaal or similar approved				
3/14/24	VAAL: SOLA 630 MEDICAL BASIN (Code: 702800) fine fireclay 630 x 500mm rectangular “Sola 630” medical basin with no tapholes, overflow or chainstay hole, with 600 x 600mm porcelain splash back. Drilled holes ON SPLASHBACK to accommodate for elbow action wall mounted mixer (specified elsewhere).	No	6		
3/14/25	VAAL:HIBISCUS BASIN (Code: 702303) Vitreous china 510 x 405mm rounded “Hibiscus” basin with three semi-punched tapholes (i.e. available in zero, one, two or three taphole configurations), integrated overflow, and chainstay hole through the centre semi-punched taphole bolted to wall.	No	4		
3/14/26	VAAL: Azalea 540 Basin (Code: 705700) Vitreous china 540 x 450 x 165mm “Azalea 540” semi-recessed basin with one taphole and integrated overflow.	No	4		
	Carried Forward			R	

Section No. 3
Bill No. 14

				R	
	Brought Forward				
3/14/27	VAAL: Iceberg Vanity Basin (Code: 703400) Vitreous china 420 x 420mm “Iceberg” round self-rimming drop in vanity basin.	No	3		
3/14/28	VAAL: (Code: Sweetpea Wall Hung Bowl - 705126/705127) vitreous china wall hung "Sweetpea” urinal installed with concealed (back inlet) flushvalve (Cobra FJ8.102 or equivalent). Overall size 565 x 275 x 310 mm. Back inlet fittings (code 7054Z2) include a 38 mm c.p. domical grating, a spreader (with a 20 mm diameter thread), and two hanger brackets.	No	1		
3/14/29	VAAL: QUARTZ CLOSE COUPLED SUITE (Code: 771363) Vitreous china "Quartz" close coupled 90° outlet closed rim washdown pan (code 772800) and matching 6 litre pushbutton top dual flush cistern (code 7116DT) complete with lid and fitments; supplied with quality wooden seat. (code 8515Z000). The suite is designed to flush effectively on 6/3 litres.	No	5		
3/14/30	VAAL: PEARL PARAPLEGIC SEMI CC SUITE (Code: 7300SC) Vitreous china "Pearl Paraplegic” semi-close coupled 90° outlet open rim washdown pan and matching 9 litre cistern complete with lid, fitments, and purpose made C.P. side-flush lever (left or right). Supplied with purpose made thermoset seat and cover plate. The suite is designed to flush effectively on 6 litres.	No	2		
	<u>Franke or similar approved</u>				
3/14/31	FRANKE Stainless steel Rondo inset prep bowl without tap landing (Code: RDX610-45).	No	1		
3/14/32	FRANKE: EC combination bedpan & washup sink; supplied complete with a factory fitted Cobra FM 1.00 flush valve, 35 mm water supply through 50 mm sleeve on unit, P171/041 pillar mixer with over- arm swivel spout, CP297 pillar mixer with retractable hand spray, 15 mm bedpan spray nozzle, 15 mm bottle spray nozzle (both nozzles activated by two 15 mm quarter turn elbow action valves). Please refer to fixing table below for fixing options. Unit is plumbed at factory and is supplied complete with fittings. NOTE: you cannot add your own flushing fittings as it is factory fitted. (Model size to be confirmed)	No	1		
	Carried Forward			R	

Section No. 3
Bill No. 14

				R	
	Brought Forward				
3/14/33	FRANKE: CH Slop Hopper, size 540 x 540mm manufactured from grade 304 (18/10) stainless steel 1,2mm thick with a 100mm high integral splash back to the rear and both sides. The cone must be seamless with no welding and have an integral flushing rim with a 107mm waste outlet for pan connector, the inlet is fitted with a 38 x 250mm long vertical flush pipe for standard flush valve. Unit fitted with a hinged bucket grid manufactured from 10mm dia. grade 304 (18/10) stainless steel round bar, complete with two 40 x 40mm square stainless steel wall mounting gallows brackets. Unit to be fixed to wall 600mm from the top of the front apron to the finish floor level with 4 off anchor bolts. (Flushing via flushvalve: COBRA: FM1.100). Include tap bracket with bucket hook.	No	1		
3/14/34	FRANKE: Model DSG Drip Sink/ Cleaner Sink, size 535 x 454mm manufactured from grade 304 (18/10) stainless steel 1,2mm thick with 100 integrated splash back. Unit is fitted with hinged bucked grid manufactured from 10mm stainless steel round bar. Unit complete with two 40 x 20mm stainless steel wall mounting brackets. Unit is fixed to wall 600mm high from the top of the front apron to the finish floor level with 4 off anchor bolts. Include tap bracket with bucket hook.	No	1		
3/14/35	FRANKE: Model MSS single bowl sink, size 650 x 650 x 258mm manufactured from grade 304 (18/10) stainless steel 1.2mm gauge with 50 x 10mm apron all around. Sink with pressed bowl, size 525 x 425 x 258mm deep (43 litres) with a 40mm waste outlet. Unit is fitted with stainless steel gusset brackets for securing the sink to the wall.	No	1		
	Kwikot or similar approved				
3/14/36	KWIKOT: Arden series stainless steel single bowl (Code: SCO-900-SE), size 900 x 460mm, installed as set in, NOT on top.	No	2		
3/14/37	KWIKOT: Arden series stainless steel double bowl (Code: SSO-1200-DE), size 1200 x 535mm	No	2		
	TRAPS ETC				
	Carried Forward			R	

				R	
	Brought Forward				
	Chromium plated				
3/14/38	GIO cylinder bottle trap (Code: A186)	No	15		
	Rofo or similar approved				
3/14/39	ROFO: Stainless steel 304 full flow floor trap to be stain & corrosion resistant. Installation to make provision for appropriate edging strip as recommended by the manufacturer for installation on a vinyl floor finish. Include water seal/ trap to prevent odours from escaping. Trap cover to have holes.	No	1		
	TAPS, VALVES, ETC				
	Cobra or similar approved				
3/14/40	COBRA: Junior Flushmaster Flushvalves (Code: FJ2-210), Exposed type toilet flushvalve, top entry installations, pan connector, wall flange, seat buffer and ball-o-stop and wall flange. SANS 1240.	No	1		
3/14/41	COBRA: MEDISHIFT PRO RANGE: (Code: NM-859) Single lever elbow action wall type mixer with progressive cartridge. ½" BSP male inlets. SANS 1480	No	9		
3/14/42	COBRA: NOKA (Code: NA-970) Single lever sink mixer with aerated swivel outlet, SANS 1480.	No	5		
3/14/43	COBRA: Star (Code: 206-15 15) ib tap with hot and cold indices, ½" BSP male inlet, SANS 226 TYPE2.	No	2		
	Franke or similar approved				
3/14/44	FRANKE: Aqualine S - Aqua 205 Self Closing Bib Tap (or similar and approved)	No	7		
	SANITARY PLUMBING				
	uPVC soil and vent pipes				
3/14/45	50mm Pipes including chasing into brickwork	m	85		
	Carried Forward			R	

Section No. 3
Bill No. 14

				R	
	Brought Forward				
3/14/46	110mm Pipes including chasing into brickwork	m	57		
	Extra over uPVC soil and vent pipes for fittings				
3/14/47	50mm End cap	No	4		
3/14/48	50mm Bend	No	16		
3/14/49	50mm Junction	No	8		
3/14/50	50mm Access bend	No	8		
3/14/51	50mm Access junction	No	7		
3/14/52	110mm End cap	No	2		
3/14/53	110mm Pan connector	No	8		
3/14/54	110mm Bend	No	8		
3/14/55	110mm Junction	No	7		
3/14/56	110mm Reducing junction	No	7		
3/14/57	110mm Reducing double junction	No	5		
3/14/58	110mm Access bend	No	5		
3/14/59	110mm Access junction	No	7		
3/14/60	110mm Air vent cowl	No	8		
3/14/61	50mm Stubstack	No	8		
	Precast concrete gulleys				
3/14/62	Gulley not exceeding 1m deep to invert comprising 100mm daimeter vitrified clay gulley trap and head, fitted with 190mm diameter cast in iron grating, including excavating for, bedding on and encasing in mass concrete and fitted with and including precast gulley top bedded in (3:1) cement mortar	No	3		
	Carried Forward			R	

				R	
	Brought Forward				
	Sundries				
3/14/63	Wire balloon grating in top of pipe not exceeding 100mm diameter	No	1		
	Testing				
3/14/64	Provide all necessary apparatus for testing of waste pipe system		Item		
	WATER SUPPLIES				
	Class 10 HDPe type IV pipes				
3/14/65	80mm Pipes laid in and including trenches not exceeding 1m deep	m	100		
	Extra over Class 10 HDPe type IV pipes for "Plasson" fittings				
3/14/66	80mm Reducer	No	10		
3/14/67	80mm Junction	No	10		
3/14/68	80mm Bend	No	10		
3/14/69	80mm Threaded adaptor	No	10		
	Class O copper pipes with capillary type soldered joints, including couplers in the running length				
3/14/70	15 mm Pipes	m	110		
3/14/71	22 mm Pipes	m	95		
3/14/72	28 mm Pipes	m	45		
3/14/73	35 mm Pipes	m	30		
	Extra over class 0 copper pipes for capillary fittings				
3/14/74	15 mm Fittings	No	110		
3/14/75	22 mm Fittings	No	95		
3/14/76	28 mm Fittings	No	45		
	Carried Forward			R	

				R	
	Brought Forward				
3/14/77	35mm Tee	No	30		
3/14/78	35 mm Reducer	No	25		
	Extra over class 0 copper pipes for conex compression fittings				
3/14/79	15 mm Fittings	No	60		
3/14/80	22mm Fittings	No	60		
	Copper overflow and service pipes				
3/14/81	22mm Overflow pipe 500mm girth twice bent	No	3		
	Sundries				
3/14/82	500 x 500mm Cast iron stopcock box including brick chamber below not exceeding 500mm deep internally	No	1		
3/14/83	100mm Brass hydrant including two flanged spacer pipes, 100mm duckfoot bend, connecting bolts, gaskets, etc	No	1		
	ELECTRIC WATER HEATERS				
	Kwikot or similar approved				
3/14/84	KWIKOT: 10litre undercounter water heater (Code: FPRX-10-UB) (or similar approved) to be installed according to the strict recommendations and specifications of the manufacturer.	No	1		
	SOLAR GEYSERS				
	Carried Forward			R	

Section No. 3
Bill No. 14

	Brought Forward			R	
	Kwikot or similar approved				
3/14/85	Kwikot Kwiksol indirect pump circulation split solar water heating system or imilar approved with 2000 x 1000 x 80mm high flat solar panel collector (code: SOL-PANEL-2), system to include 150 Litre SOL-150-IND round solar water heater complying with SANS 1307:2007, overall size 590mm diameter x 1070mm long with 22mm copper pipe and operating at 400kPa with 400kPa Kwikot Multi pressure control and expansion relief valve (Code: KHN3.214), 100KPa expansion relief valve, auto vent valve, differential thermostat, 20mm draincock and 22mm insulated pipe work including two Kwikot vacuum breakers (Code: KHN4.200CX) installed on hot and cold water supply. Geyser to be installed horizontally in roof space above level of solar collectors to allow convection with polyethylene drip tray with union and back nut connected to 40mm PVC overflow pipe taken out at eaves, all in accordance with SANS 10254:2004 and SANS 10106:2006, connected to single phase electrical power supply with isolator 1m away from connection on geyser.	No	4		
	Roof connection				
3/14/86	Appropriate clips as recommended by GRS to attach solar geyser to Klip-Tite roof sheeting to be included and installed according to the strict recommendations and specifications of the manufacturer. Clips may not pierce roof sheeting/ scratch any coatings or deform the structural integrity of the roof sheeting.	No	4		
	Carried Forward to Summary of Section No. 3			R	

Section No. 3
Bill No. 14

Item No			Quantity	Rate	Amount
	BILL NO. 15				
	GLAZING				
	PREAMBLES				
	For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)				
	CPAP ADJUSTMENT				
	Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 150 for Contract Price Adjustment Provisions				
	SUPPLEMENTARY PREAMBLES				
	Float glass				
	The term "float glass" is used for monolithic annealed glass				
	Laminated glass				
	Laminated glass to have polyvinyl butyral (PVB) interlayer(s)				
	TOPS, SHELVES, DOORS, MIRRORS, ETC				
	GSA Images ® copper free standard wall mirror (silver), size according to specifications (approx. 500(w) x 700mm) with nominal thickness of 5 mm with brilliant polished edges manufactured to comply with ISO 9001:2000 quality standards, wall mounted to wall as indicated on the drawings with dome screws (Length: 50mm) spaced as indicated on the drawings. Mirror to be set in 20 x 20mm powder coated aluminium frame (Colour: according to the architect). Mirror and frame to be wall mounted.				
3/15/1	500 x 700 wall mounted mirror in powder coated aluminium frame	No	14		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 15				

Item No		Quantity	Rate	Amount

BILL NO. 16

PAINTWORK

PREAMBLES

For preambles refer to "General Specification of Materials and Methods to be used for Building Contracts" (GP /ASC)

CPAP ADJUSTMENT

Unless otherwise stated all items in this bill shall be deemed to fall into Work Group 152 for Contract Price Adjustment Provisions

PREPARATORY WORK TO EXISTING WORK

New plastered walls

Ensure plastered surface to be clean and dry before painting. New plaster must be given adequate drying time (moisture content must be less than 15%) and treat with plaster primer before the first coat of paint is applied

Previously painted plastered surfaces

Surfaces shall be thoroughly washed down and allowed to dry completely before any paint is applied. Blistered or peeling paint shall be completely removed and cracks shall be opened, filled with a suitable filler and finished smooth

Previously painted metal surfaces

Surfaces shall be thoroughly rubbed and cleaned down. Blistered or peeling paint shall be completely removed down to bare metal

Previously painted wood surfaces

Surfaces shall be thoroughly cleaned down. Blistered or peeling paint shall be completely removed and cracks and crevices shall be primed, filled with suitable filler and finished smooth

Carried Forward R

	Brought Forward			R	
	Previously painted surfaces to receive epoxy coating **Previously painted surfaces are to be stripped back to the orignal firm substrate by abrading, flaem treatings or chemical removal, using an approved paint Remover. Once contanminants have been reomoved the surface is to be acid etched using an approved acid dilited 1:1 with water, applied with plasitc watering can at approximately 2m/lt, removing laitance and slightly roughening the surface to give a finish similar to that of fine sandpapaer. Rinse the entire surface with clean water and allow to dry; normally if well ventilated.** **ON INTERNAL FLOATED PLASTER SURFACES** **Apply (x1) coat DULUX PRIMER FOR NEW PLASTER (Code: D36) or similar approved, with an additional coat after a period of 18 hours. Apply (x2) coats DULUX ANTI-BACTERIAL ACRYLIC PVA (Code: D21) modified ackrylic paint (Colour: according to the architect) or similar approved with an overcoating time of 4 hours. All in accordance with the specifications of the manufacturer.**				
3/16/1	Walls **Laminin textured paint, Tex Collection or similar approved; Fine textured paint to be applied according to the strict recommendations of the manufacturer (Colours to be confirmed and to the staisfaction of the architect).**	m2	2 013		
3/16/2	Walls **ON EXTERNAL FLOATED PLASTER SURFACES**	m2	174		
	Carried Forward			R	

Section No. 3
Bill No. 16

				R	
	Brought Forward				
	Apply one coat Permacrete (Marmoran) 1,5mm (Product code: AS003), (or similar approved), (Colour: according to the architect) when the coating has fully cured, seal with Marmoran Universal Glaze according to SANS ISO 1514:2004. The system must be applied in strict conformance to the manufacturer's instructions, Application to be done by approved applicator and guarantees should be submitted on completion.				
3/16/3	Permacrete on walls	m2	323		
	ON PLASTERBOARD SURFACES				
	One coat primer and two coats superior quality acrylic emulsion paint for interior and exterior use				
3/16/4	Ceilings and cornices, including priming metal cover strips and nailheads	m2	299		
	ON FIBRE-CEMENT BOARD SURFACES				
	One coat primer and painted two coats enamel paint.				
3/16/5	Fascias and barge boards, including priming metal jointing strips	m2	53		
	ON METAL SURFACES				
	One coat primer and Two coats enamel paint finish over edge (Colour: according to the architect).				
3/16/6	Steel doors and frames	m2	63		
3/16/7	New rainwater gutters and downpipes	m2	52		
3/16/8	Gates, grilles, burglar screens, balustrades, etc (both sides measured over the full flat area)	m2	16		
3/16/9	Rails, bars, pipes, etc	m	41		
	ON WOOD SURFACES				
	Carried Forward			R	

	Brought Forward			R	
	<u>One coat primer and Two coats enamel paint finish over edge (Colour: according to the architect).</u>				
3/16/10	Doors	m2	123		
	Carried Forward to Summary of Section No. 3			R	
	Section No. 3 Bill No. 16				

Section No. 3

Section 3 - New Building Works

SECTION SUMMARY - Section 3 - New Building Works

Bill No		Page No		Amount
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3/2	Concrete, Formwork & Reinforcement	53		
3/3	Masonry	57		
3/4	Waterproofing	58		
3/5	Carpentry and Joinery	62		
3/6	Roof Coverings, etc.	64		
3/7	Ceilings, Partitions and Access Flooring	68		
3/8	Floor Coverings, Plastic Linings, etc.	72		
3/9	Iron Mongery	78		
3/10	Structural Steel Work	81		
3/11	Metal Work	94		
3/12	Plastering	96		
3/13	Tiling	99		
3/14	Plumbing and Drainage (Provisional)	110		
3/15	Glazing	111		
3/16	Paintwork	115		
	Carried to Final Summary		R	

Section No. 3

Item No		Quantity	Rate	Amount

BILL NO. 1

PROVISIONAL SUMS

General

The following Provisional Amounts are for work to be done by firms of specialists and will, unless expressly stated otherwise, be regarded as Selected Sub-contractors to the Contractor.

The Contractor must assist in obtaining tenders and/or quotations from approved firms and submit them to the Agent/Representative for his approval.

The tenderer's attention is drawn to Section 1: Preliminaries for further amplification of Provisional- and Prime Cost Amounts.

Note: All provisional sums are "NETT".

The profit and attendance on Nominated/Selected Subcontract allowances will be adjusted to take the of actual Final Account values of the respective Subcontracts into account. The adjustment factor will be the percentages calculated with reference to the BoQ allowances.

Profit

Where listed the contractor may allow for profit if required. The profit will be adjusted in the same ratio as the adjusted value of the subcontract.

Attendance

Without in any way limiting the meaning and interpretation, "general attendance" on sub-contractors shall include free of charge to the sub-contractor the following services for the purpose of the relative sub-contract works:

1) access to the site and to the places where the work is to be carried out, including the use of any temporary personnel hoists erected by the Contractor for his own use;

Carried Forward R

	Brought Forward			R	
	2) the provision of water and lighting and of single and/or three phase electric power to a position within 50 metres of the place where work is to be carried out, but excluding water, fuel and power for commissioning of the installation for which the Contractor shall be responsible; 3) the provision of an area for office accommodation, temporary workshops and for the storage of plant and materials; 4) the use of erected scaffolding belonging to the Contractor, in common with others having the like right whilst it so remains erected upon the site; 5) the use of messrooms, latrine, health and welfare facilities, and the like, where provided; 6) the use of the site telephone (if provided) subject to the payment by the sub-contractor for all his outgoing calls; 7) temporary casing and/or other protection of the work; 8) site security measures; 9) hoisting of the sub-contractor's material in loads not exceeding the available hoisting loads of cranes of the contractor; 10) repairs and making good in all trades and final cleaning down on completion. **<u>Fuel, power and water for commissioning plant</u>** The cost of fuel, power and water for the commissioning of plant shall be borne by the sub-contractor appointed for the relevant sub-contract works in terms of the conditions under which they have/are contracted for the specialist work involved. The contractor shall allow opposite this item or under the relevant attendance items for the recovery of such costs via the installation of the necessary meters				
	Carried Forward			R	

	Brought Forward		R	
	Work executed by direct contractors			
	Work listed under the heading "Work executed by direct contractors" shall be executed before and during this contract and the tenderer must allow free access to the site for such other contractors.			
	These contractors shall be directly paid by the client and the tenderer must allow for programming in conjunction with them to complete the project successfully within the contract period.			
	The estimated values of these contracts are listed to enable the tenderer to determine the extent of the attendance if required. Profit on these contracts shall not be allowed.			
	Budgetary allowances			
	Budgetary allowances shall be re-measured and valued on the same pricing structure as the rest of the contract or shall be omitted in full if so required.			

	Furniture, Fixtures & Fittings			
4/1/1	Provide an amount of R 1 000 000,00 nett for Furniture, Fixtures & Fittings to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		1 000 000,00
4/1/2	Add: Profit	Item		
4/1/3	Add: Attendence	Item		
	Health Technology Equipment			
4/1/4	Provide an amount of R 1 000 000,00 (One Million Rand) nett for Health Technology Equipment to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		1 000 000,00
4/1/5	Add: Profit	Item		
4/1/6	Add: Attendence	Item		
	Carried Forward		R	

Section No. 4
Bill No. 1

	Brought Forward		R	
	Landscaping and Outdoor Furniture			
4/1/7	Provide an amount of R 100 000,00 (One Hundred Thousand Rand) nett for Landscaping and Outdoor Furniture to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		100 000,00
4/1/8	Add: Profit	Item		
4/1/9	Add: Attendence	Item		
	External Canopies/Parking			
4/1/10	Provide an amount of R 500 000,00 (Five Hundred Thousand Rand) nett for painting and making good to External Canopies/Parking, etc to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		500 000,00
4/1/11	Add: Profit	Item		
4/1/12	Add: Attendence	Item		
	Community Liason Officer			
4/1/13	Provide an amount of R 100 000,00 (One Hundred Thousand Rand) nett for Community Liaison Officer to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		100 000,00
4/1/14	Add: Profit	Item		
4/1/15	Add: Attendence	Item		
	Project Steering Committee			
4/1/16	Provide an amount of R 35 000,00 (Thirty-Five Thousand Rand) nett for Project Steering Committee to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		35 000,00
4/1/17	Add: Profit	Item		
4/1/18	Add: Attendence	Item		
	Carried Forward		R	

Section No. 4
Bill No. 1

	Brought Forward		R	
	Occupational Health and Safety			
4/1/19	Provide a net amount of R 100 000,00 (One Hundred Thousand Rand) nett for compliance with the Occupational Health and Safety Act and its regulations and with the Employers Health and Safety requirements to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.	Item		100 000,00
	BUDGETARY ALLOWANCES			
	Civil and Building Works			
4/1/20	Allow the amount of R 80 000,00 (Eighty Thousand Rand) nett for building and civil works related to the Sewer Treatment should they be required or alternative to be approved by Principal Agent.	Item		80 000,00
	PSC & CLO			
4/1/21	Allow an amount of R 20 000.00 for the repayment of CLO & PSC as the Principal Agent may direct or deducted in whole or in part, if not required.	Item		20 000,00
	Carried to Final Summary		R	

Section No. 4
Bill No. 1

PART 2

SECTION 7 - CIVIL WORKS

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 1: ROADS AND PAVING				
	SANS 1200 C	**Site Clearance**				
1	PSC 8.2.1	Clear and grub areas	m²	1284		R -
	SANS 1200 D	**Earthworks**				
2	8.3.4	Importing of materials under floors:				
		a) G7 compacted to in 150mm layers to 90% of modified AASHTO maximum density for infill under building floors	m³	185		R -
	SANS 1200 DM	**Earthworks (Roads, Subgrade)**				
3	8.3.2	Preparation of Site:				
		a) Removal of topsoil to nominal depth of 150 mm, and the stockpiling and maintenance thereof	m³	133		R -
4	8.3.3	Treatment of roadbed:				
		a) Roadbed preparation and compaction of material to a minimum of 93% of modified AASHTO	m³	130		R -
		b) In-place treatment of road-bed in intermediate or hard rock material by:				
		i) Ripping	m³	30		R -
5	8.3.4	Cut to fill:				
		a) Compact to 90% of modified AASHTO maximum density	m³	155		R -
6	8.3.6	Extra over item 2.5 above for:				
		a) Hard rock excavation	m³	30		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
	SANS 1200 ME	**Subbase**				
7	8.3.3	Construct the subbase course with material from commercial sources:				
		a) 150mm G7 material compacted to 95% of modified AASHTO maximum density under roads and parking areas	m³	59		R -
		b) 150mm G7 material compacted to 93% of modified AASHTO maximum density under paved areas	m³	34		R -
	SANS 1200 MF	**Base**				
8	8.3.3	Construct the base course with material from commercial sources:				
		a) 150mm C4 material compacted to 97% of modified AASHTO maximum density	m³	59		R -
9	8.3.8	Stabilizing agent:				
		a) Portland cement	t	2.2		R -
	SANS 1200 MJ	**Segmented Paving**				
10	8.2.1	Provision of edge restraints:				
		a) For straight edging	m	86		R -
		b) For curved edging	m	8		R -
		c) Edge beams	m	-		Rate Only
11	8.2.2	Construction of paving complete with 20mm bedding sand layer:				
		a) 80mm Type S-A Class 40/2.6 interlocking concrete pavers (tan colour) laid in herringbone pattern for roads	m²	262		R -
		b) 60mm Type S-A Class 40/2.6 interlocking concrete pavers (grey) laid in herringbone pattern for paved areas	m²	36		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		c) 400x400x50mm thick concrete blocks, for pedestrian areas and courtyard	m²	143		R -
		d) 150x150x50mm thick Smartstone Hugenot 150 pavers (earth colour) for parking and road crossing	m²	126		R -
		e) 60mm Corobrick Onyx Piazza pavers, laid in stack bond for landscaped area	m²	63		R -
12	8.2.3	Cutting blocks to fit edge restraints:				
		a) Straight cutting	m	223		R -
		b) Circular cutting	m	36		R -
13	8.2.4	Rolling to locked-up condition as specified in Clause 5.6.2	m²	612		R -
	SANS 1200 MK	**Kerbing and Channeling**				
14	8.2.1	Pre-cast concrete kerbing:				
		a) Mountable kerb (SANS 927 fig. 8c):				
		i) Supply and install new curved kerbing complete	m	5		R -
		ii) Supply and instal new straight kerbing complete	m	11		R -
		b) Barrier kerb (SANS 927 fig. 3):				
		i) Supply and install new curved kerbing complete	m	22		R -
		ii) Supply and instal new straight kerbing complete	m	183		R -
15	8.2.7	Trimming of excavations for concrete-lined open drains and concrete aprons in:				
		a) All materials	m²	252		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
16	8.2.8	Cast-in-situ concrete lining to open drains and aprons:				
		a) Grade 25 concrete, 100 mm thick	m³	29		R -
17	8.2.9	Formwork to cast-in-situ concrete lining of open drains and aprons (smooth surface finish):				
		a) To sides	m²	29		R -
		b) To ends of slabs	m²	11		R -
18	8.2.10	Sealed joints in concrete lining of open drains and aprons:				
		a) Hot bitumen	m	273		R -
19	8.2.12	Steel reinforcement for open drains and aprons:				
		a) Mesh Ref. 193	m²	280		R -
20	8.2.13	250 micron thick polyethylene sheeting for concrete-lined open drains and aprons	m²	280		R -
	TOTAL OF BILL 1 CARRIED TO SUMMARY					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 2: WATER				
	SANS 1200 DB	**Earthworks (Pipe Trenches)**				
1	8.3.2	Excavate in all materials for trenches, backfill, compact and dispose of surplus material:				
		a) Pipes up to 160 mm dia for depths:				
		i) up to 1,0m	m³	-		Rate Only
		ii) from 1,01m up to 2,0m	m³	36		R -
		iii) from 2,01m up to 3,0m	m³	-		Rate Only
2	8.3.2	Extra over item 3.1 above for:				
		a) Hard rock excavation	m³	10		R -
		b) Hand excavation and backfill where ordered by the Engineer	m³	5		R -
		c) Soilcrete backfill where directed by the Engineer (12% added cement by volume)	m³	10		R -
		d) Careful hand excavation to locate and expose existing services	m³	5		R -
	SANS 1200 L	**Medium-Pressure Pipelines**				
3	8.2.1	Supply, lay, joint (weld), bed, test and backfill HDPE PE100 class PN16 pipeline:				
		a) 25mm dia.	m	16		R -
		b) 32mm dia.	m	6		R -
		c) 63mm dia.	m	14		R -
4	8.2.2	Extra over item 3.1 for supplying, laying and bedding of HDPE specials complete with couplings:				
		a) 45° bends:				
		i) 25mm dia	no.	1		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		b) 90° elbows:				
		i) 25mm dia.	no.	1		R -
		ii) 32mm dia.	no.	1		R -
		ii) 63mm dia.	no.	1		R -
		c) Tees:				
		i) 63mm dia x 63mm dia	no.	2		R -
		d) Reducers:				
		i) 50mm dia x 25mm dia	no.	1		R -
		ii) 50mm dia x 32mm dia	no.	1		R -
		ii) 63mm dia x 50mm dia	no.	2		R -
5	8.2.3	Extra over item 3.1 for supplying and fixing of stop valves, complete with with couplings:				
		a) 25mm dia.	no.	1		R -
		b) 32mm dia.	no.	1		R -
		c) 63mm dia.	no.	1		R -
6		Extra over item 3.1 for supplying and fixing of building connections				
		a) Guard house (node 22)	no.	1		R -
		b) Decanting facility (node 3)	no.	1		R -
		c) Clinic (node 24)	no.	1		R -
7	8.2.13	Supply and installation of valve chambers:				
		a) HDPE valve chamber	no.	3		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
8		Manufacture, supply, deliver, transport, handle, protect, store, install, test, commission and uphold during the Defects Liability Period:				
		a) Booster pump:				
		i) Required delivery: 125 l/min max.				
		ii) Pumping head: 30m maximum				
		iii) Pump set: DAB K35/100 Auto 1.1kW or simlar approved	no.	1		R -
		b) Pressure vessel: 24l	no.	1		R -
		c) Pump cover to suit a) and b) above	no.	1		R -
9		Supply, installation, testing and commisioning of complete pipework, valves and fittings required to connect the storage tanks to the borehole and booster pump, inculding all material and labour required	sum	1		R -
10		Supply, deliver, install, test and commission 49 kL steel water storage tank complete, including steel support stand, access ladder/platforms, structural supports, bracing and fixings; reinforced concrete plinth/foundations including excavation, backfilling and making good; inlet, outlet, overflow, scour and drain pipework; all valves, fittings, connections and associated water reticulation; pumps complete with controls, starters, protection and all accessories; electrical power supply from the Main DB to the pump installation, including circuit breakers, isolators, cabling, cable containment, trenching where required, earthing, termination and connection; testing, commissioning and all sundry works necessary for a complete and fully operational installation.	sum	1		R -
	SANS 1200 LB	**Bedding (Pipes)**				
11	8.2.2	Supply only of bedding by importation:				
		a) From commercial sources:				
		i) Selected granular material	m³	3		R -
		ii) Selected fill material	m³	7		R -
	TOTAL OF BILL 2 CARRIED TO SUMMARY					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 3: SEWER				
	SANS 1200 DB	**Earthworks (Pipe Trenches)**				
1	8.3.2	Excavate in all materials for trenches, backfill, compact and dispose of surplus material:				
		a) Pipes up to 160 mm dia for depths:				
		i) up to 1,0m	m³	8	R	-
		ii) from 1,01m up to 2,0m	m³	171	R	-
		iii) from 2,01m up to 3,0m	m³	2	R	-
2	8.3.2	Extra over item 4.1 above for:				
		a) Hard rock excavation	m³	10	R	-
		b) Hand excavation and backfill where ordered by the Engineer	m³	5	R	-
		c) Soilcrete backfill where directed by the Engineer (12% added cement by volume)	m³	10	R	-
		d) Careful hand excavation to locate and expose existing services	m³	5	R	-
	SANS 1200 LB	**Bedding (Pipes)**				
3	8.2.2	Supply only of bedding by importation:				
		a) From commercial sources:				
		i) Selected granular material	m³	39	R	-
		ii) Selected fill material	m³	26	R	-
	SANS 1200 LD	**Sewers**				
4	8.2.1	Supply, lay, joint (weld), bed, test and backfill HDPE PE100 class PN12 pipeline:				
		a) 110mm dia.	m	181	R	-
	Carried forward					

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
5	8.2.5	Supply and installation of HDPE manholes,				
		a) 1000mm dia, complete as per drawings, for depths:				
		i) Depth to invert up to 1,0m	no.	3		R -
		ii) Depth to invert from 1,01m to 1,5m	no.	7		R -
		iii) Depth to invert from 1,51m to 2,0m	no.	1		R -
		iv) Depth to invert from 2,01m to 2,5m	no.	-		Rate Only
6	8.2.6	Supply and installation of rodding eyes,	no.	4		R -
7	8.2.7	Connections from buidlings to main sewer,				
		a) Length up to 2,0m	no.	20		R -
		b) Length from 2,01m to 5,0m	no.	3		R -
		c) Length from 5,01m to 10,0m	no.	1		R -
8.0		Manufacture, supply, deliver, off-load, handle, protect, store, install, test, commission and maintain during the Defects Liability Period, complete 10 m³/day below-ground sewage treatment plant, comprising 5,500 litre flow equalisation chamber, septic/anoxic tanks, modular bio-reactors, 1,500 litre settling tank, 1,500 litre disinfection chamber, below-ground chlorinator, side-channel blower, electrical/control equipment, pumps, sludge return and interconnecting pipework, valves, fittings, connections and all necessary accessories, including 90 m long treated-effluent outlet to perennial river, all complete and operational in accordance with the specialist manufacturer's requirements; earthworks measured elsewhere	sum	1		R -
	TOTAL OF BILL 3 CARRIED TO SUMMARY					

ITEM NO	PAYMENT REFERS TO		UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 4: STORMWATER DRAINAGE				
		(HAYLETT FORMULA WORK GROUP NO. 146)				
1	8.3,2	Excavate in all materials for trenches, dewater, backfill, compact, and dispose of surplus unsuitable material for: Storm water pipes over 110mm upto and including 200mm external diameter depths:				
		Exceeding 0.0m up to 1.0m	m	70		R -
		Exceeding 1.0m up to 2.0m	m	100		R -
2	8.2.1	uPVC pipes				
		110mm uPVC Pipes	m	70		R -
		160mm uPVC Pipes	m	100		R -
3	8.2.2	Extra over uPVC pipes for fittings				
		110mm Fittings	No	5		R -
		160mm Fittings	No	5		R -
4		Sundries				
	8.2.8	15MPa/19mm mass concrete encasing around 110mm horizontal drain pipe including all necessary formwork	m	10		R -
		15MPa/19mm mass concrete encasing around 110mm vertical or raking drain pipe to cleaning eye including all necessary formwork	m	15		R -
		15MPa/19mm mass concrete in precast I.E. marker block set flush with the ground or paving	No	5		R -
5		INSPECTION CHAMBERS				
	8.2.3	Inspection chamber of concrete bottom, brick walls, concrete slab, channels, channel junctions, channel bends, internal plaster and 450 x 600mm type 9A cast iron cover and frame				
		Inspection chamber 1 070 x 880mm exceeding 1 000mm and not exceeding 1 250mm deep internally	No	1		R -
		THE FOLLOWING IN PRE-FABRICATED MANHOLES				
		(HAYLETT FORMULA WORK GROUP NO. 146)				
	8.2.3	Pre-fabricated concrete manholes and shall constructed according to the Manufacturer's instructions. All manholes to be out of dolomitic aggregate				

ITEM NO	PAYMENT REFERS TO		UNIT	QUAN-TITY	RATE	AMOUNT
		Excavate in earth for and including circular type precast concrete manhole formed of 1,4m diameter x 100mm thick 20MPa/19mm mass concrete bottom with manhole shaft formed of 1,05m diameter (internal) precast concrete rings with joints sealed with bitumious putty with and including precast concrete cover slab 125mm thick and precast concrete spacer slab with opening for and including heavy duty road type manhole cover and frame as type 4 set in cement mortar and sealed in tallow and with fine mass concrete benching in bottom floated smooth with falls to and including 110mm Pvc channels and finished on all exposed surfaces with 25mm thick granolithic with angles rounded including all necessary step irons, etc.				
		Manhole not exceeding 1m deep	No	1		R -
		Manhole exceeding 1m and not exceeding 2m deep	No	1		R -
6	8.2.10	Sundries				
		Hole through side of precast concrete manhole for pipe exceeding 100mm and not exceeding 200mm diameter and make good	No	1		R -
	Carried forward					

ITEM NO	PAYMENT REFERS TO		UNIT	QUAN-TITY	RATE	AMOUNT
		Brought forward				
		WATER SUPPLIES				
7	8.5	Water connection				
		Provide the Provisional Amount of R 25 000.00 (Twenty Five Thousand Rand) NET for the connection to the water main to be carried out by the Local Authority	Item	1		R -
		Allow for profit on previous item, if required	Item	1		R -
8	8.2.1	HDPE pipes				
		63mm Pipes laid in and including trenches	m	100		R -
9	8.2.2	Extra over HDPE fittings				
		63mm Fittings	No	10		R -
10	8.2.3	Extra over HDPE Pipes for cast iron fittings				
		63mm Gate valve including all necessary flanges, drilling, bolts and connection to HDPE pipe	No	1		R -
11	8.2.1	Galvanised mild steel screwed and socketed pipes and fittings				
		25mm Pipe fixed to hydrant box	m	5		R -
		80mm Pipe laid in trenches (trenches elsewhere)	m	25		R -
		80mm Fire hydrant stand pipe (no fixing)	m	4		R -
12	8.2.2	Extra over galvanised mild steel pipes for galvanised mild steel fittings				
		25mm Fittings	No	4		R -
		80mm Bend	No	5		R -
		TOTAL OF BILL 4 CARRIED TO SUMMARY				

ITEM NO	PAYMENT REFERS TO		UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 5: APRONS, CHANNELS, ETC.				
		NOTE: Unless otherwise stated herein all items in this bill shall be deemed to fall into Work Group No 104 for Haylett Formula purposes				
		NOTE: All excavations are measured as being in "earth" and/or filling compacted to 98% modified AASHTO density Descriptions of excavations shall be deemed to include for setting aside surplus excavated material in soil heaps for use as filling or for depositing within 150m of the perimeter of the excavations and spreading and roughly levelling as directed, as well as for increase in bulk and multiple handling of excavated material caused by the contractor's method of operation. Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site and for bulking.				
		THE FOLLOWING IN APRONS, CHANNELS, ETC.				
1	8.4.3	Mass concrete with a coarse aggregate of 19mm and a minimum compressive strength of 15MPa at 28 days:				
		In aprons, channels, etc.	m3	22		R -
2		Sundries				
	8.4.4	Finish raking top surface of surface bed to a smooth and even non-slip wood float surface including additional dry sand/cement mixture added as necessary whilst the concrete is still wet	m2	216		R -
3	8.4.1	Formwork to sides of:				
		Edges, risers, ends and reveals not exceeding 300mm high or wide.	m	216		R -
4	8.4.8	Movement joints:				
		Vertical separation joint between brick- and/or concrete surfaces formed with 13mm bitumen impregnated softboard joint filler not exceeding 300mm high including raking out for a depth 12mm and finish off with 12 x 13mm bituminous filling.	m	24		R -
5	8.4.5	Fabric reinforcement				
		Type 245 fabric reinforcement in concrete surface beds, slabs, etc.	m2	216		R -
		TOTAL OF BILL 5 CARRIED TO SUMMARY				**R -**

ITEM NO	PAYMENT REFERS TO		UNIT	QUAN-TITY	RATE	AMOUNT
		BILL 6: FENCING				
		SECURITY FENCING (PROVISIONAL))				
1	8.2.1	COCHRAN ClearVu Fencing (or similar approved), 2100mm high comprising of galvanised reinforcing rib mesh, nominal panel size 3297mm wide secured to 85 x 85mm galvanized posts, with posts set in minimum 15MPa mass concrete bases 400 x 400 x 600mm deep according to manufacturerÆs specifications. (Colour: according to the architect).				
		2100mm high Clearvu fence	m	50		R -
2	8.2.4	ClearVu100mm hugh toughened steel Castle spike shall be affixed to panel edge, internally at 150mm intervals using anti vandal bolts. Spike finish to be hot dipped galvanised (Colour: to match fence)				
		CLEARVU fence topping	m	25		R -
3	8.2.3	Clearvu Gates				
		Clearvu Single swing pedestrian gate complete	No	2		R -
		Clearvu Single sliding pedestrian gate	No	1		R -
		Clearvu Double vehicle access gate (The rate shall include motorising the gate complete all to the Architect's detail)	No	1		R -
		BOUNDARY WALL (PROVISIONAL))				
4	8.2.1	230mm thick brick wall 2.1m high above the ground inclusive of foundations as per architect's detail.				
		2100mm high boundary wall	m	14		R -
		TOTAL OF BILL 6 CARRIED TO SUMMARY				**R -**

SCHEDULE OF QUANTITIES

BILL 1	:	ROADS AND PAVING	R
BILL 2	:	WATER	R
BILL 3	:	SEWER	R
BILL 4	:	STORMWATER DRAINAGE	R
BILL 5	:	APRONS, CHANNELS, ETC.	R
BILL 6	:	FENCING	R

TOTAL CARRIED TO FINAL SUMMARY	**R**	**0.00**

SECTION 8 - ELECTRICAL WORKS

Schedule of Quantities						Electrical Installation
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**
	LOW VOLTAGE DISTRIBUTION					
1.	**LV FEEDER CABLES AND EARTH WIRES**					
1.1	Supply, install and connect 660/1000 Volt multi-core PVC/PVC/SWA/PVC insulated, armoured, Copper cables:					
	Eskom supply point to Kiosk					
1.1.1	16mm² x 4 core - Cable in ground	meter	**20**			R -
1.1.2	16mm² x 4 core - Cable ends	each	**2**			R -
1.1.3	16mm² BCEW - Cable in ground	meter	**20**			R -
	Kiosk to Generator					
1.1.4	16mm² x 4 core - Cable in ground	meter	**10**			R -
1.1.5	16mm² x 4 core - Cable ends	each	**2**			R -
1.1.6	16mm² BCEW - Cable in ground	meter	**10**			R -
	Generator to kiosk					
1.1.8	16mm² x 4 core - Cable in ground	meter	**10**			R -
1.1.9	16mm² x 4 core - Cable ends	each	**2**			R -
1.1.10	16mm² BCEW - Cable in ground	meter	**10**			R -
	Kiosk to DB A (Normal section)					
1.1.11	16mm² x 4 core - Cable in ground	meter	**30**			R -
1.1.12	16mm² x 4 core - Cable ends	each	**2**			R -
1.1.13	16mm² BCEW - Cable in ground	meter	**30**			R -
	Kiosk to DB A (Emergency section)					
1.1.14	16mm² x 4 core - Cable in ground	meter	**30**			R -
1.1.15	16mm² x 4 core - Cable ends	each	**2**			R -
1.1.16	16mm² BCEW - Cable in ground	meter	**30**			R -
	DB A to DB B (Normal section)					
1.1.17	10mm² x 4 core - Cable wire mesh	meter	**25**			R -
1.1.18	10mm² x 4 core - Cable ends	each	**2**			R -
1.1.19	10mm² BCEW - Cable tray	meter	**25**			R -
	DB A to DB B (Emergency section)					
1.1.20	10mm² x 4 core - Cable wire mesh	meter	**25**			R -
1.1.21	10mm² x 4 core - Cable ends	each	**2**			R -
1.1.22	10mm² BCEW - Cable tray	meter	**25**			R -
	DB A to DB C (Normal section)					
1.1.23	6mm² x 4 core - Cable wire mesh	meter				R -
1.1.24	6mm² x 4 core - Cable ends	each				R -
1.1.25	6mm² BCEW - Cable tray	meter				R -
	DB A to DB C (Emergency section)					
1.1.26	4mm² x 3 core - Cable wire mesh	meter				R -
1.1.27	4mm² x 3 core - Cable ends	each				R -
	KIOSK to DB GH (Normal section)					
1.1.28	4mm² x 3 core - Cable wire mesh	meter	**16**			R -
1.1.29	4mm² x 3 core - Cable ends	each	**2**			R -
	Site Lighting					
1.1.30	4mm² x 3 core - Cable trench	meter	**120**			R -
1.1.31	4mm² x 3 core - Cable ends	each	**16**			R -
	Kiosk to Decanting Units					
1.1.32	16mm² x 4 core - Cable in ground	meter				R -
1.1.33	16mm² x 4 core - Cable ends	each				R -
1.1.34	16mm² BCEW - Cable in ground	meter				R -
Amount carried forward						**R -**

Schedule of Quantities						Electrical Installation
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**
Amount brought forward						**R -**
3.	**CABLE SLEEVES**					
3.1	Supply and install uPVC cable sleeve pipes including short lengths, jointing, slow bends, bushes, locknuts, etc.:					
3.1.1	160mm diameter PVC in trenches	meter				Rate Only
3.1.2	110mm diameter PVC in trenches	meter				R -
3.1.3	50mm diameter PVC in trenches	meter	**100**			R -
3.1.4	50mm diameter PVC buiied-in or cast in concrete	meter	**20**			R -
4.	**REMOVAL OF EXISTING SERVICES**					
4.1	The electrical contractor must remove all redundend electrical equipment including cabling, conduit and wiring. This include the safe making of any part of the electrical installation.					
4.1.1	Removal of existing services (Provisional Amount)	item	**1**			**R 10 000.00**
5.	**EXCAVATIONS (750MM DEEP, 350MM WIDE)**					
5.1.1	Pickable, including backfilling and compaction	m³	**30**			R -
5.1.2	Hard Rock, including backfilling and compaction	m³	**5**			R -
5.1.3	Bedding	m³	**6**			R -
6.	**MANHOLES**					
6.1	Supply and install RHI-NODE600 manholes complete with lid.	each				R -
7,	**UPGRADING OF ESKOM CONNECTION POINT**					
7,1	Upgrading of the existing Eskom connection to a 100kVA bulk metered low voltage connection. Provisional Amount	item	**1**	**xxxxx**	**xxxxx**	**R 300 000.00**
AMOUNT TO BE CARRIED FORWARD TO ELECTRICAL TENDER SUMMARY						

Schedule of Quantities						Electrical Installation
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**
	BUILDING INSTALLATION					
1.	**DISTRIBUTION BOARDS**					
1.1	Supply, install and commission distribution boards (flush mounted / surface mounted / floor standing), complete with - all switchgear as specified and including framework, tray, busbars (one per phase plus neutral) to carry Mains Circuit Breaker currents, the termination of all conduits, conductors, sleeves, etc.: **All Circuit Breakers to be equal and approved to Schneider Electric. (Provisional Amounts)**					
1.1.1	Kiosk complete as specified (Floor standing)	item	**1**			R -
1.1.2	DB.A (Flush Mounted)	item	**1**			R -
1.1.3	DB.B (Flush Mounted)	item	**1**			R -
1.1.4	DB.C (Flush Mounted)	item	**0**			R -
1.1.5	DB.GH (Flush Mounted)	item	**1**			R -
1.1.6	Telephone/Data DB (Surface mounted 600mm x 600mm DB with door complete)	item	**1**			R -
1.1.7	Decanting kiosk (PC Amount)	item	**0**			R -
2.	**CHANNELS AND WIRE WAYS**					
2.1	Supply and install OL8000 Wire Channels complete with splice clamps,channel hangers ,threaded rod, coupling nuts, ect. **(Sockets & Lights)**					
2.1.1	**127mm** wide - Wire Channel for power installation	meter	**160**			R -
2.1.2	90 vertical falling	each	**2**			R -
2.1.3	90 vertical rising	each	**2**			R -
2.1.4	Tee	each	**2**			R -
2.1.5	Intersection	each	**1**			R -
2.2	Supply and install GS50 Wire Mesh complete with splice clamps,channel hangers, coupling nuts,horizontal bends, tee's ect.					
2.2.1	**100mm** wide - Medium Duty Wire Mesh for Cable distribution	meter	**80**			R -
2.2.2	External Elbow	each	**3**			R -
2.2.3	Horizontal Elbow	each	**1**			R -
2.2.4	Tee	each	**1**			R -
3.	**POWER SKIRTING**					
3.1	Supply and install metal type power skirting consisting of 2 compartment 2 cover; including cutting ends, covers, elbows, T's, short lenghts, screws, etc. as specified.					
3.1.1	Power skirting	meter	**42**			R -
3.1.2	90° Bends	each	**4**			R -
3.1.3	End caps	each	**22**			R -
4.	**CONDUIT**					
4.1	Supply and install PVC conduit (for Lighting & Power circuits and Security) including cutting, bending, short lengths, 1-/2-/3-/4-way boxes, bushes, locknuts, couplings, saddles, screws etc.					
4.1.1	20mm diameter - Built-in or cast in concrete / ceiling void	meter	**1400**			R -
4.1.2	25mm diameter - Built-in or cast in concrete / ceiling void	meter	**300**			R -
4.1.3	20mm diameter - Built-in or cast in concrete PVC (Lightning protection)	meter	**30**			R -
Amount carried forward						**R -**

Schedule of Quantities						Electrical Installation
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**
Amount brought forward						**R -**
5.	**CONDUIT ACCESSORIES**					
5.1	Supply and install a galvanised draw box complete with a cover plate above each of the distribution boards:					
5.1.1	300mm x 300mm x 100mm	each	**3**			R -
5.1.2	500mm x 500mm x 100mm	each	**1**			R -
5.2	Supply and install pressed steel galvanised wall boxes 1mm thick:					
5.2.1	100mm x 50mm x 50mm deep	each	**50**			R -
5.2.2	100mm x 100mm x 50mm deep	each	**62**			R -
5.2.3	50mm Round Box with lid	each	**20**			R -
5.3	Supply and install PVC wiring box:					
5.3.1	100mm x 50mm x 50mm deep	each	**1**			Rate Only
5.3.2	100mm x 100mm x 50mm deep	each	**13**			R -
5.3.3	50mm Round Box with lid	each	**1**			Rate Only
5.4	Supply and install 1,6mm diameter steel galvanised draw wires drawn into conduit/sleeves:	meter				R -
5.5	Supply and install 100mm x 100mm blank cover plates:	each	**5**			R -
6.	**CONDUCTORS**					
6.1	Supply and install 600/1000Volt PVC insulated stranded copper conductors drawn into conduits, etc.:					
6.1.1	2.5mm²	meter	**3000**			R -
6.1.2	4mm²	meter	**3400**			R -
6.1.2	6mm²	meter	**0**			R -
6.2	Supply and install 600/1000Volt PVC insulated (green) stranded copper earth conductors drawn into conduits, etc.:					
6.2.1	2,5mm²	meter	**0**			R -
6.2.2	2,5mm² BCEW	meter	**2900**			R -
6.2.3	4mm² BCEW	meter	**0**			R -
7.	**SWITCH SOCKETS**					
7.1	Supply, install and connect switch sockets in flush mounted boxes, complete with cover plates (All sockets complete with Vandal Proof Screws):					
7.1.1	16 Amp,1 x Normal 3pin and 1 x Euro 2pin	each	**38**			R -
7.1.2	TV outlet 1 x Normal 3pin, 1 x Euro 2pin and 1 x 4x4 box with blank cover	each	**3**			R -
7.1.3	16 Amp,1 x Normal 3pin and 1 x Euro 2pin (weather proof)	each	**3**			R -
7.2	Supply, install and connect switch sockets in power skirting complete with cover plates.:					
7.2.1	16 Amp Single Socket on power skirting	each	**32**			R -
7.2.2	16 Amp Single Socket (Dedicated) on power skirting	each	**16**			R -
7.2.3	Data RJ45 outlet on power skirting	each	**16**			R -
7.2.4	Tel RJ11 outlet on power skirting	each	**16**			R -
7.3	Supply, install and connect unswitched sockets in ceiling void, complete in a round box with cover plate:					
7.3.1	5 Amp unswitch socket in a round box	each	**180**			R -
Amount carried forward						**R -**

Schedule of Quantities						Electrical Installation	
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**	
Amount brought forward						**R**	**-**
8.	**ISOLATORS**						
8.1	Supply, install and connect isolators complete in a wallbox including a indication light and cover plate:						
8.1.1	30Amp Double pole isolator for geysers, tumble dryers & stoves	each	**4**			R	-
8.1.2	30Amp 3 pole isolator for AC units	each	**0**			R	-
8.1.3	20Amp 2 Pole isolator for AC indoor,fresh air and extraction fans	each	**26**			R	-
8.1.4	20Amp 2 Pole isolator for AC Outdoor	each	**0**			R	-
8.1.5	20Amp 2 Pole isolator for Access Control	each	**0**			R	-
8.1.6	30Amp 2 Pole Isolator for 48000BTU H/A	each	**0**			R	-
8.2	York S20 Weatherproof box with sliding lid to fit 100mm x 100mm socket outlets.	each	**0**			R	-
9.	**LUMINAIRES**						
9.1	Supply, install and connect luminaires complete with lamps, fixings, brass screws, washers, 3-meter 3-core fly lead and 6A socket, etc. (All luminaires must be equal and approved to the luminaires indicated below):						
9.1.1	**New Type A1**	each	**24**			R	-
9.1.2	**New Type A2**	each	**51**			R	-
9.1.3	**New Type A3**	each	**7**			R	-
9.1.4	**New Type A4**	each	**51**			R	-
9.1.5	**New Type A5**	each	**0**			R	-
9.1.6	**New Type A6**	each	**0**			R	-
9.1.7	**New Type B1**	each	**16**			R	-
9.1.8	**New Type B2**	each	**5**			R	-
9.1.9	**New Type B3**	each	**8**			R	-
9.1.10	**New Type B4**	each	**5**			R	-
9.1.11	**New Type B5**	each	**0**			R	-
9.1.12	**New Type F2**	each	**14**			R	-
9.1.13	**New Type F2.1**	each	**2**			R	-
9.1.14	**New Type EXIT**	each	**4**			R	-
10.	**LIGHT SWITCHES**						
10.1	Supply, install and connect switches in flush mounted boxes, complete with cover plates:						
10.1.1	16 Amp 1-lever / 1-way	each	**36**			R	-
10.1.2	16 Amp 1-lever / 2-way	each	**4**			R	-
10.1.3	16 Amp 2-lever / 1-way/ 1-way push dimm	each	**0**			R	-
10.1.4	16 Amp 3-lever / 1-way / 1-way/ 1-way push dimm	each	**0**			R	-
10.1.5	Schneider Flush mounted occupancy sensor with passive infrared **SAE-UE-MS-CDBWE**	each	**0**			R	-
10.	Supply, install and connect photo electrical switches complete in a wall mounted box:	each	**2**			R	-
11.	**EARTHING AND BONDING**						
11.1	Earthing of all buildings to comply with the latest SABS 0142-1993 *Code of Practice for The Wiring of Premises* as amended and as specified.	item	**sum**			R	3 500.00
11.2	Bonding of all hot, cold and waste pipes complete with 12,5mm x 1mm thick solid or perforated copper tape including fixings, brass screws, nuts, washers, etc.:	item	**sum**			R	2 500.00
12.	**TESTING AND COMMISSIONING**						
12.1	Inspections, testing and handing over of the complete installation in the presence of the Engineer and certify the results on the Certificate of compliance by an accredited person.	item	**sum**			R	7 500.00
Amount carried forward						**R**	**13 500.00**

Schedule of Quantities						Electrical Installation
ITEM	**DESCRIPTION**	**UNIT**	**QTY**	**MATERIAL**	**LABOUR**	**TOTAL PRICE**
Amount brought forward						**R 13 500.00**
13.	**EMERGENCY STANDBY GENERATOR**					
13.1	Full service of the existing 60kVA emergency standby generator, including filters, oil, consumables, etc.	item	**sum**			R -
13.2	Relocation of the existing generator to new position	Item	**sum**			R -
14.	**LIGHTNING PROTECTION INSTALLATION**					
14.1	Supply, install and test a complete lightning protection, installation, including aluminium and copper conductors, test joints, galvanised conduit, earth electrodes, etc:					
14.1.1	Flush mounted down conductors	each	**12**			R -
14.1.2	Joints for electrical continuity	each	**12**			R -
14.1.3	Test and certifying	each	**sum**			R 13 850.00
AMOUNT TO BE CARRIED FORWARD TO ELECTRICAL TENDER SUMMARY						

Schedule of Quantities						Electrical Installation
ITEM	DESCRIPTION	UNIT	QTY	MATERIAL	LABOUR	TOTAL PRICE
	FIRE DETECTION INSTALLATION Supply and install a Fire Detection System, by a specialist (must be SAQCC registered), complete with all accessories and equipment as specified.					
1.	**MAIN FIRE CONTROL PANEL**					
1.1	Supply, install and comission a Main Fire Control panel as per Project Specification.	each	**1**			R -
2.	**MIMIC FIRE PANELS**					
2.1	Supply, install and commission a 600mm x 600mm (minimum) mimic panel with mimic chart, flush mounted against the wall as part of the main fire control panel, indicating all the zones with high intensity LEDs. Mimic chart must indicate the number, room description, etc. of each detector or break glass unit.	each	**1**			Rate Only
3.	**DETECTOR ELEMENTS**					
3.1	Supply and install Detector elements mounted on and including standard round electrical outlet box:					
3.1.1	Optical Smoke/Heat detector fixed to suspended ceiling	each				R -
3.1.2	Optical smoke detectors fixed to suspended ceiling	each	**35**			R -
3.1.3	Optical smoke detectors fixed in ceiling void	each	**8**			R -
3.2	Audible and visual sirens	each	**3**			R -
4.	**BREAK GLASS UNITS - RESETTABLE TYPE**					
4.1	Break glass unit mounted on and including standard round electrical outlet box:					
4.1.1	Break glass unit - resettable type	each	**5**			R -
4.1.2	Testing keys for break glass unit	each	**5**			R -
5.	**WIRING AND CABLING**					
5.1	Wiring and cabling to interconnect and control or monitor the various mediums to complete a workable fire detection control system.	meter	**400**			R -
5.2	Electromagnetic Door Lock (Mag-Lock), 300Kg rating, including door closer (enabling automatic closing of doors)	each				R -
5.3	Air conditioning cut-off control and extraction fan start-up control	each	**2**			R -
6.	**WIRING CHANNELS**					
6.1	Supply and install GS50 Wire Mesh complete with splice clamps,M8 drop in anchors, coupling nuts,horizontal bends, tee's ect. Note: The rates for wiring channels shall include for hangers, splices, jointing, drilling, etc:					
6.1.1	**100mm** wide - Medium Duty Wire Mesh for fire, data & telephone installation	meter	**60**			R -
6.1.2	External Elbow	each	**2**			R -
6.1.3	Horizontal Elbow	each	**2**			R -
6.1.4	Tee	each	**1**			R -
Amount carried forward						**R -**

Schedule of Quantities						Electrical Installation
ITEM	DESCRIPTION	UNIT	QTY	MATERIAL	LABOUR	TOTAL PRICE
Amount brought forward						R -
7.	**WIRING CHANNELS, CONDUITS, SLEEVES & OUTLETS**					
7.1	Supply and install BOSAL conduit (for Fire & Public Address) including cutting, bending, short lengths, 1-/2-/3-/4-way boxes, couplings, saddles, screws etc.					
7.1.1	25mm diameter - Builed-in or cast in concrete	meter	**80**			R -
7.1.2	32mm diameter - Fixed in ceiling void	meter				R -
7.2	Galvanized steel draw wire 1,6mm thick, pulled into fire detection conduits.	meter	**400**			R -
7.3	**General (To complete installation)** Allow for any additional items not listed above to complete the system into working order.	item	**sum**			R 1 500.00
7.4	**Testing and Commissioning** Testing and commissioning of the systems as specified.	item	**sum**			R 3 500.00
7.5	**Training** Training of technical staff in operation and maintaining all the systems as per specification	item	**sum**			R 2 000.00
7.6	**Drawings** Supply to the Electrical consultant three sets of drawings for approval and one set "As built" drawings.	item	**sum**			R 1 000.00
7.7	**Manual and Literature** Supply and delivery of three (3) copies of maintenance and operating instructions as per specification.	item	**sum**			R 1 500.00
7.8	**Guatantee and Maintenance** Guarantee and maintenance during the (twelve) 12 month period as per specification.	item	**sum**			R 9 800.00
AMOUNT TO BE CARRIED FORWARD TO ELECTRICAL TENDER SUMMARY						

SUMMARY

ITEM	DESCRIPTION	TOTAL AMOUNT
1	LOW VOLTAGE DISTRIBUTION	R -
2	SMALL POWER AND LIGHTING	R -
3	FIRE DETECTION INSTALLATION	R -
4	POWER SUPPLY DECANTING UNITS (Provisional Amount)	R 80 000.00
5	CARRIED TO FINAL SUMMARY	

SECTION 9 - MECHANICAL WORKS

FCE CONSULTING ENGINEERS
TEL: 051 403 8596

Summary - Mechanical Services: HVAC

Item No	Description	Total
1	**Bill 1**	
	General Items	R -
2	**Bill 2**	
	Air Conditioning Systems	R -
3	**Bill 3**	
	Ventilation: Fresh Air	R -
4	**Bill 4**	
	Ventilation: Extraction	R -
	TOTTAL CARRIED TO FINAL SUMMARY	**R -**

		Main Bill - Mechanical					
Item No		DESCRIPTION	SIZE & CAPACITY	UNIT	QTY	ITEM	TOTAL
1.	1	**Bill 1 - P&G's**					
1.	2	Technical submittals for all mechanical and electrical equipment i.e., Duct pressure drop, Fan systems, diffuser and weather louvre, etc.		Sum	1		
1.	3	Co-ordinated workshop drawings.		Sum	1		
1.	4	Operating and Maintenance manuals c/w record and as built drawing (electronic and paper format) x3 sets.		Sum	1		
1.	5	Workshop drawings for approval by Consultant		Sum	1		
1.	6	Allow for the compliance with the Occupational Health & Safety Act and Regulations and other statutory requirements (SABS and SANS).		Sum	1		
1.	7	Allow for the guarantee of the complete installation and equipment for a period of 12 Months after installation is completed.		Sum	1		
1.	8	Allow for the full maintenance of the installation and equipment for a period of 12 Months after installation is complete		Sum	1		
1.	9	Training and use of plant for end-user operational staff		Sum	1		
1.	10	Items required by contractor not measured in the bill of quantities. Attach a detailed list if any items is required (Accommodation and traveling)		Sum	1		
1.	11	NOTE: Working at heights 0 - 3m Mechanical contractor allowance for scaffolding.		Sum	1		
1.	12	NOTE: Working at heights 3.1m and above main contractor to supply scaffolding.		Note			
1.	13	Electrical COC certificate on all the mechanical connections and panels.		Sum	1		
1.	14	Labelling of all equipment (AC Units indoors and outdoors, fans and electrical control boards etc)		Sum	1		
1.	15	All PC and Allowance Amounts in Bill to be final priced by contractor once information is available		Note			
1.	16	All items is re-measurable after installation and workshop drawing approvals by engineer.		Note			
1.	17	All Hide Away Ducted Split Units, complete with supply and return grilles and plenums. Refrigerant piping, electrical power and communications cabling. All ducting to be externally lagged c/w strapping.		Note			
1.	18	All air conditioning equipment must be installed and commissioned by a qualified air conditioning technician.		Note			
1.	19	All Supply Air Galvanised ducting complete with brackets, strapping and support for trusses installation. Ducting complete externally lagged with 25mm FRK, clamps and sealant. Ducting in this area to be site measured before manufacturing and work drawings to be issued for approval by engineer.		Note			
1.	20	All Return Air Galvanised ducting complete with brackets, strapping and support for wooden trusses installation. Ducting externally lagged with 25mm FRK, clamps and sealant. Ducting in this area to be site measured before manufacturing and work drawings to be issued for approval by engineer.		Note			
1.	21	All ventilation equipment must be installed and commissioned by a qualified HVAC technician.		Note			
1.	22	All Galvanised ducting systems (all cross brake type) complete with hangers and support brackets for truss installation.		Note			
1.	23	**Total - Bill 1 carried over to summary page**					
	24						

2.	25	**Bill 2 - Air Conditioning Systems**					
2.	26						
2.	27	**EMERGENGY ROOM (CAS 2)(B)**					
2.	28	Cassette Inverter type split aircon unit, complete with installation, testing and commissioning.	18 000 BTU	no	1		
2.	29	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	30	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	31	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	32	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	33	**VITALS ROOM (CAS 3)(A)**					
2.	34	Cassette Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	35	Refrigerant copper piping c/w Armaflex lagging.		m	20		
2.	36	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	37	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	38	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	39	**MULTI - PURPOSE ROOM (CAS 6)(C)**					
2.	40	Cassette Inverter type split aircon unit, complete with installation, testing and commissioning.	24 000 BTU	no	1		
2.	41	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	42	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	43	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	44	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	45	**CHRONIC CARE CONSULTING (MW 1)(A)**					
2.	46	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	47	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	48	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	49	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	50	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	51	**MINOR AILMENTS CONSULTING (MW 2)(A)**					
2.	52	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	53	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	54	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	55	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	56	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	57	**ACUTE CHRONIC COUNCELLING (MW 3)(A)**					
2.	58	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	59	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	60	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	61	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	62	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	63	**CCMD (MW 4)(A)**					
2.	64	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	65	Refrigerant copper piping c/w Armaflex lagging.		m	20		
2.	66	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	67	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		

2.	68	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	69	**OUTREACH OFFICE (MW 5)(A)**					
2.	70	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	71	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	72	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	73	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	74	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	75	**SERVER ROOM (MW 6)(A)**					
2.	76	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	77	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	78	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	79	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	80	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	81	**CHILD HEALTH CONULTING (MW 7)(A)**					
2.	82	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	83	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	84	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	85	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	86	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	87	**MATERNAL HEALTH CONSULTING (MW 8)(A)**					
2.	88	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	89	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	90	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	91	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	92	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	93	**STAFF REST (MW 9)(A)**					
2.	94	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	95	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	96	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	97	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	98	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	99	**MANAGERS OFFICE (MW 10)(A)**					
2.	100	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	101	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	102	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	103	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		
2.	104	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	105	**MEDICINE STORE (MW11 1)(A)**					
2.	106	High Wall Inverter type split aircon unit, complete with installation brackets, electrical connection, wire ways, testing and commissioning.	12 000 BTU	no	1		
2.	107	Refrigerant copper piping c/w Armaflex lagging.		m	15		
2.	108	Galvanised trunking for refrigerant piping (outdoor)		m	8		
2.	109	PVC trunking for electrical cables, refrigerant piping and condensate pipe (indoor)		m	2		

2.	110	Condenser brackets, 600mm long, complete with anti vibration mounting fixed to brick wall.		no	1		
2.	111	**Total - Bill 2 carried over to summary page**					
	112						
	113	**Bill 3 - Ventilation Systems: Fresh Air**					
	114						
3.	115	**SUB WAITING: MOTHER & CHILD (FAF 1)(1) AND MINOR/CRONIC (FAF 4)(1)**					
3.	116	Weather Louvre, anodised and complete with wire mesh (Colour TBC)	500x400 opening size	no	2		
3.	117	Wooden frame to be build in by builder for plenum installation	500x400	no	2		
3.	118	Galv plenum box	500x400x500(D)	no	2		
3.	119	Inline type fan complete with pod type sound attenuators (900mm long), AMS/Luft type, installed on frame with anti vibration mounting in roof trusses.	435 l/s @ 200Pa	no	2		
3.	120	Galv Square to round	Fan to 500x400	no	2		
3.	121	Galv Square to round	Fan to 250x400	no	2		
3.	122	Canvas connection complete with earthing strap	Fan to Square to Round	no	4		
3.	123	Galv straight ducting	250x400	m	6		
3.	124	Galv Spigots - Oval	Dia 450mm	no	2		
3.	125	Flexible connection c/w clamps and tape finish	Dia 450mm	m	8		
3.	126	Galv Grill plenum box complete with 1xø450mm spigot connection.	595x595x250(h) c/w Dia 450 spigot	no	8		
3.	127	Single deflection return air hinged grille, complete with 50mm washable filter mounted in 600x600 grid suspended ceiling. (No handle, Anodised: Colour TBA)	595x595	no	2		
3.	128	Electrical Connection from Isolator to fan		no	1		
3.	129	Fan speed controller complete with occupancy control. DB by HVAC contractors (to switch by light/occupancy sensor),		no	1		
3.	130	Air balancing of extraction systems and witnessed by engineer		no	1		
3.	131	**Total - Bill 3 carried over to summary page**					
	132						
	133	**Bill 4 - Ventilation Systems: Extraction**					
	134						
4.	135	**SUB WAITING: MINOR/CRONIC (EAF 1)(1)**					
4.	136	Weather Louvre, anodised and complete with wire mesh (Colour TBC)	500x400 opening size	no	1		
4.	137	Wooden frame to be build in by builder for plenum installation	500x400	no	1		
4.	138	Galv plenum box c/w ø350 spigot connection	500x400x500(D)	no	1		
4.	139	Inline type fan complete with pod type sound attenuators (900mm long), AMS/Luft type, installed on frame with anti vibration mounting in trusses.	435 l/s @ 200Pa	no	1		
4.	140	Galv. spiral	ø350	m	1		
4.	141	Galv. spiral bend	ø350	no	1		
4.	142	Galv. Square to round	Fan to 350x300	no	1		
4.	143	Canvas connection complete with earthing strap	Fan to Square to Round	no	1		
4.	144	Canvas connection complete with earthing strap	Fan to Spiral bend	no	1		
4.	145	Galv straight ducting	350x300	m	2		
4.	146	Galv ducting 90bend	350x300	no	1		
4.	147	Grill Plenum / wall sleeve to be painted black inside	500x350(ø300mm)	no	1		
4.	148	Single deflection grille, mounted inside wall. (No handle, Anodised: Colour TBA)	500x350 opening size	no	1		
4.	149	Electrical Connection from Isolator to fan		no	1		
4.	150	Fan speed controller complete with occupancy control, DB by HVAC contractors (to switch by light/occupancy sensor)		no	1		
4.	151	Air Balancing of Extraction systems and witnessed by engineer		no	1		
4.	152	**TOILET VENTILATION (EAF 2)(2)**					
4.	153	Weather Louvre, anodised and complete with wire mesh (Colour TBC)	500x400	no	1		

4.	154	Wooden frame to be build in by builder for plenum installation	500x400	no	1		
4.	155	Galv plenum box	500x400x400mm (D)	no	1		
4.	156	Inline type fan complete with pod type sound attenuators (900mm long), AMS/Luft type, installed on frame with anti vibration mounting in roof trusses and canvas connections.	366 l/s @ 250Pa	no	1		
4.	157	Galv Square to round	Fan to 500x400	no	1		
4.	158	Galv Square to round	Fan to 300x200	no	1		
4.	159	Canvas connection complete with earthing strap	Fan to Square to Round	no	2		
4.	160	Galv straight ducting	300x200	m	1.5		
4.	161	Galv straight ducting	200x200	m	4		
4.	162	Galv straight ducting	200x150	m	4		
4.	163	Galv straight ducting	150x150	m	1		
4.	164	Galv shoe	200x200	no	1		
4.	165	Galv shoe	200x150	no	1		
4.	166	Galv ducting 90bend	200x200	no	1		
4.	167	Disk valve complete with butterfly type balancing damper installed in grid suspended ceiling	Dia 150mm	no	6		
4.	168	Flexible connection c/w clamps and tape finish	Dia 150mm	m	10		
4.	169	Galv Stop end	200x150	no	1		
4.	170	Flat Plate spigots	Dia 150mm	no	6		
4.	171	Galv Transformation	200x200 to 200x150	no	1		
4.	172	Galv Transformation	200x150 to 150x150	no	1		
4.	173	Door grilles	400x400	no	5		
4.	174	Electrical Connection from Isolator to fan control DB (by ac contractor)		no	1		
4.	175	Fan speed controller complete with occupancy control. DB by HVAC contractors(to switch by light/occupancy sensor.)		no	1		
4.	176	Air Balancing of Extraction systems and witnessed by engineer		no	1		
4.	177	**EMERGENCY ROOM VENTILATION (EAF 3)(3)**					
4.	178	Weather Louvre, anodised and complete with wire mesh (Colour TBC)	500x400	no	1		
4.	179	Wooden frame to be build in by builder for plenum installation	500x400	no	1		
4.	180	Galv plenum box	500x400x400mm (D)	no	1		
4.	181	Inline type fan complete with pod type sound attenuators (900mm long), AMS/Luft type, installed on frame with anti vibration mounting in roof trusses and canvas connections.	235 l/s @ 250Pa	no	1		
4.	182	Galv Square to round	Fan to 500x400	no	1		
4.	183	Galv Square to round	Fan to 300x200	no	1		
4.	184	Canvas connection complete with earthing strap	Fan to Square to Round	no	2		
4.	185	Galv straight ducting	300x200	m	1.5		
4.	186	Galv straight ducting	200x200	m	6		
4.	187	Galv shoe	200x200	no	1		
4.	188	Galv ducting 90bend	200x200	no	1		
4.	189	Disk valve complete with butterfly type balancing damper installed in grid suspended ceiling	Dia 200mm	no	3		
4.	190	Flexible connection c/w clamps and tape finish	Dia 200mm	m	5		
4.	191	Galv Stop end	300x200	no	2		
4.	192	Flat Plate spigots	Dia 200mm	no	3		
4.	193	Door grilles	400x400	no	1		
4.	194	Electrical Connection from Isolator to fan control DB (by ac contractor)		no	1		
4.	195	Fan speed controller complete with occupancy control. DB by HVAC contractors(to switch by light/occupancy sensor.)		no	1		
4.	196	Air Balancing of Extraction systems and witnessed by engineer		no	1		
4.	197	**MOTHERS ROOM WC (WMF 3)(4)**					
4.	198	Wall mounted type fan c/w electrical connection and occupancy sensor switch.	50 L/S	no	1		
4.	199	Door grilles	400x400	no	2		
4.	200	**STAFF TOILET & LOCKER (WMF 4)(4)**					

4.	201	Wall mounted type fan c/w electrical connection and occupancy sensor switch.	50 L/S	no	1		
4.	202	Door grilles	400x400	no	2		
4.	203	**GENERAL STORE (WMF 5)(4)**					
4.	204	Staff toilet & locker extraction wall mounted type fan (to switch by light/occupancy sensor.)	50 L/S	no	1		
4.	205	Door grilles	400x400	no	1		
4.	206	**DIRTY UTILITIES (WMF 6)(4)**					
4.	207	Staff toilet & locker extraction wall mounted type fan (to switch by light/occupancy sensor.)	50 L/S	no	1		
4.	208	Door grilles	400x400	no	1		
4.	209	**CLEANERS ROOM (WMF 7)(4)**					
4.	210	Staff toilet & locker extraction wall mounted type fan (to switch by light/occupancy sensor.)	50 L/S	no	1		
4.	211	Door grilles	400x400	no	1		
4.	212	**SUB WAITING: MOTHER & CHILD (WMF 8)(1)**					
4.	213	Wall mounted type extractor fan c/w installation, connection to isolator and controls (to switch by light/occupancy sensor.)	435L/s @ 200Pa	no	1		
4.	214	**Total - Bill 4 carried over to summary page**					

FINAL SUMMARY

FINAL SUMMARY

Section No		Page No		Amount
	PART 1			
1	SECTION 1 - PRELIMINARIES & GENERAL	38	R	
2	SECTION 2 - ALTERATIONS	48	R	
3	SECTION 3 - NEW BUILDING WORKS	116	R	
4	SECTION 4 - PROVISIONAL SUMS & BUDGETARY ALLOWANCES	118	R	
	Sub-total A		R	
	PART 2			
5	Civil Works (Vat excl. Carried over from a separate document Civil Bills of Quantities)	Item	R	
6	Electrical Works (Vat excl. Carried over from a separate document Electrical Bills of Quantities)	Item	R	
7	Mechanical Works (Vat excl. Carried over from a separate document Mechanical Bills of Quantities)	Item	R	
	Sub-total B		R	-
	ESCALATION			
	Allow 5% Escalation to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.		R	-
	Sub-total C		R	-
	CONTINGENCY ALLOWANCE			
	Allow 5% Contingencies to be used as directed by the Employer/Employer's representative and to be deducted in whole or in part if not required.		R	-
	Sub-total D		R	-
	Value Added Tax (15%)		R	-
	Carried to Form of Tender		R	-

C3 SCOPE OF WORKS

C3.1 Scope of Work

1) DESCRIPTION OF THE WORKS

1.1 Employer's objectives

The scope of works is Completion of the outstanding works at Logobate Clinic.

The Employer may include the following statement in the tender documents should the Employer wish to have specific training carried out as an objective of the project: One of the objectives of the project is to training ether of the following: (occupational qualifications, trade qualification, work integrated learners – P1 and P2 learners, professional candidates)

The objective of the project is to provide for a minimum contract participation goal (CPG) of 5% of the total project value and to develop targeted enterprise by the main or lead partner contractors.

The Contractor shall:

- Subcontract a minimum of 5% of the total project value to targeted enterprises;
- Perform needs analysis on the targeted enterprise to identify developmental goals;
- Provide internal mentorship support to improve the targeted enterprise/s performance;
- Develop a project specific enterprise development plan to improve the targeted enterprise/s performance in the identified developmental areas to the CIDB Competence Standard for Contractors Gazette No. 41237, 10 November 2017
- Monitor and report the progress of the agreed development areas with the targeted enterprise/s
- Submit a project completion report to the Employer's representative for each targeted enterprise.

The Contractor shall provide opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as agreed: accommodate Part/Full Occupational qualification (Method 1), Trade qualifications learners (Method 2),train Work Integrated Learners – P1 and P2 Learners (Method 3) and/or Professional Candidates (Method 4) as indicated in the CIDB Standard and as agreed to by the Employer on this project (Employer to stipulate)

The Contractor may only place 33% employees employed by him/her or that of his/her subcontractor contributing to the CSDG.

The Contractor shall achieve the measurable CSDG by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as agreed: accommodate Part/Full Occupational qualification (Method 1), Trade qualifications learners (Method 2), Work Integrated Learners (Method 3) and/or Candidates (Method 4) as per the CIDB Standard in relation to work directly related to the Contract as indicated under clause 4.2 and 4.3 in the cidb Standard. (Employer to stipulate).

The Contractor shall ensure that all beneficiaries of the Standard are registered with CIDB Skills Development Agency (SDA).

The Contractor shall be responsible for developing subcontractors in accordance with

the CIDB Standard for Indirect Targeting for Enterprise Development.

The Contractor shall be responsible for the appointment of the Enterprise Development Coordinator.

1.2 Overview of the works

1.2.1 The construction of:

1) Guard House

1.2.2 The renovations and alterations of:

1) Clinic

1.2.3 Upgrade and new water supply, soil drainage and stormwater management

1.2.4 New pavings to parking

1.2.5 Security Fencing (ClearVu)

1.2.6 Renovations to decanting facilities

1.2.7 Covered Carports

1.2.8 Electrical and Mechanical installations

1.3 Labour-intensive works

Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work

1.4 Extent of the works

The extent of the works shall comply with the Employer's requirements as outlined on the drawings listed on 2.4 below

1.5 Location of the works

Works will be executed in an approved stand/erf/portion as described in the tittle deed and delimited in the surveyor general diagram LOGOBATE CLINIC:

The location of the Logobate Primary Health Facility is at 27°10'35.46"S, 23°24'27.82"E in the John Taolo Gaetsewe District, Joe Morolong Local Municipality. The immediate context mainly consists of informal residential structures which are positioned randomly apart in an arid landscape.

1.6 Temporary works

The Contractor shall provide, erect, maintain and remove on completion of the works, a temporary office to be used by Principal Agent when they are onsite and project meetings which should include ablution, parking, eating area, etc. as may be deemed necessary for project use. The location of the Contractor's facilities shall be pre-approved by the Principal Agent before site establishment. In his office there must be kept a copy of all working drawings suitably mounted, a copy of the contract documents in a good and orderly condition, the site instruction and site diary books and any specification referred to in the contract documents.

2) ENGINEERING

2.1 Design services

The design responsibility shall be allocate as follows:

Works designed by ..... Employer

Temporary works ……..... Contractor

Preparation of as-built drawings ..... Contractor

2.2 Employer's design

The Employer will be responsible for the design of the permanent works unless otherwise stated. The Contractor is responsible for the design of the temporary works and their compatibility with the permanent works.

2.3 Design brief

The Employer and the Employer's design agent will be responsible for the design of the permanent works unless otherwise stated. The Contractor will be required to submit as-built drawings.

- Construction breaks and the extent of individual concrete pours
- Routing of and junctions in all services
- Salient features for the operation and maintenance of services

and to be submitted to the following Employer's required format and manner:

- A paper copy complete with approval signatures of the agent/agents bound into the operating instruction manuals
- Tiff format scanned versions of the approved paper copy
- Electronic version of approved drawings on CD in either Caddie.drw or Autocad.dwg formats

2.4 Drawings

The following drawings are applicable to the contract:

Drawing number	Title
Architectural	
Civil	
Structural	

Electrical

Mechanical

3) PROCUREMENT

3.1 Subcontracting

3.1.1 Scope of mandatory subcontract work

As per the mandatory sub-contracting clause, the Contractor must not sub-contract more than 30%, 10% of which should be allocated to the IDT CDP contractors between 1GB and 4GB (list per cluster will be provided upon appointment).

The Contractor shall without delay enter into contracts with the Domestic Subcontractors as submitted on the returnable schedule and forward a copy of these agreements to the Principal Agent. The Contractor shall remain responsible for providing the subcontracted portion of the works as if the work had not been subcontracted.
The Contractor to take note of item 3.2.2 below

3.1.2 Preferred subcontractors / suppliers

3.1.3 Subcontracting procedures

See items 3.2.1 and 3.2.2 as well as BID data

3.1.4 Attendance on subcontractors

Attendance to Domestic Sub-contractors as stated above should be priced under the relevant items in the Preliminaries section of the bills of quantities. Attendance to nominated sub-contractors should be priced under the relevant items in the Provisional Sums section of the bills of quantities.

3.2 CIDB B.U.I.L.D. Programme

The contractor must comply with the Department of Public Works and Infrastructure General Notice 1779 of 2023 as per Construction Industry Development Board (CIDB) for achieving the standards for delivery skills for infrastructure contracts 31 March 2023.

4) CONSTRUCTION

4.1 Works specification

The works specifications that are applicable to the works are attached to the bid document as well as other recognized specifications obtainable on request from the Employer:

- Applicable SANS 2001 standards
- Applicable national and international standards
- Particular / generic specifications

5) MANAGEMENT

5.1 Management of the works

5.1.1 Planning and programming

The Contractor shall submit within the period stated in the Contract Data a suitable and realistic construction programme for the consideration of the Principal Agent.

5.1.2 Recording of weather

The Contractor shall erect an effective rainfall gauge on the site and record the daily rainfall figures in a book. Such book shall be handed to the Employer's representative for his signature no later than 12 days after rain that is considered to justify an extension of time occurs.

5.1.3 Unauthorized persons

The Contractor shall keep unauthorized persons from the works at all times. Under no circumstances may any person except guards be allowed to sleep on the building site.

5.1.4 Key personnel

The Contractor shall submit an organogram indicating all key personnel involved in this contract as well as their telephone or cell phone numbers. This information should be available within 2 (two) weeks after the award of the contract.

5.1.5 Management meetings

The Employer's Representative and the Contractor shall hold meetings relating to the progress of the works at regular intervals and at other such times as may be necessary. The Contractor shall attend all site meetings and shall ensure that all persons under his jurisdiction are notified timeously of all site meetings should the Employer's Representative require their attendance at such meetings.

The Contractor shall keep on site a set of minutes of all site meetings, daily records of resources (people and equipment employed), a site instruction book, a complete set of contract working drawings and a copy of the procurement document and make these available at all reasonable times to all persons concerned with the contract.

5.1.6 Forms for contract administration

All contract administration forms must be in the manner prescribed by the JBCC as well as the scope of work

The Contractor shall be required to submit an updated contractor monthly report during site meetings, which will be used by the consultant to update the client.

5.1.7 Payment certificates

The Contractor to ensure that the VAT invoice required with each certificate is delivered timeously. The date of the certificate will be that of the date when the certificate is received by the consultant.

The Contractor to ensure timeous submission of all required documentation for the expedient processing of payment certificates, as required by the client, eg BAS entity forms, company registration details, VAT clearance certificates, etc. The Contractor is responsible for such documentation submission.

5.1.8 Daily records

The Contractor shall provide an A4 triplicate book to be used as a Daily Diary book for the duration of the contract. The Principal Agent shall retain the original sheet and the

Contractor shall retain the first copy of each sheet. The second copy of each completed sheet shall be left in the Daily Diary Book. The diary shall be completed on a daily basis.

In addition to this the Contractor shall provide an A4 size triplicate book to act as a Site Instruction book. The Principal Agent shall retain the original and the Contractor shall retain the first copy of each sheet. The second copy of each completed sheet shall be left in the Site instruction book. Only the Principal Agent and/or delegated representative will have the authority to issue Site Instruction to the Contractor.

5.2 Contract Skills Development Goal (CSDG)

The successful contractor must keep site records regarding the part/full occupational qualification learners', trade qualification learners', work integrated learners' or candidates' (delete that which is not applicable) progress, site attendance, hours worked and other relevant information as required by the Standard.

The successful contractor shall provide the required number of appropriately qualified mentors to the maximum number of part/full occupational qualification learners, trade qualification learners, work integrated learners in the proportion as specified in the Standard.

The successful contractor shall provide a supervisor to manage the training of the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates (delete that which is not applicable).

The successful contractor shall submit to the Employer's representative a baseline training plan in the specified format (Pro-forma A2) for the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates (delete that which is not applicable) within 30 days of start of the contract.

The successful contractor shall submit to the Employer's representative project interim report in the specified format (Pro-forma A3) on the progress of each of part/full occupational qualification learner, trade qualification learner, work integrated learner, candidate (delete that which is not applicable) every three months.

The successful contractor shall submit to the Employer's representative the names and particulars in the specified format (Pro-forma A4) of the supervisor, mentors for the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable) within 30 days of start of the contract.

The successful contractor shall keep a daily record of all the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates on site and their daily activities and shall be made available to the Employer's representative on request.

The successful contractor shall submit to the Employer's representative the reports on the progress and status of the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable) with the monthly invoice for the payment certificate.

The successful contractor shall have health and safety inductions for all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable).
The successful contractor shall conduct entry and exit medical tests of all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable).
The successful contractor shall provide personal protective equipment (PPE) to all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates (delete that which is not applicable) at the start of their employment on site.

Annexes
List by title
A1. List of cidb accredited SDAs
A2. Baseline training plan
A3. Project interim report
A4. Supervisor and / or mentor details
A5. Project completion report.

5.3 Annexures

ANNEXURE A

ARCHITECTURAL DRAWINGS

ARCHITECTURAL DRAWING REGISTER / ISSUE SLIP N0. 6

DESTUDIO

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PROJECT	NCDoH: Cluster 1 Health Facilities Upgrade: Logobate PHC		
PROJ. NO.	14-158-P04	DATE	2026/05/28
REF NO.	LOGOBATE PHC		
PAGE NO.	1	OF	1

DWG No:	DRAWING TITLE	REV	DWG SIZE	REV DATE	NO. OF COPIES
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_02	_site plan	2	A1	2024/06/19	1
_03	_floor plan	2	A1	2024/06/19	1
_04	_elevations 1	0	A1	2024/06/19	1
_05	_elevations 2	0	A1	2024/06/19	1
_06	_ceiling plan	0	A1	2024/06/19	1
_07	_sections 1	0	A1	2024/06/19	1
_08	_sections 2	0	A1	2024/06/19	1
_10	_roof plan	0	A1	2024/06/19	1
_13	_window schedule_1	0	A1	2024/06/19	1
_14	_window schedule_2	0	A1	2024/06/19	1
_15	_window schedule_3	0	A1	2024/06/19	1
_16	_window schedule_4	0	A1	2024/06/19	1
_17	_door schedule	0	A1	2024/06/19	1
_25	_landscape details_gates	0	A1	2024/06/19	1
_26	_landscape details_screen walls	0	A1	2024/06/19	1
_27	_landscape bench, seating etc	0	A1	2024/06/19	1
14-158-P04	__finishing index Sanitary ware	0	A3	2024/06/19	3
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DISTRIBUTION TO	Quantgroup	Sign Received by	
PURPOSE		Date	

Information

Construction

As Built

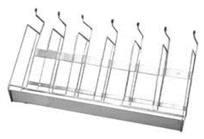
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Register

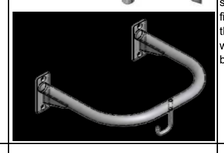
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LOGOBATE: SANITARY SCHEDULE | **14-158-P4_32 _ REV0** | **2025/10/21**

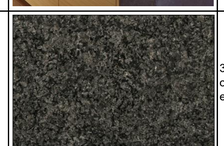
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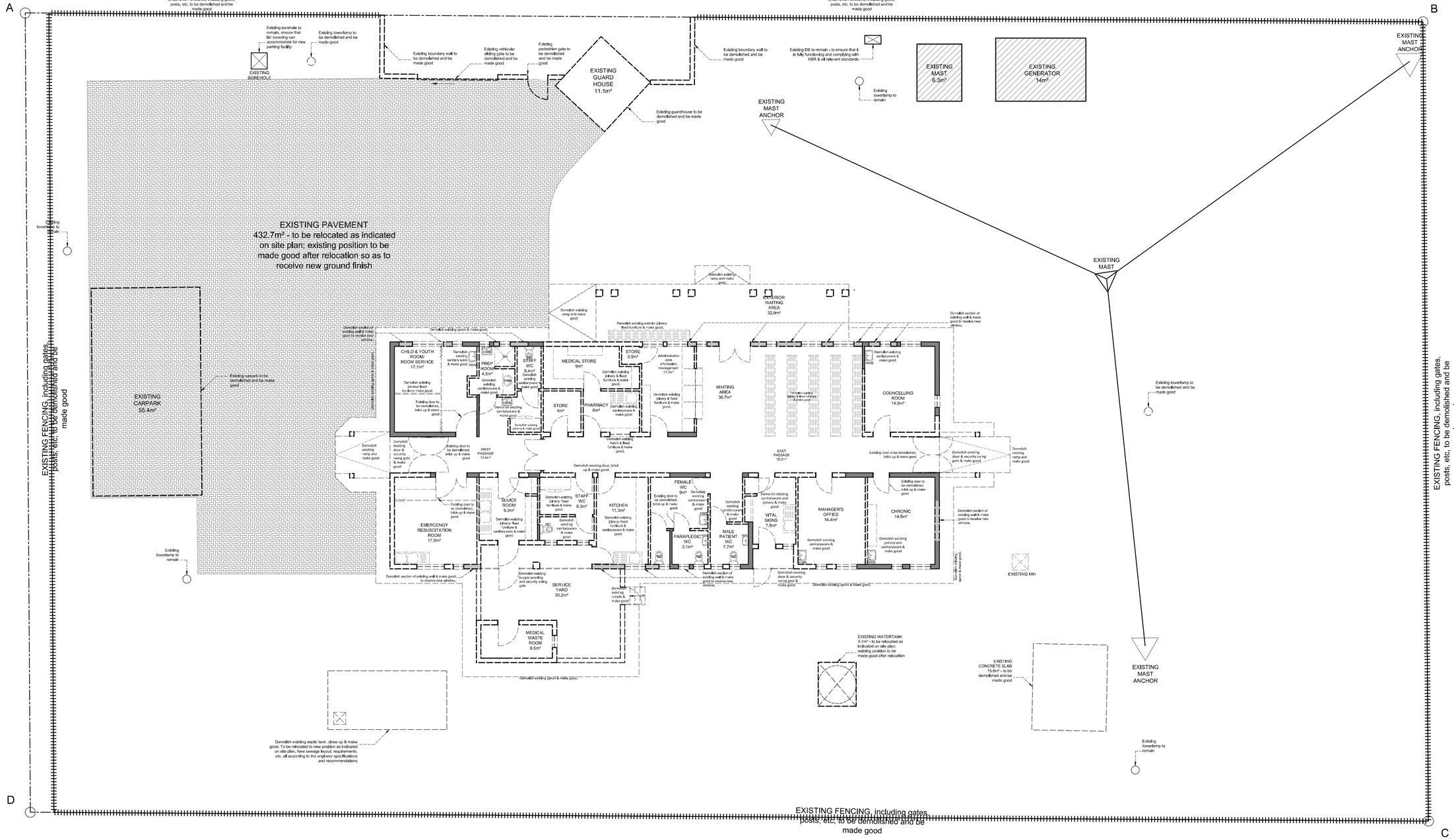
ITEM		IMAGE	DESCRIPTION	INTERIOR SPACES: GUARDHOUSE	Pedestrian Screening Walkway	Outside covered area	Multipurpose meeting rooms	External toilet	MAIN CENTRAL AREA	Help Desk	Admissions counter/ Reception	Records Room	Waiting area	CCMDD collection kiosk	Play area	Toilet and HWB - male	Toilet and HWB - female	Universal toilet	Mother's Room	ACUTE CARE (Emergency & Minor Ailments)	Emergency/ Birthing Room	Sub wait Acute	Preparation/ Vitals Room	Consulting room	Counselling room	Sputum collection booth	CHRONIC CARE	Sub wait	Consulting room	PROMOTIVE & PREVENTATIVE HEALTH (Maternal and	Sub wait area	Child Health Consulting	Maternal Health Consulting Room	SHARED SUPPORT ROOMS	Management office	Community Outreach Team office	Clean utility	PABX/ Server room	Dirty Utility	Store - medicine	Store - general	Store - linen	Store - surgical and consumable	Store - stationery	Staff rest	Staff toilets & lockers with lobby	Cleaner's room & store	EXTERNAL	Laundry	General waste	Medical waste	Yard (General)	Gardener store	Gas store	Ablution for Gardener
			Area (m²)																																																	
1.1	Clinical HWB		VAAL: SOLA 630 MEDICAL BASIN (Code: 702800) fine fireclay 630 x 500mm rectangular "Sola 630" medical basin with no tapholes, overflow or chainstay hole, with 600 x 600mm porcelain splash back. Drilled holes ON SPLASHBACK to accommodate for elbow action wall mounted mixer (specified elsewhere).											●						●		●	●	●				●			●	●					●	●																	
1.2	HWB (NO PEDESTAL - see GIO BOTTLETRAP)		VAAL:HIBISCUS BASIN (Code: 702303) Vitreous china 510 x 405mm rounded "Hibiscus" basin with three semi-punched tapholes (i.e. available in zero, one, two or three taphole configurations), integrated overflow, and chainstay hole through the centre semi-punched taphole bolted to wall.	●				●										●	●					●																														●
1.3	HWB		VAAL: Azalea 540 Basin (Code: 705700) Vitreous china 540 x 450 x 165mm "Azalea 540" semi-recessed basin with one taphole and integrated overflow.					●								●	●																											●								
1.4	HWB (baby changing facility)		VAAL: Iceberg Vanity Basin (Code: 703400) Vitreous china 420 x 420mm "Iceberg" round self-rimming drop in vanity basin.																●							●																										
2.0	Bottle trap		GIO cylinder bottle trap (Code: A186)	●				●						●		●	●	●	●		●			●	●	●	●			●			●	●					●	●					●								●
3.1	Prep bowl		FRANKE Stainless steel Rondo inset prep bowl without tap landing (Code: RDX610-45).																	●	●																																		
3.2	Sink		KWIKOT: Arden series stainless steel single bowl (Code: SCO-900-SE), size 900 x 460mm, installed as set in, NOT on top.	●			●															●		●														●														
3.3	Sink		KWIKOT: Arden series stainless steel double bowl (Code: SSO-1200-DE), size 1200 x 535mm																																																	
4.1	PPE (gloves & gowns dispenser)		MEDICARE HOSPITAL EQUIPMENT: Bowman PPE Protection System Dispenser (Code: LD-007 LD-007), size 422 x 641 x 114mm																	●																																		
4.2	Mop & broom rail		Stainless steel wall mountable broom- & mop rail designed for a healthcare environment																																																	
4.3	Bedpan & bottle rack		FRANKE: BBR bedpan & bottle rack (Code: BBR4)																																																
4.4	Stainless steel shelving		FRANKE: Model Z-series adjustable modular solid shelving manufactured from grade 18/10 stainless steel 1.2mm thick. One piece shelf and integrated bracket with a 25mm apron to front and sides with 30mm turn up at back and safety edge on corners. FRANKE: Model Z-modular series wall bands manufactured from grade 18/10 stainless steel 1.2mm thick, to be double slotted to allow (x2) shelves to be lined up next to each other on a single wall band.																																																		
	Washtrough		FRANKE: Code: ET102 double fabricated economy type washtrough, 1030 x 430 x 348mm deep; manufactured from Grade 430 (17/10) stainless steel. To accommodate for wall mounting.																																																	
4.5	Double sluice sink (wash & rinse) (MIXERS TO BE INCLUDED ACC. TO MANUFAC-TURER SPECIFI-CATION)		FRANKE: EC combination bedpan & washup sink; supplied complete with a factory fitted Cobra FM 1.00 flush valve, 35 mm water supply through 50 mm sleeve on unit, P171/041 pillar mixer with over- arm swivel spout, CP297 pillar mixer with retractable hand spray, 15 mm bedpan spray nozzle, 15 mm bottle spray nozzle (both nozzles activated by two 15 mm quarter turn elbow action valves). Please refer to fixing table below for fixing options. Unit is plumbed at factory and is supplied complete with fittings. NOTE: you cannot add your own flushing fittings as it is factory fitted. (Model size to be confirmed)																																																			
	Alternative 1	Standard flushing method using flush valve	COBRA model FM 1,000 - 35mm water supply flush valve or, COBRA FJ 2.000 - 20mm water supply flush valve and a COBRA FJT 1.2 straight flush pipe connected to CP on brass adaptor																																																	
	Alternative 2	Alternative flushing method using high level cistern	Slop hopper can be adapted to flush using 11 litres stainless steel high levelcistern fitted with Supa Flush Valve and pull chain, 41mm dia. Stainless steel flush pipe and 41mm chrome plated coupling which is reduced on one end to fit the 38mm connection on the unit.																																																
5.0	Slop hopper		FRANKE: CH Slop Hopper, size 540 x 540mm manufactured from grade 304 (18/10) stainless steel 1,2mm thick with a 100mm high integral splash back to the rear and both sides. The cone must be seamless with no welding and have an integral flushing rim with a 107mm waste outlet for pan connector, the inlet is fitted with a 38 x 250mm long vertical flush pipe for standard flush valve. Unit fitted with a hinged bucket grid manufactured from 10mm dia. grade 304 (18/10) stainless steel round bar, complete with two 40 x 40mm square stainless steel wall mounting gallows brackets. Unit to be fixed to wall 600mm from the top of the front apron to the finish floor level with 4 off anchor bolts. (Flushing via flushvalve: COBRA: FM1.100). Include tap bracket with bucket hook.																																																		

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				GUARDHOUSE	Pedestrian Screening Walkway	Outside covered area	Multipurpose meeting rooms	External toilet	MAIN CENTRAL AREA	Help Desk	Admissions counter/ Reception	Records Room	Waiting area	CCMDD collection kiosk	Play area	Toilet and HWB - male	Toilet and HWB - female	Universal toilet	Mother's Room	ACUTE CARE (Emergency & Minor Ailments)	Emergency/ Birthing Room	Sub wait Acute	Preparation/ Vitals Room	Consulting room	Counselling room	Sputum collection booth	CHRONIC CARE	Sub wait	Consulting room	PROMOTIVE & PREVENTATIVE HEALTH (Maternal and	Sub wait area	Child Health Consulting	Maternal Health Consulting Room	SHARED SUPPORT ROOMS	Management office	Community Outreach Team office	Clean utility	PABX/ Server room	Dirty Utility	Store - medicine	Store - general	Store - linen	Store - surgical and consumable	Store - stationery	Staff rest	Staff toilets & lockers with lobby	Cleaner's room & store	EXTERNAL	Laundry	General waste	Medical waste	Yard (General)	Gardener store	Gas store	Ablution for Gardener
6.0	Drip sink	 	FRANKE: Model DSG Drip Sink/ Cleaner Sink, size 535 x 454mm manufactured from grade 304 (18/10) stainless steel 1,2mm thick with 100 integrated splash back. Unit is fitted with hinged bucked grid manufactured from 10mm stainless steel round bar. Unit complete with two 40 x 20mm stainless steel wall mounting brackets. Unit is fixed to wall 600mm high from the top of the front apron to the finish floor level with 4 off anchor bolts. Include tap bracket with bucket hook.																																●																							
7.0	Stainless steel hand basin		FRANKE: Model MSS single bowl sink, size 650 x 650 x 258mm manufactured from grade 304 (18/10) stainless steel 1.2mm gauge with 50 x 10mm apron all around. Sink with pressed bowl, size 525 x 425 x 258mm deep (43 litres) with a 40mm waste outlet. Unit is fitted with stainless steel gusset brackets for securing the sink to the wall.																																																						
8.0	Flush valve (slop hopper)		COBRA: Junior Flushmaster Flushvalves (Code: FJ2-210), Exposed type toilet flushvalve, top entry installations, pan connector, wall flange, seat buffer and ball-o-stop and wall flange. SANS 1240.																																●																							
9.0	Floor drain		ROFO: Stainless steel 304 full flow floor trap to be stain & corrosion resistant. Installation to make provision for appropriate edging strip as recommended by the manufacturer for installation on a vinyl floor finish. Include water seal/ trap to prevent odours from escaping. Trap cover to have holes.																							●											●																●	●				
10.1	WHB mixer & tap		COBRA: MEDISHIFT PRO RANGE: (Code: NM-859) Single lever elbow action wall type mixer with progressive cartridge. ½" BSP male inlets. SANS 1480												●							●		●	●	●	●		●			●	●						●	●																	
10	WHB paraplegic friendly		COBRA: Medical elbow action mixer (Product Code NM-851, (SAP Code FBN1D1NM-0GT0050) (or similar and approved)															●						●																																
10.2	WHB metering tap		Product COBRA: Taryn metering tap (Code KM2-100FS), (SAP Code FPT1MTMT-0GT0110) (or similar and approved)	●				●								●	●		●																				●																	●
10.3	Kitchen sink mixer		COBRA: NOKA (Code: NA-970) Single lever sink mixer with aerated swivel outlet, SANS 1480.	●			●												●	●																							●													
10.4	Tap (x2 taps; x1 warm & x1 cold respectively)		COBRA: Star (Code: 206-15 15) ib tap with hot and cold indices, ½" BSP male inlet, SANS 226 TYPE2.																																●																●					
	Tap (pillar tap)		COBRA: Star (Code: 111-15) ib tap with hot and cold indices, ½" BSP male inlet, SANS 226 TYPE2.																																																					●			
10.5	Bib tap for hose		COBRA: Hose Bibtap (Code: 108-20) ¾" BSP hose union with wingnut and lining for ¾" hose. ¾" BSP male iron connection end. SANS 226 TYPE 1. Complete with wingnut and lining for ¾" hose. ¾" heavy pattern headpart, very low resistance for low pressure or high water demand installations.																																																				●		●			
11.1	Paper towel dispenser		TCSHYGIENE: PART No: (Code: PDFOLD STAINLESS STEEL RV) 430 Stainless steel lockable folded hand paper dispenser, size: 397(h) x 294(w) x 105(d)mm Fully enclosed - paper stays clean and dry. Lid slot shows paper status at a glance. Made of tough Stainless steel. Bottom hinged lid for ease of loading folded hand paper towels. 430 Stainless Steel (304 to specification)												●				●			●		●	●	●	●		●			●	●						●	●																	
11.2	Soap dispenser		FRANKE: Stainless steel satin finish wall mounted soap dispenser (Code: RODX619) with approx. 1 litre volume holder, size 132(d) x 140(h) z 200(w)mm	●				●							●		●	●	●	●		●		●	●	●	●		●			●	●						●	●																	●
11.3	Waste bin wall mounted		FRANKE: Stainless steel satin finish wall mounted waste bin (Code: RODX605) with approx. 23 litre bag holder, size 168(d) x 460(h) z 355(w)mm	●							●			●							●		●	●	●	●		●			●	●		●		●		●	●																	
11.4	Baby diaper bin		FRANKE: Set Franke waste bin (Code: STRX 607) and hinged lid (Code: STRX 608) for surface mounting. Stainless steel stratos waste bin with hinged lids. Both are finished with a layer InoxPlus to avoid fingerprints and to facilitate cleaning (easy to clean)																●																																							
12.1	Shower spout		COBRA: Vandalproof shower head, single-function, chrome. Includes: 1/2" BSP male inlet, 10L/min maximum flow restrictor, self-cleaning spray nozzle, and minimum flow pressure 50 kPa. (Code: COB-KP2-6).																																																					●
12.2	Shower mixer		COBRA: Noka Single lever undertile bath/ shower mixer (Code: NA-956) All ½" female connections. SANS 226 TYPE 2. To include single lever undertile shower mixer with sliding wall flange.																																																					●
12.3	Shower drain		COBRA: Shower p-trap, rough brass. Includes: shallow seal, chrome-plated grating, and 11/2" female outlet. (Code: COB-373)																																																					●

DESTUDIO
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				GUARDHOUSE	Pedestrian Screening Walkway	Outside covered area	Multipurpose meeting rooms	External toilet	MAIN CENTRAL AREA	Help Desk	Admissions counter/ Reception	Records Room	Waiting area	CCMDD collection kiosk	Play area	Toilet and HWB - male	Toilet and HWB - female	Universal toilet	Mother's Room	ACUTE CARE (Emergency & Minor Ailments)	Emergency/ Birthing Room	Sub wait Acute	Preparation/ Vitals Room	Consulting room	Counselling room	Sputum collection booth	CHRONIC CARE	Sub wait	Consulting room	PROMOTIVE & PREVENTATIVE HEALTH /Maternal and	Sub wait area	Child Health Consulting	Maternal Health Consulting Room	SHARED SUPPORT ROOMS	Management office	Community Outreach Team office	Clean utility	PABX/ Server room	Dirty Utility	Store - medicine	Store - general	Store - linen	Store - surgical and consumable	Store - stationery	Staff rest	Staff toilets & lockers with lobby	Cleaner's room & store	EXTERNAL	Laundry	General waste	Medical waste	Yard (General)	Gardener store	Gas store	Ablution for Gardener
12.4	Shower cubicle		900 Pivot door with 900 return panel "Origin group" or similar approved (Adjust: 976 - 1008) Aluminium with white powdercoat finish and frosted laminated safety glass to comply with SANS 10400.																																														●
12.5	Shower amenity rack		FRANKE: Brushed stainless steel amenities rack (Code: BHM7B)																																													●
12.6	Shower bathtowel rail		FRANKE: Double towel rail (Code: BHM 12P) manufactured from polished stainless steel.																																													●
13.0	Urinal		VAAL: (Code: Sweetpea Wall Hung Bowl - 705126/705127) vitreous china wall hung "Sweetpea" urinal installed with concealed (back inlet) flushvalve (Cobra FJ8.102 or equivalent). Overall size 565 x 275 x 310 mm. Back inlet fittings (code 7054Z2) include a 38 mm c.p. domical grating, a spreader (with a 20 mm diameter thread), and two hanger brackets.														●																																	
14.1	WC		VAAL: Orchid Wall Hung Pan (Code: 439016) Vitreous china "Orchid" back inlet (code 439016) 90° wall hung open rim pan. Back inlet can be used with a concealed cistern, Vaal Sanitaryware duct cistern (code 7116DP. Flush volume 6/3 litres, subject to the pan being installed with a cistern providing an effective 6/3 litre flush volume. Marley SG47 pan collar or equivalent. Jazz double flap thermoset seat (code 8531Z0). Uniset 130 Skate white control panel (code 439009)														●	●		●																															
14.2			VAAL: Vitreous china "Orchid Paraplegic" back inlet (code 439016) 90° wall hung open rim pan. Pan can be used with a concealed cistern. Flush volume 6/3 litres. Floor bracket (code 8082Z0), Jazz thermoset seat (code 8531Z0), DPI Flushfit, Marley SG47 pan collar or equivalent, 32mm Stainless Steel rear grab rail (code Sr1), 32mm Stainless Steel side grab rail (code Dl2)					●											●				●																											
14.3			VAAL: Vitreous china "Orchid" close coupled 90º outlet wall hung open rim pan (code 438600) and matching 6 litre pushbutton top dual flush back inlet cistern (code 4386DT) complete with lid, fitments Floor bracket (code 8082Z0) or bolt-through-the-wall bracket (code 8084Z0). Jazz double flap thermoset seat (code 8531Z0)	●																																													●
15.1	Toilet roll holder		FRANKE: Double toilet roll holder with spindle system for wall mounting, stainless steel, surface satin finished, material thickness 0.8 mm, folded front cover, cylinder lock with Franke standard key, for 2 rolls with max. Ø 120 mm, second roll will be released after consumption of first roll, with spindles, reserve roll not visible, incl. stainless steel screws and dowels. (Code: RODX672)	●				●									●	●	●	●				●																				●									●
15.2	Sanitary bin		FRANKE: 0,8mm Stainless steel with satin finish sanitary towel and disposal bin for wall mounting, size 130(d) x 469(h) x 350(w)mm, approx. 6 liter capacity with integrated bag holder and self closing lid (Code: RODX612). Cylinder lock with Franke standard key, incl. stainless steel screws and dowels.					●										●	●	●				●																				●									
15.3	Paper towel dispneser		FRANKE: Paper towel dispenser, waste bin combination (Code: RODX602) for wall mounting, stainless steel, surface satin finished, material thickness 0.8 mm, folded front cover, cylinder lock with Franke standard key, loading capacity 500 - 800 pcs. of paper depending on convolution, waste bin with approx. 23 liter capacity, incl. stainless steel screws and dowels	●				●									●	●	●			●		●																				●									●
15.4	Hand Dryer		FRANKE; JETSTREAM AIRTRONIC Warm Air Hand Dryer Jetstream Airtronic Sensor operated hand dryer for wall mounting manufactured from Grade 304 1,2mm Stainless Steel, brushed finish. (Code: 2500002), size, 245 x 140 x 167mm Include automatic cut-off, Warm air output of 90m/s at 55°C, adjustable sensitivity from 50 to 250mm & Vandal resistant lock, screws and key wrench	●				●									●	●	●	●				●																				●									●
16.1	WC hand rail		FRANKE: Stainless steel angle Bar 135° (Code: CNTX700A), size Diameter: 32(ø) x 256(h) x 618(w) x 91(d)mm. Fine grip surface that complies with European safety standards to prevent slipping.					●											●				●																											
16.2	WC hand rail		FRANKE: Stainless steel cistern back grab rail (Code: CNTXBR) Diameter: 32(ø) x 750(w) x 260(d) mm					●											●				●																											
17	Coat hanger		FRANKE: Double robe hook for wall mounting, 304 stainless steel, round cover to conceal the fixing of screws, incl. stainless steel screws and dowels, all in stainless steel satin finish. (Code: Hooks: MEDIUS)	●				●									●	●	●	●		●		●	●	●			●			●	●																		●
18.1	Vanity slabs		PG BISON: 19mm SURRINO composite acrylic modiefied polyester resin countertop system	●													●	●		●	●	●		●																											
18.2	Polished & sealed concrete slab (Sputum counter slab detail)		In-situ cast concrete slab to be polished and grinded and sealed with appropriate sealant; all to the satisfaction of the architect. (Sealant colour: Clear)					●																		●																							
18.3	Polished granite slab (Colour: Rustenburg Granite)		30mm Rustenburg Granite slab, polished on all exposed pencil edges with beveled edges; all according to architect detail					●							●																																	
19.0	Undercounter geyser		KWIKOT: 10litre undercounter water heater (Code: FPRX-10-UB) (or similar approved) to be installed according to the strict recommendations and specifications of the manufacturer.				●																																									


A
B
C
D
EXISTING FENCING, including gates, posts, etc, to be demolished and be made good
Existing boundary wall to be demolished and be made good
Existing vehicular sliding gate to be demolished and be made good
Existing pedestrian gate to be demolished and be made good
Existing borehole to remain, ensure that lid/ covering can accommodate for new parking facility
EXISTING BOREHOLE
Existing towerlamp to be demolished and be made good
EXISTING GUARD HOUSE 11.1m²
Existing guardhouse to be demolished and be made good
Existing DB to remain - to ensure that it is fully functioning and complying with NRR & all relevant standards
Existing towerlamp to remain
EXISTING MAST 6.3m²
EXISTING GENERATOR 14m²
EXISTING MAST ANCHOR
EXISTING PAVEMENT 432.7m² - to be relocated as indicated on site plan; existing position to be made good after relocation so as to receive new ground finish
EXISTING CARPARK 55.4m²
Existing towerlamp to remain
Existing towerlamp to be demolished and be made good
EXISTING MAST
Existing towerlamp to remain
Existing towerlamp to remain
Existing towerlamp to remain

LEGEND

- Remove trees
- Existing Trees
- New Trees
- New Shrubs

SAFETY SIGNS

TYPES: PV-PHOTOBISTORY = CIRCULAR, RED
SLOTOP = OCTAGONAL
RED AND WHITE.
SIZE: 600 X 600mm
MATERIAL OF BACKING SHEET: ALUMINIUM
STEEL, PLASTIC, VINYL, RETROHELECTIVE.
MATERIAL SHOULD CONFORM WITH SABS 1519
THE SURFACE SHOULD NOT BE EMBOSSED
SIGN SHOULD BE RETROHELECTIVE
SIGNS SHOULD NOT BE DECALED

PV CODE: R3 | STOP S CODE: R1 | 10 CODE: R1

ROAD MARKINGS

ALL ROAD MARKINGS TO BE ACCORDING TO THE SOUTH-AFRICAN GUIDE OF ROAD TRAFFIC SIGNS.
THE FOLLOWING OF PARKINGS LOTS WILL NOT EXCEED THE FOLLOWING:
LONGITUDINAL DIRECTION: 3%
CROSS SLOPE 5%
THE : LONGITUDINAL GRADIENTS OF DRIVEWAYS WILL NOT EXCEED 5%
THE : LONGITUDINAL GRADIENTS OF THE ACCESS ROAD OVER THE DRIVEWAY AS WELL AS THE FIRST AND LAST 5M OF ACCESS ROADS ON THE SITE WILL NOT EXCEED 4%
ALL SHUNTS SHOULD BE A MINIMUM OF 1000mm

SIGNS

Signs should preferment except route signage size 150 x 150mm, in SABS 1519 certified HDS plastic with natural concrete aluminium frame hung from ceiling with stainless steel chains or cables or fixed to wall in the position indicated.

Fire hydrants should be provided when building areas exceed 1620m² @ a rate of 1 per 1620m².

AREA SCHEDULE

ERF PORTION 60 of FARM 219
2722m² / 0.27 Ha

Upgrade to existing Main Building:	297.4 m²
	297.4 m²
Existing outbuildings:	
Covered staff parking	58.0 m²
Existing transformer	12.0 m²
Existing mast	12.0 m²
TOTAL	82.0 m²
New additions to PHC:	347.3 m²
Multi-functional facility:	46.4 m²
Staff Facility:	46.4 m²
Security Facility:	22.0 m²
TOTAL	2722.0 m²
TOTAL COVERED AREA:	833.6 m²
TOTAL COVERAGE:	30.6%

MECHANICAL VENTILATION

All buildings mechanical ventilation requirements to be installed by the contractor in accordance with the National Building Regulations and Standards Act, SANS 10400-O, and the SANS 10400-XA requirements. As current, the Bluetooth encounter levels are naturally ventilated with louvres.

NOTES:

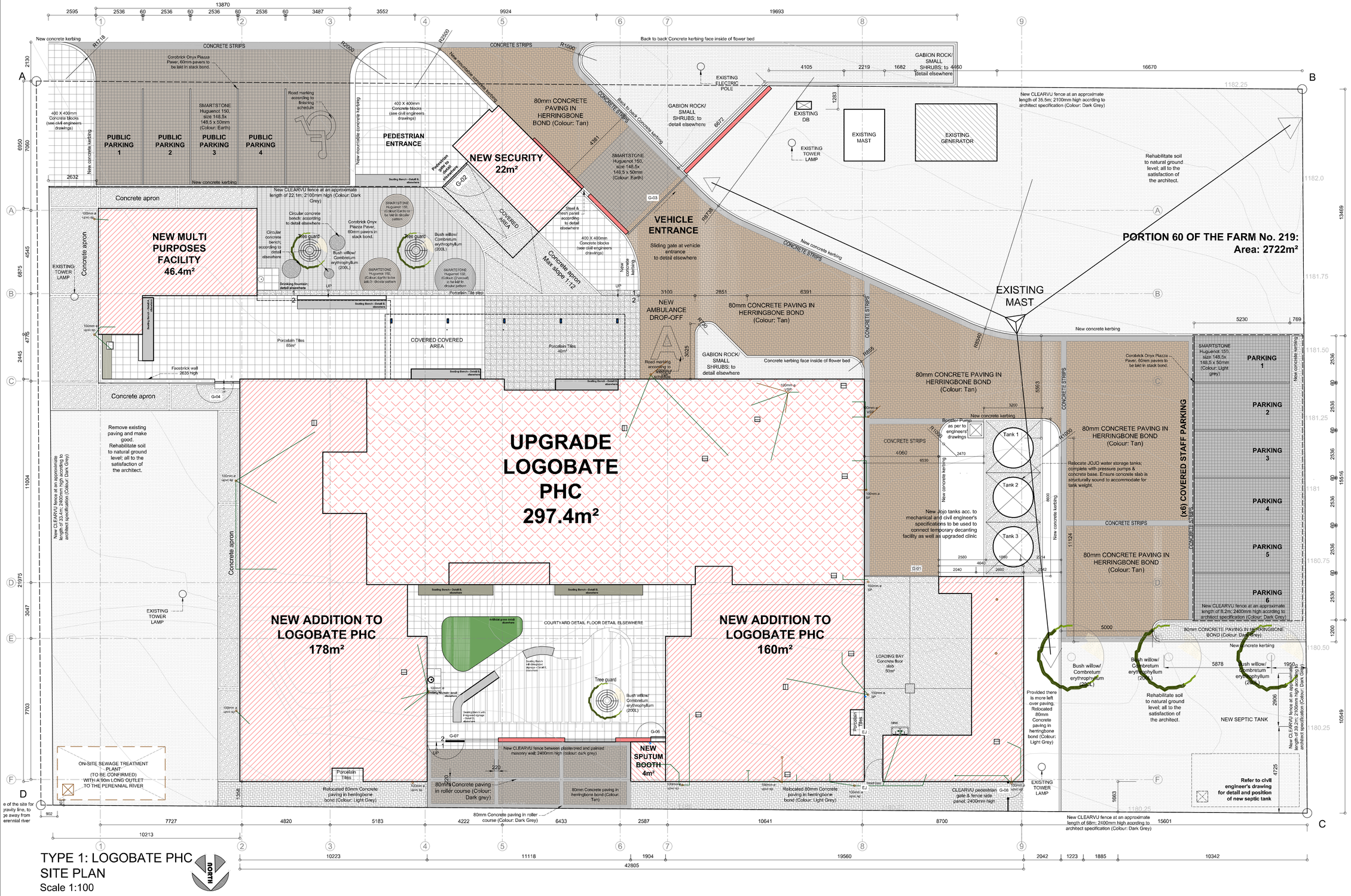
TREES:
- 100 LITER SPECIMEN'S TO BE SUPPLIED PLANT HOLES TO BE 750 X 750 X 750MM.
- PLANT IN MIXTURE OF 50:50 COMPOST & TOP SOIL.
- FOR EACH TREE MIX ONE CUP OF BONEMEAL, ONE CUP OF SUPER-PHOSPHATE AND ONE CUP OF SLOW RELEASE 3:2:1 FERTILIZER TO BE MIXED IN SOIL.
- ALL TREES TO BE STAKED WITH A METAL FENCE POLE AND ATTACHED WITH APPROVED TREE TIES.

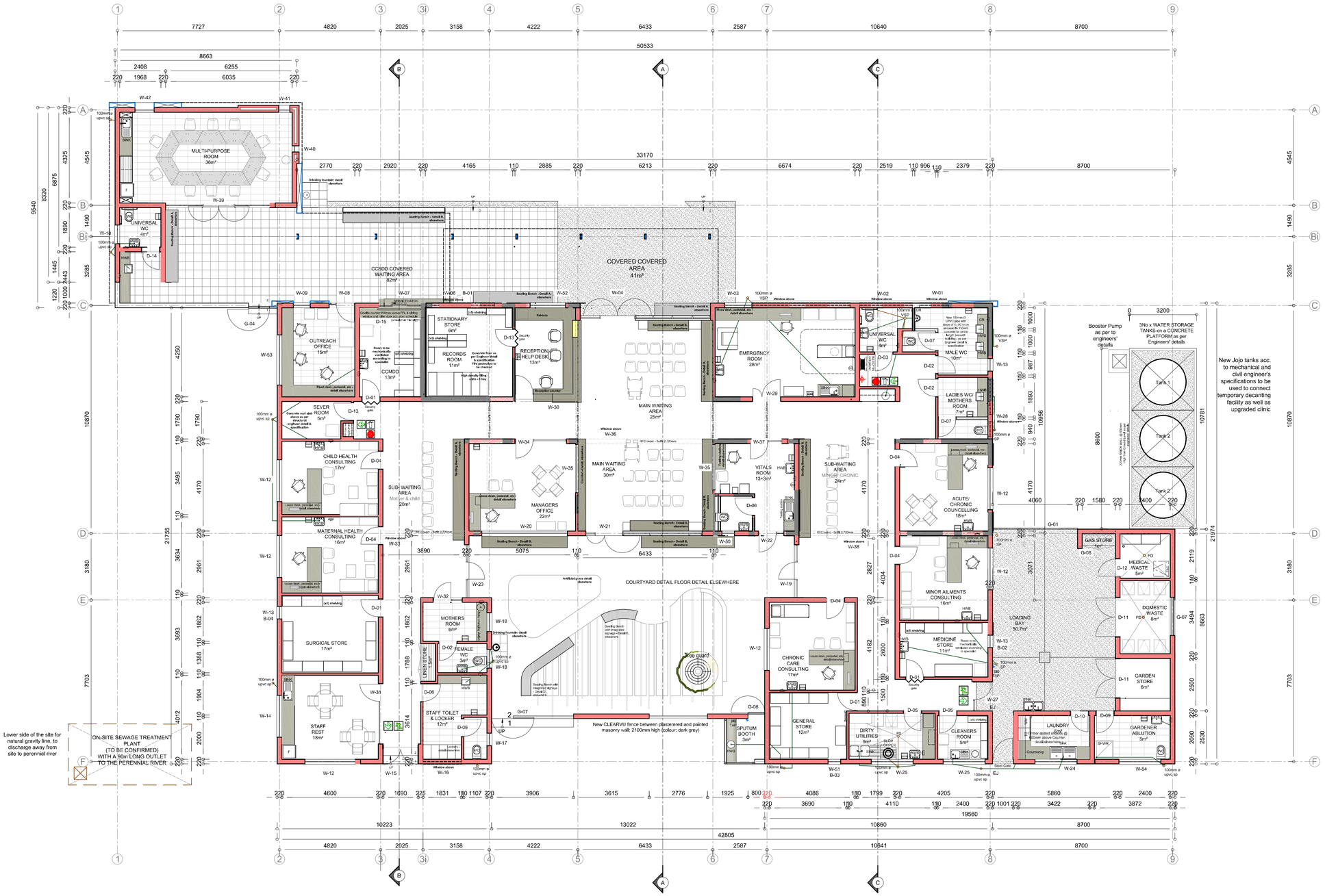
METRO:
1. MAXIMUM LONGITUDINAL GRADIENT OF PARKING BAYS 3% AND MAXIMUM CROSS SECTION GRADIENT OF PARKING BAYS 5%

2. THE SLOPE OF ROADWAYS WILL NOT EXCEED 5%. THE LONGITUDINAL SLOPE OF THE ACCESS ROAD OVER THE SIDEWALK AND THE FIRST/LAST 5M OF THE ACCESS ROAD ON THE SIDEWILL NOT EXCEDD 4%

GENERAL:
1. ALL AREAS NOT VENTILATED NATURALY, TO BE SUPPLIED BY MECHANICAL VENTILATION

2. ALL EXTERNAL SEWERAGE AS PER ENGINEERS DRAWINGS AND DETAILS


NEW MULTI PURPOSES FACILITY 46.4m²
UPGRADE LOGOBATE PHC 297.4m²
NEW ADDITION TO LOGOBATE PHC 178m²
NEW ADDITION TO LOGOBATE PHC 160m²
NEW SECURITY 22m²
NEW SPUTUM BOOTH 4m²
NEW AMBULANCE DROP-OFF
VEHICLE ENTRANCE
PEDESTRIAN ENTRANCE
PORTION 60 OF THE FARM No. 219: Area: 2722m²
(x6) COVERED STAFF PARKING
PARKING 1
PARKING 2
PARKING 3
PARKING 4
PARKING 5
PARKING 6
PUBLIC PARKING 1
PUBLIC PARKING 2
PUBLIC PARKING 3
PUBLIC PARKING 4
EXISTING MAST
EXISTING GENERATOR
EXISTING ELECTRIC POLE
EXISTING DB
EXISTING TOWER LAMP
EXISTING TANK
Tank 1
Tank 2
Tank 3
Booster Pump as per to engineers' drawings
Relocate JOJO water storage tanks; complete with pressure pumps & concrete base. Ensure concrete slab is structurally sound to accommodate for tank weight.
New Jojo tanks acc. to mechanical and civil engineer's specifications to be used to connect temporary decanting facility as well as upgraded clinic
LOADING BAY Concrete floor slab 50m²
COURTYARD DETAIL FLOOR DETAIL ELSEWHERE
ON-SITE SEWAGE TREATMENT PLANT (TO BE CONFIRMED) WITH A 90m LONG OUTLET TO THE PERENNIAL RIVER
NEW SEPTIC TANK
Refer to civil engineer's drawing for detail and position of new septic tank
80mm CONCRETE PAVING IN HERRINGBONE BOND (Colour: Tan)
80mm CONCRETE PAVING IN HERRINGBONE BOND (Colour: Dark Grey)
80mm Concrete paving in roller course (Colour: Dark Grey)
80mm Concrete paving in herringbone bond (Colour: Tan)
Relocated 80mm Concrete paving in herringbone bond (Colour: Light Grey)
Provided there is more left over paving. Relocated 80mm Concrete paving in herringbone bond (Colour: Light Grey)
CONCRETE STRIPS
COVERED AREA
Concrete apron
Concrete apron Max slope 1:12
New concrete kerbing
New roundtube concrete kerbing
Back to back Concrete kerbing face inside of flower bed
Concrete kerbing face inside of flower bed
Road marking according to traffic engineer's specifications
Corobrick Onyx Plazza Paver, 60mm pavers to be laid in stack bond.
SMARTSTONE Huguenot 150, size 148.5x 148.5 x 50mm (Colour: Earth)
SMARTSTONE Huguenot 150, size 148.5x 148.5 x 50mm (Colour: Light grey)
400 X 400mm Concrete blocks (see civil engineers drawings)
GABION ROCK/ SMALL SHRUBS; to detail elsewhere
GABION ROCK/ SMALL SHRUBS: to detail elsewhere
New CLEARVU fence at an approximate length of 35.5m; 2100mm high accrding to architect specification (Colour: Dark Grey)
New CLEARVU fence at an approximate length of 33.4m; 2400mm high accrding to architect specification (Colour: Dark Grey)
New CLEARVU fence at an approximate length of 8.2m; 2400mm high accrding to architect specification (Colour: Dark Grey)
New CLEARVU fence at an approximate length of 68m; 2400mm high accrding to architect specification (Colour: Dark Grey)
New CLEARVU fence between plastered/red and painted masonry wall; 2400mm high (colour: dark grey)
CLEARVU pedestrian gate & fence side panel, 2400mm high
Rehabilitate soil to natural ground level; all to the satisfaction of the architect.
Remove existing paving and make good. Rehabilitate soil to natural ground level; all to the satisfaction of the architect.
Bush willow/ Combretum erythrophyllum (200L)
Tree guard
Circular concrete bench, according to detail elsewhere
Drinking fountain; detail elsewhere
Seating Bench - Detail B; elsewhere
Seating Bench with Engraved signage - Detail D; elsewhere
Porcelain Tiles 65m²
Porcelain Tiles 40m²
Porcelain Tile step
Facebrick wall 2635 high
Steel & mesh panel according to detail elsewhere
Pedestrian gate; to detail elsewhere
Sliding gate at vehicle entrance to detail elsewhere
Boundary Number; detail elsewhere
Sink
Porcelain Tiles
Shed Door
Steel Door
Concrete kerbing face inside of flower bed
Concrete apron
Concrete apron
Concrete apron



TYPE 1: LOGOBATE PHC
FLOOR PLAN
Scale 1:100

NOTES

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No	REVISION	DATE	APPROVED

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idt independent development trust

USER CLIENT

Province of the NORTHERN CAPE
Department of Health

PROJECT

LOGOBATE PHC

UPGRADE AND REFURBISHMENT TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

FLOOR PLAN

APPROVED BY

IDT: MR F GREEN — DATE
PROJECT MANAGER

IDT: MR B KOLOTI — DATE
PROGRAMME MANAGER

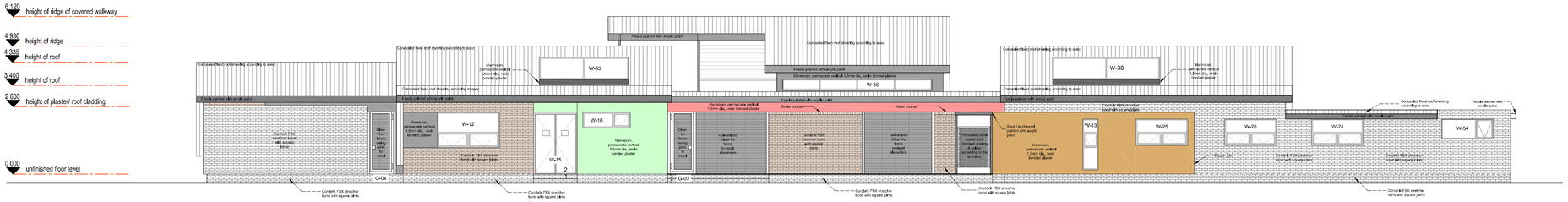
NCDoH: MR V HALVEY — DATE
ACTING DIRECTOR: INFRASTRUCTURE PLANNING

NCDoH:MR P RIET — DATE
ACTING CHIEF DIRECTOR: INFRASTRUCTURE UNIT

NCDoH: MS Z KITI — DATE
DIRECTOR: DISTRICT HEALTH SERVICES

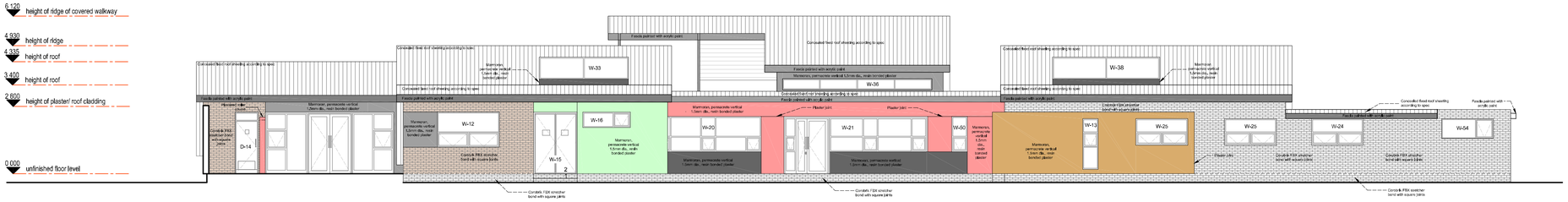
NCDoH: MR G MENTOOR — DATE
ACTING CHIEF DIRECTOR: DISTRICT HEALT SERVICES

SCALE	ISSUED
AS INDICATED	2025-07-21
DRAWING STATUS	Rev 0 — DWG No
CONSTRUCTION DRAWING	14-158_P4_03



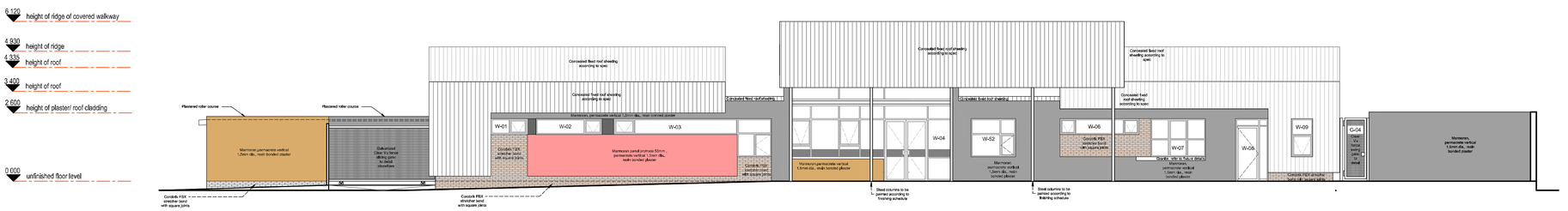
NORTH ELEVATION

SCALE 1:100



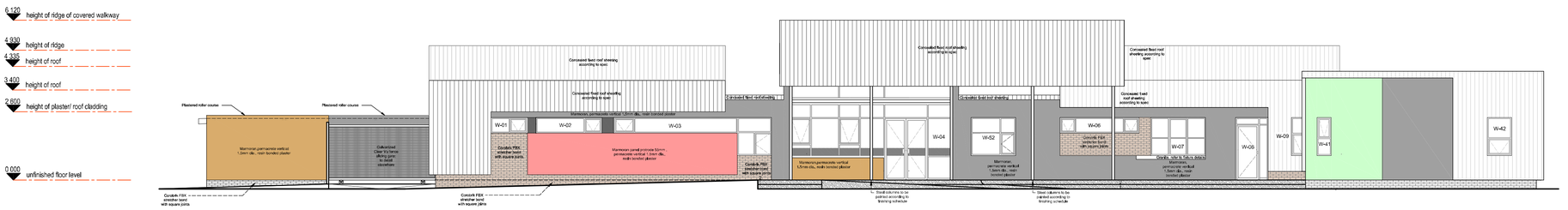
NORTH ELEVATION/SECTION COURTYARD

SCALE 1:100



SOUTH ELEVATION

SCALE 1:100



SOUTH ELEVATION MULTI FUNCTIONAL FACILITY

SCALE 1:100

NOTES

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idt independent development trust

USER CLIENT

Province of the NORTHERN CAPE
Department of Health

PROJECT

LOGOBATE PHC

UPGRADE AND REFURBISHMENT TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

ELEVATIONS 01

APPROVED BY

IDT: MR F GREEN
PROJECT MANAGER — DATE

IDT: MR B KOLOTI
PROGRAMME MANAGER — DATE

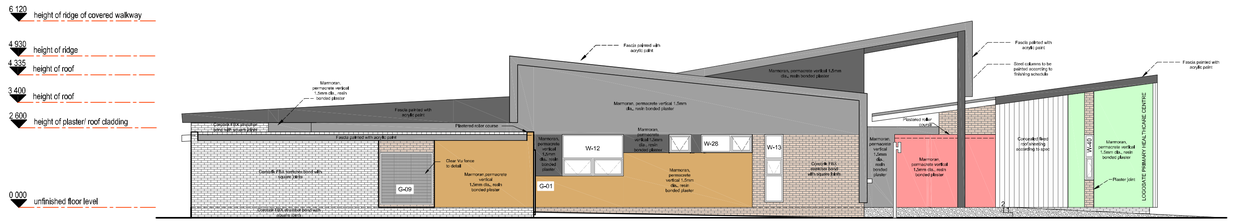
NCDoH: MR V HALVEY
ACTING DIRECTOR: INFRASTRUCTURE PLANNING — DATE

NCDoH:MR P RIET
ACTING CHIEF DIRECTOR: INFRASTRUCTURE UNIT — DATE

NCDoH: MS Z KITI
DIRECTOR: DISTRICT HEALTH SERVICES — DATE

NCDoH: MR G MENTOOR
ACTING CHIEF DIRECTOR: DISTRICT HEALT SERVICES — DATE

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	Rev 0 — DWG No
CONSTRUCTION DRAWING	14-158_P4_04


6.120 height of ridge of covered walkway
4.935 height of ridge
4.335 height of roof
3.400 height of roof
2.600 height of plaster/ roof cladding
0.000 unfinished floor level
Fascia painted with acrylic paint
Marmoran, permaxonite vertical 1.5mm dia., resin bonded plaster
Steel columns to be painted according to finishing schedule
Plastered roller course
Concrete FBX stretcher bond with square joints
Concrete FBX stretcher bond with square joints
Concrete FBX stretcher bond with square joints



TYPE 1: LOGOBATE PHC
CEILING PLAN
Scale 1:100

NORTH

0 1 2 3 4 5 6 7 8 9 10
Metres

CEILING FINISH:

1200 ANTI-FUNGAL SUSPENDED CEILING: Mineral suspended ceiling tiles: 600 x 1200 x 17mm ARMSTRONG BIO GUARD beveled tegular mineral ceiling tiles (or similar approved) in suspended grid system . (Colour: White) *See finishing schedule for fixing details.	**600 VINYL CLAD SUSPENDED CEILING (fissured texture)** Vinyl clad gypsum fissured texture suspended ceiling tiles: 600 x 600 x 12mm CAPCO (or similar approved) with exposed T in suspended grid system, and ECO-TEX (or similar approved) vinyl clad gypsum aluminium foil backed ceiling tiles with fissured texture. (Colour: white). *See finishing schedule for fixing details.
600 ANTI-FUNGAL SUSPENDED CEILING: Mineral suspended ceiling tiles: 600 x 600 x 17mm ARMSTRONG BIO GUARD beveled tegular mineral ceiling tiles (or similar approved) in suspended grid system . (Colour: White) *See finishing schedule for fixing details.	**9.6mm FLUSH PLASTERED CEILING:** Gypsum plasterboard flush plastered ceiling: 9.6mm gypsum flush plastered RHINO ceiling boards (or similar approved), and painted with approved enamel anti-fungal paint. (Colour: according to architect's approval) *See finishing schedule for fixing details.
1200 ACOUSTIC SUSPENDID CEILING Mineral fibre suspended ceiling tiles: 600 x 1200 x 15mm CAPCO Daiken Excel-Tone Constellation mineral fibre ceiling tiles, with reveal edge (or similar approved), and painted with approved acrylic paint, in suspended grid system. (Colour: white) *See finishing schedule for fixing details.	**BULKHEAD** (including horizontal- & upstand planes. Bulkhead constructed from 9.6mm gypsum flush plastered ceiling boards): Gypsum plasterboard flush plastered bulkheads: 9.6mm gypsum flush plastered RHINO ceiling boards (or similar approved), and painted with approved acrylic paint. (Colour: according to architect's approval) *See finishing schedule for fixing details.
600 ACOUSTIC SUSPENDID CEILING Mineral fibre suspended ceiling tiles: 600 x 600 x 15mm CAPCO Daiken Excel-Tone Constellation mineral fibre ceiling tiles, with reveal edge (or similar approved), and painted with approved acrylic paint, in suspended grid system. (Colour: white) *See finishing schedule for fixing details.	
1200 VINYL CLAD SUSPENDED CEILING (ripple texture) Vinyl clad ripple texture gypsum suspended ceiling tiles: 600 x 1200 x 12mm CAPCO (or similar approved) with exposed T in suspended grid system, and ECO-TEX (or similar approved) vinyl clad gypsum aluminium foil backed ceiling tiles with ripple texture. (Colour: white) *See finishing schedule for fixing details.	**FIBRE CEMENT CEILING BOARDS (paint finish):** 6mm NUTEC plain fibre cement ceiling boards with H profile steel jointing strips (or similar approved), finished with exterior acrylic matt ceiling paint to manufacturer's specifications. (Colour: white) *See finishing schedule for fixing details.
600 VINYL CLAD SUSPENDED CEILING (ripple texture) Vinyl clad ripple texture gypsum suspended ceiling tiles: 600 x 600 x 12mm CAPCO (or similar approved) with exposed T in suspended grid system, and ECO-TEX (or similar approved) vinyl clad gypsum aluminium foil backed ceiling tiles with ripple texture. (Colour: white) *See finishing schedule for fixing details.	**CONCRETE ROOFSLAB:** All according to engineer specification. Soffit of concrete roofslab to have a Class 1 off-shutter finish with approved new shutter boards

CEMENT SAND PLASTERED CEILING: Key off-shutter concrete surfaces with cement/sand mixture and bonding agent. Apply one coat Class 1 cements/sand plaster, 15mm thick, with steel trowel finish. Skim plastered ceiling with Rhinoglide gypsum 2nd coat plaster and treat with plaster primer before painting acc. schedule	
FLOATING TIMBER BULKHEAD: Floating timber bulkhead: with matt acrylic paint finish, suspended below ceiling grid with stainless steel cables, to detail elsewhere.	
FIBRE CEMENT CEILING BOARDS (Coloured marmoran finish): 6mm NUTEC plain fibre cement ceiling boards with H profile steel jointing strips (or similar approved), finished with exterior Marmoran to match exterior wall finish to manufacturer's specifications. (Colour: white) *See finishing schedule for fixing details.	
CHROMADEK COLOURED ROOF SHEETING CEILING: 0.3mm thick, with CHROMADEK finish (Colour: White), screwed to steel structure below.	
Cavity space for projection screen (Projector equipment & screen to be installed by specialist contractor). In-ceiling (concealed ceiling) electric screen for projection purposes, to include total recessed housing, access panel, remote control, etc. Unit to be installed within ceiling cavity according to the strict recommendations & specifications of the manufacturer. Screen fabric size, 3300 (wide) x 1800(drop)mm including 60mm black border all around.	
Indication that relevant ceiling is to be installed at an inclined slope	

(A) 1200 X 600mm Recessed fluorescent
(B) 600 X 600mm Recessed fluorescent
(C) 1200mm Surface mounted fluorescent
(D) 1500mm Surface mounted fluorescent
(E) 1500mm Recessed fluorescent light fitting

Recessed compact fluorescent
Recessed ceiling light
Pendant light
Pendant light
Wall light point - (3570 height above floor level)
Wall light point
Foot light (as shown on detail elsewhere)
downlight, (with dimmer switch)

Lay 135mm ISOVER: non-combustible mineral fibre Factorylite composite insulation with (reInforced foll/ white bubble) on galvanised wire at 300mm centres. Affix to the roof apex and unroll the blanket with reinforced foil facing up and white bubble facing down. Overlapping foil edges to be stapled all according to the strict recommendations and specifications of the manufacturer and according to NBR & SANS standards. or similar approved with certified thermal Resistance-value of 3.46 m2.K/W

NOTES

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No	REVISION	DATE	APPROVED

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USER CLIENT

Province of the NORTHERN CAPE
Department of Health

PROJECT

LOGOBATE PHC

UPGRADE AND REFURBISHMENT TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

CEILING PLAN

APPROVED BY

IDT: MR F GREEN — DATE
PROJECT MANAGER

IDT: MR B KOLOTI — DATE
PROGRAMME MANAGER

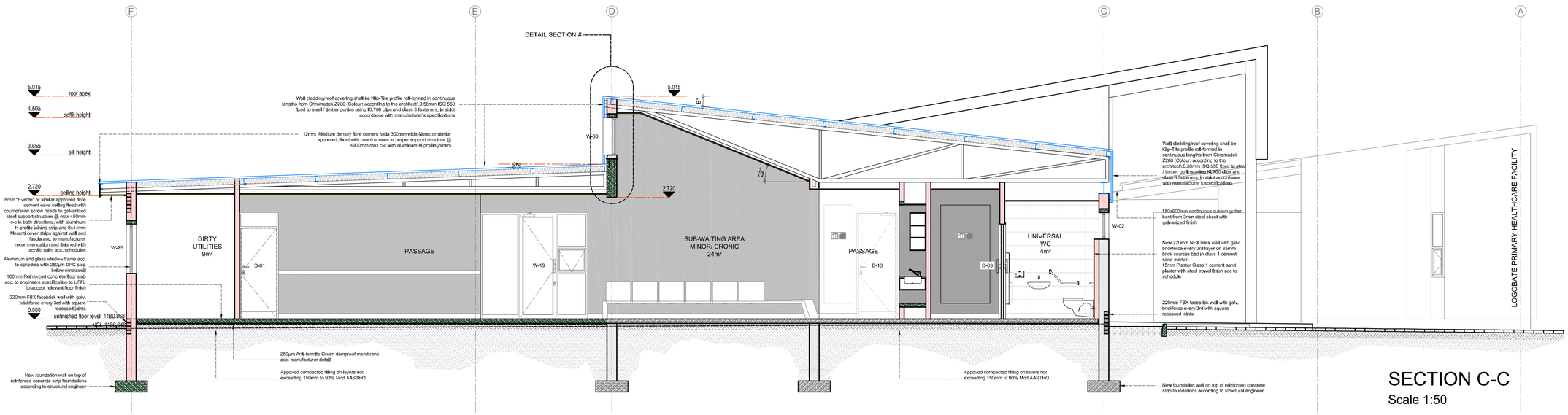
NCDoH: MR V HALVEY — DATE
ACTING DIRECTOR; INFRASTRUCTURE PLANNING

NCDoH:MR P RIET — DATE
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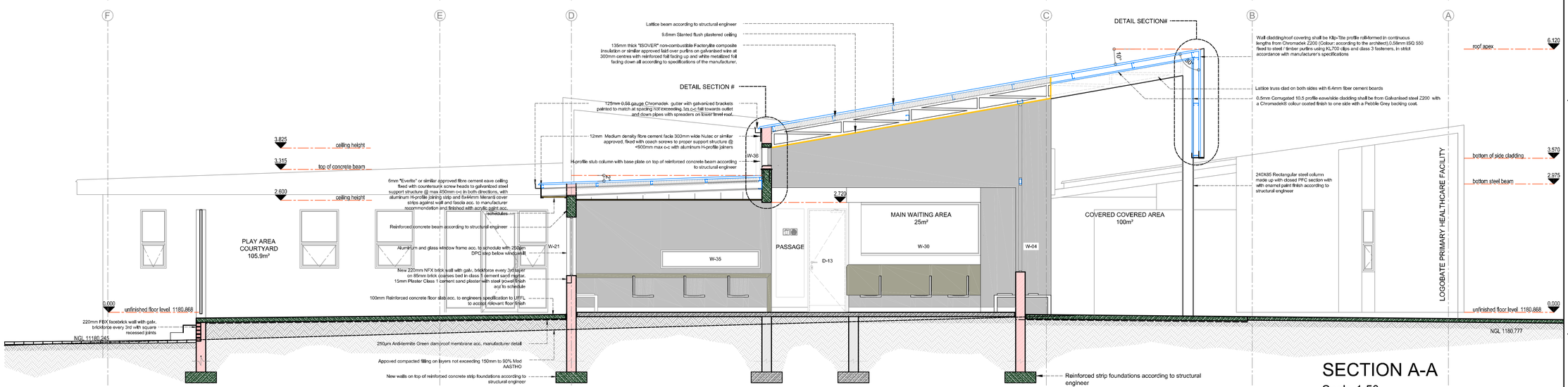
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DIRECTOR: DISTRICT HEALTH SERVICES

NCDoH: MR G MENTOOR — DATE
ACTING CHIEF DIRECTOR: DISTRICT HEALT SERVICES

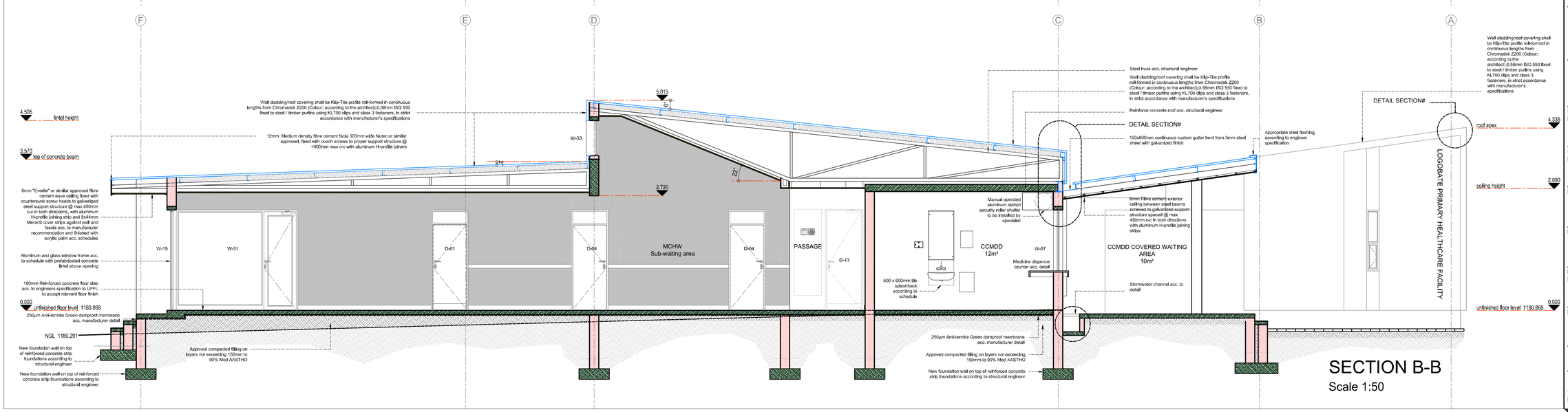
SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_06**



SECTION C-C
Scale 1:50



SECTION A-A
Scale 1:50



SECTION B-B
Scale 1:50

NOTES

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No	REVISION	DATE	APPROVED

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USER CLIENT

Province of the NORTHERN CAPE
Department of Health

PROJECT

LOGOBATE PHC

UPGRADE AND REFURBISHMENT TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

SECTIONS
A-A
B-B
C-C

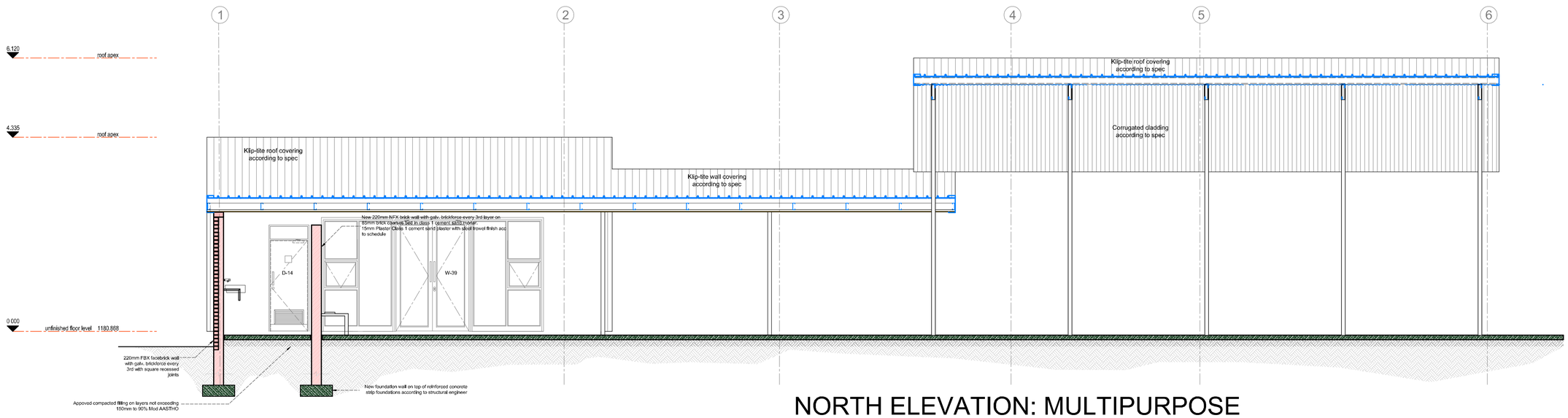
APPROVED BY

	DATE
IDT: MR F GREEN PROJECT MANAGER	
IDT: MR B KOLOTI PROGRAMME MANAGER	
NCDoH: MR V HALVEY ACTING DIRECTOR: INFRASTRUCTURE PLANNING	
NCDoH:MR P RIET ACTING CHIEF DIRECTOR: INFRASTRUCTURE UNIT	
NCDoH: MS Z KITI DIRECTOR: DISTRICT HEALTH SERVICES	
NCDoH: MR G MENTOOR ACTING CHIEF DIRECTOR: DISTRICT HEALT SERVICES	

SCALE	ISSUED
AS INDICATED	2024-06-19

DRAWING STATUS
CONSTRUCTION DRAWING

Rev 0 **DWG No** **14-158_P4_07**



NORTH ELEVATION: MULTIPURPOSE

SCALE 1:100

NOTES

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No	REVISION	DATE	APPROVED

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Department of Health

PROJECT

LOGOBATE PHC

UPGRADE AND REFURBISHMENT TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

DECANTING
SECTIONS

APPROVED BY

IDT: MR F GREEN — DATE
PROJECT MANAGER

IDT: MR B KOLOTI — DATE
PROGRAMME MANAGER

NCDoH: MR V HALVEY — DATE
ACTING DIRECTOR: INFRASTRUCTURE PLANNING

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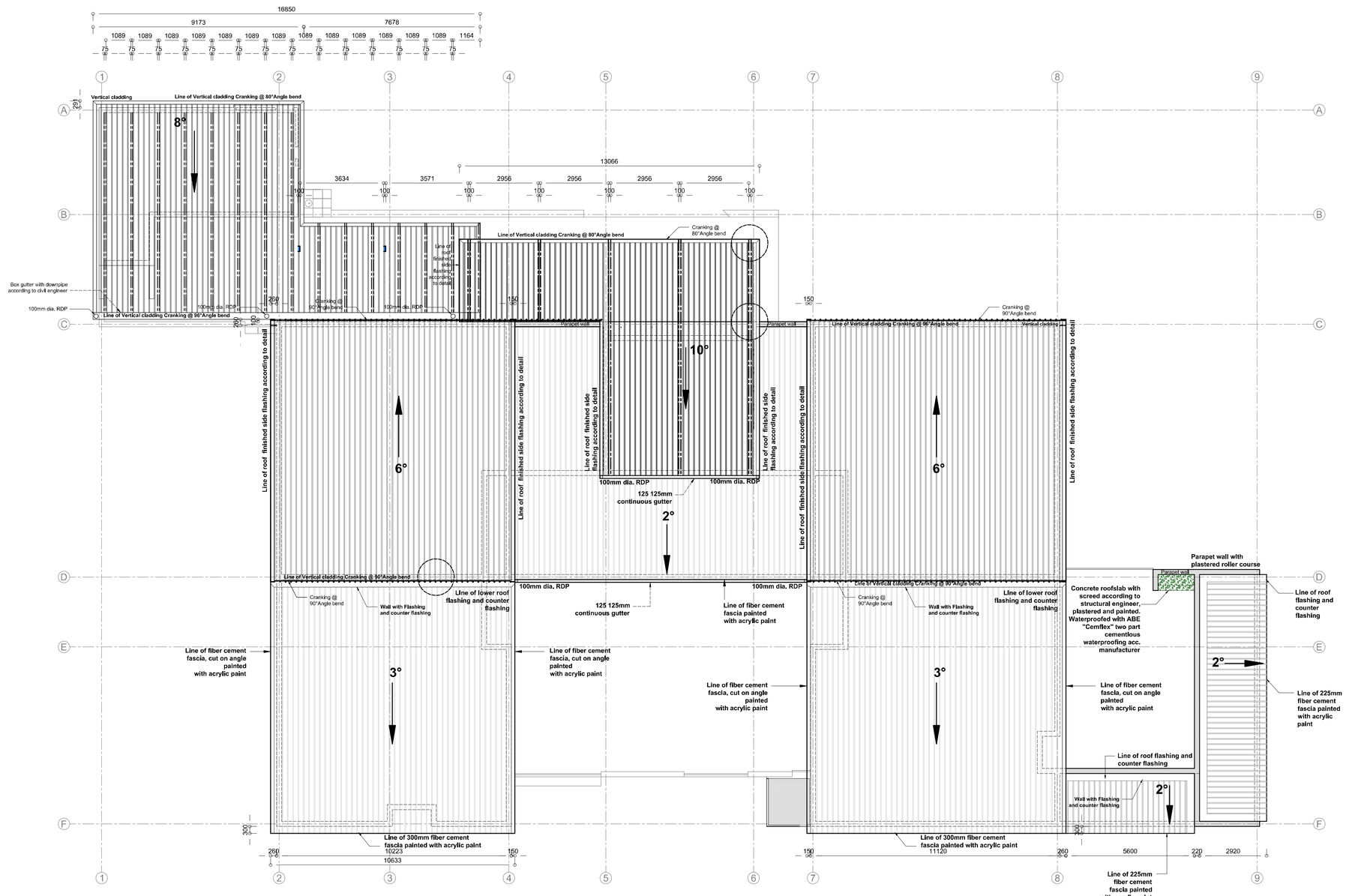
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SCALE	ISSUED
AS INDICATED	2024-06-19

DRAWING STATUS
CONSTRUCTION DRAWING

Rev 0 **DWG No** 14-158_P4_08



LOGOBATE PHC
ROOF PLAN
Scale 1:100

NORTH

0.53mm thick Klip-Tite profile roll-formed in continuous lengths from Chromadek Z200 (Colour: according to the architect), concealed fixed roof sheeting, 0.58mm ISQ 550 fixed to steel / timber purlins using KL700 clips and class 3 fasteners, installed complete with all relevant flashings (Colour: according to the architect), by a specialist contractor (approved by GRS), all in accordance with the manufacturer specifications and recommendations.

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No	REVISION	DATE	APPROVED

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PROJECT

LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

ROOF PLAN

APPROVED BY

IDT: MR B KOLOTI — DATE
PROGRAMME MANAGER

NCDoH: MR R BROWN — DATE
DIRECTOR: INFRASTRUCTURE PLANNING

NCDoH:MS N MAZIBUKO — DATE
CHIEF DIRECTOR: DISTRICT HEALTH

NCDoH: DR LG MABONA — DATE
DIRECTOR: DELIVERY

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_10**

NUMBER AND QUANTITY	W-01 1 (ONE)	W-02 1 (ONE)	W-03 1 (ONE)	W-04 1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung, (x1 sidehung) and (x3) fixed panel	Custom aluminium shopfront with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect). Double door with 180 degree swing, delayed action and hold open
IRONMONGERY	As supplied by specialist	As supplied by specialist	As supplied by specialist	QS HARDWARE: (x2) pair - stainless steel round section T handle, size 30x400x500mm (Code: QS2501BTB), back to back pullhandles on each door leaf (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x2) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x2) each QS900 transom concealed door closer with bottom pivot and hold open function (x2) each - door stop (Code: QS4421) (x1) pair - top & bottom flush bolts on passive door leaf only (x1) each - brush seal on bottom of each door panel (x1) break glass box for fire escape All items to be confirmed according to recommendations and specifications of the specialist.
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Top Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.975 for width of shopfront

NUMBER AND QUANTITY	W-05 1 (ONE)	W-06 1 (ONE)	W-07 PATIO TYPE 1 (ONE)	W-08 1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Sidehung and (x3) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Sidehung and (x1) fixed panel	Custom aluminum sliding windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). Sliding patio window (XO), top hung and (x1) fixed panels (x1). Sliding window track should be recessed below surface of counter top to avoid any obstruction	Custom aluminium door- & (x1) sidelight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).
IRONMONGERY	As supplied by specialist	As supplied by specialist	Manual operated aluminum slatted security roller shutter, Trellidor "Rollerstyle" or similar approved, manufactured from 55mm x 1.2mm structural grade aluminum and extruded from a double wall vented slat only. With powdercoat finish to match window frame. Installed complete above window opening by specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Laminated safety glass door panel and safety glass side- & top light as supplied by the manufacturer to comply with AAAMSA & NBR standards.

NUMBER AND QUANTITY	W-09 1 (ONE)	W-10 1 (ONE)		
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (x2) fixed panel		
IRONMONGERY	As supplied by specialist	As supplied by specialist		
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.		

GENERAL
Screens shall be the Window Wall system as supplied by HBS Aluminium Systems or similar approved.
Manufacture shall be in accordance with the current manuals as provided by HBS Aluminium Systems All aluminium work must comply with the latest edition of publications of Messer AAAMSA An AFSA Certificate of Conformance In respect of product finishes must be obtained.

MATERIALS
Material shall be of 6063T6 aluminium alloy with a minimum structural wall thickness of 1.8mm. Outer frame to infill panels will be a nominal depth of 166 or 111mm.

CONSTRUCTION
Outer frame to consist of a single part compensating head and jamb and continuous sub-Sill.
Infill panels are to be constructed from double cavity tubular profiles, forming a wet cavity with drainage slots to allow for transom drainage to the exterior. All glazing rebates to be 25mm. Joints of the infill panels shall be notched and screwed to spigots with No 8 stainless steel screws. Where required, a 111mm or 166mm Split mullion assembly must be used to couple infill panels together, still making allowance for all thermal and dynamic movement. Door panels within the screens to have a 4-edge door rebate with gasket seal all round.

INSTALLATION
All aluminium work to be done in strict accordance to the manufacturers specifications by a specialist firm. All openings to be checked on site before any materials are ordered or manufacture of window and door frames. Panel-by-panel installation from Inside or from Outside the building. All aluminium frame works to be provided with a continuous silicone seal around all construction openings.

HARDWARE
All sashes to have mechanical Corner Connectors, wind locks and multi-point locking handles. Sashes not to exceed 1700mm wide by 1200mm high as per specification. Friction stay to suit max weight and size of Sash.
Door hardware shall be compatible with the system and will take cognisance of the finish specification of the applicable area. See Hardware Schedule for door.

FINISH
Sections will be painted in accordance with SABS1578, parts1 & 2. Powercote, and anodised aluminium, should be protected to prevent any damage or stain by cement, etc. All powder coating to be 25 micron thick and shall be executed in strict adherence to sabs 999

GLAZING
Glass thickness should be in accordance with SANS 10400 and designed by a competent person.
Glazing is to be carried out in accordance with SABS 0137, with particular attention to size limitations, packing and setting blocks.
Thicknesses from 6-28mm.
All glass panes to be marked for specification and thickness

STRUCTURAL PERFORMANCE
System shall meet or exceed the requirements of SANS613 and the design loading determination by SABS 0160 for this application.
Deflection of structural members shall not exceed L/175 or L/240+6mm as applicable.

THERMAL PERFORMANCE
System shall comply with SANS204 in applications where Fenestration makes up more than 15% of Floor area.
U-value with Air filled glazing units = 3.36
For U-values below 3.38 use Argon or Krypton gas filled glazing units.

BURGLAR PROOFING SCHEDULE

SPECIFICATION	NUMBER	SPACE WHERE APPLICABLE	WINDOW	WIDTH	HEIGHT
Non-retractable flat burglar bars, "Trellidor Burglar Guard" or similar approved consisting of electro-galvanized steel sections.	B-01	Records room/stationary store	W-06	3000mm	595mm
Vertical members to have a maximum spacing of 100mm ctc and horizontal sections a maximum spacing of 300mm ctc with powder coat finish to match window frame (colour: according to architect)	B-02	Medicine store	W-13	600mm	2210mm
	B-03	General store	W-51	600mm	1955mm
Burglar bars to be manufactured supplied and fitted complete within window reveals by specialist contractor	B-04	Surgical store	W-13	600mm	2210mm

NOTES

UNDER NO CIRCUMSTANCES MAY THIS DOCUMENT BE REPRODUCED WITHOUT THE CONSENT OF DEJONG DESIGN STUDIO CC.

DRAWINGS MAY NOT BE SCALED.
ALL DIMENSIONS AND HEIGHTS MUST BE CORRELATED BEFORE ANY WORK COMMENCES OR BEFORE MATERIALS ARE ORDERED.
IT IS THE CONTRACTOR'S RESPONSIBILITY TO SET-OUT CONSTRUCTION WORK ACCURATELY ON SITE WITH REFERENCE TO SITE BOUNDARIES, BUILDING LINES SERVITUDES AND ESPECIALLY IN CIRCUMSTANCES WHERE WORK CONNECT WITH EXISTING STRUCTURES.
ALL FLOOR LEVEL HEIGHTS INDICATED ON DRAWINGS REFER TO UNFINISHED LEVELS AND ANY AMBIGUOUS OR CONTRADICTORY INFORMATION SHOULD IMMEDIATELY BE CO-ORDINATED WITH THE ARCHITECT. A FULL SET OF DRAWINGS SHOULD BE KEPT ON SITE BY THE CONTRACTOR.
ALL DIMENSIONS INDICATE ON DRAWINGS SHOULD BE SET-OUT ON A LEVEL HORIZONTAL PLANE.
THE CONTRACTOR SHOULD MAKE USE OF CORNER PROFILES MARKED ON 85MM BRICK GAUGE, UNLESS DIFFERENTLY SPECIFIED.

THE CONTRACTOR IS RESPONSIBLE TO USE APPROVED DAMP PROOF COURSE IN EXTERNAL WALLS AND DAMP PROOF MEMBRANES UNDER FLOOR SLABS.
THE QUALITY OF ALL MATERIALS AND WORKMANSHIP SHOULD COMPLY WITH THE RELEVANT S.A.B.S. SPECIFICATIONS AND STANDARDS.
ALL MINIMUM STANDARDS AS SET OUT IN THE NATIONAL BUILDING REGULATIONS AND STANDARDS ACT SANS 10400 ARE ALSO APPLICABLE IN SITUATIONS WHERE NOT SPECIFICALY REFERRED TO.
ALL GEYSERS AND WARM WATER MUST COMPLY WITH SANS 10254. WATER RETICULATION INSTALLATION MUST COMPLY WITH SANS 10252-1.ALL UPVC PIPES MUST COMPLY WITH SANS 966.ALL COPPER PIPES MUST COMPLY WITH SANS 460.ALL HDPE PIPES MUST COMPLY WITH SANS 533.ALL TAPS AND MIXERS MUST COMPLY WITH SANS 226, SANS 1026, SANS 1808-35 EN 1808-37.

No	REVISION	DATE	APPROVED

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PROJECT
LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING
WINDOW SCHEDULE 01

APPROVED BY

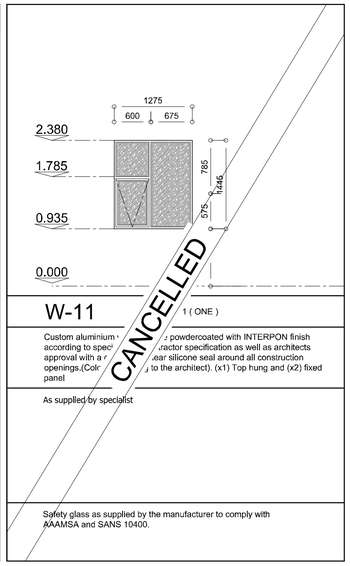
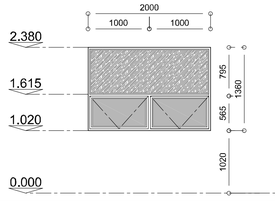
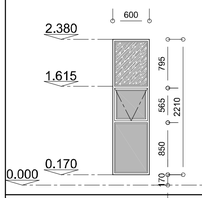
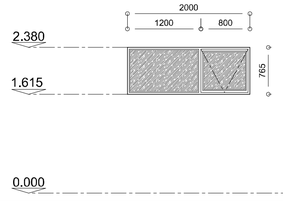
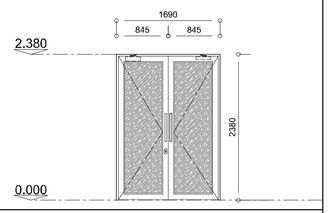
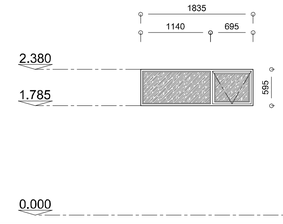
IDT: MR C TSEISI
PROGRAMME MANAGER — DATE

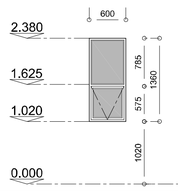
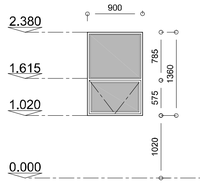
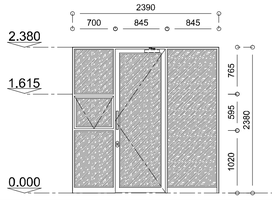
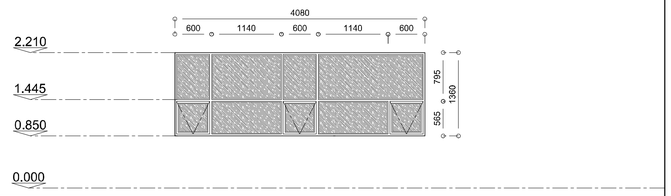
DOH: MR M NTOLOSI
DIRECTOR INFRASTRUCTURE PLANNING — DATE

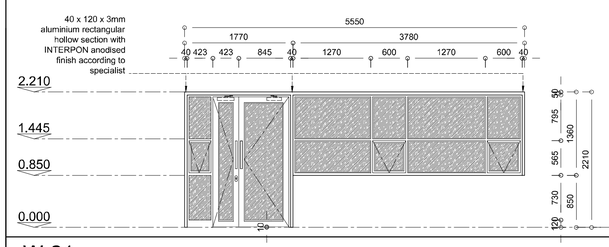
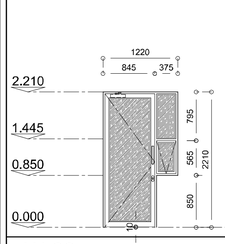
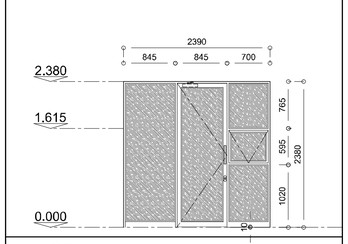
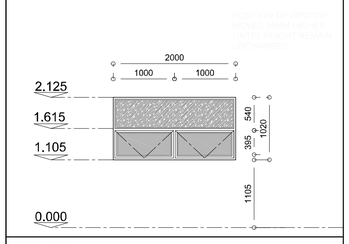
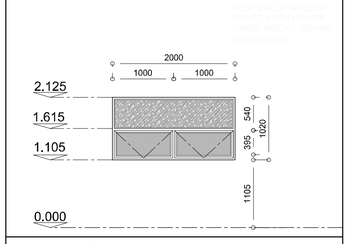
DOH:MS N MAZIBUKO
CHIEF DIRECTOR DISTRICT HEALTH — DATE

DOH: Dr LG MABONA
ACTING CHIEF DIRECTOR — DATE

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	Rev 0 DWG No
CONSTRUCTION DRAWING	14-158_P4_13

	W-11	W-12	W-13	W-14	W-15	W-16
					TO ACT AS EMERGENCY EXIT DOOR PROVIDE BREAKABLE GLASS BOX WITH DOORKEY - TO BE MOUNTED AGAINST WALL ADJACENT TO DOOR THAT IS VISUALLY ACCEPTABLE TO COMPLY WITH NBR STANDARDS AND REGULATIONS. 	
NUMBER AND QUANTITY	1 (ONE)	6 (SIX)	3 (THREE)	1 (ONE)	1 (ONE)	1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium [illegible] powdercoated with INTERPON finish according to spec[illegible]ractor specification as well as architects approval with a [illegible]ear silicone seal around all construction openings.(Col[illegible] to the architect). (x1) Top hung and (x2) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Top hung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x2) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium double door, all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel
IRONMONGERY	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist	QS HARDWARE: (x2) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel (x1) each - lock box with breakable glass All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.

	W-17	W-18	W-19	W-20
				
NUMBER AND QUANTITY	1 (ONE)	2 (TWO)	1 (ONE)	1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium door- & (x3) sidelight & (x1) top hung; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x3) Top hung and (x6) fixed panel
IRONMONGERY	As supplied by specialist	As supplied by specialist	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist
GLASS AND GLAZING	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.850 to 1.425 for width of shopfront

	W-21	W-22	W-23	W-24	W-25
					
NUMBER AND QUANTITY	1 (ONE)	1 (ONE)	1 (ONE)	1 (ONE)	2 (TWO)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium shopfront with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect), Double door with 180 degree swing with delayed action and hold open	Custom aluminium door- & (x1) sidelights & (x1) top hung; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium door- & (x3) sidelight & (x1) top hung; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Top hung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel
IRONMONGERY	QS HARDWARE: (x2) pair - stainless steel round section T handle, size 30x400x500mm (Code: QS2501BTB), back to back pullhandles on each door leaf (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x2) pair - stainless steel narrow stile escutcheons (Code: QS440S) (x2) each QS900 transom concealed door closer with bottom pivot and hold open function (x2) each - door stop (Code: QS4421) (x1) pair - top & bottom flush bolts on passive door leaf only (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.		
GLASS AND GLAZING	matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 up to 2.380 for width of shopfront	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.

NOTES

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ALL DIMENSIONS INDICATE ON DRAWINGS SHOULD BE SET-OUT ON A LEVEL HORIZONTAL PLANE.
THE CONTRACTOR SHOULD MAKE USE OF CORNER PROFILES MARKED ON 85MM BRICK GAUGE, UNLESS DIFFERENTLY SPECIFIED.
THE CONTRACTOR IS RESPONSIBLE TO USE APPROVED DAMP PROOF COURSE IN EXTERNAL WALLS AND DAMP PROOF MEMBRANES UNDER FLOOR SLABS.
THE QUALITY OF ALL MATERIALS AND WORKMANSHIP SHOULD COMPLY WITH THE RELEVANT S.A.B.S. SPECIFICATIONS AND STANDARDS.
ALL MINIMUM STANDARDS AS SET OUT IN THE NATIONAL BUILDING REGULATIONS AND STANDARDS ACT SANS 10400 ARE ALSO APPLICABLE IN SITUATIONS WHERE NOT SPECIFICALY REFERRED TO.
ALL GEYSERS AND WARM WATER MUST COMPLY WITH SANS 10254, WATER RETICULATION INSTALLATION MUST COMPLY WITH SANS 10252-1,ALL UPVC PIPES MUST COMPLY WITH SANS 966,ALL COPPER PIPES MUST COMPLY WITH SANS 460,ALL HDPE PIPES MUST COMPLY WITH SANS 533,ALL TAPS AND MIXERS MUST COMPLY WITH SANS 226, SANS 1026, SANS 1808-35 EN 1808-37.

No	REVISION	DATE	APPROVED

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PROJECT

LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

WINDOW SCHEDULE 02

APPROVED BY

IDT: MR C TSEISI — DATE
PROGRAMME MANAGER

DOH: MR M NTOLOSI — DATE
DIRECTOR INFRASTRUCTURE PLANNING

DOH:MS N MAZIBUKO — DATE
CHIEF DIRECTOR DISTRICT HEALTH

DOH: Dr LG MABONA — DATE
ACTING CHIEF DIRECTOR

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_14**

NUMBER AND QUANTITY	W-26 ~~CANCELLED~~ ONE)	W-27 1 (ONE)	W-28 1 (ONE)	W-29 1 (ONE)	W-30 1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowfra oated with INTERPON finish according to specialist subc cification as well as architects approval with a continuous clear sil ound all construction openings.(Colour according to the archite ung and (x1) fixed panel	Custom aluminium door- & (x1) sidelight & (x2) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Tophung and (x1) fixed panel	Custom aluminium double door- & (x1) toplight, with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium door- & (x2) sidelight panels, with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect).
IRONMONGERY	As supplied by specia	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel (x1) each - lock box with breakable glass All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist	QS HARDWARE: (x2) pair - stainless steel round section bolt through T handle, size 30x400x500mm (Code: QS2506TBTB), back to back pullhandles on each door leaf (x2) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) each - door stop (Code: QS4421) (x2) each QS900 transom concealed door closer with bottom pivot and hold open function (x2) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width), (x2) pair 1.5mm, 150mm high stainless steel back to back Hulaband composite push plates with hairline finish to match frame (width according to doorpanel width). All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) each - door stop (Code: QS4421) All items to be confirmed according to recommendations and specifications of the specialist.
GLASS AND GLAZING	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.550 for width of shopfront

NUMBER AND QUANTITY	W-31 1 (ONE)	W-32 1 (ONE)	W-33 1 (ONE)	W-34 1 (ONE)	W-35 2 (TWO)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium door- & (x1) sidelight, with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium door- & (x1) sidelight & (x2) toplight; all powdercoated with INTERPON finish according to specialist subcontractor specifications as well as architects approval with a continuous clear silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) fixed panels	Custom aluminium door- & (x3) sidelight and (x1 toplight), with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) fixed panels
IRONMONGERY	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) each - door stop (Code: QS4421) All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) each - brush seal on bottom of each door panel (x1) each - lock box with breakable glass All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) each - door stop (Code: QS4421) All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist
GLASS AND GLAZING	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.380 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.550 for width of shopfront	One directional safety glass to architects approval such as solarshield S10 silver as supplied by the manufacturer to comply with AAAMSA and SANS 10400.

NUMBER AND QUANTITY	W-36 1 (ONE)	W-37 1 (ONE)	W-38 1 (ONE)		
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x4) fixed panels	Custom aluminium door- & (x3) sidelight and (x1 toplight), with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect).	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) fixed panels		
IRONMONGERY	As supplied by specialist	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x1) each - door stop (Code: QS4421) All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist		
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.550 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.		

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No	REVISION	DATE	APPROVED

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PROJECT

LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

WINDOW SCHEDULE 03

APPROVED BY

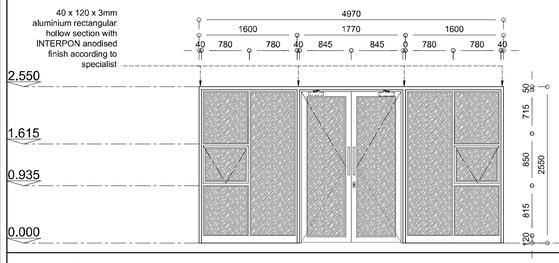
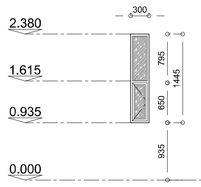
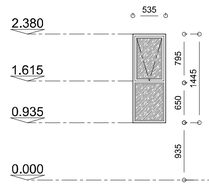
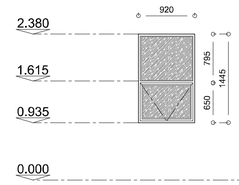
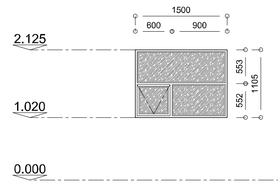
IDT: MR C TSEISI — DATE
PROGRAMME MANAGER

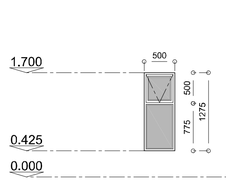
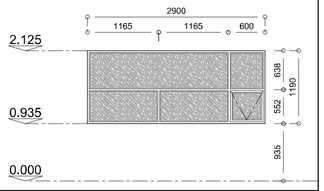
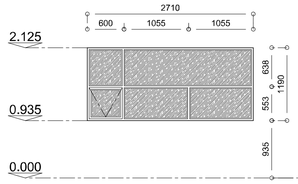
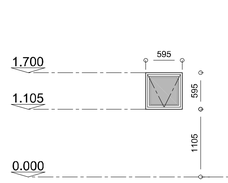
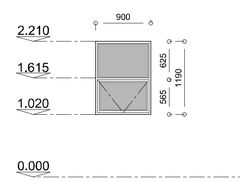
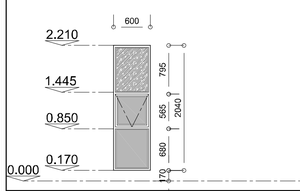
DOH: MR M NTOLOSI — DATE
DIRECTOR INFRASTRUCTURE PLANNING

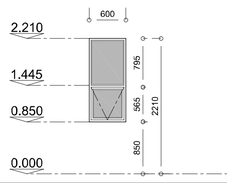
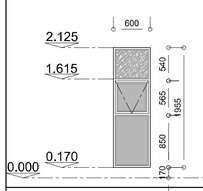
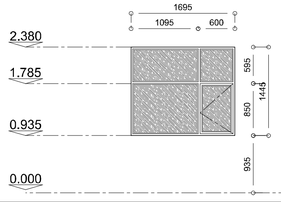
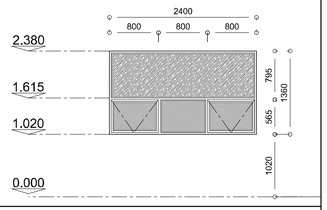
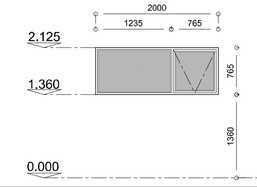
DOH:MS N MAZIBUKO — DATE
CHIEF DIRECTOR DISTRICT HEALTH

DOH: Dr LG MABONA — DATE
ACTING CHIEF DIRECTOR

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_15**

					
NUMBER AND QUANTITY	W-39 1 (ONE)	W-40 1 (ONE)	W-41 1 (ONE)	W-42 1 (ONE)	W-43 1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium shopfront with INTERPON powdercoated finish by specialist subcontractor to architects approval with a continuous matching silicone seal around all construction openings. (Colour according to the architect). Double door with 180 degree swing with delayed action and hold open	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) fixed panel and (x1) side hung panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) fixed panel and (x1) top hung panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (3) fixed panels
IRONMONGERY	QS HARDWARE: (x2) pair - stainless steel round section T handle, size 30x400x500mm (Code: QS2501BTB), back to back pullhandles on each door leaf (x1) each - appropriate double cylinder lock to fit with stainless steel narrowstile deadbolt lock on 35mm backset (Code: QS 8535/4)(master keyed) (x2) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x2) each QS900 transom concealed door closer with bottom pivot and hold open function (x2) each - door stop (Code: QS4421) (x1) pair - top & bottom flush bolts on passive door leaf only (x1) each - brush seal on bottom of each door panel All items to be confirmed according to recommendations and specifications of the specialist.	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist
GLASS AND GLAZING	matching laminated safety glass as supplied by the manufacturer to comply with AAAMSA & SANS 10400. Silver/matt frosted polyester film. Solyx or similar approved with signage cutout detail elsewhere. From 0.000 to 2.550 for width of shopfront	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Intruderproof toughened safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.

						
NUMBER AND QUANTITY	W-44 1 (ONE)	W-45 1 (ONE)	W-46 1 (ONE)	W-47 1 (ONE)	W-48 1 (ONE)	W-49 1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (3) fixed panels	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung and (3) fixed panels	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Top hung window	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x2) fixed panel
IRONMONGERY	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist
GLASS AND GLAZING	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Intruderproof toughened safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Intruderproof toughened safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.

						
NUMBER AND QUANTITY	W-50 1 (ONE)	W-51 1 (ONE)	W-52 1 (ONE)	W-53 1 (ONE)	W-54 1 (ONE)	
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x2) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Sidehung and (x3) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x2) Top hung and (x2) fixed panel	Custom aluminium windowframe powdercoated with INTERPON finish according to specialist subcontractor specification as well as architects approval with a continuous clear silicone seal around all construction openings.(Colour according to the architect). (x1) Tophung and (x1) fixed panel	
IRONMONGERY	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist	As supplied by specialist	
GLASS AND GLAZING	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400.	Top panel - Safety glass as supplied by the manufacturer to comply with AAAMSA and SANS 10400. Bottom panel - 6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	6.38mm white transluscent safety glass to comply with AAMSA & SANS 10400.	

NOTES

UNDER NO CIRCUMSTANCES MAY THIS DOCUMENT BE REPRODUCED WITHOUT THE CONSENT OF DEJONG DESIGN STUDIO CC.
DRAWINGS MAY NOT BE SCALED.
ALL DIMENSIONS AND HEIGHTS MUST BE CORRELATED BEFORE ANY WORK COMMENCES OR BEFORE MATERIALS ARE ORDERED.
IT IS THE CONTRACTOR'S RESPONSIBILITY TO SET-OUT CONSTRUCTION WORK ACCURATELY ON SITE WITH REFERENCE TO SITE BOUNDARIES, BUILDING LINES SERVITUDES AND ESPECIALLY IN CIRCUMSTANCES WHERE WORK CONNECT WITH EXISTING STRUCTURES.
ALL FLOOR LEVEL HEIGHTS INDICATED ON DRAWINGS REFER TO UNFINISHED LEVELS AND ANY AMBIGUOUS OR CONTRADICTORY INFORMATION SHOULD IMMEDIATELY BE CO-ORDINATED WITH THE ARCHITECT. A FULL SET OF DRAWINGS SHOULD BE KEPT ON SITE BY THE CONTRACTOR.
ALL DIMENSIONS INDICATE ON DRAWINGS SHOULD BE SET-OUT ON A LEVEL HORIZONTAL PLANE.
THE CONTRACTOR SHOULD MAKE USE OF CORNER PROFILES MARKED ON 85MM BRICK GAUGE, UNLESS DIFFERENTLY SPECIFIED.
THE CONTRACTOR IS RESPONSIBLE TO USE APPROVED DAMP PROOF COURSE IN EXTERNAL WALLS AND DAMP PROOF MEMBRANES UNDER FLOOR SLABS.
THE QUALITY OF ALL MATERIALS AND WORKMANSHIP SHOULD COMPLY WITH THE RELEVANT S.A.B.S. SPECIFICATIONS AND STANDARDS.
ALL MINIMUM STANDARDS AS SET OUT IN THE NATIONAL BUILDING REGULATIONS AND STANDARDS ACT SANS 10400 ARE ALSO APPLICABLE IN SITUATIONS WHERE NOT SPECIFICALY REFERRED TO.
ALL GEYSERS AND WARM WATER MUST COMPLY WITH SANS 10254. WATER RETICULATION INSTALLATION MUST COMPLY WITH SANS 10252-1.ALL UPVC PIPES MUST COMPLY WITH SANS 966.ALL COPPER PIPES MUST COMPLY WITH SANS 460.ALL HDPE PIPES MUST COMPLY WITH SANS 533.ALL TAPS AND MIXERS MUST COMPLY WITH SANS 226, SANS 1026, SANS 1808-35 EN 1808-37.

No	REVISION	DATE	APPROVED

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Province of the NORTHERN CAPE
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PROGRAMME MANAGER

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PROJECT

LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

WINDOW SCHEDULE 04

APPROVED BY

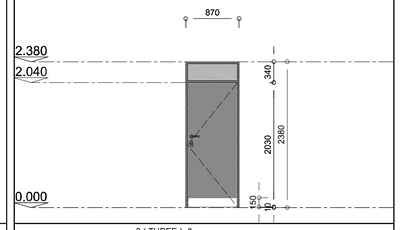
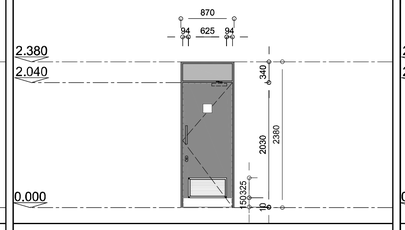
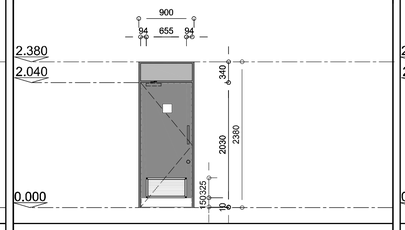
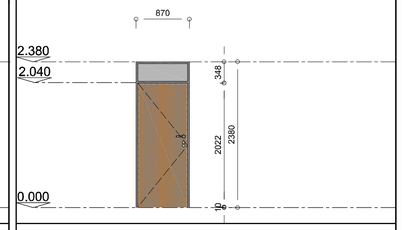
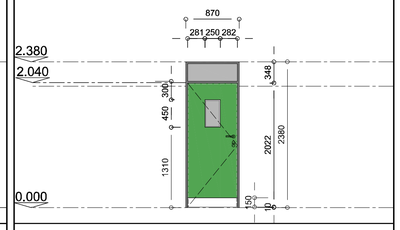
IDT: MR C TSEISI
PROGRAMME MANAGER — DATE

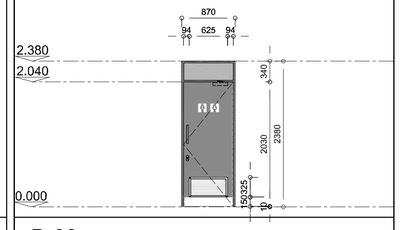
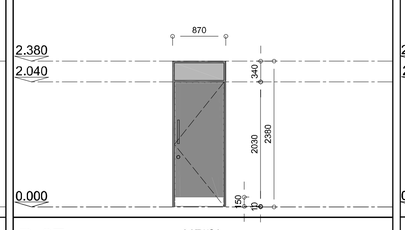
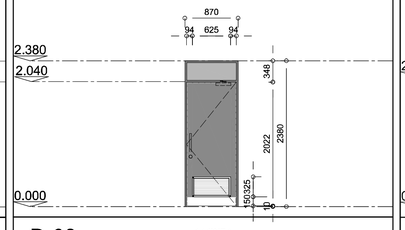
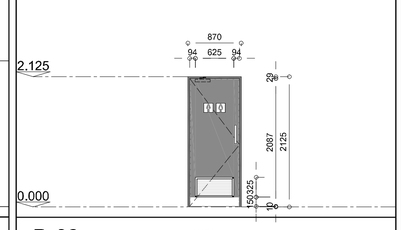
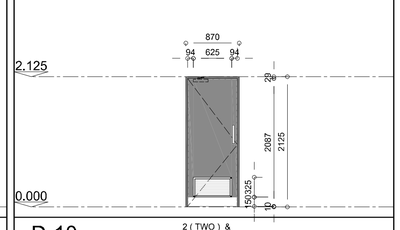
DOH: MR M NTOLOSI
DIRECTOR INFRASTRUCTURE PLANNING — DATE

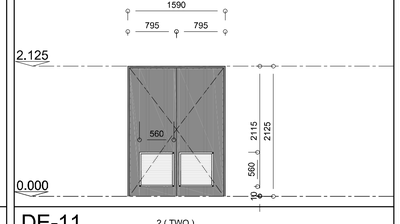
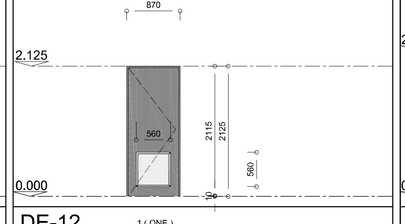
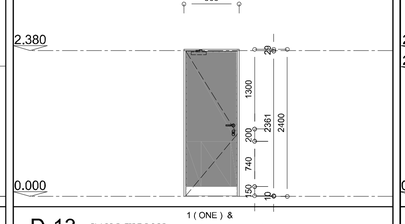
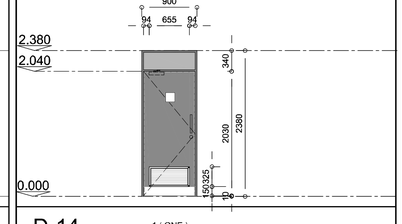
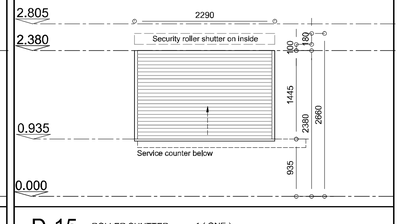
DOH:MS N MAZIBUKO
CHIEF DIRECTOR DISTRICT HEALTH — DATE

DOH: Dr LG MABONA
ACTING CHIEF DIRECTOR — DATE

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_16**

	D-01	D-02	D-03	D-04	D-05
					
NUMBER AND QUANTITY	3 (THREE) & 2 (TWO) with x2 (TWO) security gates respectively	3 (THREE)	1 (ONE)	5 (FIVE)	2 (TWO)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Medium duty semi-solid door; Swartland Kayo or MD UNSAPM12 or similar approved, with veneer over concealed edges (Sapele veneer). Finish with atleast (x2) coats clear satin varnish.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge. To include safety glass viewing panel with aluminium frame.
IRONMONGERY	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each - appropriate stainless steel cylinder lock with latch & deadbolt to fit with 55mm backset 60mm centre (Code: QS 6055/1) (master keyed) (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) pair - stainless steel narrow stile escutcheons (Code: QS4405) (x1) each - appropriate cylinder lock to fit (master keyed) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 (x1) each respectively stainless steel square engraved signs, 100x100mm indicative of male OR female respectively All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each stainless steel disabled WC thumb turn (Code: QS4406 & QS4409) with stainless steel bathroom lock 58mm c/c (Code: QS0055/5) (x1) each QS700 door closer fitted pull side on door leaf with delayed action for disable (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 (x1) each stainless steel square engraved sign, 100x100mm indicative of universal wc All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each stainless steel cylinder (master keyed) with latch & deadbolt on 55mm backset 60mm centre (Code: QS6055/1) (x1) each - door stop (Code: QS4421) (X1) each stainless steel adjustable roller bolt (Code: QS6001) All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each stainless steel cylinder (master keyed) with latch & deadbolt on 55mm backset 60mm centre (Code: QS6055/1) (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (X1) each stainless steel adjustable roller bolt (Code: QS6001) All items to be confirmed according to recommendations and specifications of the specialist.
SECURITY	Custom made retractable Level 2 security gate, TRELLIDOR TROJAN II - T100 roll formed steel with powder coat finish to match door frame (colour: acc. to architect) with steel top track with cover and reinforced anchor plates at fixings into the wall or similar approved, with deadlock with multiple locking points in all door height ranges with one key point. Fully framed and complete installed on surface of door opening within separate subframe by specialist contractor	N/A	N/A	N/A	N/A
GLASS AND GLAZING	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.

	D-06	D-07	D-08	D-09	D-10
					
NUMBER AND QUANTITY	3 (THREE)	2 (TWO)	1 (ONE)	1 (ONE)	2 (TWO) & 1 (ONE) with x1 (ONE) security gates respectively
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with (x1) shop coat red oxide, size of opening 813 x2032mm high for 110mm wall (check doorswing and wall thickness on plan). Frame painted (x2) coats enamel paint (Colour: according to the architect), Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Commercial standard semi solid heavy duty hardboard door; Swartland Kayo HB STD HI2 or similar approved, with (x2) concealed edges, size 2030 x 813 x 46mm to be prepared and painted (x2) coats eggshell enamel paint finish, (Colour: according to architect) on both sides, over-edge.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009.	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009.
IRONMONGERY	As supplied by the manufacturer	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each stainless steel WC thumb turn (Code: QS4410) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each - door stop (Code: QS4421) (X1) each stainless steel adjustable roller bolt (Code: QS6001) All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each QS700 door closer fitted pull side on door leaf with delayed action for disable (x1) each - door stop (Code: QS4421) (x1) each stainless steel disabled WC thumb turn (Code: QS4406 & QS4409) with stainless steel bathroom lock 58mm c/c (Code: QS0055/5) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 (x1) each stainless steel square engraved sign, 100x100mm indicative of male/ female respectively All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) pair escutcheon (Code: QS4403) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 (x1) each stainless steel square engraved sign, 100x100mm indicative of male/ female respectively All items to be confirmed according to recommendations and specifications of the specialist.	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) pair escutcheon (Code: QS4403) (x1) each QS700 door closer fitted pull side on door leaf (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 All items to be confirmed according to recommendations and specifications of the specialist.
SECURITY	N/A	N/A	N/A	N/A	Non retractable welded steel security swing gate MAXI-GATE ULTRA: with stainless steel rivets, with high security double turn locking mechanism, with powder coated finish to match door frame or similar approved (colour: according to architect) with 180° swing, manufactured from 25mm x 25mm steel frame and 16mm x 16mm uprights. Installed complete by specialist contractor
GLASS AND GLAZING	N/A	N/A	N/A	N/A	N/A

	DE-11	DE-12	D-13	D-14	D-15
					
NUMBER AND QUANTITY	2 (TWO)	1 (ONE)	1 (ONE) & 1 (ONE) with 1 (ONE) security gates respectively	1 (ONE)	1 (ONE)
DESCRIPTION OF DOOR PANEL, FRAME AND FINISH	BITCON steel double door, overall size; 1590(w) x 2125(h)mm (Code: Type G) with fully louvred vents. Frame to be pressed from 1.6mm steel sheeting fully welded in a double rebated profile, to be primed with (x1) coat red oxide & finished with (x2) enamel paint (Colour: according to the architect). Door to be fitted with l00mm heavy duty flanged stainless steel hinges. Door to include pull handle, padlatch and barrel bolts to double doors as a standard. Door to be installed square true and plumb with the door/s in the closed position. The bottom leading edge/s or the door/s must be wedged to support the vertical load of the door on the frame. The wedge/s should not be removed until the brickwork is satisfactory cured. Louvre vents to be lined on the inside with vermin proof mesh screen size 560mm x 560mm (AV.) manufactured fully louvred with rebated frame surround for installation in walls.	BITCON steel double door, overall size; 870(w) x 2125(h)mm (Code: Type G) with fully louvred vents. Frame to be pressed from 1.6mm steel sheeting fully welded in a double rebated profile, to be primed with (x1) coat red oxide & finished with (x2) enamel paint (Colour: according to the architect). Door to be fitted with l00mm heavy duty flanged stainless steel hinges. Door to include pull handle, padlatch and barrel bolts to double doors as a standard. Door to be installed square true and plumb with the door/s in the closed position. The bottom leading edge/s or the door/s must be wedged to support the vertical load of the door on the frame. The wedge/s should not be removed until the brickwork is satisfactory cured. Louvre vents to be lined on the inside with vermin proof mesh screen size 560mm x 560mm (AV.) manufactured fully louvred with rebated frame surround for installation in walls.	120min Heavy duty, flush face, solid core Class D FIRE door comply with SANS 1253, with steel doorframe from 3mm steel sheet double rebated profile 54x20mm rebate, size of opening 900 x 2400mm high for 220mm wall. Frame to accommodate for screeded floor finish. With intumescent strips and smoke seals Door leaf with hardboard finish inside and 1.2mm galvanized steel fire side with concealed edges. Aluglass Bautech® or similar approved, all acc. to recommendations of the supplier. Door to be SANS tabled with class and identification. Finish with paint acc. schedule	Standard heavy duty double rebated pressed steel doorframe with toplight with factory red oxide primer for doorswing and wall thickness as indicated on plan with (x2) coat enamel paint finish (Colour: according to the architect). Frame to accommodate for screeded floor finish. Framed ledge and braced exterior door with flush panel on both sides, painted 2 coats eggshell enamel paint finish (Colour: according to the architect) on both sides over-edge manufactured in accordance with SANS 545:2009.	Aluminium Roller Shutter door: TRELLIDOR Rollerstyle manually operated , slatted security roller shutter or similar approved, with powder coated finish to match window frame (Colour: according to architect) Manufactured from 55mm x 12mm structural grade aluminium and extruded from a double wall vented slat only. Installed complete with compact shutterbox above interior side of window opening by specialist contractor.
IRONMONGERY	As supplied by the manufacturer	As supplied by the manufacturer	QS HARDWARE: (x1) set solid stainless steel lever handle on rose with escutcheons (Code: Molo) (x1) each stainless steel cylinder (master keyed) with latch & deadbolt on 55mm backset 60mm centre (Code: QS6055/1) (x1) pair escutcheons (x1) each - door stop (x1) pair 1.2mm, 150mm high stainless steel back to back kick plate with hairline finish and 1.2mm to door width	QS HARDWARE: (x1) pair - stainless steel round section T handle, size 30x200x300mm (Code: QS2506BTB), back to back pull handle (x1) each stainless steel disabled WC thumb turn (Code: QS4406 & QS4409) with stainless steel bathroom lock 58mm c/c (Code: QS0055/5) (x1) each QS700 door closer fitted pull side on door leaf with delayed action for disable (x1) each - door stop (Code: QS4421) (x1) pair 1.5mm, 150mm high stainless steel back to back kick plate with hairline finish (width according to doorpanel width). (x1) each natural anodized aluminum door grill 325x625 (x1) each stainless steel square engraved sign, 100x100mm indicative of universal wc All items to be confirmed according to recommendations and specifications of the specialist.	(x1) cylinder lock (x2) sets guiderails Relevant accessories All as supplied by manufacturer.
SECURITY	N/A	N/A	Custom made retractable Level 2 security gate, TRELLIDOR TROJAN II - T100 roll formed steel with powder coat finish to match door frame (colour: acc. to architect) with steel top track with cover and reinforced anchor plates at fixings into the wall or similar approved, with deadlock with multiple locking points in all door height ranges with one key point. Fully framed and complete installed on surface of door opening within separate subframe by specialist contractor	N/A	N/A
GLASS AND GLAZING	N/A	N/A	N/A	Safety glass as supplied by the manufacturer to comply with AAAMSA and NBR Standards.	N/A

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THE QUALITY OF ALL MATERIALS AND WORKMANSHIP SHOULD COMPLY WITH THE RELEVANT S.A.B.S. SPECIFICATIONS AND STANDARDS.
ALL MINIMUM STANDARDS AS SET OUT IN THE NATIONAL BUILDING REGULATIONS AND STANDARDS ACT SANS 10400 ARE ALSO APPLICABLE IN SITUATIONS WHERE NOT SPECIFICALY REFERRED TO.
ALL GEYSERS AND WARM WATER MUST COMPLY WITH SANS 10254, WATER RETICULATION INSTALLATION MUST COMPLY WITH SANS 10252-1,ALL UPVC PIPES MUST COMPLY WITH SANS 966.ALL COPPER PIPES MUST COMPLY WITH SANS 460.ALL HDPE PIPES MUST COMPLY WITH SANS 533.ALL TAPS AND MIXERS MUST COMPLY WITH SANS 226, SANS 1026, SANS 1808-35 EN 1808-37.

No	REVISION	DATE	APPROVED

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PROJECT

LOGOBATE PHC

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

DOOR SCHEDULE

APPROVED BY

IDT: MR C TSEISI — DATE
PROGRAMME MANAGER

DOH: MR M NTOLOSI — DATE
DIRECTOR INFRASTRUCTURE PLANNING

DOH:MS N MAZIBUKO — DATE
CHIEF DIRECTOR DISTRICT HEALTH

DOH: Dr LG MABONA — DATE
ACTING CHIEF DIRECTOR

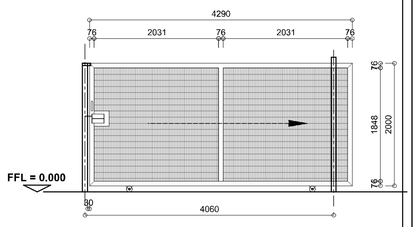
SCALE	ISSUED
AS INDICATED	2018-03-26
DRAWING STATUS	**Rev 1** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_17**

GATE SCHEDULE

SCALE: 1 : 50

G1

GENERAL NOTE
CLEARVU PRESSED HIGH DENSITY MESH PANEL
Standard panel width 3,297 x 2100mm or 2000 height as indicated
Mesh diameter: 4/3,
Aperture size: 76.2x12.7mm c-c
Panel shall have 4x50mm deep V-formation horizontal reassessed bands
Panel shall have 2x70deg flanges along sides for fixture against posts on inside of fence.
Panel shall have 2x90deg flanges along top and toe integrated rigid angle anti-scale locking devices
Panel post shall have a flush panel post finish with no climbing aid.
All items with Fusion bond coating Colour: Charcoal

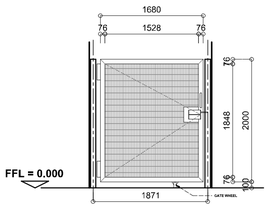


NUMBER ON PLAN AMOUNT: G1 1 (one)

GATE & FRAME SPECIFICATON: Custom COCHRAN ClearVu SLIDING GATE (or similar approved), 2000mm high comprising of galvanized reinforcing rib mesh, nominal panel size 3297mm wide secured to steel framework manufactured and installed by specialist according to manufacturer's specifications. (Colour: according to the architect).
POSTS

DETAIL: Refer to typical Gate detail C

G2

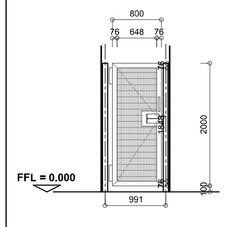


NUMBER ON PLAN AMOUNT: G2 1 (one)

GATE & FRAME SPECIFICATON: Custom COCHRAN ClearVu SLIDING GATE (or similar approved), 2000mm high comprising of galvanized reinforcing rib mesh, nominal panel size 3297mm wide secured to steel framework manufactured and installed by specialist according to manufacturer's specifications. (Colour: according to the architect).

DETAIL: Refer to typical Gate detail B
Cochrane shark tooth spike, 2mm thick toughened steel 100mm high shall be affixed to panel edge, internally at 150mm intervals using anti vandal bolts. Spike finish to be hot dipped galvanized (Colour: to match fence)

G4

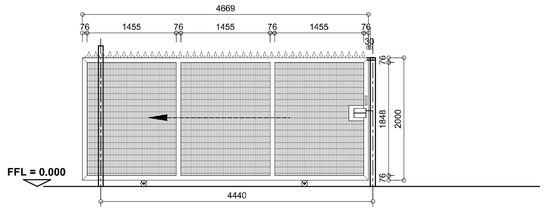


NUMBER ON PLAN AMOUNT: G4 2 (two)

GATE & FRAME SPECIFICATON: Custom COCHRAN ClearVu SLIDING GATE (or similar approved), 2000mm high comprising of galvanized reinforcing rib mesh, nominal panel size 3297mm wide secured to steel framework manufactured and installed by specialist according to manufacturer's specifications. (Colour: according to the architect).

DETAIL: Refer to typical Gate detail D

G3

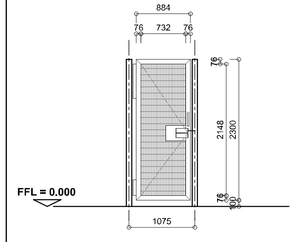


NUMBER ON PLAN AMOUNT: G3 1 (one)

GATE & FRAME SPECIFICATON: Custom COCHRAN ClearVu SLIDING GATE (or similar approved), 2000mm high comprising of galvanized reinforcing rib mesh, nominal panel size 3297mm wide secured to steel framework manufactured and installed by specialist according to manufacturer's specifications. (Colour: according to the architect).

DETAIL: Refer to typical Gate detail A
Cochrane shark tooth spike, 2mm thick toughened steel 100mm high shall be affixed to panel edge, internally at 150mm intervals using anti vandal bolts. Spike finish to be hot dipped galvanized (Colour: to match fence)

G5

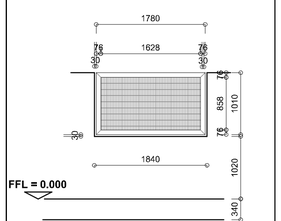


NUMBER ON PLAN AMOUNT: G5 1 (one)

GATE & FRAME SPECIFICATON: Custom COCHRAN ClearVu SLIDING GATE (or similar approved), 2300mm high comprising of galvanized reinforcing rib mesh, nominal panel size 3297mm wide secured to steel framework manufactured and installed by specialist according to manufacturer's specifications. (Colour: according to the architect).

DETAIL: Refer to typical Gate detail D

G7

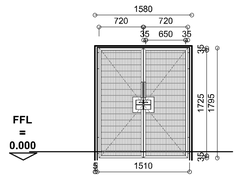


NUMBER ON PLAN AMOUNT: G7 1 (one)

GATE & FRAME SPECIFICATON: Fix panel with Steeldale spesimesh, (Code: M613), apertures 50 x 25mm, 4mm wire diameter welded in 35x35x3mm equal angel frame with 2x bullet hinges each with barrel bolts and padlock lugs.

DETAIL:

G8

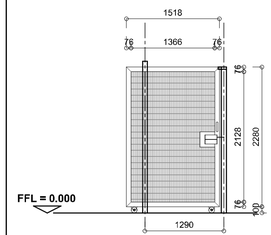


G8 1 (one)

Cage doors with Steeldale spesimesh, (Code: M613), apertures 50 x 25mm, 4mm wire diameter welded in 35x35x3mm equal angel frame with 2x bullet hinges each with barrel bolts and padlock lugs.

Main frame consists of 30x30x3mm square tube on sides and top, bolted through lugs into brickwork with M10 Rawl bolts.
Factory prime with steel etch primer and finish with Hammerite paint acc. to schedule.

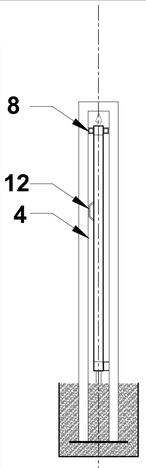
G6



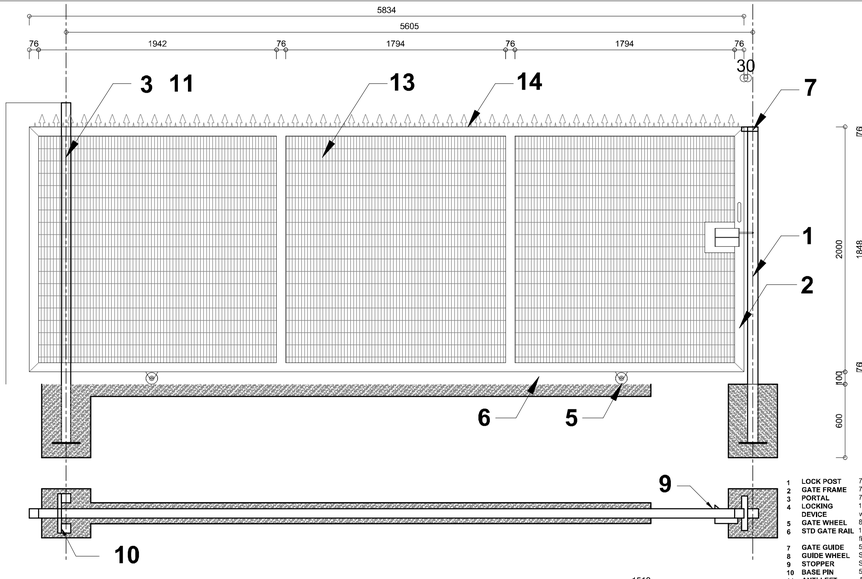
G6 1 (one)

Custom COCHRANE SLIDING GATE with CLEARVU framework, posts and panels (all according to the specialist)

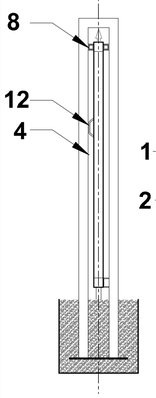
Refer to typical Gate detail C



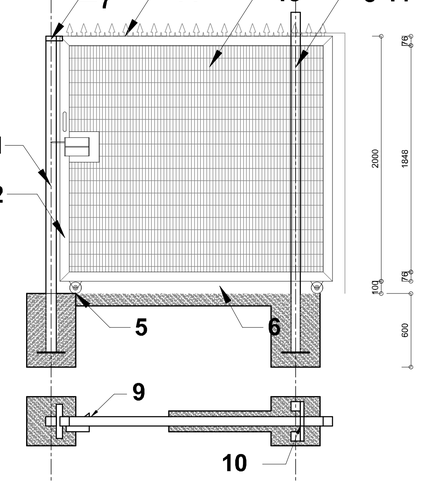
TYPICAL GATE DETAIL A
SCALE 1:25



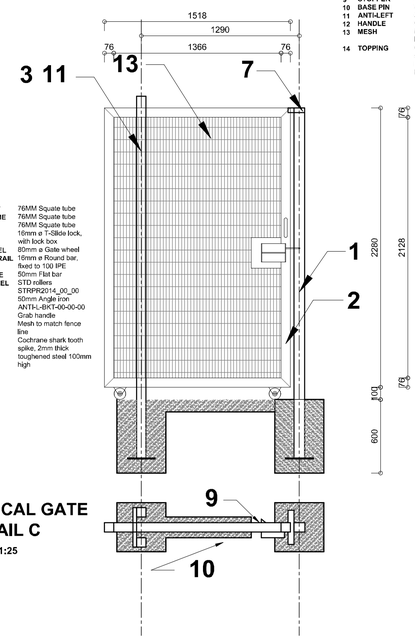
1	LOCK POST	76MM Square tube
2	GATE FRAME	76MM Square tube
3	PORTAL	76MM Square tube
4	LOCKING DEVICE	16mm ø T-Slide lock, with lock box
5	GATE WHEEL	80mm ø Gate wheel
6	STD GATE RAIL	16mm ø Round bar, fixed to 100 IPE
7	GATE GUIDE	50mm Flat bar
8	GUIDE WHEEL	STD rollers
9	STOPPER	STRPR2014_00_00
10	BASE PIN	50mm Angle iron
11	ANTI-LEFT	ANTI-L-BKT-00-00-00
12	HANDLE	Grab handle
13	MESH	Mesh to match fence line
14	TOPPING	Cochrane shark tooth spike, 2mm thick toughened steel 100mm high



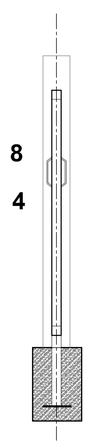
TYPICAL GATE DETAIL B
SCALE 1:25



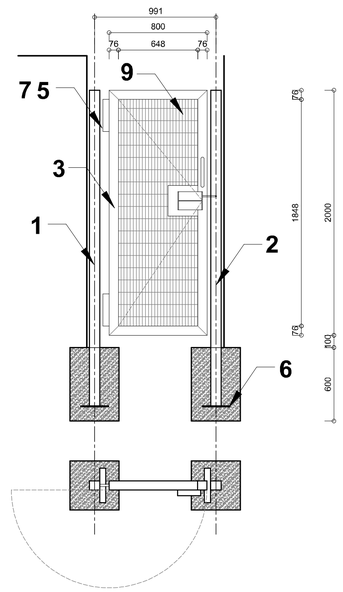
TYPICAL GATE DETAIL C
SCALE 1:25



1	LOCK POST	76MM Square tube
2	GATE FRAME	76MM Square tube
3	PORTAL	76MM Square tube
4	LOCKING DEVICE	16mm ø T-Slide lock, with lock box
5	GATE WHEEL	80mm ø Gate wheel
6	STD GATE RAIL	16mm ø Round bar, fixed to 100 IPE
7	GATE GUIDE	50mm Flat bar
8	GUIDE WHEEL	STD rollers
9	STOPPER	STRPR2014_00_00
10	BASE PIN	50mm Angle iron
11	ANTI-LEFT	ANTI-L-BKT-00-00-00
12	HANDLE	Grab handle
13	MESH	Mesh to match fence line
14	TOPPING	Cochrane shark tooth spike, 2mm thick toughened steel 100mm high



TYPICAL GATE DETAIL D
SCALE 1:25



1	HINDGE POST	101MM Square tube
2	LOCKING POST	76MM Square tube
3	GATE FRAME	76MM Square tube
4	LOCKING DEVICE	16mm ø T-Slide lock, with lock box
5	HINGE	Adjustable screw hinge
6	BASE PIN	50mm Angle iron
7	COVER PLATE	270x50x5mm CP2014-00-01
8	HANDLE	Grab handle
9	MESH	Mesh to match fence line
10	TOPPING	Cochrane shark tooth spike, 2mm thick toughened steel 100mm high

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PROJECT

LOGOBATE PHC:

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

LANDSCAPE DETAILS
GATES

APPROVED BY

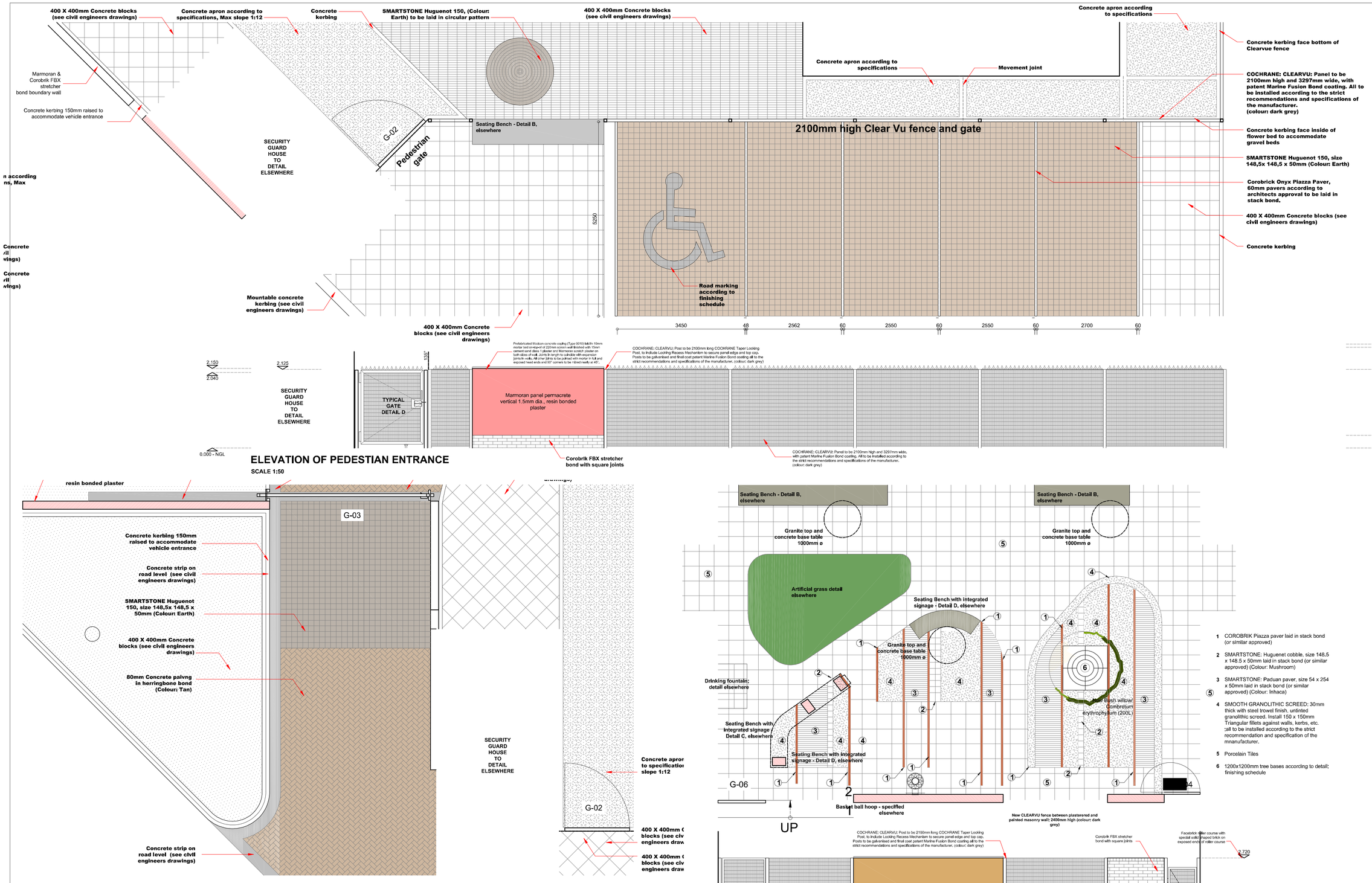
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CHIEF DIRECTOR DISTRICT HEALTH

DOH: Dr LG MABONA — DATE
ACTING CHIEF DIRECTOR

SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_25**



ELEVATION OF PEDESTIAN ENTRANCE

SCALE 1:50

ELEVATION OF VEHICLE ENTRANCE

SCALE 1:50

1 COROBRIK Piazza paver laid in stack bond (or similar approved)

2 SMARTSTONE: Huguenot cobble, size 148.5 x 148.5 x 50mm laid in stack bond (or similar approved) (Colour: Mushroom)

3 SMARTSTONE: Paduan paver, size 54 x 254 x 50mm laid in stack bond (or similar approved) (Colour: Inhaca)

4 SMOOTH GRANOLITHIC SCREED: 30mm thick with steel trowel finish, untinted granolithic screed. Install 150 x 150mm Triangular fillets against walls, kerbs, etc. :all to be installed according to the strict recommendation and specification of the mnanufacturer.

5 Porcelain Tiles

6 1200x1200mm tree bases according to detail; finishing schedule

ELEVATION OF COURTYARD

SCALE 1:50

NOTES

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PROJECT

LOGOBATE PHC:

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

LANDSCAPE DETAILS
PAVING
SCREEN WALLS

APPROVED BY

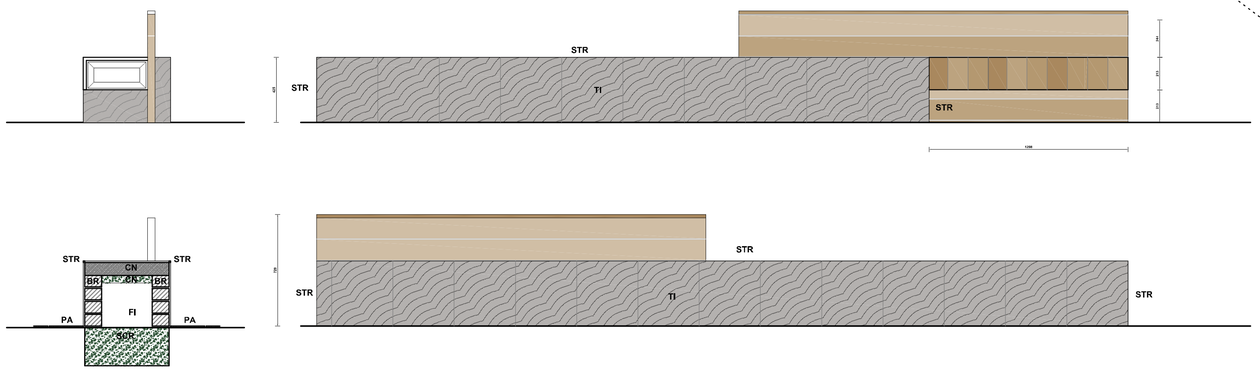
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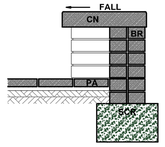
SCALE	ISSUED
AS INDICATED	2024-06-19
DRAWING STATUS	**Rev 0** **DWG No**
CONSTRUCTION DRAWING	**14-158_P4_26**

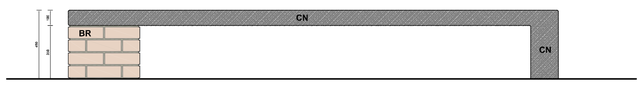


SEATING A
SCALE 1:20

BR PLASTER BRICK
CN CONCRETE TO ENGINEERS DETAIL
FI COMPACT FILLING
TI TILES TO SPEC
SCR CONCRETE STRIP FOOTING
STR BUSHED STAINLESS STEEL RECTANGULAR TILE TRIM TO SPEC

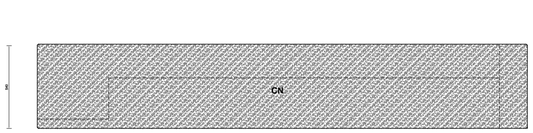
EVA-TECH composite decking panels (Colour: To be confirmed by the architect, Design: INFINITY SOLID PROFILE), size 23 x 140mm (5.8m lengths) to be screwed to steel structural joists with concealed fix brackets between panels every 400mm c/c. 5mm horizontal gaps between decking panels. Detailed installation according to the strict recommendations of the manufacturer.

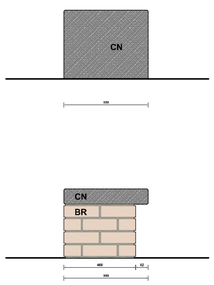


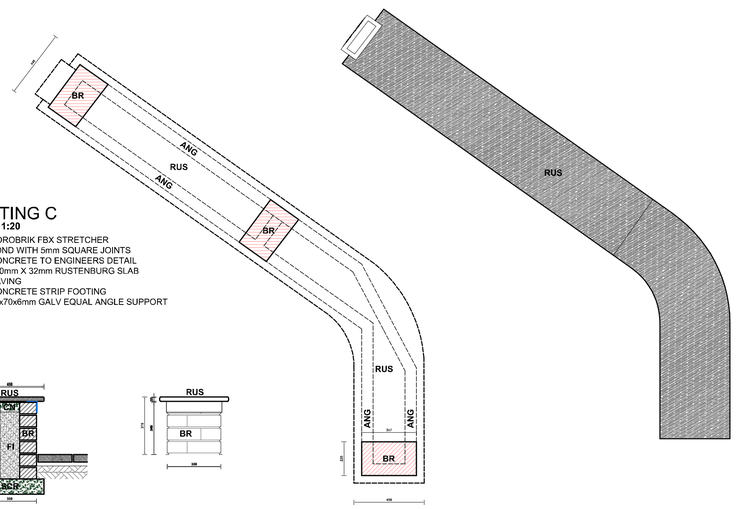


SEATING B
SCALE 1:20

BR COROBRIK FBX STRETCHER BOND WITH 5mm SQUARE JOINTS
CN CONCRETE TO ENGINEERS DETAIL
GR GRAVEL
PA PAVING
SCR CONCRETE STRIP FOOTING

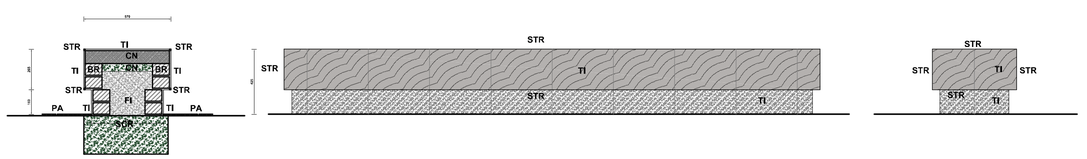






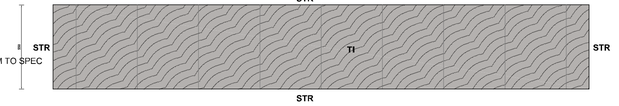
SEATING C
SCALE 1:20

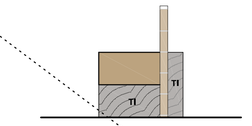
BR COROBRIK FBX STRETCHER BOND WITH 5mm SQUARE JOINTS
CN CONCRETE TO ENGINEERS DETAIL
RUS 450mm X 32mm RUSTENBURG SLAB
PA PAVING
SCR CONCRETE STRIP FOOTING
ANG 70x70x6mm GALV EQUAL ANGLE SUPPORT



SEATING D
SCALE 1:20

BR PLASTER BRICK
CN CONCRETE TO ENGINEERS DETAIL
FI COMPACT FILLING
TI PORCELAIN TILES
STP BUSHED STAINLESS STEEL RECTANGULAR TILE TRIM TO SPEC
SCR CONCRETE STRIP FOOTING





DETAILED PLANTS SPECIFICATION:

GABION ROCK GARDEN

FOCUS PLANTS
Agapanthuspraecox (4Ltr@7/m²)
Aloe Marlotiii; maculate; arborescens
Bulbine frutescens
Crinum moorei
Dietes grandiflora/ bicolour
Kniphofia spe.

SHRUBS
Aloe ciliaris
Crassula multicava
Correa alba 4l
Chrysanthemoides monilifera
Euryops chrysanthemoides
freylinia tropica
Hypoestes aristate
Leonotis leonurus
Plectranthus neochilus
Plectranthus ecklonii
Plectranthus 'Mona Lavender'
Salvia africana-lutea
Tulbaghia violacea

SMALL TREES
Seasia lancea
Seasia pendulania
Buddleja saligna
Combretum erythrophyllum
Olea europaea subsp africana

GREEN FOLIAGE MIX & GRASSES GARDEN

Daisy lirion 5l
Lampranthus
Carpobrotus plugs
Felicia 4L
Euryops pectinatus 4L
Aptenia cordifolia
Osteospermum ecklonis (daisy)
Carpobrotus edulis
Plectranthus neochilus
Cotyledon orbiculata
Aptenia cordifolia
Stapelia grandiflora
Crassula ovata
Haworthia glauca
Portulacaria afra

DETAILED GROUND COVER SPECIFICATION:

Gabion rock

Prepare soil to a depth of 300mm for small plants in areas as indicated on landscape plans. Place a weed-suppressing membrane around small shrubs for the total area as indicated and place on top of membrane GABION ROCK for a depth of 200mm

Soil preparation

Prepare soil in flower bed to a depth of 200mm for small plants and ground cover in areas as indicated on landscape plans. Infill garden soil need to be approved by architect.

Prepare soil for Mature New Bush willow/ Combretum erythrophyllum (200L) or (100L) & ground cover plants to a depth of 1000mm in areas as indicated on landscape plans. Infill garden soil need to be approved by architect. Provide infill garden soil to a depth of 400mm for vegetables as approved by architect.

Tree Specimen's to be supplied Plant holes to be 750 x 750 x 750mm. Prepare soil also for small trees (40L) and other plants to a depth of 1000mm in areas as indicated on landscape plans.

Plant in mixture of 50:50 compost & top soil. For each tree mix one cup of bonemeal, one cup of superphosphate and one cup of slow release 3:21 fertilizer to be mixed in soil.

Trees

Mature New Bush willow/ Combretum erythrophyllum (200L) or (100L). All trees to be staked with a metal fence pole and attached with approved tree ties.

Supply Small shrubs

All trees not indicated inside the parking area will be removed.

All existing tree trunks, branches and roots must be protected 1500mm radius for the center ot tree.

HARD SURFACE/ STREET FURNITURE SPECIFICATION:

Hard Landscaping

DRINKING FOUNTAIN
a Water fountain 1200 x 900 x 300 with Galvanised tap

TREE RINGS
a Paving Tree rings, Use Baltimore 1200 x 1200mm tree grids from Wilson's Cement Industries, to protect each tree.

BICICLE RACKS
a As per drawing

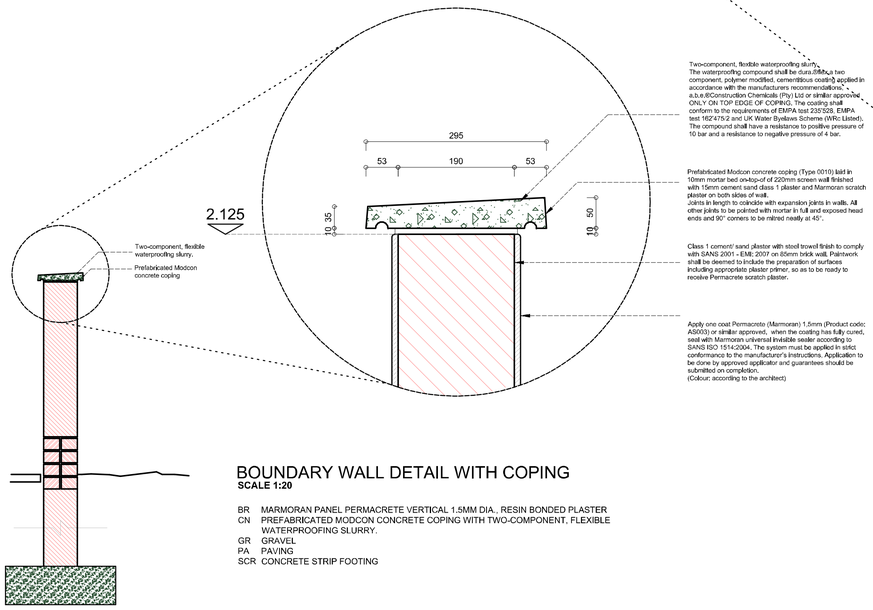
ARTIFICIAL LAWN
a As per drawing priced installed with layer works

WEED GUARD/BIDUM
a Bidum under layer for gravel

DUSTBIN
a Refer to specificactions

BENCH
a As per drawing

TABLE
a Granite top and concrete base table 1000mm a



BOUNDARY WALL DETAIL WITH COPING
SCALE 1:20

BR MARMORAN PANEL PERMACRETE VERTICAL 1.5MM DIA., RESIN BONDED PLASTER
CN PREFABRICATED MODCON CONCRETE COPING WITH TWO-COMPONENT, FLEXIBLE WATERPROOFING SLURRY.
GR GRAVEL
PA PAVING
SCR CONCRETE STRIP FOOTING

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LOGOBATE PHC:

ADDITIONS & ALTERATIONS TO EXISTING HEALTH FACILITY, ON PORTION 60 ON THE FARM 219 KURUMAN DISTRICT NORTHERN CAPE

DRAWING

LANDSCAPE DETAILS
SEATING, BENCH ETC

APPROVED BY

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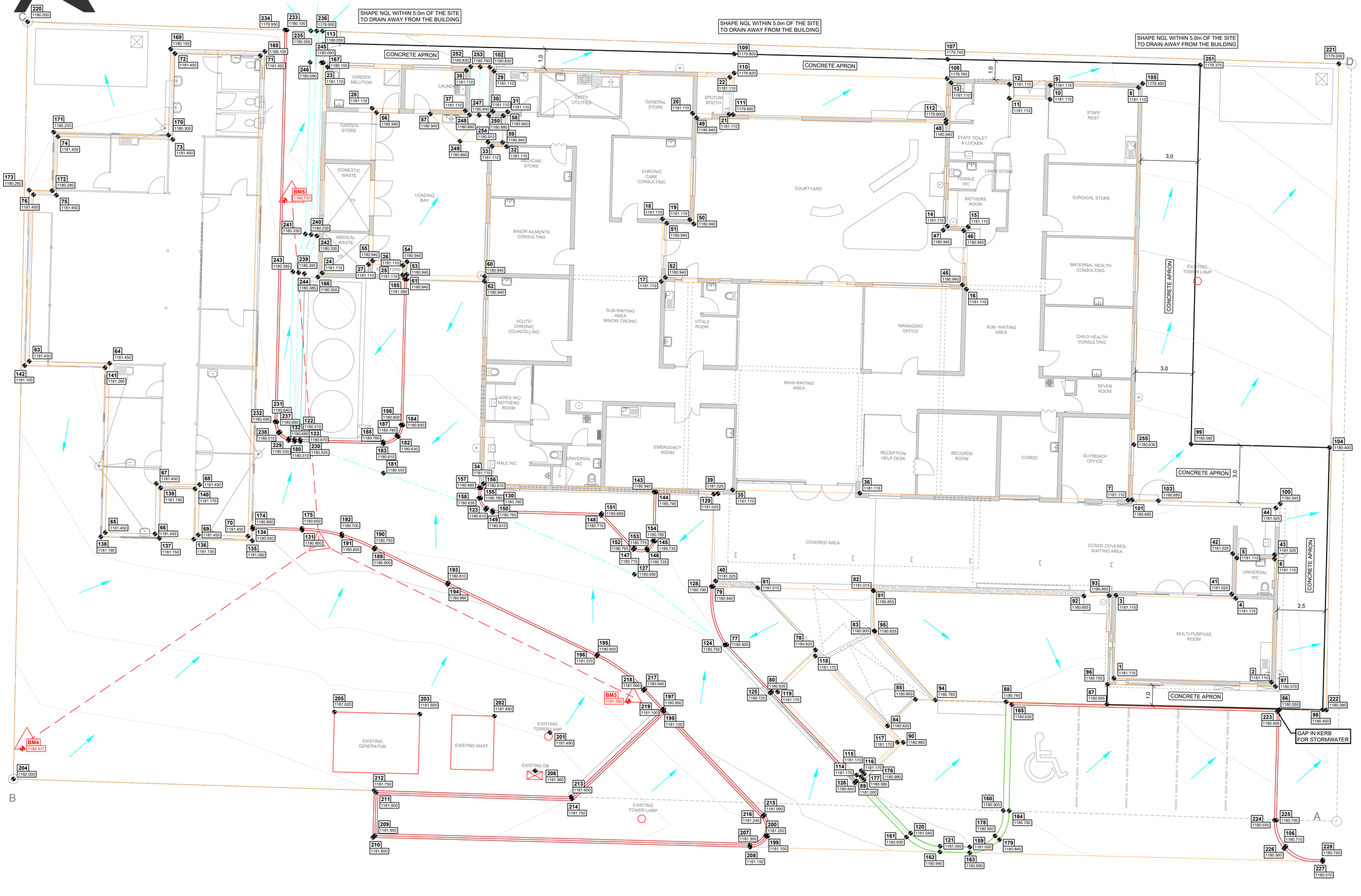
SCALE	ISSUED
AS INDICATED	2024-06-19

DRAWING STATUS
CONSTRUCTION DRAWING

Rev 0 **DWG No**
14-158_P4_27

ANNEXURE B

CIVIL AND STRUCTURAL DRAWINGS



NOTES:

DUE TO THE PRESENCE OF DOLOMITIC MATERIAL IN THE AREA, THIS SITE HAS A IHC2//1 CLASSIFICATION WITH D3 PRECAUTIONARY MEASURES PRESCRIBED.

1. 150mm TOP SOIL TO BE STRIPPED AND SPOILED.
2. ALL CUT SLOPES TO BE SHAPED TO 3% AND FILL SLOPES TO 3%, UNLESS OTHERWISE DIRECTED BY THE ENGINEER ON SITE.
3. FILL MATERIAL TO BE COMPACTED IN LAYERS NOT EXCEEDING 150mm TO 95% MOD AASHTO.
4. EACH LAYER TO BE TESTED WITH A MINIMUM OF 3 DENSITY TESTS.
5. SURFACE TO BE SHAPED TO SLOPE AWAY FROM THE BUILDING FOR A MINIMUM OF 10m.
6. STORMWATER CHANNELS TO BE 100mm THICK V-SHAPED CONCRETE DRAINS WITH MESH REF. 193 REINFORCEMENT, SEALED WITH A 250 MICRON HDPE LINING.

NOTES / LEGEND

- PLATFORM FEATURE LINE
- STORMWATER CHANNEL / WATERCOURSE
- DRAINAGE DIRECTION
- SETTING-OUT POINT
- BENCHMARK
- MOUNTABLE KERB (FIG. 8c)
- BARRIER KERB (FIG. 3)

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
17/03/2026	A1	0

	PRELIMINARY
	INFO ONLY
	FOR TENDER
X	FOR CONSTRUCTION
	AS-BUILT

APPROVED BY COUNCIL / CLIENT

CITY ENGINEER / CLIENT | REG. NO. | DATE

AMENDMENTS CODE

A,B,C.../ : BEFORE TENDER
T0 / : TENDER DRAWING
0,1,2.../ : AFTER TENDER
Z / : AS BUILT

/A : BY CLIENT
/B : BY ARCHITECT
/C : BY MECHANICAL OR ELECTRICAL
/D : BY BVi
/E : BY OTHER ( )

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DATE.	INITIAL	NO.	DESCRIPTION OF REVISION

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Civil, Structural & Electrical Engineers. Environmental & Project Management
Registration no. 1998/003018/07

ISO 9001 BBBEE LEVEL 1

CLIENT

health
Department:
Health
Northern Cape Province

PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

PAVING LEVEL AND STORM WATER DRAINAGE LAYOUT

APPROVED BY BVI

JJ HAEFELE	20190844	17/03/2026
ENGINEER/TECHNOLOGIST	REG. NO.	DATE

SCALE	1:100	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-120-1	0

POINT TABLE

POINT	Y	X	LEVEL	DESCRIPTION
1	-40 412.221	3 007 268.553	1181.110	FFL
2	-40 420.440	3 007 268.762	1181.110	FFL
3	-40 412.330	3 007 264.230	1181.110	FFL
4	-40 418.578	3 007 264.388	1181.110	FFL
5	-40 418.636	3 007 262.279	1181.110	FFL
6	-40 420.603	3 007 262.329	1181.110	FFL
7	-40 412.951	3 007 259.249	1181.110	FFL
8	-40 413.496	3 007 237.722	1181.110	FFL
9	-40 408.897	3 007 237.605	1181.110	FFL
10	-40 408.879	3 007 238.335	1181.110	FFL
11	-40 406.750	3 007 238.282	1181.110	FFL
12	-40 406.768	3 007 237.551	1181.110	FFL
13	-40 403.716	3 007 237.474	1181.110	FFL
14	-40 403.527	3 007 244.956	1181.110	FFL
15	-40 404.606	3 007 244.983	1181.110	FFL
16	-40 404.516	3 007 248.250	1181.110	FFL
17	-40 388.574	3 007 247.845	1181.110	FFL
18	-40 388.644	3 007 244.579	1181.110	FFL
19	-40 390.069	3 007 244.615	1181.110	FFL
20	-40 390.210	3 007 239.067	1181.110	FFL
21	-40 392.119	3 007 239.127	1181.110	FFL
22	-40 392.152	3 007 237.184	1181.110	FFL
23	-40 371,144	3 007 236.650	1181.110	FFL
24	-40 370,872	3 007 247.398	1181.110	FFL
25	-40 375.071	3 007 247.504	1181.110	FFL
26	-40 375.083	3 007 247.008	1181.110	FFL
27	-40 373,283	3 007 246.954	1181.110	FFL
28	-40 373.480	3 007 238.800	1181.110	FFL
29	-40 379.842	3 007 236.870	1181.110	FFL
30	-40 379.790	3 007 238.960	1181.110	FFL
31	-40 380.559	3 007 238.980	1181.110	FFL
32	-40 380.506	3 007 240.807	1181.110	FFL
33	-40 379.742	3 007 240.789	1181.110	FFL
34	-40 379.297	3 007 258.397	1181.110	FFL
35	-40 392.300	3 007 258.727	1181.110	FFL
36	-40 398,950	3 007 258.895	1181.110	FFL
37	-40 378.349	3 007 238.923	1181.110	FFL
38	-40 378.398	3 007 236.830	1181.110	FFL
39	-40 391,539	3 007 258.920	1181.025	FFL
40	-40 391,423	3 007 263.475	1181.025	FFL
41	-40 418.368	3 007 264.162	1181.025	FFL
42	-40 418.422	3 007 262.054	1181.025	FFL
43	-40 420.609	3 007 262.109	1181.025	FFL
44	-40 420,671	3 007 259.665	1181.025	FFL
45	-40 404.302	3 007 248.023	1180.940	Top of Paving
46	-40 404.374	3 007 245.197	1180.940	Top of Paving
47	-40 403.301	3 007 245.170	1180.940	Top of Paving
48	-40 403,443	3 007 239.577	1180.940	Top of Paving
49	-40 390,423	3 007 239.304	1180.940	Top of Paving
50	-40 390,283	3 007 244.841	1180.940	Top of Paving
51	-40 388,871	3 007 244.805	1180.940	Top of Paving
52	-40 388.799	3 007 247.630	1180.940	Top of Paving
53	-40 375,292	3 007 247,487	1180.940	Top of Paving
54	-40 375.309	3 007 246.810	1180.940	Top of Paving
55	-40 373,509	3 007 246,764	1180.940	Top of Paving

POINT TABLE

POINT	Y	X	LEVEL	DESCRIPTION
56	-40 373,705	3 007 239,026	1180.940	Top of Paving
57	-40 376.514	3 007 239,097	1180.940	Top of Paving
58	-40 380,327	3 007 239,193	1180.940	Top of Paving
59	-40 380.291	3 007 240.583	1180.940	Top of Paving
60	-40 379,350	3 007 247,590	1180.940	Top of Paving
61	-40 375.285	3 007 247,729	1180.940	Bottom of Kerb
62	-40 379,344	3 007 247.832	1180.940	Top of Paving
63	-40 355,570	3 007 252,009	1181.450	FFL
64	-40 359,769	3 007 252,117	1181.450	FFL
65	-40 359,542	3 007 260.952	1181.450	FFL
66	-40 362.142	3 007 261.018	1181.450	FFL
67	-40 362,209	3 007 258,391	1181.450	FFL
68	-40 364.468	3 007 258,449	1181.450	FFL
69	-40 364,401	3 007 261,076	1181.450	FFL
70	-40 367.000	3 007 261.143	1181.450	FFL
71	-40 367,643	3 007 236.061	1181.450	FFL
72	-40 363,185	3 007 235,947	1181.450	FFL
73	-40 363,070	3 007 240,435	1181.450	FFL
74	-40 357,072	3 007 240.282	1181.450	FFL
75	-40 356.993	3 007 243,341	1181.450	FFL
76	-40 355.793	3 007 243,310	1181.450	FFL
77	-40 392,005	3 007 266.800	1180.900	Top of Kerb
78	-40 396,633	3 007 267,082	1180.925	Top of Ramp
79	-40 391,285	3 007 263,772	1180.940	Top of Kerb
80	-40 394,342	3 007 269,259	1180.935	Top of Kerb
81	-40 393,618	3 007 263,837	1181,015	Top of Ramp
82	-40 399.650	3 007 263.969	1181.015	Top of Ramp
83	-40 399,703	3 007 266,090	1180.900	Top of Ramp
84	-40 400,397	3 007 271,043	1180.825	Top of Ramp
85	-40 401.856	3 007 269.658	1180.800	Top of Ramp
86	-40 420,851	3 007 270,195	1180.550	Top of Kerb
87	-40 411,856	3 007 269,913	1180,855	Top of Apron
88	-40 406.586	3 007 269.787	1180.740	Top of Kerb
89	-40 398,774	3 007 273,925	1181,000	Top of Kerb
90	-40 401.218	3 007 271,907	1180.860	Top of Paving
91	-40 399.663	3 007 263,990	1180.855	Top of Paving
92	-40 410,652	3 007 264,266	1180.855	Top of Paving
93	-40 411,974	3 007 264,241	1180.855	Top of Apron
94	-40 402,892	3 007 269,693	1180.785	Top of Ramp
95	-40 399,731	3 007 266,096	1180.835	Top of Paving
96	-40 411,882	3 007 268,875	1180,705	Top of Apron
97	-40 420,655	3 007 268,987	1180.570	Top of Apron
98	-40 423,123	3 007 270,200	1180.450	Top of Apron
99	-40 416,246	3 007 256,332	1180,580	Top of Apron
100	-40 420,896	3 007 259,451	1180.545	Top of Apron
101	-40 413,171	3 007 259,240	1180.685	Top of Apron
102	-40 379,627	3 007 236,656	1180.830	Channel Side
103	-40 414,541	3 007 259,290	1180,685	Top of Apron
104	-40 423,471	3 007 256,515	1180.400	Top of Apron
105	-40 413,721	3 007 237,507	1179,460	Top of Apron
106	-40 421,193	3 007 277,336	1180,710	Top of Kerb
107	-40 403,531	3 007 236,244	1179.740	Top of Apron
108	-40 403,502	3 007 237,249	1179.760	Top of Apron
109	-40 392,388	3 007 235,964	1179,800	Top of Apron
110	-40 392,387	3 007 236,967	1179,820	Top of Apron

POINT TABLE

POINT	Y	X	LEVEL	DESCRIPTION
111	-40 392,333	3 007 239,132	1179,860	Top of Apron
112	-40 403,451	3 007 239,415	1179,800	Top of Apron
113	-40 370,885	3 007 234,777	1180,050	Channel Side
114	-40 398,782	3 007 273,614	1181,170	FFL
115	-40 399,023	3 007 273,385	1181,170	FFL
116	-40 399,175	3 007 273,545	1181,170	FFL
117	-40 400,907	3 007 271,899	1181,170	FFL
118	-40 396,625	3 007 267,393	1181,170	FFL
119	-40 394,653	3 007 269,267	1181,170	FFL
120	-40 401,601	3 007 276,642	1181,040	Top of Kerb
121	-40 403,139	3 007 277,326	1181,050	Top of Kerb
122	-40 369,429	3 007 256,093	1180,510	Top of Kerb
123	-40 379,409	3 007 259,752	1180,610	Bottom of Kerb
124	-40 391,894	3 007 266,824	1180,750	Bottom of Kerb
125	-40 394,270	3 007 269,327	1180,725	Bottom of Kerb
126	-40 398,685	3 007 274,010	1180,850	Bottom of Kerb
127	-40 387,176	3 007 263,132	1180,690	Top of Paving
128	-40 391,194	3 007 263,775	1180,790	Bottom of Kerb
129	-40 391,316	3 007 258,947	1181,025	Top of Paving
130	-40 379,464	3 007 259,669	1180,760	Top of Kerb
131	-40 369,821	3 007 260,827	1180,800	Top of Kerb
132	-40 369,137	3 007 256,049	1180,680	Top of Kerb
133	-40 369,728	3 007 256,099	1180,670	Top of Kerb
134	-40 367,240	3 007 260,762	1180,950	Top of Kerb
135	-40 367,224	3 007 261,379	1181,090	NGL
136	-40 364,162	3 007 261,303	1181,130	NGL
137	-40 362,366	3 007 261,254	1181,150	NGL
138	-40 359,307	3 007 261,176	1181,190	NGL
139	-40 362,433	3 007 258,627	1181,190	NGL
140	-40 364,232	3 007 258,673	1181,170	NGL
141	-40 359,533	3 007 252,341	1181,280	NGL
142	-40 355,335	3 007 252,233	1181,100	NGL
143	-40 388,210	3 007 258,835	1180,940	Top of Kerb
144	-40 388,310	3 007 258,837	1180,790	Bottom of Kerb
145	-40 388,245	3 007 261,400	1180,735	Bottom of Kerb
146	-40 387,854	3 007 261,872	1180,725	Bottom of Kerb
147	-40 387,118	3 007 261,833	1180,715	Bottom of Kerb
148	-40 385,427	3 007 260,053	1180,710	Bottom of Kerb
149	-40 379,768	3 007 259,901	1180,615	Bottom of Kerb
150	-40 379,778	3 007 259,801	1180,765	Top of Kerb
151	-40 385,471	3 007 259,955	1180,860	Top of Kerb
152	-40 387,183	3 007 261,757	1180,765	Top of Kerb
153	-40 387,828	3 007 261,784	1180,775	Top of Kerb
154	-40 388,145	3 007 261,387	1180,785	Top of Kerb
155	-40 379,157	3 007 259,147	1180,785	Top of Kerb
156	-40 379,164	3 007 258,613	1180,810	Top of Kerb
157	-40 379,063	3 007 258,612	1180,660	Bottom of Kerb
158	-40 379,057	3 007 259,153	1180,635	Bottom of Kerb
159	-40 404,691	3 007 277,365	1181,000	Top of Kerb
160	-40 406,439	3 007 275,461	1180,900	Top of Kerb
161	-40 401,383	3 007 276,848	1180,930	Bottom of Kerb
162	-40 403,132	3 007 277,626	1180,940	Bottom of Kerb
163	-40 404,683	3 007 277,665	1180,890	Bottom of Kerb
164	-40 406,744	3 007 275,473	1180,790	Bottom of Kerb
165	-40 406,882	3 007 269,937	1180,630	Bottom of Kerb

POINT TABLE

POINT	Y	X	LEVEL	DESCRIPTION
166	-40 370,647	3 007 247,612	1180,500	Top of Paving
167	-40 370,930	3 007 236,424	1180,100	Top of Apron
168	-40 367,879	3 007 235,837	1180,100	NGL
169	-40 362,961	3 007 235,711	1180,150	NGL
170	-40 362,846	3 007 240,200	1180,300	NGL
171	-40 356,848	3 007 240,046	1180,250	NGL
172	-40 356,769	3 007 243,105	1180,280	NGL
173	-40 355,569	3 007 243,074	1180,260	NGL
174	-40 367,242	3 007 260,664	1180,800	Bottom of Kerb
175	-40 369,820	3 007 260,730	1180,650	Bottom of Kerb
176	-40 399,015	3 007 273,696	1180,990	Top of Paving
177	-40 399,167	3 007 273,856	1180,980	Top of Paving
178	-40 406,009	3 007 276,786	1180,950	Top of Kerb
179	-40 406,241	3 007 276,981	1180,840	Bottom of Kerb
180	-40 369,425	3 007 256,193	1180,510	Bottom of Kerb
181	-40 374,070	3 007 257,850	1180,555	Top of Paving
182	-40 374,850	3 007 255,950	1180,630	Bottom of Kerb
183	-40 374,057	3 007 256,320	1180,610	Bottom of Kerb
184	-40 375,087	3 007 255,336	1180,650	Bottom of Kerb
185	-40 375,182	3 007 247,726	1181,090	Top of Kerb
186	-40 374,987	3 007 255,337	1180,800	Top of Kerb
187	-40 374,774	3 007 255,892	1180,780	Top of Kerb
188	-40 374,064	3 007 256,213	1180,760	Top of Kerb
189	-40 373,588	3 007 261,825	1180,900	Top of Kerb
190	-40 373,633	3 007 261,735	1180,750	Bottom of Kerb
191	-40 371,892	3 007 261,136	1180,850	Top of Kerb
192	-40 371,892	3 007 261,020	1180,700	Bottom of Kerb
193	-40 377,455	3 007 263,568	1180,810	Bottom of Kerb
194	-40 377,408	3 007 263,655	1180,960	Top of Kerb
195	-40 385,253	3 007 267,312	1180,920	Bottom of Kerb
196	-40 385,201	3 007 267,396	1181,070	Top of Kerb
197	-40 388,706	3 007 270,152	1180,950	Bottom of Kerb
198	-40 388,702	3 007 270,293	1181,100	Top of Kerb
199	-40 394,133	3 007 276,811	1181,100	Bottom of Kerb
200	-40 394,035	3 007 276,788	1181,250	Top of Kerb
201	-40 382,763	3 007 271,395	1181,490	NGL
202	-40 379,871	3 007 270,531	1181,490	NGL
203	-40 375,972	3 007 270,431	1181,600	NGL
204	-40 354,749	3 007 273,816	1182,000	NGL
205	-40 371,513	3 007 270,315	1181,620	NGL
206	-40 381,998	3 007 273,390	1181,560	NGL
207	-40 393,214	3 007 277,271	1181,300	Top of Kerb
208	-40 393,211	3 007 277,371	1181,150	Bottom of Kerb
209	-40 373,627	3 007 276,769	1181,950	Top of Kerb
210	-40 373,525	3 007 276,866	1181,800	Bottom of Kerb
211	-40 373,685	3 007 274,521	1181,900	Top of Kerb
212	-40 373,587	3 007 274,418	1181,750	Bottom of Kerb
213	-40 383,869	3 007 274,747	1181,600	Bottom of Kerb
214	-40 383,908	3 007 274,848	1181,750	Top of Kerb
215	-40 393,962	3 007 275,683	1181,090	Bottom of Kerb
216	-40 393,889	3 007 275,752	1181,240	Top of Kerb
217	-40 387,723	3 007 269,117	1180,940	Bottom of Kerb
218	-40 387,651	3 007 269,186	1181,090	Top of Kerb
219	-40 388,633	3 007 270,220	1181,100	Top of Kerb
220	-40 355,488	3 007 234,288	1180,000	NGL

POINT TABLE

POINT	Y	X	LEVEL	DESCRIPTION
221	-40 423,964	3 007 236,477	1179,000	NGL
222	-40 423,310	3 007 270,216	1180,380	NGL
223	-40 420,749	3 007 270,293	1180,400	Bottom of Kerb
224	-40 420,603	3 007 275,970	1180,550	Bottom of Kerb
225	-40 420,703	3 007 275,975	1180,700	Top of Kerb
226	-40 421,099	3 007 277,452	1180,560	Bottom of Kerb
227	-40 423,109	3 007 278,127	1180,570	Bottom of Kerb
228	-40 423,130	3 007 278,038	1180,720	Top of Kerb
229	-40 369,110	3 007 256,140	1180,530	Bottom of Kerb
230	-40 369,722	3 007 256,196	1180,520	Bottom of Kerb
231	-40 368,507	3 007 255,170	1180,640	Top of Kerb
232	-40 368,407	3 007 255,168	1180,490	Bottom of Kerb
233	-40 369,032	3 007 234,717	1180,100	Top of Kerb
234	-40 368,932	3 007 234,713	1179,950	Bottom of Kerb
235	-40 370,283	3 007 234,756	1180,050	Channel Side
236	-40 370,586	3 007 234,764	1179,950	Channel Centreline
237	-40 368,663	3 007 255,699	1180,660	Top of Kerb
238	-40 368,579	3 007 255,752	1180,510	Bottom of Kerb
239	-40 369,642	3 007 247,380	1180,285	Channel Centreline
240	-40 370,293	3 007 245,398	1180,230	Channel Centreline
241	-40 369,996	3 007 245,364	1180,330	Channel Side
242	-40 370,594	3 007 245,461	1180,330	Channel Side
243	-40 369,344	3 007 247,334	1180,385	Channel Side
244	-40 369,942	3 007 247,438	1180,385	Channel Side
245	-40 370,841	3 007 236,422	1180,090	Channel Side
246	-40 370,241	3 007 236,407	1180,090	Channel Side
247	-40 379,063	3 007 239,161	1180,840	Channel Centreline
248	-40 378,564	3 007 239,148	1180,880	Top of Paving
249	-40 378,067	3 007 240,525	1180,860	Top of Paving
250	-40 379,563	3 007 239,174	1180,880	Top of Paving
251	-40 416,729	3 007 236,545	1179,370	Top of Apron
252	-40 378,627	3 007 236,629	1180,830	Channel Side
253	-40 379,127	3 007 236,643	1180,790	Channel Centreline
254	-40 379,528	3 007 240,564	1180,910	Top of Paving
255	-40 413,263	3 007 256,357	1180,630	Top of Apron

BENCHMARKS (WGD84 LO23)

BENCHMARK	Y	X	Z
BM3	-40 386,862	3 007 269,762	1181,395
BM4	-40 355,216	3 007 272,227	1182,417
BM5	-40 368,913	3 007 243,612	1180,737

NOTES / LEGEND

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
17/03/2026	A1	0

	PRELIMINARY
	INFO ONLY
	FOR TENDER
X	FOR CONSTRUCTION
	AS-BUILT

APPROVED BY COUNCIL / CLIENT

CITY ENGINEER / CLIENT | REG. NO. | DATE

AMENDMENTS CODE

A,B,C.../ : BEFORE TENDER
T0 / : TENDER DRAWING
0,1,2.../ : AFTER TENDER
Z / : AS BUILT

/A : BY CLIENT
/B : BY ARCHITECT
/C : BY MECHANICAL OR ELECTRICAL
/D : BY BVI
/E : BY OTHER ( )

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Registration no. 1998/000185/07
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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

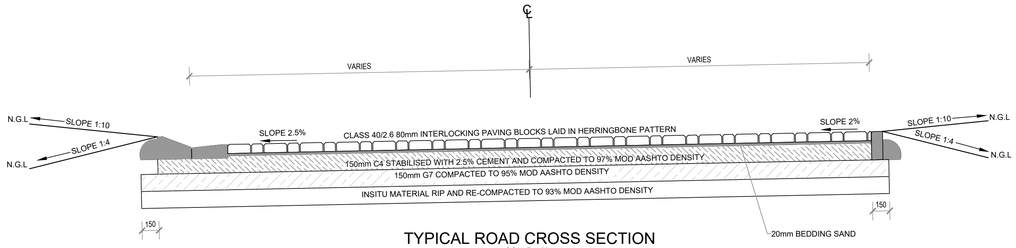
PLATFORM POINTS LIST

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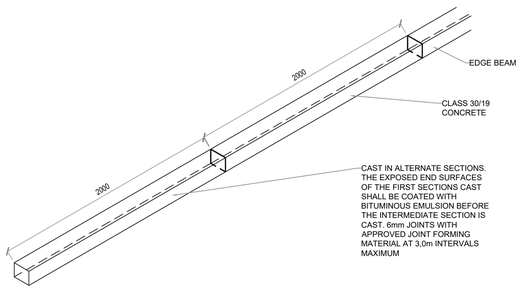
JJ HAEFELE | 20190844 | 17/03/2026
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

SCALE	N.T.S.	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

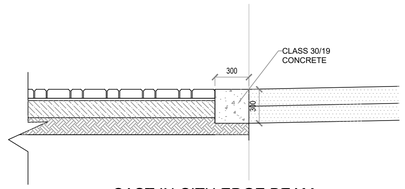
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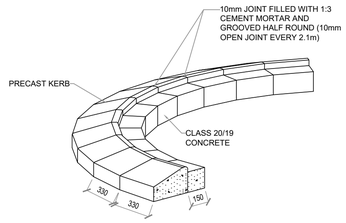
TYPICAL ROAD CROSS SECTION
SCALE 1:50



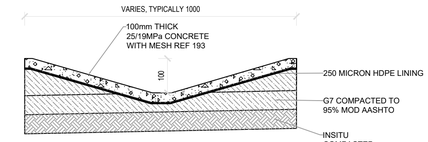
DETAIL OF EDGE BEAM
SCALE 1:20



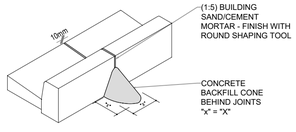
CAST IN-SITU EDGE BEAM
SCALE 1:20



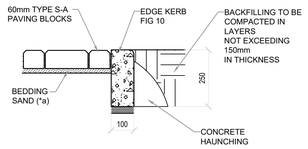
DETAIL OF KERBS ON CURVED SECTIONS
SCALE 1:20



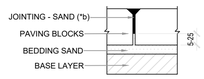
TYPICAL STORMWATER CHANNEL DETAIL
SCALE 1:10



CONCRETE HAUNCHING
SCALE 1:20



EDGE DETAIL (SANS 927 FIG 10)
SCALE 1:10



DETAIL B : JOINTS BETWEEN BLOCKS
SCALE 1 : 5



SABS FIG 10
SCALE 1 : 10



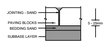
SABS FIG 3
SCALE 1 : 10



SABS FIG 14
SCALE 1 : 10



SABS FIG 8c
SCALE 1 : 10



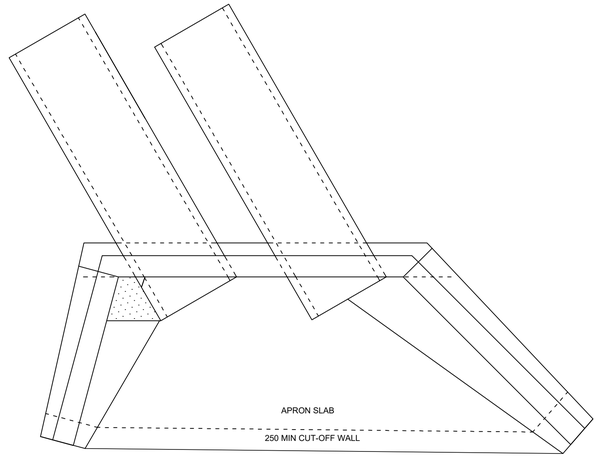
DETAIL A : JOINTS
BETWEEN BLOCKS
SCALE 1 : 10

NOTE :

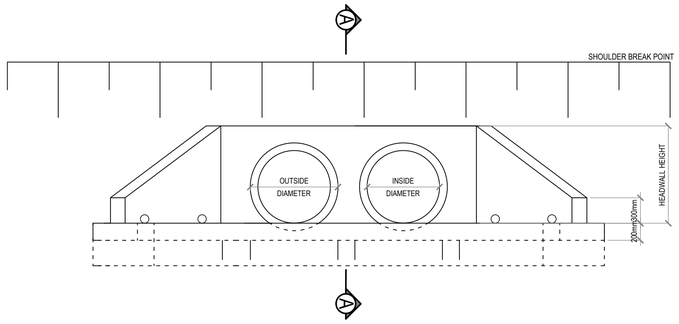
*a) BEDDING SAND SIZE AND GRADING TO COMPLY WITH STANDARDS AS SET OUT IN THE UTG 2 (STRUCTURAL DESIGN OF SEGMENTAL BLOCK PAVEMENTS) (SIEVE GRADING TEST RESULTS TO BE SUPPLIED TO ENGINEER)

*b) JOINTING SAND SHALL PASS A 1.18mm SIEVE AND SHALL CONTAIN 10 - 50% OF MATERIAL THAT PASSES A 0.075mm SIEVE (SIEVE GRADING TEST RESULTS TO BE SUPPLIED TO ENGINEER)

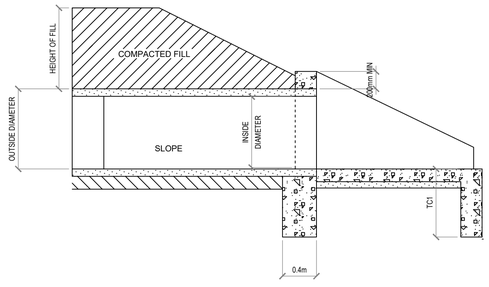
1. PAVER THICKNESS 80mm
   PAVER CLASS 40/2.6
   PAVER TYPE S-A (TYPE A) INTERLOCKING PAVING BLOCKS
   PAVER LAID IN HERRINGBONE PATTERN
2. ALL ROADS TO HAVE A MIN 2% CROSS FALL OR CAMBER
3. THESE DRAWINGS MUST BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS
4. ALL DIMENSIONS AND LEVELS MUST BE CHECKED AGAINST OTHER RELEVANT DRAWINGS AND ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER FOR ATTENTION. DRAWINGS NOT TO BE SCALED.
5. ALL DIMENSIONS AND LEVELS MUST BE CHECKED ON SITE.
6. ALL CONCRETE WORKS TO COMPLY WITH S.A.B.S. 1200G AND ALL REINFORCEMENT STEEL TO COMPLY WITH S.A.B.S. 920
7. ALL CONCRETE TO BE VIBRATED AND THE MIN. 28 DAYS STRENGTH TO BE 30MPa UNLESS SPECIFIED OTHERWISE.
8. MAXIMUM SLUMP IN CONCRETE = 100mm
9. CONCRETE COVER TO REINFORCING STEEL: FOUNDATIONS = 40mm
10. REINFORCED STEEL TO BE HELD IN POSITION WITH THE USE OF PLASTIC SPACER BLOCKS (1 PER m²)
11. "Y" REINFORCEMENT TO SABS STANDARDS (MIN YIELD STRESS OF 450MPa). AND "R" REINFORCEMENT TO SABS STANDARDS (MIN YIELD STRESS OF 250MPa).
12. ENGINEER TO APPROVE ALL REINFORCING PRIOR TO CASTING OF CONCRETE.
13. 48hours INSPECTION AND SITE VISIT NOTICE PERIOD REQUIRED.
14. COPYRIGHT RESERVED ON ALL DRAWINGS
15. ALL CONCRETE STORMWATER CHANNELS TO HAVE A WOOD FLOAT FINISH
16. PRECAST CONCRETE KERBS SHOULD COMPLY WITH SANS 927-2003
17. KERBS ARE GENERALLY SUPPLIED IN LENGTHS OF 0.33m OR 1.0m FOR EXTRA HEAVY DUTY AREAS CONTINUOUS CONCRETE HAUNCHING SHOULD BE PLACED BEHIND KERB / EDGE RESTRAINT



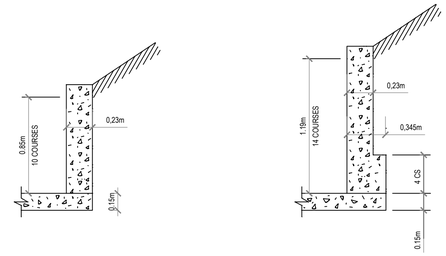
SKEW PIPE CULVERT
SCALE 1:20



ELEVATION
SCALE 1:20



PART SECTION A-A
SCALE 1:20



TYPICAL RETAINING WALL DETAILS
SCALE 1:20

NOTES / LEGEND

GENERAL

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ISSUE DATE:	DRAWING SIZE:	REVISION:
17/03/2026	A1	0

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Registration no. 1996/000185/07
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CESA Consulting Engineers South Africa

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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

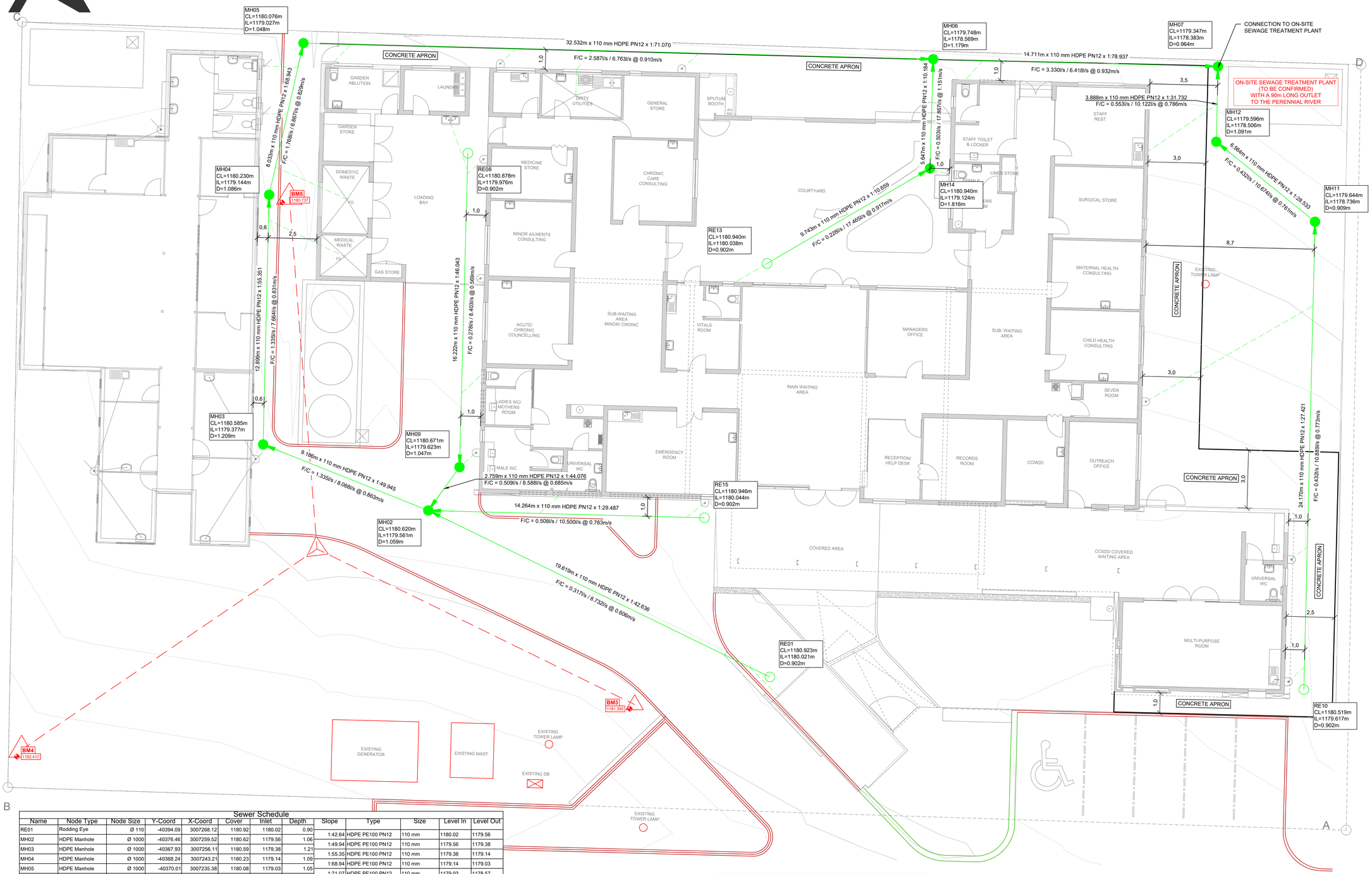
TYPICAL ROAD AND STORMWATER DETAILS

APPROVED BY BVI

JJ HAEFELE	20190844	17/03/2026
ENGINEER/TECHNOLOGIST	REG. NO.	DATE

SCALE	AS SHOWN	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-123-1	0



Sewer Schedule

Name	Node Type	Node Size	Y-Coord	X-Coord	Cover	Inlet	Depth	Slope	Type	Size	Level In	Level Out
RE01	Rodding Eye	Ø 110	-40394.09	3007268.12	1180.92	1180.02	0.90	1:42.64	HDPE PE100 PN12	110 mm	1180.02	1179.56
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06	1:49.94	HDPE PE100 PN12	110 mm	1179.56	1179.38
MH03	HDPE Manhole	Ø 1000	-40367.93	3007256.11	1180.59	1179.38	1.21	1:55.35	HDPE PE100 PN12	110 mm	1179.38	1179.14
MH04	HDPE Manhole	Ø 1000	-40368.24	3007243.21	1180.23	1179.14	1.09	1:68.94	HDPE PE100 PN12	110 mm	1179.14	1179.03
MH05	HDPE Manhole	Ø 1000	-40370.01	3007235.38	1180.08	1179.03	1.05	1:71.07	HDPE PE100 PN12	110 mm	1179.03	1178.57
MH06	HDPE Manhole	Ø 1000	-40402.53	3007236.21	1179.75	1178.57	1.18	1:78.94	HDPE PE100 PN12	110 mm	1178.57	1178.38
MH07	HDPE Manhole	Ø 1000	-40417.24	3007236.58	1179.35	1178.38	0.96					
RE08	Rodding Eye	Ø 110	-40378.50	3007241.06	1180.88	1179.98	0.90	1:46.04	HDPE PE100 PN12	110 mm	1179.98	1179.62
MH09	HDPE Manhole	Ø 1000	-40378.07	3007257.28	1180.67	1179.62	1.05	1:44.08	HDPE PE100 PN12	110 mm	1179.62	1179.56
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06					
RE15	Rodding Eye	Ø 110	-40390.72	3007259.89	1180.95	1180.04	0.90	1:29.49	HDPE PE100 PN12	110 mm	1180.04	1179.56
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06					
RE13	Rodding Eye	Ø 110	-40393.95	3007246.76	1180.94	1180.04	0.90	1:10.66	HDPE PE100 PN12	110 mm	1180.04	1179.12
MH14	HDPE Manhole	Ø 1000	-40402.36	3007241.85	1180.94	1179.12	1.82	1:10.18	HDPE PE100 PN12	110 mm	1179.12	1178.57
MH06	HDPE Manhole	Ø 1000	-40402.53	3007236.21	1179.75	1178.57	1.18					
RE10	Rodding Eye	Ø 110	-40421.67	3007268.77	1180.52	1179.62	0.90	1:27.42	HDPE PE100 PN12	110 mm	1179.62	1178.74
MH11	HDPE Manhole	Ø 1000	-40422.25	3007244.60	1179.64	1178.74	0.91	1:28.53	HDPE PE100 PN12	110 mm	1178.74	1178.51
MH12	HDPE Manhole	Ø 1000	-40417.15	3007240.47	1179.60	1178.51	1.09	1:31.73	HDPE PE100 PN12	110 mm	1178.51	1178.38
MH07	HDPE Manhole	Ø 1000	-40417.24	3007236.58	1179.35	1178.38	0.96					

BENCHMARKS (WGD84 LO23)			
BENCHMARK	Y	X	Z
BM3	-40 386.862	3 007 269.762	1181.395
BM4	-40 355.216	3 007 272.227	1182.417
BM5	-40 368.913	3 007 243.612	1180.737

NOTES:

DUE TO THE PRESENCE OF DOLOMITIC MATERIAL IN THE AREA, THIS SITE HAS A IHC2//1 CLASSIFICATION WITH D3 PRECAUTIONARY MEASURES PRESCRIBED.

1. ALL PIPES TO BE HDPE PE100.
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4. NO COMPRESSION FITTINGS ARE ALLOWED BELOW GROUND, EXCEPT IF THEY ARE INSTALLED IN WATERTIGHT MANHOLES.
5. ALL MANHOLES TO BE WATERTIGHT PREFABRICATED HDPE MANHOLES.
6. ALL CONNECTIONS TO HDPE MANHOLES SHALL BE FLEXIBLE AND WATERTIGHT.
7. ALL SEWER PIPES AND FITTINGS MUST BE WATERTIGHT.
8. ALL LAID DRAINAGE AND SANITARY SEWER PIPES SHOULD BE TESTED FOR LEAKAGE USING THE STANDARD SANS WATER TEST UN INSTALLATION.
9. WELDED HDPE PIPE SYSTEMS SHOULD BE PRESSURE TESTED TO THE RELEVANT PIPE PRESSURE CLASS AND THE MANUFACTURER'S SPECIFICATIONS.
10. ALL SITE SERVICES TO BE TESTED TO HAVE ZERO PERCENT LEAKAGE.
11. THE NUMBER OF JOINTS MUST BE KEPT TO A MINIMUM.

1 0 2 4m
SCALE 1:100

NOTES / LEGEND

- NEW SEWER PIPE
- PROPOSED SEWER CONNECTION
- NEW RODDING EYE
- NEW HDPE MANHOLE
- F/C PEAK FLOW / CAPACITY

GENERAL

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Civil, Structural & Electrical Engineers. Environmental & Project Management
Registration no. 1998/003150/07

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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

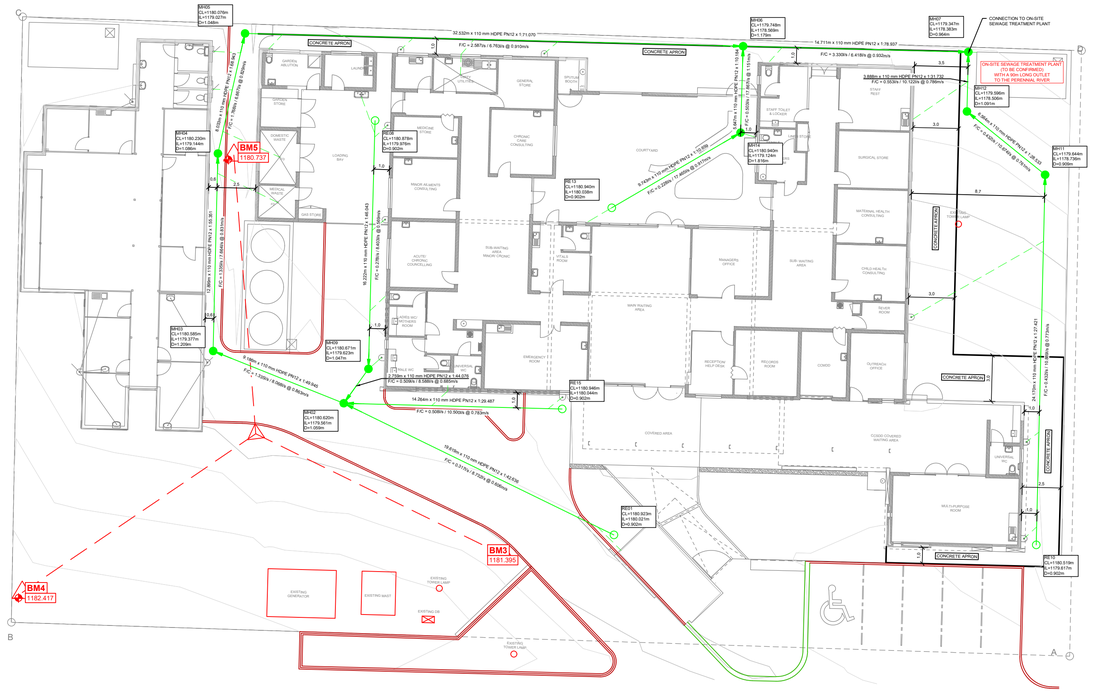
SEWER LAYOUT

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JJ HAEFELE | 20190844 | 17/03/2026
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

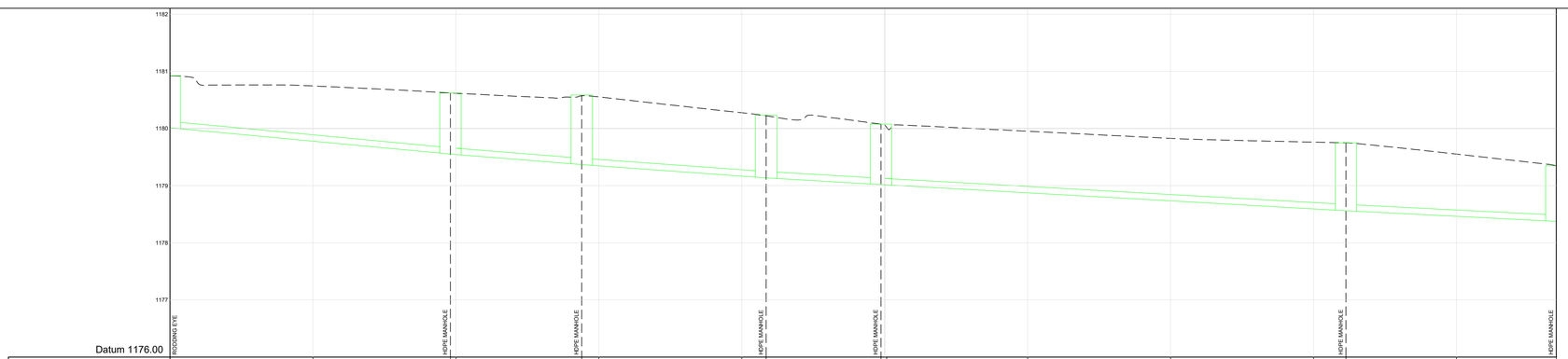
SCALE	1:100	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-130-1	0



2 0 4 8m

SCALE 1:200



Datum 1176.00

Chainage	0.000	10.000	19.819 20.000	28.805 30.000	40.000	41.703 49.726 50.000	60.000 70.000 80.000	82.288 90.000 96.979
Manhole Name	RE01	MH02	MH03	MH04	MH05	MH06	MH07	
Ground Level	1180.74	1180.63 1180.62	1180.59	1180.27	1180.23	1180.08 1180.06	1179.95 1179.83 1179.76	1179.75 1179.55 1179.35
Cover Level	1180.853	1180.820	1180.585	1180.230	1180.035	1179.748	1179.347
Inlet Level	1180.021	1179.786	1179.397	1179.174	1179.144	1179.037 1179.003	1178.883 1178.742 1178.601	1178.569 1178.471 1178.383
Depth	0.902	0.958	1.059 1.062	1.209 1.197	1.100	1.086	1.048 1.044	1.069 1.054 1.159 1.170 1.080 1.064
Link Type / Link Size		HDPE PE100 PN12 110 mm	HDPE PE100 PN12 110 mm	HDPE PE100 PN12 110 mm	HDPE PE100 PN12 110 mm	HDPE PE100 PN12 110 mm		
Length / Slope		19.624 m 1:43	9.187 m 1:50	12.901 m 1:55	8.034 m 1:69	32.535 m 1:71		14.712 m 1:79
Flow		0.317 l/s	1.335 l/s	1.335 l/s	1.768 l/s	2.587 l/s		3.330 l/s
Capacity		8.732 l/s	8.068 l/s	7.664 l/s	6.867 l/s	6.763 l/s		6.418 l/s
Velocity		0.606 m/s	0.863 m/s	0.831 m/s	0.829 m/s	0.910 m/s		0.932 m/s
Full-Bore Velocity		1.248 m/s	1.153 m/s	1.095 m/s	0.981 m/s	0.966 m/s		0.917 m/s

Sewer Schedule

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MH07	HDPE Manhole	Ø 1000	-40417.24	3007236.58	1179.35	1178.38	0.96	1:31.73	HDPE PE100 PN12	110 mm	1178.51	1178.38

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GENERAL NOTES

DRAWING LEGEND

- NEW SEWER PIPE
- PROPOSED SEWER CONNECTION
- NEW RODDING EYE
- NEW HDPE MANHOLE
- F/C PEAK FLOW / CAPACITY

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health
Department:
Health
Northern Cape Province

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CESA Consulting Engineers South Africa
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OFFICE: Central
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PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

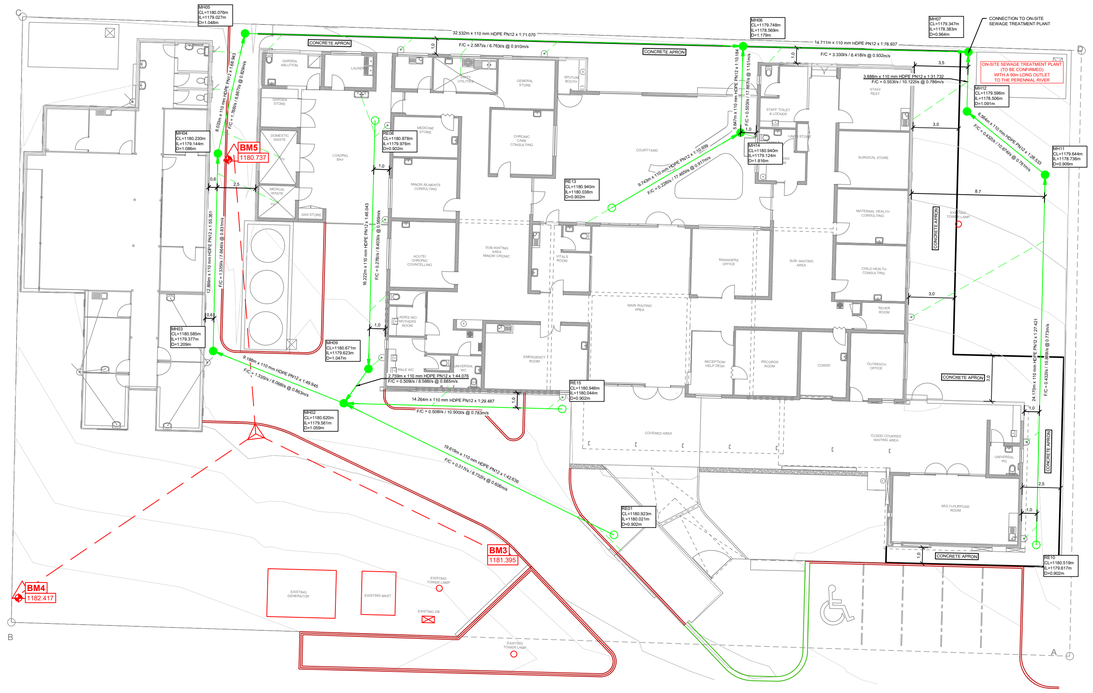
SEWER LONGITUDINAL SECTION SHEET 1

APPROVED BY BVI

JJ HAEFELE | 20190844 | 17/03/2026
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

SCALE	1:50 VER 1:200 HOR	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER: 35566-131-1 | REVISION NO.: 0



2 0 4 8m

SCALE 1:200

Sewer Schedule

Name	Node Type	Node Size	Y-Coord	X-Coord	Cover	Inlet	Depth	Slope	Type	Size	Level In	Level Out
RE01	Rodding Eye	Ø 110	-40394.09	3007268.12	1180.92	1180.02	0.90					
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06	1:42.64	HDPE PE100 PN12	110 mm	1180.02	1179.56
MH03	HDPE Manhole	Ø 1000	-40367.93	3007256.11	1180.59	1179.38	1.21	1:49.94	HDPE PE100 PN12	110 mm	1179.56	1179.38
MH04	HDPE Manhole	Ø 1000	-40368.24	3007243.21	1180.23	1179.14	1.09	1:55.35	HDPE PE100 PN12	110 mm	1179.38	1179.14
MH05	HDPE Manhole	Ø 1000	-40370.01	3007235.38	1180.08	1179.03	1.05	1:68.94	HDPE PE100 PN12	110 mm	1179.14	1179.03
MH06	HDPE Manhole	Ø 1000	-40402.53	3007236.21	1179.75	1178.57	1.18	1:71.07	HDPE PE100 PN12	110 mm	1179.03	1178.57
MH07	HDPE Manhole	Ø 1000	-40417.24	3007236.58	1179.35	1178.38	0.96	1:78.94	HDPE PE100 PN12	110 mm	1178.57	1178.38
RE08	Rodding Eye	Ø 110	-40378.50	3007241.06	1180.88	1179.98	0.90					
MH09	HDPE Manhole	Ø 1000	-40378.07	3007257.28	1180.67	1179.62	1.05	1:46.04	HDPE PE100 PN12	110 mm	1179.98	1179.62
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06	1:44.08	HDPE PE100 PN12	110 mm	1179.62	1179.56
RE15	Rodding Eye	Ø 110	-40390.72	3007259.89	1180.95	1180.04	0.90					
MH02	HDPE Manhole	Ø 1000	-40376.46	3007259.52	1180.62	1179.56	1.06	1:29.49	HDPE PE100 PN12	110 mm	1180.04	1179.56
RE13	Rodding Eye	Ø 110	-40393.95	3007246.76	1180.94	1180.04	0.90					
MH14	HDPE Manhole	Ø 1000	-40402.36	3007241.85	1180.94	1179.12	1.82	1:10.66	HDPE PE100 PN12	110 mm	1180.04	1179.12
MH06	HDPE Manhole	Ø 1000	-40402.53	3007236.21	1179.75	1178.57	1.18	1:10.18	HDPE PE100 PN12	110 mm	1179.12	1178.57
RE10	Rodding Eye	Ø 110	-40421.67	3007268.77	1180.52	1179.62	0.90					
MH11	HDPE Manhole	Ø 1000	-40422.25	3007244.60	1179.64	1178.74	0.91	1:27.42	HDPE PE100 PN12	110 mm	1179.62	1178.74
MH12	HDPE Manhole	Ø 1000	-40417.15	3007240.47	1179.60	1178.51	1.09	1:28.53	HDPE PE100 PN12	110 mm	1178.74	1178.51
MH07	HDPE Manhole	Ø 1000	-40417.24	3007236.58	1179.35	1178.38	0.96	1:31.73	HDPE PE100 PN12	110 mm	1178.51	1178.38

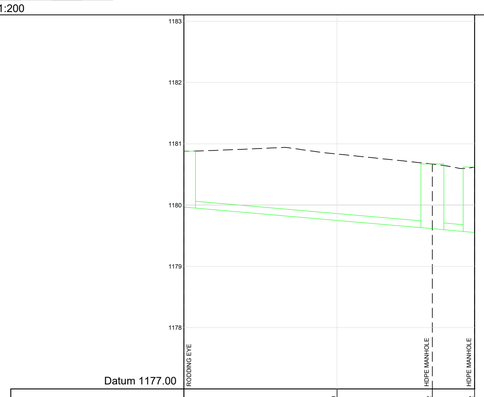
BENCHMARKS (WGD84 LO23)

BENCHMARK	Y	X	Z
BM3	-40 386.862	3 007 269.762	1181.395
BM4	-40 355.216	3 007 272.227	1182.417
BM5	-40 368.913	3 007 243.612	1180.737

NOTES:

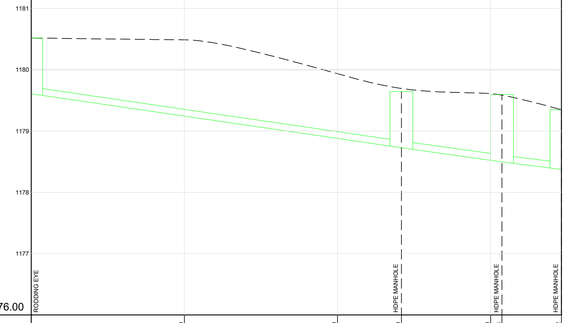
DUE TO THE PRESENCE OF DOLOMITIC MATERIAL IN THE AREA, THIS SITE HAS A IHC2//1 CLASSIFICATION WITH D3 PRECAUTIONARY MEASURES PRESCRIBED.

1. ALL PIPES TO BE HDPE PE100.
2. JOINTS TO BE BUTT-WELDED (SANS 0268 - PART 1) IN GENERAL, OR ELECTRO FUSION WELDED (SANS 0268 - PART 2) WHERE BUTT-WELDING IS NOT POSSIBLE.
3. ALL WELDING TO BE DONE IN ACCORDANCE WITH THE RELEVANT SANS 0268, SANS 0269, SANS 1269, SANS 0270, SANS 1655 AND SANS 1671 CODES.
4. NO COMPRESSION FITTINGS ARE ALLOWED BELOW GROUND, EXCEPT IF THEY ARE INSTALLED IN WATERTIGHT MANHOLES.
5. ALL MANHOLES TO BE WATERTIGHT PREFABRICATED HDPE MANHOLES.
6. ALL CONNECTIONS TO HDPE MANHOLES SHALL BE FLEXIBLE AND WATERTIGHT.
7. ALL SEWER PIPES AND FITTINGS MUST BE WATERTIGHT.
8. ALL LAID DRAINAGE AND SANITARY SEWER PIPES SHOULD BE TESTED FOR LEAKAGE USING THE STANDARD SANS WATER TEST UN INSTALLATION.
9. WELDED HDPE PIPE SYSTEMS SHOULD BE PRESSURE TESTED TO THE RELEVANT PIPE PRESSURE CLASS AND THE MANUFACTURER'S SPECIFICATIONS.
10. ALL SITE SERVICES TO BE TESTED TO HAVE ZERO PERCENT LEAKAGE.
11. THE NUMBER OF JOINTS MUST BE KEPT TO A MINIMUM.



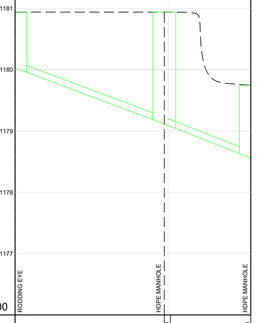
Datum 1177.00

Chainage	0.000	10.000	16.222	18.982
Manhole Name	RE08	MH09	MH02	
Ground Level	1180.88	1180.83	1180.67	1180.62
Cover Level	1180.678		1180.671	1180.620
Inlet Level	1179.978	1179.758	1179.623	1179.561
Depth	0.902	1.074	1.047	1.059
Link Type / Link Size	HDPE PE100 PN12 110 mm			HDPE PN12 110 mm
Length / Slope	16.226 m 1:46			2.760 m 1:44
Flow	0.278 l/s			0.509 l/s
Capacity	8.403 l/s			8.588 l/s
Velocity	0.569 m/s			0.685 m/s
Full-Bore Velocity	1.201 m/s			1.227 m/s



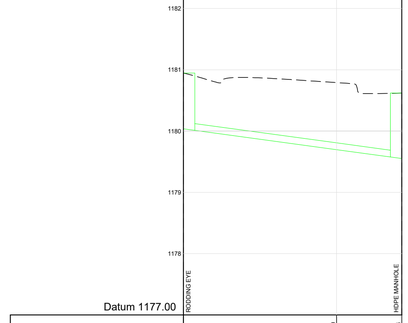
Datum 1176.00

Chainage	0.000	10.000	20.000	24.170	30.000	30.734	34.652
Manhole Name	RE10	MH11	MH12	MH07	
Ground Level	1180.52	1180.49	1179.94	1179.61	1179.60	1179.35	1179.35
Cover Level	1180.519		1179.644		1179.596		1179.347
Inlet Level	1179.877	1179.292	1178.888	1178.728	1178.537	1178.540	1178.383
Depth	0.902	1.226	1.048	0.909	1.078	1.091	0.964
Link Type / Link Size	HDPE PE100 PN12 110 mm				HDPE PE100 PN12 110 mm		HDPE PE100 PN12 110 mm
Length / Slope	24.186 m 1:27				6.568 m 1:29		3.890 m 1:32
Flow	0.432 l/s				0.432 l/s		0.553 l/s
Capacity	10.889 l/s				10.674 l/s		10.122 l/s
Velocity	0.773 m/s				0.761 m/s		0.786 m/s
Full-Bore Velocity	1.556 m/s				1.525 m/s		1.446 m/s



Datum 1176.00

Chainage	0.000	0.725	0.000	15.380
Manhole Name	RE13	MH14	MH06	
Ground Level	1180.94	1180.94	1180.94	1179.75	1179.75
Cover Level	1180.940		1180.940		1179.748
Inlet Level	1180.038	1179.126	1179.050	1178.568
Depth	0.902	1.815	1.890	1.179
Link Type / Link Size	HDPE PE100 PN12 110 mm		HDPE PE100 PN12 110 mm	
Length / Slope	9.786 m 1:11		5.674 m 1:10	
Flow	0.228 l/s		0.503 l/s	
Capacity	17.465 l/s		17.867 l/s	
Velocity	0.917 m/s		1.151 m/s	
Full-Bore Velocity	2.495 m/s		2.553 m/s	



Datum 1177.00

Chainage	0.000	10.000	14.264
Manhole Name	RE15	MH02	
Ground Level	1180.95	1180.79	1180.62
Cover Level	1180.946		1180.620
Inlet Level	1180.044	1179.705	1179.561
Depth	0.902	1.085	1.059
Link Type / Link Size	HDPE PE100 PN12 110 mm		
Length / Slope	14.272 m 1:29		
Flow	0.508 l/s		
Capacity	10.500 l/s		
Velocity	0.783 m/s		
Full-Bore Velocity	1.500 m/s		

GENERAL NOTES

DRAWING LEGEND

- NEW SEWER PIPE
- PROPOSED SEWER CONNECTION
- NEW RODDING EYE
- NEW HDPE MANHOLE
- F/C PEAK FLOW / CAPACITY

APPROVED BY COUNCIL / CLIENT

CITY ENGINEER / CLIENT | REG. NO. | DATE

ISSUE DATE: 17/03/2026 | DRAWING SIZE: A1 | REVISION: 0

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CLIENT

health
Department:
Health
Northern Cape Province

CONSULTING ENGINEERS CENTRAL
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PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

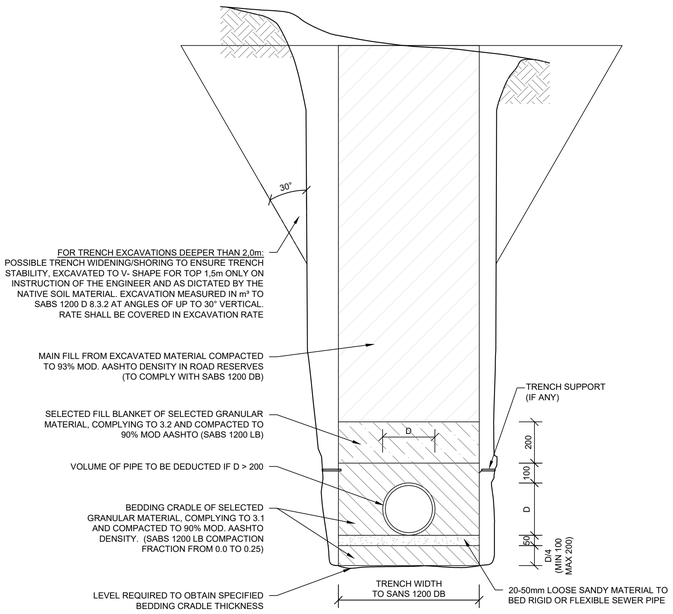
SEWER LONGITUDINAL SECTION SHEET 2

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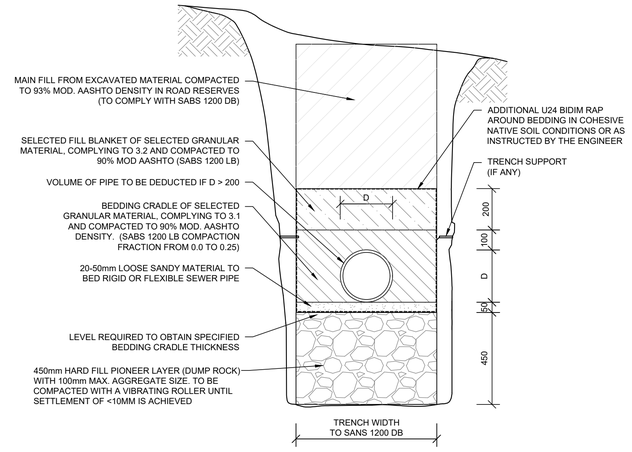
SCALE	1:50 VER 1:200 HOR	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

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35566-131-2	0



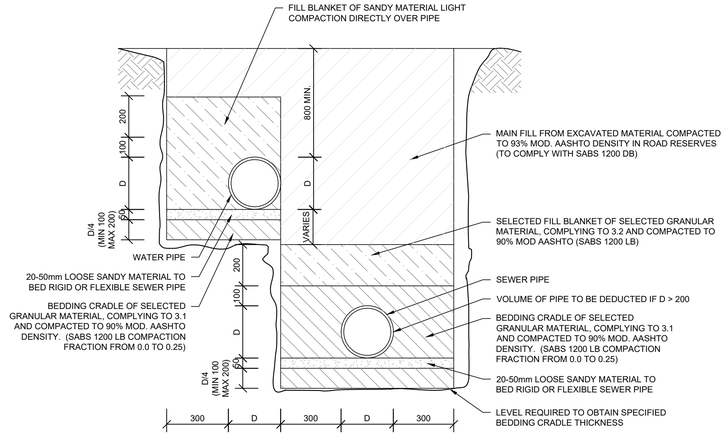
DETAIL F1:
BEDDING FOR FLEXIBLE SEWER PIPES

SCALE 1:15



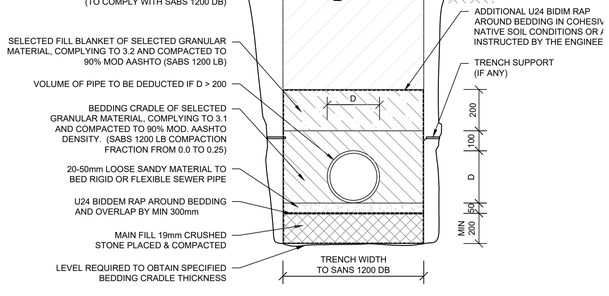
DETAIL F2:
BEDDING FOR POOR NATIVE SOIL FOUNDING CONDITIONS

SCALE 1:15



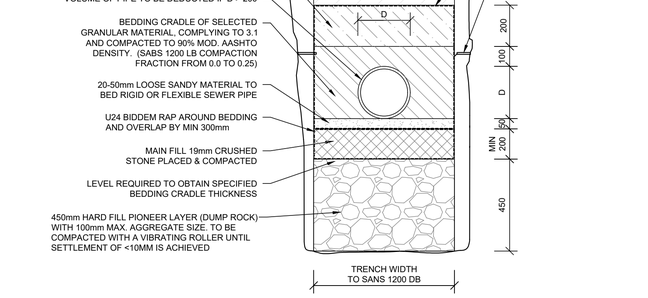
DETAIL CT1:
COMBINED TRENCHES

SCALE 1:15



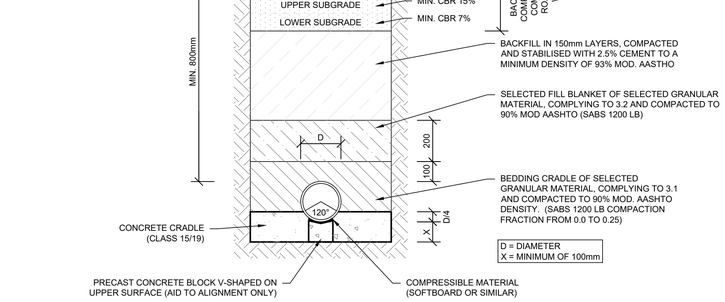
DETAIL U1:
UNDERDRAIN BEDDING

SCALE 1:15



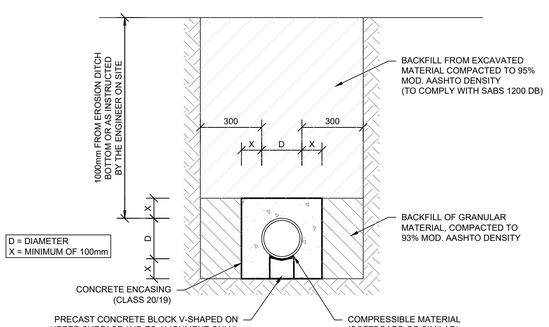
DETAIL F3:
BEDDING FOR POOR NATIVE SOIL FOUNDING CONDITIONS: PIPES LOCATED BELOW THE WATER TABLE / IN WATERCOURSES

SCALE 1:15



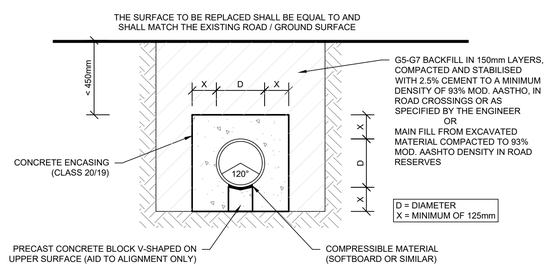
DETAIL C3:
ROAD CROSSING: COVER > 800mm

SCALE 1:15



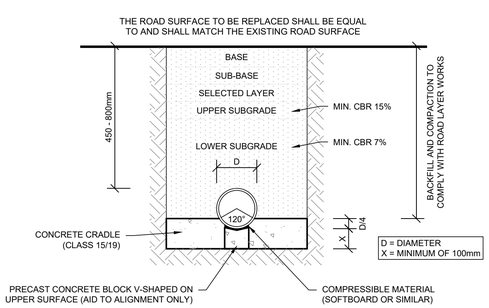
DETAIL E1:
EROSION DITCH CROSSING

SCALE 1:15



DETAIL C1:
CONCRETE ENCASEMENT / ROAD CROSSING: COVER < 450mm

SCALE 1:15



DETAIL C2:
ROAD CROSSING: COVER 450 - 800mm

SCALE 1:15

NOTES / LEGEND

COVER ON PIPES SHALL BE:
1) UNDER WALKWAYS = 800
2) UNDER PERMANENT SURFACED ROADWAYS = 1000
3) UNDER GRAVEL SURFACED ROADWAYS = 1150

PIPE BEDDING AND BLANKET MATERIAL SHALL CONFORM TO SABS 1200 LB.

1. SELECTED GRANULAR MATERIAL FOR BEDDING CRADLE
a) GRADING 0,6 - 19mm
b) NON CORROSIVE , FREE DRAINING
c) COMPACTABILITY FACTOR MAX. 0,25
d) PI MAX. 6

2. SELECTED FILL MATERIAL FOR SELECTED FILL BLANKET:
a) MAXIMUM PARTICLE SIZE 30mm
b) PI MAX. 6

GENERAL

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AMENDMENTS CODE

A,B,C.../ : BEFORE TENDER
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0,1,2.../ : AFTER TENDER
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PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

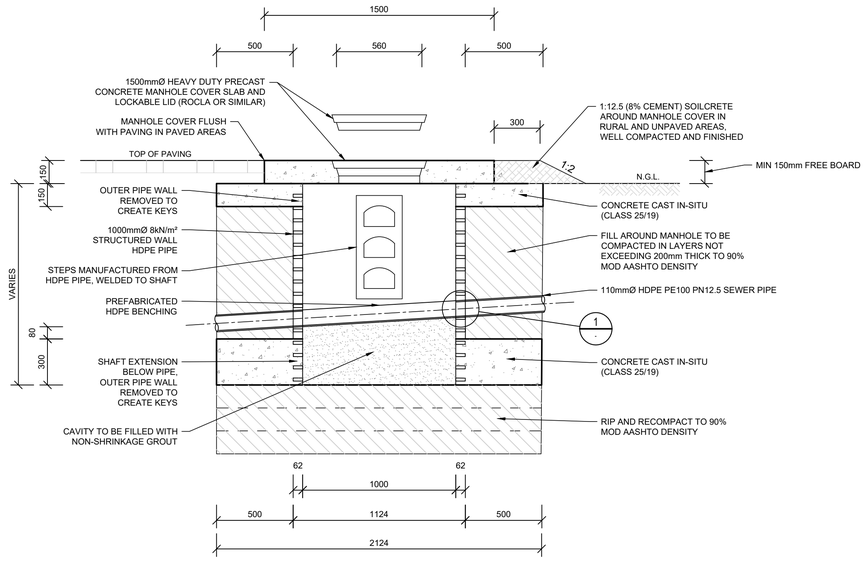
TYPICAL PIPE BEDDING DETAILS

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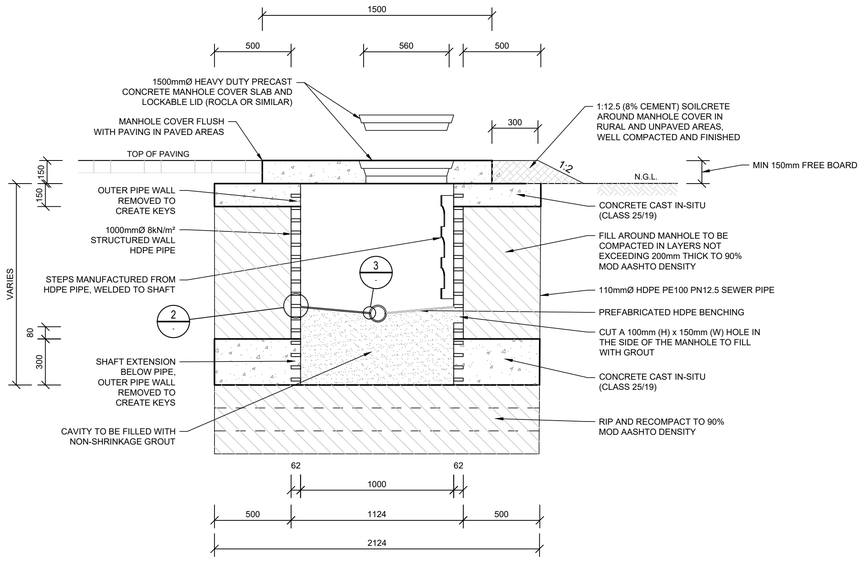
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SECTION ELEVATION ALONG CENTRE OF TYPICAL HDPE MANHOLE
1:20



SECTION ELEVATION AT RIGHT ANGLE TO TYPICAL HDPE MANHOLE
1:20

NOTES

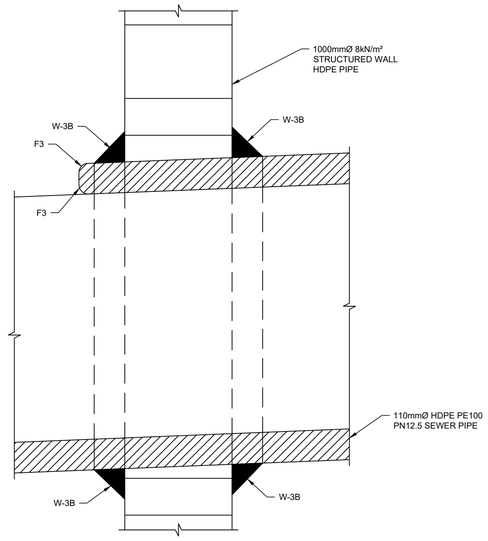
GENERAL NOTES:
1. ALL MATERIALS TO BE HDPE PE-100 AS PER SABS ISO 4427 / SANS 4427
2. HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8KN/m^2

GENERAL WELDING SPECIFICATIONS:
1. BUTT WELDING OF PIPES TO COMPLY TO SABS 0268-1:1999, SANS 10268-1.
2. HOT GAS WELDING TO COMPLY TO SABS 0268-3:1999, SANS 10268-3.
3. HOT GAS EXTRUSION WELDING TO COMPLY TO SABS 0268-4:1999, SANS 10268-4.

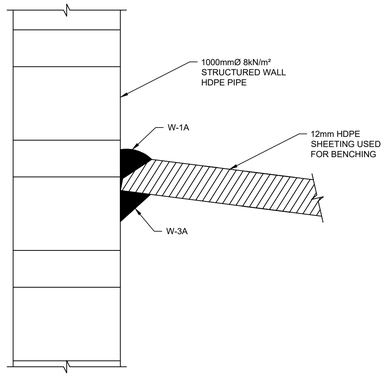
GENERAL FINISHING NOTES
1. F1 - REMOVE FILLER EXPULSION AND FINISH WELD SMOOTH WITH PIPE SURFACE.
2. F2 - REMOVE FILLER EXPULSION AND FINISH WELD WITH SMOOTH ROUNDED EDGE.
3. F3 - FINISH PIPE WITH SMOOTH ROUNDED EDGE,
4. F4 - REMOVE INTERNAL WELDING BEAD.

WELDING NOTATION FOR JOINTS, SEE SABS 0270/SANS 10270 PAR 5AS WELL AS ANNEX A.
1. W-1A = REF TABLE A.1 FILLET GROUP A FIG 1A.
2. W-2A = REF TABLE A.1 FILLET GROUP A FIG 2A.
3. W-3A = REF TABLE A.1 FILLET GROUP A FIG 3A.
3. W-3B = REF TABLE A.1 BUTT GROUP B FIG 3B.
4. W-BUTT = REF TABLE A.2 BUTT GROUP B.

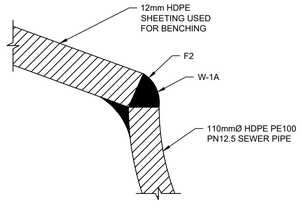
OTHER RELEVANT MANUFACTURING STANDARDS,
1. SABS 0268-1 / SANS 10268-1
2. SABS 0269 / SANS 10269
3. SABS 0270 / SANS 10270
4. SABS 1269 / SANS 1269
5. SABS 1655 / SANS 1655
6. SABS 1671 / SANS 1671-1



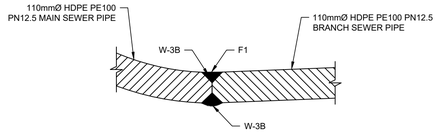
DETAIL 1
N.T.S



DETAIL 2
N.T.S



DETAIL 3
N.T.S



TYPICAL DETAIL FOR WELDING BRANCH PIPE TO MAIN PIPE
N.T.S.

NOTES / LEGEND

GENERAL

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CESA Consulting Engineers South Africa

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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

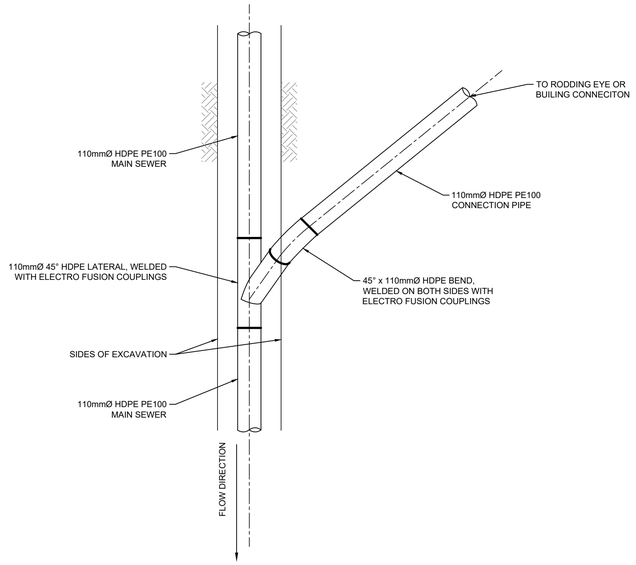
HDPE SEWER MANHOLE DETAILS

APPROVED BY BVI

JJ HAEFELE	20190844	17/03/2026
ENGINEER/TECHNOLOGIST	REG. NO.	DATE

SCALE	AS SHOWN	DRAWN	D COETZEE
DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-133-2	0



LAYOUT OF SEWER COLLECTOR
CONNECTION TO MAIN SEWER

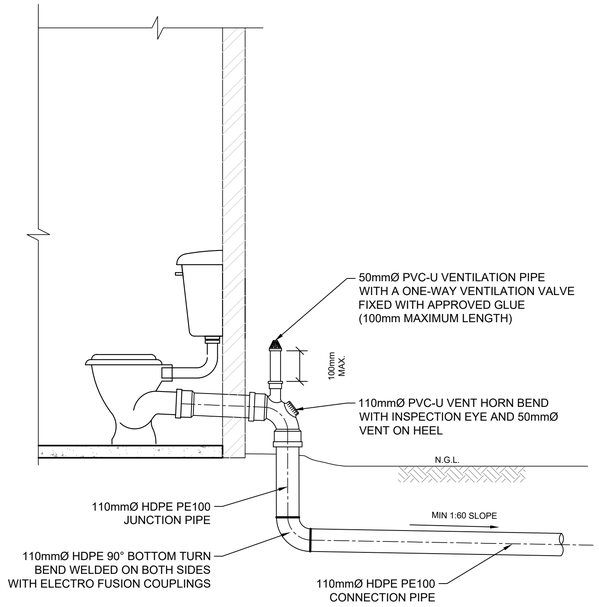
N.T.S.

NOTES

GENERAL NOTES:
1. ALL MATERIALS TO BE HDPE PE-100 AS PER SABS ISO 4427 / SANS 4427
2. HOOP STIFFNESS OF MANHOLE SHAFT TO BE 8KN/m²

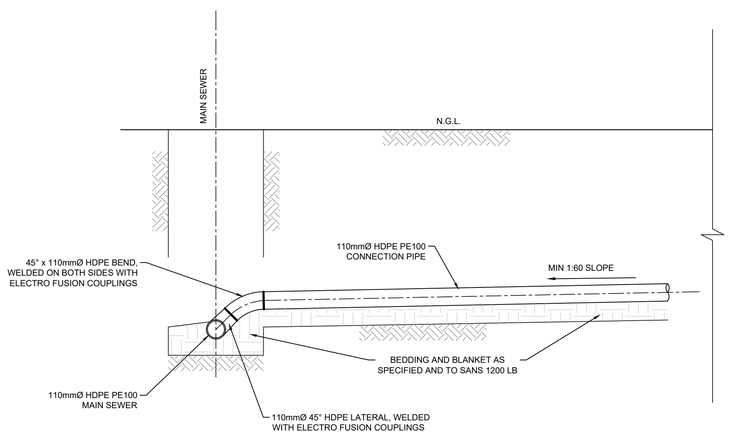
GENERAL WELDING SPECIFICATIONS:
1. BUTT WELDING OF PIPES TO COMPLY TO SABS 0268-1:1999, SANS 10268-1.
2. HOT GAS WELDING TO COMPLY TO SABS 0268-3:1999, SANS 10268-3.
3. HOT GAS EXTRUSION WELDING TO COMPLY TO SABS 0268-4:1999, SANS 10268-4.

OTHER RELEVANT MANUFACTURING STANDARDS,
1. SABS 0268-1 / SANS 10268-1
2. SABS 0269 / SANS 10269
3. SABS 0270 / SANS 10270
4. SABS 1269 / SANS 1269
5. SABS 1655 / SANS 1655
6. SABS 1671 / SANS 1671-1



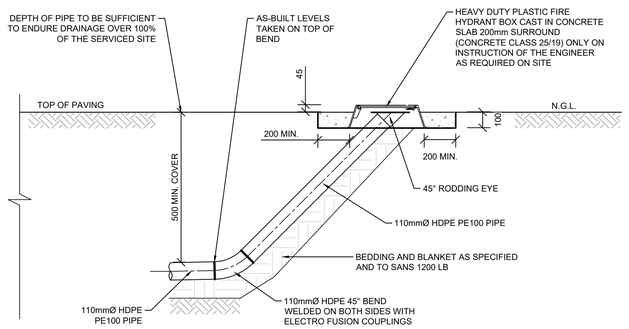
SEWER INSTALLATION DETAILS
SIDE VIEW

N.T.S.



ELEVATION OF SEWER COLLECTOR
CONNECTION TO MAIN SEWER

N.T.S.



TYPICAL DETAIL OF RODDING EYE
AT THE HEAD OF THE ERF SEWER LINE

N.T.S.

NOTES / LEGEND

GENERAL

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Northern Cape Province

PROJECT

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DRAWING TITLE

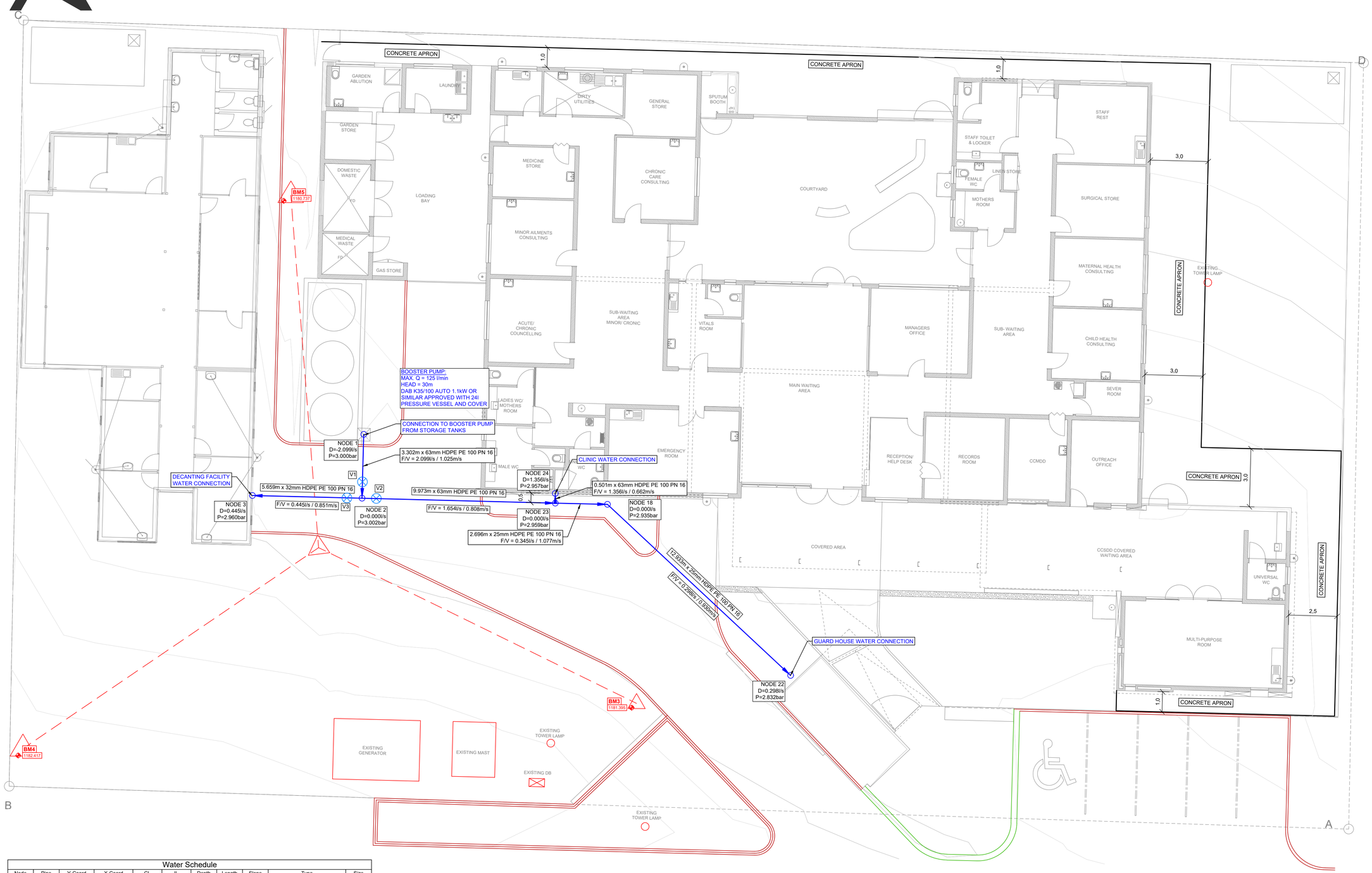
HDPE SEWER CONNECTION DETAILS

APPROVED BY BVI

JJ HAEFELE | 20190844 | 17/03/2026
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

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DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-133-3	0



Water Schedule

Node	Pipe	Y-Coord	X-Coord	CL	IL	Depth	Length	Slope	Type	Size
[1]		-40373.040	3007255.658	1180.751	1179.882	0.869				
	[1]						3.302	4.346 %	HDPE PE 100 Class PN 12.5	63
[2]		-40372.952	3007258.956	1180.607	1179.738	0.869				
	[2]						5.659	2.463 %	HDPE PE 100 Class PN 16	32
[2]		-40372.952	3007258.956	1180.607	1179.779	0.829				
[3]		-40367.296	3007258.815	1180.747	1179.918	0.829				
[18]		-40385.615	3007259.272	1180.886	1180.063	0.823				
	[22]						6.384	1.854 %	HDPE PE 100 Class PN 16	25
[22]		-40390.279	3007263.629	1180.767	1179.945	0.823	6.549	2.444 %	HDPE PE 100 Class PN 16	25
[22]		-40395.063	3007268.098	1180.927	1180.105	0.823				
[18]		-40385.615	3007259.272	1180.886	1180.063	0.823				
	[27]						2.696	1.441 %	HDPE PE 100 Class PN 16	25
[23]		-40382.920	3007259.209	1180.847	1180.024	0.823				
[23]		-40382.920	3007259.209	1180.847	1179.990	0.857				
	[29]						9.973	2.399 %	HDPE PE 100 Class PN 16	63
[2]		-40372.952	3007258.956	1180.607	1179.750	0.857				
[23]		-40382.920	3007259.209	1180.847	1179.976	0.870				
	[30]						0.501	3.432 %	HDPE PE 100 Class PN 16	63
[24]		-40382.923	3007258.709	1180.864	1179.994	0.870				

Fitting Schedule (HDPE)

Node	Description
NODE 2	Tee-63x63mm, Reducer-63x50mm, Reducer-50x32mm
NODE 3	Bend-32mmx90° (Connection as per drawing no. 35566-143-1)
NODE 22	Bend-25mmx90° (Connection as per drawing no. 35566-143-1)
NODE 23	Tee-63x63mm, Reducer-63x50mm, Reducer-50x25mm
NODE 24	Bend-63mmx90° (Connection as per drawing no. 35566-143-1)
V1	Stop Valve-63mm (with HDPE Valve Chamber as per drawing no. 35566-143-1)
V2	Stop Valve-63mm (with HDPE Valve Chamber as per drawing no. 35566-143-1)
V3	Stop Valve-32mm (with HDPE Valve Chamber as per drawing no. 35566-143-1)

BENCHMARKS (WGD84 LO23)

BENCHMARK	Y	X	Z
BM3	-40 386.862	3 007 269.762	1181.395
BM4	-40 355.216	3 007 272.227	1182.417
BM5	-40 368.913	3 007 243.612	1180.737

NOTES:

DUE TO THE PRESENCE OF DOLOMITIC MATERIAL IN THE AREA, THIS SITE HAS A IIHC2//1 CLASSIFICATION WITH D3 PRECAUTIONARY MEASURES PRESCRIBED.

1. ALL PIPES TO BE HDPE PE100.
2. JOINTS TO BE BUTT-WELDED (SANS 0268 - PART 1) IN GENERAL, OR ELECTRO FUSION WELDED (SANS 0268 - PART 2) WHERE BUTT-WELDING IS NOT POSSIBLE.
3. ALL WELDING TO BE DONE IN ACCORDANCE WITH THE RELEVANT SANS 0268, SANS 0269, SANS 1269, SANS 0270, SANS 1655 AND SANS 1671 CODES.
4. NO COMPRESSION FITTINGS ARE ALLOWED BELOW GROUND, EXCEPT IF THEY ARE INSTALLED IN WATERTIGHT MANHOLES.
5. ALL SITE SERVICES TO BE TESTED TO HAVE ZERO PERCENT LEAKAGE.
6. THE NUMBER OF JOINTS MUST BE KEPT TO A MINIMUM.

1 0 2 4m
SCALE 1:100

NOTES / LEGEND

NEW WATER PIPE
NEW WATER NODE
NEW STOP VALVE
F/V PEAK FLOW / VELOCITY

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UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

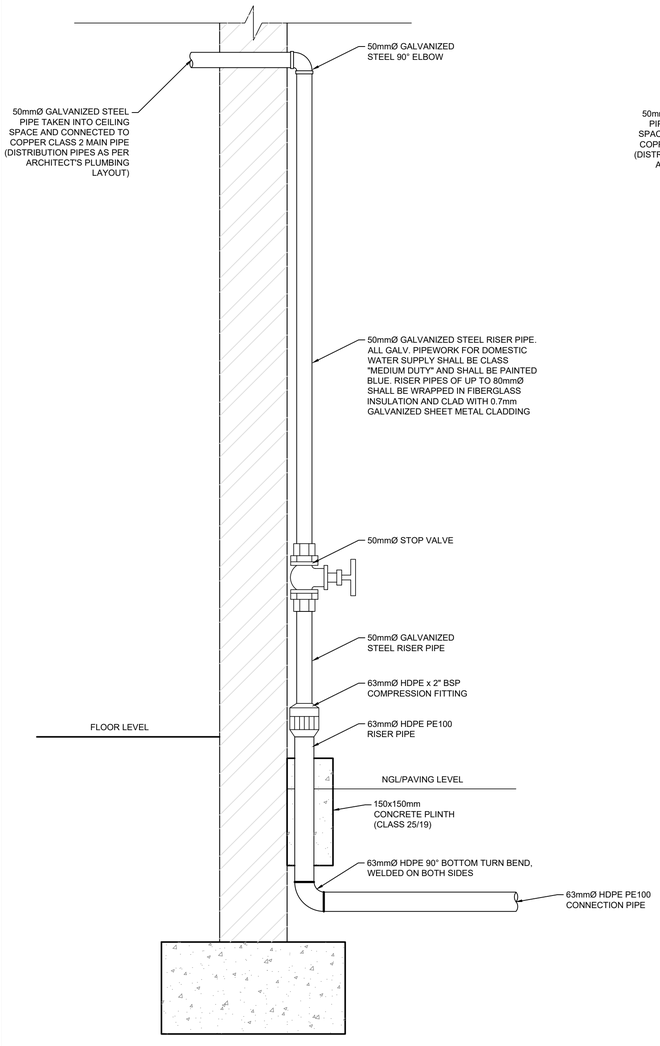
WATER LAYOUT

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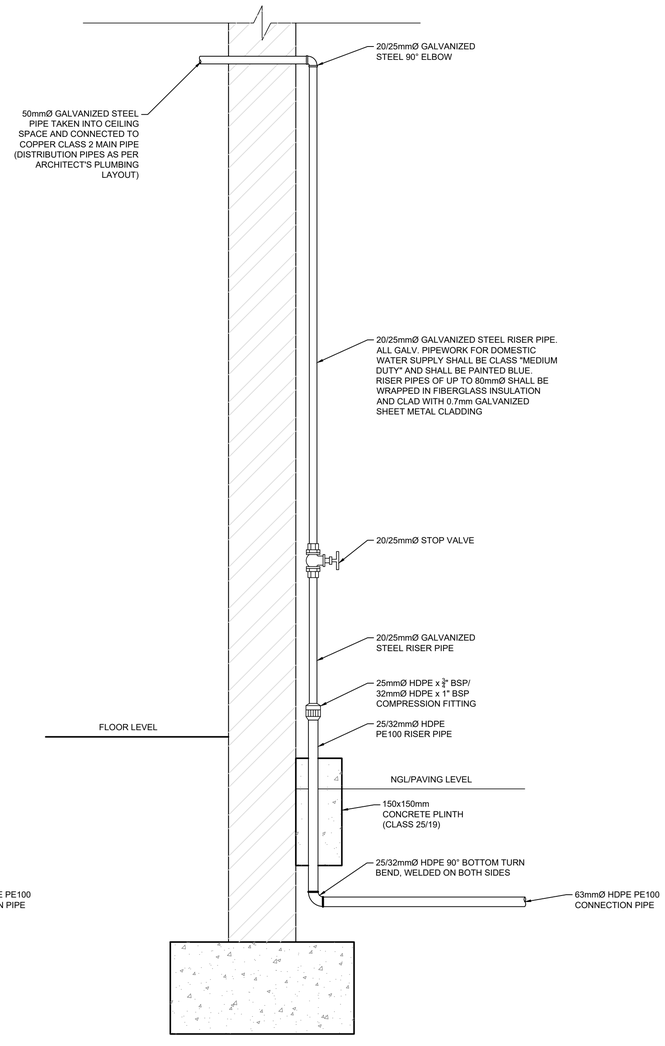
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DESIGNED	D COETZEE	CHECKED	J HAEFELE

PLAN NUMBER	REVISION NO.
35566-140-1	0



CLINIC WATER CONNECTION
(NODE 24)
1:10



TYPICAL WATER CONNECTION
TO BUILDING (NODE 3 & 22)
1:10

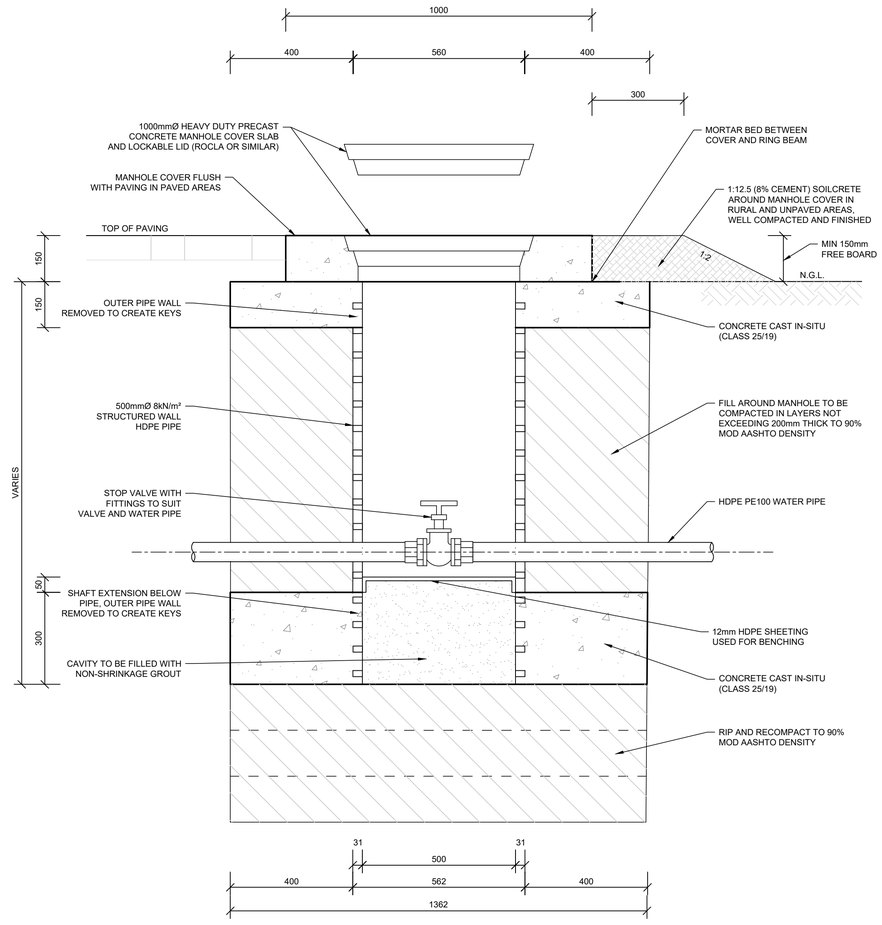
NOTES:

ALL PIPES AND FITTINGS FOR THE DOMESTIC WATER NETWORK SHALL COMPLY WITH THE FOLLOWING:

HDPE PIPE:
MATERIAL - HOMO-POLYMER OF ETHYLENE OR CO-POLYMER OF ETHYLENE AND HIGHER OLEFINS.
PIPE - SABS 533 PART 11:1982 (AMENDED MAY 1993) HIGH DENSITY BLACK POLYETHYLENE PRESSURE PIPES TYPE IV IN WHICH THE NOMINAL SIZE IS RELATED TO THE OUTSIDE DIAMETER.
- SABS 533 PART 111:1995 (AMENDED AUGUST 1997) HIGH DENSITY BLACK POLYETHYLENE PE 80 PRESSURE PIPES TYPE V IN WHICH THE NOMINAL SIZE IS RELATED TO THE OUTSIDE DIAMETER.
FITTINGS - COMPRESSION TYPE FITTINGS WITH LIP GASKET SEAL.

GALVANIZED STEEL PIPE:
MATERIAL - UP TO 150mm [: MILD STEEL TO SABS 62 ERW GRADE "A" MEDIUM DUTY
- OVER 150mm [: MILD STEEL TO SABS 719 ERW GRADE "A" MEDIUM DUTY.
FLANGES - SABS 1123 TABLE 1000/3
COUPLINGS - VIKING JOHNSON REPAIR COUPLINGS.
CORROSION PROTECTION - HOT DIPPED GALVANIZING TO SABS 763 FOR FABRICATED ITEMS AND DENSO TAPE WRAPPED WHEN IN CONTACT WITH SOIL.

COPPER TUBING:
MATERIAL - COPPER TUBING SHALL COMPLY WITH SABS 460/85 (as amended 1986) TO THE FOLLOWING CLASSES:
- 460/0 TUBES CLASS 0 (HARD DRAWN) ABOVE GROUND AND EXPOSED ONLY.
- 460/1 TUBES CLASS 1 (LIGHT, HALF HARD) ABOVE GROUND AND EXPOSED ONLY.
- 460/2 TUBES CLASS 2 (MEDIUM, HALF HARD) ABOVE AND BELOW GROUND AND CHASED IN.
- 460/3 TUBES CLASS 3 (HEAVY, HALF HARD) ONLY USED FOR UNDERGROUND PLUMBING.
FITTINGS - FITTINGS SHALL BE OF THE CAPILLARY SOLDERED JOINTS TYPE EXCEPT FOR UNDERGROUND WHERE COMPRESSION FITTINGS SHALL BE USED.
SOLDERS - SOLDERS USED FOR CAPILLARY FITTINGS SHALL COMPLY WITH SABS 24-1971 AMENDED 1987, OR DIN 1707 SPECIFICATIONS AND SHALL BE OF GRADE 97/3 (97% TIN, 3% COPPER)



SECTION ELEVATION ALONG CENTRE OF
TYPICAL HDPE VALVE CHAMBER
1:10

NOTES / LEGEND

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PROJECT

UPGRADING AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

TYPICAL WATER DETAILS

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PLAN NUMBER	REVISION NO.
35566-143-1	0

CODES:

DESIGN CODES:
- SANS 10100-1: The structural use of concrete.
- SANS 2001: Standardised specification for Civil Engineering Construction.
- SANS 10160: The General procedures and loadings to be adopted in design of buildings
- SANS 10162: The structural use of steel
- SANS 10400: The application of National Building Regulations

CONSTRUCTION CODES AND NOTES
The contractor shall adhere to the following codes during construction as applicable:
SANS 2001 construction works:
- Part CC1: Concrete Works (Structural)
- Part CC2: Concrete Works (Minor Works)
- Part CG1: Installation of Glazing In Window And Door Frames
- Part CM1: Masonry Walling
- Part CM2: Strip Footings, Pad Footings and Slab-On-The-Ground Foundations for Masonry Walling
- Part CS1: Structural Steelwork
- Part CT1: Structural Timberwork (Flooring)
- Part CT2: Structural Timberwork (Roofing)
- Part EM1: Cement Plaster

SANS 10155 accuracy in buildings (SANS 2001 CC1 Table 11)
Grade II permissible deviation / tolerance shall apply U.N.O.
One copy of each of these codes shall be kept on-site and shall be made available to the engineer on request.

GENERAL
- SANS 10155 accuracy in buildings (SANS 2001 CC1 Table 11)
- Grade II permissible deviation / tolerance shall apply U.N.O.
- One copy of each of these codes shall be kept on-site and shall be made available to the engineer on request.
- All civil works to comply with S.A.N.S. 1200 accuracy level II UNO
- Do not scale any drawings, work to figured dimensions only.
- These drawings must be read as part of the contract documents and all discrepancies must be discussed with the engineer without delay.
- Any discrepancies on the drawings are to be brought to the engineers' attention prior to implementation of any work.
- The engineer should be notified in good time if he is required on site.
- All setting-out dimensions and levels must be checked by the contractor prior to any work commencing on-site.
- Only concrete dimensions are shown on these drawings.
- Refer to the relevant architect's drawings for finishing details and masonry work.
- The contractor is to maintain a full set of the latest drawings on site.

STRUCTURAL CONCRETE (SANS 10100 - 1: 2000)

CONCRETE SPECIFICATION:
- Only CEM 1 cement to be used. (SANS 50197-1)
- Maximum extender to be used is 30% for all concrete, except extenders for surface beds must be limited to 20%
- Only fly ash to be used as an extender. No GGBS allowed.
- Maximum water content for walls and slabs = 180 l/m³
- Aggregate to be 19mm stone U.N.O
- Only potable water to be used
- Sand to be well graded, free of clay with a sand equivalent of more than 85% (AASHTO T 176) (SANS 1083)
- Aggregate to consist of rock types that will produce low shrinkage and are not Alkali Reactive
- Design mix to be submitted to BVI for approval before the concrete pour.

Minimum concrete cubes crushing strength after 28 days for: (u.n.o.)

Retaining walls	30 MPa
Structural foundations	25 MPa
Structural columns	30 MPa
Structural walls	30 MPa
Suspended slabs, beams & parapets	30 MPa
Non-structural foundations	20 MPa
Blinding layers	15 MPa
Surface beds (with max. 20% extender)	30 MPa
Mass concrete (non-structural fill)	10 MPa
Mass concrete (structural fill below found.)	25 MPa
Bond-dek or bond-kik slabs	30 MPa
Shear walls and lift shafts	35 MPa
Soilcrete	80 kg/m³
Water retaining concrete (water tank)	35 MPa

PLACEMENT AND POURING (SANS 2001 CC1 4.7.9 – 4.7.10)
No concrete pouring allowed without obtaining the written consent of the consulting engineer.
No concrete must be poured in rainy conditions or after 19h00 without approval.
Do not pour concrete after a delay of 60 minutes if mixing water has been added. (SANS 2001 CC1 4.7.10.3)
Concrete must not be mixed or poured in temperatures under 2 degrees Celsius on a rising thermometer or under 5 degrees Celsius on a falling thermometer. Thereafter concrete must be kept at a minimum of 10 degrees Celsius and a maximum of 26 degrees Celsius for at least 72 hours. (SANS 2001 CC1 4.7.14)
When concrete is poured against existing concrete, existing concrete must be watered and coated with cement paste (SANS 2001 CC1 Table 7)
Concrete shall not be allowed to fall freely through a height of more than 3 m. (SANS 2001 CC1 4.7.10.8)

CURING (SANS 2001 CC1 4.7.13):
All green concrete must be effectively covered and watered for a minimum period of 10 days (e.g. Hessian for walls and columns and 25mm sand for floor plus water).
The use of a curing compound is also allowed. Curing method of concrete to be agreed with the engineer.

PRESTRESSING:
The support and laying of prestressed material must be in accordance with the supplier's requirements.

FINISHES (SANS 2001 CC1 Table 1):
Concrete surfaces to be power float finished (U.N.O) to be confirmed with architects' drawings.
All exposed concrete edges to have 25x25mm chamfer (U.N.O).

OFF-SHUTTER (Special off-form):
- Formwork quality shall be special: smooth and fair in accordance with SANS 2001 CC1 Table 1.
  Designated joints shall be in the position and of the details shown on the working drawings. Should the contractor wish to incorporate further construction joints or amend the position of those shown to suit his own requirements or technique, this may be allowed provided that all design considerations are met, that the prior approval of the engineer is obtained and that any extra costs are borne by the contractor.
- Special care shall be taken to ensure that forms are clean and free of all pieces of tying wire, nails and other debris at the time of concreting. The standard of finish shall be such that upon removal of the formwork, no further treatment, other than treatment of bolt holes if required, shall be found necessary to provide a straight, smooth and uniform finish of good quality and consistent colour and texture, free of all honeycombing etc. Any defect shall be made good by either removing and replacing the defective concrete or, in certain instances only, by patching.

Removal of formwork as per SANS 2001 CC1 Table 2

REMEDIALS:
- No "honey-combing" in concrete should be rectified without inspection and consent of the engineer. Do not cover with plaster or other finishes to hide the defect. All Honey Combing must be chipped open for visual inspection by engineer before repair remedial can be provided.
- Crack repairs to be confirmed by engineer before repairs commence.

CONCRETE COVER ON MAIN REINFORCING: (U.N.O.)
(To be confirmed with Durability class, see SANS 2001 CC1 Table 3)

Slabs all round	30mm
Beams all round	30mm
Foundation bottom, no blinding	75mm
Foundation sides and top	50mm
Columns	30mm
Ret. Walls - inside face	30mm
Ret. Walls - outside face	40mm
RC walls	30mm

CONCRETE SLABS
In slabs with main reinforcement in two directions, the steel spanning the shorter distance must be laid first (u.n.o). Reinforcement in top of slabs must be supported by stools at 1/m² (minimum).

BACKPROPPING
When suspended floor slabs are poured in a multi-storey building, the following guidelines apply with regard to the propping of the supporting floor slabs:
- If slabs are poured less than 10 days apart
  - Wet concrete and construction joint of the slab to be poured must be supported with 100% propping on at least 3 former slabs,
- If slabs are poured more than 10 days apart:
  - 50% props under the first slab
  - 25% props under the second slab
  - 0% props under the third slab.
- The position of the props on top and bottom of slab must correspond.
- Not withstanding the above-mentioned, no shuttering may be stripped without the consent of the consulting engineer. Stripping procedures should be agreed with consulting engineer.
- Props to remain in place for 21 days or as otherwise directed by the engineer.

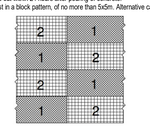
UPWARD CAMBER:
Beams and slabs to be poured with an upward camber as follows:

Cantilever beams & cantilever slabs	Span / 150
Other beams & slabs	Span / 500

Beam dimensions:
- Width x depth UP/DOWN -STAND. The slab thickness is excluded in the beam depth (U.N.O). i.e 230x510 DP RC UP-STAND BEAM
- Width x depth. The slab thickness is included in the beam depth (U.N.O). i.e 230x510 DP RC BEAM

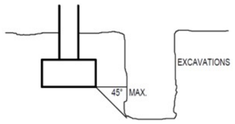
COMPACTION
- In-situ material (cut to fill) compacted in layers of 150mm TO 95% MOD. AASHTO (U.N.O).
- Final 150mm layers to be compacted to 98% MOD. AASHTO (U.N.O).
- If topsoil is collapsible sand then top soil to be removed to a depth of 300mm and replaced with an approved material.
- Soil to be compacted in 150mm LAYERS to a density of 95% MOD. AASHTO (U.N.O).
- Refer to drawings to confirm if above is adapted for specific site conditions

SURFACE BED
- All surface beds to be constructed on 250-micron polyethene sheeting.
- Surface beds to be cast in panels not exceeding 10x13m with saw cut and isolation joints as indicated on drawings. A proper construction joint must be formed. Saw cut joints to be cut within 24 hours after pouring of concrete.
- Alternatively; Surface beds to be cast in a block pattern, of no more than 5x5m. Alternative casting to be approved by the consulting engineer.



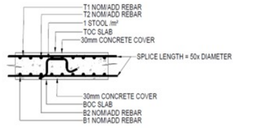
TYPICAL PANEL CAST SEQUENCE

FOUNDATIONS:
- The final dimension for the foundations are reserved until the excavations are approved.
- The excavation for foundations must be kept dry and compacted where necessary (U.N.O).
- All concrete work to be founded on in-situ soil or fill as specified on the construction drawing.
- When excavating for drainage pits etc, the contractor must take care that the bottom of such excavation does not undermine adjacent footings. See figure below.

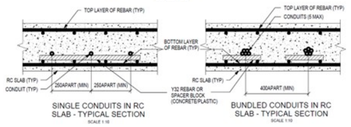


REINFORCEMENT
- All bending dimensions for reinforcement are overall, unless shown otherwise on the schedules.
- Reinforcing steel to SANS 920-1969 as amended.
- When pouring concrete: reinforcement to be maintained in position and at specified depth by means of approved spacers to ensure correct concrete cover.
- Measures should be taken to protect reinforcement from rust. All rust must be removed. Excessively corroded rebar may be rejected by the consulting engineer. All rebar to be clean from shutter oil / rust / dirt or any contaminants.
- Where main reinforcement in beams is laid in two or more layers (in same direction) spacer bars must be provided at 1000mm centre-to-centre to support the upper layers.
- The engineer shall be informed 72 hours in advance when an inspection on the reinforcement fixing is required.
- All reinforcement is to be inspected by the responsible engineer prior to casting of any concrete.
- Bars to be bundled and tagged with bar no., drg no. and member no. before delivery to site.
- SANAS certificate to be provided to confirm reinforcement compliance (SANS 2001 CC1 4.2.5.3)

SERVICES
No supply or waste pipes may enter the concrete construction without the consent of the consulting engineer. And no rebar may be cut to make space for ducts and cables (services)



TYPICAL SLAB REBAR SECTION
SCALE 1:20



SINGLE CONDUITS IN RC SLAB - TYPICAL SECTION
SCALE 1:10

BUNDLED CONDUITS IN RC SLAB - TYPICAL SECTION
SCALE 1:10

ALLOWABLE CONDUIT PLACING IN RC SLAB

WATERPROOFING
- Waterproofing to be designed and installed by a manufacturer's approved applicator.
- All pipes must be cast in-situ unless approved by the structural engineer.
- 250 micron DPM waterproofing required beneath foundations
- 250 micron DPC waterproofing required brickwall at NGL
- Drainage around perimeter of buildings and water to drain away from building with the use of aprons.
- Edge drip detail at the soffit of all exposed RC slabs.

CONCRETE TESTING (SANS 2001 CC1 5:
- Concrete SANS 2001-CC1: 5.1.3.2 Unless otherwise specified in the specification data, at least one set of samples of concrete shall be taken from each day's casting and from at least every 50 m³ of concrete of each grade placed.
- Concrete cubes must comply with the SANS code (see C&CI publication on "how to make 150mm test cubes"). SANS 5861-3.
- Slump Testing: SANS 5862-1.
- Slump: Max 80mm for not vibrated and max 120mm for pumped concrete. (SANS 2001 CC1 Table 4 and 4.7.3)
- MOD AASHTO tests on earthworks per layer: every 30m or 3 sets per individual structure
- Soil classification test: 1 per 1000m³ imported soil
- Compliance as per SANS 2001 CC1 5

NOTE:
- Further construction procedures must comply with SANS codes for reinforced and plain concrete.
- Equivalent products from the specified can be used if approved by engineer beforehand.

PERMISSIBLE DEVIATION ACCEPTANCE CRITERIA ON CONCRETE SLABS
In general, tolerances for structural elements to comply with SANS 10006 (Concrete Structural) Clause 6 or SANS 2001 CC1 Table 11.

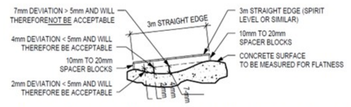
Floor tolerances to fulfil two criteria, flatness and deviation from a prescribed level.

FLATNESS:
- A) Any deviation from flatness of a plane surface will be measured as the maximum deviation of the surface from any straight line of length 3m joining two points on the surface, determined by means of a straight-edge, the ends of which are supported on identical blocks of suitable thickness placed over each of the points. (See sketch 1 and 2).

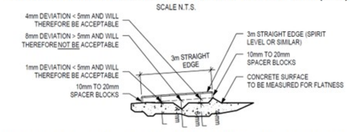
- B) Any abrupt change in a continuous surface, including a local depression or peak in a floor or wall and any abrupt change caused by a joint in framework will be measured as specified in (a) above. (see sketch 3).

The maximum deviation from flatness as measured in (A) and (B) above shall be 5mm.

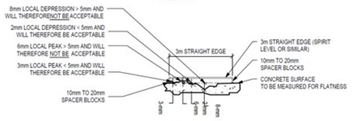
DEVIATION FROM A PRESCRIBED LEVEL (SEE SKETCH 4):
- The permissible deviation from a prescribed design level on the upper or lower surface unless otherwise specified is +5 /-15mm PLUS the expected elastic and long-term deflection calculated by the engineer i.e. SPAN/300 (±25mm at midspan for a 7500mm or SPAN/300 for terminal deflection of cantilevers.
- Quality assurance investigation shall be carried out after removal of shuttering, but before removal of props.
- Props to remain in place for 21 days or as otherwise directed by the engineer.
- There shall be no limitation as to the number of readings.
- No deviation from the specification shall be accepted i.e. remedial works will be necessary in non-compliant areas



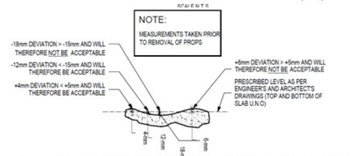
SKETCH 1: DEVIATION FROM FLATNESS (1.a)
SCALE N.T.S.



(STRAIGHT EDGE PLACED ONTO A LOCAL PEAK)
SKETCH 2: DEVIATION FROM FLATNESS (1.a)
SCALE N.T.S.



SKETCH 3: DEVIATION FROM FLATNESS (1.b)
SCALE N.T.S.



SKETCH 4: DEVIATION FROM PRESCRIBED LEVEL (2)
SCALE N.T.S.

STRUCTURAL STEEL

The quality of work and materials must comply with SANS 10162 "the structural use of steel", SANS 1200H "standardized specifications for civil engineering construction chapter 4 - structural steelwork" and SANS 2001 CS1.

CONSTRUCTION / MANUFACTURING / ERECTION:
- Steel structures are to be strictly in accordance with SANS 2001 CS1
- Steel grade S355JR U.N.O. and the mark must be clearly visible
- The contractor must submit detailed workshop drawings to the engineer for review prior to manufacture
- Only sizes of structural members, connections and splices will be checked
- Final dimensions and the correct fitting of members shall remain the responsibility of the contractor,
- All dimensions are to be confirmed on site prior to manufacturing of elements.
- The position of holding down bolts is to be verified on-site.
- All sliding plates must be supplied with graphite grease.
- Permissible deviations as per SANS 2001 CC1 Table 3

FASTENERS:
- All fasteners to be class 8.8 bolts with class 8 lock nuts (u.n.o.). (SANS 1700-5-1)
- Only 2mm oversize bolt holes are permitted
- Minimum bolt size to be M12 (u.n.o.).

WELDING:
- Welding must be of high quality with minimum defects
- No notches or cracks shall be accepted.
- The full penetration groove welds shall have contoured fillet reinforcing to provide a smooth flow of stresses.
- All welds to be continuous and not intermittent welds shall be allowed
- Intersecting welds running in various directions at any point must be prevented by cutting selected plates so as to remain clear of the intersection
- Welding must comply with SANS 10044. If gusset plates are used, members must be welded around full circumference of contact area. If not specified, welds must be 6mm fillet welds with 4.2mm throat thickness.
- Welding machines must be of sufficient capacity to ensure full penetration - 150 amps is regarded the minimum.
- All welds to be E70 XX electrodes with min weld strength of 480 MPa (SANS 2001 CS1 Table2)
- Welders certificate must be qualified as per ANSI/AWS D1.1/D1.1M (SANS 2001 CC1 5.2)
- MINIMUM WELD SIZES:

THICKNESS OF THICKER PART (mm)	MIN FILLET WELD
UP TO 12mm	6mm
OVER 12mm TO 20mm	6mm
OVER 20mm TO 40mm	8mm

The structural steel contractor must provide for the following in his tender price:
- Temporary bracing and struts, if necessary to improve ease of erection and positioning of any steel members.
- Testing of at least 5 welds if required by the engineer via X-Ray, Magnetic Particle Inspection or dye penetrant inspection. (SANS 2001 CC1 5.3.4)
- Workshop drawings (SANS 1200H 5.1.2 refers).

CORROSION PROTECTION:
- All structural steel must be painted directly after manufacture, in accordance with contract specifications.
  - Damage to paintwork must be touched-up after completion of structural steelwork.
  - Corrosion protection to all external steel elements for environmental class C3 industrial for 5-year maintenance period in accordance with ISO 12944 part 2 U.N.O TBC with engineer
  - If manufactured structural steelwork has to be stored, measures should be taken to avoid rusting. No rusted steel may be erected.

Bolt anchoring and grout:
- If grout is specified, use PRO-STRUCT 531MCI five star grout (u.n.o).
- If an epoxy grout is specified, use PRO-STRUCT 510 epoxy grout (u.n.o).
- If an epoxy is specified, use PRO-STRUCT 617 general epoxy adhesive (u.n.o).
- If a chemical anchor is specified, use HILTI HVU with grade 8.8 has rods (u.n.o).
- Use PRO-STRUCT 617 general-purpose epoxy adhesive for fixing of dowel bars.

Dowel bars: holes drilled for dowels to be 1.25 to 1.5 x dowel bar diameter (u.n.o):
- Y10 DOWELS = ø14mm HOLE
- Y12 DOWELS = ø18mm HOLE.
- Y16 DOWELS = ø24mm HOLE.
- Y20 DOWELS = ø30mm HOLE.
- Y25 DOWELS = ø36mm HOLE.
- Y32 DOWELS = ø44mm HOLE.

BRICKWORK (SANS 10164 -1)

All load-bearing brickwork to be in accordance with SANS 10164 and installed as per SANS 10400-K.
- Loadbearing walls to be a minimum 220mm wide with a minimum compressive strength of the masonry units to be 14 MPa, with class II Mortar.
  - 375µm DPM on the troweled mortar between all RC slabs and masonry.
  - Openings in load-bearing walls to be spanned by prestressed lintels supplied by contractor with min support of 300mm on load-bearing walls. Max 2.4m span for precast lintels with minimum coarse height of 425mm.
  - All non-load-bearing brickwork to receive jointex or softboard between slab soffit and top of walls.
  - Plaster joint between slabs/cols & brickwork to be cut through the plaster to create a clear movement joint.
  - Jointex/softboard to be installed between RC cols & brickwork
  - No brickwork to continue over structural expansion joints.
  - Seismic requirement: all brickwork shall be tied to concrete with galvanised hoop iron ties every 4th course

Cavity Walls:
- To be filled with mass concrete below surface bed level and typ. 600mm below RC slabs/beams
- Must have 3.15mm thick galvanised butterfly wall ties spaced at 400mm vertically, 600mm horizontally (± 3 ties / m²) and staggered with min. Overlap of 50mm on mortar
- Weepholes installed in the external cavity wall above DPC to prevent moisture build-up spaced at max. 1m c/c

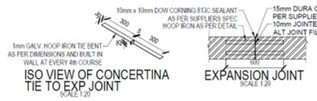
2mm brickforce to be placed in brick walls every:
- Brick course in foundation walls.
- Brick course in internal walls for the first 3 brick courses, then
- Every fifth brick course.
- Third brick course for external brick courses.
- Brick course for the last 4 brick courses below roof level.
- Brick course for 5 courses below all windows & 5 courses above all Windows & doors - to extend 800mm on both sides of openings.

Vertical Control- / expansion joints to comply with sans 10400-K:
- Max 7.5m c/c for walls (u.n.o) or
- As specified by SANS 10400-K:2011 ed 3 Table 19

Wall stiffeners / lateral support to comply with SANS 10400-K:
- Generally 5m c/c for 220mm walls (u.n.o) above 3.3m in height tbc
- Generally 3m c/c for 110mm walls (u.n.o) above 3.3m in height tbc

Horizontal movement joint:
- To be every floor level, max 3.3m (seating angle).

Engineers to be consulted with regards to additional brickwork requirements.



ISO VIEW OF CONCERTINA TIE TO EXP JOINT
SCALE 1:20

EXPANSION JOINT
SCALE 1:20

DOCUMENTATION TO BE ISSUED TO THE ENGINEER
PRELIMINARY
- Geotechnical report
- Site survey

EARTHWORKS
- Fill material test results
- Compaction test results
- Soil poisoning certificate

CONCRETE
- Concrete mix designs
- 150x150x150mm cube test results
- SANAS certificate to be provided to confirm reinforcement compliance

STEEL STRUCTURE
- Workshop drawings (SANS 1200H 5.1.2 refers).
- Qualified welders certificate must be provided
- Paint specification
- Bolt torque confirmation
- Structural steel material guarantee
- ITC certified roof sign off for timber / LFS roofs
- Roof sheeting material guarantee
- Roof sheeting installation guarantee

WATERPROOFING
- Waterproofing 10 year material guarantee
- Waterproofing 10 year installation

ABBREVIATIONS:

U.N.O	= UNLESS NOTED OTHERWISE
U.S.O	= UNLESS STATED OTHERWISE
RET.	= RETAINING (EXAMPLE: RETAINING WALLS)
EXP.	= EXPANSION (EXAMPLE: EXPANSION BOLTS)
S/BED	= SURFACE BED
RC	= REINFORCED CONCRETE
COL	= COLUMN
BM	= BEAM
T.O.C.	= TOP OF CONCRETE
B.O.C.	= BOTTOM OF CONCRETE
S.S.L.	= STRUCTURAL SLAB LEVEL
F.F.L.	= FINISHED FLOOR LEVEL
F.L.	= FINISHED / FINAL LEVEL
I.L.	= INVERT LEVEL
R.E.	= RODDING EYE
C.E.	= CLEANING EYE
I.E.	= INSPECTION EYE
RWDP.	= RAIN WATER DOWN PIPE
THK	= THICK
PL OR PLT	= PLATE
L	= ANGLE IRON
UB	= UNIVERSAL BEAM (I-SECTION)
UC	= UNIVERSAL COLUMN (H-SECTION)
CFLC	= COLD-FORMED LIPPED CHANNEL
PFC	= PARALLEL FLANGE CHANNEL
TFC	= TAPERED FLANGE CHANNEL
RHS	= RECTANGULAR HOLLOW SECTION
CHS	= CIRCULAR HOLLOW SECTION
SHS	= SQUARE HOLLOW SECTION

NOTES / LEGEND

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP COMPLY WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
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NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

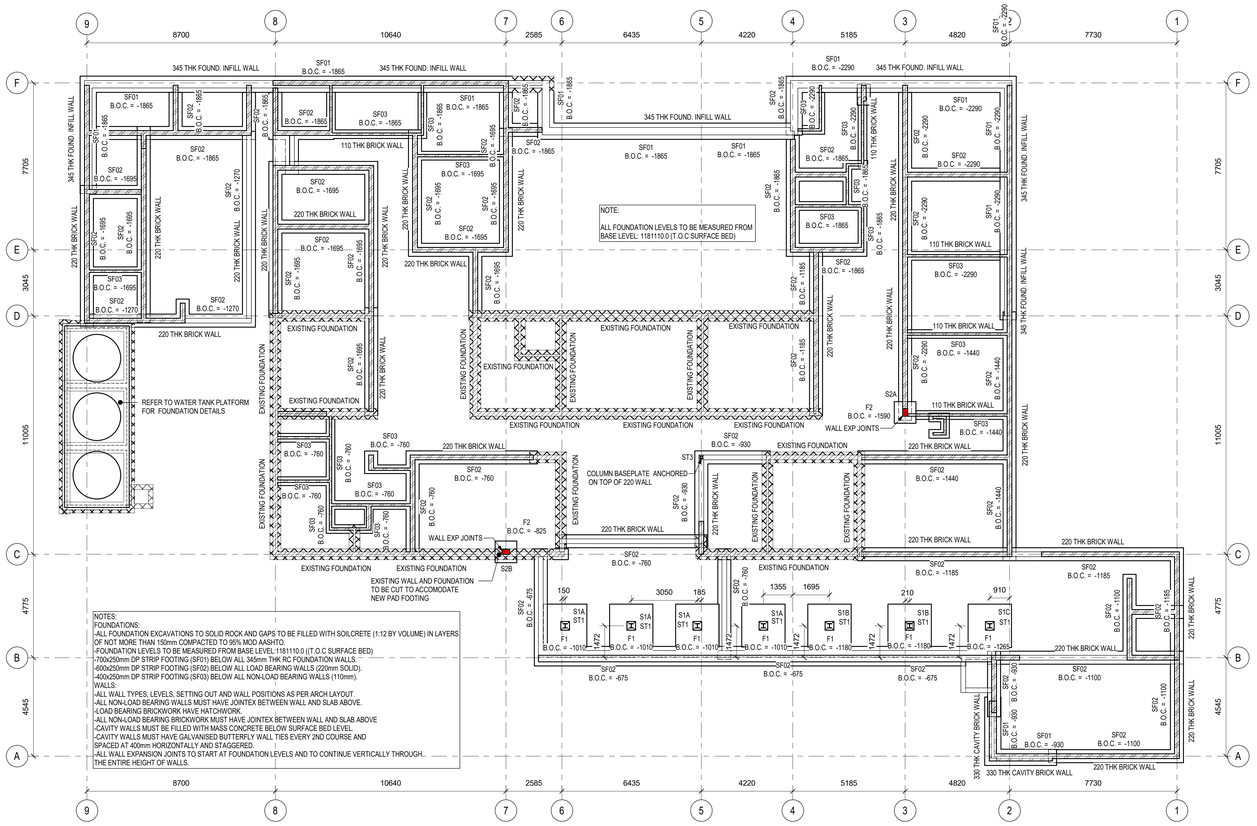
STANDARD SPECIFICATIONS

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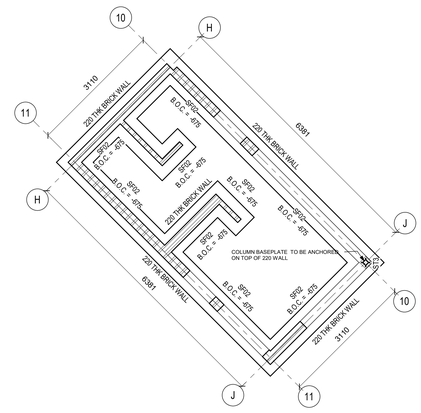
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ENGINEER/TECHNOLOGIST | REG. NO. | DATE

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DESIGNED	JTM	CHECKED	JJH

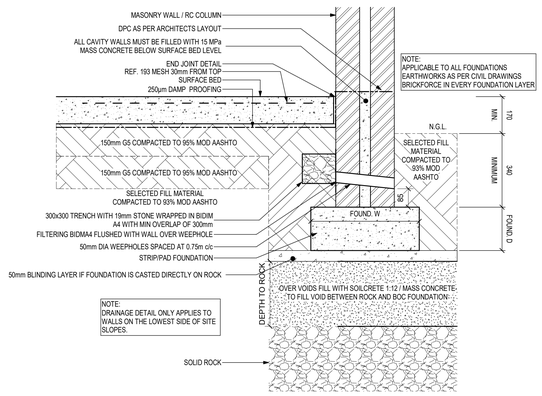
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35566S -200-G01	0	2026-03-13



MAIN CLINIC -
FOUNDATION LAYOUT
1 : 100

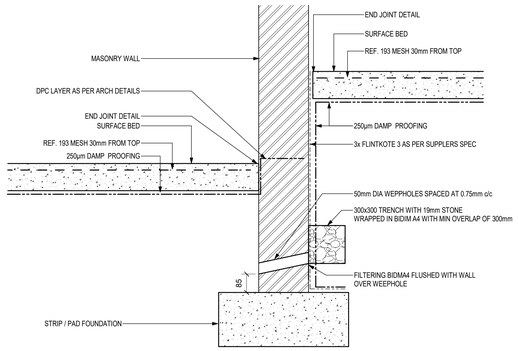


GATEHOUSE -
FOUNDATION LAYOUT
1 : 50



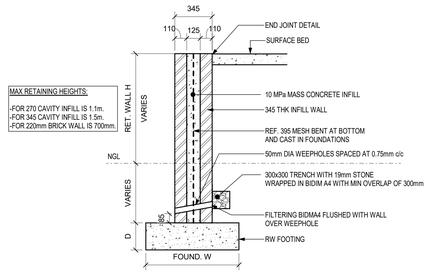
TYPICAL FOUNDATION DETAIL

SCALE 1:10



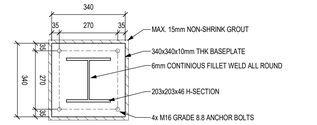
TYPICAL SURFACE BED STEP DETAIL

SCALE 1:10



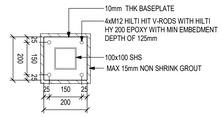
TYPICAL INFILL FOUNDATION RETAINING WALL

SCALE 1:20



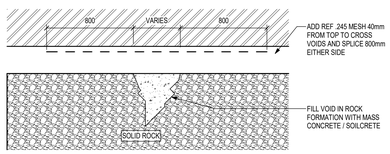
203x203 H-SECTION BASEPLATE DETAIL

SCALE 1:10



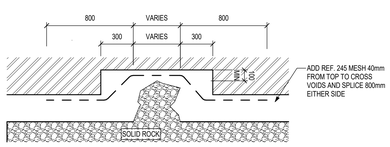
BASEPLATE DETAIL

SCALE 1:10



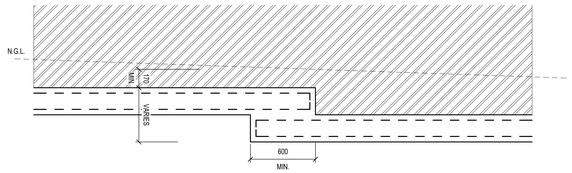
TYPICAL FOUNDATION DETAIL OVER VOID

SCALE 1:20



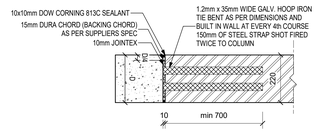
TYPICAL FOUNDATION DETAIL OVER ROCK PROTRUSION

SCALE 1:20



TYPICAL FOUNDATION WALL STEP

SCALE 1:20



MASONRY WALL TO RC EXPANSION JOINT DETAIL

SCALE 1:10

GENERAL NOTES:
1. ALL SETTING OUTS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL 8.
2. DO NOT SCALE ANY DRAWINGS. WORK TO FIGURED DIMENSIONS ONLY.
3. ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
4. THE CONTRACTOR IS TO MAINTAIN A FULL SET OF DRAWINGS ON SITE.
5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS.
6. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE.
7. ALL REINFORCEMENT TO BE INSPECTED BY THE RESPONSIBLE ENGINEER PRIOR TO CASTING OF ANY CONCRETE.

NOTE :
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PART CC1: CONCRETE WORKS (STRUCTURAL)
PART CC2: CONCRETE WORKS (MINOR WORKS)
PART CG1: INSTALLATION OF GLAZING IN WINDOW
PART DM1: MASONRY WALLING
PART CS1: STRUCTURAL STEELWORK
PART CT1: STRUCTURAL TIMBERWORK (FLOORING)
PART CT2: STRUCTURAL TIMBERWORK (ROOFING)
PART DP1: CEMENT PLASTER
SANS 10145: ACCOUSTICS IN BUILDINGS.
GRADE II PERMISSIBLE DEVIATION / TOLERANCE SHALL APPLY UNLESS OTHERWISE NOTED.
ONE COPY OF EACH OF THESE CODES SHALL BE KEPT ON SITE AND SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST.

FOOTINGS:

F1: 2.0x2.0x0.5 PAD FOOTING
F2: 1.0x1.0x0.4 PAD FOOTING
SF01: 750x250 DP STRIP FOOTING
SF02: 600x250 DP STRIP FOOTING
SF03: 400x250 DP STRIP FOOTING

CONCRETE COLUMNS

S1: 400x400mm RC COLUMN
S2: 230x350mm RC COLUMN

STEEL COLUMNS

ST1: 203x203x46 H-SECTIONS
ST2: 152x152x23 H-SECTIONS
ST3: 100x100x4 SHS

NOTES / LEGEND

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM TO THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
2026-03-13	A0	0

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2026-03-13	JTM	0	ISSUED FOR CONSTRUCTION

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ISO 9001 BVI 2015 BVI

BBBEE Level 1

CESA Consulting Engineers South Africa

CLIENT

DEPARTMENT OF HEALTH
NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

FOUNDATION LAYOUT

APPROVED BY BVI

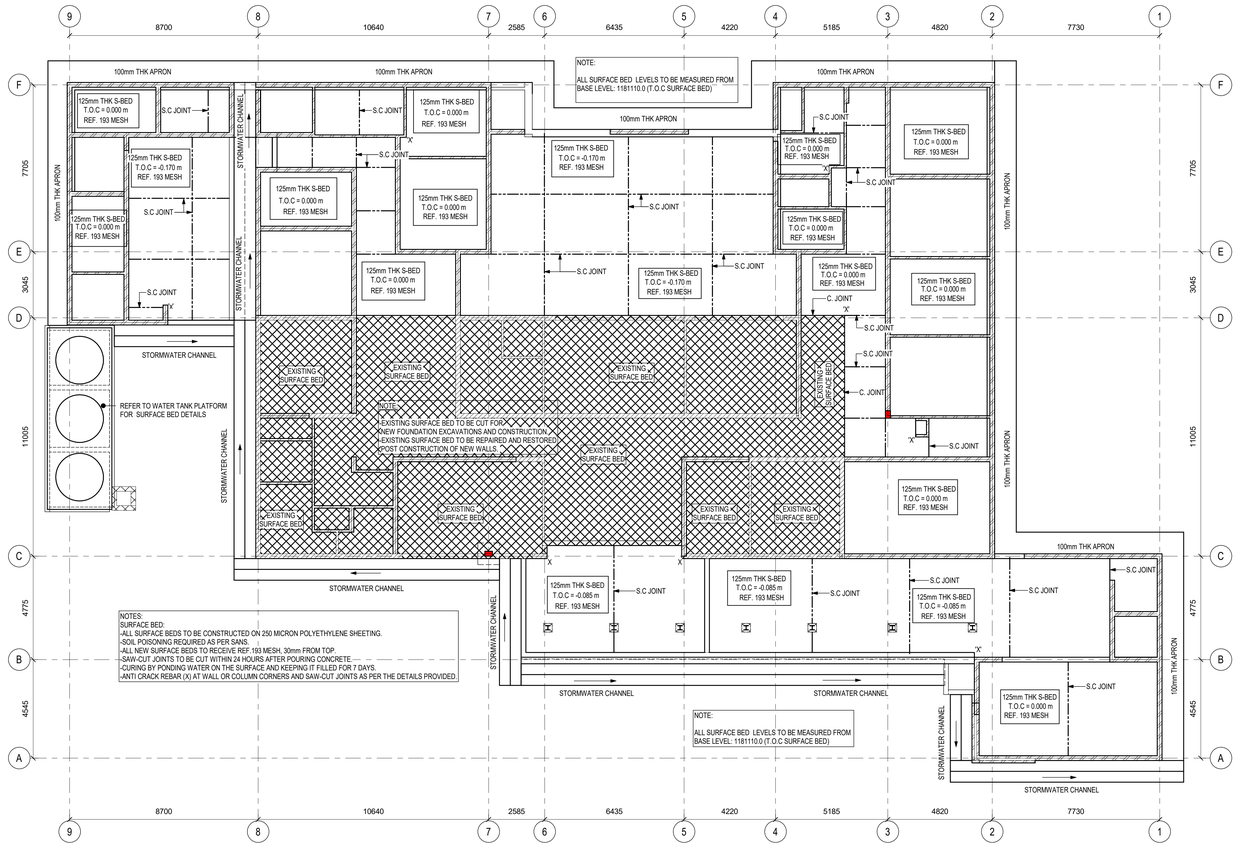
JJ HAEFELE | 20190844 | 2026-03-13

ENGINEER/TECHNOLOGIST | REG. NO. | DATE

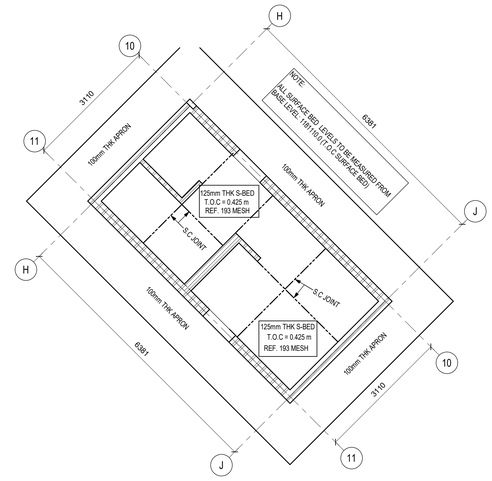
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DESIGNED	JTM	CHECKED	JJH

PLAN NUMBER	REVISION NO.	DATE SAVED
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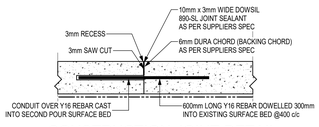
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-35566S-200-G01
-35566S-201-02/03



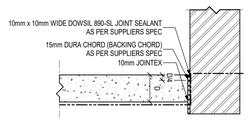
MAIN CLINIC - SURFACE BED
1 : 100



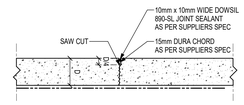
GATEHOUSE- SURFACE BED
1 : 50



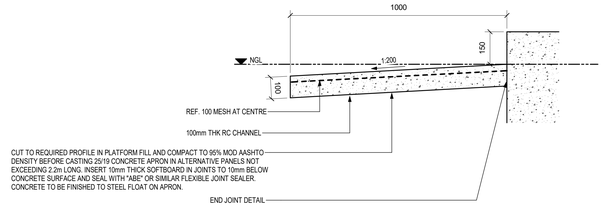
CONSTRUCTION JOINT DETAIL
SCALE 1:10



END JOINT DETAIL
SCALE 1:10

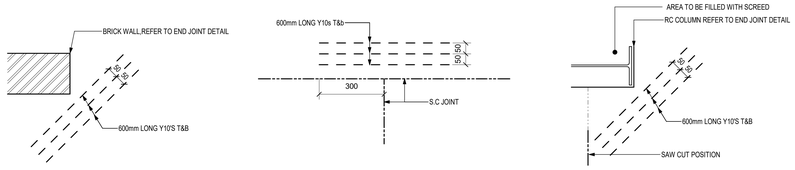


SAW CUT DETAIL
SCALE 1:10



TYPICAL APRON DETAIL
SCALE 1:10

CONSTRUCTION JOINT (C.JOINT)
EXPANSION JOINT (E.JOINT)
SAW-CUT JOINT (S.C JOINT)



TYPICAL ANTI CRACK REBAR 'X'
SCALE 1:10

GENERAL NOTES:
1. ALL CIVIL WORKS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL II.
2. DO NOT SCALE ANY DRAWINGS, WORK TO FIGURED DIMENSIONS ONLY.
3. ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION BEFORE COMMENCEMENT OF ANY WORK.
4. THE CONTRACTOR IS TO MAINTAIN A COMPLETE SET OF DRAWINGS ON SITE.
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PART CS1: STRUCTURAL STEELWORK
PART CT1: STRUCTURAL TIMBERWORK (FLOORING)
PART CT2: STRUCTURAL TIMBERWORK (ROOFING)
PART EM1: CEMENT PLASTER
SANS 10155 ACCURACY IN BUILDINGS.
GRADE II PERMISSIBLE DEVIATION / TOLERANCE SHALL APPLY
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NOTES / LEGEND

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Central Office
Registered no. 1994/004052/07

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DEPARTMENT OF HEALTH
NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

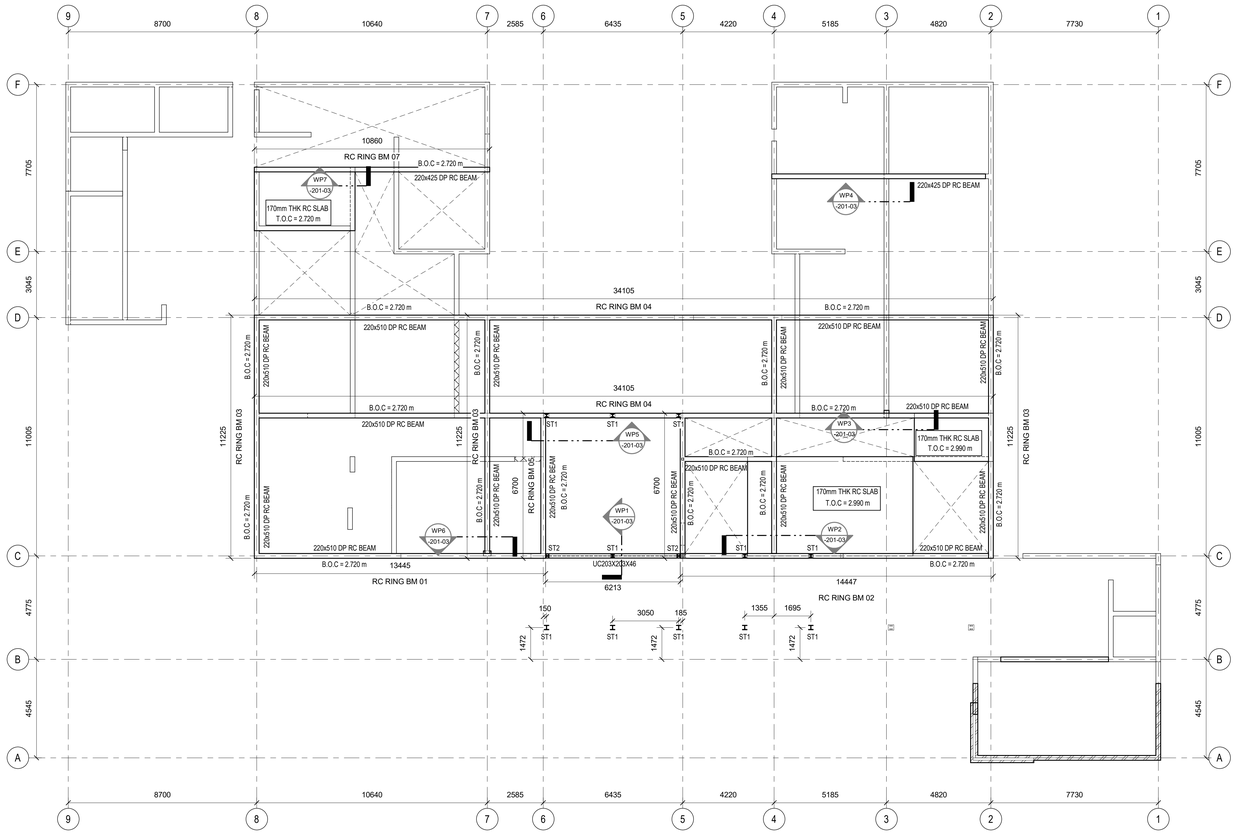
SURFACE BED LAYOUT

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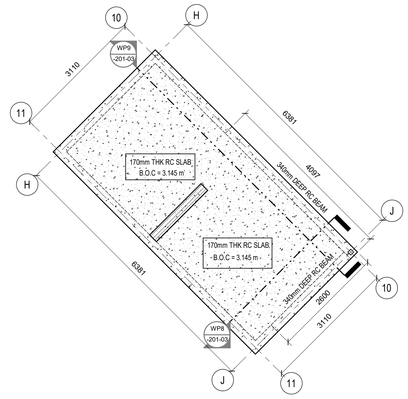
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DESIGNED	JTM	CHECKED	JJH

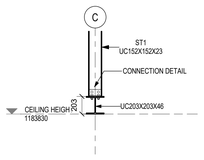
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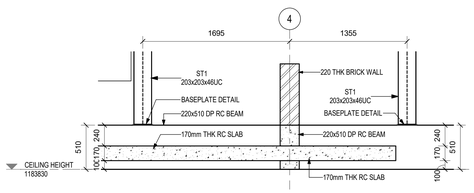
MAIN CLINIC -WALL PLATE LAYOUT
1 : 100



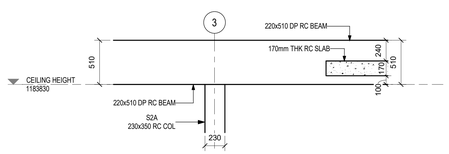
GATEHOUSE-WALL PLATE LAYOUT
1 : 50



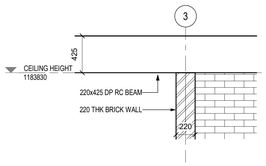
WP1 WP SECTION 1
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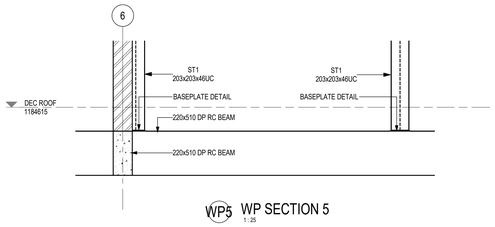
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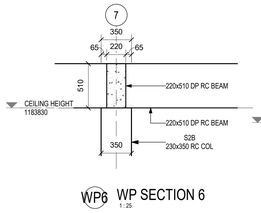
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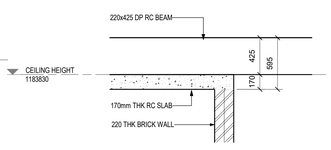
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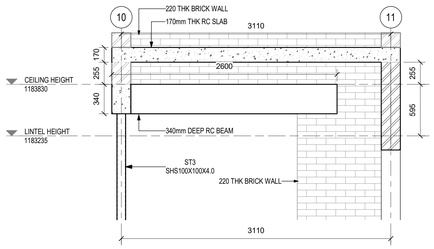
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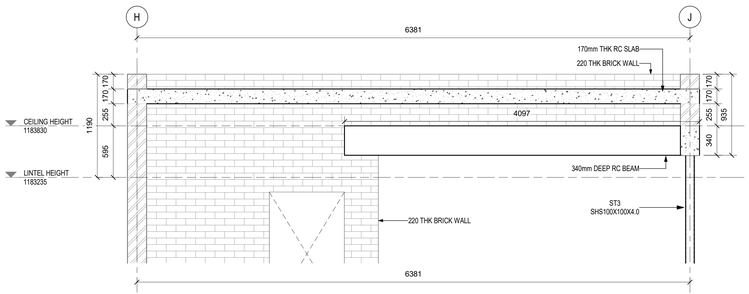
WP6 WP SECTION 6
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WP7 WP SECTION 7
1 : 25



WP8 WP SECTION 8
1 : 25



WP9 WP SECTION 9
1 : 25

GENERAL NOTES:
1. ALL CIVIL WORKS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL 6.
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3. ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
4. ALL DIMENSIONS TO BE CHECKED ON A FULL SET OF DRAWINGS ON SITE.
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SANS 10155 ACCURACY IN BUILDINGS
GRADE II PERMISSIBLE DEVIATION / TOLERANCE SHALL APPLY UNLESS OTHERWISE NOTED
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2026-03-13	JTM	B	ISSUED FOR INFORMATION PURPOSES

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ENGINEERING PROCUREMENT MANAGEMENT

BBBEE Level 1

CLIENT

DEPARTMENT OF HEALTH
NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

WALL PLATE LAYOUT

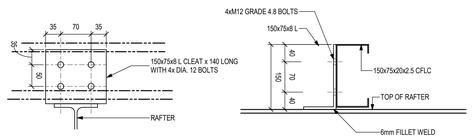
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DESIGNED	JTM	CHECKED	JJH

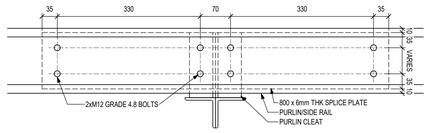
PLAN NUMBER	REVISION NO.	DATE SAVED
35566S -201-03	B	2026-03-13

DWG. TO BE READ IN CONJUNCTION WITH:
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-35566S-201-01/02
-35566S-210-02



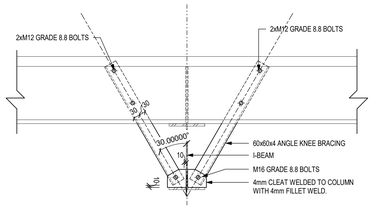
PURLIN CONNECTION DETAIL

SCALE 1:5

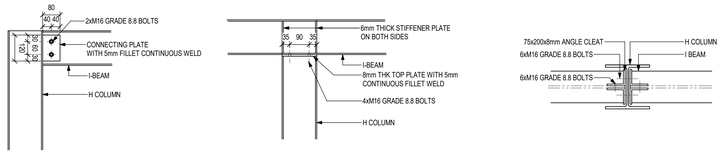


PURLIN SPLICE DETAIL

SCALE 1:5

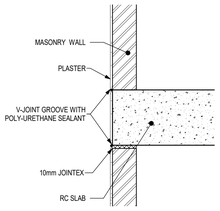


TYPICAL RAFTER KNEE BRACE DETAIL



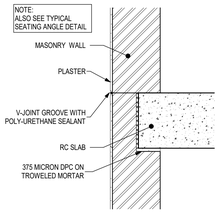
TYPICAL COLUMN-BEAM CONNECTION DETAILS

SCALE 1:10



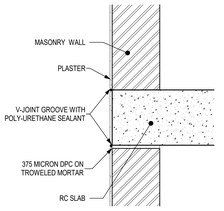
WALL TO SLAB SECTION NON-LOAD BEARING WALL

SCALE 1:10



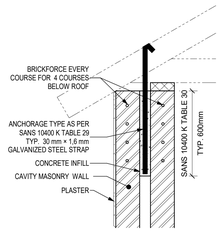
WALL TO SLAB SECTION LOAD BEARING WALL

SCALE 1:10



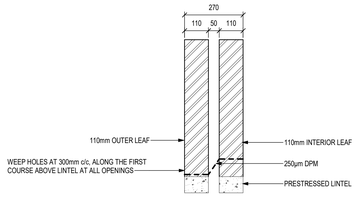
WALL TO SLAB SECTION LOAD BEARING WALL

SCALE 1:10



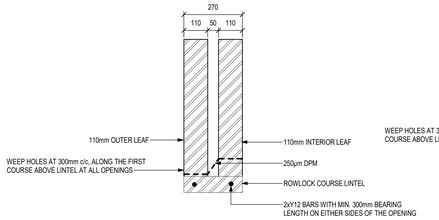
FILLED CAVITY WALL ANCHOR DETAIL

SCALE 1:10



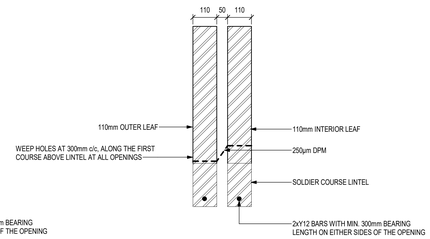
PRESTRESSED LINTEL DETAIL

SCALE 1:10



ROWLOCK COURSE LINTEL DETAIL

SCALE 1:10



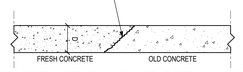
SOLDIER COURSE LINTEL DETAIL

SCALE 1:10

1. CHICKEN MESH PLACED AT 45 DEGREE ANGLE TO STOP FLOW OF CONCRETE AT INITIAL CONCRETE POUR

2. CONCRETE JOINT TO BE "GREEN CUT" BY MEANS OF HIGH PRESSURE WASHER TO REMOVE CEMENT PASTE AND ONLY SHOW EXPOSED AGGREGATES, THIS MUST BE DONE IMMEDIATELY AFTER THE INITIAL SETTING STAGE OF THE CONCRETE IS COMPLETED (± 4-6 HOURS AFTER POUR) OR ALTERNATIVELY A BREAKER CAN BE USED TO SCABBLE THE CONCRETE THE FOLLOWING DAY TO EXPOSE THE AGGREGATES AND REMOVE THE TOP CEMENT PASTE

3. WET-TO-DRY EPOXY MUST BE USED ON EXPOSED SURFACE BEFORE NEXT CONCRETE POUR AS PER SUPPLIERS INSTRUCTIONS OR ALTERNATIVELY A SLUSH (SAND+CEMENT MIXTURE) CAN BE USED AS PER SANS 2001-CC1:2012 TABLE 7 - METHOD OF FORMING CONSTRUCTION JOINTS



CONSTRUCTION JOINT DETAIL WITH MESH

SCALE 1:10

DWG. TO BE READ IN CONJUNCTION WITH:

-35566S-200-G01
-35566S-201-01/02/03
-35566S-210-02

GENERAL NOTES:
1. ALL DIMENSIONS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL 8.
2. DO NOT SCALE ANY DRAWINGS. WORK TO FIGURED DIMENSIONS ONLY.
3. ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
4. THE CONTRACTOR IS TO MAINTAIN A FULL SET OF DRAWINGS ON SITE.
5. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS.
6. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE.
7. ALL REINFORCEMENT TO BE INSPECTED BY THE RESPONSIBLE ENGINEER PRIOR TO CASTING OF ANY CONCRETE.

NOTE :-
THE CONTRACTOR SHALL ADHERE TO THE FOLLOWING CODES DURING CONSTRUCTION AS APPLICABLE: SANS 2001 CONSTRUCTION WORKS:
PART CC1: CONCRETE WORKS (STRUCTURAL)
PART CC2: CONCRETE WORKS (MINOR WORKS)
PART CC3: CONCRETE WORKS - PRECASTING IN WINDOW
PART DM1: MASONRY WALLING
PART CS1: STRUCTURAL STEELWORK
PART CT1: STRUCTURAL TIMBERWORK (FLOORING)
PART CT2: STRUCTURAL TIMBERWORK (ROOFING)
PART EM1: CEMENT PLASTER
SANS 1200 ACCURACY IN BUILDINGS
GRADE 3 PREDOMINANT EXECUTION / TOLERANCE SHALL APPLY UNLESS OTHERWISE NOTED.
ONE COPY OF EACH OF THESE CODES SHALL BE KEPT ON SITE AND SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST.

NOTES / LEGEND

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
2026-03-13	A0	B

	PRELIMINARY
X	INFO ONLY
	FOR TENDER
	FOR CONSTRUCTION
	AS-BUILT

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CITY ENGINEER / CLIENT | REG. NO. | DATE

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DATE	INITIAL	NO.	DESCRIPTION OF REVISION
2026-01-16	JTM	A	ISSUED FOR INFORMATION PURPOSES
2026-03-13	JTM	B	ISSUED FOR INFORMATION PURPOSES

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Visit or contact us online at www.bvigroup.co.za

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BBBEE Level 1
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CLIENT

DEPARTMENT OF HEALTH
NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

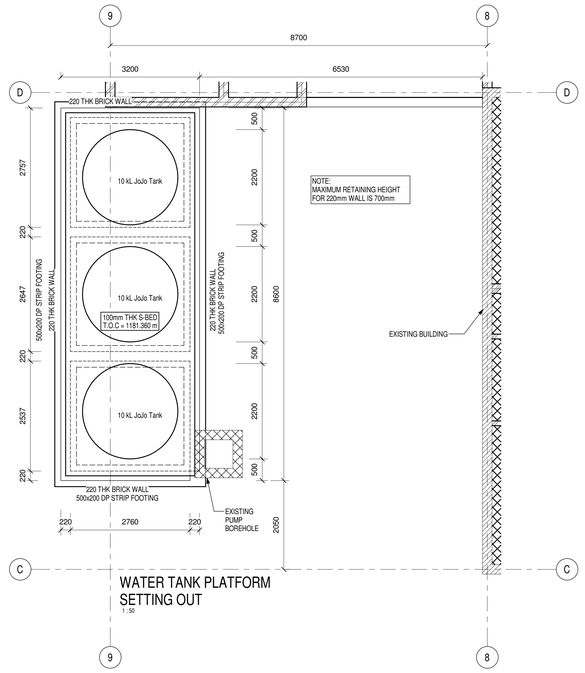
CONSTRUCTION DETAILS

APPROVED BY BVI

JJ HAEFELE | 20190844 | 2026-03-13
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

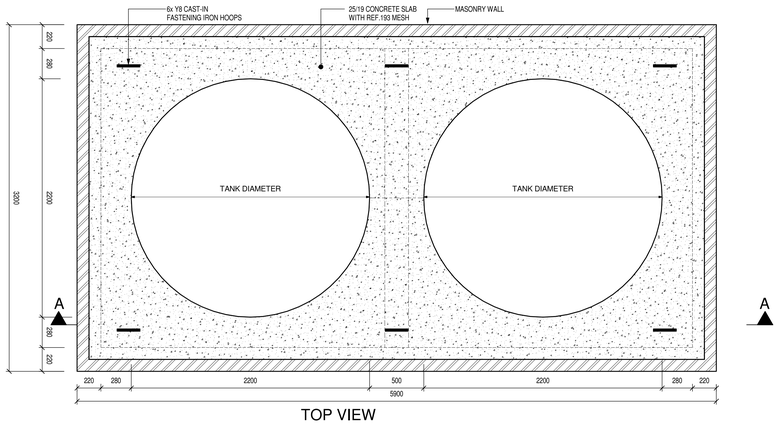
SCALE	As indicated	DRAWN	JTM
DESIGNED	JTM	CHECKED	JJH

PLAN NUMBER		REVISION NO.	DATE SAVED
35566S	-202-01	B	2026-03-13



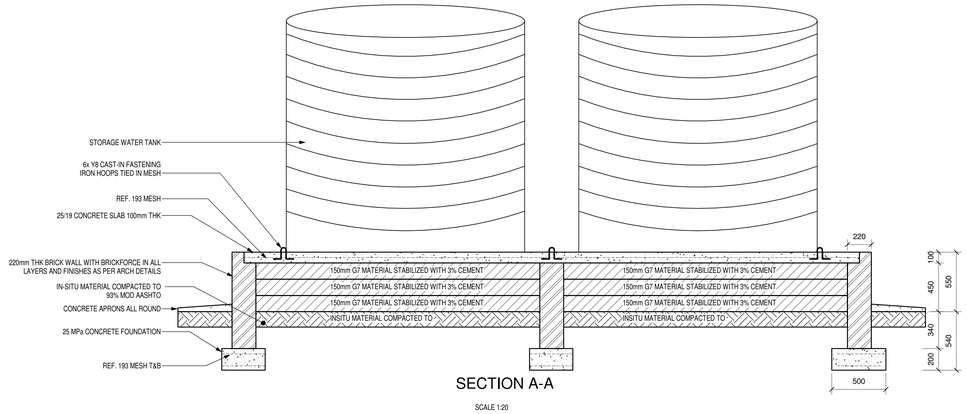
WATER TANK PLATFORM SETTING OUT

1:50



TOP VIEW

SCALE 1:20



SECTION A-A

SCALE 1:20

WATER STORAGE TANK BASE TYPICAL DETAILS

1 : 20

GENERAL NOTES:
1. ALL CIVIL WORKS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL 9.
2. DO NOT SCALE ANY DRAWINGS, WORK TO FIGURED DIMENSIONS ONLY.
3. ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
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7. ALL CONSTRUCTION IS TO BE INSPECTED BY THE RESPONSIBLE ENGINEER PRIOR TO CASTING OF ANY CONCRETE.

NOTE :
THE CONTRACTOR SHALL ADHERE TO THE FOLLOWING CODES DURING CONSTRUCTION AS APPLICABLE: SANS 2001 CONSTRUCTION WORKS:
PART CC1: CONCRETE WORKS (STRUCTURAL)
PART CC2: CONCRETE WORKS (MINOR WORKS)
PART CG1: INSTALLATION OF GLAZING IN WINDOW
PART CM1: MASONRY WALLING
PART CS1: STRUCTURAL STEELWORK
PART CT1: STRUCTURAL TIMBERWORK (FLOORING)
PART CT5: STRUCTURAL TIMBERWORK (ROOFING)
PART BM1: CEMENT PLASTER
SANS 1011 GENERAL CONSTRUCTION
GRADE II PERMISSIBLE DEVIATION / TOLERANCE SHALL APPLY
UNLESS OTHERWISE NOTED.
ONE COPY OF EACH OF THESE CODES SHALL BE KEPT ON SITE AND SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST.

NOTES / LEGEND

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ISSUE DATE:	DRAWING SIZE:	REVISION:
2025-11-12	A0	0

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DATE	INITIAL	NO.	DESCRIPTION OF REVISION
2025-11-12	JJH	0	ISSUED FOR CONSTRUCTION

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ENGINEERING PROCUREMENT MANAGEMENT
Central Office
Registration No. 1998/003450/07
BBBEE Level 1
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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

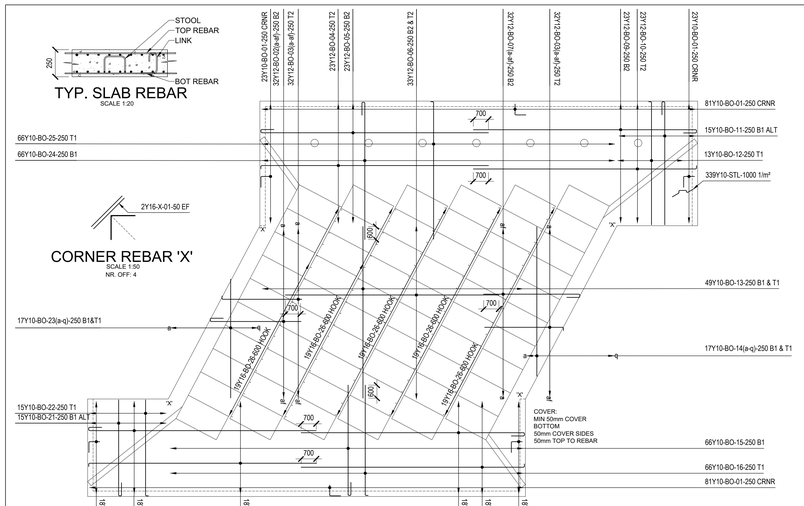
WATER TANK PLATFORM

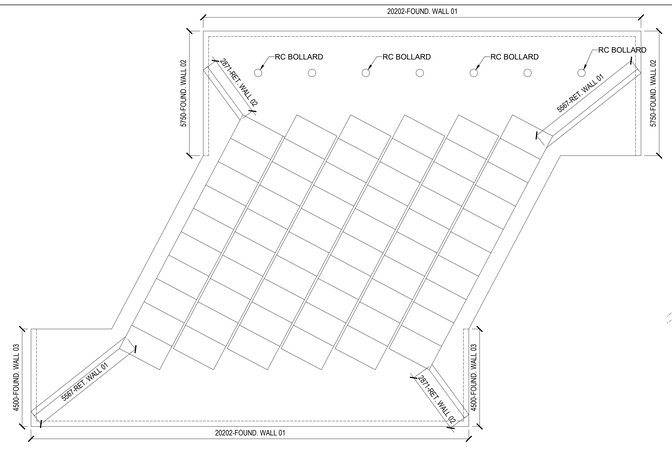
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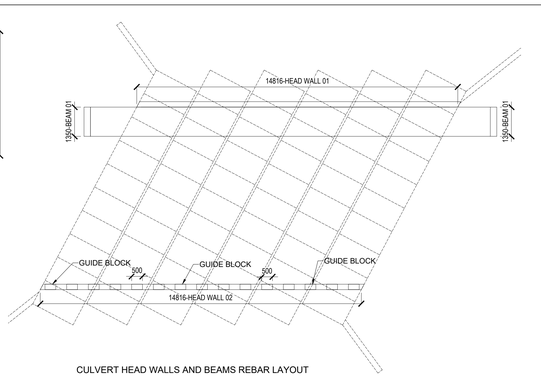
JJ HAEFELE — 20190844 — 2025-11-12
ENGINEER/TECHNOLOGIST — REG. NO. — DATE

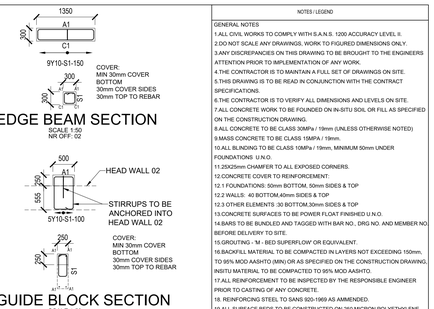
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DESIGNED	JJH	CHECKED	DF LEUKES

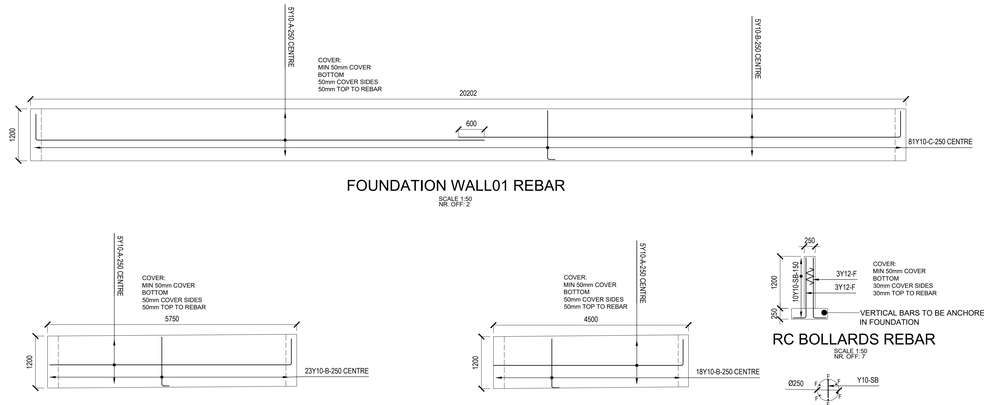
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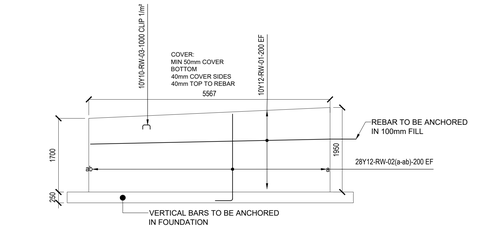


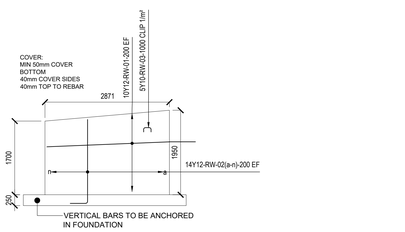


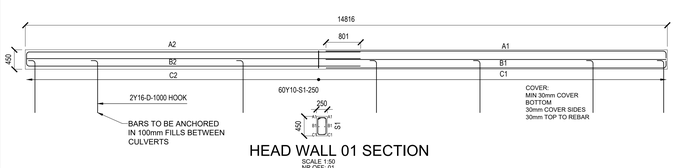


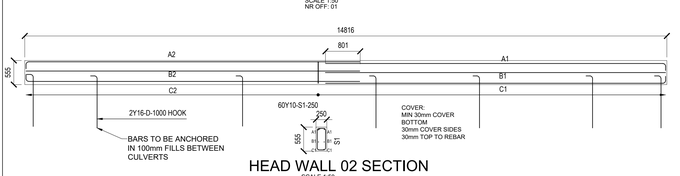


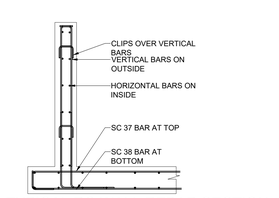












Member	Num of	Bars per Memb	Type	Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
FOUND. W1	2	5	Y10	10	A	10950	37	10350	600					
		5	Y10	10	B	10800	37	10200	600					
		81	Y10	162	C	1300	37	1130	170					
FOUND. W2	2	5	Y10	10	A	6150	37	600	5575					
		23	Y10	46	B	1300	37	1130	170					
FOUND. W3	2	5	Y10	10	A	4950	37	600	4375					
		18	Y10	36	B	1300	37	1130	170					
CULVERT BASE	1	244	Y10	244	BO-01	1000	37	500	500					
		1	Y12	1	BO-02a	2600	38	1900	150	600				
		1	Y12	1	BO-02b	2750	38	2035	150	600				
		1	Y12	1	BO-02c	2850	38	2170	150	600				
		1	Y12	1	BO-02d	3000	38	2305	150	600				
		1	Y12	1	BO-02e	3150	38	2440	150	600				
		1	Y12	1	BO-02f	3250	38	2575	150	600				
		1	Y12	1	BO-02g	3400	38	2715	150	600				
		1	Y12	1	BO-02h	3550	38	2850	150	600				
		1	Y12	1	BO-02i	3650	38	2985	150	600				
		1	Y12	1	BO-02j	3800	38	3120	150	600				
		1	Y12	1	BO-02k	3950	38	3255	150	600				
		1	Y12	1	BO-02l	4100	38	3390	150	600				
		1	Y12	1	BO-02m	4200	38	3525	150	600				
		1	Y12	1	BO-02n	4350	38	3660	150	600				
		1	Y12	1	BO-02o	4500	38	3795	150	600				
		1	Y12	1	BO-02p	4600	38	3930	150	600				
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		1	Y12	1	BO-02x	5700	38	5015	150	600				
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		1	Y12	1	BO-03e	2550	37	2440	150					
		1	Y12	1	BO-03e	2550	37	2440	150					

	6	8	10	12	16	20	25	32	40	TOT
R										
Y			549	154						703
TOT			549	154						703

Client: MOQHAKA LOCAL MUNICIPALITY

Job Description: UPGRADING OF 0.85KM SMALDEEL ROAD TO A PAVED ROAD AND STORMWATER-PHASE 1

Schedule Description: CULVERT BRIDGE REBAR SLAB, WALLS, BEAMS & BOLLARDS

Job No:	35112S
Date:	2026-03-10
Det. by:	JTM
Ref Dwg:	35112S-204-01
Revision:	0
Schedule No:	35112S-206-01A

Member	Num of	Bars per Memb	Type	Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
CULVERT BASE	1	1	Y12	1	BO-03f	2700	37	2575	150					
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		1	Y12	1	BO-03g	2850	37	2715	150					
		1	Y12	1	BO-03h	2950	37	2850	150					
		1	Y12	1	BO-03h	2950	37	2850	150					
		1	Y12	1	BO-03i	3100	37	2985	150					
		1	Y12	1	BO-03i	3100	37	2985	150					
		1	Y12	1	BO-03j	3250	37	3120	150					
		1	Y12	1	BO-03j	3250	37	3120	150					
		1	Y12	1	BO-03k	3350	37	3255	150					
		1	Y12	1	BO-03l	3500	37	3390	150					
		1	Y12	1	BO-03l	3500	37	3390	150					
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		1	Y12	1	BO-03w	5000	37	4880	150					
		1	Y12	1	BO-03x	5150	37	5015	150					
		1	Y12	1	BO-03x	5150	37	5015	150					
		1	Y12	1	BO-03y	5250	37	5150	150					
		1	Y12	1	BO-03y	5250	37	5150	150					
		1	Y12	1	BO-03z	5400	37	5285	150					
		1	Y12	1	BO-03z	5400	37	5285	150					
		1	Y12	1	BO-03aa	5550	37	5425	150					
		1	Y12	1	BO-03aa	5550	37	5425	150					
		1	Y12	1	BO-03ab	5700	37	5560	150					
		1	Y12	1	BO-03ab	5700	37	5560	150					
		1	Y12	1	BO-03ac	5800	37	5695	150					
		1	Y12	1	BO-03ac	5800	37	5695	150					
		1	Y12	1	BO-03ad	5950	37	5830	150					
		1	Y12	1	BO-03ad	5950	37	5830	150					
		1	Y12	1	BO-03ae	6100	37	5965	150					
		1	Y12	1	BO-03ae	6100	37	5965	150					
		1	Y12	1	BO-03af	6200	37	6100	150					

	6	8	10	12	16	20	25	32	40	TOT
R										
Y				208						208
TOT				208						208

Client: MOQHAKA LOCAL MUNICIPALITY

Job Description: UPGRADING OF 0.85KM SMALDEEL ROAD TO A PAVED ROAD AND STORMWATER-PHASE 1

Schedule Description: CULVERT BRIDGE REBAR SLAB, WALLS, BEAMS & BOLLARDS

Job No:	35112S
Date:	2026-03-10
Det. by:	JTM
Ref Dwg:	35112S-204-01
Revision:	0
Schedule No:	35112S-206-01B

Member	Num of	Bars per Memb	Type	Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
CULVERT BASE	1	1	Y12	1	BO-03af	6200	37	6100	150					
		23	Y12	23	BO-04	10650	37	10500	150					
		23	Y12	23	BO-05	11200	38	600	150	10500				
		66	Y12	66	BO-06	9855	20	9855						
		1	Y12	1	BO-07a	2600	38	1900	150	600				
		1	Y12	1	BO-07b	2750	38	2035	150	600				
		1	Y12	1	BO-07c	2850	38	2170	150	600				
		1	Y12	1	BO-07d	3000	38	2305	150	600				
		1	Y12	1	BO-07e	3150	38	2440	150	600				
		1	Y12	1	BO-07f	3250	38	2575	150	600				
		1	Y12	1	BO-07g	3400	38	2715	150	600				
		1	Y12	1	BO-07h	3550	38	2850	150	600				
		1	Y12	1	BO-07i	3650	38	2985	150	600				
		1	Y12	1	BO-07j	3800	38	3120	150	600				
		1	Y12	1	BO-07k	3950	38	3255	150	600				
		1	Y12	1	BO-07l	4100	38	3390	150	600				
		1	Y12	1	BO-07m	4200	38	3525	150	600				
		1	Y12	1	BO-07n	4350	38	3660	150	600				
		1	Y12	1	BO-07o	4500	38	3795	150	600				
		1	Y12	1	BO-07p	4600	38	3930	150	600				
		1	Y12	1	BO-07q	4750	38	4070	150	600				
		1	Y12	1	BO-07r	4900	38	4205	150	600				
		1	Y12	1	BO-07s	5050	38	4340	150	600				
		1	Y12	1	BO-07t	5150	38	4475	150	600				
		1	Y12	1	BO-07u	5300	38	4610	150	600				
		1	Y12	1	BO-07v	5450	38	4745	150	600				
		1	Y12	1	BO-07w	5550	38	4880	150	600				
		1	Y12	1	BO-07x	5700	38	5015	150	600				
		1	Y12	1	BO-07y	5850	38	5150	150	600				
		1	Y12	1	BO-07z	6000	38	5285	150	600				
		1	Y12	1	BO-07aa	6100	38	5425	150	600				
		1	Y12	1	BO-07ab	6250	38	5560	150	600				
		1	Y12	1	BO-07ac	6400	38	5695	150	600				
		1	Y12	1	BO-07ad	6500	38	5830	150	600				
		1	Y12	1	BO-07ae	6650	38	5965	150	600				
		1	Y12	1	BO-07af	6800	38	6100	150	600				
		23	Y12	23	BO-09	11500	38	600	150	10300				
		23	Y12	23	BO-10	10450	37	10300	150					
		15	Y10	15	BO-11	6400	38	5680	130	600				
		13	Y10	13	BO-12	5800	37	5680	130					
		98	Y10	98	BO-13	7920	20	7920						
		2	Y10	2	BO-14a	300	20	300						
		2	Y10	2	BO-14b	800	20	775						
		2	Y10	2	BO-14c	1250	20	1250						
		2	Y10	2	BO-14d	1700	20	1725						
		2	Y10	2	BO-14e	2200	20	2200						
		2	Y10	2	BO-14f	2700	20	2675						
		2	Y10	2	BO-14g	3150	20	3150						
		2	Y10	2	BO-14h	3600	20	3625						
		2	Y10	2	BO-14i	4100	20	4100						
		2	Y10	2	BO-14j	4600	20	4575						
		2	Y10	2	BO-14k	5050	20	5050						
		2	Y10	2	BO-14l	5500	20	5525						

	6	8	10	12	16	20	25	32	40	TOT
R										
Y				628	1601					2229
TOT				628	1601					2229

Client: MOQHAKA LOCAL MUNICIPALITY

Job Description: UPGRADING OF 0.85KM SMALDEEL ROAD TO A PAVED ROAD AND STORMWATER-PHASE 1

Schedule Description: CULVERT BRIDGE REBAR SLAB, WALLS, BEAMS & BOLLARDS

Job No:	35112S
Date:	2026-03-10
Det. by:	JTM
Ref Dwg:	35112S-204-01
Revision:	0
Schedule No:	35112S-206-01C

Member	Num of	Bars per Memb	Type	Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
CULVERT BASE	2	2	Y12	4	A1	1500	38	120	1290	120				
EDGE BM		2	Y12	4	C1	1500	38	120	1290	120				
		9	Y10	18	S1	1150	60	240	240					
GUIDE BLOCKS	15	2	Y10	30	A1	2550	60	745	440					
		5	Y10	75	S1	1550	60	500	190					
RET. W1	2	2	Y12	4	RW-02q	2350	37	2000	400					
		2	Y12	4	RW-02r	2400	37	2005	400					
		2	Y12	4	RW-02s	2400	37	2015	400					
		2	Y12	4	RW-02t	2400	37	2025	400					
		2	Y12	4	RW-02u	2400	37	2035	400					
		2	Y12	4	RW-02v	2400	37	2045	400					
		2	Y12	4	RW-02w	2400	37	2055	400					
		2	Y12	4	RW-02x	2450	37	2065	400					
		2	Y12	4	RW-02y	2450	37	2070	400					
		2	Y12	4	RW-02z	2450	37	2080	400					
		2	Y12	4	RW-02aa	2450	37	2090	400					
		2	Y12	4	RW-02ab	2450	37	2100	400					
		10	Y10	20	RW-03	350	38	100	170	100				
RET. W2	2	20	Y12	40	RW-01	3450	62	2830	115	600				
		2	Y12	4	RW-02a	2200	37	1850	400					
		2	Y12	4	RW-02b	2250	37	1870	400					
		2	Y12	4	RW-02c	2250	37	1890	400					
		2	Y12	4	RW-02d	2300	37	1910	400					
		2	Y12	4	RW-02e	2300	37	1925	400					
		2	Y12	4	RW-02f	2300	37	1945	400					
		2	Y12	4	RW-02g	2350	37	1965	400					
		2	Y12	4	RW-02h	2350	37	1985	400					
		2	Y12	4	RW-02i	2350	37	2005	400					
		2	Y12	4	RW-02j	2400	37	2025	400					
		2	Y12	4	RW-02k	2400	37	2040	400					
		2	Y12	4	RW-02l	2450	37	2060	400					
		2	Y12	4	RW-02m	2450	37	2080	400					
		2	Y12	4	RW-02n	2450	37	2100	400					
		5	Y10	10	RW-03	350	38	100	170	100				
HEAD WALL 01	1	2	Y16	2	A1	8000	37	7850	160					
		2	Y16	2	A2	7850	37	7700	160					
		2	Y16	2	B1	7850	20	7850						
		2	Y16	2	B2	7700	20	7700						
		2	Y16	2	C1	8000	37	7845	160					
		2	Y16	2	C2	7850	37	7700	160					
		14	Y16	14	D	1350	37	1200	150					
		60	Y10	60	S1	1350	60	390	190					
HEAD WALL 02	1	2	Y16	2	A1	8000	37	7845	160					
		2	Y16	2	A2	7850	37	7700	160					
		2	Y16	2	B1	7850	20	7850						
		2	Y16	2	B2	7700	20	7700						
		2	Y16	2	C1	8000	37	7845	160					
		2	Y16	2	C2	7850	37	7700	160					
		12	Y16	12	D	1350	37	1200	150					
		2	Y16	2	D	1300	37	1160	150					
		60	Y10	60	S1	1550	60	495	190					
BOLLARD	7	6	Y12	42	F	1700	37	300	1390					
		10	Y10	70	SB	6750	86	190	150	1370				

	6	8	10	12	16	20	25	32	40	TOT
R										
Y			405	405	358					1169
TOT			405	405	358					1169

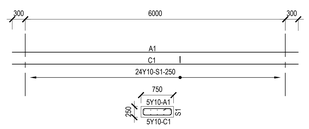
Client: MOQHAKA LOCAL MUNICIPALITY

Job Description: UPGRADING OF 0.85KM SMALDEEL ROAD TO A PAVED ROAD AND STORMWATER-PHASE 1

Schedule Description: CULVERT BRIDGE REBAR SLAB, WALLS, BEAMS & BOLLARDS

Job No:	35112S
Date:	2026-03-10
Det. by:	JTM
Ref Dwg:	35112S-204-01
Revision:	0
Schedule No:	35112S-206-01D

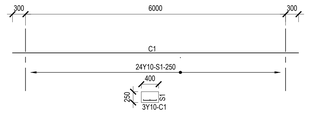
Member	Num of	Bars per Memb	Type	Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
CULVERT BASE	1	1	Y12	1	BO-03af	6200	37	6100	150					
		23	Y12	23	BO-04	10650	37	10500	150					
		23	Y12	23	BO-05	11200	38	600	150	10500				
		66	Y12	66	BO-06	9855	20	9855						
		1	Y12	1	BO-07a	2600	38	1900	150	600				
		1	Y12	1	BO-07b	2750	38	2035	150	600				
		1	Y12	1	BO-07c	2850	38	2170	150	600				
		1	Y12	1	BO-07d	3000	38	2305	150	600				
		1	Y12	1	BO-07e	3150	38	2440	150	600				
		1	Y12	1	BO-07f	3250	38	2575	150	600				
		1	Y12	1	BO-07g	3400	38	2715	150	600				
		1	Y12	1	BO-07h	3550	38	2850	150	600				
		1	Y12	1	BO-07i	3650	38	2985	150	600				
		1	Y12	1	BO-07j	3800	38	3120	150	600				
		1	Y12	1	BO-07k	3950	38	3255	150	600				
		1	Y12	1	BO-07l	4100	38	3390	150	600				
		1	Y12	1	BO-07m	4200	38	3525	150	600				
		1	Y12	1	BO-07n	4350	38	3660	150	600				
		1	Y12	1	BO-07o	4500	38	3795	150	600				
		1	Y12	1	BO-07p	4600	38	3930	150	600				
		1	Y12	1	BO-07q	4750	38	4070	150	600				
		1	Y12	1	BO-07r	4900	38	4205	150	600				
		1	Y12	1



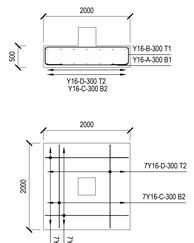
SF01:750x250mm RW FOUNDATION
SCALE 1:50
NR OFF: 12



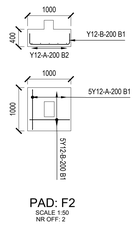
SF02:600x250mm STRIP FOUNDATION
SCALE 1:50
NR OFF: 54



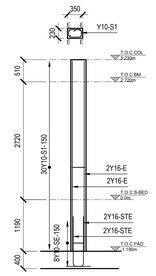
SF03:400x250mm STRIP FOUNDATION
SCALE 1:50
NR OFF: 12



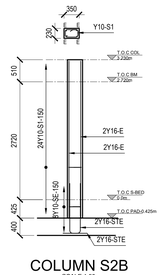
PAD: F1
SCALE 1:50
NR OFF: 7



PAD: F2
SCALE 1:50
NR OFF: 2



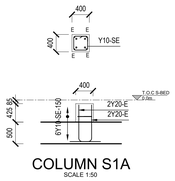
COLUMN S2A
SCALE 1:50
NO. OFF: 01



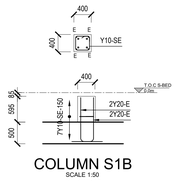
COLUMN S2B
SCALE 1:50
NO. OFF: 01

Member	Num of	Bars per Memb	Type Dia	Tot Nr	Bar Mark	Cut Length	SC	A [mm]	B [mm]	C [mm]	D [mm]	E/r [mm]	REV
SF01	12	5	Y10	60	A1	6600	20	6600					
		5	Y10	60	C1	6600	20	6600					
		24	Y10	288	S1	1800	60	150	650				
SF02	54	4	Y10	216	C1	6600	20	6600					
		24	Y10	1296	S1	500	20	500					
SF03	12	3	Y10	36	C1	6600	20	6600					
		24	Y10	288	S1	300	20	300					
PAD F1	7	7	Y16	49	A	2650	38	400	1920	400			
		7	Y16	49	B	3400	55	400	400	1920	400	400	
		7	Y16	49	C	2600	38	370	1920	370			
		7	Y16	49	D	3300	55	400	370	1920	370	400	
PAD F2	2	5	Y12	10	A	1400	38	250	920	250			
		5	Y12	10	B	1400	38	250	920	250			
COL S1A	4	4	Y20	16	E	1300	37	500	845				
		6	Y10	24	SE	1450	60	320	320				
COL S1B	2	4	Y20	8	E	1500	37	500	1015				
		7	Y10	14	SE	1450	60	320	320				
COL S1C	1	4	Y20	4	E	1550	37	500	1100				
		8	Y10	8	SE	1450	60	320	320				
COL S2A	1	4	Y16	4	E	4390	20	4390					
		30	Y10	30	S1	1100	60	170	290				
		8	Y10	8	SE	1000	60	140	260				
		4	Y16	4	STE	1550	37	400	1150				
COL S2B	1	4	Y16	4	E	3625	20	3625					
		24	Y10	24	S1	1100	60	170	290				
		8	Y10	8	SE	1000	60	140	260				
		4	Y16	4	STE	1550	37	400	1150				

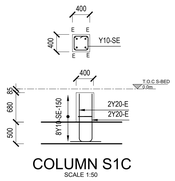
	6	8	10	12	16	20	25	32	40	TOT
R										
Y			2376	25	995	96				3492
TOT			2376	25	995	96				3492



COLUMN S1A
SCALE 1:50
NO. OFF: 04



COLUMN S1B
SCALE 1:50
NO. OFF: 02



COLUMN S1C
SCALE 1:50
NO. OFF: 01

Client:
DEPARTMENT OF HEALTH
NORTHERN CAPE

Job Description:
UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

Schedule Description:
FOUNDATION REBAR
FOOTINGS AND COLUMNS

Job No: 35566S
Date: 2026-03-13
Det. by: JTM
Ref Dwg: 35566S-204-01
Revision: 0
Schedule No: 35566S-206-01

NOTES / LEGEND

GENERAL NOTES
1.ALL CIVIL WORKS TO COMPLY WITH S.A.N.S. 1200 ACCURACY LEVEL II.
2.DO NOT SCALE ANY DRAWINGS, WORK TO FIGURED DIMENSIONS ONLY.
3.ANY DISCREPANCIES ON THIS DRAWING TO BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO IMPLEMENTATION OF ANY WORK.
4.THE CONTRACTOR IS TO MAINTAIN A FULL SET OF DRAWINGS ON SITE.
5.THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONTRACT SPECIFICATIONS.
6.THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE.
7.ALL CONCRETE WORK TO BE FOUNDED ON IN-SITU SOIL OR FILL AS SPECIFIED ON THE CONSTRUCTION DRAWING.
8.ALL CONCRETE TO BE CLASS 30MPa / 19mm (UNLESS OTHERWISE NOTED)
9.MASS CONCRETE TO BE CLASS 15MPA / 19mm.
10.ALL BLINDING TO BE CLASS 10MPa / 19mm, MINIMUM 50mm UNDER FOUNDATIONS U.N.O.
11.20X20mm CHAMFER TO ALL EXPOSED CORNERS.
12.CONCRETE COVER TO REINFORCEMENT:
12.1 FOUNDATIONS, 75mm BOTTOM, 50mm SIDES & TOP
12.2 ALL OTHER ELEMENTS 30mm
13.CONCRETE SURFACES TO BE POWER FLOAT FINISHED U.N.O.
14.BARS TO BE BUNDLED AND TAGGED WITH BAR NO., DRG NO. AND MEMBER NO. BEFORE DELIVERY TO SITE.
15.GROUTING – 'M - BED SUPERFLOW' OR EQUIVALENT.
16.BACKFILL MATERIAL TO BE COMPACTED IN LAYERS NOT EXCEEDING 150mm, TO 95% MOD AASHTO (MIN) OR AS SPECIFIED ON THE CONSTRUCTION DRAWING. INSITU MATERIAL TO BE COMPACTED TO 95% MOD AASHTO.
17.ALL REINFORCEMENT TO BE INSPECTED BY THE RESPONSIBLE ENGINEER PRIOR TO CASTING OF ANY CONCRETE.
18. REINFORCING STEEL TO SANS 920-1969 AS AMMENDED.
19.ALL SURFACE BEDS TO BE CONSTRUCTED ON 250 MICRON POLYETHYLENE SHEETING.
20. ALL STEELWORK TO BE GRADE 350WA, ALL BOLTS TO BE GRADE 8.8 U.N.O, ALL WELDS TO BE 6mm FILLET WELDS ALL ROUND U.N.O, ALL DIMENSIONS TO BE VERIFIED ON SITE

NOTE:
THE CONTRACTOR SHALL ADHERE TO THE FOLLOWING CODES DURING CONSTRUCTION AS APPLICABLE.
SANS 2001 CONSTRUCTION WORKS:
PART CC1: CONCRETE WORKS (STRUCTURAL)
PART CC2: CONCRETE WORKS (MINOR WORKS)
PART CG1: INSTALLATION OF GLAZING IN WINDOW AND DOOR FRAMES
PART CM1: MASONRY WALLING
PART CS1: STRUCTURAL STEELWORK
PART CT1: STRUCTURAL TIMBERWORK (FLOORING)
PART CT2: STRUCTURAL TIMBERWORK (ROOFING)
PART EM1: CEMENT PLASTER
SANS 10155 ACCURACY IN BUILDINGS
GRADE II PERMISSIBLE DEVIATION / TOLERANCE SHALL APPLY UNLESS OTHERWISE NOTED.
ONE COPY OF EACH OF THESE CODES SHALL BE KEPT ON SITE AND SHALL BE MADE AVAILABLE TO THE ENGINEER ON REQUEST.

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
2026-03-13	A0	0

	PRELIMINARY
	INFO ONLY
	FOR TENDER
X	FOR CONSTRUCTION
	AS-BUILT

APPROVED BY COUNCIL / CLIENT

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2026-03-13	JTM	0	ISSUED FOR CONSTRUCTION

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CONSULTING ENGINEERS CENTRAL
Civil, Structural & Electrical Engineers Environmental & Project Management

CLIENT

health
Department of Health
NORTHERN CAPE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

FOUNDATION REBAR

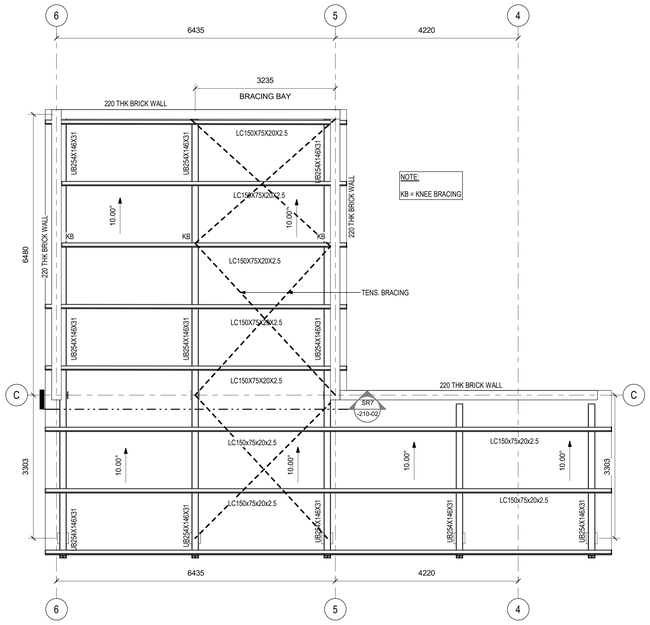
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JJ HAEFELE | 20160844 | 2026-03-13
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

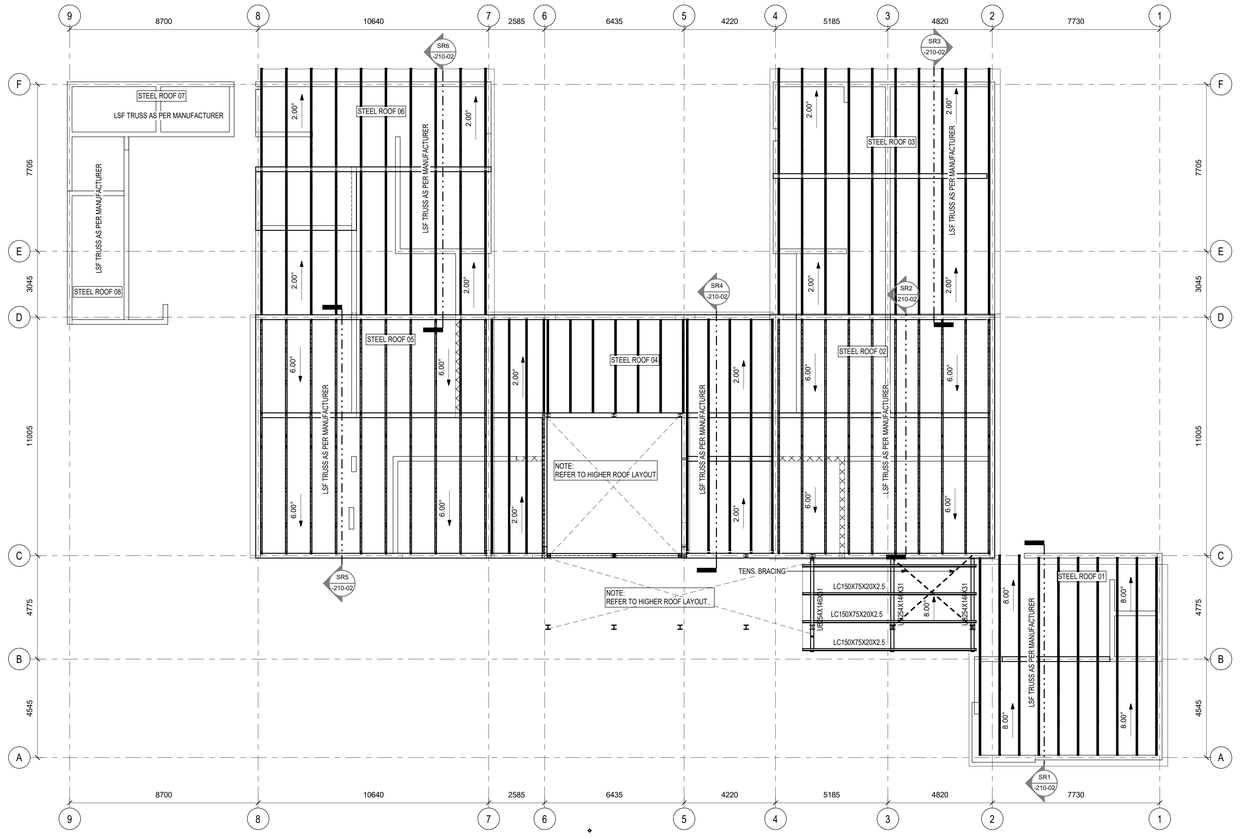
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DESIGNED	JTM	CHECKED	JJH

PLAN NUMBER	REVISION NO.	
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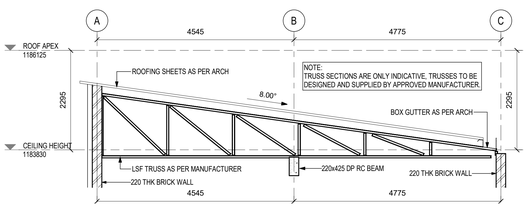
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-35566S-201-01
-35566S-200-G01



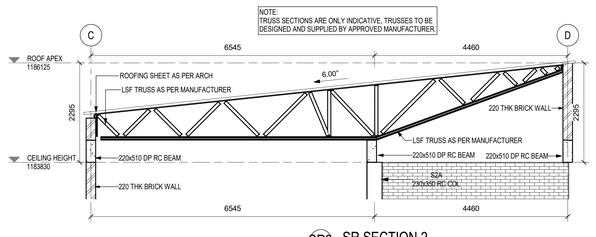
HIGHER STEEL ROOF LAYOUT
1 : 50



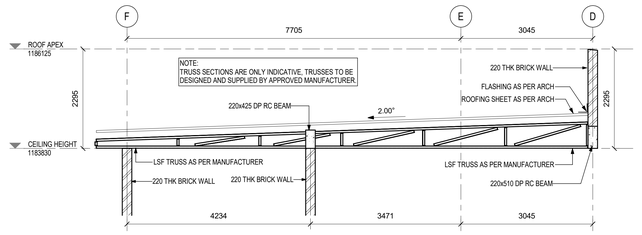
LOWER STEEL ROOF LAYOUT
1 : 100



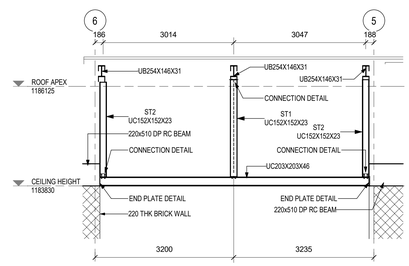
SR1 SR SECTION 1
1 : 50



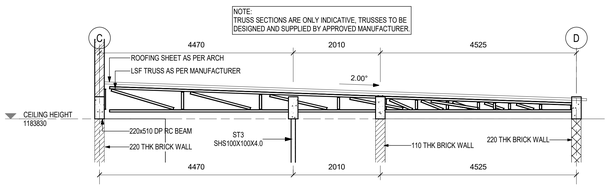
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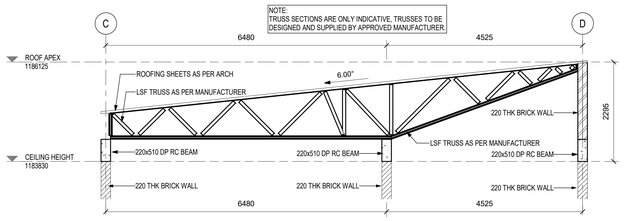
SR3 SR SECTION 3
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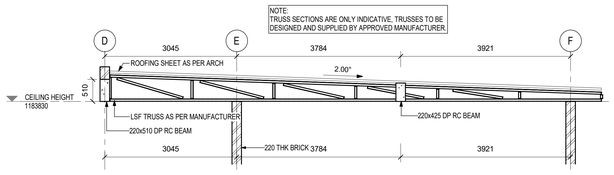
SR7 SR SECTION 7
1 : 50



SR4 SR SECTION 4
1 : 50



SR5 SR SECTION 5
1 : 50



SR6 SR SECTION 6
1 : 50

NOTES ON STEEL WORK:

FASTENERS:
- ALL FASTENERS TO BE CLASS 8.8 BOLTS WITH CLASS 8 LOCK NUTS
- ONLY 2mm OVERSIZE BOLT HOLES ARE PERMITTED

CONSTRUCTION / MANUFACTURING / ERECTION:
- STEEL STRUCTURES ARE TO BE STRICTLY IN ACCORDANCE WITH SANS 2001:CS1
- STEEL GRADE S355J
- THE CONTRACTOR MUST SUBMIT DETAILED WORKSHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO MANUFACTURE
- ONLY SIZES OF STRUCTURAL MEMBERS, CONNECTIONS AND SPLICES WILL BE CHECKED
- FINAL DIMENSIONS AND THE CORRECT FITTING OF MEMBERS SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR

WELDING:
- WELDING MUST BE OF HIGH QUALITY WITH MINIMUM DEFECTS
- NO NOTCHES OR CRACKS SHALL BE ACCEPTED
- THE FULL PENETRATION GROOVE WELDS SHALL HAVE CONTOURED FILLET REINFORCING TO PROVIDE A SMOOTH FLOW OF STRESSES.
- ALL WELDS TO BE CONTINUOUS AND NOT INTERMITTENT WELDS SHALL BE ALLOWED
- INTERSECTING WELDS RUNNING IN VARIOUS DIRECTIONS AT ANY POINT MUST BE PREVENTED BY CUTTING SELECTED PLATES SO AS TO REMAIN CLEAR OF THE INTERSECTION

MINIMUM WELD SIZES:

THICKNESS OF THICKER PART (mm)	MIN FILLET WELD
1. UP TO 12mm	5mm
2. OVER 12mm TO 20mm	6mm
3. OVER 20mm TO 40mm	8mm

- ALL WELDS TO BE E70 XX ELECTRODES WITH MIN WELD STRENGTH OF 480 MPa

PAINT SPECIFICATIONS:
CORROSION PROTECTION TO ALL EXTERNAL STEEL ELEMENTS FOR ENVIRONMENTAL CLASS C3 INDUSTRIAL FOR 5 YEAR MAINTENANCE PERIOD IN ACCORDANCE WITH ISO 12944 PART 2

ROOF MEMBER SIZES
- FOUNDATION: 2.0x2.0x0.5m PAD FOUNDATION
-RC STUB COLUMN: 400x400mm
- RAFTER: 254x146x31 I-SECTION
-GIRDER BEAM: 203x203x46 H
- STEEL COL(ST1): 203x203x46 H
- STEEL COL(ST2): 152x152x23 H
- STEEL COL(ST3): 100x100x4 SHS
- PURLIN: 150x75x20x2.5 CFLC
-BRACING: 60x60x6 L
- PURLIN SPLICE EVERY MEMBER END TO CREATE A CONTINUOUS SYSTEM - NOTED: "SP"
-KB: KNEE BRACES 60x60x4 L

ROOF SHEETING:
ROOF CLADDING AS PER ARCHITECT'S SPECIFICATIONS, AND INSTALLATIONS AS PER SUPPLIER'S SPECIFICATIONS.

NOTES / LEGEND

GENERAL

- THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ALL MATERIALS AND WORKMANSHIP CONFORM WITH THE DETAILS AND SPECIFICATIONS SHOWN ON THIS DRAWING, AND ALL RELEVANT SABS SPECIFICATIONS, IRRESPECTIVE OF WHETHER THE ENGINEER HAS INSPECTED THE WORKS ON SITE OR NOT.
- ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE AND CORRELATED WITH THE ENGINEER'S DRAWINGS BEFORE CONSTRUCTION COMMENCES.
- NO SCALING WITH SCALE RULER FROM THE DRAWING IS PERMITTED. THE CONTRACTOR MUST ENSURE THAT HE GETS THE CORRECT DIMENSIONS FROM THE ENGINEER BEFORE CONSTRUCTION COMMENCES.

ISSUE DATE:	DRAWING SIZE:	REVISION:
2026-03-13	A0	B

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2026-01-16	JTM	A	ISSUED FOR INFORMATION PURPOSES
2026-03-13	JTM	B	ISSUED FOR INFORMATION PURPOSES

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ISO 9001 BVI FIRMS

BBBEE Level 1

CESA Consulting Engineers South Africa

CLIENT

DEPARTMENT OF HEALTH
NORTHERN CAPE PROVINCE

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

STEEL ROOF LAYOUTS

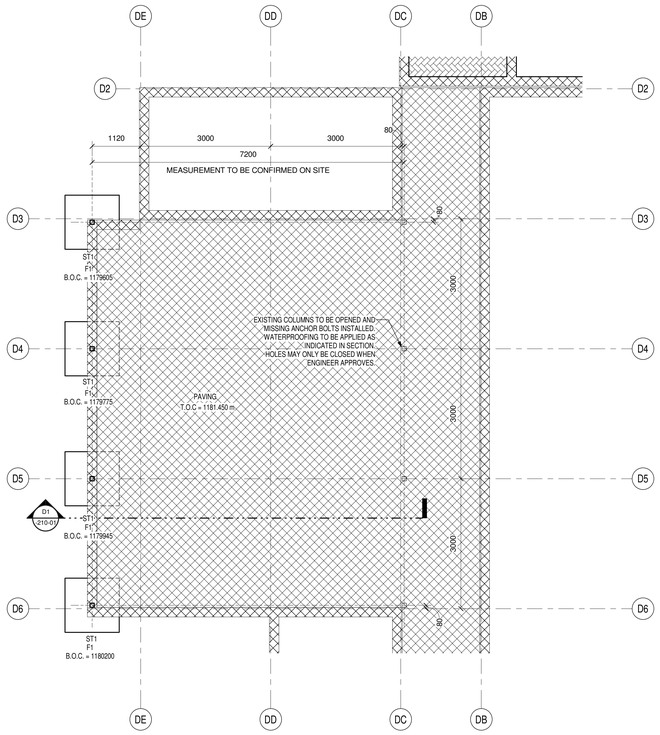
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ENGINEER/TECHNOLOGIST REG. NO. DATE

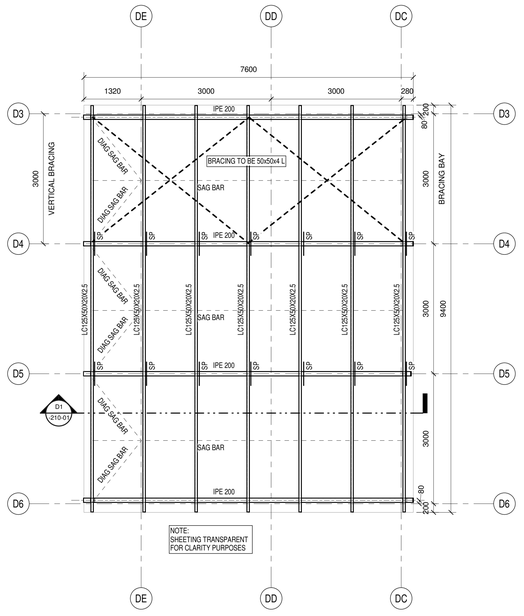
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DESIGNED	JJH	CHECKED	JJH

PLAN NUMBER	REVISION NO.	DATE SAVED
35566S -210-02	B	2026-03-13

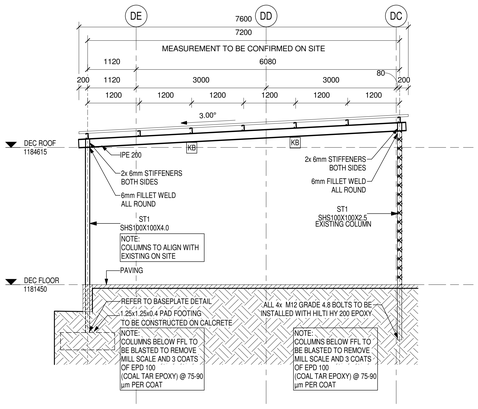
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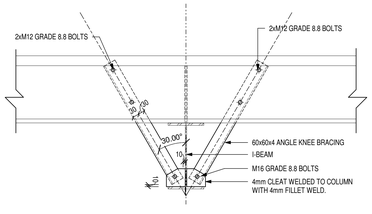
DECANTING WAITING
AREA FOUNDATION
1 : 50



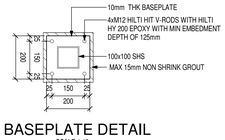
DECANTING WAITING
AREA ROOF
1 : 50



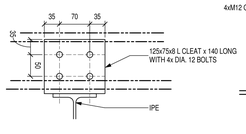
D1 DECANTING WAITING
AREA ROOF SECTION
1 : 50

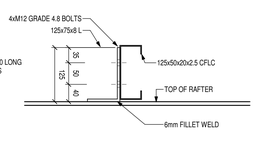


TYPICAL RAFTER KNEE BRACE (KB) DETAIL

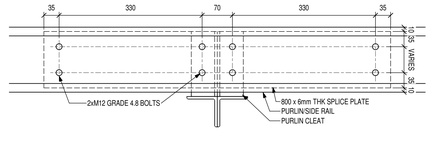


BASEPLATE DETAIL
SCALE 1:10





PURLIN CONNECTION DETAIL
SCALE 1:5



PURLIN SPLICE DETAIL
SCALE 1:5

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PAINT SPECIFICATIONS:
CORROSION PROTECTION TO ALL EXTERNAL STEEL ELEMENTS FOR ENVIRONMENTAL CLASS C3 INDUSTRIAL FOR 5 YEAR MAINTENANCE PERIOD IN ACCORDANCE WITH ISO 12944 PART 2

ROOF MEMBER SIZES
- FOUNDATION: 1.25x1.25x0.4m PAD FOUNDATION
- RAFTER: IPE 200
- STEEL COL: 100x100x4.0 SHS LOWER SIDE (ST1)
- STEEL COL: 100x100x2.5 SHS HIGHER SIDE (EXISTING)
- SAG BARS: 50x50x3 SAG ANGLES WITH 4mm END PLATES & 2xM10 Gr 8.8 BOLTS PER CONNECTION
- BRACING: 50x50x4.0 L CROSS AND BOLTED MIDSPAN
- PURLIN: 125x50x20x2.5 CFLC
- PURLIN SPLICE CONTINUOUS SYSTEM: EVERY MEMBER END TO CREATE A NOTED: "SP"
- KB: KNEE BRACES 60x60x4 L

ROOF SHEETING:
ROOF CLADDING AS PER ARCHITECTS SPECIFICATIONS, AND INSTALLATIONS AS PER SUPPLIERS SPECIFICATIONS.

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ISSUE DATE:	DRAWING SIZE:	REVISION:
2025-11-12	A0	0

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DATE	INITIAL	NO.	DESCRIPTION OF REVISION
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health
Department:
Health
Northern Cape Province

PROJECT

UPGRADE AND REFURBISHMENT OF LOGOBATE PHC

DRAWING TITLE

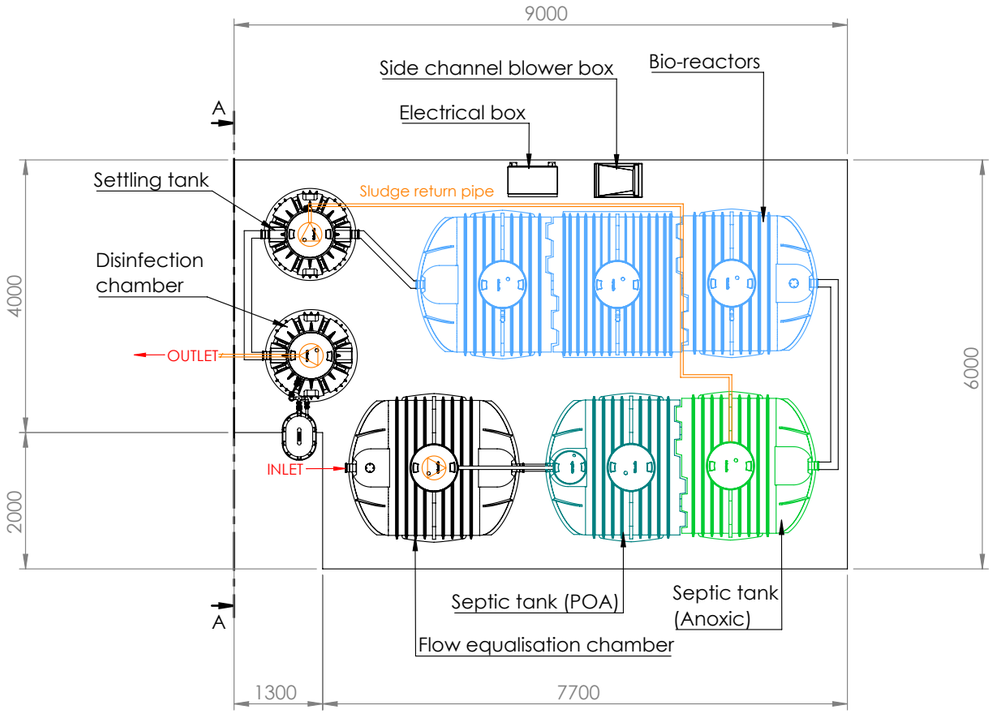
DECANTING STEEL ROOF LAYOUT

APPROVED BY BVI

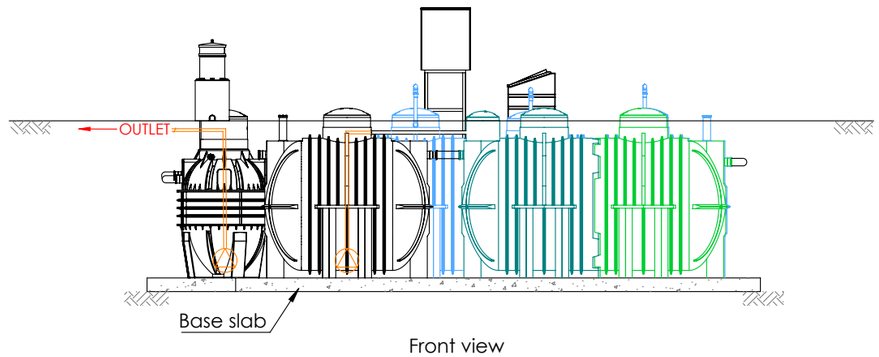
JJ HAEFELE | 20190844 | 2025-11-12
ENGINEER/TECHNOLOGIST | REG. NO. | DATE

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DESIGNED	JJH	CHECKED	DF LEUKES

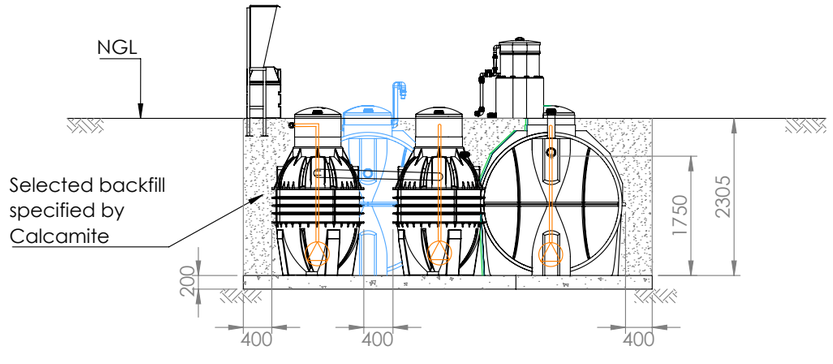
TO BE READ IN CONJUNCTION WITH	PLAN NUMBER	REVISION NO.	DATE SAVED
-35566S-200-G01	35566S -210-01	0	2025-11-12



Top View



Front view



SECTION A-A
SCALE 1 : 90

Description	QTY
5 500l Flow equalisation chamber	1
Septic dome end	2
Bio-reactor dome end	2
Middle modular bio-reactor	1
1 500l Settling tank	1
1 500l Disinfection chamber	1
Side channel blower box	1
electrical box	1
Complete below ground chlorinator	1

REF#	DATE:	REFERENCE:
1.	17/03/2026	Drawing proposed for discussion/comment
2.	31/03/2026	No longer required special standards
2.	10/04/2026	Changed plant configuration to fit 9m x 6m

PROJECT
NAME: Logobate Clinic
CLIENT: Johnnie Haefele, Byi
LOCATION: Logobate

Calcamite
SANITATION + WASTEWATER
012 742 0900 sales@calcamite.co.za

SPECIFICATIONS	
ADWF:	10m³/day
PLANT TYPE:	Below Ground
TOTAL BASE SLAB:	Surface area: ≈52m²
	Volume: ≈11m³
BACKFILL:	Volume: ≈103m³

DRAWN BY:	CHECKED BY:
Alex Lazarides	Muvhusi Mugeri

REV#	DWG. PHASE:	DATE:
3.	Issued for information	10/04/2026
DWG.#: CAL00861P03		SCALE: 1:90

Note:

- Please refer to the proposal documentation for detailed electrical requirements. This is to ensure that the client fully understands the specifications needed to operate our electrical equipment effectively for the wastewater plant.
- The designated backfill material, as specified by Calcamite, is intended for use under stable soil conditions in vertical 90° excavations.

NOT FOR CONSTRUCTION

35566S

LOGOBATE PHC:UPGRADE AND REFURBISHMENTS

Structural Drawing Register

13-Mar-26

PLEASE SIGN AND RETURN				
REMARKS:				
DELIVERY:	E-MAIL			
RECEIVED BY :	COMPANY	**DEPARTMENT OF HEALTH NORTHERN CAPE**	DATE :	
	NAME AND SIGNATURE		COPIES:	1

ISSUED TODAY (√)	DWG.NO.	DESCRIPTION	Rev No	Date Issued
GENERAL DRAWING SCHEDULE				
√	35566S-200-G01	STANDARD SPECIFICATIONS	0	2025-11-12
√	35566S-201-01	FOUNDATION LAYOUT	0	2026-03-13
√	35566S-201-02	SURFACE-BED LAYOUT	0	2026-03-13
√	35566S-201-03	WALL PLATE LAYOUT	B	2026-03-13
√	35566S-202-01	CONSTRUCTION DETAILS	B	2026-03-13
√	35566S-203-01	WATER TANK PLATFORM	0	2025-11-12
√	35566S-204-01	FOUNDATION REBAR	0	2026-03-13
√	35566S-210-10	DECANTING WAITING STEEL ROOF	0	2025-11-12
√	35566S-210-02	STEEL ROOF LAYOUTS	B	2026-03-13

ANNEXURE C

ELECTRICAL AND MECHANICAL DRAWINGS

Drawing Issue Register

39 Brebner Street
Westdene Bloemfontein
Tel : (051) 403 8696
Fax : (051) 430 1776
e-mail/e-pos :stefan@fceconsultingengineers.co.za

CONSULTINGENGINEERS

Project: LEGOBATE PHC

Project Number: EE1311

Project Director: CS ESTERHUYSEN

Drawing Number	Size	Description	Scale	ISSUED FOR AND REVISION NUMBER	Issue Date: 05/07/2024
EE1311C-01E	A1	LV Reticulation & Sleeve Layout	1:100		C0
EE1311C-02E	A1	Light Layout	1:100		C0
EE1311C-03E	A1	Power Layout	1:100		C0
EE1311C-04E	A1	Fire Detection & Lightning Protection	1:100		C0
EE1311C-05E	A1	Mechanical Layout	1:100		
EE1311C-06E	A1	Single Line Diagrams	1:100		C0

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Architect				
QS				
Electrical Engineer				
Main Contractor				E
HVAC Sub Contractor				
Electrical Sub Contractor				

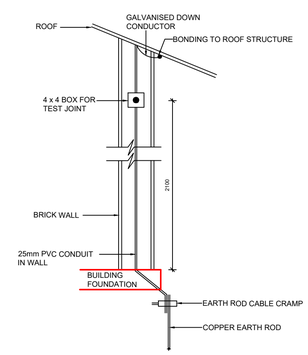
Issued for: A=Approval; I=Information; C=Construction; O=coOrdination; T=Tender

Issue Type: P=Paper; E=Electronic

DATE	REV	DESCRIPTION
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DETAIL B: LIGHTNING PROTECTION



CONCEPT DRAWING	TENDER DRAWING	CONSTRUCTION DRAWING	AS-BUILT DRAWING
☐	☐	■	☐

PROJECT NOTES

GENERAL NOTES

LEGEND

(S)	SMOKE DETECTOR
(S)	SMOKE DETECTOR IN CEILING VOID
(SH)	SMOKE / HEAT DETECTOR
B	BREAK GLASS UNIT
	FIRE DETECTION PANEL
	SIREN
	CABELING / WIRING IN CONDUITS AND CHANNELS
	EARTH SPIKE

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PROJECT TITLE

LOGOBATE PHC:
ADDITIONS & ALTERATIONS TO
EXISTING PORTION 60 ON FARM 219
KURUMAN NORTHERN CAPE

CLIENT DETAILS

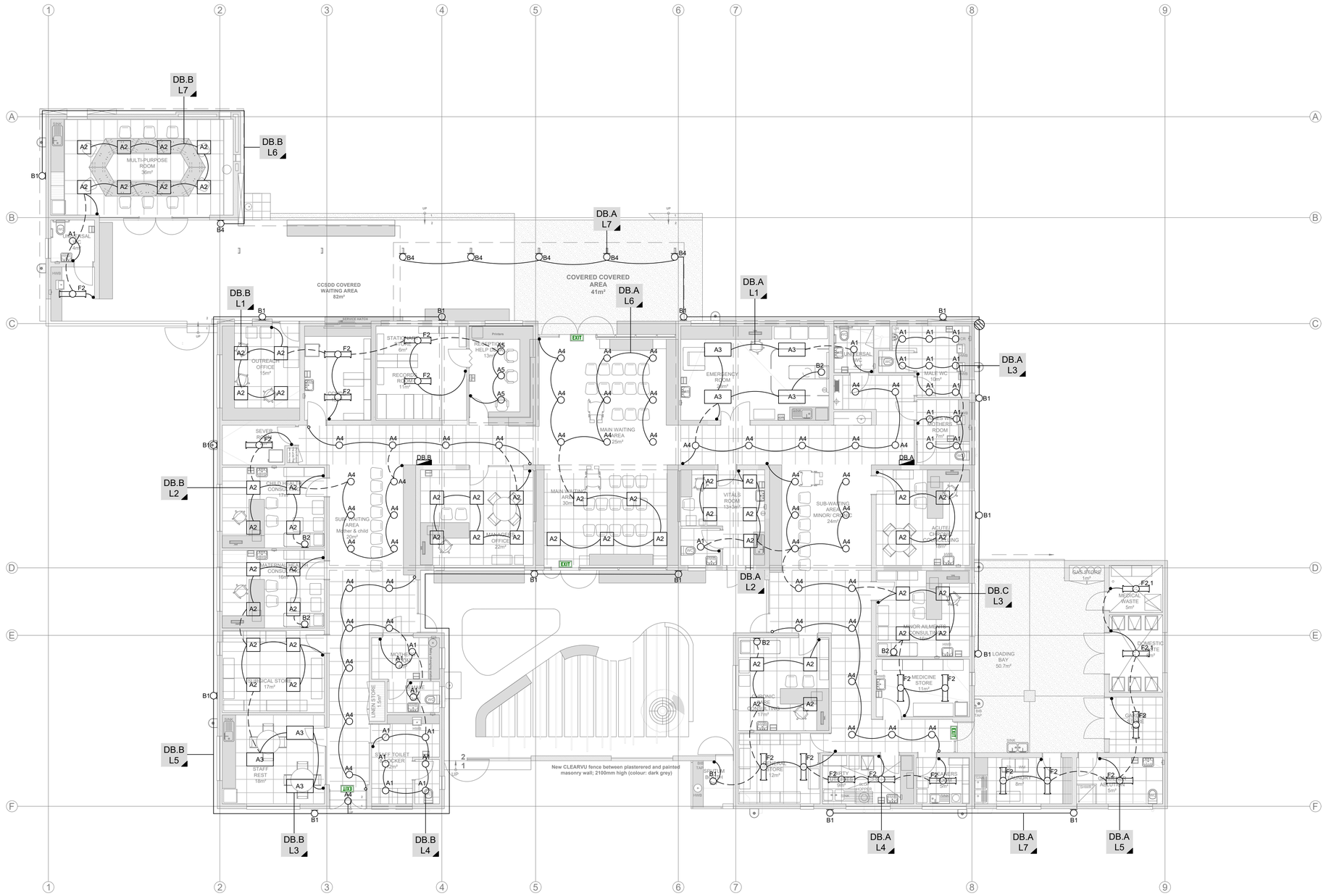
Province of the
NORTHERN CAPE
Department of Health

CLIENT APPROVAL

DRAWING DESCRIPTION: FIRE DETECTION LAYOUT

DESIGN	CS. ESTERHUYSEN Pr Tech Eng: 200970285		
CHECKED	CS. ESTERHUYSEN Pr Tech Eng: 200970285		
SCALE	1:100	DRAWN	R.M
DATE	JUN 2024		
PROJECT NUMBER	EE1311C	DRAWING NUMBER	4E

DATE	REV	DESCRIPTION
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CONCEPT DRAWING	☐
TENDER DRAWING	☐
CONSTRUCTION DRAWING	■
AS-BUILT DRAWING	☐

PROJECT NOTES

GENERAL NOTES

LEGEND

	DISTRIBUTION BOARD
	DATA BOARD
	TELEPHONE BOARD
A1	6W LED DOWNLIGHTER
A2	35W LED PANEL RECESSED FITTING
A3	70W LED PANEL RECESSED FITTING
A4	12W LED DOWNLIGHTER
A5	18W LED DOWNLIGHTER DIMMABLE
A6	PENDANT 5W LED
F2	2 x 24W OPEN TUBE LED
F2.1	2 x 24W VAPOUR PROOF LED TUBE
B1	20W LED BULKHEAD
B2	INSPECTION LIGHT
B4	UP/DOWN LIGHTER
B5	BRICKLIGHT
EXIT	EXIT
	LIGHT SWITCH SINGLE LEVER / ONE-WAY
	LIGHT SWITCH SINGLE LEVER / TWO WAY
W	WATERTIGHT LIGHT SWITCH
	PHOTO CELL
	SOCKET AT MOUNTING HEIGHT OF 1400mm ABOVE FFL
	1 x NORMAL SOCKET OUTLET 1 X 2 PIN OUTLET (EURO)
WP	WEATHER PROOF
	SOCKET IN CEILING VOID
	ON POWER SKIRTING: 1 x NORMAL SOCKET OUTLET 1 x 2 PIN (EURO) 1 x DATA
	MULTI UNIT ON POWER SKIRTING: 2 x NORMAL SOCKET OUTLETS 2 x DEDICATED SOCKET OUTLETS 1 x 2 PIN OUTLET (EURO) 1 x TELEPHONE CRADDLE 1 x DATA CRADDLE
TV	MULTI UNIT IN FLUSH WALLBOX: 2 x NORMAL SOCKET OUTLETS 2 x 2 PIN OUTLETS (EURO) 1 x SATELITE OUTLET 1 x DATA CRADDLE
	TELEPHONE OUTLET
	2 CHANNEL POWER SKIRTING
	GEYSER POINT
	TWO POLE ISOLATOR
	THREE POLE ISOLATOR
	MOTION SENSOR
P1	NORMAL CIRCUIT
P1	EMERGENCY CIRCUIT

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PROJECT TITLE

LOGOBATE PHC:
ADDITIONS & ALTERATIONS TO EXISTING PORTION 60 ON FARM 219 KURUMAN NORTHERN CAPE

CLIENT DETAILS

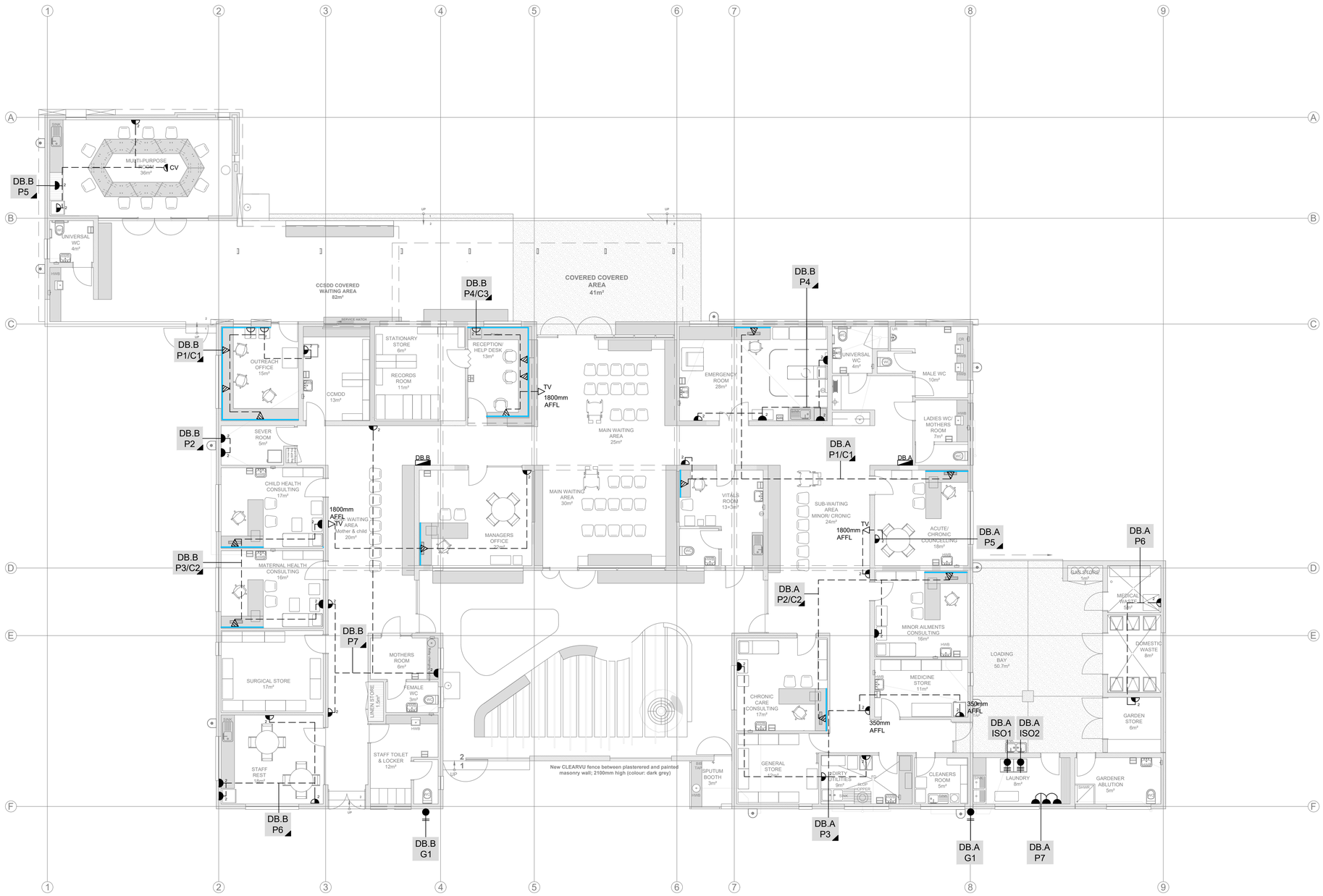
Province of the NORTHERN CAPE
Department of Health

CLIENT APPROVAL

DRAWING DESCRIPTION: LIGHT LAYOUT

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CHECKED	CS. ESTERHUYSEN Pr Tech Eng: 200970285		
SCALE	1:100	DRAWN: R.M	DATE: JUN 2024
PROJECT NUMBER	EE1311C	DRAWING NUMBER	2E

DATE	REV	DESCRIPTION
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LEGEND

	DISTRIBUTION BOARD
	DATA BOARD
	TELEPHONE BOARD
A1	6W LED DOWNLIGHTER
A2	35W LED PANEL RECESSED FITTING
A3	70W LED PANEL RECESSED FITTING
A4	12W LED DOWNLIGHTER
A5	18W LED DOWNLIGHTER DIMMABLE
A6	PENDANT 5W LED
F2	2 x 24W OPEN TUBE LED
F2.1	2 x 24W VAPOUR PROOF LED TUBE
B1	20W LED BULKHEAD
B2	INSPECTION LIGHT
B4	UP/DOWN LIGHTER
B5	BRICKLIGHT
EXIT	EXIT
	LIGHT SWITCH SINGLE LEVER / ONE-WAY
	LIGHT SWITCH SINGLE LEVER / TWO WAY
W	WATERTIGHT LIGHT SWITCH
	PHOTO CELL
	SOCKET AT MOUNTING HEIGHT OF 1400mm ABOVE FFL
	1 x NORMAL SOCKET OUTLET 1 X 2 PIN OUTLET (EURO)
WP	WEATHER PROOF
CV	SOCKET IN CEILING VOID
	ON POWER SKIRTING: 1 x NORMAL SOCKET OUTLET 1 x 2 PIN (EURO) 1 x DATA
	MULTI UNIT ON POWER SKIRTING: 2 x NORMAL SOCKET OUTLETS 2 x DEDICATED SOCKET OUTLETS 1 x 2 PIN OUTLET (EURO) 1 x TELEPHONE CRADDLE 1 x DATA CRADDLE
TV	MULTI UNIT IN FLUSH WALLBOX: 2 x NORMAL SOCKET OUTLETS 2 x 2 PIN OUTLETS (EURO) 1 x SATELITE OUTLET 1 x DATA CRADDLE
	TELEPHONE OUTLET
	2 CHANNEL POWER SKIRTING
	GEYSER POINT
	TWO POLE ISOLATOR
	THREE POLE ISOLATOR
	MOTION SENSOR
P1	NORMAL CIRCUIT
P1	EMERGENCY CIRCUIT

PROJECT NOTES

GENERAL NOTES

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PROJECT TITLE

LOGOBATE PHC:
ADDITIONS & ALTERATIONS TO
EXISTING PORTION 60 ON FARM 219
KURUMAN NORTHERN CAPE

CLIENT DETAILS

Province of the
NORTHERN CAPE
Department of Health

CLIENT APPROVAL

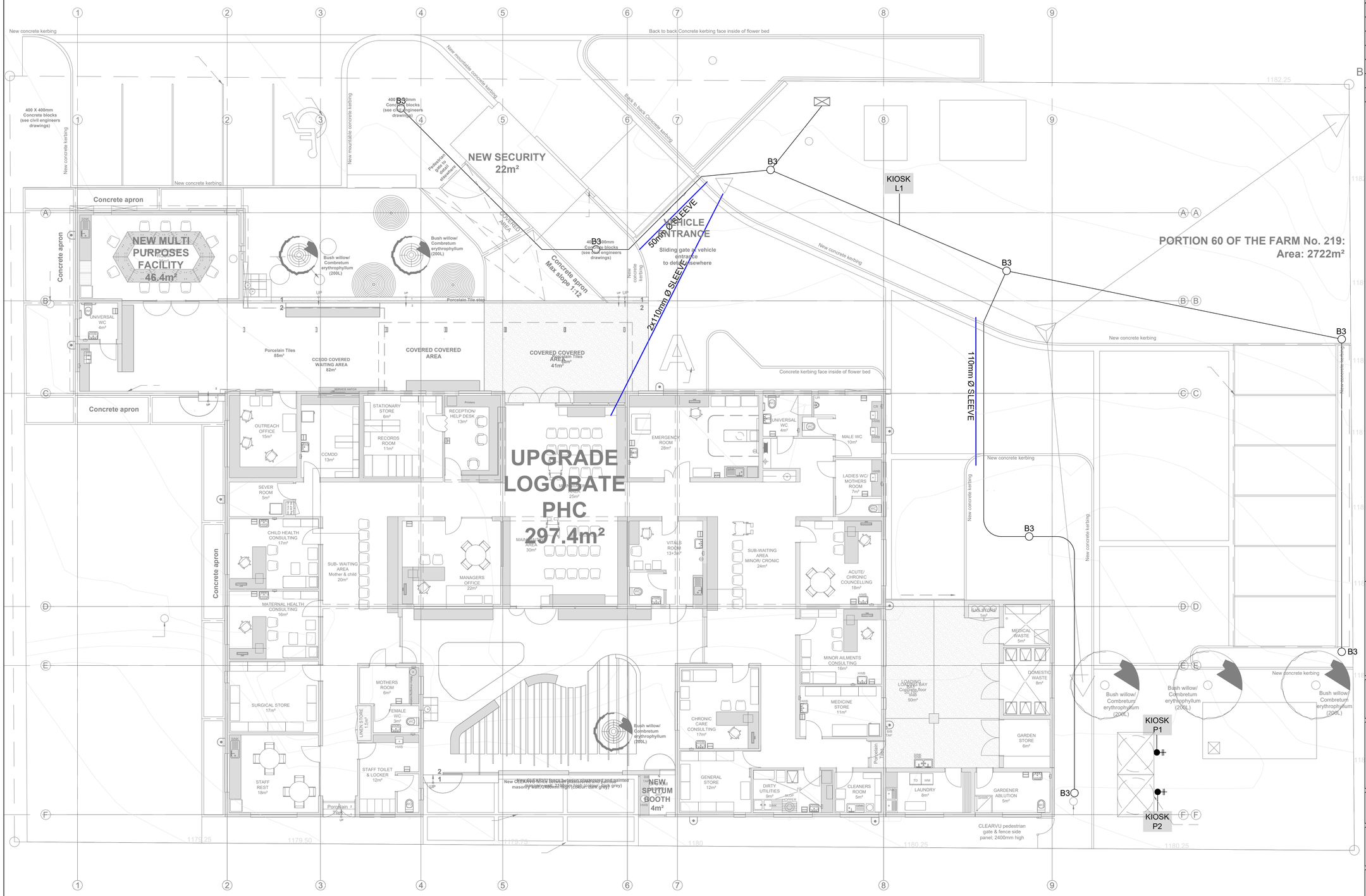
DRAWING DESCRIPTION

POWER LAYOUT

DESIGN	CS. ESTERHUYSEN Pr Tech Eng: 200970285			
CHECKED	CS. ESTERHUYSEN Pr Tech Eng: 200970285			
SCALE	1:100	DRAWN	R.M	DATE: JUN 2024
PROJECT NUMBER	EE1311C	DRAWING NUMBER	3E	

CONCEPT DRAWING	TENDER DRAWING	CONSTRUCTION DRAWING	AS-BUILT DRAWING
☐	☐	■	☐

DATE	REV	DESCRIPTION
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PROJECT NOTES	
GENERAL NOTES	

LEGEND

	DISTRIBUTION BOARD
	KIOSK
B3	55W LED POST TOP
MH	MANHOLE
	110mm Ø SLEEVE
	50mm Ø SLEEVE
	10mm² x 3 CORE CABLE

CONCEPT DRAWING	☐
TENDER DRAWING	☐
CONSTRUCTION DRAWING	■
AS-BUILT DRAWING	☐

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PROJECT TITLE

LOGOBATE PHC:
ADDITIONS & ALTERATIONS TO EXISTING PORTION 60 ON FARM 219 KURUMAN NORTHERN CAPE

CLIENT DETAILS

Province of the NORTHERN CAPE
Department of Health

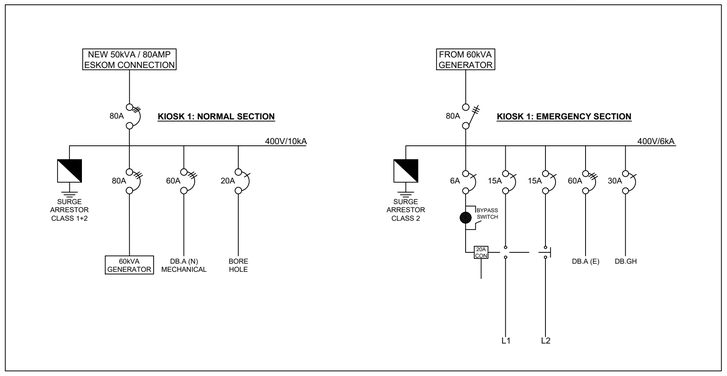
CLIENT APPROVAL

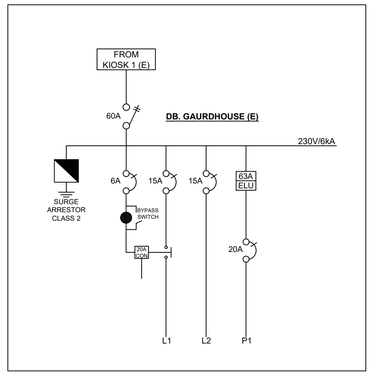
DRAWING DESCRIPTION: SITE PLAN

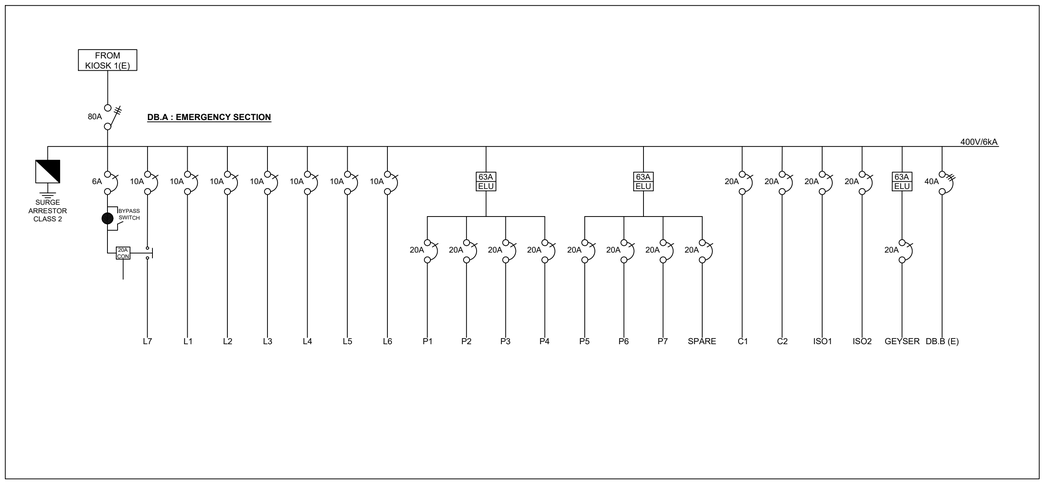
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SCALE	1:100	DRAWN: R.M	DATE: JUN 2024
PROJECT NUMBER	EE1311C	DRAWING NUMBER	1E

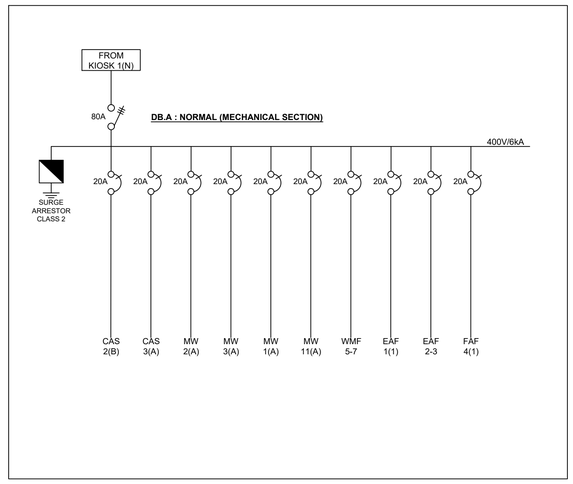
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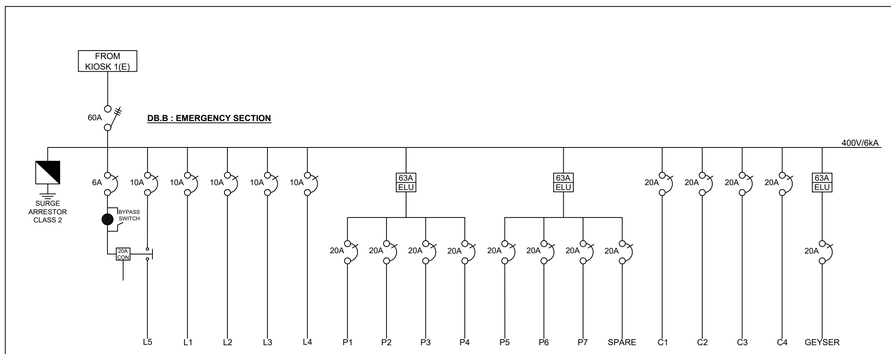
KIOSK 1: NORMAL & EMERGENCY SECTION

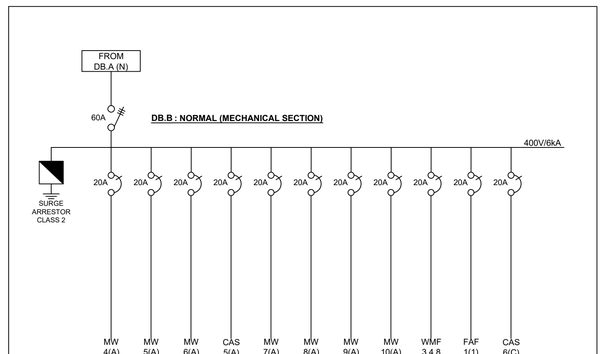












CONCEPT DRAWING	TENDER DRAWING	CONSTRUCTION DRAWING	AS-BUILT DRAWING
☐	☐	■	☐

PROJECT NOTES

GENERAL NOTES

LEGEND

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PROJECT TITLE: GLENRED PHC: ADDITIONS & ALTERATIONS TO REMAINDER OF GLENRED 510 NORTHERN CAPE

CLIENT DETAILS: Province of the NORTHERN CAPE Department of Health

CLIENT APPROVAL

DRAWING DESCRIPTION: SINGLE LINE LAYOUT

DESIGN	CHECKED	SCALE	DRAWN	DATE	PROJECT NUMBER	DRAWING NUMBER
CS. ESTERHUYSEN Pr Tech Eng: 200970285	CS. ESTERHUYSEN Pr Tech Eng: 200970285	N.T.S	R.M	FEB 2023	EE1311B	6E

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PROJECT SPECIFICATION

1. SCOPE OF WORK

a) Supply and install a new distribution kiosk, complete with equipment as per single lines.

b) Remove all redundant electrical equipment and safe making of electrical circuits.

c) Supply and installation of new distribution boards complete as specified.

d) Supply and install new equipment in the distribution boards as specified.

e) Supply and install new low voltage cables as specified.

f) Supply and install new light fittings, light switches, switched sockets and isolators.

g) Complete wiring trunking, conduit and wiring installation for the new outlet points and circuits.

h) Supply and install a new Fire Detection installation.

i) Supply and install new routes for data & telephone System.

j) Servicing of the existing emergency standby generator (60kVA).

k) Test and commission the complete installation.

2. SITE INSPECTION

No compulsory site visit is required.

3. DRAWINGS

DESCRIPTION:	DRAWING NO.:	SIZE:
Drawings will only be issued to the successful tenderer.		

4. CONFLICT BETWEEN SPECIFICATIONS AND DRAWINGS

Should there be conflict between the specifications and drawings then sections shall be considered in the following order of priority:

Project Specification

Drawings

Quality Specifications

Should the contractor note an inconsistency between the specifications and drawings he shall be responsible for notifying the Electrical Engineer or his Representative/Agent and obtaining clarification or instructions prior to ordering or installing equipment.

5. AS-INSTALLED DRAWINGS

A special set of all electrical drawings will be issued to the electrical contractor, who must keep it in a secure place in the site office. The purpose of these drawings is to update all information indicated thereon as and when any variations to the originals should occur. All updating of these drawings shall be done in **red ink** and shall be perfectly legible.

All relevant information regarding the installation will be clearly shown on these drawings.

Once a month these drawings will be provided to the Engineer or his Representative/Agent for inspection and approval.

When required by the Director or his Representative/Agent these drawings will be provided to him for the periodical updating of the original tender drawings.

6. OPERATING CONDITIONS

Legobate: Material and equipment shall be suitable for efficient use and operation at the altitude and climatic conditions of Legobate, which is at 1200 m+ above sea level. Maximum ambient temperatures will seldom rise above 45 degrees C, with minimum temperature of below minus 5 degrees C.

7. SUPPLY AUTHORITY

Eskom

8. MAIN CONNECTION

The existing 16kVA single phase connection shall be upgraded to a new 50kVA/80Amp three phase supply point.

Application for the upgrading shall be done by electrical engineer.

9 LOW VOLTAGE INSTALLATION

9.1 General

The sizes and routes of low voltage cables are indicated on the drawings and in these documents.

Low voltage cables shall be PVC SWA PVC type with Copper conductors which shall comply with the requirements of SABS 150 and those of the Department's General electrical Technical Specification in all respects. All new cables shall be provided with enhanced armouring suitable for E.C.C. use and cable glands are to be provided complete with E.C.C. connection washers to allow for correct earthing techniques to be followed, as specified.

Tenderers must base their cost for trenching in earth. Payment for cable trenching having a greater volume than that specified for the purpose will not be considered except where extra excavations are necessary to by-pass obstacles such as water pipes, drains, large boulders etc. In all such instances the amount of the extra excavations must be agreed upon on site between the Engineer or his Representative/Agent and the contractor.

Earth continuity conductors are to be run with all cables constituting part of low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live-conductor of the cable, but shall not be less than 4 mm² or more than 70 mm².

Cables shall be labelled, cable routes marked and terminated all as per the requirements of the General Technical Specification (No. 1).

Cables in roof spaces shall be neatly laid on suitably sized cable trays, which shall run adjacent to the services trunking in roof spaces, as per detail layout drawing and layouts.

The installation of cables in cable ladders/trays in roof spaces shall comply with the requirements of the General Technical Specification.

The electrical contractor shall determine the present cable routes of all existing underground cables as and when required for the contract work and shall allow for this requirement as part of his tender sum.

The dielectric shall consist of PVC suitable for general use, 600/1000V grade. It shall be distinctly coloured as detailed in Table I of SABS 150/1970 so as to identify the phase, neutral and earth conductors with the phase conductors being coloured red, white or blue, the neutral conductor black and the earth conductor green/yellow or green.

The whole of the dielectric shall be coloured - surface painting or a longitudinal coloured stripe is not acceptable.

9.2 Cable markers

The necessary number of cable markers must be installed so as to indicate the route of underground cables, as on the drawings. Where the direction of cables changes, this must be indicated on the surface by means of cable markers. Cable markers must be concrete pyramids, with measurements of 150mm x 150mm on the top and 250mm x 250mm at the bottom. Their height must be 300mm.

Brass plates must be cast into the tops of these pyramids in such a way that they cannot be removed easily. The words "ELECTRIC CABLE/ELEKTRIESE KABLE" must be punched onto these plates as well as the voltage of the cable and an arrow indicating the direction of the cable routes. The cable must be linked to the cable marker by a galvanized wire cast in the cable marker.

Cable markers must be placed on the surface above all underground cables and must stand out 35mm above ground level, unless they are a danger to pedestrians or traffic, in which case the tops of the markers must be flush with the level of the ground. Cable markers must be placed at the beginning and end of each cable route (e.g. where a cable goes into a cable kiosk or a building); at changes of direction; at all joints; above cable sleeve inlets and outlets, and along the whole cable route at distances not exceeding 50 meters.

Low voltage cables must be laid at a depth of 750mm under final ground level.

9.3 Tape above Cable

For all cables, a coloured plastic-marking tape shall be installed 200mm above the cable. The tape shall be yellow, with red skull & crossbones with the words "ELECTRIC CABLE /ELEKTRIESE KABEL". These markings shall not be more than 1m apart from center to center.

9.4 Schedule of Low Voltage Cables

NOTE TO CONTRACTOR:

ALL SPECIFIC CABLE ROOTS MUST FIRST BE DETERMINED ON SITE WITH THE ENGINEER AND THEN MEASURED BEFORE ANY CABLES ARE ORDERED.

FROM	TO	CABLE / SIZE (mm^2) Copper	EARTH CONDUCTOR SIZE(mm^2)	ESTIMATE LENGTH
Eskom	Kiosk	16mm^2 x 4-core	16mm^2	As per BOM
Kiosk	Generator	16mm^2 x 4-core	16mm^2	As per BOM
Generator	Kiosk	16mm^2 x 4-core	16mm^2	As per BOM
Kiosk (normal)	DB.A (normal)	16mm^2 x 4-core	16mm^2	As per BOM
Kiosk (emergency)	DB.A (emergency)	16mm^2 x 4-core	16mm^2	As per BOM
Kiosk	DB.GH	4mm^2 x 3-core	N/A	As per BOM
Kiosk	Decanting units	N/A	N/A	N/A
Kiosk	Area lighting	4mm^2 x 3-core	N/A	As per BOM
DB.A (normal)	DB.B (normal)	10mm^2 x 4-core	10mm^2	As per BOM
DB.A (emergency)	DB.B (emergency)	10mm^2 x 4-core	10mm^2	As per BOM

9.5 Excavations

The Contractor shall be responsible for all trenching excavations unless specified to the contrary.

10 CABLE SLEEVES

10.1 General

Supply and install sleeves in the positions as shown on the drawings. The sleeves shall be heavy duty class 34 UPVC sleeving with a wall thickness of not less than 1,5mm thick and a smooth finish inside.

Sleeves must be installed where cables cross under roadways, other services and where cables enter buildings.

The electrical contractor shall ensure that all required sleeves are installed, in the correct positions.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

The exact position of all sleeves must be indicated on the drawings.

10.2 LV Sleeves

Supply and install sleeves in the positions as shown on the drawings.

11 DISTRIBUTION BOARDS

11.1 General

All distribution boards and equipment shall comply with the requirements of the General Technical Specification.

Before the commencement of manufacture, detailed drawings of the proposed panels and boards are to be submitted to the Engineer or his Representative/Agent for approval. Full schematic details of the layout and wiring of the boards are to be provided with these drawings.

The completed panels and distribution boards shall not be delivered to the site before they are inspected in the factory by the Engineer or his Representative/Agent and his written approval obtained.

All boards and panels shall be completely dust resistant and positively vermin proofed. They shall be delivered to the site in completely sealed plastic packaging which shall only be removed when the equipment is moved to a safe and clean environment.

After all metal parts have been degreased, pickled, phosphate, neutralised and primed with a high quality zinc chromate layer, the interior shall be painted with two coats of best quality white “arc-free” paint and the outside shall be painted with two coats of appliance white enamel paint. An approved epoxy/polyester baked powder coating process to SABS 1274:1979 may be substituted for the painting specified above.

All equipment mounted in distribution boards shall be clearly labelled with engraved ivorine or similar approved. All labels shall be screwed on and no adhesive backed labels will be accepted. All DB’s shall be clearly labelled in accordance with the convention detailed in the General Technical Specification. All cables shall be labelled, indicating sizes, origin and destination as specified.

All DB’s are to be provided with a complete and accurate “as installed” A4 sized schematic diagrams and legend cards fixed suitably in the board and in accordance with the General Technical Specification.

30 % Additional space on distribution boards and 30 % for sub-distribution boards for MCCB’s circuit breakers, contactors and time switches shall be provided.

All equipment shall comply with the requirements detailed in the General Technical Specification.

The electrical contractor is required to ensure that, in all cases where general layout information is supplied in this document, adequate access, working and cable termination space is provided in addition to checking that access routes, construction fit and that the space for cable routes and bends is sufficient.

This philosophy shall be maintained throughout on all parts of the electrical installation, but in particular for the boards, the electrical subcontractor is required to ensure that all builders work for his installation is properly co-ordinated for his equipment, e.g. that feeder access routes are positioned on the correct side of the DB for main isolator connection, that physical sizes correlate, etc.

The costs of any additional work caused by late, incorrect or defective positioning of equipment and/or material by the contractor, shall be recovered from him.

The contractor shall, while material and/or equipment forming part of the electrical installation are/is being built in, have a competent representative present to ensure that no unnecessary stress is placed on the material that will influence subsequent installation of equipment. Care shall be taken that all equipment of the board fit properly in their respective position without distortion, which can lead to a poor installation and appearance. All bolts, clamps and fasteners shall be examined and properly tightened.

The contractor shall ensure that all circuit breakers and other equipment can be changed and replaced if and when required.

All support props and struts, packing pieces and material used by the board manufacturer to prevent damage during transit, shall be removed by the electrical contractor. The contractor shall examine all boards and ensure that all equipment shown on the appropriate relevant drawings has been supplied and fitted.

Any conspicuous damage like scratches or chafe marks to paintwork, shall be touched up with the same colour paint as supplied by the board supplier.

The contractor shall ensure that cables sleeves and provision for the entry of cables to distribution boards as shown on drawings are done properly and neatly.

11.2 New Distribution boards

- Distribution Board A, B & GH

  As shown on the single line diagrams.

  The **colour finish** of the cover panels shall be Epoxy Powder Coated Orange for the normal power & mechanical supply section, Red for the emergency supply section.

  All the boards shall be complete with **surge arrestors**.

- Buildings

  Supply, install and connect floor mounted or surface mounted or flush mounted distribution boards in the positions indicated on the drawings. The boards shall be of galvanised sheet metal fabrication and comply with the relevant requirements of the General Technical Specification foregoing and shall be equipped as shown on the drawing.

  All these boards must have single or multiple sections as indicated in the specification and shown on the single line diagrams.

  The **colour finish** of the cover panels shall be Epoxy Powder Coated Orange for the normal power & mechanical supply section, Red for the emergency supply section and Blue for UPS Section.

  All the boards shall be complete with **surge arrestors**.

  Three sets of the **manufactures drawings** shall be submitted to the Engineer for approval with all information as described in the General Technical Specification.

- Schedule of distribution boards

DB.A, B & GH	DB.A, B & GH	Flush mounted

- Labeling

  All distribution boards must be labeled in a visible manner that indicates the **board name, supply cable with earth and from where it is fed**.

12 DISTRIBUTION BOARD EQUIPMENT

12.1 General

Supply, install and connect all the distribution boards with distribution equipment as specified below and as indicated on the single line diagrams. All equipment must have a minimum fault current of 6 kA or as otherwise specific specified. Allow 30% spare capacity in each board.

Abbreviations:
MCB - Miniature Circuit Breaker
MCCB- Moulded Case Circuit Breaker
ACB - Air Circuit Breaker

13 CONDUIT INSTALLATION

13.1 General

Conduit, fittings and their installation shall comply with the requirements of this document.

Conduit and conduit accessories used shall be of the **PVC** and shall be concealed in the building work where possible, except where otherwise indicated. One fifty percent (50 %) spare conduit shall be installed between distribution boards and wiring trays. The ends of these spare conduits shall be properly closed with suitable and acceptable closing plugs. No paper, timber of similar plugs will be accepted.

Lying in concrete, chasing in walls or running in ceiling/roof spaces shall conceal all conduits.

The installation will be carried out in Steel conduit. All conduits must comply with SABS 1007 & SABS 1065.

Steel conduit exposed to damp or weather conditions shall be galvanized to SABS 763.

PVC conduits may only be used for lighting protection installations, and must comply with SABS 950.

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of this specification. Wiring of the installation shall be carried out as directed in this specification.

Galvanised draw wires shall be provided in all conduits provided for other services.

No chasing by hammer and chisel will be accepted. Slots for conduits shall be cut where necessary.

All outlet boxes shall be metal and steel and must be hot-dipped galvanized to SABS 763 as amended.

Blank cover plates on round outlet boxes shall be fixed with flat head brass screws and a gasket to seal the box.

Blank cover plates on 100mm x 100mm outlet boxes shall be fixed with two countersunk chrome screws.

All conduits in the ceiling void shall be done in a rectangular way with all conduits mounted against the trusses by **steel saddles and screws** at distances that do not exceed 1500mm. All round draw boxes must be fixed to a brandering and where there are no branderings, brandering must be installed.

Where outlet boxes or draw boxes are mounted on finished surfaces the contractor shall take care that such outlets are mounted symmetrically. **It will not be sufficient to scale the position of any outlet off the drawings**. No extra payment will be allowed where the outlets are not mounted symmetrically and have to be changed.

The conduits for the light and power installation must be done from the top/ceiling voids where the wiring channels have been installed.

13.2 Draw boxes

Supply and install a 300mm x 300mm x 100mm and/or 500mm x 500mm x 100mm steel galvanised draw box complete with a cover plate above each of the distribution boards as specified. These draw boxes are for all the conduits and sleeves from and to the distribution board.

The supply cables to the distribution boards must not be taken throw these draw boxes.

14 POWER SKIRTING INSTALLATION

14.1 General

Power skirting shall comply with the requirements as detailed in the Quality Specification and theseclauses.

Two (2) compartment wall-mounted power skirting shall be supplied installed and connected complete with all accessories in the positions and according to the layouts as indicated on the drawings.

The top compartment shall be used for power wiring and outlets, the bottom compartment for telephone wire way services & data communications services.

Wall-mounted power skirting shall be equal and approved to **"O-LINE Multiskirt MS2"**complete with all corners, T-junctions, cover plates, etc. The colour shall be determined by the Engineer or his Representative/Agent and samples shall be submitted for approval prior to ordering of the power skirting.

14.2 Power skirting installation

Supply and install Power Skirting as shown on the drawings.

Two (2) compartment power skirting shall be supplied at the areas in the buildings as shown on the drawings. This section of power skirting must be mounted against the counter or wall. The specific position and installation will be determined on site.

14.3 Data Outlets

All outlets shall be flush-mounted in 200mm cover plate sections.

Supply and install a cradle with a blanking plug and a RJ45 socket for each two dedicated socket on the power skirting.

14.4 Conduit Feeders and Wiring to Power Skirting

Conduits for the circuit wiring to the power skirting shall terminate in flush conduit boxes, behind the power skirting and be installed to match the height and dimensions of the skirting.

The wiring/cables shall pass through large diameter openings, neatly cut in the rear of the power skirting. The holes shall be suitably bushed or trimmed to prevent damage to the wiring or cables.

The Principal Contractor shall provide openings through walls, beams and slabs where required and the electrical contractor shall timeously indicate such information to the Principal Contractor.

14.5 Power

Supply and install a 20mm diameter conduit for each socket and dedicated socket circuit from the distribution board to the specific section of skirting. The conduits from the distribution boards must end in a 100mm x 100mm x 50mm flush wall box at the back of the skirtings (or surface boxes where skirtings are installed in cupboards), not more than two conduits in one box. The wiring must consist out of 4mm² PVC insulated copper conductors. The earth wire must be a 2,5mm² green PVC insulated copper conductor for all wiring in the skirting.

Supply and install two (2) spare 20mm diameter conduits from the distribution board to each section of skirting.

14.6 Telephone

Supply and install one (1) 25mm diameter conduit for each section of skirting to the telephone board. The conduits from the Telephone board must end in a 100mm x 100mm x 50mm flush wall box at the back of the skirting (or surface boxes where skirtings are installed in cupboards), not more than two conduits in one wall box.

Supply and install one (1) spare 25mm diameter conduit from the Telephone board to each section of skirting.

14.7 Data

Supply and install one (1) 32mm diameter conduits for each section of skirting to the data board. The conduits from the Data board must end in a 100mm x 100mm x 50mm flush wall box at the back of the skirting (or surface boxes where skirtings are installed in cupboards), not more than two conduits in one wall box.

Supply and install one (1) spare 32mm diameter conduit from the Data board to each section of skirting.

15 WIRING TRUNKING AND TRAYS

15.1 General

Services distribution trunking/wire ways shall comply in all respects with the requirements of the Quality Specification &the clauses below, and as indicated on the drawings.

The lids/covers of the various sections of trunking shall be white PVC suitably labelled with coloured adhesive disks where trunking changes direction, penetrates barriers and/or begins/ends. The colours of the adhesive disks shall be as follows:

- Normal power — Silver
- Telephone/Data — Orange
- Security — Red
- Nurse-call — White and gold
- Fire/Public address — Pink and gold

The disks shall be non-degradable, non-fading, coloured plastic self-adhesive type of approximately 25 mm in diameter.

15.2 Roof/ceiling space trunking distribution network

Services distribution networks in roof/ceiling spaces shall consist of a number of individual trunking sections, the number shall be as specified. The positions of these trunking shall be determined on site. The fastening/hanging of the trunking will be as specified in the Quality Specification.

From out these trunking, conduits must be used to the specific outlet points.

The various services shall be allocated in individual trunking as follows:

1 x Cabstrut P8000 or O-Line Olistrut OL8000	:	Small Power
1 x Cabstrut P8000 or O-Line Olistrut OL8000	:	Lighting
Wire mesh GS 100	:	Telephone
Wire mesh GS 100	:	Data
Wire mesh GS 50	:	Fire Detection

The various sections shall be fixed together as specified in the Quality Specification. All sections shall be properly supported, suspended, clamped and fixed with mechanical support accessories specially engineered and manufactured as per Messrs ‘Cabstrut or O-Line’ detail specifications, or equivalent.

The electrical subcontractor shall closely liaise with the Principal Contractor to obtain the correct mounting height(s) and to liaise/interface with the ceiling contractor.

All openings through walls, concrete beams, slabs, etc. shall be provided by the Principal Contractor and the electrical subcontractor shall timeously indicate these requirements to the principal Contractor.

All accessories, mechanical support equipment, etc., shall be factory engineered and manufactured, and installed in accordance with the specifications of Messrs ‘Cabstrut or O-Line’, or equivalent.

The final routes shall be determined on site together with the Engineer or his Representative/Agent.

The electrical contractor shall construct a sample length of the services trunking complete in all respects for approval by the Engineer before commencement of construction.

15.3 Cable trays

Supply and install wire mesh cable trays in the ceiling voids as specified. The wire mesh cable trays must be of the heavy duty type, equal and approved to **"O-LINE GRIDSPAN WIRE MESH or CABSTRUT WELDED WIRE MESH MEDIUM DUTY"**. All these cable trays must be complete with hold down clamps and fasteners.

Supply and install 400mm, 300mm, 200mm, 150mm and 100mm wide cable trays in the ceiling void and against the walls for the complete length of the building for the supply cables as will be determined on site.

Supply and install 150mm wide cable tray against the wall in the Laundry for the supply cables of the equipment.

16 WIRING INSTALLATION

Wiring of the installation shall be carried out as directed in this specification.

Lighting outlets shall be wired by means of 2,5mm^2 PVC insulated copper conductors and a 2,5mm^2 earth conductor in 20mm diameter conduit unless otherwise indicated.

Switched socket circuits shall be wired by means of 4mm² PVC insulated copper conductors and a 2,5mm² earth conductor in 20mm diameter conduit unless otherwise indicated.

All special sockets for computers must be wired with **two** 2,5mm² earth wires. The one wire must be connected to the earth pin of the socket and the other one to the mounting plate.

All earth wires in power skirting must be of the **green** PVC insulated type.

17 LIGHTING OUTLETS

17.1 General

Provide lighting outlets throughout the building as scheduled and shown on the drawings.

All the flush mounted light fittings in the suspended ceiling shall be wired by means of 6A unswitched socket outlets.

Lighting outlets must be connected using the loop-in method, whereby **ALL** wiring is done from the bottom and as described in the General Technical Specification.

Additional wood brandering shall be provided for the fixing of light fittings. No butterfly clips are acceptable.

All return wires from and to light switches must be a different colour.

17.2 Lights in open ceiling void

Supply and install in the following building 1,5-meter single tube, open channel LED fluorescent luminaires in the open ceiling void all along and above the channel system. These luminaires must be switched by a single lever industrial light switch at the trapdoor nearest to the middle of the building.

18 LUMINAIRES

18.1 General

Supply, install and connect all luminaires complete with the specified or appropriate lamps.

Each lighting outlet is provided on the drawings with a reference letter, which identifies the type of luminaires to be installed on each outlet.

Diffuser assemblies shall only be fitted to the luminaires after all rooms have been thoroughly cleaned and free from dust prior to the handing over.

Supply and install a compressible sponge neoprene gasket between wall and luminaires for all outdoor wall mounted luminaires.

All fluorescent luminaires must have class A2 electronic control gear, or Class A1 dimmable electronic control gear (where specified).

All LED luminaires must have roto-lock lamp holders.

All luminaires shall be supplied with tamper proof screws.

18.2 Lamps

All fluorescent lamps shall comply with the SABS 1041 as revised.

All incandescent lamps shall comply with SABS 56 as revised and must be 250 Volt of the long life type and carry the SABS stamp.

All lamps shall be of 4000K.

18.3 Luminaires to be used

Supply, install and connect all luminaires as specified and shown on the drawings, all luminaires shall be complete with the lamps as specified.

The specific positions of the luminaires, especially the recessed luminaires must be determined on site with the engineer before installation.

<u>Note:</u> Alternative luminaries must be approved in writing by the Engineer.

A sample of each type of luminaire must be submitted for approval before delivery on site.

All LED luminaries must have a colour rendering index (CRI) of 0.8 or higher and a correlated colour temperature (CCI) of 4000 Kelvin unless CCI is specified differently.

All lamps shall be LED 4000K.

TYPE	PHOTO	LUMINAIRE DESCRIPTION
F2		2X24W OPEN TUBE LED FITTING MANUFACTURED BY SYNERJI L:1570mm, W:95mm, H:120mm, CCT:4000K, BA: # deg, FC: #, ECG: ND Lamp spec: 1500mm 24W Synerji LED glass tube

TYPE	PHOTO	LUMINAIRE DESCRIPTION
F2.1		2X24W WEATHERPROOF LED FITTING MANUFACTURED BY SYNERJI L:1570mm, W:95mm, H:120mm, CCT:6500K, BA: # deg, FC: #, ECG: ND Lamp spec: 1500mm 24W Synerji LED glass tube
B1		Wall mounted bulkhead luminaire complete with 18W LED, similar or equal or approved to **"BEKA 51118"**. This luminaire must be complete with "allen key" screws and IP 65 rating. (Cool White)
B2		Wall mounted examination LED light complete with articulated arm similar or equal and approved to **"ACEM STARLED1 EVO"**
B3		230V, 55W LED, 32deg, 4000K (Cool White). Surface mounted up down lighter complete with control gear and ingress protection of IP66. Similar orequal and approved to **BEKA Zela** **Dimensions:** Diameter: 81mm Length: 262mm Height: 121mm
B4		Wall mounted Up/down luminaire complete with 5.3W LED lamps(Osram), similar or equal or approved to **"Regent ECHO"**. This luminaire must be complete with stainless steel screws and IP 65 rating. (Warm White)

TYPE	PHOTO	LUMINAIRE DESCRIPTION
A1		Supply and install recessed mounted 4000K 10W COB LED downlighter complete with LED driver, 3meter 3core fly lead and 6A socket. Similar equal and approved to Bright Star DL048
A2		Supply and install recessed mounted, 230V, 6500K, 600mm x 600mm fitting complete with 4 x 10W LED lamps with prismatic diffuser, 1.5meter 3core cabtyre and 5A male socket. Similar or equal or approved to **"Synergi"**.
A3		Supply and install recessed mounted, 230V, 6500K, 600mm x 600mm fitting complete with 4 x 20W LED lamps with prismatic diffuser, 1.5meter 3core cabtyre and 5A male socket. Similar or equal or approved to **"Synergi"**.
A4		Supply and install recessed mounted 4000K 18W LED downlighter complete with LED driver, 3meter 3core fly lead and 6A socket. Similar equal and approved to Bright Star DL504
Exit		Surface mounted emergency exit luminaire complete with 1 hour battery pack (maintained) and signage, similar or equal and approved to **"RADIANT EMERGENCY EXIT"**

19 LIGHT SWITCHES

19.1 General

Light switches shall be in accordance with the General Technical Specification and only switches from the **same manufacturer** will be accepted.

Switches shall be similar or equal and approved to the **"Crabtree Diamond"** type.

Switches in plaster or face brick walls shall be flush-mounted in 100mm x 50mm x 50mm deep pressed metal boxes, installed at a height of 1400mm above finished floor level. Light switches shall have a rating of 16 Amp and only single lever switches will be used unless otherwise specified.

Switches shall be supplied with steel cover plates of the same colour as the switched socket outlets.

Vandal proof (TAMPER PROOF) screws must be used for the covers of all light switches.

19.2 Special light switches

Supply and install watertight light switches as shown on the drawings. These light switches must be equal and approved to **"Crabtree Diamond "**.

20 SOCKET OUTLETS

20.1 Switched Socket outlets

Socket outlets shall be installed in the positions indicated on the drawings. Socket outlets shall be similar or equal and approved to the **"Crabtree Diamond"** type.

All socket outlets shall comply with the relevant General Technical Specification and shall be of the combination switch-type, 16 Amp. 3-pin & Euro 2-pin sockets. Socket outlets in plaster or face brick walls shall be flush-mounted in 100 x 100 x 50mm deep pressed metal boxes, with cover plates similar to those for switches. Only socket outlets from the same manufacturer will be accepted.

Switched socket circuits shall be protected by means of earth leakage units as detailed.

Socket outlets shall be mounted at a height of 400mm and 1400mm above finished floor level unless otherwise indicated.

Vandal proof (TAMPER PROOF) screws must be used for the covers of all socket outlets.

20.2 Un-switched Socket outlets

Supply and install 6A unswitched socket outlets in round conduit boxes at each recessed luminaires position.

20.3 Computer Switched Socket outlets and other Special Switched Socket outlets

Supply and install switched sockets consisting out of a 16 A special switched socket similar or equal and approved to **"Crabtree Diamond"**type. Supply and install dedicated sockets in the positions as indicated on the drawings. The special type of sockets on the power skirting must consist out of a special switched sockets that are on a 45° cradle with a flat earth pin, complete in red finish. The wall-mounted sockets will be normal sockets with a flat earth pin, complete in red finish

The power supply of these particular outlet sockets must **not** be wired through an earth leakage relay.

20.4 Plug tops

Supply and hand-over to the head of the department shaved earth pin plug tops for all the dedicated (computer) socket outlets.

20.5 Watertight sockets

Supply and install watertight sockets in the positions as indicated on the drawing. The 16 Amp switched sockets must be mounted in a **"YORK S15-A"** weatherproof box.

20.6 Three phase sockets

Supply and install three phase sockets in the positions as indicated on the drawings. The three phase switched sockets must be equal and approved to **"WACO 63 Amp"**.

Note to all socket installations:

The contractor must co-ordinate the positions of all socket outlets with the positions of other equipment.

21 SPECIAL OUTLETS

21.1 General

An isolator must be behind or next to the equipment. The isolator must be installed at least 1350mm, but not more than 1700mm, above the finished floor surface. The cover plate of the isolator must be finished with white baked enamel paint, unless specified otherwise.

From the isolator a conduit must be flush-mounted in the wall. This conduit must end 450 mm above the finished floor level in such a position that it is behind the equipment and the end point thereof projects from the wall and is bent down. The connection from the equipment to the conduit must consist of a flexible conduit such as "KOPEX" or similar approved type, complete with approved couplers. The flexible conduit must be long enough for the equipment to be moved at least 600mm from its normal position.

The ends of the conductors must be fitted with approved crimped lugs for connection to stove terminals.

21.2 Geysers

Geysers will be supplied and installed by others.

Supply and install outlet points as indicated on the drawings, which must be wired with 2 x 4mm² PVC insulated copper conductors plus 1 x 2,5mm² copper earth wire in a 20mm diameter conduit. A double-pole flush mounted 30 Amp isolator complete with an indicator lamp in a box with a cover plate must be installed adjacent to the geyser. The connection between the geyser and the isolating switch must be done with a flexible cord complete with approved glands at the geyser.

The end of the conductors must be fitted with approved crimping lugs for connection to geyser terminals.

Outlet points in ceiling voids shall be an industrial type box mounted against the roof trusses adjacent to the geyser. Wall mounted outlets (if necessary) must be flush-mounted 100mm x 100mm x 50mm wall boxes for the isolators and from the wall boxes as 20mm diameter flush-mounted conduit to a point adjacent to the geyser connecting terminals with the end of the conduit projecting outward being bend down.

Before conduits are installed, the final positions of all geysers shall be determined on site. All geysers to be installed under earth leakage protection.

21.3 Stove outlet point

The supply to the stove must consist of 2 x 6mm² PVC insulated copper conductors and a 4mm² copper earth conductor in a 25mm diameter conduit.

A 60 Amp 2-pole isolator complete must control the stove with an indicator lamp, which is flush-mounted in a wall outlet box behind or next to the stove. The isolator must be installed at least 1350mm, but not more than 1700mm, above the finished floor surface. The cover plate of the isolator must be finished with white baked enamel paint, unless specified otherwise.

From the isolator a conduit must be flush-mounted in the wall. This conduit must end 450 mm above the finished floor level in such a position that it is behind the stove and the end point thereof projects from the wall and is bent down. The connection from the stove to the conduit must consist of a flexible conduit such as "KOPEX" or similar approved type, complete with approved couplers. The flexible conduit must be long enough for the stove to be moved at least 600mm from its normal position.

The ends of the conductors must be fitted with approved crimped lugs for connection to stove terminals.

21.4 MultiOutlet

Supply and install multi outlets as shown on the drawing. It must be equal and approved to **“Crabtree Diamond”**type

The multi outlets must be complete with 2 x normal socket, 1 x Euro 2-pin socket, 1 x computer sockets, 1 x telephone RJ11 outlet and 1 x data RJ45 outlet.

Supply and install two (2) 20mm diameter conduits in each Power multi outlet and two (2) 32mm diameter conduits to each Telephone/Data multi outlet. These outlets must have only one wall box build into the wall with specific outlets mounted in the box.

22 MECHANICAL OUTLETS INSTALLATION

22.1 Heating and Cooling installation

The mechanical units will be supplied and installed by others.

22.1.1 Mechanical outlets in ceiling void

Supply and install outlet points in the ceiling void. The outlet points in ceiling voids shall consist out of an industrial type box mounted against the roof trusses adjacent to the mechanical unit. Wall mounted outlets (if necessary) must be flush-mounted 100mm x 100mm x 50mm wall boxes for the isolators and from the wall boxes as 20mm diameter flush-mounted conduit to a point adjacent to the unit.

Supply and install a 20 A double pole isolator complete with an indication light for each unit. The units must be wired with 2 x 4mm² PVC insulated conductors plus 1 x 2,5mm² earth wire in a 20mm diameter conduit. The contractor must allow for a 1000mm length of 20mm diameter flexible conduit at each outlet.

Before conduits and isolators are installed, the final positions of all units shall be determined on site.

Typical wiring for one indoor outdoor unit system as follows:

The circuit breaker from the distribution board will supply the indoor isolator of the indoor unit, thereafter the supply cable/wire will go directly to the outdoor unit (there are no electrical connection from the indoor isolator to the indoor AC unit). The outdoor isolator supply power to the outdoor AC unit, which in turn will supply the indoor AC unit of power.

22.1.2 Air-con unit outlets

The air-conditioner units will be supplied and installed by others.

It is the responsibility of the Electrical contractor to coordinate with the Air-con contractor to ensure that the outlets are in the correct positions.

The outlets points for air conditioners are as shown on the drawings. The exact position of the outlet will be determined on site.

23. TELEPHONE FACILITIES

23.1 General

The electrical contractor shall supply and install the complete wire way and conduit installation for the telephone system as indicated on the drawings and specified in these documents, including all distribution panels, outlets, draw-boxes, conduit, conduit accessories and earth bar (as per Telkom's specification).

23.2 Telephone connection

Install a 110mm diameter PVC sleeve with 1,8mm-wall thickness from the Main Telephone board at Server Room 1 to the site boundary, the conduit must be supplied with draw wires.

The Telephone sleeve may be installed in the same cable trench as the supply cable, at a depth of 500mm and must end in a 900mm diameter pre-cast concrete ring manhole, complete with frame and a SABS 558 type 4 cover.

The manhole must be 700mm deep and be supplied with incoming and outgoing 50mm diameter PVC conduit.

23.3 Telephone distribution board

Data distribution panels (450mm x 450mm x 100mm deep) shall be flush-mounted, architrave type panels, complete with a 20mm laminated wooden backboard and lockable doors, and shall comply with the requirements of flush-mounted distribution boards.

Telephone distribution boards shall be white in colour and be provided with lockable doors and labels.

All locks shall be keyed alike with locks unique to the telephone distribution panels.

23.4 Telephone outlets

Supply and install telephone outlet points as indicated on the attached drawings. Telephone outlet points shall consist of 100mm x 100mm x 50mm surface mounted boxes. Acute bends in conduits are not-permitted. A galvanised steel draw wire shall be provided in all the conductor tubes with an extra length of 300 mm rolled up in each box

Outlet- and draw boxes, and cover plate grids shall be labelled with colour red adhesive disks as specified for services trunking lids.

Draw boxes shall be flush-mounted in walls in the positions indicated.

All draw boxes shall be complete with oversize cover plates and shall be labelled.

All conduit shall be **25mm** diameter and shall be flush in walls/floors or surface mounted in roof spaces complete with 2mm galvanised steel draw-wire, except where otherwise indicated.

23.5 Site Reticulation

The electrical contractor shall be responsible for the site/complex distribution layout, including all trenching, cable sleeves, manholes, draw-boxes, draw-wire, etc., where required and indicated.

All manholes/sleeve junction boxes, shall be installed by the Contractor.

The electrical contractor shall supply and install all conduit and sleeve pipes.

All sleeves (as indicated on drawing) and conduit for the telephone installation shall be provided with 2mm diameter galvanised steel draw-wire, with the ends of the draw-wires bent over and neatly rolled up, ready for use, when necessary.

No telephone sleeve shall be closer than 300mm in the horizontal or vertical plane from any electrical cable.

23.6 Power skirting Outlets

Telephone outlets in power skirting shall be separate blank 200mm length cover plates complete with a telephone socket.

24. DATA INSTALLATION

24.1 General

The electrical contractor shall supply and install the complete conduit installation, including all outlets, draw boxes, wiring channels, distribution panels, conduit and conduit accessories as indicated on the drawings.

The Data Communication system will be supplied and installed by others.

24.2 Data distribution board

Data distribution panels (450mm x 450mm x 100mm deep) shall be flush-mounted, architrave type panels, complete with a 20mm laminated wooden backboard and lockable doors, and shall comply with the requirements of flush-mounted distribution boards.

Supply and install an internal 16 A dedicated switched socket in these distribution boards. The socket must be wired with 2 x 4mm² PVC insulated copper conductors plus a 2,5mm² earth wire in a 20mm diameter conduit from the electrical distribution board.

The Data/Comms distribution panel shall be ivory in colour and be properly labelled.

All locks shall be keyed alike with locks unique to these comms panels. From this board install a 50mm diameter PVC sleeve to the Telkom board and a 100mm diameter to the manhole at the outside of the building.

Manhole are specified elsewhere in this specification

24.3 Conduit installation

All conduit shall be flush in walls and floors and shall be provided with 2 mm galvanised steel draw-wires.

All outlet and draw boxes shall be provided with blank covers and shall be flush-mounted where indicated in ceilings, slabs and walls.

All outlet and draw boxes shall be of the 100mm x 100mm x 50mm boxes and interconnected with **32mm** diameter conduit. Where more than two (2) 90 degree bends occur between outlets and/or outlets and central boards, additional draw boxes shall be supplied and installed in suitable positions by the electrical contractor.

All outlet and draw boxes shall comply with the requirements for conduit and conduit accessories as given in Department's General Technical Specification of these documents. Cover plates shall be White coloured enamel on steel.

Outlet- and draw boxes, and cover plate grids shall be labelled with colour green adhesive disks as specified for services trunking lids.

All draw boxes shall be labelled.

All conduit and sleeves for the communications installation shall be provided with 2.0 mm dia. galvanised steel draw-wire, with the ends of the draw-wires bent over and neatly rolled up, ready for use, when necessary.

24.4 Site Reticulation

The electrical subcontractor shall be responsible for the site/complex distribution layout, including all trenching, cable sleeves, manholes, draw boxes, draw-wire, etc.

The electrical contractor shall supply and install all conduit and sleeve pipes.

All conduit and sleeves for the communications installation shall be provided with 2.0 mm dia. galvanised steel draw-wire, with the ends of the draw-wires bent over and neatly rolled up, ready for use, when necessary.

No data communications sleeve shall be closer than 300 mm in the horizontal or vertical plane from any electrical cable.

The Data sleeve may be installed in the same cable trench as the Telephone sleeves, at a depth of 500mm and must end in a 900mm diameter pre-cast concrete ring manhole, complete with frame and a SABS 558 type 4 cover.

The manhole must be 700mm deep and be supplied with incoming and outgoing 50mm diameter PVC conduit.

24.5 Power Skirting Outlets

Communications outlets in power skirting shall be separate blank 200 mm length cover plates complete with RJ45 sockets.

24.6 UPS

N/A

25. FIRE DETECTION INSTALLATION (ONLY SAQCC REGISTERED SERVICE PROVIDER WILL BE USED)

25.1 General

A specialist contractor, specialising in the field of FIRE DETECTION shall install the system.

The Contract entails the provision, delivery, installation and free of charge maintenance thereof during the warranty period of twelve months for the addressable fire detection system that consists of the following:

a) The supply and installation of an addressable fire detection system complete with detectors, break glass units, sirens, panel etc.

b) The supply and installation of a connection to the safety and security office.

c) The supply to the shunt trip units at the mechanical distribution boards.

d) Testing and commissioning of the complete installation.

First hand over procedures will not take place if the “as built” drawings have not been submitted to the Engineer.

25.2 Addressable Fire Detection Installation

This installation shall be suitable in all respects for operation under the atmospheric conditions and electricity supply present on the site. The onus is on the tenderer to ascertain any local conditions or peculiarities, which might affect the working of the particular equipment, offered and no allowance in price or standards of material or workmanship will be made for any ignorance on the part of the tenderer in this respect. This applies also to the nature and construction of the building, details of which can be obtained from the Architects.

All materials and workmanship supplied under this contract shall be of the highest quality. Installation work shall be done in accordance with the best modern engineering practice. The Engineer shall have the right to reject and demand satisfactory replacement at the Contractor’s cost of the installation or any part of it, which, in his opinion, does not conform to the highest standards of material and workmanship. The installation shall be required to run for long continuous periods, and it is essential that all installations shall be capable of operating continuously and satisfactorily over such periods.

25.3 Testing and Commissioning

This part of the contract includes for the complete testing and commissioning of the installation. The contractor shall provide all equipment, material or labour required to perform these tests.

25.4 Scope of Contract

This part of the contract is for the supply, delivery, installation and commissioning of a complete automatic fire detection system together with a fire brigade alarm relay system.

The contract shall include the following:

a) Addressable panel against the wall in the position as will be determine on site.

b) Addressable optical and heat detectors.

c) Break glass manual alarm units.

d) Audible alarms.

e) A Safety and security office alarm relay system.

f) A shunt-trip relay system to switch off the mechanical air-con systems.

g) All wires for above systems.

h) Block plans, operational and maintenance manuals as described.

25.5 Drawings

The specification drawings are in diagrammatic form and are not manufacturing drawings and any dimensions given are only sufficient for tendering purposes or to enable the Contractor to complete his working drawings. Due allowance must be made in the tender for such items not shown or detailed on the drawings but which are nevertheless necessary for the proper execution of the works and operation of the system.

25.6 Standards

The equipment and installation shall conform to the following:

a) The National Building regulations of South Africa, SABS 0400 as amended.

b) The F. O. C. of the United Kingdom.

c) NFPA of the USA.

d) The board of Fire Insurance Companies of South Africa.

e) Internationally accepted institutions similar to the above.

f) SABS 0139/1981 – Code of Practice for the prevention, automatic detection and extinguishing of fire in buildings.

g) BS 5839: Part I/1980 – Code of Practice for installation and servicing of fire detection systems in buildings.

h) BS 6266/1982 – Code of Practice for the protection of electronic data processing equipment.

i) SABS 0142/1993 – Code of Practice for the wiring of premises.

25.7 Technical Requirements

25.7.1 General

The addressable fire alarm installation shall be designed according to the requirements and design standards described in this specification and no other published code or specification.

As far as possible only standard, easily obtainable components shall be used. The contractor shall guarantee the availability of spare parts for the installation for a period of ten (10) years.

Equipment shall be standardized throughout the installation and the number of different sub-assemblies shall be restricted to the minimum. Replacement of parts on a plug-in basis is regarded as essential to facilitate service and repairs.

All material and equipment shall be suitable for use under the conditions that exist on the site. These conditions include, weather conditions, installation and operational conditions. If the equipment is not sufficiently protected against conditions that may exist during installation, the contractor shall at his own expense provide the necessary protection.

Control equipment shall in general comply with the latest approved electronic technology and must be of sturdy miniature construction. Equipment shall be of the surface mounted type and batteries and battery charging equipment shall be housed in separate cabinets where such equipment is specified.

25.7.2 Approved equipment

Tenderers must indicate whether the equipment offered by them complies with one or more of the following:

a) The F. O. C. of the United Kingdom

b) NFPA of the United States of America

c) Similar internationally accepted institutions with proven standards.

Where applicable the equipment offered shall also comply in all respects to officially accepted samples.

25.7.3 Fire panel

The addressable fire panel which is supplied under this section must be suitable to operate under the following conditions or must make allowance for the following:

a) Suitable for use with optical fire detectors.

b) Indication when operating under battery or emergency power.

c) Facility to accept signals from sprinkler flow switches and to reproduce these in the form of visual and audible alarms, including the position of alarms. The panel shall also activate a radio fire brigade signaling system in the event of an alarm.

d) Lamp test facility.

e) Alarms must be visual as well as audible. Acceptance of an alarm shall only silence the alarm and visual indications must remain.

f) Suitable for monitoring of break glass units.

g) Detector lines must be monitored for open and short circuit as well as for the removal of detectors.

h) Alarms and indications must include:

   (i) Fire

   (ii) Fault

   (iii) Pre-warning with reference to weakening performance due to contamination of alarm units.

   (iv) Normal

i) The fire panel shall be equipped with sufficient stand-by components to enable the system to remain operative in spite of faults in the fire panel.

   The fire panel shall be a wall mounted panel in the position as shown on the drawing. A power point shall be supplied under the electrical part of this contract. It shall consist out of three (3) 2,5mm² PVC insulated copper conductors in a 20mm conduit from the distribution board.

The fire panel shall be a conventional type and shall be suitable for the effective zoning of the building and also for connection to sprinkler switches, air-conditioner control and a fire brigade radio relay system. The exact zone borders will be pointed out to the contractor on site.

The fire panel shall operate independently of any external equipment and shall operate under minimum power consumption under normal and battery conditions.

The panel shall be reliable and stable under all conditions including voltage fluctuations and shall be immune to electrical network or other electro-magnetic disturbances. In particular the tenderer shall ensure that any degree of lightning activity will not adversely affect the system. Full allowance shall be made for the necessary protection equipment to protect the panel and detectors from ground current surges resulting from lightning strikes in the vicinity.

25.7.4 Optical detectors

Optical detectors shall be specially designed to render reliable service free from false alarms when installed in areas subject to adverse wind conditions. Detectors requiring windshields in order to meet this requirement are **not** acceptable.

The detectors shall be designed for mounting on a standard round electrical outlet box having 50mm hole centers. In the case of ceilings the base of the detector shall be mounted flush with the ceiling. The detectors shall plug or screw into the detector bases to facilitate their easy replacement. The bases for optical and heat detectors shall be similar so as to permit the interchanging of the two types of detectors.

The detectors shall operate satisfactorily on a nominal 24 volt DC non-polarized two wire system over a voltage range from 20 to 27 volts. The unit shall be factory adjusted but on-site adjustments shall also be possible.

The unit shall operate satisfactorily under the following conditions:

Temperature - 25°C to 75°C

Humidity - 20% to 95% RH

The supplier shall indicate the radiation level of the radioactive source.

The optical smoke detectors must detect visible as well as invisible combustion gasses. Each detector shall be fitted with an alarm indication light and mounted in such a way that it is easily visible. Each detector shall be of the addressable type.

All detectors, which are placed in concealed areas such as ceiling voids strong rooms etc., shall be fitted with indication lights, which are extended to an easily visible position.

Faulty detectors, which are already in alarm mode, shall not adversely affect the operation of the other detectors in the system.

All circuits shall be monitored for earth fault, short circuit and open circuit. Any other fault condition must also be indicated. Alarms and faults must be discernable from one another. Signals received from alarm units shall be so evaluated that changes in ambient conditions do not adversely affect the accuracy of the units.

The sensitivity of each detector shall be individually adjustable from the fire panel.

25.7.5 Heat detectors

In certain areas where smoke may occur frequently, heat detectors shall be installed. These shall also be of the conventional type and shall be placed as indicated on the drawings.

25.7.6 Detector bases

All detector bases must be identical, whether they are intended for heat or ionization detectors.

Detector bases, which are fitted directly to concrete slabs or ceiling, shall be fitted to 50mm diameter, round boxes.

25.7.7 Break glass manual alarm units

These units must be of the normally “Closed” type and must comprise of a contact switch rated at 5 Amp, a mounting plate and a glass front. The front of the unit must be clearly marked in red “FIRE / BRAND”. These units shall be constructed for either surface or flush mounting and so designed that the glass breaks without injury to the user. The break glass manual alarm shall, unless specified otherwise, be mounted flush, 1,4 meter above the floor. The glass of the unit must be easily replaceable but must nevertheless be tamper proof and shall only be opened by means of hand tools.

In cases where surface mounting should be required the unit shall be deep enough to accept the termination of a 20mm conduit.

The contacts shall be normally closed and the contact shall break when the glass is broken. Electrical connections to the unit shall be by means of a lug and contact pressure plate and screw.

25.7.8 Block plan

An approved block plan shall be provided indicating every detector zone so that the position of an alarm can be identified.

The block plan shall have a professional appearance and shall be submitted to the Engineer for approval prior to mounting.

The block plan shall be neatly framed behind glass and mounted adjacent to the fire alarm panel or be on the front panel of the control panel.

25.7.9 Audible alarms

All audible alarms shall be placed in accordance with the drawings.

The alarms to be used shall have an intensity of at least 90 dBA at a distance of 1 meter from the source.

The alarm units shall be surface mounted over a 50mm diameter round flush box.

The alarm unit at the outside shall be weatherproof and shall have facility to produce four different tomes.

Power supply to the sirens must consist out of three (3) 1,5mm² PVC insulated copper conductors in a 20mm conduit from the fire panel.

Sirens in the building must be placed just below the ceiling. External siren must be installed at a height of 2500mm above final ground level.

25.7.10 Electrical supply

It shall consist out of two (2) 4mm² PVC insulated copper conductors and one 2,5mm² earth conductor in a 20mm conduit from the nearest distribution board.

Supply and install a 20 Amp double pool circuit breaker in the distribution board.

25.7.11 Batteries

The batteries of the fire alarm panel shall be of the Nickel Cadmium type operating on a float charge from the main control unit. The batteries shall be of sufficient capacity to maintain the alarm system fully operational for a period of 48 hours, and to maintain the alarm condition for a period of one hour.

25.7.12 Circuits and wiring

All monitor and detection-wires shall be of a minimum size of 0,85mm².

The voltage drop in any alarm circuit shall not exceed 2 volts under alarm conditions.

Wiring shall be PVC insulated conductors where these run in steel conduits. Should any exposed wiring be required this shall be done in steel reinforced fireproof cable such as Perelli FR20

If not specified otherwise all wiring will be fire resistant cable in 20mm diameter PVC conduits.

The detector zones are shown on the drawings. The detectors above the ceilings shall form part of the zone of areas below the ceilings. The indication lights of the detectors above the ceilings shall however be extended to the ceiling panel directly below the detector.

Cables and wiring shall be connected to the detectors by means of the loop principle. T-offs is not permitted. Junction boxes shall be restricted to a minimum and when used, they shall be in accessible positions and joints shall be soldered with the use of suitable connection blocks.

Audible alarms shall be wired with suitable 500 volt PVC insulated copper conductors to ensure that there is not a volt drop of more than 2 volts at full load.

25.7.13 Conduits

All conduits for the wiring of this system shall be provided as part of the electrical section of the contract and the contractor shall ensure that the conduits are installed timeously. If not specified otherwise, 20mm diameter PVC conduits will be used.

Conduits shall not be installed closer than 150mm to water pipes, and shall not touch pipes of other services that may cause electrolytic corrosion.

During installation of the conduits care shall be taken to ensure that debris does not enter the conduits by the use of solid plugs. Before wiring is pulled into the conduits, they shall be cleaned. All steel conduits ends shall be reamed.

Electrical continuity shall be maintained throughout the conduit installation. Conduits shall not however be used for earth continuity.

Draw boxes shall be placed in accessible positions and shall be provided with cover plates of the correct size.

Refer to the standard requirements of the electrical installation for detailed technical requirements relating to the installation of conduits.

25.7.14 Materials

All materials used on the contract shall be of the very best of their respective types and kind.

No equipment or parts older than two years at the commencement of the contract shall be installed in this system.

Material for which a SABS specification exists shall be in accordance with such a specification and shall bear the mark of the SABS.

25.7.15 Spares

The tenderer shall indicate the availability of spares and shall provide a list of agents or distributors where such spares may be obtained.

25.7.16 Installation, operating and maintenance instructions

Full installation operating and maintenance instructions, shall be supplied in triplicate with the system and shall include schematics and detailed wiring drawings with full component list indicating not only component values but sources of supply. Equipment will not be accepted until this information has been handed to the Engineer.

25.7.17 Testing of system prior to handing over

It is the full responsibility of tenderers to include all equipment necessary to present, on completion, an installation conforming to the least techniques of highly sophisticated fire engineering practice.

Testing of the system after completion shall be carried out in the presence of, and to the satisfaction of the Engineer.

Tenders should therefore note that the results of the tests should comply with the requirements laid down in this specification.

The tests shall include simulated fire tests in each area of the installation, and tests to prove the efficient operation of all aspects of the system, to the satisfaction of the Engineer. The contractor shall arrange for the necessary equipment to be available to conduct the tests.

26. LIGHTNING PROTECTION INSTALLATION

It is a prerequisite for this contract that the Lightning Protection Installation be done by a specialist in this field.

Supply, install and test a complete lightning protection installation comprising of flush conduits, aluminium conductors, PVC conductors, test joints, earth electrodes etc; as shown on the drawings.

The contractor shall employ a specialist sub-contractor to install the lightning protection system to the buildings complying with the latest requirements of SABS 03 and 03A as amended.

Where down conductors are required, they must meet the requirements mentioned below.

The conductors must consist of 35mm² stranded copper conductors carried from the earth electrode up to the test joint by means of a 25mm diameter PVC conduit that must be flush-mounted.

The top part of the down conductor must consist of electrical aluminium alloy conductor wire with a minimum cross-section area of 30mm² or solid 8mm diameter aluminium must be attached to the structure, at maximum intervals of 1500mm, using aluminium alloy fasteners or other approved fasteners.

This conductor must be installed in a flush-mounted 25mm diameter PVC conduit from the test joint to just under the roof over-hang.

Down conductors shall terminate in the test joints and be bolted onto the earth electrode conductors by means of two (2) x 6mm galvanised nuts and bolts.

Test joints shall consist of flush-mounted 100mm x 100mm x 50mm deep galvanised boxes mounted at 2,2 meters above finished floor level.

Provide 100mm x 100mm manufactured special steel covers with the engraved wording;

"LIGHTNING PROTECTION TEST JOINT"

Any labeling glued onto boxes will not be acceptable.

The contractor is reminded that where different materials are connected to one another, as described above, the SABS code of practice stipulations as prescribed must be strictly adhered to.

Earthing electrodes will be extensible vertical 16mm diameter rod type electrodes, made of either copper (only for soft soil) or copper-clad steel or phosphor bronze. Where copper-clad steel rods are used, the two metals must have an interlocking crystal coupling between them to prevent moisture penetration. Where it is necessary to joint the two rods to each other, a corrosion-proof non-ferrous coupler must be used which prevents moisture from penetrating the joint.

Earth electrodes must be installed in positions as indicated on the drawings, must be at least 1200mm long and have the top point of the electrode 500mm below ground level.

For tendering purposes, allow four (4) additional electrodes, the final amount will be determined on the results of the earth resistively tests done on site.

Connections between earth electrodes, gutters and metal constructions shall be installed as shown on the drawings. The termination of conductors shall consist of crimped lugs bolted to the gutters and roofs by means of two (2) x 6mm diameter-galvanised nuts and bolts.

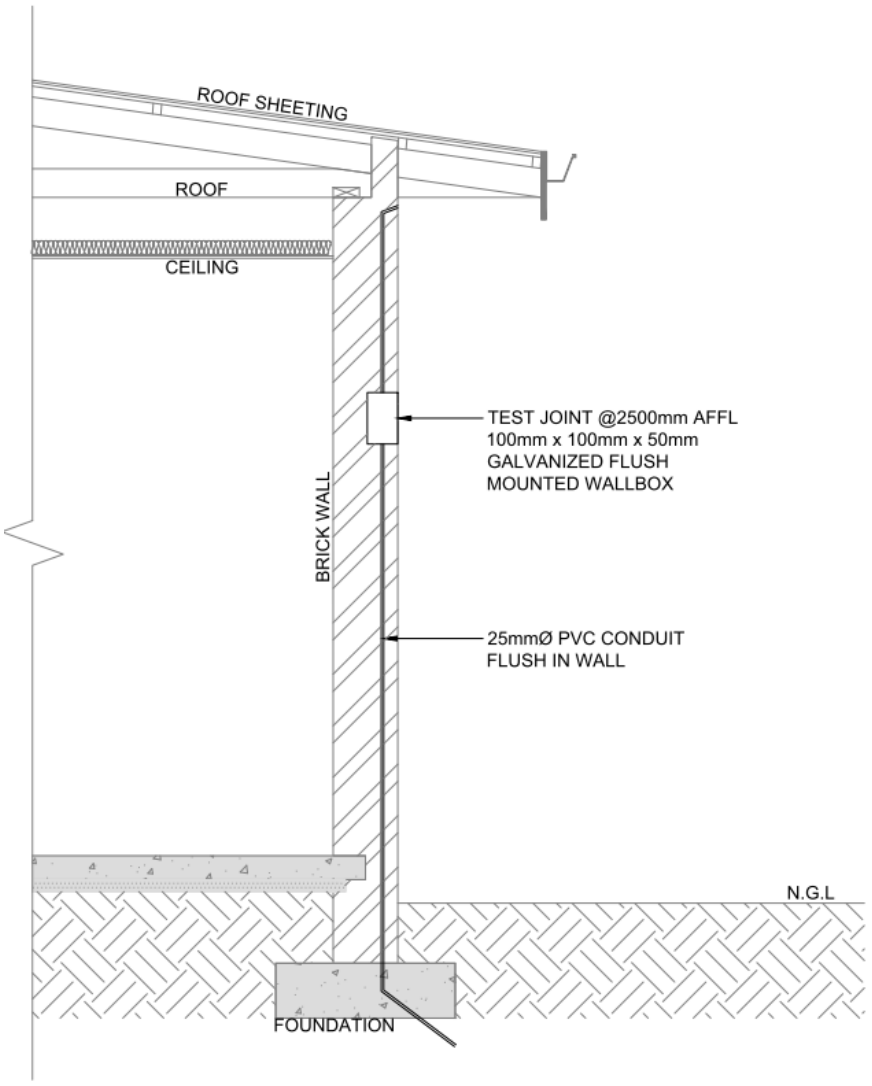
Arrange for soil resistively tests to be carried out at each electrode point so that the number of earth electrodes can be determined and the depths at which they must be installed. These results shall be submitted to the Consulting Engineer for checking and determining the outcome thereof.

No additional materials shall be installed regarding the test results without the written approval of the Engineer.

After this section of the installation has been completed, the contractor must execute the necessary tests, as prescribed by the Engineer and hand the certificate concerned to the Engineer.

Although this document refers in various places to aluminium or aluminium alloy conductors, the tenderer is allowed to use alternative conductor materials. However, in all cases the cross-section surface of these alternative conductors may not be smaller than the specified dimensions. In addition, all directives in respect of joints to non-similar materials must be adapted accordingly.

The contractor will allow for all scaffolding, which he may need to execute his work.



LIGHTNING PROTECTION TYPICAL DETAIL

QUALITY SPECIFICATION

1. GENERAL

This Quality specification defines the Generals of materials and equipment, installation work and ancillary work to be employed in the electrical installation contract or sub-contract. The Project Specification defines the extent of work required.

2. REGULATIONS, LAWS AND BY-LAWS

The supply and installation of the work shall be in agreement with the Conditions of the Contract with special attention to the following in particular:

a) The Occupational Health and Safety Act no. 85 of 1993, as revised, whereby SANS 10142 is enclosed.

b) Government notices.

c) The local Municipal By-laws and any special requirements of the local supply authorities.

d) The local Fire Office Regulations.

e) Telkom Regulations

f) Any special conditions specified in this specification.

It must be clearly understood that, where differences in the Generals occur as stated in (a), (b), (c), (d), (e) and (f) or where additional requirements are required, the higher General requirements shall apply.

In the event of any contradiction between (a), (b), (c), (d), (e) and (f), then (f) shall be accepted above the rest.

Where any required by-law or regulation, which applies or becomes applicable during the execution of the electrical installation, is in conflict with the stipulation of the document, the former must have preference in all cases. The contractor must immediately notify the engineer of such discrepancies.

The contractor may not make any alterations to the installation before written sanction to do so is received from the Engineer or its representative.

3. ELECTRICAL/ELECTRONIC EQUIPMENT

All the equipment must be properly protected against damage, faulty functioning or interference by any external factors such as static electricity, induced voltage, magnetizing forces, radio waves, etc., which may occur in the building.

Equipment which is sensitive to interference and interference peaks in the electrical circuit; variations in voltage and frequency such as normally occur in the electrical distribution network, and the municipal supply to the building, which are inevitable, must be fitted with the necessary stabilizers, over and under-voltage protection equipment, suppressers, etc.

Equipment must be so manufactured and installed (and provided with suppression), that it does not cause any interference to other equipment or in any way affect the functioning thereof.

4. TERMINOLOGY

Labels must indicate the functions of equipment and components in the distribution boxes and/or distribution boards.

The terminology on the identification labels must be in English.

5. LIASON

The electrical Contractor shall, in each case, provide the Principal Contractor with all necessary information, dimensions, materials, etc., as called for in the specification, in good time.

It is essential that the electrical Contractor work in close collaboration with the Principal Contractor to ensure that where his services run in proximity with other services, there are no clashes.

Failure to comply with the above may mean that corrective measures will have to be taken to correctly position the equipment. Any abortive work resulting will be entirely to the electrical Contractor's account.

Where the electrical Contractor is to provide electrical supplies to control panels forming part of other contract works, it is essential that the electrical Contractor liaise fully with the particular Contractor who must provide the electrical Contractor with all information necessary so as to ensure that the supply cable terminates in the correct position and that the phase rotation complies with the equipment installed.

Failure to do so may result in the electrical Contractor being held responsible for the cost of removing and replacing not only his own but also the equipment of the Principal Contractor and other Contractors.

The electrical Contractor is to make allowance in his tender price for extension and alterations to the hospital electrical power distribution network and substations after normal working hours.

6. SUPERVISORY STAFF AND IDENTIFICATION

All work done on site shall at all times be under the direct and full time supervision of a contract manager who shall be a qualified installation electrician who will sign the certificate of compliance.

Full particulars of the site organisation, complete with names of officials the Tenderer proposes to allocate to this project are to be submitted with this tender. For the duration of this contract the above detailed officials will be permanently assigned to this project and may only be relieved of their duties after prior agreement by the Engineer or his Representative/Agent.

Whilst on the site all staff and labourers, employed by the electrical Contractor shall wear distinctively marked clothing, bearing the name of the electrical Contractor or his identification logo.

7. SETTING OUT OF WORKS

The electrical Contractor shall be responsible for marking out and setting out of all equipment and plant.

The position of items of electrical equipment and plant indicated on the drawings are to be taken as approximate. The exact position for fixing shall be obtained by site measurements.

In case of doubt, decisions shall be obtained from the Engineer or his Representative/Agent.

8. ERECTION OF EQUIPMENT

The Contractor shall be responsible for the erection and installation of all equipment supplied by him under this contract.

In addition, the Contractor shall be responsible for the care and maintenance of all electrical equipment after erection is completed until the first delivery of the specific section of the works. He shall ensure that the proper enclosure of all equipment is maintained at all times, that access doors and covers are opened only when necessary to work on the equipment and replaced afterwards, that the paint finish on all items is effectively protected and that all unused cable and conduit entries are effectively sealed.

9. CERTIFICATE OF COMPLIANCE BY AN ACCREDITED PERSON

On completion of the electrical installation the contractor shall complete the Certificate of Compliance for the electrical Installation in the form of Annexure 1 as described in the Occupational Health and Safety Act no. 85 of 1993, as amended, and obtainable from the Electrical Contracting Board of South Africa. This form must be handed to the Engineer or its representative.

10. INSTALLATION TESTS

Tests as stipulated in the " Occupational Health and Safety Act no. 85 of 1993, as amended, and in the "Code of Practice for the Wiring of Premises" SANS 10142 (as amended), must be done. These test report forms must be filled in fully and correctly in ink, signed by the installation electrician and handed to the Engineer or its representative.

Tests must be conducted on site after the whole installation is complete, unless written the Engineer to the contrary grants permission. The tests must include a full-load test for an adequate period to ensure the satisfactory working of the installation.

If negative test results are obtained, faults must be rectified and tests again done.

The contractor must supply all testing apparatus, correctly calibrated.

All tests shall be carried out in conjunction with and to the satisfaction of the Supply Authority and in the presence of the Engineer or his representative. The contractor shall make all arrangements for testing and inspection, the costs thereof being included in the Tender Price.

All 220 Volt socket outlets shall be tested for polarity and the sensitivity of the earth leakage protection equipment shall be tested by means of an approved instrument.

Each length of cable shall be tested for insulation and polarity by means of a 1000 Volt Megger designed for that purpose. In the case of underground cables this shall be done before back filling. In addition, the earth-loop impedance of each conductor earth electrode shall be measured. The earth resistance shall be tested by means of an approved instrument.

"Danger" notices shall be displayed at remote ends of cables under test.

The contractor shall ensure that the installation is completed in every respect and that there are no major defects prior to notifying the Engineer (in writing) for a first delivery inspection.

The Engineer will accept zero minor defects during the final inspection. Should the number of defects be exceeded at the final inspection then the Engineer will terminate that inspection and request that the contractor arrange an additional final inspection.

11. MATERIAL

Materials and equipment used in this installation must be of the best quality of their respective types, must meet the relative SABS, SANS or BSS specifications and must be installed to the satisfaction of the electrical Engineer or his representative.

The contractor will be informed in writing if any material or workmanship is not of the required quality. In such a case the contractor must replace the material concerned or repair the installation to the satisfaction of the Engineer or its representative.

If requested to do so, the contractor must provide samples of materials or equipment, for the approval of the Electrical Engineer, before it may be installed. The samples will be kept for comparison with materials and equipment actually installed and will be returned after the contract has been satisfactorily completed.

12. DELIVERY AND COMPLETION

All contract materials shall be ordered timeously and delivered to site at dates suited to the agreed construction program.

The successful bidder for the installation will be required to commence work immediately following notification of bid acceptance, and shall thereafter at all times maintain the progress required by the agreed completion program.

13. DRAWINGS

Submit to the Engineer duplicate prints of dimensioned general arrangement drawings of all switchboards, distribution boards, motor control centers, control boards and consoles, busbar trunking systems, rising mains systems, etc. Attend upon the Engineer, preferably with the manufacturers of the equipment, to discuss and agree any changes required in the drawings.

Modify makers' drawings as directed and, after approval by the Engineer, provide at least four prints of each for distribution to the parties to the contract.

On completion of the project update the drawings with any changes made during the course of the contract works and furnish the Engineer with the necessary prints for record purposes.

14. FIXINGS AND SUPPORTS

Fixings to concrete and brickwork shall be by means of bolts grouted into the structure or by means of expanding bolts. The necessary holes shall be made by means of carbide-tipped "masonry" drills: percussion drilling is unacceptable. Fixings to brickwork shall be into solid brick and not into joints. Plugs or inserts of wood are not acceptable.

Fixings to steel work shall be by means of bolts and nuts through steelwork or by bolts in tapped holes in the steel. "Caddy" proprietary fixings are acceptable if specifically suited to the duty involved,

Fixings into hollow tiles and the like shall be by means of cavity anchors similar and equal to "HILTI". "Butterfly" or "Toggle" bolts are not acceptable; the holes shall be formed by means of " masonry" drills.

Powder-driven "shot" bolts are not acceptable.

15. CHASING AND CUTTING

Whenever possible, arrangements shall be made with the Contractor for building in the conduits, etc., of a flush installation. If this is not possible all chasing and cutting shall be done under this contract.

All chasing and cutting shall be done with properly sharpened tools, with the minimum possible damage to the building: power-driven cutting tools shall be used wherever possible. No cutting or chasing shall be done without the express permission of the architect or the structural engineer in charge of the project.

The Contractor will make good all plaster and brickwork damaged in the course of normal chasing and cutting. However, any additional plaster work or making good which has to be carried out due to the contractor's inefficient or late installation of conduit, switchboxes, plug boxes or other equipment, will be carried out at the contractor's expense.

16. LEVELLING AND PLUMBING

All equipment shall be carefully leveled and plumbed, checked with a spirit level. Should any equipment be unsatisfactorily installed in this respect it shall be dismantled and reinstalled, the costs of making good to damaged structures, plaster and paint will be for the account of the Contractor.

It must be noted that boxes for imported accessories must be leveled and plumbed when installed, since the inserts cannot be leveled independently of the boxes.

17. INSTALLATION OF CABLES

17.1 General

All cable sleeves manholes and cable markers are to be provided by the Contractor unless otherwise specified. Others will provide Cable ducts in the floors of buildings unless otherwise specified.

Cable run indoors shall be supported on cable trays or cable rack, secured thereto by heavy plastic strapping. The cables shall be fixed at intervals not greater than those stipulated in SANS 10142 and shall be spaced sufficiently to avoid de-rating in terms of SANS 10142 – 1 cables shall be individually fixed so that any one may be removed from a group without disturbing the others.

Cables installed in trenches shall be installed to a depth of 750mm below final ground level. All cable depth measurements shall be made to the top of the cable when laid directly in ground or to the top of the duct or sleeve where these are provided.

The contractor may only deviate from the above depth provided prior authority in writing has been obtained from the Engineer.

A yellow PVC cable warning tape with the wording "DANGER/GEVAAR" shall be installed above all cables installed in cable trenches.

Every run of cable shall be a single length without joints; save that where a run exceeds the general drum length of where the length of a run is increased after the cable is delivered on site, a through box will be permitted. Such through boxes shall be so placed as to afford easy access for maintenance and repair; when they are required in underground cable runs the contractor shall provide special cable markers to locate them.

All cable tails shall be provided with either cable lugs or ferrules as may be appropriate. At each sealing end straps-on cable markers shall be fixed, showing clearly and indelibly the number and size of cable cores and the destination of the cable.

17.2 Cable routes

Cables shall follow the routes shown on the drawings; the routes shall only be varied with the written permission of the Engineer. Where no routes are defined on the drawings the contractor may select routes to his reasonable preference but shall obtain written approval of them before installing the cables.

The Contractor shall, before trenching commences, familiarizes him with the routes and site conditions and the procedure and order of doing the work shall be planned in conjunction with the general construction program for other services and building requirements.

The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose he shall approach the Engineer's representative, the local municipal authority and any other authority which may be involved, in writing.

The Engineer reserves the right to alter any cable route or portion thereof in advance of cable laying. Payment in respect of any additional or wasted work involved shall be at the documented rates.

The removal of obstructions along the cable routes shall be subject to the approval of the Engineer.

17.3 Trenching

Trenching shall be programmed in advance and the approved program shall not be departed from except with the consent of the Engineer.

The Contractor will be held responsible for damage to any existing services brought to his attention by the relevant authorities and shall be responsible for the cost of repairs.

The Contractor shall take all the necessary precautions and provide the necessary barriers, warning signs and/or lights to ensure that the public and/or employees on site are not endangered.

The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property.

Trenches shall connect the points shown on the drawings in a straight line. The Engineer beforehand shall approve any deviations due to obstructions or existing services.

Trenches shall be as straight as possible and shall be excavated to a depth of 750mm x 300mm wide.

The bottom of the trench shall be of smooth contour, and shall have no sharp dips or rises, which may cause tensile forces in the cable during back filling.

The excavated material shall be placed adjacent to each trench in such a manner as to prevent nuisance, interference or damage to adjacent drains, gateways, trenches, water furrows, other works, properties or traffic. Where this is not possible the excavated materials shall be removed from site and returned for back filling on completion of cable lying.

Trenches across roads, access ways or footpaths shall not be left open. If cables cannot be laid immediately the Contractor shall install temporary “bridges” or cover plates of sufficient strength to accommodate the traffic concerned.

In the event of damage to other services or structures during trenching operations the Contractor shall immediately notify the Engineer and institute repairs.

Prior to cable laying the trench shall be inspected thoroughly and all objects likely to cause damage to the cables either during or after lying shall be removed.

Where ground conditions are likely to reduce maximum current carrying capacities of cables or where the cables are likely to be subjected to chemical or other damage or electrolytic action, the Engineer shall be notified before installing the cables. The Engineer will advise on the course of action to be taken.

Extreme care shall be taken not to disturb surveyor's pegs. These pegs shall not be covered with excavated material. If the surveyor's pegs are disturbed, a person qualified to do so shall replace them.

17.4 Bedding

The bottom of the trench shall be filled across the full width with a 100mm layer of suitable soil sifted through a 6mm mesh and leveled off.

Only sandy clay or loam soil with a satisfactory thermal resistivity (not exceeding 1,5 C m/W) may be used for this purpose. Sea or river sand, ash, chalk, peat, clinker or clayey soil shall not be used. The use of crusher sand is acceptable.

Where no suitable soil is available on site, the Contractor shall import fill from elsewhere and make all the necessary arrangements to do so. The cost of importing soil for bedding purposes shall be included in the unit rates for excavations.

After cable laying a further layer of bedding shall be provided to extend to 100mm above the cables.

17.5 Back filling

The Contractor shall not commence with the back filling of trenches without prior notification to the Engineer so that the cable installation may be inspected. Should the Contractor fail to give a timeous notification, the trenches shall be re-opened at the Contractor's cost. Such an inspection will not be unreasonably delayed.

For all cables, a coloured plastic-marking tape shall be installed 200mm above the cable. The tape shall be yellow, with red skull and crossbones with the words "ELECTRIC CABLE /ELEKTRIESE KABEL". These markings shall not be more than 1m apart from center to center.

Back filling shall be undertaken with soil suitable to ensure settling without voids. The maximum allowable diameter of stones present in the back fill material, is 75mm.

The Contractor shall have allowed in his tender for the importation of suitable backfill material if required.

The backfill shall be compacted in layers of 150mm and sufficient allowance shall be made for final settlement. The Contractor shall maintain the refilled trench at his expense for the duration of the contract. Surplus material shall be removed from site and suitably disposed of.

On completion, the surface shall be made good to match the surrounding area.

In the case of roadways or paved areas the excavations shall be consolidated to the original density of the surrounding material and the surface finish reinstated.

17.6 Mechanical excavators

Power driven mechanical excavators may be used for trenching operations provided that they are not used in close proximity to other plant, services or other installations likely to be damaged by the use of such machinery.

The use of power driven mechanical excavators shall be subject to the approval of the Engineer. Should the excavator produce trenches that exceed the required dimensions, payment based on volumetric excavation rates will be calculated on the required dimensions only.

17.7 Blasting

No guarantee is given or implied that blasting will not be required.

Should blasting be necessary and approved by the Engineer, the Contractor shall obtain the necessary authority from the relevant Government Departments and Local Authorities. The

Contractor shall take full responsibility and observe all conditions and regulations set forth by the above authorities.

18. ELECTRICAL SUPPLY CABLES

18.1 General

All low voltage underground cables must be stranded copper-core PVC/SDP/PVC 600/1000 Volt grade, multi-cored, PVC insulated, PVC covered, wire armoured and PVC encased. PVC cables must meet SABS 150 and 1507 as amended, where applicable. Cables must be of new stock and must still be sealed when brought on site. If these conditions are not met, it may lead to the cables being removed from the site and their being replaced with the correct type, all at the contractor's expense.

The contractor must do all measuring on site himself in respect of lengths of cable, earth wires and ditches required. The lengths given in the schedules are only allowed for tender purposes. Payments will only be made for the lengths of cable actually installed and at the Tendered tariffs. In their tenders, tenderers must allow for cut-off lengths of cables and bends.

The storage, transport, handling and lying of cables must conform to approved and acceptable practice and must meet the requirements of SABS 0198 as amended. Cables, which are cut and left open for a period of time before being coupled, must be sealed in the prescribed manner. When such cable ends are flooded by water, they must be subjected to the tests prescribed by the engineer.

The contractor must have adequate suitable equipment and labour available to prevent damage to cables.

Before the cable is installed, the cable trenches must be carefully inspected and any objects, which may damage the cable during or after installation, must be removed.

18.2 Sealing glands for PVC insulated cables

The sealing glands must consist of a sleeve in which a conical bush screws into one side and a nickel-brass or galvanized steel lock nut is situated on the other side. The galvanizing must meet SABS 763 as amended standards. The sleeve must have a hollow groove on the side on which the cable enters the sleeve to house the top ring of the waterproofing mantle.

The waterproofing mantle must be manufactured from non-weathering neoprene or other synthetic rubber and must be proof against water, oil and sunlight. These mantles must fit snugly over the sealing glands and the cables.

Sealing glands must have a 150 screw thread and must be suitable for the specified cable sizes.

18.3 Cable joints

Cable joints are not permissible except where specifically approved. No joints will be allowed where the specified length of cable appears on a drum.

19. SLEEVES

Cable sleeves shall be provided where shown on the drawings and wherever necessitated by installation conditions. Sleeves shall be of steel water pipe when traversing railways sidings, heavy duty tarmac, loading areas, etc.; they shall be of other approved materials where traffic loading is lighter. Cable sleeves shall be not less than 100mm internal diameter unless specifically noted otherwise in the Project Specification; they shall be of continuously smooth bore with no snags or hitches en route and shall encompass only easy sweeping bends permitting the easy passage of the heaviest cable involved. No cable sleeve shall exceed ten meters without a manhole draw position, unless authorized in writing by the Engineer.

Cable sleeves entering a floor cable duct shall be swept gently to the level of the bottom of the trench so that cables do not kink at entry to the trench. Cable sleeves brought to switchboards or distribution boards having no associated floor cable ducts, or brought to rising cable ducts shall be swept up easily so that the cable emerges vertically from the floor. In cases where the emerging cable is exposed to view, wooden dams shall be fitted round the cable at the top of the sleeve, and

the floor screeded completely round the cable. The outer ends of cable sleeves entering buildings shall, after drawing in the cables, be water proofed with cable compound of low melting point.

Sweeping bends shall be installed where sleeves enter distribution boards. Sharp sleeve bends are not acceptable.

Cables attached to external walls must be placed in a recessed galvanized pipe from 300 mm below ground level into the meter box or into roof spaces complete with brass bushes at both ends.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

20. CABLE MARKERS

The necessary number of cable markers must be installed so as to indicate the route of underground cables, as on the drawings. Where the direction of cables changes, this must be indicated on the surface by means of cable markers. Cable markers must be concrete pyramids, with measurements of 150mm x 150mm on the top and 250mm x 250mm at the bottom. Their height must be 300mm.

Brass plates must be cast into the tops of these pyramids in such a way that they cannot be removed easily. The words “ELECTRIC CABLE/ELEKTRIESE KABEL” must be punched onto these plates as well as the voltage of the cable and an arrow indicating the direction of the cable routes. The cable must be linked to the cable marker by a galvanized wire cast in the cable marker.

Cable markers must be placed on the surface above all underground cables and must stand out 35mm above ground level, unless they are a danger to pedestrians or traffic, in which case the tops of the markers must be flush with the level of the ground. Cable markers must be placed at the beginning and end of each cable route (e.g. where a cable goes into a cable kiosk or a building); at changes of direction; at all joints; above cable sleeve inlets and outlets, and along the whole cable route at distances not exceeding 50 meters.

21. SWITCHBOARDS AND DISTRIBUTION BOARDS

21.1 General

All switchboards and distribution boards shall be constructed in compliance with SABS 1180 - Part I: 1978/Part II : 1979 as amended and shall be the products of specialist manufacturers of this class of equipment: they shall comprise sheet steel enclosures with angle-iron or folded heavy-gauge sheet steel frameworks arranged for wall or floor mounting, flush or surface type as specified hereafter. All floor-mounting boards shall embody a slightly recessed plinth/kick plate of channel iron or heavy sheet steel box section.

A wall-mounting distribution board to which cables are brought shall have cable trunking of sufficient width to encompass cables, sealing ends and sleeves. Cable trunkings shall be furnished with recessed in the framing into which shall fit flush front covers having a peg-and-hole fixing at the bottom and key-operated latches at the top. The trunkings shall be the same depth as the distribution board and shall run from floor to underside of board and/or from ceiling to top of the board. Flush trunkings shall be made in two portions, the outer portion having an adjustable overlapping leveled flange to mask the edge of the plaster.

After fabrication is complete, all boards shall be derusted and degreased and painted inside and out with at least one coat of primer and two finishing coats of epoxy powder baked enamel. Unless otherwise specified surface-mounting boards shall be finished outside cream; flush-mounting boards shall be finished light grey: the interiors of all distribution boards and switchboards shall be finished white.

When locking outer doors are specified, each outer door shall be furnished with a latch and with a barrel lock with sneak so that the lock may be rendered inoperative if so required; all locks in the installation shall fall in one master series; two keys for each lock, each complete with Ivorian label and one master key suitably labeled, shall be handed to the Principals on completion of the contract; one master key, labeled with the reference number of the contract, shall be handed to the Engineer.

Miniature circuit-breakers, disconnecters, control switches and earth leakage detector/trip units shall be so mounted that their toggles protrude through slots cut in the inner face plates of switchboards and distribution boards and the raised faces of their enclosures fit snugly into the slots. Push buttons, test pushes, overload reset pushes and the like shall be similarly mounted. Indicator and

pilot lights and lamp holders shall be similarly mounted, with only their shielded jewels fixed to the inner faceplates. Indicating instruments shall be set flush in hinged panels, with their associated fuse links and selector switches. Energy meters and demand indicators, hour counters and time switches shall be set behind clear Perspex inserts let into inner face plates, in such fashion that readings of such instruments may be made without removing the inner face plates. Contactors, starters, current transformers, bell transformers and ammeter shunts shall be mounted behind inner face plates in such a manner as to ensure ventilation and cool running.

All surface-mounting switchboards shall be arranged for future extension at both ends and shall be provided with removable end panels for this purpose. Flush switchboards and all distribution boards shall embody space and mounting facilities as well as spare conduits for the future addition of equipment equal to at least 25% of that now installed. This requirement shall not apply in regard to disconnecters, earth leakage detector-trip units, time switches, and hour counters, indicating or metering instruments. The inner faceplates shall have their slots made long enough to accept the future additions, the unoccupied portions of the slots being closed by blank circuit breaker mouldings. Switchboards and distribution boards shall be carefully laid out to ensure ample space for wiring and particularly to facilitate making off incoming cables. Wiring channels shall be provided in all boards, running horizontally and vertically, sufficient to provide adequate space for all present and future main and sub-circuit wiring. The equipment shall, subject to consideration of accessibility and operational efficiency, be so arranged within switchboards and distribution boards as to exhibit a neat and even handsome appearance. All items of equipment and their labels shall be mounted level in the boards; labels shall be mounted on the centerlines of their associated equipment, in unambiguous positions.

Each distribution board and each sub-circuit shall be clearly defined by means of engraved sandwich boards labels, bearing designation as given in the Wiring Schedules. In the case of single-pole miniature circuit-breakers, a number reference to an index mounted inside the distribution board will be acceptable, providing that the index is typewritten on cartridge paper and contained within a frame rigidly mounted inside the distribution board door, adequately protected by means of non-flammable clear plastic window. The numbers allocated to circuit breakers shall be identical with their circuit numbers on the wiring schedules.

Each distribution board shall additionally bear a label indicating the source and size of the feeder to it.

21.2 Testing of switchboards and distribution boards

The Engineer or its representative shall make all switchboards and distribution boards available for inspection and testing at makers' works before being delivered to site.

21.3 Installation of switchboards and distribution boards

All switchboards shall be fixed rigidly in the positions shown on the drawings, accurately level and plumb. The outer finished surfaces of all boards shall be kept protected against damage and defacement until immediately before final testing and commissioning; make good any blemishes in paint work, using enamel from the board manufacturers' original batch to ensure accurate colour matching.

All conduits and cables entering boards shall be so disposed that their terminations are readily accessible; earth terminal bushes shall be fitted to all conduit and PVC/SWA/PVC cable termination's in painted board enclosures, to which bushes stranded Earth wires shall be fixed. Cable and conductor tails shall be laced circuit-by-circuit with approved strapping and led in neat groups through the horizontal and vertical wiring channels in the boards: circuits shall be spaced well apart to ensure good ventilation.

All sub-circuit conductors shall be clearly and indelibly marked at their terminations in switchboards and distribution boards, by tags displaying the circuit numbers as set out in the wiring schedules.

21.4 Drawings

As soon as is possible after the contract has been awarded to him, the Contractor must submit two (2) copies of the following drawings to the Engineer for approval:

Design and construction drawings of all distribution boards and/or distribution boxes as specified.

The following information must appear on the drawings:

(1) A full lay out with the arrangement of the equipment in the distribution boards and boxes, and on which all measurements of the equipment and the construction are indication.
(2) The position, fastening method and current rating of the Bus bars.
(3) The make, catalogue number and capacity of insulators, circuit breakers, fuses, contactors, etc.

The Engineer's approval of these drawings does not release the Contractor from his responsibility to supply the distribution boards and/or boxes in terms of this contract.

22. LABELS AND NOTICES

The Contractor shall arrange for the labeling of all equipment, instruments, meters, relays, cables, etc., as indicated below.

Where identical items of equipment can be removed from their housings, e.g. HV circuit breaker carriages, plug-in relays etc., both the fixed and withdrawal portion are to be labeled identically.

All labels shall be ivorine or other back engraved white on black labels of the sizes indicated. They are to be located in purpose made holders or otherwise are to be screwed or riveted into position. "Dymo" tape or similar labels will not be accepted nor will labels, which are glued in position only.

Labels on poles shall comprise an aluminum plate with the designated number. These labels shall be nailed to the pole 1,5 m above ground level. Nails shall be electro-galvanized clout nails.

Prior to any equipment being labeled, the Contractor shall request the Engineer to provide a complete labeling schedule for all items of equipment. Under no circumstances is equipment to be labeled in accordance with the tender drawings since any description thereon is for identification purposed during construction only and is unlikely to apply to the completed Works.

The following list indicates the general labeling requirements but does not limit the extent of labeling required, which shall encompass the full extent of the equipment supplied, or in the case of existing equipment, any such which is affected by this Contract.

50 mm high lettering:-

Substation and mini sub designation.
Outdoor switch gear designation.
Transformer designation.

Distribution kiosk and fused feeder panel designation.

20 mm high lettering:-

Main or sub-main board designation.
Control panel designation.
Indoor switch gear designation.

10 mm high lettering:-

Individual switches on switch gear.
Cubicles.
Sub-distribution board designation.
Poles for OH lines.

5 mm high lettering:-

Mini sub feeder breakers and isolators.
Distribution kiosk feeder breakers and isolators.
General distribution switch gear.
Meters, instruments and relays.
Multiplying factors.

3 mm high lettering:-

This size shall be used to designate the conductor size and number of cores of each cable installed under this Contract. In addition, all feeder cables shall be labeled at both ends indicating from where/to cables are feeding.

All switchboards shall be provided with a label in both official languages reading "In case of leakage or accidental contact, put off main switch immediately".

All substations, mini-subs, kiosks, transformer rooms and switch rooms shall be provided with notices as required by the Machinery and Occupational Safety Act. All doors to such locations shall be fitted with the appropriate notices. In the case of mini-subs, these shall comprise at least two 190 mm x 190 mm design WW7 in accordance with SABS 1186 externally and Hv/s and LV/S respectively on the inside of all doors, while kiosk doors shall meet the LV requirements only. For all other sub stations, enclosures etc: "Contra" Safety Signs as supplied by Mine Safety Appliances or approved equivalent are to be provided Nos. KM115 and KO711 being used externally and KM112, K0706 and K0710 internally.

Where more than one similar item of equipment is fed from the same board or control panel, the item itself shall be labeled, this being fixed in a permanent position, i.e. not attached to motors, pumps, etc., but to bases or adjacent thereto. The lettering shall be 50 mm high.

Each distribution board shall additionally bear a label indicating the source and size of the feeder to it. Labeling will be done with **"brother tape"**.

For Example: DB.A (Office 1, 2 & 3)

Fed from Mini-sub 5

95mm² x 4 core cable + 70mm² BCEW

Each feeder must be labeled at both ends with "brother tape" and a clear heat shrink to cover the tape. This label must indicate the size of the cable and from/to where the cable is feeding.

For Example: 95mm² x 4 core cable + 70mm² BCEW

Fed from DB.A to DB.B

Light switches, socket outlets, multi outlets, pop out boxes and isolators must be labeled indicating from/ to which DB and circuit it is feeding.

23. POWER SKIRTING

Power skirting shall be of PVC DLP skirting, generally of 3-compartment design, complying with the requirements of SABS 1197 Part 1: 1978. Each power skirting system shall be complete with all necessary internal/external angles, cover joints, end caps, body joints, etc. The Architect shall verify the exact fixing height to the Contractor, to suit floor finishes. The skirting shall be installed accurately level, plumb and straight.

The rear surfaces of the skirting shall be neatly and cleanly cut away to afford conduit or trunking entries and the cut edges shall be furnished with plastic or similar fairing pieces. Run a bus earth wire through each skirting system of cross sectional area adequate for the highest rated circuit, bonded to each metal section and connected back to the earth bar in the distribution board.

Provide all necessary power, telecommunications and special conduits or trunking to and between runs of skirting, as indicated on drawings; cut and fair all necessary entries to the skirting.

Supply and fix to the skirtingall power and telecommunications outlet kits, these to be of the same provenance as the skirting; cut and drill the skirting as necessary for fixing the kits, complying fully with the makers' requirements or procedures. Provide all necessary power circuitry and connections.

24. WIRING TRUNKING

Wiring trunking shall comply with the requirements of SABS 1197 Part I : 1978 and shall be of completely metallic construction unless otherwise specified.

Each run of trunking shall be complete with all-necessary feed-in boxes, splices, elbows, and tee-pieces. End-closers, etc., all to be factory-made equipment.

The size of trunking required for any run, if not given in the Project Specification, shall be calculated from requirements given in SANS 10142 making allowance for 25% future increase in cables.

Each run of trunking shall be accurately aligned and leveled and shall be supported at close enough intervals to prevent sag or sway: provide additional supports where direct fixing to the building structure does not permit this requirement to be met.

Circuits from more than one switchboard or distribution board shall not share the same trunking. Each run of trunking shall embody a single bus earth conductor sized in compliance with SANS 10142 to match the highest-rated protective device of all the circuits in the run. Each length of trunking shall be bonded to this bus earth: reduced earth conductors for circuits leaving the trunking shall be crimped or soldered to the bus earth at the points of take-off.

Circuit conductors in trunking shall be strapped together in their individual circuits at intervals not greater than 2 meters, using approved strapping. Each circuit shall be identified, at intervals not greater than 3 meters, by approved ferrules bearing the circuit number as given in the wiring schedules. Suitable clips shall be installed in the trunking to restrain cables in position when the trunking covers are opened.

Unless otherwise called for in the Project Specification the trunking shall be finished with Class 2 enamel to SABS 1197: 1980, using epoxy powder paint in colours as specified.

25. ELECTRICAL CONDUCTOR CONDUITS

25.1 Steel conduits

Conductor conduits must be made of thick steel and be solid drawn or welded heavy gauge screwed type conduits, meeting SABS 1065 as amended specification and bearing the SABS mark. All conduits must be painted, inside and out, with smooth elastic enamel paint. No conduit may be less than 20mm in diameter.

25.2 Smooth-ended conductor conduits

Smooth-ended conduits may be used provided they meet the following requirements:

(1) They must meet SABS 1007 as amended standards and bear the SABS mark.

(2) They must be installed in accordance with the SABS code of practice 0142 of 1993 as amended

(3) The conduit is not used for earth continuity.

25.3 Galvanized conduits

All conduits subjected to weather, moisture, acid or harmful substances and gases must be galvanized.

Galvanized conduits must be hot-dip galvanized, inside and out, in accordance with SABS 763 as amended

25.4 PVC conduits

PVC conductor conduits may only be used if so specified and/or written approval is obtained from the Engineer.

PVC conduits must be installed strictly in accordance with the manufacturer’s instructions,and must meet SABS 950 as amended standards and bear the SABS mark.

25.5 Flexible conduits

Flexible conductor conduits must be used for the final connection of equipment at installations where equipment is often moved, for installation involving vibrating equipment and for any connections for which ordinary conduits are not suitable.

Flexible conduits must be connected to the rest of the equipment via a draw-box. Flexible conduits can also be connected directly to the end of a conduit if there is a draw-box within 2 meters of the connection and the flexible conduit can be easily rewired.

Flexible conduits must be PVC covered metal conduits or other approved type conduits. In ceiling spaces flexible galvanized steel conduits may be used. Coupling sleeves for these flexible conduits must be gland type or screw type manufactured from brass or cadmium/zinc plated mild steel.

Flexible conduits must be installed in accordance with SANS 10142 as amended, and must meet BS731 Part 1 as amended standards.

25.6 Conduit Fittings

All conduit fittings shall conform to SABS 1065 Part I and II. Conduit bushes shall be made of brass or nylon smoothly rounded at outlet; the threads shall be undercut to ensure that the bushes may be screwed fully home. Other conduit fittings shall be malleable cast iron with screwed entry spouts, finished hot-dip galvanized, serialized or black enameled according to the nature of the conduit run in which they are to be installed. No solid tees or elbows shall be used; all draw boxes and inspection fittings shall be provided with properly fitted covers secured by their full complement of screws.

26. CONDUCTOR CONDUIT INSTALLATION

26.1 General

The contractor must acquaint him of the positions of all equipment items such as cabinets, shelves working surfaces, etc., before he commences with conduit installation. The positions of switches and outlet sockets, as shown on the drawings are only approximate. The contractor must check that the final position of these switches and outlet socket points are not covered by the installation of the above items or are situated somewhere on connections between raw walls and outer wall finishes. No extras will be allowed for the moving of switches and outlet socket points resulting from the Contractor's neglect to check final position of equipment or type or wall finishing.

The conduit installation must be executed flush with the surface of the wall on the surface, above the ceiling in the roof space or in concrete slabs, depending on what is specified. Conduits must enter distribution boards from above, except where specified otherwise.

All conduits shall be bent cold by machine, any distorted conduits being rejected. All conduits exhibiting roughness or obstructions in the bore shall be rejected. All conduits shall be securely bonded to their terminating gear; complete electrical and mechanical continuity throughout every conduit run shall be ensured and each run shall be securely bonded to earth. The contractor shall collaborate with the engineer or its representative in testing the earth resistance of random runs of conduit.

26.2 Installation requirements

All conduits must be reamed and all joints must be screwed tightly to one another. Running joints with long screw threads may only be used to ensure an effectively strong mechanical and electrical continuous connection.

Where more than one outlet socket is connected to the same circuit, the conduits must be looped from the one outlet point to the other.

No wiring may be done until the whole conduit installation has been installed, fastened and inspected. No conductors may be drawn through before all foreign matter and moisture has been carefully removed from conduits. To ensure that conductors can be easily withdrawn from any circuit, the engineer retains the right to withdraw, at its discretion, any conductors from any circuit. If this withdrawal occurs easily and without any sign of damage, the costs of the withdrawal and replacement of conductors will be borne by the engineer. However, if the conductors are damaged, the costs of the test and the replacement of conductors will be borne by the contractor.

26.3 In open roof-spaces

In open roof-spaces the conduit from the distribution board must, if possible, end in a prefabricated sheet-steel draw-box, at least 1,2mm thick, which is situated near each distribution board in a roof-space of at least one meter free space.

Light and outlet socket circuits may be grouped separately in common conductor conduits from the distribution board to the draw-box.

The installation of conduits in open roof-spaces above ceilings must be executed before the walls and ceilings are painted. All conduits must be installed parallel and at right angles to roof trusses and they must be secured by saddles spaced not more than 1 250mm apart. Saddles may be attached to trusses with clout nails. Draw-boxes with metal cover-plates must be supplied, if necessary. Standard switch or outlet socket boxes are not acceptable for this purpose.

Draw-boxes must be installed near to gangplanks (where provided). All conduit draw-boxes in open roof-spaces must be so placed that wiring therein can be easily inspected. Inspection T pieces and elbows are not allowed.

Conduits ending in a roof-space of less than one metal free height must be lengthened, where necessary, to where there is adequate free height, but in such a case the shortest possible route may be followed. (In other words, it is not necessary to install these conduits parallel and at right-angles to the roof-trusses). In roof-spaces with a free height of less than one meter, installation must be done in such a way that all wiring can be done from below, as in the case of a concrete slab construction (loop method). All conduit ends for light points in open ceilings must be firmly braced.

26.4 Flush conduit installations

Where a flush installation is called for, all conduits shall be installed completely concealed within the building fabric; the outer faces of conduits in plastered walls shall not be less than 13mm back from the finished plaster surface. If required the Contractor shall do all chasing of brick and concrete surfaces, but shall first obtain the Architect's approval in writing for any chasing machines. The Contractor will build around flush conduits and shall ensure that such conduits and their terminating enclosures are accurately placed in time and shall verify that all enclosures are plumb, level and aligned with plaster at the time of building-in. The cost of any making good to structures and finishes necessitated by the Contractor's failure to comply with these requirements will be for the account of the Contractor.

Conduits set in concrete slabs or beams shall be firmly fixed in position before concrete is cast; where groups of conduit are brought to distribution board positions or the like, they shall be fixed with spaces between equal to one conduit diameter, to permit of an adequate fill of concrete. Conduits shall, as far as possible, be run in and through the neutral axes of slabs and beams. Conduit outlet boxes in slabs shall be bolted to shuttering with 5mm screws and nuts, to ensure accurate positioning. Conduits in hollow tile slabs shall be run only in the solid concrete portions of the slab, using back entry boxes; where large conduits in groups traverse such slabs, the Contractor shall seek permission for selected rows of tiles to be replaced by solid concrete.

Unless otherwise specified hereafter, every conduit crossing an expansion joint in concrete shall be provided with an outer sleeve of conduit two sizes larger, extending 150mm either side of the joint; the annular gaps at each end between conduit and outer sleeve shall be plugged to exclude concrete mix. All conduits traversing expansion joints in concrete shall be provided with stranded earth wires which shall be bonded to the first conduit boxes in the runs on each side of the joint.

Conduits in floor slabs shall be run wholly in the concrete and not in surface bends or fill. Steel conduits shall not be run in breeze or ash; if any conduits have to traverse such areas the Contractor shall ensure that they are completely encased in mass concrete provided specially for the purpose, or shall use non-metallic conduit.

The Contractor shall position conduit draw-boxes as inconspicuously as possible, selecting less important rooms, such as stores, tea kitchens and the like. Where practicable, suitably filleted multi circuit draw boxes shall be used, furnished with heavy gauge overlapping sheet steel covers enameled in colours to match the building finish. The Contractor shall agree to the positions of draw boxes in advance in collaboration with the Engineer or its representative. Where flush-mounted draw boxes, outlet boxes, or accessory boxes occur in plastered ceiling and walls, the Contractor shall provide a suitable slip-fit former in each box so that the plasterer may finish up to the box with a hard clean edge. When the plaster is dry the former shall be removed from the box and, after drawing in wiring, each box shall be provided with an overlapping blank cover plate finished in correct matching colour to approval.

The Contractor shall notify the Engineer immediately he commences conduit work on a deck and shall arrange for each deck to be inspected by the Engineer or its representative before concrete is cast, giving adequate notice to ensure that the inspection does not delay the Contractor's work.

26.5 Surface conduit installations

Where the installation is to be surface-run, conduits shall be installed strictly parallel to horizontal and vertical building lines. Wherever runs comprising several conduits in parallel have to be set, they shall be carefully bent by machine so that the bent conduits are concentric or coaxial as may be

applicable. Where draw boxes are required in such multi-conduit runs they shall be grouped in neat single-line staggered formations with cover plate securing screws readily accessible. Purpose-made multi-saddle bars shall be used for securing such runs, such that individual conduits may be removed and replaced without disturbing other conduits in the run.

Stand off saddles or multi-saddle bars shall be used to support all surface-run conduits: "Caddy" saddles are acceptable. All purpose-made supports shall be of steel or aluminium and shall be neatly finished, degreased and de-rusted, primed with one coat of calcium plum bate and finished with two coats of epoxy powder paint in colours to be approved by the Engineer. All surface-runs of black enameled conduits shall, after complete installation, be cleaned of all oil and grease, lightly sanded and finished with a touch-up coat of black enamel; the enamel shall be compatible with the maker's finish.

26.6 Conduits at terminal points

Conductor conduits must be fixed to switch boxes, outlet socket boxes and in distribution board boxes by means of two lock-nuts and one brass bush or one lock-nut and one brass sleeve nut.

All conduits, which terminate in switch boxes and outlet socket boxes and in distribution board boxes, must be fitted with brass bushes. Conduits to fluorescent light accessories must be attached to the light apparatuses by means of lock nuts and brass bushes.

PVC/SWA/PVC cables and conduit shall be connected to unthreaded metal enclosures by means of brass male bushes fitted inside the enclosures and connected through a coupler to the conduit; alternatively by means of inner and outer lock-nuts and female brass bushes. In all cases where the terminating enclosure is painted, the bushes shall embody earth terminals and earth wires shall be connected thereto.

26.7 Draw wires

Conductor conduits which are installed for other services or future extension, but which will not receive conductors immediately, must be fitted with galvanised or steel draw wires.

27. SWITCH BOXES AND OUTLET SOCKET BOXES

Flush-mounting boxes for housing electrical accessories and for use as Telecom outlets, etc., shall be general 100mm x 100mm x 50mm and 100mm x 50mm x 50mm metal boxes complying with the requirements of SABS 1085 Part 1 : 1980

The boxes must be made of heavy pressed galvanized steel at least 0,09mm thick. Boxes for a maximum of three combined light switches must be 100mm x 50mm x 50mm with one knock-out disc plate each on the top and bottom sides and two knock-out plates each on the left and right sides and on the back. Boxes for outlet sockets must be 100mm x 100mm x 50mm with two knock out disc plates each on all five the above-mentioned surfaces (top, bottom, sides and back). The knock out boxes must be hot-dip galvanized type boxes as stipulated in SABS 763 as amended

When these boxes are installed care must be taken to mount them square and with the front end of the boxes not more (deeper) than 10mm from the final surface.

28. COVER PLATES

Cover plates for switches and outlet sockets (including blank cover plates) must be made of rustproof metal at least 1,2mm thick. Paint finish must be baked enamel and the colour BSS 4-046, as amended, except where stipulated otherwise. Cover plates for switches and outlet sockets must meet SABS 1084 as amended standards.

Cover plates for insulation must be finished with white baked enamel paint, except where stipulated differently.

29. CONDUCTORS

Cables used for wiring the building must be 250 V grade PVC insulated cables. Heat resistant cables must be either asbestos insulated or heatproof PCP insulated (e.g. B.I.C.C. or other approved

type). Cables must not be old stock and must be delivered on site with their seals unbroken. PVC insulated conductors must meet SABS 150 and 1507 as amended standards and bear the SABS mark. Conductors for light circuits must be 1,5mm² and those for outlet socket circuits 2,5mm², unless specified otherwise.

Because of the distortion of insulating materials at temperatures above 57°C, PVC cables must not be directly attached to the terminal clamps of equipment such as stoves, geysers, built-in electrical heaters and any other electrical apparatus or equipment (including light accessories) of which the temperature exceeds 57°C.

30. CONDUCTORS IN CONDUITS

30.1 Wiring

Wiring may only be done after the conduit installation and plasterwork has been completed, but before painting commences. Except where stipulated otherwise, wiring must be drawn into screw-type conduits. No more than two circuits of the same type may be drawn into one conduit, with the exception of conduits between distribution boards and the steel draw-boxes (over distribution boards), where the number of circuits per conduit may be exceeded. Wiring of circuits must be executed for the loop system and no wires may be joined inside conduits. No more than four conductors will be allowed at any one light point. Cutting away of wire strands on the conductor side is not permitted.

30.2 Connection at outlet points

Connection of light accessories or other electrical apparatus, where connecting terminals are used, must be made by means of block type connecting terminals with brass connecting pieces, or the insulated steel spring type. Other types of connecting terminals will not be allowed. Inlet openings in light accessories must be fitted with brass input caps, where they are used as wiring inlets.

In light accessories fitted with light bulbs, the wiring between lamp holder and circuit connection must consist of heat resistant insulated conductors. The connection must be made in the 25mm space stipulated for this type of light accessory.

31. EQUIPMENT OF SWITCHBOARDS AND DISTRIBUTION BOARDS

Air circuit-breakers shall comply with IEC 157-1, shall be furnished with adjustable overload trips with adjustable time delays and shall be of fixed or draw-out construction with manual or motorized operation as called for in the Project Specification or the wiring schedules. The fault-breaking capacity of each breaker shall be certified by IEC test to be not less than the prospective fault levels marked on the wiring schedules. When used as main L.T. switches protecting transformers, they shall be submitted to the Supply Authority for trip testing.

Moulded case circuit-breakers shall comply with IEC 157-1 or SABS 156: 1987 as amended, shall be of fixed or draw-out execution as set out in the Project Specification. It shall have fault-breaking capacities certified by I.E.C. test to be equal to or greater than the prospective fault levels marked on the wiring schedules. Wherever possible circuit breakers shall bear the SABS mark.

Miniature circuit-breakers shall comply with SABS 156 : 1987 as amended and shall bear the SABS mark. The fault-breaking capacity of miniature circuit breakers shall be certified by SABS test to be not less than the values set out in the wiring schedules.

Current-limiting circuit breakers, suitably certified, are acceptable in all cases.

In general circuit-breaker overload trip systems of the thermal or hydraulic-magnetic types are equally acceptable. In cases where high ambient temperatures or widely varying extremes of ambient temperature are expected hydraulic-magnetic devices shall be preferred: alternatively thermal devices with ambient temperature compensation may be offered. Where circuit breakers have to sustain motor-starting currents and the like, circuit breakers shall be hydraulic-magnetic with appropriate tripping characteristics. Where described in the Project Specification as being for short-circuit protection only, the circuit breakers shall be supplied without overload trip devices.

Switches shall comply with the requirements of SABS 152: 1987 as amended and shall be capable of safely making onto fault currents of the magnitudes shown on the wiring schedules. Main switches of distribution boards shall additionally comply with the requirements of SABS 152: 1987 applicable

to switch-disconnecters. The main switches shall be rated for uninterrupted duty, other switches shall be rated for 8-hour duty: the utilization category shall in all cases be AC22. All switches and switch-disconnecters shall bear the SABS mark.

Energy meters shall comply with B.S. 5685: 1979 as amended and shall be of the appropriate class as required by the Supply Authority. The meters shall be mounted with adequate ventilation behind Perspex moulded inserts, such that the instruments may be read without opening the inner panels.

All instruments shall have engraved labels immediately adjacent to the Perspex viewers, stating the relevant multiplying factor to be applied and the particular circuit, which is being metered.

Indicating instruments shall be flush panel instruments to B.S. 89: 1977 as amended, first grade accuracy, with not less than 100mm dials. Current transformers shall be to B.S. 3938, of suitable grade and burden in each case. Current transformers shall be so mounted as to ensure adequate ventilation and easy replacement.

Earth leakage detector/trip units shall be single phase units of the passive type of 30 milli-amperes sensitivity or better, complying with the requirements of SABS 767: Part I : 1985, and shall bear the SABS mark. Each unit shall embody a switch-disconnecter or a circuit breaker as noted on the wiring schedules.

Time switches may be of synchronous or quartz type: synchronous switches shall embody a clockwork spring reserve of not less than 12 hours; quartz units shall embody 24-hour battery reserve with rechargeable batteries. Switching shall be achieved by adjustment of captive tappets on the periphery of the dials: switching intervals shall be 15 minutes on 24-hour dials and 2 hours on 7-day dials. The dial configuration required will be defined on the wiring schedules.

Other options such as solar dial movements can be used with the necessary approving. A by-pass switch shall be installed at each time switch to provide optional manual switching.

Sub-circuit loading shall of 16 ampere or higher rating as dictate lighting control switches. They shall in each case be mounted in a separate panel of the distribution board, suitably labeled.

Contactors and motor starters shall comply with SABS 1092 : 1993 and shall be rated to perform not less than 1 000 000 operations at the current ratings and duties quoted on the wiring schedules. They shall be so fixed as to ensure adequate coil ventilation. Starters and contactors shall comply with the detailed requirements set out later in this Specification.

Push-button control assemblies shall be chassis-mounted with the buttons protruding through snugly fitting holes in the inner faceplate. The buttons shall be colour-coded and engraved with legends distinguishing their functions. A label shall be fixed adjacent to each push-button assembly, defining what it controls.

Terminal blocks shall be of cage-clamp design mounted on General rails and provided with engraved snap-in plastic labels displaying the circuit numbers as given in the wiring schedules. The terminal block current ratings shall be at least equal to the circuit-breaker rating. Ample space shall be provided for incoming and outgoing cable tails and for access to cable and conduit terminations.

All switchboards shall be complete with all internal wiring to terminal blocks, labels, earth bars, neutral bars, statutory notices and everything necessary for complete equipment's ready to go into service.

The internal wiring of switchboards shall be done with colour-coded PVC-insulated stranded conductors and shall include all phase, neutral, earth and control wires between equipment and to terminal blocks. Wiring channels shall be made spacious enough to permit the easy passage of all circuit wiring with adequate spacing between different circuits to promote ventilation. All the wires of each circuit or sub-circuit shall be braided together with approved strapping and shall be so arranged as to permit any individual circuit to be examined or renewed without disturbing any other circuits Stranded conductors shall be terminated in crimped lugs of ferrules; manual crimping shall be done with makers' special tools which will not release until the full crimping pressure has been achieved; the ends of conductors from 50mm² cross-sectional areas upwards shall be crimped by hydraulic machine.

All labels shall be of plastic "sandwich board" material, the legends being engraved through the front plastic layer to the contrasting inner layer.

The lettering of legends shall not be less than 6mm high in sans-serif capitals; white lettering on black ground or black lettering on white ground shall be selected as necessary to ensure maximum

legibility and contrast with the switchboard finish. All labels shall be secured by at least two bolts or rivets per label and shall be accurately level and central over their subjects.

Bus bars shall be of copper or aluminium and shall comply with SABS 1195: 1978. Copper Bus bars shall be tinned after fabrication; the current ratings shall be those assigned by the Copper Development Association. Aluminium Bus bars shall be of bright finish; the current ratings shall be those assigned by Alcan Aluminium S.A. Ltd. Multiple bars shall be arranged with air gaps between the sections, equal to the section thickness. Insulating busbar supports shall be provided at intervals related to the prospective short-circuit fault currents, the following table being a guide for single-section Bus bars:

BUSBAR SECTION mm	**kA at 400 V FOR INSULATING SPACINGS OF**			
	450mm	**610mm**	**760mm**	**915mm**
25 x 9,5	29	21	17	14
40 x 9,5	47	35	27	23
50 x 9,5	55	47	39	33
75 x 9,5	61	53	47	43
100 x 9,5	67	58	52	47

Bell transformers shall be of the double-wound type, of capacity not less than 50VA on short-time rating, with secondary voltages as noted in the Project Specifications. Either one end or the center point of the secondary windings shall be securely bonded to earth, save in cases where the outgoing circuits feed into hazardous areas. The transformers shall be so mounted behind the inner faceplates of boards as to ensure adequate ventilation and cool running.

Ammeter and voltmeter selector switches shall be of flush-mounted type, rotary action, not less than 10 amperes contact rating.

Pilot light lamp holders shall be two-part construction, comprising a fixed chassis-mounted socket and a lens and bezel ring assembly fixed to the inner faceplate. For general “ON-OFF” indication neon discharge lamps of the appropriate voltage ratings shall be used in conjunction with faceted clear glass or plastic lens jewels. For more sophisticated indication systems, clear tungsten filament lamps shall be used in conjunction with facetted glass or plastic lens jewels of colours noted in the Project Specification.

Hour counters shall comprise miniature synchronous motors, operating cycle meter type dials displaying the number of whole hours for which the counters have been energized. The dials shall preferably be coupled to a hand operated reset-to-zero lever, and shall have a maximum reading of 99 000 hours.

The circuits, to which they are to be connected, if any, are noted in the Project Specification.

Cable sealing ends and glands shall be fixed to perforate metal gland plates or racks rigidly fixed in the boards and so positioned that terminating the cables is made easy.

32. LUMINAIRES

32.1 Luminaires identification

Lighting outlets are numbered on the drawings and provided with a type letter which, from the Key to Luminaires Types, defines the type of luminaires to be installed on each outlet: the absence of a letter reference indicates a blanked outlet. The numbering of the outlets defines the circuitry and control required.

32.2 Incandescent luminaires

Luminaires for incandescent lamps shall comply with the relevant requirements of BS4533 and shall be clearly marked with the maximum wattage of lamp to be used. All internal wiring shall be silicone-rubber-insulated or other approved heat-resisting conductors. Incandescent lamps must be the

frosted type and meet SABS 56 standards, bear the SABS mark and be suitable for voltage of 250 Volts.

32.3 Discharge luminaires

Luminaires for discharge lamps other than tubular fluorescent lamps shall comply with SABS 1278: 1991. The ballasts shall comply with the requirements of SABS 1266/1267: 1979.

All luminaires shall embody power factor correction to at least 0,9 lagging: capacitors shall comply with SABS 1250: 1991.

32.4 Fluorescent luminaires

Luminaires for tubular fluorescent lamps shall comply with SABS 1119: 1976 as amended.

The fitting must consist of a ventilated body made of cold-rolled steel plate with a minimum thickness of 0,8mm. The body must be reinforced to prevent warping and must be able to carry the weight of the whole fitting when it is suspended.

The body of the fitting must be designed to house the control apparatus, wiring, lamp holders and where applicable, the light diffusers. It must be possible to reach the control equipment without removing the fitting or undoing the wiring.

Except for mounting holes and/or ventilation slots the back part of the body must be closed and fully fitted with knockout disc plates for connections. All components must be corrosion resistant.

Fittings must be fully wired internally. Conductors must be protected by grommets where they pass through holes in the body. The insulation of conductors must be able to withstand the internal heat of the body without distortion. Conductors must come together at a suitable junction block and no joints in the wiring are permissible.

Telescopic spring-loaded holders must be used.

All ballast's shall comply with the relevant requirements of SABS 890/891: 1977, as amended; the type of control ballast required is specified in the Key to Luminaires Types in the Detail Specification. Where low noise level control gear is called for in the Detail Specification the ballast's, etc., shall be certified to have a sound power level not exceeding 17 dbA when tested to SABS 0191 - 0197: 1984.

Except in the case of luminaires with dimming ballasts, the overall power factor of the luminaires shall be corrected to 0,95 lagging: capacitors shall comply with SABS 1250: 1991.

Starters shall comply with BS 3772: 1981. Lamp holders shall be securely fixed and shall not flex when the lamps are inserted: telescopic lamp holders shall be used whenever possible.

32.5 Lamps

Each luminaire shall be furnished with the required number of lamps of the appropriate type, wattage and colour as specified in the Key to Luminaires Type References or as implied by the catalogue number of the luminaires specified.

Tubular fluorescent lamps for general service shall comply with the requirements of SABS 1041: 1992 as amended. Unless specified to the contrary they shall be Colour 21 to SABS 1041.

Incandescent lamps for general service shall comply with the requirements of VC 8043: 1992 as amended.

33. INSTALLATION OF LUMINAIRES

All light points must be mounted symmetrically on the ceiling with proper consideration being given to the ceiling squares and/or brandering. The positions of light points as indicated on the plans, are only approximate and the contractor must determine the final positions of light fittings on site in collaboration with the Electrical Engineer or his representative, if any doubt exists concerning actual outlet points. Light fittings must be mounted in such a way that they can easily be completely removed. Fluorescent light fittings must be attached to ceilings with no gaps appearing between the fittings and the ceiling. On ceilings with open roof-spaces above, fluorescent fittings must be bolted to 50mm x 70mm wooden beams, which are attached to the ceiling beams. The contractor must

arrange for the above-mentioned wooden supports to be installed and the onus is on him to see that the work is satisfactorily done.

All luminaires shall be fixed strictly level or plumb as apposite, parallel to building lines. Steel set screws shall secure Luminaires fed from 2-hole outlet boxes directly thereto: fluorescent luminaires fixed near each end. Two pairs of such screws, permitting accurate leveling shall fix fluorescent luminaires more than 200mm in width.

Luminaires recessed in concrete shall have their outer casings cast into the carcass concrete or grouted therein, the inner assemblies being fixed to the outer casings and accurately aligned to the ceiling soffit.

Luminaires recessed in non-structural ceilings shall be fixed to ceiling brandering or tracks by means of self-leveling sliding or screw lugs; only if this means be impracticable shall the luminaires be side-screwed into brandering.

Luminaires mounted in pairs or in continuous rows end-to-end need only have one outlet per row; from which sub-circuit wiring and earth wire shall be extended through the raceways of continuous luminaires, neatly clipped along one side of the raceways. Luminaires so mounted shall be coupled together by bolts and nuts with shims and washers, such that the alignment in rows is accurate and permanently maintained. At each joint between luminaires the end of the raceways shall be drilled and chassis-punched, and provided with through going bushed nipples for sub-circuit wiring.

The lamps and diffuser assemblies of fluorescent luminaires shall only be installed immediately before final testing, so that a completely clean lighting installation is handed over. Gloves shall be worn when handling the polished reflector assemblies of low brightness luminaires; gloved hands are recommended for handling plastic diffusers to minimize the accumulation of dust due to static electricity.

Suspended fluorescent fittings must be hung by means of two rods (with lengths as specified) attached to a single roof truss.

Except where specified otherwise, suspended bulb-type fittings must be mounted with the lowest part of the glass not lower than 2 400mm above the finished floor surface.

34. LUMINAIRES OUTLETS

Outlets for luminaires shall be provided throughout the contract as scheduled and shown on the drawings. They shall in general be 60mm diameter 2-hole B.S.I. conduit boxes, deep pattern in concrete slabs and shallow pattern in normal flush and surface installations. Outlets for luminaires shall be wired by means of 1,5mm² PVC insulated copper conductors and a 2,5mm² earth conductor in 20mm diameter conduit.

Luminaires outlets for fittings recessed in concrete or brickwork shall be made with conduit locknutted and bushed to the outer enclosures of the fittings.

Outlets for fittings recessed in ceiling voids shall be unswitched 5 ampere 3-pin socket outlets set in steel boxes, with properly bounded earth pins; they shall be fixed in the ceiling void, clear of the fittings but immediately accessible on removal of the fittings.

Outlet boxes for future fittings, not presently equipped, shall be provided with overlapping blank cover plates, finished in baked enamel to match the surround. Such future outlets need not be wired; if wiring has to pass through the outlet boxes, however, sufficient slack shall be left in each box to permit of future connections being made.

Unless otherwise shown or specified outlets for bracket lights shall be taken for tendering purposes to be 2,2m above finished floor or landing level. Confirming data will be issued to the successful tenderer, who shall be responsible for seeking confirmed positions in good time before erection of walls concerned. Failure to obtain confirmation of positions will result in all costs of repositioning and making good being debited to the contractor.

Connection of light accessories, where connecting terminals are used, must be made by means of block type connecting terminals with brass connecting pieces, or the insulated steel spring type. Other types of connecting terminals will not be allowed. Inlet openings in light accessories must be fitted with brass input caps, where they are used as wiring inlets.

In light accessories fitted with light bulbs, the wiring between lamp holder and circuit connection must consist of heat resistant insulated conductors. The connection must be made in the space stipulated for this type of light accessory.

35. LIGHT SWITCH OUTLETS

Switches shall be provided throughout the installation for the control of lights and other single-phase loads. These switches must be of the best-approved tumbler, micro-gap type. All switches must have a rating of 16 amps and be suitable for a voltage of 220/250 volt. Switches must have covered terminals for safe wiring and the contacts must be made of silver material. Switches must be so installed that the tumbler movement occurs on a vertical plane. All switches must meet SABS 163, as amended standards and bear the SABS mark. Where used for switching fluorescent or discharge lamp loads they shall either carry the manufacturer's endorsement that they are suitable for such service or comply with the requirements of BS 3676 category "X".

Flush switches shall be mounted in flush boxes to SABS 1085 Part I : 1980 and furnished with overlapping cover plates to SABS 1084 : 1976, metal unless otherwise specified; the colour finish to metal plates must be confirmed before ordering. A single outlet box shall not accommodate more than two switches; double or larger boxes shall be used for groups of more than two switches.

Surface-mounted switches shall be housed in metal or polycarbonate enclosures with integral protection for the switch toggles.

Weatherproof switches shall preferably be of all-plastics construction with toggles operated through flexible transparent panels, "Busch-Jaeger" or equal. The degree of protection shall be at least IP55.

Unless approved otherwise, light switches must be installed next to doors on the lock side of the door at a height of 1 400mm. Where the lock position is not indicated in drawings, the position thereof must be determined before switch boxes are installed.

Where the lower part of a wall consists of face bricks and finishing of the upper part of plaster, switches must be installed in the plastered surface provided that the lower edge of the plaster finish does not exceed a height of 1 500mm above the finished floor level.

Switches shall be flush-mounted in 100mm x 50mm x 50mm wall boxes and surface-mounted in 128mm x 78mm x 35mm extension boxes with 2,5mm2 PVC insulated copper conductors in 20mm diameter conduit.

36. PHOTO-ELECTRIC SWITCHES

This unit must consist of a photocell, thermal starter and switch. The body of this unit must be manufactured from strong material to protect it against tampering, and it must also have good anti-weathering features; it must be capable of withstanding ultra-violet rays and long periods of exposure to the sun.

The unit must be a wall-mountable type and it must be fitted with a suitable mounting frame. The unit must be mounted over a 60mm (diameter) round draw-box of which the lid must be fitted with a grommet to protect conductors entering the draw-box. The unit must be installed in such a way that it is not activated by any of the other light fittings.

The unit must be pre-set in the factory so that it will switch on at an illumination level of approximately 54 Lux and switch off again at 108 Lux. A time delay of at least 15 seconds must be provided for to prevent the switch from being activated by lightning or other brief changes in the illumination level.

37. SOCKET OUTLETS

All outlet sockets must be high quality standard three-pin type outlet sockets and they must be installed with the control switch or circuit breaker in one box under a common cover plate, except where specified otherwise. The switch must be a tumbler micro-gap type switch. The outlet socket and switch must have a 16 Amp rating and be suitable for a voltage of 220/250 volts. Outlet sockets must meet SABS 164 and 1514 standards and bear the SABS mark. The switches must meet SABS 163, and the circuit breakers SABS 156 standards and bear the SABS mark. Socket outlets shall be shuttered units complying with the requirements of BS 1363.

Outlet socket assemblies shall be mounted in boxes to SABS 1085 and furnished with overlapping steel cover plates to SABS 1084. The engineer or its representative shall confirm the colour finish of the plates before ordering.

Surface-mounting socket outlet assemblies shall be housed in 128mm x 128mm x 35mm extension boxes and industrial type enclosures, metalled or of polycarbonate material, incorporating protection for the switch or circuit breaker toggles.

Lighting switches and all socket outlet assemblies in the same building shall be of the same manufacture, type and colour finish.

Each socket outlet is generally shown on the drawings with a symbol indicating the type and the height of the outlet above finished floor level. If no dimension is given, a written directive shall be obtained from the engineer before positioning the outlet.

Where the lower part of a wall has a face brick finish and the top part is plastered, outlet sockets must be mounted in the plastered surface, provided that the bottom edge of the plaster finish does not exceed a height of 500mm above finished floor level.

Switched socket circuits shall be wired by means of 4mm² PVC insulated copper conductors and a 2,5mm² earth conductor in 20mm diameter conduit unless otherwise specified. Unswitched sockets in ceiling voids and wall-mounted types for extractor fans shall be wired by means of 2,5mm² PVC insulated copper conductors and a 2,5mm² earth conductor.

All switched socket circuits shall be protected by means of earth leakage units in the distribution boards.

In certain instances unequipped boxes for future switch socket outlets may be called for. Such outlets shall comprise flush boxes only with bushed conduits, the boxes being furnished with blind yokes and blank overlapping cover plates matching the plates of equipped outlets. The boxes shall be mounted at exactly the same height as adjacent switch socket outlets; the blank plates shall be brought to these outlet boxes if required for looping purposes, in which case sufficient slack wire shall be left to allow of easy connections to the future outlet assembly.

38. COMMUNICATION FACILITIES

The contractor shall provide all facilities for telephone and data line installations by others as shown on drawings.

The telephone connection, telephone outlet box and telephone outlet points must be supplied and installed in accordance with Telkom directives.

The main intake shall be a sleeve not less than 100mm diameter for an underground cable connection and a conduit less than 40mm diameter for an overhead service. Sleeves and conduits shall encompass only easy sweeping bends.

Communication sleeves run underground shall be at 600mm below finished ground level; in general the sleeves of steel, asbestos cement, PVC and pitch-fibre, but sleeves under roads shall in all cases be of steel. Manholes shall be 900 x 900 x 800mm deep with weatherproof covers.

The manholes must be sturdy brick structures built by a qualified bricklayer. The manholes must be plastered on the inside and a steel frame and lid must be firmly fixed to the top. The steel lid must seal the manholes against water penetration and must be flush with the final surface of the ground. The sleeve pipes must terminate inside the manhole just above the floor of the manhole which floor must be of concrete. The manhole on the boundary of the stand must be fitted with a 100mm-diameter sleeve pipe up to the outside for the coupling of Telkom's cable.

Install a 450mm x 450mm x 150mm deep telephone inlet box 1400mm above the skirting board as shown on the drawing. This box must have a door with a catch, which closes neatly in the frame of the box. The box must be acceptable to TELKOM.

Telephone inlet boxes shall be constructed in accordance with the foregoing requirements for distribution boards, save that they do not incorporate inner faceplates. The panel of each strip box shall be furnished with a rear liner of 25mm timber.

Telephone outlet points must consist of 100mm x 100mm x 50mm flush-mounted wall boxes. Relative connections between outlet points must be as indicated on the drawings and must be done with 25mm diameter conduits. Draw-boxes must be fitted at distances of not more than 9 metres in straight lengths and at each bend. Sharp bends in conduits are not permissible. All conduits must be fitted with galvanized steel draw wires with an extra length of 300mm rolled up in each box. Outlet and draw boxes must have blank metal cover plates.

Outlet boxes must be manufactured from 1,6mm (minimum) thick plate steel and they must meet TELKOM specifications.

39. LIGHTNING PROTECTION INSTALLATION

Supply, install and test a complete lightning protection installation comprising of flush conduits, aluminium conductors, PVC conductors, test joints, earth electrodes etc; as shown on the drawings.

The contractor shall employ a specialist sub-contractor to install the lightning protection system to the buildings complying with the latest requirements of SABS 03 and 03A as amended.

Where down conductors are required, they must meet the requirements mentioned below.

The conductors must consist of 35mm² stranded copper conductors carried from the earth electrode up to the test joint by means of a 25mm diameter PVC conduit that must be flush-mounted.

The top part of the down conductor must consist of electrical aluminium alloy conductor wire with a minimum cross-section area of 30mm² or solid 8mm diameter aluminium must be attached to the structure, at maximum intervals of 1500mm, using aluminium alloy fasteners or other approved fasteners.

This conductor must be installed in a flush-mounted 25mm diameter PVC conduit from the test joint to just under the roof over-hang.

Down conductors shall terminate in the test joints and be bolted onto the earth electrode conductors by means of two (2) x 6mm galvanized nuts and bolts.

Test joints shall consist of flush-mounted 100mm x 100mm x 50mm deep galvanized boxes mounted at 2,2 meters above finished floor level.

Provide 100mm x 100mm manufactured special steel covers with the engraved wording;

"LIGHTNING PROTECTION TEST JOINT"

Any labeling glued onto boxes will not be acceptable.

The contractor is reminded that where different materials are connected to one another, as described above, the SABS code of practice stipulations as prescribed must be strictly adhered to.

Earthing electrodes will be extensible vertical 16mm diameter rod type electrodes, made of either copper (only for soft soil) or copper-clad steel or phosphor bronze. Where copper-clad steel rods are used, the two metals must have an interlocking crystal coupling between them to prevent moisture penetration. Where it is necessary to joint the two rods to each other, a corrosion-proof non-ferrous coupler must be used which prevents moisture from penetrating the joint.

Earth electrodes must be installed in positions as indicated on the drawings, must be at least 1200mm long and have the top point of the electrode 500mm below ground level.

For tendering purposes, allow four (4) additional electrodes, the final amount will be determined on the results of the earth resistively tests done on site.

Connections between earth electrodes, gutters and metal constructions shall be installed as shown on the drawings. The termination of conductors shall consist of crimped lugs bolted to the gutters and roofs by means of two (2) x 6mm diameter-galvanized nuts and bolts.

Arrange for soil resistively tests to be carried out at each electrode point so that the number of earth electrodes can be determined and the depths at which they must be installed. These results shall be submitted to the Consulting Engineer for checking and determining the outcome thereof.

No additional materials shall be installed regarding the test results without the written approval of the Engineer.

After this section of the installation has been completed, the contractor must execute the necessary tests, as prescribed by the Engineer and hand the certificate concerned to the Engineer.

Although this document refers in various places to aluminium or aluminium alloy conductors, the tenderer is allowed to use alternative conductor materials. However, in all cases the cross-section surface of these alternative conductors may not be smaller than the specified dimensions. In addition, all directives in respect of joints to non-similar materials must be adapted accordingly.

The contractor will allow for all scaffolding, which he may need to execute his work.

SCHEDULES

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SCHEDULES

The schedules must only be completed insofar as the equipment and materials required for this particular contract are concerned.

If these schedules are not properly completed by the Bidder, his bid document will be regarded as incomplete.

Where types, etc. are filled in below and these do not comply with the Specification, this must be specifically pointed out by the Bidder. Filling in of types, etc. below does not, if they do not comply, signify that they are acceptable or will be accepted.

1. WIREWAYS AND ACCESSORIES

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
Conduit : Bosal	
PVC	
Flexible steel	
Flexible PVC	
Sleeves : PVC	
Upvc	
Cable Trays	
Power skirting	
Flush ceiling mounted wire way services trunking	
Surface ceiling space mounted wire way trunking	
Wall-mounted bed head aluminium wire way trunking ■Single Compartment ■Three Compartment	

2. CABLES, CONDUCTORS AND ACCESSORIES (LV)

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
PVC Conductors	
PVC PVC SWA PVC cables	
PVC PVC SWA PVC cable through joints	
Cable glands	

3. CABLES, CONDUCTORS AND ACCESSORIES (HV)

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
6.350/11kV PILSTC high voltage cable	
22kV PILSTC cable box terminations compound	
22kV PILSTC outdoor (Heat/Cold) shrink seal terminations	
22kV PILSTC cable through joint	

4. ELECTRICAL WIRING ACCESSORIES

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
Outlet Boxes : Steel	
PVC	
Cover plates	
Draw boxes	
Light switches: Recessed	
Surface mounted	
Dimmer	
Weatherproof	
Aluminium trunking Mounted (Bed head)	
Key-operated	
16 Ampere, 3-pin domestic type switch socket outlets	
16 Ampere, 3-pin & 2-pin combination type switch socket outlets	
16 Ampere, 3-pin ‘dedicated’ switch socket outlet	
16 Ampere 3-flat pin switch socket outlet	
16 Ampere, 3-pin double-pole ‘Ironing’ type switched socket outlet	
16 Ampere, 3-pin weatherproof (IP 65) switched socket outlets	
PVC wall-mounted power skirt switched socket outlets	
16 Ampere, 3-pin double pole switched socket outlets (Bed head Aluminium trunking mounted)	
5 Ampere, 3-pin un switched socket outlets	
Combination 20 Ampere double pole switch and cord outlet unit.	
Flush isolators: Single phase	

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
Three phase	
Surface mounted isolators:	
Single phase	
Three phase	
Three phase weatherproof	

5. DISTRIBUTION BOARDS AND EQUIPMENT

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
Voltmeters	
Ammeters	
kWh meters	
kVA meters	
Power factor meters	
Selector switches	
LV current transformers	
Voltage transformers	
LV main distribution panel	
LV distribution board	
Sub-distribution boards	
Air circuit breakers (ACB)	
Moulded case circuit breakers (Mccb) :	
Small frame	
Large frame	
Photo-electric switch	
Time switches	
Manual bypass switch	
Starters	
Contactors	
Relays	
Push buttons	
Indicator lights	
Earth leakage relays	
Panel selector switches	

6. LUMINAIRES

TYPE	SUPPLIER AND CATALOGUE NO.
F2	
F2.1	
B1	
B2	
B3	
B4	
A1	
A2	
A4	
A4	
Exit	

7. MISCELLANEOUS ITEMS : (Bidder to specify others in blank spaces below)

EQUIPMENT AND MATERIAL	DESCRIPTION AND MAKE
Earthing clips	
Telephone boards	
Isolation transformers	
Line isolation monitors	
Manhole covers	
Distribution transformer	

REGISTRATION AS AN ELECTRICAL CONTRACTOR

The contractor is responsible for the completion and submission of the required application forms, in respect of registration, to the particular supplying authority. A copy of the registration form must be forwarded to the Engineer or its representative as soon as possible after the contract has been allocated. The electrical installation may not commence before the registration certificate and proof that the particular electrician is registered as an installation electrician has been received.

The successful tenderer/electrical sub-contractor must be registered as an Electrical Contractor with the Electrical Contracting Board of South Africa, with the Workmen's Compensation Commissioner and the Unemployment Insurance Commissioner to qualify for this contract.

The successful tenderer must complete the following questionnaire and submit it to the Engineer before any work is commenced.

THE TENDER MAY NOT BE CONSIDERED UNLESS ALL THE NECESSARY INFORMATION HAS BEEN SUBMITTED.

Has the company been registered as an electrical contractor with the Electrical Contracting Board of South Africa?.

YES	NO

Registration No.: .....

Date of issue : .....

Has the company been registered with the:

1. Department of Manpower?

YES	NO

Registration No.: .....

Date of issue : .....

2. The Workmen's Compensation Commissioner?

YES	NO

Registration No.: .....

Date of issue : .....

The Unemployment Insurance?

YES	NO

Registration No.: .....

Date of issue : .....

I/We certify that the above information is correct and undertake to comply with the provisions in Regulation 4(2) and 6(1) of Government Notice R2920 of 23 October 1992 promulgated under Section 35 of the Occupational Health and Safety Act, No. 85 of 1993.

SIGNATURE OF CONTRACTOR: .....

DATE: .....

NAME OF CONTRACTOR: .....

ADDRESS: .....

.....

.....

Regulation (4) 2 reads as follows:

CONSTRUCTION
Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out and no person shall allow such work without such control.

Regulation 6(1) reads as follows:

COMMENCEMENT OF AND PERMISSION TO CONNECT INSTALLATION WORK
No person shall commence with installation work which would require a new electricity supply or an increase in electricity supply capacity unless the supplier has been notified thereof in the form of Annexure 2 : Provided that the supplier may waive this requirement in respect of such types of work as he may specify.
(In your own interest you are advised to obtain a copy of Government Gazette No. 9968 of 11 October 1985 from the Government Printer in Pretoria).

INFORMATION ON PREVIOUS CONTRACTS

Contractors are requested to give information on at least three contracts recently successfully completed, or presently being executed by them. The contracts must at least be similar to this installation with respect to type and size of location. This information will be used when tenders are considered.

NAME OF CLIENT AND DESCRIPSION OF WORK	NAME OF CONSULTANT	AMOUNT OF CONTRACT R c	DATE OF COMPLETION

....

SIGNATURE OF CONTRACTOR **DATE**

SCHEDULE OF STAFF AND WORKERS

The Contractor must insert in the space below, details of staff and workmen he intends employing on the contract. The Bidder must fill in the various categories e.g. plant operators, clerks, laboratory assistants, etc. as required.

CATEGORY	NUMBER

Specify the name, qualifications and experience of the site agent

_____

_____

Specify the name, qualifications and experience of the contract manager

_____

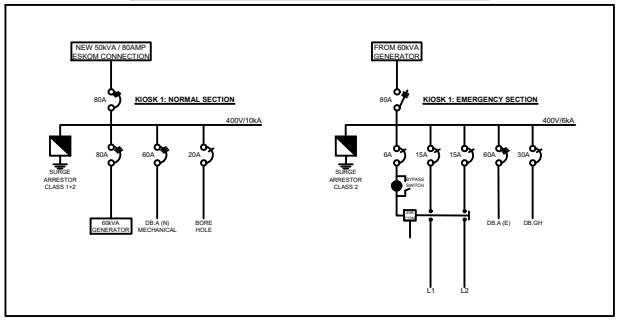
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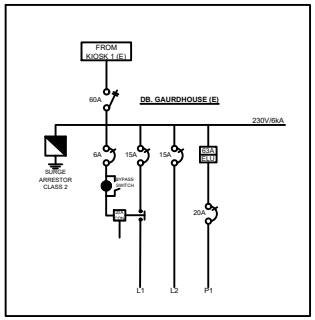
_____ _____

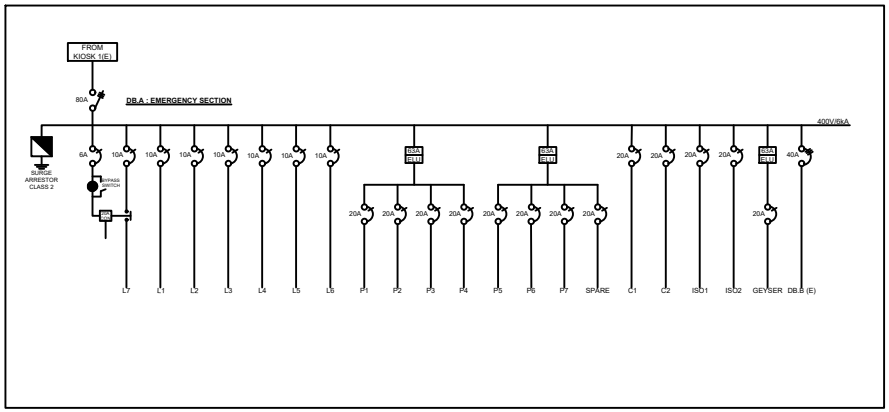
SIGNED ON BEHALF OF CONTRACTOR **DATE**

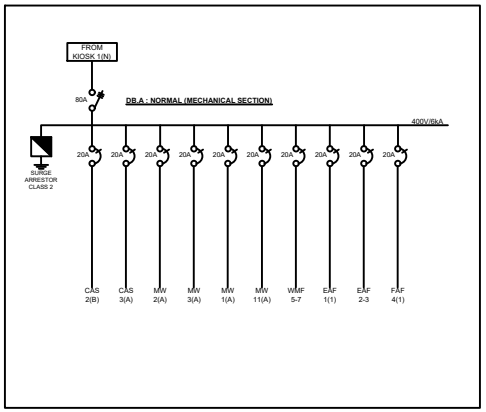
DATE	REV.	DESCRIPTION
00-JAN-0000	0	

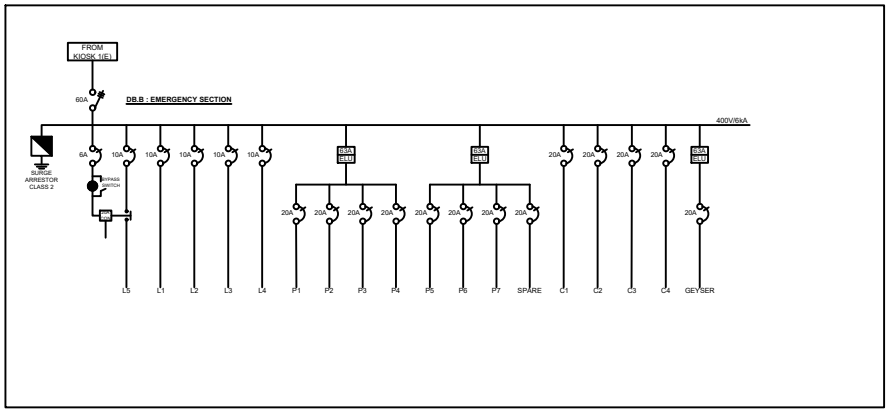
KIOSK 1: NORMAL & EMERGENCY SECTION

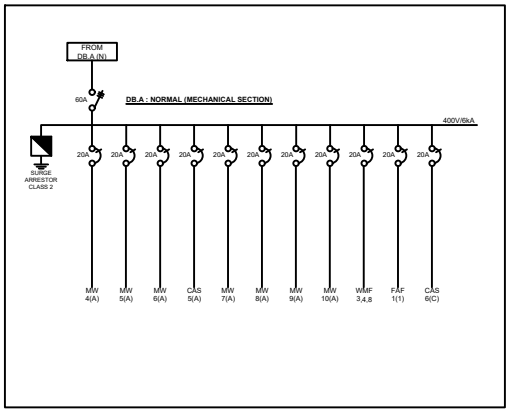












CONCEPT DRAWING	TENDER DRAWING	CONSTRUCTION DRAWING	AS-BUILT DRAWING
☐	☐	■	☐

PROJECT NOTES

GENERAL NOTES

LEGEND

CONSULTING ENGINEERS

CONSULTINGENGINEERS
39 Brebner Street
Westdene 9301
TEL:+27 (0)51 403 8596
FAX:+27 (0)51 430 1776
e-mail: admin@fceconsultingengineers.co.za

PROJECT TITLE

GLENRED PHC:
ADDITIONS & ALTERATIONS TO REMAINDER OF GLENRED 510 NORTHERN CAPE

CLIENT DETAILS

Province of the NORTHERN CAPE
Department of Health

CLIENT APPROVAL

DRAWING DESCRIPTION

SINGLE LINE LAYOUT

DESIGN	CHECKED	SCALE	DRAWN	DATE
CS. ESTERHUYSEN Pr Tech Eng: 200970285	CS. ESTERHUYSEN Pr Tech Eng: 200970285	N.T.S	R.M	FEB 2023

PROJECT NUMBER	DRAWING NUMBER
EE1311B	6E

Drawing Issue Register

39 Brebner Street
Westdene Bloemfontein
Tel : (051) 403 8696
Fax : (051) 430 1776
e-mail/e-pos :stefan@fceconsultingengineers.co.za

CONSULTINGENGINEERS

Project: LEGOBATE PHC

Project Number: EE1311

Project Director: CS ESTERHUYSEN

Drawing Number	Size	Description	Scale	ISSUED FOR AND REVISION NUMBER	Issue Date: 05/07/2024
EE1311C-01E	A1	LV Reticulation & Sleeve Layout	1:100		C0
EE1311C-02E	A1	Light Layout	1:100		C0
EE1311C-03E	A1	Power Layout	1:100		C0
EE1311C-04E	A1	Fire Detection & Lightning Protection	1:100		C0
EE1311C-05E	A1	Mechanical Layout	1:100		
EE1311C-06E	A1	Single Line Diagrams	1:100		C0

Issued to:				# COPIES
Project Manager				
Architect				
QS				
Electrical Engineer				
Main Contractor				E
HVAC Sub Contractor				
Electrical Sub Contractor				

Issued for: A=Approval; I=Information; C=Construction; O=coOrdination; T=Tender

Issue Type: P=Paper; E=Electronic

DATE	REV	DESCRIPTION
15-02-2023	1	UPDATE MECHANICAL EQUIPMENT AND OMIT WAITING AREA AIR CONDITIONING

PROJECT NOTES

GENERAL NOTES



TYPE 1: LOGOBATE PHC
FLOOR PLAN
Scale 1:100

NORTH

EQUIPMENT SCHEDULE

AC SIZE SCHEDULE	
(A)	12 000 BTU
(B)	18 000 BTU
(C)	24 000 BTU
(D)	36 000 BTU
(E)	48 000 BTU
(F)	60 000 BTU

FAN SCHEDULE	
(1)	435 L/s @ 200Pa
(2)	150 L/s @ 250Pa
(3)	235 L/s @ 250Pa
(4)	50 L/s @ 150Pa
(5)	

RAG/SAG SCHEDULE	
(1)	1195 x 595
(2)	595 x 595
(3)	1144 x 68 (OPENING SIZE)
(4)	500 x 350 (OPENING SIZE)
DETAIL	
(HG)	HINGED GRILL COMPLETE WITH 50MM PLEATED FILTER
(PL)	GRILL COMPLETE WITH PLENUM BOX & SPIGGOT

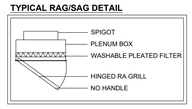
W/L SCHEDULE	
(1)	500 x 400

ELECTRICAL LOADS

AC EQUIPMENT ELECTRICAL SCHEDULE	KW	PH	V
(A) 12 000 BTU	(1.2)	1	220-240
(B) 18 000 BTU	(2.0)	1	220-240
(C) 24 000 BTU	(2.4)	1	220-240
(D) 36 000 BTU	(3.6)	3	380-415
(E) 48 000 BTU	(5.0)	3	380-415
(F) 60 000 BTU	(6.0)	3	380-415

FAN EQUIPMENT ELECTRICAL SCHEDULE	KW	PH	V
(1) 435 L/s @ 200Pa	(1.0)	1	220-240
(2) 150 L/s @ 250Pa	(1.0)	1	220-240
(3) 235 L/s @ 200Pa	(1.0)	1	220-240
(4) 50 L/s @ 150Pa	(1.0)	1	220-240
(5)			

TYPICAL RAG/SAG DETAIL



EQUIPMENT QUANTITY's

UC	(D)	= 2
CAS	(A)	= 1
	(B)	= 1
	(C)	= 1
MW	(A)	= 11
HA	(E)	= 0
FAF	(1)	= 2
	(3)	= 1
EAF	(1)	= 1
	(2)	= 1
WMF	(1)	= 1
	(3)	= 0
	(4)	= 5

LEGEND

SYMBOLS: TOP VIEW

UC	SPLIT, UNDER CEILING INDOOR UNIT
CAS	SPLIT, CASSETTE INDOOR UNIT
MW	SPLIT, MIDWALL INDOOR UNIT
HA	SPLIT, HIDE AWAY INDOOR UNIT
RAG	RETURN AIR GRILL
SAG	SLOT
OU	SPLIT, OUTDOOR UNIT
FAF	FRESH AIR FAN
SAG	FRESH AIR GRILL
EAF	EXTRACTION AIR FAN
RAG	EXTRACTION AIR GRILL
WMF	WALL MOUNTED EXTRACTION AIR FAN
W/L	WEATHER LOUVRE

SYMBOLS: SECTION VIEW

UC	SPLIT, UNDER CEILING INDOOR UNIT
CAS	SPLIT, CASSETTE INDOOR UNIT
MW	SPLIT, MIDWALL INDOOR UNIT
HA	SPLIT, HIDE AWAY INDOOR UNIT
RAG	RETURN AIR GRILL
SAG	SLOT
OU	SPLIT, OUTDOOR UNIT
FAF	FRESH AIR FAN
SAG	FRESH AIR GRILL
EAF	EXTRACTION AIR FAN
RAG	EXTRACTION AIR GRILL
WMF	WALL MOUNTED EXTRACTION AIR FAN
W/L	WEATHER LOUVRE

CONSULTING ENGINEERS

FCE CONSULTING ENGINEERS

39 Brebner Street
Westdene 9301

TEL:+27 (0)51 403 8596
FAX:+27 (0)51 430 1776
e-mail: admin@fceconsultingengineers.co.za

PROJECT TITLE

GLENRED PHC:
ADDITIONS & ALTERATIONS TO REMAINDER OF GLENRED 510
NORTHERN CAPE

CLIENT DETAILS

Province of the NORTHERN CAPE
Department of Health

CLIENT APPROVAL

DRAWING DESCRIPTION

HVAC LAYOUT

DESIGN

CB MARAIS
Pr Tech Eng: (Mech)

CHECKED

CB MARAIS
Pr Tech Eng: (Mech)

SCALE	DRAWN	DATE
1:100	J.M	OCT 2022

PROJECT NUMBER	DRAWING NUMBER
EE1311C	1M

CONCEPT DRAWING	TENDER DRAWING	CONSTRUCTION DRAWING	AS-BUILT DRAWING
☐	■	☐	☐

Summary - Mechanical Services: HVAC

Company Turnover:

.....

Last three related projects:

1.) .....

2.) .....

3.) .....

Project Manager (Name, Qualification and Experience)

1.) .....

2.) .....

3.) .....

Head Technician (Name, Qualification and Experience)

1.) .....

2.) .....

3.) .....

Equipment Schedule - Air Conditioning & Ventilation Systems

Item No	Description	Details
	Air Conditioning Equipment - Ducted Split	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Sound Attenuators	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Diffusers and Slot Diffusers	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Flexible Connections	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Supply air and Return Air grilles	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Copper Piping and Armaflex	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Electrical and Screen Cabling	
	1. Manufacturer:	

FCE CONSULTING ENGINEERS
TEL: 051 403 8596

Equipment Schedule - Air Conditioning & Ventilation Systems

Item No	Description	Details
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Air Conditioning Equipment - Ducting Systems & FRK	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Ventilation Fans - Toilet Extraction	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Ventilation Fans - Fresh Air Systems	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	Ventilation Fans - Smoke Extraction	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	

Equipment Schedule - Air Conditioning & Ventilation Systems

Item No	Description	Details
	Ventilation Weather Louvre	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	

FCE CONSULTING ENGINEERS
TEL: 051 403 8596

Equipment Schedule - Air Conditioning & Ventilation Systems

Item No	Description	Details
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	
	1. Manufacturer:	
	2. Warranty:	
	3. Model Number:	
	4. Installed and Commissioning by:	

C4 SITE INFORMATION

C4.1 Site Information

2) DESCRIPTION OF THE WORKS

1.1 THE SITE

The location of the Logobate Primary Health Facility is at 27°10'35.46"S, 23°24'27.82"E in the John Taolo Gaetsewe District, Joe Morolong Local Municipality. The immediate context mainly consists of informal residential structures which are positioned randomly apart in an arid landscape.

1.2 WORK AREA

The working area is the area within the boundaries

1.3 ACCESS

The contractor to arrange temporary access to the site.

1.4 GENERAL - Restrictions on site

Whilst there are no known restriction on site, the Contractor is to seek confirmation from the Principal Agent before any site establishment.

ADDENDUM A

Occupational Health and Safety Regulations

GOVERNMENT NOTICE

DEPARTMENT OF LABOUR

No. R. ..... 7 February 2014

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993

CONSTRUCTION REGULATIONS, 2014

The Minister of Labour has under section 43 of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

ADDENDUM A

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993
Regulation 3 of the Construction Regulations, 2014

NOTIFICATION OF CONSTRUCTION WORK

1.(a) Name and postal address of principal contractor:

_____

(b) Name and tel. no of principal contractor's contact person:

_____

2. Principal contractor's compensation registration number: _____

3.(a) Name and postal address of client:

_____

(b) Name and tel no of client's contact person or agent:

_____

4.(a) Name and postal address of designer(s) for the project:

_____

(b) Name and tel. no of designer(s) contact person:

_____

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulation 6.(1). _____

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 6.(2).

_____

7. Exact physical address of the construction site or site office:

_____

8. Nature of the construction work:

_____

_____

_____

9. Expected commencement date: _____

10. Expected completion date: _____

11. Estimated maximum number of persons on the construction site.

_____

12. Planned number of contractors on the construction site accountable to principal contractor:

_____

13. Name(s) of contractors already chosen.

_____

_____

_____

_____ _____

Principal Contractor Date

_____ _____

Client Date

- THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

- **ALL PRINCIPAL CONTRACTORS** THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

ADDENDUM B

Occupational Health and Safety Specification

THE COMPLETION OF FOR THE OUTSTANDING WORKS AT LOGOBATE CLINICTHE DEPARTMENT OF HEALTH, NORTH WEST PROVINCE

INDEPENDENT DEVELOPMENT TRUST

(Hereinafter referred to as the Employer)

OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

This specification shall be used in conjunction with all other applicable safety specifications, legislation and regulations in force at the time of the contract. Where unique site specifications are in force, those site specifications shall take precedence over this Specification.

INDEPENDENT DEVELOPMENT TRUST (NORTHERN CAPE OFFICES)
Sanlam Office Park, Block D
13 Bishops avenue
Labram
Kimberley
8301

ADDENDUM "A"

PRO-FORMA AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT 1993

PRO-FORMA AGREEMENT IN TERMS OF

OCCUPATIONAL HEALTH AND SAFETY ACT 1993 – SECTION 37 (2)

NEW CONSTRUCTION SAFETY REGULATIONS

The above-mentioned regulations were promulgated in the Govt. Gazette on Friday, 18 July 2014 under the Occupational Health & Safety Act (85 of 1993) and are now in force.

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act 1993 (Act 85 of 1993, hereinafter referred to as the Act), that the following arrangements and procedures shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:

(a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all the relevant provisions of the Act and the regulations promulgated in terms of the Act, and the Employer's Health and Safety Specifications included in the contract documents.

(b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations and the Employer's Health and Safety Specifications included in the contract documents will be complied with in all respects.

(c) In relation to any work or activity performed by the Contractor, his workmen or any other person for whose acts or omissions the Contractor is responsible in terms of the Contract, the Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from itself being obliged to comply with any of the aforesaid duties, obligations and prohibitions.

(d) The Contractor agrees that any duly authorised officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to ensure that the Contractor has complied with his undertakings as set out more fully in paragraphs (a) and (b) above, which steps may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or to inspect any appropriate records held by the Contractor.

(e) The Contractor shall be obliged to report forthwith in writing to the Representative/Agent full details of any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract.

(f) Forward “safety meeting” minutes to the representative/Agent.

For the Employer: _____ Date: _____

Witnesses: 1) : _____ 2) _____

For the Contractor: _____ Date: _____

Witnesses: 1) : _____ 2) _____

ADDENDUM “B”

NOTIFICATION OF CONSTRUCTION WORK

NOTIFICATION OF CONSTRUCTION WORK
(Regulation 3 of the Construction Regulations, 2014)

1. CONTRACTOR

1.1 Name and postal address of Contractor:

_____
_____
_____

1.2 Name and telephone number of Contractor's contact person :

_____

1.3 Contractor's compensation registration number :

_____

1.4 Name and telephone number of Contractor's Construction Supervisor :

_____

1.5 Physical address of the construction site or site office:

_____
_____
_____

1.5 Estimated number of persons on the construction site:

_____

1.6 Estimated number of Subcontractors on the construction site accountable to the Contractor:

_____

2. EMPLOYER

2.1 Name and postal address of Employer :

_____
_____
_____

2.2 Name and telephone number of Employer's Principal Agent:

3. DESIGN CONSULTANTS

3.1 Name and postal address of OHS consultants:

3.1.1 Occupational Health and Safety

To be advised

3.1.2 Other (if any):

3.2 Name and telephone number of design consultant's contact person:

3.2.1 Construction project managers/ Principal Agent:

3.2.2 Architects:

3.2.3 Structural engineer :

3.2.4 Electrical engineer:

3.2.5 Mechanical engineer:

3.2.6 Civil engineer:

3.2.7 Other (if any):

4. THE WORKS

Nature of the works:

Commencement date:

_____

Completion date:

_____

Contractor: _____ Date: _____

Employer: _____ Date: _____

THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR **PRIOR TO COMMENCEMENT** OF WORK ON SITE.

ALL CONTRACTORS THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER CONTRACTOR ON THE SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

ADDENDUM C

Environmental Management Plan

TO BE PROVIDED BY THE SUCCESSFUL BIDDER

ADDENDUM I

Drawings

ADDENDUM J

IDT Addendum to the JBCC

ADDENDUM

To the

THE JBCC PRINCIPAL BUILDING AGREEMENT

NAME OF PROJECT: ----------

INTRODUCTION

WHEREAS, the Independent Development Trust ("IDT") made an Offer of Appointment and the Contractor has accepted such appointment subject to the conditions stipulated in the aforesaid Offer of Appointment Letter, which conditions include signing of the JBCC Agreement, Edition …… (hereinafter referred to as "Main Agreement").

AND WHEREAS, this addendum shall form part of the Main Agreement between the Employer and the Contractor.

1. ADDENDUM TO THE MAIN AGREEMENT

1.1 This Agreement will constitute an Addendum to the Main Agreement as contemplated herein;

1.2 The Terms of Reference, Accepted Proposal or BID, Standard Conditions of BID, Special Conditions of BID and adjusted Priced Bills of Quantities shall form part of the agreement between the Contractor and the Employer;

1.3 This Addendum will be deemed to incorporate, with or without variation, all the provisions of the Main Agreement, unless the context clearly requires otherwise;

1.4 All words and phrases used in this Addendum which are defined in the Main Agreement, will bear the same meaning assigned to them in the Main Agreement; and

1.5 All references in the Main Agreement to "the/this Agreement" itself, will be deemed to be references also to the Main Agreement duly amended by this Addendum.

1.6 Interpretations and Definition

1.6.01 **Financial Implications** shall means the variation amount over and above the awarded contract sum.

2. SPECIAL CONDITION

If there is any conflict between the contents or any part of this Addendum and the contents or any part of the Main Agreement and other annexures, the content of this Addendum shall prevail.

3. WAIVER OF CONTRACTOR'S LIEN

3.1 The Contractor hereby 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.

3.2 The Employer, as an Organ of State, shall not be required to provide payment guarantees.

4. ASSIGNMENT OF RIGHTS OR OBLIGATIONS

4.1 Neither **party** shall assign or cede rights or obligations without the written consent of the other **party**, which consent shall not be unreasonable withheld.

4.2 Where the Contractor intend to cedes any right to monies due or to become due under this agreement as security in favour of a financial institution, a written consent in accordance with clause 4.1 above, shall be obtained from the Employer prior to entering into such cession.

4.3 Any cession entered into without the necessary written consent from the either party, shall be null and void.

4.4 The Employer shall not consent to a cession of monies due or to become due under this agreement as security in favour of a financial institution, unless such financial institution submitted to the IDT a Valid Tax Clearance Certificate, is registered as a credit provider in terms of the National Credit Act and as a vendor in the IDT's Vendor Management System.

5 INTERIM PAYMENT

5.1 The **Employer** shall, in accordance with clause 8.2.3 of the treasury regulation of March 2005, pay to the **Contractor** the amount certified in an interim **payment certificate** within **thirty (30) calendar days** of the date of submission of the **payment certificate**".

5.2 Default interest, where applicable, shall only be effective after the 30 calendar days of the date of receipt of the interim **payment certificate from the Principal Agent.**

5.3 The Employer shall be entitled to apply a set-off against a legitimate and liquid claim against the Contractor from which a valid invoice has been received.

6 TAX COMPLIANCE MEAUSRES

6.1 The Contractor hereby grant confirmation that SARS may, on on-going basis during the contract term, disclose the Contractor's tax compliance status to the Employer.

6.2 Should the Contractor appoint a sub-contractor to execute a portion of a work in excess of the threshold (currently 25%) prescribed by the National Treasury, the Contractor must ensure that a sub-contractor is tax complaint and remains tax compliant for the full duration of the contract. The contractor shall obtain a written consent from its sub-contractors confirming that SARS may on on-going basis during the contract term, disclose the sub-contractor's tax compliance status to the Employer.

6.3 The Contractor shall submit a valid tax clearance certificate within 10 working days from the date of expiry of the tax clearance certificate. The Employer reserve the right to demand a valid Tax Clearance Certificate prior to making any payment to the Contractor, should it become aware that the tax clearance corticated has expired.

6.4 Unless the Employer receive a written confirmation that the Contractor has challenged its tax compliance status with SARS, the Employer shall not process any payment to the Contractor, if 30 days has lapsed since the written notice by the Employer and the Contractor has failed to remedy its tax compliance status.

6.5 Employer's non-payment of the Contractor's invoice in accordance with clause 6.4 above shall not absolve the contractor from performing its obligation in terms of the contract.

6.6 Unless the Employer receives a written confirmation that the Contractor or sub-Contractor has challenged its tax compliance status with SARS, the Employer shall be entitled to cancel the contract with the Contractor or instruct the Contractor to cancel its contract with the Sub-Contractor.

6.7 Where a Contractor is a JV, each party to a JV must be tax complaint and remains tax compliant for the full duration of the contract, failing which, the Employer shall invoke paragraph 6.4 or 6.6 above.

7. APPROVAL OF VARIATION ORDERS

7.1 Upon receipt of the Variation Order (VO), the Principal Agent must professionally consider the merits of the Variation Order and make a recommendation to the Employer.

7.2 The Principal Agent shall not have the power to approve any deviation or variation which has financial implications on the Employer without the necessary written approval of the Employer, except under emergency circumstances wherein failure to undertake the work may result in loss of life.

7.3 The Employer must communicate the approval of a Variation Order in writing to the Principal Agent and the Principal Agent shall, upon receipt of confirmation of the approval of the VO, issue the necessary Contract Instruction to the contractor to undertake the works.

7.4 The Contractor shall not commence with any Variation Order Works without the written approval of the Variation Order from the Employer, except under circumstances mentioned in paragraph **7.2** above.

7.5 Should the Contractor undertakes the Variation Order Works without the necessary written approval of the Variation Order from the Employer, the Contractor shall be entirely liable for any financial and any related implications and hereby indemnify

and hold harmless the Employer from and against any and all claims, actions, damages, liabilities, injuries, costs, fees, expenses, or losses, including and without limitation, reasonable attorney's fees and costs of investigation and litigation, whatsoever which may be incurred by, or for which liability may be asserted against, the Employer arising out of the Contractor's performance or non-performance of unauthorized works, but only to the extent caused by the negligent acts, errors or omissions of the Contractor.

7.6 The Contractor shall not accept any instructions from any party, including beneficiary Department, other than the Principal Agent.

8. JOINT VENTURE AGREEMENT

8.1 Should the Joint Venture Agreement be dissolved or any of the JV partner pull out the JV Agreement for any reasons whatsoever, the Employer hereby reserve its right to terminate the contract with immediate effect.

8.2 Should the Employer decide not to terminate the contract upon the dissolution of the JV Agreement and the replacement JV partner does not meet the BBBEE threshold stipulated in the BID document, the IDT shall be entitled to cancel the contract with immediate effect.

8.3 Should the BBBEE status of the Joint Venture be changed to a lower rate than the BIDding rate, based on legislation applicable at the closing date of the

8.4 BID, the IDT shall be entitled to cancel the contract.

9. BREACH

9.1 In the event that the contractor: -

9.1.1 commits an act of insolvency; or

9.1.2 is placed under a provisional or final winding-up or judicial management order; or

9.1.3 is placed under or applied for business rescue; or

9.1.4 makes an assignment of more than 25% of either its right and/or its obligation for the benefit of the third arty without the written consent of the Employer; or

9.1.5 the Contractor is registered or fails to renew his registration with the CIDB or changes directorship during the course of the project, resulting in the contravention of BBBEE statutory requirement; or

9.1.6 fails to satisfy or take steps to have set aside any judgment taken against it within 14 (Fourteen) business days after such judgment has come to its notice,

then the other Employer will be entitled to terminate the Agreement on written notice.

Signed at …… on this the …… day of ……..**202……B.**

AS WITNESSES:

A. _____ _____

For and on behalf of the **Employer: (…….)**, in his/her capacity as the ----------

B. _____ _____

For and on behalf of the **Employer: (……..)**,in his/her capacity as the ----------.

Signed at …… on this the …… day of ……**202…**

AS WITNESSES:

C. _____

D. _____ _____

For and on behalf of the **Contractor: ……**in his/her capacity as ……, who hereby confirm that he/she is duly authorized.