# ATTACHMENTS

14. HEALTH AND SAFETY FILE COMPILATION AND CONTENT

15. SAFETY AND SWITCHING PROCEDURES FOR ELECTRICAL INSTALLATIONS

16. GUIDE TO THE GENERAL ADMINISTRATIVE REGULATIONS

17. IMPORTANT CONTACT DETAILS - HEALTH & SAFETY ONLY

# "HEALTH AND SAFETY FILE"

**FOR**

**PROJECTS AND MAINTENANCE (BUILDING/ELECTRICAL/MECHANICAL)**

**MANAGED ON BEHALF OF**

## THE NATIONAL DEPARTMENT OF PUBLIC WORKS

**(THE "CLIENT")**

**PROJECT: DCS: WESTVILLE CORRECTIONAL SERVICE: INSTALLATION OF FACILITIES FOR PEOPLE WITH DISABILITIES**

**WCS NO: 049089**

This document serves as a guide to Principle Contractors and Contractors (and their agents) to assist them in complying with the requirements of the Act and more specifically the Construction Regulations and to ensure a most comprehensive Health and Safety File. Kindly note the following extractions from the Construction Regulations:

*"Every contractor shall ensure that a health and safety file, which shall include all documentation required in terms of the provisions of the Act and the Regulations, is opened and kept on site and made available to an inspector, client, client's agent or principle contractor upon request. [CR 5(7)]*

*A Principal Contractor shall hand over a consolidated health and safety file to the client upon completion of the construction work and shall, in addition to the documentation referred to in sub regulation (7) [above], include a record of all drawings, designs, materials used and other similar information concerning the completed structure. [CR 5(8)]*

*A Principal Contractor shall ensure that in addition to the documentation required in the health and safety file as determined in the two sub regulations above, a comprehensive and updated list of all the contractors on site accountable to the Principal Contractor, the agreements between the parties and the type of work being done are included and available. [CR 5(9)]"*

The information, documentation and lists required to be included in the Health and Safety File as contemplated in the Construction Regulations [CR 5(7)], shall be suitably and sufficiently documented in terms of the following items listed below to ensure compliance with the Act as far as is reasonably practicable.

**Note: In the event that any of the items listed below may not have reference to the planning, implementation and completion of the work to be done pertaining to the project on the construction site, it must clearly be indicated as such with a proper statement e.g. 'Not Applicable'. All other relevant references or items below shall relate to the information required as contemplated in the Act and Regulations.**

**IMPORTANT** - ***This Health and Safety File shall be regarded as the property of the Client as it has to be consolidated and handed over to the Client upon completion of the project. The Principal Contractor shall ensure that this file is adequately protected against any form of damage, abuse or fraud.***

***Registers as follows:***

* Accident/Incident Register (Annexure 1 of the General Administrative Regulations)
* H&S Representatives ('SHE - Reps') Inspection Register
* Arc & Gas Welding & Flame Cutting Equipment Inspections
* Inspection of Cranes
* Inspection of Ladders
* Inspection of Vessels under Pressure plus all other excluded under VUP regulations
* Fire fighting equipment

The H&S Representatives (SHE-Reps) will be required to submit the abovementioned registers as well as other legally required registers, also from the list below, on a monthly basis to the chairman of the H&S committee for submission to, and endorsement by the H&S Committee. Also refer to the suggested Agenda for the H&S Committee under 12.8.3

***Documents as follows:***

Copy of OH&S Act (updated) (General Administrative Regulation 4.)
Proof of Registration and good standing with a COID Insurer (Construction Regulation 4(1)(g)
Appointments – in terms of the Construction Regulations * [See references Page 4]
Notification of Construction Work – Annexure 1 [CR 3]
H&S Specifications [CR 4]
H&S Plan – Principal Contractor, Contractor & Sub-contractors [CR 5(1) & (4)]
Proof of Periodic Audits [CR 4, 5 & 6]
List of all Contractors (accountable to Principal Contractor) on site [CR 5(9)]
Contractor Agreements [CR 5(9)]
Type of work done on site [CR 5(9)]
Records of drawings, designs, materials used and similar information concerning the completed structure [CR 5(8)]
Input by Construction Safety Officer [CR 6(7)]
Risk Assessment [CR 7(1)]
Copy of Risk Assessment [CR 7(2)]
Proof of H&S Induction Training [CR 7(4) & (7) & (9)(b)]
Proof of training on Hazards and Work Related Procedures [CR (7(4)]
Fall Protection Plan [CR 8]
Designer notice to contractor of dangers and hazards relating to construction work [CR 9(2)(b)]
Drawings design of structure [CR 9(3)]
Records of Inspections of Structure [CR 9(4)]
Maintenance records – structure safety [CR 9(5)]
Record Excavation Inspection [CR 11(3)(h)]
Method Statement [CR 11(3)(k)]
Method Statement [CR 12(2)]
Method Statement [CR 12(11)]
Operational Compliance Plan [CR 15(2)(c)]
Certificates, design calculations, sketches and test results [CR 15(3)]
Examination results [CR 15(9)]

Suspended Platform Inspection and Performance Test records [CR 15(11)]
Medical Certificate of Fitness [CR 15(12)(b)]
Proof of Training [CR 15(12)(c)]
Material Hoist Inspections [CR17(8)(c)]
Maintenance Records Material hoist [CR17(8)(d)]
Record Batch Plant Maintenance & Repair [CR18(9)]
Register for control of cartridges/nails studs – explosive powered tools [CR19(2)(g)(ii)]
Medical Certificates of Fitness [CR 20(g)]
Medical Certificates of Fitness [CR 21(1)(d)(ii)]
Findings of daily inspections Construction Vehicles & Mobile Plant [CR21(1)(j)]
Record of Temporary Electrical Installation Inspections [CR22(d)]
Record of Electrical Machinery Inspections [CR22(d)]
Proof of Training [CR 27(i)]
Evacuation Plan [CR 27(l)]
H&S Rep & Committee Members details
H&S Committee Meetings' Minutes
Other appointments in terms of OHASA

***The following further identified requirements in terms of the Act and other Regulations of the Act are similarly applicable as part of the contents of the 'Health and Safety File':***

Details of Inspections (by DoL)
Recording and Investigation of Incidents – Annexure 1 [GAR 9(1-3)]
Action taken on all incidents [GAR 9(4)]
Certificates of Competency in First Aid [GSR 3(4)]
Record of Medical Surveillance required in terms of OHASA
Proof of compliance with Asbestos Regulation requirements
Proof of compliance with Major Hazard Installation requirements

****The Appointments to be made in writing with job descriptions as per the Construction Regulations may include some or all of the following:***

PRINCIPAL CONTRACTORS - [CR 4(1)(c)]

CONTRACTORS – [CR 5(3)(b) + (11)]

COMPETENT PERSONS
- [CR 6(1) + (2)]
- [CR 6(6)]
- [CR 7(1) + (4)]
- [CR 8(1)(a)]
- [CR 10(a) + (e) + (f)]
- [CR 11(1) + (3)(b)(ii)(b) + (3)(k)]
- [CR 12(1) + (2) + (3) + (11)]
- [CR 14(2)]
- [CR 15(1) + (2)(c) + (8)(c) + (13)]
- [CR 17(8)(a)]
- [CR 18(1) + (7)]
- [CR 19(2)(b) + (2)(g)(i)]
- [CR 20(f)]
- [CR 21(1)(d)(i) + (1)(j)]
- [CR 22(d) + (e)]
- [CR 26(a)]
- [CR 27(h)]

CONSTRUCTION SAFETY OFFICER - [CR 6(6)]

DESIGNER - [CR 9(2)]

**IMPORTANT:**

A copy of the following certification in terms of the **"SAFETY AND SWITCHING PROCEDURES FOR ELECTRICAL INSTALLATIONS"** (Document attached) signed by the prospective tenderer / contractor is to be included in the Health and Safety File:

**" I hereby certify that I have taken cognisance of the content of the document titled 'SAFETY AND SWITCHING PROCEDURES FOR ELECTRICAL INSTALLATIONS', and have included the relevant elements of the document applicable to the above project in my Health and Safety Plan and shall ensure adherence and compliance to the requirements thereof."**

NATIONAL DEPARTMENT OF PUBLIC WORKS

# SAFETY AND SWITCHING PROCEDURES

# FOR

# ELECTRICAL INSTALLATIONS

**JANUARY 2003**

## CONTENTS

## 1 REGULATIONS AND DEFINITION OF COMPETENT PERSON:

### 1.1 REGULATIONS:

All persons who carry out or arrange for work of any description for the Department in connection with electrical apparatus shall make themselves acquainted with the Occupational Health and Safety Act (Act 85 1993) with particular reference to the Electrical Machinery Regulations, Regulations 1 to 23 inclusive.

Access to the above Act and its Regulations can be arranged with the Regional Manager.

### 1.2 DEFINITION OF COMPETENT PERSON:

"competent person" in relation to machinery, means any person who—

(a) has served an apprenticeship in an engineering trade which included the operation and maintenance of machinery, or has had at least five years' practical experience in the operation and maintenance of machinery, and who during or subsequent to such apprenticeship or period of practical experience, as the case may be, has had not less than one year's experience in the operation and maintenance appropriate to the class of machinery he is required to supervise;

(b) has obtained an engineering diploma in either the mechanical or electrotechnical (heavy current) fields with an academic qualification of at least T3 or N5, or of an equivalent level, and who subsequent to achieving such qualification has had not less than two years' practical experience in the operation and maintenance appropriate to the class of machinery he is required to supervise;

(c) is a graduate engineer and has had not less than two years' post-graduate practical experience in the operation and maintenance appropriate to the class of machinery he is required to supervise and who has passed the examination on the Act and the regulations made there-under, held by the Commission of Examiners in terms of regulations E5 (2) of the regulations published under Government Notice R.929 of 28 June 1963; or

(d) is a certificated engineer;

## 2 SAFETY EQUIPMENT

The following equipment required for working on electrical installations and distribution systems, must be maintained in good order and repair and must be made available:-

Safety belt, overalls, hard hat, safety shoes or boots, rubber gloves, "Men Working" notice boards, locks for locking off switches, buss bar shutters in truck-type switchgear, isolators or earthing links, rubber sheet and length of rope with short circuiting earthing-chains, earthing sticks and testing/phasing sticks rated for the voltage of the equipment to be tested.

Under no circumstances shall work be carried out on electrical apparatus unless the proper safety equipment is used

With regard to overhead linesmen, no work shall be carried out unless use is made of a non-metallic ladder and the appropriate safety belt, rubber gloves, overalls, hardhat and safety shoes or boots are worn. The buddy system must also be implemented.

## 3 DEFINITION OF OPERATING TERMS

### 3.1 Alive or live

This means electrically connected to the power system and/or electrically charged.

Consider an isolated overhead line that is not earthed. An overhead line can be electrically connected to the system in the following ways:

(a) By means of a metallic conductor such as links and breakers or switches. This is the normal way of transmitting electrical energy.

(b) Electromagnetic induction or transformer action from a nearby current carrying line will induce a dangerous voltage in the isolated lines and are a hazard to all personnel that must work on or with the line.

(c) Electrostatic induction or condenser action from a nearby live line will induce a dangerous voltage in any isolated, but not earthed, overhead line. Electrically charged means at a potential difference or voltage above zero

3.2 Dead

This means that any apparatus so described is isolated from the power system. Rotating plant shall not be regarded as dead until it is stationary or is being slowly rotated by means of barring gear and is not excited.

The Occupational Health and Safety Act defines dead as: "dead" means at or about zero potential and isolated from any live system. Disconnected has the same meaning as isolated. An overhead line disconnected from all sources of supply but not earthed, cannot be regarded as dead because:

(a) It can retain a static charge.

(b) It can acquire a static charge due to atmospheric conditions.

(c) It can accidentally be made alive.

(d) Nearby lines continually induce voltage in them.

The regulations recognise only the following devices as disconnects or isolators:-

(a) Links.
(b) Fuses.
(c) Truck type switchgear.

3.3 Earthing

This means the connecting of apparatus electrically to the general mass of earth in such a manner as will ensure at all times an immediate safe discharge of electrical energy. This is done through an earth bar or spike by means of a good metallic conductor.

To fully appreciate this definition we must refer to the Electrical Machinery Regulations, Regulation 3 of the Occupational Health and Safety Act which states:

"Work on Disconnected Electrical Machinery. —Without derogating from any specific duty imposed on employers or users of machinery by the Act, the employer or user shall, whenever work is to be carried out on any electrical machinery which has been disconnected from all sources of electrical energy but which is liable to acquire or to retain an electrical charge, as far as is practicable, cause precautions to be taken by earthing or other means to discharge the electrical energy to earth from such electrical machinery or any adjacent electrical machinery if there is danger if there is danger therefrom before it is handled and to prevent any electrical machinery from being charged or made live while persons are working thereon."

Electrical apparatus and in particular overhead lines may become charged due to:-

(a) Direct lightning strokes.

(b) Electro magnetically induced currents due to a lightning stroke in the immediate vicinity of the line.

(c) Electro statically induced charges on the lines due to the presence of thunderclouds.

(d) Electrostatic charges imparted to the line by the friction of dust or snow blowing past the conductors.

(e) Electrostatic charges imparted to the line due to changes in line altitude"

These changes are responsible for tremendously high voltages between overhead lines and earth, in fact, sometimes high enough to cause a flash over on insulators. A spark may span several centimetres of air to a person's hand should he approach too closely to an isolated unearthed overhead line.

An overhead line or apparatus can be made alive by:

(a) Unauthorised operating, i.e., closing the wrong links and breaker.

(b) Faulty wiring on consumer's stand-by sets. (Back feed from consumer)

(c) A broken overhead conductor from a different line falling onto the isolated line.

(d) Synchronising plugs.

From the foregoing paragraphs it is clear that the purpose of earthing isolated lines and apparatus are:

(a) To discharge them should there be a residual voltage or charge.

(b) To prevent them acquiring a static charge.

(c) To prevent danger to persons working on apparatus in the event of someone accidentally making it alive.

(d) To dissipate induced voltages continuously and safely.

Earthing gear means the fixed or portable appliances used for earthing electrical apparatus. The dangers from inadequate or improper earth connections are:

(a) Electrocution.
(b) Burns from arcing.
(c) Electric shock leading to falls.

Earthing may be done by the closing of earthing links, or by the attaching of fixed earthing devices or by the affixing of portable earthing straps. In each case the main idea is to ensure the safety of personnel.

In affixing portable earth straps, the connection to the earthbar or earthed metal or spike must be made first and in removing such earthing straps, the disconnecting from the earthbar or earthed metal or spike must be done last. Also, a link stick or an insulated stick should be used to connect the earth wires to the overhead lines or apparatus.

These requirements are most important because connecting the portable strap first to earth and then to the conductors by means of a link stick avoids the risk of a shock to the operator from static charges or induced voltages.

**REMEMBER: Always safety test before applying earths.**

3.4 Isolate

This means to disconnect from all Sources of electrical potential by means of opening of links or fuses or the withdrawal of truck-type circuit-breakers.

All sources of electrical potential mean all points or circuits from where the apparatus can be made alive. Links, fuses and truck-type switchgear can be regarded as isolators because:

(a) They leave a visible air gap in a circuit when open, removed or withdrawn.
(b) They contain no stored energy and will not close due to defects.
(c) They can be locked in a physical condition and thus can only be operated by the person with the correct key.

Opening links and locking them in the open position; removing fuses and locking them away; withdrawing truck-type switchgear and locking the buss bar shutters are the only safe methods of isolating.

3.5 Circuit Breaker

This is a device designed to make or break electric current under normal and fault conditions. A breaker can make or break an electric current because it is designed to extinguish the arc very rapidly and effectively. It is also designed to withstand the tremendous forces under short circuit conditions. The arc-extinguishing medium for high-voltage breakers is normally air, oil or vacuum and should this medium be lost, the breaker becomes a link. Never use a breaker without an arc-extinguishing medium to interrupt current flow because the breaker will probably explode or it will sustain severe damage.

A fault condition is any condition that will cause an excessive amount of current flow. The normal fault conditions are:

(a) Phase faults.
(b) Earth faults.
(c) Open circuit in one line of a three-phase system (Single-phasing).
(d) Too low a voltage. (Motors will draw a large current or even stall).
(e) Too high a voltage.
(f) Overloading.

For the following reasons breakers cannot be regarded as isolators:

(a) They leave no visible gap in a circuit.
(b) They contain stored energy and can close on their own due to various defects.
(c) It is normally not possible to lock them in an open position.
(d) Oil circuit-breakers are subjected to carbon tracking which could cause a flash-over between contacts.

3.6 Link

This is a device for making or breaking a circuit when no load current is flowing.
Links differ from breakers and switches in the following respects:

(a) They are not equipped with an arc extinguishing medium/device.
(b) Their movement is very slow.

Should current be interrupted by means of links, an uncontrollable arc will be struck at the points where the contacts part.

The temperature of the arc is so high (+ 2 000°C) that it will simply melt the parting contacts. As the contacts move further apart, the arc will lengthen and burn everything away. Molten metal could splash onto the operator and cause severe injuries.

As the arc lengthens, considerable noise is generated and the light intensity is so severe that the operator could suffer from "welding flash" of the eyes.

When apparatus equipped with earthing links is required to be earthed at more than one place, the earthing links shall always be closed first and thereafter, any necessary portable earthing gear may be affixed to the apparatus.

In removing the earths in readiness for making the apparatus alive, all portable earthing gear shall first be removed and earthing links shall be opened last.

Closing the earthing links first ensures maximum safety to the operator. These links are easily operated, make good contact and the operating handles are at a safe distance from the contact points.

Locks and keys shall also be provided for links. The operating mechanism of all manually operated links shall be fitted with fastenings for locks. The operating mechanisms of each set of manually operated links shall normally be locked whether the links are in the open or in the closed position.

The locking of links provides a safeguard against their being opened or closed in error by other persons apart from the one with the correct key and a written instruction to operate.

3.7 Operating methods

This means switching, linking, safety testing and earthing. This definition also indicates the order of operating when making apparatus safe to work on.

(a) Switching -

(i) Open breaker or switch to interrupt current flow safely, i.e. prevent arcs.
(ii) Close breaker or switch to start current flow - the only safe way.

(b) Linking - open at least one set of links from where the apparatus can be made alive and lock the links in the open position. Always ensure that you are not going to start or interrupt current flow with the links by ensuring that the breaker or switch is open.

(c) Safety test - test all three phases to ensure that the apparatus is disconnected from all sources of supply and that there is no back-feed from a consumer's standby set or other source.

(d) Apply earths - ensure safety of the workers by:-

(i) Discharging the line or apparatus.
(ii) Preventing the line from acquiring a static charge.
(iii) Preventing the line or apparatus from being accidentally made alive.

Before applying portable earths, ensure that they are mechanically and electrically in good condition. There should be no broken strands, the clamps should be rigid and without defect and when applied properly, should make intimate contact with the conductors and earthbar or spike. The earthing cable tails should be as short as possible. The current carrying capacity of the portable earth is greatly reduced by broken strands. It will act as a fuse and increase the danger to workmen.

## 4 GENERAL SAFETY PRECAUTIONS

**No person shall carry out work of any description (including maintenance, repairs, cleaning and testing) on any part of electrical apparatus unless such parts of the apparatus are:**

(a) dead;

(b) disconnected, isolated and all practicable steps taken to lock off from live conductors;

(c) efficiently connected to earth with the appropriate earthing sticks or gear designed for this purpose at all points of disconnection of supply;

(d) screened where necessary to prevent danger, and caution and danger notices fixed;

and unless such person is fully conversant with the nature and extent of the work to be done.

It is the duty of the competent person in charge of the work to ensure that the foregoing provisions are complied with. He shall also ensure that when the work has been completed, the apparatus is safe to be made alive and that all earths and temporary danger notices have been removed.

Provided that cleaning and painting of earthed metal enclosures, connections or disconnections of circuits to or from live systems may be carried out in accordance with instructions issued by the competent person concerned.

Provided also that where the design of the apparatus precludes the strict compliance with all details of these precautions, the work shall be carried out to the instructions of the senior competent person present.

When any person receives instructions: regarding work on or the operation of high voltage apparatus he shall report any objection to the carrying out of such instructions to the competent person who shall have the matter investigated and, if necessary, referred to higher authority.

## 5 ACCESS TO HIGH VOLTAGE ENCLOSURES AND APPARATUS

Enclosures, chambers, cubicles or cells containing high voltage conductors shall be kept locked and shall not be opened except by a competent person.

## 6 SWITCHING:

(a) No switching shall be carried out without the sanction of the appropriate competent person except for agreed routine switching or in cases of emergency.

All telephone instructions/messages relating to the switching operation shall be written down and be repeated in full to the sender to ensure that the message has been accurately received.

(b) When a switch shows any sign of distress after operating, its condition shall be immediately reported to the appropriate competent person, and it shall be examined before further operation.

(c) The examination of and necessary adjustments including inspection and/or changing of oil of any high voltage oil immersed circuit-breaker which has operated under fault conditions shall be carried out if possible before the circuit-breaker is re-closed, or at the earliest available opportunity thereafter.

## 7 WORK IN SUBSTATIONS AND SWITCHING STATIONS CONTAINING EXPOSED LIVE CONDUCTORS.

### 7.1 Safety Clearances to Live Conductors:

Unless the whole equipment is "dead", the section which is made dead for work to be carried out shall be defined by the use of barriers or roping such that the minimum clearance from the nearest exposed conductor to ground level or platform or access way shall be:-

| Rated Voltage | Clearance |
|---|---|
| Up to 11 kV | 3.0 m. |
| From 11kV to 33kV | 3.4 m |

The area at ground level shall be only that in which the work is to be carried out.

### 7.2 Insufficient Clearances

If the above clearances are not sufficient to avoid danger, other suitable arrangements shall be made to provide the requisite degree of safety.

7.3 Ladders and Other Long Objects

Ladders and other long objects shall not be used without the permission of the senior authorised person in charge of the work and the movement and erection of such ladders shall be under his/her direct supervision at all times.

## 8 WORK ON METAL CLAD SWITCHGEAR SPOUTS:

(i) The section of bus bars on which work is to be carried out shall be made dead and isolated from all points of supply.

(ii) The shutters of live spouts shall be locked closed.

(iii) The busbars shall be earthed with approved earthing equipment if possible, at a panel other than that at which work is to be carried out. Temporary earths shall in any case be applied to all phases on the busbar at the point of work. These earths may then be removed one phase at a time for work to be carried out. Each phase earth shall be replaced before a second phase earth is removed.

For the earthing of metal clad switchgear, approved appliances only shall be used. The insertion of the hand or any other tool in contact spouts for this purpose is forbidden.

## 9 WORK ON TRANSFORMERS:

When work is carried out on transformers, both the primary and secondary switches and isolators shall be opened. The transformer shall also be isolated from all common neutral earthing equipment from which it may become live. This does not require the disconnection of solidly earthed neutrals.

## 10 WORK ON CABLES, CONDUCTORS AND OVERHEAD LINES:

10.1 Cables and Conductors

(a) No person shall touch the insulation, which covers or supports any high voltage conductor unless the conductor is dead and earthed.

(b) Before carrying out work involving cutting into a high voltage cable, the responsible person shall satisfy himself that the cable has been made dead, isolated and earthed where practicable and identified. In all cases of doubt, the cable shall be spiked in an approved manner.

10.2 Overhead Lines

(a) All persons while at work on towers, poles and high structures or when working on live lines shall make proper use of their safety belts and safety equipment, and no man shall work alone at any tower or high structure, or on live equipment.

(b) The senior authorised person in charge of the work shall satisfy himself that the line conductors are short circuited and earthed before work is commenced. When work has been completed, the responsible person shall ensure that all temporary earths have been removed and that the line is safe to be made alive.

(c) When work is carried out on a high voltage line, earths shall be placed at the point or points where the work is being done in addition to the earths provided at the points of disconnection.

(d) In the event of the near approach of a lightning storm, all work on overhead lines shall cease immediately and the authorised person in general charge of the work shall be informed.

(e) For the safety of the public, strain insulators shall be placed in all stays on overhead lines.

## APPENDIX 1

## EMERGENCY FIRST AID, RESCUE AND RESUSCITATION IN THE CASE 0F ELECTRIC SHOCK

### 1. FIRST AID:

1.1 Burns:

Treat with Vaseline to exclude air.

1.2 Shock:

In addition to suffering from electric shock, it is also probable that the patient will be suffering from physical shock and important that this condition be treated.

The patient must be kept warm with blankets and/or coats, and if available, hot water bottles should be applied to the feet.

1.3 Drinks:

Drinks must on no account be administered unless the patient is fully conscious.

Alcoholic drinks should not be administered unless recommended by a doctor.

### 2. RESCUE

The procedure to rescue persons from contact with a live conductor cannot definitely be laid down for all cases. However, certain principles and methods are outlined which all persons working on electrical apparatus or assisting in such work should know.

### 3. RELEASES FROM CONTACT WITH LIVE CONDUCTORS

3.1 Low voltage

(a) Observe quickly the general circumstances of the case, whether special difficulties are involved and if special precautions are necessary. Every second is precious and delay may be fatal; be prepared, therefore, to act promptly. Speed of action must be accompanied with due care.

(b) Take precautions against receiving a shock your self. Remember that the patient, until released, is electrified at the same voltage of the live conductor.

(c) In cases where the contact has been made on a live conductor with adjacent switch control, the switch should be opened immediately and then the patient pulled clear. If in doubt about which switch to open, all switches should be opened; but assume all conductors are still alive unless some method is available to determine that the conductors are dead.

(d) When conductors cannot be de-energised immediately by adjacent switch control, the procedure will depend on the voltage of the live conductor.

In all cases it is necessary for the rescuer to be adequately insulated against shock from a conductor to earth and against shock from a conductor to conductor, or by touching the patient.

For low and medium voltage (up to 650 V) rubber gloves, rubber sheeting or dry cloth, including loose portions of the patients clothing, provide adequate insulation for the rescuer's hands. The use of such insulating guards should always be aimed for; but a dry pole with no associated earthed metal on it provides adequate insulation for the rescuer against shock from a conductor (or patient's body to earth).

(e) Cutting away a conductor (carrying up to 650 V only) may provide a quick and easy method of release in some cases. It is useful especially when delay might otherwise occur in releasing the patient. This method requires that the rescuer has sound knowledge of what he/she is doing.

(f) Prevention of patient falling from aloft; when a patient is being rescued above ground level, care must be taken to ensure that he does not fall from a dangerous height when pulled clear or when conductors are de-energised.

(g) Be prepared to use considerable force when releasing a patient who is holding a live conductor. Punch the wrist heavily on the inner side or strike the back of the hand. It may be easier in some cases to use one's foot to force the patient's hand clear.

3.2 High voltage

For high voltage it is necessary to put an extra long, say 2 m or more, dry insulating material, such as wood or rope, between the rescuer's hands and the patient to enable the patient to be pushed or pulled clear of the conductor, or enable the conductor to be cleared from the patient.

## 4. RESUSCITATION AFTER CONTACT WITH LIVE CONDUCTORS

Immediately after rescue, a rapid but careful examination of the patient must be made to determine the extent of treatment necessary.

Electric shock may cause breathing to stop because of a sudden paralysis of the respiratory centre and it may also cause a failure of the circulation because the shock has affected the heart.

The method of resuscitation will therefore depend on the patient's condition.

4.1 Patient breathing

If the patient is breathing and his heart is beating then in a large majority of cases recovery will be rapid.

Do not apply artificial respiration if the patient is breathing. Let the patient have plenty of fresh air. If the patient is in a collapsed condition, lay him on his back in as comfortable a position as practicable with his head tilted slightly back. This will keep his airway open and assist breathing. A pad, if available, placed under the patient's shoulders will assist in keeping his head back. Loosen any tight clothing.

4.2 Patient not breathing

If breathing has stopped or is very weak or appears to be failing, commence artificial respiration without delay.

4.3 Circulation

In cases of electric shock, failure of the heart should be suspected if the patient does not quickly show some response to artificial respiration. Circulation should be assessed within fifteen seconds after the commencement of artificial respiration.

Feel for a pulse in one of the carotid arteries in the patient's neck. This is done with the pads of the fingers at the level of and at either side of the Adam's apple. Do not feel both carotid arteries at the same time, as this would stop the flow of blood to the brain. If the heart is beating, a pulse will be felt.

If no pulse is felt, lift the patient's eyelids. If the heart is not beating the pupils of the eyes will be large and will not become smaller when exposed to light by the lifting of the eyelids. If the heart is beating the pupils will become smaller when exposed to the light.

The absence of a pulse in the carotid artery and the enlarged pupil of the eye, which does not become smaller when exposed to light, indicate that the heart has stopped beating.

(a) Patient's heart beating. Do not apply external cardiac (heart) massage when a pulse can be felt.

(b) Patient's heart not beating. If the heart has stopped beating commence external cardiac (heart) massage without delay.

4.4 General

Immediately resuscitation is commenced, send for medical assistance and an ambulance and notify the hospital if applicable.

If the patient is not breathing and his heart has stopped beating, artificial respiration by the expired air method should be carried out in conjunction with external cardiac (heart) massage.

Every second you wait can cause severe brain damage through lack of blood and oxygen.

Artificial respiration and external cardiac (heart) massage must be commenced without delay and should be continued until breathing is restored and the heart starts beating or until a doctor advises that further efforts will be of no avail.

Care should be taken to avoid, as far as possible, aggravating any injuries the patient may have sustained.

4.5 Artificial respiration

If available in order to reduce the risk of infection it is recommended that a facemask or shield be used for both mouth to mouth or mouth to nose artificial respiration. However, time should not be lost in getting a face mask/shield.

**Examples of Masks**

Alternatively a clean cotton handkerchief can be used to cover the mouth.

It is not necessary to be highly trained in resuscitation methods to carry out artificial respiration effectively.

Simply stated, artificial respiration is a means of supplying oxygen to the patient's lungs, and thus, through the blood, to his brain to keep him alive while his own breathing is suspended.

The expired air method of artificial respiration is recommended as the best universally applicable field type of artificial respiration.

For artificial respiration the patient's head must be kept well back to ensure a free passage to the lungs. Exact rhythm and timing in carrying out artificial respiration are unimportant. The only purpose of artificial respiration is to get oxygen into the patient's lungs.

Artificial respiration must be continued until breathing is restored or until a doctor advises that further efforts will be of no avail.

4.5.1 Expired air artificial respiration

In the expired air method of artificial respiration the rescuer breaths his own exhaled breathe into the patient's lungs.

The normal air we breathe in contains 20 per cent oxygen. The air we exhale contains about 16 per cent oxygen and this is ample to keep the oxygen content in the patient's blood normal if it is breathed into him at about the rate of normal breathing.

Therefore, quickly ensure that the patient's throat is free from foreign matter. Next place him on his back and tilt the head well back (Fig.A1.1) this ensures an open passageway to the lungs. Placing a pad under the patient's shoulders will make the tilting of the head easier. However, time should not be lost in getting a pad.

The rescuer may then breathe into the patient's mouth or nose.

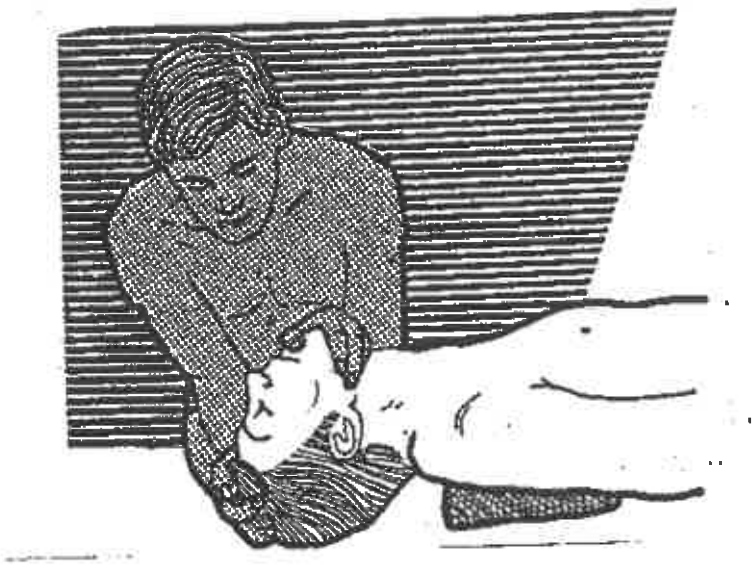


**Figure A1.1**

Lift the neck and tilt the head back. Hold the head tilted so that the skin over the throat is stretched tight. With one hand push the crown of the head down, remove the other from below the neck and use it to pull up the chin. This prevents the tongue from causing an obstruction.

4.5.2 Mouth-to-mouth method

The patient's head is tilted well back as in Figure A1.1 his mouth is opened and the rescuer opens his mouth wide and makes an air-tight seal around the patient's mouth as shown in Figure A.1.2. The rescuer's cheeks will normally seal the patient's nostrils, but if necessary the nostrils must be pinched closed with the fingers. The rescuer then breathes into the patient. The resistance to the rescuer's breath is about the same as that experienced when blowing up a balloon. The chest should be seen to rise.

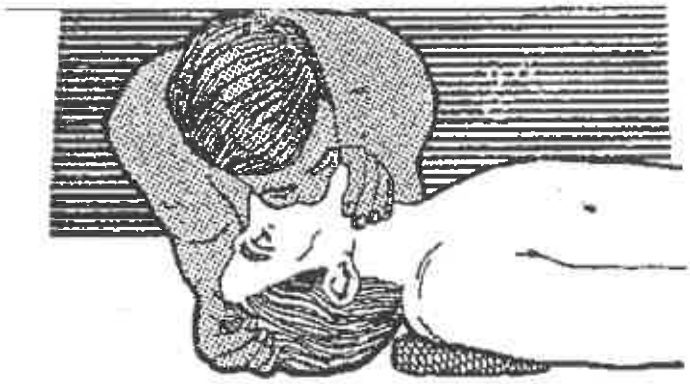


**Figure A1.2**

Seal your lips widely around the victim's mouth. Fold his lower lip down to keep his mouth open during inflation and exhalation. To prevent leakage, press your cheek against his nostrils during inflation. Blow air into the victim until you see the chest rise. Then remove your mouth to let him breathe out. Take your next breath as you listen to the sound of his breath escaping. Re-inflate his lungs as soon as he has exhaled.

Having breathed into the patient's lungs, the rescuer removes his mouth and, turning his face to one side to avoid the patient's exhaled breath, takes another deep breath and again breathe into the patient's lungs. This is kept up at a steady rate of from ten to fifteen times per minute.

One rescuer can take over from another. Remember rhythm and timing are not important but the patient must under no circumstances be left without air for longer than a minute.

4.5.3 Mouth-to-nose method:

The patient's head is tilted well back as in Figure A1.1. The rescuer opens his mouth and places it right over the patient's nose making an airtight contact (Figure A1.3) The lips do not contact the nostrils as this would tend to close them. The patient's mouth is held closed and the rescuer breathes into his patient as in the mouth-to-mouth method.

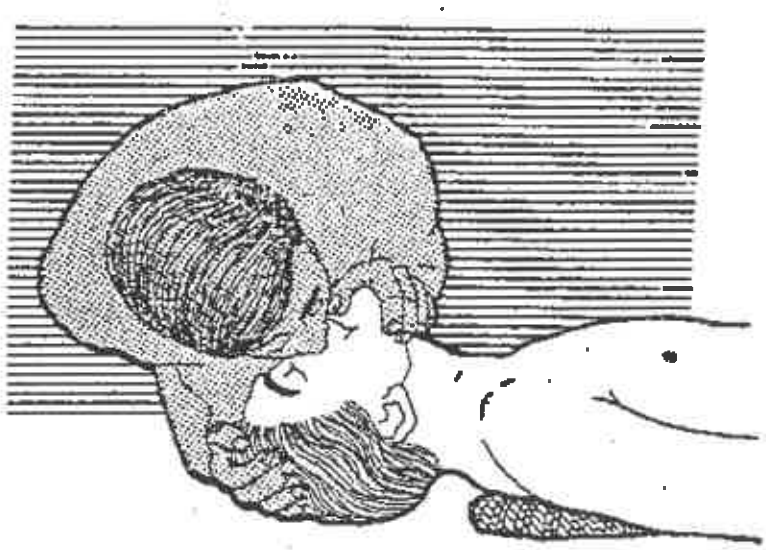


**Figure A1.3 ~ Mouth-to-nose method**

4.5.4 Filling the lungs:

The rescuer blows steadily and firmly, not with a jerk, and the patient's chest should be seen to rise. If air does not appear to be entering the lungs, quickly look for any blockage in the air passage, check the head again, making sure the jaw is well forward and the head tilted well back, and commence blowing again.

About ten good quick breaths should first be breathed into the patient as soon as he is reached. This will oxygenate his blood and give the rescuer a minute or so to get his patient into a more convenient location for continuing artificial respiration, for example, to lower a linesman from a pole.

## 5. EXTERNAL CARDIAC (HEART) MASSAGE

The lives of people whose hearts have ceased to function can often be saved by the prompt application of a form of resuscitation known as external cardiac (heart) massage (for example, massage of the heart without opening the chest). This massage may be performed by anyone.

The heart is in the centre of the chest between the breast-bone and the spine and if pressure is applied to the lower half of the breast-bone, the heart is compressed and the blood is squeezed out of it into the arteries. When the pressure is released the breast-bone springs back into place, the heart, like a rubber ball, resumes its shape and in so doing allows blood from the veins to enter. Valves in the heart prevent blood flowing back into the heart from the arteries.

In this way a heart which has either stopped beating altogether or which has gone into ventricular fibrillation (a state of ineffective quivering often caused by electric shock) can be made to circulate the blood.

This compressing and releasing of pressure on the heart carried out rhythmically at a rate of approximately 60 compressions per minute is called external cardiac (heart) massage. It can keep a person alive if breathing is maintained, until his heart resumes its proper beating. A heart in ventricular fibrillation will require hospital treatment to restore normal heartbeat, but the heart can be made to circulate blood by external cardiac (heart) massage until the necessary medical aid is obtained.

It is desirable that adequate training in external cardiac (heart) massage be given to develop the technique. This can best be achieved with a training aid.

5.1 Technique:

Lay the patient on his back on a firm surface.

Feel for the notch at the top of the breast-bone (sternum) with one hand and for the lower end with the other. It is on the lower half of this bone that the pressure has to be made (see Figure A1 4)

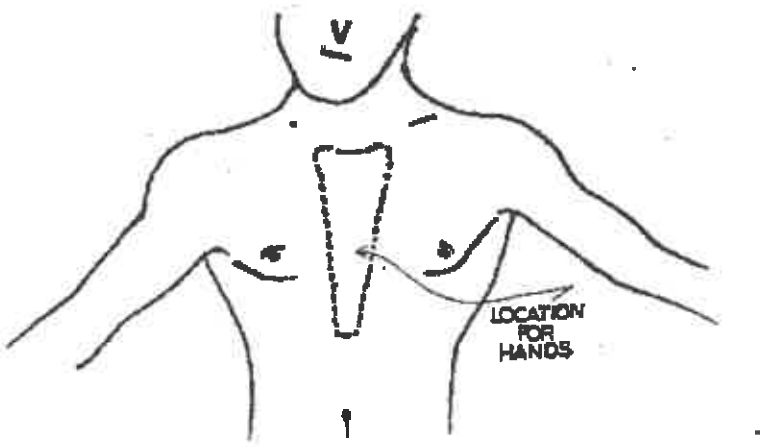



**Fig A1.4: Location of the rescuers hands for external cardiac (heart) massage.**

The rescuer leans directly over the patient and places the heel of one hand (either hand) on the lower half of the patient's breast-bone and places the heel of his other hand on the back of the first (one hand for a child' two fingers for an infant). The fingers should not press on the patient's chest as this would reduce the effectiveness of the pressure on the heels of the hands.

Keeping the arms straight, the rescuer presses down sharply and firmly to depress the patient's breast-bone from 30 to 50 mm in the case of an adult, depending on his build. Immediately release the pressure to allow the chest wall to recoil. If the technique is correctly applied it will not damage the patient's ribs.

If the patient is not breathing, external cardiac (heart) massage will be of no avail unless artificial respiration (expired air method) is carried out at the same time.

If only one rescuer is available, two breaths are given by the expired air method followed by fifteen chest compressions at the rate of approximately one per second.

Where two rescuers are available, one breathes into the patient and the other gives five chest compressions between each chest inflation. The rescuer giving the breaths should also feel for the pulse in the patient's carotid artery during resuscitation.

The chest should not, of course, be compressed at the same time as it is being inflated.

## APPENDIX II

### TESTING PROCEDURES AND PRECAUTIONS FOR COMMISSIONING OF ELECTRICAL CABLES

The aim of this section is to create an awareness of the latest standards and testing procedures for the commissioning of new and the re-commissioning of repaired electrical cables.

Before commissioning or re-commissioning cables tests must be carried out to ensure the integrity of the cable/s and to ensure the safety of operating personnel.

1. Low voltage Cables

1.1 Initial Tests

Carry out a meter test to ensure that the insulation resistance complies with the manufacture's and the relevant SABS requirements. For L.V. cables a 500V d.c. meter is adequate for this purpose.

1.2 Voltage Tests

This covers extruded solid dielectric cables (covered by SABS 1507), voltage ranges are as indicated in Table 1

After installation the cable has to be tested to ensure the integrity of the cable and the quality of the work. A.C. testing of solid dielectric cables is preferred. Very low frequency high voltage sinusoidal electrical testing methods are recommended to avoid the use of cumbersome large testing equipment.

Method: The test voltage should be applied between conductors and between each conductor and the metallic protection or earthed surroundings of the cable as appropriate. The voltage to be raised gradually to the specified values in the table and maintained for 15 minutes.

Table1 -Test Voltages After Installation

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| ble operating voltage | e test voltage is to be applied | Test Voltage V | |
| | | m.s) | d.c. |
| 300/500 | een Conductors and conductors/earth | ) | ) |
| 600/1000 | een Conductors and conductors/earth | ) | ) |
| 1900/3300 | een conductors | ) | ) |
| 1900/3300 | een Conductors and conductors/earth | ) | ) |

2. Medium/High Voltage

Each section of the cable installation between substations shall be subjected to a preliminary voltage or insulation resistance test to prove the insulation resistance.

The installation resistance can be measured with a high voltage meter with a rating of 5000V.

2.1 Paper Insulated Lead covered Double Steel Tape or Wire Armoured Cable (covered by SABS 97), voltage ranges are as indicated in Table 2

The test voltage should be applied between conductors and between each conductor and the metal sheath, which should be held at earth potential. In each case, the voltage should be increased steadily to the stipulated value and maintained at this value for 15 minutes.

Table 2 in-situ test voltages.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| ge Rating of Cable kV | Test Voltage | | | | | |
| | Belted Cables | | | | le–core and screened cables | |
| | Between conductors | | From conductor to sheath | | een conductor and sheath or screen | |
| | a.c. | d.c. | a.c. | d.c. | a.c. | d.c. |
| 3.3/3.3 | 7 | 9 | 7 | 9 | - | - |
| 3.8/6.6 | 13 | 19 | 8 | 11 | 8 | 11 |
| 6.6/6.6 | 13 | 19 | 13 | 19 | - | - |
| 6.35/11 | 22 | 31 | 13 | 19 | 13 | 19 |
| 11/11 | 22 | 31 | 22 | 31 | - | - |
| 12.7/22 | - | - | - | - | 25 | 36 |
| 19/33 | - | - | - | - | 38 | 54 |

2.2 XLPE-Insulated Cables covered by SABS 0198 Part 13.

NOTE: If circumstances necessitate testing that is not in accordance with the recommendations of this section, the cable manufacturer or a test expert should be consulted before any testing is carried out.

The use of inappropriate or excessive test voltages or of unsuitable fault location methods can damage XLPE-insulated cables. Cables that are particularly prone to damage during testing are those that have water trees and those that have a construction that differs from that specified in the 1981 and in subsequent editions of SABS 1339.

The Types of Test Waveforms to be applied are:

a) Very low frequency (VLF): An Alternating waveform that is either sinusoidal or pseudo-square/cosine rectangular, of nominal frequency 0,1 Hz.
b) Power frequency: An alternating sinusoidal waveform of frequency in the range 25 Hz to 100 Hz.
c) Surge: A step waveform that has a rise time of a few microseconds and that gradually decays to zero within 5 s.

These waveforms are referred to in the various test tables below.

Note: Where the capacity of the test set permits, all three cores of a three-core cable may be tested together.

2.2.1 PRELIMINARY TESTS

2.2.1.1 Leakage Resistance. Before carrying out any testing or fault location, determine and accurately record the leakage resistance to earth and, if relevant, between conductors. Use an instrument that generates a d.c test voltage of not less than 250 V and not more than 5 kV. Typical minimum values of leakage resistance are given in Table 3.

TABLE 3—MINIMUM LEAKAGE RESISTANCE

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Cable Operating voltage *U*, kV | Minimum leakage resistance, MΩ | | | |
| | Cable length, m | | | |
| | 100 | 300 | 1 000 | 3 000 |
| 6,6 | 150 | 50 | 15 | 5 |
| 11 | 240 | 80 | 24 | 8 |
| 22 | 460 | 153 | 46 | 15 |
| 33 | 680 | 227 | 68 | 23 |

NOTE:

1 The value of leakage resistance multiplied by the cable length should not be less than (2 U + 2) MΩ.km, where U is the voltage rating of the cable in kilovolt.

2 This test is repeated after the required sequence of tests (see 2.2.2.7).

2.2.2 TESTING

2.2.2.1 Over voltage Commissioning Tests. When newly installed cables are being commissioned, they should be tested at the test voltages given in Table 4, appropriate to the test waveforms and test durations given in columns 1 and 2 of the table.

TABLE 4—COMMISSIONING TEST VOLTAGES (r.m.s.)

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Test waveform (see 2.2) | Duration, Min | Commissioning test voltage, kV | | | |
| | | Cable Operating voltage, kV | | | |
| | | 6.6 | 11 | 22 | 33 |
| VLF (0,1 Hz) | 60 | 11 | 19 | 38 | 57 |
| Power frequency | 60 | 8 | 13 | 25 | 38 |

NOTE:

1. Test sets for the above are commercially available.
2. Where the above test levels cannot be achieved, a reduced voltage for an extended time may be negotiated.

2.2.2.2 Overvoltage Maintenance/Repair Tests. When cables are tested for maintenance or repair purposes, they should be tested at the test voltages given in Table 5, appropriate to the waveforms and test durations given in columns 1 and 2 of the table.

2.2.2.3 Surge Test Method (see Table 5). The surge test is intended to be a practical basic safety test. It can be used as a non-damaging means of identifying fairly serious existing or potential faults when power frequency or VLF equipment is not available. The test avoids the application of a continuous d.c. voltage (see 2.2.2.4), but it is not as conclusive or rigorous as the other methods.

CAUTION: During the surge test, a peak voltage of up to twice the test voltage can be generated in the cable.

Method. Charge the surge generator to the appropriate test voltage given in Table 5. Using single-shot mode, release a surge into the cable and then soft-discharge the cable (see 2.2.5.5) within 5 s. Repeat the procedure up to five times and then fully discharge the cable by solidly earthing it for at least 5 min.

TABLE 5—MAINTENANCE/REPAIRS TEST VOLTAGES (r.m.s.)

| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Test waveform (see 2.2) | Duration | Maintenance/repair test voltage, kV | | | |
| | | Cable operating voltage, kV | | | |
| | | 6.6 | 11 | 22 | 33 |
| VLF (0,1 Hz) | 15 min | 8 | 13 | 25 | 38 |
| Power frequency | 15 min | 7 | 11 | 22 | 33 |
| Surge test (see 2.2.1.3) | 5 surges, max. | 7 | 11 | 22 | 33 |

2.2.2.4 D.c. Over voltage Testing. D.c. over voltage testing is likely to cause irreversible damage to XLPE-insulated cable systems, particularly if the cables have water trees. It often fails to identify potentially hazardous conditions in the cable. If d.c. testing has to be carried out because no other test methods are available, the voltage and duration should be limited to the appropriate values given in Table 6, which are recommended for quick identification of gross faults only. Use a d.c. test set or a surge generator in d.c. mode to apply the test voltage. After applying the voltage, soft-discharge the cable (see 2.2.2.5), using either the d.c. test set or a discharge stick. Fully discharge the cable by solidly earthing it for at least 8 h but preferably for 24 h.

TABLE 6—D.C. TEST VOLTAGES

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Duration, s | D.c. test voltage, kV | | | |
| | Cable operating voltage, kV | | | |
| | 6.6 | 11 | 22 | 33 |
| 10 | 6 | 10 | 20 | 30 |

2.2.2.5 SOFT DISCHARGE OF CABLE. An XLPE-insulated cable should always be soft-discharged through a resistance of at least 200 kΩ, for example by using a discharge stick. Discharging a conductor direct to earth by short-circuiting it with a lead can severely damage the cable. After the initial discharge, a cable should be solidly earthed for at least 5 min. If the cable has been subjected to any form of d.c. test, it should be solidly earthed for at least 8 h, but preferably for 24 h.

2.2.2.6 CABLE SHEATH TESTING. To avoid problems caused by the ingress of water into the cable, a cable should be subjected to sheath testing:

a) at commissioning,
b) annually, and
c) after the location and repair of a fault.

Cable sheath testing can also be used to locate conductor earth faults that have punctured the outer sheath, provided that multiple sheath faults are not present. A direct current sheath test voltage of 5 kV should be applied for 1 min, with a leakage current of 1 mA/km being regarded as acceptable.

2.2.2.7 AFTER TESTING. After completion of any of the above tests, the leakage test described in 2.2.1.1 should be repeated. A tenfold reduction in the value of leakage resistance could indicate a potential problem.

2.2.3 CIRCUIT-BREAKER CLOSURE

2.2.3.1 Faulty or Unknown Cable Conditions. Closing a circuit-breaker on an untested cable can be hazardous to the operator and can damage the cable. A fault should never be re-established by repeated closing of a circuit-breaker.

2.2.3.2 Voltage Doubling. During switch-in onto open circuit, voltage doubling occurs at the remote end of the cable. Voltages of up to 20 kV can occur on an 11 kV system. Switching onto a load such as a transformer avoids this voltage doubling.

Published: March 2003


**Department of Labour**

# GUIDE GENERAL ADMINISTRATIVE REGULATIONS, 2003

**Chief Directorate of Occupational Health and Safety**

*NO: OHC 5*

## INTRODUCTION

As the name of the regulation indicates, the General Administrative Regulations determines the administrative procedure of the Occupational Health and Safety Act. This procedure was not placed in the Act itself owing to the fact that changes can be made to a Regulation with greater ease than that of a Section in the Act. A change to a Section of the Act needs to be passed by parliament whereas the Minister of the relevant Department can approve a change in a Regulation.

The General Administrative Regulations, as is the case with all other regulations, is an extension of the Act and should therefore be seen as a complete unit.

Terms, which were previously defined in the Act, are not redefined in the Regulations. If a specific definition does not appear in the Regulations, then it should be available in Section 1 of the Act.

## DEFINITIONS

All new phrases as well as words (expressions and words which differ from the standard dictionary definitions) that are used in this regulation, which have not been defined in the Act, will be defined in this regulation. Where the Act or regulation refers to "mean" the definition in the Act or regulation must be considered and where there's reference made to "It Includes" definition from the Act and regulation including the oxford dictionary must be considered

## ACCESS TO PREMISES

It is prohibited for an employer to refuse an inspector entry to perform his or her function because an inspector is entitled by the law to enter employer's workplace.

Employers should always ensure that inspectors are accompanied by a person who has knowledge and experience of the activities and safety requirements of the workplace.

## EXEMPTIONS

Any exemption, which has been granted to any person shall be signed by the Chief Inspector of the Department of Labour. An person who wishes to apply for an exemption should forward his/her application to the office of the Chief Inspector in Pretoria. The application for exemption should indicate proof that the health and safety of persons who are likely to be affected by the exemption will not bee prejudiced in consequences of it. Health and safety representatives and committees must be consulted during the whole process and given time to comment.

## COPY OF THE ACT

Employees together with employers have certain duties and rights, which have been assigned to them in terms of the Act. In order to comply with the provisions of the Act and regulations, each employee must have access to a copy of the Act. This regulation requires that—

(a) Each employer with 5 or more employees shall have a copy of at least one Act, which will be made readily available for perusal by the employee. Owing in the fact that a workplace can be made up of a very large area, and that the legislator did not intend to be unreasonable, various concessions are made. For example, a meter-reader in the town of Brits' workplace is the Municipal area of Brits. In such a case it is expected that a copy of the Act be made available at the point where the employee reports for duty in the morning, or any other suitable position as agreed upon with the employer.

(b) Each employer with less than 5 employees, shall, if requested provide a copy of the Act for perusal by the employees. This includes farm workers and domestic servants.

The copy of the Act may be an electronic reproduction or from a library. The Act and Regulations are amended from time to time, and it is therefore important to remember that one must obtain a copy of the latest amendments to keep up to date with the current legislation.

## HEALTH AND SAFETY COMMITTEES

The Health and Safety committees are made up of all the Health and Safety Representatives together with an equal amount of employer appointee representatives to represent the employer (there can be more than one committee to avoid a large congregation of representatives). If more than two committees are established, each health and safety representative must be member of at least one of the committees. These committees are the point around which self-regulation revolves.

Employer should provide necessary equipment, facilities and stationary required by the committee in order them to perform their functions.
It is important to keep the records of the meeting as they can be used as evidence for action taken to eliminate hazards and vice versa

## NEGOTIATIONS AND CONSULTATIONS BEFORE DESIGNATION OF HEALTH AND SAFETY REPRESENTATIVES

The regulation prescribe the items which must be agreed upon during negotiations between the employer and employees representatives. If a dispute arises between the employees and employers or his authorised representative, the matter should be referred for arbitration. Both parties shall submit a statement within a prescribed period to both the arbitrator and the other party concerned.

The statement is to contain the following information:

(a) The proposal for the arrangements and procedures for the nomination of the Health and Safety Representatives.

(b) The decision which is sought.

The arbitrator should then:

(a) Determine when and where the arbitration procedure shall be held. The arbitration may be held in the absence of the party who failed to submit a statement to the arbitrator and other party;

(b) Determine whether a pre-hearing conference shall be held;

(c) Determine which arbitration procedures shall be followed;

(d) Determine the procedures for the admission of evidence;

(e) Determine the admissibility of hearsay evidence; and

(f) Determine other relevant procedural matters.

In terms of Section 17(2) of the Act both parties are to come to a decision within 14 days as to who the arbitrator shall be. If no decision can be made, the president of the Labour Court is to be notified in writing. The president of the Labour Court in consultation with the Chief Inspector shall appoint an arbitrator, whose decision shall be final. This arbitrator will be entitled to receive remuneration as is payable to an additional member of the Labour Court.

## DESIGNATION OF HEALTH AND SAFETY REPRESENTATIVES

The employer must designate Health and Safety Representatives as follows:

- Shops and offices— one for up to 100 employees; and
- Workplaces other than shops and offices— one for up to 50 employees.

The employer shall ensure that employees designated as health and safety representatives meet the following requirements:

- Employed in a full-time capacity in the specific workplace or section thereof;
- Acquainted with conditions and activities at that workplace or section thereof, and
- Taking into account the nature of hazards associated with the activities of the workplace or section thereof, the employer shall provide as far as is reasonable practicable health and safety training to the health and safety representatives on how to identify health and safety risks and how to conduct inspections of the workplace or section thereof.

## REPORTING OF INCIDENTS AND OCCUPATIONAL DISEASES

Section 24 of the Act refers to certain incidents occurring at the workplace, or in connection with the use of machinery whereby a person dies or is injured to be extent where he is likely to die or could have resulted in a major incident. Such incidents should be reported to the Provincial Director on a WCL 1 or WCL 2 form within seven days.

Certain other types of incidents must be reported to the Provincial Director telephonically, facsimile or similar means of communication and these types of incidents are as follows—

(a) Where a person, as a result of the incident;

i) Dies;
ii) Becomes unconscious;
iii) Suffers the loss of a limb or part thereof;
iv) Is injured to the extent that he is likely to die;
v) Is injured to the extent that he is likely to be permanently disabled;
vi) Is injured to the extent that he is likely to be off for a period of 14 days or more;
vii) Cannot perform his normal duties (those duties for which he was employed).

(b) An incident of major consequence arising out of the use of industrial equipment or machinery or industrial practices at a workplace.

(c) The health and safety of any person is endangered and where –

i) A dangerous substance was spilled;
ii) The uncontrolled release of any substance under pressure (pressure greater than 1 atmosphere) took place;
iii) Machinery or any part thereof fractured or failed, resulting in flying, falling or uncontrolled moving objects; or
iv) Machines, which ran out of control.

These incidents should also be recorded and investigated in accordance to Regulation 8 of the General Administrative Regulations.

If an injured person is to die as a result of an incident, which has already been reported in terms of the above, the employer or user should report such death to the Provincial Director.

Any registered medical practitioner should, in terms of Section 25 of the Act, report all (to the employer and Chief Inspector) cases of occupational diseases or any other disease, which he believes arose out of a person's employment, which he/she has treated. This must be done within 14 days in the form of a WCL 22 form.

Any other person may in writing, give notice of any disease suspected to be an occupational disease, to the employer and chief inspector.

## RECORDING AND INVESTIGATION OF INCIDENTS

The employer or user of machinery should keep record and investigate all incidents referred to in terms of Section 24 of the Act together with any other incident, which resulted in the person concerned having had to receive medical treatment other than first aid.

These incidents must be recorded in the form of Annexure 1 of these regulations and be kept for a period of at least 3 years. This record shall be kept on the premises and available for perusal by an inspector.

The employer, a designated person, a health and safety representative or a member of the health and safety committee must investigate the above-mentioned incidents. This investigation should take place within 7 days from the date of incident and completed as soon as is reasonable practicable or within the contracted period of contract workers. The employer should record the result of the investigation in the Annexure 1. The purpose of the investigation is to establish the cause of the incident together with the safety measures that can be implemented to prevent the re-occurrence of such incidents in the future.

The health and safety committee shall examine this record at their next meeting.

## WITNESS AT AN INQUIRY

The chief inspector can, in terms of Section 32, direct an inspector to hold a formal inquiry as a result of an incident reported in terms of Section 24 (refer to Regulation 6). In such an instance, the inspector shall inform the employer or user of machinery of his intentions, and request the following from him/her:

a) That all persons witness to the incident; and
b) That any other person as required by the inspector,

be notified in connection with the time, date and venue of the formal inquiry.

The employer or user of machinery is to establish which persons are likely not to attend the inquiry, and shall advise the inspector of the names and addresses of such persons to allow the inspector to subpoena such persons.

## RETURNS

An employer or user shall furnish the inspector with such information as requested for the purpose of the Administration of the Act.

# IMPORTANT CONTACT DETAILS

## (FOR HEALTH & SAFETY ASPECTS ONLY)

The contractor is to add all the important contact information about essentials services, support and assistance.

| | SERVICE | NUMBER | CONTACT PERSON |
|---|---|---|---|
|  | Hospital | | |
|  | Ambulance | | |
|  | Water<br>Electricity | | |
|  | Police | | |
|  | Fire Brigade | | |
|  | Engineer | | |

**ADD OTHER IMPORTANT HEALTH & SAFETY CONTACT DETAILS AS MAY BE FOUND NECESSARY.**

## Reference & Detail Drawings

| | |
|---|---|
| 3313-S-001 | Site Plan and Location Plan |
| 3313-AB-001 | Recreation Centre |
| 3313-C-001 | Female Single Quarters Guest Apartment |
| 3313-D-001 | Female Single Quarters Guest Apartment 2 |
| 3313-E-001 | Mess |
| 3313-F-001 | Male Single Quarters Guest Apartment |
| 3313-G-001 | Clinic |
| 3313-H-001 | Entrance Gate |
| 3313-I-001 | Logistics |
| 3313-I-002 | Logistics |
| 3313-J-001 | Juvenile Prison |
| 3313-K-001 | Admin Block |
| 3313-K-002 | Admin Block |
| 3313-K-003 | Admin Block |
| 3313-K-004 | Admin Block |
| 3313-L-001 | Block C Prison |
| 3313-M-004 | Block B |

Ref: **6306/2001/26/44**

# PARAPLEGIC LIFT INSTALLATION SPECIFICATION

1.1 GENERAL SPECIFICATION

1.2 TECHNICAL SPECIFICATION

[blue]

WCS 048089

# WESTVILLE PRISON, K - ADMIN

MECHANICAL SERVICES

# PARAPLEGIC LIFT INSTALLATION

## 1. GENERAL SPECIFICATION:

**This lift installation shall comply with the following Standards:**

- OHS act of 1993, with schedule as per Government gazette of September 2010 issued by the Department of Labour
- SANS 1545 & SANS 50081-1 for Lift installations, & EN 81-41
- SANS 10400 part N for glazing. Glazing must be certified , with each piece stamped.
- Prior to commencement the Lift regulations notice to Department of Labour- Annexure 1 must be completed and approved.

This scope is for the supply, delivery, handling and erection, commissioning, testing and setting to work of the complete lift installation with glazed enclosure in accordance with the below specification and to the Architects and Engineers satisfaction.

## 2. TECHNICAL SPECIFICATION:

The following specification is the particular specification for the above and details the Free standing platform lift installation required. [Refer drawing ME 30260]

2.1 LIFT & ENCLOSURE:

The lift shall be a platform lift erected in a self-standing Aluminium shaft structure of the outdoor type with a fully glazed walling externally to the shaft with indoor landing doors. The shaft enclosure must be delivered ready-made with panels of certified toughened and laminated glass. The panels are to be assembled and attached, without welding, to the corner profiles of the lift shaft, to the predetermined height. This must ensure totally smooth internal and external shaft enclosure walls.

Level of certification required:

The tendered offer shall meet an equal or approved equivalent to Cibes lift A 5000 as certified by the notified body DNV (certificate no. 68671-2009-CE-NOR-REV 4.0) according to the Essential Safety Requirements of the Machinery Directive 2006/42/EC and comply to all the Safety Requirements of the standard EN81-41, as supplied by Shortsmobility.

2.2 MACHINE SPECIFICATION

The machinery and electrical systems must be built into the lift-shaft enclosure. No separate machine room is allowed.

Selected Make: CIBES, unit reference No. 84357-W, Model: A 5000

Quantity of units: 1 off

Drive system: Screw drive

Control system: Hold to run

Rated load: 400 kg

Rated speed: 0,15 m/sec.

Landings: 3 landing levels, with 3 full height fronts and landing doors.

2.3 DIMENSIONS:

Travel height: 6500 mm.

Pit: 50 mm

Shaft height on upper landing: 2700 mm. [refer drawing ]

Shaft: A complete ready-made steel shaft painted in white colour RAL 9016 (inside/outside)

2.4 DOORS:

Doors must be powder coated aluminium: The doors and door frames will be delivered factory painted in standard white, spec RAL 9016. Landing doors, L side hinged, powered, with Audible bell.

Door configuration to spec with electrical compartment & rail guides:

The rail guides are placed on the Left side of the door/front on side bottom landing.

2.5 PLATFORM:

Platform: Size 1000 x 1500 mm

The platform carriage is powder coat finished in metallic silver, RAL 9006.

The floor is to be covered with a grey rubber mat.

The control panel must be oriented for easy access. Controls Height to conform to disabled lifts per SANS 1545, Part 4

2.6 ELECTRICAL:

Electrical Requirements:

Frequency converter, 1 x 230 VAC, 50 Hz, 16 A, 3 x 2,5 $mm^2$, soft start and stop.

Note. Cibes frequency inverter does not function with an earth fault breaker.

An on-board battery backup must be provided in the event of power failures, to take the lift to the next lower level and open doors. The Battery emergency lowering device operates instead of lowering the platform manually. The battery is continuously charged by the alarm card.

An automatic lighting system must turn on the light when the landing push button is pressed. It automatically turns off after a preset time when the platform lift is empty and the doors are closed.

2.7 EXTRA ITEMS TO STANDARD LIFT TO BE INCLUDED:

The following items are required :

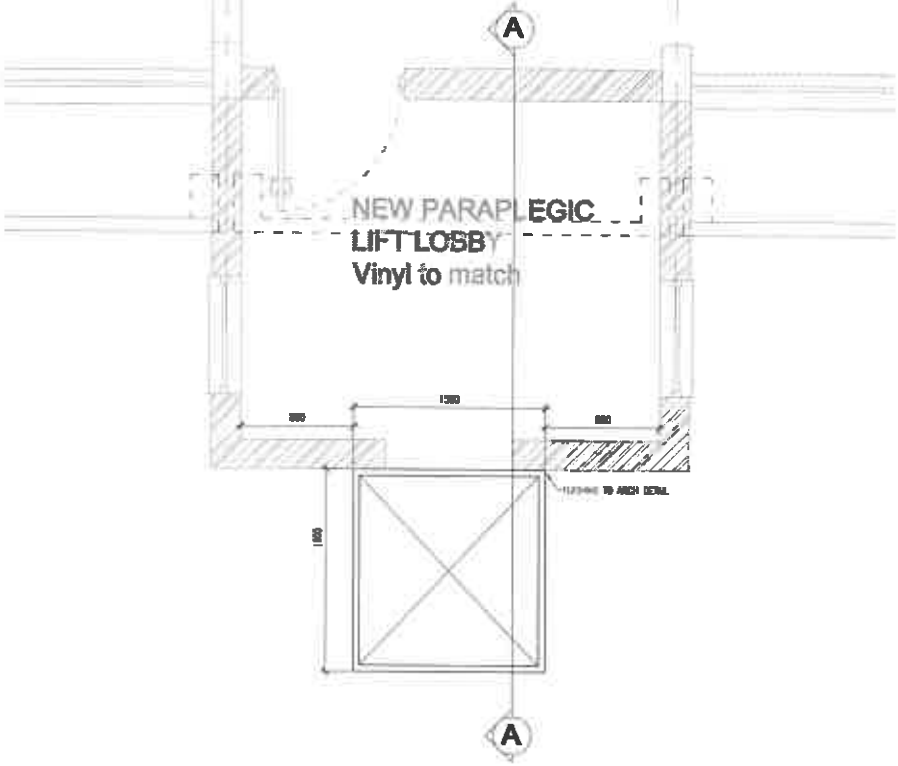
1. Shaft ceiling
2. Steel panels for 1 side.
3. Closure panels above door fronts
4. A wall telephone installed on the control panel.
5. A key lock (On/Off) installed on the control panel.
6. External roof
7. Voice Announcement on arrival at landings

2.8 SCHEDULE OF INFORMATION REQUIRED: The following schedule must be completed for equipment offered

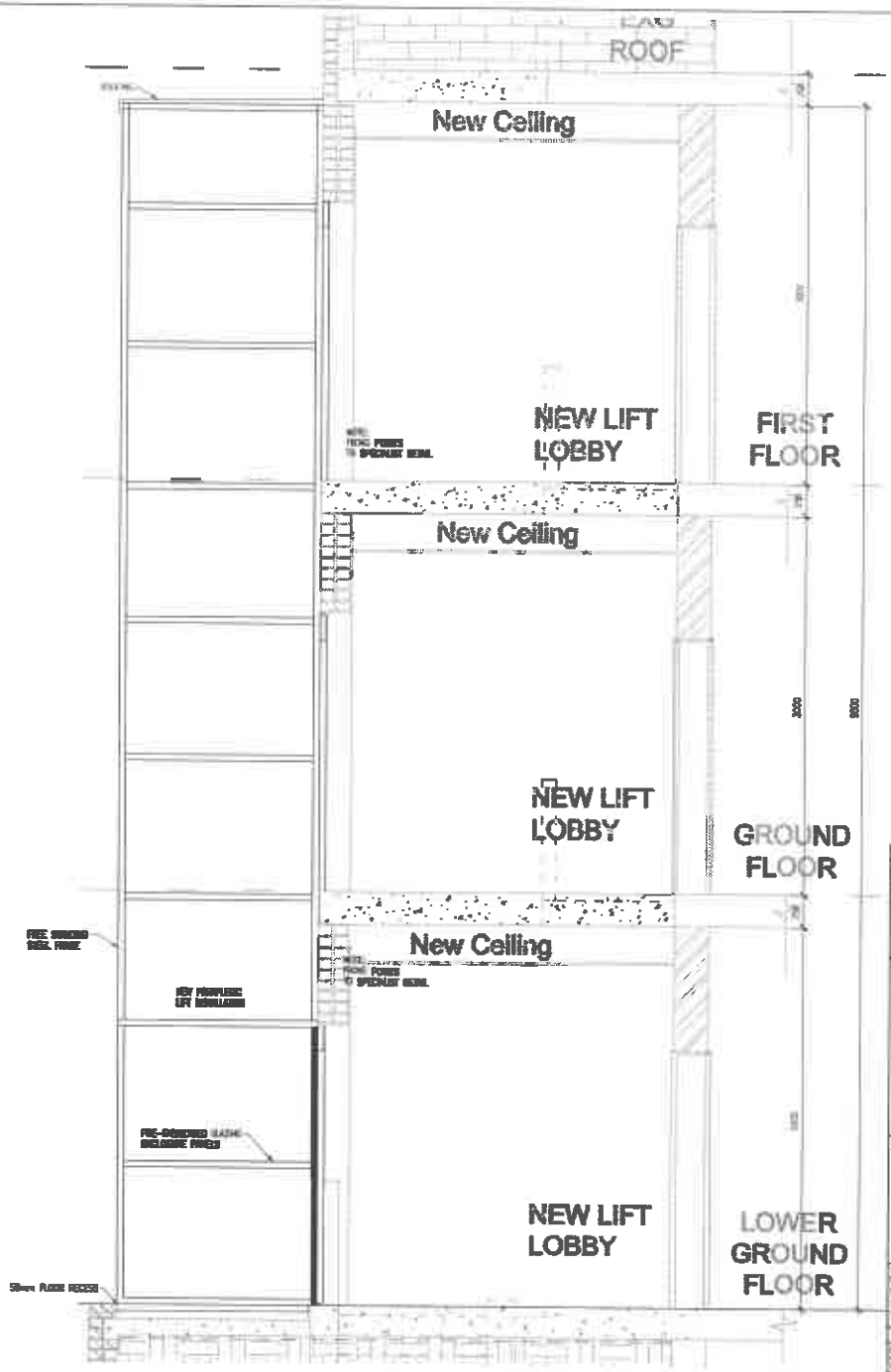
| Item | Description | Specification | Tender offer |
|---|---|---|---|
| 1 | Selected Make: | CIBES, unit reference No. 84357-W, Model: A 5000 | |
| 2 | Drive system | Screw drive | |
| 3 | Control system: | Hold to run | |
| 4 | Rated load: | 400 kg | |
| 5 | Rated speed: | 0,15 m/sec. | |
| 6 | Travel height: | 6500 mm. | |
| 7 | Pit Depth: | 50 mm | |
| 8 | Shaft height on upper landing | 2700 mm. | |
| 9 | Shaft: | A complete ready-made steel shaft painted in white colour RAL 9016 (inside/outside) | |
| 10 | Door fronts: | The doors and door frames will be delivered factory painted in standard white, spec RAL 9016. | |
| 11 | Landing doors: | Left side hinged, powered, with | |

| | | | |
|---|---|---|---|
| | | Audible bell. | |
| 12 | Door configuration | Electrical compartment & rail guides: Placed on the Left side of the door/front on side A bottom landing. | |
| 13 | Platform: | Size 1000 x 1500 mm | |
| 14 | Platform carriage | Aluminium powder coat finished in metallic silver, RAL 9006. | |
| 15 | Floor covering | Grey rubber mat. | |
| 16 | Control panel | Oriented for easy access to SANS | |
| | Electrical Requirements: | Unit shall have a Frequency converter, 1 x 230 VAC, 50 Hz, 16 A, 3 x 2,5 $mm^2$, soft start and stop. Note. Cibes frequency inverter does not function with an earth fault breaker | |
| 17 | Battery | An on-board battery backup must be provided in the event of power failures, to take the lift to the next lower level and open doors. The Battery emergency lowering device operates instead of lowering the platform manually. The battery is continuously charged by the alarm card. | |
| 18 | Lighting | An automatic lighting system must turn on the light when the landing push button is pressed, & automatically turns off after a preset time when the platform lift is empty and the doors are closed. | |

| | | | |
|---|---|---|---|
| | Extra over standard items required | | |
| 19 | Ceiling | Shaft ceiling | |
| 20 | Side panels | Steel panels for 1 side. | |
| 21 | Closures | Closure panels above door fronts panel. | |
| 22 | Telephone | A wall telephone installed on the control panel | |
| 23 | Voice announcement | Voice Announcement on arrival at landings | |
| 24 | Roof | External roof to be provided | |
| 25 | Lock | A key lock (On/Off) installed on the control panel | |
| 26 | Warranty | 3 year warranty to be provided | |
| 27 | Registration | Lift to be registered for the owners | |
| 28 | Containment | Lift to be fully self contained with no external gear or parts | |
| 29 | Servicing | 1 year servicing contract will be required following completion | |
| 30 | Other | | |
| | | | |
| | | | |
| | | | |
| | | | |




**TYPICAL FLOOR LAYOUT** SCALE 1:50




**SECTION A-A** SCALE 1:50

NKANYEZI CONSULTING (PTY) LTD

public works

WESTVILLE PRISON, DURBAN

TYPICAL FLOOR LAYOUT AND SECTION A-A

SCALE: 1:50

ME-30280

# Part C4: Site Information

# C4 Site Information

[green]

# PG-03.2 (EC) SITE INFORMATION – JBCC 2000 PRINCIPAL BUILDING AGREEMENT (edition 4.1 of March 2005)

| | | | |
|---|---|---|---|
| **Project title:** | ***DCS: WESTVILLE: INSTALLATION OF FACILITIES FOR PEOPLE WITH DISABILITIES*** | | |
| **Tender no:** | *DBN21/08/04* | **Reference no:** | *6306/2001/26/44* |

## C4 Site Information

1. *GENERAL*

*The Standard for Uniformity in Construction Procurement published in terms of the Construction Industry Development Board (CIDB) Act, 2000 (Act no. 38 of 2000), the Standardized Construction Procurement Documents for Engineering and Construction Works as issued by the CIDB and any other relevant documentation pertaining thereto must be studied and all principles in this regard must be applied to all procurement documentation, practices and procedures.*

2. The soil conditions are described as packable. Further information regarding the soil conditions and geotechnical assessment can be obtained from the civil & structural Engineers.
3. Specific requirements are described in clause 12.1 of the schedule of variables, section B, JBCC Preliminaries.
4. The site is the existing Westville DCS Medium Prison situated at 1 harry Gwala Road in Durban, KwaZulu-Natal. The whole site is fenced in with welded mesh fence.