



an agency of the
Department of Arts and Culture

ROBBEN ISLAND MUSEUM



RIM EST 03-2017/2018

**THE APPOINTMENT OF A SERVICE PROVIDER TO SUPPLY,
COMMISSION, INSTALL AND MAINTAIN A STANDBY GENERATOR AT
NELSON MANDELA GATEWAY BUILDING, V & A WATERFRONT FOR
ROBBEN ISLAND MUSEUM.**

Ms. PN Madikane

Unit Manager: Supply Chain Management

20 October 2017

Signature: 

CHECKLIST OF COMPULSORY RETURNABLE SCHEDULES AND DOCUMENTS

Please adhere to the following instructions

- Tick in the relevant block below, the documents and schedules that form part of your response.
- Ensure that the following documents are completed and signed where applicable:
- Use the prescribed sequence in attaching the annexes that bidder may be disqualified on the basis of non-compliance/ non-responsiveness.

YES	NO	THE BID / REQUEST FOR QUOTATION RETURNABLE SCHEDULE OR DOCUMENT
<input type="checkbox"/>	<input type="checkbox"/>	Checklist of Compulsory Returnable Schedules and Documents
<input type="checkbox"/>	<input type="checkbox"/>	Instruction to BIDDERS (signed)
<input type="checkbox"/>	<input type="checkbox"/>	Proposal Document
<input type="checkbox"/>	<input type="checkbox"/>	SBD 1: Invitation to Bid (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 2: Tax Clearance Status (registered on the Central Supplier Database)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 3.2 Pricing Schedule (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 4: Declaration of Interest (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 6.1: Preference Claim Forms in terms of Preferential Procurement Regulations AND accredited and Valid B BBEE certificate. SBD 6.1 must be completed when claiming for B BBEE points. (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 6.2: Declaration Certificate for Local Production and content for designated sectors
<input type="checkbox"/>	<input type="checkbox"/>	SBD 8: Declaration of Bidder's Past Supply Chain Practices (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	SBD 9: Certificate of Independent Bid Determination (completed & signed)
<input type="checkbox"/>	<input type="checkbox"/>	Terms of reference (Specification)
<input type="checkbox"/>	<input type="checkbox"/>	General Conditions of Contract

INSTRUCTION TO TENDERERS

RIM EST 03-2017/18

THE APPOINTMENT OF A SERVICE PROVIDER TO SUPPLY, COMMISSION, INSTALL AND MAINTAIN A STANDBY GENERATOR AT NELSON MANDELA GATEWAY BUILDING, V & A WATERFRONT FOR ROB BEN ISLAND MUSEUM.

1. INTRODUCTION

1.1 Robben Island Museum (RIM) invites all interested prospective service providers to submit proposals for the appointment of a service provider to supply, commission, install and maintain a standby generator at Nelson Mandela Gateway Building, V & A Waterfront for Robben Island Museum.

2. ALL TENDER CONDITIONS MUST BE STRICTLY ADHERED TO, FAILING WHICH, THIS TENDER SUBMISSION MAY BE DECLARED NON-RESPONSIVE.

2.1 This tender consists of these Instructions, the invitation to submit proposal/s for the appointment of a service provider to supply, commission, install and maintain a standby generator at Nelson Mandela Gateway Building, V & A Waterfront for Robben Island Museum.

2.2 Bidders are required to submit their tenders in a sealed envelope in which they have duly:

(a) Completed all forms; and

(b) Included all other necessary and/or desirable documents in support of their bids.

2.3 The complete tender document should be returned in its entirety, with each page initialled by the authorised signatory and a witness.

2.4 Any portion of the tender document not completed maybe interpreted as "not applicable" where appropriate.

2.5 Tenders must be properly received and deposited in the tender box on or before the closing date 15 November 2017 and before the closing time of 11H00 am at Robben Island Museum, Nelson Mandela Gateway Building, V & A Waterfront, Cape Town.

2.6 RIM reserves:

(a) The right to accept the whole tender or part of a tender or any item or part of any item or accept more than one tender (in the event of a number of items being offered);

(b) The right not to accept the lowest or any tender;

3. RIM shall not consider tenders, which are received after the closing date and time for such a tender.
4. RIM will not be held responsible for any expenses incurred by bidders in preparing and submitting tenders.
5. RIM may, after the closing date, request additional information or clarification of bidders in writing.
7. A bidder may request in writing and, after the closing date, that his/her tender be withdrawn and which withdrawal will be permitted or refused in the sole discretion of RIM after consideration of the reasons for the withdrawal, which shall be set out by the bidder in the written request for withdrawal.
8. RIM's representative for the purpose of this tender shall be:
 - (a) Ms. L. Penicela at telephone 021 409 5159 in respect of matters relating to the Terms of Reference; and
 - (b) Enquiries pertaining to the completion of the tender documents can be addressed to Ms. P. Madikane at telephone (021) 413- 4265/08.
9. Joint Ventures/ Consortiums
 - 9.1 In the case of Joint Ventures/Consortiums, a copy of the Joint Venture agreement must be submitted with the tender document.
10. Validity Period
 - 10.1 Any tender submitted shall remain valid, irrevocable and open for written acceptance by RIM for a period of sixty (60) days from the closing date.
11. Bidders must be registered on the Central Supplier Database (CSD).
 - 11.1 RIM shall reject a bid from an entity whose tax matters have not been declared by the South African Revenue Service (SARS) to be in order.
 - 11.2 If bidders are not registered yet on the CSD, they must follow the following link <https://secure.csd.gov.za/Account/Register> in order to register.
 - 11.3 It is the responsibility of the successful bidder/s to ensure that that the tax matters with SARS are in order.

11.4 Each party to a joint venture / consortium / partnership must comply with all of the above.

12 B-BBEE

12.1 Each bidder must submit a certificate issued by an accredited B-BBEE verification agency or an affidavit, indicating its B-BBEE rating in terms of the relevant B-BBEE scorecard.

12.2 For Consortiums / Joint Ventures / or Sub-contracting arrangements, the bidder must also submit a combined B-BBEE certificate issued by an accredited B-BBEE verification agency.

13. Due Diligence of bidder

13.1 RIM reserves the right to conduct a due diligence investigation prior to the final award of the contract or at any time during the contract.

14. Inducements, rewards, gifts and other abuses of the Supply Chain Management System is prohibited, and:

(a) No person who is a provider or prospective provider of goods or services, or a recipient or prospective recipient of goods disposed or to be disposed of may directly or indirectly, through a representative or intermediary promise, offer or grant;

(i) Any inducement or reward to RIM for or in connection with the award of a contract; or

(ii) Any reward, gift, favour or hospitality to any official or any other role player involved in the implementation of the supply chain management policy;

(b) No person who is a provider or prospective provider of goods or services, or a recipient or prospective recipient of goods disposed or to be disposed of may directly or indirectly

(i) influence or interfere with the work of any RIM official(s) involved in the tender process in order to *inter alia*:

(ii) influence the process and/or outcome of a bid;

(iii) incite breach of confidentiality and/or the offering of bribes;

(iv) cause over and under invoicing;

(v) influence the choice of procurement method or technical standards; and

(vi) influence any RIM official(s) in any way which may secure an unfair advantage during or at any stage of the procurement process.

- (d) Abuse of the RIM's supply chain management system is not permitted and may result in the tender being rejected, the cancellation of the contract, the "blacklisting" of the bidder by RIM against participation in any future bid processes and any other remedy permitted in law.

15. Declarations and authorisation

- 15.1 Bidder are required to complete all declarations and authorisations in the schedules attached hereto, failing which the tender may be disqualified.

16. Alternative offers

- 16.1 Alternative offers may be considered, provided that an offer free of qualifications and strictly in accordance with the bid documents is also submitted. RIM shall not be bound to consider alternative tenders.

EVALUATION CRITERIA

1. Invalid Tenders

- 1.1 Tenders shall be endorsed and may be recorded as potentially invalid in the tender opening record by the RIM responsible official in the following instances:
 - (i) if the tender is not sealed;
 - (ii) If the tender is not completed in non-erasable ink;

2. Non-Responsive Tenders

- 2.1 Valid tenders will be declared non-responsive and eliminated from further evaluation if:
 - (a) The bidder has been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act, 12 of 2004 or has been listed on National Treasury's database as a person prohibited from doing business with the public sector;
 - (b) The bidder has failed to complete and/or sign the required declarations and/or authorisations; and

3. Disqualified Tenders

- 3.1 The tender will be disqualified and eliminated from further evaluation if it fails to adhere to a written request (within the specified period set out in such request) to:
 - (a) Comply with one or more of the provisions contained in the Instruction to bidders;

(b) Comply with any other terms and conditions of the tender documentation after being called upon to do so;

4. Directions and Closing Date for Submission of Bids

4.1 Directions: Cape Town, Waterfront: Nelson Mandela Gateway building next to Clock Tower building.

4.2 CLOSING DATE FOR SUBMISSION OF BIDS: 15 NOVEMBER 2017 AT 11H00 AM.



an agency of the
Department of Arts and Culture

BID REFERENCE NUMBER: RIM EST-03-2017/2018

TERMS OF REFERENCE FOR:

THE APPOINTMENT OF A SERVICE PROVIDER TO SUPPLY, INSTALL AND COMMISSION A STANDBY GENERATOR AT NELSON MANDELA GATEWAY BUILDING, V & A WATERFRONT FOR ROBBERN ISLAND MUSEUM

DATE OF ISSUE:	20 OCTOBER 2017
COMPULSORY BRIEFING SESSION:	01 NOVEMBER 2017
CLOSING DATE:	15 NOVEMBER 2017

NELSON MANDELA GATEWAY BUILDING: V&A WATERFRONT

STANDBY GENERATOR INSTALLATION

TECHNICAL SPECIFICATION

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NELSON MANDELA GATEWAY BUILDING: V&A WATERFRONT

STANDBY GENERATOR INSTALLATION

PART 10

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PART 10

SECTION A

NELSON MANDELA GATEWAY BUILDING: V&A WATERFRONT

STANDBY GENERATOR INSTALLATION

SCHEDULE OF TENDER PRICES

1.0	Net Price For Standby Generator as specified	R.....
2.0	Net Price for Electrical Installation	R.....
	SUB TOTAL	R
	ADD: 14 % VAT	R
	TOTAL	R

Price must be fixed and must include all costs.

This Schedule of Tender Prices, together with the Form of Tender and Schedule of Rates duly completed, shall be enclosed in a sealed envelope endorsed:

SCHEDULE OF TENDER PRICES
STANDBY GENERATOR INSTALLATION
NELSON MANDELA GATEWAY BUILDING: V&A WATERFRONT

TENDERERS AUTHORISED SIGNATURE:

PRINT NAME:

COMPANY:DATE:

ADDRESS:.....

.....

.....

TEL No.....FAX No.....

EMAIL.....

PART 10

SECTION B

STANDARD SPECIFICATION – DIESEL STANDBY GENERATORS

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SECTION B

STANDARD SPECIFICATION – DIESEL STANDBY GENERATORS

B1.0 GENERAL

B1.1 Scope

This section of the specification covers the standards of material, equipment, workmanship and general methods and procedures in the execution of the Works for a diesel driven Standby Generator system complete with all specified associated equipment and forms part of the Contract Documents.

B1.2 Precedence of Clauses

Where a statement in the Detail Specification is at variance with a statement in this Standard Specification, then the Detail Specification shall take precedence.

B1.3 Guarantee & Maintenance

- .1 Guarantee: The Contractor shall guarantee the Contract Works for a period of twelve months after notification of taking over. During this period any defective material, equipment or workmanship (excepting only proven, wilful or accidental damage, or fair wear and tear), shall be made good with all possible speed at the Contractor's expense and to the satisfaction of the Engineer.
- .2 Making Good: When called on by the Engineer the Contractor shall make good on site and bear all expenses incidental thereto including making good of work by others, arising out of removal or re-installation of equipment. The Contractor may delegate such making good to an approved party. All work arising from the implementation of the guarantee or maintenance of equipment shall be carried out at times which will not result in any undue inconvenience to users of the equipment or occupants of premises.

If any defects are not remedied within a reasonable time the Employer may proceed to do the work at the Contractor's risk and expense, but without prejudice to any other rights which the Employer may have against the Contractor.

- .3 Latent Defects and Failure to Comply with Specification: The Engineer reserves the right to demand the replacement or making good by the Contractor at the Contractor's expense of any part of the Contract Works which is shown to have any latent defects or not to have complied with the Specification, notwithstanding that such work has been taken over or that the guarantee period has expired.
- .4 Qualification by Tenderer: Should any specified materials or equipment in the Tenderer's opinion be for inferior quality or unsuitably employed, rated or loaded, the Tenderer shall, at the time of tendering draw the attention of the Engineer to these conditions and duly qualify his tender. His failure to do so shall mean that he guarantees the work including all materials or equipment as specified.

.5 Maintenance: At quarterly intervals during the guarantee period of twelve months, the Contractor shall adjust and maintain the standby plant and its ancillary equipment in proper working order. As a minimum requirement, the Contractor shall:

- (a) Check and top-up if necessary, the fluid levels in the radiator, engine sump and batteries.
- (b) Test run the standby plant and ancillary equipment for a period of 15 minutes.
- (c) Wipe down the standby plant and its ancillary equipment and report on any evidence of any fluid leaks or other defects.
- (d) Fill in the standby plant logbook.

The cost of such inspections, maintenance, adjustments, repairs, etc. shall be included in the Price Summary but the cost of renewing any part which may have become worn through fair wear and tear, or damaged beyond the control of the Contractor (provided this is not due to unsuitable design) shall be excluded.

If during the guarantee and maintenance period the standby plant is not in working order for any reason for which the Contractor can be held responsible, then the Contractor will be notified and immediate steps shall be taken by him to remedy the defects. Should the standby plant defects be so frequent as to become objectionable or should the equipment otherwise prove unsatisfactory during the guarantee period of twelve months, the Contractor shall, if called upon by the Engineer, at his own expense replace the whole or such parts thereof as the Engineer may deem necessary with equipment to be specified by the Engineer. Approval – tacit or otherwise – of the equipment installed shall be considered as provisional only and shall not invalidate the Engineer's rights as indicated above.

B2.0 STANDARDS

All products and methods used in the Standby Generator system shall comply with the relevant South African Standard and carry the SABS mark, where such a standard exists.

The following standards shall, inter alia, apply to this contract:

SANS 2:	Lead-acid starter batteries
SANS 10131:	Above-ground storage tanks for petroleum products
SANS 10142-1:	The wiring of premises Part 1: Low voltage installations
SANS 8528:	Reciprocating internal combustion engine driven alternating current generating sets

This code is subdivided into the following parts:

Part 1:	Application, ratings and performance
Part 2:	Engines

B3

Part 3:	Alternating current generators for generating sets
Part 4:	Control gear and switchgear
Part 5:	Generating Sets
Part 6:	Test Method
Part 7:	Technical declarations for specification and design
Part 8:	Requirements and tests for low-power generating sets
Part 9:	Measurement and evaluation of mechanical vibrations
Part 10:	Measurement of airborne noise by the enveloping surface method
Part 11:	Rotary uninterruptible power supply systems – Performance requirements and test methods
Part 12:	Emergency power supplies to safety services
IEC 60085:	Electrical insulation – Thermal evaluation and designation
OHSA:	The Occupational, Health and Safety Act

B3.0 DEFINITIONS

The definitions listed below are the majority of definitions directly applicable to this Standard Specification.

B3.1 Contract/Subcontract

The type of contract applicable to the Standby Generator system will be detailed elsewhere. Where reference is made to the “contract” in this Standard Specification, then it applies equally to a “subcontract”, should that be applicable.

B3.2 Standby Generator Contractor/Subcontractor

Where reference is made to the “Standby Generator Contractor” in this Standard Specification, then it applies equally to a “Standby Generator Subcontractor”, should that be applicable.

B3.3 Engineer

This term shall mean BFBA Consultants Cape Town (Pty) Ltd, or their authorized representatives, duly instructed and authorized on behalf of the Employer.

B3.4 Approved

Where the word “approved” appears in this specification, then it means approved in writing by the Engineer.

B4.0 INFORMATION REQUIRED WITH TENDERS

B4.1 General

Tenderers shall submit with their tenders full technical details of all engines, generators, machines, equipment and ancillary equipment offered, together with any relevant descriptive leaflets, illustrations, standard drawings and documents. In addition, the “Schedule of Technical Information” shall be completed in full and submitted with the tender.

Failure to provide any of the above requested information may lead to disqualification of tenders.

B4.2 Drawings

Tenderers shall submit with their tender dimensioned drawings showing the general layout of the plant offered and any building and/or structural details required for the installation and operation of the plant.

B5.0 INFORMATION REQUIRED AFTER AWARD OF TENDER

The following requirements are given as a guide as to the extent of documentation required from the Standby Generator Contractor after the award of the tender. The exact requirements will depend on the complexity of the system.

Typically, within one month of the award of the tender, the Standby Generator Contractor shall submit three prints of shop drawings to the Engineer for approval. These drawings shall include the layouts and schematics of all electrical panels and boards; schematic of the complete electrical systems, batteries and automatic battery chargers; schematic of the fuel system; dimensioned layout of the complete plant including all piping, cabling, etc., and any other drawings that the Engineer may require for the approval of the proposed installation.

B6.0 EQUIPMENT/ITEMS TO BE INCLUDED

Tenderers must include for all equipment/items for the proper operation of the standby generator plant, notwithstanding the fact that they may not be detailed in the Detail Specification. Should any such items be, in the opinion of the tenderer, of significance to their tender offer, then the tenderer must qualify his tender by means of a covering letter to be submitted with the tender documents. In such an instance, the tenderer shall also submit a quotation at the time of tendering for the equipment/items omitted.

Tenderers shall include for the supply and delivery to site of all scaffolding, ladders, trestles, tools and everything necessary for the proper execution of the contract and for the clearing away of all rubbish due to the work.

B7.0 PROTECTION OF EQUIPMENT

The Standby Generator Contractor shall be solely responsible for the protection of the works from damage due to the building operations or from other trades and from the weather.

B8.0 DELIVERY REQUIREMENTS

Where applicable, the Standby Generator Contractor shall note that the required delivery date may depend on the main building programme and the Standby Generator Contractor shall therefore effect delivery in accordance with the building construction requirements. Early or late requirements shall not be grounds for any payment variations.

B9.0 BUILDERS WORK

The Standby Generator Contractor shall notify the Engineer and the Main Contractor (if applicable) of the position and sizes of any holes, sleeves, recesses, chases, etc. that will be required in good time to enable these to be provided during the course of construction in order that no unnecessary expense may be incurred. Except where otherwise specified, the cost of the above and of all cutting

away and making good will not form part of this contract but will be executed by the Main Contractor.

The Standby Generator Contractor will be held responsible for the sizes and positions of all work performed by the Main Contractor. Any alterations to these after they have been provided by the main Contractor will be for the Standby Generator' Contractor's account.

B10.0 REGULATIONS AND BY-LAWS

The installation shall comply with the relevant electricity Supply Authorities regulations and SANS 10142-1, the latest requirements of the Occupational Health and Safety Act and of any Local Municipal Regulations and By-laws which have the force of law shall also be complied with.

Typically such Regulations and By-laws would address the following issues:

- Paralleling of the genset with the mains
- Noise break-out
- Smoke emissions
- Storage of fuel.

Should any compliance entail a modification to the Detail Specification then this shall be referred to the Engineer before tenders are submitted. No extras arising out of the need to comply with Regulations or By-laws will be considered.

B11.0 WORKMANSHIP

All workmanship must be of the best quality and to the satisfaction of the Engineer. Poor workmanship will be rejected and the work re-undertaken where, in the judgement of the Engineer, the workmanship is not of the highest quality. Where a specific kind or quality of a material is not specified, a first class standard article, as approved by the Engineer, must be provided.

B12.0 COORDINATION OF SYSTEMS

The Standby Generator Contractor will be responsible for the coordination of all aspects of the contract to ensure that clashes do not occur with other trades. Where conflicts cannot be resolved on site, then this must be referred to the Engineer.

B13.0 ENGINE

B13.1 General

The engine shall be of the reciprocating, compression ignition, four stroke, liquid fuel type with a normal running speed of 1 500 rpm. The engine shall be capable of delivering the specified output continuously at the stated site conditions and shall do this without overheating. The engine and alternator shall be close coupled onto a steel base frame (simplex or duplex as specified in the Detail Specification) with resilient anti-vibration mountings. The steel base shall be suitable for installation directly onto a concrete floor.

The engine must comply with SANS 8528 – Part 2: Engines, or with some other comparable national standard. In this case, the details of this alternative standard must be submitted with the tender documentation.

B13.2 Engine Duty

The engine duty will normally be specified as one of the following duty ratings according to SANS 8528: Reciprocating, internal combustion engine driven alternating current generating sets: Part 1 (Application, ratings and performance):

Continuous Power (COP)
Prime Power (PRP)
Emergency Standby Power (ESP).

Should the duty not be specified in the Detail Specification, then the engine must be rated as a Prime Power Unit.

B13.2.1 Continuous Power (COP)

Continuous Power is defined as being the maximum power which the generating set is capable of delivering continuously whilst supplying a constant electrical load when operated for an unlimited number of hours per year under the site operating conditions.

B13.2.2 Prime Power (PRP)

Prime Power is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the site operating conditions. The permissible average power output over 24 hours of operation shall not exceed 70 % of the PRP unless otherwise specified.

B13.2.3 Emergency Standby Power (ESP)

Emergency Standby Power is defined as the maximum power available during a variable electrical power sequence, under the site operating conditions, for which the generating set is capable of delivery in the event of a utility power outage for up to 200 hours of operation per year. The permissible average power output over 24 hours of operation shall not exceed 70 % of the ESP unless otherwise specified.

B13.3 Engine Governor

The engine speed shall be governed by means of an electronic governor that complies with Class G3 as per SANS 8528-5.

B13.4 Cooling System

The engine shall be water cooled unless otherwise specified. Normally the radiator shall be integral with engine and mounted onto the steel base frame. The radiator shall be the heavy duty, tropical type and be designed to allow the engine to operate continuously at rated load at the specified site conditions without overheating.

Where specified in the Detail Specification, galvanized steel ducting shall be provided and fitted between the radiator and the ventilation outlet louvre. In the case of air cooled engines, suitable ducting shall be provided between the room air intake louvre and the cooling air intake of the engine.

The ducting shall incorporate a suitable flexible section to minimize vibration transmission.

Whether water cooled or air cooled engines are offered, a suitable engine driven or independently driven fan shall be provided for radiator cooling.

A preventative device shall be fitted to the engine to prevent operation at excessive engine temperatures.

B13.5 Lubrication

Lubrication of the main engine bearings and other moving parts shall be by a forced feed system. A pressure sensitive device shall be fitted to prevent operation of the engine at low engine oil pressure.

A semi-rotary hand operated sump drain pump must be provided together with an oil drip tray.

The engine shall be handed over with the first fill of new oil.

B13.6 Starting

The engine shall be fitted with a direct current electric starting motor rated for operation from a battery of not less than 12 volts.

The engine shall be easily started from cold, under summer and winter conditions, and shall be capable of supplying the specified loads immediately change-over occurs. These loads may be applied in steps as described in the Detail Specification.

The total time for the diesel generating plant to achieve stabilized running from start shall not exceed 30 seconds.

Thermostatically controlled water jacket heaters shall be fitted and full details of such equipment shall be submitted with the tender.

B13.7 Starter Batteries

The starter battery shall be of the lead acid, maintenance free type, minimum 200A.Hr per battery, type 698MF or better, mounted on a steel framework. It shall be rated at least 220A.Hr and shall be capable of providing three automatic starts of 10 second duration followed by three manual starts of 10 seconds duration per start. There shall be no appreciable, permanent voltage drop and the voltage drop during cranking shall not exceed 25 % of the nominal battery voltage.

The battery shall be placed on a suitable plastic lined or epoxy coated battery stand which shall stand on the plantroom floor or be fixed to the genset steel base. The battery shall be connected to the starter motor with suitably rated and insulated flexible copper cored cables.

B13.8 Battery Charger

The battery charging equipment shall be connected so that the battery is normally charged from the mains via the battery charger, but is to be charged from an engine mounted alternator when the engine is running.

The charging equipment shall include a suitable ammeter and protection equipment. The battery charger shall be incorporated in the standby plant switchboard and shall be of the two stage type (i.e. booster and trickle charge).

B13.9 Engine Instrumentation

Where the Standby Plant Switchboard is mounted remotely from the genset, the following instrumentation shall be mounted on the genset:

- Temperature gauge
- Oil pressure gauge
- Battery charging ammeter
- Start pushbutton.

Where the Standby Plant Switchboard is mounted on or adjacent to the genset, then the above instrumentation may be incorporated in the board.

B13.10 Fuel System

The fuel system shall comply with SANS 10131. The engine's fuel injection system shall be suitable for trouble-free operation with commercial brands of diesel normally locally available.

The fuel system shall normally comprise of the following:

.1 *Fuel Tank (Day Tank)*

The plant shall be equipped with either a wall or floor mounted fuel day tank. In order to comply with SANS 10131, day tanks must not exceed 1000 litres.

Day tanks are to be fitted with the following items:

- .1 Sludge trap (dished bottom) with drain valve.
- .2 Easily removable, dust-proof lid.
- .3 Fuel level indicator other than a sightglass to provide "Full", "Fill" and "Low" indication.
- .4 Outlet valve positioned 50 mm above the bottom of the tank.
- .5 Injector leak-off return fitting.
- .6 Low fuel alarm float switch.

.2 *Fuel Tank (Bulk Tank)*

Should a Bulk Fuel Tank be required, then this will be specified in the Detail Specification.

When a bulk tank is specified, the fuel system shall include a motor driven, self-priming pump, starter, start/stop pushbuttons or float switches, isolator and terminal box to facilitate automatic day tank filling from the bulk supply.

.3 *Fuel Piping*

All necessary interconnecting fuel piping shall be provided and installed by the Standby Generator Contractor.

A heavy duty filter incorporating a water trap shall be fitted between the day tank and the engine mounted fuel feed pump. Isolating valves shall be provided on both sides of the filter.

.4 *Hand Pump*

A hand operated pump with the delivery permanently connected to the day tank and with a flexible suction pipe to facilitate the filling of the day tank from drums of diesel shall be provided.

.5 *Handover*

All fuel used during commissioning etc., shall be supplied by the Standby Generator Contractor. The genset shall be handed over with all fuel tanks full.

B13.11 Exhaust System

An exhaust gas system shall be provided. The exhaust pipes shall be coupled to the engine via a flexible coupling and shall discharge outside the building at a position approved by the Engineer. The exhaust system shall be of adequate size and gauge taking due account of the possible route and the materials used shall be approved by the Engineer.

Within the building, the exhaust shall be lagged with glass wool and clad with Grade 316, highly polished stainless steel. The exhaust pipes shall be neatly supported on suitable brackets with expansion joints and spring supports. All required residential type silencers are to be provided with the exhaust pipes.

B14.0 MAIN ALTERNATOR

B14.1 General

The alternator shall be the self-excited brushless type, with an enclosed drip-proof housing and shall be capable of continuously delivering the output to meet the load requirements stated in the Detail Specification. The alternator shall be generally constructed and rated in accordance with SANS 8528 – Part 3. The alternators thermal insulation class shall be Class 180 (Class H) (or better).

B14.2 Regulations and Response

The alternator shall be self-regulating and shall incorporate a self-contained automatic voltage regulator. The alternator output voltage shall not exceed a 2 ½ % from no load to full load, including cold and hot variations at any power factor between 0,8 lagging and unity and inclusive of speed variations within the limits of the engine governor.

B14.3 Bearings and Couplings

The alternator may be either the single or two bearing type and shall be directly coupled to the engine by means of a bell housing in such a manner as to ensure permanent alignment of the alternator and engine.

B15.0 FUSIBLE LINK

A fusible link connected to the fuel solenoid valve shall be provided to stop the engine in the event of a fire.

B16.0 STANDBY PLANT SWITCHBOARD

B16.1 Specialist Manufacture

All electrical boards shall be made by an approved specialist board manufacturer, who will also install the switchgear, equipment and carry out all the internal wiring.

B16.2 General Construction

The board is to be constructed of folded steel of 1,6 mm minimum thickness. Up to 50 km from the coast, this steel shall be the electro-galvanised type. All metalwork must be ground smooth and rendered free from blemishes. Self-tapping type screws must not be used in the construction of boards nor for the fixing of panels.

B16.3 Fault Currents

Boards must be constructed so as to be able to withstand the fault current specified in the Detail Specification.

B16.4 Engine Controller

A proprietary, solid state engine controller shall be incorporated into the genset switchboard.

The complexity and features of the controller will depend on the detailed system operation as specified in the Detail Specification.

In all cases, preference will be given to systems that require the minimum of discrete components.

The basic controller shall incorporate the following features:

- .1 Automatic starting feature to provide three automatic start attempts of 10 seconds duration with 10 second intervals between attempts and lock-out after the third start failure.
- .2 Mains voltage sensing on each phase of the utility supply. Should there be a voltage drop on any one or combination of phases of more than 20 %, then the controller shall initiate the engine start sequence after an adjustable time delay of between 0 and 10 seconds.
- .3 Upon restoration of the utility supply, the diesel plant must continue to supply the load for an adjustable time of between 0 and 30 seconds.

- .4 For liquid cooled engines, an off-load stop timer shall be provided to enable the set to run for a further 5 minutes before shutting down.
- .5 Generator voltage sensing feature monitoring the generator output to trip the generator protection circuit breaker in the event of a voltage drop on any one or combination of phases of more than 20 % of the nominal voltage.
- .6 Incorporate an alarm annunciator that shall feature a resettable alarm giving both visual and audible indication of specific faults.

It shall only be possible to cancel the alarm when a fault condition has been rectified, restored to normal and the controller reset.

The following alarms and/or trip functions shall typically be installed:

<u>Function</u>	<u>Alarm</u>	<u>Trip</u>
High engine temperature alarm	X	
High engine temperature trip (Higher than alarm)		X
High engine rpm	X	X
Alternator under voltage	X	X
Start sequence failure	X	
Low fuel level alarm	X	
Low fuel level trip (Lower than alarm)		X
Low oil pressure	X	X
Battery charger alternator failure	X	

In addition, the following parameters shall be available on the Standby Plant Switchboard, either as part of the controller functionality, or as discrete instrumentation:

- Voltage - phase to phase and phase to neutral. If discrete components used, shall consist of a flush mounted 100 x 100 mm dial voltmeter scaled 0-400 volts complete with a set of protection HRC fuses. A seven position voltage selector switch shall be provided.
- Current - Instantaneous and maximum demand. If discrete components used shall consist of three instantaneous and maximum demand type 100 x 100 mm flush mounted ammeters suitably scaled for the generator rating. To be complete with appropriate ratio current transformers (CT's).
- Frequency - If discrete to consist of a flush mounted 100 x 100 mm vibrating read type meter.

- .7 Starting signals for any ventilation fans, circulating water pumps, etc. that may be required. Details will be specified in the Detail Specification.
- .8 On the more sophisticated systems, the controller may also be required to synchronise two or more gensets, synchronise the gensets with the mains, etc. Details shall be as specified in the Detail Specification.

B16.5 Powder Coating

All boards shall be powder coated with a micro-constructed paint powder applied electrostatically. Coating to be applied strictly to the manufacturer's instructions and to be not less than 60 microns thick. Colour to be as specified in the Detail Specification.

B16.6 Board Drawings

As soon as is reasonable after commencement of the contract, dimensioned drawings of the proposed layout and construction of all boards must be supplied in duplicate to the Engineer.

B17.0 PLANT OPERATION

The details of the required plant operation will be specified in the Detail Specification. However, the most common forms of operation are as follows:

B17.1 Automatic Mains Failure (AMF) – Non-synchronising

In this type of system, the genset automatically starts up on a mains failure, runs up to speed and then changeover switchgear switches the essential loads onto the genset. (Depending on the size of the genset and the loads, it may be required to apply the loads to the genset in a stepped fashion.)

On resumption of mains power, the changeover switchgear switches the load onto the mains and the genset shuts down.

There is thus a break in supply to the loads both on mains power failure and mains power resumption.

B17.1.2 Switchgear on Standby Plant Switchboard

Typically, the Standby Plant Switchgear will contain, inter alia, the following switchgear:

1 x TP Mains Isolator (manually operated)

1 x TP Generator Circuit Breaker (manually operated). This circuit breaker shall be rated to suit the generator offered and shall have both adjustable thermal and instantaneous overload current elements.

Provide a label: "In case of emergency isolate both switches" below these two switches. Auxiliary contacts shall be fitted to meet the operational alarm requirements.

1 x Set of automatic changeover on-load isolators with motor operated mechanisms suitably rated and with appropriate auxiliary and control contacts. These two isolators must be

electrically and mechanically interlocked with other to prevent them from closing simultaneously.

Note that as per SANS 10142, the automatic changeover switches shall be as follows:

Three Pole (TP) – Where the genset is located near to the main incomer and supplies the total load.

Four Pole (4P) - Where the genset is located some distance from the load and it is not practical to connect and earth the neutrals together

and/or

Where the genset only feeds a portion of the total load.

Note that in practice that the Mains Isolator and the Generator Circuit Breaker may be omitted and their functions incorporated into the changeover switchgear.

1 x Four position selector switch that controls the following functions:

“Test” position. Engine starts but the changeover switchgear does not operate and engine takes no load.

“Manual” position. Set can be manually started and takes load, even if the mains are present.

“Auto” position. Set will automatically start and stop, dependent on the mains supply being available or not.

“Off” position. Set is completely disconnected from the automatic controls for cleaning and maintenance purposes.

B17.1.3 Automatic Mode Alarms

When the Mains Isolator, Generator Circuit Breaker, Bypass Keyswitch or the Status Selector Switch are moved away from their normal positions, an alarm shall be given. This alarm shall indicate that the position of one or more of the above devices is incompatible with the operation of the plant as an automatic mains failure installation.

B17.2 Automatic Mains Failure (AMF) – Synchronising

B17.2.1 Unscheduled Mains Failure

In this situation, an unscheduled mains failure shall cause the genset to automatically start up and after a set time open the mains circuit breaker. There will thus be a brief break in supply to the essential loads.

On return of the mains supply, the genset shall synchronise with the mains and after an (adjustable) time delay, transfer the load to the mains and go through the preset shutdown procedure.

B17.2.2 Scheduled Mains Failure

Should the time of the expected mains failure be known, it must then be possible to manually start the genset and for it to synchronise with the mains. Upon mains failure, the genset shall seamlessly take over the load. There will thus be no break in the supply to the essential loads.

On return of the mains supply, the genset shall seamlessly switch over to the mains supply as per B17.2.1 above.

B17.2.3 Switchgear on Standby Plant Switchboard

The detailed configuration of the switchgear will be as specified in the Detail Specification but could be similar to that for a non-synchronising type genset.

The main difference is that, in this case, it is not possible to interlock the changeover switchgear as both the mains and genset breakers will be closed under parallel operation conditions.

The entire operation shall be fully automatic and controlled by means of a specialised solid state controller.

B17.2.4 Testing

It must be possible to perform at least two types of tests as follows:

.1 *Test 1*

The mains supply is switched off to simulate an unexpected mains failure and the genset automatically performs the normal mains failure sequence.

.2 *Test 2*

The mains supply is not switched off but the genset is manually started, runs up to speed and automatically synchronises with the mains and takes the load.

On completion of the test, the genset must transfer the load back to the mains and then seamlessly goes through the predetermined shutdown sequence.

B18.0 EXHAUST EMISSIONS

Should the genset engine be required to comply with any exhaust emission standard then this will be specified in the Detail Specification.

However, preference will be given to engines with the lowest emissions. Should supplying such an engine have cost implications, then tenderers should offer the engine as an alternative to their main tender offer.

B19.0 VENTILATION LOUVRES

Unless otherwise specified in the Detail Specification, the required ventilation (air inlet and radiator exhaust) shall be supplied by the Standby Generator Contractor. Unless otherwise specified, they will be installed by others but the Standby Generator Contractor must provide the relevant

instructions for their correct installation. Details of the proposed ventilation louvres must be provided with the tender offers.

B20.0 SOUND ATTENUATION

The required level of sound attenuation treatment to be applied to the genset installation (at full load) will be specified in the Detail Specification.

However, it is the responsibility of the Standby Generator Contractor to ensure that the genset's noise emissions comply with all National and Local Regulations.

B21.0 WARNING NOTICES

Clearly legible and indelible notices made of plastic, shall be mounted in conspicuous positions on both the genset and standby plant switchboard.

The notices shall read as follows:

DANGER

THIS ENGINE WILL START WITHOUT NOTICE.

GEVAAR

HIERDIE ENJIN SAL SONDER WAARSKUWING BEGIN LOOP.

B22.0 ELECTRICAL

Unless otherwise specified in the Detail Specification, the Standby Generator Contractor shall be responsible for all cables, wiring, installation and connections in the standby plantrooms between the diesel generating plant and the standby plant switchboard.

General purpose PVC/PVC/SWA/PVC cables to SANS 1507 (Electric cables) shall be used throughout and, where necessary, shall be adequately supported on both horizontal and vertical runs by means of galvanized perforated metal cable trays adequately supported by means of substantial angle iron brackets or other approved means, bearing in mind the number and weight of the cables to be supported.

The neutral point of the generator shall be solidly connected by means of an appropriate size of insulated earth conductor, to the earthbar mounted in the standby plant switchboard.

All plant, ancillary equipment and steelwork in the standby plantroom shall be bonded to the standby plant switchboard's earthbar.

The Standby Generator Contractor shall ensure that the mains and generator phase rotations are identical.

B23.0 HANDBOOK AND MAINTENANCE INSTRUCTIONS

At the time of handover, the Standby Generator Contractor shall provide three (3) copies each of:

- i) All relevant drawings.
- ii) A fully comprehensive operations handbook with maintenance instructions.
- iii) A list of spare parts complete with names and addresses of the suppliers.
- iv) Copies of all relevant Test Certificates.
- v) The recommended lubricants, cooling fluid, etc.
- vi) All handover test reports.

All the above information shall be collated and bound in loose-leaf hard-covered binders suitably named and indexed. The front cover shall clearly state the project name, Standby Generator Contractor's name, address and telephone numbers (normal business, after hours and emergency).

B24.0 SHELF AND LOGBOOK

The Standby Generator Contractor shall provide a shelf unit with a sloping top shelf and below that, a fixed horizontal shelf.

A logbook, approved by the Engineer shall be provided. This logbook may be stored in the abovementioned shelf or in a suitable metal box mounted in a prominent position in the standby plantroom.

PART 10

SECTION C

DETAIL SPECIFICATION

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PART 10

SECTION C

DETAIL SPECIFICATION

NELSON MANDELA GATEWAY BUILDING: V&A WATERFRONT

SECTION C: SCOPE OF CONTRACT, SPECIAL CONDITIONS, ELECTRICAL LOADS AND INSTALLATION

C1 PRECEDENCE OF CLAUSES

All requirements of this Detail Specification which are different to that in the General Technical Specification for Electrical Standby Generating Plant are to take precedence over the General Specification.

C2 SITE LOCATION & CONDITIONS & PRINCIPAL CONTRACTOR

The plant shall be rated to suit local conditions in the Nelson Mandela Gateway Building: V&A Waterfront, i.e. altitude, maximum and minimum temperature and humidity. Tenderers must make themselves aware of site conditions as no variations will be entertained due to lack of site knowledge.

The Standby Generator Subcontractor is to be appointed by the Employer.

C3 APPROVAL AND SUBSTITUTION OF MATERIALS

Where materials or articles are specified in the Detailed Specification, it is to indicate the quality and type of materials or articles required. Where the term "or equal and approved" is used in conjunction therewith, it shall mean that no substitution will be permitted unless written authority has been obtained from the Engineer before tenders close.

Approval by the Engineer shall not relieve the Contractor of any of his obligations under the Contract, the guarantee, or compliance with the requirements of the Authorities having jurisdiction.

C4 PRICE BASIS

Tenderers must fill in the applicable exchange rate(s) at time of tender for all imported equipment (see page E6). The only tender price adjustment will be for any exchange rate variation between the date of close of tender and the date of the official order to the S/B Contractor. On the date, forward cover must be taken out to protect the Client from any exchange rate variation. A Provisional Sum has been allowed in the Price Summary for this Forward Cover. Other than the above, this contract is to be on a fixed price basis.

- .8 The Tenderers are to make allowance to provide training of Robben Island Museum (R.I.M.) personnel on basic operation, testing and interpretation of the various alarms as stipulated on this specification
- .9 Allowance to be made for a protection of the standby generator container by means of an Armco Crash Barrier mounted on the side and front of the container at 500mm above ground and another at 1200mm to prevent cars knocking into the container. The barrier is to be designed to protect the standby generator container from light impact but to be easily dismantled if the impact is severe to prevent damaging the container.
- .10 The Tenderers are to make an allowance for a five (5) year maintenance costing plan that is to be submitted separately to the standby generator tender as stipulated in Clause Twenty-One (C22) of this specification.

C8 ENGINE REQUIREMENTS

The engine shall be rated for continuous operation with a variable load of which the average engine load factor is 80% of 350kVA with an allowable 10% overload for 1 hour in every 12 hours of operation (i.e. Prime Power Rated). Engine speed to be 1500rpm.

Only well-established engine manufacturers that have permanent representation in South Africa, backed up with an extensive spare parts holding and service capability will be considered. Only approved makes to be tendered namely: Perkins, Cummins (UK or USA), CAT, Volvo, Scania or John Deere or equal and approved.

All engines are to be EUIIIA Emissions compliant.

C9 ALTERNATOR REQUIREMENTS

The alternator shall be close coupled to the engine. It shall be rated at **350kVA @ 0.8pf**, 50Hz, 400/230 volts.

Only well established alternator manufacturers that have permanent representation in South Africa, backed up with an extensive spare parts holding and service capability will be considered. Only approved makes to be tendered namely: Stamford, Morelli Motori, Engga, Leroy Somer, Marathon or Meccalte.

C10 COOLING SYSTEM

The radiator shall be the tropical type, integral with the genset. All flashing required for connection from the radiator to the exhaust louvre is to be supplied by the Generator Subcontractor.

C11 GENERATOR LOCATION

The Enclosed Generator is to be located on grade in the position as indicated on accompanied sketches (bound at back of specification).

- (iv) "TEST" position: set will start automatically bypassing the automatic control to test the starting sequence and alarm circuitry without switching onto the standby busbars. However, in the event of power failure the generator has to take the load.

C14.4 Alarm/Shut Down System for Fault Conditions

This system shall consist of a set of alarm annunciators and shutdown devices with test facilities. Any faulty condition in the system shall cause a visual alarm with clear indication of the specific fault. The visual alarm must persist until the faulty condition is rectified.

An audible alarm shall also be activated but it must be possible to cancel it by a "cancel" push button.

Certain fault conditions as listed below shall cause the automatic shutdown of the generator when the fault reaches preset (adjustable) values.

C15 ACCEPTANCE OF LOAD

The time from the initiating of the starting operation of the engine and the switching of the total essential load to standby supply shall not exceed 20 seconds.

This shall be set at time of Commissioning and witnessed at factory acceptance tests. The Engineer is to be notified of these tests and attend at his discretion. In the case that the factory is in a different town, the tenderers shall allow for the travelling cost of the Engineer and Robben Island Museum Representative.

C16 MAINS CABLES

The connection of the mains cables to the genset shall be undertaken by the generator supplier. Tenderers are to allow for lifting up of the existing paving cobbles, installation of 110mmØ PVC sleeve in which the cables will be installed and making good.

The following cables are to be taken from the load side of the meters in the Main and Meter db to the generator and back from the changeover panel to the main db:

<u>DB fed</u>	<u>PVC PVC SWA PVC Cable</u>
Existing DB	8 x 120mm ² , single core
c/o Panel	2 x 120mm ² , 4 core
c/o Panel	2 x 4mm ² , 4 core
c/o Panel	1 x 2,5mm ² , 7 core

The successful tenderer shall take photos of the existing conditions of the paving, and the entire route of the new cables to the existing distribution boards as status core records, before embarking on the new works.

Tenderers must allow for supply and installation of cable rack from the point of entering into the Nelson Mandela Building fire escape passage to the existing infrastructure to the existing DB.

The bottom section of the existing vent louvre shall be modified, where a cover plate shall be inserted to accommodate the penetration for the new cables.

C17 CABLE AND WIRING

All cabling, wiring, piping, cable trays, etc. required to interconnect the various components of the system shall be supplied and installed under this Contract. All trenches and sleeves are to be provided by the Generator contractor.

C18 SITE LIAISON

Tenderers are to note that NO other contract will be running in parallel to this contract. Close liaison with the Employer's representative will be required to ensure the success of this project. Tenderers must also allow for regular Site Visits and liaison with the Engineer.

C19 PAINTING

The complete Standby Plant shall be painted to the satisfaction of the Engineer. This shall be suitable for coastal environments and paint thickness shall be a minimum of 125 micron cover.

All fixings, hinges, locks and the like are to be of 316 grade stainless steel.

C20 DEEP SEA ELECTRONICS COMMUNICATION

The Deep Sea Electronics (DSE) Communication GSM Module shall be provided to the control panel of the standby generator to ensure communication by an SMS notification to the Robben Island Museum (RIM) representatives and any other parties as deemed necessary by RIM to receive the following:

- Diesel standby generator running
- Low fuel
- Common alarm
- Alarm on canopy door opening.

C21 TESTING AND COMMISSIONING

The genset shall be load tested at the suppliers premises in the presence of the Engineer. Should this testing be undertaken outside of the Western Cape Province, the tenderer shall allow for the price of a return air ticket and one day car hire for this inspection. On site testing and commissioning shall also take place in the presence of the Engineer.

On completion and handover, three (3) sets of Operating and Maintenance Manuals and "As Built Drawings" shall be handed over to the Engineer.

As part of the O&M documentation, a valid Certificate of Compliance (COC) is to be included. As part of the “functionality criteria” the details are to be provided.

C22 PROPOSED STANDARD MAINTENANCE CONTRACT

The Tenderers shall submit separately a quotation for a five (5) year maintenance costing plan. The maintenance plan shall include but not limited to the items listed hereunder:

a) Minor Service

Minor services consist of services carried out at 3 monthly intervals with the following checks being carried out:

- Batteries and battery charger
- Turbo hoses
- Fuel hoses
- Water hoses
- Oil and coolant levels
- Oil and coolant levels if necessary (with Client’s provided oil and coolant)
- Fan belt tension and condition
- Radiator fans for cleanliness
- DC and AC connections
- Clean air filters if necessary
- Test run set off load and check for leaks
- Record all data
- Clean canopy
- Fill in log book and any defects shall be reported and quotations submitted to rectify any faults

b) Major Service

Major servicing will be carried out every 12 months or once the set has done 250 hours whichever comes first.

A major service covers everything carried out in a minor service plus an oil change, fuel and air filter change (all oil and filters will be disposed by the generator contractor).

SECTION D

D1 SCHEDULE OF TECHNICAL INFORMATION AND MAKES

DIESEL STANDBY PLANT

1. 350 kVA STANDBY PLANT

A. Engine and Ancillary Equipment

- .1 Manufacturer
- .2 Place of Manufacture
- .3 Manufacturer's Engine Model N°
- .4 Name of Engine Agencies in RSA
- .5 Continuous sea level rating after reduction for fan and/or ancillaries kW at °C
- .6 Continuous site net rating at specified conditions kW at °C
- .7 Percentage of rated load that may be applied as a step load%
- .8 Balance of load to be applied after seconds
- .9 Nominal speed rpm
- .10 Number and arrangement of the cylinders
- .11 Is engine fitted with an intercooler?
- .12 Fuel Consumption
 - (a) Full Load l/hr
 - (b) 3/4 Full Load l/hr
 - (c) 1/2 Full Load l/hr

SIGNATURE:

COMPANY:

DATE:

D2

- .13 Air quantity required for adequate cooling of engine and generator at site conditions m³/h
- .14 Air quantity required for combustion at full load at site atmospheric conditions m³/h
- .15 Is a turbocharger fitted?
- .16 Is a jacket water heated fitted?
- .17 If so, make and type of jacket water heater fitted
- .18 Rating of jacket water heater
- .19 State make and class of engine governor
- .20 Recommended interval, in engine running hours, for:
 - (a) Air filter oil change hrs
 - (b) Oil filter element change hrs
 - (c) Lubricating oil change hrs

SIGNATURE:

COMPANY:

DATE:

B. Generator and Ancillary Equipment

- .1 Manufacturer
- .2 Country of Origin
- .3 Manufacturer's Generator Model N°
- .4 Continuous sea level rating at 0.8 PF lagging kVA
- .5 Continuous site rating at 0.8 PF lagging kVA

C. Standby Plant Switchboard

- .1 Manufacturer
- .2 Is Board floor, wall mounted or set mounted?
- .3 Make and rating of Generator ACB

**D. Canopy & Acoustic
Details**

SIGNATURE:

COMPANY:

DATE:

E. Starter and Control Battery

- .1 Manufacturer
- .2 Country of Origin
- .3 Manufacturer's Battery Type N°
- .4 Ampere hour rating of battery Ah
- .5 Battery voltage (as supplied across starter motor) Volts

F. Dimensions and Masses

.1 Engine Generator and Skid Base Unit

This shall include the radiator but shall exclude radiator ducting, exhaust gas pipework, etc.

- (a) Overall length m
- (b) Overall width m
- (c) Overall height m
- (d) Mass in operating condition with full oil sump and radiator kg

G. Delivery Periods

Delivery

Diesel/Alternator Set

SIGNATURE:

COMPANY:

DATE:

SECTION D2: SCHEDULE OF DEPARTURE FROM SPECIFICATION

Any departure from this Specification must be listed by the Tenderer in the space below. Any sheets shall be of the same form, and attached to this page. The Tenderer must sign this page together with any further sheets. If there are no departures, the Tenderer must state NIL on this page and sign the page. All items not detailed on this page shall be deemed to comply with this Specification or will be altered or replaced to meet this Specification at no extra cost.

<u>PART N°</u>	<u>REFERENCE</u>	<u>CLAUSE N°</u>	<u>DEPARTURES</u>
----------------	------------------	------------------	-------------------

SIGNATURE:

COMPANY:

DATE:

SECTION D3: CURRENCY EXCHANGE RATES

Tenderers are to enter below the applicable currency exchange rates for all major imported items.

Equipment Description

Country of Origin

Rand Exchange Rate

Only equipment listed above will be considered for any exchange rate variation claim.