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FALL PROTECTION PROCEDURE FOR VAALPUTS	

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Revisions

This document has been revised according to the following schedule:

Revision	Date Approved	Nature of Revision	Prepared by
0	30/06/11	General update	SJ Vreÿ
1	See Title Page	General revision, new construction regulations, new document format	SJ Vreÿ

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FALL PROTECTION PROCEDURE FOR VAALPUTS

1.0 PURPOSE

This document describes the procedure upon which all work from elevated positions, work in excavations and confined spaces are being conducted on the Vaalputs Site so as to ensure compliance with the requirements set out in the Occupational Health and Safety Act with regard to the Construction Regulations 2014 [2].

2.0 SCOPE

The aim of this document is to recognize all the hazards applicable to operational activities which include:

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work,

...in order to establish procedures to be followed and equipment to be used to prevent falls to lower levels or through holes and openings in walking and working surfaces.

3.0 LEGAL REQUIREMENTS

- Applicable sections of the Act;
- Responsibilities of different functionaries;
- Employees' fitness evaluation;
- Risk assessment (identify all hazards in the work area);
- Employee training and recording of training;

4.0 FALL PROTECTION SYSTEM

- Fall Prevention Equipment;
- Fall Arrest Equipment;
- Different types of equipment;
- Inspection, Maintenance, Testing and Cleaning of Equipment
- Overhead protection for workers who may be in, or passing through the area below the work area;
- Emergency response: the method for prompt, safe removal of injured workers;
- Fall Protection Plan

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5.0 REFERENCES

The following documents are referenced in this document:

- | | |
|-------------------------|---|
| [1] VLP-IMS-01: | Vaalputs IMS Manual |
| [2] OHS-Act | Occupational H&S Act, (Act No. 85 of 1993) and applicable regulations |
| [3] SHEQ-INS: | SHEQ System |
| [4] SHEQ-INS 0825: | Requirements for Construction. |
| [5] SHEQ-INS-2100: | General Requirements for Statutory Equipment |
| [6] SHEQ-INS-2140: | Ladders, Scaffolding, Steps and Passageways |
| [7] SHEQ-INS-5520: | Work Permits |
| [8] SHEQ-FRM-5330: | Man-job Specification |
| [9] SHEQ-INS-2400: | General requirements for Personal Protective Equipment |
| [10] SHEQ-INS-2150: | Lifting Equipment |
| [11] SHEQ-INS-2180: | Control over the use of Motorized Equipment and Training of Lifting machine/Equipment Operators |
| [12] SHEQ-INS-2141: | Fall protection planning |
| [13] SHEQ-INS-2450: | Respiratory Protective Equipment |
| [14] SHEQ-INS-2460: | Hearing Conservation |
| [15] SHEQ-INS-2490: | Issue and Control over PPE |
| [16] SHEQ-INS-2500: | Affixing of Notices and Signs and labelling of electrical and other critical equipment |
| [17] SANS 50353-1:2003: | PPE against falls from heights (Rigid anchor line) |
| [18] SANS 50353-2:2003: | PPE against falls from heights (Flexible anchor line) |
| [19] SANS 50354:2003: | PPE against falls from heights (Lanyards) |
| [20] SANS 50355:2003: | PPE against falls from heights (Energy absorbers) |
| [21] SANS 50358:2003: | PPE for work positioning and prevention of falls from heights. |
| [22] SANS 50363:2003: | PPE against falls from heights (Fall arrest systems) |
| [23] SANS 50360:2003: | PPE against falls from heights (Retractable type fall arrest) |
| [24] SANS 50361:2003: | PPE against falls from heights (Full body harnesses) |
| [25] SANS 50364:1992: | PPE against falls from heights (Test Methods) |
| [26] SANS 50365:2008: | PPE against falls from heights (General requirements for instructions for use, maintenance, periodic examinations, repair, marking and packing) |
| [27] VLP-PLN-005: | Fall protection Procedure for Vaalputs |
| [28] SHEQ-INS-2495: | Requirements for Confined Spaces |
| [29] SHEQ-INS 2120: | Lock-out Systems |
| [30] SHEQ-INS 5100: | Appointments |

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[31] SHEQ-INS 5100:

Written Safe work Procedures, Instructions, orientation and Task training

6.0 DEFINITIONS

In these Regulations any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned and, unless the context otherwise indicates—

"agent" means a competent person who acts as a representative for a client;

"client" means any person for whom construction work is being performed;

"competent person" means a person who—

- (a) has in respect of the work or task to be performed the required **knowledge, training and experience** and, where applicable, **qualifications**, specific to that work or task: Provided that where appropriate **qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000)**, those qualifications and that training shall be regarded as the required qualifications and training; and
- (b) is familiar with the Act and with the applicable regulations made under the Act;

"construction manager" means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"construction site" means a work place where construction work is being performed;

"construction supervisor" means a competent person responsible for supervising construction activities on a construction site;

"construction work" means any work in connection with—

- (a) the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- (b) the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"Contractor" means an employer who performs construction work;

"excavation work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

"fall arrest equipment" means equipment used to arrest a person in a fall, including personal equipment, a body harness, lanyards, deceleration devices, lifelines or similar equipment;

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"fall prevention equipment" means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines or physical equipment such as guardrails, screens, barricades, anchorages or similar equipment;

"fall protection plan" means a documented plan, which includes and provides for—

- (a) all risks relating to working from a fall risk position, considering the nature of work undertaken;
- (b) the procedures and methods to be applied in order to eliminate the risk of falling; and
- (c) a rescue plan and procedures;

"fall risk" means any potential exposure to falling either from, off or into;

"HSF " means a file, or other record containing the information in writing required by these Regulations;

"H&S specification" means a site, activity or project specific document prepared by Vaalputs pertaining to all H&S requirements related to construction work;

"material hoist" means a hoist used to lower or raise material and equipment, excluding passengers;

"medical certificate of fitness" means a certificate contemplated in regulation 7(8);

"mobile plant" means any machinery, appliance or other similar device that is able to move independently, and is used for the purpose of performing construction work on a construction site;

"Principal Contractor" means an employer appointed by the Client to perform construction work;

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional Technologist" means a person holding registration as a Professional Engineering Technologist in terms of the Engineering Profession Act, 2000;

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations, 2003;

"scaffold" means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"Inertia reel" (also known as a self-retracting life lanyard or fall-arrest block) is a mechanical device that arrest a fall by locking onto a drop line and at the same allows for free movement;

"shoring" means a system used to support the sides of an excavation and which is intended to

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prevent the cave-in or the collapse of the sides of an excavation;

"structure" means—

- (a) any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;
- (b) any false work, scaffold or other structure designed or used to provide support or means of access during construction work; or
- (c) any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling;

"suspended platform" means a working platform suspended from supports by means of one or more separate ropes from each support;

"suspension trauma means (Syn. "orthostatic shock while suspended"), also known as **harness hang syndrome (HHS)**, or **orthostatic intolerance**, is an effect which occurs when the human body is held upright without any movement for a period of time. If the person is strapped into a harness or tied to an upright object they will eventually suffer fainting. If one faints but remains vertical, one risks death due to one's brain not receiving the oxygen it requires.

People at risk of suspension trauma include people using industrial harnesses (fall arrest systems, abseiling systems, confined space systems), people using harnesses for sporting purposes (caving, climbing, parachuting, etc.), stunt performers, circus performers, and so on.

"temporary works" means any false work, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work;

"the Act" means the Occupational H&S Act, 1993 (Act No. 85 of 1993);

"tunneling" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral.

The Act means, unless the context indicates otherwise, the Occupational H&S Act, 1993 (ACT NO. 85 of 1993) and Regulations promulgated there under.

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7.0 ABBREVIATIONS

CR:	Construction Regulations
FM:	Facility Manager
HIRA:	Hazard Identification Risk Assessment
HSF:	Health & Safety File
H&S:	Health & Safety
OEWS:	Occupational Exposed Worker
OHS-Act:	Occupational H&S Act, 85 of 1993
PPE:	Personal Protective Equipment
SACPCMP:	South African Council for the Project and Construction Management Professions
SQEP:	Suitably Qualified Experienced Persons
S&LD:	Safety and Licensing Department
SSC:	Structure Systems and Components
ToR:	Terms of Reference
WASP:	Worker Allocated surveillance Programme

8.0 LEGAL REQUIREMENTS

8.1 LEGISLATION

The following sections of the OHS Act will apply to employers and employees who work in elevated positions:

- General safety Regulations, Sub-Sections 6, Work in elevated positions;
- General safety Regulations, Sub-Sections 13A, Ladders;
- Construction Regulations, Sub-Sections 10, Fall Protection;
- Construction Regulations, Sub-Sections 10, Rope Access Work.

No employer shall require or permit any person to work in an elevated position, and no person shall work in an elevated position, unless such work is performed safely from a ladder or scaffolding, or from a position where such person has been made as safe as if he were working from scaffolding.

8.2 RESPONSIBILITIES

8.2.1 Facility Manager or any Contractor

The Manager: Vaalputs or any Contractor shall:

- designate a competent person to be responsible for the preparation of a fall protection plan;
- ensure that all fall hazards (risks) in the work areas have been identified as far as possible ensure;

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- ensure that employees have been informed about all fall hazards (risks) and have received and understood the required training;
-
- that the fall protection plan is implemented, amended where and when necessary and maintained as required; and
- take steps to ensure continued adherence to the fall protection plan;
- ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.
- ensure that all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;
- ensure that no person is required to work in a fall risk position, unless such work is performed safely;
- ensure proper selection of Fall Protection Equipment after the hazards assessment of the job is made;
- ensure that fall prevention and fall arrest equipment are—
 - approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and
 - securely attached to a structure or plant, and the structure or plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and any person who could fall; and
 - fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.
 - Where roof work is being performed on a construction site, the contractor must ensure that, in addition to the requirements set out above, it is indicated in the fall protection plan that—
 - the roof work has been properly planned;
 - the roof erectors are competent to carry out the work;
 - no employee is permitted to work on roofs during inclement weather conditions or if any conditions are hazardous to the health and safety of the employee;
 - all covers to openings and fragile material are of sufficient strength to withstand any imposed loads;
 - suitable and sufficient platforms, coverings or other similar means of support have been provided to be used in such a way that the weight of any person passing across or working on or from fragile material is supported; and
 - suitable and sufficient guard-rails, barriers and toe-boards or other similar means of protection prevent, as far as is reasonably practicable, the fall of any person, material or equipment.

8.2.2 Principal Contractor (Project Manager /Construction Supervisor)

It is the responsibility of the Principal Contractor to ensure that:

- the Fall Protection Programme is implemented at the Vaalputs Site;

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- any unsafe practices or conditions are reported and corrected immediately;
- employees and supervisors are trained in recognizing fall hazards and the use of fall protection systems;
- the Manager: Vaalputs is informed of any falling hazards not identified in the initial compilation of the fall protection plan.
- records are maintained of employee training, equipment issue, and fall protection systems;
- all incidents are investigated and documented and
- the Construction SF is up to date and available on site at any time.

8.2.3 Project/ Construction Supervisor

It is the responsibility of the Project/ Construction Supervisor to:

- ensure that working on elevated heights are performed in a safe manner and to
- perform continual observational safety checks of the work operations and to enforce this procedure.

8.2.4 Employees

It is the responsibility of every employee/ contractor working on the Vaalputs premises who is engaged in work at heights, excavations or confined spaces to:

- understand and adhere to the requirements of this procedure and to report any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees and to
- ensure that their Fall Protection Equipment is properly maintained, care for and stored as required.

8.3 EMPLOYEES FITNESS TO WORK AT ELEVATED POSITIONS

8.3.1 Physical and Psychological

All Vaalputs employees and/or contractors working in elevated positions, excavations and confined spaces shall:

- be verified physiologically and psychologically fit by an Occupational Health Practitioner;
- undergo initial medical examination and annually thereafter;
- have a completed OREP (Man-job [8]) and

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All records of medical and I or psychological testing shall be kept by the Project/ Construction Supervisor and the Occupational Physician conducting such testing, and a copy of the notification from the Occupational Physician declaring the personnel fit to work at elevated positions.

8.4 TRAINING

All employees/ contractors who may be exposed to fall hazards shall be trained by an accredited institution and qualified i.t.o. the OHS Act.

Training shall include:

- The nature of the falling hazard;
- When Fall Protection Equipment is necessary;
- What Fall Protection Equipment is necessary for each situation encountered;
- How to properly put on, adjust and wear Fall Protection Equipment;
- Limitations of the specific Fall Protection Equipment provided;
- The proper care, maintenance, storage, useful life and disposal of Fall Protection Equipment;
- Correct procedures for erecting, maintaining, disassembling, and inspection of fall protection systems;
- Use and operation of controlled access zones, guardrails, personal fall arrest systems, safety nets, warning lines, etc.;
- The role of each employee in the Safety Monitoring System and Fall Protection Plan;
- The correct procedures for equipment and material handling, and storage erection of overhead protection.
- Emergency rescue planning

8.5 RISK ASSESMENT

Before beginning any work at height, all hazards shall be identified and assessed for the most suitable and safest way of doing the job.

A risk assessment shall be performed of the risks/hazards during the construction work including at least identification, evaluation, mitigation, control of hazards and risks, and preparation of a monitoring plan and review of plan, and shall prescribe training and re-training requirements i.r.o. the risks/hazards.

A copy of the risk assessment shall be submitted to the S&LD.

Risk Assessments shall also include (but not limited to) the following areas pertinent to the scope of works:

- Erecting scaffolds;

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- Lock Out;
- Remove Cladding on walls, equipment;
- Floor Openings;
- Working on Edges;
- Electrical Hazards;
- Shafts/Tunnels/Trenches;
- Tripping Hazards;
- Cranes Operations;
- Work Access Above, Walkways Above.
- Confined spaces

9.0 FALL PROTECTION SYSTEM

Work at height means working at a place, above or below ground level, where a person could be injured if they fall from one level to another. With the exception of a staircase in a permanent workplace, access and egress to or within a work place can also be considered work at height. Work at height does not include a fall at the same level, for example falling or slipping at ground or floor level.

A fall protection system refers to equipment designed to control fall hazards.

All fall protection systems either prevent a fall from occurring or safely arrest a fall.

Typical fall-protection systems include:

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> • Personal fall-arrest systems; • Guardrail systems; • Safety-net systems; | } | <p>Conventional fall protection (Anchor, connectors, and a body harness stop one from falling, also includes lanyards, deceleration device and a lifeline</p> |
| <ul style="list-style-type: none"> • Positioning-device systems; • Warning-line systems; roofing tasks • Safety monitoring systems and • Controlled-access zones. | } | <p>Protect workers from concrete form work and</p> <p>Defines an area where one can do leading-edge work, overhand bricklaying and related work under a fall-protection plan without using conventional fall protection.</p> |

9.1 FALL PROTECTION PLAN

A fall protection plan shall include—

- a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- a programme for the training of employees working from a fall risk position and the records thereof;

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- the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

See ATTACHMENT 1 for an example of a Fall Protection Plan.

9.2 FALL PROTECTION EQUIPMENT

All equipment used for working at heights, in excavations and confined spaces, shall be SABS, SANS or EN approved.

Based on the Risk Assessment, the proper selection of Fall Protection Equipment shall be made by the Manager: Vaalputs, the fall Protection Planner as well as the Construction Supervisor to determine the method of fall arrest or fall restraint to be provided for each job.

The equipment shall be selected according to [9, 15] based on suitability & strength to bear the load of the person/s it is designed to protect.

The equipment shall be securely attached to a structure or plant with sufficient strength to safely support equipment or person.

Obsolete or damaged equipment shall be destroyed and disposed of.

9.3 FALL PREVENTION EQUIPMENT

Equipment used to prevent persons from falling from an elevated position, physical equipment, guardrails, screens, barricades, anchorages or similar equipment. It can also include personal equipment, body harness, body belts, lanyards, lifelines.

Fall Prevention Equipment will be selected for the purpose for which it will be used and the strength to carry the weight.

Guardrails, screens, barricades, etc. should be properly fixed to a structure not to collapse when leaning against it.

9.4 FALL ARREST EQUIPMENT/SYSTEMS

Whenever it is not possible for fall prevention equipment to be installed to protect the employees, the Manager: Vaalputs shall be responsible to ensure fall arrest equipment/ systems [22] is provided and issued.

The Manager: Vaalputs shall ensure that the choice of protection selected will not pose any further danger or injury to personnel or the public.

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Equipment used to arrest the person in a fall from an elevated position includes: personal equipment, body harness, lanyards, deceleration devices, lifelines or similar equipment, but excludes body belts.

Fall Arrest Equipment/ systems will be selected for the purpose it will be used and the strength to carry the weight.

Only SABS Approved Fall Arrest Equipment will be used.

Fall Arrest Equipment will be properly fixed to a structure to provide sufficient support to the falling person.

9.5 TYPES OF FALL PREVENTION AND FALL PROTECTION EQUIPMENT

TYPES OF FALL	PURPOSE/FUNCTION
Guardrails/ Barricades	Rails around edges, elevated platforms, walkways etc. to prevent people from falling off such height
Toe Boards	Panels erected along edges of overhead walking/ working surface
Horizontal Life Lines	A horizontal line installed between two anchor points set to a certain tension with an angle of not more than 15°. By installing a horizontal life line you are eliminating the creation of pendulum type swing fall. It is also beneficial for worker mobility but can only accommodate a certain amount of workers at a time.
Vertical Life Lines	These life lines are installed to a top anchor. Life lines are manufactured from steel cable or rope with a fall arrest unit sliding up or down the steel cable or rope. A life line can be used with a portable ladder or fixed structure.
Harnesses and Shock absorbing	Stop a person when falling and minimizes force of the fall to your body. It must be adjusted to prevent hitting the ground or lower level.
Waist Belt	Not allowed because a fall will usually result in injury. The high force of the fall is concentrated at your waist rather than the 6 points of a full body harness
Cover over holes	Cover plates, guardrails, etc. to prevent people from falling in or through openings.
Safety Nets	Safety net, consisting of a mesh opening, not exceeding 230 cm ² and not longer than 15 cm on any side, and the openings, measured center-to-center, of mesh ropes or webbing, shall not exceed 15 cm.
Anchor's	Used to attach fall arrest equipment. Must be able to withstand 2267 kg. of force without failing.

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Rigid Anchor Line	Connecting element specified for a sub-system with a guided type fall arrester. A grid anchor line may be a rail or a wire rope and is intended for securing to a structure in such a way that lateral movements of the line are limited.
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- Take note that knots in ropes or lanyards can reduce strength by as much as 50%.
- Snap hooks must be the locking type. Never hook 2 snap hooks together
- Don't attached fall arrest equipment to guardrails or hoists

9.6 TESTING, MAINTENANCE AND CLEANING OF EQUIPMENT {26}

9.6.1 Maintenance of Fall Arrest Equipment

All fall protection equipment shall be inventoried, kept in a designated place, maintained properly and issued in accordance with [16].

Maintenance and inspections of the Fall Arrest equipment shall be conducted in conjunction with the supplier specification prior each use.

9.6.2 Testing of Fall Equipment

The Manager: Vaalputs shall appoint a competent person in writing to perform statutory inspections on all Fall Arrest Equipment.

All Fall Arrest equipment shall be inspected by the users daily before use.

Equipment found to be faulty shall be withdrawn from service immediately.
The areas of importance are:

Webbing (harness or lanyard)

- Inspect the entire surface of webbing for damage;
- Bend the webbing in an inverted U;
- Holding the body side of the belt towards you, gasp the belt with your hands 6 to 8 inches apart;
- Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage.

Buckle

- Inspect for loose, distorted or broken grommets;
- Do not cut holes or punch additional holes in the waist strap or strength members;
- Check a belt without grommets for torn or elongated holes that could cause the buckle tongue to slip;
- Inspect the buckle for distortion and sharp edges;
- The outer and center bars must be straight

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- Check corners and attachment points of the center bar. They should overlap the buckle frame and move freely back and forth in their sockets. The roller should turn freely on the frame;
- Check that rivets are tight and cannot be moved;
- The body side of the rivet base and outside river burr should be flat against the material;
- Ensure that the rivets are not bend
- Inspect for cracked rivets that show signs of chemical corrosion.

Ropes and lanyards

Rotate the rope and lanyard and inspect from end to end for fuzzy, broken or cut fibres. Weekend areas have noticeable changes in the original rope diameter;

- Replace when diameter is not uniform throughout, following a short break-in period;
- The older rope or lanyard is and the more used it gets, the more important testing and inspection become.

Steel snaps and D-rings

- Inspect hardware for cracks or other defects;
- Replace the belt if the D-ring is not at a 90-degree angle and does not move vertically independent of the body pad or D-saddle;
- Inspect tools, loops and belt stitching for broken or stretched loops;
- Check bag rings and knife snaps to see that they are secure and working properly;
- Check tool loop rivets.
- Check for thread separation or rotting, both inside and outside the body pad belt;
- Inspect snaps for hook and eye distortions, cracks, corrosion, or pitted surfaces.

Safety Straps

- Inspect for cut fibers or damaged stitches inch by inch by flexing the strap in an inverted U. Note cuts, frayed areas or corrosion damage;
- Check friction buckle for slippage and sharp buckle edges;
- Replace when tongue buckle holes are excessively worn or elongated.

9.6.3 Cleaning of equipment

- Wipe of all surface dirt with a sponge damped in plain water;
- Rinse the sponge and squeeze it dry;
- Dip sponge in a mild solution of water and commercial soap or detergent.
- Work up a thick lather with a vigorous back and forth motion;
- Rinse the webbing in clear water;
- Wipe the belt dry with a clean cloth. Hang freely to dry.
- Dry the belt and other equipment away from direct heat, and out of long periods of sunlight;
- Store in a clean, dry area, free of fumes, sunlight or corrosive materials and in such a way that it does not warp or distort the belt;

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9.7 OVERHEAD PROTECTION FOR WORKERS

Overhead protection shall be provided for workers who may be in, or pass through, the area below the work site which shall include one or more of the following:

- Hard hats shall be worn in all areas;
- Suitable and adequate signage and warnings shall be posted to warn the employees of the danger.

Note that no additional inspections will be performed in terms of this procedure. All inspections will form part of the statutory inspections as scheduled for the Vaalputs site

9.8 EMERGENCY RESPONSE

- The supervisor and first aider shall evaluate the employee's condition and administer first aid as appropriate.
- If the employee's condition appears to be serious, activate Vaalputs Emergency Team and request assistance;
- Stay at the site until emergency assistance arrives. Provide first aid as possible and necessary;
- Do not attempt to move or remove an injured worker unless it can be done safely;
- Report accident.

10.0 RECORDS

The following records shall be kept.

DESCRIPTION	RETENTION PERIOD	BY WHOM
Fall Protection Plans	For the lifetime of the Facility	Document Custodian
AI Inspections, Checks and Registers	For the lifetime of the Facility	Document Custodian
Training Records	For the lifetime of the Facility	Document Custodian
Appointments	For the lifetime of the Facility	Document Custodian

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FALL PROTECTION PROCEDURE FOR VAALPUTS

ATTACHMENT 1: FALL PROTECTION PLAN

	
FALL PROTECTION PLAN:	
A. FILL OUT THE SPECIFIC JOB INFORMATION	
Building:	
Site Description:	
Work Area:	
Work Permit Reference:	
Task:	
Name:	Start Date:
(Person responsible for the implementation of this plan)	Period Valid:

B. SITE SPECIFIC FALL HAZARDS AND REQUIREMENTS

Max. height to be worked on :	
Roof Slope, if applicable:	
Proximity to high voltage power lines:	
Ground Cover/Hazards:	
Falling Hazard As Identified (As in 3):	
Rescue Procedure and Method Statement (Attachment 1):	

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Falling Hazard Assessment (Attachment 2):	
Fall Arrest or Fall Restraint Equipment Hazard Assessment (Attachment 3):	
Free Fall Distance Calculated (Attachment 4):	
Other/Comments:	

C. IDENTIFICATION OF FALLING HAZARD

Fall from heights.	Using man cages / Hoist cradle to transport people.	Work on platforms
Work on structures that might collapse.	Crane Operations	Work on roofs/ceilings.
Work on ladders.	Lifting Equipment	Excavations
Work on scaffolding.	Doing demolition work	Slipping and Tripping Hazards
Work around openings.	Confined spaces Manholes/ Shafts (Ventilation Tunnels)	Other
Walkways above/ Work Access Above	Electrical Hazards	

D. FALL ARREST AND RESTRAINT EQUIPMENT APPLICABLE

Lanyards	Rope Grab Unit	Self- Retractable Lifeline	Anchorage	Rope Access
Restraint System	Safety Harnesses	Pulley	Safety Nets	Work Position System
Temporary Lifeline	Platforms	Mesh/Grids	Toe Board	Guardrails
Karabiner.	Scaffolding	LadderS	Cherry Picker	

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FALL PROTECTION PROCEDURE FOR VAALPUTS

E. EMERGENCY RESCUE EQUIPMENT

Stretcher	Breathing Apparatus								
Safety Harness	Dust Mask								
Temporary Lifeline	Emergency Kit								
Shovels	Visibility Vests								
Ladder									

F. EXCAVATION PLANT/EQUIPMENT AND SIGNS

								
Other								

G. FALL PROTECTION INSPECTIONS ON EQUIPMENT

Item	Comment/Defect	Item	Comment/Defect	Date
Harness		Plat Form		
Ropes		Pulleys		
Lanyards		Rope Grab Unit		
Grab Units		Temporary Lifeline		
Anchors		Self-Retractable Lifeline		

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Ladders					
Free Standing Ladder			Guard Rails		
			Karabiner Locking System		
Toe boards			Cherry Picker		
Safety Nets			Scaffolding		
Grids/ Mesh			Boatswains Chair		
Boatswains Chair			Tool Bag/ Vest		

PPE Requirement & Safety Signs														
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

	Yes	No	Requirements	Comments/Actions
Employees are declared medically fit.			Working on heights and in confined spaces	
Training for working from elevated positions is completed.			Training in working from elevated positions and in confined spaces	
Training is valid.			Working at heights	

Vaalputs Procedure/Work instruction, VLP-FRM-045 Rev 1

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J. FALLING CLEARANCE REQUIREMENTS

There should be sufficient distance between the work surface and any surface below to enable the system, including the action of any shock absorber to fully deploy. To work out whether there is enough distance available, you should take into account:

The worker's height;

The height and position of the anchorage point;

The length of the lanyard;

Any slack in the horizontal life line;

Any stretching of the lanyard or horizontal life line when extended by a fall and

The length of the energy absorber when extended by a fall.

K. HAZARDS AND CONTROLS	✓	X	REQUIREMENTS	COMMENTS/ACTIONS
K Fall from heights			See K1-K7	
K1 Work on structures that might collapse			See K6 and K7	
K2 Work on Ladders <i>Ladders shall be constructed of sound material and only be used for the purpose it is suitable and:</i> GSR 13A (OHSAct)			- fitted with non-skid devices at the bottom ends; - fitted with hooks or similar devices at the upper ends; - lashed, held, or secured to ensure stability under all conditions and at all times; - physical conditions of the ladders meet the standards. - inventoried, uniquely numbered, and inspected by a person trained and appointed for that purpose; - are not longer than 9m when leaned against an object for support;	

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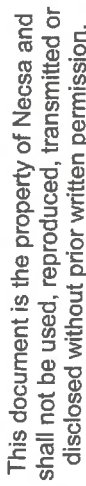
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Stepladder (platform stepladder, normal stepladder or double stepladder) is used.	- A person must support the ladder while it's being climbed. - Ladders should be secured at the top and bottom. - Both hands must be free to grip while climbing. - Safety harness must be worn and used on whatever height person intent to work. - Safety shoes and a hard hat must be worn. - The person holding the ladder must also wear safety shoes and a hard hat. - Statutory inspection 3 monthly.		
Fixed Ladders which exceeds 5m in length and attached to a vertical structure with an inclination of 75° or more:	- fixed ladders pass through a platform or floor, are provided with a cover or handrails with a protective boom or similar mechanism; - inspected every 3 months and statutory inspected annually. - rungs shall be at least 150mm away from the structure to which the ladder is attached; - is provided with a cage which extends from a point not exceeding 2.5m from the lower level to a height of at least 900mm above the top level served by the ladder; - shall afford firm support along the whole length for the back of a person climbing the ladder, and from which purpose no part of the cage shall be more than 700mm away from the level of the rungs.		
Extension and other ladders:	- shall be inspected regularly as specified or before use; - shall be secured at the top and bottom; - shall extend at least 910 to 1070 mm above the landing; - roof or cornice hooks shall be firmly anchored; - the locking devices shall be fully secured after adjusting the length of the extension ladder.		

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Crane Operations		• SHEQ-INS-2100 [5], 2150 [10] and 2180 [11] shall be complied with. • Crane's beam shall be equipped with handrails, unless permission by manager with use of safety harness. • Inventoried on register and number. • Maintain, inspect test lifting equipment. • Statutory inspection annually.
Using lifting equipment such as, forklifts		• SHEQ-INS-2100 [5], 2150 [10] and 2180 [11] Appoint a competent person to maintain, inspect and test lifting equipment in accordance with • Operators of lifting equipment to be trained and certificated. • Lifting Equipment to be registered, and uniquely numbered. • Inspection registers containing inspection results to be kept. • All equipment from which lifting equipment is hanging, to be clearly and permanently labelled with the safe workload (kg). • Only lifting equipment meeting statutory requirements shall be used. • Newly acquisitioned equipment to be registered with maintenance group to ensure statutory inspections and tests are performed.
Confined spaces Manholes/ Shafts (Ventilation Tunnels)		Comply with SHEQ-INS-2495 [28], SHEQ-INS-5520 [7], SHEQ-FRM-2495 [28] • Performed risk assessment to identify engulfment, mechanical, electrical, chemical, radiological and physical hazards. • The atmosphere shall be tested and certified to be safe to enter, by a competent person. • Complete hazardous work permit prior to entry. • Workers declared medically fit to enter confined spaces and shall be trained in the health and safety impacts due to exposure and rescue procedure. • Workers shall only enter with applicable RPE/PPE as prescribed in the

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FALL PROTECTION PROCEDURE FOR VAALPUTS

M	FALL PREVENTION AND FALL ARREST EQUIPMENT			Comments/Actions
	✓	X	Requirements	
Body harness			SHEQ-INS-2100 [5], -2400 [9] and [24] shall be complied with. • Use only SABS approved harnesses. • Write procedure addressing inspection, testing and maintenance. • To be recorded on inventory and 3 Monthly statutory inspection. • Limit the maximum arresting force on an employee to 816 kg when used with a body harness (see manufacturer specs) ; • Must be rigged so that an employee can neither free fall more than 1.8 m nor contact any lower level; • Must bring an employee to a complete stop and limit the maximum deceleration distance an employee travels to 1.07m; • Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 1.8m or the free fall distance permitted by the system, whichever is the less (see manufacturer specs). • Equipment shall be of sufficient strength. Calculations to be appended to this form. • Equipment shall be correctly attached to the structure. • Surrounding area shall be safe and shall not cause injuries to the person in the event of a fall	
Screens				
Guardrails/			• Comply with SHEQ-INS-2100[5], -2400[9]	
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Barricades	- Guardrail system shall be surfaced to protect workers from punctures or lacerations and to prevent clothing from snagging - When Guardrail systems are used at hoisting areas, a chain, gate, or removable guardrail system must be placed across the access opening between guardrail sections when hoisting operations are not taking place; - At holes, guardrail systems must be set up on all unprotected sides or edges; - When holes are used for the passage of materials, the hole shall have not more than 2 sides with removable guardrail sections; - When the hole is not in use, it must be covered or provided with guardrails along all unprotected sides or edges. - If guardrail systems are used around holes that are used as access points (such as ladder ways), gates must be used or the point of access must be offset to prevent accidental walking into the hole.		
Anchorage or similar equipment	Comply with SHEQ-INS-2100[5].-2400[9], [17], [18] When the use of safety harnesses is necessary for a person's safety, adequate and suitable means of anchorage shall be provided. - A Rigid anchor line shall: - be a rail or a wire rope; - have a diameter of 8mm or of value giving the equal safety; - shall be secured to a structure at recommended intervals; - In case of wire rope anchor line, it shall be secured to a structure and the wire rope shall be tightened; - Shall be so designed that it permits movement of the <i>guided type fall arrester in the specified directions only</i>, and prevent any separation of the guided type fall arrester from the anchor line; - All attachment/detachment points shall be either fitted with an end-stop or be capable of being fitted with an end-stop to prevent the guided type fall		

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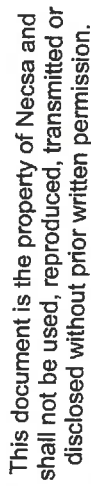
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		arrestor from running off the anchor line unintended; - The guided type fall arrestor shall be equipped with a connector or a connector-terminated lanyard; - If only equipped with a connector, it may be permanently attached to the fall arrestor or be detachable from the fall arrestor; - If the fall arrestor is equipped with a lanyard, one end of the lanyard shall be permanently attached to the fall arrestor, and the other end of the yard shall be terminated with a connector. - To be recorded on inventory; - Write procedure addressing inspection, testing and maintenance; 3 Monthly statutory inspection		
Lanyards		Comply with SHEQ-INS-2100[5], -2400[9], [19], [20], [21] - Both ends of a lanyard shall be suitably terminated; - When using splices for terminating kern mantel ropes, the splice shall have a minimum length of 100mm, and shall be secured by whipping, or any other method which prevents the splice from coming open in use; - The length of a non-adjustable or adjustable lanyard including energy absorber, shall not exceed 2m; - The ends of the adjustable part of the lanyard shall be fitted with an end stop; - All metallic elements of the lanyard with exception of wire ropes and chains shall be protected against corrosion - Equipment shall be correctly attached to the structure; - Surrounding area shall be safe and shall not cause injuries to the person in the event of a fall - Equipment shall be correctly attached to the structure. - Surrounding area shall be safe and shall not cause injuries to the person in the event of a fall.		

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Lifelines, deceleration devices or other equipment attached to the worker	Comply with SHEQ-INS-2100[5], -2400[9], [23] - Horizontal lifelines shall be installed and used under the supervision of a qualified person, as part of a complete fall arrest system; - Self-retractable lifelines and lanyards that automatically limit free fall distance to 0.61m or less shall be capable of sustaining a minimum tensile load of 1360kg applied to the device with the lifeline or lanyard in the fully extended position. - Equipment shall be correctly attached to the structure. - Surrounding area shall be safe and shall not cause injuries to the person in the event of a fall.	
--	--	--

FOR CALCULATING THE FALLING CLEARANCE SEE ATTACHMENT 4

	NAME	SIGNATURE	DATE
PREPARED <i>(By Competent Person)</i>			
ACCEPTED <i>(By Worker)</i>			
APPROVED <i>(By Supervisor prior to task)</i>			
SIGN-OFF <i>(By Supervisor on completion of task)</i>			
DISTRIBUTION			

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ATTACHMENT 2: EXCAVATION RESCUE PLAN

EMERGENCY AND RESCUE PROCEDURE				
Communication	Yes	No	Requirements	Comments/Actions
Direct voice communication				
Whistle				
Mobile phone				
Two-way-radios				
Emergency Contact				
In the event of an emergency / fall from height engulfment the WAH supervisor should immediately be alerted: WAH: Work At Height				
Rescue Team Names and telephone numbers.				
First Aider(s) Name and telephone number.				
If the site rescue team is unable to affect a rescue within 5 minutes the Emergency Service are to be called immediately.			Telephone Number X3333	
Who will be executing the rescue operation?				
Self-rescue if possible				
Co-workers				

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Rescue Team					
Standby personnel					
Emergency Personnel					
Safety of Rescuers					
Are Operators trained competent & up to date in use of rescue equipment?					
Are Rescue training records up to date?					
Is rescue equipment selected appropriate for nature of work?					
Are there a sufficient number of rescuers available?					
What obstructions are in the way of reaching the suspended/ Engulfed Operator?					
Have assessments been made of anchor points, & are they in date for test?					
Has consideration been made to method of attaching casualty?					
How will rescuers get to casualty?					
Remote Rescue Kit					
Rescue ladder					
Keys to building & roof					
Elevator					

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Pull casualty in through window / balcony				
Pull casualty up through floor / slab / roof				
Climb / abseil down building / structure				
Suspended access equipment				
Aerial equipment from ground				
Other				
Rescue options and equipment				
Cutting the worker down			Use a Re-tractable Life Line	
Rescue ladder			Aerial ladder truck	
Rescue Kit - Winch			Suspended access equipment	
Rescue Kit - Haul			Climbing / rope rescue system	
Low Height Rescue Kit			Crane man basket/ Mobile Platform/ Cherry Picker	
Descent Rescue Kit			Stretcher	
First Aid Kit			Shovels	

If Worker is injured

Can casualty still be rescued within 5 minutes?

Is a qualified first aider who understands suspension trauma present?

Who and how will the emergency services and hospital be alerted?

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How will others be protected to prevent further injury or damage?

How will Accident scene be protected?

Other Considerations

First Aid attendant/facilities/equipment

Safety Headgear available for all workers

Barricades in place

Safety Footwear for ground work issued

Safety Eyewear if applicable

Locations of any rescue line anchor points for rope rescue.

How to attach retrieval or lowering lines to the worker's harness.

Unusual features of building / structure.

Weather Conditions.

Proximity to emergency services/hospital.

Language barriers (agency / contract staff)

Other site-specific details needed for a safe and successful rescue.

Report Incident / Event in normal manner

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FOR EXCAVATIONS

Is standby worker available?		Is the standby worker a qualified first aider who under stands engulfment trauma present?	
In the event of a trench collapse:			
1. Do not leave the site and leave the trapped worker;			
2. Call for help;			
3. Clear the area of all non-required personnel;			
4. Activate emergency plan and personnel;			
5. Identify if further collapse is likely;			
6. Carefully remove the collapsed soil with shovels;			
7. NEVER have anyone on top of the collapsed soil;			
8. If the excavation trench is over 1.5 m deep, rescuers SHALL wear safety harnesses with lifelines attached securing them to the surface ;			
9. When digging is close to the trapped worker, continue excavation using hands;			
10. When trapped worker gas been located, clear soil from around the head and chest areas. Check for breathing and a pulse;			
11. If breathing has stopped, commence expired air resuscitation (E.A.R.) and C.P.R. and continue until emergency services arrived to take over;			
12. After trapped worker has been freed, treated and stabilized, make arrangements for the person to be removed from the excavation/trench in a safe manner, stop work, follow accident /incident reporting procedure, re-plan operation.			
1. Workers Involved	Signatures	Date	

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WORK AT HEIGHT/EXCAVATION RESCUE PLAN PRODUCED BY:
Rescuer in Charge:

Name (print): _____ Position: _____
Signature: _____ Date: _____

APPROVAL OF WORK AT HEIGHT RESCUE PLAN:
Work At Height Supervisor:

Name (print): _____ Position: _____
Signature: _____ Date: _____

Authorising Manager:

Name (print): _____ Position: _____
Signature: _____ Date: _____

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FALL PROTECTION PROCEDURE FOR VAALPUTS

ATTACHMENT 3: FALLING HAZARD RISK ASSESSMENT

RISK ASSESSMENT METHODOLOGY		Yes	No	Actions	Comments
1. Assess all risks					
- Nature, size and layout of workplace; - Duration, extent and type of work; - At what height or depth will the workers be required to access or undertake work; - Access of personnel and equipment to the workplace; - How to get to the site (Travel distance, terrain, ease of access of equipment; - Training and experience of employees; - Number of movement of people and plant on the work site; - Conditions of workplace (Poor lighting, Sloping or slippery surfaces, windy, strength, stability, fragility or brittleness, power lines, etc.)					
2. Can the Risks be eliminated?	Removing the hazard or hazardous work practice from the workplace (e.g. eliminating the need to access the fall risk area.				
3. If the risk cannot be eliminated can it be substituted?					
4.	Replacing a hazard or hazardous work practice with a less hazardous one (e.g. providing an alternative means of access such as a safe walkway so the risks of falls are avoided; or installing an elevating work platform for work at heights).				
5. If the risk cannot be eliminated or substituted can it be Isolated?	Isolating or separating the hazard or hazardous work practice from people				

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involved in the work or people in the general work areas (e.g. barricading or enclosing the fall risk area with edge protection, installing handrails and covering floor penetrations).				
6. If "NO" to 2, 3 and 4, put control measures in place • Engineering controls This includes the use of passive fall prevention systems designed to restrain or arrest a person's fall from one level to another and minimise the risk of injury or harm to a person if they fall (e.g. a restraint system or fall-arrest system, catch platforms, safety nets, cherry pickers, scaffolding, guard railing, safety mesh, forklifts, ect.) Adequacy of inspections and maintenance (e.g. scaffolding, fall arrest equipment etc.) • Administrative controls This includes introducing work practices that reduce the risk, such as implementing measures to ensure that procedures, instruction, training and warning signs are in place to warn and protect persons exposed to falls. These controls should be used in conjunction with physical controls and appropriate supervision.				
7. Supervision Supervision must be provided and responsibilities assigned to manage fall prevention at the workplace (Employers, Person in control of the workplace, Suppliers of equipment, etc.)				
8. Legal requirements Comply with the Occupational Health and Safety Act with regard to the				

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Construction Regulations 2003 [2] and Applicable SHEQ-INS-System Documents					
9. Training to include: Fall Hazards, Safety Measures including safe practices, Emergency procedures and First Aid					
10. Emergency Procedures Information, training and instruction in emergency and rescue procedures. First aid officers, equipment and facilities, no one to work alone.					
10. Evaluation: Risk Unacceptable, Adequately Controlled, Further Action needed. (U, A or F).					

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ATTACHMENT 4: RISK ASSESSMENT PERSONAL FALL ARREST/FALL RESTRAINT EQUIPMENT

Hazard	Persons at Risk	Existing Controls	Further Action Required
Unsafe anchorage, unsafe or inappropriate fall protection systems.	Workers	Fall protection systems are designed, specified and installed by registered professionals and regularly inspected according to schedule. When any device be it a single point anchor, horizontal safety line system or fall arrest apparatus which has arrested a fall it must be taken out of service. The advice of the manufacturer of the device / system must be sought and remedial measures as specified undertaken before re-commissioning of the system.	Periodic (annual at minimum) inspection and certification of installations. Do not use fall protection systems which are not within service inspection date; report out of date equipment as soon as possible.
Lack of awareness of fall hazards in workplace.	Workers	Users are properly trained and assessed for their competency. Competent persons train workers at risk of falls with regard to types of fall hazards, risk reduction, limitations of fall arrest/fall restraint equipment, dangers of hanging in a harness and emergency rescue planning.	Where fall arrest protection is used a rescue methodology must be provided, appropriately resourced and task / area specific.
Failure to observe good practice in the use of fall arrest/fall restraint equipment, or misuse of such equipment. E.g. fall arresters used incorrectly in the horizontal plane, over a potential edge.	Workers	Competent persons train workers in selection, inspection and correct use of fall arrest/fall restraint equipment. A qualified person must supervise the setting up of work and equipment. A full body harness is always required when using fall protection equipment.	Training must cover site specific hazards. Use the right type of fall prevention/protection equipment for the task to be carried out and fall hazard.

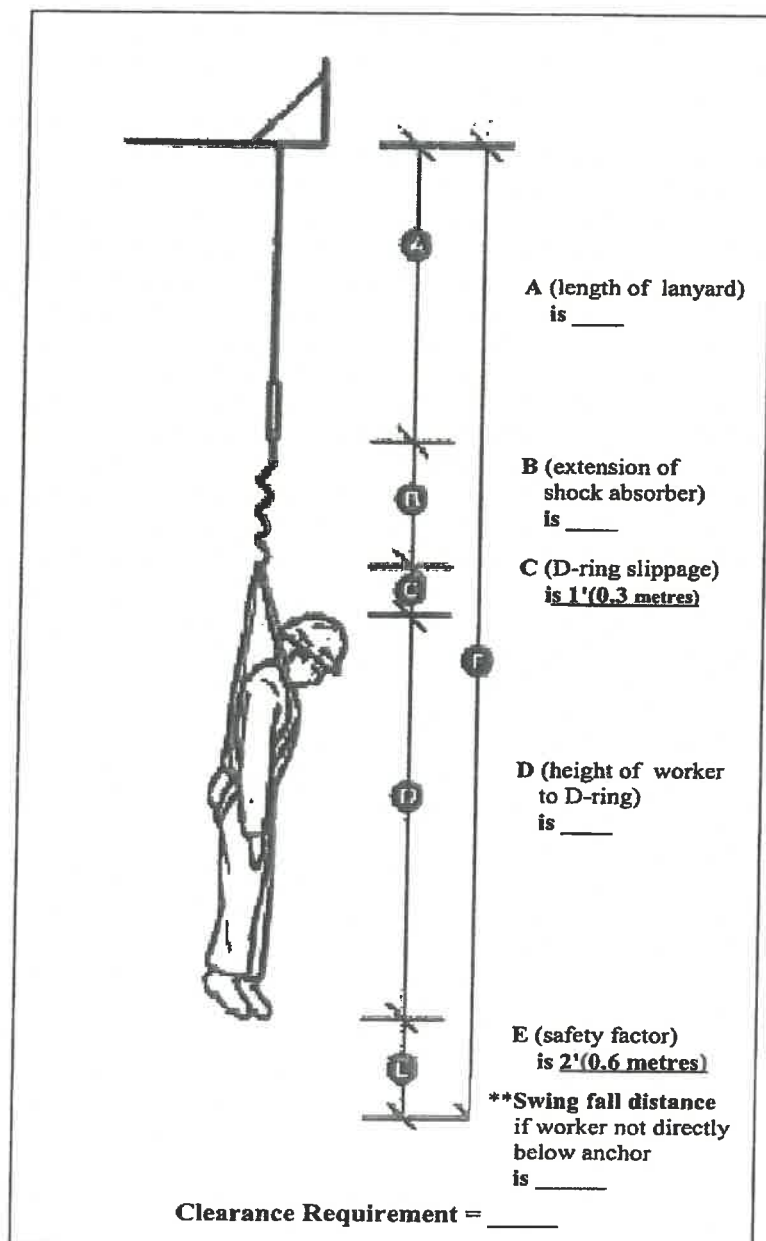
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ATTACHMENT 5: FALLING CLEARANCE REQUIREMENTS

Clearance Requirement

This must be calculated. The distance the worker would fall must be less than the distance to the nearest object/surface below the worker. Note: If using a lifeline and rope grab, the calculation will have to be from the grab location.



Calculating Clearance Requirement

Add A + B + C + D + E + **, to determine minimum distance from anchor point to nearest surface below worker.

Clearance requirement = _____

Distance to surface below _____

Clearance requirement must be less than the distance from the worker to the nearest surface below the worker.

Note: If your clearance distance is **greater** than the distance to the next surface below, you will need to change your anchor point, or your type of fall protection equipment.

You should also calculate Free Fall Distance.

Calculating Free Fall Distance

This must not be greater than 1.2 m (4') if there is no shock absorber. It must not be greater than that permitted by fall protection manufacturer.

Calculate by adding:

Length of lanyard & connecting hardware _____

Height of D-ring from worker's feet _____

and subtracting:

Distance between anchor point & unguarded edge _____

Free Fall Distance = _____

Note: If your free fall distance is greater than noted above, you will have to change your anchor point or your type of fall protection equipment.