SPECIFICATION DOCUMENT MECHANICAL WORKS

Contents

INTRODUCTION

SCOPE

This specification covers air-conditioning system repairs, new installation testing, quality control, and commissioning requirements.

GENERAL STANDARD REQUIREMENT

Occupational Health and Safety Act No.85 of 1993
SANS 10142-1 Wiring of premises

SANS 10400-O The application of National Building Regulations – Part O: Lighting and Ventilation

SANS 10147, Refrigerating Systems including plants associated with air conditioning Systems

National Building Regulations and Standards Act of 1997 (Act 103 of 1997)

SCOPE REQUIREMENTS FOR THE AIR CONDITIONING SYSTEM

The contractor will ensure that safety files are kept on site and up to date for audit purposes.

The Department of Labour, Occupational Health and Safety Act 1993, Certification of Compliance for Refrigeration and Air Conditioning must be completed and signed after each installation.

The contractor shall check that the Equipment(s) comply with the Technical Specifications and meet the requirements on its premises and in the presence of the Purchaser.

The contractor shall provide a method statement related to the installation work.

The contractor will provide technical documentation, including a maintenance manual, and issue a Conformity certificate showing compliance with the specification and applicable regulations.

Core drilling on the wall and slab concrete can be done during the installation if necessary, and the contractor must ensure that the concrete structure is not compromised.

Any holes created shall be filled with cement and painted after core drilling.

After the air conditioner units are installed, plumbing, plastering, paintwork, and any other builder’s work shall be restored to good condition.

After installing any air conditioning, the supplier will be required to replace or repair and make good any ceiling or partitioning work.

Must have close control over temperature, humidity, and operation with other air conditioners

The air conditioner shall be able to auto-restart. When there is an electricity failure, the system shuts off. After the power is restored, the unit will start in the same conditions as before the power failure.

The air conditioner should automatically switch on a timer and be able to be controlled by a remote.

The air conditioner shall have a manual override/forced operation if the user needs to switch it on.

The air conditioner should be able to go into a sleep mode and be switched on again when the controller receives the required signal.

The air conditioners should be able to dehumidify and/or remove moisture from the air inside the required room or container.

The air conditioner should be able to operate in the following outside ambient temperature range, as desired by the user: at least up to 45 degrees Celsius.

The air conditioner should have an auto-defrosting feature that reduces the outdoor fan speed when such an incident occurs.

Easy access and filter removal should be possible to enhance routine maintenance.

The piping length between the indoor and outdoor units should be able to operate at a distance as per the desired storage point on the building.

Air conditioners should be able to regulate the temperature in a room to a desired temperature.

The Wireless remote control or panel-mounted control should be supplied with the air conditioner.

The recommended refrigerant fluid used in air conditioning shall be R410A.

Free cooling mode must be an optional item, and it will be deployed as and where required.

The outdoor unit’s heat exchanger fins are processed using a special anti-corrosion treatment. The surface is covered with a thin acrylic resin layer to enhance the fins’ resistance to acid rain and salt corrosion.

The air conditioner shall memorize the settings for the operation mode (cooling, dry, heating, automatic, and fan only), airflow, temperature, etc., and automatically return to them when power is restored after a power failure.

Before heating, a sensor checks the outdoor unit for frost and performs automatic defrosting, if necessary, before air is discharged.

The air conditioner shall display malfunction codes on the digital display panel or wireless remote controller for fast and easy maintenance.

PRODUCT IDENTIFICATION & MARKING

Components and products shall be marked with the date of manufacture or next service and the manufacturing firm’s logo or name. This marking must be permanent on the equipment.

DATA PLATES

The air conditioning unit must feature the manufacturer's data plates or plastic labels. The plastic tags shall be installed indoors and outdoors for tracking and upkeep.

COMMISIONING, TESTING MANUALS AND CATALOGUES

Necessary manuals and catalogues must be coordinated and supplied on high-quality soft copy in “PDF” format along with hand-copy documents.

A representative from the air conditioner manufacturer will conduct a quality inspection. And testing of the system, before the installer completes the air conditioning setup

A copy of the Certificate of Compliance for the electrical work completed shall be provided to the site.

QUALITY ASSURANCE

The supplier must implement a suitable quality management system to meet the design and manufacturing specifications, ensuring a safe, dependable, and accessible conditioning installation.

EXTRACTION FAN TYPE

The extraction fan shall be installed in a ceiling-mounted configuration, and the minimum power rating shall be equal to or greater than 15 Watts with Db 29

AIRCON TYPE

New installation brand type recommended, but not limited to the specified type (Daikin, Carrier, LG, and Samsung OR **equivalent product**)

GROUND FLOOR

GROUND FLOOR AIRCON REPORT			
LOCATION	**FINDINGS**	**QTY**	**BTU UNIT SIZES**
A1&A2	ASSESS, REPAIR AND MAINTAIN THE AIRCON(GROUND FLOOR)	2	12000BTU
A3	ASSESS, REPAIR AND MAINTAIN THE AIRCON(GROUND FLOOR)	1	18000BTU
A4,A5,A6,A13,A17,A18,A19,A20,K4	ASSESS, REPAIR AND MAINTAIN THE AIRCON(GROUND FLOOR)	9	9000BTU
A7	ASSESS, REPAIR AND MAINTAIN THE AIRCON(GROUND FLOOR)	1	24000BTU
A8,A10,A16,A21	SERVICE THE AIRCON(GROUND FLOOR)	4	9000BTU
A11,A12,A14,A34,A32,B3,A9,A15	INSTALL NEW AIRCON(NEW OFFICE AREA AND EXISTING AREA)	8	9000BTU
B2	INSTALL NEW AIRCON 2 SPLIT CEILING MOUNTED(NEW OFFICE AREA)	1	30000BTU
A22,A23,A33,A26,A27,A28,A29,A30,A31,A24,I1,K3,A25	NEW 3 SPLIT TYPE AIRCON(NEW OFFICE AREA)	5	36000BTU
B1	REPLACE AND INSTALL THE CEILING MOUNTED AIRCON(GROUND FLOOR)	1	18000BTU

D11,D3,D4,E1,D2,D1,D9,D6,D5,E2	NEW EXTRACTION FAN INSTALLATION (KITCHEN &TOILET)	10	11WATT
K1	REPLACE AND INSTALL THE CEILING MOUNTED AIRCON (WAITING AREA)	1	30000BTU

FIRST FLOOR AIRCON REPORT			
LOCATION	**FINDINGS**	**QTY**	**BTU UNIT SIZES**
A1,A2,A3,A12,A11	SERVICE THE AIRCON AND INSTALL A NEW OUTDOOR UNIT, SECURE THE NEW OUTDOOR UNIT	5	9000BTU
A4,A10,A5	SERVICE THE AIRCON AND INSTALL A NEW OUTDOOR UNIT, SECURE THE NEW OUTDOOR UNIT	3	12000BTU
A6,A7,A8,A9,A13	SERVICE AIRCON AND SECURE THE NEW OUTDOOR UNIT	5	9000BTU
B1	INSTALL NEW AIRCON(KITCHEN AREA)	1	36000BTU
B2	INSTALL A 2-SPLIT UNIT CEILING MOUNTED AIRCON(OPEN SPACE)	1	48000BTU
B3,B4,B5	INSTALL A CASSET , CEILING MOUNTED AIRCON	3	24000BTU
D1,D2,D3,D5,D6,D6,D7,D10	INSTALLATION EXTRACTION FAN(KITCHEN & TOILET AREA)	7	
I1	INSTALL A CASSET , CEILING MOUNTED AIRCON	1	30000BTU

PIPING, AND FITTINGS ETC

LOCATION	**FINDINGS**	**QTY**	**UNIT SIZES**
3,1	ALLOW THE AMOUNT R202,500.00 FOR COPPER PIPING AND INSTALLATION SOCKET KIT, GAS		

INSTALLATION FIRE SYSTEM SANS 10400

The installation of the fire system and signs shall be installed by approved drawings from the municipality, SANS 10400

SANS 10400 S:
Clear, legible signs shall indicate the direction and name of an accessible facility and shall incorporate the international symbol. The height of the lettering shall not be less than 50 mm. Where the viewing distance is greater than 10 m,

SANS 10400 S:
Clear, legible signs shall indicate the direction and name of an accessible facility and incorporate the international symbol. The lettering shall be at least 50 mm high.

By SANS 10400 T 4.16.5, all doorways and circulation spaces, obstructions in the path of travel, stairways, ramps, handrails, and warning signals located along escape routes shall comply with the requirements of SANS 10400 S.

4.35.3 Any hydrant shall, where required by the local authority, be provided with an appropriate fire hose of 24 m or 30 m in length, together with couplings and a 16 mm internal diameter nozzle, all of which shall comply with the requirements of SANS 11282. Such hose and nozzle shall, when positioned in the open air or any factory building, be suitably housed in a cupboard, provided that this requirement shall not apply in any occupancy classified as J4.

4.35.4 In any industrial park, permanent amusement park or exhibition ground, shopping centre or group housing, cluster housing, or townhouse complex there shall be installed ground or raised hydrants so placed that no point in such amusement park or exhibition ground or shopping centre or in any building in such housing complex shall be at a distance greater than 90 m from any hydrant. **4.35.5** A hydrant shall comply with the requirements of SANS 1128-

All internal signage to indicate escape routes in case of total blackout shall comply with the SANS 10400 standard.

GENERAL REQUIREMENTS FOR FIRE DETECTION SYSTEMS SANS 10139

The fire detection and alarm system will consist of primary fire alarm control panels, optical smoke detectors, heat detectors, and optical smoke/heat detectors with

integrated sounder units, manual call points, electronic sounders, repeat panels, and interface units, each equipped with its own built-in short-circuit isolators.

All loop cabling and other components and accessories considered essential for a safe, dependable, and satisfactory system will adhere to **SANS 10139** (Fire Detection and Alarm Systems for Buildings). b) Before delivering the project, the contractor will educate and guide the client's staff on the system's proper use, operation, and oversight.

INSTALLATION

Fire alarm components will be installed directly to conduit outlet boxes at the mounting heights above the finished floor level and measured to the centre of the box unless stated otherwise. The automatic smoke detectors shall be mounted above the ceiling.

The following material shall be installed for fire system

ITEM NO	DESCRIPTION	UNIT	QTY
1	PHOTOLUMINESCENT SIGN IN ALUMINIUM FRAME (MINIMUM 290MM HEIGHT) AND HANGERS, OR MOUNTING ACCESSORIES	No.	50
2	SUPPLY FIRE DETECTORS AND INSTALL PANELS	Lot	1
3	FIRE CABLE (200m)	m	200
4	FIRE / SMOKE DETECTORS	No.	90
5	ADDRESSABLE FIRE CONTROL PANEL	No.	1
6	MANUAL CALL POINTS	Lot	1
7	FIRE HYDRANT	No.	1
8	SOUND BEACONS	No.	12
9	SUPPLY OF 110mm Pipe	m	80

TESTING AND COMMISSIONING

After the installation, the contractor will conduct operating and commissioning tests.

The equipment will be demonstrated to operate according to the requirements of the specification.

The system installation, testing, and commissioning will be done according to local approvals and requirements.

The fire alarm system will be programmed according to the Fire Department's requirements.

All tests will be carried out in the presence of the Client or persons authorized by the consultant client.

CARPORT STRUCTURAL REQUIREMENTS

GENERAL

The carport shall be designed according to structural engineering as per the ECSA guideline. Members will manufacture the material, which will mainly be S355.

The design shall be done and signed by a professional engineer registered with ECSA.

All drawings shall be subject to review before any materials are purchased.

The FEA (finite element analysis) report shall be provided for the structural analysis of the design

Methods statement, quality inspection shall be supplied

The following activities will contribute to the Output required:

1. Site Clearance
2. Electrical Wiring
3. Repair the Pavement Layers
4. Road Marking
5. Concrete and Steel works for covered parking (minor excavation for column bases, concrete work for bases, installation of steel columns & Plinth, and roof sheeting

CORROSION PROTECTION

According to the client's requirements, the carport structure shall be hot-dip galvanized with a minimum DFT of 100 microns.

INSPECTION

Carport, Inspection shall be carried out, and work shall not proceed to the next stage before an authorized person has inspected the quality of the work.

MANUFACTURING DRAWINGS

The Client shall be allowed to comment and review the manufacturing drawings before constructing the carport.

The manufacturing drawings shall be supplied before the installation and delivery of materials for approvals.

Manufacturing drawings shall comply with Specification SANS 10111.

The drawings shall include a complete and comprehensive data list of all drawings.

VALIDATION & VERIFICATION REQUIREMENTS

Conformance to all elements of this specification shall be validated during scheduled design reviews with the client.

Detailed design and test reports shall be compiled and submitted to the client for approval.

HEALTH AND SAFETY REQUIREMENT

The contractor must comply with the Company's Safety, Health, Environmental, and Quality (SHEQ).

Certification of Quality Management Systems to international standards (ISO 9001:2018) shall be applicable.

The contractor must ensure that all services performed and all equipment used on site comply with the Occupational Health and Safety Act of 1993.

GUARANTEE PERIOD AND DEFECT LIABILITY PERIOD

When the tender is being awarded, after issuing purchase order to the contractor, the work shall be deemed to be satisfactorily completed, a Commissioning and Completion Certificate will be issued and the guarantee period shall commence.

The guarantee period for this particular work done shall be at least one year from the date as specified after issuing the completion certificate and agreed by the parties.

The guarantee period for spare parts or materials acquired or manufactured shall be one year from the date of Commissioning, unless otherwise specified by the suppliers thereof. During the guarantee period, the Contractor shall rectify, at its own cost, any defects attributable to faulty material or workmanship.