



SARS MUSINA WAREHOUSE

**ELECTRICAL INSTALLATION
SPECIFICATION**

AUGUST 2015

SUPPLY AND INSTALLATION OF ELECTRICAL SERVICES FOR THE REFURBISHMENT OF THE MUSINA WAREHOUSE

PROJECT SPECIFICATION FOR THE SUPPLY AND INSTALLATION OF THE ELECTRICAL SERVICES

DETAIL SPECIFICATION

CONTENTS

1	GENERAL	1
2	SCOPE OF WORK	1
3	SITE CONDITIONS	1
4	STANDARD SPECIFICATIONS, REGULATIONS AND CODES	2
5	CONSTRUCTION PROGRAM	2
6	QUALITY OF MATERIALS	2
7	COMPETENCE OF PERSONNEL, WORKMANSHIP AND STAFF	3
8	STORAGE	3
9	CO-ORDINATION OF SERVICES ON SITE	3
10	FINISHING AND TIDYING	3
11	EXISTING ELECTRICAL INSTALLATION	3
12	CABLE INSTALLATION	4
13	DISTRIBUTION BOARDS	4
14	LIGHTING INSTALLATION	5
15	POWER OUTLETS	6
16	WIRING	6
17	POWER SKIRTING, CABLE TRAYS, TRUNKING AND CONDUIT	7
18	EARTHING AND BONDING	7
19	LIGHTNING PROTECTION AND EARTHING	8
20	LABELLING OF CIRCUITS	9
21	SITE TESTS AND COMMISSIONING	9
22	CERTIFICATE OF COMPLIANCE	10
23	AS-BUILT DRAWINGS AND DOCUMENTATION	10
24	DEFECTS LIABILITY PERIOD	10
25	PREAMBLE TO SCHEDULE OF QUANTITIES	11
	ANNEXURE A - SCHEDULE OF LUMINAIRES	A1
	ANNEXURE B - SCHEDULE OF INFORMATION BY TENDERERS	A2
	ANNEXURE C - LIST OF DRAWINGS	A3

1

GENERAL

This project entails the electrical installation refurbishment of an existing Warehouse building for SARS at Musina, adjacent to the Musina Military Base as well as lightning protection for the generator room and administration offices building.

The existing building comprises of a ground floor with double volume area areas covered with a concrete soffit (store room and ablutions). The warehouse area is currently not in use. The balance of the site has an administration and generator building.

2

SCOPE OF WORK

The scope of the electrical installation for the existing building shall comprise:

- Partial decommissioning of the existing electrical installation ;
- Electrical distribution board modifications and new installations;
- Low voltage cabling and cable terminations;
- Lightning protection installation;
- Luminaire installation (most installed at high level);
- Replacement of lamps of the existing luminaires on the warehouse building perimeter;
- Power distribution;
- Socket outlet installation;
- Installation of wiring ducts and wire basket;
- Labelling and nomenclature on sockets and light switches;
- Site supervision;
- Witnessed testing;
- Production of as-built drawings;
- 12 months maintenance and guarantee on balance of materials and workmanship, and;
- The issuing a certificate of compliance for DB-2.

The successful Contractor is to allow for a detailed audit of the existing installation in conjunction with the Engineer and provide a detailed programme of equipment/electrical installation within two weeks after award of contract.

3

SITE CONDITIONS

The site building is located in Musina adjacent to the Military Base.

Potable water and toilet facilities are available at the site.

The Main Low Voltage Board is currently not supplied with power. DB-2 is connected to the main Low Voltage board by a cable from the existing Main Low Voltage Board. The Electrical Contractor will have to supply generator power for work done by him including testing of DBs until another party connects power to the main low voltage Board.

All equipment and materials shall be designed to operate at the following ambient conditions:

Altitude above sea level:	600m
Average ambient air temperature:	29.6°C (max) 15.4°C (min)
Extreme air temperature:	46°C (max) 0 °C (min)
Humidity:	49-59% (avg)
Corrosion:	Mild
Dust:	High

4

STANDARD SPECIFICATIONS, REGULATIONS AND CODES

4.1

The latest edition, including all amendments up to date of tender of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

- The general conditions of contract shall be as dictated by the principal contract.
- The applicable SABS code of Practice for the Wiring of Premises shall be SANS 10142-1:2003 amendment 8.
- Reference to Occupational Health and Safety Act shall be taken as referring to the Occupational Health and Safety Act 85, 1993 and regulations as amended.
- SANS 10098-1: Public lighting Part 1: The lighting of public thoroughfares.
- SANS 10098-2: Public lighting Part 2: The lighting of certain specific areas of streets and highways.
- SANS 60269-6: Low-voltage fuses Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems.
- SANS 156: Moulded-case circuit-breakers.
- SANS 10313:2010: Protection against lightning — Physical damage to structures and life hazard.
- SANS 10225: The design and construction of lighting masts.
- SANS 60598-2-3: Luminaires - Part 2-3: Particular requirements – Luminaires for road and street lighting.
- For lighting structures and lightning protection: any steel components shall be hot dip galvanized to SANS EN 10240:1997 (SANS 32).
- Equipment used shall originate from Suppliers which have been certified in accordance with SABS ISO 9001 (ISO 9001) or SABS ISO 9002 (ISO 9002) for quality assurance. Copies of certificates of approval shall be provided by the Tenderers with their tenders.

The Standard Electrical Specification shall be read in conjunction with the Project Specification

5

CONSTRUCTION PROGRAM

The Contractor's programme shall be co-ordinated with that of the Principal Contractor. The Contractor shall take note of the accelerated construction programme.

6

QUALITY OF MATERIALS

- 6.1 All materials used shall be new except where otherwise indicated.
- 6.2 Material shall be installed as per the Manufacturers instructions.
- 6.3 All material shall comply with the relevant SANS specifications.
- 6.4 All materials shall be unconditionally guaranteed for a minimum period of 12 months.
- 6.5 The Contractor shall replace any materials that are found to be defective during the 12 months defects liability period. Note that this requirement includes lamp replacement.
- 6.6 Samples of equipment offered shall be submitted for formal approval by the Engineer prior to procurement.

7 COMPETENCE OF PERSONNEL, WORKMANSHIP AND STAFF

- 7.1 All work shall be executed and supervised by suitably qualified staff. Only "ACCREDITED PERSONS" shall be permitted to carry out and supervise electrical work on site.
- 7.2 The Contractor shall at all times have an adequate number of employees available during the construction period to ensure that the electrical work does not delay the construction program.

8 STORAGE

- 8.1 The Contractor shall provide adequate and safe storage for all materials. Safe storage space on the construction site can be negotiated with the main contractor.

9 CO-ORDINATION OF SERVICES ON SITE

- 9.1 The Contractor shall be responsible for the on site co-ordination with the Principal Contractor and other Sub-contractors. Due allowance shall be made for this liaison and on-site co-ordination in the tender price.

10 FINISHING AND TIDYING

- 10.1 Progressive and systematic finishing and tidying will form an essential part of this Contract. On no account will soil, rubble, materials, equipment or unfinished operations be allowed to accumulate in such a manner as to impede the activities of Others. In the event of this occurring, the Client will have the right to withhold payment for as long as may be necessary in respect of the relevant Works in the area(s) concerned, without thereby prejudicing the rights of Others to institute claims against the Contractor on the ground of unnecessary obstruction.
- 10.2 Finishing and tidying shall therefore not be left to the end of the Contract, but shall be a continuous operation.

11 EXISTING ELECTRICAL INSTALLATION

- 11.1 Small power installation

- 11.1.1 There is currently no small power installation in the warehouse building.

- 11.1.2 Wall boxes and floor boxes

The existing wall and floor boxes shall be retained and modified as follows.

- Guardroom light switches and wired outlets to remain
- The light switches to at the store rooms must be removed and new ones installed as per the refurbishment layout

11.2 Lighting installation

11.2.1 The existing luminaire installation in the building shall be stripped out. The luminaires shall be reused as far as possible. The remaining luminaires shall be stored on site and returned to SARS under the cover of transmittal notes at practical completion. The existing lighting circuits for the lighting on the building perimeter will remain as is.

11.2.2 The Contactor shall make provision for the identification and labeling of the existing lighting circuits in the DBs prior to disconnecting the cables.

12 CABLE INSTALLATION

12.1 All power cables shall have stranded copper conductors, and shall be of the 600/1 000V PVC/SWA/PVC type. Power cables shall comply with SANS 1574 Part 1; 3; 4 & 5.

12.2 All cable terminations shall be done with crimped cable lugs.

12.3 Where sleeves are not specified, power cables shall be laid directly in the ground. Minimum laying depths shall be 800 mm below final ground level, unless otherwise specified, and routes shall be as indicated on the drawings.

12.4 Tenderers shall base their rates on hand excavation to minimise risk of damage to any existing services.

12.5 All trenching, including excavations, bedding layers, shoring and prevention of water logging, drainage of excavations, backfilling and compaction of trenches form part of this contract. The Contractor shall be deemed to have allowed for the laying of cables, terminal boxes, glands and termination of cables. Trenches shall be compacted to a minimum of 93% of modified AASHTO density during backfilling.

12.6 Tenderers shall be aware that other services might be installed along the same routes as the cables. The Contractor shall, before commencing with any excavations, peg out the proposed cable route and obtain the Engineers approval.

12.7 Positions of concrete cable markers shall be pegged on site in collaboration with the Engineer. The wording of the stamped aluminum labels shall be provided by the Engineer.

12.8 Sleeve connections have been provided by Others.

13 DISTRIBUTION BOARDS

13.1 Extensive modifications to the existing distribution board shall be required as part of this project.

13.2 Tenderers shall take note that the entire building's electrical load will be fed by a new standby diesel generator in lieu of the partial backup philosophy of the base-build.

13.3 The existing DB affected by the renovations are listed below.

- DB-2 (Generator section only)

13.4 Modifications to the above DBs include, but are not limited to, the following items.

- Relabeling of all DBs
- Installation of additional circuit breakers and contactors, as per the single line diagram
- Faceplate cutouts and repainting (powder coating)

- 13.5 No on-site faceplate modifications (cutting) and painting will be permitted – all modifications and powder coating shall be done in a factory by a reputable distribution board manufacturer. Sheet metal work shall be measured on site and manufactured off-site. Tray or busbar modifications will be allowed.
- 13.6 Where the Contractor deems the DB modifications too substantial for on-site modifications, disconnecting and removing of the entire DB shall be considered by the Engineer. This shall be done and approved in writing by the Engineer on a case-by-case basis.
- 13.7 All new circuit breakers and isolators shall be Merlin Gerin from the Manufacturer Schneider Electric to match the existing installation.
- 13.8 New sub distribution board supply circuit breakers shall be supplied complete with extended spread connection terminals suitable for multiple cable connections. All cable terminations shall be done with crimped cable lugs.
- 13.9 Shop drawings shall be submitted to the Engineer for formal approval, before any manufacturing commences. Tenderers shall take note of the existing electrical cupboards dimensions and DB sizes and construction type. All new DBs shall match the existing form factors employed.
- 13.10 All distribution boards must be inspected and accepted by the Engineer in the factory prior to dispatching.
- 13.11 The Engineer will provide the exact wording of the engraved labeling requirements during the factory inspection.

14 LIGHTING INSTALLATION

- 14.1 Luminaires
- 14.2 The new luminaires for the building shall be supplied by the Contractor after the engineer has approved of samples provided by the Contractor. Tenderers shall allow for the installation cost of the various types of luminaires in the schedule of quantities.
- 14.2.1 The luminaires shall be wired via 20mm \varnothing conduit connected to new P8000 trunking that must be installed at approximately 4.8m AFFL. The trunking must be suspended from the purlins/trusses using purpose made purlin clamps and M8 threaded rods.
- 14.2.2 Luminaires shall be supplied without fly leads.
- 14.3 Light switches
- 14.3.1 Light switches shall be rated at 16A, similar or approved equal to Clipsal S2000 range, complete with white cover plates to match the existing installation.
- 14.3.2 Motion detectors where required, shall be employed in the common open areas and shall be similar or approved equal to the Hubbell OMNI DT2000 and OMNI IR range.
- 14.3.3 The switching and control philosophy shall be provided by the Client prior to construction commences.

15 POWER OUTLETS

- 15.1 Wall-mounted socket outlets shall be from the Clipsal S2000 range to match the existing installation.
- 15.2 All socket outlets shall be supplied and installed complete with cradles and white socket outlet cover plates for normal power. Red socket outlet cover plates for UPS power shall be used.
- 15.3 Single and double socket outlets shall each be mounted in a flush-mounted horizontal 100x100x50mm wall box or in power skirting.
- 15.4 At back-to back socket outlets, galvanized 100x100x50 wall boxes pre-fitted with conduit interconnections, shall be used.
- 15.5 Lighting Duct
- 15.5.1 5A un-switched socket outlets are not required.

16 WIRING

- 16.1 Wiring shall bear the SABS mark and shall be stranded copper or solid copper conductors to match the existing installation. UPS wiring (L&N) shall have a different sheath colour than normal power
- 16.2 Joints of any kind will not be permitted in wiring. No more than two single or 1 three phase circuit may be drawn into any 20mm conduit.
- 16.3 UPS SSOs will have an insulated earth wire, wired back to the insulated earth bar in the UPS compartment of the Supply DB
- 16.4 All conductors shall be marked by suitable cable markers indicating the circuit (e.g. L1 on both live and neutral conductors) at both ends.

Circuit	Minimum conductor (size)	
	Phase (mm ²)	Earth (mm ²)
Lighting power supply	2,5 or 4,0mm (as stated on the single line diagram)	2,5 bare (normal supply)
Motion sensor wiring	1,5mm ²	1,5mm ² bare
Switched socket outlets & Isolators	4,0	2,5 bare

17 POWER SKIRTING, CABLE TRAYS, TRUNKING AND CONDUIT

- 17.1 Power skirting
 - 17.1.1 Power skirting shall be high quality aluminum 1 or 2 compartment respectively, gray finish, similar or approved equal to Cabstrut AL8/AL801 range.
 - 17.1.2 Power skirting shall be supplied complete with purpose-made securing clips, splices, faceplate equipment and all the necessary accessories including covers, bends, elbows, end caps, etc.
 - 17.1.3 Power skirting installed against walls shall be secured by means of 8 x 40mm "Fischer" anchors with oversize galvanized fender washers.
 - 17.1.4 Power skirting shall be used for power, data and telephone wiring and outlets shall be compatible with the power skirting provided.
 - 17.1.5 The power skirting shall be linked to the distribution board by conduit installed to a pre-manufactured conduit entry unit behind the power skirting. The same arrangement shall apply at positions where power skirting is interlinked as indicated on drawings. This position shall be indicated with a label on the front cover.
 - 17.1.6 2x25mm Ø Conduit links per compartment from the power skirting to the ceiling void / adjacent power skirting shall be provided as part of the power skirting installation unless otherwise indicated on the drawings. Where audio visual connections are indicated on the power skirting 2x32mm Ø conduit links shall be provided from the data compartment to the ceiling void unless otherwise indicated on the drawings.
 - 17.1.7 Any damage to completed wall, partition or glass finishes will be rectified to the satisfaction of the Principal Contractor, at the Contractor's expense.
- 17.2 Ducting and wire-ways
 - 17.2.1 Steel ducts, where required, shall be the hot dip galvanized type complete with elbows, splice connectors, elbows, tees, etc. The sizes shall be as specified on the relevant drawings.
 - 17.2.2 Surface mounted ducting shall be secured by means of 8 x 40mm "Fischer" anchors with oversize galvanized fender washers.
 - 17.2.3 Ducts shall only be fitted with purpose made accessories, splices, bends etc.
 - 17.2.4 All wiring ducts shall be fitted with galvanized steel or powder coated covers after cable installation.
 - 17.2.5 PVC glue must be used with the indoor PVC conduit installation. Conduit shall bear the SABS mark.
 - 17.2.6 Galvanized steel conduit shall be employed on all external conduit runs or as indicated on the drawings.

18 EARTHING AND BONDING

- 18.1 The Electrical Contractor is to ensure that the installations covered in this document are effectively earthed and bonded in accordance with the requirements of the SABS 0313.

Wire ways and trays shall be solidly bonded with 6mm nuts and bolts.

19 LIGHTNING PROTECTION AND EARTHING

19.1 Conductors

- 19.1.1 Conductors above ground may be of copper or of a suitable corrosion resistant aluminium alloy.
- 19.1.2 Aluminium conductors may not be installed in direct contact with concrete or plaster but must be installed with suitable insulating sleeves and stand-off brackets.
- 19.1.3 Aluminium conductors may only be connected to copper with cadmium-plated or heavily tinned connectors.
- 19.1.4 "Kwena" composite copper/steel shall be used in trenches
- 19.1.5 Copper conductors may only be connected to galvanized steel via a heavily tinned connector above ground.
- 19.1.6 Underground connections shall only be made between similar metals.
- 19.1.7 Avoid copper conductors in the vicinity of underground galvanized steel services.
- 19.1.8 Avoid galvanized steel conductors in the vicinity of underground copper services.
- 19.1.9 Stainless steel components shall be Type 304 or approved alternative.
- 19.1.10 Aluminium may not be installed underground except in short lengths completely protected by a plastic sleeve with both ends above ground and facing downwards.

19.2 Conductor Fastenings

- 19.2.1 Conductors shall be securely fastened at spacings of not less than 1,5 m.
- 19.2.2 The fastenings shall allow for thermal expansion and contraction and prevent direct contact between Aluminium and concrete or plaster.
- 19.2.3 The fastening system shall comprise components selected to avoid corrosion, and deterioration from weather, ultra-violet radiation, moisture, heat and cold.
- 19.3 Provide permanent testing joints between each down conductor and its associated earth conductor.
 - 19.3.1 Test and submit test record to Engineer, as follows:
 - (a) Earth resistance of earth conductor.
 - (b) Continuity of any trench earth.
 - (c) Continuity of overhead system by measuring between one down conductor and each of the remaining down conductors with the earth conductors disconnected.
- 19.4 Roof and downconductors shall comprise strip, rod, tube or stranded conductor of at least 50 mm² cross-sectional area, of copper, brass, phosphor-bronze, aluminium, stainless steel or galvanized steel.

- 19.5 Join lengths of tube, rod or stranded conductor with suitable crimped ferrules.
- 19.6 Join lengths of strip by double riveting, two nuts and bolts with washers, brazing, welding, or by clamping. Rivets, nuts, bolts and washers shall be of the same material as the conductor. Self-tapping screws or pop rivets may not be used for any joints.
- 19.7 Joint surface must be prepared by thorough cleaning and coating with suitable compound. Riveted, screwed or bolted joints must be painted or coated with compound.
- 19.8 Single earth rods shall be installed at a depth of at least 1,5 m below final ground level. An array of earth rods must be installed at a depth of at least 0,9 m below final ground level.
- 19.9 Bond any metallic objects within 500mm of a roof or down conductor (such objects include antennae, pipes, stairways, balustrades and sun-screening). Bond at least one earth terminal or down conductor to any metallic water main. Bond all metallic finials, ducts, vent pipes that are on, or project above, the roof to a roof or down conductor. Bond any metallic foil or wire netting immediately under the roof to a roof or down conductor at least two points.

20 LABELLING OF CIRCUITS

- 20.1.1 All outlets, isolators and light switches shall be labelled with engraved labels on the cover plates. The label shall indicate the supply DB and circuit number (e.g. DB-1-L5).
- 20.2 Wiring inside the DB shall be bear Gravoplast or equal and approved alternative, labels.
- Plastic (Brother-type) labels are not acceptable.

21 SITE TESTS AND COMMISSIONING

- 21.1 The following minimum site tests of the new electrical installation shall be carried out by the Contractor and the results presented to the Engineer:
- Insulation resistance between all conductors and earth
 - Insulation resistance between all conductors and neutral
 - Insulation resistance between all 3 phase conductors (Separate tests for UPS and normal power circuits)
 - Polarity of light switches
 - Earth leakage protection on normal power circuits
- 21.2 After submission of the test results, the Contractor shall notify that the installation is complete, tested and in working order. The Client and/or the Engineer will witness the re-testing of the installation.

22 CERTIFICATE OF COMPLIANCE

- 22.1 All work covered under this contract, must be executed by a qualified and fully representative person. Only persons registered as an "installation electrician" will be accepted to carry out the installation work.
- 22.2 Following completion of the contract, the Contractor shall submit to the Engineer a Certificate of Compliance - in terms of present legislation - prior to final payment being processed.
- 22.3 One Certificate is required for DB-2, and the Certificate shall cover the DB and all the downstream connected works of the designated distribution board.

23 AS-BUILT DRAWINGS AND DOCUMENTATION

- 23.1 The Contractor shall prepare as-built drawings of his completed installation – including conduit routes.
- 23.2 The Contractor shall also prepare a comprehensive set of Operations and Maintenance (O+M) manuals for approval by the Engineer. The following shall be included as a minimum:
- Cover page
 - Index
 - Contractor contact details
 - Call out procedure
 - Manuals and Specifications of all the installed equipment
 - Installed equipment warrantee details including supplier contact information
 - Commissioning data
 - Certificates of Compliance
 - Operator guides and procedures
 - As-built drawings

24 DEFECTS LIABILITY PERIOD

- 24.1 The equipment and installation supplied under this contract shall be guaranteed for a period of twelve months, or as stated, from date of acceptance by the Engineer in all respects and commissioned for continuous service. The tender price shall include for the above.
- 24.2 The defects liability will be for a period of twelve months, calculated from the date of issue of the Certificate of completion by the Engineer.
- 24.3 Do note that the 12 month maintenance period includes lamp replacement.

PREAMBLE TO SCHEDULE OF QUANTITIES

The Schedules of Quantities form part and must be read in conjunction with the specifications and drawings which contain the full description of the work to be done and material and equipment to be used.

The total tender sum in the tender form shall constitute the contract price of the successful Tenderer. Tenderers are advised to check their item extensions and total additions, as no claim for arithmetical errors will be considered. The Employer or his Agent may correct the tendered schedule in terms of any arithmetical errors.

Black ink shall be used. No alteration, erasure or addition is to be made in the text of the Schedule of Quantities. Should any alteration, erasure or addition be made, it will not be recognised, but the original wording of the schedule of quantities will be adhered to. Line items not completed, shall be regarded as R null rated.

The priced Schedule of Quantities of the successful Tenderer will be checked and the Engineer reserves the right to call for reasonable adjustments to any individual price and to rectify any discrepancies whilst the rates, as submitted, remain unaltered.

The responsibility for accuracy of the quantities written into the Schedules remains with the party who prepared the Schedules. The Tenderer shall be relieved of the responsibility of measuring quantities at tender stage, and the tender sum submitted shall be in respect of the quantities set out in the Schedules, although he will be required to make his assessment of items such as brackets, fixings, etc from details as stated in the Schedules and Specifications and shall include in the item prices for such small installation materials as are required for the complete installation in accordance with the Specification.

The Contractor and Employer agree that the total of any schedule or schedules, including variations by way thereto or deductions there from, represents a fair and accurate quantification of the items set out in the Schedules and the parties may agree final payment on that basis. In the event of any disputes as to quantities, then the disputed item or items shall be adjusted where necessary.

The quantities in these Schedules of Quantities are not to be used for ordering purposes.

Variations in the scope and extent of the work included in the Schedules shall be allowed to meet the Employer's requirements. The supply and installation cost of any item shall be fully included in the unit price.

The description of an item shall be held to include the manufacture, conveying and delivery, unloading, storing and any other action required to supply and install the item.

The quantities in these Schedules of Quantities are measured provisionally. All work executed in accordance with the construction drawings, approved by the Engineer, shall be re-measured and priced at rates contained in, or based on, the priced schedule of quantities.

Prime cost amounts, provisional amounts and budget allowances shall be fully included in the tender price. Approval and payment for these line items are under the control of the Employer.

Annexure A1

SARS WAREHOUSE Refurbishment of Warehouse

ELECTRICAL INSTALLATION

SCHEDULE OF LUMINAIRES rev0

TYPE	DESCRIPTION	REVISION
F3	Existing vapour proof fluorescent luminaire similar to Voltex lighting C10 with 2 x 58W lamps	0
F5	Existing surface fluorescent luminaire similar to Voltex lighting T-BAY/COVER with clear perspex cover and 4 x 58W lamps	0
F6	2x58W surface mounted Zone 2.2 hazardous location luminaire complete with control gear and (840) cool white lamps, equal to Nordland Lighting type JBP/DIP 2x58 A22 Ta T4 IP 66 or similar approved	0
F6E	2x58W surface mounted Zone 2.2 hazardous location luminaire complete with control gear and (840) cool white lamps, equal to Nordland Lighting type JBP/DIP 2x58 A22 Ta T4 IP 66 or similar approved with one lamp on battery back-up	0
F7	Open channel fluorescent luminaire similar to Voltex lighting R1 with 2 x 54W lamps or similar approved	0
B1	Existing bulkhead similar to Voltex B70 in white with 2 x9W PL lamps	0
B2	Existing floodlight similar to Reef Light RL303 with 85W CFL lamp	0
B3	Existing bulkhead similar to Voltex B10/DOM 2 x 9W PL lamp	0

Annexure A2

SARS WAREHOUSE Refurbishment of Warehouse

ELECTRICAL INSTALLATION

SCHEDULE OF INFORMATION BY TENDERERS

CONTENT

1	SCHEDULE OF TECHNICAL INFORMATION	1
1.1	Guarantee	1
1.2	Labelling	1
1.3	Low voltage cables	1
1.4	Low voltage distribution boards	2
1.5	Luminaires	2
1.6	Small power	2
1.7	Wiring and wire ways	3
2	LIST OF SPECIALIST SUBCONTRACTORS ENVISIONED ON THIS PROJECT	3

1 SCHEDULE OF TECHNICAL INFORMATION

This Schedule must be completed by all Tenderers for all items tendered. Tenders may be considered invalid if insufficient information is submitted.

1.1 Guarantee

Item	Description	Guarantee period (If more than 1 year)
1.	Low voltage cables	
2.	Distribution boards	
3.	Luminaires Switches Motion sensors	
4.	Small power and data outlets	
5.	Wiring and wire ways	

1.2 Labelling

Item	Description	Response
1.	Manufacturer	
2.	Type	
3.	Fixing method: <ul style="list-style-type: none">• Socket outlets• Power skirting• Ducts• SWA/PVC Cables• DBs• Enclosures• Stranded and solid conductors• Conduit	

1.3 Low voltage cables

Item	Description	Response
4.	Manufacturer	
5.	Type of cable	
6.	Type of insulation	
7.	SANS Specification to which cable is manufactured	

1.4 Low voltage distribution boards

Item	Description	Response
1.	Proposed Manufacturer	
2.	Current-carrying capacity of busbars	
3.	Type of busbars	
4.	Method of fixing and supporting of busbars	
5.	Short-circuit rating	_____ kA
6.	Type of construction of board	
7.	Manufacturer and type of interlock switch	
8.	Manufacturer and type of isolators	
9.	Manufacturer and type of circuit breakers	
10.	Manufacturer and type of contactors	
11.	Manufacturer and type (class) of surge arrestors	
12.	Manufacturer and type of indication lights	

1.5 Luminaires

Item	Description	Response
1.	Luminaire Manufacturer(s)	
2.	Light switch Manufacturer(s)	
3.	Motion sensor Manufacturer	

1.6 Small power

Item	Description	Response
1.	Switched socket outlet Manufacturer	
2.	Switched socket outlet range/model number	
3.	Isolator Manufacturer	
4.	Isolator outlet range/model number	

1.7 Wiring and wire ways

Item	Description	Response
1.	General purpose stranded copper conductor Manufacturer Type of cable Type of insulation Specification to which cable is manufactured	
2.	General purpose solid copper conductor Manufacturer Type of cable Type of insulation Specification to which cable is manufactured	
3.	Conduit approval authority	
4.	Wiring duct Manufacturer	
5.	Wiring duct model number	
6.	Cable sleeves Manufacturer	
7.	Cable sleeve model number	

2 LIST OF SPECIALIST SUBCONTRACTORS ENVISIONED ON THIS PROJECT

Item	Task	Subcontractor
1.	Earthing and Lightning protection	
2.	DB face plate modifications	
3.	Other _____	

Annexure A3

SARS WAREHOUSE Refurbishment of Warehouse

ELECTRICAL INSTALLATION

SCHEDULE OF DRAWINGS rev0

DRAWING NO	DRAWING TITLE	REVISION
B05.PTA.000533-E-101	Warehouse Ground Floor Lighting Layout	0
B05.PTA.000533-E-201	Warehouse Ground Floor Small Power Layout	0
B05.PTA.000533-E-301	Warehouse Ground Floor Security wireway layout	0
B05.PTA.000533-E-401	Schematics	0
B05.PTA.000533-E-501	Warehouse and loading bay lightning protection layout	0