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NATIONAL DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

TECHNICAL SPECIFICATIONS
KITCHEN EQUIPMENT

FICKSBURG CORRECTIONAL CENTRE – REPAIR AND RENOVATION

WCS: 056436

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1. General notes acceptable to standards and project specifications.

DEFINITIONS AND INTERPRETATION

Words and phrases used in this document shall have the following meaning:

"Employer" means the party who will employ the Contractor and the legal successors in title to the Employer, but not, except with the written consent of the Contractor, any assignee of the Employer.

"Principal Contractor" means the person, firm or company whose tender has been accepted for the execution of the main building contract by or on behalf of the Employer and includes the Contractor's personal representatives, successors, and permitted assigns as the case may be.

"Sub-contractor" means any nominated Sub-contractor or any person, firm or company (other than the

Contractor) named in the Contract for any part of the Works or any person to whom any part of the contract has been sub-let with the consent in writing of the Engineer, and the Sub-contractor' s legal personal representatives, successors and permitted assigns.

"Engineer" means the person, firm or company appointed by the Employer to act as Engineer for the purposes of the Contract and designated as such in the Special Conditions of Contract, or any other Engineer appointed from time to time by the Employer and notified in writing to the Contractor.

"Works" means all Plant to be provided and work to be executed in accordance with the Contract.

"Contract" means these General and Special Conditions of Contract, Specification, Drawings, Schedules, Tender, the Letter of Acceptance and the Contract Agreement (if completed).

"Contract Sum" means the sum named in the Contract Agreement as the Contract Sum.

"Contract Price" means the Contract Sum subject to such additions thereto and deductions therefrom as may be made from time to time under the provisions of this contract.

"Site" means the lands and other places provided by the Employer for the purposes of the Contract.

"Tests on Completion" means such tests to be made by the Contractor before the Works are taken over by the Employer as are provided for in the Contract or otherwise agreed between the Employer and the Contractor.

"**Month**" means a calendar month.

"**Day**" means calendar day.

"**Writing**" means any manuscript, typewritten or printed statement.

"**Foreign currency**" means a currency of a country other than that in which the Works are to be executed.

"**Letter of Acceptance**" means the formal acceptance made by or on behalf of the Employer of the Tender, including any adjustment or variations to the Tender agreed between the Employer and the Sub-contractor.

"**Taking Over**" means when the Works are set in operation for the beneficial use of the Employer or when the Works are available for such beneficial use.

"**Special Conditions of Contract**" means any addition to departure from or amendment of these General Conditions as set out in the Special Conditions of Contract.

"**Tender**" means the Sub-contractor's offer to perform the Works described in the invitation to tender.

Words importing persons or parties shall include firms and corporations.

Words importing the singular only also include the plural and vice versa where the context requires.

The headings and marginal notes in these General Conditions shall not be deemed part thereof or be taken into consideration in the interpretation or construction thereof or of the Contract.

The word "Cost" shall be deemed to include overhead costs whether incurred on or of the Site.

"**Time for Completion**" means the time for completion of the Works or any section or portion thereof as stated in the Special Conditions of Contract and shall be calculated from whichever is the later of:

- the date specified in the Contract;
- the date of receipt by the Contractor of such payment in advance of commencing the Works as may be stipulated in the Contract;

"**Contractor's Equipment**" means all appliances or things of whatsoever nature required for the purpose of completing the Works but does not include plant, materials or other things intended to form or forming part of the Works.

"**Section of the Works**" means the stages or phrases into which the Works are divided for the purposes described and set out in the Specification.

"**Specification**" means the specification annexed to or issued with the General Conditions and modifications thereto made in writing.

"**Drawings**" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer.

ABBREVIATIONS:

Abbreviations referred to in this document shall have the following meaning:

British:

BS British Standard

American:

ARI Air conditioning and Refrigeration Institute

ASA American Standards Association

ASHRAE American Society of Heating, Refrigeration and air conditioning Engineers.

UL Underwriters Laboratories

South African:

AMEU Association of Municipal Electricity Undertakings

CSIR Council for Scientific and Industrial Research

SABS South African Bureau of Standards

SAIEE South African Institute of Mechanical Engineers

1.1. Equipment Installation

1.1.1. In preparing a project design, the Engineer will have contact with suppliers of equipment to allow for such normal information requirements with regard to equipment size, access for installation, access for maintenance, mass, electrical supply, safety precautions etc. that Suppliers might have, in order to ensure proper installation and future safe and optimum operation of such equipment.

1.1.2. As the final selection of equipment is, however, in the hands of the successful Tenderer, and the contract for the supply of equipment is between the sub-contractor and supplier,

it shall be the sub-contractor's responsibility to ensure that the equipment procured will be suitable for the spaces in which it will be installed and that other influences shall not interfere with the safe and optimum operation of such equipment. Particular attention must be given to the aspects of easy accessibility for maintenance and adjustment, and specific safety requirements of particular suppliers.

1.2. Local Representation

1.2.1. Preference will be given to equipment and materials of local manufacture, where such equipment and material meets.

1.2.2. Tenderers shall only offer equipment and materials of a well-known and recognized manufacture, unless prior approval has been obtained from the Engineer.

1.2.3. The continuous successful operation of the system is dependent on good maintenance and the availability of spares. It is therefore important that Tenderers only include for equipment with good local representation who are able to provide an after-sales service.

1.3. Construction Drawings

Three copies of mechanical construction drawings shall be provided.

1.4. Shop Drawings

Three copies of mechanical construction drawings shall be provided.

1.5. Installation Fit

Installation fit is an engineering function and not a system design function. Tenderers shall price in their contract for the required engineering undertaken during the preparation of shop drawings in coordinating services to suit service spaces provided. Such engineering to include co-ordination with other sub-contractors and shall take into account the Principal Contractor's preferred services installation sequence program.

1.6. Supports

The requirements and spacing of equipment and services supports are generally not specified in or shown on the drawings. The Contractor shall allow for sufficient supports required by him for the safe and stable support of all equipment and services installed under this contract. Drawings notes in some instance do give guidelines as to distances between supports.

1.7. Wooden and steel frames and sleeves

Unless otherwise specified in Part V or indicated on the drawings, all wooden and steel frames and sleeves in walls and slabs required for services to be installed after such walls and slabs have been completed, shall be supplied under this contract. Such frames and sleeves shall be handed over timeously to the Principal Contractor to be built into such walls and slabs. The sub-contractor shall ensure that frames and sleeves are of the correct size to suit the services and that the Principal Contractor has detailed and correct information to accurately position such frames and sleeves.

1.8. Supply of Samples

1.8.1. The sub-contractor shall supply samples as listed in the document to the Engineer for approval. Approval of samples to be obtained in advance of mass manufacturing of such items, allowing for sufficient time for approval and to meet the Principal Contractor's installation program.

1.8.2. Samples will only be approved with regard to physical and esthetical aspects and will not relieve the Contractor from his obligations under the contract to meet the specified performance requirements.

1.8.3. Once an item has been approved for manufacture, the approved sample shall be kept on site or at the Engineer's office for future reference. The Engineer shall have the right to reject materials and equipment on site not conforming to the approved sample. Samples shall be in addition to these required for actual installation work.

1.9. Local Altitude

The performance requirements for equipment and systems as specified in Part V of the specification shall be that required for the conditions applicable to the actual site. Adjustments shall be made to equipment ratings to be suitable for the local altitude of the project.

2. PROJECT TECHNICAL SPECIFICATION

2.1. APPLICABLE DOCUMENTATION

2.1.1. The tender drawings as listed in the attached drawing register forms part of the specification.

2.1.2. The following Parts of the Specification which, combined with the drawings, forms the project Specification:

Part 1: General Technical Specification.

Part 2: Project Technical Specification.

Part 3: Schedule of Capacities

Part 1 of this document contains the basic standard technical specifications concerning quality of workmanship, materials and equipment and may well refer to components or requirements which are not part of the project.

Part 2 of this document contains aspects pertinent to this project only. Where any discrepancy occurs between Parts 1 and 2, Part 2 shall have preference.

2.1.3. The latest issue of the following standards and Acts shall be applicable:

SANS Specifications and Regulations

- SANS 10064: The preparation of steel surfaces for coating
- SANS 10400: The application of the National Building Regulations
- SANS 460: Copper and copper alloy tubing
- SANS 1186-1: Symbolic Safety Signs Part I: Standard signs and general requirements
- SANS 10103: The measurement and rating of environmental noise with respect to annoyance and speech communication
- National building regulations and building standards act 103 of 1977 as amended
- Occupation health and safety act 85 of 1993 as amended.
- SANS standards for electrical installations.

2.2. SCOPE OF WORK

2.2.1. The department of correctional services has appointed the department of public works Engineering Services to replace the kitchen equipment at Ficksburg Correctional Centre that was damaged fire.

2.2.2. The kitchen installation includes the following (as indicated on the drawings and as per the Bill of Quantities):

- Phutu pot.
- Oil jacketed pot.
- Deep fryer.
- Bain marie cabinet.
- Potato peeler.
- Extractor canopy.
- Hot plate stove with oven.
- Hot water geyser.
- Sinks.
- Table.
- Hot and cold water supply pipes and fittings.

2.2.3. The installation is to be of a high quality. Only tenderers with a proven track record in kitchen & laundry installations will be accepted.

2.2.4. The contract shall include but not be limited to:

- Supply, delivery and installation of all the equipment, services and systems, as specified, including testing, commissioning, certification and final handover.
- The provision of all necessary wiring from isolators to equipment as specified herein.
- Installation workshop drawings in a scale of not less than 1:50.
- Record "as-built" drawings for the entire kitchen, including wiring schematics and electrical drawings. Drawings shall be issued in electronic format (DWG and PDF) as well as in hard copy format.

- Operating and maintenance manuals (draft copies of the O & M Manuals must be issued for approval at least one week prior to practical completion).
- Removal from site of excess and waste material generated during the works and at the end of each working day.
- Commissioning of all equipment.
- Training.
- Twelve month maintenance and guarantee of equipment.

2.2.5. The entire installation must conform to the requirements of this specification and must be complete in every respect. All items required in order to comply with the specification and to form a complete working system, shall form part of this contract.

2.2.6. All work on site is to be carried out in accordance with the OHS Act as well as in compliance with the site safety regulations and code of conduct. Safety induction training is compulsory and will be provided for the contractor and all his sub-contractors - this will comprise not more than a one day course.

2.2.7. The contractor is to familiarize himself with all the safety requirements, e.g. material data sheets, work risk assessment, scaffolding register and hand tool register that will be required by the client. The contractor shall co-operate fully with these requirements.

2.3. GENERAL REQUIREMENTS

2.3.1. Site supervision by contractor

The contractor is responsible for the supervision on this contract. A complete CV of the person responsible for the site supervision shall be submitted to the engineer. The engineer may require an interview with the proposed supervisor. The final choice of the supervisor shall not in any way alter the final tender amount on this contract. The contractor shall replace the supervisor at his own cost if the aforementioned supervisor is unable to perform his duties satisfactorily. The submission of the supervisor's CV is required only after the contractor has been appointed.

2.3.2. Submissions by contractor

a) The contractor shall take note that all equipment selections approved **(Or not rejected)** by the Engineer shall not free the contractor to comply with the specification.

b) The following information with regard to equipment selections shall be submitted to the Engineer:

- Manufacture, name and model, power requirements, weights, dimensions, etc.
- Diagrams, tables and graphs to explain the functioning of equipment, where applicable.
- Applicable pamphlets or catalogue information (original).
- Name and address of manufacturer and/or distributor.
- Number of years that equipment has been available in RSA.
- Any other relevant information required by the Engineer.

c) The above submissions are required after appointment of the contractor and in accordance with the requirements of the main contract program.

2.3.3. **Marked-up Drawings and Shop Drawings:**

a) Marked-up structural and other drawings: The marked-up structural, architectural drawings and other drawings referred to, shall be submitted as per program and shall include the following information:

- All dimensions and positions of openings and sleeves through both brick and concrete building structures required to fit the services
- Dimensions and positions of concrete plinths (machine bases) required to locate equipment. The point loading and any forces generated by equipment shall also be shown on these drawings.
- Installation positions of wooden, glass fiber, or steel frames or sleeves to be built in.
- Any other requirements in respect of water supply points, drain points, power supplies, etc. that may be required.

b) Shop Drawings and As-built Drawings

Where equipment is indicated on the shop drawings, the shop drawings must also be signed by the supplier of such equipment approving the application, positioning and installation details of his equipment. Shop drawings shall:

- Be approved and signed by DPWI's Engineer.

- Indicate required service space around equipment (marked-up).
- Indicate operating mass of equipment.
- Indicate electrical operating and motor loads.

c) The successful contractor shall verify that provision has been made for all openings, wooden frames, sleeves, etc. as described above and that such openings, frames, etc. are in the correct position before any concrete casting or building work is done.

2.3.4. **Installation Fit**

Refer to 1.5.

2.3.5. **Supports**

Refer to 1.6 No supports are shown on the drawings nor are they billed. The contractor shall allow for sufficient supports as specified.

2.3.6. **Performance of Systems and Equipment**

The systems, equipment and layout designed by the Engineer shall conform to his requirements with regard to installation and performance in accordance with this specification. This suggests that the performance of the equipment in the system supplied and installed by the contractor, shall be in accordance with the design and performance figures as published by the manufacturers and/or suppliers.

All equipment is to be de-rated for altitude and design parameters as defined in this document.

The efficiency of the design of the specified system(s) is not the responsibility of the contractor. It is, however the responsibility of the contractor to see to it that the quality of the workmanship and the installation of the equipment shall conform to the requirements of the Engineer and to the satisfaction of the manufacturer and/or supplier.

It is furthermore accepted that the contractor has assured himself that all equipment supplied and installed under this contract shall perform within the given limits, as stated by the manufacturer/supplier, to conform to the specification.

2.3.7. Protection, Cleaning, Adjustments, Commissioning, Test and Operating Maintenance Manuals

The contractor shall be responsible for the running of the installation, including the maintenance and replacement of worn parts, from the start-up date until it is handed to the client.

The installation and systems as specified in this document shall be maintained for one (1) year after the final hand over to the client. The maintenance shall include **twelve monthly maintenance visits** and the servicing and maintenance of all equipment installed as part of this contract. Maintenance logs shall be signed by the Client. Cleaning of the filters (if required) on a monthly basis shall be included. The cost for the one year maintenance shall be included in the tender price.

The contractor shall provide the entire operating and maintenance manual in electronic format. The contractor shall in addition provide three (3) hard copies of the entire manual. Drawings shall be in DWG format.

2.3.8. Language

All notices on equipment shall be in English.

2.3.9. Standard Specification

The contractor shall in all instances refer to the standard specifications as it forms an integral part of this document. This includes Part 1 of this specification, DPW and SANS specifications.

2.3.10. Safety, Health and Quality (SHEQ) requirements

Health and safety plans shall be submitted and shall be maintained as per the required standards. All required safety signs and notices shall be displayed and maintained for the duration of the contract. The contractor shall have a qualified health and safety officer on site at all times. The works will be suspended by the Client and/ or Engineer if the contractor does not adhere to the standards and OHS requirements.

All work shall be carried out in accordance with the applicable SANS standards. The Engineer reserves the right to reject any material or work done if it does not conform to the standards.

2.3.11. **Programme**

Refer to the main contractor's programme. It is important to note that completion of this project is critical to the Client's business plan. The construction period is therefore to be adhered to (and improved if possible) as no extension to the contract will be granted.

The tenderer must make allowance for working overtime, or on Saturdays and Sundays as or if required, to meet the program.

A pre-tender site inspection will be arranged to establish actual site conditions and restraints. The **site inspection is compulsory** and the contractor is to confirm to the engineer, with submission of the tender offer, if he has any concerns regarding the implementation of the project and meeting the required construction program.

The successful contractor shall submit a detailed Work break down structure and Gantt chart programme two weeks after appointment. This programme shall indicate all activities, including that of all sub-contractors, if any. The programme shall include activities such as drawing and equipment submittal dates and equipment order and delivery dates. An update programme shall be submitted on a fortnightly basis and shall be accompanied by a progress report.

Delays caused by sub-contractors shall be for the contractor's account.

2.3.12. **Co-ordination**

The contractor shall co-ordinate and ensures that his sub-contractors do not damage the work of each other. The cost of repair to other services will be borne by the contractor. The client and engineer shall alone, determine the repairs required caused by the contractor. The contractor shall ensure that all services are fully coordinated between his sub-contractors. The contractor is responsible for the provision and installation of conduit,

wire ways, trunking, power points, gas, water and drain points etc. as required for each discipline.

2.4. BUILDERS WORK

2.4.1. Builders Work

Builders work (if any) forms part of this contract. The construction site shall be kept clean and tidy at all times.

2.4.1.1. Builders work shall include, inter alia, the following:

- Plinths (where required)
- Water proofing (where required)
- Painting
- Floor and wall tilting
-

2.4.2. Temporary electrical supply

Temporary power, required at any stage during the project, shall be provided by the contractor. The contractor shall also provide temporary lighting if required.

2.5. ELECTRICAL INSTALLATION

The scope of the electrical work consists of making off and connecting kitchen equipment to isolators or SSO's provided by the electrical contractor in the vicinity of the equipment. This shall include stainless steel flexible wire ways and supports where required.

2.6. KITCHEN EQUIPMENT INSTALLATION

2.6.1. General

Any equipment, conduit or pipe supports that may be required must be allowed for. All kitchen equipment shall be of well-known manufacture, represented in South Africa for at least 15 years.

Unless otherwise specified, all stainless steel used in the construction of units/equipment shall be of type 304 not less than 1,2mm thick. The construction of the units generally is

to comply with the Standard Specification for Stainless Steel Sinks for Institutional Use, SANS 907.

All exposed surfaces of stainless steel to be satin finished, except where otherwise specified. The finish shall be of approximately 220 to 240 grit.

The units, except where specified as being movable or mobile, must be securely fixed to floors either by non-ferrous bolts in the surface bed or by substantial non-ferrous screws into plus in the floor.

All welding is to be done in the most up-to-date manner and to be cleaned off flush and smooth where exposed.

2.6.2. Potato peeler

The potato peeler shall be made of stainless steel type 304 and be designed for floor mounting and with driving motor mounted integrally with the unit.

The unit shall be fitted with a peel expeller. The motor shall be a three phase unit connected to a suitable reduction gearbox. Suitable starters and overload protection shall form part of the unit.

2.6.3. Hot plate stove with oven

The Range shall be of modular design with three (3) hot plates and an oven. The Body and door shall be manufactured of grade 430 stainless steel. The oven panels shall be stainless steel.

The Range shall be mounted on four (4) +- 150mm high stainless steel legs with adjustable feet.

Hot plate top: The top shall be solid with a total cooking surface of 0,620m² (min); 12kw total load (min). The plate shall be controlled by a heavy duty three position switch.

Oven: The oven shall have a 145 litre capacity and shall be suitable to accommodate four full size gastronome pans. The oven door shall be a thermally insulated, stainless steel, counterbalanced, drop down door. The oven shall have 6kW elements which shall be thermostatically controlled from 50°C to 300°C. Two oven racks shall be provided with the unit. The oven shall be fitted with an oven light and two grid shelves.

2.6.4. Steam jacketed stationary cooking pots: electrically or direct steam heated: phutu pots

2.6.4.1. Construction

The pots shall be constructed entirely out of 304 stainless steel and shall consist of a jacketed vessel supported on 4 legs with adjustable feet.

A hinged domed lid manufactured out of 1,6mm 304 stainless steel shall be fitted to the pot, opening to left or right side. The lid shall be counter balanced and the handles extended below the lid to prevent the operator being burned.

The pot shall be hemispherical in shape with the outer and inner steam jackets constructed out of 2,5mm and 3,0mm thick type 304 stainless steel. Three quarters of the pan shall be jacketed. The rim of the pot shall be re-informed by means of a welded-on ring of 32mm of 304 stainless steel pipe.

A 32mm nominal bore 304 stainless steel drain pipe shall be installed to ensure complete drainage of the pot shall be fitted to the bottom of the inner jacket.

A 32mm screwed full bore stainless steel ball valve operated by hand lever shall be fitted to the drain pipe. An inclined step shall be provided above the valve for protection.

A control panel welded to the sidewall near the rim on the side opposite the lid hinge shall be provided to house water and steam control valves and in the case of electrically heated pots, the electrical equipment and wiring. All operating controls shall face the front of the pot.

Electrical equipment and wiring shall be mounted within a separate waterproof compartment.

2.6.5. Bain marie cabinet

The Bain marie shall be made of stainless steel type 430 and be designed for floor mounting and have integral heating elements to keep food warm.

The equipment shall have a minimum of three sliding doors on the cabinet.

2.6.6. Deep fryer

The deep fryer shall be made of stainless steel type 430 and be designed for floor mounting and it must have double pan.

Each of the pans shall have a volume of 20 Litres and the equipment shall have two (2) stainless steel front doors and side panels. The equipment must be equipped with an oil indicator as well as a safety thermostat pre-set at 220°C.

2.7. GENERAL PROJECT EXECUTION

2.7.1. Project Administration

Particular attention must be paid to the requirements of Part 2 of the Specification. Progress payment certificates will not be processed if they are not presented in format as agreed with the engineer.

Any work carried out or equipment installed which has not been approved via official workshop drawings or engineering submissions, may be rejected if non-compliant with specification requirements.

Tenderers shall ensure and confirm that the main contractor's construction program is acceptable and within his capabilities to adhere to, as no extension of time will be granted by the Client.

2.7.2. EXTENDED GUARANTEE

The contractor shall allow for the extension of the guarantee of any equipment if any of such equipment is not guaranteed by the supplier for 12 months after the official handover.

2.7.3. THE OCCUPATIONAL HEALTH AND SAFETY ACT

The contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2003 as promulgated in the Government Gazette No. 25207 and Regulation Gazette No 7721 of 18 July 2003. Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

The tendered sum shall include full compensation to the Contractor for compliance with all the requirements of the OHS Act and the construction Regulations 2003 at all times during the construction stage.

The successful tenderer shall provide the Engineer with a complete breakdown of this tendered sum.

The amount relating to compensation for compliance with the Act will be paid to the Contractor in equal monthly amounts for the entire duration of the contract period.

3. SCHEDULE OF CAPACITIES

3.1. GENERAL

All kitchen equipment shall be selected to operate normally under the following design conditions.

3.2. KITCHEN EQUIPMENT

Below is a list of the kitchen equipment to be installed at Ficksburg Correctional Centre.

3.2.1. Potato peeler

General	Unit	Description
Item no	-	1
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (wxhxd)	mm	750x1270x900
Mass	kg	87
Material	-	Stainless Steel
Capacity	kg	30
Power Supply	kW/V/P/Hz	1.5/220/3/50

3.2.2. Bain marie

General	Unit	Description
Item no	-	2
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (wxhxd)	mm	1785x850x900

Mass	kg	252
Material	-	Stainless Steel
Capacity	-	5 divisions
Power Supply	kW/V/P	5.5/380/3

3.2.3. Hot plate stove with oven

General	Unit	Description
Item no	-	3
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (wxhxd)	mm	1000x850x910
Mass	kg	
Material	-	Stainless Steel
Capacity	-	3 plate with 145litre oven
Power Supply	kW/V/P	18/400/3

3.2.4. Oil Jacketed pot

General	Unit	Description
Item no	-	4
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (dxh)	mm	1100x1000
Mass	kg	180

Material	-	Stainless Steel
Capacity	-	225 litres
Power Supply	kW/V/P	18/400/3

3.2.5. **Steam phutu pot**

General	Unit	Description
Item no	-	5
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (dxh)	mm	1100x1000
Mass	kg	180
Material	-	Stainless Steel
Capacity	L	150
Power Supply	kW/V/P	18/400/3

3.2.6. **Commercial Double sink**

General	Unit	Description
Item no	-	6
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (wxhxd)	mm	2250x900x650
Material	-	Stainless Steel 304
Capacity	mm	650mm deep

3.2.7. Shelf

General	Unit	Description
Item no	-	7
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension (wxhxd)	mm	1200x900x650
Material	-	Stainless Steel 304
Mass	kg	38
Capacity	mm	-

3.2.8. Deep fryer

General	Unit	Description
Item no	-	8
Manufacture/Supplier	-	TBA
Model Number	-	TBA
Dimension ((wxhxd)	mm	1015x900x615
Mass	kg	78
Material	-	Stainless Steel
Capacity	L	2x20L
Power Supply	kW/V/P	30kW/380/3

3.2.9. Extractor Canopy

General	Unit	Description
Item no	-	10
Manufacture/Supplier	-	TBA

Model Number	-	TBA
Dimension ((wxhxd)	mm	4700x400x2400
Capacity	l/s	2820 l/s
Material	-	Stainless Steel
Power Supply	kW/V/P	0,8kW/380/3

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TECHNICAL SPECIFICATIONS

WET SERVICES

FICKSBURG CORRECTIONAL CENTRE – REPLACEMENT OF KITCHEN EQUIPMENT

WCS: 056436

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1. INTRODUCTION

The purpose of this document is to outline the scope of work and specification for the wet Services installation at the Ficksburg Correctional Centre, located at Ficksburg in the Free State province.

The wet services contractor is expected to communicate with main contractor on program and site co-ordination issues that could arise on this site. The wet services contractor must also be aware of sanitary fittings which is considered an architectural component and must be allowed for in the installation. As far as possible equipment should be sourced from South Africa to remove issues that shall arise related to exchange rate and transport.

2. SCOPE OF WORK

The scope of work is the installation of cold water reticulation and hot water reticulation within the building. The installation shall be from the new incoming line of the civil connection.

3. HOT WATER SYSTEM

Hot water supply is provided by hot water cylinders using their internal heating elements for the ablutions in the old and new buildings, kitchen in the old building, kitchenette in the old building, and bathrooms and laundries in the houses on site. The position of the equipment and electrical requirements are indicated on the drawings, however the wets sub-contractor is required to coordinate with the electrical sub-contractor on site.

3.1. Geysers

The geysers shall be a mounted type with insulation and suitable safety valves. Each geyser shall come with the corresponding heating element, openings for safety valve, cold water inlet and hot water outlet. The geyser shall contain all necessary statutory requirements of a pressure vessel including safety valve and pressure gauge. They should be rated to handle a pressure of 600 kPa. The hot water cylinders shall be able to supply hot water up to 60°C maximum and be able to operate at 5°C ambient temperature.

3.2. Heat Pump

The heat pump shall be connected to the electric geyser and serve as a the primary hot water supply source. The elements of the geyser should only be in operation when the heat pump is not operational.

4. PIPING

The pipe size indicated on the drawing are sized to SANS 460 class 2 copper piping. The piping shall be mounted on purpose made supports not exceeding those indicated on the SANS specification.

The proposed support detail must be sent to the wets engineer for approval before manufacture.

5. VALVES

Shut-off Valves – These can either be ball or gate valves with rubber seat and suitable for water and temperature up to 60°C.

Non-Return Valves – These can be swing type check valves and suitable for the process conditions defined.

Strainer valves – Y type strainer valves are specified for this project and process requirements.

All suggested valves must be sent to engineer for approval before procurement.

6. DRAINAGE INSTALLATION

The drainage installation will include a uPVC pipe network complete with bends, joints, Y & T-piece fittings, junctions, coupling and connection to sanitary and brassware fittings. The installation will connect to the civil battery limit.

At points indicated on drawing where the drainage stack goes through the roof, flashing will be applied at that point and treated to manufacturer specification to make area waterproof.

Drainage to be provided to HVAC units. HVAC drainage is to tap into the closest wets drainage point.

7. APPROVALS

All equipment or material offered shall be from the same manufacturer.

Approval by other organisations shall if it is deemed satisfactory, be granted by the Engineer, on application.

8. ALLOCATED SPACE

The physical sizes of the equipment offered shall be suitable for the locations shown on the drawings and shall be positioned in such a manner to ensure reasonable access all around the equipment for maintenance purposes, as recommended by the suppliers of the equipment, or as per any relevant statutory requirements.

Tenderers are to advise the Engineer at close of tender, in the form of a letter enclosed with the tender documents, should any of the plant areas not be adequate to accommodate their equipment. No claim of whatever nature, arising out of the Tenderer's failure to do so, will be entertained.

9. COORDINATION WITH OTHER TRADES

The contractor shall plan his work in advance and shall coordinate all space requirements in conjunction with the Principal Contractor and electrical contractor, especially where other trades share the same space. Where conflicts occur, the contractor shall request clarification from the Architect and/or Engineer.

10. BUILDER'S WORK

The successful tenderer shall, within 14 days of acceptance of this tender, provide the Engineer via the Principal Contractor with all Builder-provided work such as holes, machine bases, chases, recesses, service ducts, wooden sleeves and frames, etc., as herein identified being provided by others and which will be required to accommodate his services.

No structural element shall be erected and no holes shall be cut or made through the structure and no items of equipment shall be supported from the structure without the prior approval of the Structural Engineer or at least the Principal Contractor. Where foundations, machine bases, drained ducts, floor channels, cable sleeves, etc., have been identified herein to be provided by others, the contractor shall liaise and assist the Principal Contractor or others in setting out, locating, etc., of these items.

The contractor shall be responsible for the cost of all cutting, patching, making good, etc., as may be required to accommodate his work, due to late or wrong information been given by the contractor.

11. DRAWINGS

Any drawing which accompanies this specifications illustrates schematics and do not show exact dimensions or positions of equipment. Tenders must satisfy themselves that the equipment offered by them shall fit in the available space and can be positioned so that access for maintenance, repair or removal is not encumbered.

Note: Final dimensions must be taken on site before any equipment or material is either purchased or manufactured.

12. SHOP DRAWINGS

Within 14 days of being awarded the contract the contractor will produce a complete layout in the form of a shop drawings with all the required service connections detailed and dimensioned. Any other shop drawings required to effect the installation shall be produced as required. At the end of the contract, three full sets of "as built" drawings and manuals shall be provided for this contract.

The successful tenderer shall before commencing manufacture of any of the equipment provide a dimensioned shop drawing for approval.

Approval of the contractor's drawings in no way indemnifies him from being responsible for the correctness of the drawings and satisfactory operation of the installations and for equipment.

13. WATERPROOFING

Where any work pierces waterproofing, including waterproof concrete and roofing, the method of installation shall be approved by the Architect and/or Engineer before the work is carried out.

All necessary sleeves, caulking, skirts, soaker sheets, flashing, etc., required to make the openings absolutely water-tight shall be provided by the contractor, or shall be handed over to others for installation.

14. ALTERNATIVE MANUFACTURE AND PRICES

The tendered Subcontract Sum shall be for work and materials as specified herein. Should the tenderer wish to offer alternative equipment, etc., the details shall be submitted in a covering letter accompanying the tender and clearly identifying the extent, quality and advantages of the alternative(s).

Acceptance of the alternative(s) shall be at the discretion of the Engineer.

Any price submitted for alternatives, variations, extras, saving, omissions, etc., whether prior to tender acceptance or during the construction stage of the works shall be taken to include the applicable Value Added Tax (VAT), unless clearly identified otherwise at the time of its submission.

15. MATERIALS, WORKMANSHIP AND EQUIPMENT OFFERED

Materials, workmanship and equipment offered shall be as specified and comply with the specification.

All material and equipment shall be new, free from rust, defects, undamaged and suitable for the purpose for which it will be used. Material shall comply with the latest issue of the relevant SANS specifications where applicable.

If any material or workmanship is not to the satisfaction of the Department, it shall be rectified and /or replaced at the contractor's cost and all rejected material shall immediately be removed from the site. The contractor is responsible for the correct and complete eruption of the installation and inspections executed by the Department do not exempt the contractor of this obligation.

The term 'approved equal', as used herein, shall mean an item generally the same as the specified one, but of different manufacture. It shall meet all the specified parameters and approval for its use shall be obtained in writing from the Engineer.

16. STATUTORY AND REGULATORY REQUIREMENTS, DOCUMENTATION AND DRAWINGS

This supplementary specification is to be read as forming part of one or more Department of Public Works and Infrastructure Standard Specifications. The Department Standard

Specifications for the Electrical Installations and Electrical Equipment pertaining to Mechanical Services shall also apply.

All equipment and installations shall comply with the requirements of the Occupational Health and Safety Act.

Where conditions are at variance this supplementary specification shall have preference over both the standards specifications and the drawings.

The Complete works shall comply in particular with the specifications and requirements of:

16.1. SANS 10252-1: Water supply to buildings
16.2. SANS 460: Plain-ended solid drawn copper tubes for potable water
16.3. SANS 241-1: Drinking water Part 1: Microbiological, physical, aesthetic and chemical determinands
16.4. SANS 241-2: Drinking water Part 2: Application of SANS 241-1
16.5. SANS 10140: Identification colour marking
16.6. SANS 15875: Plastics piping systems for hot and cold water installations
16.7. SANS 10142: The wiring of premises
16.8. SANS 10400-A: General principles and requirements
16.9. The Occupational Health and Safety Act, Act 85 of 1993, as amended.

This detailed specification and the drawings form part of the tender documents.

Deviation from this specification shall immediately be reported to the Engineer.

The works shall furthermore comply with all the requirements and bylaws of the relevant local authority. Where the proposed layouts, or any of the materials specified, etc., do not comply with these regulations, the matter shall immediately be brought to the attention of the Engineer.

Certificates of approval/ inspection from the local and/or statutory authorities shall be submitted to the Engineer before the final payment certificate will be issued.

The contractor shall furthermore issue all notices and pay all fees required to be given or paid in terms of statutory and regulatory requirements and the relevant local authority's bylaws.

17. SANS SPECIFICATION

All references to the South African National Standards and Codes of Practice shall be deemed to be references to the latest issues of such specifications and codes.

18. GUARANTEE AND MAINTENANCE

The tenderer shall guarantee equipment for a period of twelve months from the date on which the installation /fixing of all the units is satisfactorily completed.

The contractor shall repair, at his own cost, defects that may become defective during the guarantee period due to the inferior materials or workmanship (fair wear and tear excluded). Any part so replaced, shall be guaranteed for a further year from the date of replacement.

The contractor shall provide free maintenance for a period of 1 (one) year following the hand over to the client. The maintenance shall include for all management, labour, lubricating materials, cleaning materials and transport

19. SUBMISSION BY CONTRACTOR

The contractor shall take note that all equipment selections approved by the Engineer shall not relieve the contractor of his obligations to comply with the specification.

The following information with regard to specified equipment shall be submitted to the Engineer:

- Manufacturer, name and model
- Motor capacity
- Power Consumption
- Diagrams, tables and graphs detailing the performance of the equipment where applicable.
- Applicable pamphlets or catalogue information
- Name and address of manufacturer and/or distributor
- Number of years that equipment has been available in RSA
- Any other relevant information required by the Engineer

The above submissions are required after the appointment of the Contractor and in accordance with the requirements of the main contract programme.

20. COMPREHENSIVE CONTRACTS AND SUB-CONTRACTORS

Only specialists sub-contractors who have previously successfully completed mechanical installations of the extent and type specified in this document shall be considered.

Note: No change in make, type, or capacity of equipment specified in the schedule of particulars shall be allowed after acceptance of the tender without the written approval of the Department.

21. SUPPORTS

No supports for the piping etc. are shown on the drawings. The Contractor shall allow for sufficient supports as specified in the Standard Specification for Plumbing & Drainage installations.

22. PERFORMANCE OF SYSTEMS AND EQUIPMENT

The systems and equipment layout designed by the Engineer shall conform to the requirements with regard to installation and system performance. This suggests that the performance of the equipment in the system supplied and installed by the contractor, shall be in accordance with the design and performance figures as published by the manufacturers and/or suppliers.

The efficiency of the design of the specified system is not the responsibility of the contractor. It is, however, the responsibility of the contractor to ensure that the quality of the workmanship and the installation of the equipment shall conform to the requirements of the Engineer and to the supplier/manufacturer.

It is furthermore accepted that the contractor has assured himself that all equipment supplied and installed under the contract shall perform within the given limits, as stated by the supplier/manufacturer, conforming to the specification.

23. PAINTING

All equipment, where required, shall be painted.

The colour of the materials and equipment shall be painted in accordance with SANS 10140: Identification colour markings Part 3: Contents of pipelines.

24. CORROSION PRECAUTIONS AND FINISHES

All materials such as brackets, hanger, etc., shall be shot-blasted, pre-painted, galvanised or treated against corrosion prior to their delivery to site. Any work that will require site cutting, etc., i.e. exposure of the bare steel to the atmosphere, shall immediately be treated by cold galvanising, painting, etc.

The method of treatment for the above shall depend on the particular environment and type of surface to be coated. The surface preparation, primer coats, finishing coats, etc. shall therefore be in accordance with those specified by reputable paint manufacturers.

All black steel piping, support brackets, hangers, etc., installed inside the building shall be treated with two coats of corrosion inhibitor paint prior to installation. The first coat shall be allowed to dry completely before the next coat is applied. A further coat of corrosion inhibitor shall be applied after installation and allowed to dry completely. Two coats of enamel paint, to the Architect or Engineer's specification, shall finally be applied. The first coat shall be allowed to dry completely before the next coat is applied.

All black steel piping, support brackets, hangers, etc., exposed to the weather shall be hot dipped galvanised.

All duct, supports, equipment and materials exposed to view (i.e. not in shafts, false ceiling, bulkheads, etc.) shall be cleaned, primed and then finished with two coats of enamel paint to the Architect or Engineer's specification. Each application shall be allowed to dry completely before the next coat is applied. The only exception to these stipulations shall be in the case of subcontracts, where the contractor shall only apply the primer coats and the Principal Contractor the finishing coats.

Colour coding shall follow the coding currently used on site. If no colour coding is in use, or in the case of new installations, the latest SANS 10140 Standards shall be used.

Plant and equipment, pre-painted or pre-primed at the factory shall be examined to ensure that the paint finishes are in a good condition. If not satisfactory, priming paint or finishing coats shall be removed where necessary, the surface cleaned to remove rust, and all such surfaces re-primed and finished in two coats of high quality paintwork to match the original.

The contractor shall fix black on white ivorine labels to all items of equipment (machinery, fans, pumps, electric heater batteries, humidifiers, air handling units, etc.), as well as to all active valves (motorised and solenoid) and major isolating valves.

The labels shall be screwed or pop-riveted to the equipment and attached to the valves with steel cables. The lettering shall not be less than 10 mm in height and the wording shall be

approved by the Engineer. The wording and tag numbers shall be the same as those used in this specification and indicated on the drawings.

25. DAMAGE

The tenderer will be held entirely responsible for any damage which may occur to equipment during the transportation, setting into position and fixing and must make good any such damage at his/her own risk.

No patching or repairing of damaged units will be allowed unless such damage can be completely effectively repaired and to the entire satisfactions of the Representative/Agent.

26. TUITION

The contractor shall provide capable instructor/s to train the client's personnel. These instructor/s shall be available for a total period of 1 (one) working day (eight hours) after the system has been commissioned and handed over to the client. The Operating and Maintenance Manuals shall be in possession of the client before the training commences.

27. TENDER SUBMISSIONS

Tender submissions shall conform strictly to the specification requirement. Tenders that are not in accordance with the specification will not be considered.

28. COMMISSIONING

Commissioning of the works shall form part of the Subcontract. Commissioning shall be meticulous and all procedures as stipulated by the suppliers of the equipment shall be strictly adhered to.

The contractor shall prepare detailed commissioning schedules well in advance of the programmed practical completion inspection date.

The schedules shall make allowance for all measurements that will be required, checking of operational and safety set-points, test results, etc., and shall be submitted to the Engineer for approval prior to the start of commissioning.

The contractor shall submit the completed schedules to the Engineer for checking after commissioning has been completed, and prior to the practical completion inspection.

The contractor is forewarned that the Engineer will under absolutely no circumstances deviate from the above procedure. The Engineer furthermore reserves the right to refuse to carry out the practical completion inspection until the contractor has complied with the above stipulations. The contractor shall accept this reserved right by the act of tendering.

Each task in these schedules shall be countersigned by the contractor's Commissioning Engineer to ensure that any discrepancies between site and commissioning conditions/data can be clarified.

All piping systems to be pressure tested to 1.5 times working pressure i.e. 900 kpa. Cold commissioning must be witnessed by the engineer of the project.

Hot commissioning must be undertaken with the relevant suppliers present to ensure final checking and guarantees are in place.

The minimum commissioning requirements are:

Initial visual check

- Correct models, types, etc. provided.
- Equipment located in correct positions and parallel to building lines unless otherwise specified.
- Shipping fasteners, clamps, etc. removed or released.
- Joints tight and correctly fitted.
- All fasteners in position and tight.
- Coil piping correct configuration. (Counter flow, IN-at-the-bottom, OUT-at-the- top, etc.).
- Existence of sufficient and where applicable correctly fitted bleed-off, vent valves, drains etc., as specified. (Both at components and in pipework).
- Thermal expansion and contraction allowances.
- Access panels provided and are hinged complete with handles, patches, locks etc.
- Natural free movement of rotary/moving equipment.
- Proper isolation of rotary/moving equipment (check canvas collars anti-vibration mounts, flexible couplings/rubber mounts, etc.).
- Soundness and alignment of general supports.
- Grommets provided against chaffing at all pipe cables, etc. penetrations through housings etc.

- Installation workmanship and finish.

29. OPERATING AND MAINTENANCE MANUALS

Three sets of operating and maintenance manuals shall be prepared by the contractor. These manuals shall be submitted to the Engineer for approval 1 week prior to the programmed date for the practical completion inspection.

Tenderers are to note that the said practical completion inspection shall not be carried out prior to the approval of these operating and maintenance manuals.

The manuals shall be properly bound and titled. Each set shall consist of 4 sections. Each section shall have the following sub-sections:

Section 1 - Operation

Introduction:

Short description of the complete system to familiarise laymen with the system lay-out and operation.

Detailed description:

A detailed description of each system and its equipment, complete with schematic drawings. The purpose of this system is to explain the intended operation of each system and item of equipment to technical personnel. Detailed descriptions of the operation, set-points, adjustments, etc., are thus to be included.

Section 2 - Commissioning data

Schedules of data:

Detailed schedules of commissioning data of all the systems shall be included in this section for future reference. These schedules shall include, amongst others, air flow rates, major equipment power draws, pressure drops, etc.

Section 3 - Maintenance

Schedules:

This section shall contain detailed maintenance and service schedules for the complete installation.

Equipment details:

This section shall contain manufacturers' brochures, spare parts lists, etc., of all the items of equipment.

List of suppliers:

The list of suppliers (complete with addresses and telephone numbers) for each item of equipment shall be included in this section.

Section 4 - Drawings

As-built drawings:

A complete set of as-built drawings shall be enclosed in this section.

30. DRAWINGS

The following drawings form part of this document:

No	Description	Drawing Number
1	KITCHEN- WET SERVICE LAYOUT	056436-M5002-1

public works
& infrastructure
Department
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

NATIONAL DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

TECHNICAL SPECIFICATIONS

FIRE PROTECTION SERVICES

FICKSBURG CORRECTIONAL CENTRE

WCS: 056436

TABLE OF CONTENTS

1. INTRODUCTION

The purpose of this document is to describe the scope of works required for the fire protection service at Ficksburg correctional centre in the Free State province.

The scope of the successful bidder shall be described in this document and shall be referred to as the Fire Contractor (FC).

This document describes the supply and installation of the auxiliary protection, associated signage and interface with the civil connections.

This document must be read in conjunction with the reference drawings and bill of quantities.

The successful fire contractor will be the sub-contractor to the main building contractor on site.

The successful fire contractor must ensure that they are able to meet the program dates of the main contractor including commissioning and hand-over.

2. SCOPE OF WORK

The scope of work is the installation is fire protection equipment, fire piping and fire signage. The piping installation shall be from the fire incoming line of the civil connection.

3. WORK, PLANT, EQUIPMENT AND SERVICES ETC. EXCLUDED

The items of plant, equipment and work listed hereunder are specifically excluded from the scope of the contractor's obligations.

The tenderer will however furnish full details in the tender data sheets of any further items of equipment, material and work not provided for in its tender

List of exclusions;

- Tap off from civil water line
- Underground piping from communication line into site and associated fittings
- Detection (Manual call points)
- Emergency lighting

All items of plant, equipment and work not listed above and in the tender data sheets as being excluded, will be deemed to be included in the tender and / or contract prices.

4. WORK, PLANT, EQUIPMENT AND SERVICES ETC. INCLUDED

This Specification provides and includes for;

- The design, manufacture, inspection, testing, supply, packing, forwarding and delivery of plant, equipment and materials to the site, including the payment of all freight, insurance, import, customs, excise and other duties, levies, forwarding, railage and all other transportation and delivery charges.
- The furnishing of "know-how", for the successful operation/functioning of the plant/equipment/process.
- Management of manufacturing and delivery of piping, hydrant fittings, hose reels and fittings, extinguishers and fire signage.
- Interface with main building contractor and civil contractor during installation and commissioning.
- The supply and delivery of commissioning spares.
- The supervision of and responsibility for the commissioning including preliminary trials, final testing, starting, setting to work, proving and handing over to Client of all plant, equipment and materials in full working order under the stated operating conditions and complying with the performance and other guarantees specified.
- The supply of all specified operating, training and maintenance information including complete parts data, parts manuals (if applicable) and drawings as specified.
- The remedy of the plant and equipment during the "Defects Liability Period".
- The supply of all services, information and data.
- Any other items not covered by the foregoing, but forming part of the contractor's obligations and responsibilities.

5. GENERAL DESCRIPTION: FIRE PROTECTION SYSTEM

The General Description must be read in conjunction with the bill of quantity and relevant drawings.

5.1. Piping

The FC scope with respect to the piping begins at the underground fire water take-off points. The take-off position is marked up on the fire drawings, if the suggested take off point is

deemed unsuitable, the FC must notify the Engineer immediately, so that a new take off point can be determined. The underground take-off point must be from a dedicated fire line.

Piping to be SANS 62-1/2 Medium Black steel and are to be painted signal Red (A10) as per SANS 10140-1 and to be treated as per paint supplier specification. Piping will contain directional arrows indicating flow of water. The system is to be a wet system.

The methodology of paint application procedure to be submitted for approval prior to application.

The FC shall be responsible for the HDPE flange adaptor and associated steel SANS 1123 1600/3 mating steel flange which will be welded onto associated medium black steel pipe.

The above mentioned connection and all underground steel pipes are to be wrapped in high adhesive petrolatum tape.

Take offs for Hydrant systems shall be 100 NB steel pipe.

Take offs for Hose reel only lines are to be 32 NB or 25 NB steel pipe sizes as indicated on fire drawings.

Pipes are to be supported from the wall soffit or roof truss with rubber encased clamps. 32NB piping is to be supported at every 3.0 m on vertical runs and 2.4 m on horizontal runs. 25 NB piping is to be supported at every 3.0 m on vertical runs and 2.4 m on horizontal runs. 100 NB piping is to be supported at every 5.0 m on vertical runs and 3.0 m on horizontal runs.

Routing of piping to be confirmed on site with professional team to ensure aesthetically pleasing finish.

Piping will be flushed and pressure tested before commissioning.

5.2. Hydrants

Hydrants and boosters will to be installed on the site at positions shown on the fire drawings.

Hydrants to be in line with SANS 1128-1.

5.3. Hose reels

30m long Signal Red fire hose reels will be installed on the site at positions shown on the fire drawings.

5.4. Extinguishers

4.5 kg DCP type and/or 5 kg CO_2 type fire extinguisher will to be installed on hook or placed within a fire box. Fire extinguishers to comply with SANS 1910, Portable refillable fire extinguishers. The procurement of the box by the FC or Architect will be confirmed prior to the commencement of the installation.

5.5. Fire Signage

Photo luminescent fire signage will be installed for escape routes, escape direction arrows, hose reels, hydrants, and red directional arrows.

Size of signage to be in line with SANS 1186-1/5 and ensure visibility from 18 m.

5.6. General

The contractor will as part of the contract also allow for:

All the foregoing will be carried out by the Contractor in accordance with the Specification and the other contractual documentation to complete the Contract Works within the Contract Program and at the Contract Price stated in the Contract.

The whole of the Contract Works will be complete in every respect, ready for operation and continuous production at full load. Should any part or parts of the plant/ work/ services/ information which may be necessary for the satisfactory operation and maintenance of the plant/ equipment be omitted by the Contractor, such items will be provided expeditiously by him free of all extra cost to the Client.

6. APPROVALS

All equipment or material offered shall be from the same manufacturer.

Approval by other organisations shall if it is deemed satisfactory, be granted by the Engineer, on application.

7. BATTERY LIMITS

7.1. Civil

- Underground tap off from fire water civil line.
- Associated flange and steel mating flange is in the scope of the FC.

8. ALLOCATED SPACE

The physical sizes of the equipment offered shall be suitable for the locations shown on the drawings and shall be positioned in such a manner to ensure reasonable access all around the equipment for maintenance purposes, as recommended by the suppliers of the equipment, or as per any relevant statutory requirements.

Tenderers are to advise the Engineer at close of tender, in the form of a letter enclosed with the tender documents, should any of the plant areas not be adequate to accommodate their equipment. No claim of whatever nature, arising out of the Tenderer's failure to do so, will be entertained.

9. COORDINATION WITH OTHER TRADES

The contractor shall plan his work in advance and shall coordinate all space requirements in conjunction with the Principal Contractor, especially where other trades share the same space. Where conflicts occur, the contractor shall request clarification from the Architect and/or Engineer.

10. BUILDER'S WORK

The successful tenderer shall, within 14 days of acceptance of this tender, provide the Engineer via the Principal Contractor with all Builder-provided work such as holes, machine bases, chases, recesses, service ducts, wooden sleeves and frames, etc., as herein identified being provided by others and which will be required to accommodate his services.

No structural element shall be erected and no holes shall be cut or made through the structure and no items of equipment shall be supported from the structure without the prior approval of the Structural Engineer or at least the Principal Contractor. Where foundations, machine bases, drained ducts, floor channels, cable sleeves, etc., have been identified herein to be

provided by others, the contractor shall liaise and assist the Principal Contractor or others in setting out, locating, etc., of these items.

The contractor shall be responsible for the cost of all cutting, patching, making good, etc., as may be required to accommodate his work, due to late or wrong information been given by the contractor.

11. DRAWINGS

Any drawing which accompanies this specifications illustrates schematics and do not show exact dimensions or positions of equipment. Tenders must satisfy themselves that the equipment offered by them shall fit in the available space and can be positioned so that access for maintenance, repair or removal is not encumbered.

Note: Final dimensions must be taken on site before any equipment or material is either purchased or manufactured.

12. SHOP DRAWINGS

Within 14 days of being awarded the contract the contractor will produce a complete layout in the form of a shop drawings with all the required service connections detailed and dimensioned. Any other shop drawings required to effect the installation shall be produced as required. At the end of the contract, three full sets of "as built" drawings and manuals shall be provided for this contract.

The successful tenderer shall before commencing manufacture of any of the equipment provide a dimensioned shop drawing for approval.

Approval of the contractor's drawings in no way indemnifies him from being responsible for the correctness of the drawings and satisfactory operation of the installations and for equipment.

13. MATERIALS, WORKMANSHIP AND EQUIPMENT OFFERED

Materials, workmanship and equipment offered shall be as specified and comply with the specification.

All material and equipment shall be new, free from rust, defects, undamaged and suitable for the purpose for which it will be used. Material shall comply with the latest issue of the relevant SANS specifications where applicable.

If any material or workmanship is not to the satisfaction of the Department, it shall be rectified and /or replaced at the contractor's cost and all rejected material shall immediately be removed from the site. The contractor is responsible for the correct and complete eruption of the installation and inspections executed by the Department do not exempt the contractor of this obligation.

The term 'approved equal', as used herein, shall mean an item generally the same as the specified one, but of different manufacture. It shall meet all the specified parameters and approval for its use shall be obtained in writing from the Engineer.

14. STATUTORY AND REGULATORY REQUIREMENTS, DOCUMENTATION AND DRAWINGS

This supplementary specification is to be read as forming part of one or more Department of Public Works and Infrastructure Standard Specifications. The Department Standard Specifications for the Electrical Installations and Electrical Equipment pertaining to Mechanical Services shall also apply.

All equipment and installations shall comply with the requirements of the Occupational Health and Safety Act.

Where conditions are at variance this supplementary specification shall have preference over both the standards specifications and the drawings.

The Complete works shall comply in particular with the specifications and requirements of:

- SANS 1123: Pipe Flanges
- SANS 10400-O: Lighting and ventilation
- SANS 1044-S: Facilities for persons with disabilities
- SANS 10400-T: Fire protection
- SANS 10400-W: Fire installation
- SANS 10177: Fire testing of materials, components and elements used in buildings
- SANS 543: Fire hose reels (with semi-rigid hose)
- SANS 1128-1: Firefighting equipment: Components of underground and above-ground hydrant systems

- SANS1128-2: Firefighting equipment: Hose couplings, connectors and branch pipe and nozzle connections
- SANS 1464-22: Safety of luminaires: Luminaires for emergency lighting
- SANS 10139: Fire detection and alarm systems for buildings - System design, installation and servicing
- SANS 10252-1: Water supply to buildings
- SANS 460: Plain-ended solid drawn copper tubes for potable water
- SANS 10140-3: Identification colour marking: Contents of pipelines
- SANS 10400-A: General principles and requirements
- The Occupational Health and Safety Act, Act 85 of 1993, as amended.

This detailed specification and the drawings form part of the tender documents.

Deviation from this specification shall immediately be reported to the Engineer.

The works shall furthermore comply with all the requirements and bylaws of the relevant local authority. Where the proposed layouts, or any of the materials specified, etc., do not comply with these regulations, the matter shall immediately be brought to the attention of the Engineer.

Certificates of approval/ inspection from the local and/or statutory authorities shall be submitted to the Engineer before the final payment certificate will be issued.

The contractor shall furthermore issue all notices and pay all fees required to be given or paid in terms of statutory and regulatory requirements and the relevant local authority's bylaws.

15. SANS SPECIFICATION

All references to the South African National Standards and Codes of Practice shall be deemed to be references to the latest issues of such specifications and codes.

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The contractor shall provide free maintenance for a period of 1 (one) year following the hand over to the client. The maintenance shall include for all management, labour, lubricating materials, cleaning materials and transport

17. COMPREHENSIVE CONTRACTS AND SUB-CONTRACTORS

Only specialists sub-contractors who have previously successfully completed mechanical installations of the extent and type specified in this document shall be considered.

Note: No change in make, type, or capacity of equipment specified in the schedule of particulars shall be allowed after acceptance of the tender without the written approval of the Department.

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The systems and equipment layout designed by the Engineer shall conform to the requirements with regard to installation and system performance. This suggests that the performance of the equipment in the system supplied and installed by the contractor, shall be in accordance with the design and performance figures as published by the manufacturers and/or suppliers.

The efficiency of the design of the specified system is not the responsibility of the contractor. It is, however, the responsibility of the contractor to ensure that the quality of the workmanship and the installation of the equipment shall conform to the requirements of the Engineer and to the supplier/manufacturer.

It is furthermore accepted that the contractor has assured himself that all equipment supplied and installed under the contract shall perform within the given limits, as stated by the supplier/manufacturer, conforming to the specification.

19. PAINTING

All equipment, where required, shall be painted.

The colour of the materials and equipment shall be painted in accordance with SANS 10140: Identification colour markings Part 3: Contents of pipelines.

20. CORROSION PRECAUTIONS AND FINISHES

All materials such as brackets, hanger, etc., shall be shot-blasted, pre-painted, galvanised or treated against corrosion prior to their delivery to site. Any work that will require site cutting, etc., i.e. exposure of the bare steel to the atmosphere, shall immediately be treated by cold galvanising, painting, etc.

The method of treatment for the above shall depend on the particular environment and type of surface to be coated. The surface preparation, primer coats, finishing coats, etc. shall therefore be in accordance with those specified by reputable paint manufacturers.

All black steel piping, support brackets, hangers, etc., installed inside the building shall be treated with two coats of corrosion inhibitor paint prior to installation. The first coat shall be allowed to dry completely before the next coat is applied. A further coat of corrosion inhibitor shall be applied after installation and allowed to dry completely. Two coats of enamel paint, to the Architect or Engineer's specification, shall finally be applied. The first coat shall be allowed to dry completely before the next coat is applied.

All black steel piping, support brackets, hangers, etc., exposed to the weather shall be hot dipped galvanised.

All duct, supports, equipment and materials exposed to view (i.e. not in shafts, false ceiling, bulkheads, etc.) shall be cleaned, primed and then finished with two coats of enamel paint to the Architect or Engineer's specification. Each application shall be allowed to dry completely before the next coat is applied. The only exception to these stipulations shall be in the case of subcontracts, where the contractor shall only apply the primer coats and the Principal Contractor the finishing coats.

Colour coding shall follow the coding currently used on site. If no colour coding is in use, or in the case of new installations, the latest SANS 10140 Standards shall be used.

Plant and equipment, pre-painted or pre-primed at the factory shall be examined to ensure that the paint finishes are in a good condition. If not satisfactory, priming paint or finishing coats shall be removed where necessary, the surface cleaned to remove rust, and all such surfaces re-primed and finished in two coats of high quality paintwork to match the original.

The contractor shall fix black on white ivorine labels to all items of equipment (machinery, fans, pumps, electric heater batteries, humidifiers, air handling units, etc.), as well as to all active valves (motorised and solenoid) and major isolating valves.

The labels shall be screwed or pop-riveted to the equipment and attached to the valves with steel cables. The lettering shall not be less than 10 mm in height and the wording shall be

approved by the Engineer. The wording and tag numbers shall be the same as those used in this specification and indicated on the drawings.

21. DAMAGE

The tenderer will be held entirely responsible for any damage which may occur to equipment during the transportation, setting into position and fixing and must make good any such damage at his/her own risk.

No patching or repairing of damaged units will be allowed unless such damage can be completely effectively repaired and to the entire satisfactions of the Representative/Agent.

22. TUITION

The contractor shall provide capable instructor/s to train the client's personnel. These instructor/s shall be available for a total period of 1 (one) working day (eight hours) after the system has been commissioned and handed over to the client. The Operating and Maintenance Manuals shall be in possession of the client before the training commences.

23. TENDER SUBMISSIONS

Tender submissions shall conform strictly to the specification requirement. Tenders that are not in accordance with the specification will not be considered.

24. COMMISSIONING

Commissioning of the works shall form part of the Subcontract. Commissioning shall be meticulous and all procedures as stipulated by the suppliers of the equipment shall be strictly adhered to.

The contractor shall prepare detailed commissioning schedules well in advance of the programmed practical completion inspection date.

The schedules shall make allowance for all measurements that will be required, checking of operational and safety set-points, test results, etc., and shall be submitted to the Engineer for approval prior to the start of commissioning.

The contractor shall submit the completed schedules to the Engineer for checking after commissioning has been completed, and prior to the practical completion inspection.

The contractor is forewarned that the Engineer will under absolutely no circumstances deviate from the above procedure. The Engineer furthermore reserves the right to refuse to carry out the practical completion inspection until the contractor has complied with the above stipulations. The contractor shall accept this reserved right by the act of tendering.

Each task in these schedules shall be countersigned by the contractor's Commissioning Engineer to ensure that any discrepancies between site and commissioning conditions/data can be clarified.

All piping systems to be pressure tested to 1.5 times working pressure.

25. OPERATING AND MAINTENANCE MANUALS

Three sets of operating and maintenance manuals shall be prepared by the FC. These manuals shall be submitted to the Engineer for approval 1 week prior to the programmed date for the practical completion inspection.

Tenderers are to note that the said practical completion inspection shall not be carried out prior to the approval of these operating and maintenance manuals.

The manuals shall be properly bound and titled. Each set shall consist of 4 sections. Each section shall have the following sub sections:

Section 1: Operation

Introduction:

Short description of the complete system to familiarize laymen with the system lay out and operation.

Detailed description:

A detailed description of each system and its equipment, complete with schematic drawings. The purpose of this system is to explain the intended operation of each system and item of equipment to technical personnel. Detailed descriptions of the operation, set points, adjustments, etc., are thus to be included.

Section 2: Commissioning data

Schedules of data:

Detailed schedules of commissioning data of all the systems shall be included in this section for future reference. These schedules shall include, amongst others, water flow rates, major equipment, pressures, etc.

Section 3: Maintenance

Schedules:

This section shall contain detailed maintenance and service schedules for the complete installation.

Equipment details:

This section shall contain manufacturers' brochures, spare parts lists, etc., of all the items of equipment.

List of suppliers:

The list of suppliers (complete with addresses and telephone numbers) for each item of equipment shall be included in this section.

Section 4: Drawings

As built drawings:

A complete set of as built drawings shall be enclosed in this section.

26. FIRE CERTIFICATION

Once the installation is completed, and the fire engineer has signed off the installation, the FC shall arrange an inspection by the local fire department. The FC shall obtain a certificate by the local fire department, indicating the installation is approved by them. The certificate is to be submitted to the client, and one copy is to be submitted to the fire engineer.

If the local fire department does not sign of the installation, the FC is to inform the fire engineer and client of the concerns of the fire department, so that these issues can be addressed.

27. DRAWINGS

The following drawings form part of this document:

No	Description	Drawing Number
1	FICKSBURG FIRE PROTECTION	056436- M5003-1

DEPARTMENT OF PUBLIC WORKS & INFRASTRUCTURE
WCS: 056436
DCS: FICKSBURG CORRECTIONAL CENTRE: REPLACEMENT OF KITCHEN EQUIPMENT

Department
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

SCHEDULE OF QUANTITIES

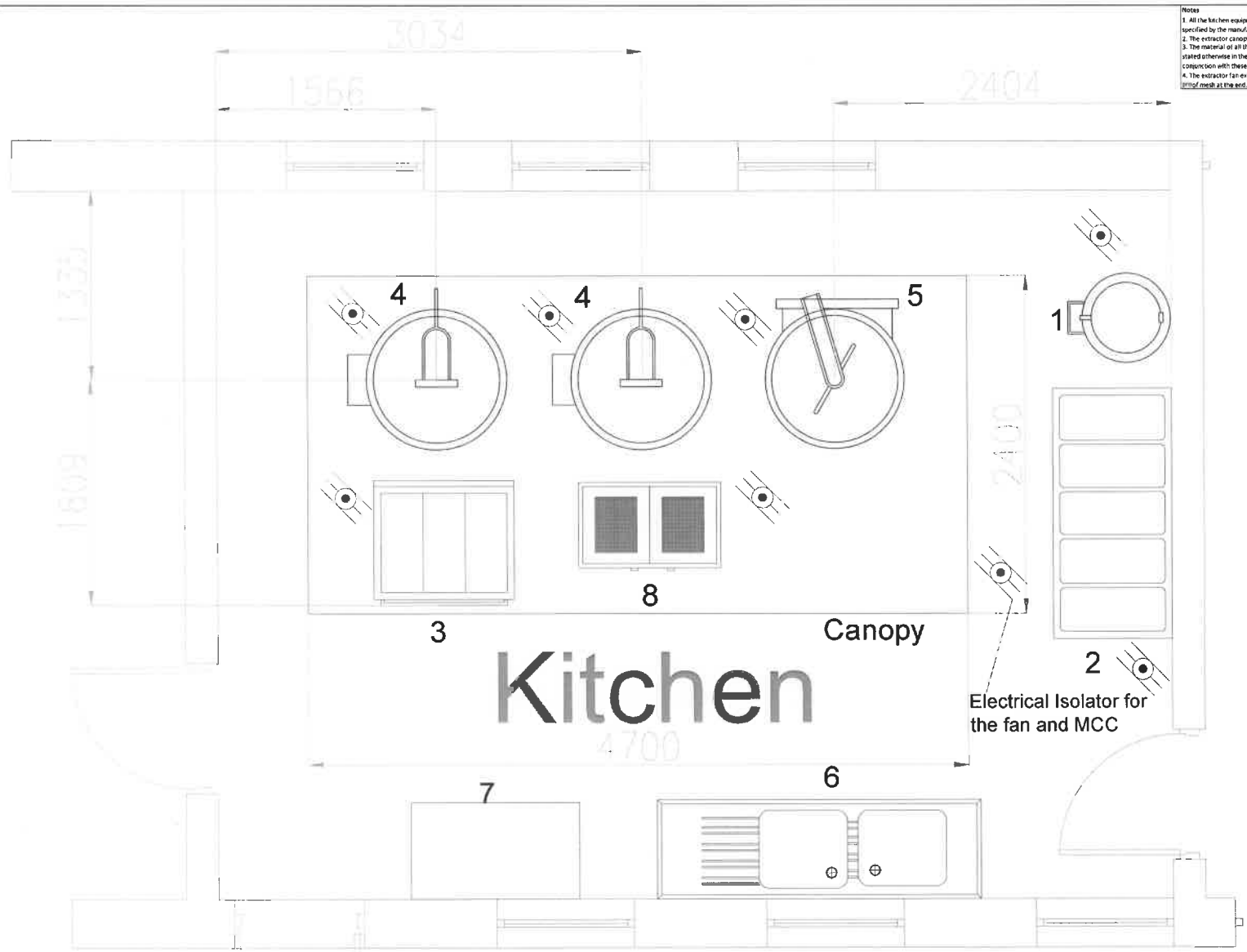
SCHEDULE 2: KITCHEN EQUIPMENT

REFERENCE	ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	2.1	**ISOLATION, DISCONNECTION, REMOVAL AND DISPOSAL** **Kitchen equipment removal** Complete isolation, disconnection, removal of the existing units including all pipework, valves, panels, motors, pumps, electrical connections, etc and all other associated fittings, fixtures and accessories associated with the installation as noted on site. In taking down and removing existing work the utmost care must be taken to avoid any structural or other damage to the remaining portions of the building and the Contractor shall provide all shoring, needling, strutting, etc. to ensure the stability of all structures during the removal work. The Contractor will be held solely responsible for the safety and stability of the buildings for the whole period of the contract and must make good any damage at his own expense. Contractor to liaise with the Management of the facility with regards to the programming of the works (availability of rooms, etc) so as to not disrupt the functioning of the facility. The contractor shall make good to chased brickwork with internal cement plaster, paintwork to previously painted surfaces and make good paintwork to chasing of walls. The contractor shall provide to the engineer prior to works commencement a methodology on the proposed procedure for comment.				
	2.1.1	**DECOMMISSIONING AND REMOVAL OF EXISTING UNITS AND ASSOCIATED INSTALLATIONS**	no.	8		
	2.2	**Kitchen Equipment**				
1		**Potato Peeler**				
	2.2.1	Supply and install potato peeler complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power. 1,5kW* *Capacity: 30kg* *Dimension: 750x1200x900 (mm)*	no.	1		
2		**Bain Marie**				
	2.2.2	Supply and install bain marie complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power: 5,5kW* *Mass: 252kg* *Dimension:1785x850x900 (mm)*	no	1		
3		**Hot plate stove with oven**				
	2.2.3	Supply and install hot plate stove with oven complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power: 18kW* *Number of plate: 3* *Dimension:1000x850x910 (mm)*	no.	1		
4		**Oil Jacketed pot**				
	2.2.4	Supply and install oil jacketed pot complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power: 18kW* *Capacity: 225L* *Dimension:1100x1000 (mm)*	no.	2		
		Balance Carried forward				

		Balance Brought Forward				
5		**Steam phutu pot**				
	2.2.5	Supply and install steam phutu pot complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power: 18kW* *Capacity: 150L* *Dimension:1100x1000 (mm)*	no.	1		
6		**Commercial double sink**				
	2.2.6	Supply and install commercial double sink complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Depth: 650mm* *Dimension: 2250x900x650 (mm)*	no.	1		
7		**Shelf**				
	2.2.7	Supply and install shelf complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Dimension: 1200x900x650 (mm)*	no.	1		
8		**Deep fryer**				
	2.2.8	Supply and install deep dyer complete with mounting brackets, nuts and bolts, wiring and all the necessary accessories to complete the installation with the following specifications: *Power: 30kW* *Capacity: 2x20L* *Dimension: 1015x900x615 (mm)*	no.	1		
	2.2.9	Supply and install extractor canopy complete with fan, attenautor, filters duct, spigot and duct, duct and light fitlings, starter, mountings and all the necessary accessories to complete the installation. **Q=2820l/s, S.P=30Pa, P=0.8kW, Canopy Dimensions: 4.7mx2.4m, Attenuator size: Ø=400mm , Duct: Ø=400mm**	no.	1		
	2,3	**Commisioning**				
	2.3.1	Test and commisioning of kitchen equipment installation, including the issuing of an Electrical Certificate of Compliance (COC)	Item	1		
		Carried forward to Final Summary				

Notes
1. All the kitchen equipment must be floor mounted using the mountings specified by the manufacturer of the equipment.
2. The extractor canopy must be mounted to roof slab usin metal brackets.
3. The material of all the kitchen equipment is stainless steel 340 unless stated otherwise in the technical specification which should be read in conjunction with these drawings.
4. The extractor fan external duct on the roof must be fitted with vinning proof mesh at the end.

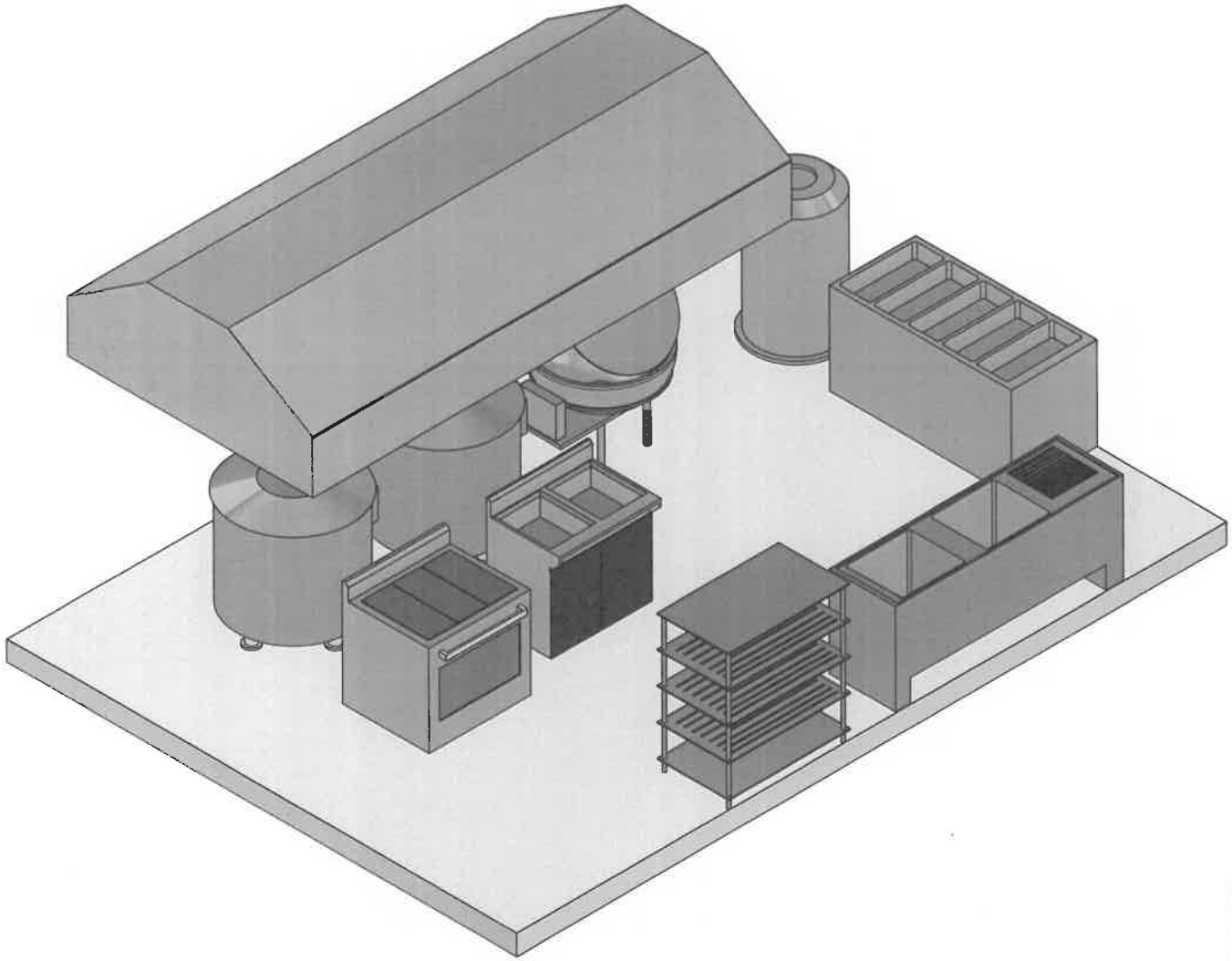
DRAWING LEGEND



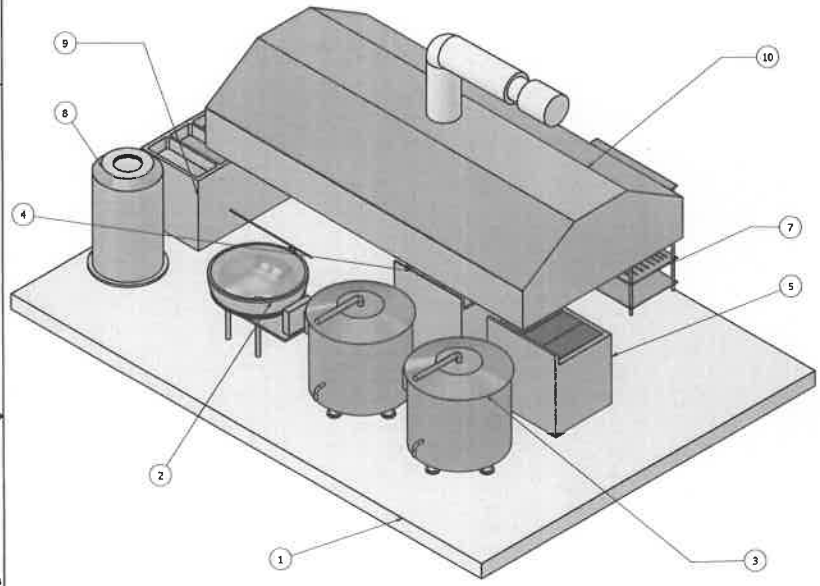
FICKSBURG KITCHEN EQUIPMENT
SCALE 1:50

EQUIPMENT SCHEDULE

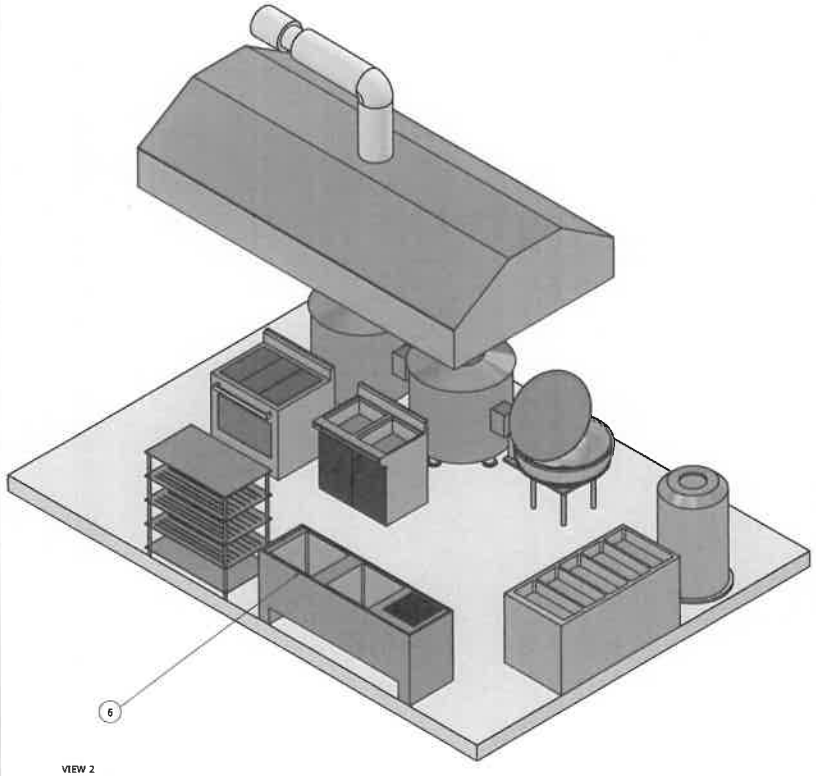
ITEM	DESCRIPTION	POWER kW/V/ph/Hz	DIMENSIONS (WXHXD)	QUANTITY
1	Potato peeler	1.5/220/3/50	750x1270x900	1
2	Bain marie	5.5/380/3/50	1785x850x900	1
3	Hot plate stove with oven	18/400/3/50	1000x850x910	1
4	Oil Jacketed pot	18/400/3/50	1100x1000	2
5	Steam phutu pot	18/400/3/50	1100x1000	1
6	Commercial Double pot sink	-	2250x900x650	1
7	Shelf	-	1200X900X650	1
8	Deep fryer	30/380/3/50	1015x900x615	1



DRAWN		
Ngoako Lehong	4/27/2023	
CHECKED		
QA		TITLE
MFG		
APPROVED		
		SIZE D / DWG NO Kitchen assemby / REV
		SCALE 1 / 15 / SHEET 1 OF 1



VIEW 1
SCALE 1:25



VIEW 2
SCALE 1:25

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	Floor	
2	1	Capdan pot	
3	2	Oil Jacketed Pot	
4	1	Deep fryer	
5	1	Hotplate stove	
6	1	Sink	
7	1	Shelf	
8	1	Potato peeler	
9	1	Bain marie	
10	1	Canopy	

DRAWING ISSUED FOR:	
INFORMATION	X
PRELIMINARY DESIGN	
DETAILED DESIGN	
TENDER	
CONSTRUCTION	
AS-BUILT	

FULL NAME _____

PROFESSIONAL REGISTRATION NUMBER _____

CONSULTANT

DEPARTMENT OF PUBLIC WORKS AND INFRASTRUCTURE

CLIENT

DEPARTMENT OF CORRECTIONAL SERVICES

Disciplines Mark with X	
ARCHITECTURAL	
CIVIL AND STRUCTURAL ENGINEERING	
ELECTRICAL ENGINEERING	
MECHANICAL ENGINEERING	X

PROJECT TITLE

FICKSBURG CORRECTIONAL CENTRE: REPLACEMENT OF BURNT KITCHEN

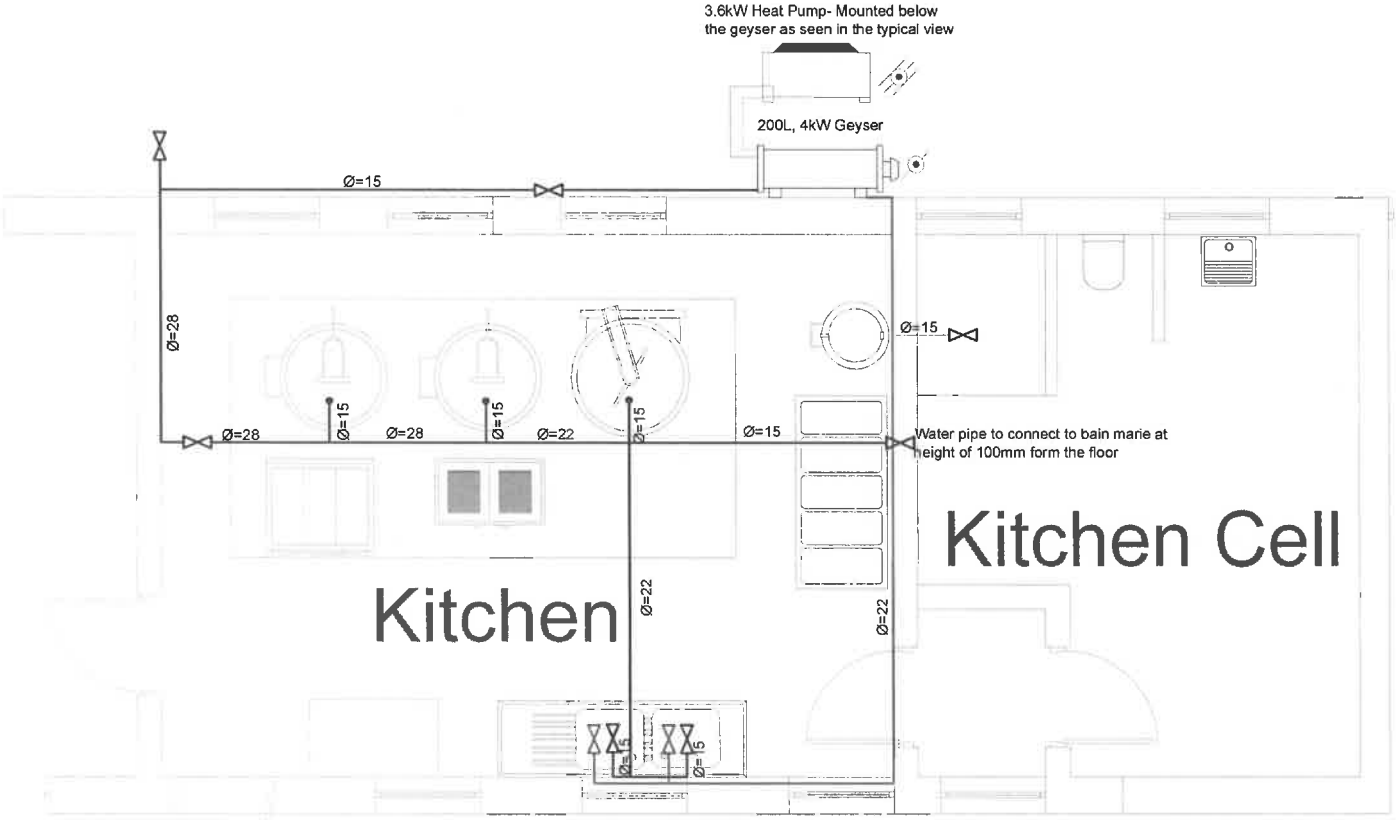
DRAWING TITLE

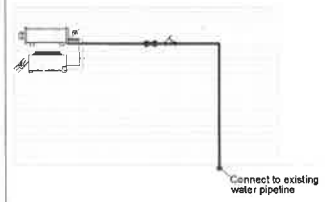
3D LAYOUT OF FICKSBURG KITCHEN

CAPITAL	X	MAINTENANCE	
WCS NO. 056436		DESIGNED BY: NH LEHONG	
SCALE 1:25		DRAWN BY: NH LEHONG	
DATE 26/04/2023		REVIEWED BY: KC CHABALALA	
CHECKED BY: KC CHABALALA		APPROVED BY: KC CHABALALA	
DRAWING NO:		REV NO: 1	SIZE A1

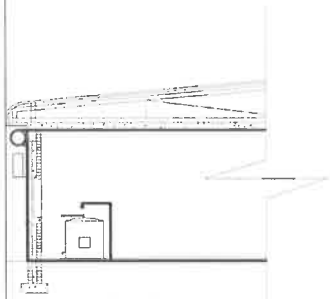
Notes

1. All pipe sizes indicated as copper.
2. Installation shall be as per SANS 10252-1.
3. Piping shall be class 2 for sizes Ø15mm, Ø22mm and Ø28mm.
4. Piping shall be class 1 for Ø35mm and larger.
5. All underground piping shall be class 3.
6. Class 0 piping shall not be accepted.
7. All plumbing material shall be SABS approved and bear the SANS logo.
8. Flow design of water in pipes are designed at 1m/s.
9. Jointing up to Ø54mm will be by means capillary fittings and 97/3 Tin/Copper solder with approved water soluble flux
10. Any pipe soldered during the day shall be flushed with running water using a hose before the end of the day's work.
11. Piping above Ø54mm must be brazed using copper-phosphorus rods, strictly in accordance with manufacturers instructions including the use of
12. Where connections are made into taps, valves, pumps, or other equipment that may require removal or additional tightening of thread joints, either capillary union fittings or conex compression fittings shall be used.
13. Fittings shall be dezincification resistant.
14. Pipe support and insulation shall be as per the specification.
15. Hot water pipes must insulated and cladded.
16. Geyser and heat pump are to be wall mounted using metal brackets.





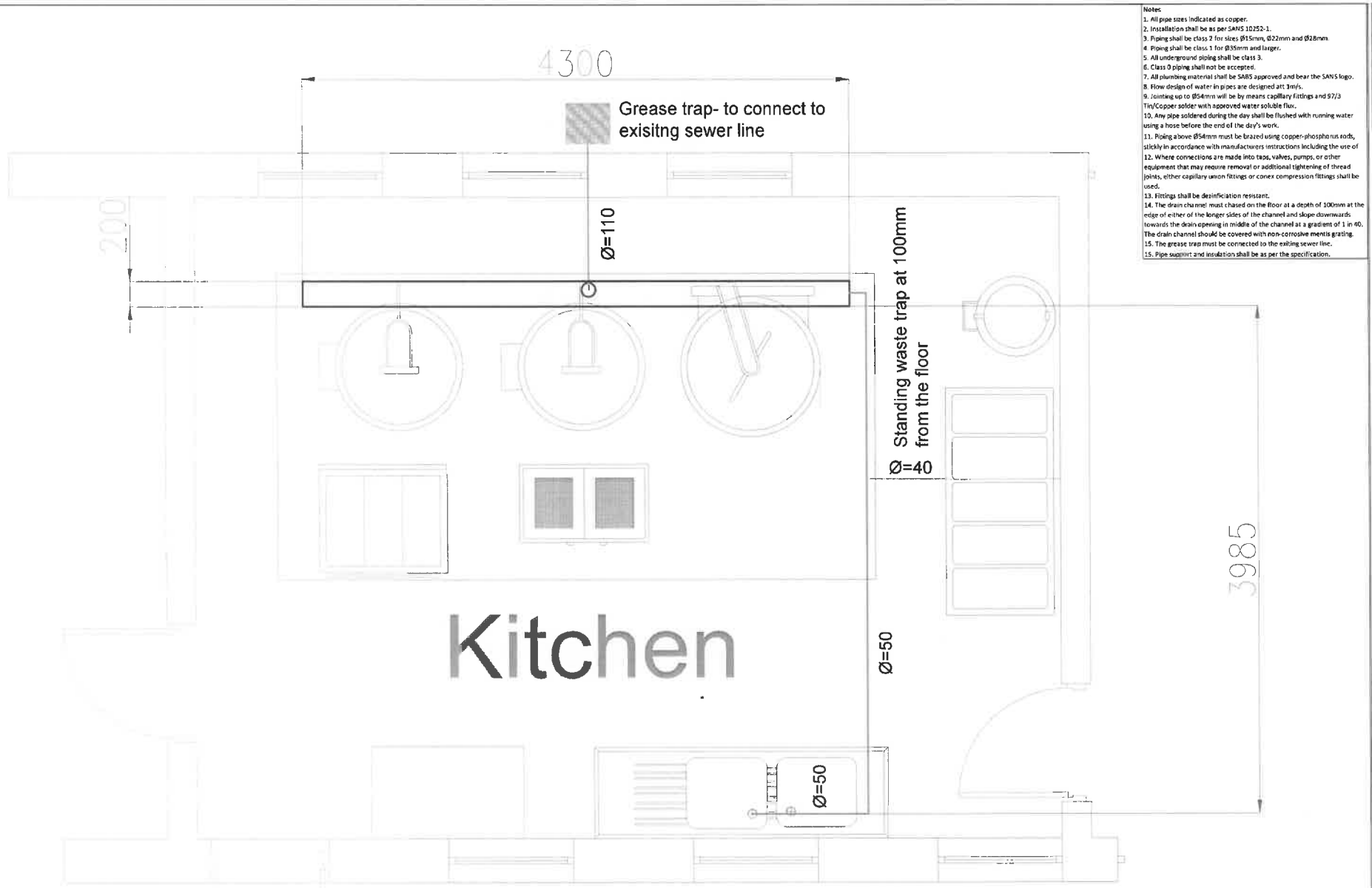
Typical riser elevation for cold water pipe connection from main pipeline to geyser



Typical riser elevation for cold water pipe connection from main pipeline to geyser and kitchen

DRAWING LEGEND

FICKSBURG KITCHEN WET SERVICE
SCALE 1:10



Notes

1. All pipe sizes indicated as copper.
2. Installation shall be as per SANS 10252-1.
3. Piping shall be class 2 for sizes Ø15mm, Ø22mm and Ø28mm.
4. Piping shall be class 1 for Ø35mm and larger.
5. All underground piping shall be class 3.
6. Class 0 piping shall not be accepted.
7. All plumbing material shall be SABS approved and bear the SANS logo.
8. Flow design of water in pipes are designed att 1m/s.
9. Jointing up to Ø54mm will be by means capillary fittings and 97/3 Tin/Copper solder with approved water soluble flux.
10. Any pipe soldered during the day shall be flushed with running water using a hose before the end of the day's work.
11. Piping above Ø54mm must be brazed using copper-phosphorus rods, stickly in accordance with manufacturers instructions including the use of
12. Where connections are made into taps, valves, pumps, or other equipment that may require removal or additional tightening of thread joints, either capillary union fittings or conex compression fittings shall be used.
13. Fittings shall be dezinfication resistant.
14. The drain channel must chased on the floor at a depth of 100mm at the edge of either of the longer sides of the channel and slope downwards towards the drain opening in middle of the channel at a gradient of 1 in 40. The drain channel should be covered with non-corrosive mentis grating.
15. The grease trap must be connected to the exiting sewer line.
15. Pipe support and insulation shall be as per the specification.

FICKSBURG KITCHEN DRAINAGE
SCALE 1:70

Notes

1. Photoluminescence fire and directional signage must comply with SANS 1186-1&5. Photoluminescence and to be installed in accordance with SANS 10400: 1990
2. All photoluminescence fire and direction signs are to have a matt finish and are to be framed with mitered corners and concealed elbow joints. Frame to be manufactured from 3mm thick Aluminium plate
3. All wall mounted fire and directional signage to be screwed into brickwork with security screws. No Double sided tape should be used to mount the signage.
4. All suspended fire and directional signage to be hung on wire
5. Signage in office areas to be mounted 1500mm high.

PLAN VIEW ELEVATION

TYPICAL FIRE EXTINGUISHER DETAIL

SCALE 1:10

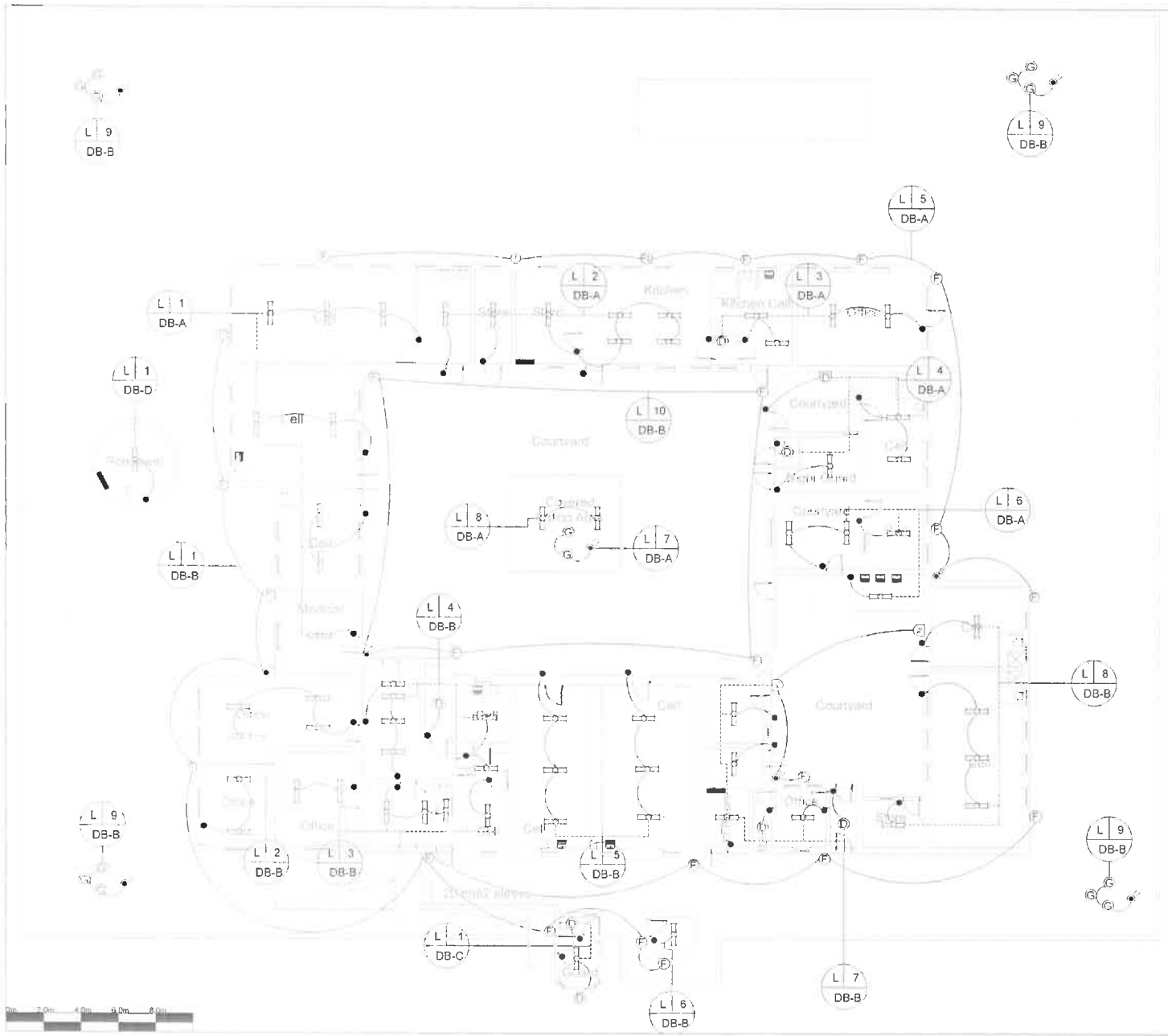
FICKSBURG KITCHEN FIRE PROTECTION

SCALE 1:10

DRAWING NOTES

EQUIPMENT SCHEDULE

REFERENCE	DESCRIPTION	CAPACITY/SIZE	QUANTITY
FE	CO2 Fire Extinguisher	5kg	3
FB1	Fire Extinguisher + blanket signage	450x150	1
FB	Fire Extinguisher signage	300x150	2
ES	Exit Signage	300x150	1
B	Fire Blanket	1,8x1,8	1



SYMBOL DESCRIPTION
(F)
(D)
(G)

No.	DATE	AMENDMENT	D.P.W
0	07/04/23	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES
All wiring to be new and installed in a trunking and conduits
Use trunking layout as a guid however refer to trunking drawing
All lighting to be approved/test before installation
Sample and specification sheet must be brought to the Engineer
Pole top lights are allocated approximately 10m high
The wrong tie pole lights shall remain as they are

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

name

date

professional registration no

scale	page size
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Client

correctional services
Department:
Correctional Services
REPUBLIC OF SOUTH AFRICA

Consultant

Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA
18 PRESIDENT BRAND STREET
BLOEMFONTEIN, 9300
TEL. (051) 408 7422
E-mail: nozandi.njom@dpw.gov.za

discipline: ELECTRICAL

service

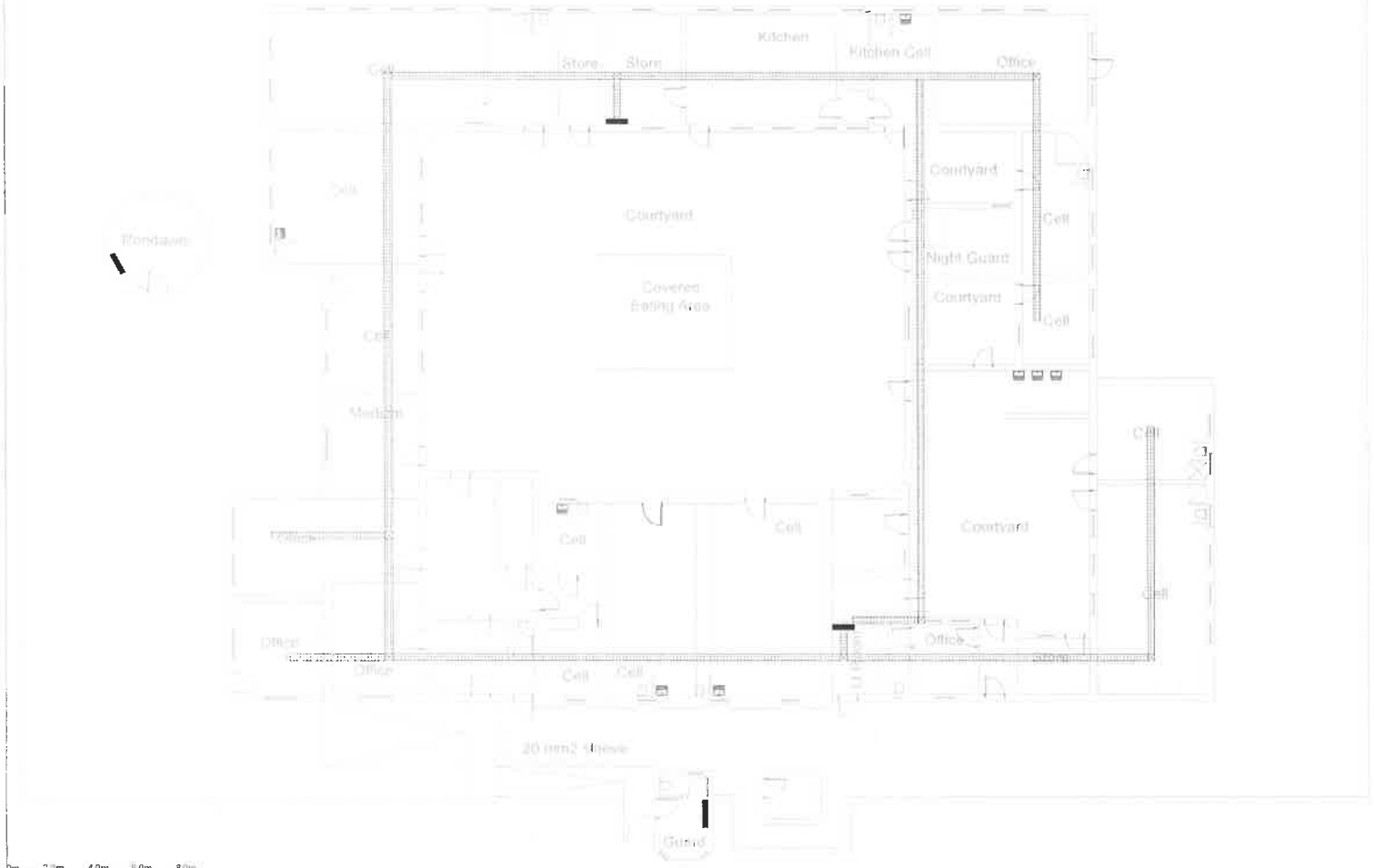
FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055488

drawing title: LIGHTING LAYOUT

ref no	designed: M GOVENDER
scale: 1:100	drawn: N NJOMI
date: 24/07/2023	checked: M GOVENDER
drawing number	approved: S PALACKAL

ES/EE/CS/03



SYMBOL DESCRIPTION

	75000 GALVANISED STEEL TRUNKING 127x76MM
	DISTRIBUTION BOARD
⊠	GALVANISED STEEL JUNCTION BOX
	50MM2 SLEEVE

No	DATE	AMENDMENT	D P W
0	07/06/2023	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES
Trunking route and lengths are provisional as available roof space must be established first

Where trunking is to pass through walls the walls must be made good

Only careful cutting of fibre cement using circular saw or other tools are allowed

In order for the trunking to be installed, the roof sheet must be moved in sections

The roof sheet carefully lifted and plastic be temporarily use to avoid ingress of water. The roof is to be made good again with proper sealing

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

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professional registration no.:

cad file name: -

page size: A1

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correctional services
Department:
Correctional Services
REPUBLIC OF SOUTH AFRICA

Consultant:

Department
REPUBLIC OF SOUTH AFRICA

15 PRESIDENT BRAND STREET
BLOEMFONTEIN, 9300
TEL. (051) 408 7422
E-mail: noraindi.njemla@dpw.gov.za

discipline: ELECTRICAL

service:

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number : 055488

drawing title: POWER TRUNKING LAYOUT

designed	M.GOVENDER
drawn	T.NDUMA
checked	M.GOVENDER
approved	S.PAKACHA

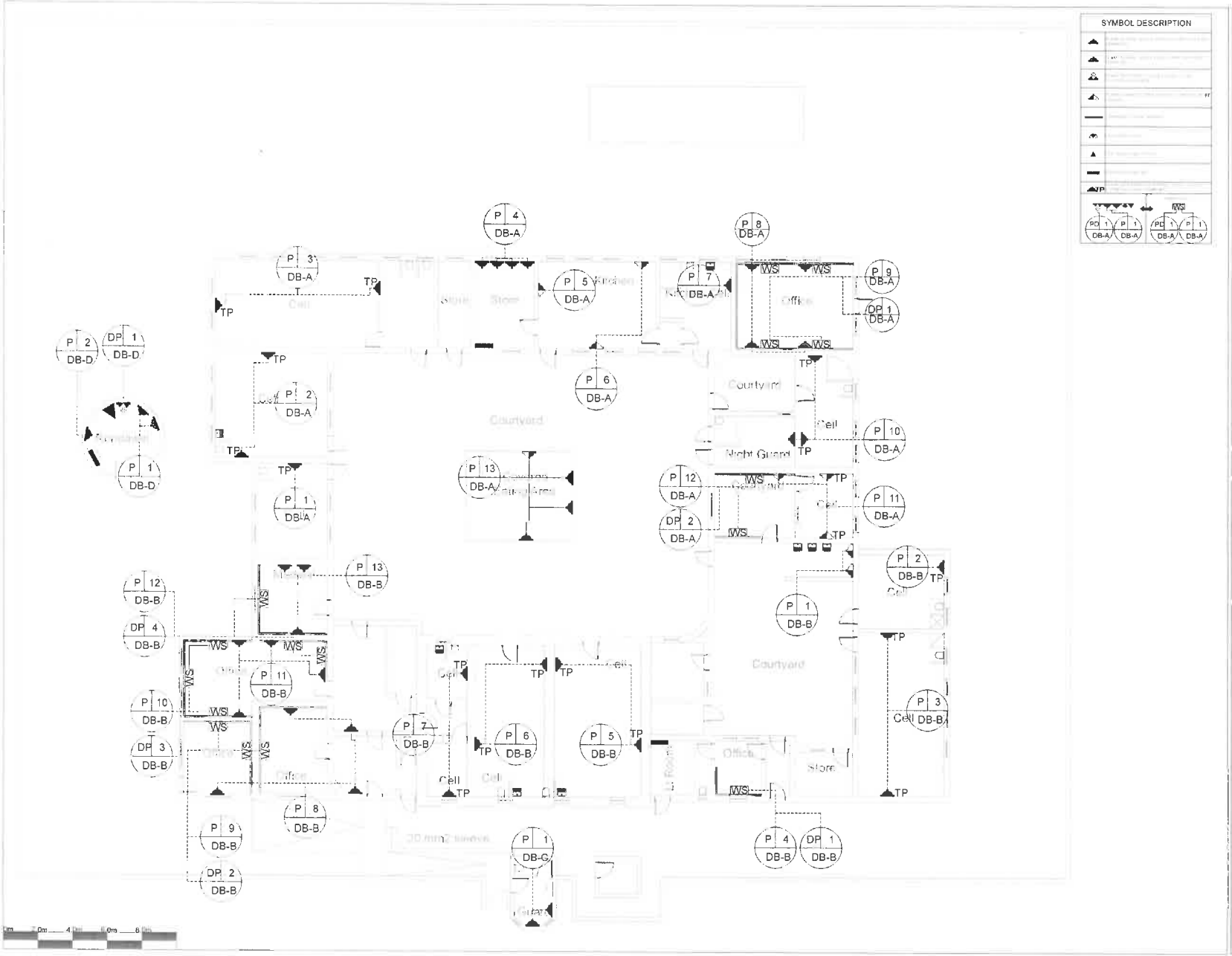
ref.no.

scale : 100

date: 24/07/23

drawing number

ES/EE/CS/07



No.	DATE	AMENDMENT	D.P.W
0	02/06/2023	DETAILED DESIGN	N.N
1	24/07/23	AMMENED AS PER ENGINEER'S COMMENTS	N.N

NOTES:
All wiring to be tested
Punchlist wiring to be remain as is
All wall socket outlets to be terminated with screws
All new plugs and sockets final positions to be determined on site
All outlets to be wired
Refer to line diagram for circuit layout
All holes wall chase etc for the purpose of the installation must be made good
All material to be installed must be approved first before installation

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

name:

date:

professional registration no.

cad file name: -

page type: A 1

Client:

correctional services
Department:
Correctional Services
REPUBLIC OF SOUTH AFRICA

Consultant:

public works
Department:
Public Works and Infrastructure
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19 PRESIDENT BRAND STREET
BLOEMFONTEIN, 9300
TEL: (051) 409 7422
Email: nozandinjonis@dpw.gov.za

discipline: ELECTRICAL

service

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 0355469

drawing title: SMALL POWER LAYOUT

ref no.:

scale: 1 : 100

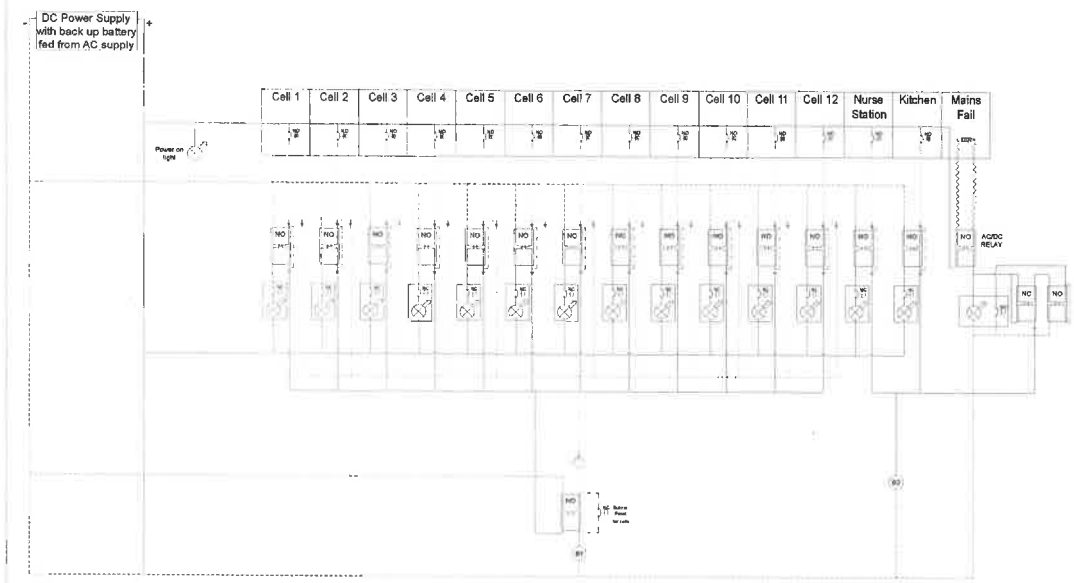
date: 24/07/23

designed: M GOVENDER
drawn: N NJONI
checked: M GOVENDER
approved: S PILLAY

drawing number

ES/EE/CS/01

CONTROL CIRCUIT FOR CELL CALL SYSTEM



OPERATION OF CELL CALL SYSTEM

1. The cell push button is pressed, pilot light and buzzer B1 is operational continuously
2. Cell buzzer is silenced using push button.
3. Cell pilot light can then be turn off using push button.
4. Cell pilot light push button may also turn off the pilot light and buzzer together when pressed initially
5. Cell buzzer B1 may be turned off completely using selector switch
6. Nurse station, kitchen and mains fail push button is pressed and pilot light and buzzer B2 is operational.
7. Nurse station and kitchen pilot light and buzzer B2 may only be turned off together. Buzzer cannot be silenced on its own.
8. Mains fail pilot will remain on while buzzer can be silenced

SPECIFICATION OF CELL CALL SYSTEM

1. The cell call system shall be operated on a 24V power supply
2. The system shall comply with SANS 10222-1 and SANS 2220.
3. The power supply shall include battery back-up of 24 hours with charger.
4. The system shall include all necessary DC protection system in the event of short circuit of call buttons.
5. Buzzers for the cell cells and the kitchen/nurse cell shall have a different sound
6. Red push button switches shall be used on the main panel for indication and input and shall not be separate.
7. The entire system shall be enclosed in a powder coated steel enclosure
8. An audible and visual indication shall be given when there is a main failure.
9. A.C.O.C must be issued for the entire installation.

SYMBOL DESCRIPTION

	PUSH BUTTON ILLUMINATED SWITCH
	ON/OFF SELECTOR SWITCH
	DISTRIBUTION BOARD LOCK
	TAMPERPROOF SCREW
	STAINLESS STEEL CALL BUTTON
	TAMPERPROOF BOLT IN BOLT TERMINAL WELDED TO CONDUIT BOX
	M5 RAWBOLT
NC	NORMALLY CLOSED PUSH BUTTON SWITCH.
NO	NORMALLY OPEN PUSH BUTTON SWITCH
NO	NORMALLY OPEN RELAY
NC	NORMALLY CLOSED RELAY
	DIODE
	PILOT LIGHT WITH NORMALLY CLOSED PUSH BUTTON SWITCH.
	PILOT LIGHT WITH NORMALLY OPEN PUSH BUTTON SWITCH
	PILOT LIGHT.
B1 B2	BUZZER B1 AND B2 WITH DIFFERENCE TONE
	DC POWER FEED
	AC POWER FEED
	GROUND
	SIGNAL FEED.
	FEEDBACK LOOP SIGNAL

No	DATE	AMENDMENT	D P W
0	02/08/2023	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES

1) Shop drawings must be be approved before installation.
2) The circuit diagram represents the schematic flow of logic for the circuit and does not compose of all components needed for full logic control and protection. The tender must include all other components necessary to this effect. The tender may suggest alternative components in use to achieve the same output.
3) A 24V 24 hour battery back up must also be provided

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

name:

date:

professional registration no.:

cad file name: | page type: A 1

Client:

correctional services
Department
Correctional Services
REPUBLIC OF SOUTH AFRICA

Consultant:

Department
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA
19 PRESIDENT BRAND STREET
BLOEMFONTEIN, 9300
TEL. (051) 408 7422
E-mail: nozandi.njomi@dpw.gov.za

discipline: ELECTRICAL

service:

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

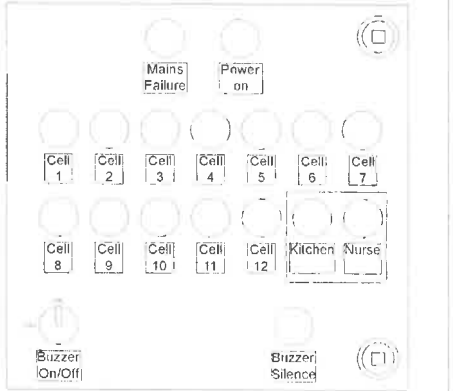
WCS number : 0854483

drawing title: CELL CALL SYSTEM

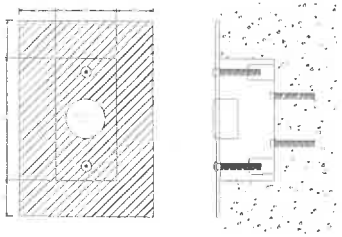
ref.no.	designed M GOVENDER
scale : 1/0	drawn N NJOMI
date: 24/07/23	checked M GOVENDER
	approved S PALACKAL

drawing number: ES/EE/CS/09

CELL CALL SYSTEM CONTROL PANEL



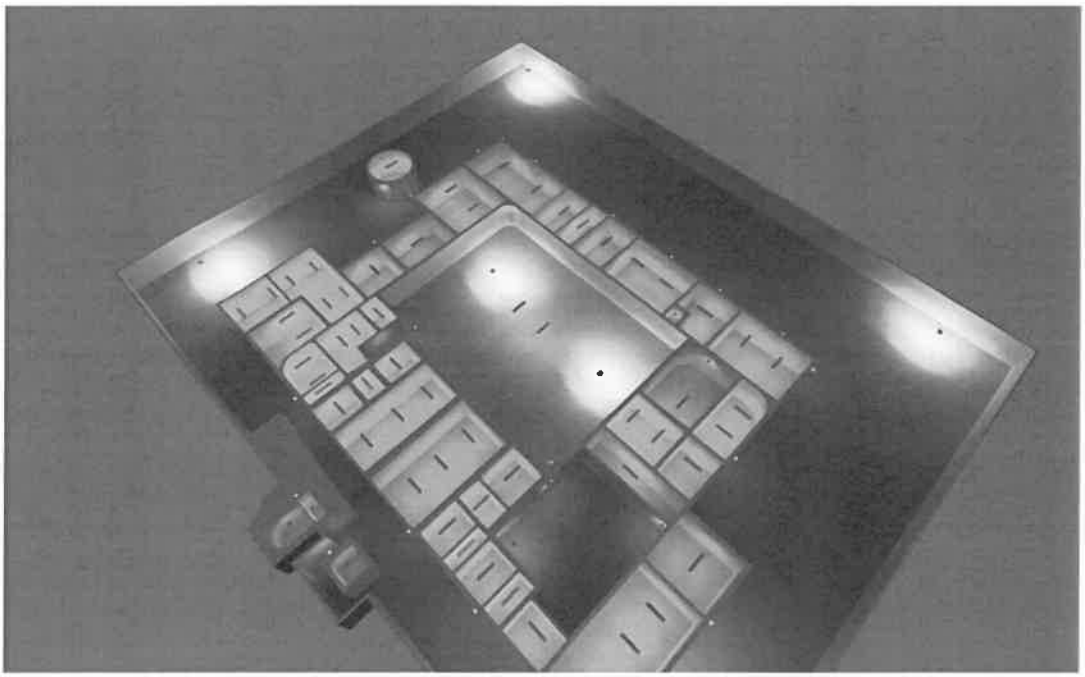
CELL CALL BUTTON



SPECIFICATION OF CELL CALL BUTTON

1. THE CELL CALL BUTTON IS TO BE MADE OF STAINLESS STEEL.
2. TAMPERPROOF BOLTS ARE TO BE USED TO SECURE FRONT PLATE. TAMPERPROOF BOLTS MAY ONLY BE OPENED BY THE USE OF SPECIALISED TOOL. TOOL TO BE PROVIDED AS WELL.
3. SCREW IN TERMINAL TO BE WELDED ONTO STEEL CONDUIT.
4. M5 RAW BOLTS ARE TO BE USED TO SECURE CONDUIT BOX.
5. STAINLESS STEEL BUTTON TO BE FLUSH TO FRONT PLATE TO PREVENT IT FROM BEING PRIED OPEN.

DIALux



Ficksburg Prison

Object
055488

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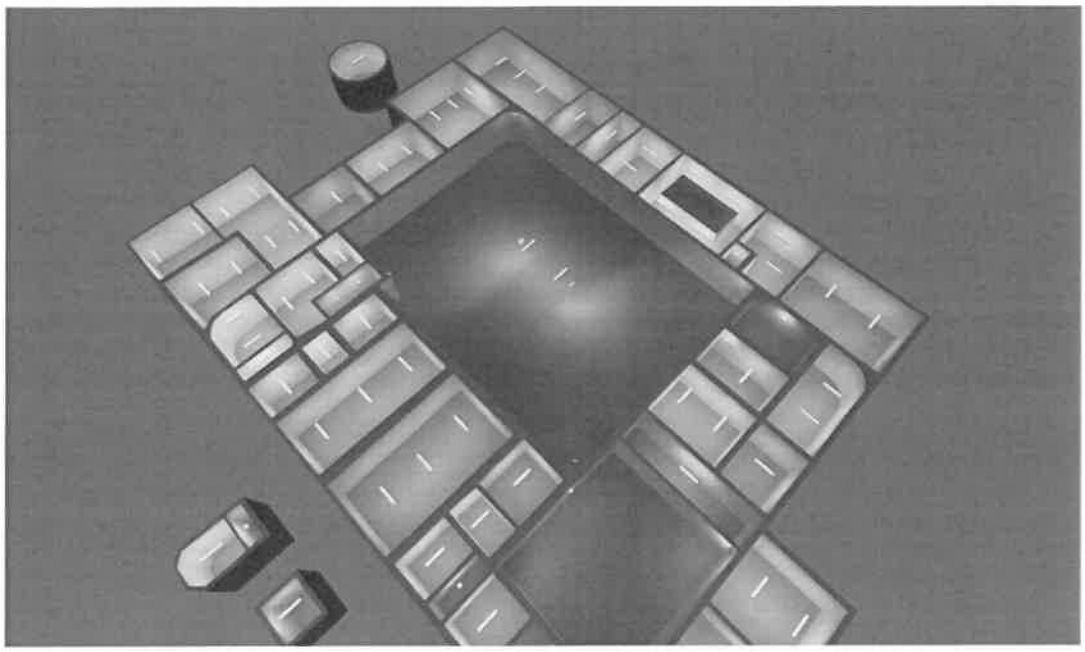


Description

lighting simmulation

Nozandi Njomi

Public works
no 18 President Brand
street,Bloemfontein,93001

T 051 408 7422
F N/A
nozandi.njomi@dpw.gov.za

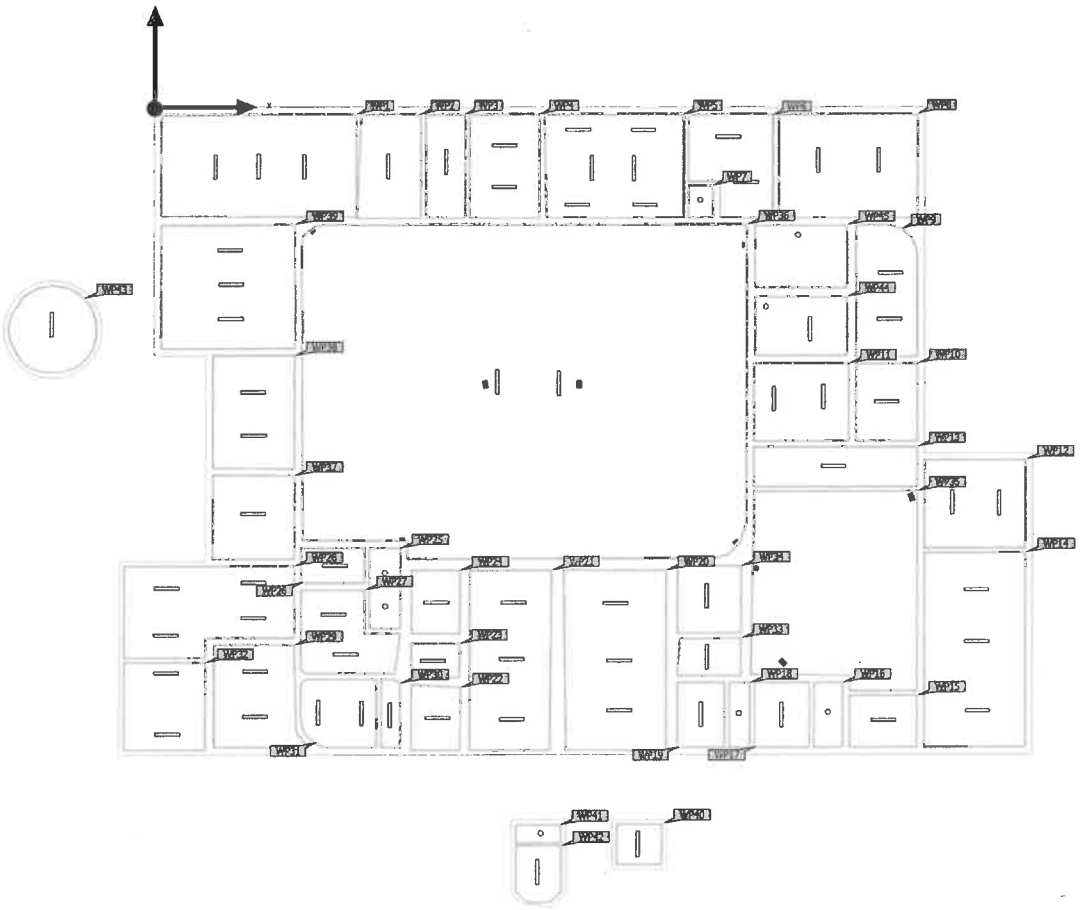
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
840806 lm	7402.0 W	113.6 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
3	Not yet a DIALux member		Type FL - 50w floodlight 4600 lm	50.0 W	4600 lm	92.0 lm/W
14	Not yet a DIALux member		Type G - 100w floodlight 14000 lm	100.0 W	14001 lm	140.0 lm/W
27	Not yet a DIALux member	1	Type A - 72W 8436 LM	72.0 W	8436 lm	117.2 lm/W
1	Not yet a DIALux member	1	Type C - 36W 3220 LM	36.0 W	3220 lm	89.4 lm/W
40	Not yet a DIALux member	1	Type TP - 72W 8200 LM	72.0 W	8200 lm	113.9 lm/W
8	Not yet a DIALux member	4058075374980	Type D - 31W LED Bulkhead round indoor 2250 LM	31.0 W	2250 lm	72.6 lm/W
24	Not yet a DIALux member	4058075374980	Type F - 31W LED Bulkhead round outdoor 2250 LM	31.0 W	2250 lm	72.6 lm/W

Building 1 · Storey 1 (Light scene 1)

Calculation objects



Building 1 · Storey 1 (Light scene 1)

Calculation objects

Working planes

Properties	Ē (Target)	E_{min}	E_{max}	U_o (g_1) (Target)	g_2	Index
Working plane (Room 1) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	372 lx (≥ 300 lx) ✓	91.8 lx	852 lx	0.25 (≥ 0.00) ✓	0.11	WP1
Working plane (Room 3) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	239 lx (≥ 200 lx) ✓	135 lx	370 lx	0.56 (≥ 0.00) ✓	0.36	WP2
Working plane (Room 4) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	280 lx (≥ 200 lx) ✓	159 lx	407 lx	0.57 (≥ 0.00) ✓	0.39	WP3
Working plane (Room 5) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	538 lx (≥ 300 lx) ✓	252 lx	834 lx	0.47 (≥ 0.00) ✓	0.30	WP4
Working plane (Room 6) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	858 lx (≥ 500 lx) ✓	241 lx	1754 lx	0.28 (≥ 0.00) ✓	0.14	WP5
Working plane (Room 7) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	506 lx (≥ 300 lx) ✓	202 lx	780 lx	0.40 (≥ 0.00) ✓	0.26	WP6
Working plane (Room 8) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	131 lx (≥ 100 lx) ✓	117 lx	144 lx	0.89 (≥ 0.00) ✓	0.81	WP7
Working plane (Room 9) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	334 lx (≥ 300 lx) ✓	102 lx	688 lx	0.31 (≥ 0.00) ✓	0.15	WP8
Working plane (Room 10) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	393 lx (≥ 350 lx) ✓	187 lx	557 lx	0.48 (≥ 0.40) ✓	0.34	WP9
Working plane (Room 12) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	376 lx (≥ 150 lx) ✓	190 lx	645 lx	0.51 (≥ 0.00) ✓	0.29	WP10
Working plane (Room 13) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	425 lx (≥ 300 lx) ✓	232 lx	558 lx	0.55 (≥ 0.00) ✓	0.42	WP11

Building 1 · Storey 1 (Light scene 1)

Calculation objects

Working plane (Room 14) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	375 lx (≥ 300 lx) ✓	207 lx	533 lx	0.55 (≥ 0.00) ✓	0.39	WP12
Working plane (Room 15) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	256 lx (≥ 150 lx) ✓	54.8 lx	684 lx	0.21 (≥ 0.00) ✓	0.080	WP13
Working plane (Room 17) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	312 lx (≥ 300 lx) ✓	140 lx	503 lx	0.45 (≥ 0.00) ✓	0.28	WP14
Working plane (Room 18) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	467 lx (≥ 300 lx) ✓	262 lx	708 lx	0.56 (≥ 0.00) ✓	0.37	WP15
Working plane (Room 19) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	158 lx (≥ 100 lx) ✓	87.4 lx	220 lx	0.55 (≥ 0.00) ✓	0.40	WP16
Working plane (Room 20) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	464 lx (≥ 300 lx) ✓	268 lx	708 lx	0.58 (≥ 0.00) ✓	0.38	WP17
Working plane (Room 21) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	169 lx (≥ 150 lx) ✓	101 lx	229 lx	0.60 (≥ 0.00) ✓	0.44	WP18
Working plane (Room 22) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	499 lx (≥ 300 lx) ✓	297 lx	729 lx	0.60 (≥ 0.00) ✓	0.41	WP19
Working plane (Room 23) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	334 lx (≥ 300 lx) ✓	147 lx	530 lx	0.44 (≥ 0.00) ✓	0.28	WP20
Working plane (Room 24) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	377 lx (≥ 300 lx) ✓	198 lx	521 lx	0.53 (≥ 0.00) ✓	0.38	WP21
Working plane (Room 25) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	342 lx (≥ 300 lx) ✓	257 lx	420 lx	0.75 (≥ 0.00) ✓	0.61	WP22
Working plane (Room 26) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	433 lx (≥ 300 lx) ✓	335 lx	501 lx	0.77 (≥ 0.00) ✓	0.67	WP23

Building 1 · Storey 1 (Light scene 1)

Calculation objects

Working plane (Room 27) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	488 lx (≥ 300 lx) ✓	284 lx	712 lx	0.58 (≥ 0.00) ✓	0.40	WP24
Working plane (Room 28) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	258 lx (≥ 200 lx) ✓	155 lx	321 lx	0.60 (≥ 0.00) ✓	0.48	WP25
Working plane (Room 29) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	576 lx (≥ 300 lx) ✓	361 lx	784 lx	0.63 (≥ 0.00) ✓	0.46	WP26
Working plane (Room 30) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	569 lx (≥ 300 lx) ✓	162 lx	887 lx	0.28 (≥ 0.00) ✓	0.18	WP27
Working plane (Room 31) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	610 lx (≥ 300 lx) ✓	268 lx	1012 lx	0.44 (≥ 0.00) ✓	0.26	WP28
Working plane (Room 32) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	496 lx (≥ 300 lx) ✓	155 lx	816 lx	0.31 (≥ 0.00) ✓	0.19	WP29
Working plane (Room 33) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	392 lx (≥ 200 lx) ✓	303 lx	464 lx	0.77 (≥ 0.00) ✓	0.65	WP30
Working plane (Room 34) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	531 lx (≥ 150 lx) ✓	366 lx	664 lx	0.69 (≥ 0.00) ✓	0.55	WP31
Working plane (Room 35) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	513 lx (≥ 300 lx) ✓	259 lx	794 lx	0.50 (≥ 0.00) ✓	0.33	WP32
Working plane (Room 36) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	552 lx (≥ 200 lx) ✓	324 lx	763 lx	0.59 (≥ 0.00) ✓	0.42	WP33
Working plane (Room 37) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	405 lx (≥ 300 lx) ✓	186 lx	664 lx	0.46 (≥ 0.00) ✓	0.28	WP34
Working plane (Room 38) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	83.0 lx (≥ 50.0 lx) ✓	17.3 lx	175 lx	0.21 (≥ 0.00) ✓	0.099	WP35

Building 1 · Storey 1 (Light scene 1)

Calculation objects

Working plane (Room 39) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	104 lx (≥ 50.0 lx) ✓	20.9 lx	636 lx	0.20 (≥ 0.00) ✓	0.033	WP36
Working plane (Room 40) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	306 lx (≥ 300 lx) ✓	115 lx	640 lx	0.38 (≥ 0.00) ✓	0.18	WP37
Working plane (Room 41) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	370 lx (≥ 300 lx) ✓	198 lx	545 lx	0.54 (≥ 0.00) ✓	0.36	WP38
Working plane (Room 42) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	374 lx (≥ 300 lx) ✓	144 lx	687 lx	0.39 (≥ 0.00) ✓	0.21	WP39
Working plane (Room 43) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	162 lx (≥ 150 lx) ✓	121 lx	191 lx	0.75 (≥ 0.75) ✓	0.63	WP40
Working plane (Room 44) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	205 lx (≥ 150 lx) ✓	152 lx	246 lx	0.74 (≥ 0.00) ✓	0.62	WP41
Working plane (Room 45) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	389 lx (≥ 300 lx) ✓	310 lx	466 lx	0.80 (≥ 0.00) ✓	0.67	WP42
Working plane (Room 46) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	339 lx (≥ 300 lx) ✓	169 lx	652 lx	0.50 (≥ 0.00) ✓	0.26	WP43
Working plane (Room 48) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	409 lx (≥ 300 lx) ✓	179 lx	700 lx	0.44 (≥ 0.00) ✓	0.26	WP44
Working plane (Room 49) Perpendicular illuminance (adaptive) Height: 0.800 m, Wall zone: 0.000 m	79.6 lx (≥ 50.0 lx) ✓	26.0 lx	187 lx	0.33 (≥ 0.00) ✓	0.14	WP45

public works

Department:
Public Works
REPUBLIC OF SOUTH AFRICA

SAMPLE SPECIFICATION

FOR THE

ELECTRICAL INSTALLATION

OF A

COMPREHENSIVE SERVICE

IN FICKSBURG PRISON DCS

JULY 2022

SAMPLE SPECIFCATION FOR THE ELECTRICAL INSTALLATION

OF A COMPREHENSIVE SERVICE

AT
FICKSBURG PRISON DCS

CONSISTING OF:

SECTION C3..... : ELECTRICAL INSTALLATION WORK

In part C3 see separate documents for:

Building work
Mechanical work
Fire detection work
Generator
Lift
Etc.

INDEX **PAGE NO.**

SPECIFICATION FOR ELECTRICAL WORK

PART 1 - GENERAL

CONTENTS

PART 1 - GENERAL

1 TESTS

After completion of the works and before practical completion is achieved, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installations will be inspected and the Contractor shall make good, to the satisfaction of the Principle Agent/Electrical Engineer or the employer, any defects which may arise.

The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

2 MAINTENANCE OF INSTALLATIONS

With effect from the date of the Practical completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Principle Agent/Electrical Engineer or the Employer, at his own expense replace the whole of the installations or such parts thereof as the Principal Agent/Electrical Engineer or the Employer may deem necessary with apparatus specified by the Principal Agent/Electrical Engineer or the Employer.

3 REGULATIONS

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works

4 NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

5 SCHEDULE OF FITTINGS

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

6 QUALITY OF MATERIALS

Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Departmental specifications for various materials to be used on this Contract are attached to and form part of this specification.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to IEC Specifications, where no SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

7 CONDUIT AND ACCESSORIES

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be

black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SANS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

a) Screwed metallic conduit and accessories: SANS 61386-1 and 21.

b) Plain-end metallic conduit and accessories: SANS 61386-1 and 21.

c) Non-metallic conduit and accessories: SANS 61386-1 and 21.

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit.

Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor's expense.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SANS 32 and SANS 121.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

8 CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1,5m by means of saddles screwed to the roof timbers.

Nail or crampets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450 mm. The Contractor shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 0,9m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

Conduit runs from distribution boards shall, where possible terminate in fabricated sheet steel draw-boxes installed directly above or in close proximity to the boards.

9 SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided, however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

10 CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp

bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferable be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

11 FLEXIBLE CONNECTIONS FOR CONNECTING UP OF STOVES, MACHINES, ETC.

Flexible tubing connections shall be of galvanised steel construction, and in damp situations of the plastic sheathed galvanised steel type. Other types may only be used subject to the prior approval of the Department's site electrical representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadmium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

Aluminium and zinc alloy connectors will not be acceptable.

12 WIRING:

Except where otherwise specified in Part 2 of this specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit will be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduits to be clear of moisture and debris before wiring is commenced.

Unless otherwise specified in Part 2 of this specification or indicated on the service drawings, the wiring of the installation shall be carried out in accordance with the "Wiring Code". Further to the requirements concerning the installation of earth conductors to certain light points as set out in the "Wiring Code", it is a specific requirement of this document that where plain-end metallic conduit or non-metallic conduit has been used, earth conductors must be provided and drawn into the conduit with the main conductors to all points, including all luminaires and switches throughout the installation.

Wiring for lighting circuits is to be carried out with 1,5mm² conductors and a 1,5mm²-earth conductor. For socket outlet circuits the wiring shall comprise 4mm² conductors and a 2,5mm²-earth conductor. In certain instances, as will be directed in Part 2 of this specification, the sizes of the aforementioned conductors may be increased for specified circuits. Sizes of conductors to be drawn into conduit in all other instances, such as feeders to distribution boards, power points etc., shall be as specified elsewhere in this specification or indicated on the drawings. Sizes of conductors not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 1507.

Where cable ends connect onto switches, luminaires etc., the end strands must be neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

13 SWITCHES AND SOCKET OUTLETS

All switches and switch-socket outlet combination units shall conform to the Department Quality Specifications, which form part of this specification.

No other than 16 A 3 pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1,4m above finished floor level and all socket outlets as directed in the Schedule of Fittings which forms part of this specification or alternatively the height of socket outlets may be indicated on the drawings.

14 SWITCHGEAR

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Departmental Quality Specifications which form part of this specification and shall be equal and similar in quality to such brands as may be specified.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear mentioned in the Quality Specifications shall be used throughout the installations.

15 SWITCHBOARDS

All boards shall be in accordance with the types as specified, be constructed according to the detail or type drawings and must be approved by the Employer before installation.

In all instances where provision is to be made on boards for the supply authority's main switch and/or metering equipment the contractor must ensure that all requirements of the authorities concerned in this respect are met.

Any construction or standard type aboard proposed, as an alternative to that specified must have the prior approval of the Employer.

All busbars, wiring, terminals, etc., are to be adequately insulated and all wiring is to enter the switchgear from the back of the board. The switchgear shall be mounted within the boards to give a flush front panel. Cable and boxes and other ancillary equipment must be provided where required.

Clearly engraved labels are to be mounted on or below every switch. The working of the labels in English, is to be according to the lay-out drawings or as directed by the Electrical Engineer and must be confirmed on site. Flush mounted boards to be installed with the top of the board 2,0m above the finished floor level.

16 WORKMANSHIP AND STAFF

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

17 VERIFICATION AND CERTIFICATION OF ELECTRICAL INSTALLATION (CERTIFICATE OF COMPLIANCE AND TEST REPORT

On completion of the service, a certificate of compliance must be issued to the Principal Agent/Electrical Engineer or Employer in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in the format as set out in SANS 10142-1 & 2.

18 EARTHING OF INSTALLATION

Main earthing

The type of main earthing must be as required by the supply authority if other than the Employer, and in any event as directed by the Principal Agent/Electrical Engineer, who may require additional earthing to meet test standards.

Where required an earth mat shall be provided, the minimum size, unless otherwise specified, being 1,0m

x 1,0m and consisting of 4mm diameter hard-drawn bare copper wires at 250mm centres, brazed at all intersections.

Alternatively or additionally earth rods or trench earths may be required as specified or directed by the Electrical Engineer.

Installations shall be effectively earthed in accordance with the "Wiring Code" and to the requirements of the supply authority. All earth conductors shall be stranded copper with or without green PVC installation.

Connection from the main earth bar on the main board must be made to the cold water main, the incoming service earth conductor, if any and the earth mat or other local electrode by means of 12mm x 1,60 mm solid copper strapping or 16 mm² stranded (not solid) bare copper wire or such conductor as the Department's representative may direct. Main earth copper strapping where installed below 3m from ground level, must be run in 20 mm diameter conduit securely fixed to the walls.

All other hot and cold water pipes shall be connected with 12mm x 0,8mm perforated for solid copper strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipework with brass nuts and bolts and against walls with brass screws at 150-mm centres. In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6m of switchboards an earth connection consisting of copper strapping shall be installed between the pipework and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each distribution board.

Roofs, gutters and down pipes

Where service connections consist of overhead conductors, all metal parts of roofs, gutters and down pipes shall be earthed. One bare 10mm² copper conductor shall be installed over the full length of the ceiling void, fixed to the top purlin and connected to the main earth conductor and each switchboard. The roof and gutters shall be connected at 15m intervals to this conductor by means of 12mm X 0,8mm copper strapping (not conductors) and galvanised bolts and nuts. Self-tapping screws are not acceptable. Where service connections consist of underground supplies, the above requirements are not applicable.

Sub-distribution boards

A separate earth connection shall be supplied between the earth busbar in each sub-distribution board and the earth busbar in the Main Switchboard. These connections shall consist of a bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised where specified or approved.

Sub-circuits

The earth conductors of fall sub-circuits shall be connected to the earth busbar in the supply board in accordance with SANS 10142.

Ring Mains

Common earth conductors may be used where various circuits are installed in the same wire way in accordance with SANS 10142. In such instances the sizes of earth conductors shall be equivalent to that of the largest current carrying conductor installed in the wire way, alternatively the size of the conductor shall be as directed by the Engineer. Earth conductors for individual circuits branching from the ring main shall by connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

Non-metallic Conduit

Where non-metallic conduit is specified or allowed, the installation shall comply with the Department's standard quality specification for "conduit and conduit accessories".

Standard copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including metal switch boxes, socket-outlet boxes, draw-boxes, switchboards,

luminaires, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

Flexible Conduit

An earth conductor shall be installed in all non-metal flexible conduit. This earth conductor shall not be installed externally to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

Connection

Under no circumstances shall any connection points, bolts, screws, etc., used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided.

Unless earth conductors are connected to proper terminals, the end shall be tinned and lugged.

19 MOUNTING AND POSITIONING OF LUMINAIRES

The Contractor is to note that in the case of board and acoustic tile ceilings, i.e. as opposed to concrete slabs, close co-operation with the building contractor is necessary to ensure that as far as possible the luminaires are symmetrically positioned with regard to the ceiling pattern.

The layout of the luminaires as indicated on the drawings must be adhered to as far as possible and must be confirmed with the Department's representative.

Fluorescent luminaires installed against concrete ceilings shall be screwed to the outlet boxes and in addition 2 x 6mm expansion or other approved type fixing bolts are to be provided. The bolts are to be ¾ of the length of the luminaires apart.

Fluorescent luminaires to be mounted on board ceilings shall be secured by means of two 40mm x No. 10 round head screws and washers. The luminaires shall also be bonded to the circuit conduit by means of locknuts and brass bushes. The fixing screws are to be placed ¾ of the length of the fitting apart.

Earth conductors must be drawn in with the circuit wiring and connected to the earthing terminal of all fluorescent luminaires as well as other luminaires exposed to the weather in accordance with the "Wiring Code".

Incandescent luminaires are to be screwed directly to outlet boxes in concrete slabs. Against board ceilings the luminaires shall be secured to the brandering or joists by means of two 40mm x No. 8 round head screws.

PART 2: INSTALLATION DETAILS

[Omit which is not applicable. Clauses 1 to 10 of Part 2 are standard clauses (which should not be altered) and must be inserted in the document in the order as set out.]

CONTENTS

PART 2: INSTALLATION DETAILS

1 CABLE SLEEVE PIPES

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in earthenware or high-density polyethylene pipes.

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

2 NOTICES

The Contractor shall issue all notices and make the necessary arrangements with Supply Authorities, the Postmaster-General, and S.A. Transport Services, Provincial or National Road Authorities and other authorities as may be required with respect to the installation.

3 ELECTRICAL EQUIPMENT

All equipment and fittings supplied must be in accordance with the attached quality specification (Part 3 of this document), suitable for the relevant supply voltage, and frequency and must be approved by the Employers Electrical Engineer.

4 DRAWINGS

The drawings generally show the scope and extent of the proposed work and shall not be held as showing every minute detail of the work to be executed.

The position of power points, switches and light points that may be influenced by built-in furniture must be established on site, prior to these items being built in.

5 BALANCING OF LOAD

The Contractor is required to balance the load as equally as possible over the multiphase supply.

6 SERVICE CONDITIONS

All plant shall be designed for the climatic conditions appertaining to the service.

7 SWITCHES AND SOCKET OUTLETS

The installation of switches and socket outlets must conform to clause 13 of Part 1 of this specification.

8 LIGHT FITTINGS AND LAMPS

The installation and mounting of luminaires must conform to clause 19 of Part 1 of this specification.

All fittings to be supplied by the Contractor shall have the approval of the Employer.

The light fittings must be of the type specified in the Schedule of Light Fittings.

9 EARTHING AND BONDING

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described in clause 18 of Part 1 of this specification and to the satisfaction of the Employer/s Electrical Engineer.

10 MAINTENANCE OF ELECTRICAL SUPPLY

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the Client and the Employer's Electrical Engineer.

11 EXTENT OF WORK

The work covered by this contract comprises the complete electrical installation, in working order, as shown on the drawings and as per this specification, including the supply and installation of all fittings and also the installation of such equipment supplied by the Employer.

12 SUPPLY AND CONNECTION

There is enough existing 250 kVA electrical supply on site.

EXAMPLE:

The supply is at 400/230 Volt 50Hz.

The Contractor shall connect to the existing supply as per the designs.

The Contractor will be responsible for the supply and installation of the supply cable from the meter box to the main low-tension distribution board (MDB). The size and length of the cable is listed in the Schedule of Cables and measured in the Bills of Quantities.

Standby Plant

Currently there is a standby generator with a 250kVA capacity complete with an automatic changeover control panel. The standby generator provides full back up for normal power supplies.

It is the Contractor's responsibility to reconnect the generator once the wiring upgrade has been completed.

13 CONDUIT AND WIRING

Conduit and conduit accessories shall be black enameled/galvanized screwed conduit or black enameled/galvanized plain end conduit in accordance with SANS 61386.

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of clauses 4 to 8 of Part 1 of the specification. Wiring of the installation shall be carried out as directed in clause 9 part 1 of this specification.

Where plain end conduit is offered all switches and light fittings must be supplied with a permanent earth terminal for the connection of the earth wire.

Lugs held by switch fixing screws or self tapping screws will not be acceptable.

13.1 Telephone Installation

The Contractor shall allow for the complete installation of all conduits, outlet boxes, the communication service provider Distribution boards, sleeve pipes, etc., required for the telephone system as shown on the drawings.

The sizes of all telephone conduits are indicated on the drawings and must be installed in the floor slab. Galvanized steel draw-wires shall be installed in all conduits.

End boxes must consist of a 50mm x 100 mm x 100mm outlet box fitted with suitable blank cover plates, flush mounted 0,4m above floor level.

The communication service provider Distribution Board must consist of a 150mm x 600mm x 600mm metal box and hinged door with a 20mm thick wooden backboard. The board must be flush mounted, 1,37m above the floor.

13.2 Intercom Installation

The supply and installation of the intercom system is not included in this Contract.

The Contractor shall allow for the complete supply and installation of all conduits and outlet boxes required for the intercom installation as shown on the drawings.

The size of all conduits, boxes and mounting heights of the end boxes are indicated on the drawings. Galvanized steel draw-wires shall be installed in all conduits and the boxes fitted with suitable blank cover plates.

13.3 Power Trunking

The Contractor shall be responsible for the supply and installation of all power trunking complete with corner pieces, end pieces, junction pieces, supply conduits, cover plates and power outlets as specified and indicated on the drawings.

The power trunking must comply with SANS 61084. The Contractor must ensure that the power trunking is installed to satisfaction of the Employer's Electrical Engineer before commencing with the wiring of the power trunking.

[The method of installing and wiring of the power trunking must be specified in detail.]

14 POWER POINTS

Allow for the installation of power points and equipment as listed in the schedule, indicated on the drawings and described below:

14.1 ELECTRIC STOVE
14.2 ELECTRIC COOKING TOP
14.3 WATER HEATERS, ETC.

[The power points required for the service must be specified in detail with reference to supplier of the equipment, method of installation and final connection. The size of the conduit/the conductors and cable must be listed in the Schedule of Power Points.]

Example: Water Heaters

The Contractor must electrically connect all water heaters as specified and listed in the Schedule of Power Points.

NOTE: The hot water installation must be approved by the Employers Electrical Engineer. Detail with regard to the size and type of water heaters that must be provided must be obtained from the Architect.

15 CABLES

The Contractor shall supply and completely install all distribution cables as indicated on the drawings, and listed in the Schedule of Cables.

No	Cable size	Use
1	1.5mm^2	Power supply to cell call system buttons.
2	2.5mm^2 housewire	Power supply to lighting circuits.
3	2.5mm^2 4 core	Potato peeler.
4	2.5mm^2 bare copper wire	Earthing wire for lights, plugs and air-conditioners.
5	4mm^2 housewire	Power supply to the plugs and air-conditioners.
6	4mm^2 4 core	Walk-in fridge, freezers and food warmer.
7	4mm^2 bare copper earth wire	Earthing wire for geysers.
8	6mm^2 housewire	Power supply to geysers.
9	6mm^2 bare copper wire	Earthing wire for cooking pots.
10	10mm^2 4 core SWA	Power supply to cooking pots
11	10mm^2 bare copper wire	Earthing wire for oven and stove.
12	16mm^2 4 core SWA	Power supply to oven and stove.
13	120mm^2 4 core SWA	Power supply to kitchen DB.
14	70mm^2 bare copper wire	Earthing wire for kitchen DB.
15	95mm^2 bare copper wire	Earthing wire for Main DB.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 0,9m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sites free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 75mm thick bed of earth and be covered with a 150-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best established practice by competent cable jointers using first class materials or by means of approved epoxy-resin pressure type jointing kits. Epoxy-resign joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low tension PVCA cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but shall not be less than 4mm² or more than 70mm². A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

15.1 LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

[The requirements specified hereafter, are aimed essentially at high tension cable but are also valid for low tension cable, where applicable.]

1. The use of the term "Inspector", includes the engineer or inspector of the Department or an empowered person of the concerned supervising consulting engineer's firm.

2. No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.

3. After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.

4. All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.

5. Before the Contractor allows the jointer to commence with the jointing work or making off of the cable (making off is recognized as half a joint) he must take care and ensure:

5.1 That he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable ferrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,

5.2 That the joint pit is dry and that all loose stones and material are removed,

5.3 That the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,

5.4 That the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,

5.5 That the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,

5.6 That the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,

5.7 That the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,

5.8 That the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,

5.9 That the heating of cable oil, cable compound, plumbers metal and solder is arranged that they are at the correct temperature when required so that the cable is not unnecessary exposed to the atmosphere and consequently the ingress of moisture (care must be taken of overheating)

Flow temperatures of cable oil and compound must be determined with suitable thermometers. Cable oil and compound must not be heated to exceed the temperatures given on the containers and precaution must be taken to ensure that the tin is not overheated in one position. The whole mass must be evenly and proportionally heated.

(Temperatures of solder and plumbers metal may be tested with brown paper (testing time: 3 seconds). The paper must colour slightly - not black or burnt).

6. Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated paper tape in warm cable oil heated to a temperature of 130 ± 5°C.

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation and the amount of the froth gives an indication of the moisture present.

7. If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.

8. The joint or making off of paper insulated cables must not be commenced during rainy weather.

9. Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.

10. The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.

11. Relating to the jointing of the cable the following requirements apply:

11.1 All jointing must be carried out in accordance with recognized and tried techniques and comply strictly with the instructions given by the supplier of the jointing kit.

11.2 The cables must be twisted by hand so that the cores can be joined according to the core numbers. If necessary the cable is to be exposed for a short distance to accomplish this. Under no circumstances may the cores in a joint be crossed so as to enable cores to be joined according to the core numbers. If it is not possible to twist the cables so that the preceding requirements can be met, then cores are to be joined in the normal way without any consideration of the core numbers.

11.3 Normally the cables will have profile conductors. The conductors shall be pinched with gas pliers to form a circular section, bound with binding wire so that they do not spread, and then tinned before jointing.

11.4 Jointing ferrules, the length of which are at least 6 times the diameter of the conductors, must be slid over the conductor ends to be joined and pinched tightly. Then they are soldered by means of the ladle process whilst being pinched further closed.

Use resin only as a flux. The slot opening in the ferrule must be completely filled, including all depressions.

Remove all superfluous metal with a cloth dipped in tallow. Work during the soldering process must be from top to bottom. Rub the ferrule smooth and clean with aluminium oxide tape after it has cooled down to ensure that there are not any sharp points or edges.

NB: The spaces between the conductor strands must be completely filled by soldering process and must be carried out quick enough to prevent the paper insulation from burning or drying out unnecessarily.

11.5 After the ferrules have been rubbed smooth and clean, they and the exposed cores must be treated with hot cable oil (110°C) to remove all dust and moisture. These parts are to be thoroughly basted with the oil.

11.6 The jointer must take care that his hands are dry and clean before the joint is insulated. Also the insulating tape which is to be used must first be immersed in warm cable oil (110°C) for a sufficient period to ensure that no moisture is present.

11.7 After the individual cores have been installed they must be well basted with hot cable oil and again after the applicable separator and/or belt insulation tape is applied before the lead joint sleeve is placed in position.

11.8 The lead joint sleeve must be thoroughly cleaned and prepared before it is placed on the cable and must be kept clean during the whole jointing process. Seal the filling apertures of the sleeve with tape until the sleeve is ready for compound filling.

11.9 The plumbing joints employed to solder the joint sleeve to the cable sheath, must be cooled off with tallow and the joint sleeve is to be filled with compound while it is still warm. Top up continuously until the joint is completely filled to compensate for the compound shrinkage.

11.10 The outer joint box must be clean and free from corrosion. After it has been placed in position it must be slightly heated before being filled with compound. Top up until completely full.

12. As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

16. DISTRIBUTION BOARDS

In addition to clause 14 and clause 15 of Part 1 of this specification the following shall also be applicable to switchboards required for this service.

BUILDING	DISTRIBUTION BOARD	TYPE OF BOARD
Admin Block	DB-B/ Main	Floor Stand
Kitchen	DB - A	Wall Mounted
Guard House	DB - C	Wall Mounted
Rondavel	DB - D	Wall Mounted

The Contractor shall supply and install the distribution boards as indicated on the drawings and listed in the distribution Board Schedule. All distribution boards shall comply with the quality specification in Part 3 of this specification, and be approved by the Employer's Electrical Engineer.

BUILDING	DISTRIBUTION BOARD	TYPE OF BOARD
Kitchen	DB - A	Wall Mounted

18. SCHEDULE OF LIGHT FITINGS

The Departmental Quality Specification for the relevant luminaires must be included in Part 3 of the specification.

The light fittings and accessories are to be according to the quality specifications in Part 3 and shall be approved by the Employer.

Type A: Surface mounted LED 2x36W/3W emergency, 4000K 8436lm T-Line LED strip complete with diffuser colour 4000K with SANS approved mark.

Type D: **31W LED Decorative indoor bulk head, 2250lm LED strips complete with diffuser colour 4000K with SANS approved mark.**

Type F: **31W wall mounted LED Decorative bulk head Vandal Resistance with IP65, 2250lm strips complete with diffuser colour 4000K with SANS approved mark.**

Type G: **IP65 100W led high mast 10000lm LED strips complete with diffuser colour 2700K-6500K with SANS approved mark.**

Type TP: **Surface mounted LED 2x36W/3W emergency, temper proof and Vandal resistance with IP65, 8436lm, strip complete with diffuser colour 4000K with SANS approved mark.**

Type FL: **50W Outdoor LED Flood Light with IP 65 rating, .Colour cool white, 4000K, Flux of 4600lm**

Type C: **1x36W T-Line Surface mounted LED clips onto T Profile White Zhaga Boards 5500-6500K, 2880lm, IP22**

Exterior light description	**Type**	**Picture**
Ingress protection - IP65 31W LED Decorative bulk head High-pressure die-cast aluminium Vandal Resistance, Operating temperature range (Ta) -20°C to +35°C LED colour temperature 4000K (Neutral white 840)	F	
Ingress protection - IP66 Designed to operate LED light sources of up to 147W in an ambient temperature (Tq) environment of up to 25˚C, without reducing the useful lifetime of 100 000 hours, at a lumen depreciation of not more than 5% (L95B10), LED colour temperature 4000K (Neutral white).Recommended installation height 4m to 15m	G	
Interior light description	**Type**	**Picture**

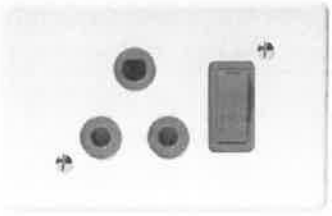
2x36W/3W emergency T-Line Surface mounted LED Clips onto T Profile 1150mm White Zhaga Boards 4000K 500mA Non-dimmable controller (23.21W/m), 8436lm	A	
31W LED Decorative bulk head High-pressure die-cast aluminium Vandal Resistance, Operating temperature range (Ta) -20°C to +35°C LED colour temperature 4000K (Neutral white 840)	D	
Ingress Protection – IP65 3x36w/3w emergency LED Up to 3.8kg Materials: Housing: Marine grade aluminium (EN 1706 AC-44300) Diffuser: Polycarbonate Standard colour: Pearl Light Grey (RAL 9022), Textured finish LED light sources Correlated colour temperature (CCT): 4000K (Neutral white 840) Colour rendering index (CRI): ≥80 Wattage: 7W - 56W Flux: 1060lm - 8200lm	TP	
50W Outdoor LED Flood Light with IP 65 rating , .Colour cool white ,4000K ,Flux of 4600lm	FL	

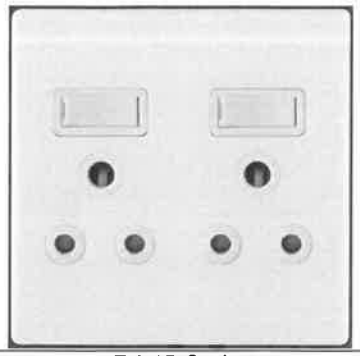
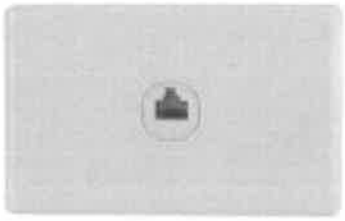
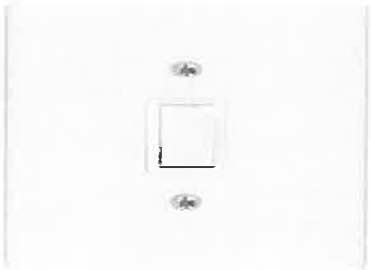
1x36W T-Line Surface mounted LED clips onto T Profile White Zhaga Boards 5500-6500K ,2880lm ,IP22	C	

19. SCHEDULE OF POWER POINTS

BOARD	OWER POINT	TYPE	SIZE OF CABLES, CONDUIT AND WIRING	LOAD WATTS
MDB	PP1	Aircon	20mm dia. conduit with 4mm² conductors and 2,5mm² earth wire	1200
	PP2	geyser	20 mm dia. conduit with 4mm² conductors and 2,5mm² earth wire	1200
	PP3	Aircon	20mm dia. conduit with 4mm² conductors and 2,5mm² earth wire	1200
	PP4	Geyser	20mm dia. conduit with 4mm² conductors and 2,5mm² earth wire	1200
	PP5	Geyser	25mm dia. conduit with 6mm² conductors and 4mm² earth wire	3000
	PP6	Geyser	25mm dia. conduit with 6mm² conductors and 4mm² earth wire	3000
	PP7	Geyser	25mm dia. conduit with 6mm² conductors and 4mm² earth wire	3000
	PP8	Geyser	25mm dia. conduit with 6mm² conductors and 4mm² earth wire	3000
DB-A	PP1	Port	25 mm dia. conduit with 10mm² conductors and 6mm earth wire	18000
	PP2	Port	25 mm dia. conduit with 10mm² conductors and 6mm earth wire	18000
	PP6	Port	25 mm dia. conduit with 10mm² conductors and 6mm earth wire	18000
	PP4	Stove	25mm dia.conduit with 16mm²conductors and10mm earth wire	22000
	PP5	Oven	25 mm dia. conduit with 16mm² conductors and 10mm earth wire	24000
	PP6	Wormer	**25 mm dia. conduit with 10**mm² conductors and 2,5mm earth wire	7000
	PP7	Pan	**25 mm dia. conduit with 16**mm² conductors and 10mm earth wire	18000
	PP8	Geyser	**25 mm dia. conduit with 6**mm² conductors and 4mm earth wire	1800
	PP9	Freezer	**25 mm dia. conduit with 4**mm² conductors and 2,5mm earth wire	8000
	PP10	Cold-room	**25 mm dia. conduit with 4**mm² conductors and 2,5mm earth wire	8000
	PP11	Aircon	**25 mm dia. conduit with 4**mm² conductors and 2,5mm earth wire	1200
	PP12	Aircon	**25 mm dia. conduit with 4**mm² conductors and 2,5mm earth wire	1200

	PP13	Geyser	**25 mm dia. conduit with 6**mm² conductors and 4mm earth wire	1500
	PP14	Geyser	**25 mm dia. conduit with 6**mm² conductors and 4mm earth wire	3000
DB-C	PP1	Intercom	4mm² 2-core PVCA cable with 4mm² earth wire	500
DB-D	PP1	Aircon	25 mm dia. conduit with 4mm² conductors and 2,5mm earth wire	1000

DESCRIPTION	LOCATION OF USE
STEEL SOCKET OUTLET 16A WITH ON/OFF SWITCH 	On walls of offices and tamperproof for cells.
Steel wall mounted 16 Amp normal euro switch socket 	Rondavel.
Steel wall mounted 16 Amp dedicated single switch socket 	Rondavel.
Steel wall mounted 16 Amp normal single switch socket	Nurse's station, kitchen and laundry area.

	
RJ 45 Outlet 	Rondavel.
RJ 11 Outlet 	Rondavel.
Galvanised steel power skirting with 1 x Normal socket, 1 x Euro socket, 1 x Dedicated docket, 1x RJ45, 1x RJ11 	Offices.
Steel wall mounted 16 Amp 1 lever 1 way light switch 	All indoor areas.

Existing weatherproof rotary switch 	Outdoor of cells
Motion Sensor Infra-Red 360 degree - PIR36 	Offices.
5 – 50 LUX (adjustable)Switches lights ON at dusk and OFF at dawn Compatible with LED, incandescent, fluorescent, quartz and halogen lighting domestic and business applications entrances, gates, offices and warehouses 20-240V AC, 25 Amp 	Outdoor walls.

Isolator Switch 30Amp with WaterProof Surface Box ; 50mm x 100mm; PVC wall box; SABS approved 	Geysers and airconditioners.
Stainless steel pedestrian isolators for kitchen equipment To be bolted into the floor and must be 40mm above the floor level  	Kitchen equipment.

20. SCHEDULE OF CABLES, CONDUIT AND WIRING

Supply, install and connect the following cable, conduit and wiring:

FROM	TO	SIZE AND TYPE	LOAD (kVA)
Meter box Normal Power	MDB	120mm2 4 core SWA	205 Amps 3 phase

21. SCHEDULE OF DISTRIBUTION BOARDS

The front panels of normal supply, standby power and no-break supply sections shall be painted in distinctive colours as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.
Standby power : Signal Red, colour A11 of SANS 1091.
No-break supply: Dark Violet, colour F06 or Olive Green, Colour H05 of SANS 1091.

Indicated is the probable fault level rating (kA) of the busbars. Refer to the Summary of Switchgear and

Circuits for the minimum fault level rating of specified equipment.

BOARD	TYPE	PANEL	FAULT LEVEL	LOAD kVA
DB A	Surface mounted with door	Normal/Standby power	15 kA	205 Amps 3 phase
DB B/MAIN	Floor standing with door	Normal/Standby power	25 kA	214 Amps 3 phase
DB C	Surface, with door	Normal/Standby power	3 kA	7.1 Amps 1 phase
DB D	Surface mounted, with door	Normal/Standby power	3 kA	12.17 Amps 1 phase
Standby	Outdoor generator	Standby Power	15 kA	250 kVA

22. SUMMARY OF SWITCHGEAR AND CIRCUITS

The indicated fault current rating (kA) is the minimum value that the switchgear must comply with for connecting to the busbars of the respective panels-distribution boards.

MAIN DISTRIBUTION BOARD : MDB

PANEL - 1 : NORMAL POWER

Main switch/DB-B	:	250A three pole 25kA circuit breaker.
Distribution board – A	:	225A three pole 15kA circuit breaker.
Distribution board – C	:	30A three pole 5kA circuit breaker.
Distribution board – D	:	60A three pole 5A circuit breaker.
250kVA Standby plant	:	250A three pole 25kA circuit breaker.

PART 3: QUALITY SPECIFICATION FOR MATERIALS AND EQUIPMENT OF ELECTRICAL INSTALLATIONS

"Part 3: Quality specification for materials and equipment" manual of the Department of Public Works is applicable for this Contract and the manual can be obtained from the Department of Public Works.

[ONLY ITEMS OF MATERIAL applicable to the Contract must be included in Part 3]

CONTENTS

2.2
2.3
2.4

ADDITIONAL REQUIREMENTS OR SPECIFICATIONS NOT COVERED IN QUALITY SPECIFICATIONS ABOVE

LED LIGHTS

All Light fittings installed for this project is to be of the LED type, unless otherwise stated.

The following international standard specifications and South-African Bureau of Standards shall apply to the LED luminaire specification:

SANS 475	Luminaires for interior lighting, street lighting and floodlighting – Performance and requirements
SANS 10114-1	Interior lighting part 1: Artificial lighting of interiors
SANS 10114-2	Interior lighting part 2: Emergency lighting
SANS 60598-1	Luminaires part 1: General requirements and tests
SANS 60598-2.1	Luminaires part 2: Particular requirements section 1 – Fixed general purpose luminaires.
SANS 60598-2.2	Luminaires part 2: Particular requirements section 2 – Recessed luminaires.
SANS 60598-2.3	Luminaires part 2: Particular requirements section 3 – Luminaires for road and street lighting.
SANS 60598-2.5	Luminaires part 2: Particular requirements section 5 – Flood lighting.
SANS 61347-1 to 13	Lamp control gear
SANS 62031	LED modules for general lighting – Safety specifications
SANS 62384	DC or AC supplied electronic control gear for LED modules – Performance requirements.
SANS 62560	Self-ballasted LED lamps for general lighting services with supply voltages > 50V – Safety specification.
SANS 62612	Self-ballasted LED lamps for general lighting services with supply voltages > 50V – Performance requirements
EN 55015	Limits and methods of measurement of radio disturbance of electrical lighting or equipment.
EN 61000-3.2	Electromagnetic compatibility (EMC) limits for harmonic current emissions.
EN 61000-3.3	Electromagnetic compatibility (EMC) limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems.
EN 61547	Equipment for general lighting purposes: EMC immunity requirements.
IEC-EN 62471	Photo biological safety of lamps and lamp systems for LEDs
IES LM-79-08	Approved method: Electrical and photometric measurement of solid-state lighting products.
IES LM-80	Approved method: Measuring lumen maintenance of LED light sources.

General requirements:

The luminaire shall be suitable for operation with mid-power LEDs. **Note that no LED tubes are allowed to be used.**

The luminaire shall be suitable for operation on a 230V single phase 50Hz mains supply.

Power factor capacitors shall be supplied to correct the power factor to at least 0.95 of higher.

The luminaire shall be marked with identification labels stating the brand name and model and shall bear the SANS approval mark.

The driver shall comply with IEC 61347-1 and IEC 61347-2B as applicable and shall be suitable for operation on 230V +-10%, 50Hz single phase system and it must be insured that harmonics filter is provided as per SANS 61000-3-2. The drivers and LED circuitry shall be protected against lighting and power surges. Suitable surge arrestors with a 10kA rating shall be provided for indoor installations and 20kA for outdoor installations.

Colour rendering (Ra) shall be not less than 80 and lumen depreciation of not more than 30% L70 at 50 000 hours @ Tq 25°C. Colour temperature of the LED lamp shall be 4000K, unless otherwise stated.

Thermal requirements:

The luminaire must be able to withstand an ambient temperature of 35°C. Storage temperature of this luminaire should be able to handle -40°C < T < 60°C.

To this end internal electrical and mechanical components shall not be allowed to exceed their maximum temperature ratings of 75°C. Test reports from an independent authorised testing facility proving this requirement shall be made available on request.

Noise requirements:

The noise level emitted from the luminaire shall be kept as low as possible. Drivers/electronic components shall therefore fully comply with the latest edition of SANS 55015.

= END OF SPECIFICATION =

PART 4: BILLS OF QUANTITIES

Electrical, mechanical and/or any other engineering work must be measured by the quantity surveyor and must be prepared in accordance with the latest edition of the Standard System of Measuring Building Work.

No additional provision for Preliminaries may be included in the engineering sections of the bills of quantities.

Bills of Quantities are included in part C2.2 of the tender document.

PART 5: ELECTRICAL WORK MATERIAL SCHEDULE

The Contractor shall complete the following schedules and submit them to the Electrical Engineer within 21 days of the date of the acceptance of the tender.

The schedules will be scrutinised by the Electrical Engineer and should any material offered not comply with the requirements contained in the specification, the Contractor will be required to supply material in accordance with the contract at no additional cost.

NB: **Only one manufacturer's name to be inserted for each item.**

Item	Material	Make or trade name	Country of origin
1.	Distribution boards		
2.	Circuit breakers 1P, 2P, 3P		
3.	On load isolators without trips		
4.	Contactors 1P, 2P, 3P		
5.	Earth leakage relays 1 & 3 phase		
6.	H.R.C. fuse switches		
7.	Kilowatt hour meter		
8.	Current transformers		
9.	Voltmeter		
10.	Maximum demand ammeter		
11.	Daylight sensitive switch		
12.	Time switch		
13.	Conduit		
14.	Conduit boxes		
15.	Power skirting		
16.	Surface switches		
17.	Watertight switches		
18.	16A flush socket outlets		
19.	16A surface socket outlets		
20.	16A watertight socket outlets		
21.	Fluorescent luminaires		
22.	Type A		
	Type D		
	Type F		
	Type G		
	Type TP		
	Etc.		
23.	Bulkhead fittings: Type F		
24.	Spherical fittings: Type G		
25.	4 plate stove		
26.	Convection heater		
27.	Fan heater		
28.	Fans		
29.	Clocks		
30.	PVCA cable		
31.	Cable trays		

PARTICULARS OF ELECTRICAL CONTRACTOR

Note to consultants

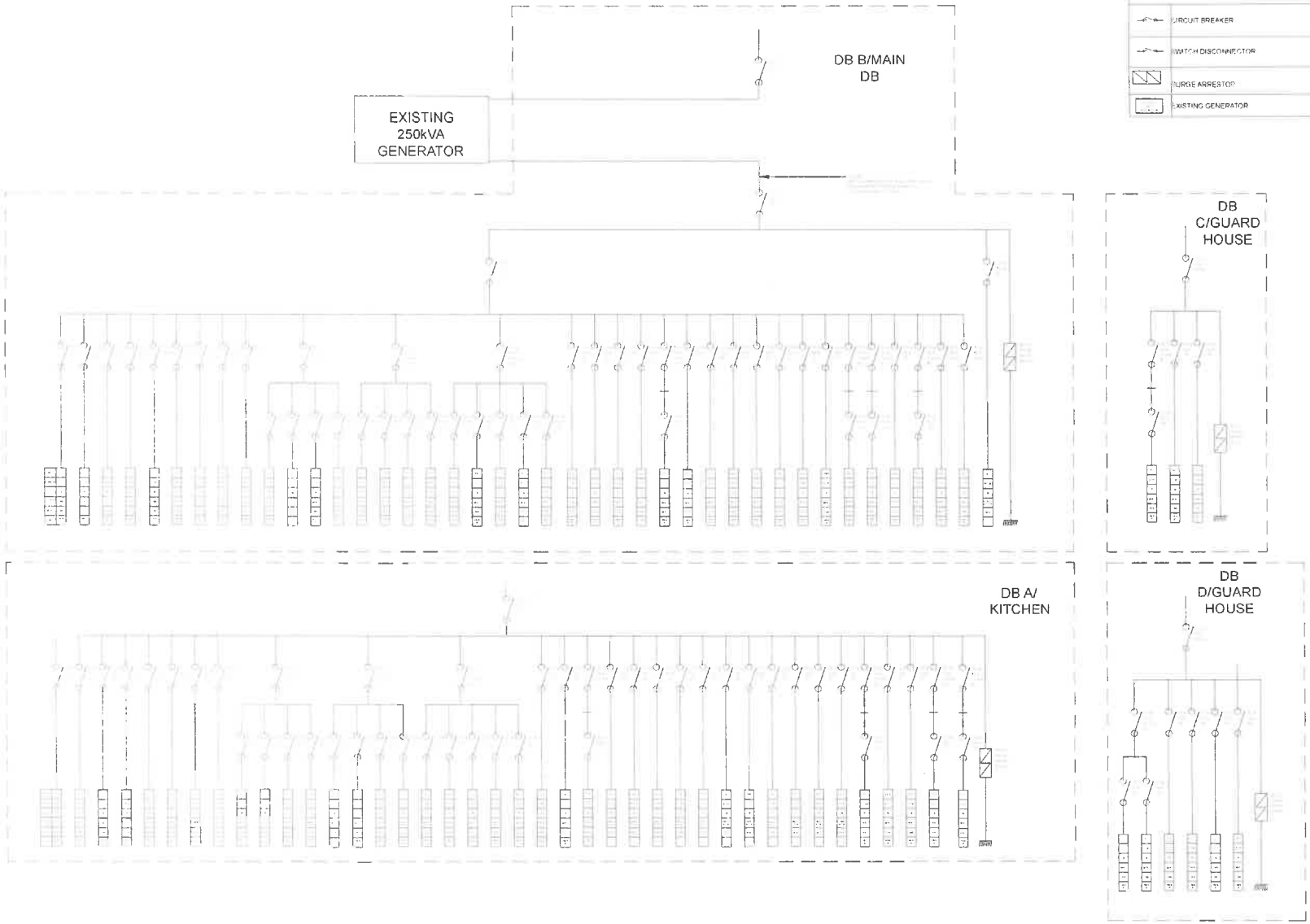
Please ensure that DPW -22(EC) Particulars of electrical contractor is inserted in main tender document.

PART 6: DRAWINGS

DRAWING NUMBER	TITLE
ES/EE/CS/01	Small power layout
ES/EE/CS/02	Isolator layout
ES/EE/CS/03	Lighting layout
ES/EE/CS/04	Single line diagram
ES/EE/CS/05	Site layout
ES/EE/CS/06	Data trunking layout
ES/EE/CS/08	Cell call system and security reticulation
ES/EE/CS/09	Cell call system

NOTE TO CONSULTANTS

List all drawings



SYMBOL DESCRIPTION	
	CIRCUIT BREAKER
	SWITCH DISCONNECTOR
	SURGE ARRESTOR
	EXISTING GENERATOR

No.	DATE	AMENDMENT	DPW
2	02/08/23	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES
All circuit breakers to be of the same manufacturer and SABS approved
Entire DB's can be manufactured,all DB's to be labelled with the spread the incoming cable size and short-circuit rating
Surge arrestors should be type 2 in all the DB's

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

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date:

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cad file name: page type A 1

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Consultant:

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Public Works and Infrastructure
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18 PRESIDENT BRAND STREET
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E-mail: nozandi.nomi@dpw.gov.za

discipline ELECTRICAL

service

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055485

drawing title SINGLE LINE DIAGRAM

ref.no.

scale: NTS

date : 24/07/23

designed M.SOVENDER

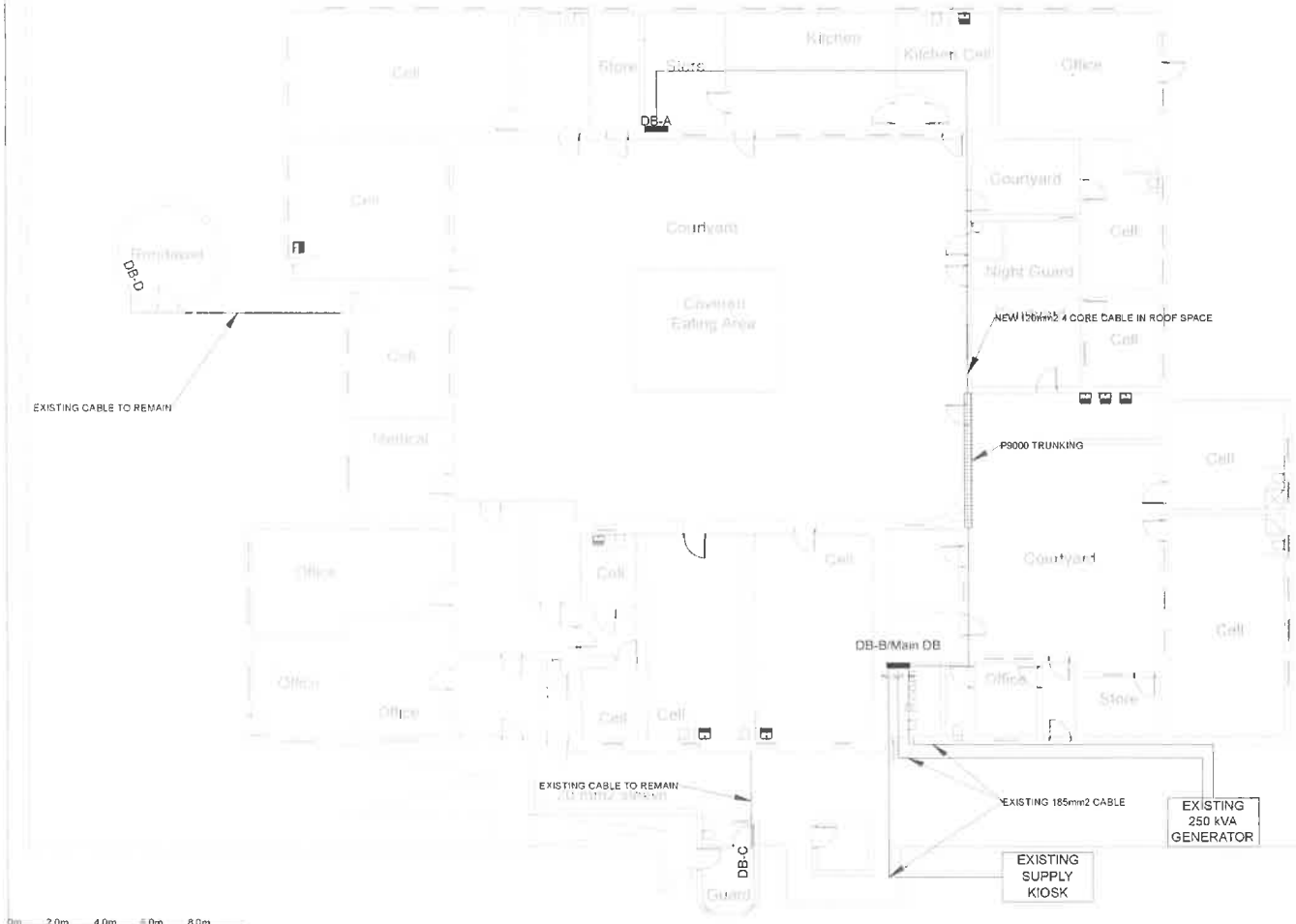
drawn

checked M.SOVENDER

approved S.PALMKAL

drawing number

ES/EE/CS/04



SYMBOL	DESCRIPTION

No.	DATE	AMENDMENT	DPW
2	02/04/2024	DETAILED DESIGN	N.N
1	04/7/2023	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES:
All cables going in and out of DB's must be in conduit

No other work will take place on other buildings on site

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AA-BUILT DRAWING REQUIREMENTS

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E-mail: nosandi.njoni@dpw.gov.za

discipline: ELECTRICAL

service:

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055488

drawing title: SITE LAYOUT

ref.no.:

scale: 1 : 100

date: 24/07/23

designed: M.GOVENDER

drawn: T.TUTANE

checked: M.GOVENDER

approved: S.SHLANGU

drawing number:

ES/EE/CS/05

SYMBOL DESCRIPTION
SYMBOL DESCRIPTION

No	DATE	AMENDMENT	DPW
0	05/01/22	PRELIMINARY DESIGN	N.N
1	21/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES
Trenching route and lengths are approximate as detailed site must space must be established first

Where trunking is to pass through walls the walls must be made good.

Only careful cutting of brickwork using circular saw or other tools are allowed

In order for the trunking to be installed the roof sheet must be moved in sections

The roof sheet carefully stored and plaster be temporarily use to avoid ingress of water. The roof is to be made good again with proper sealing

Draw wires must must be installed on trunking

as-built drawings

certified as-built drawings as per Centralised Drawing Archive AS-BUILT DRAWING REQUIREMENTS

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page type: A1

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discipline: ELECTRICAL

service:

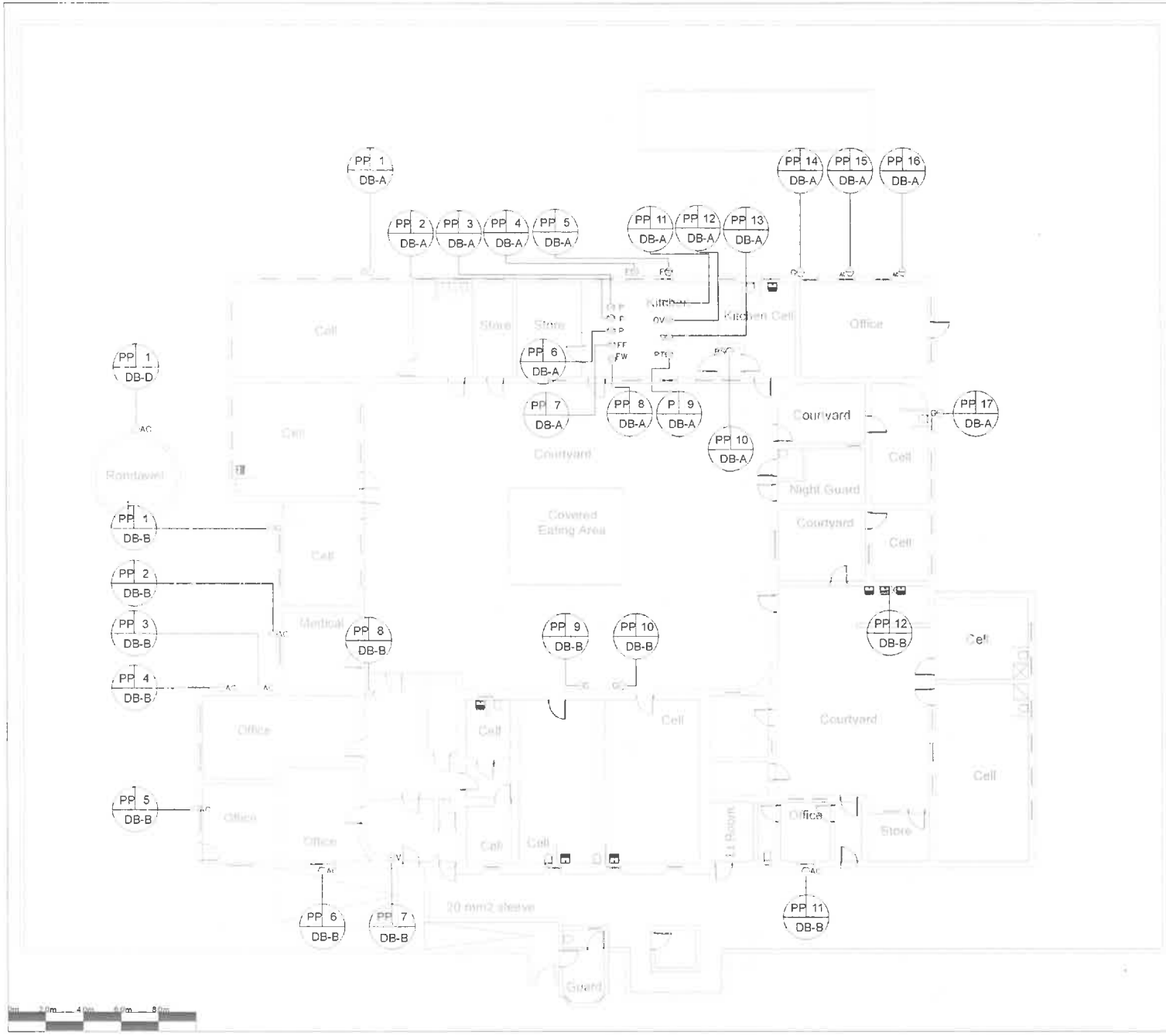
FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055488

drawing title: DATA TRUNKING LAYOUT

ref.no.	designed: M.MOVELIDEP
scale: 1 : 100	drawn: N.NJOMI
date: 21/07/23	checked: M.MOVELIDEP
drawing number:	approved: S.PALACKAL

ES/EE/CS/06



SYMBOL DESCRIPTION	
A	
B	
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AC	
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BS	
FW	
FF	

No.	DATE	AMENDMENT	D P W
0	07/06/23	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED SA PER ENGINEER'S COMMENTS	N.N

NOTES:
All isolator positions are provisional. The exact positions will be determined on site.
All wiring to be installed in trunking and conduit as per drawings
All isolators must be must be approved by the Engineer before installation
Cut the concrete for the installation of stainless steel pedestrian grids
Isolators for chain saw equipment must be pedestrian

as-built drawings

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E-mail: nozandi.njomi@dpw.gov.za

discipline: ELECTRICAL

service:

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055483

drawing title: ISOLATOR LAYOUT

ref.no.

designed: M.GOVENDER

drawn: NJOMI

scale: 1 : 100

checked: M.GOVENDER

date: 24/07/23

approved: S.PALACKAL

drawing number:

ES/EE/CS/02

SYMBOL DESCRIPTION
P
M
G
VI

No.	DATE	AMENDMENT	D P W
0	02/06/23	DETAILED DESIGN	N.N
1	24/07/23	AMMENDED AS PER ENGINEER'S COMMENTS	N.N

NOTES:
Trunking runs and lengths are provisional as available end/ spare must be established first.

Where trunking is to pass through walls the walls must be made good

Only careful cutting of brickwork using circular saw or other tools are allowed

In order for the trunking to be installed the roof sheet must be moved in sections

The roof sheet carefully stored and plastic be temporarily use to avoid ingress of water. The roof is to be made good again with proper sealing

as-built drawings

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Department:
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discipline: ELECTRICAL

service:

FICKSBURG CORRECTIONAL FACILITY: UPGRADING OF ELECTRICAL WIRING AROUND THE CENTRE

WCS number: 055488

drawing title: CELL CALL SYSTEM AND SECURITY RETICULATION

ref.no.	designed M.GOVENDER
scale 1 : 100	drawn M.GOVENDER
date: 24/07/23	checked M.GOVENDER
drawing number	approved S.PALACKAL

ES/EE/CS/08