

	Specification	Technology
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Title: **Duvha Power Station Admin
5th floor office partitioning
scope of work** Unique Identifier: **382- 1700543**

Alternative Reference Number: **N/A**

Area of Applicability: **Engineering**

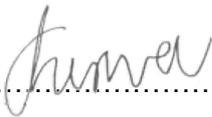
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1. INTRODUCTION

Duvha Power Station management team requires new office space for newly appointed senior managers. The senior management team offices are located at the fifth floor of Duvha main administration building. The current offices layout is partitioned using non-load bearing drywalls. It is required to rearrange the floor layout by reducing and relocate the boundaries of the current offices walls to create space for three additional offices. This scope of works covers Civil, Electrical and Airconditioning.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document covers the minimum technical specification for the scope of the works. The scope covers demolition a section of the existing drywall partitioning walls, installation of new partitioning walls for offices modification, Electrical power supply & lighting, Heat, Ventilation and Air Conditioning (HVAC) in Duvha Power Station main admin building. The scope of work to be delivered by the Contractor is defined in this document.

2.1.1 Purpose

The purpose of this document is to describe in detail the technical specification for scope of modifying the partitioning walls prescribed herein to be conducted by an appointed contractor.

2.1.2 Applicability

This document applies to Duvha Power Station only.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems.
- [2] ENVP0005 - Duvha Power Station Waste Management procedure
- [3] 240-107981296, Constructability Assessment Guideline
- [4] 240-53114186, Project/ Plant Specific Technical Document and Records Management Procedure
- [5] 240-86973501, Engineering Drawing Standard
- [6] National Environmental Management Act, 1998 (Act 107 of 1998)
- [7] National Environmental Management Waste Act, 2008 (Act 59 of 2008)
- [8] SANS 2001, Construction Works (All applicable parts)
- [9] 32-727 - Eskom Safety, Health, Environment and Quality (SHEQ) Policy
- [10] Occupational Health and Safety Act No. 85 of 1993, Asbestos regulations.

These documents are indispensable for the application of this document, i.e., documents to be used together with this document.

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2.2.2 Informative

- [11] 474-58 (Rev1): Document and Records Management
- [12] 240-53113685, Design Review Procedure
- [13] 240-53113953, Manage Engineering Accountability Procedure
- [14] 240-53114002, Engineering Change Management Procedure
- [15] 240-53114026, Project Engineering Change Management Procedure
- [16] 240-56364545, Structural Design and Engineering Standard
- [17] 240-76992014, Project/Plant Specific Technical Documents and Records Management Work Instruction
- [18] SANS 2001-CG1, Construction works – Part CG1: Installation of glazing in window and door frames.
- [19] SANS 10400-N: Glazing
- [20] SANS 10305-4: Painting of walls, ceilings, and cladding
- [21] SANS 1013: The installation of glazing in buildings.
- [22] SANS 266: Gypsum plasterboard
- [23] 240-55714363: Eskom Generation Power station Lighting and small power installation standard
- [24] 240-56227443: Requirements for Control and power cables for power stations
- [25] 240-86973501: Engineering drawing standard.
- [26] 240-56356396: Earthing and Lightning standard.
- [27] SANS 10114-1 Interior Lighting

2.3 DEFINITIONS

2.3.1 Disclosure Classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 ABBREVIATIONS

Abbreviation	Description
CoC	Certificate of Compliance
DB	Distribution Board
ECSA	Engineering Council of South Africa
ISO	International Organisation of Standards

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Abbreviation	Description
MCB	Miniature Circuit Breaker
OEM	Original Equipment Manufacturer
SANS	South African National Standards
SHEQ	Safety, Health, Environmental & Quality
SE	System Engineer
PD	Permissible Deviations
PM	Project Manager
PSR	Plant Safety Regulations
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
RT&D	Research, testing and Development
TDS	Technical Data Sheet

2.5 ROLES AND RESPONSIBILITIES

Power Station: It is the role of the Power Station to follow the necessary processes to appoint the Contractor(s) for the works stated herein.

System Engineer (SE): It is the role of the System Engineer to ensure that this scope is executed accordingly and ensure all the work is done as per specification.

Project Manager (PM): It is the role of the Project Manager is to manage the project and ensure all works are being executed with accordance to the contract agreement between the client and the appointed contractor.

Contractor: It is the role of the Contractor to conduct the works in accordance with the details provided in this document and adhere to all the terms in the contract.

2.6 REQUIRED CRITERIA FOR CONSULTANT

Not Applicable

2.7 RELATED/SUPPORTING DOCUMENTS

Not Applicable

3. SCOPE OF WORKS

3.1 DESCRIPTION OF THE *WORKS*

The Contractor is responsible for executing the scope of work that includes but not limited to removal of office furnisher, demolition of the existing drywall partitions, installation of new partition walls, Electrical power supply, lighting and HVAC system. The Contractor takes all necessary precautions that may be required to safeguard existing infrastructure and services including protection of all surface works. All the works required and described herein shall be detailed in a method statement thoroughly explaining how the work will be executed in a safe way and achieving the quality of work required.

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The Contractor takes note that review and acceptance of any document/ drawing/ design by the Project Manager in no way relieves the Contractor of his liability for the works. The Contractor remains liable for all works conducted as per this document.

The Contractor is liable and fully accountable for the works and the constructability thereof.

The Contractor interacts with others through the Project Manager, to ensure seamless integration of the various works.

Only trained personnel are allowed to perform repair and replacement works of all infrastructure.

Records of training are maintained by the Contractor's Quality Control Department

3.2 EMPLOYER'S DESIGN REQUIREMENTS

The building is an existing structure that needs to be repartitioned internally with non-bearing walls as per the scope of work defined in section 4.

There is currently an Electrical DB board located on the fifth floor. The incomer to this DB is a single-phase supply and this DB feeds all the lights, plug circuits and the air conditioning units on the fifth floor.

The *Contractor* is required to complete technical schedules A and B, appendix B of 240-55714363.

3.3 CONSULTANT 'S DESIGN

3.3.1 Temporary Works

The *Contractor* is responsible for the design of all temporary works required for the execution of the *works* and is mandated in terms of Construction Regulations 2014: Duties of Designer, 6(2) a – d, to fulfil the duties described therein for the temporary works designs done by the *Contractor*.

The *Contractor's* appointed ECSA professionally registered engineer:

- i. Reviews and approves (by signature) the designs and drawings of all temporary works and additional supports and method statements produced by the *Contractor*; and
- ii. Supervises, inspects, and approves the *works*.

4. CONSTRUCTION

The *Contractor* is responsible for the construction of the *works*, including all temporary works and design thereof, and all associated services in accordance with the layout drawings and specifications.

The *Contractor* disposes of all demolition waste at a licenced waste disposal site to be accepted by the *Project Manager*. The waste disposal site is selected to suit the classification of the materials to be disposed of. Certificates of disposal are required to be submitted to the *Employer*. The contractor shall provide their own waste bins for rubbles. The Bins shall be labelled for the type of waste to be disposed of.

4.1 CIVIL AND STRUCTURES SCOPE

4.1.1 Preparations of the working space

- Remove office furnisher to a safe temporary storage area as shown and arranged by the *Project Manager*.
- Eskom asset list shall be formally developed by the Client's *Project Manager* and reviewed by the *Contractor* to agree upon the office furnisher and any other asset to be moved during the construction. The asset list shall have detailed description, asset number (if any) and condition

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before removal and after being placed at the storage area, all defects shall be recorded. The same exercise shall be repeated when restoring the assets back to the original location after the construction. Both parties shall sign the asset list in agreement to witness and monitor the assets conditions during the construction.

- Employees working in the area shall be informed to evacuate with all their valuable items before the work starts.
- Electrical power supply to the offices affected shall be isolated before the works starts.
- The contractor shall have dust control system to eliminate or prevent dust in place prior to the demolition and construction works. The dust control system shall form part for the works execution method statement.

4.1.2 Demolition works and removal of services.

- Safely remove the electrical trunking that is mounted on the walls.
- Safely remove internet LAN cable from the walls, carefully not to damage existing infrastructures.
- Scrap and remove the existing dry walls as directed by the client's Engineer/Project Manager.
- All waste generated from the construction works shall be disposed into the correct waste bins.
- Remove the current tinted windows and curved wooden architectural feature on the front walls of the current offices. These items shall be removed carefully for reuse.
- Demolish the partitioning walls from the Technical Plant Manager's office to the HR Manger's office.
- Prior to demolition an inspection shall be conducted between the client and the contractor to identify and mark all the walls to be demolished as well as to safeguard existing infrastructures and services.
- Remove the current ceiling from Technical Plant Manager's office to the HR Manger's office.
- Remove the current existing floor carpet.

4.1.3 New Partitioning Wall Installation

- Supply and install non-load bearing dry walls of plasterboards of level 5 with galvanised metal studs wall framing.
- The Level 5 finish is required to achieve the highest degree of quality by providing a uniform surface and minimizing the possibility of joint photographing and/or fasteners showing through the final decoration.
- Administration building offices to be partitioned with accordance with the attached sketch.
- Partition walls shall include all accessories such as trimming between the walls and the floor tiles, mounting brackets and corner connectors.
- Standard grade plaster board must be manufactured in accordance with the latest edition of SANS 266:2003 consisting of aerated gypsum core bonded to durable paper liners with unprinted liner.
- Fire Retarded Plaster board manufactured in accordance with the latest edition of SANS 266:2003 Edition 2.2 consisting of aerated gypsum core with suitable additions fibreglass stands and un-exfoliated vermiculite bonded to durable paper liners with unprinted liner.
- Moisture Resistant Plasterboard – Standard Plaster board manufactured in accordance with the latest edition of SANS 266:2003 Edition 2.2 consisting of aerated gypsum with special additive core bonded to durable impregnated green paper liners with unprinted liner.
- The Galvanised metal studs to be 51mm with spacing recommended under Appendix A: two below.
- Maximum distance between fixings shall be 300mm.
- The Drywall Partitions and lightweight internal walls shall be installed in strict adherence to the material manufacturers' recommendations.
- Dry wall to include:

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- Insulation properties, 0.022W/mK (Watts per meter); as recommended by manufactures.
- Foam density, 36kg/m³.
- Each blank panel is injected with high density polyurethane covered with a temporary protective film.
- Acoustic properties of 32db drop through panel.
- All Requirements and tolerances shall be referred to Table 1 and 2 of SANS 266:2003
- Partitioning walls shall be sealed with the existing ceiling with silicon passed product accordance with manufacturer's instructions.
- Partitioning walls shall be painted with Antique petal forty-three or similar colour. Refer to table 1 of SANS 10305-4:2012 application compliance.
- The Permissible Deviations for the internal dry wall shall be with the given parameters as stated in table 1 herein the document.
- Supply and install premia skirting 15 x 80 mm Columbia along the office's walls.

4.1.4 Installation of new Ceiling

- Supply and install galvanised metal grid system for the ceiling support including main tees, cross tees, galvanised steel angel irons, hangers, and other accessories.
- Metal ceiling framework shall be of galvanized cold rolled sheet steel with a minimum yield stress of steel 230MPa.
- The minimum performance of the steel grid and tolerances shall comply with ASTM C635. The load bearing capacity/duty rating shall be evaluated and graded in accordance with ASTM C635.
- Galvanising coating shall comply with the requirements for class C1 corrosion exposure in accordance with ISO 9223.
- The manufacturing tolerance for steel shall be as table 5,6 and 7 of SABISA General Specification for Suspended Ceilings: June 2022.
- Supply and install new moisture resistant plastered of 6.4mm thick standard size panels ceiling from office 3 to 11.
- Fasteners shall comply with the requirements on table 10 of SABISA General Specification for Suspended Ceilings: June 2022.
- The ceiling plasterboards shall be installed after the routing of electrical cables, smoke detectors as well as repositioning of central unit air-conditioning vents.
- Supply and install shadow line trim along the walls with all connection and mounting accessories.
- Make provision for lighting, HVAC vents and smoke detectors installation.

4.1.5 Installation of new floor carpets

- Supply and install new commercial duty carpets in the office.
- Office carpets shall be plain blue (pantone 287c) colour as per 240-103414344 Eskom Corporate Identity Manual.

4.1.6 Installation of new doors

- Install the existing office doors in the new positions for the offices.
- 76mm aluminium profile door frames cut to size for a normal 2032mm x 813mm wooden door accordance with SANS 10400-B for all offices.
- Each is door framed with 0.5mm pre-painted galvanised capping riveted to door panel.

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- Supply and install new wooden internal doors of 2032mm x 813mm of light shade cottonwood colour or like existing doors colour for the additional offices.
- Supply and install all door accessories such as hinges and commercial door lock sets.

4.1.7 Glazing natural lighting

For Office 2,5,6,9 and 11 the following architectural works shall be done using the existing material.

- Modify the sizes of the current aluminium framed tinted windows to be as follows.
 - For the two upright tinted windows, reduce the width of the windows from 400mm to 300mm. The length of the window shall remain the same (2200mm).
 - For the horizontal top window, reduce the length from 3000mm to 2100mm and the width from 400mm to 300mm.
- Modify the current arc wooden architectural feature from 2200mm to 1500mm. The arch shape shall remain the same.

For Office 3,7 and 10 (new offices)

- Supply and install tinted glass of 5mm thick for the front partitioning walls.
- For the two upright windows the length shall be 2200mm and the width shall be 300mm
- For the horizontal top window, the length shall be 1500mm and a width of 300mm, applicable to office 3 and 7.
- The top horizontal window for office ten shall have a length of 1300mm and a width of 300mm. Install a 2200mm x 1000mm tinted window as a centre feature instead of an arc wood like the other offices.
- 76mm aluminium profile for window frames cut to size window sizes refer to SANS 10400 – N, tables 1 to 4 with the given glass thickness.
- Windows glasses shall be of Monolithic annealed glass, see table 2 and figure 3 of SANS 10400 – N for requirements.
- Supply and install architectural arc wooden feature for office 3 and 7 to match the existing.
- The arc wooden feature shall be made of hardwood laminated to match the texture and colour of the existing features.
- Office 10 front wall architectural feature shall be made of aluminium framed tinted windows only, without a wooden feature.
- Supply all required tools and additional material required for the modification of the current architectural features on the office front walls.

4.2 ELECTRICAL WORKS SCOPE OF WORK

4.2.1 Scope

- The *Contractor* shall adhere to the relevant sections of the Eskom Lighting and small power installation standard.
- All cabling work to comply to 240-56227443.
- Before any electrical work is conducted, the electrical power supply must be isolated. Isolation of the main incoming electrical supply will be the responsibility of the Employer, and this will form part of the Permit to Work system.

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- The *Contractor* shall test the power cables (these will only be applicable for the affected cables and the new cables), to check if the insulation is still good before terminating the cable.
- The *Contractor* shall have all the tools, instruments and testing equipment to execute the scope.
- The Contractor shall also provide emergency lighting as stated in the standard 240-55714363.
-
- Should the existing lights, fittings, electrical trunking, wires, cables, switches and plug socket outlets be in the way of the demolition and construction work, they must be carefully removed and/or disconnected.
- The *Contractor* shall do a design using the new floor plan layout, detailing the new positions of the lights, plug sockets, light switches, and the air conditioning isolator switches, before any execution. This design shall be approved by the *Contractor* with professional registration with ECSA.
- The *Contractor* shall do a proposed lighting design (Relax simulation) and submit with tender.
- The *Contractor* shall ensure that one sample of each different luminaire, that is proposed to be used, to accompany the submission. These luminaires shall undergo photometric and electrical tests in the Eskom RT&D laboratories.
- The *Contractor* shall ensure that there is no overloading of circuits, including the main supply power cable to the existing DB on the 5th floor.
- Should the *Contractor* decide that the existing power supply cable from the ground floor to the 5th floor will be too small to carry the new load, then the *Contractor* shall install a bigger size power cable. Take note that 16 new air conditioning units are required, which will increase the load current. The existing supply cable to the DB on the 5th floor is a two core 70mm square cable.
- The current existing DB at the 5th floor has the following MCBs.
 - 1 x 60A earth leakage.
 - 7 x 20A single pole for plugs sockets.
 - 1 x 40A single pole for plugs sockets.
 - 9 x 15A single pole for lights.
 - 2 x 40A single pole for lights.
 - 1 x 20A single pole for lights.
 - 2 x 100A double pole for air-conditioning units.
 - 3 x 40A double pole for air-conditioning diffusers.
 - 1 x 63A double pole for air-conditioning diffusers.
 - 1 x 300A isolator for the incomer.
- The contractor shall make use of the existing MCBs in the design.
- To supply, install and wire new MCBs in the current existing DB.
- To supply and install new cables, from the DB to the loads.
- To supply and install new lights and fittings wherever it is necessary.
- The contractor shall complete technical schedules A and B, which is appendix B as part of 240-55714363.

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- The *Contractor* can re-use the old light switches if they are still in a good condition.
- To reinstall the old plug sockets. If they found to be not in a good condition, then new ones need to be supplied and installed.
- To supply and install new plug sockets wherever it is necessary.
- To supply and install new MCBs in the DB for the new air conditioning units. The new air conditioning units shall be single phase ac supply.
- To supply and install new isolators (lockable type) for each air conditioning unit.
- All the light switches, plug sockets, air conditioning isolators (old and new ones) must be labelled stating which MCB it is being supplied from.
- On completion of the installation, the Contractor shall issue an Electrical certificate of compliance (CoC), for all the circuits that have been worked on.
- An accredited person shall exercise general control over all the electrical installation work conducted.
- The *Contractor* shall perform Illumination measurements as recommended in SANS 10114-1. Illumination measurement reports shall be produced and submitted to the Employer. Measurements shall be performed once the installation has been completed.

4.2.2 Documentation

As a minimum, the following is required after execution of the work,

- 1x hard copies, of the electrical drawings, detailing the wiring from the DB to the light switches, plug sockets and air conditioning units, marked "As Built". The drawing number will be supplied by the Employer.
- 1x soft copies of drawings in Micro station format.
- CoC certificate
- 1x hard and soft copy of the illumination test results, together with a report.

4.3 HVAC SCOPE OF WORK

4.3.1 System Description

The new offices and open plan secretary space areas shall be air conditioned with split unit reverse cycle units. The indoor units are positioned at higher level. The indoor and outdoor units are linked with refrigerant piping. Condensate drain from the evaporator and condenser unit is piped to the drainage network in the building.

The existing diffusers linked to the Administration building central air conditioning system shall be kept as original, for minimum fresh air supply in the offices and open plan secretary space areas.

4.3.2 Operating philosophy

The room temperature is manually controlled, adjusted and monitored with a control pad. The Split type Dx units are manually adjusted to achieve adequate temperature control in a room. The Contractor provides all the wiring between the HVAC equipments and the operating / control units. Heat rejection is via the heat pump type outdoor condensing units.

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4.3.3 Design Parameters

4.3.3.1 Outdoor design conditions:

- a) Summer: 32°C DB, 20°C WB
- b) Winter: 2°C DB
- c) Altitude: 1600 m

4.3.3.2 Indoor design conditions:

- Dry bulb temperature: 22 °C ± 2 °C
- Relative humidity: Not controlled

4.3.4 Proposed layout of equipment

The proposed layout of the split air conditioning units is as per the new revised floor layout, attached in Appendix A3. The condenser pipe work is routed from the evaporator units through the ceiling, then to the rooftop of the Administration building, where they are linked to their condenser units. The final layout shall be concluded at the detailed design phase of the project.

4.3.5 Capacities of equipment

The capacities of the air conditioning equipment are indicated in the data sheets attached in Appendix A2, for completion by the Contractor.

4.3.6 Electrical Power Supply

The air conditioning split units shall be powered from the existing Lighting distribution board located at the 5th floor of the Administration Building. The electrical power supply or termination and cabling is the responsibility of the Contractor (i.e. isolators and cabling). The air conditioning units split units electrical power consumption do not overload the existing load on the lighting distribution board.

4.3.7 Configuration

The Contractor generate a list of equipment for installation after Contract Award. The list is required for allocation of the AKZ numbers, for installation of the AKZ tags by the Contractor.

5. COMMISSIONING OF THE SYSTEM

Commissioning is to be done in accordance with OEM requirements and commissioning reports to be issued to the Employer after completion of the project during the handover phase. Commissioning reports shall have to be submitted as part of the QCP file/ package.

6. SAFETY REQUIREMENTS

- Contractor's Safety File must be pre-approved by Duvha Safety Department.
- Contractor employees must complete Duvha Safety Induction Course before any work can be executed.
- Risk assessment and Pre-job brief shall be conducted by Contractor's Supervisor with all his employees. Copies shall be handed over to the client.
- No work shall be performed without a Permit to Work. Domestic installations are exempted.
- No work shall be performed without pre-arrangement with the project manager.

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- Special care must be taken regarding people that might occupy the office while the installations are done.
- Any damage to the ceiling, walls, floors, paint work or other office equipment etc. shall be repaired by the *Contractor's* on own cost.
- All other spares, materials and safety equipment needed to do the work, shall be supplied by the *Contractor*.
- All required Personal protective equipment (PPE) must be worn all the time.
- All Eskom's and other safety rules must be adhered to all the time.

7. QUALITY REQUIREMENTS

No work shall commence before the approval of the QCP. The *Contractor* is expected to compile the QCP document and submit it to the *Employer* for review and approval. The *Contractor* is also expected to thoroughly go through the standard: 240-105658000 Supplier Quality Management Specification. Find the standard attached. The following shall be submitted to the Project Manager before work commence.

- Method statements and specifications adhered to.
- Material Certificates.
- Calibration Certificates.
- Calculations for any temporary works that may be required for the safe execution of the works.
- Steel grade certificates.

8. HANDOVER

Apart from any statutory data packages required, the Contractor also compiles a data package of the relevant drawings, test certificates, etc. to the Project Manager for acceptance. These include, but are not limited to:

- Document List.
- Instruction for Work/ Purchase Order.
- Approved and signed off ITP's, QCP's.
- Certificate of Compliance
- Notifications.
- Modifications.
- Concessions.
- Technical Queries, Engineering Responses, and communications with Project Manager/ Employer
- Non-conformance reports.
- Internal Release Notes.
- Transport notifications.
- As-built data and marked up drawings of the completed *works* upon handover.

9. AUTHORISATION

This document has been seen and accepted by:

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Name & Surname	Designation
Sibonokuhle Tapala	Senior Engineer: Auxiliary Engineering
David Chetty	Electrical System Engineer

10. REVISIONS

Date	Rev.	Compiler	Remarks
February 2024	A	Chirwa V	Draft Document
February 2024	B	Chirwa V	HVAC and Electrical requirement incorporate
February 2024	0	Chirwa V	Final Document for Authorisation
June 2025	0.1	Chirwa V	Fire detection scope removal
June 2025	1	Chirwa V	Final Document for Authorisation

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Appendix A 1

DRYWALL PARTITION SELECTION GUIDE - PART 3			
	1 HOUR FIRE RATING (RESIDENTIAL TYPE WALL) 43db	ACOUSTIC WALLING 47db	ACOUSTIC WALLING 52db
51MM STUD 15MM PLASTERBOARD			
58MM STUD 15MM PLASTERBOARD			
102MM STUD 15MM PLASTERBOARD			

KEY : FIRE STOP PLASTERBOARD - ALL JOINTS TO BE STAGGERED

ALL DRYWALLS SCREWS SPACED AT MAXIMUM 220 MM CENTRES
ALL FIXINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS

NOTE: WE RECOMMEND THAT MANUFACTURERS ARE CONTACTED FOR SPECIFIC ADVICE.
ACOUSTIC TESTED UNDER LABORATORY CONDITIONS

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Appendix A 2

Part 5 – Internal Walls on Galvanized Steel – (Non-Fibre Reinforced Cement Boards)

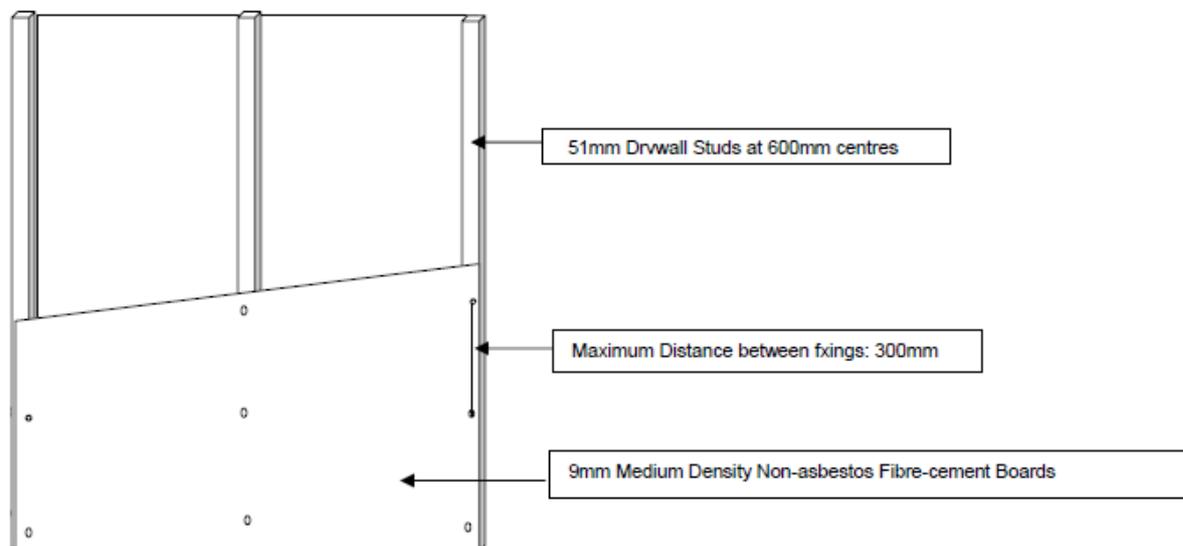


Table 1: Permissible Deviations (PD) in drywall partitions and lightweight internal walls

DESCRIPTION	PD, mm	
	Grade	
	II	I
Position on plan		
PD of fair-faced specified side of wall from the designed position	±15	±10
Length		
Up to and including 5m	±15	±10
Over 5m, up to and including 10m	±20	±15
Over 10m	±25	±20
Height		
Up to and including 3m	±10	± 5
Over 3m, up to and including 6m	±20	±15
Over 6m	±25	±20
Straightness, max.		
In any 5m (not cumulative)	15	10
Verticality		
In any 2m	±10	± 5
In any 5m	±15	±10
Finished surfaces		
PD of any point from a 2m straight-edge placed in any direction of the wall, max	6	3

- Notes:**
- ~ PD – Permissible Deviation.
 - ~ Grades I and II are grades of accuracy defined in SANS 10155 as follows:

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Grade I accuracy may necessitate the use a special method, or materials, or both, and will require a close degree of supervision and control.

Grade II accuracy is suitable for the major proportion of building work.

Table 2: Selection of surface finishing for drywall partitions and lightweight internal walls.

LEVEL	APPLICATION	DESCRIPTION
1	Temporary constructions.	No jointing or finishing at all
2	Frequently used in plenum areas above ceilings and in areas that are generally concealed.	All joints shall have the tape embedded in jointing compound. Surface shall be free of excess jointing compound, but tool marks and ridges are acceptable
3	This finish is suitable where moisture resistant boards are used as a substrate for tiling and may be used in garages or warehouse storage where surface appearance is not of primary importance.	All joints, angles and accessories shall have one coat of jointing compound applied. All screw heads to be spotted. Surface shall be free of excess jointing compound, but tool marks and ridges are acceptable.
4	This level is suitable for areas which are to receive heavy or medium textured paint finishes, or where heavy grade wall coverings are to be applied. Where lightweight vinyls are to be used all joints etc. should be carefully sanded to provide a smoother surface.	All joints, angles and accessories shall have two separate coats of jointing compound applied. All screw heads to be spotted. All jointing compounds shall be smooth and free of tool marks and ridges. It is recommended that all the areas of jointing compound receive a coat of suitable * based Plaster Primer before finishing. *Refer to paint manufacturers recommendation.
5	This level should be used where gloss, semi-gloss or matt non-textured paints are specified. Any drywall that is subjected to critical lighting shall be finished to this level.	All joints, angles and accessories shall have two separate coats of jointing compound applied. All screw heads to be spotted. A thin skim coat of plaster shall be applied to the entire surface of the drywall. The surface shall be completely smooth and free of any marks and surface blemishes. The entire surface of the drywall shall receive a coat of oil-based plaster primer before final decoration.

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Appendix A 3

HVAC EQUIPMENT DATA SHEET

Table 3: 5.0 kW Nominal Cooling Capacity High Wall Mounted Type or Similar Unit (Cooling and Heating)

Description	Unit	Number Required	Specified	Tendered
1. High Wall Mounted Type or similar unit model/manufacture	-	16	To be specified by the Contractor	
2. Displacement/under-ceiling type or similar unit nominal cooling / heating capacity	kW	Multiple Units	5.0 kW Cooling Capacity and 5.3 kW Heating Capacity (each)	
3. Power input	-	-	230V/1ph/2.4kW (each)	
4. Coefficient of performance (COP)	-	-	3.0	
5. Evaporator Section				
5.1. Air Discharge	-	-	High Wall Mounted Type	
5.2. Estimate evaporator unit or similar unit size	mm	-	300 x 1100 x 300 (HxWxD)	
5.3. Estimated evaporator unit or similar unit weight	kg	-	14 (each)	
5.4. Evaporator fan type	-	-	Line flow fan	
5.5. Air Flow Rate	L/s	-	320 (each)	
5.6. External static pressure	Pa	-	50	
5.7. Condensate drain piping diameter size	mm	-	25	
6. Condenser Section				
6.1. Estimate condenser unit or similar unit size	mm	-	800 x 900 x 400 (HxWxD)	
6.2. Estimated condenser unit or similar unit weight	kg	-	50 (each)	
6.3. Air flow rate	L/s	-	-	
6.4. Control, Driving mechanism	-	-	Inverter-control, Direct-driven by motor	
6.5. Compressor	-	Multiple Units	Inverter scroll hermetic compressor	
6.6. Starting method	-	-	Inverter	
7. External finish	-	-	Pre-coated galvanized steel sheets and powder coating	
8. Protection devices				
8.1. High pressure protection	-	-	High pressure sensor and High pressure switch	

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Description	Unit	Number Required	Specified	Tendered
8.2. Inverter circuit	-	-	Over-heat protection and Over-current protection	
8.3. Compressor	-	-	Over-heat protection	
9. Refrigerant	-	-	R410A OR SIMILAR	
10. Heat exchanger	-	-	Salt-resistant cross fin & copper tube	
11. HIC circuit (HIC: Heat Inter-Changer)	-	-	Copper pipe, tube-in-tube structure	
12. Defrosting method	-	-	Auto-defrost mode (Reversed refrigerant cycle)	

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Appendix A 4

PROPOSED HVAC LAYOUT

