Project Number	: XDN.E.0022
Project	: Provision of Paraplegic Lifts at the Dredging Services Building in the Port of Durban.
Document Title	: Works Information
Discipline	: Electrical Lighting and Power

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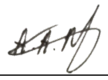
Approved by:			28/07/25
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Rev	**Date**	**Revision Details**

4.3 Electrical Engineering Works

4.3.1 Scope of Work

The scope to be carried out by the *Contractor* shall include but not be limited to the following:

- Additions to Ground Floor including Supply, delivery and installation of a 63A 6kA Circuit Breaker.
- Supply, delivery and installation of Lift Distribution Board including all switchgear and wiring.
- Supply, delivery and installation of a switch disconnector and socket outlets including all wireways
- Supply, delivery and all cabling for the installation
- Commission and testing of the entire installation and hand over to the Employer.

The *Contractor* shall undertake designs and submit them to the *Employer's* responsible personnel for approval. The high-level designs by the *Employer*, which illustrates the overall design methodology, is detailed and shown in the drawings and specifications accompanying this document. The *Contractor* shall read this document in conjunction with all the drawings and the specifications mentioned herein this document.

4.3.2 General

- Transnet National Port's Authority electrical appointed personnel shall perform all the required switching and control work permits.
- For any required switching, the Contractor shall submit a notification to the *Project Manager* seven days prior to the required work being performed.

4.3.3 Standard of Work, Equipment and Materials

- The electrical installation shall conform to the requirements of the latest edition and amendments of SANS 10142-1 Code of Practice for the Wiring of Premises and any additional requirements thereto, described in this specification.
- All equipment and material used shall be of high quality and the work shall be of a high standard of workmanship carried out by qualified staff under proper supervision by experienced and competent officers.

- All equipment and material shall comply with the relevant Transnet National Port's Authority (TNPA) specification. Where equipment does not comply, it shall be submitted to the Project Manager for approval.
- All installations, testing and terminations must be approved by the Transnet National Port's Authority (TNPA) Engineer prior to commissioning.

4.3.4 Generic Specifications

All Design's undertaken, Plant's and Materials supplied by the *Contractor* in agreement with the Employer, with the intention to execute the works detailed in this document, shall comply in general with all associated Transnet Specifications listed below. It is understood that Transnet Specification requirements are more stringent than the SANS standard requirements, the *Contractor* is required to fully comply with the Transnet Specifications. In the case where SANS standard is stringent than Transnet Standard, the Contractor shall comply with SANS Standard. The contractor shall also verify all site details given in the employers' drawings.

SPECIFICATION	DESCRIPTION
TPD-001-EL&PSPEC	Technical specification for electrical installations to building other than dwelling houses
TPD-002-DBSPEC	Technical specification for low voltage distribution boards
TPD-003-CABLESPEC	Technical specification for medium and low voltage cables

4.3.5 Service Conditions

The equipment shall be designed and rated for continuous operation under the following conditions:

4.3.5.1 Ambient/Environment Conditions:

All equipment offered shall be rated for continuous operation under the following conditions:

- Altitude : 0 to 1800m Above Sea Level.
- Ambient temperature : -5°C to +40°C (daily average +35°C).
- Relative humidity : As high as 96%.
- Lightning conditions density of : Severe, with a maximum lightning ground flash 11 flashes per km² per annum.
- Atmosphere : Salt laden and corrosive industrial chemical and dust laden nature. Frequent heavy rains driven by wind reaching speeds of 100 Km/h and above.

4.3.5.2 Electrical Conditions:

- The Low voltage supply will be two phase, 2 wire, 50 Hz alternating current with earthed neutral at a nominal voltage of 230V.
- The voltage may vary within the range of 95% to 105% of the nominal and all equipment installed shall be suitably rated.

4.3.5.3 Lightning conditions

All lightning protection equipment offered shall be rated to withstand the following conditions:

- Current : The peak lightning current and its rate of rise shall be regarded as severe when i_{max} = 200kA.
- Voltage : The highest cloud potential shall be assumed to be more that 100MV, where; Q = CV, where Q is assumed at 100C and C to be 10^{-7} F.

4.3.6 Governing Codes, Standards and Specifications

4.3.6.1 Normative References

The following publications and specifications (latest edition) shall apply where contextually correct:

Standard No.	Description
SANS 767 - 1	Fixed earth leakage protection circuit-breakers
SANS 950	Unplasticized chloride rigid conduit and fittings for use in electrical installations
SANS 1063	Earth rods, couplers and connections
SANS 1085	Wall outlet boxes for the enclosure of electrical accessories
SANS 1091	National colour standards for paint
SANS 1213	Mechanical cable glands
SANS 1433 - 1	Electrical terminals and connectors Part 1 terminal blocks having screw and screw less terminals
SANS 1433 - 2	Electrical terminals and connectors Part 2: Flat push-on connector
SANS 1507 (part 1 – 4)	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1900/3300V) Part 1 - 4
SANS 60669 - 2 - 1	Switches for household and similar fixed electrical installations Part 2-1: Particular requirements - Electronic switches
SANS 60669 - 2 - 4	Switches for household and similar fixed electrical installations Part 2-4: Particular requirements - Isolating switches
SANS 10064	Code Of Practice For The Preparation Of Steel Surfaces For Coating.
SANS10142-1	Code Of Practice For The Wiring Of Premises
SANS 10389-1	Exterior Lighting Part 1: Artificial Lighting Of Exterior Areas For Work And Safety
OHS Act	Occupational Health And Safety Act Of 1993
SANS 10199	The Design And Installation Of Earth Electrodes
SANS152	Low Voltage Air Breaker Switches, Connectors, Switch Disconnectors, Fuse Combination Units.
SANS 172	Low Voltage Fuses
SABS 763	Hot Dip Zinc (Galvanised) Coatings
SANS 1012	Electric Light Dimmers

SANS 1065-1	Metal Conduits And Fittings For Electrical Wiring
SABS 1180	Electrical Distribution Boards
SANS 1279	Floodlight Luminaires
SABS IEC 439	Low Voltage Switchgear
SABS IEC 309	Plugs, Socket Outlets And Couplers For Industrial Purposes
SABS IEC 742	Isolating Transformers And Safety Isolating Transformers
SANS 10313	Protection against Lightning – Physical damage to structures and life hazard

4.3.6.2 Codes of Practice

All *Design's*, *Construction* works (i.e. excavation), *installation* works to be undertaken by the *Contractor*, in agreement with the *Employer*, with the intention to execute the works detailed in this document, and shall adhere to as a minimum, the requirements of the *Codes of Practice* listed in the table below. Where reference is made to a *Code of Practice*, the reference shall be taken to mean the latest edition of the *Code of Practice*, including latest amendments, supplements and revisions thereto.

Standard No.	**Description**
OHS Act 1993	Occupational Health and Safety Act (Electrical Installation regulations)
SANS 10142-1	Code of Practice for the Wiring of Premises Part 1 Low Voltage Installations.
SANS 10114-1	Interior Lighting Part 1 The artificial lighting of Interiors
SANS 10114-2	Interior Lighting Part 2: Emergency Lighting
SANS 10313	Code of Practice for protection of buildings against lightning

4.3.7 Building LV Electrical Installation

4.3.7.1 First Floor

This works information shall be read in conjunction with the drawings listed in section 6.4.9, SANS standards, codes of practice, and Transnet specifications listed herein this document.

All works to be carried out shall be performed with full adherence to safe practice of electrical installations as stipulated in SANS 10142-1, SANS 10142-2 and OHS Act 85 of 1993 (Electrical Installation Regulations).

a) GROUND FLOOR DISTRIBUTION BOARD

- The *Contractor* shall install a 63A 6kA 2 pole circuit breaker in the First Floor Distribution Board B for switching of the Proposed Lift Distribution as indicated in drawing number XDN.E.0022-300-E-LA-0001-01-0A

- Description of circuit fed by the associated circuit breaker as indicated in drawing number XDN.E.0022-300-E-LA-0001-01-0A

- Full description of the type of cable (Copper PVC insulated ECC, SWA), the size in mm2 of the cable terminated in the associated circuit breaker and the cable run length to the load.

LIFT DISTRIBUTION BOARD L

- The *Contractor* shall design, construct, supply, deliver, offload, install and commission Lift Distribution Board DB-L in the Ground Floor . The distribution board shall be Surface mounted on the wall, made of 3CR12 type material with a thickness of 1.6mm, paint type shall be powder coated at 40 microns as shown in drawing number XDN.E.0022-300-E-LA-0001-01-0A.. The distribution board shall be top cable entry

- The Lift Distribution Board shall contain the following signage: Name of the Distribution Board as indicated in drawing number XDN.E.0022-300-E-LA-0001-01-0A (“Distribution Board DB-L”).

- The distribution board shall be top cable entry. Cableways shall be built or installed in terms of conduit chased into the concrete or brick wall.

- The rated Voltage level of the Distribution Board

- The rated Short Circuit Current in all different sections of the distribution board

- The rated current in different sections of the distribution board

- Description of circuits fed by the associated circuit breaker as indicated in drawing number XDN.E.0022-300-E-LA-0001-01-0A

- Full description of the type of cable (Copper PVC insulated ECC, SWA), the size in mm2 of the cable terminated in the associated circuit breaker and the cable run length to the load

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- Danger sign in all sections of the Distribution board.

SWITCHED SOCKET OUTLETS

- The *Contractor* shall supply and install switched socket outlets as shown on drawing number XDN.E.0022-300-E-LA-0001-01-0A.
- The power supply to the socket outlet shall be installed in existing PVC conduits recessed into the wall, unless otherwise stated. The mounting height for the power points is as specified in the drawing.
- The conduit droppers and the socket outlet boxes if required shall be cast into concrete and built into brick walls. All conduit terminations to socket outlet boxes shall be done using a PVC male adaptor and a suitable PVC washer.
- All PVC conduits, couplers, male adaptors, boxes and PVC adhesives shall be SABS approved.
- All socket outlets shall be installed according SANS 10142-1 and specification No. TPD: 001-EL&PSPEC; Technical specification for the supply and installation of electrical lighting and power in buildings other than dwelling houses.

b) SWITCHED ISOLATORS

- The *Contractor* shall supply, deliver, offload and install a switched disconnector (isolator) as shown in drawing number XDN.E.0022-300-E-LA-0001-01-0A. The isolators shall be installed in the lift shaft at a height approved by the Lift Manufacturer
- The *Contractor* shall design, supply, deliver and install SABS approved PVC conduits flush mounted in the wall. The PVC conduit shall be used as a wireway, linking all isolators to the distribution board. All necessary accessories such as fasteners, bends, junction boxes, adaptors, etc shall be included to ensure a safe neat link for the conduit system.
- The *Contractor* shall supply, deliver, offload and install SABS approved PVC insulated house wire for all isolator circuits as shown in drawing XDN.E.0022-300-E-LA-0001-01-0A The PVC insulated wire shall comply with Transnet specification TPD-003-CABLESPEC. The PVC insulated house wire shall be installed in conduit.

c) CABLE AND CABLE WAY SYSTEM

The *Contractor* shall supply, deliver and install 10mm^2 2 Core PVC ECC Copper cable which will be chased into the floor and ceiling and in PVC sleeve pipes

4.3.8 LIST OF DRAWINGS

4.3.8.1 Drawings issued by the *Employer*

This is the list of drawings issued by the *Employer* at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing Number	Revision	Title
XDN.E.0022-300-E-LA-0001-01-0A	0A	Dredging Services Paraplegic Lift EL&P Layout