



Request for Sealed Quotations For Civil Works

**Fencing, Casting of Concrete Slabs and the Extension of
Chlorination Building at NamWater Okondjatu Scheme**

Procurement Reference No: W/RFQ/NW-004/2027

Name of Bidder		
Contact Person		
E-mail Address		
Postal Address		
Total Amount (Excl. VAT)		
Contact Phone number	Work:	Mobile:

Documents must be posted / delivered to:

The Quotation/Bid Box

Att: Procurement Management Unit (bids@namwater.com.na)

Namibia Water Corporation Ltd.

Private Bag 13389

176 Iscor Street, Aigams Building

Windhoek

Closing Date: Thursday, 25 June 2026 at 11h00

**Non-Compulsory site meeting: Thursday, 11 June 2026 at 10h00, Location: NamWater
Offices Okondjatu, which is located 103km east of Okakarara on the C22 Road**

NO LATE BIDS WILL BE ACCEPTED!

NOTICE TO BIDDERS

- Please take note of initializing all pages of the standard bidding document and initial all the supporting documents including company profiles, brochures, etc.**
- Take note to sign all relevant pages as stipulated in the bidding document.**
- Copies of documents not certified by a Commissioner of Oath appointed in terms of the Justices of the Peace and Commissioners of Oaths Act.1963 (Act No. 16 of 1963) will not be accepted.**

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Namibia Water Corporation Ltd.
Private Bag 13389, Windhoek, Namibia
Tel: +264 61 71 2081
Fax: +264 61 21 0741

Letter of Invitation

Name and Address of Bidder _____

Procurement Reference Number: W/RFQ/NW-004/2027

3 June 2026

Dear Sir/Madam,

Request for Quotations for the Extension of a Chlorination Building, Casting of Concrete Slabs and Fencing for NamWater Okondjatu Scheme

NamWater invites you to submit your best quote for the works described in detail hereunder.

Any resulting contract shall be subject to the terms and conditions referred to in the document.

Queries, if any, should be addressed to Procurement Management Unit E-mail:
bids@namwater.com.na, Private Bag 13389 Windhoek, Namibia.

Please prepare and submit your quotation in accordance with the instructions given or inform the undersigned if you will not be submitting a quotation.

Yours faithfully,

Head of Procurement Management Unit
NamWater

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SECTION I: INSTRUCTIONS TO BIDDERS

1. Rights of Public Entity

NamWater reserves the right:

- (a) to split the contract as per the lowest evaluated cost per lot; and
- (b) to accept or reject any quotation or to cancel the quotation process and reject all quotations at any time prior to contract award.
- (c) to change the quantity and of the quoted items.

2. Preparation of Quotations

You are requested to quote for the works mentioned in Section III, by completing, signing and returning:

- (a) the Quotation Letter in Section II with its annex for Bid Securing Declaration, where applicable;
- (b) the Priced Activity Schedule in Section IV;
- (c) the Specifications and Compliance Sheet in Section V; and
- (d) any other attachment as deemed appropriate

You are advised to carefully read the complete Request for Quotations document, including the Special Conditions of Contract in Section VII, before preparing your Quotation. The standard forms in this document may be retyped for completion but the Bidder is responsible for their accurate reproduction.

3. Validity of Quotations

The quotation validity period shall be **120 days** from the date of bid submission deadline.

4. Eligibility Criteria

To be eligible to participate in this Bid exercise, you should:

- (a) Have a certified copy (certified by a Commissioner of Oath appointed in terms of the Justices of the Peace and Commissioners of Oaths Act.1963 (Act No. 16 of 1963)), of a full valid company Registration Document;
- (b) Have an original or a certified copy (certified by a Commissioner of Oath appointed in terms of the Justices of the Peace and Commissioners of Oaths Act.1963 (Act No. 16 of 1963)), of a valid Good Standing Tax Certificate, as certified by the Commissioner of Oath.
- (c) Have a valid good Standing Social Security Certificate,
- (d) Have a valid certified copy (certified by a Commissioner of Oath appointed in terms of the Justices of the Peace and Commissioners of Oaths Act.1963 (Act No. 16 of 1963)), of Affirmative Action Compliance Certificate, proof from Employment Equity Commissioner that bidder is not a relevant employer, or exemption issued in terms of Section 42 of the Affirmative Action Act, 1998 or a valid certified copy of the original document, as certified by the Commissioner of Oath;
- (e) Submit signed Bid-securing Declaration.
- (f) An undertaking on the part of the Bidder that the salaries and wages payable to its personnel in respect of this proposal are compliant to the relevant laws, Remuneration Order, and Award, where applicable and that it will abide to sub-clause 4.6 of the General conditions of Contract if it is awarded the contract or part thereof; and;

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- (g) Submit at least three (3) references or completion certificate for experience in Civil Construction works of equivalent value to offered bid amount performed in the last 3 years.
- (h) Submit documentary evidence that bidder has a minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the 30 % of offered amount. Documentation should be submitted from a reputable financial firm and /or letter of intent from material suppliers' suppliers stating credit limits in the bidders name.
- (i) Submit a comprehensive Company profile that includes information to proof experience in the last five (5) years as Main Contractor in the following areas equivalent to N\$ 1.2 million.
 - Civil construction
 - Fencing
 - Renovation
 - Plumbing and Electrification
- (j) Submit a comprehensive Curriculum Vitae (CV) of personnel to be used for the project with relevant years of experience and qualification
 - Site Agent 5 years with Degree/National Diploma in Civil Engineering/Construction
 - Foreman 3years with N3 Trade Certificate in Welding and Fabricating, Boiler Maker or Brick Laying and Plastering.
- (k) A comprehensive method statement indicating/focusing on the following areas:
 - Site layout
 - Integration into the existing building
 - Installation methodology
- (l) Submission of Works Programme on an A3 page
- (m) Has the Bidder submitted a declaration stating that the bidder commits to submit a comprehensive Safety File upon Contract Award.

Bids from service providers appearing on the ineligibility lists of African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank Group and World Bank Group shall be rejected.

Links for checking the ineligibility lists are available at:

- Republic of Namibia, Procurement Policy Unit
<https://egp2.gov.na/forms/SearchSuspendedBidders.jsf>
- African Development Bank
<https://www.afdb.org/en/projects-operations/debarment-and-sanctions-procedures>
- Asian Development Bank
<http://lnadbg4.adb.org/oga0009p.nsf/sancALLPublic?OpenView&count=99>
- European Bank for Reconstruction and Development
<http://www.ebrd.com/pages/about/integrity/list.shtml>
- Inter-American Development Bank Group
<http://www.iadb.org/en/topics/transparency/integrity-at-the-idb-group/sanctioned-firms-and-individuals,1293.html>

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- World Bank Group

<http://www.worldbank.org/en/projects-operations/procurement/debarred-firms>

5. Bid Securing Declaration

Bidders are required to subscribe to a Bid Securing Declaration for this procurement process.

6. Works Completion Period

The completion period for works shall be **4 months [16 weeks]** after acceptance and issue of Purchase Order. Deviation in completion period shall not be accepted/shall be considered if such deviation is reasonable.

6.1. The following tests and inspections will be conducted on the goods at handover:

Test and inspections shall be as specified in Section IV.

7. Sealing and Marking of Quotations

Quotations should be sealed in a single envelope, clearly marked with the Procurement Reference Number **W/RFQ/NW-004/2027**, addressed to NamWater with the Bidder's name and contact information at the back of the envelope.

8. Submission of Quotations

Quotations should be deposited in the Quotation/Bid Box located at Namibia Water Corporation Ltd Head office, Private Bag 13389, 176 Iscor Street, Aigams Building, Windhoek, not later than **Thursday, 25 June 2026 at 11h00. Thursday, 11 June 2026 at 10h00, Location: NamWater Offices Okondjatu, which is located 103km east of Okakarara on the C22 Road** Quotations by post or hand delivered should reach Private Bag 13389 by the same date and time at latest. Late quotations will be rejected. Quotations received by e-mail will not be considered.

9. Opening of Quotations

Quotations will be opened internally by **NamWater** immediately after the closing time referred to in section 8 above. A record of the Quotation Opening stating the name of the bidders, the amount quoted, the presence or absence of a Bid Security/Bid Securing Declaration, will be posted on the website of NamWater and available to any bidder on request within three working days of the Opening.

10. Evaluation of Quotations

NamWater shall have the right to request for clarifications in writing during evaluation. Offers that are substantially responsive shall be compared on the basis of price or ownership cost, subject to Margin of Preference where applicable, to determine the lowest evaluated quotation.

10.1. Evaluation Criteria

This section contains supplementary criteria that the Employer shall use to evaluate bids.

1. Technical Admissibility Criteria

The technical admissibility evaluation Bid criteria will be assessed based on a **Yes** or a **No**. All Bidders that pass with **Yes** in all the required documents as stated in **Table 1**, will proceed to the next evaluation criteria (**Criteria 1 – Evaluation Score Grid**). A

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bidder that obtains a “NO” in any of the criteria shall be deemed non-responsive and therefore will be disqualified and excluded from further evaluation.

Table 1: Technical Admissibility Evaluation

#	Description	Yes	No
1	Submit at least three (3) references or completion certificate for experience in Civil Construction works of equivalent value to offered bid amount performed in the last 3 years.		
2	Has the bidder submitted documentary evidence that they have a minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the 30 % of offered amount. Documentation should be submitted from a reputable financial firm and /or letter of intent from material suppliers' suppliers stating credit limits in the bidders name.		
3	Submit a comprehensive Company profile that includes information to proof experience in the last five (5) years as Main Contractor in the following areas equivalent to N\$ 1.2 million. <ul style="list-style-type: none"> • Civil construction • Fencing • Renovation • Plumbing and Electrification 		
4	Submit a comprehensive Curriculum Vitae (CV) of personnel to be used for the project with relevant years of experience and qualification <ul style="list-style-type: none"> • Site Agent 5 years with Degree/National Diploma in Civil Engineering/Construction • Foreman 3years with N3 Trade Certificate in Welding and Fabricating, Boiler Maker or Brick Laying and Plastering 		
5	A comprehensive method statement indicating/focusing on the following areas: <ul style="list-style-type: none"> • Site layout • Integration into the existing building • Installation methodology 		
6	Submission of Works Programme on an A3 page		

Failure to submit all above-mentioned documents and references, the bidder shall be deemed non-compliant, therefore disqualified and excluded from further evaluation

2. Financial Evaluation

The financial evaluation of the bid will be assessed based on the following criteria:

- a) A Bid price which is abnormally low, i.e. 10% below the Employers Cost Estimate will be deemed to be non-responsive.
- b) A Bid price that is 10% above the average of the Employers Cost Estimate will be deemed to be non-responsive.

3. Award

The procurement contract will be awarded to the bidder with the lowest most substantially responsive technically compliant bidder.

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11. Technical Compliance

The Specifications and Compliance Sheet details the minimum specifications of the works to be carried out. The specifications have to be met, but no credit will be given for exceeding the specifications.

Bidders can submit along with their quotation documents, catalogues and any other relevant datasheets to substantiate their experience in similar projects completed.

12. Prices and Currency of Payment

Prices for the execution of works shall be fixed in Namibian Dollars as quoted.

Quotations shall cover all costs of labour, materials, equipment, overheads, profits and all associated costs for performing the works, and shall include all duties. The whole cost of performing the works shall be included in the items stated, and the cost of any incidental works shall be deemed to be included in the prices quoted.

13. Margin of Preference

The applicable margins of preference and their application methodology are as follows:

13.1. The applicable margins of preference and their application methodology are as follows:

Categories of Bidders	Margin of Preference	Documentary evidence to be submitted	Criteria
Manufacturer	2%	-Certificate of registration from a registering authority -Declaration by the bidder that the manufactured goods meet the local content as determined in Annexure 6 as per the cost structure for Value Added Calculation in Annexure 1, and as certified by an Accountant.	“manufacturer” means a person or a company that is involved in the physical or chemical transformation or materials or components into new products whether or not – (a) the transformation is through work; (i) Performed by a power-driven machine or by hand; or (ii) Done in a home or factory; or (iii) The new products are sold on a wholesale or retail basis.
Micro, Small and Medium Enterprise	1%	-SME registration certificate -Declaration indicating the percentage of Namibian MSME ownership	A bidder who is a MSME, means an enterprise that has a valid micro, small and medium enterprise certificate issued by the Ministry responsible for trade, whose minimum equity is 51 % owned by Namibians.
Women owned Enterprise	1%	-IDs of all shareholders -Founding statement/company registration indicating ownership structure/shareholder certificate -declaration indicating the percentage of Namibian female ownership	A bidder who is a woman or whose minimum equity is 51% owned by Namibian women.
Youth owned enterprise	2%	-IDs of all shareholders -Founding statement/company registration indicating ownership structure/shareholder certificate -declaration indicating the percentage of Namibian youth ownership	A bidder who is a youth or whose minimum equity is 51% owned by Namibian youths
Previously Disadvantaged Person owned enterprise	2%	-IDs of all shareholders -Founding statement/company registration indicating ownership structure/shareholder certificates	A bidder who is a PDP or whose minimum equity is 51% owned by Namibian PDPs.

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Categories of Bidders	Margin of Preference	Documentary evidence to be submitted	Criteria
		-declaration indicating the percentage of Namibian PDPs ownership	
Suppliers providing environmental protection	1%	-declaration and proof that the bidder meets the requirements set out in the bidding document	A bidder that promotes the protection of the environment, maintain ecosystems and sustainable use of natural resources as specified by the public entity in the bidding document.
Suppliers providing employment to Namibian	1%	-declaration that the bidder employs 50% or more Namibian citizens	A bidder who employs 50% or more Namibian citizens. Submit employees Social Security certificates
TOTAL	10%		

Formula to calculate margins of preference:

$$A = \frac{MP \times BP}{100}$$

in which formula -

- (a) "A" represents the amount to be determined.
- (b) "MP" represents the total percentage of all margins of preferences granted in respect of the bid, and
- (c) "BP" represents the bid price.

14. Award of Contract

The Bidder having submitted the lowest evaluated responsive quotation and qualified to perform the works shall be selected for award of contract. **Award of contract shall be by issue of a Purchase Order/Letter of Acceptance** in accordance with terms and conditions contained in Section VI: Contract Agreement and General Conditions of Contract.

15. Notification of Award and Debriefing

NamWater shall after award of contract promptly inform all unsuccessful bidders in writing of the name and address of the successful bidder and the contract amount and post a notice of award on its website within seven (7) days. Furthermore, NamWater shall attend to all requests for debriefing made in writing within seven (7) days of the unsuccessful bidders being informed of the award.

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SECTION II: QUOTATION LETTER

(to be completed by Bidders)

*[Complete this form with all the requested details and submit it as the first page of your quotation with the Priced Activity Schedule and documents requested above. A signature and authorisation on this form will confirm that the terms and conditions of the RFQ prevail over any attachments. **If your quotation is not authorised, it will be rejected***

Quotation addressed to: <i>[name of Public Entity]</i>	Namibia Water Corporation Ltd
Procurement Reference Number:	W/RFQ/NW-004/2027
Subject matter of Procurement:	Fencing, Casting of Concrete Slabs and the Extension of Chlorination Building at NamWater Okondjatu Scheme

We offer to execute the Works detailed in the Statement of Requirements, in accordance with the terms and conditions stated in your Request for Sealed Quotations referenced above.

We confirm that we are eligible to participate in this Quotation exercise and meet the eligibility criteria specified in Section 1: Instructions to Bidders

We undertake to abide by the Conduct of Bidders and Suppliers as provided under the Public Procurement Act during the procurement process and the execution of any resulting contract.

We have read and understood the content of the Bid Security/Bid Securing Declaration (BSD) attached hereto and subscribe fully to the terms and conditions contained therein. We further understand that this subscription could lead disqualification on the grounds mentioned in the BDS]

The validity period of our Quotation is _____ days *[insert number of days]* from the date of the bid submission deadline.

We confirm that the prices quoted in the Priced Activity Schedule are fixed and firm and will not be subject to revision or variation, if we are awarded the contract **prior to the expiry** date of the quotation validity.

Works will commence within _____ *[insert number]* days from date of issue of Purchase Order/ Letter of Acceptance.

Works will be completed within _____ *[insert number]* days from date of issue of Purchase Order/ Letter of acceptance.

Quotation Authorised by:

Name of Bidder		Company's Address and seal	
Contact Person			
Name of Person Authorising the Quotation:		Position:	Signature:
Date		Phone No./E-mail	

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Appendix to Quotation Letter

BID SECURING DECLARATION

(Section 45 of Act)

(Regulation 37(1) (b) and 37(5))

Date: *[Day / month / year]*

Procurement Ref No.: **W/RFQ/NW-004/2027**

To:*[insert complete name of Public Entity and address]*

I/We* understand that in terms of section 45 of the Act a public entity must include in the bidding document the requirement for a declaration as an alternative form of bid security.

I/We* accept that under section 45 of the Act, I/we* may be suspended or disqualified in the event of

- (a) a modification or withdrawal of a bid after the deadline for submission of bids during the period of validity;**
- (b) refusal by a bidder to accept a correction of an error appearing on the face of a bid;**
- (c) failure to sign a procurement contract in accordance with the terms and conditions set forth in the bidding document, should I/We* be successful bidder; or**
- (d) failure to provide security for the performance of the procurement contract if required to do so by the bidding document.**

I/We* understand this bid securing declaration ceases to be valid if I am/We are* not the successful Bidder

Signed:
[insert signature of person whose name and capacity are shown]

Capacity of:
[indicate legal capacity of person(s) signing the Bid Securing Declaration]

Name:
[insert complete name of person signing the Bid Securing Declaration]

Duly authorized to sign the bid for and on behalf of: *[insert complete name of Bidder]*

Dated on _____ day of _____
[insert date of signing]

Corporate Seal (where appropriate)

[Note*: In case of a joint venture, the bid securing declaration must be in the name of all partners to the joint venture that submits the bid.]

**delete if not applicable / appropriate*

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Republic Of Namibia

Ministry of Labour, Industrial Relations and Employment Creation

Written undertaking in terms of section 138 of the Labour Act, 2015 and section 50(2)(D) of the Public Procurement Act, 2015

1. EMPLOYERS DETAILS

Company Trade Name:.....

Registration Number :.....

Vat Number:

Industry/Sector:

Place of Business:.....

Physical Address:.....

Tell No.:.....

Fax No.:.....

Email Address:.....

Postal Address:.....

Full name of Owner/Accounting Officer:.....

.....

Email Address:.....

2. PROCUREMENT DETAILS

Procurement Reference No.:

Procurement Description:

.....

.....

Anticipated Contract Duration:

Location where work will be done, good/services will be delivered:

.....

3. UNDERTAKING

I[insert full name], owner/representative

of[insert full name of company]

hereby undertake in writing that my company will at all relevant times comply fully with the relevant provisions of the Labour Act and the Terms and Conditions of Collective Agreements as applicable.

I am fully aware that failure to abide to such shall lead to the action as stipulated in section 138 of the labour Act, 2007, which include but not limited to the cancellation of the contract/licence/grant/permit or concession.

Signature:

Date:

Seal:.....

Please take note:

- 1. A labour inspector may conduct unannounced inspections to assess the level of compliance*
- 2. This undertaking must be displayed at the workplace where it will be readily accessible and visible by the employees rendering service(s) in relations to the goods and services being procured under this contract.*

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SECTION III: STATEMENT OF REQUIREMENTS

A. PROJECT SCOPE OF WORK AND SPECIFICATIONS

i. Scope

These project specifications consist of two Portions.

PORTION 1 contains a general description of the Works, the site, the requirements to be met and the Standardised and Particular Specifications applicable to this contract.

PORTION 2 contains the variations and additions to the Standardised and Particular Specifications applicable to this contract and that are listed in portion 1.

ii. Status

PORTION 2 of the Project Specifications supplements the Standardised and Particular Specifications and forms an integral part of the Contract.

Should any requirement of any portion of the Project Specifications conflict with any requirement of the Standardized or Particular Specifications (listed in Portion 1 of the Project Specification), the requirement of the Project Specification shall prevail.

If there is any discrepancy between the project specifications and any part of the SANS 1200 standardised specifications, drawings or the schedule of quantities, the order of precedence shall be:

1. Letter of Acceptance
2. Special Conditions of Contract
3. General Conditions of Contract
4. Project Specification
5. SANS 1200
6. Drawings
7. Schedule of Quantities

The detail description of the required scope of work and project specifications are included hereunder in this Bid document. The contractor is required to liaise the project requirements under this section with the provided schedule of quantities and allow for all required works accordingly.

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PORTION 1: PROJECT SPECIFICATIONS THE WORKS (CIVIL & STRUCTURAL)

PS 1 GENERAL DESCRIPTION OF THE WORK

1. General

The works for this Request for Quotation entails the construction of Concrete Slabs, Security Fencing, Extension and Renovation of an Existing Building in Okondjatu. The slabs shall be placed within the NamWater areas in four locations. The drawings for the slabs, building extension and security fencing are attached to this document along with the standard design for the concrete slab.

1.2 Excavation of Slab Footing

At Okondjatu the slab footing will be excavated in all type of material. Care shall be taken not to damage existing services where excavation for the slab is done.

1.3 Construction of the Concrete Slab

The new concrete slab will have a 50mm thick blinding layer casted before any boxing of the slab is started. The slab will be boxed, and steel reinforcement will be installed as per drawings.

1.4 Extension of Building and Renovation

The extension and renovation of the building will be done at the NamWater Chlorination Room. Care should be taken not to damage existing services where excavation is taking place.

2. Inspections

NamWater will inspect the works during the construction phase over 4 site visits to ascertain the work quality of the works. The onus thus rest with the contractor to ensure that all items purchased and sourced are to specifications. Payment will only be made if all the works are completed and to specifications.

PS 2 DESCRIPTION OF SITE AND ACCESS

PS 2.1 Site Location

The chlorination building is located at the NamWater Okondjatu offices and the four boreholes are located on different sites as shown on **Figure 1**.

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Figure 1: Site location of the Chlorination Building and Boreholes

Table 1 shows the coordinates of the building and boreholes location.

Table 1:Coordinates of Chlorination Building and Boreholes

Scheme Components	Coordinates
Chlorination Building	20.988785 S, 18.232206 E
WW25303	20.5723 S, 18.1419 E
WW25302	20.5727 S, 18.1411 E
WW24723	20.5739 S, 18.1421 E
WW32249	20.5817 S, 18.1411 E

PS 3 TOPOGRAPHY AND CLIMATE

PS3.1 Topography

The project site topography is generally flat.

PS3.2 Climate

Precipitation (mm/a)	0-118.59
Variation in annual rainfall (%)	>32.3
Average annual evaporation (mm/a)	2800-3000
Water deficit (mm/a)	1901-2100
Temperature (°C)	19.2 – 33.7

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PS 4 NATURE OF THE GROUND AND SUBSOIL CONDITIONS

PS 4.1 Geotechnical Investigation

There is no detailed geotechnical investigation carried out for the project area. However, it is observed from the site inspection that the area is dominated by a loose sand layer. Hence, it is recommended that the bidders inspect the project site and make allowance for all the required excavation machineries and equipment.

The above-mentioned information is a general guideline and will not relieve the Contractor of his responsibilities in terms of the General Conditions of Contract to satisfy himself with the conditions on site.

PS4.2 Vegetation

The vegetation within the area forms a large expanse of transitional vegetation between the xeric southern Kalahari and the woodlands of the northern Kalahari.

PS 5: DESCRIPTION OF CONTRACT

This clause will provide a more detailed description of the work required under the contract. The Contractor will be responsible for the construction of all the civil works required.

PS5.1 Site Preparation

Site preparation such as clearing, grubbing, the removal of large trees will be done according to the provisions of SANS 1200 C.

PS5.2 Construction and Renovation of building

Construction of the building will be done according to the provisions of SANS 10400. The following renovation works to be done:

- Replacement of the existing doors, insect proof mesh on louvers and broken glazing.
- Replacement of existing roof structure, roof covering, gutters, rainwater downpipes and fascia.
- Brickwork on top of existing ring beam and plastering of such brickwork.
- Painting of the whole entire building.

PS 6: CONSTRUCTION PROGRAM

Within two weeks of bid acceptance, the Contractor shall submit a detailed program in the form of a Gantt Chart, outlining labor and plant resources, the proposed rate of progress, and an estimated cash flow. The critical path must be clearly defined, and the program shall be prepared with sufficient detail.

The Time for Completion of the works in terms of Clause 1.1 (v) of the Conditions of Contract will be **Four (4) calendar months**. The Commencement Date will be within **14**

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days after the Contractor receives the Letter of Acceptance and performance guarantee has been provided to the Project Manager.

The Contractor shall be responsible for liquidated damages in the event that the project schedule is delayed due to an error on their part. The calculation of liquidated damages shall be in accordance with the provisions outlined in the Conditions of Contract.

The Contractor himself is responsible for liaison and arrangements with the local authority in connection with the finalisation and approval of the construction programme.

A Certificate of Completion, in accordance with **Clause 53** of the Conditions of Contract, will only be issued upon the satisfactory completion of all testing and commissioning of the works.

Bidders shall submit, together with their bids, a detailed programme showing the dates for the completion of the major activities of the works. This program shall form the basis of the detailed program required of the Contractor in terms of **clause 25** of the GCC, which shall be submitted to the Project Manager within the period stated in the SCC.

The bidder will not receive additional payment for re-programming of the works and/or any delays that may be caused because of bad co-ordination, unless otherwise agreed by the Project Manager.

The separate detailed programme shall clearly show:

- a) the proposed rate of progress to complete the Works within the required time stated in the Appendix to Bid, stating the various activities and its duration for each element of the Works in sufficient detail to gauge the construction progress,
- b) the critical path activities and other float times available,
- c) key dates in respect of work to be carried out, or information, etc. to be provided, by others, and
- d) A projected cash flow that relates to projected progress on site.

When drawing up his programme, the Contractor shall make allowance for at least the following:

- expected weather conditions and its effects,
- known physical conditions or artificial obstructions,
- reasonable requirements of other parties (communities), regarding access,
- searching for, dealing with and carrying out alterations to existing services,
- accommodation and safeguarding of traffic,
- selection of materials, and
- design, testing and approval of concrete mixes.

Continued failure on the part of the Contractor to work according to the programme or revised programmes shall be sufficient reason for the Project Manager to take steps as provided for in the General Condition of Contract and Special Condition of Contract.

If any changes to the critical path occur or become necessary during the Contract Period, the Contractor shall promptly notify the Project Manager in writing.

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PS 7: SITE FACILITIES AVAILABLE

PS7.1 Contractor's Site Camp

The contractor will have to make his own arrangements for his construction yard and camp. It shall be the Contractor's responsibility to find a suitable site which shall carry the approval of the Employer & Project Manager, the Contractor shall be required to fence in his construction camp with a minimum 1.8m high security fence with lockable double leaf gate and shall employ a full-time watchman or watchmen to guard his equipment and materials in the camp.

No housing will be provided for the Contractor's employees, and the Contractor is responsible for arranging accommodations and transportation to the site. The Contractor shall avoid unnecessary removal of large trees and must maintain a neat and tidy camp at all times. The camp and storage of materials shall be confined to designated areas. Upon completion of the construction works, the Contractor shall restore the utilized areas to their original condition at their own expense, to the satisfaction of the Project Manager. Pollution and littering of any kind will not be tolerated. All costs associated with the accommodation of the Contractor's activities on the site must be allowed for in the schedule of quantities.

The Contractor may not unnecessarily remove any trees and he shall keep his camp and yard neat and tidy at all times and on completion of the works, shall restore same to its original condition at his own expense and to the Project Manager's satisfaction. No pollution or littering of any kind will be tolerated and the camp terrain shall be to the approval of the health authority.

PS7.2 Services

Potable water and power supply are available near the project area. It is the Contractor's responsibility to apply for connections to the existing water supply network and power distribution with NamWater and CENORED, respectively. Upon receiving approval from the relevant service authorities, the Contractor shall arrange for the installation of water and power at the site camp and bear the cost of these installations, as well as the payment for water and power consumed. To this end, the Contractor shall install appropriate lockable meters as required by the supply authorities.

The Contractor will be held responsible for any damages to meters and supply lines and fittings for the duration of the contract. Any extension of time due to delays resulting from these facilities will not be granted.

The Contractor shall make his own arrangements for the disposal of wastewater and sewerage effluent. He shall be required to construct septic tanks and French drains of an approved design and size in positions to be approved by the Project Manager. Under no circumstances will the discharge of wastewater to the surface be permitted.

The Contractor shall make himself thoroughly acquainted with the regulations relating to the use of water and electricity and shall take adequate measures to prevent the wastage of water.

The Employer accepts no responsibility for the shortage of water due to any cause whatsoever, nor additional costs incurred by the Contractor as a result of such shortage thereof.

Initials.....

The Contractor shall take note that no direct payment will be made for costs incurred for the provision of a water and electricity supply point to the project area. Payment for the aforementioned shall be deemed to be covered by the rates and prices tendered and paid for under the specific items of the P&G's in the Schedule of Quantities.

At the end of the project the Contractor to ensure that the local authority is paid in full for the utilities used for the construction works before vacating site and proof of this is to be provided to the Project Manager.

PS7.3 Survey Beacons, Benchmarks and Reference Pegs

The Contractor is responsible for the setting out of the required works and no separate payment will be made therefore as the cost involved for the setting out of the Works is deemed to be included in the tendered sum.

The Contractor shall also ensure that no survey beacons, erf pegs and benchmarks are covered up or disturbed. It is his responsibility to protect the boundary pegs, beacons and benchmarks which may be encountered during the course of the work.

It is the responsibility of the Contractor to inform the Project Manager within 14 days of establishment should the Contractor not be satisfied with the provided pegs and benchmarks. Should no communication be received within 14 days it will be assumed that the Contractor is satisfied with the pegs and benchmarks and no additional payments will be made and no additional extension of time will be granted should the Contractor not be satisfied at a later date.

Erf pegs and benchmarks may not be replaced by the Contractor. Control benchmarks may be provided by the Contractor for setting out the works.

PS7.4 Dump Site

The Contractor will make his own arrangements with the local authorities regarding the disposal of any building rubble and other surplus building material.

Various old borrow pits exist in the area which may be used by the Contractor as dump sites. However, the onus rests on the Contractor to dispose the material as suggested in the Environmental Management Plan and engage with the relative authorities regarding permits or permission to do so.

PS7.5 Water for Compaction and manufacturing of Concrete

Potable water is available at the NamWater offices in Okondjatu, but the Contractor shall make his own arrangements with the NamWater Operations Manager in Otjiwarongo for the connection of these services and for laying the water to his yard. He shall also be responsible for the costs of these services and the laying of these services and shall ensure that water is not wasted.

The Contractor shall make his own arrangements for the disposal of wastewater and sewerage effluent. Under no circumstances will the discharge of wastewater to the surface be permitted or the construction of septic tanks and French drains.

PS 8: SITE FACILITIES REQUIRED

PS8.1 Site Offices

Initials.....

The contractor will have to make his own arrangements for his construction yard and camp. It shall be the Contractor's responsibility to find a suitable site which shall carry the approval of local authorities. The Contractor shall be required to fence in his construction camp with a minimum of 1.8m high security fence with lockable double leaf gate and shall employ a full-time watchman or watchmen to guard his equipment and materials in the camp.

A site office will not be required by the Engineer. However, the Contractor must provide adequate office facilities for site meetings. The site office shall be dust proof with sufficient room to accommodate at least eight (8) people, seated at a suitable table. All contract related documentation and drawings shall be kept available in this office.

PS8.2 Laboratory Facilities

The Contractor shall make use of the services of a recognised and suitably qualified independent laboratory capable of carrying out the required tests as listed below for Quality Acceptance Control purposes for the tests submitted to the Project Manager.

All testing methods and frequency shall be strictly in accordance with the methods specified in the applicable SANS 1200 standard specifications. No additional payments will be made towards the testing of work and the Contractor should allow for the required testing in his Tender.

The Project Manager shall (from time to time and as deemed necessary), within the provisions of the Contract, carry out acceptance control testing to verify the testing certificates produced by the approved independent laboratory as well as the materials produced by the Contractor for the incorporation into the works.

The Project Manager and his site staff shall have unrestricted access to the laboratory at all times for the purpose of controlling testing procedures and/or carrying out his own tests should the need arise.

The laboratory shall be equipped with the equipment required to conduct the following tests:

- Sieve analysis of gravel, sand and soil samples;
- Determination of Atterberg Limits (Liquid Limit, Plastic Limit, Plasticity Index, Linear Shrinkage);
- Determination of maximum dry density and optimum moisture content of gravel, soil and sand;
- Determination of the in-place dry density of soil or gravel by the sand replacement method;
- Determination of the in-place density and moisture content of soils and gravels by nuclear methods;
- Determination of the California Bearing Ratio (CBR);
- Determination of the fineness modulus of fine aggregate;
- Making, curing and compressive strength determination of concrete test cubes; and

Initials.....

- Determination of the slump of freshly made concrete.

Notwithstanding the equipment requirements for the above tests, the Contractor shall ensure that the following equipment is kept on site:

- Sufficient concrete cube moulds (150mm x 150 mm) to comply with the minimum frequency of sampling specified in Clause 7.1.2 of SANS 1200G and the requirements of the number of cubes per test as set out in Clause PSG 7.1.2.2 of Portion 2 of the Project Specifications;
- Cube curing baths capable of holding the number of cubes accumulated over 28 days; and
- An adequate number of 50 Kg sample bags.

The Contractor shall provide for the proper maintenance and cleaning of the laboratory, fittings and equipment during the contract period.

Note: A provisional sum has been provided in the Schedules of Quantities for any tests directed by the Project Manager

One copy of the results of all tests carried out shall be send to the Project Manager and one copy shall be kept on site at all times.

PS8.3 Sanitary Facility

The Contractor shall provide and maintain adequate and appropriate latrines for his site personnel. As the nature of the project will affect remote site areas, adequate portable toilet facilities in close proximity to the project area shall be provided. At least 1 latrine will be provided per 10 people.

Latrines shall be effectively screened from view and maintained in a clean and sanitary condition to the satisfaction of the Project Manager or Council’s Health & Safety Officer. The Contractor shall make all the necessary arrangements for the regular removal and emptying of the sanitary pails. The cost of establishing and maintaining of portable toilets is provided for in the Bill of Quantities.

If at any time the Contractor fails to observe the abovementioned conditions and after being notified by the Project Manager, fails to rectify conditions, the Project Manager shall have the right to appoint any workmen as may see fit, to maintain clean and hygienic conditions. All related costs will be covered by the Contractor.

PS8.4 Telephone Facilities

The Contractor is not required to provide a site telephone and fax machine. It is however be required that the Contractor can be reached via email or cellular phone.

PS8.5 Contract Name Board

Initials.....

Two (2) standard name-boards similar in size to that of the Association of Consulting Project Managers of Namibia shall be provided under this contract.

The name board shall be erected within **three (3) weeks** of the award of the contract. It shall be maintained in good order for the duration of the contract and shall be removed by the Contractor at the end of retention period. The Project Manager's representative will determine the location of these boards.

The details of the layout and wording on the name board will be given by the Project Manager to the Contractor with the award of the Contract.

PS8.6 Survey Equipment and Assistants

The Contractor is required to have on site at all times a level with tripod, a single second tachometer with tripod, two 4-meter-long measuring staffs graduated in centimetres and 5m steel measuring tape which shall be shared with the Project Manager.

The Contractor shall also avail to the Project Manager when required two (2) experienced survey assistants.

PS8.7 Drawing Records

As the work progresses, the Contractor shall keep full records of all amendments to and deviations from the drawings as issued to the Contractor at the start of the contract. The Contractor must submit this information monthly with his payment certificate to the Project Manager. The true positions, invert levels and ground levels of all services shall be indicated on the drawings, for which purpose the Contractor shall receive a separate complete set of drawings from the Project Manager at no cost. The actual position and depth of any future connections, as well as any previously unknown existing services shall also be provided.

The completion certificate shall only be issued after the Project Manager has received a properly completed set of "**record**" drawings from the Contractor. No separate payment shall be made for this service as all costs related thereto shall be deemed to be included in the relevant items.

PS8.8 Site Instruction Book

A triplicate site instructions book for site instruction purposes shall be supplied free of charge by the Contractor and shall at all times be kept on the Site and accessible to the Project Manager during normal working hours. Only instructions received from the Project Manager shall be considered formal and binding.

PS8.9 Visitors Register

A visitor's register must be kept on site and signed by anyone visiting the site. The register should make provision for comments and date.

PS8.10 Site Diary Book

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A site diary book shall be availed by the Project Manager to record the day-to-day events on site. It is in the Contractor's best interest to keep the site diary book up to date.

PS8.11 Request for Approval of Works Book

A template for request for approval of works shall be provided by the Project Manager to the Contractor to record and request formal inspections of the completed work. No formal inspections of the completed works shall be conducted prior to the completion of the form.

PS8.12 Request for Information System (RFI)

A template for request for information pertaining to the works shall be provided by the Project Manager to the Contractor to request critical information pertaining to the works. Formal replies shall be recorded in this system and followed with written site instruction (if required).

PS8.13 Rain gauge

Rainfall during the construction period shall be measured on site by the Contractor from a representative point. All equipment necessary is to be supplied, installed, maintained and removed at the completion of the contract by the Contractor at his own expense and access to such a point must be restricted.

PS8.14 Permits and Wayleaves

Wayleave for working close to or in the proximity of any existing services shall be applied for by the Contractor. The existing services must be indicated by the relevant authority and stamped and signed-off before any excavation may commence. If the above is not complied with and services are damaged, then all resulting costs will be for the Contractor's account.

PS8.15 Alteration, Addition, Extension and Modification to existing works

The Contractor must familiarise himself of the position of all existing services and structures and report any discrepancies or services not shown on the drawing to the Project Manager

The Contractor must verify the list of benchmarks shown on the drawings for the setting out of the works and confirm the accuracy.

Sufficient photos of existing structures, walls and areas that have to be crossed must be taken by the Contractor and handed over to the Project Manager before such operations commence. No payment will be made in this regard and it shall be deemed to be covered in the preliminary and general items.

PS8.16 As-built Drawings

Initials.....

As the work progresses, the Contractor **shall keep full records of all amendments to and deviations from the drawings as issued to the Contractor at the start of the contract.** This information must be submitted monthly by the Contractor with his payment certificate, to the Project Manager

The completion certificate shall only be issued after the Project Manager has received a properly completed set of "as built" drawings from the Contractor. No separate payment shall be made for this service as all costs related thereto shall be deemed to be included in the related items.

PS 9: SECURITY AND SAFETY

It shall be the responsibility of the Contractor to control access to the site during the execution of the Contract to prevent any unauthorised persons from entering the site. The Contractor shall provide security guards for this Contract as he deems fit. However, it is recommended that at least one security guard must be on duty 24 hours a day at the campsite.

It shall be the responsibility of the Contractor to control access to the site during the execution of the Contract to prevent any unauthorised persons from entering the site.

The drawings and other construction details are confidential and shall not be disclosed to any third party.

Since the construction occurs in an area where there is an existing bulk water infrastructure, the Contractor must take the safety of the existing infrastructure into account during the planning and execution of the works. All open trenches, services, material and machines must be protected and clearly marked.

Construction methods must be of such a nature that no infrastructure is damaged as it is the bulk water supply line to the towns of Walvis Bay, Swakopmund and Arandis.

The Contractor shall appoint a responsible person as well as an assistant for him and their names shall be forwarded to the Project Manager in writing before any work may commence. The responsible person shall legally be responsible for all safety aspects on site. No work may be executed on site if neither of these two persons is on site. The Contractor will be held liable should any incidences occur where safety personnel is not present.

The Contractor will be responsible for the safety of his personnel and the site in general at all times. All laws, rules and regulations shall be strictly followed in this regard and all the necessary precautions and measures shall be taken to ensure the safety of personnel, the public and equipment.

The Contractor shall apply suitable proven methods for construction complying with the relevant Acts, as well as with the Occupational Health and Safety Specifications Plan so

Initials.....

that his activities will not constitute a hazard to his work force, the public or any adjacent property.

All excavations shall be suitably safeguarded and barricaded especially during night-time, weekends or holidays and any other day of inactivity by the Contractor. The Contractor shall also ensure that excavations are shored or otherwise made safe. The camp and construction site will be locked after hours to ensure safety of passers-by. No additional payment will be made to the Contractor for complying with these requirements.

The Contractor shall take every precaution to ensure safety and to protect the works and temporary works from theft and vandalism. The Contractor will be responsible for the safety and security of their personnel, materials on site and the works in general at all times.

PS 10: SITE INSPECTION

The bidder shall inspect and examine the Site and its surroundings and shall take full account of the form and nature of the Site, its surroundings, the ground and sub-soil (so far as is practical) and the access to the Site in preparation of his Bid.

An official Pre-Bid Meeting and Site Visit will be held by the Project Manager, on the date and time indicated in the Bid advertisement. The venue for the Pre-Bid Meeting will be announced prior to the meeting.

PS 11: SOURCES OF NATURAL MATERIALS

PS11.1 Gravel

Borrow materials for earthworks, layer works and bedding material can be obtained from existing licensed borrow pits. The borrow pit should have an Environmental Clearance Certificate (ECC).

In the event, that royalties have to be paid, the cost therefore shall be deemed to be covered by the rates for various items of work for which these materials are used and no additional payment will be made in this regard.

The contractor is to make his own investigations and arrangements with the owners of the borrow pits to obtain the specified material.

The Project Manager reserves the right to direct the use of and/or to reserve the available material in the borrow pits. The Contractor shall comply with the Project Manager's instructions in this regard even if it means adapting his construction programme.

The Contractor shall be aware that the Project Manager may decide to use a better-quality material than the minimum specified in the Contract Documents.

Alternative or additional sources proposed by the Contractor shall produce material with properties after completion of construction at least equivalent to those of material designated by the Project Manager.

Initials.....

PS11.2 Stockpiling

Stockpiles of excess overburden, unsuitable material and approved gravel shall be kept separately in such a manner that they do not obstruct the further exploitation of the borrow source.

No payment will be made for the stockpiling operations specified above, nor will any claim be considered which may arise from the Contractor's failure to comply with the requirements of this Clause.

No sites for temporary stockpiling have been identified. The Contractor shall be responsible for proposing, for approval by the Engineer after consultation with the relevant authorities and communities, the location and size of any areas required for the temporary stockpiling of materials.

PS11.3 Spoil sites

No formal spoil sites have been identified for this project. Spoil sites shall be planned and agreed by the Contractor and the project Manager well in advance of the earthwork's operations takes place, considering:

- The type and volume of material to be spoiled
- Cost considerations
- Environmental and community considerations
- Any authority approvals required.

It is anticipated that the following areas will be used as spoil areas:

- Previously worked out borrow areas
- Existing erosion areas/dongas
- New borrow and quarry excavations and areas
- Areas to be levelled for community facilities (sports fields etc) as agreed with the community.

PS11.4 Aggregate for Concrete and Surfacing

Aggregate and sand for concrete and surfacing can be obtained from commercial sources or crushing and screening of suitable sources which need to be approved by the Project Manager. No separate payment will be made for this work.

PS11.5 Water for Construction Purpose

The Contractor shall be responsible for obtaining all the water required for the contract.

All water proposed for construction purposes has to be tested for the presence of undesirable minerals and impurities.

Initials.....

Any temporary pipelines supplied and laid by the Contractor shall be removed before or at the end of the construction period.

PS11.6 Disclaimer

The information regarding the subsurface conditions, materials and groundwater potential on the site is provided in good faith for the Contractor's convenience as an indication of the conditions likely to be encountered. No responsibility will be accepted for, and there is no guarantee of, the information being representative of the whole area of the Works or of the various materials encountered.

The provision of such information shall not be regarded as in any way limiting, or detracting from, the Contractor's responsibilities in terms of the General Conditions of Contract or the Specifications.

The Contractor will be held to have satisfied himself as to the subsurface conditions to be encountered on the Site and to have allowed accordingly in his tendered rates.

PS 12: LIAISON WITH LOCAL AUHORITIES AND LANDOWNERS

The Contractor shall at all times liaise closely with the Local and Regional Authorities regarding the execution of the Contract. In particular the Contractor shall not enter any land or touch any service without first contacting the owner and/or service provider.

The Project Manager also contacted the relevant authorities and has details of the relevant contact persons at the relevant government department, local authority and service provider.

Nevertheless, the Contractor must be sensitive to the residents' concepts of ownership. This will be particularly relevant if crops have been planted on land for which compensation has already been paid. Resolving any land issues which arise shall be a team effort involving the Contractor, the Project Manager and, if necessary, the Employer.

Special attention shall be given to the section of pipeline in the vicinity of the existing water and electrical infrastructures. A formal correspondence of the Contractor's intention to commence with works in the area shall be submitted to the Project Manager **three (3) weeks** prior to the commencement of works in the area.

PS 13: ALTERNATIVE DESIGNS OF MATERIALS

PS13.1 General

Generally, offers for materials, designs or methods other than shown on this drawing, specified or mentioned in the Schedule of Quantities will be considered. However, alternatives will be considered only if all items of the original Schedule of Quantities have been priced to the original specification and the other requirements of the tender documents been met.

Initials.....

PS13.2 Particulars

Any such alternatives will only be considered, if detailed particulars are submitted at the time of tendering and provided that, in the option of the Project Engineer, a detailed and efficient design has been made. Generally, offers for materials, designs or methods other than shown on this drawing, specified or mentioned in the Schedule of Quantities will be considered. However, alternatives will be considered only if all items of the original Schedule of Quantities have been priced to the original specification and the other requirements of the tender documents been met.

PS13.3 Responsibility

The responsibility and the extent of the work required of any Bidder offering an alternative shall be the same as implied in the Specification of these Documents.

PS13.4 Schedule of Quantities

Bidder shall prepare additional but separate Schedules of Quantities covering essentially the same items as in the Schedule of Quantities included in these Documents or such additional items that are a requirement of the particular alternative Tender.

PS13.5 Details to be submitted

Each Tender for an alternative shall accompanied by the following:

- Fully detailed design description, calculations and drawings.
- If structural design calculations are required, those calculations must have been checked by an independent recognised institution before the submission of the offer.
- Specifications and references to any standard specifications.
- Detailed description of manufacturing and construction processes.
- Standard dimensions that can be supplied and tolerances on dimensional requirements.
- Factory testing and quality control methods.
- Methods of handling and transport.
- Any other information that the bidder may regard as relevant and important.

PS 14: QUALITY CONTROL AND QUALITY ASSURANCE

The Contractor will be solely responsible for the compliance of the works to the Specifications and to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to undertake appropriate quality control and quality assurance measures on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to ensure that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure.

Initials.....

PS 15: FEATURES REQUIRING SPECIAL ATTENTION

PS15.1 Alternative Offers

Not Applicable to this Contract.

PS15.2 Existing Services

The Contractor shall be responsible for the location of all existing services and shall take special care not to damage any existing services and structures on site.

The Contractor will be provided with information regarding the approximate position of all existing services as could be established to the best knowledge of the Project Manager. Before commencement of construction the Contractor shall acquaint himself with the position of all existing services before any excavation or other work likely to affect the existing services is commenced. The Contractor will be held responsible for damage to existing services and any damaged caused by or arising out of the Contractor's operations shall be made good at his own expense.

The Contractor shall verify details, positions and levels of all existing services well in advance of undertaking related works to prevent any possible delays if such services are not as mapped. No claims related to the late verification of existing services shall be entertained.

The provided drawings or other information indicating the position of existing services shall in no way relieve the Contractor of his obligation hereunder to acquaint himself with the position of all existing services nor of liability for damage to such services.

All electrical cables shall be considered as live at all times. Contact NORED at least two weeks prior to the date on which cable location is required. All associated costs will be to the Contractor's account.

The Contractor will be held responsible at all times for the security of any existing services (including the cost of any repairs) and for the safety of the general public in the vicinity of excavation work.

The contractor must be extra careful when mechanical plants are being used in the vicinity of existing services (i.e. overhead electrical lines, water lines).

The Contractor is fully responsible for the protection of all services. The Contractor will be held responsible for damage to services, which are:

- In the approximate position of services indicated on construction drawings.
- Where the presence of such services can reasonably be foreseen by an experienced Contractor from associated surface structures or markings or underground warning tape.
- Where they have been informed of the presence of such services by any person or authority.

Initials.....

The Contractor will be held responsible for any damage to “known” existing services caused by or arising out of his operations. Existing services will be considered “known” if it is either shown on the construction drawings, wayleaves or shown to the Contractor on site. The penalty for damage to a “known” existing service will be N\$2 000.00 plus the cost of repairing and reinstating such service.

In the event of damage caused to a service by the Contractor, the Contractor shall take such immediate action as is necessary to prevent further damage or danger to life and property and shall notify the Project Manager immediately, who will then issue instructions as to the necessary measures to be undertaken. The cost thereof shall be borne by the Contractor irrespective of whether the repairs or protective measures are carried out by themselves or by the owner or a representative of the owner of the service.

Some of the existing roads, water reticulations, and electrical systems crossing the site of the works need to be maintained by the Contractor and no disruptions of services will be tolerated.

Lump sums are inserted into the Schedule of Quantities for the location of all existing services within certain sections of the Works and no additional payment will be made for the provision of protective measures, co-operation with and providing access to Authorities concerned, delay to the construction arising from moving or protecting services or claims arising from damage to or relocation of existing services.

PS15.3 Disruption of Existing Service

Any work requiring the disruption of an existing service shall be carried out as quickly as possible. The estimated time and date required for the work shall be presented beforehand to the Project Manager for his approval.

PS15.4 Accommodation of Traffic

The Contractors shall accommodate normal traffic wherever possible and reasonable during the construction of the pipelines and will erect suitable warning signs which comply with the Road Traffic Ordinance to warn all traffic of these construction activities. The costs for the accommodation of traffic shall be included under the pay item provided in terms of Clause 8.8.2 of SANS 1200 A in the relevant sections of the Schedule of Quantities.

PS15.5 Test on Completion of the Works

The Contractor will be required to test the Works as specified in the Project Specifications. These tests will include the hydraulic testing of all the pipe lines.

A Certificate of Completion will not be issued before such tests have been successfully completed and the test results have been submitted to and accepted by the Project Manager.

PS15.6 Restoring Surfaces

Initials.....

The Contractor will be held responsible for all damage to existing surfaces, kerbs and channels outside the specified excavation dimensions, and the work has to be restored at his own expense to the satisfaction of the Project Manager

All rubbish, tools, tackle, plant and material must be removed immediately from each section of the work as soon as it is completed. Each completed section of the work is to be left in a neat, tidy and orderly state.

PS15.7 Contract Manager

The successful bidder shall notify the Project Manager in writing, within 14 days after receipt of the letter of award, of the name, qualifications and experience of the Contract Manager he proposes to appoint for the project. For bidding purposes, the intended Contract Manager shall be listed on FORM 1.5, Section IV (Bidding Forms), Qualification Information.

PS15.8 Supervising Staff

The Contractor shall ensure that sufficient supervisory staff, the required transport, instruments, equipment and tools are available to control works on site. The Contract Manager or his representative will not act as supervisor, foreman or surveyor.

All Construction activities shall be executed and supervised by suitably qualified and experienced personnel.

PS15.9 Quality Assurance

The quality of work and workmanship will be strictly monitored and in no way will work quality be compromised. All work shall meet the requirements of the specifications. The quality of work is not negotiable.

Quality Assurance System (QAS) shall consist of procedures compliance with all requirements of the contract. Contractor shall ensure that all key staff members are trained to implement and documents quality assurance system on the project. The following are some of the QAS requirements:

- Minimum requirements;
- Quality control systems;
- Measurement systems;
- Approval systems; and
- Site administration.

The quality assurance system shall be divided into “general” and “project specific” parts. The “general” part shall contain the Contractor’s standard best practice. The “project specific” part shall contain project specific requirements, especially with regards, to the Quality Control System, which shall reflect the requirements of the Standard and Project Specifications.”

Initials.....

PS15.10 Testing Methods and Frequency

All testing methods and their respective testing frequencies shall be strictly in accordance with the methods specified in the applicable SANS 1200 (or equivalent SANS 1200) standard specifications. No additional payments will be made towards the testing of work and the Contractor should allow for the required testing in his Bid.

PS15.11 Workmanship

The onus shall rest on the Contractor to produce work that conforms in quality and accuracy of detail to the requirements of the specifications and drawings. The Contractor shall at his own expense institute quality control system to provide experienced project managers, foreman, surveyors, materials technicians, other technicians and technical staff (with all transport, instruments and equipment) to ensure adequate supervision and positive control of the works at all times. The cost of the supervision and process control and including testing carried out by the Contractor shall be deemed to be included in the rates tendered for the related items of work.

Contractor's attention is drawn to the provision of the various standardised specifications regarding the minimum frequency of testing required for his process control. The Contractor shall at all times at his own discretion increase this frequency where necessary to ensure adequate control. On completion and submission of every part of the work to the Project Manager for examination, the contractor shall furnish the Project Manager with results of the relevant tests, measurement and levels to indicate compliance with specifications.

PS15.12 Traffic Control and Access to Property

The successful Contractor must allow for provision and erection of all necessary barricading, road traffic sign boarding and lighting and for the posting of flagmen. When sections of a road have to be closed, the correct warning signs have to be displayed in positions which will allow traffic to change course without vehicles having to reverse or turn around. The road signs to be displayed during the contract shall be in accordance with "The road signs to be displayed during the contract shall be in accordance with "The South African Road Traffic Signs Manual" or accepted equivalent (Namibian Roads Traffic Signs Manual" or accepted equivalent

PS15.13 Existing Residential Areas

Electricity and water supply interruptions in surrounding areas shall be kept to an absolute minimum. The Project Manager's approval shall be obtained prior to such interruptions and residents shall be notified in writing at least 24 hours in advance. All supplies shall be normalised by 16h00 on the same day.

PS15.14 Liaison Meeting

Initials.....

The liaising of all parties involved on this Contract is of prime importance. The Contractor therefore needs to arrange ad-hoc meetings with stakeholders such as local authorities, NORED etc.... on a regular basis to keep them well informed of the progress of the works.

PS15.15 Safeguarding of Excavations and Trenches

The responsibility of safeguarding of excavations lies entirely with the Contractor. No trenches may be left open during the Builder's Holidays. The onus shall rest with the Contractor to protect the public against dangerous on-site conditions such as open trench excavations, manholes etc. Special attention is drawn to the fact that the Contractor needs to ensure safe pedestrian and vehicular movement and access at all times especially at night. The Contractor should therefore identify and safeguard potential hazard before the end of each working day especially on weekends.

PS 16: EXISTING ROADS AND ACCOMMODATION OF TRAFFIC

PS16.1 Existing Roads

There is formal access road to the site. The Contractor will have to make the necessary arrangements to gain access to the site for construction purposes. Although there is formal access to site, the project area does not have formal gravel road and this shall be considered by the Contractor when preparing this Bid as there might be a need to construct temporary access road for the duration of the Contract.

PS16.2 Accommodation of Traffic

As the project site is located away from built up area and with only existing water and electricity infrastructure, and low volume of traffic, the successful Contractor shall erect all necessary and applicable road signs near the construction area and also ensure that it is visible to any road users that may pass by the site. It is important that the signage comply with the Road Traffic Ordinance, during the course of construction period. The costs for the traffic accommodation and possible construction of gravel road for access shall be included under the pay item provided in terms of Clause 8.3.3.2 of SANS 1200 A in the relevant section of the Schedule of Quantities.

PS 17: OVERHAUL

All rates for materials or excavation shall allow for all hauling to and from the Site. For this contract free-haul shall therefore continue indefinitely and no overhaul shall be paid.

PS 18: BLASTING

No blasting will be permitted in this Contract

The Contractor will indemnify the Employer from any damages to any property by any blasting to be done by the Contractor or any sub-contractor appointed by him. In all cases the requirements of the applicable blasting regulations in Namibia will be met and the Contractor will adhere to any instruction given by the local authorities.

Initials.....

PS 19: ASBUILT DRAWINGS

The Contractor shall, on completion of the Works, submit a complete set of "as built" drawings for the project. The drawings must be in a reproducible form and on a durable material of at least a polyester base with a minimum thickness of 0.5 mm. The drawing size shall be A1, using the Employer’s drawing title block as varied, and approved by the Project Manager, for the use by the Contractor. The drawings must be numbered and titled as directed by the Project Manager and to the same standard as the drawings issued with the Bid and shall be prepared using an approved CAD system. As built drawings shall be submitted in dwg or dxf format only. Drawings compiled through converted from pdf files to dwg format shall not be accepted. **The Taking-Over Certificate of the Works shall not be issued until the "as built" drawings have been received and approved by the Project Manager.**

PS 20: DAMAGES FOR LATE COMPLETION

Should the Contractor find that it will not be possible for him to comply with the time for completion of the works as specified in the bid, he shall inform the Engineer in writing of the anticipated delay, the reason therefore and the new anticipated delivery date, which information shall be used to assess the reasonableness of any claims for extension of time if and when these are submitted by the Contractor. If the Contractor fails to submit the written information described above or fails to submit this within the time period as stipulated in the GCC, or if the reasons for the delay are not acceptable, delay damages (of percentage states in the SCC 46.1) of the total Contract Price per calendar day will become payable by the Contractor to the Employer in terms of Clause 46 of the GCC and will be deducted from any monies due to the Contractor.

PS 21: WORKING HOURS

The Contractor shall limit his operations hours to normal working hours, which shall be defined as sunrise to sunset, Monday to Friday. The Contractor shall make allowance for all working restrictions, public holidays, and the normal construction industry holidays, in his tender. The Normal industry holiday runs from early December to early January, but it is not statutory.

Should sub-contractors be employed by the Contractor, such sub-contractor will follow the same working hours as the main Contractor. A sub-contractor will not be allowed to work on site without the Contractor’s Representative on site.

PS 22: NON-WORKING DAYS

The Contractor shall not work on the statutory Public holidays as gazette as listed below:

- New Year’s Day (1 January)
- Independence Day (21 March)
- Good Friday (3 April)
- Easter Monday (6 April)

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- Workers Day (1 May)
- Cassinga Day (4 May)
- Ascension Day (14 May)
- Africa Day (25 May)
- Genocide Remembrance Day (28 May)
- Heroes Day (26 August)
- International Human Rights Day (10 December) and
- Christmas Day and Family day (25/26 December)

Note: Where any of these days fall on a Sunday the following Monday will be special non-working day.

PS 23: SAMPLES

The Contractor shall supply the required samples at his own cost in terms of the General Conditions of Contract. Materials or work that does not conform to the approved samples shall be rejected. The Project Manager reserves the right to submit samples for test to ensure that the material represented by the sample, meeting specification requirements.

PS 24: NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS

The Contractor shall erect the necessary signs, notices and barricades for the duration of the contract to safeguard the works and public. Notices, signs and barricades as well as advertisements may be used only if approved by the Project Manager. The Contractor shall be responsible for the supply, erection and maintenance and removal of the road signage. The former shall be deemed to be included in the Contractor’s tendered rates.

The Project Manager has the right to have any sign, notice or advertisement moved to another position, should they in any way prove to be unsatisfactory, inconvenient or dangerous to the general public. Such barricades shall be provided at the Contractor’s own expense.

PS 25: DEALING WITH WATER

The Contractor is responsible for the control of storm water from adjoining areas, the site and groundwater. No additional payment will be made and it will be deemed to be included in the rates of the relevant work items. Take note that the area is relatively flat therefore there might be standing water during the rainy season. A pay item is included under Bill 1 P&G and the rate for dealing with water shall make provision for all mentioned above.

PS 26: CERTIFICATES OF PAYMENT

The statement to be submitted by the Contractor in terms of the General Condition of Contract shall be prepared in accordance with the standard payment certificate prescribed by the Project Manager and shall comprise at least three sets of A4 sized copies. The Estimated contract value of the works executed during the month shall be agreed with the Project Manager on the site prior to the preparation of the Statement. The quantities claimed

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for the various items shall be accurate and shall not simply be guessed or based on a percentage of the Scheduled quantity.

Note: In the submission of the payment certificate, the Contractor must supply documentary proof of quantities and calculations, sketches etc. of work to be claimed in the certificate.

SANS 1200 payment clauses not shown in the Schedule of Quantities will not be applicable to the Contract. Only the payment clauses shown in the Schedules of Quantities shall prevail.

In addition, the Contractor should make provision in his rates to cover all incidentals required as per drawings to perform the task to the satisfaction of the Project Manager All costs for the preparation and submission of the aforesaid statements shall be borne by the Contractor. The Project Manager shall check and certify the payment and issued the checked payment certificate to the Employer for approval.

PS 27: VALUE ADDED TAX

Prices and rates to be inserted in the Schedule of Quantities and daywork shall be full inclusive values of the work described under the several items. It will include all costs and expenses which may be required in and for the construction of the work described together with all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based.

All items in the Bill must be priced exclusive of VAT. VAT shall be added, at a rate of 15%, to the Bid Price.

PS 28: KEY PERSONNEL

The Contractor's Site Agent and Foreman will under no circumstance be allowed to be absent from the site without the written approval of the Project Manager. Should this approval be granted, the Contractor will be required to provide an equally or better qualified replacement for the duration of the Contractor's Site Agent or Foreman's absence from the site. Any such arrangements should be done timeously.

Detailed CV of the proposed site agent and senior key personnel must be attached to qualifications information and submitted with the bid documents.

Should the Contractor fail to comply with this sub-clause, Preliminary and General payments will be withheld until such time that the Contractor does comply.

PS 29: LIMITATION OF CONSTRUCTION ACTIVITIES AND PROTECTION OF THE ENVIRONMENT

Construction activities by the Contractor shall be limited where possible to the boundaries of the pipeline route and will be done with minimum disruption to the environment.

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The Contractor shall carry out such instructions from any relevant authority, given through the Engineer, which may be necessary for the preservation of the environment within which the Works are situated.

The ESMP, NSMPs and the NamWater Environmental Code of Conduct (NECC) which form an integral part of the Contract are attached to this Bidding Document and provides measures to the Contractor for environmental and social compliance. The Engineer will monitor these provisions during construction to ensure compliance. The Contractor is obliged to sensitize the workforce on environmental issues, since all members of the construction team will be expected to co-operate in this regard. The Contractor shall appoint a member of his staff to act as Environment Control Officer (ECO) in terms of Clause 6.7 of the General Conditions of Contract. This person shall be responsible for liaison with the Engineer in respect of environmental matters and for ensuring that these environmental regulations are adhered to at all times.

The Contractor shall report monthly under a monitoring programme, on his compliance with the EMP and shall include in these reports photographs clearly showing the relevant area or site before his occupation and after rehabilitation thereof. The format of the monthly report will be instructed by the Engineer. This report shall form part of the progress report in terms of Clause 4.21 of the General Conditions of contract, but shall be bound and submitted separately for forwarding to NamWater.

The Contractor should note that the environmental and social issues are considered serious and that penalties or termination of the contract (**mentioned in the EMP where applicable**) may result in a case of non-compliance. The obligations mentioned in this EMP shall be applicable to the Contractor and his sub-contractors.

The Contractor should specifically note that all borrow pits, including existing ones pointed out by the Engineer, must be rehabilitated according to this EMP and as specified in the tender document. Before the release of any retention monies, the Contractor must submit proof to the Engineer that he has fulfilled all requirements of the various acts which deals with the rehabilitation of quarries. He must also submit a letter from the relevant landowners and/or authorities in this regard.

A special duty of care is laid upon the Contractor to conduct all his operations in a manner specifically calculated to restrict his operations to the site area, except where he must unavoidably move outside the area for the sole purpose of actions essential, in the opinion of the Engineer, for the execution of the work.

All elements of the work are required to comply with the EMP, ESMPs and NECC will be deemed to be included in the Bidding rates.

PS 30: INCLEMENT WEATHER CONDITIONS

The Contractor shall make allowance for the average rainfall conditions that may exist during the contract period. All necessary steps shall be taken to proceed with the works

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despite inclement weather. The Contractor shall however record all rainy periods which adversely affect the contract extension of time of the general conditions of contract, arising from abnormal climatic conditions.

The contractor shall take note of the fact that the following anticipated number of days that may be lost due to climatic conditions during this contract.

Table 30-2: Number of days lost due to inclement weather

Month	Working Days Lost (no compensation)	Average monthly rainfall
January	3	298.41
February	2	268.22
March	3	224.6
April	4	91.53
May	0	4.91
June	0	0
July	0	0
August	0	0
September	0	0
October	2	62.8
November	1	292.31
December	2	118.59

No claim for extension of time will be considered where working time was lost because of rainfall/sandstorm which could normally have been expected to occur during a certain period.

There is no hydrological information available, however it may be noted that it can be foggy windy and dusty at times, thus the contractor is expected to programme and protect his works such that he is not severely affected by the above-mentioned weather conditions. Therefore, Bidders should ensure that their bid prices adequately consider the effect of such conditions, and remedial damage thereto.

For the purpose of this contract the number of days expected to be lost per month as a result of rainfall is listed in **Table 30-1**. The Contractor shall therefore be deemed to have allowed in his program and Bidding rates for at least the number of days per month listed as expected days lost as a result of rainfall.

To submit a claim for an extension of time due to inclement weather conditions the number of days more than the number of working days anticipated to be lost as per the table above shall be taken into consideration. The contractor shall give a written notice with the following details:

- The times work was stopped and recommenced.
- A motivation for the reason's construction could not continue, with reference to the agreed construction programme activities and whether the critical path has been affected.

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- A report on active resources (material, plant, labour) on site at the time of the disruption, which shall be certified by the Project Manager's site representative or Clerk-of-Works.
- The circumstances surrounding any instruction by a third party to stop work due to inclement weather (i.e., Industrial Council/Safety Officer, etc.).

The Contractor shall submit to the Project Manager notice for all time lost due to inclement weather within 14 working day of the event, duly certified by the Project Manager's representative or Clerk-of-Works, as the case may be. A record of inclement weather will be kept and summarized at site meetings. Only when all parts of the contract have been handed over will claims, if any, be considered for exceptionally inclement weather. The onus is on the Contractor to prove these claims within the specified period as per GCC.

Extension of time as a result of rainfall shall be calculated monthly and shall be regarded as the total number work days on which no work was possible less the number of days listed in the **Table PS 30-1, provided that the Project Manager's Representative certifies lost day(s) due to adverse weather conditions**, which he will do only if:

- No work on the critical path could be carried out during the specific working day(s); or if
- Only 30% or less of the work force and plant on Site could be employed during the specific working day(s)

The contractor is required to setup a rain gauge (or other instruments for measuring rainfall) on site, and to keep records of rainfall data to substantiate his claims for Extension of Time.

The delays granted, in terms of this clause, shall not automatically result in an overall extension of time being granted for completion of the works unless the effect is clearly applicable to the critical path of the agreed construction programme.

PS 31: MANAGEMENT

PS31.1 Maintenance of Accesses and Streets

The Contractor must note that no additional payment will be made for the construction of temporary access roads to the construction site, borrow areas or to the spoil sites, except for payment made under payment item A 8.3.2.2 of SANS 1200 A.

PS31.2 Blasting Operation

No blasting is required on this project based on the scope of work and general geology of the project area.

The commander of the local Police Services shall be informed of the time and date that blasting operations will take place at least 6 hours before blasting. No blasting operations may take place on weekends or holidays or after 17:00 on weekdays.

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The Contractor shall ensure that sufficient suitable cover material, to the satisfaction of the blaster, is available and in place before a blast is initiated.

PS31.3 *Interference with NamWater Staff and Operations*

The Contractor shall ensure that none of his staff interfere in any way with any NamWater staff member or their functions.

Any member of the Contractor's staff found to be interfering with NamWater staff or operations in any way shall be removed from the site and shall not be allowed to return.

PS31.4 *Giving Notice of Work to Be Covered Up*

The Contractor shall give the Project Manager reasonable time to accommodate examinations in his programme, in which case times for inspections can be agreed on. Requests for inspection of work shall be made in the site request book 24 hrs. in advance and furthermore, the Project Manager shall be notified through an email.

If the Project Manager attends with the purpose of examining any part or materials of the works at the time and date as agreed upon with the Contractor, and it is found that the works or materials are not yet ready for inspection, the Contractor shall be responsible for the costs of such a visit by the Project Manager

PS31.5 *Cost of Test Specimens and Tests*

It is deemed that the Contractor has made provision in his tender for all such services and tests that are required from him. It is the duty of the Contractor to prove, at his own cost and by means of the necessary tests, to the Project Manager that the works and compaction where prescribed, comply with the specification.

PS31.6 *Demarcation of the Site*

For the purpose of the EMP, the site shall be divided into two areas identified by the Project Manager and the Contractor:

The construction camp comprising all buildings, offices, lay down yards, vehicle wash areas, fuel and material storage areas, batching areas and other infrastructure that is required for the running of the job.

The working area is the area in which construction activity is permitted to take place. No infrastructure, permanent lay down or storage areas shall be established in this working area unless specified in the project specification or prior approval is obtained from the Project Manager

PS31.7 *Construction Camp*

The construction camp shall be planned in such a way so as to affect as small an area as practically possible.

PS31.8 *Fencing of the Site*

If a temporary fence is required, the Contractor shall erect and maintain such a fence (demarcating the boundary of the working area, construction camp and access roads) to the

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satisfaction of the Project Manager. The erection of this fence shall be one of the first tasks undertaken by the Contractor after the commencement date. The boundaries between the construction camp area and the working area within the site shall also be fenced.

The Contractor shall ensure that the erection of the fencing causes minimal disturbance to flora, fauna, natural, historical and cultural features. A method statement shall be submitted to the Project Manager prior to erection to ensure proper positioning of the fence.

All material left over from fencing operations shall be collected after the fence has been erected and removed from site. Fences shall not be moved or removed without the written consent of the Project Manager. The Contractor throughout the construction period shall maintain fences.

PS31.9 Workshops

Any workshops shall be located inside the demarcated construction camp area. The exact location and design of the workshop shall be as approved by the employer and the Project Manager prior to establishment. The workshop shall have a smooth impermeable (concrete) floor. The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages of substances (e.g. oil). When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. All waste material shall be disposed of in accordance with national, regional and local laws, regulations and by-laws. This waste material shall be regularly removed off site and disposed of at an approved waste site.

PS31.10 Eating Areas

The Contractor's employees shall eat in the designated eating area indicated on the Contractor's drawing of the construction camp that has been approved by the Project Manager. No changes to the eating area shall be made without the approval of the Project Manager. The Contractor shall provide shade and adequate scavenger-proof and weatherproof refuse bins in this area.

Any cooking on site shall only be undertaken in the eating area and be done on well-maintained gas cookers with fire extinguishers present. No cooking shall be done anywhere else on site and no fires are permitted.

PS31.11 Watchmen

The Contractor shall ensure that a watchman is present on site during all non-working hours, including public holidays unless otherwise agreed with the Project Manager to ensure the safety of sensitive areas.

PS31.12 Solid Waste Collection Areas

"Solid waste" refers to all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

The Contractor shall set up a waste control and removal system. The Contractor shall submit a method statement for waste control and removal to the Project Manager for approval prior to commencement. Bins shall be closed, weatherproof and scavenger-proof.

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Waste shall be collected from these bins on a daily basis and shall be stored in a central collection area prior to removal off-site. The waste from this central collection area shall be disposed of off-site at an approved waste site. Waste shall be removed from site on a regular basis as approved by the Project Manager. Waste shall not be burnt or buried on site or in the surrounding area. Where possible, appropriate material shall be reused or recycled.

PS31.13 *Fuel Storage Areas*

Fuels required for use during construction shall be stored in a depot at the construction camp at a location as agreed upon by the Project Manager. The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are kept firmly shut. The tanks shall be situated on a smooth impermeable (plastic or concrete) base with an earth bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 1,5 x the total capacity of the storage tanks. The bunded area shall be emptied of water following rainfall events. The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel and / or fuel-soaked water to be removed.

The Contractor shall keep fuel under lock and key at all times.

PS31.14 *Concrete Batching Area*

Cement and concrete are regarded as hazardous to the environment due to the high pH of the material and the chemicals it contains.

The Contractor shall submit a method statement for mixing of concrete for approval by the Project Manager indicating where the mixing will take place and the methods to ensure that wastewater and materials are contained in the batching area and disposed of correctly. Concrete shall not be mixed directly on the ground.

PS31.15 *Equipment Maintenance and Storage*

All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the site. Where possible, all maintenance of equipment and vehicles shall be performed in the workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain agreement from the Project Manager prior to commencing activities.

The Contractor shall demarcate an area in which equipment and vehicles may be stored. The location of this area shall be as approved by the Project Manager. The Contractor shall take measures to ensure that there is no pollution of this storage area by leaks or drips.

PS31.16 *Materials Handling, Use and Storage*

The Contractor is responsible for ensuring that any material delivery drivers are informed of all procedures and restrictions (e.g. which access roads to use, “no go” areas, speed limits, dust control, etc.) required to comply with the EMP before they arrive at site and off load any materials. The Contractor shall ensure that the delivery drivers are supervised

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during off-loading by someone with an adequate understanding of the requirements of the EMP, so as to ensure that all relevant requirements of the EMP are followed.

PS31.17 Hazardous Substances

The Contractor shall comply with all relevant national, regional and local legislation with regard to the transport, use and disposal of hazardous materials.

The Contractor shall provide the Project Manager with a list of all hazardous materials to be used on site, together with the storage, handling and disposal procedures of the materials. This information shall be available to all personnel on site.

The location of the hazardous material store shall be within the demarcated construction camp area. The location and design of the store within this area shall be approved by the Project Manager prior to establishment.

PS31.18 Fuel (Petrol and Diesel) and Oil

Where possible, the Contractor shall ensure the refuelling of vehicles takes place only at the fuel storage area in the construction camp. Where this is not possible, the Contractor shall notify the Project Manager to get his approval of the refuelling method to be used. The surface under the refuelling area shall be protected against pollution to the satisfaction of the Project Manager prior to any refuelling activities. All equipment that leaks shall be repaired immediately or removed from the site. Refuelling shall be carried out by means of pumps, rather than funnels.

PS31.19 Emergency Procedures

The Contractor shall ensure that emergency procedures for the following situations are submitted for approval to the Project Manager prior to establishment of the site.

PS31.20 Fire

The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his staff and the staff of Subcontractors are aware of the procedure to be followed in the event of a fire.

PS31.21 Accidental Leaks and Spillages

The Contractor shall ensure that his staff and the staff of Subcontractors are aware of the procedure to be followed for dealing with spills and leaks, which will include notifying the Project Manager and relevant authorities. The Contractor shall also ensure that the necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of spills and any damage caused by the spill or leak shall be for the Contractor's account. The Contractor shall submit a method statement for management of accidental leaks and spillages of any liquid material to the Project Manager for approval.

PS31.22 Care of Surrounding Areas

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The Contractor shall ensure that no contamination of or damage to the surrounding areas or watercourses shall occur as a result of any of his activities during construction.

Care shall be taken to ensure no accidental spillage or leakage occurs. Should any spillage or leakage occur the Contractor shall immediately stop his operations and clean up the spillage. He shall then rectify the cause of the spillage or leakage before proceeding further to ensure that no further spillages occur.

The clean-up of spillage and any damage caused by the spillage or leakage shall be for the Contractor's account. The Contractor shall submit a method statement for management of accidental leaks and spillages of any sewage to the Project Manager for approval.

The Contractor shall ensure that no pollution of the surrounding areas occurs due to wind-blown or other litter emanating from the site or from his activities during construction. No fires are permitted, neither is the cutting down of or any damage to trees and other vegetation outside of the demarcated site.

PS31.23 *Planning and Programming*

The Employer will take no responsibilities for any work done outside the site of works without approval by the Project Manager

Immediately after the handing over of the site the Project Manager and the Contractor shall discuss the order of procedure and methods in which the Contractor shall carry out the works, and to give priority to the following parts of the works to avoid delays, after which the Contractor shall compile and submit to the Project Manager, within 14 days of the commencement date, a bar chart showing the construction programme.

The programme shall be in the form of a bar chart only, and shall clearly show the anticipated quantities, the production rates and value of work to be performed each month.

A software generated bar chart (e.g. MS Projects or equivalent) shall also be provided showing the various activities and critical path in such detail as may be required by the Project Manager. The programme shall be updated monthly in accordance with the progress made by the Contractor.

It is a prerequisite of this contract that minimal disruption of the public is ensured during construction. Construction methods must be of such a nature that no property or life is endangered. The Employer accepts no responsibility for any work done outside the site boundaries without the Project Manager's approval.

Failure to comply with these requirements will entitle the Project Manager to use a programme based on his own assumptions for the purpose of evaluating claims for extension of time or additional payments.

The compilation of the construction programme and any amendments thereto during the course of construction shall be at the cost of the Contractor and shall not be measured elsewhere in the contract.

PS31.24 *Recording of Weather*

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The Contractor shall record all rainy and windy periods, which may adversely affect to the contractual time for completion in terms of clause 42 of the General Conditions of Contract.

The Contractor shall erect a rain gauge on site for the purpose of recording precipitation. Photographic record to be submitted clearly indicating the date.

PS31.25 Format of Communications

All communication regarding the contract shall be channelled through the Project Manager and/or his duly authorised representative.

A “Progress Report”, “Labour on site”, and “Plant on site” must be submitted at each site meeting.

PS31.26 Management Meeting

Management (site) meetings shall be held once a month for the duration of the project on times and dates to be agreed.

Health and Safety management meetings will be arranged by the appointed Health and Safety Officer.

PS31.27 Electronic Payments

Electronic payments, if applicable, will be discussed at the first site meeting.

PS31.28 Daily Records

Daily records must be kept as a “Site Diary”.

PS31.29 Payment Certificates

The date of measurement of the monthly payment certificate will be agreed at the first site meeting. All quantities must be agreed with the Resident Project Manager/Clerk of Works before a payment certificate is submitted.

The applicable cession forms for unfixed materials on site and unfixed materials not on site as shown in on form to be supplied must be submitted with each payment certificate if applicable.

PS31.30 Health and Safety Requirements

Before starting work on site, the Contractor shall present to the Employer his Health and Safety Plan for approval. He shall also appoint a Health and Safety Officer in writing and give a copy of the letter of appointment to the Employer.

The Health and Safety Specifications are attached and must be referred to when compiling the Health and Safety Plan.

PS31.31 Access to Site by Public

The Contractor shall erect fences and employ sufficient security personnel to prevent unauthorised access to the site by members of the public. Notices prohibiting access to the site shall be clearly displayed at all access points.

The notices shall be in English, Afrikaans and the most commonly used local language.

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PS 32: WORKING TIMES

Normal working hours shall be between 07:00 and 17:00 on weekdays from Mondays to Fridays and between 07:00 and 13:00 on Saturdays, should the Contractor choose to work on Saturdays, excluding Public holidays.

PS 33: COPYRIGHT

All records connected with or referring to the contract in any way shall become the property of the Employer in whom the copyright shall rest.

PS 34: APPLICABLE STANDARDISED AND PARTICULAR SPECIFICATIONS

PS34.1 Standardised Specifications

For the purpose of this Contract the latest issues of the following Standard Specifications for Civil Engineering Construction of SANS 1200 and variations for Civil Engineering Construction Works, applicable at the date of tender advertisement, shall apply and the work has to be executed to the satisfaction of the Project Manager and the Employer.

SANS 1200 A	:	1986	General
SANS 1200 AA	:	1986	General (Small Works)
SANS 1200 AB	:	1986	Project Manager's Office
SANS 1200 AD	:	1986	General (Small Dams)
SANS 1200 C	:	1980	Site Clearance (Amendment 1, 1982)
SANS 1200 D	:	1988	Earthworks (Amendment 1, 1990)
SANS 1200 DA	:	1988	Earthworks (Small Works) (Amendment 1, 1990)
SANS 1200 DB	:	1989	Earthworks (Pipe Trenches)
SANS 1200 DM	:	1981	Earthworks (Roads, Subgrade)
SANS 1200 G	:	1982	Concrete (Structural)
SANS 1200 GA	:	1982	Concrete (Small Works)
SANS 1200 GE	-	1984	Pre-cast Concrete (Structural)
SANS 1200 H	:	1990	Structural Steelwork
SANS 1200 HA	:	1990	Structural Steelwork (Sundry Items)
SANS 1200 HC	:	1988	Corrosion Protection of Structural Steel
SANS 1200 L	:	1983	Medium-Pressure Pipelines
SANS 1200 LB	:	1983	Bedding (Pipes)
SANS 1200 LC	:	1981	Cable Ducts
SANS 1200 M	:	1996	Roads (General)
SANS 1200 ME	:	1981	Subbase
SANS 1200 MF	:	1981	Base

- a) The term project specifications appearing in any of the SANS 1200 standardized specifications must be replaced with the terms scope of work and read in reference with the provided scope of work included under Appendix I of this bid document.

PS34.2 Variations and Additions to Specifications

This Portion of the project specification covers variations and additions to standardized or particular specifications that are applicable to the contract.

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The numbering method of this project specification deviates as follows from the method suggested in the Code of Practice SANS 0120. Each clause with the prefix PS shall refer to the congruent clause in the appropriate section of the standardized or particular specification. Such clause shall either substitute, or supplement, or amend the clause with the same number. Where there is no such congruent clause in the standardized or particular specification, the PS clause shall be a new clause in the project specification.

PS34.3 Particular Specification

In addition, the following Particular Specifications that are bound into the Portion-3 of this Contract Document shall apply:

- PF Building Construction
- PG Fencing
- PJ Cleaning and Finishing

Should anything appear in the above-mentioned Particular Specifications which is at variance with the SABS standard specifications or the drawings, the Particular Specifications and Bid Drawings shall prevail.

In case of discrepancy or conflict between the various specifications and drawings, the order of preference shall be as follows:

- Project Scope of work requirements
- Project Drawings
- Particular Specifications
- The variations and additions to the Standardized Specifications
- Standardised Specifications

Note: Wherever the word or term “Employer’s Representative” is used in all the above-mentioned Standard Specifications, Particular Specifications and variations and additions thereof, it shall have the same meaning as the word or term “Project Manager”.

1. PORTION 2: AMENDMENTS TO THE REQUIREMENTS OF THE STANDARDISED SPECIFICATIONS

SANS 1200 A: GENERAL

PS A: GENERAL

PS A 3 MATERIALS

PS A 3.1 Quality

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Substitute the second sentence of the first paragraph of A3.1 with the following:

Materials shall bear the official SANS mark of the appropriate standard.

The Contractor shall submit in good time, before any construction commences, to the Project Manager on site samples of all materials intended to be incorporated into the works. The samples shall be accompanied by results of tests undertaken by an approved independent laboratory on the samples in question on behalf of the Contractor and at his cost, before consideration by the Project Manager

The Project Manager, during construction, will take independent samples from stockpile of proposed construction materials on site and from the completed works. Approval will not be granted for samples delivered by the contractor directly to the Project Manager's office.

The Contractor shall be responsible for the cost of all testing to ascertain that the materials do comply with the specified minimum requirements of the relative materials and no additional payment will be made for such testing.

The Contractor shall inform the Project Manager of any control testing to be done at least 48 hours before such tests are required and must allow in his programme for the time necessary for the tests and the processing of the results thereof.

The Project Manager, during construction, will take independent samples from stockpiles of proposed construction materials on site and from the completed works. Approval will not be granted for samples delivered by the contractor directly to the Project Manager's office. The Contractor shall be responsible for the cost of all failures on test samples and control testing.

All pipes, fittings and materials used in the Works, must bear the official standardisation mark of Standards South Africa where applicable. The mark on a pipe shall be visible from above after the pipe is laid.

Rubber articles, including pipe insertion or joint rings shall be stored in a suitable shed and kept away from sunlight, oil or grease.

Large items not normally stored in a building shall be neatly stacked or laid out on suitable cleared areas on the Site. Grass or vegetation shall not be allowed to grow long in the storage areas and the material shall be kept free of dust and mud and be protected from stormwater. Pipes shall be handled and stacked in accordance with the manufacturer's recommendations, special care being taken to avoid stacking to excessive heights and placing over hard objects. uPVC pipes shall be protected from direct sunlight by suitable covers.

Every precaution shall be taken to keep cement dry and prevent access of moisture to it from the time it leaves the place of manufacture until it is

Initials.....

required for use on the Site. Cement is to be used on a first in/first out basis. Bags of cement which show any degree of hydration and setting shall be removed from the site of the Works and replaced at the Contractor's own expense. Any cement older than six weeks is to be removed from site.

Materials shall be handled with proper care at all times. Under no circumstances may materials be dropped from vehicles. Large pipes or large plant shall be lifted or lowered only by means of suitable hoisting equipment.

Irrespective of any approval granted by the Project Manager or the Employer, the Contractor shall be deemed responsible for all material quality use for construction and their specified performance.”

Add the following to this clause:

PS A 3.3 Ordering of Materials

“The quantities set out in the schedule of quantities have been carefully determined from calculations based on data available at the time and should therefore be considered to be approximate quantities only. Before ordering materials of any kind the Contractor shall check with the Project Manager whether or not the scope of the work for which the materials are required is likely to change substantially. No liability or responsibility whatsoever shall be attached to the Employer for materials ordered by the Contractor except when ordered in accordance with written confirmation issued by the Project Manager”

PSA 4 PLANT

PSA 4.2 Contractor's Offices Stores and Services

PSA 4.2.1 The Contractor's Yard and Offices (New Clause)

Add the following to A 4.2:

“The Contractor's site agent or representative must be contactable at all times by phone. Should use be made of radio and/or cellular phone, these must be operational at all times with sufficient back-up batteries or recharging facilities.

The Contractor's buildings, sheds and other facilities erected or utilised on the site for the purpose of the contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor.

The extent of the Contractor's Yard and Offices shall be restricted to the area agreed upon and the camp shall be fenced in.

No personnel may reside on the site. No housing facilities for the Contractor's work force are available and the Contractor shall make his own arrangements to house his employees. Only night watchmen may be on the site after hours.

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

PSA 4.2.2 Laboratory (New Clause)

The Contractor shall provide an approved laboratory for the execution of process control on Site before any permanent work is commenced. The laboratory shall be equipped with adequate facilities for the taking of concrete samples, the casting of cubes, for their curing and the crushing of cubes as well as for any other tests required in terms of the relevant parts of SANS 1200 and the Project Specification. The Contractor shall make available to the Project Manager all the necessary facilities for the execution of such acceptance control tests as the Project Manager may deem necessary and the costs incurred shall be deemed to be included in the tendered rates.

The laboratory buildings, equipment, methods of testing, administration, personnel and general maintenance shall comply with the following requirements:

a) Laboratory buildings and layout:

The field laboratory shall have an interior floor area of at least 25m² and a covered exterior concrete work area of 15 m².

b) Laboratory equipment:

All field laboratory equipment shall comply with the requirements of the latest edition of TMH1 "Standard Methods of Testing Road Construction Materials".

The quantity of apparatus required will be determined by the relevant testing frequencies specified for the Contract.

c) Methods of testing:

All tests shall be executed in accordance with the standard methods as specified in TMH1 "Standard Methods of Testing Road Construction Materials", all relevant SANS, BS, ASTM and DIN Specifications.

d) Administration of the Laboratory:

The administration of the field laboratory shall be done in an orderly manner to ensure the timeous submission of test results to the Project Manager and the safekeeping of all records.

e) Personnel:

The field laboratory shall be sufficiently staffed with competent technicians and technical assistants capable of carrying out all relevant field tests.

f) Maintenance of laboratory buildings and equipment:

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The laboratory buildings and all fittings shall be properly maintained for the duration of the Contract. Buildings shall be kept neat and tidy at all times.

g) General:

All the specified tests may be carried out in the field laboratory provided on Site or alternatively part or all of the testing may be carried out by a recognised commercial testing laboratory.

The Project Manager reserves the right to enter and inspect the Contractor's field laboratory at any time and to reject any equipment or test method found not complying with the requirements of the specifications.

The Project Manager shall execute acceptance control testing at random, and he or his assistants may use the Contractor's laboratory as and when required to do such acceptance control testing, and in the event of the Contractor's field laboratory not complying with the specified requirements, the Project Manager may order that all further testing be executed by a recognised commercial testing laboratory until the unacceptable situation has been rectified. The costs of any such testing shall be for the Contractor's account.

PSA 4.3 **Restriction on Employee Accommodation (New Clause)**

Add new sub clause A 4.3:

No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees. With the exception of a night watchman, employees may also not be housed or accommodated on the Site of the Works. The Contractor will be responsible for the provision of water and electricity, the handling of sewage, the fencing of the accommodation erected and the supply of transport to Site. The supply and maintenance of accommodation for his employees will be for the Contractor's account. It is also the responsibility of the Contractor to comply with any restrictions or employment regulations applicable, The Contractor shall negotiate with the relevant authorities to finalise the actual position of the site for the erection of this accommodation.

PSA 4.4 **Hand Tools (New Clause)**

Add new sub clause A 4.4:

The Contractor shall provide and maintain all hand tools required for the execution of the works and all such costs shall be deemed to be included in the tendered rates and no separate payment will be made for it.

PSA 4.5 **Medical Facilities and Safety Equipment (New Clause)**

Add new sub clause A 4.5:

The Contractor shall provide a First Aid cabinet fully equipped and maintained with the minimum contents as listed in the Annexure Regulation 3 to General Safety Regulations of the Occupational Health and Safety Act (Act 85 of 1993), to deal with accidents and ailments which are likely to occur during the construction period.

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

The Contractor shall designate his Safety Officer and Qualified First Aider. The Contractor shall give copies of the minutes of the site safety meetings to the Engineer.

PSA 5 CONSTRUCTION

PSA 5.1 Survey

PSA 5.1.1 Setting out of the Works

Substitute the first sentence in sub-clause A 5.1.1 with the following:

The Contractor will be responsible for the setting out of the works and survey the pipeline routes as specified in **PS 15.6** of the Project Specifications. It shall be done from survey pegs along the street reserve boundaries and from benchmarks as indicated on the drawings. The Contractor shall, within two (2) weeks after the site has been handed over to him, ascertain himself of the correctness of all pegs and benchmarks. Any discrepancy shall immediately be reported in writing to the Project Manager. Any costs or subsequent costs arising from discrepancies which had not been reported to the Project Manager within the aforementioned period, shall be the sole responsibility of the Contractor.

Should there not be any reference peg, the Contractor is required to use a surveyor to establish a local survey benchmark.

Add the following:

“Setting out of the works will not be measured and paid for directly, and compensation for the work involved in setting out shall be deemed to be covered by the tendered rates for the various items of work included under the contract.”

PSA 5.1.3 General (New sub-clause)

The Contractor is responsible for ensuring that no survey beacons, erf pegs or benchmarks are covered or disturbed. The cost of the re-establishment of any reference pegs disturbed by the Contractor as well as the issuing of a Land Surveyor's certificate, where applicable, shall be for the Contractor's account.

PSA 5.2 Watching, Barricading, Lighting

Add the following to this clause:

The Contractor shall employ competent watchmen to guard the Works both by day and night.

From the time any portion of the Works commences, until the Completion of the Works and the issue of the Certificate of Completion of the Works, the Contractor shall be responsible for protecting the property of the

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Employer and all persons having business on the Site from anything dangerous or likely to cause damage or injury. The Contractor shall take all practical precautions to avoid nuisance or inconvenience to the owners or occupier of properties near to the Site and to the public generally whilst carrying out the Works and shall at all times keep the Site clean and, in a safety, and satisfactory condition.

Temporary traffic signs shall be erected when work is being done within and adjacent to roadways. The number and layout of the traffic signs shall comply with the Site Manual entitled "Safety at Roadworks in Urban Areas", as published by the Department of Transport. Traffic signs shall have a yellow background with either a red or black border. The Contractor shall control all access to the site, for authorised persons only, and to ensure that the approved conditions of the Health and Safety Management Plan is adhered to.

The Contractor shall control all access to the site, for authorised persons only, and ensure that the approved conditions of the Health and Safety Management Plan is adhered to.

PSA 5.3 Protection of Existing Structures

Replace: "Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)" with "Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended," and insert the following after (Act No 27 of 1956): as amended.

PSA 5.4 Protection of Overhead and Underground Services

Add the following to A 5.4:

Before construction of the works, or any phase of the works, the Contractor shall contact all relevant parties and authority officials to establish the existence of existing services on site. The Contractor shall be responsible for obtaining all necessary wayleaves. No claims shall be lodged by the contractor for delays in obtaining such wayleaves.

The Contractor shall also commence with the detection of existing services as soon as the site is handed over to him.

In the event of damage to existing services, the Contractor shall take such immediate action as is necessary to prevent further damage or danger to life or property and shall immediately notify the Project Manager who will issue instructions as to the necessary repairs or protective measures to be taken. The cost thereof shall be borne by the Contractor irrespective of whether the repairs or protective measures were carried out by him or on behalf of the service authority or department concerned.

Where the Contractor is responsible for the cost of repairs carried out by the Employer or others, the costs will be recovered by means of a deduction from the Contractor's monthly payment certificate.

All exposed pipes, cables and appurtenant structures shall be backfilled before nightfall, and if this is not possible, watchmen shall be placed at the exposed services to ensure that the exposed pipe, cable or other service is

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not damaged or stolen during the night. Should anything be stolen or damaged in this way, the Contactor is responsible for the cost of the repair and replacement thereof.

PSA 5.5 Protection of Existing Structures

Replace: “Machinery and Occupational Safety Act, 1983 (Act No 6 of 1983)” with “Occupational Health and Safety Act, 1993 (Act No 85 of 1993), as amended,” and insert the following after (Act No 27 of 1956): as amended.

PSA 5.9 Time Related Items

Where extension of time is approved no payment shall be claimed against time related items unless approved by the Project Manager The extension of time may only refer to the relief of penalties.

PSA 5.10 Compensation Act

It is a requirement of this contract that all labour employed on the site be covered by the Employee’s Compensation Act and Social Security. The Contractor is to arrange a suitable method of complying with the Act including the payment of the necessary levies.

PSA 5.11 Existing Services

The tendered rate shall further cover the cost of backfilling the excavation with selected material compacted to 90% AASHTO density, keeping the excavation safe and taking care that the services are not damaged in any way. The rate shall include for all negotiations with the authorities, notification to all affected parties and any other requirement to protect and complete the work. No additional direct payment will be made for the protection of such services.

PSA 5.12 Record Drawing Information

As the Works are progressing, the Contractor shall mark on a special set of drawings, all as-built details and submit them to the Project Manager’s Representative for approval on a monthly basis. No extra payment shall be made for preparation of these as-built plans.

All service household ends, manholes, valves, hydrants and the like shall be coordinated together with their invert and cover/ground levels on the as-built drawings.

The Certificate of Completion shall only be issued once all the as-built information has been received and verified by the Project Manager.

PSA 5.13 Clearance of Site on Completion

The Contractor shall obtain, from each property owner listed in the Project Specification as being affected by the Works, a certificate to the effect that the property owner is satisfied with the standard of reinstatement of any fences, boundary walls or structures, compensation paid for loss or damage

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to stock, crops or property, material spoiled on their properties or any other condition affecting their properties as a result of the operations of the Contractor. The Contractor shall further obtain a Clearance Certificate from each authority whose services have been affected or installed during the construction of the works.

All such certificates must be lodged with the Project Manager before the Certificate of Completion will be issued.

PSA 5.14 Community Liaison Offer

A provisional sum is included to allow for the salary of a person working full time as the Community Liaison Officer for the duration of the construction on this Contract. The sum also includes for costs such as transport, an office space, communication and any other requirement necessary. The Contractor shall ensure that the salary and other expenses such as payment to the Community Liaison Officer members are paid timeously in accordance with the payment dates of his own staff.

A separate item for overheads, charges and profit on the above item is applicable.

PSA 5.15 Connection into Existing Services

A provisional sum has been included to cover the cost of connecting into the existing sewer system. The sum includes for all labour, plant, specials, and materials required to complete the work and deal with existing flows. All works are to be based on rates submitted in the Tender.

PSA 5.16 Relocation of Existing Services

A provisional sum has been included to cover the cost of re-locating existing services. The sum includes for all labour, plant, specials, and materials required to complete the work. All works are to be based on rates submitted in the tender.

PSA 5.17 Electricity Connection Fee

A provisional sum has been included to allow for the electrical connection at the required points in the works. The sum includes for all work to be carried out by ERONGORED.

PSA 5.18 Site Meeting

The Contractor will be required to attend regular site meetings, normally held once a month to discuss general progress, quality of work, problems, claims, payments, etc., but not matters concerning the day-to-day running of the Contract. The Contractor must be represented at the site meetings by a duly authorised person that is empowered to take decisions on behalf of the company.

PSA 7 MEASUREMENT AND PAYMENT

Initials.....

PSA 7.4 Statistical Analysis of Control Tests

Substitute A 7.4 with the following:

“Test results shall not be evaluated by statistical methods. All results shall comply with the specified minimum requirements of the materials concerned.

PSA 8 MEASUREMENT AND PAYMENT

PSA 8.1 Measurement

PSA 8.1.2 Preliminary and General Items or Section

PSA 8.1.2.2: Tendered Sums

Replace the contents of this sub clause with the following:

“The Contractor’s tendered sums under items PSA 8.3 and PSA 8.4 shall collectively cover all charges for:

- a) Risks, costs and obligations in terms of the general conditions of contract and of this standardised specification, except where provision is made in these project specifications to cover compensation for any of these items;
- b) Head office and site overheads and supervision profit and financing costs;
- c) Expenses of a general nature not specifically related to any item or items of permanent or temporary work;
- d) Providing facilities on site for the Contractor’s personnel, including offices, storage facilities, workshops, ablutions, for providing services such as water, electricity, sewerage, sewage and rubbish disposal, for access roads and all other facilities required, as well as for the maintenance and removal on completion of the works of these facilities and the cleaning-up of the camp site on completion of the works; and
- e) Providing facilities for the Project Manager and staff (refer to PS8.1).”

PSA 8.2 Payment

PS A 8.2.1 Fixed-charge and Value Related Items

Replace sub clause 8.2.1 with the following:

PSA 8.2.1.1: Fixed Charge items

“Payment of fixed charges in respect of items 8.3.1 and 8.3.3 will be made as follows:

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80% of the sum tendered will be paid when the facilities have been provided and approved. The remaining 20% will be paid when the works have been completed, the facilities have been removed and the camp site has been cleared and cleaned.

PSA 8.2.1.2: Value related items

“Payment for the sum tendered under item 83.2 will be made in three separate instalments as follows:

1. The first instalment, which is 40% of the sum, will be paid when the Contractor has fulfilled all his obligations to date under this specification, the general conditions of contract and the special conditions of the contract, and when the value of work certified for payment, excluding materials on site and payments for preliminary and general items, is equal to not less than 5% of the total value of work listed in the schedule of quantities.
2. The second instalment, which is 40% of the sum, will be made when the amount certified for payment, including retention monies but excluding this second instalment, exceeds 50% of the tender sum.
3. The final payment, which is 20% of the sum, will be made when the works have been certified as completed and the Contractor has fulfilled all his obligations to date under this specification, the general conditions of contract and the special conditions of contract.

Should the value of the measured work finally completed be more or less than the tender sum, the sum tendered under item 8.3.2 will be adjusted up or down in accordance with the provisions of sub-clause 12.3 of the general conditions of contract and the special conditions of contract, and this adjustment will be applied to the third instalment.

No adjustment will apply to items 8.3.1 and 8.3.3 in respect of variations in the value of work done or the finally authorised time for completion.”

PSA 8.2.1.2: Time related items

Replace the contents of this sub clause with the following:

“subject to the provision of sub-clause 8.2.3 and 8.3.4, payment under items 8.4.1, 8.4.2 and 8.4.3 (time-related item) will be made monthly in equal amounts, calculated by dividing the sum tendered for the item by the tendered contract period (and the extension of time granted in accordance with the provisions of the contract, if applicable) in months, provided always that the total of the monthly amounts so paid for the item is not out of proportion with the progress of the work as a whole.

Should the Project Manager grant an extension of time for completion of the works, the Contractor will be entitled to an increase in the sum tendered for the time-related item, which increase shall be in the same proportion to the original tendered sum as the extension of time is to the original time for completion of the works.

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Payments of such increased amounts will be deemed full compensation for all additional time-related preliminary and general costs due to the circumstances pertaining to the extension of time granted.”

PS A 8.2.5 Adjusted Payment for Time-related Items

The payment to the Contractor for time-related items shall be adjusted in accordance with the following formula in the event of the contract being extended by means of a variation order:

$$\frac{\text{Sum of Tendered amounts for time-related items}}{\text{Extended contract period as authorised by variation order}} \times \frac{\text{Tendered contract period}}{\text{X variation order}}$$

The above-mentioned adjustment of the payment for time-related items shall be made in the Completion Payment Certificate and shall be the only payment for additional time-related costs.

PSA 8.3 Scheduled Fixed-charged and Value-related Items

Replace the items with the following:

PSA 8.3.1: Fixed preliminary and general charges.....Unit:
Sum

PSA 8.3.2: Value-related preliminary and general charges.....Unit:
Sum

The lump-sums tendered shall provide full compensation for the Contractor’s expenses with:

- (i) Setting up and maintaining his organisation, personnel, equipment and plant on site: the supply and erection of all services, fencing and contract name boards and the removal of all on completion of the works.
- (ii) Effecting all insurance’s, guarantees and indemnities.
- (iii) Meeting all other general obligations and liabilities that are not specifically measured for payment elsewhere in these contract documents.
- (iv) All site and head office overheads, profit, finance costs, risks and legal and contractual responsibilities as set out in the Conditions of Contract and elsewhere in this document.

The total of the lump sums tendered under “Fixed-charges” shall include full compensation for all fixed establishment charges, i.e. those items of which the cost does not fluctuate with the duration of the contract period.

Payment for items under “Fixed-charges” will be made in the first progress certificate after the Contractor’s completed his obligations for such item.

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Any payment made under this sub-item shall not be considered when determining whether the value of a certificate complies with the “minimum amount of interim certificate” as laid down in the “Appendix to Form of Tender”.

The lump sum tendered for the "Name board" shall include full compensation for the manufacture, erection, maintenance and eventual removal of the name board as specified and shown on the drawings. 80% of the payment shall be made when the name board has been erected and approved and the remaining 20% after removal.

PSA 8.3.2.1 Facilities for Engineer

Add the following payment items:

d) Car ports (2
No.).....Unit: Sum

The sum Bid for items (d) and (e) shall cover all costs as specified in sub-clause 8.3.2.3 of SANS 1200A to provide these facilities as specified in PS 8.2 and 8.4, PSAB 3.3 and PSAB 3.4 respectively.

i) Survey equipment.....Unit: Sum

The sum Bid for item (g) shall cover all costs as specified in Sub-clause 8.3.2.3 of SANS 1200A and 5.5 of SANS 1200AB to provide these facilities as specified in Clause PSAB 4.2.

PSA 8.4 Scheduled Time-related Items

The total of the lump sums tendered under “Time-related Items”, shall represent that part of the Contractor’s establishment on site that is substantially related to the time required for the completion of the contract.

This item will, however, be adjusted pro rata to any authorised extension to the tendered time for the completion of the contract, in full settlement of any claims for varied establishment costs.

Payment for lump sums tendered “Time-related Items” will be certified monthly on the basis of the total for this sub-item on any particular certificate of payment, being calculated as follows:

$$P = \frac{A \times T_e}{T_c}$$

in which the symbols have the following meanings:

“P” = interim amount certified for payment under “Time-relate Items”

“A” = amount tendered for “Time-relate Items” adjusted for varied time of completion.

“Te” = time elapsed from the commencement date to date of the certificate.

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“Tc” = time for completion plus any extensions of time granted, or minus any extensions of time granted, or minus any reduced time for completion authorized up to date of the certificate.

PSA 8.5 Sums Stated Provisionally by Project Manager

Replace this item with the following:

- i. Location, exposure, protection and/or move existing services.....Unit: Prov. Sum
- ii. Overheads, charges and profit on item (1) above Unit: %
- iii. Additional tests ordered by the Project ManagerUnit: Prov. Sum
- iv. Overheads, charges and profit on item (iii) above Unit: %
- v. Additional site surveys ordered by the Project Manager.....Unit: Prov. Sum
- vi. Overheads, charges and profit on item (iv) above..... Unit: %

The Provisional Sums provided in the Schedules of Quantities for the above-mentioned disciplines is work ordered by the Project Manager or to be executed by specialist Sub-contractors and shall be paid in accordance with Clause 4.4 of the General Conditions of Contract.

The percentages tendered for overheads, charges and profit will be paid to the Contractor on the actual amount paid to the sub-contractor and shall include full compensation for all cost incurred in fulfilling his contractual role as the main Contractor.

PSA 8.6 Prime Cost Item

Replace this item with the following:

- i. Additional tests required by the Project ManagerUnit: PC Sum
- ii. Charges required by Contractor on sub item (i) above..... Unit: %
- iii. Relocation of services by employer/nominated sub-contractor as ordered by the Project Manager
Unit: PC Sum
- iv. Charges required by Contractor on sub item (i) above..... Unit: %

The prime cost sum provided under sub-item (i) and (iii) in the schedule of quantities will be expanded in accordance with the General Conditions of Contract.

The tendered percentage under sub-item (ii) will be paid to the Contractor on the value of each payment to the approved testing laboratory and shall also cover the cost for providing and delivering samples to the approved test laboratory.

The tendered percentage under sub-item (iv) will be paid to the Contractor on the value of each payment to the employer or nominated sub-contractor to relocate services. The percentage shall cover any cost the Contractor may

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encounter for accommodating the employer or nominated sub-Contractor on site.

Note in connection with sub item (i):

The Contractor is otherwise responsible for both the cost of normal testing as described in clause PS 18 in Portion 1 of the project specifications and for the cost of any additional test that indicates that the specifications have not been compiled with.

PSA 8.8.4 Existing Services

Replace item 8.8.4 with the following:

PSA 8.8.4 Location and Protection of Existing Services:

PSA 8.8.4.1 Provision of detection devices for:

- a. Water and Pipes..... Unit: Sum
- b. Electrical and other cables..... Unit: Sum

Tendered amount shall cover the cost of providing and operating suitable equipment for as long as is required to locate the existing services likely to be affected by the construction activities.

PS A 8.9 Occupational Health and Safety (Provisional)

PSA 8.9.1 Health and Safety Requirements Unit: Sum

The rate shall cover all costs pertaining to the provision and maintenance for the duration of the contract of the health and safety measures required in terms of Clause 5 (Principle Contractor and Contractor) of the Construction Regulations (2003) of the Occupational Health and Safety Act. No other sum shall be paid in this respect and Tenderers must therefore ensure that adequate provision has been allowed for. The Health and Safety officer involved will certify part or total of provisions allowed.

PSA 8.9.2 Health and Safety Plan Unit: Sum

The rate shall cover all costs pertaining to the provision and maintenance for the duration of the contract of the health and safety plan as required in the Construction Regulations (2003). The rate shall include for all risk assessments required as well as for the development and implementation of safe work procedures and method statements. No other sum shall be paid in this respect and Tenderers must therefore ensure that adequate provision has been allowed for. The Health and Safety officer involved will certify part or total of provisions allowed.

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SANS 1200 AB: ENGINEER'S OFFICE

PSAB PROJECT MANAGER'S OFFICE

PSAB 3 MATERIALS

PSAB 3.1 Name Boards

The contractor shall supply the number of name boards as specified and will erect it at a position to be indicated by the Project Manager A sketch of the typical name board will be provided by the Project Manager. The rate shall include supply and installation complete, including all overheads, charges and profit.

Substitute "South African Institution of Civil Project Managers" in the first paragraph of PSAB 3.1 with "South African Association of Consulting Project Managers".

The board shall be manufactured from materials specified in Clause 3.1 of SANS 1200 AB but shall conform in the painting, decorating and detail with the recommendations for the Standard Board of the South African Institution of Civil Project Managers.

All nameboards shall be removed 14 days prior to the date of the Final Approval Certificate.

PS AB 3.2 Office Buildings

Add the following to PSAB 3.2:

A site office will be required as per the details outlined under **PS 8.1** of the Project Specifications. The site office shall be dust proof with sufficient room to accommodate 8 people, seated at a suitable table. All contract related documentation and drawings shall be kept available in this office.

Add the following sub-clause:

PSAB 3.3

PSAB 3.4 Ablution units (Additional sub-clause)

Ablution units shall be well ventilated and the floors shall be of concrete. Latrines shall be provided with vitreous enamel W.C. pans with PVC seats, covers and flushing cisterns. Wash basins shall be in vitreous enamel of minimum size, complete with taps and drains. The ablution unit shall be provided with a lockable door and two keys. The Contractor shall be responsible for providing all sanitary services necessary to keep latrines in a clean, neat and hygienic condition. The Contractor shall also provide and maintain the necessary septic tank and French drain or connection to the local sewer network to the approval of the Project Manager.

PSAB 4 PLANT

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PS AB 4.1 **Telephone**

Substitute PSAB 4.1 with the following:

PS AB 4.1 **Site Office**

A site office will not be required by the Project Manager. However, the Contractor must provide adequate office facilities for site meetings. The site office shall be dust proof with sufficient room to accommodate 8 people, seated at a suitable table. All contract related documentation and drawings shall be kept available in this office.

PSAB 4.2 **Survey Equipment (Additional sub-clause)**

The Contractor shall make available two survey assistants as and when required by the Engineer.

The Contractor shall provide the following survey equipment on the Site from commencement to completion of the Works:

- A ten second Tacheometer.
Automatic level with tripod
- 2 x 4 m measuring staffs graduated in centimetres
- 1 x PVC tape of length 100m.
- 1 x 5 m steel tape.

The tacheometer, level and staffs may be shared by arrangement between the Contractor and the Engineer. The Contractor shall keep the equipment continuously insured against any loss, damage or breakage, and he shall indemnify the Engineer and the Employer against any claims in this regard. Upon completion of the whole of the Works the ownership of the equipment shall revert to the Contractor.

The Contractor shall maintain the equipment in good order and keep it clean throughout the Contract period.

PSAB 5 CONSTRUCTION

PS AB 5.1 **Name Boards**

Add the following to AB 5.1:

The name boards shall be erected within one month after receipt of the letter of acceptance and shall be placed at the position indicated by the Project Manager, and kept in good repair for the duration of the contract and the defects liability period. Any damage to these boards shall be repaired within fourteen days of a written instruction issued by the Project Manager. No payment shall be made in terms of the contract prior to the erection of the name boards.

The Contractor will be permitted to erect a maximum of two of his own name boards, in positions approved by the Project Manager. The Project

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Manager reserves the right to order the removal of these boards if they are not kept in good repair.

PSAB 5.5 Survey Assistants

Substitute "two or more suitably educated survey labourers" in the first sentence of AB 5.5 with "two semi-skilled labourers."

Add the following sub clause:

PSAB 5.6 Site Instruction Book (Additional sub-clause)

The Project Manager shall supply a site instruction book for specific use on the Site. All instructions given by the Project Manager's Representative must be confirmed and countersigned by the Project Manager. The instruction shall be countersigned by the Contractor before implementation.

The Contractor shall supply a triplicate book for site correspondence and inspection requests to the Project Manager's Representative. Reasonable notice shall be allowed prior to inspections. All inspections request and approval/disapproval thereof shall be recorded by the Site staff in writing. All requests must be signed and dated by the Project Manager's Representative before implementation.

The Contractor in conjunction with the Project Manager must ensure that a suitable site quality record system is put in place to record that each section, or work item, complies with the relative works specification. Failure to update or provide sufficient records may result of a 10% interim payment reduction being withheld.

The book shall be kept on Site and shall be accessible to both the Contractor and the Project Manager at all times. It shall be used:

- a) By the Contractor for providing the Project Manager with any:
 - i) Information regarding the construction of the Works which may be required, and giving notification of inspection, drawings, etc. required by the Contractor,
 - ii) Notification as required by any of the relevant clauses of the Conditions of Contract and
 - iii) All other communications on Site.
- b) By the Project Manager for the purpose of all written communication on Site and confirming any verbal communication on Site with the Contractor.

One copy of each site note or instruction shall be issued to each the originator, recipient and the Project Manager, and one copy shall remain in the book.

Initials.....

SANS 1200 C: SITE CLEARANCE

PSC SITE CLEARANCE

PSC 3 MATERIALS

PSC 3.1 Disposal of Material

Material obtained from clearing and grubbing shall remain the property of the Employer and shall be disposed of in a manner approved by Employer. Irrespective of any arrangement reached with the Employer, the Site shall be left in a condition that meets with the approval of the Project Manager and no material shall be disposed of on the Site.

PSC 5 CONSTRUCTION

PSC 5.1 Areas to be cleared and grubbed

Add the following:

Pipeline routes shall be cleared to a distance of 1.5m on both sides of the pipeline centreline, route pegs and markers shall not be damaged or destroyed during clearing operations. Only areas where actual clearing was required along the route shall be payable.

Road reserves shall be cleared and grubbed otherwise only the minimum area required shall be cleared and grubbed, as instructed by the Project Manager, and the Contractor shall take care not to unnecessary damage natural vegetation.

Substitute the first sentence of C 5.1 with the following:

Unless otherwise indicated by the Project Manager, clearing and grubbing are limited to the street reserves or such wider area as is necessitated by the street prism, borrow pits, a 10 m wide strip for concrete and/or earth channels, a 1.5 m wide strip either side of the pipelines not in street reserves and if requested by the Project Manager the spoil areas. The Contractor may proceed with clearing and grubbing after the handing over of the site. Measurement and payment for clearing and grubbing shall only occur for areas as required in writing by the Project Manager.

Substitute the last paragraph with the following:

The Contractor shall programme his work in such a manner that re-clearing will not be necessary. The cost of re-clearing shall be borne by the Contractor.

Add the following:

For the access and site roads the width of clearing shall only be sufficient for the construction of the road i.e. for the cut and fill operations and allowing for side slopes or as amended by the Project Manager.

Initials.....

No trees with a trunk girth of more than 1 m shall be removed without the written permission of the Project Manager.

PSC 5.2 Clearing of Trees

The Contractor shall take care to remove only those trees that lie directly in the path of operations. Under no circumstances shall any other trees be removed without the prior approval of the Project Manager.

PSC 5.3 Removal of Existing Fences

Omit paragraph 5.3(e) and replace with the following:

All fences removed to construct the water pipeline, must be re-instated to their original condition.

PSC 5.9 Removal of Existing Infrastructure (New Clause)

Any existing infrastructure obstructing the new work shall be removed and re-erected as instructed by the Engineer.

PSC 8 MEASUREMENT AND PAYMENT

PSC 8.2 Scheduled Items

PS C 8.2.1 Clear and grubUnit: ha

Add the following after Clear and Grub: "designates areas"

Clear and grub designated areas shall include the area within the cut/fill toe line of earthworks platforms and road embankments. Clear and grub designated areas will be measured to the nearest 1.0m². The rate shall cover the cost as outlined under sub clause 8.2.1, SANS 1200C.

The rate tendered for clearing and grubbing shall cover the cost of disposal of the material off the Site by approved means. Debris should be dealt with as per PSC 3.1, as amended.

PS C 8.2.2 Remove and Grub large trees and Tree Stumps of GirthUnit: No.

a) Over 1m and up to and including 2m in areas

The rate shall cover the cost of cutting the trunk of the tree into lengths not exceeding 2.0m, loading, transporting and offloading at designated stockpile site, cutting of branches into manageable lengths, removal of roots, loading, transporting and dumping in designated spoil dumps.

PS C 8.2.5 Take down existing fences.....Unit: m

Omit the heading to paragraph 8.2.5 and replace with the following:

"Take down and reinstate fences"

Add the following to paragraph 8.2.5

Initials.....

“The rate will also cover the cost of reinstating the fence to its original condition to the satisfaction of the Project Manager including the cost of any material so required.”

PSC 8.2.7 Dismantle and re-erect fences.....Unit: m

The rate shall cover the cost of removal and stacking of existing fencing material, including all gates, as well as of the re-erection thereof with the existing material. No additional payment will be made for the replacement of fencing material that has been damaged by the Contractor.

Material that is unsuitable for re-erection must be viewed by the Project Manager before it is removed after which the Project Manager must give written approval for the replacement thereof and for payment therefore.

PS C 8.2.8 Dismantle and remove pipelines.....Unit: m

Separate items will be scheduled for each type and diameter (or group of diameters) of pipeline (encased in concrete or not encased). The unit of measurement shall be the length of pipelines removed and disposed of as instructed by the Project Manager. The rate shall cover the cost of all labour, materials and equipment necessary for the breaking, dismantling, lifting, loading, transporting and disposing of each pipeline, including the associated charges at an approved disposal site. The rate shall further cover the additional cost of precautions required during excavation in the vicinity of such pipeline, but not the cost of excavating, backfilling and reinstatement of ground surfaces. These will be measured separately.

SANS 1200 D: EARTHWORKS

PSD EARTHWORKS

PSD 2 INTERPRETATIONS

PSD 2.3 Definitions

Add the following to D 2.3:

Sand (cohesion less and non-cohesive)

For the purposes of the compaction requirements, a non-plastic material of which not less than 95 % by mass passes a sieve of nominal aperture size 4.75 mm, and not more than 10 % passes a sieve of nominal aperture size 0.075 mm.

PSD 3 MATERIALS

PSD 3.1 Classification for Excavation Purposes

Initials.....

PSD 3.1.2 Classes of Excavation

Add the following

Only "soft" excavation shall be applicable to this Contract. All material that does not classify as "soft excavation" in terms of clause 3.1.2 (a) shall be classified as "hard excavation".

The Contractor shall immediately inform the Project Manager if and when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Project Manager in good time shall entitle the project Manager to reclassify, at his discretion, such excavated material.

Replace Sub-clauses 3.1.2 (a), (b) and (c) with the following:

All material encountered in any excavations for any purpose including restricted excavations will be classified as follows:

1. Excavation in all materials, excluding hard rock. This category of excavation includes; excavation in all sandy and disturbed material; in clay; in undisturbed and weathered Shale (clay); Sandstone; Mudstone and in all rippable rock.
2. Excavation in hard rock will require blasting or rock splitting. Areas where rock splitting is required will be indicated on site by the Project Manager.

Extra-over payment will be made for hard rock excavation and boulder excavation class A and B provided the surface levels of the hard rock have been recorded on drawings signed by the Project Manager before it is excavated.

Other earthworks

Non-plastic sandy material from excavations shall be used in the following order:

- a) As selected granular material for pipe bedding.
- b) As blanket and backfill to pipe trenches.
- c) As backfill to structures.
- d) As spoil stockpiled in selected areas indicated by the Project Manager.

The Contractor shall employ selective methods of excavation to obtain topsoil, and material suitable for backfill, embankments, pipe bedding, selected granular material, road construction and bulk earthworks platforms.

PSD 3.2 Classification for placing purposes

PSD 3.2.3 Material suitable for backfill or fill against structures

Replace the contents of this sub-clause with the following:

Initials.....

Material used for backfill behind the structures shall generally be the material excavated, subject to the following conditions:

- a) The material shall not contain an excessive number of stones retained on a 50mm sieve;
- b) The material shall not contain large clay lumps that do not breakup under the action of the compaction equipment;
- c) The liquid limit of the material shall not exceed 40, neither shall the PI exceed 18.
- d) Selected fill/backfill against retaining walls shall have a minimum CBR of 25 @95% MOD AASHTO compaction, PI less than 12 and minimum GM of 12 or as specified on the drawings.

PSD 3.3 Selection

PSD 3.3.1 General

Substitute the second paragraph of D 3.3.1 with the following:

The Contractor shall deal selectively with material from general excavation. Any imported material in road reserves that do not comply with the minimum requirements for the respective layers, shall be removed and replaced with suitable material, all at the Contractor's expense.

The Contractor shall deal in such a way with materials from all excavations for streets, channels or pipe trenches and excavations for structures to ensure that usable material is not contaminated with unsuitable material. If usable material is contaminated, such contaminated material shall be removed and replaced with suitable material, all at the Contractor's expense. No additional payment shall be made in respect of this and all relevant costs shall be deemed to be included in the tendered rates.

All unsuitable material shall be removed prior to importing fill material to such areas.

Add the following sub-clause:

PSD 3.3.3 Selection in Excavations

Approval for a borrow area for a certain purpose does not necessarily mean that all the material in that area is suitable for the specified purpose. What it does mean is that the borrow area contains some suitable material. The onus shall rest with the Contractor to ensure that only material that is indeed suitable is removed and used for the specified purpose.

When the Contractor has to select excavated material for a specified purpose, the above provisions relating to borrow areas shall apply mutatis mutandis to excavations.

Initials.....

The Contractor shall not waste or contaminate material that has been selected for a specific purpose.

PSD 3.4 Material for Subsoil Drainage

PSD 3.4.1 Pipes

Pipes for subsoil drainage shall be uPVC pipes complying with the requirements of SANS 791 but shall be perforated or slotted.

The size of perforations in perforated pipes shall in all cases be 8 mm in diameter \pm 1,5 mm and the number of perforations per metre shall be not less than 26 for 110 mm pipes and 52 for 160 mm pipes. Perforations shall be spaced in two rows for 110 mm pipes and in three rows for 160 mm pipes.

Slotted pipes shall have a slot width of 8 mm \pm 1,5 mm. The arrangement of slots shall be subject to the Project Manager's approval, but the total slot area shall be not less than that presented for perforations.

Pipes without slots or perforations required for conveying ground water from the subsoil drainage proper to the point of discharge, shall be uPVC pipes as specified above.

PSD 3.4.2 Crushed-stone

Crushed-stone in subsoil drains shall be 19 mm single-sized stone complying with the grading requirements of stone for concrete in SANS 1083.

PSD 3.4.4 Sand

Sand in subsoil drains shall comply with the requirements of PSD 2.3.

PSD 5 CONSTRUCTION

PSDB 5.1 PRECAUTIONS

PSDB 5.1.1.2 Safeguarding of Excavations

Replace Clause 5.1.1.2 (b) with the following:

The Contractor shall be responsible for safeguarding all open excavations and shall indemnify the Engineer and the Client against any loss or damage suffered by any persons resulting from the presence of any open excavations.

The Contractor must note that the excavations for some manholes are deep and the concrete and brickwork walls to be constructed are vertical. The deep vertical faces of excavations could collapse during construction causing injury or death and the Contractor must either:

- a) provide a shoring system, designed by the Contractor and signed by a suitably qualified Professional Project Manager,

Initials.....

OR

b) Reduce the slope of excavations to the safe angle as determined by a suitably qualified Professional geotechnical Project Manager employed by the Contractor.

The Contractor shall be responsible for safeguarding all open excavations and shall indemnify the Project Manager and the Client against any loss or damage suffered by any persons resulting from the presence of any open excavations.

PSD 5.1.2 Existing Services

PSD 5.1.2.2 Detection, location and exposure

Add the following:

The requirements of PSA 5.4 shall apply mutatis mutandis.

If existing services are not shown on the drawings but the existence thereof can be reasonably expected, the Contractor shall, in conjunction with all relevant authorities, determine the exact depth and location of such services before the commencement of construction. After locating the exact position of services, whether indicated on the drawings or not, such services shall be deemed to be known services and the Contractor shall be liable for all costs and subsequent costs arising from the damage thereof as a result of the Contractor's activities. These services must also be indicated on the "as built" drawings.

PSD 5.1.2.3 Protection of cables

Substitute "estimated position" in the second sentence of PSD 5.1.2.3 with "actual or exposed position".

PSD 5.1.3 Stormwater and Groundwater

Add the following:

The Contractor shall where applicable and at the earliest practicable opportunity, install the permanent drainage specified or shown on the Drawings and shall at his own cost provide the temporary drainage required to protect the works.

PSD 5.1.4 Nuisance

PSD 5.1.4.1 Dust nuisance

Add the following:

The Contractor is responsible for dust control and is liable for all claims that may result from dust nuisance on all parts of the site and surrounding areas

Initials.....

at all times from the date of handing over of the site to the completion date of the contract. No payment regarding the above-mentioned will be made and all costs shall be deemed to be covered by the tendered rates.

The Contractor shall plan the Works accordingly and shall use sufficient water or other methods to keep the level of dust to a minimum. This shall be done in consultation with the Project Manager and to the Project Manager's approval. The contractor must make allowance for the above in the rates tendered for excavation.

PSD 5.1.4.3 Excavated material not to endanger or interfere

Add the following to this clause:

All surplus material and unsuitable material not required for backfilling shall be disposed of at suitable sites to be located by the Contractor. All such sites shall require the approval of the Project Manager and the Local Authority and community. No additional payment will be made for the transportation of such material

Dumping shall proceed in an orderly manner with coarse material placed at the bottom and covered with finer material, where possible. Upon completion of dumping, the material shall be shaped to provide free-draining surfaces and slopes and finished off to the satisfaction of the Project Manager.

PSD 5.1.6 Road Traffic Control

Add the following:

- a) Sufficient road signs must be erected in such a way that motorists will be warned in time of works, e.g. at the closing of a street sufficient signs to direct traffic must be erected at the preceding intersection.
- b) Bypasses and/or road signs shall be provided and/or erected at all locations where the free flow of traffic is obstructed and shall be approved by the Project Manager before the commencement of construction. Where main roads are crossed, detours and temporary traffic signs must be provided as shown on the attached drawings.
- c) Where a trench crosses a street or any place where a trench crosses the direction of traffic flow, drums must be placed in the street and not just along the sides of the street with danger tape in between.
- d) Danger tape must be put up between drums and tied around the drums.
- e) Drums may not be filled with stones. The spacing of drums must be in such a way (maximum 5 m) that they are visible from all directions.
- f) Sufficient safety measures must be utilised for pedestrians.

Initials.....

PSD 5.2 METHODS AND PROCEDURES

PSD 5.2.1 Site Preparation

PSD 5.2.2 Excavation

PSD 5.2.2.1 Excavation for General Earthworks and for Structures

The Contractor shall acquaint himself at bidding stage of the geological conditions on Site and shall allow for this in his rates.

(Clause 5.2.2.1 c)

The Contractor shall excavate to the net outline of the structure plus an allowance for workspace. Vertical concrete walls shall not be cast against excavated surfaces unless as so specified on drawings.

(Clause 5.2.2.1 e)

Should, after excavation to the foundation levels shown on the drawings, the founding materials prove to be unsuitable, the Engineer will instruct the contractor to excavate to some greater depth. The excess excavation shall be backfilled with cement stabilized sand comprising of 6% by mass of cement compacted to 100% MOD AASHTO or with mass concrete specified by the Engineer.

Should the Contractor excavate to dimensions in excess of those stipulated or permitted, he shall fill in the excess with material specified or approved by the Engineer at his own expense.

PSD 5.2.2.3 Disposal

All excess material not designated for re-use shall be disposed of at approved spoil sites.

PSD 5.2.3.3 Re-compaction of Bulk Excavations of Substrata Modification of Reservoirs and Towers (New Clause)

The material shall be deposited in layers of thickness, before compaction, not exceeding 150 mm.

Each layer shall be compacted to 98 % Mod AASHTO of max. dry density.

PSD 5.2.5 Transport for Earthworks

PSD 5.2.5.1 Freehaul

The freehaul distance for all earthworks on this Contract shall be unlimited.

PSD 5.2.5.2 Overhaul

No overhaul shall be paid, and the transport of all material shall be deemed to be within the freehaul distance

Initials.....

PSD 6 TOLERANCES

PSD 6.1 Position, Dimensions, Levels, etc

Degree of Accuracy II shall apply for all earthworks.

PSD 6.2 Moisture Content and Density

Degree of Accuracy II shall apply.

PSD 7 TESTING

PSD 7.2 Taking and Testing of Samples

Replace the contents of the sub-clause with the following:

The Contractor shall carry out sufficient process control checks (one test per five cubic metres of backfill) on the compaction of all backfill layers before calling the Project Manager to inspect the work completed.

The Project Manager may likewise carry out such tests.

Testing by the Project Manager will not be relieving the Contractor of his obligations to provide materials and workmanship in accordance with Specifications.

The compaction requirements for fills shall be deemed complied with when at least 85% of the dry-density tests on any lot show values equal to or above the specified density and when no single value is more than five percentages (5%) below the specified value.

The Contractor shall carry out sufficient tests as part of his Process Control Testing obligations under SANS 1200D, or as applicable, to demonstrate that all materials used for bulk earthworks and road works conform to the specifications. The Contractor shall ensure that the cost of testing is included in his tendered rates.

PSD 7.4 Density Tests (New Clause)

The Contractor shall carry out density tests on embankment subgrades at locations to be determined by the Engineer, but on average there shall be not less than one test per 25 m² bench area per backfill layer. The results of these test shall be properly recorded with the following information: -

- location
- backfill layer level
- date
- density (in kg/m³ and % compaction)
- moisture content

The results of these tests shall be available for the Engineer's scrutiny at all times. The Engineer may demand additional density tests to be carried out in his presence during site visits.

Initials.....

The costs of these tests shall be borne by the Contractor.

PSD 7.5 Supervision (New Clause)

All foundations for structures shall be inspected by the Project Manager before backfilling with material, placing of the blinding layer or concreting of any kind is commenced. The Project Manager shall be given at least 24 hours' notice by the Contractor for the necessary arrangements to be made.

PSD 8 MEASUREMENT AND PAYMENT

PSD 8.3 SCHEDULES ITEMS

PSD 8.3.2 Bulk Excavation

Add the following items:

b) Extra-over for.....Unit: m³

Replace the contents of this Sub-clause with the following:

No extra-over payment will be made for excavation in material classified in terms of Sub-clause 3.1.2, as amended, as intermediate excavation. The tendered rate for excavation in all materials shall include for the cost of such excavation. Refer to PSD 3.1.2, as amended.

Extra-over item will be made for:

- a) Material classified as "hard rock". Refer to PSD 3.1.2, as amended.
- b) Boulder excavation which, for the purposes of measurement, will not be differentiated into Class A and Class B.

c) Excavate in all materials, temporary stockpile and maintain.....Unit: m³

The unit of measurement shall be the cubic meter and the quantity shall be calculated from the authorised dimensions and as agreed with the Project Manager.

The tendered rate shall include the excavation and loading of suitable, selected material from cut, where the selected material cannot be placed directly in their required position, transporting it to the temporary stockpile site selected by the Contractor, off-loading, spreading and maintain for the duration of the stockpiling.

d) Excavate in all materials, dispose surplus or unsuitable material.....Unit: m³

Initials.....

The unit of measurement shall be the cubic meter and quantity shall be calculated from the authorised dimensions and as agreed with the Project Manager.

The tendered rate shall cover the costs for the operation and shall include full compensation for providing an approved spoil site by local authority for transporting the material regardless of the distance involved, for acceptance charges for such material and for all other incidental costs to dispose of the spoil material. No overhaul shall apply.

e) Extra-over for hand excavation in

- 1) Intermediate excavationUnit: m³
- 2) Hard rock excavationUnit: m³

PSD 8.3.3 Restricted Excavation

Substitute with the following:

Restricted excavation shall be limited to those excavations detailed on the drawings or as agreed to by the Project Manager as being restricted.

a) Extra excavation in all materials to provide working space around structures Unit: m³

Alter the number of item PSD 8.3.5 to PSD 8.3.5(a) and add the following sub-item:

b) Extra over for hard rock excavations.....Unit: m³

The rate shall cover the additional cost of complying with the requirements of PSD 5.3.5 (a) for any portion of the excavated material that is classified as hard rock. The rate shall also include cleaning of the final excavated level before concreting.

PSD 8.3.4 Importation of Material

Change sub-clause 8.3.4 (a) to read as follows:

(i) Importation of suitable material from temporary stockpile.....Unit: m³

(ii) Importation of fill/backfill behind structures from commercial sourceUnit: m³

and

Replace the last paragraph with the following:

The rate for importation of fill/backfill materials from temporary stockpile or selected fill/backfill materials for use against temporary stockpile or commercial source selected by the Contractor shall cover the costs of royalties if applicable in the case of commercial source, acquiring suitable material, excavation, selection of suitable material, loading, transportation irrespective of distance, offloading at point of placing, spreading or backfilling, watering, compacting, final grading, testing in

Initials.....

final position all in accordance with the requirements, specifications and detail given on the drawings.

PSD 8.3.6 Overhaul

Replace this clause with the following:

Freehaul is unlimited and no overhaul shall be paid.

Add the following to this sub-clause:

PSD 8.3.7 Additional Lateral SupportUnit: Sum

Add the following to 8.3.7:

The depth of shoring will be measured from the bottom of excavation to the top of excavation that requires support. Additional lateral support shall be measured in depth increments where necessary.

PSD 8.3.8 Existing Services

PSD 8.3.8.1 Location

c) Excavate by hand in soft material to expose existing services Unit: m³

Add the following:

Excavation by hand to expose existing services shall only be measured and paid for if so ordered in writing by the Project Manager. After the excavation of trial holes to determine the exact position and depth of existing services, at intervals as required by the Project Manager, the excavation to a level of 300 mm above such services shall be measured and paid for as normal excavation, independent of the depth of such excavation.

Only excavation within 300 mm of the existing services will be measured and paid for as excavation by hand and then only if ordered in writing by the Project Manager. The rate shall also include the backfilling of the excavations and compaction thereof.

SANS 1200 GA: CONCRETE (SMALL WORKS)

PSGA: CONCRETE (SMALL WORKS)

PSGA 3 MATERIAL

PSGA 3.2 Cement

Only mixtures of Ordinary Portland Cement (OPC) compliant with the requirements of SABS 471 and Pulverized Fly Ash (PFA) shall be used for

Initials.....

concrete in this Contract. The fly-ash cement thus obtained by blending of the OPC and Pulverized Fly Ash (PFA) shall comply with the requirements of SABS 1491 Part II of 1989. No other types of cement (e.g. Rapid Hardening Cement, Portland Blast Furnace Cement or Slagment) may be used without the prior approval by the Project Manager.

All concrete works shall be constructed using a 75:25 Ordinary Portland Cement: PFA blend.

If aggregates to be used in this contract are alkali-reactive, the OPC used on this Contract shall not have an alkali content ($\text{Na}_2\text{O} + 0,658 \text{ K}_2\text{O}$) which exceeds 0,6% by mass of the cement. For the cement used in conjunction with the selected additional aggregates the alkali content per cubic meter of concrete shall not exceed 2,2 kg. The Contractor shall submit the necessary test results to prove the above.

The Concrete mix must be determined by means of a proper mix design by an accredited laboratory and must be approved by the Project Manager.

PSGA3.2.1: **Applicable Specifications**

Substitute G 3.2.1 with the following:

The SABS approved the European Pre-standard (ENV) specification for Common and Masonry cements and issued these standards as SABS ENV 197-1 and SABS ENV 413-1 respectively for general use. These standard specifications (and specifications directly related thereto) will be applicable to this contract and reference to the various cements to be used will be based on the descriptions, notations and types as specified therein.

SABS 471, SABS 626 and SABS 831 have however not been withdrawing and are still applicable. SABS ENV 197-1, SABS ENV 197-2, SABS 413-1 and SABS ENV 413-2 shall therefore be deemed to be included wherever reference is made to SABS standard specifications in the contract document and drawings. In case of conflict, SABS ENV 197-1 and SABS ENV 413-1 will govern.

PSGA3.2.1.1: **Portland-Fly Ash Cement (New sub-Clause)**

Portland-fly ash cement shall be used in all concrete works. For that purpose, CEM II B-V 32,5 in compliance with the requirements of SABS ENV 197: 1992 shall be used, or Portland-fly ash cement may be produced on site by blending CEM I 42,5 with 25% Pulverized Fuel Ash (PFA).

PSGA 3.2.1.2 **Pulverized Fuel Ash (New sub-Clause)**

If PFA is blended with OPC on site, the following additional requirements shall apply:

- a) PFA shall be obtained from only one power station, from which the PFA has to be approved for use in concrete. Should the Contractor

Initials.....

wish to change the source of PFA during the Contract, he shall inform the Project Manager accordingly in advance, carry out test on the new PFA, produce trial mixes in accordance with the Specifications and obtain the Project Manager's approval in writing. After receiving the approval, the Contractor shall inform the Project Manager in writing as to the date when the PFA from the new source is to be used.

- b) All PFA shall comply with the requirements of BS 3892 Part 1 1982.
- c) Each consignment shall be tested for loss of ignition (which shall not exceed 7%), and the percentage mass retained on a 45-micron sieve by wet screening (which shall not exceed 12,5 %). Testing shall be carried out in accordance with the procedures specified in BS 3892 Part 1 1982.
- d) In addition, the chloride content and sulphate (SO₃) content of the PFA shall be tested every three months for each power station source.

If PFA and OPC are blended on site, PFA shall be stored separately from the OPC and shall have separate delivery facilities. It shall be stored in the same manner as specified for cement. When handled in bulk and stored in silos, PFA shall require greater silo capacity and more efficient filters than Portland cement, and furthermore, provision must be made for the aeration in the storage silo. The percentage of PFA by mass shall be 25% of the total cementitious material in the concrete, which is defined as the total mass of OPC and PFA combined.

PS GA 3.2.2 Storage of Cement

Add the following to GA 3.2.2:

Cement shall be used in the order in which it was received.

Unless approved by the Project Manager, cement kept in storage for longer than 8 weeks shall not be used in the works.

Any cement that contains lumps that cannot easily be crumbled to powder between the fingers, may not be used.

It is of prime importance that OPC and PFA to be used in concrete for water retaining structures shall always be stored in a cool environment, and it is strongly advised that OPC and PFA silos be painted white to reduce any temperature rise in the stored cementitious material.

PSGA 3.3 Water

To limit heat, gain in concrete for water retaining structures, the temperature of the mixing water must preferably be below 20 °C when added to the concrete mix.

Initials.....

PSGA 3.4 Aggregates

PSGA 3.4.1 Applicable Specifications

The maximum size of well graded aggregate shall be 19 mm for the concrete used in all other structures.

The maximum water absorption of the coarse aggregate shall not exceed 1% and the flakiness index shall not exceed 25%.

Aggregate to be used in this contract shall be tested in accordance with subsection C-15 of SABS 1245 of 1994 to determine whether they are potentially alkali-aggregate reactive. If they are alkali-aggregate reactive they shall either be replaced with aggregates that are not alkali-aggregate reactive or the requirements of PSGA 3.2 in the respect of alkali-aggregate reactivity shall apply.

The content of chloride ion in the aggregates shall be determined and shall be within the limits specified in SABS 1083. Test results of this regard shall be submitted to the Project Manager.

At Bid stage the Contractor shall assure himself by means of tests and test mixes by an accredited laboratory that the fine and coarse aggregates that he intends to use comply with the specification. The Bidding rates shall therefore be deemed to allow for the importation of aggregates that do comply with the specification.

The Contractor shall be responsible for locating the sources of all aggregate. It shall be the contractor's responsibility to ascertain the sufficiency of the supplies and their conformity to the requirements of the respective specifications. The Contractor shall not be entitled to claim for additional costs arising from the rejection of concrete aggregates, which do not meet the requirements of the specifications.

PSGA 4 PLANT

PSGA 4.4 Formwork

PSGA 4.4.1 Design

All internal and exposed external angles in concrete shall have 25 mm x 25 mm fillets and chamfers respectively unless otherwise specified or ordered.

PSGA 4.5 Cube Mould (New Clause)

At least 12 (twelve) 150 mm cube moulds and a temperature-controlled water-bath for curing the concrete cubes shall be available on Site at all times.

PSGA 5: CONSTRUCTION

PSGA 5.1 Reinforcement

PSGA 5.1.2 Fixing

Initials.....

The Contractor shall give the Project Manager at least 24 hours' notice, in which time the Project Manager shall have time to inspect the fixed reinforcement if needed, of his intention to close up the shuttering around the reinforcement.

PSGA 5.1.3 Cover

The cover of all concrete on the Works shall be a minimum of 50 mm.

PSGA 5.2 Formwork

PS GA 5.2.1 Classification of Finishes

Add the following to GA 5.2.1:

The following surface conditions are required on the finished concrete:

a) **Rough**

Concealed surfaces and surfaces lower than 100 mm below finished ground level.

b) **Smooth**

All surface finishes not classified as rough in paragraph a) shall be classified as smooth. All exposed arises unless otherwise indicated on the drawings, shall be chamfered 20 mm x 20 mm by means of triangular fillets fixed to the formwork.

PSGA 5.2.3 Removal of Formwork

PSGA 5.2.3.1 Add the following to sub clause 5.2.3.1

Formwork for PFA concrete shall remain in place after placing of the concrete as indicated in Table 1 for Portland Blast furnace cement.

PSGA 5.4 Concrete

PSGA 5.4.1 Quality

PSGA 5.4.1.3 Workability

The workability range for all PFA concrete (slump) shall be between 50 and 75 mm.

PSGA 5.4.1.5 Strength Concrete

All concrete shall be Class 25 MPa / 19 mm.

The maximum allowable standard deviation (S.D) shall be 4.5 MPa.

PSGA 5.4.1.7 Chloride content (New clause)

Efflorescence will not be acceptable on any exposed concrete surface.

PSGA 5.4.1.8 Durability (New clause)

Initials.....

The maximum ratio of water to cementitious material shall be 0.45 with a minimum of 420 kg/m³ cement content for all concrete works on this project.

PSGA 5.4.2 Batching

Batching of strength concrete shall be by mass.

PSGA 5.4.3 Mixing

PSGA 5.4.3(g) Ready-mixed concrete (New clause)

The use of ready-mixed concrete for this Contract will only be permitted if adequate proof of quality control for the specific design mix can be provided to the Project Manager.

PSGA 5.4.5.5 Casting of concrete in excavation (New clause)

Structural concrete shall not be cast directly against the side of any excavation without the use of formwork unless prior approval has been obtained in writing from the Project Manager.

Mass concrete or concrete used in pipe trenches for encasement, thrust blocks, etc. may be cast directly against the side of the excavation.

PSGA 5.4.7 Curing and Protection

Replace paragraphs (a) to (c) by the following:

Curing shall be as specified below, unless otherwise approved by the Project Manager, for:

- (a) Surfaces shall be protected with approved plastic sheets that comply with the requirements as specified below immediately after the prescribed surface finishing has been completed. When the concrete has gained sufficient strength to prevent damage to the surface thereof, the plastic sheets shall be removed on a regular basis to allow the application of more water to the concrete to ensure that it is kept moist continuously. Plastic sheets shall be reinstalled after each wetting of the concrete the curing period shall be at least 10 days.

The sheeting shall be firmly held in place at its edges by means that do not damage the fresh concrete.

- (b) Notwithstanding the preceding specifications, the Contractor shall also ensure that the concrete shall not be exposed to thermal shocks during the first 28 days after casting and he shall take the necessary, additional precautions to shield the concrete with plastic sheets or hessian during extreme warm, cold or windy weather. Hessian shall be wetted should the conditions necessitate this. Curing methods shall be such that saturation and subsequent damage to soil foundations is prevented. The Contractor shall make allowance in his rates for the above-mentioned curing methods.

Initials.....

c) Curing compound

The use of membrane curing compounds will be allowed on vertical faces or steeply inclined faces (i.e. steeper than 45 to the horizontal) of cast-in-situ members of the structures subject to the Contractor producing sufficient, satisfactory cube crushing strength test results where the crushing strength of cubes which have been cured with the proposed curing membrane and left exposed to the elements are compared with those of an equal number of waters cured cubes. The crushing strength of cubes cured with the proposed curing membrane shall be at least 85% of the crushing strength of the water cured cubes.

Before any membrane curing compound is used, each batch shall be tested on a trial surface to ensure that it forms a satisfactory membrane and any compound which is unsatisfactory, in the opinion of the Project Manager, shall be rejected. Curing membranes will be disallowed if discoloration of the concrete takes place. **Surfaces where curing membranes are used shall be treated in such a manner that the final concrete texture and colour blends in with the rest of the concrete work.** Furthermore, the Project Manager shall, at his discretion require the Contractor immediately to adopt an effective alternative means of curing any area of the structure to which a membrane has been applied, which in the opinion of the Project Manager is unsatisfactory. The curing compound used shall be to the approval of the Project Manager. Wax based curing compounds will not be permitted.

The curing compound shall be applied immediately as formwork is progressively stripped. It shall preferably be applied by spraying and the rate of application shall be strictly in accordance with the manufacturer's recommendations. A method of monitoring the area to which curing compound has been applied and the application rate shall be as approved by the Project Manager's Representative and rigidly applied by the Contractor.

PSGA 5.4.8 **Concrete Surfaces**

PSGA 5.5.8.2 Add the following to sub clause 5.5.8.2:

(1) Wood-floated Finish

When a wood-floated finish is specified, the surface shall first be treated as specified in sub clause 5.5.8.1, and after the concrete has hardened sufficiently, it shall be floated to a uniform surface free from trowel marks. The levelled surface shall be wood floated either by hand or by machine only, to remove trowel marks.

PSGA 5.4.10 **Defects**

5.4.10.1 Add the following to sub clause 5.5.10.1:

All defects to the concrete shall be attended to, in full, as soon as possible after the formwork is removed. Further concreting of the element

Initials.....

concerned may be prohibited by the Project Manager until he is satisfied that this remedial work has been satisfactorily attended to.

5.4.10.2 Add the following sub clause 5.4.10.2:

The method of repair of defects in the concrete shall be by approved epoxy primer, epoxy and filler applied strictly according to the manufacturer's specification or such other methods acceptable to the Project Manager. Cementitious mortar may not be used for such remedial works. All repair materials shall be of an equivalent thermal and structural elasticity to concrete.

PSGA 5.4.11 Adverse Weather Conditions (New clause)

The temperature of the concrete when deposited shall not be allowed to exceed 25⁰C.

PSGA 5.4.12. Grouting (New clause)

Only liquid epoxy grouting compounds like epidermix 395 shall be used for the grouting of threaded steel bars. Similar liquid epoxy grouting compounds may be used, but must be approved by the Project Manager.

PSGA 5.4.12.1 All free-flowing grouts except epoxy grouts

The grout shall be placed quickly and continuously to avoid the undesirable effects of overworking, (These effects are segregation, bleeding, and breaking-down of initial set.) The method of placement shall be subject to approval. The means of placing the grout shall be such that the grout will completely fill the space to be grouted, will be thoroughly compacted, will be free of air pockets, and will have evenly distributed contact over an area in excess of 80 % or, in the case of expanding grout, 95 % of the bearing area of the item to be supported.

PSGA 5.4.13 Records (New clause)

Add the following sub clauses:

- (d) The quality, proportions, water content and test results of each cast.
- (e) Tests made on weigh batching apparatus. scales, mixers and water content control devices.
- (t) A control chart showing the compressive strength of test cubes at 7 days and 28 days.

The records shall be kept up to date, be readily available for inspection and shall be submitted as soon as possible.

PSGA 5.14 Fixings for items supplied under this Contract (New Clause)

Initials.....

Where anchor bolts are used which are installed into holes drilled into concrete or rock these shall be of hot dip galvanized Grade 4.8 threaded steel rods.

PSGA 6 TOLERANCES

PSGA 6.4 General

In general, Degree of Accuracy II shall apply except that abrupt changes in a continuous surface shall not be more than 3 mm.

PSGA 7 TESTS

PSGA 7.1.2. Frequency of Sampling

PSGA 7.1.2.3 Omit sub clause 7.1.2.3 and replace with the following:

The structural concrete shall be designed to meet its specified strength at 28 days after casting. A set of 6 cubes shall be taken from each simultaneous casting of concrete and from at least every 50 m³ of placed concrete, of which 3 are to be tested at 7 days and 3 at 28 days. Thus, if the contractor cast concrete on more than one structure in a day, a set of 6 cubes shall be taken from the concrete of each structure.

PSGA 7.2 Testing

PSGA 7.2.1 General

Add the following:

The Contractor shall allow for all the costs for testing in his rates.

PSGA 8: MEASUREMENT AND PAYMENT

PSGA 8.1 Measurement and Rates

PSGA 8.1.1 Formwork

No separate payment will be made for chamfers and fillets 25 mm or less in size.

PSGA 8.1.2.1 Reinforcement

The rate shall cover the cost of supply, cutting, bending, placing in position, and fixing of the reinforcing and supporting steel scheduled, and the provision of all spacer devices and binding wire, as well as the cost of tests in terms of SABS 920. The rate for welded mesh shall cover the supply, cutting and placing of mesh, as well as the cost of all waste due to laps.

PSGA 8.1.4 Concrete Complete with Formwork

In addition to the items specified under Subclause 8.1.4. the rates for concrete complete with formwork shall cover the costs of:

Initials.....

- (i) the preparation of design mixes by an approved laboratory,
- (ii) using one of the curing methods specified in PSGA 5.4.7,

PSGA 8.2 Scheduled Formwork Items

PS GA 8.2.3 Narrow widths Unit: m

Substitute GA 8.2.3 with the following:

No payment shall be made for narrow widths.

PSGA 8.3 Scheduled Reinforcement Items

PS GA 8.3.2 High-tensile Welded Mesh Unit: kg

Substitute GA 8.3.2 with the following:

Welded mesh shall be measured and paid for by mass.

SANS 1200 HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)

PSHA STRUCTURAL STEELWORK (SUNDRY ITEMS)

PSHA 3: MATERIALS

Add the following under this heading:

Where the words "Structural Steelwork" appear in the heading and in other relevant Clauses, amend to read "Aluminium, Stainless Steel and Structural Steel".

PSHA 3.1 Structural Steelwork

Add the following to this clause:

Structural steelwork shall comply with Grade 43 of BS 4360 (or any relevant replacement standard). All steel pipes and specials, irrespective of diameter, shall be fabricated from plain ended pipes. The use of screwed flanges and fittings shall not be permitted, except for use on air-valve assemblies. All fabrication shall take place in a suitable workshop prior to galvanizing, and no cutting or welding of pipes on site shall be permitted.

Add the following clauses:

PSHA 3.1.2 Stainless steel

Where stainless steel is to be used, the grade of stainless steel shall be grade 316L unless specified elsewhere.

PSHA 3.1.3 Aluminium

Initials.....

All aluminium items shall be grade M57S material anodized in accordance with SANS 999 Grade 25.

PSHA 3.3.1 Bolts and nuts

Add the following to this Sub-clause:

All bolts, nuts and washers within water retaining structures or exposed to the rain, or with a diameter of 10 mm or less, all anchor bolts of any size in concrete or brickwork and all bolts of any size used in conjunction with stainless steel items, shall be manufactured from Grade 316L stainless steel.

All other bolts, nuts and washers with a diameter of 12 mm or greater shall be hot dip galvanized to SANS 10684. Nuts shall be tapped before galvanizing, taking into consideration the extra clearance necessary to allow for the thickness of galvanizing on the bolts. If, after installation, there is any indication that galvanising has been stripped from either the nut or the bolt, both nut and bolt shall be removed and replaced.

PSHA 5 CONSTRUCTION

PSHA 5.2 FABRICATION AND ASSEMBLY

PSHA 5.2.1: Ladders

Add the following to HA 5.2.11:

Ladders shall be GRP or equivalent after manufacturing.

See paint specification above (HA 1.1).

PSHA 5.2.4: Welding

The Contractor shall submit with his shop drawing full details of welding procedures. All welds shall be continuous. Unless otherwise approved no longitudinal or overhead welding shall be carried out on site. Under no circumstances will cutting and welding of grid covers, and frames be permitted on site.

Welders undertaking manual welding of permanent steelwork shall be experienced and competent artisan.

PSHA 5.2.6 Handrailing

Handrailing shall generally be of the standard ball type consisting of circular hollow steel section, to the Mentis INTER-LINK hand railing system. Hand and knee-rails shall be of the dimensions 34.0 mm OD x 2.5 mm and stanchions shall be of the dimensions 42.9 mm OD x 3.0 mm. Base plates shall be at least 10 mm thick and bolted to the supporting concrete or brickwork using two M16 stainless steel anchors (e.g. HILTI HAS size or equal).

Initials.....

The handrails shall be manufactured entirely of mild steel tubing and shall either be treated with one coat of self-etching primer followed by two coats of high gloss enamel paint or hot dipped galvanized.

Stanchions shall be manufactured preformed in one piece and shall be of stainless-steel tubing of nominal thickness of 2,6 mm and of nominal outside diameter of at least 42 mm. The bases of the stanchions shall be manufactured of 150 mm x 75 mm x 12,5 mm flat bars and shall be performed to suit the situation in which they are to be installed (i.e. for platform- or side-mounting, and for horizontal- or sloped-mounting on concrete or steel), and the stanchion spheres shall be performed to suit right angled or other angled intersections), all as shown on the drawings.

Unless specified, handrails should be manufactured from GRP or stainless steel.

Stanchions shall be spaced at intervals not exceeding 1,5 m and shall be fixed with two M16 stainless steel bolts, washers and nuts each. All joints shall be welded.

PSHA 5.2.7 **Ladders**

Ladders and other structural steel work inside water retaining structures shall be manufactured from grade 316 stainless steel. Stainless steel 316 welding rods shall be used and welding shall be done according to the MMA process. All welds shall be pickled and passivated after welding.

Ladders and other structural steel outside water retaining structures shall be manufactured from Grade 300 W steel and hot dipped galvanized according to SABS 763.

PSHA 5.2.8 **Open Grid Floors**

Floor grating shall either be hot dipped galvanized steel gratings or made of 3CR12 material or stainless steel and will be to the dimensions as shown on the drawings or specified. In all cases the gratings will be banded.

Grid floors shall be manufactured from GRP or stainless steel as specified and shall be U-grid or approved equivalent. All parts shall be banded and secured with standard clips

All open grid floor panels shall be open-ended as specified, except where bonding is specified on the drawings. Cut outs shall be provided where indicated on the Drawings.

PSHA 5.2.11 **Step Irons (New Clause)**

Step irons for embedding in concrete walls shall be made of cast iron according to BS 1247 Type M3327 (Besaans catalogue No.) and shall have lateral slip protection.

Initials.....

PSHA 5.2.12: Prefabricated Open Grid Floors

Substitute the second sentence of HA 5.2.8.1 with the following:

This shall be similar to the "U"-grid type grid floors manufactured from GRP or Stainless steel as specified.

PSHA 5.2.13: Floor plate Floors

Substitute HA 5.2.13 with the following:

Floor plate floors shall consist of 8 mm thick checker plate.

See paint specification above (HA 1.1).

PSHA 6 TOLERANCES

PSHA 6.1 Fabrication and Assembly Tolerance

PSHA 6.1.3 Other Tolerance

Grade II accuracy shall be applicable.

PSHA 8: MEASUREMENT AND PAYMENT

PSHA 8.3.3: Ladders, complete and installed

Separate items will be scheduled for ladders of different materials, dimensions and height.

The tendered rate shall include full compensation for the cost of supplying the specified or scheduled ladders complete, including welding and all fasteners, where applicable.

PSHA 8.3.4: Flooring, complete and installed with frames

Separate items will be scheduled for grid floors, floor plate floors and kerbs of different materials, dimensions, weight and different methods of fixing.

The tendered rate shall include full compensation for the cost of supplying the specified or scheduled types of flooring, frames or kerbing complete, including welding where applicable.

PSHA 8.3.6: Corrosion Protection

Substitute HA 8.3.6 with the following:

Corrosion protection shall not be measured separately. The cost thereof shall be included in the rate for the related item.

PS HA 8.3.7 Stanchions.....Unit: No

The rates shall cover the cost for the supply of all material, manufacturing, handle, and deliver to site, offloading, erection and grouting. The rate shall also cover the cost for all bolts and nuts, washers, cutting to size, etc.

Initials.....

PS HA 8.3.8 Steel Basket..... Unit: No

The rate shall cover the cost of manufacturing, supply of all materials (stainless steel 316L) delivery on site and installation. The rate shall cover the cost of all bolts and nuts, washers, cutting to size, etc.

Initials.....

SANS 1200 HC: CORROSION PROTECTION OF STRUCTURAL STEEL WORK

PSHC CORROSION PROTECTION OF STRUCTURAL STEELWORK

PSHC 5 CONSTRUCTION

PSHC 5.4 Preparation for Coating

PSHC 5.4.1 General

The standard of abrasive blast cleaning will be SA 2½.

All surfaces shall be coated or hot dipped galvanized within 4 hours of abrasive blast cleaning.

PSHC 5.7 Coating System

Unless otherwise specified structural steelwork shall be prepared in accordance with sub-clause 5.4 of SANS 1200 HC and shall be blast cleaned to SA 2.5. Within four hours after blast cleaning, the surface shall be over-coated with one coat zinc chromate primer to SANS 769 (Type 1) to a dry film thickness of 40 microns. This shall be followed by a second coat of the same primer coat and to the same thickness. The primer coat shall be followed by two coats of high gloss enamel.

PSHC 8: MEASUREMENT AND PAYMENT

PSHC 8.1 Principles

No additional payment will be made for corrosion protection and the cost of the protective coating shall be included in the cost of supply and erection.

Initials.....

PORTION 3: PROJECT PARTICULAR SPECIFICATIONS

1: PREFACE TO THE PROJECT PARTICULAR SPECIFICATIONS

The Project Particular Specifications form an integral part of the Contract Documents and shall be deemed to be included in and form part of the Specifications.

The Project Particular Specifications are intended to describe the work to be carried out under the Contract when applicable and to clarify and modify the Standard Specifications. The clauses in this portion of the Project Specification contains Particular Specifications that are not covered in SANS 1200.

The number of a clause or a new payment item, which does not form part of a clause or a payment item in the Standard Specifications and is included here, is also prefixed by PS followed by a new number.

In case of discrepancy or conflict between the various specifications and drawings, the order of preference shall be as follows:

1. Amendments and additions to the Standardized/Particular Specifications
2. Particular Specifications
3. Standardized Specifications

PARTICULAR SPECIFICATIONS

No.	DESCRIPTION
PF	Building construction
PG	Fencing
PJ	Cleaning and finishing

Initials.....

PF BUILDING CONSTRUCTION

PF 1 SCOPE

PF 1.1 This Specification covers the construction of brick walls including foundations, plastering, doors, floors, painting and all other aspects required to complete this work in accordance with the specifications and details given on the drawings.

PF 2 INTERPRETATIONS

PF 2.1 SUPPORTING SPECIFICATIONS

Where this specification is required for a project, the following specifications shall, inter alia form part of the contract document: -

- (a) Project Specifications;
- (b) SANS 1200 AH;
- (c) SANS 1200 C;
- (d) SANS 1200 H
- (d) SANS 1200 D or SANS DA, as applicable.

In addition, the following specifications may be required for the project: -

- (e) SANS 1200 G or SANS 1200 GA, as applicable.

PF 2.2 APPLICATION

Interpretations of and variations to this specification are set out in **Portion 2** of the Project Specification which precedes this specification in a contract document.

PF 2.3 DEFINITIONS

For the purpose of this specification the definitions and abbreviations given in the applicable specifications listed in 2.1 (b), (c) and (d) and (i) shall apply.

PF 3 MATERIALS

PF 3.1 Materials used in the construction of the works shall generally comply with the relevant standard specifications. In particular, the following standard specifications shall apply: -

- | | |
|------------|----------------------------------|
| SANS 987: | Cement Bricks |
| SANS 471: | Portland Cement |
| SANS 523: | Limes for Use in Buildings |
| SANS 1083: | Aggregate from Natural Sources |
| SANS 634: | Emulsion Paints for Exterior Use |
| SANS 904: | Red Oxide Zinc Chromate Primer |
| SANS 727: | Steel Windows and Steel Doors |
| SANS 1129: | Steel Door Frames |

Initials.....

SANS 545:	Wooden flush Doors
SANS 678:	Primers for Wood
SANS 681:	Undercoats for Paints
SANS 630:	Decorative High Gloss Enamel Paints
SANS 920:	Steel Bars for Concrete Reinforcement
SANS 679:	Fine Chromate Primer

PF 4 PLANT

Not applicable to this specification.

PF 5 CONSTRUCTION

PF 5.1 FOUNDATIONS

PF 5.1.1 Excavations

All excavations and other earthworks shall be carried out in accordance with the requirements of SANS 1200 DA and the project specifications.

PF 5.1.2 Concrete for Foundations

All concrete work shall comply with the requirements of SANS 1200 GA and the project specifications.

PF 5.2 WALLS

PF 5.2.1 Brickwork

PF 5.2.1.1 General

All brickwork shall be executed in standard cement bricks which shall comply with the requirements of SANS 987 for class S7 bricks. Bricks shall be laid in English bond. Door frames shall be built in as the brickwork progresses.

PF 5.2.1.2 Mortar

Class B mortar which contains no lime shall be used throughout. The preparation of the mortar shall be such that all mixed mortar is used within one hour after mixing. Mortar which shows signs of beginning to harden shall not be used and must be discarded.

PF 5.2.1.3 Reinforcement

Unless shown otherwise on the drawings or ordered by the Project Manager each fifth layer of bricks in all walls shall be reinforced with a layer of 3 mm standard welded mesh brick reinforcement. Adequate overlap of such reinforcements shall be provided where joints in reinforcement occur and in all corners.

Initials.....

PF 5.2.1.4 **Damp proof Course**

Damp proof materials and other packing required at construction joints, at the base of wall or under concrete slabs shall comply with the requirements shown on the drawings.

PF 5.2.2 **Plaster**

Before any plastering of walls and brickwork commences the surfaces thereof shall be thoroughly brushed and washed with water. Thereafter plastering can commence and the completed plaster thickness shall lie between 12 mm and 20 mm. Final finishing of the plaster shall be by means of a steel trowel to give a smooth surface free of ridges and holes and scratch marks. Plaster shall consist of one-part cement, four parts sand and 10 percent lime which has previously been mixed with the dry sand. All materials shall comply with the requirements of the following SANS:

Cement	SANS 471
Sand	SANS 1083
Lime	SANS 523

PF 5.2.3 **Doors and Door Frames**

The size of doors shall be as shown on the drawings. Steel doors shall conform to the requirements of SANS 727 where applicable.

Steel door frames shall be a welded unit fabricated from 1,25 mm thick pressed steel conforming to the requirements of CKS 79. Wall anchors shall conform to the requirements of SANS 727.

Wooden doors shall conform to the requirements of SANS 545 and CKS 153 as applicable.

PF 5.3 **FLOOR**

PF 5.3.1 **Preparation**

Approved hardcore material 100 mm thick shall be placed on a levelled surface and compacted to at least 93 % of Mod AASHTO Maximum Dry Density before any surface beds are cast.

PF 5.3.2 **Surface Beds**

Minimum 100 mm thick concrete shall be cast on previously approved compacted hardcore and shall receive steel float finish to levels indicated on the drawings. Concrete shall comply to the requirements of SANS 1200 GA and Clause PSGA-4 of the project specifications.

PF 5.3.3 **Waterproofing**

The surface beds shall be underlain by 250 micron black PVC membrane conforming to the requirements of SANS 952 class C. A lap of 300 mm

Initials.....

shall be provided at joints. Care shall be taken that the membrane is not punctured during the construction process.

PF 5.4 PAINTING

PF 5.4.1 General

All painting shall be carried out in accordance with manufacturer's instructions or recommendations. All surfaces shall be clean and correctly prepared before painting commences. All exposed surfaces and exposed steel surfaces, including those surfaces that are hidden or are inaccessible after installation, shall be painted and in the latter case all painting shall be completed before installation. All paint shall bear the SANS mark. The colours of the paint shall be as shown on the drawings or as directed by the Project Manager

PF 5.4.2 Plastered Walls

An emulsion primer shall be applied followed by two coats of emulsion paint. All emulsion paints shall conform to the requirements of SANS 634, "Emulsion Paints for Exterior Use".

PF 5.4.3 Timberwork

After the timberwork has been thoroughly sanded where required and cleaned an approved knot and surface sealant shall be applied. Thereafter a primer in accordance with SANS 678 type 111 shall be applied. This shall be followed by an undercoat in accordance with SANS 681 type 11 and a final coat of high gloss enamel conforming to SANS 630.

PF 6 TOLERANCES

PF 6.1 Permissible Deviations

The permissible deviations for foundations and elements or components above the foundations shall be as listed in Clause 6.4 of SANS 1200 GA and shall be as follows: -

Foundations	Degree of Accuracy III
Elements above foundation	Degree of Accuracy II

PF 7 TESTING

Not applicable to this specification.

PF 8 MEASUREMENT AND PAYMENT

PF 8.1 BASIC PRINCIPLES

All work shall be measured as set out hereunder and as specified in the Schedule of Quantities and payment will be made in accordance with the tender price per unit of the particular item.

Initials.....

PF 8.2 **COMPUTATION OF QUANTITIES**

PF 8.2.1 Excavations shall be measured in accordance with the requirements of Clause 8.3.1 of SANS 1200 DA.

PF 8.2.2 Concrete foundations and surface beds shall be measured in accordance with the requirements of Clause 8 of SANS 1200 GA.

PF 8.2.3 Waterproofing under the surface beds shall be measured by the square metre laid.

PF 8.2.4 Brickwork shall be measured by the square metre constructed in a particular width and shall include for Damp proof course, for air bricks if specified and for the type of finish specified on the drawings or in the project specification.

Additional payment for plastering and painting shall only be made if specific items for the work is include in the Schedule of Quantities.

PF 8.2.5 Brickwork reinforcement shall be measured by the linear metre built in for a particular width and shall include for the galvanized hoop irons or ties to be fixed to columns, walls or slabs as specified on the drawings or in the project specification.

PF 8.2.6 Plastering shall be measured by the square metre for walls and by linear metre for narrow width smaller than 300 mm. Different items will be scheduled for internal and external plastering, various narrow widths and types of finish required as specified on the drawings or in the project specification.

PF 8.2.7 Painting shall be measured by the square metre for walls and by linear metre for narrow width smaller than 300 mm and shall include for preparation of the surface to receive the paint, the application of the under and or priming coat and for the type of finish specified on the drawings or in the project specification.

PF 8.2.8 Doors shall be measured by the number and shall include for setting and building in door frames and painting in accordance with the requirements shown on the drawings or in the project specification.

PF 8.2.9 Window frames shall be measured by the number and shall include for setting and building in window frames and painting in accordance with the requirements shown on the drawings or in the project specification.

PF 8.2.10 Glazing shall be measured by the square metre. Different items will be scheduled for types of glazing required as specified on the drawings or in the project specification.

PF 8.2.11 Built-in items and other miscellaneous items shall be measured by the number and shall include for setting and building in or fixing and painting in accordance with the requirements shown on the drawings or specified in the project specification.

Initials.....

PF 8.2.12 all structural concrete, steel work and cladding needed in a building will be measured in accordance with the Clause 8 of the relevant SANS specifications.

PF 8.3 SCHEDULED ITEMS

PF 8.3.1	Waterproofing under surface beds as specified	Unit: m ²
PF 8.3.2	Brick walls including Damp proof course, air bricks and surface finish including painting as specified on the drawings in the following widths: -	
	115 mm	Unit: m ²
	230 mm	Unit: m ²
	345 mm	Unit: m ²
PF 8.3.3	Brickwork reinforcement including galvanized hoop irons or ties as specified on the drawings in the following widths: -	
	(a) 75 mm	Unit: m
	(b) 150 mm	Unit: m
PF 8.3.4	Supply and building in of door frames and hanging of doors including painting all as specified on the drawings The schedule of quantities shall distinguish between different door heights and widths and for different wall thicknesses.	Unit: No
PF 8.3.5	Supply and building in of window frames including painting all as specified on the drawings The schedule of quantities shall distinguish between different types of window frames.	Unit: No
PF 8.3.6	Supply and building of precast concrete lintels for various walls thickness and for specified lengths	Unit: No
PF 8.3.7	Supply and setting in, building in or fixing of miscellaneous items including painting all as specified on the drawings	Unit: No
PF 8.3.8	Glazing: The schedule of quantities shall distinguish between different types of glazing.	Unit: m ²
PF 8.3.9	Plastering: (a) Internal plaster (b) External plaster	Unit: m ² Unit: m ²

Initials.....

	(c) Internal plaster to narrow widths	Unit: m
	(d) External plaster to narrow widths	Unit: m
PF 8.3.10	Painting:	
	(a) Internal surfaces	Unit: m ²
	(b) External surfaces	Unit: m ²
	(c) Internal painting to narrow widths	Unit: m
	(d) External painting to narrow widths	Unit: m

PF 9 APPLICABLE STANDARDS

Reference is made to the latest issues of the following standards: -

SANS 471 :	Portland Cement
SANS 523 :	Limes for use in Buildings
SANS 545 :	Wooden Flush Doors
SANS 630 :	Decorative High Gloss Enamel Paints
SANS 634 :	Emulsion Paints for Exterior Use
SANS 678 :	Primers for Wood
SANS 679 :	Zinc Chromate Primer
SANS 681 :	Undercoats for Paints
SANS 727 :	Steel Windows and Steel Doors
SANS 909 :	Red Oxide Zinc Chromate Primer
SANS 952 :	Polyethylene Sheet
SANS 987 :	Cement Bricks
SANS 1129:	Steel Door Frames
SANS 1200 A:	Civil Engineering Construction: General
SANS 1200 AA:	Civil Engineering Construction: General (small works)
SANS 1200 AB:	Civil Engineering Construction: Engineer's Office
SANS 1200 C:	Civil Engineering Construction: Site Clearing
SANS 1200 D:	Civil Engineering Construction: Earthworks
SANS 1200 DA:	Civil Engineering Construction: Earthworks (small works)
SANS 1200 DB:	Civil Engineering Construction: Earthworks (pipe trenches)
SANS 1200 DM:	Civil Engineering Construction: Earthworks (roads, subgrade)
SANS 1200 G:	Civil Engineering Construction: Concrete (structural)
SANS 1200 GA:	Civil Engineering Construction: Concrete (small works)
SANS 1200 H:	Structural steelwork
SANS 1200 HA:	Structural steelwork (sundry Items)
SANS 1200 HC:	Corrosion protection of structural steelwork

CODES OF PRACTICE

SANS 064 : Preparation of Steel Surfaces for Coating

PJ CLEANING AND FINISHING

PJ 1 SCOPE

Initials.....

PJ 1.1 This Section covers the final finishing and cleaning up of the Works and Site, and the disposal of excess material at places approved by the Project Manager

This Section does not cover the disposal of unsuitable excavated material, the finishing of quarries or borrow pits, the finishing of any backfill, the cleaning and finishing of concrete and other finishes described elsewhere in the specification or for which separate payment clauses exist.

PJ 2 INTERPRETATIONS

Not applicable to this specification

PJ 3 MATERIALS

Not applicable to this specification.

PJ 4 PLANT

Not applicable to this specification.

PJ 5 CONSTRUCTION

PJ 5.1 Precautions

PJ 5.1.1 Safety

The requirements of Sub clause 5.1.1 of SANS 1200 D or SANS 1200 DA (as applicable) shall apply.

PJ 5.2 Methods and Procedures

PJ 5.2.1 General

After completion of the work which is to be executed under this Contract, the Works and the Site shall be finally and neatly cleaned and finished off by means of suitable machines and equipment and hand labour where required until a neat and clean appearance is obtained. The Contractor shall ensure that completed and approved work is not damaged during the cleaning up operations. If any part is damaged it shall immediately be rectified to comply with the required specification for the particular part of the Works. Camping Sites shall be neatly cleaned and all rubbish shall be disposed at places approved by the Project Manager

PJ 5.2.2 Cleaning

Loose stones, felled trees, roots and all other rubbish on fill or on the sides of streams shall be removed to give the site a neat appearance. Storm water drains shall be cleaned of debris, soil, silt and other material. Concrete floor panels from temporary buildings and any excess concrete dumped on the site shall be broken up and disposed of in areas approved by the Project Manager and covered over to the satisfaction of the Project Manager

Initials.....

PJ 5.2.3 Finishing

Permanent access roads required for future use by the Employer and other permanent roads in the general works area shall be graded so as to remove all corrugations and all imperfections made good in such a way that the specified shape is maintained and the surface is not loosened. Dragging, pushing or scraping waste material along across these roads will not be permitted.

Care shall be taken not to damage culvert headwalls and drains when doing this work. All cutting, fills and drains shall be trimmed and finished to the original lines and grades or as required by the Project Manager All intersecting slopes shall be neatly rounded. Excess debris or other waste material adjacent to culverts and drainage structures shall be removed and trimmed as directed by the Project Manager

PJ 6 TOLERANCES

PJ 6.1 After the completion of cleaning and finishing as described in this specification, all work shall be within the tolerances required by the relevant specification for each portion of the work.

PJ 7 TESTING

Not applicable to this specification.

PJ 8 MEASUREMENT AND PAYMENT

PJ 8.1 Cleaning and Finishing Unit: Lump Sum

Payment shall be a lump sum to provide for all expenses in connection with this work. The tendered lump sum shall be a fixed amount and shall not be subject to any variation as far as quantity is concerned.

Initials.....

DRAWINGS

All the required drawings issued for tendering purpose are included under **Annexure-I** of this Bid Document. The drawings should be read in conjunction to the provided scope of work, project specifications, and schedule of quantities.

The list of drawings included under **Annexure I** of this Bid Document are listed in the table below.

List of drawings:

15/5/2/20-34, R0:	Chlorination Building Extension Plan Layout with Apron
15/5/2/20-35 R0:	Chlorination Building Extension Elevations
15/5/2/20-36 R0:	Chlorination Building Extension Detail of Foundations and Walls
15/5/2/20-37 R0:	Okondjatu Scheme Site Layout
15/5/2/20-38 R0:	Chlorination Building Electrical Layout
15/5/2/20-39 R0:	Concrete Slab For Okondjatu Boreholes
15/5/2/20-40 R0:	Borehole Fence Layout WW32249, WW24723
15/5/2/20-41 R0:	Borehole Fence Layout WW25302, WW25303
15/5/2/20-42 R0:	Borehole Fence Gate Details
15/5/2/20-43 R0:	Borehole Fence Details
15/5/2/20-444 R0:	Project Board

Soft copies of the drawings in PDF can also be provided on request.

Initials.....

SECTION IV: PRICED ACTIVITY SCHEDULE

A. PREAMBLE TO SCHEDULE OF QUANTITIES

- 1.1. The General Conditions of Contract, the Special Conditions (if any), the Specifications (including the project specifications), and the Drawings are to be read in conjunction with

The schedule of Quantities.

- (a) The schedule comprises items covering the contractor's profit and costs of general liabilities and of the construction of temporary and permanent works.
- (b) The bidder is at liberty to insert a rate of his own choosing for each item in the schedule and his attention is drawn to the fact that the contractor has the right, under various circumstances, to payment for additional works carried out and that the engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates inserted in the schedule by the contractor.
- (c) Clause 8 of each standardised specification and the measurement and payment clause of each particular specification, read together with the relevant clause of the project specification, set out what ancillary or associated activities are included in the rates for the operations specified.

- 1.1. Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the Standardised Specifications. Clause 8 of each Standardised Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification, or the Scope of Work, conflict with the terms of the Bill, the requirements of the Standardised or Scope of Work, as applicable, shall prevail.

- 1.2. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made for waste.

- 1.3. The prices and rates to be inserted in the Schedule of Quantities are to be the full inclusive prices to the Employer for the work described under the several items.

Such prices shall cover costs and expenses that may be required in and for the construction of the work described, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based.

- 1.4. A price or rate is to be entered against each item in the Schedule of Quantities, whether the quantities are stated or not. An item against which no price is entered will be considered to be covered by the other prices or rates in the schedule.

- 1.5. Should the tenderer group a number of items together and tender one lump sum for such group of items, the single tendered lump sum shall apply to that group of items and not to each individual item, that full compensation for such item had been

Initials.....

included in another item, the rate for the item included in other items shall be deemed to be nil. The tendered lump sums and rates shall be valid irrespective of any change in the quantities during the execution of the contract.

- 1.6. The Tenderer must price and extend each item in the schedule of quantities in black ink and the use of correcting fluids like tipp-ex, etc. is unacceptable.
- 1.7. The clauses in a specification in which further information regarding the Bill item can be obtained appear under “Reference clause” in the Bills of Quantities. The reference clauses indicated are not necessarily the only sources of information in respect of schedule items. Further information and set specifications may be found elsewhere in the contract documents. Standardised Specifications are identified by the letter or letters which follow SANS in the SANS 1200 series of specifications, e.g. G for SANS 1200 G.
- 1.8. The prices and rates to be inserted in the Bills of Quantities are to be the full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. The prices will be used as a basis for assessment of payment for additional work that may have to be carried out.
- 1.9. It will be assumed that prices included in these Bills of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders. (Refer to www.sans.co.za or www.iso.org for information on standards).
- 1.10. Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered such items
- 1.11. Except where rates only are required, the Tenderer shall insert all amounts to be included in his total tendered price in the “Amount” column and show the corresponding total tendered price.
- 1.12. The units of measurement described in the Bills of Quantities are metric units. Abbreviations used in the Bills of Quantities are as follows:

%	=	per cent	m ² .pass	=	square metre-pass
h	=	hour	m ³	=	cubic metre
ha	=	hectare	m ³ .km	=	cubic metre-kilometre
kg	=	kilogram	MN	=	meganewton
kℓ	=	kilolitre	MN.m	=	meganewton-metre
km	=	kilometre	MPa	=	megapascal
km-pass	=	kilometre-pass	No.	=	number
kPa	=	kilopascal	Prov sum	=	Provisional sum
kW	=	kilowatt	P C sum	=	Prime Cost sum
ℓ	=	litre	sum	=	lump sum
m	=	metre	t	=	ton (1 000 kg)
mm	=	millimetre	W/day	=	Work day
m ²	=	square metre			

Initials.....

- 1.13. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.
- 1.14. The Tenderer must price each item in the Bills of Quantities in **BLACK INK**.
- 1.15. All prices and rates shall exclude value added tax (VAT). The Tenderer shall calculate value added tax and enter it at the end of the summary of the Bills of Quantities.
- 1.16. The prices and rates to be in the Bill of Quantities are to be the full inclusive prices for the work described under the items. Such prices and rates shall cover all costs and expenses that may be required in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices shall be used as a basis for assessment of payment for additional work that may have to be carried out.
- 1.17. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bill of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.
- 1.18. The quantities set out in the Bill of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.
- 1.19. Reasonable compensation will be received where no pay item appears in respect of work required in the Bills of Quantities in terms of the Contract and which is not covered in any other pay item.
- 1.20. The short descriptions of the items of payment given in the Bill of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.
- 1.21. While the Employer has every intent to complete the full scope of works, the Employer reserves the right to reduce or increase the scope of works according to the availability of the budget, or to terminate this contract, with adjustment to the agreed rates, sums or fees and without payment of any penalty in this regard. The Service Provider shall however be entitled to pro-rata payment for all services carried out in terms of any adjustment to the Scope of Work or, in the case of termination, remuneration and/or reimbursement.
- 1.22. The General Conditions of Contract, the Particular Conditions of Contract (if any), the Specifications (including the Project Specification), and the Drawings are to be read in conjunction with the Schedule of Quantities.
- 1.23. The Schedule comprises items covering the Contractor's profit and costs of general liabilities and of the construction of temporary and permanent works.
- 1.24. The Tenderer is at liberty to insert a rate of his own choosing for each item in the schedule and his attention is drawn to the fact that the Contractor has the right, under various circumstances, to payment for additional works carried out and that the

Initials.....

Engineer is obliged to base his assessment of the rates to be paid for such additional work on the rates inserted in the schedule by the Contractor.

- 1.25. Measurement and payment shall be in accordance with Clause 8 of the SANS 1200 Standardised Specifications for Civil Engineering Construction referred to in the Scope of Works, subject to the variations and amendments contained in the section “Applicable SANS 1200 standardised specifications”.
- 1.26. Descriptions in the Schedule of Quantities are abbreviated and comply generally with those in the SANS 1200 standardised specifications. The schedule has been drawn up generally in accordance with the latest issues of Civil Engineering quantities. Should any requirements of the measurement and payment clause of the applicable Standardized Specification, or the Project Specification, or the Particular Specification(s) conflict with the terms of the schedule or, when relevant, Civil engineering quantities, the requirement of the Standardized, Project, or Particular Specification as applicable, shall prevail.
- 1.27. **A price or rate is to be entered against each item in the Schedule/Bills of Quantities, whether the quantities are stated or not.** An item against which no price is entered will be considered to be covered by the other prices or rates in the Bills of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.
- 1.28. The Contract Price for the completed contract shall be computed from the actual quantities of work done and valued at the unit rates and prices tendered against the respective items in the Schedule of Quantities. The quantities set out in these Bills of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.
- 1.29. The Schedule of Quantities must not be used for the ordering of materials and the Contractor is advised to acquire his own information from the Specifications and Drawings and to consult with the Engineer before materials are ordered.
- 1.30. The number of quantities set out in the Schedule of Quantities are estimated only, and their accuracy or inaccuracy shall in no way effect the validity of the tender or

Initials.....

1.31. any contract based thereon. The total amount of each item set out in the Schedule of Quantities at the rate or price inserted by the Tenderer shall be stated, but these figures are required solely for the purpose of assessment and shall not be deemed to be the actual sums which shall be paid to the Contractor for the execution of the Works. The sums to be paid to the Contractor shall (subject to the provisions of the General Conditions of Contract) be determined by re-measuring the work actually done in accordance with the Contract and valuing such work at the rates and prices inserted by the Contractor in the Schedule of Quantities.

1.32. *The Bill of Quantities includes provision for Preliminary and General Items in Schedule A. Please note that the value of fixed P&G's may not be more than 15% of the total contract value (excluding contingencies and VAT).*

1.33. *Also, the total P&G's (fixed + time related) may not be more than 20% of the total contract value (including contingencies and VAT).*

⁽¹⁾The Standard System of Measurement of Civil Engineering Quantities for South Africa and Namibia, published by the South African Institution of Civil Engineers.

⁽²⁾See definition in Sub-clause 2.1 of Part 1 of the code

The quantities shown below are approximate and subject to re-measurement for payment purposes.

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B. BID COST SUMMARY

The contractor should complete the cost summary table below and the detailed bill of quantities in pages to follow next.

EXTENSION OF A BUILDING, CASTING OF CONCRETE SLABS AND FENCING FOR OKONDJATU

PROCUREMENT REF NO. W/RFQ/NW-009/2025

SECTION	DESCRIPTION	PROJECT COST (N\$)
1	Preliminary and General	
2	Provisional Sum	
3	Civil Works	
4	Building Extension	
5	Building Renovation	
6	Summary	
Total (BoQ)		
*10% Contingencies		
Sub-Total		
Add 15% VAT		
Total Bid Amount		

*Allow the sum of 10% (ten percent) of the above sub-total for Contingencies to be spent as the Engineer may direct and to be deducted in whole or in part if not required.

C. SCHEDULE OF QUANTITIES

The quantities shown below are approximate and not subject to re-measurement for payment purposes.

Priced Activity Schedule Authorised By:

Name:		Signature:	
Position:		Date:	
Authorised for and on behalf of:	Company		

Initials.....

SECTION 1: PRELIMINARY AND GENERAL

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		<u>SECTION 1: PRELIMINARY AND GENERAL</u>				
	SABS					
	1200 A	<u>GENERAL</u>				
1.1	8.3	<u>FIXED CHARGE AND VALUE- RELATED ITEMS</u>				
1.1.1	8.3.1	<u>Contractual Requirements including Insurance's</u>	Sum	1		
	8.3.2	<u>Establishment of Facilities on the Site</u>				
1.1.2	8.3.2.1	<u>Facilities for the Engineer</u>				
1.1.2.1	a)	<u>Nameboard</u>	Sum	2		
1.1.3	8.3.2.2	<u>Facilities for the Contractor</u>	Sum	1		
1.1.4	8.3.4	<u>Removal of Site Establishment</u>	Sum	1		
1.2	8.4	<u>SCHEDULED TIME RELATED ITEMS</u>				
1.2.1	8.4.1	<u>Contractual Requirements</u>	Sum	1		
1.2.2	8.4.2	<u>Operate and Maintain Facilities on Site for the Duration of the Contract</u>	Sum	1		
1.2.2.1	8.4.2.1	<u>Facilities for the Engineer</u>	Sum	1		
1.2.2.2	a)	<u>Nameboard</u>	Sum	2		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
1.2.2.2	8.4.2.2	Facilities for the Contractor	Sum	1		
1.2.3	8.4.3	<u>Supervision for the Duration of the Contract</u>	Sum	1		
1.3	8.8	<u>TEMPRARY WORKS</u>	Sum	1		
1.3.1	8.8.5	Cost of Survey in Terms of the Land Survey Act	Sum	1		
TOTAL CARRIED FORWARD TO SUMMARY					N\$	

SECTION 2: PROVISIONAL SUM

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>SECTION 2: PROVISIONAL SUMS</u>				
	SABS					
	1200 A	GENERAL				
		<u>SUMS STATED PROVISIONALLY BY ENGINEER</u>				
2.1		<u>Daywork</u>				
2.1.1	8.7	Allow provisional sum to cover the cost of material ordered by the Engineer	Sum	1	100,000.00	200,000.00
2.1.2	8.5 (b)(2)	Percentage to be added to item 2.1.1 as per brought forward from Section V on page 73	%			
2.1.3	8.7	Allow provisional sum to cover the cost of work to done by skilled labour ordered by the Contractor	Sum	1	100,000.00	200,000.00
2.1.4	8.5 (b)(2)	Percentage to be added to item 2.1.3 as per brought forward from Section V on page 76	%			
2.1.5	8.7	Allow provisional sum to cover the cost of work to done by unskilled labour ordered by the Contractor	Sum	1	50,000.00	100,000.00
2.1.6	8.5 (b)(2)	Percentage to be added to item 2.1.5	%			
2.1.7	8.5.(b)(2)	Provisional sum to cover supply and installation of earthing and lighting system	Sum	1		
TOTAL CARRIED FORWARD TO SUMMARY					N\$	

SECTION 3: CIVIL WORKS

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		SECTION 3: ON GRADE SLAB				
	SANS					
3.1	1200 C	SITE CLEARANCE				
3.1.1	8.2.1	<u>Clear Site</u>	m ²	62		
	SANS					
3.2	1200 D	EARTHWORKS				
	8.3.2	<u>Bulk excavations</u>				
		<u>a) Excavate in all materials, backfill and compact or dispose of surplus material as ordered for:</u>				
3.2.1		Concrete slab foundation including 1m working space around the structure	m ³	15		
		<u>Backfill and compact</u>				
3.2.2		Slab foundation with a layer of 250mm soil properly mixed with 2% cement and compacted to 93% Mod AASHTO density at OMC, including the supply of cement and mixing with backfill material	m ³	15		
3.2.3		Soil around the slab soil properly mixed with 2% cement and compacted to 93% Mod AASHTO density at OMC, including the supply of cement and mixing with backfill material	m ³	13		
	8.3.4	<u>Importing of Materials</u>				
		<u>a) Extra over for 3.2.2 importation of materials from commercial sources or from borrow pits</u>				
3.2.4		Imported selected G5 material compacted to 98% Mod AASHTO density for slab foundations	m ³	15		
TOTAL CARRIED FORWARD					N\$	

Initials.....

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
3.2.5		Soilcrete (soil stabilized with 5% cement), compacted to 985 Mod ASSHTO maximum dry density for slab		m ³	15	
3.2.6		b) <u>Opening up and closing down of designated borrow pit</u>	Sum	1		
	SANS 1200G					
3.3	8.4	<u>CONCRETE (Structural)</u>				
	8.4.2	<u>Blinding layer in 15Mpa/19 mm concrete, 50 mm thickness for:</u>				
3.3.1		Slab	m ²	41		
	8.4.3	<u>Strength concrete 30Mpa/19mm for:</u>				
3.3.2		Slab	m ³	20		
3.3.3		Fence concrete retaining wall	m ³	20		
3.3.4		Concrete Strain Post	m ³	0.40		
3.4	8.2	<u>Formwork</u>				
	8.2.5	<u>Narrow widths up to 250mm wide to:</u>				
3.4.1		Rough vertical sides of the slab	m	58		
3.4.2		Sides of fence concrete retaining wall	m	176		
	8.1.1.2	<u>Chamfers and Groves</u>				
3.4.3		25mmx25mm chamfers on exposed edges of the slab	m ²	27		
TOTAL CARRIED FORWARD					N\$	

Initials.....

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
3.5	8.3	<u>Reinforcement</u>				
	8.3.2	<u>High Tensile welded mesh: Type reference 617:</u>				
3.5.1		Slab	m ²	25		
	8.3.1	<u>High-Yield Tensile Reinforcement (Y-Type) (8mm-20mm)</u>				
3.5.2		<u>For slab footing</u>	t	0.5		
	8.4.4	<u>Uniform Surface finish</u>				
		<u>a) Wood floated finish to:</u>				
3.5.2		Top of blinding layer	m ²	34		
		<u>b) steel floated finish to:</u>				
3.5.3		Top of slab	m ²	34		
	8.5	<u>Joints</u>				
3.5.4		Construct joint in slab with a 25x25 mm recess, filled with hot poured bitumen rubber joint sealing compound - Bitulastic Bituflex or similar approved	m	47		
3.6	1200A	<u>GENERAL</u>				
		The bidder shall list below and price on a lump sum basis any additional items which in his opinion are not adequately covered elsewhere under this section				
TOTAL CARRIED FORWARD					N\$	

Initials.....

Item No.	Payment Clause	Description	Unit	Qty	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
3.7	PG	<u>FENCING</u>				
3.7.1	PG 8.2.1	<u>Supply and Install Security Fence as detailed on Drawing No. 15/5/2/20-39R0, 40R0, 42 R0</u>	m	200		
3.7.2	PG 8.2.1	<u>Supply and Install Security Fence Gate as detailed on Drawing No. 15/5/2/20-41R0</u>	No.	4.00		
3.8	PJ	<u>CLEARING AND FINISHING</u>				
3.8.1	PJ 8.1	<u>Cleaning and finishing of site after completion of the woks and the removal of all construction rubble and debris to approved spoil sites</u>	Sum	1.00		
	SANS					
3.9	1200A	<u>GENERAL</u>				
		<u>The bidder shall list below and price on a lump sum basis any additional items which in his opinion are not adequately covered elsewhere under this section</u>				
TOTAL CARRIED TO SUMMARY					N\$	

SECTION 4: BUILDING EXTENSION

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>SECTION 4: BUILDING EXTENSION</u>				
	SANS					
4.1	1200 C	<u>SITE CLEARANCE</u>				
4.1.1	8.2.1	<u>Clear Site</u>	m ²	31		
	SANS					
4.2	1200 D	<u>EARTHWORKS</u>				
	8.3.2	<u>Bulk excavations</u>				
		a) <u>Excavate in all materials and dispose of surplus material as ordered for:</u>				
4.2.1		Concrete floor slab foundation including 1m working space around the structure	m ³	7		
4.2.2		Concrete apron	m ³	12		
4.2.3		Rip to a depth of 150mm, water and compact the bed of excavation to 98% Mod AASHTO density	m ²	32		
		<u>Backfill and compact</u>				
4.2.4		Concrete floor slab foundation with a layer of 150 mm in-situ material, layer of backfill material, and compacted to 98% Mod AASHTO density	m ³	7		
4.2.5		Apron slab foundation with a layer of 150 mm in-situ material layer, backfill material, and compacted to 98% Mod AASHTO density	m ³	4		
4.2.6		Backfill imported G5 material mixed with 2% cement in 4x150mm layers and compacted to 98% Mod AASHTO dry density, including the supply of cement and mixing with backfill material	m ³	19		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
	8.3.3	<u>Extra over item 4.2.6 for excavation in hard rock for:</u>				
4.2.7		<u>Concrete floor and apron foundations</u>	m ³	Rate Only		
	8.3.4	<u>Importation of material</u>				
4.2.8	8.3.4 a)	a) Extra over for 4.2.6 importation of material from commercial sources or borrow pits	m ³	19		
4.3		MASONRY				
		Brickwork in 7MPa cement bricks in Class II cement mortar				
4.3.1		110mm wide brick walls	m ²	4.5		
4.3.2		220mm wide brick walls	m ²	32		
		Brickwork Sundries				
4.3.3		75mm wide brick reinforcement built in horizontally	m	17.6		
4.3.4		150mm wide brick reinforcement built in horizontally	m	183		
	SANS					
4.4	1200G	<u>CONCRETE (Structural)</u>				
	8.40	<u>Concrete</u>				
	8.4.2	<u>Blinding layer in 15Mpa/19 mm concrete, 50 mm thickness for:</u>				
4.4.1		Floor slab	m ²	7		
TOTAL CARRIED FORWARD					N\$	

Initials.....

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
4.4.2		<u>Apron</u>	m ²	28		
	8.4.3	<u>Strength concrete 30MPa/19mm:</u>				
4.4.3		New wall footing	m ³	2		
4.4.4		New to Existing wall footing	m ³	1		
4.4.5		<u>Apron</u>	m ³	4		
4.4.6		Semi-dry concrete mix	m ³	0.1		
4.5	8.2	<u>Formwork</u>				
	8.2.5	<u>Narrow widths up to 500mm wide to:</u>				
4.5.1		Sides of footings	m	23		
4.5.2		Sides of concrete apron	m	25		
	8.2.2	<u>Smooth vertical plane to:</u>				
4.5.3		Sides of wall footing	m ²	3.5		
4.5.4		Sides of apron	m ²	2.5		
	8.2.2	<u>Smooth horizontal plane to:</u>				
4.5.5		Any part of the building and apron	m ²	Rate only		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
		<u>Chamfers and Groves</u>				
4.5.5		25mmx25mm chamfers on exposed edges of the floor slab	m	11		
4.5.6		25mmx25mm chamfers on exposed edges of the apron	m	25		
4.6	8.3	<u>Reinforcement</u>				
	8.3.1	<u>High Yield Tensile reinforcement (Y-type)(8mm-20mm):</u>				
4.6.1		For apron	t	0.029		
4.6.1	8.3.2	<u>High Tensile welded mesh Ref.No.617</u>				
4.6.2		For floor	m ²	7.92		
4.6.3		<u>For apron</u>	m ²	21		
4.6.2	8.3.2	High Tensile welded mesh Ref.No.888				
	8.3					
4.6.4		For footing	m ²	7		
4.7	8.4.4	<u>Unformed Surface Finish</u>				
		a) <u>Wood floated finish to:</u>				
4.7.1		<u>To blinding layer of floor</u>	m ²	7		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
4.7.2		To blinding layer of apron	m ²	28		
		<u>b) Steel floated finish to:</u>				
4.7.3		Top of screed	m ²	7		
4.7.4		Top of apron	m ²	28		
4.8	8.5	<u>Joints</u>				
4.8.1		Expansion joints 10mm wide complete with joint filler and sealant	m	11		
4.9		<u>Waterproofing</u>				
4.9.1		250 Microns Geomembrane installed below floor slab	m ²	7		
4.9.2		250 Microns Geomembrane installed below apron	m ²	28		
4.10	SABS 1200 HB	<u>ROOF COVERING</u>				
	8.2.2	<u>Supply and Install Roof Sheeting</u>				
4.10.1		0.5mm thick galvanized IBR or other approved profile roof sheeting in single lengths fixed to steel roof structure	m ²	26		
	8.2.3	<u>Supply and install ancillaries</u>				
4.10.2		9.5mm Rhino board ceiling	m ²	21		
4.10.3		100mm round stormwater downpipe and 150mm gutter	m	2.8		
4.11	SABS 1200 HA	<u>Structural Steelwork</u>				
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
		<u>Design, supply and install light steel roof structure</u>				
4.11.1		Light steel roof structure	No	1		
4.11.2		360 deep steel fascia board	No	2		
4.12		<u>Miscellaneous Items</u>				
		<u>Supply and install:</u>				
4.12.1		All electrical items as described in Drawing No. 15/5/2/20-38R0	No	1		
4.13		<u>IRONMONGRY</u>				
		Supply and installation door handles and locksets				
4.13.1		DCLSA (or similar approved) handle level on backplate GR 201 SS	No	3		
4.13.2		Union Lock mortice 4L standard upright SS union 2261-76SS	No	3		
4.14		<u>CARPENTRY AND JOINRY</u>	4.10			
		Design, supply and install door frames and hanging of doors, including painting all as specified				
4.14.1		900(W) x 2082(H) WISPECO transformer type Steel Door and Frame for 220mm wall	No	3.00		
4.14.2		Steel Burglar door	No	3		
4.14.3		900(W) x 2082(H) WISPECO transformer type Steel Door and Frame for 220mm wall	No	3.00		
		Supply and installation of windows as specified on the drawings				
4.14.4		600mm x 900mm window Anodized extruded aluminum alloy frame	No	1		
4.14.5		1000mm x 1250mm window Anodized extruded aluminum alloy frame with burglar bars	No	1		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>BROUGHT FORWARD</u>				
4.15	SABS 1200 GB	<u>PLASTERING</u>				
	8.2.7	Special Facework Finishes				
4.15.1		One coat cement plaster to internal bricks walls	m ²	59		
4.15.2		One coat cement plaster to external bricks walls	m ²	12		
4.15.3		One coat cement plaster to narrow widths not exceeding 300mm	m ²	1		
4.16		<u>PAINTWORK</u>				
		<u>Paintwork to new work</u>				
		PAINT SPECIFICATIONS				
		All painting shall be done in accordance with "SANS" specifications unless otherwise described.				
		Colors				
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate	Amount
					N\$	N\$
		BROUGHT FORWARD				
4.16.1		Unless otherwise described, all paintwork must adhere to the following specified color scheme: inside walls should be painted Ivory 1, and inside ceilings should be painted White. The outside walls should be painted Pearl Grey 12, while window sills should be painted Tile Red 15. All metalwork, both inside and outside, should be painted in Tile Red 15.	sum	1		
		<u>On floated plaster</u>				
14.16.2		Prepare and apply one coat plaster primer and two coats "Plascon Wall and All" or equal approved paint on :				
4.16.2		Internal smooth plastered walls	m ²	59		
4.16.3		External smooth plastered walls	m ²	12		
4.17	SABS1200 A	<u>GENERAL</u>				
4.17.1		The Bidder shall list below and price on a lump sum basis any additional items which in his opinion are not adequately covered elsewhere under this section				
			Sum	1		
			Sum	1		
			Sum	1		
TOTAL CARRIED FORWARD TO SUMMARY					N\$	

SECTION 5: RENOVATION OF BUILDING

Item No.	Payment Clause	Description	Unit	Quantity	Rate N\$	Amount N\$
		<u>SECTION 5: RENOVATION OF BUILDING</u>				
5.1		REMOVAL AND REPAIR OF EXISTING ITEMS				
5.1.1		Remove existing doors	No.	2		
5.1.2		Remove insect proof mesh from metal louvers	Sum	1		
5.1.3		Remove existing window	No.	1		
5.1.4		Remove existing roof sheets, gutters, stormwater downpipes, fascia, timber purlins and timber rafters	Sum	1		
5.3		PLASTERING				
5.3.1		One coat of cement plaster to internal brick walls	Sum	1		
5.3.2		One coat of cement plaster to external brick walls	Sum	1		
5.3.3		One coat of cement plaster to narrow widths not exceeding 300mm	Sum	1		
TOTAL CARRIED FORWARD					N\$	

Item No.	Payment Clause	Description	Unit	Quantity	Rate	Amount
					N\$	N\$
		<u>BROUGHT FORWARD</u>				
5.4		PAINTWORK				
		Prepare and apply one coat of Neo Acrylic Wall Primer or other approved acrylic plaster primer, stop with Neo Repair Paste or other approved and apply two coats of Neo Multi Dur PVA (SABS Grade I) or other approved paint on:				
5.4.1		External smooth plastered walls	Sum	1		
5.4.2		External smooth plastered foundations walls	Sum	1		
5.4.3		<u>External smooth plastered narrow widths not exceeding 300mm</u>	Sum	1		
5.4.4		Internal smooth plastered walls	Sum	1		
TOTAL CARRIED FORWARD					N\$	

SECTION V: SPECIFICATIONS AND COMPLIANCE SHEET

Procurement Reference Number: **W/RFQ/NW-004/2027**

Item No	Specifications and Performance Required	Compliance of Specifications and Performance Offered	Details of Non-Compliance/ Deviation (if applicable)
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Previous Experience	Refer to Qualification Information & evaluation criteria		
Years of Experience	Refer to Qualification Information & evaluation criteria		
Financial Resource	Refer to Qualification Information & evaluation criteria		
Equipment & Machineries	Refer to Qualification Information & evaluation criteria		
Human Resource	Refer to Qualification Information & evaluation criteria		

Specifications and Compliance Sheet Authorised By:

Name:		Signature:	
Position:		Date:	
Authorised for and on behalf of:		Company	

SECTION VI: GENERAL CONDITIONS OF CONTRACT AND CONTRACT AGREEMENT

Any resulting contract shall be placed by means of a Purchase Order/Letter of Acceptance and shall be subject to the General Conditions of Contract (GCC) for the Procurement of Goods - Ref. **G/RFQ-GCC** on the website of NamWater (www.namwater.com.na) except where modified by the Special Conditions below.

SECTION VII: CONTRACT AGREEMENT

Any resulting contract shall be placed by means of a Purchase Order/Letter of Acceptance and shall be subject to the General Conditions of Contract (GCC) for the Procurement of Goods except where modified by the Special Conditions below.

SECTION VIII SPECIAL CONDITIONS OF CONTRACT

Procurement Reference Number: W/RFQ/NW-004/2027

The clause numbers given in the first column correspond to the relevant clause number of the General Conditions of Contract. *[This section is to be customised by the Public Entity to suit the requirements of the specific procurement].*

GCC Clause Reference	Special Conditions
Employer GCC 1.1(r)	The Employer is: Namibia Water Corporation Ltd 176 Iscor Street Northern Industrial Area Private Bag 13389 WINDHOEK, Represented by the Chief Executive Officer
Intended Completion Date GCC	The Intended Completion Date for the whole of the Works shall be: <i>Four (4) calendar months after project site handover.</i>
Project Manager GCC 1.1(y)	The Project Manager is: Chief: Engineering Services Namibia Water Corporation Ltd 176 Iscor Street Northern Industrial Area Private Bag 13389

GCC Clause Reference	Special Conditions
	WINDHOEK, Namibia Represented by the Chief Engineering Services
Site GCC 1.1(aa)	The Site is located in Okondjatu as shown in Figure.
Start Date GCC 1.1(dd)	The Start Date shall be within fourteen (14) calendar days after the site handed over.
The Works GCC 1.1(hh)	The works consist of construction of building and concrete plinth..... The major elements comprising this contract are as follows: <ul style="list-style-type: none"> • Site Establishment; • Survey and setting out of works; • Clear and grubbing; • Construction of Building; • Construction of Fence; and • Maintenance of the works and all other requirements of the Contractor's defects liability.
Interpretation GCC 2.2	The project will be completed in the following sections: As whole
Interpretation GCC2.3	The following additional documents shall form part of the contract: <ul style="list-style-type: none"> • SANS 1200. All relevant laws in Namibia and all issued drawings and specifications.
Language and Law GCC 3.1	The language of the contract is English The law that applies to the Contract is the law of Namibia.
Project Manager's Decisions 4.1	The Project Manager shall obtain specific approval from the Employer before carrying out any of his duties under the Contract which in the Project Manager's opinion will cause the amount finally due under the Contract to exceed the Contract Price or will give entitlement to extension of time. This requirement shall be waived in an emergency affecting safety of personnel or the Works or adjacent property.
Delegation GCC 5.1	The Project Manager may delegate his/her duties.
Notices GCC 6	Any notice shall be sent to the following addresses:

Initials.....

GCC Clause Reference	Special Conditions
	<p>For the Employer, the address shall be as given on the page 2 of this Bidding Document and the contact name shall be:</p> <p>Procurement Management Unit Head: Procurement (Tel: +264 61 71 2225, E-mail: bids@namwater.com.na Private Bag 13389 Windhoek, Namibia.</p> <p>For the Contractor, the address shall be as given on the first page of the Purchase Order/Letter of Acceptance and the contact name shall be</p> <p>_____</p>
Other Contractors SCC 8.1	Schedule of another contractor: Not applicable
Insurance GCC 13.1	<p>Except for the cover mentioned in (d)(i) hereunder, the other insurance covers shall be in the joint names of the Contractor and the Employer and the minimum insurance amounts shall be:</p> <p>(a) For the Works, Plant and Materials: <i>the full contract amount of the works including removal of debris, professional fee etc.....</i></p> <p>(b) For loss or damage to Equipment: <i>the replacement value of the equipment that the contractor intends to use on site until the taking over by the Employer.</i></p> <p>(c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract: <i>for an amount representing the value of the properties that are exposed to the action of the contractor in the execution of the works. It will extend to the property of the Procuring Entity as well.</i></p> <p>(d) for personal injury or death:</p> <p>(i) Of the Contractor’s employees: <i>The Contractor shall take an adequate insurance cover for its employees for any claim arising in the execution of the works.</i></p> <p>(ii) Of other people: <i>This cover shall be for an adequate amount (10% of contract Amount) for Third Party extended to the Employer and its representatives.</i></p>

Initials.....

GCC Clause Reference	Special Conditions
	<p>(e) For loss or damage to materials on-site and for which payment have been included in the Interim Payment Certificate, where applicable.</p> <p>The Contractor shall choose to take the insurance covers indicated above as separate covers or a combination of the Contractor's All Risks coupled with the Employer's liability and First Loss Burglary, after approval of the Employer. All insurance covers shall be of nil or the minimum possible deductibles at sole expense of the contractor.</p>
<p>Site Date GCC 14.1</p>	<p>Site Data are: Referenced in Part 2 (Section V, Portion 1: The Works) of this bid document.</p> <p>The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.</p> <p>If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Project Manager and shall be entitled subject to Sub-Clause 41.1 to:</p> <ol style="list-style-type: none"> 1. An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 26 [Extension of Time for Completion], and 2. Payment of any such Cost-plus profit, which shall be included in the Contract Price. <p>After receiving this notice, the Project Manager shall proceed in accordance with Sub-Clause 4.1 to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.</p> <p>The area of the works to be occupied by the Contractor, any restriction on the area and the limit of access or exit will be pointed out to the Contractor by the Project Manager on handing over of the Site.</p>
<p>Possession of the Site GCC 20.1</p>	<p>The Site Possession Date(s) shall be: within 14 calendar days after the project award and signature of the contract agreement to take place at location to be notified by the employer.</p>
<p>Appointment of the Adjudicator SCC 23.1 & 23.2</p>	<p>No standing Adjudicator shall be appointed for this Contract. However, if the need arises to appoint an Adjudicator, the Appointing Authority for the Adjudicator shall be the Engineering Professions Association (EPA)</p>

Initials.....

GCC Clause Reference	Special Conditions
	who shall appoint and manage an Adjudicator on the National Adjudicator’s List.
Procedure for Disputes GCC 24	No Adjudicator shall be appointed under the contract and arbitration shall not apply. If any dispute arises between the Employer and the Contractor in connection with or arising out of the Contract, the parties shall seek to resolve any such dispute by amicable agreement. If the parties fail to resolve such dispute by amicable agreement, within 14 days after one party has notified the other in writing of the dispute, then the dispute shall be referred to court by either party.
Program GCC 25.1	The Contractor shall submit for approval a Program for the Works within twenty-one (21) calendar days from the date of the Notification of award.
GCC 25.3	<p>The period between Program updates is: every 30 calendar days or unless otherwise instructed by the Project Manager.</p> <p>The Project Manager may request an interim programme to be submitted by the Contractor as required.</p> <p>The amount to be withheld for late submission of an updated Program is ten percent (10%) of the next payment certificate.</p> <p>The Program of Works to be prepared and submitted to the Project Manager (or its personnel) shall be preceded by a detailed discussion with the latter on the works to be carried out under this contract.</p> <p>The Project Manager (or a representative) may request any interim program to be submitted by the Contractor.</p> <p>The Contractor shall agree with the Project Manager (or representative) on a monthly date for an official contract meeting at the Project Site Office with the Project Manager (or representative). Discussions on all contract matters shall be minuted. The Contract Manager of the Contractor shall attend these meetings at least on a quarterly basis.</p> <p>Program updates shall be required.</p>
Extension of the Intended Completion Date SCC 26.1	<p>In addition to GCC 26.1 the following shall apply:</p> <p>The Contract Completion Date may only be extended by the number of days of approved extension of time (EOT) due to inclement weather or due to an increase in workload as instructed in writing by the Project Manager. Such approved (EOT) may be dealt with in terms of SCC41 (1) (a).</p> <p>The Contractor shall make provision in his tender and program, for an expected annual delay of “n” non-production days caused by the effects of rain. Where the agreed delays due to the effects of rain exceed the value of “n”, the Contractor shall be granted extension of time for the additional delay. The number of days lost due to inclement weather</p>

Initials.....

GCC Clause Reference	Special Conditions
	<p>(such as rain) and the subsequent payment for standing time (for affected activities only, reduced by verifiable cost incurred, e.g. fuel, etc.) should be based on the current monthly program approved by the Project Manager.</p> <p>The Contractor shall take the following values of “n” to be 6 into account in his tender.</p>
<p>Defects Liability Period GCC 33.1</p>	<p>The Defects Liability Period is: twelve calendar months</p>
<p>Payment Certificates GCC 39.7</p>	<p>Interim Payment for Plants is not acceptable.</p> <p>Interim Payment certificate for Material on site <i>is</i> applicable:</p> <p>Interim Payment for material delivered to site, safeguarded, and intended for but not yet incorporated into the works:</p> <p><i>80% of the value of the following material:</i></p> <ul style="list-style-type: none"> • <i>Steel Reinforcement;</i> • <i>Pipes and fittings; and;</i> • <i>Valves.</i> <p><i>Formwork and scaffolding will not be regarded as plant or material for this purpose and the value thereof will therefore not be included in such payment.</i></p> <p>In cases where large quantities of material are to be purchased and built into the Works and where such material are properly safeguarded, the Project Manager may on written request and on submission by the Contractor of proof of payment for Material on Site. The said payment will be ducted from monies due the Contractor after the material have been built into the Works.</p>
<p>Payments GCC 40</p>	<p>The amount certified by the Project Manager shall be paid in full within 30 days from month of invoice and of receipt by the Employer of an invoice, supported by:</p> <p style="padding-left: 40px;">(a) the payment certificate; and</p> <p style="padding-left: 40px;">(b) a certificate of Completion of the Works.</p>
<p>Adverse weather Conditions GCC 41.1 (I)</p>	<p>The Contract Completion Date shall be extended by the number of approved extensions of time due to inclement weather according to SCC26.1 (or due to an increase in workload as instructed in writing by the Project Manager).</p>

Initials.....

GCC Clause Reference	Special Conditions
	Such approved extension of time shall be a ‘Compensation Event’ in terms of GCC 41.
Price Adjustment GCC 44.	The Contract is not subject to price adjustment.
Retention GCC 45.	(ii) 10% of the amount shall be retained from any payment. Half of the retention money will be released after formal taking over of the Works and the remaining shall be released after the Defect Liability Period subject to the Contractor making good all defects.
Liquidated Damages GCC 46.1	The liquidated damage for the whole of the Works is 0.5% per calendar day. The maximum amount of liquidated damages for the whole of the Works is 10% of the contract amount.
Bonus GCC 47.1	The Bonus for the whole of the Works is: Not applicable.
Advance Payment GCC 48.1	(i) No advance payment shall be made
Performance Security GCC 49.1	The Performance Security amount: (i) No Performance Security is required.
GCC 56.1	“The date by which operating and maintenance manuals are required is: The completion date of the works. The date by which “as built” drawings are required is: no later than two (2) calendar weeks after the issuing of the practical completion.
Operation and Maintenance Manuals SCC 56.2	The amount to be withheld for failing to produce “as built” drawings by the date required in SCC is: Not applicable.
GCC 59.1	The percentage to apply to the value of the work not completed, representing the Employer’s additional cost for completing the Works, is: 10%.

Initials.....

QUOTATION CHECKLIST SCHEDULE

Procurement Reference No.: W/RFQ/NW-004/2027

Description	Attached	Not Attached
Quotation Letter		
List of Goods and Price Schedule		
Specification and Compliance Sheet		
Evidences for conformity of Goods		
Valid company Registration Certificate Copy from Ministry of Trade and Industry		
Original valid good standing Tax Certificate from Inland Revenue or a valid certified copy of an original certified by the Namibian Police of good standing Tax Certificate		
Original valid good Standing Certificate from Social Security Commission or a valid certified copy of an original certified by the Namibian Police of good standing Tax Certificate		
Valid Affirmative Action Compliance Certificate, proof from Employment Equity Commissioner that bidder is not a relevant employer, or exemption issued in terms of Section 42 of the Affirmative Action Act, 1998;		
Company Profile		
Reference letters and or completion certificate indicating similar work done		
Submit a Work Delivery Schedule		
Methodology for site management and safety in executing this work, taking cognizance of the heavy equipment and tools to be used		
Submit a comprehensive method statement indicating/focusing on the following areas; (Design, Site layout, Integration into the existing scheme, Anticipated water quality expected, Installation methodology & Operational and maintenance methodology)		

Initials.....

Submit comprehensive CV's of the Key employees allocated to this particular project		
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Disclaimer: *The list defined above is meant to assist the Bidder in submitting the relevant documents and shall not be a ground for the bidder to justify its non-submission of major documents for its quotation to be responsive. The onus remains on the Bidder to ascertain that it has submitted all the documents that have been requested and are needed for its submission to be complete and responsive.*

NAMWANTER SAFETY FILE REQUIREMENTS

Health and Safety Division

Please ensure that your safety file is created in this order. All information in this file must be specific to the site/project.

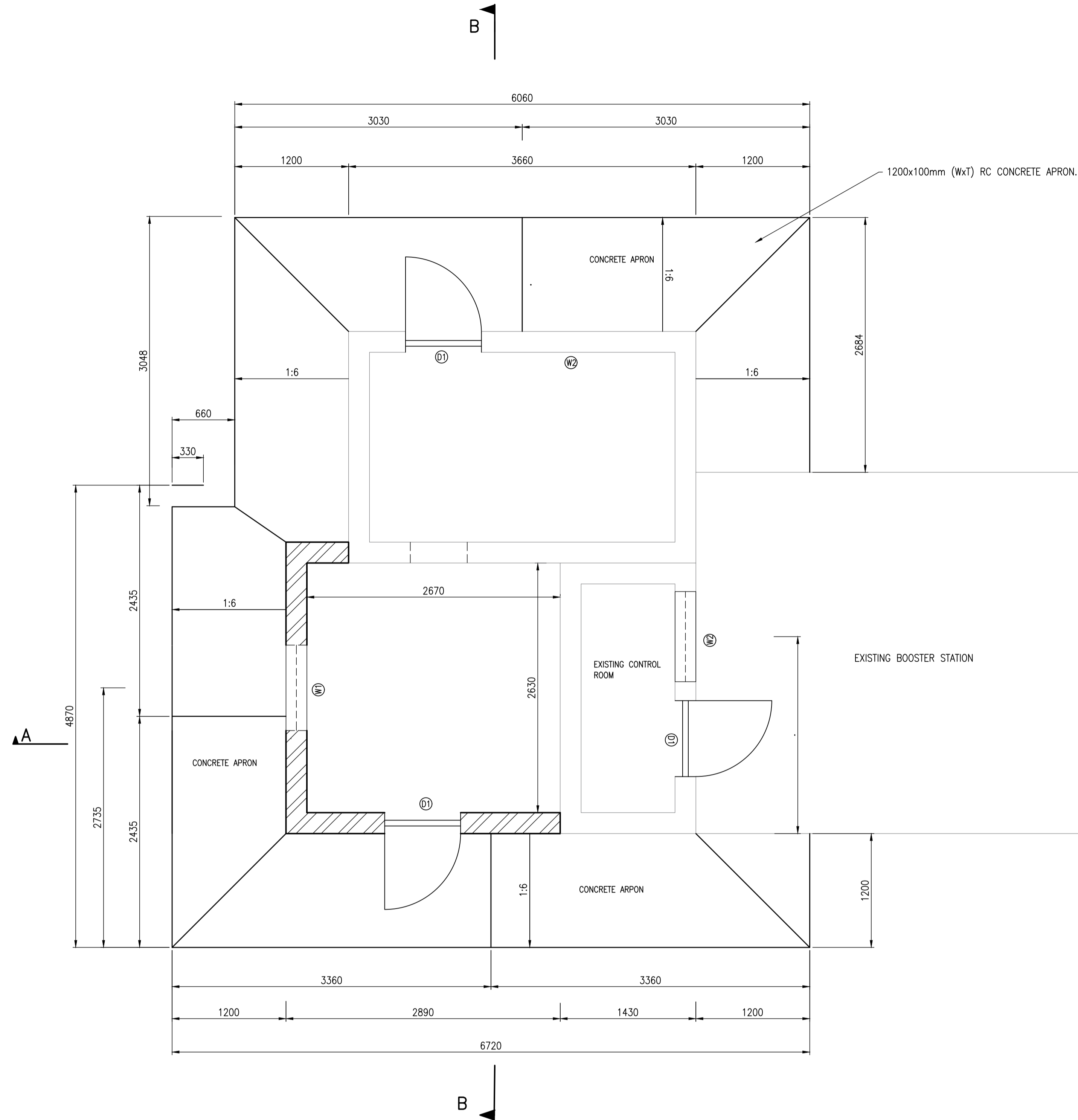
	DOCUMENTS REQUIRED	YES	NO	COMMENTS
1.	Notice of Commencement			
2.	Copy of the Labour Act and the Regulations			
3.	Company Health, Safety and Environmental Policy			
4.	Company HIV and AIDS Policy			
5.	Company letterhead with contact details			
6.	Company Profile			
7.	Public Liability (insurance cover)			
8.	Company Organogram (showing company reporting structure)			
9.	Site Team organogram with names and cell numbers of the specific team working on a specific site			
10.	Scope of work			
11.	List of employees working on this project (with their ID numbers and positions listed)			
12.	List of tools and equipment to be used on this project with Registers and Checklists Equipment maintenance records			
13.	Sub-contractor's internal Employee induction (focusing on specialize work, specific tasks, risk assessments related to these tasks, methods to be used, and general site safety)			
14.	Letter of appointment of Sub-contractor by Principal Contractor			
15.	Statutory Legal Appointments <ul style="list-style-type: none"> • MD/CEO's delegation of duties – attach ID, CV & certificates • Supervisor of construction work – attach ID, CV & certificates • Assistance supervisor of construction work – attach ID, CV & certificates • Safety officer – attach ID, CV & certificates • First aider (must be certified and certificate attached) • SHE representative (must be certified and certificate attached) • Fall protection plan developer – attach ID, CV & certificates • Risk assessor – attach ID, CV & certificates • Portable electrical tools inspector • Accident/Incident Investigator – attach ID, CV & certificates • Stacking and storage inspector • Hand Tools inspector • Operators appointments 			
16.	Company's Health and Safety Plan (must be site-specific and related to your scope of work and signed by the CEO/owner)			
17.	Method statement (how you are going to do your work safely)			
18.	Hazard identification and risk assessments – based on method statement			
19.	Registers and checklists <ul style="list-style-type: none"> • Material Safety Data Sheet (MSDS) register and supporting documentation if hazardous substances will be used 			
20.	Accident/Incident Procedure			

Initials.....

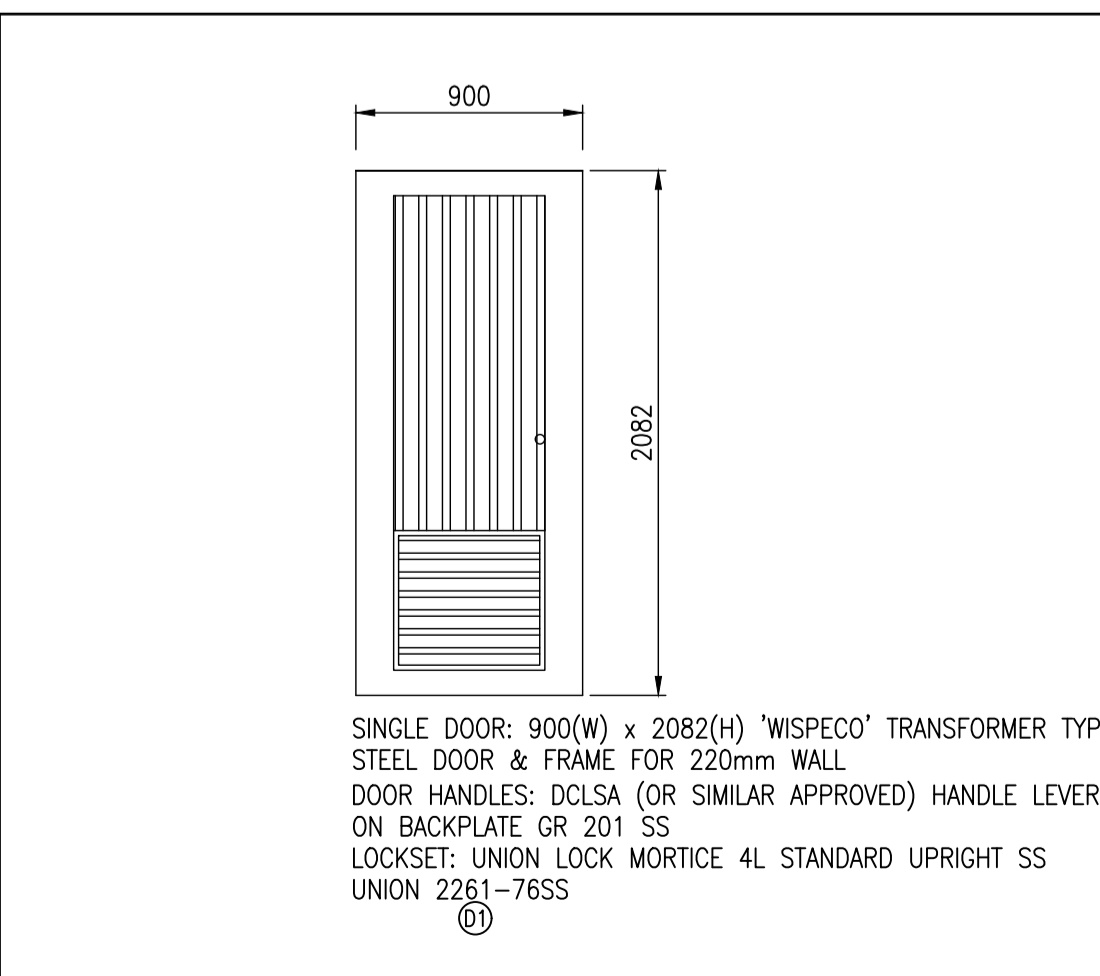
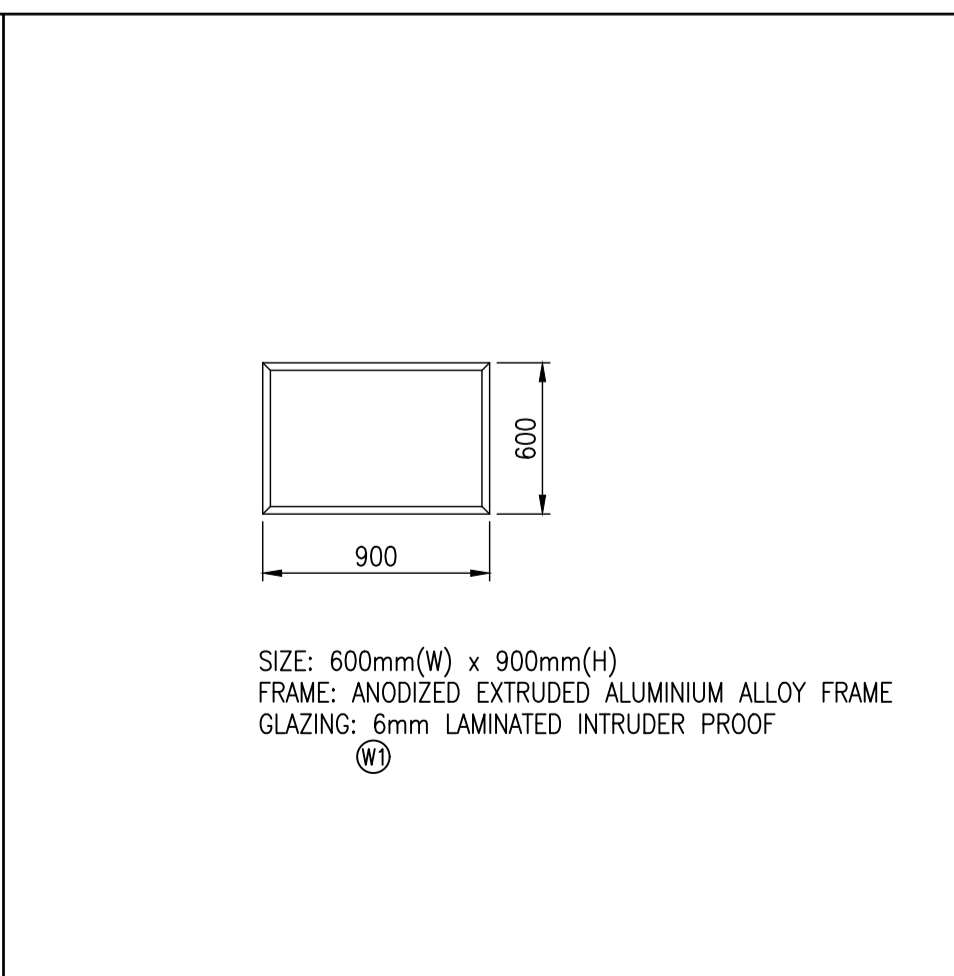
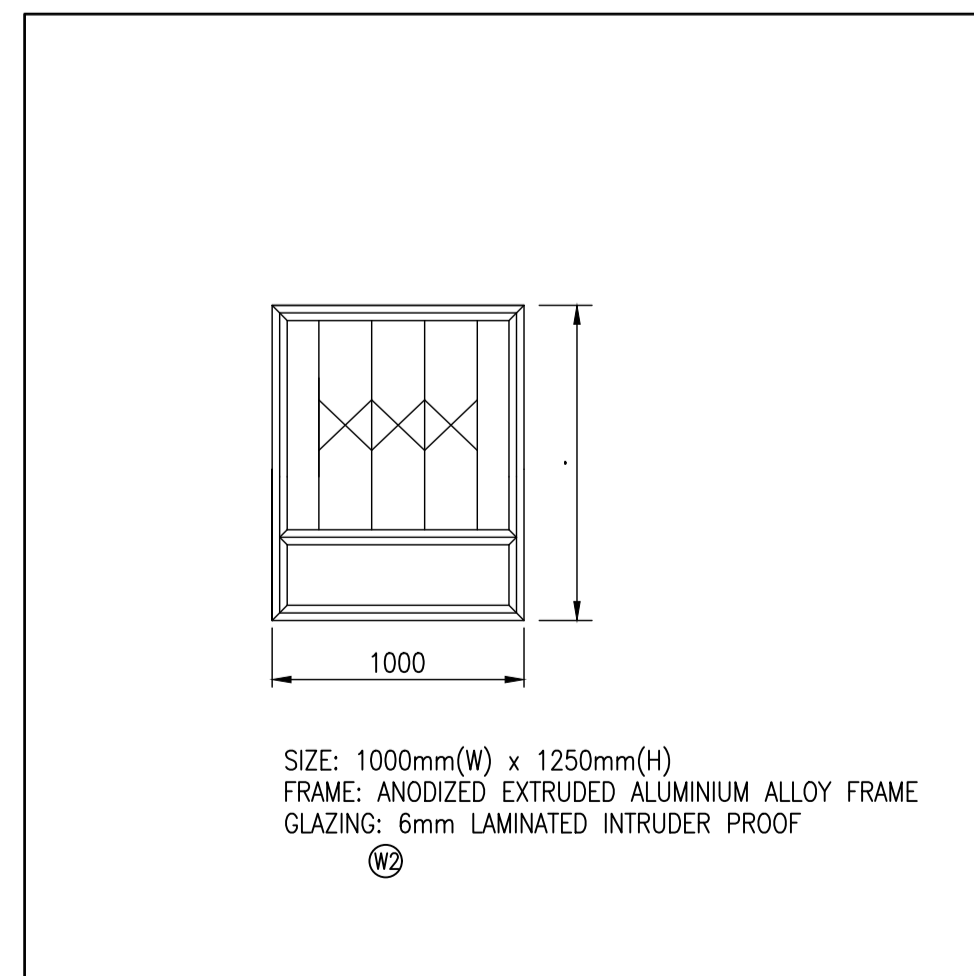
	<ul style="list-style-type: none"> • Appointment of accident/incident investigator • Proof of competency of investigator (certificate and CV) • Accident/Incident Register 			
21.	Medical Certificates for persons working above 2m, on scaffolding, painting, rooftops, and any person operating any machinery, etc.			
22.	Toolbox talks			
23.	Proof of employees' General Health Safety Training			
34.	Accident/Incident Investigation			
	• Accident/Incident Register			
	• Accident/Incident Reporting Procedure			
	• Recording of the accident/ incident			
	• Employers report of the accident			
	• Emergency contact list			

NB: You are responsible for providing the necessary PPE for your employees to conduct their work safely.

Date Received: _____
Assessed By: _____ Date: _____ <div style="text-align: center; margin-top: 5px;">Safety & Security Officer</div>
Approved/Not Approved: _____ Date Released: _____
Contractor Representative: _____ Date Received: _____
Comments:



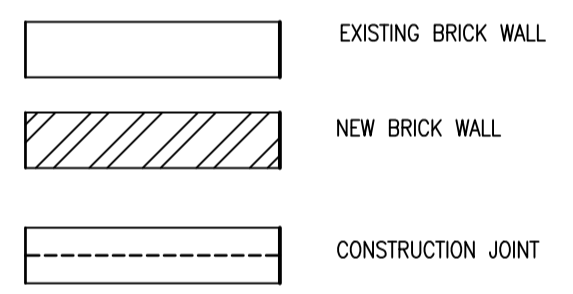
PLAN VIEW: APRON
SCALE: 1:30



NOTES :

1. CONCRETE & BRICK STRENGTH TO BE AS FOLLOWS:
UNREINFORCED STRIP FOUNDATIONS: 25 MPa
REINFORCED CONCRETE ELEMENTS: 25 MPa
SURFACE BEDS AND CONCRETE SLAB: 25 MPa
WALL BRICK: 14 MPa
FOUNDATION BRICK: 14 MPa
CONCRETE APRON: 25 MPa
2. COMPACT SUB GRADE BELOW SURFACE BEDS TO MIN. 95% MOD. AASHTO MAX DRY DENSITY.
3. COMPACT SOIL TO 95% MOD. AASHTO MAX DRY DENSITY UNDERNEATH STRIP FOUNDATION AND SURFACE BEDS.
4. PROVIDE STEEL FLOAT FINISH TO SURFACE OF CONCRETE SLAB AND SURFACE BEDS.
5. MINIMUM CONCRETE COVER FOR ALL REINFORCED CONCRETE TO BE 30mm.
6. ALL STEEL TO BE GRADE 300W. ALL COLD FORMED STEEL MAY BE OF COMMERCIAL QUALITY STEEL WITH A MINIMUM YIELD STRESS OF 200 N/sqm.
7. ALL STEEL TO BE PAINTED WITH TWO LAYERS OF SELF ETCHING PRIMER BEFORE DISPATCHED TO SITE.
APPLY TWO COATS OF HIGH GLOSS ENAMEL ALUMINIUM PAINT TO ALL STEEL WORK ON SITE.
8. PROVIDE 375 MICRON BRICK-GRIP DPC IN ALL BRICK WALLS.
9. BRICK-BEFORE FOR EVERY COURSE IN THE FOUNDATION WALLS BELOW THE NATURAL GROUND LEVEL . EVERY THIRD COURSE ABOVE THE FOUNDATION WALLS, AND ABOVE OPENINGS (DOORS AND WINDOWS) BRICK FORCE EVERY COURSE FOR THREE LAYERS.
10. ALL WALLS TO BE PLASTERED INTERNAL AND EXTERNAL.
11. EXTERNAL WALLS TO BE PAINTED WITH ONE UNDER COAT AND TWO COATS OF EXTERIOR EMULSION PVA OFF-WHITE.
12. INTERNAL WALLS TO BE PAINTED WITH TWO COATS OF "EGGSHELL" APPLIED OVER UNDER COAT AS PER MANUFACTURER'S SPECIFICATION.
13. COVER CONCRETE SLAB IMMEDIATELY AFTER CASTING AND CURE FOR A PERIOD OF MINIMUM 7 DAYS.
14. THE POSITION OF CABLE AND OTHER SLEEVES TO BE READ IN CONJUNCTION WITH THE M&E DRAWINGS.
15. ALL OTHER MECHANICAL AND ELECTRICAL WILL BE DONE BY NAMWATER.
16. FOUNDATION CONNECTION OF NEW TO EXISTING: REMOVE ANY OLD WATERPROOFING IF ANY AND SCRAPE CLEAN TO ALLOW CONCRETE TO CONCRETE BONDING. REBAR DRILLED AND SECURED INTO EXISTING FOUNDATION USING EPOXY.

LEGEND



0	ISSUED FOR BIDDING PURPOSES	11.2025	S.S.
NO.	AMENDMENTS	DATE	BY



SCHEME
OKONDJATU (WSS)

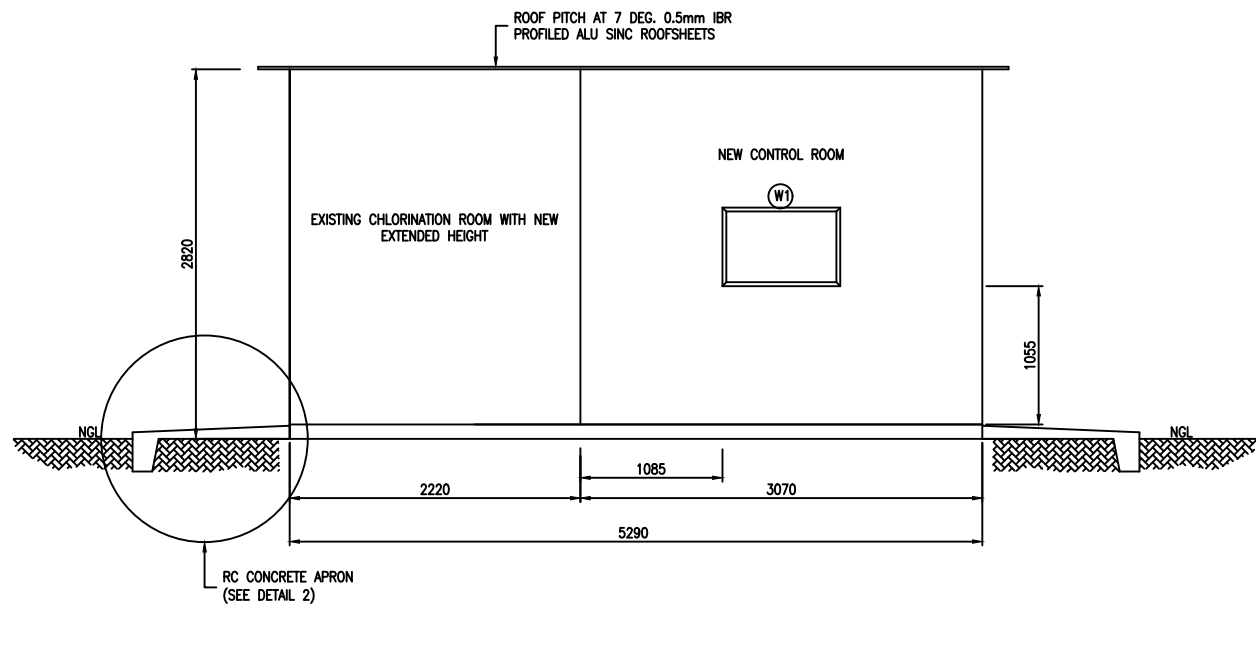
DRAWING
CHLORINATION BUILDING EXTENSION
PLAN LAYOUT WITH APRON

SURVEYED	DRAWN	TRACED
DESIGNED CIVIL	S.SHILONGO	AUTOCAD
S.SHILONGO	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
O.KAVETUNA	APPROVED ELEC.	APPROVED MECH.
APPROVED CIVIL	W. ANDERSON	

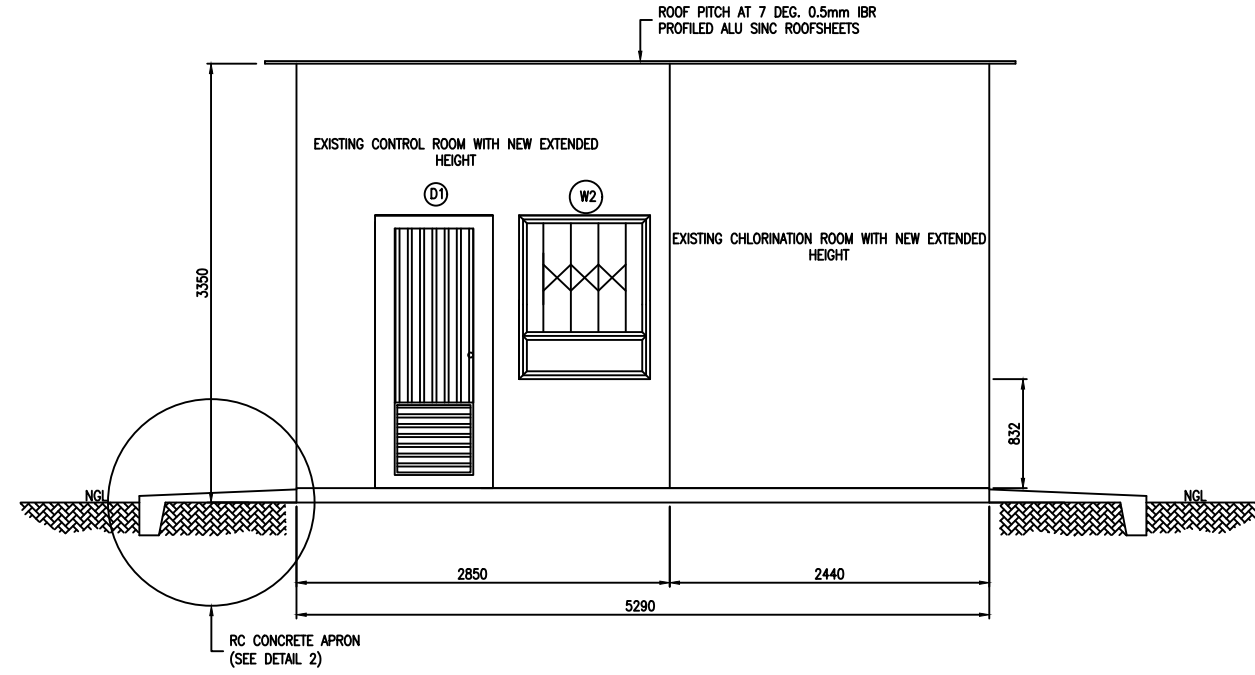
MANAGER CIVIL DESIGN

DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1

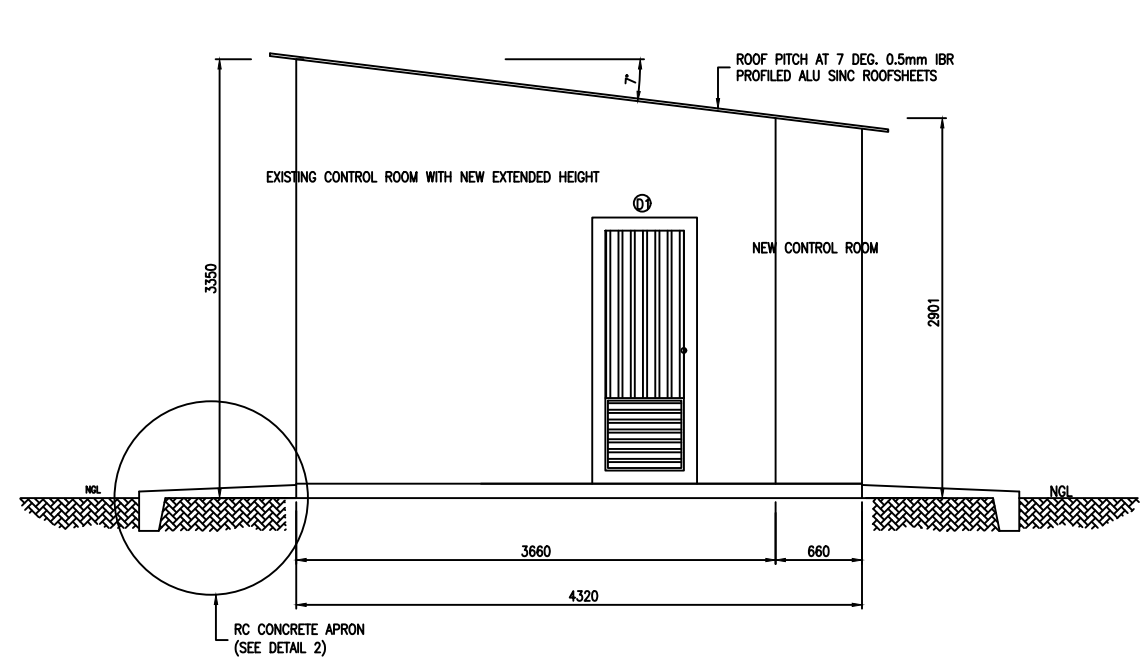
REGISTRATION NO.
15/5/2/20 - 34 R0



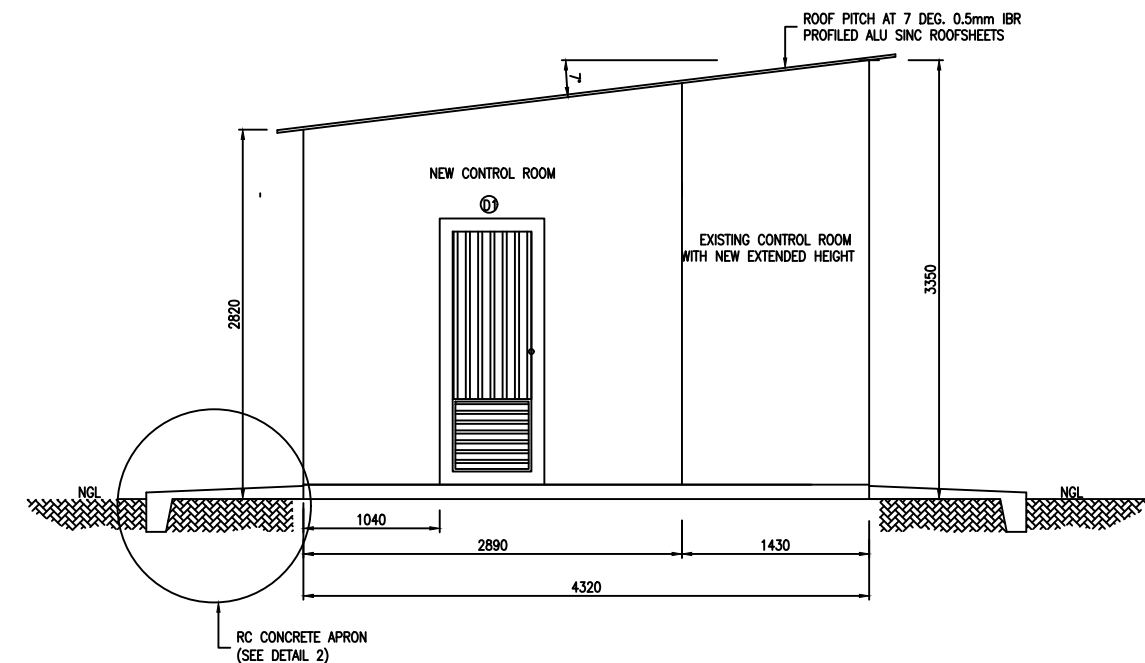
NORTHERN ELEVATION
SCALE 1:30



SOUTHERN ELEVATION
SCALE 1:30



EASTERN ELEVATION
SCALE 1:30



WESTERN ELEVATION
SCALE 1:30

- NOTES :
1. CONCRETE & BRICK STRENGTH TO BE AS FOLLOWS:
UNREINFORCED STRIP FOUNDATIONS: 25 MPa
REINFORCED CONCRETE ELEMENTS: 25 MPa
SURFACE BEDS AND CONCRETE SLAB: 25 MPa
WALL BRICK: 7 MPa
FOUNDATION BRICK: 14 MPa
CONCRETE APRON: 25 MPa
 2. COMPACT SUB GRADE BELOW SURFACE BEDS TO MIN. 95% MOD. AASHTO MAX DRY DENSITY.
 3. COMPACT SOIL TO 95% MOD. AASHTO MAX DRY DENSITY UNDERNEATH STRIP FOUNDATION AND SURFACE BEDS.
 4. PROVIDE STEEL FLOAT FINISH TO SURFACE OF CONCRETE SLAB AND SURFACE BEDS.
 5. MINIMUM CONCRETE COVER FOR ALL REINFORCED CONCRETE TO BE 25mm.
 6. ALL STEEL TO BE GRADE 300W. ALL COLD FORMED STEEL MAY BE OF COMMERCIAL QUALITY STEEL WITH A MINIMUM YIELD STRESS OF 200 N/sqm.
 7. ALL STEEL TO BE PAINTED WITH TWO LAYERS OF SELF ETCHING PRIMER BEFORE DISPATCHED TO SITE. APPLY TWO COATS OF HIGH GLOSS ENAMEL ALUMINIUM PAINT TO ALL STEEL WORK ON SITE.
 8. PROVIDE 375 MICRON BRICK-GRIP DPC IN ALL BRICK WALLS.
 9. BRICK-BEFORE FOR EVERY COURSE IN THE FOUNDATION WALLS BELOW THE NATURAL GROUND LEVEL. EVERY THIRD COURSE ABOVE THE FOUNDATION WALLS, AND ABOVE OPENINGS (DOORS AND WINDOWS) BRICK FORCE EVERY COURSE FOR THREE LAYERS.
 10. ALL WALLS TO BE PLASTERED INTERNAL AND EXTERNAL.
 11. EXTERNAL WALLS TO BE PAINTED WITH ONE UNDER COAT AND TWO COATS OF EXTERIOR EMULSION PVA OFF-WHITE.
 12. INTERNAL WALLS TO BE PAINTED WITH TWO COATS OF "EGGSHELL" APPLIED OVER UNDER COAT AS PER MANUFACTURER'S SPECIFICATION.
 13. COVER CONCRETE SLAB IMMEDIATELY AFTER CASTING AND CURE FOR A PERIOD OF MINIMUM 7 DAYS.
 14. THE POSITION OF CABLE AND OTHER SLEEVES TO BE READ IN CONJUNCTION WITH THE M&E DRAWINGS.
 15. ALL OTHER MECHANICAL AND ELECTRICAL WILL BE DONE BY NAMWATER.

0	ISSUED FOR BIDDING PURPOSES	11.2025	S.S.
NO.	AMENDMENTS	DATE	BY



SCHEME
OKONDJATU (WSS)

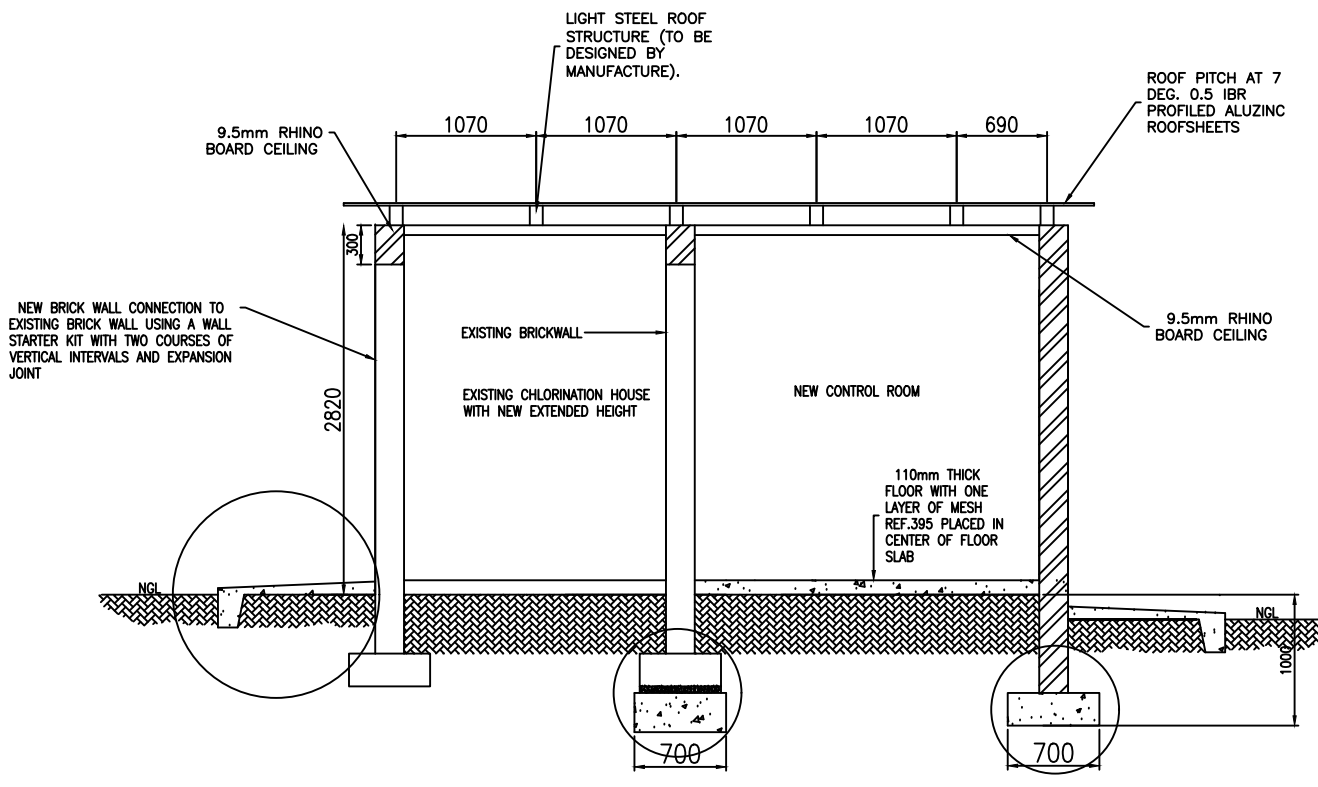
DRAWING
CHLORINATION BUILDING EXTENSION
ELEVATIONS

SURVEYED	DRAWN	TRACED
DESIGNED CIVIL	DESIGNED ELEC.	DESIGNED MECH.
DESIGNED CIVIL	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.

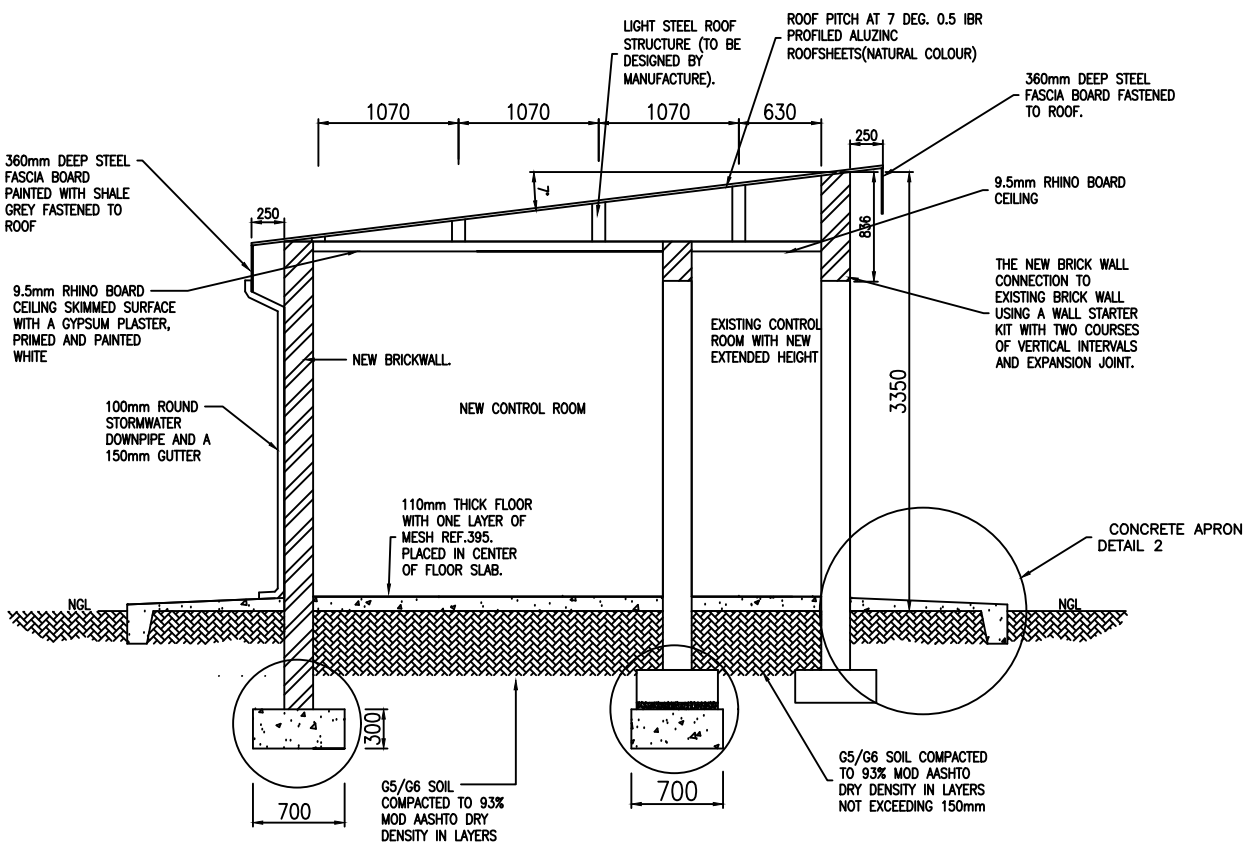
MANAGER CIVIL DESIGN

DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1

REGISTRATION NO.
15/5/2/20 - 35 RO

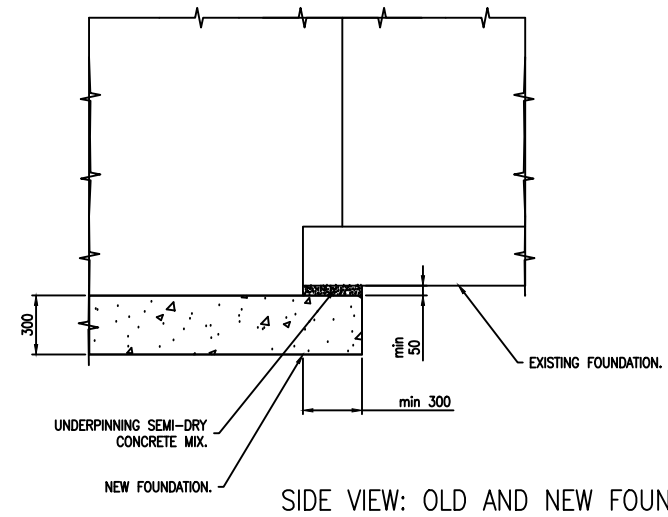


SECTION B-B
SCALE 1:30

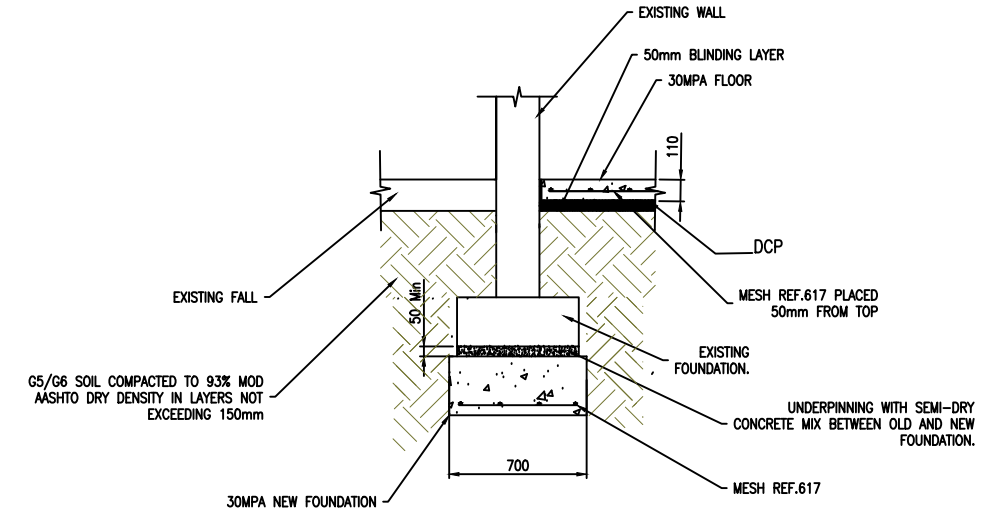


SECTION A-A
SCALE 1:30

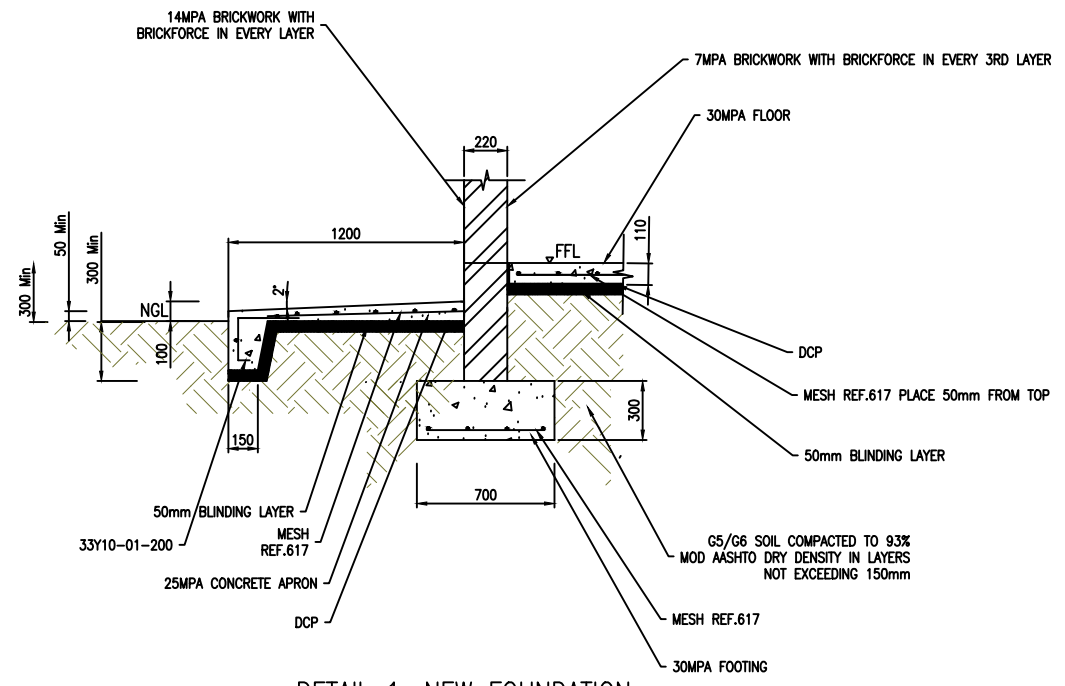
NOTE:
FOUNDATION CONNECTION OF NEW TO EXISTING:
UNDERPINNING: A 50mm TO 75mm GAP SHALL BE LEFT BETWEEN THE TOP OF THE NEW CONCRETE AND THE UNDERSIDE OF THE EXISTING FOUNDATION. THIS GAP IS TO BE FILLED 24-48HOURS LATER WITH SEMI-DRY CONCRETE RAMMED IN HARD TO ENSURE SOLID LOAD TRANSFER



SIDE VIEW: OLD AND NEW FOUNDATION
SCALE 1:20



DETAIL 3: FOUNDATION UNDERPINNING
SCALE 1:20

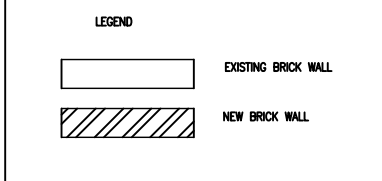


DETAIL 1: NEW FOUNDATION
SCALE 1:20

REINFORCEMENT SCHEDULE

UNIT AND MARK	BAR & SIZE	No. PER UNIT	TOTAL No.	BAR LENGTH mm	BENDING DIMENSIONS ACCORDING TO SABS 82				
					SHAPE CODE	A mm	B mm	C mm	
FLOOR		1	1		MESH REF.617 AREA: (7.92 m) ²				
FOOTING		1	1		MESH REF.888 AREA: (7 m) ²				
APRON		1	1		MESH REF.617 AREA: (21 m) ²				
APRON	01	Y10	33	91	533	38	309	215	59

- NOTES :
- CONCRETE & BRICK STRENGTH TO BE AS FOLLOWS:
UNREINFORCED STRIP FOUNDATIONS: 25 MPa
REINFORCED CONCRETE ELEMENTS: 25 MPa
SURFACE BEDS AND CONCRETE SLAB: 25 MPa
WALL BRICK: 7 MPa
FOUNDATION BRICK: 14 MPa
CONCRETE APRON: 25 MPa
 - COMPACT SUB GRADE BELOW SURFACE BEDS TO MIN. 95% MOD. AASHTO MAX DRY DENSITY.
 - COMPACT SOIL TO 95% MOD. AASHTO MAX DRY DENSITY UNDERNEATH STRIP FOUNDATION AND SURFACE BEDS.
 - PROVIDE STEEL FLOAT FINISH TO SURFACE OF CONCRETE SLAB AND SURFACE BEDS.
 - MINIMUM CONCRETE COVER FOR ALL REINFORCED CONCRETE TO BE 25mm.
 - ALL STEEL TO BE GRADE 300W. ALL COLD FORMED STEEL MAY BE OF COMMERCIAL QUALITY STEEL WITH A MINIMUM YIELD STRESS OF 200 N/sqm.
 - ALL STEEL TO BE PAINTED WITH TWO LAYERS OF SELF ETCHING PRIMER BEFORE DISPATCHED TO SITE. APPLY TWO COATS OF HIGH GLOSS ENAMEL ALUMINIUM PAINT TO ALL STEEL WORK ON SITE.
 - PROVIDE 375 MICRON BRICK-GRIP DPC IN ALL BRICK WALLS.
 - BRICK-BEFORE FOR EVERY COURSE IN THE FOUNDATION WALLS BELOW THE NATURAL GROUND LEVEL. EVERY THIRD COURSE ABOVE THE FOUNDATION WALLS, AND ABOVE OPENINGS (DOORS AND WINDOWS) BRICK FORCE EVERY COURSE FOR THREE LAYERS.
 - ALL WALLS TO BE PLASTERED INTERNAL AND EXTERNAL.
 - EXTERNAL WALLS TO BE PAINTED WITH ONE UNDER COAT AND TWO COATS OF EXTERIOR EMULSION PVA OFF-WHITE.
 - INTERNAL WALLS TO BE PAINTED WITH TWO COATS OF "EGGSHELL" APPLIED OVER UNDER COAT AS PER MANUFACTURER'S SPECIFICATION.
 - COVER CONCRETE SLAB IMMEDIATELY AFTER CASTING AND CURE FOR A PERIOD OF MINIMUM 7 DAYS.
 - THE POSITION OF CABLE AND OTHER SLEEVES TO BE READ IN CONJUNCTION WITH THE M&E DRAWING 15/5/20-38 RO.
 - ALL OTHER MECHANICAL AND ELECTRICAL WILL BE DONE BY NAMWATER.
 - FOUNDATION CONNECTION OF NEW TO EXISTING: UNDERPINNING: A 50mm to 75mm GAP SHALL BE LEFT BETWEEN THE TOP OF THE NEW CONCRETE AND THE UNDERSIDE OF THE EXISTING FOUNDATION. THIS GAP IS TO BE FILLED 24-48HOURS LATER WITH SEMI-DRY CONCRETE RAMMED IN HARD TO ENSURE SOLID LOAD TRANSFER.
 - ALL LOOSE MATERIAL AND SOIL MUST BE REMOVED FROM THE UNDERSIDE OF THE EXISTING FOOTING BEFORE CASTING.



0	ISSUED FOR BIDDING PURPOSES	11.2025	S.S.
NO.	AMENDMENTS	DATE	BY

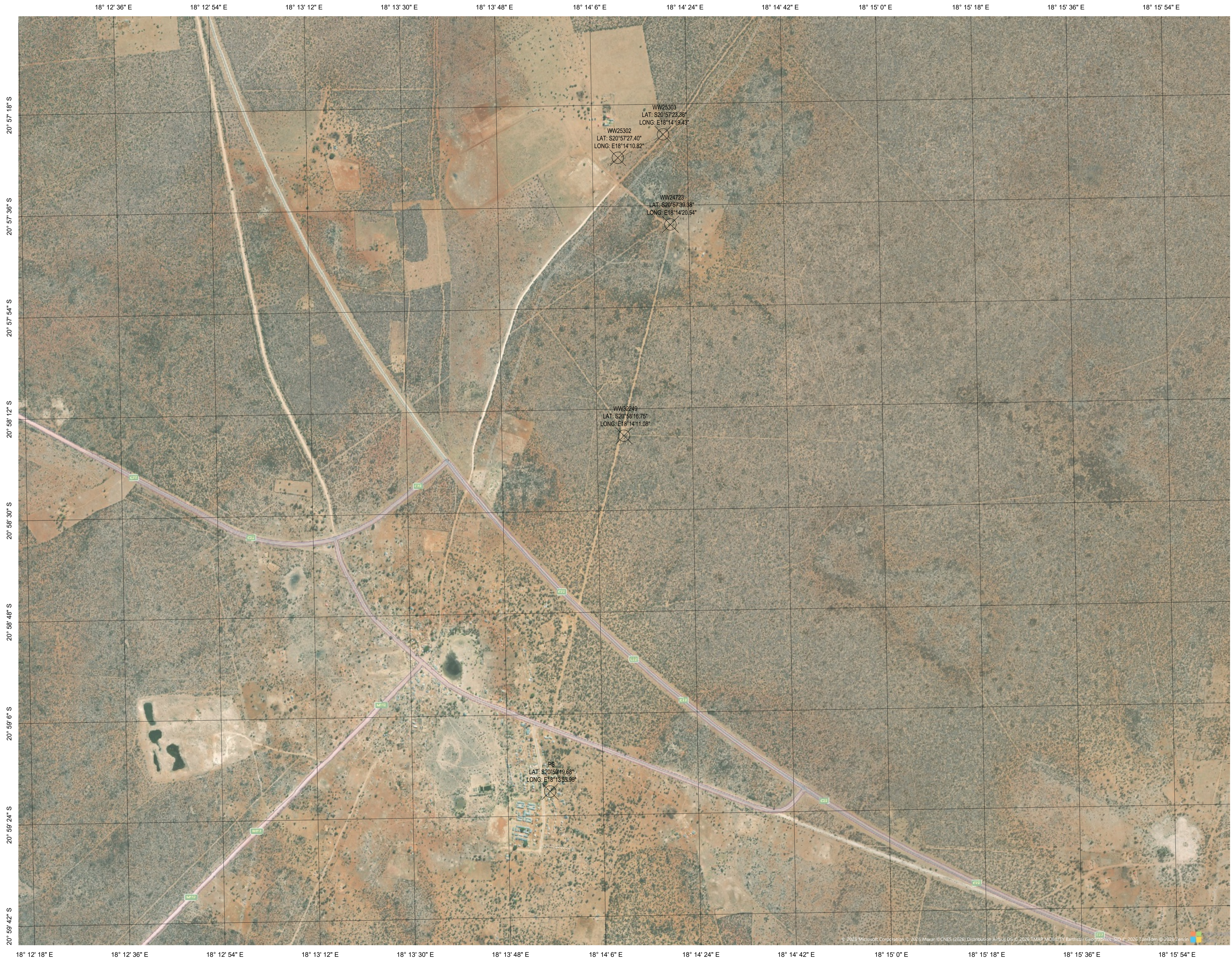


SCHEME
OKONDJATU (WSS)

DRAWING
CHLORINATION BUILDING EXTENSION
DETAIL OF FOUNDATIONS AND WALLS

SURVEYED	DRAWN	TRACED
S.SHILONGO	S.SHILONGO	AUTOCAD
DESIGNED CIVIL	DESIGNED ELEC.	DESIGNED MECH.
S.SHILONGO		
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
O.KAVETUNA		
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.
W. ANDERSON		

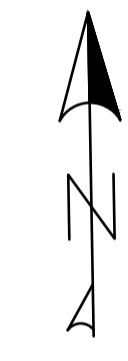
MANAGER CIVIL DESIGN
DATE 11/2025 SCALE AS SHOWN SHEET NO. 1 OF 1



NOTES :

- CO-ORDINATE SYSTEM: SCHWARZECK Lo22/19.

Point Table			
Point #	Description	Latitude	Longitude
1	WW32249	S20.971320	E18.236410
2	WW24723	S20.960940	E18.239040
3	WW25302	S20.957610	E18.236340
4	WW25303	S20.956490	E18.238730
5	PS	S20.988800	E18.232210



0	ISSUED FOR BIDDING PURPOSES	APR 2026	SS
NO.	AMENDMENTS	DATE	BY



SCHEME
OKONDJATU WSS

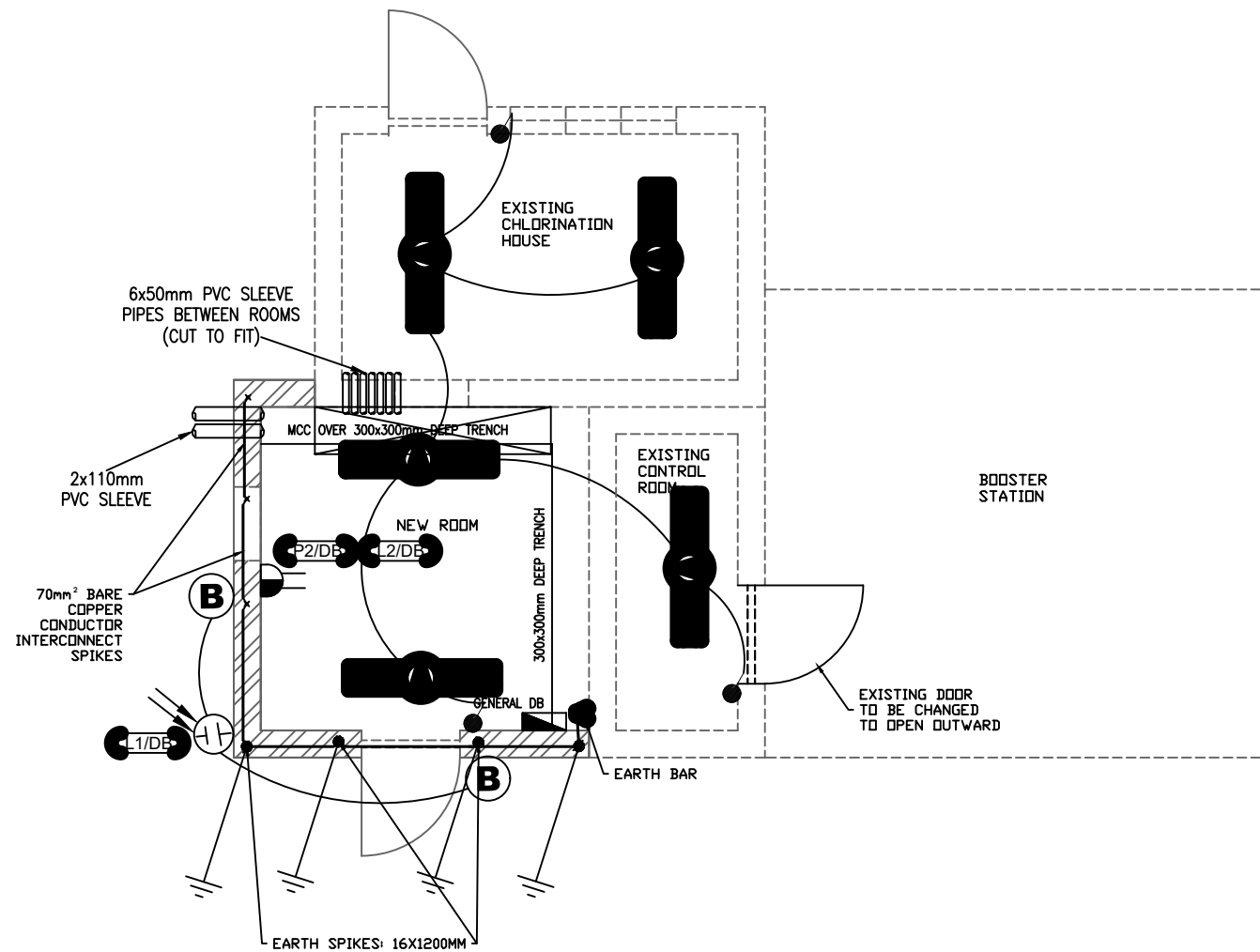
DRAWING
OKONDJATU SCHEME SITE LAYOUT

SURVEYED [INFRAWORKS]	DRAWN S. SHILONGO	TRACED AUTOCAD C3D
DESIGNED CIVIL S. SHILONGO	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL O. KAVETUNA	CHECKED ELEC.	CHECKED MECH.
APPROVED CIVIL WL. ANDERSON	APPROVED ELEC.	APPROVED MECH.

MANAGER: CIVIL DESIGN		
DATE APR 2026	SCALE AS SHOWN	SHEET NO. 1 OF 1

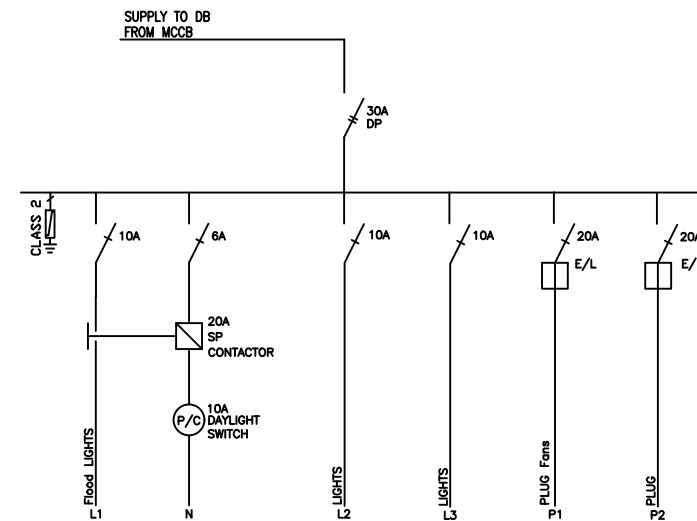
REGISTRATION NO. 15/5/2/20-37R0

SITE LAYOUT
SCALE 1:10000



ELECTRICAL LAYOUT
SCALE 1:30

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	VAPOUR PROOF LED DOUBLE TUBE 2X1.2m - 18W
	50 WATT LED FLOOD LIGHT MOUNTED 2100mm ABOVE NGL
	1 LEVER LIGHT SWITCH AT MH 1200mm AFFL COMPLETE WITH 100X50mm DRAWBOX CONNECTED TO CORRESPONDING DB WITH Ø20mm CONDUIT
	10A PHOTOCELL/DAY LIGHT SWITCH MOUNTED AT 2100mm ABOVE NGL
	L1-DENOTES LIGHT CIRCUIT ; P2- DENOTES POWER CIRCUIT
	STRUCTURE SURFACE EARTHING USING A 16mm DIAMETER 1.2m LONG SOLID COPPER EARTH SPIKES, DRILLED AND HAMMERED 1.2m INTO THE GROUND BELOW THE STRUCTURE FOUNDATION, THE SPIKES ARE 1M APART AND INTERCONNECTED TO EACH OTHER USING A 50mm/70mm COPPER CONDUCTOR. THE TAIL LEAD OF THE SYSTEM IS CONNECTED TO THE EARTH BAR LOCATED WITHIN THE MCC BUILDING. USE BRASS NUTS AND LUGS FOR THE CONNECTIONS AT THE TOP OF THE SPIKES. THE TERMINATION POINT AT THE EARTH SPIKE TO BE SEALED WITH DENSO TAPE.
	EARTH BAR- HC RED COPPER BAR MOUNTED ON DUMPY INSULATORS (LV) HOLES DRILLED
	GENERAL DISTRIBUTION BOARD
	DOUBLE SWITCHED SOCKET OUTLET AT MH 300mm AFFL CONSISTING OF 100X100mm DRAWBOX CONNECTED TO CORRESPONDING DB WITH Ø20mm CONDUIT
	110mm Ø PVC SLEEVES WITH LONG RADIUS BEND TO BE INSTALLED INTO THE TRENCH
	50mm Ø PVC SLEEVES WITH LONG RADIUS BEND TO BE INSTALLED INTO THE TRENCH



GENERAL DB WIRING
SCALE 1:50

NOTES :

- ALL OTHER MECHANICAL AND ELECTRICAL WILL BE DONE BY NAMWATER.

LEGEND	
	EXISTING BRICK WALL
	NEW BRICK WALL

0	ISSUED FOR BIDDING PURPOSES	11.2025	S.S.
NO.	AMENDMENTS	DATE	BY



SCHEME
OKONDJATU (WSS)

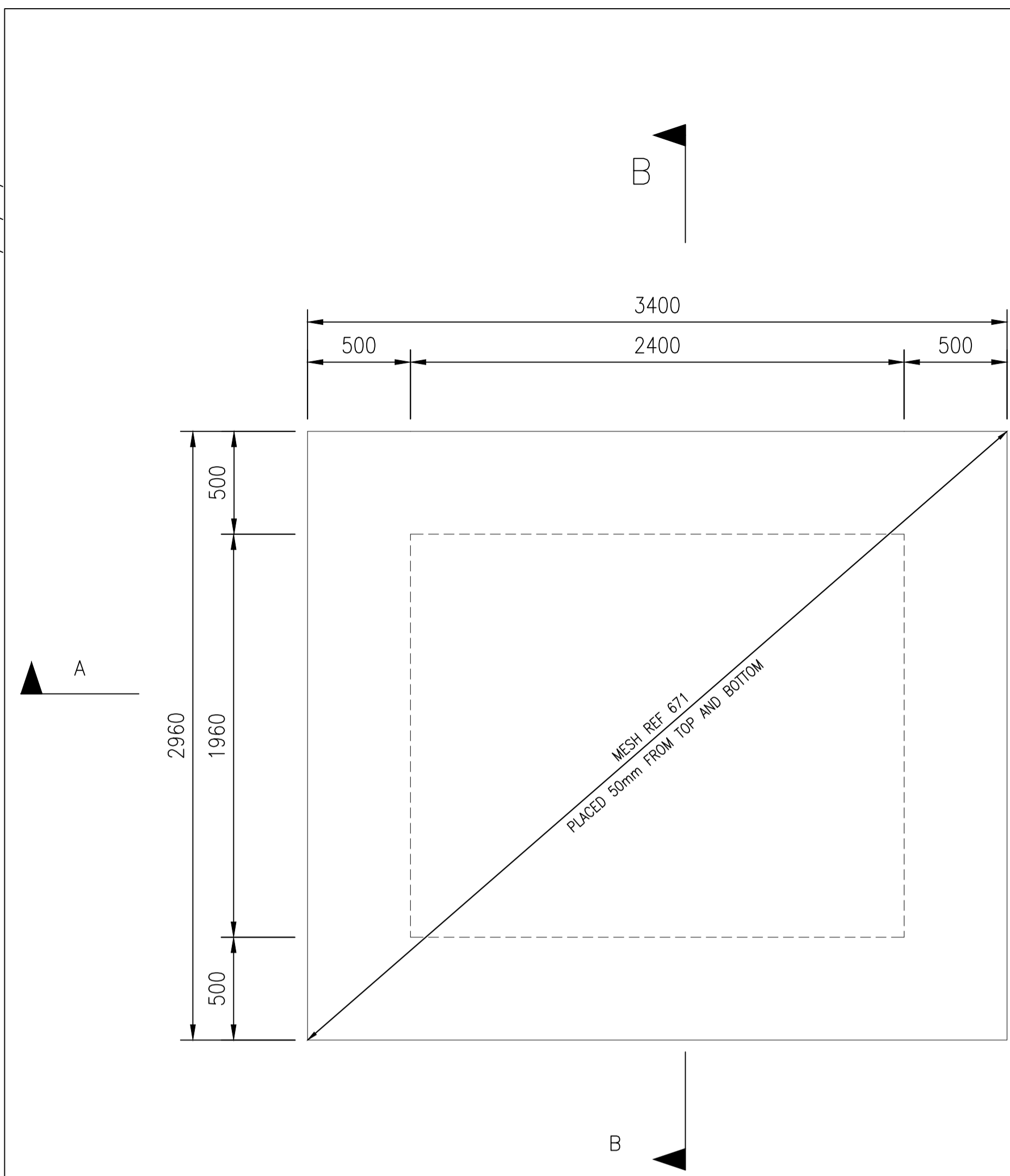
DRAWING
CHLORINATION BUILDING ELECTRICAL LAYOUT

SURVEYED	DRAWN	TRACED
DESIGNED CIVIL S.SHILONGO	S.SHILONGO	AUTOCAD
CHECKED CIVIL O.KAVETUNA	DESIGNED ELEC.	DESIGNED MECH.
APPROVED CIVIL W. ANDERSON	CHECKED ELEC.	CHECKED MECH.
	APPROVED ELEC.	APPROVED MECH.

MANAGER CIVIL DESIGN

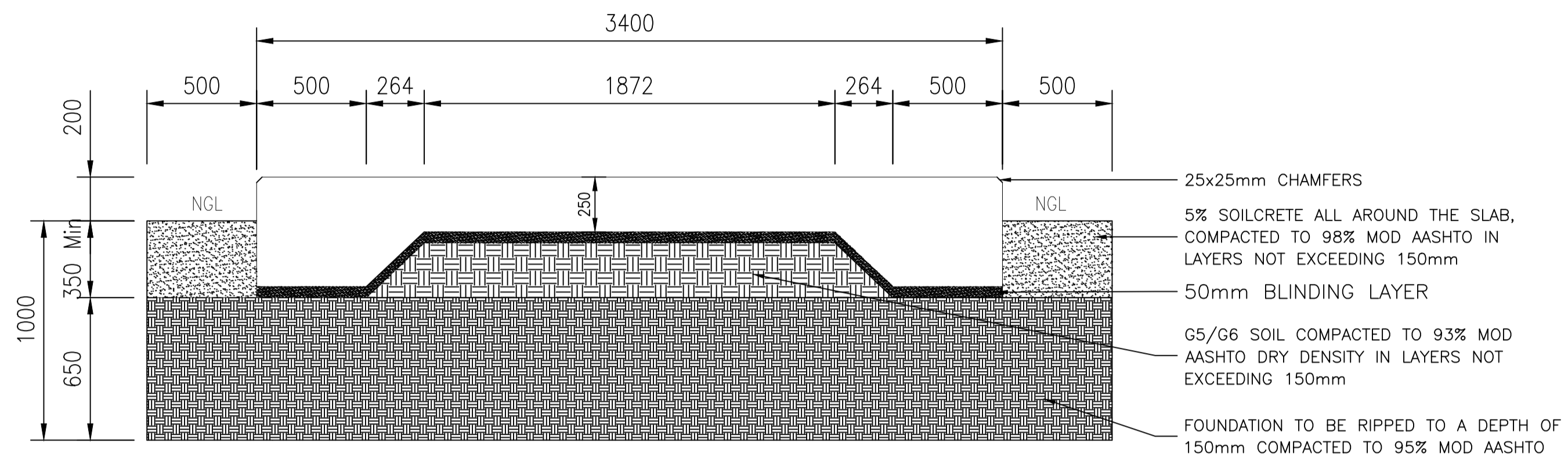
DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1

REGISTRATION NO.
15/5/2/20 - 38 RO

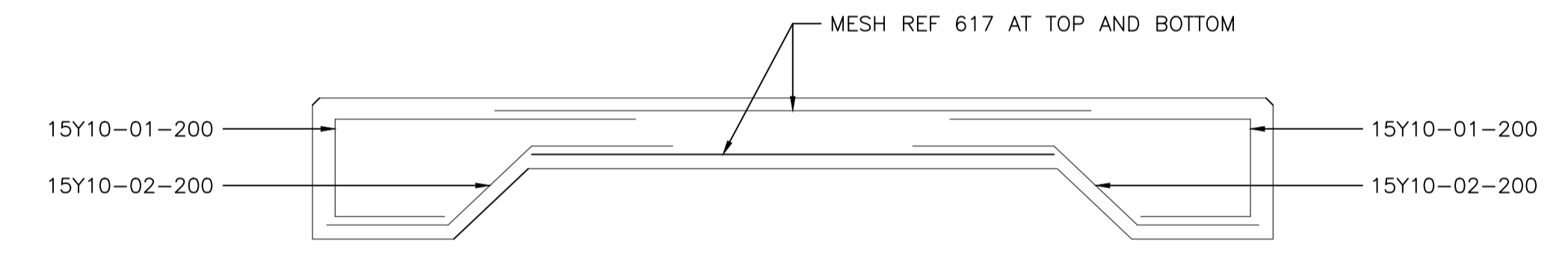


REINFORCEMENT SCHEDULE

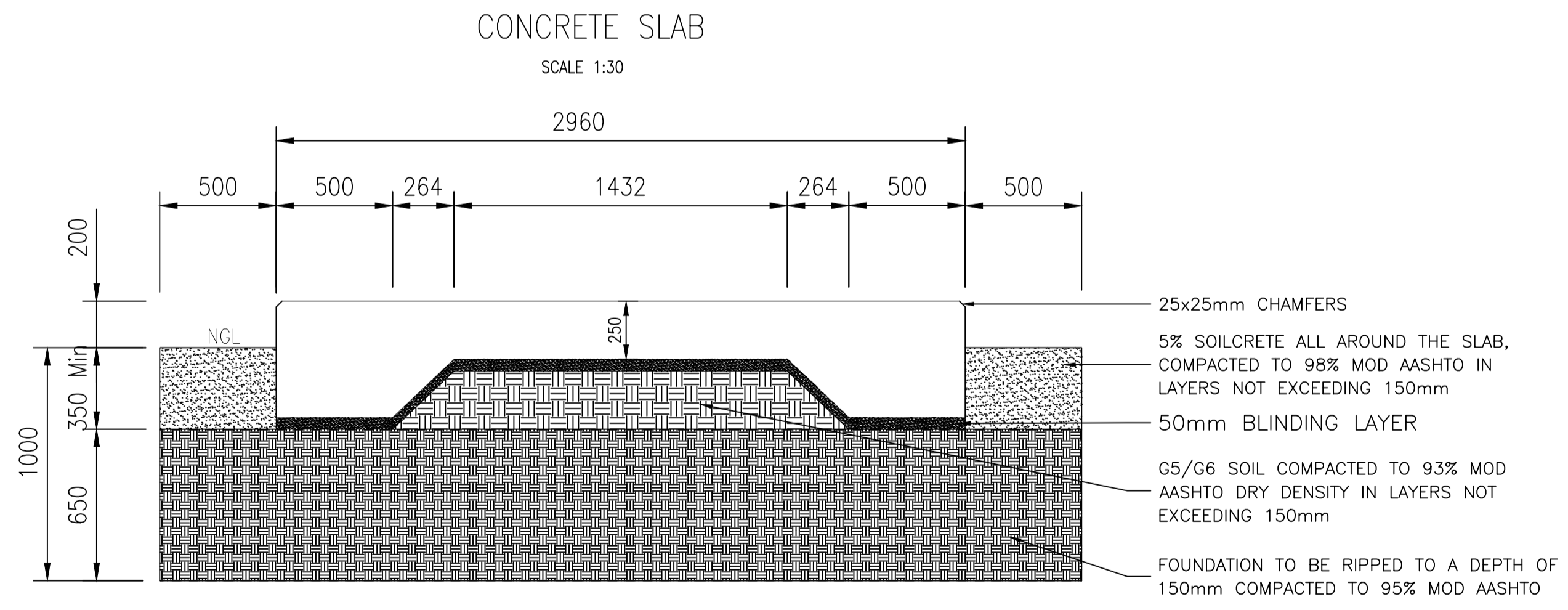
UNIT	No. OF	BAR MARK	TYPE & SIZE	No. PER UNIT	TOTAL No.	BAR LENGTH mm	BENDING DIMENSIONS ACCORDING TO SABS 82					
							SHAPE CODE	A mm	B mm	C mm	D mm	E mm
SLAB	1	01	Y10	15	30	1747	38	1064	345	388		
	1	02	Y10	15	30	1337	41	430	407	500		
	1	03	Y10	18	36	1747	38	1064	345	388		
	1	04	Y10	18	36	1337	41	430	407	500		
						MESH REF.617 AREA: (3.53 m ²)						
						MESH REF.617 AREA: (2.6 m ²)						



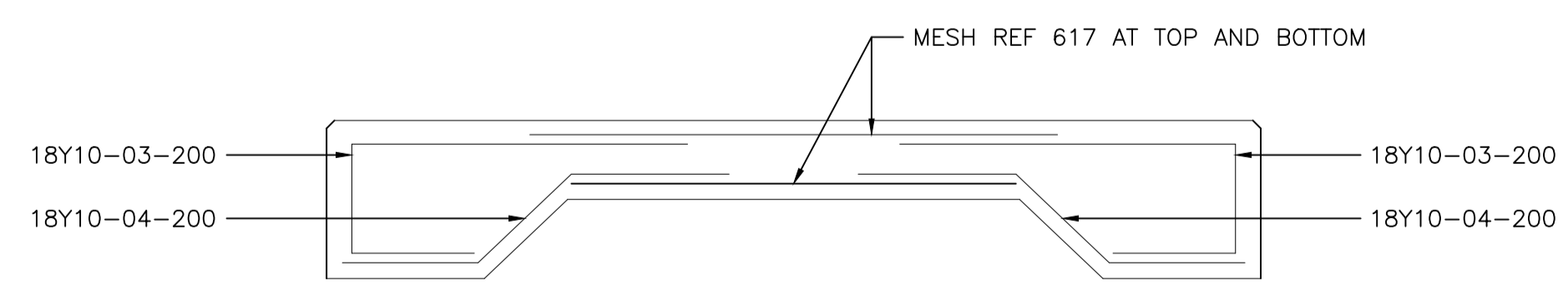
SECTION A-A: CONCRETE SLAB
SCALE 1:20



SECTION A-A: CONCRETE SLAB REINFORCEMENT
SCALE 1:20



SECTION B-B: CONCRETE SLAB
SCALE 1:20

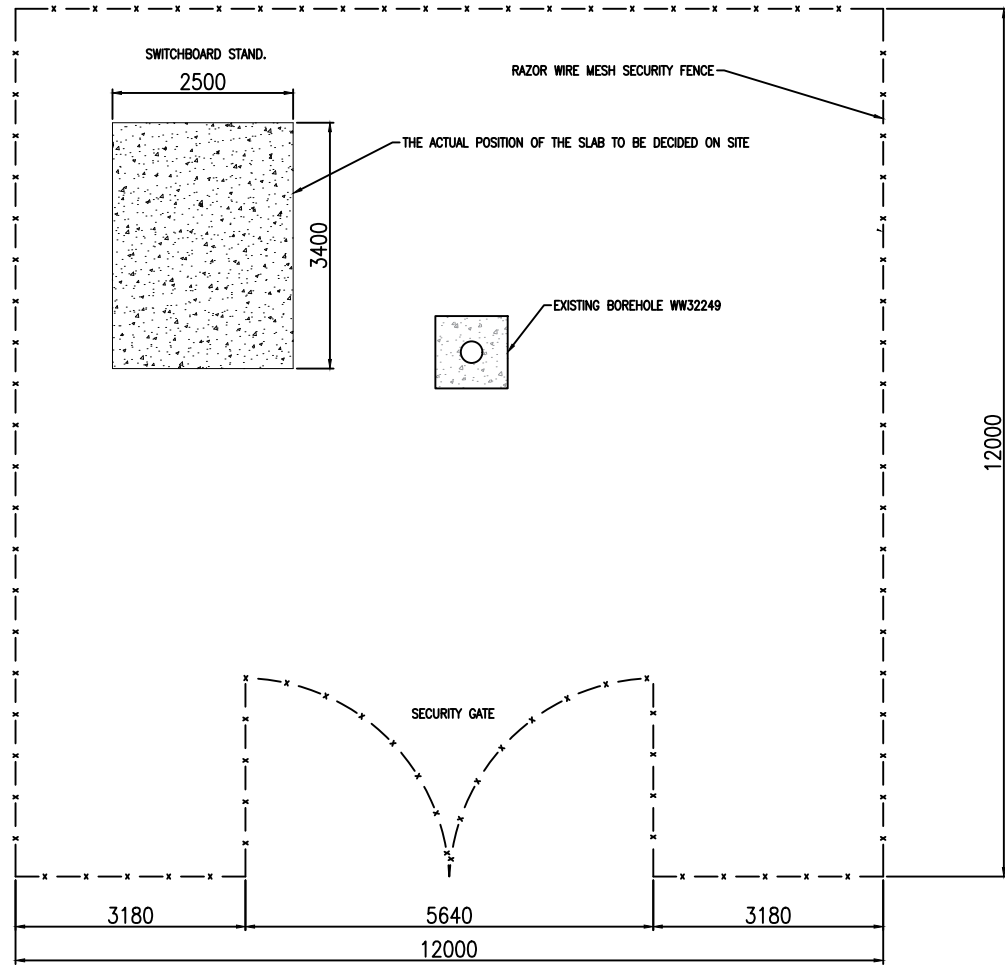


SECTION B-B: CONCRETE SLAB REINFORCEMENT
SCALE 1:20

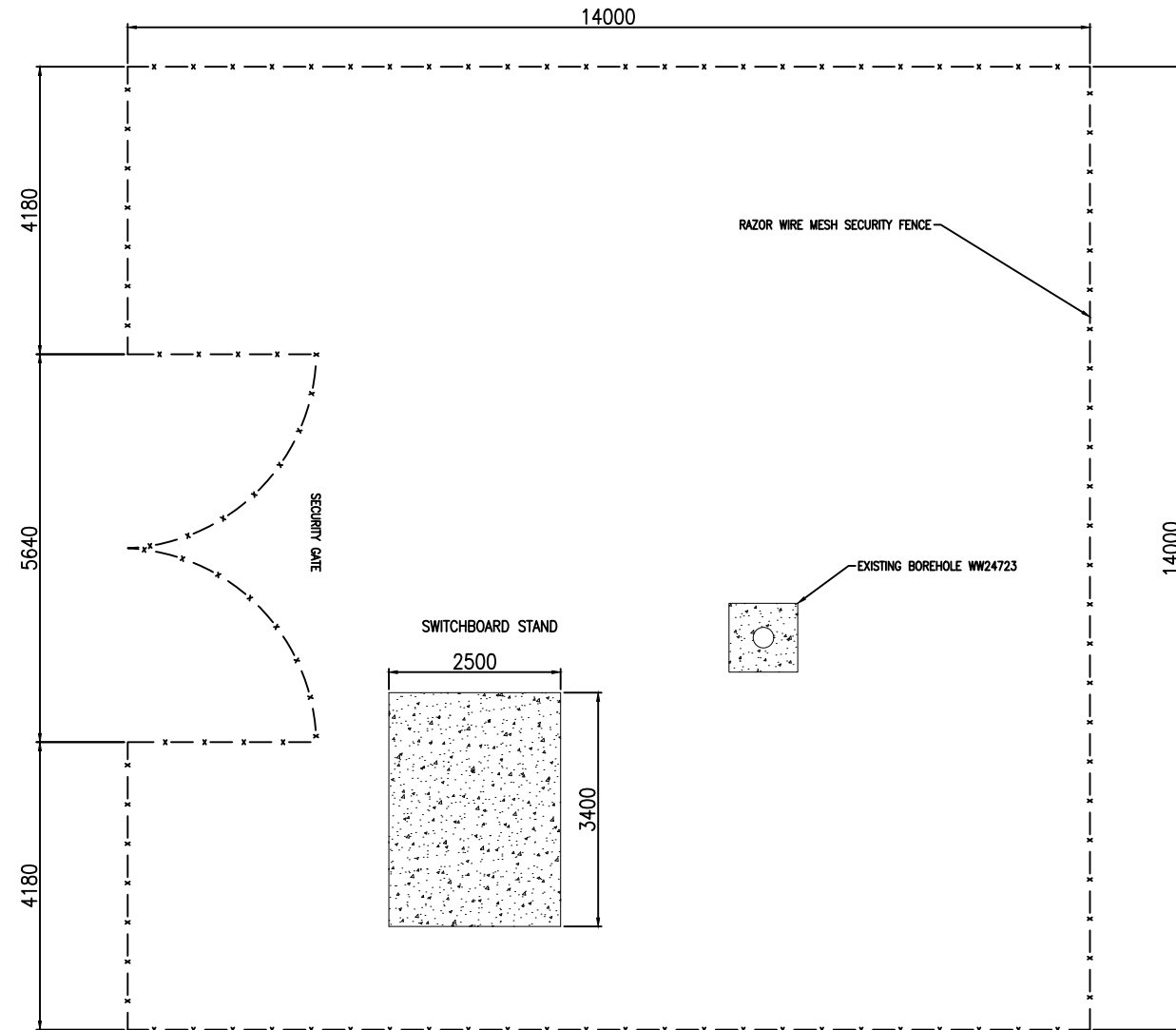
NOTES :

- ALL WORKS TO BE DONE ACCORDING TO SANS 1200.
- ALL CONCRETE WORKS TO BE 25MPa/19mm WITH 50mm COVER, UNLESS OTHERWISE SPECIFIED.
- ALL EXPOSED CONCRETE CORNERS TO HAVE 25X25mm CHAMFERS.
- ALL REINFORCEMENT TO BE HIGH YIELD STEEL UNLESS OTHERWISE SPECIFIED AND MUST COMPLY TO SABS 920
- ALL AGGREGATES MUST CONFORM TO SABS 1083.
- OVERLAP LENGTH SHOULD BE DIAMETER MULTIPLIED BY 40.
- DAMP CURING PROCESS TO BE 7 DAYS.
- COMPACT LOOSE MATERIAL AT BOTTOM OF EXCAVATION TO 93% MOD. AASHTO.
- COMPACT LOOSE MATERIAL MIX WITH 5% CEMENT AROUND THE SLAB TO 98% MOD. AASHTO.

0	ISSUED FOR BIDDING PURPOSES	MAR 2026	S.S.
NO.	AMENDMENTS	DATE	BY
NAMWATER Namibia Water Corporation Ltd			
SCHEME			
OKONDJATU (WSS)			
DRAWING			
CONCRETE SLAB FOR OKONDJATU BOREHOLE			
SURVEYED	DRAWN	TRACED	
DESIGNED CIVIL	S.SHILONGO	AUTOCAD	
S.SHILONGO	DESIGNED ELEC.	DESIGNED MECH.	
CHECKED CIVIL	O.KAVETUNA	CHECKED ELEC.	
O.KAVETUNA	CHECKED ELEC.	CHECKED MECH.	
APPROVED CIVIL	W. ANDERSON	APPROVED ELEC.	
W. ANDERSON	APPROVED ELEC.	APPROVED MECH.	
MANAGER CIVIL DESIGN			
DATE	MAR 2026	SCALE	AS SHOWN
		SHEET NO.	1 OF 1
REGISTRATION NO. 15/5/2/20-39 RO			



BOREHOLE FENCING LAYOUT: WW32249
SCALE 1:50



BOREHOLE FENCING LAYOUT: WW24723
SCALE 1:50

NOTES :

- FOR THE FENCE AND GATE DETAILS SEE PROJECT DRAWING NUMBER:15/5/2/20-42R0 AND DRAWING NUMBER:15/5/2/20-43R0 AND

0	ISSUED FOR BIDDING PURPOSE	11/2025	S.S
NO.	AMENDMENTS	DATE	BY

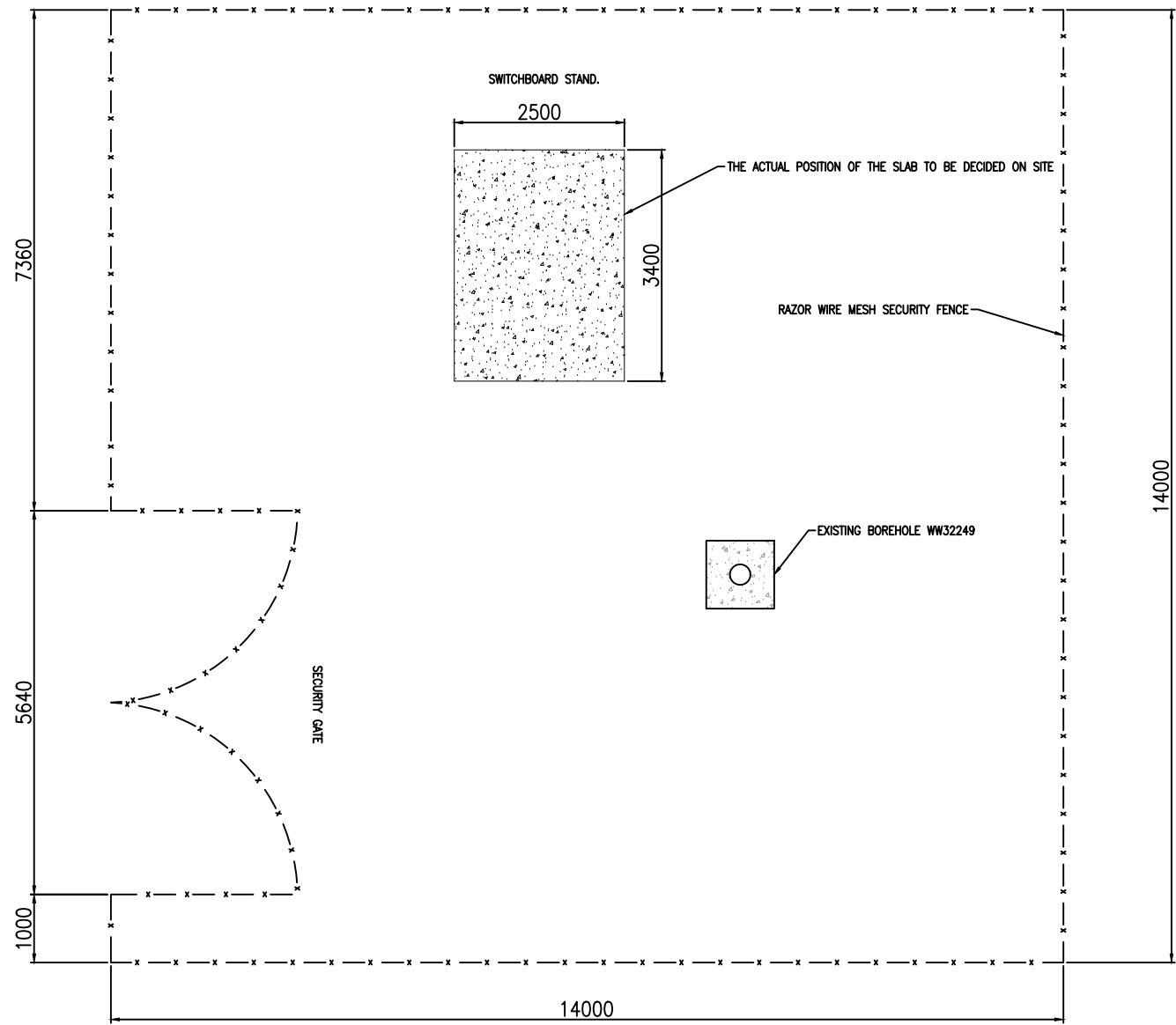


SCHEME
OKONDJATU (WSS)

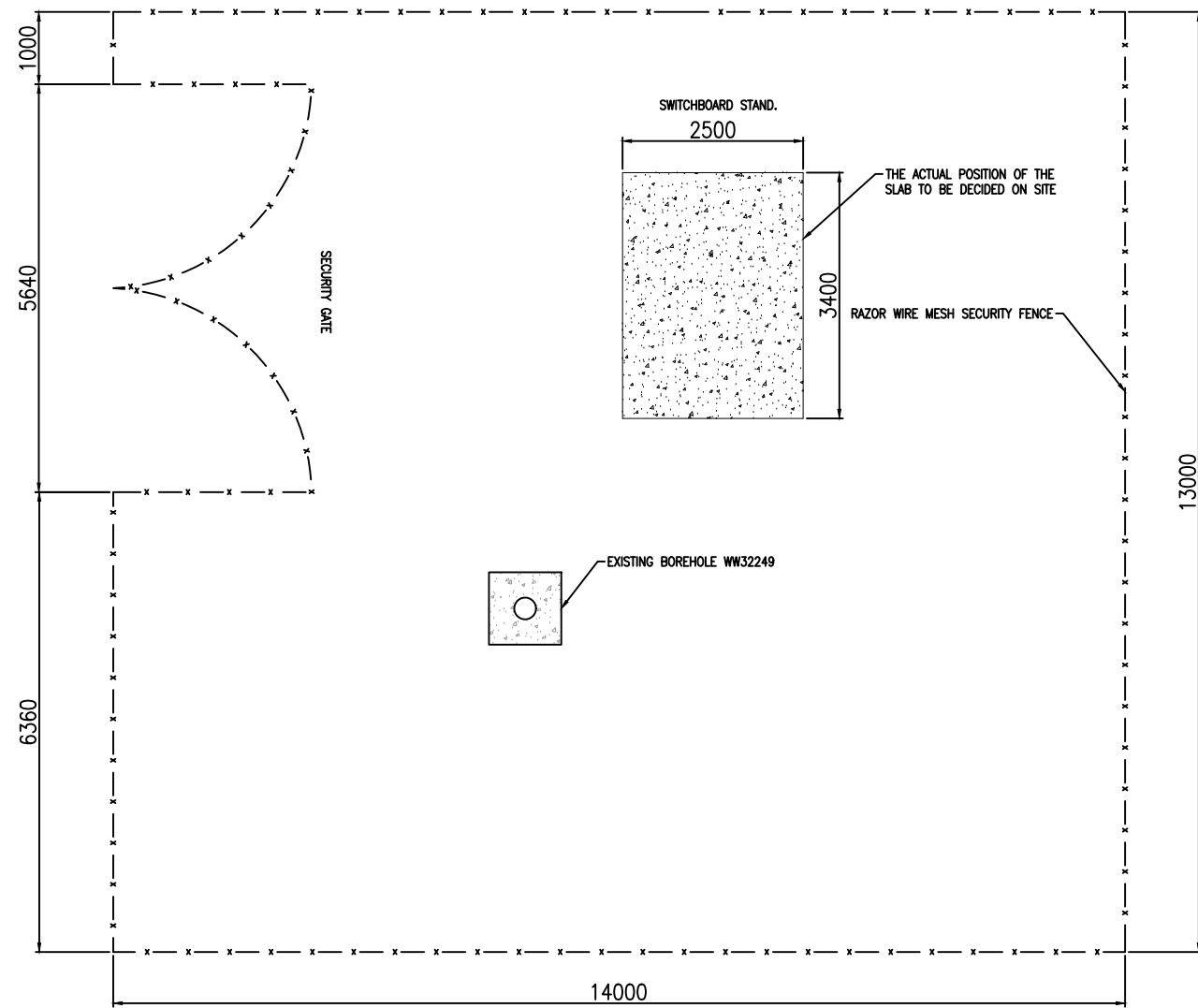
DRAWING
BOREHOLE FENCE LAYOUT
WW32249 AND WW24723

SURVEYED	DRAWN	TRACED
DESIGNED CIVIL	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.
S.SHILONGO	S.SHILONGO	AUTOCAD
O.KAVETUMA	O.KAVETUMA	
W ANDERSON	W ANDERSON	

MANAGER: CIVIL ENGINEERING		
DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1
REGISTRATION NO. 15/5/2/20- 40 R0		



BOREHOLE FENCING LAYOUT: WW25302
SCALE 1:50



BOREHOLE FENCING LAYOUT: WW25303
SCALE 1:50

NOTES :

- FOR THE FENCE AND GATE DETAILS SEE PROJECT DRAWING NUMBER:15/5/2/20-42RO AND DRAWING NUMBER:15/5/2/20-43RO AND

0	ISSUED FOR BIDDING PURPOSE	11/2025	S.S
NO.	AMENDMENTS	DATE	BY



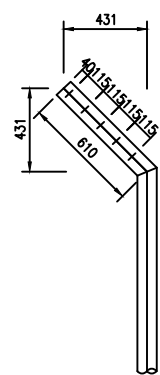
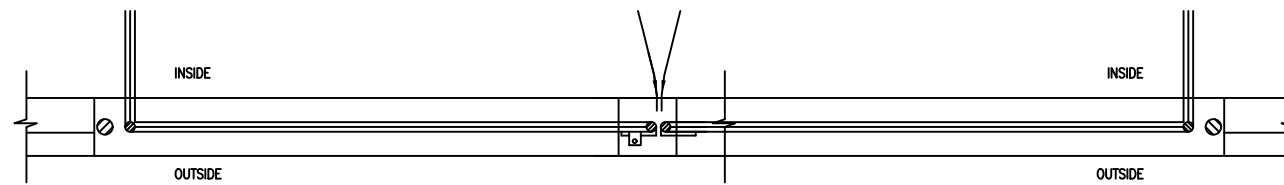
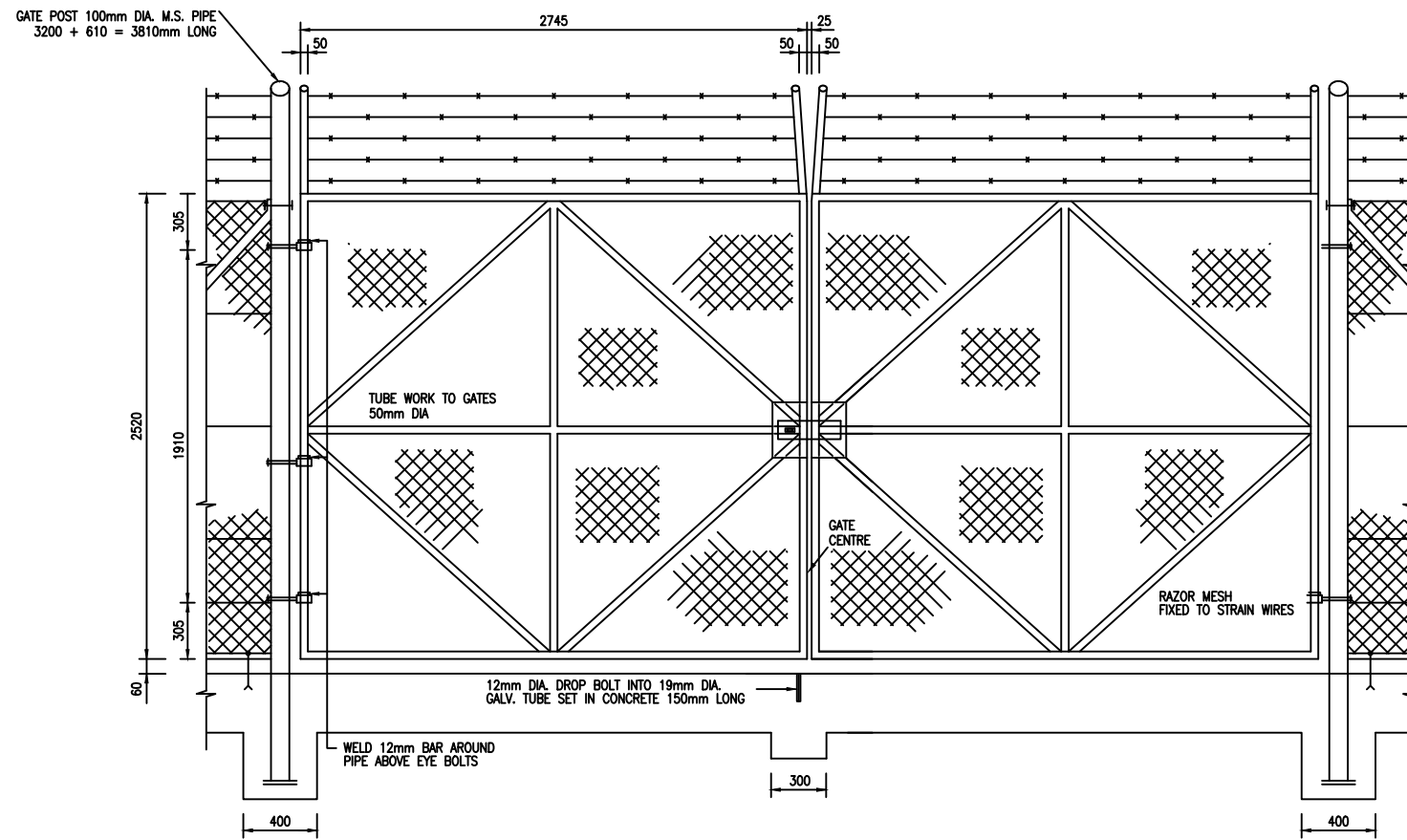
SCHEME
OKONDJATU (WSS)

DRAWING
BOREHOLE FENCE LAYOUT
WW25302 AND WW25303

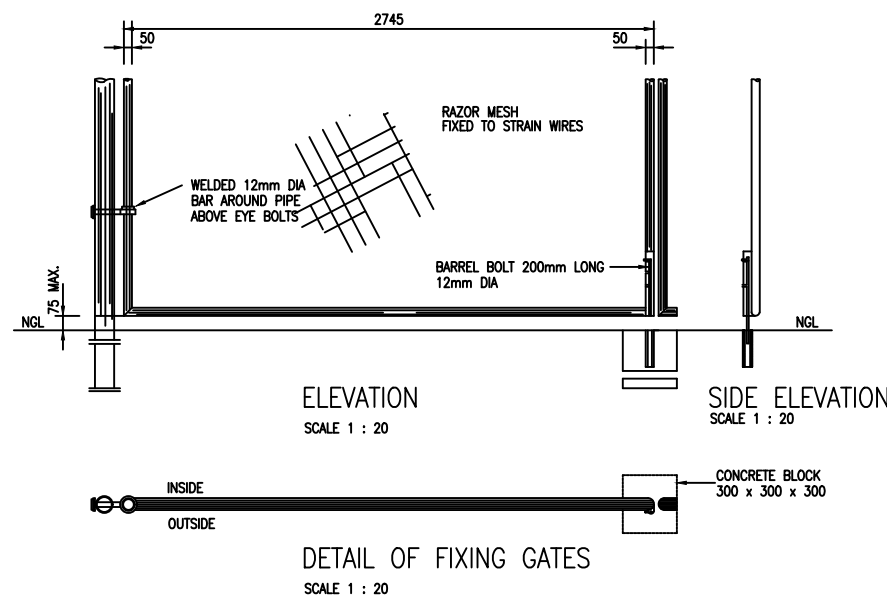
SURVEYED	DRAWN	TRACED
DESIGNED CIVIL	S.SHILONGO	AUTOCAD
S.SHILONGO	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
O.KAVETUNA		
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.
W.ANDERSON		

MANAGER: CIVIL ENGINEERING		
DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1

REGISTRATION NO.
15/5/2/20- 41 RO



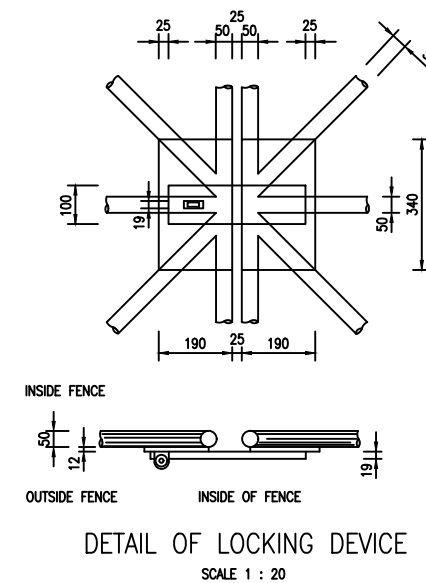
DETAIL OF GATE POST
SCALE 1 : 20



ELEVATION
SCALE 1 : 20


SIDE ELEVATION
SCALE 1 : 20

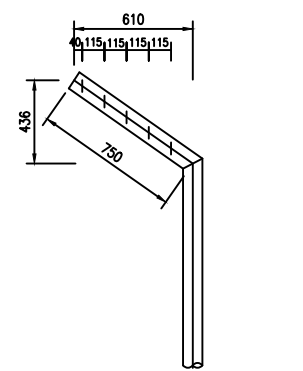
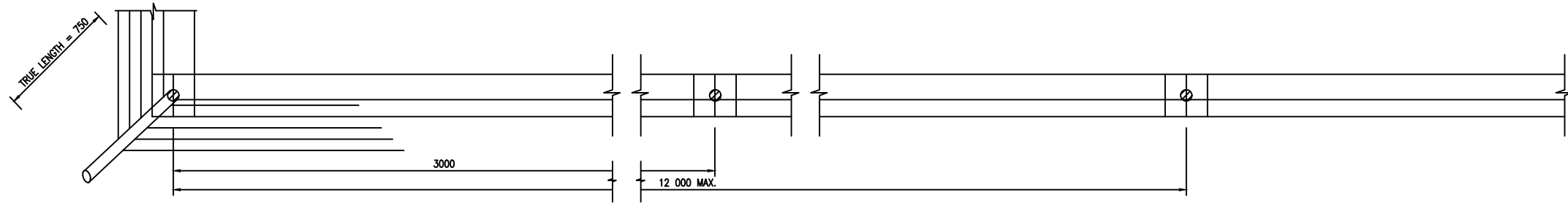
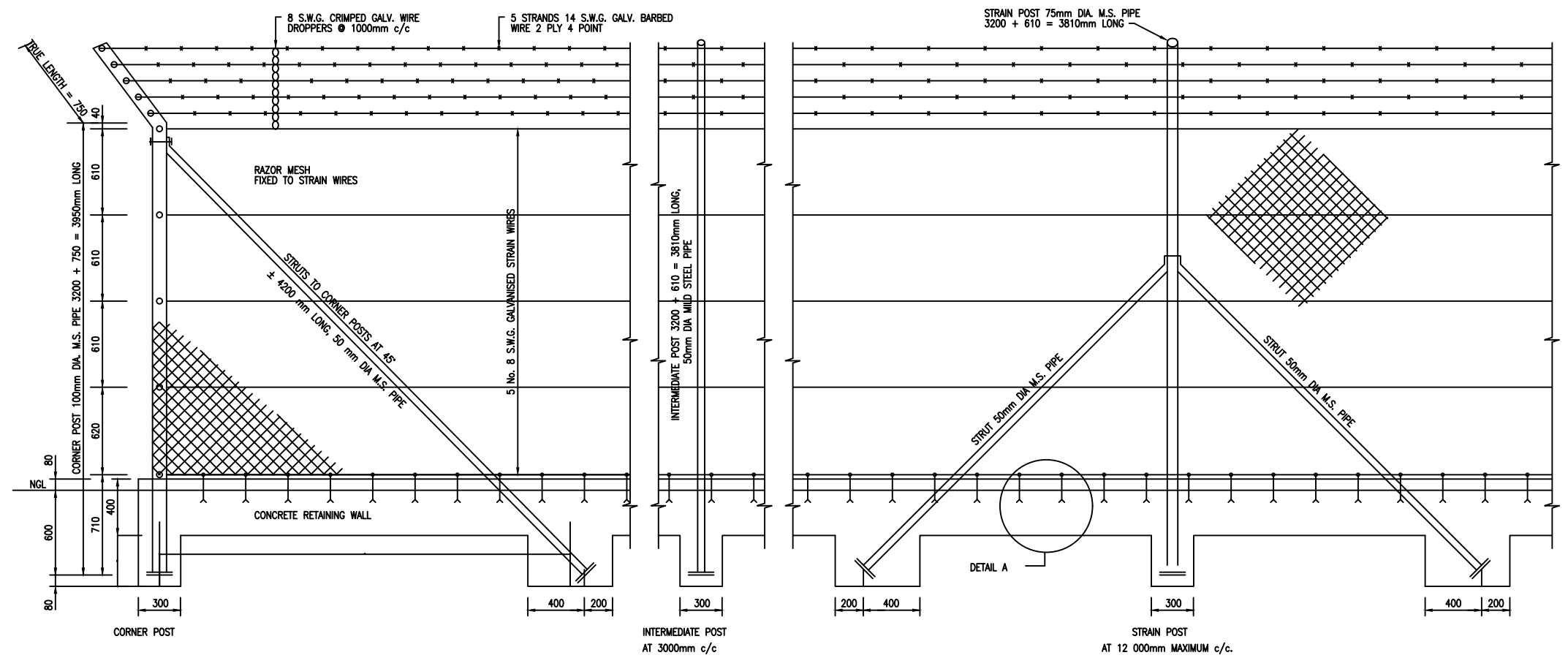
DETAIL OF FIXING GATES
SCALE 1 : 20



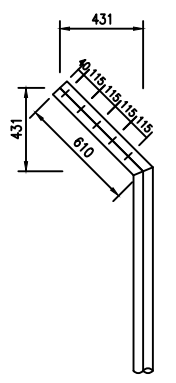
DETAIL OF LOCKING DEVICE
SCALE 1 : 20

NOTES :

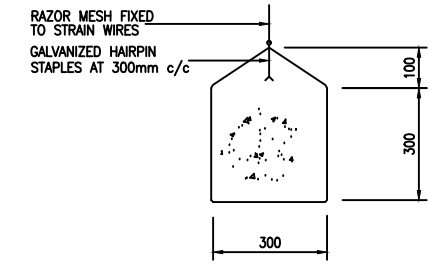
0	ISSUED FOR BIDDING PURPOSE	11/2025	S.S
NO.	AMENDMENTS	DATE	BY
 NAMWATER Namibia Water Corporation Ltd			
SCHEME			
OKONDJATU (WSS)			
DRAWING			
BOREHOLE FENCE GATE DETAIL			
SURVEYED	DRAWN	TRACED	
DESIGNED CIVIL S.SHILONGO	S.SHILONGO	DESIGNED ELEC.	AUTOCAD DESIGNED MECH.
CHECKED CIVIL O.KAVETUNA	CHECKED ELEC.	CHECKED MECH.	
APPROVED CIVIL W ANDERSON	APPROVED ELEC.	APPROVED MECH.	
MANAGER: CIVIL ENGINEERING			
DATE 11/2025	SCALE AS SHOWN	SHEET NO. 1 OF 1	
REGISTRATION NO. 15/5/2/20- 42 R0			



DETAIL OF CORNER POST
SCALE 1 : 20



DETAIL OF STRAIN, INTERMEDIATE
AND GATE POST
SCALE 1 : 20



DETAIL A
SCALE 1 : 20

NOTES :

0	ISSUED FOR BIDDING PURPOSE	11/2025	S.S
NO.	AMENDMENTS	DATE	BY

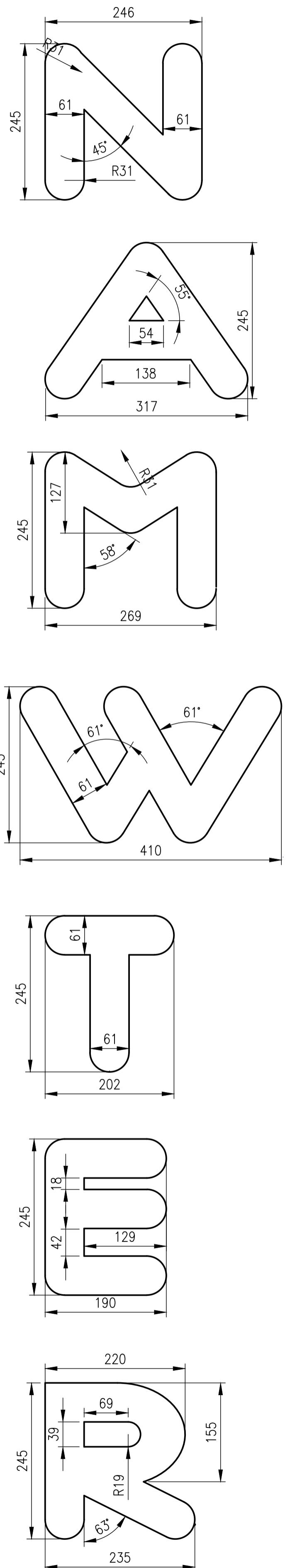


SCHEME
OKONDJATU (WSS)

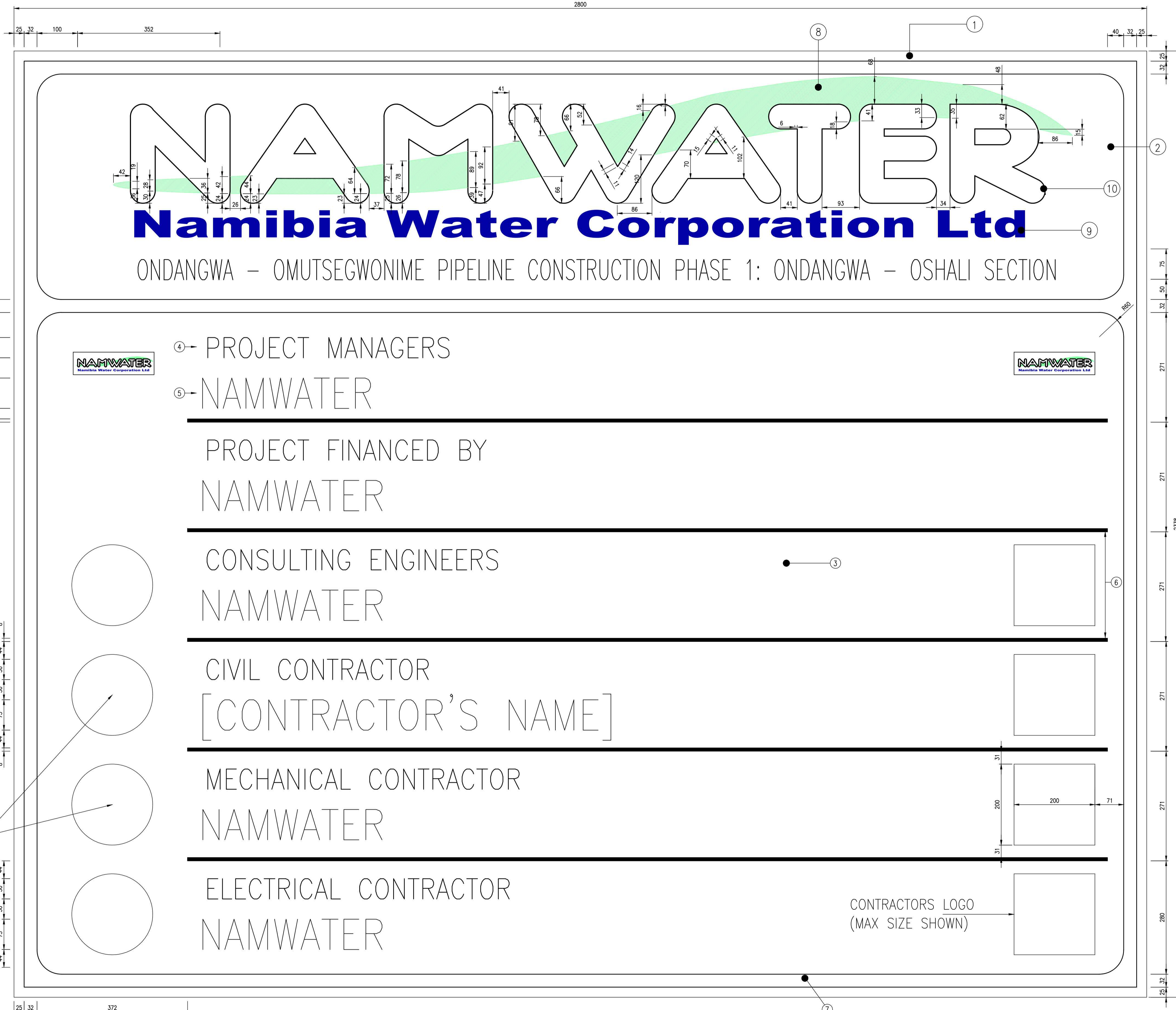
DRAWING
BOREHOLE FENCE DETAIL

SURVEYED	DRAWN	TRACED
DESIGNED CIVIL	S.SHILONGO	AUTOCAD
S.SHILONGO	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL	CHECKED ELEC.	CHECKED MECH.
O.KAVETUNA		
APPROVED CIVIL	APPROVED ELEC.	APPROVED MECH.
W.ANDERSON		

MANAGER: CIVIL ENGINEERING		
DATE	SCALE	SHEET NO.
11/2025	AS SHOWN	1 OF 1
REGISTRATION NO.		
15/5/2/20- 43 R0		



CREST TRANSFERS OF PROFESSIONAL ASSOCIATIONS, FEDERATIONS OF GROUPS



- NOTES :
- LEGEND
- COLOUR SCHEME
- 1) WHITE BORDER
 - 2) BLACK LETTERS ON WHITE BACKGROUND
 - 3) WHITE BACKGROUND
 - 4) GREEN LETTERS
 - 5) BLACK LETTERS
 - 6) GREEN LINES
 - 7) GREEN PAINTED MARGIN
 - 8) GREEN: PATONE 3265 U
 - 9) BLUE: PATONE REFLEX BLUE U, FONT : ARIAL BLACK
 - 10) BLUE: PATONE REFLEX BLUE U

COLOUR SPECIFICATION

WHITE : CLOUD WHITE, SABS 1091, COLOUR G80
 GREEN : BRILLIANT GREEN, SABS 1091, COLOUR H10
 BLACK

FONT : HELVETICA

0	ISSUED FOR BIDDING PURPOSES	11.2025	SS
NO.	AMENDMENTS	DATE	BY



SCHEME

OKONDJATU SCHEME

DRAWING

PROJECT NAMEBOARD DETAILS

SURVEYED [INFRAWORKS]	DRAWN S.SHILONGO	TRACED AUTOCAD
DESIGNED CIVIL S.SHILONGO	DESIGNED ELEC.	DESIGNED MECH.
CHECKED CIVIL O.KAVETUNA	CHECKED ELEC.	CHECKED MECH.
APPROVED CIVIL W. ANDERSON	APPROVED ELEC.	APPROVED MECH.

MANAGER: CIVIL DESIGN		
DATE 11/2025	SCALE AS SHOWN	SHEET NO. 1 OF 1
REGISTRATION NO. 15/5/2/20 - 44 R0		

PROJECT BOARD
SCALE 1:10