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Prepared by ESC for the Asian Development Bank

supremeenergy

PT. SE ML/RB/RD

SHE Procedure
Working at Height

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Any document applicable to PT Supreme Energy Muara Laboh contains the characters "ML" in the document reference.

Any document applicable to the PT Supreme Energy Rajabasa project company contains the characters "RB" in the document reference.

Any document applicable to the PT Supreme Energy Rantau Dedap project company contains the characters "RD" in the document reference.

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Within each document, for any reference to the project company, the term "Company" will be used. This term will refer to those companies the names of which are referred to in the document reference. The term Project refers to the project developed by the Company.

Content

1. Introduction

This procedure is to provide safety process regarding to working at height at SUPREME ENERGY sites to manage activity for personnel working at height safely. As imperative as it is, that this work is done, and it must be done safely. In order to maintain a high level of safety where personnel working at height, control measures used to manage risks must comply with regulatory requirements and a comprehensive process is necessary for managing their activity, including training and qualifying personnel to do the work.

Falls from heights are the single most common cause of injuries and death in any industry group who work at height. Failure to recognize a hazard causes most falls.

Hazards that may present a risk from a fall include:

- vertical reinforcing steel, the edge of a rubbish skip, a picket fence, or a stack of bricks below workers
- un-sheeted floor bearers and joists 2 meters below workers
- work on a brittle material (e.g. roof).
- clutter and disorder
- handrails/guardrails missing or not being used
- slippery surfaces
- moving or carrying material or equipment
- ladders not secured at top and bottom and/or incorrectly positioned
- working from suspended platforms or elevated work platforms
- proper height work equipment not being used.

This section establishes the minimum standards for personnel while working at heights outside the confines of a catwalk or work platform.

2. Ladders

2.1 Definitions

Leaning Ladder
A ladder supported in use by a separate structure, eg. a wall.

Single Section Ladder
A leaning ladder constructed and used as a single unit.

Extending Ladder
A leaning ladder consisting of two or three sections constructed so that the height can be varied, in increments of one rung spacing, by sliding the sections relative to each other.

Swing Back Steps
A standing step ladder in which the top is in the form of a tread and the back is merely a supporting frame.

Folding Platform Steps
A standing step ladder in which the top is constructed in the form of a working platform.

Folding Trestles
An arrangement of two frames hinged together, each fitted with cross-bearers suitable for supporting a working platform.

Lightweight Stagings
A working platform constructed of stiles, cross-bearers and decking, to provide a flat working surface.

Stiles
The side members to which the rungs, treads or cross-bearers are fitted.

Spacing (of Rungs, Treads or Cross-Bearers)
The distance, measured along the longitudinal axis of the stiles between the same relative positions of the members.

2.2 Use of Step Ladders

Portable ladders used incorrectly or in a defect condition present a serious hazard and cause many injuries. There are three main types of ladders:

1). Industrial: For heavy duty where relatively high frequency and onerous conditions of use, carriage and storage occur. Suitable for Industrial purposes. Duty rating 130 kg.

2). Light trades: For medium duty where relatively low frequency and reasonably good conditions of use, storage and carriage occur. Suitable for light trade purposes. Duty rating 110 kg (reference : EN 131 European Standard for Industrial Ladder).

3). Domestic: For light duty where frequency of use is low and good storage and carriage conditions pertain. Suitable for domestic and household purposes. Duty rating 95 kg.

Figure 2.1: Ladder Erection Methods

Have someone hold a step ladder if you cannot erect it on an even footing with the spreaders taut.

Heavy duty step ladders may be used on inside work, as trestles to support scaffold planks, provided that the footing is firm and level and that the planks are not placed higher that the second to top step. The planks shall not span more than 2.4 meters.

2.3 General Use of Ladders

- Keep clear of power wires.
- Never use a ladder which is not long enough.
- Do not splice two ladders together even as a temporary measure to gain height.
- Always stand ladders on a firm non-slip and level base.
- Always wear shoes with heels when climbing a ladder. Do not climb a ladder with oil or mud on the soles of your boots.
- Ensure the ladder is not upside down.
- When ascending or descending always face the ladder and use both hands.
- Do not climb a ladder carrying anything in your hands.
- Do not throw down tools or material from a ladder.
- Do not allow two men to work on one ladder at the same time.
- Never over-reach sideways from a ladder, instead, get down and move the ladder.
- Do not stand a ladder on boxes, barrels, bricks, pieces of timber or any other insecure object to get additional height.
- Do not place a ladder across a doorway or in a passageway without taking some action to guard against people walking into it. Close and lock the door or protect the foot of the ladder with a stool or box.
- Do not erect ladders on footpaths or roadways without a red flag attached to the ladder stile, approximately 2m above ground level.
- Hold step ladders open by locking the metal spreader.
- Do not attempt to work from the top or second top step of a step ladder.

Care of shall be inspected on a regular basis, particularly before being used. Some of the items to be checked are:

- defective rungs.
- warping, cracking or splintering of stiles.
- faulty nails, screws, rivets, bolts and fittings.
- faulty feet.
- damaged locking / hinged spreaders.

2.4 *Erection*

The following points shall be observed:

- An erected ladder shall always rest against a solid support.
- On pole work or in windy places tie the top of the ladder to the support.
- See that the foot of the ladder is secure against slipping or have it held by another person. Failure to do this results in a high number of accidents. Use a bag of sand on a concrete floor or a nail batten to a wooden floor to prevent the ladder slipping.
- The slope of an erected ladder shall not be flatter than (3 to 1). The best working slope is 4 up to 1 out.

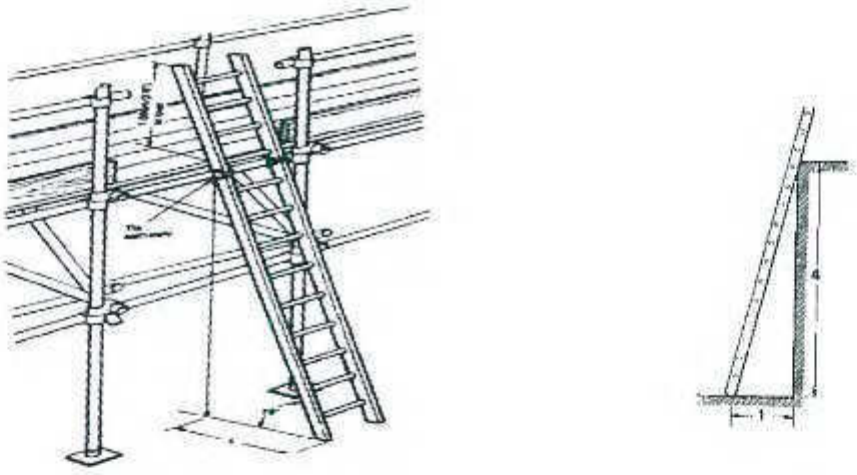

Figure 2.2: Ladder Working Slope

- A flatter slope than 4:1 is:
  - difficult to climb
  - liable to slip at the foot if not restrained
  - severe on ladder stiles
  - awkward to work from.

- A steeper slope than 4:1 is:
  - awkward to climb
  - easily pulled over backwards
  - difficult to work from and dangerous.

- Wrap the tops of the stiles with hessian if working against a smooth surface. It will protect the surface and prevent the ladder from slipping sideways.

- Wrap the tops of the stiles with hessian if working against a smooth surface. It will protect the surface and prevent the ladder from slipping sideways.
- Where a ladder is used as access to a platform or roof it shall extend not less than 1m above the platform or roof level if no effective handhold is provided.
- Exercise extreme care when using a ladder against a springy support such as a tree branch or swaying woodwork. Secure the top of the ladder to avoid a throw-back.
- Spread step ladders properly to ensure stability.
- Always secure the ladder by lashing at the top and bottom or have someone hold the ladder.

2.5 *Single and Extension Ladders*

The lengths of single-section ladders and extending ladders when fully extended shall not exceed the lengths given in a) to c), as appropriate to the class:

a) Class 1:	Industrial	- 20 meters
b) Class 2:	Light Trades	- 10.7 meters
c) Class 3:	Domestic	- 9.1 meters

Figure 2.3: Single/Extension Ladder

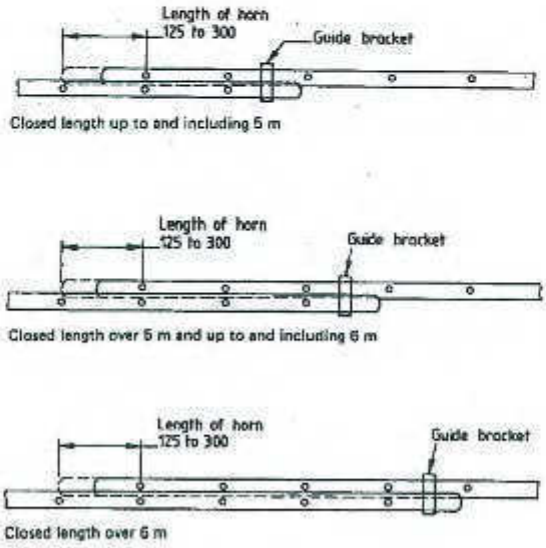

Figure 2.4: Overlap of Extending Ladders

3. Scaffolding

3.1 Introduction

This section has been prepared to provide guidance on the planning for, erection of and subsequent use of scaffolding. It is intended to provide performance requirements for scaffolding standards.

Suitable and sufficient scaffolding shall be provided where the work cannot be carried out safely by other means. Standing scaffolds, suspended scaffolds or special scaffolds may be used.

3.2 Definitions

Factor of Safety
The ratio of the load that would cause failure of a member or structure to the load that is imposed upon it in service, and, unless otherwise prescribed or directed, shall be a minimum of 3 (three).

Free-Standing Scaffold
A standing scaffold which is not attached to any other structure and is stable against overturning on its own account or, if necessary, assisted by rakers (an inclined load bearing member) and anchors.

Guardrail
A rail or barrier secured to standards or upright members, and erected along the exposed sides and ends of working platforms to prevent persons from falling. A lower rail which is fixed to standards midway between the guardrail and platform is termed a midrail.

Hanging Scaffold
A working platform suspended by tubes, bolts, fixed rope slings or other methods and not intended for raising or lowering while in use.

Height
In relation to scaffolding or part of scaffolding, means the greatest vertical distance from which any article may fall from the highest working platform of the scaffolding to the ground or structure on which the scaffolding is supported or above which the scaffolding is suspended or fixed, as the case may be. In determining the distance which an article may fall, no account shall be taken of any obstruction which may delay or stop the fall unless there is no possibility of the fall continuing after the obstruction is reached.

Live Load
That portion of a load which does not include any part of the scaffolding or decking supporting the load, and comprises the weight of workers and/or materials.

Putlog (or Bearer or Transom)
A horizontal member placed in the transverse direction between ledgers, standards, or other supports and used to support a working platform.

Qualified Person
A person who, by possession of a recognized degree, certificate, or professional standing, or who by knowledge, training or experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the subject.

Safe Working Load (SWL)
The maximum load calculated in accordance with sound and accepted engineering practice, which can be supported safely under normal working conditions.

Scaffolder
A scaffolder is a person skilled, experienced and qualified in the erection, altering and dismantling of scaffolding.

Scaffolding
(a) Means any advanced scaffolding, basic scaffolding, or suspended scaffolding or any framework or structure, of a temporary nature, used or intended to be used:

- for the support or protection of persons carrying out construction work or work connected with construction work
- for the support of materials used in connection with any such work

(b) Includes any scaffolding constructed as such and not dismantled, whether or not it is being used as scaffolding.

(c) Includes any coupling, device, fastening, fitting or plank used in connection, with the construction, erection, or use of scaffolding.

Scaffolding Process
Is defined as the planning for, the design of, the erection of, the inspection of, the use of, and the dismantling of any scaffolding. The scaffolding process does not include the erection of structures constructed using scaffolding components, such as false work, temporary grandstands, and lighting towers.

Scaffold Register
A written record of inspections carried out for scaffolding.

Suspended Scaffold
A working platform suspended from overhead and intended to be raised or lowered while in use.

Sole Plate
A timber, concrete or metal bearer used to distribute the load from a standard or base plate to the ground.

Span
Means the distance measured along the member between the centre lines of adjacent supports of the member.

Tie
The attachment by which scaffolding is attached to a structure; it also means "tie and spreader" and includes the attachments used in conjunction with the spreader or putlog extension to secure a scaffold to a building or structure to prevent movement.

Toe Board
An up stand or vertical barrier at the edge of a platform intended to prevent materials, or workers' from slipping off the platform.

Working Platform
That part of a scaffolding on which workers and/or materials are supported for the purpose of carrying out construction work.

3.3 Materials

All scaffold materials shall be in sound condition and be examined before use.

3.4 Scaffold Planks

- All scaffold planks must meet the performance requirements specified by industry standards.
- Planks shall be frequently examined during use for splits, cracks, mechanical damage, excessive wear and decay. Planks which are defective shall be rendered unfit for further use.

- Normal standard plank size is 38 mm height x 200 mm width x between 1,800 to 3,900 mm length

3.5 *Erection*

- All scaffolding, shall be erected, altered and dismantled by competent scaffolders under proper supervision.
- Scaffolding shall not be used unless the supervisor of the work is satisfied that it is safe for use and complies with the relevant standards.
- Scaffolding shall not be altered or interfered with except on the instructions of the scaffolder. Scaffolders must ensure that members of the public are not endangered while they are erecting, altering or dismantling scaffolds. They shall also ensure that the lower working platforms are not used while the upper lifts are being worked on unless a fully decked platform, with screens if necessary, separates the part being erected or dismantled from the lower part in use.
- All scaffolders must have a basic knowledge of rigging.
- Scaffolding over 5m high or intended to extend over 5m, hanging scaffolds of any height and suspended scaffolding of any height may be erected, altered or dismantled only under the direct supervision of a person who holds an appropriate certificate of competency as a scaffolder.

3.6 *Scaffolder Competence*

A person who erects scaffolding, any part of which is 5 meters or more above the ground, must be able to demonstrate to SUPREME ENERGY that they are competent and experienced to the appropriate class of scaffolding, according to the following classes:

- Basic Scaffolding: The equipment range is to include free-standing modular system scaffolding, ropes, gin wheels, static lines and fall arrest systems.
- Advanced Scaffolding: The equipment is to include free-standing modular systems, tube and coupler scaffolding including tube and coupler covered ways and gantries, scaffolding associated with perimeter safety screens and shutters, cantilevered hoists with a load limit not exceeding 250 kg (materials only), ropes, gin wheels, safety nets for public protection, and catch nets, static lines and fall arrest systems, bracket scaffolds, cantilevered load platforms from a scaffold, cantilevered and spurred scaffolds, barrow ramps and sloping platforms, mast climbers, and hung scaffolding including scaffolding hung from tubes, wire ropes and chains.
- Suspended Scaffolds: The equipment range is to include hand-haul and mechanical boatswain's chairs, building maintenance units and hand-haul and mechanical swinging stages.

3.7 *Permit-to-Work Scaffolding*

- The supervisor shall ensure that scaffolding over 5 meters in height has been issued a General Work Permit and a work specific permit-to-work (Form 4.1 at end of this section) for scaffolding. See other procedure for obtaining a permit-to-work.

- A contractor shall not commence any scaffolding work above 5 meters without a permit-to-work.
- The Scaffolding Permit shall be displayed on the scaffold at all times. A copy of the permit is to be attached to the General Work Permit.

3.8 Inspection of Scaffolds

All suspended scaffolds and all other scaffolds are to be inspected before first use and at regular intervals. Details of these inspections are to be recorded on the Scaffolding Permit (Form 4.1) on-site register (attached at the back of this section). Inspections are to be carried out by a competent person for scaffold which lower than 5m height or by a certified inspector for scaffold which exceed 5m in height, or from which a person could fall 5m or more.

a) Initial Inspection
Before first use, the scaffold is to be finally inspected and any defects found are to be rectified before use.

b) Subsequent inspections

The scaffold is to be inspected at the following intervals:

- daily in the case of suspended scaffolds, or weekly in the case of all other scaffolds while the scaffolds are in use
- after each structural alteration, addition or change to the nature of the scaffold or its anchorages or ties
- monthly while the scaffold is set up but not in use
- after any storm or occurrence that could adversely affect the safety of the scaffolding.

Should any defect be found during these inspections, the defect shall be rectified prior to the scaffold being reused.

A scaffold tag (scaff-tag) may be used to identify the completeness and functionality of the scaffold (i.e. safe or not safe to use).

3.9 Protection and Maintenance

All scaffolding shall be protected against accidental damage from traffic or other causes and should, where necessary, be barricaded.

3.10 Access to Working Platforms

Access must be adequate and safe for the working conditions and type of work carried out. Access may be provided by permanently installed stairways, temporary stairways or portable inclined ladders. Personnel shall not be expected to climb vertical ladders, or to climb the scaffold structure to gain access to working platforms.

3.11 Scaffolding Near Electric Power Lines

No person shall erect any scaffold at any distance, in any direction, less than that shown in the table to any conductors of an overhead electric line.

Table 3.1: Minimum Distance In Any Direction For Construction Of Scaffolding And Other Structures Near Conductors

Line Voltage	Minimum Distance Under Normal Conditions (meters)
Not exceeding 66 kV (maximum span 125 meters)	4.0
Exceeding 66 kV (maximum span 25 meters)	5.0
Any voltage (span greater than 125 meters but less than 250 meters)	6.0
Any voltage (span greater than 250 meters but less than 500 meters)	8.0
Any voltage (span exceeding 500 meters)	As agreed with the owner of the line but not less than 8 meters

3.12 Scaffolding Over Gantries or Roofs

Gantries or roofs used to support scaffolding shall be certified as safe for the purpose by an appropriately qualified person. The layout of the scaffold, including details of sole plates and the propping system (if any) shall also be provided.

3.13 Lifting Appliances Mounted on Scaffolding

- Hoists, winches and other lifting appliances may be mounted on scaffolding only if the scaffold framework is adequate in strength or is specially strengthened and tied back to reduce vibration and whip.
- The strengthening shall be calculated with reference to an effective static load of not less than two times the safe working load of the lifting appliance.
- Where the lifting capacity exceeds 250kg (2,450N), the scaffold shall be strengthened to the design requirement of an appropriately qualified person.

3.14 Design Loads

- Dead Load: The dead load shall include the self-weight of the scaffold structure and components including working platforms, catch platforms, access platforms, stairways, ladders, screens, sheeting, platform brackets, suspension ropes, secondary ropes, traversing ropes, tie assemblies, scaffolding hoists, electrical cables and any other attachments, where appropriate.

- Environmental Loads: Where appropriate, the environmental loads shall include the following:
  - wind loads in accordance with recognized standards imposed on the scaffold, including any guardrails, toe boards, stacked materials, screens, sheeting, platform ropes, guy wires and other attachments;
  - rain loads, where it is considered likely that the scaffold an cladding will be subjected to rain;
  - earthquake loads in accordance with recognized standards.

- Live Loads: The live load shall include the following:
  - the weight of persons;
  - the weight of materials and debris;
  - the weight of tools and equipment;
  - impact forces.

- Duty Live Loads: The live load applied to a working platform shall be categorized by the following duty conditions:
  - Light-duty, a load up to 2.2kN per bay that includes a single concentrated load of 1kN;
  - Medium-duty, a load up to 4.4kN per bay that includes a single concentrated load of 1.5kN;
  - Heavy-duty, a load up to 6.6kN per bay that includes a single concentrated load of 2.0kN;
  - Special-duty, the largest intended load but not less than heavy-duty.

  For design purposes, the single concentrated load shall be assumed to be in the most adverse position within the bay.

3.15 Scaffolding Foundations

- Scaffolding foundations shall be adequate to carry the whole weight of the scaffold, including the imposed loads, and shall be maintained in a stable condition during the life of the scaffold. Steel base plates shall be used under all standards.
- When scaffolds are supported on the ground, suitable sole plates shall be used to spread the load. The sole plates shall preferably be long enough to support at least two standards.
- Timber sole plates shall be not less than 200 x 38 x 500 mm long. Unsuitable support material may not be used i.e. blocks, bricks etc.

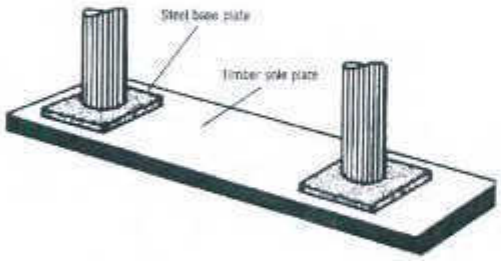

Figure 3.1: Support for Tubular Scaffold Standards

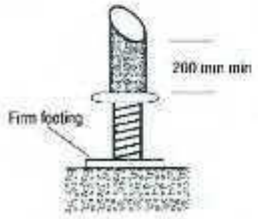

Figure 3.2: Adjustable Screw Extension

3.16 Working Platforms

Working platforms are classified as light duty, medium duty, heavy duty or special duty.

a) Light duty working platforms are platforms that are:
- supported in spans of not more than 2.4m
- not more than 1.5m in width
- designed to support concentrated live loads not exceeding a load of 2.2kN per bay that includes a single concentrated load of 1kN
- maximum height of a scaffold constructed in accordance with this standard is 33m.

b) Medium duty working platform are platforms that are:
- supported in spans of not more than 2.4m
- not more than 1.5m in width
- where the span exceeds 2.0m, one intermediate putlog shall be provided at mid span to support scaffold planks, a load of 4.4kN per bay that includes a single concentrated load of 1.5kN
- maximum height of a scaffold constructed in accordance with this standard is 33m.

c) Heavy duty working platforms are platforms that are:

- supported in spans of not more than 1.8m
- not more than 1.275m in width
- designed to support a load of 6.6kN per bay that includes a single concentrated load of 2.0kN
- maximum height of a scaffold constructed in accordance with this standard is 33m.

d) Special duty working platforms are platforms that:

- do not conform to the requirements of either a light duty or heavy duty platform with respect to loading and/or dimensions
- are of adequate strength and stability and have been approved by the supervisor before use
- may require an appropriately qualified person's design certificate for a special duty platform.

3.17 Decking

The decked width shall be not less than 600 mm, with sufficient additional width to leave 450 mm minimum clear walkway at all times.

Guardrails and Mid-Rail

- Guardrails, including mid-rail, shall be provided on the exposed sides and ends of all working platforms more than 3m in height. The height to the top of the guardrail shall be not less than 0.9m or more than 1.1m from the deck to be protected.
- Each rail, when secured to the standards or upright members, shall be capable of sustaining without failure or undue deflection a force at any point of 70kg (690N) vertical and 45kg (440N) horizontal, acting separately.

Toe Boards

A toe board or equivalent protection shall be fitted on the outside edge of every working platform more than 3m in height. The toe board shall be of sufficient height and strength to prevent the tools or materials from falling and shall be secured to the inside of the standards. A scaffold plank of 200mm minimum width may be used as a toe board.

Screens

Where the scaffold platform is above a thoroughfare, and due to the nature of the work falls of material are possible with injury to passers-by, special precautions shall be taken. Scaffolds that are screened shall be designed by an appropriately qualified person.

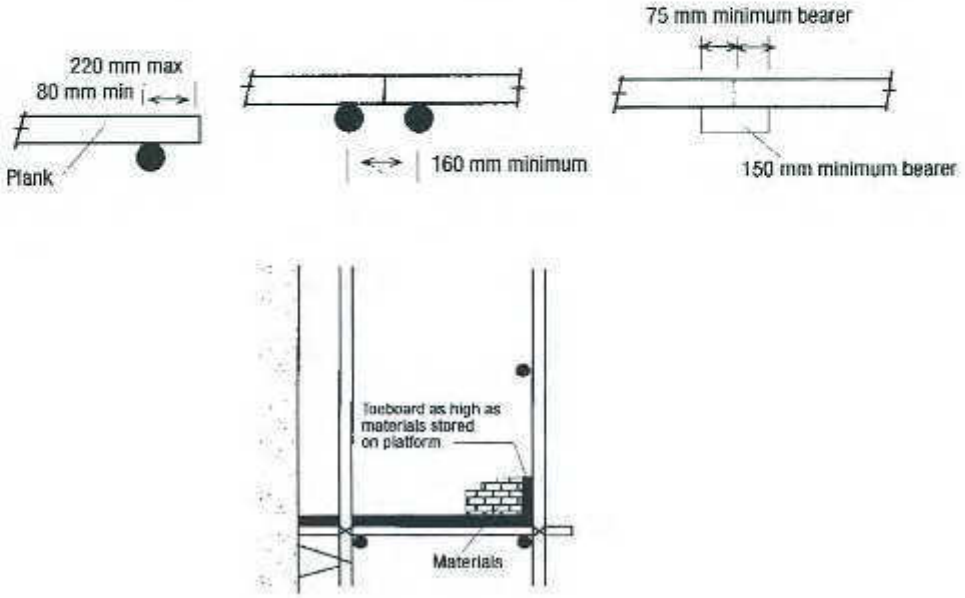

Figure 3.3: Decking

3.18 Headroom

- A scaffold platform used as a regular walkway or for the wheeling of loads shall have a clear headroom of at least 1.8m along the mid-half width.
- Where a succession of platforms are used to work up or down a face, the vertical spacing of lifts shall not exceed 2.1m except for the first lift, which if necessary may be up to 3m to allow for satisfactory working conditions at ground or floor level. When the height of the first lift exceeds 2.1m, extra bracing shall be provided on each pair of standards, commencing at approximately 1.8m from the ground.

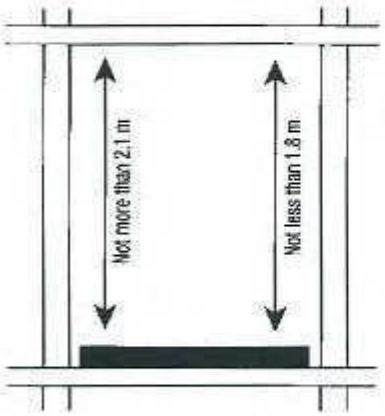

Figure 3.4: Headroom

3.19 Ties

All scaffold towers should be adequately tied to a building or structure. Where tying into a building or structure is impracticable, scaffold towers of 5m or higher will not be used without consulting a certified inspector.

3.20 Bracing

- Adequate bracing shall be provided. With such bracing, the distance between tie points shall not exceed 8.4m or four lifts.
- Temporary bracing and ties may be required to ensure stability of the scaffold during erection and dismantling. Bracing and ties can be used to prevent inward and outward movement of the scaffold and to assist the standards to act as load-carrying vertical members.

3.21 Requirements for Metal Tubes

The general requirements for metal tubes and fittings of steel or aluminum are:

- Metal tubes shall be purpose made with outside diameters accurately gauged to fit properly into the metal couplings and to allow complete interchangeability.
- Tubes in use on a scaffold shall be in good condition, free from bends and defects that might affect strength, reasonably free from corrosion and cut square at the ends. Tubes which are 3m and over in length should be reamed, if cut, to ensure safety when using internal joiners.
- When the loss of metal by corrosion or other causes reduces any cross section of a tube so that its corresponding weight is less than 90 percent of its original weight, the affected length of tube is to be discarded and rendered unfit for further use in scaffolding.
- Steel tubes shall be hot dipped galvanized or painted when used in scaffolds which are exposed for prolonged periods to marine or corrosive atmospheres.
- Fittings and couplings shall be specially made for the tubes in use and must be of a satisfactory quality as to strength and performance.
- Fittings shall be carefully maintained in good order and condition. They shall not be left lying around but stored in bags, boxes or bins, and kept well-oiled and protected from rusting.
- Special attention shall be given to the care and checking of screw threads and nuts; worn or distorted parts shall be discarded or replaced. Cracks or other flaws shall be watched for.

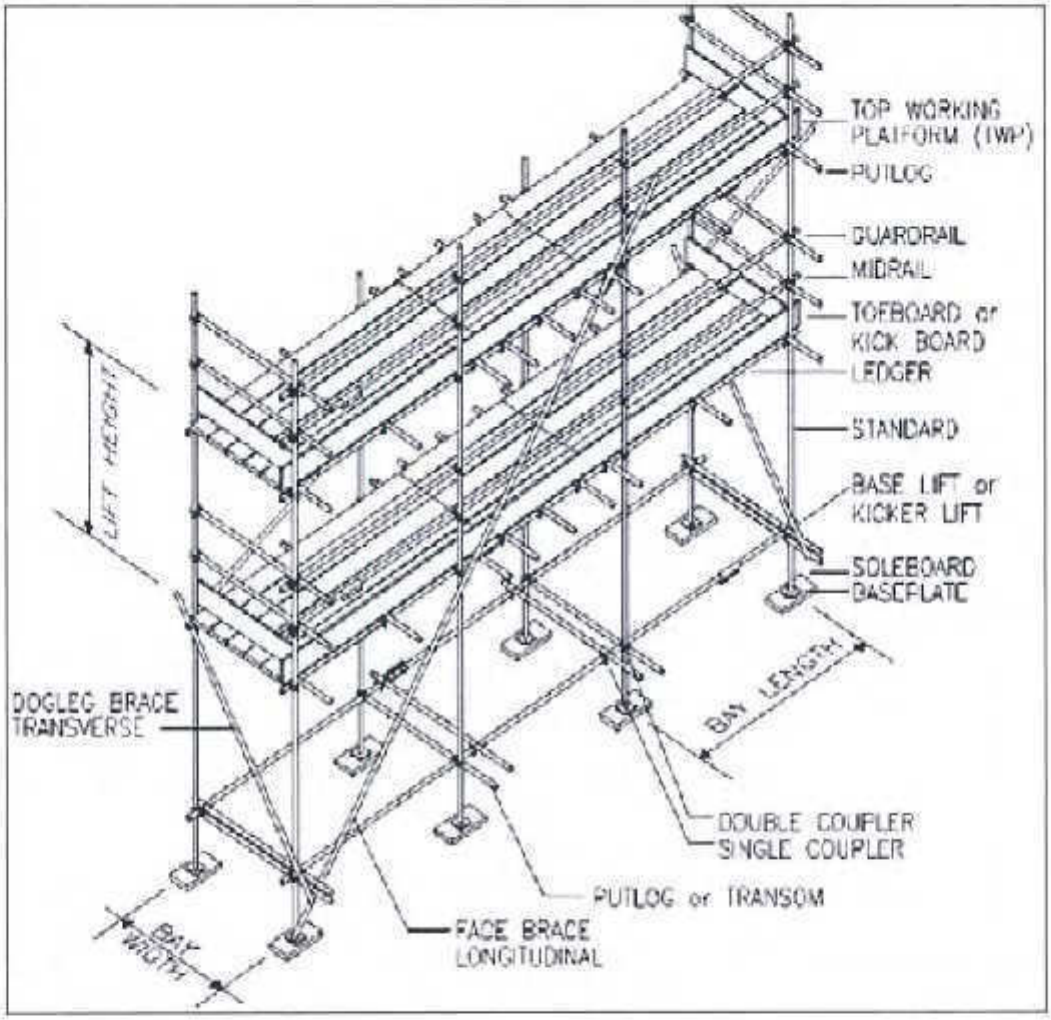

Figure 3.5: Metal Tube Scaffold

3.22 *Framed Scaffold*

- Prefabricated frames shall not be mixed up with frames of a different make or manufacture. The problem scaffolders will face is where frame scaffolding is used for heavy duty working platforms.
- Where heavy duty working platforms are to be used in conjunction with frame scaffolding, ledgers of scaffold tube will have to be provided in order that putlogs can be positioned mid span to reduce the span of scaffold planks.

Figure 3.6: Framed Scaffold

3.23 Mobile or Rolling Scaffolding

- Erection of mobile scaffolding shall be carried out by competent scaffolder and in all other aspects shall comply with this standard for scaffolding.
- Scaffolder shall ensure that the scaffolding is fully braced, both horizontally and vertically, in order that distortion in any direction does not occur.
- The scaffolding shall be used on firm, level surfaces. Always inspect the area in which the scaffold is used, especially for live overhead power lines (refer to Table 3.1).
- When in use, the scaffolding wheels shall be locked or chocked to prevent movement. On large mobile scaffolds it may not be necessary to do this as a considerable force is needed to shift them.
- Under no circumstances are persons permitted to ride the working platforms of a mobile scaffold while it is being moved.
- Access shall be provided to all of the working platforms and it is a wise method to position this access on the ends of the scaffold thereby reducing the overturning moment.
- As with all scaffolding, working platforms over 3m in height shall be equipped with correct guardrails.

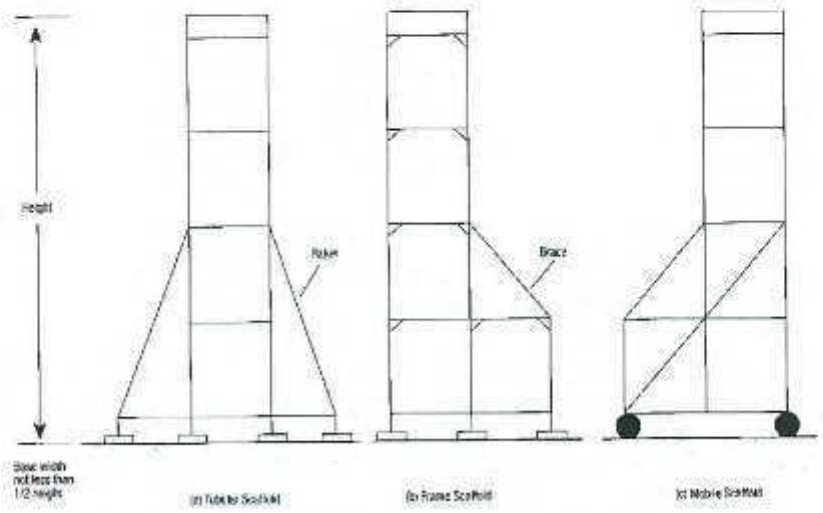

Figure 3.7: Free Standing Scaffolds

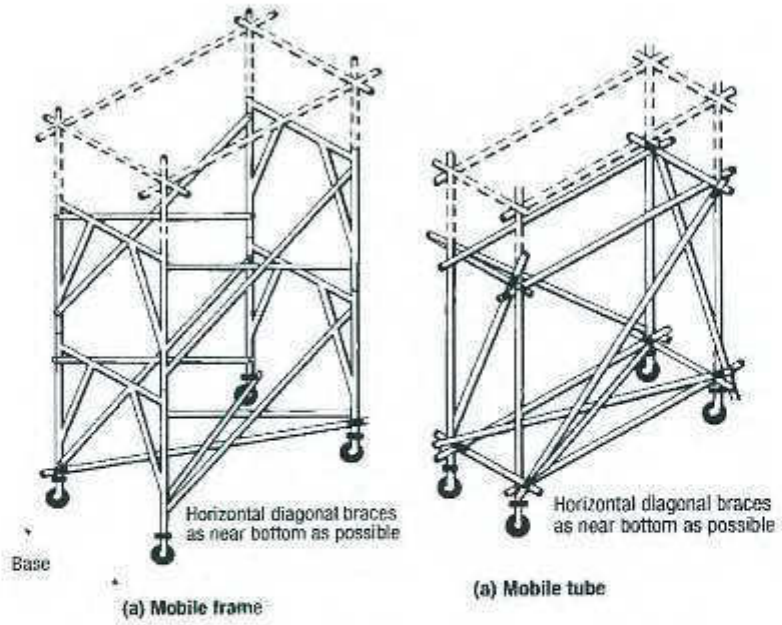

Figure 3.8: Free Standing Mobile Scaffolds

3.24 Suspended and Swinging Scaffold

- The scaffold shall be inspected as well as the anchorage, the ropes, and all of the fastenings. Always ensure that the maximum permissible safe working load is not exceeded.
- In the case of single overhead support, it shall not be more than 115kg.
- With double overhead support, it shall not be more than 340kg gross. Care shall also be taken when using a mechanical stage that the safe working load is not exceeded.

3.25 Access To and Egress From Working Platforms

- All working platforms that form part of any scaffold shall have suitable and safe means of access and egress from each platform.
- The scaffolder shall ensure that whatever the access, be it ladders, external stairs or access from adjacent buildings, persons are not in any way endangered by using it.

4. Fall Prevention

4.1 Introduction

This standard Practice establishes the minimum standard for personnel while working at heights outside the confines of a working platform. Safety harness shall be worn when working in areas of more than 1.5 meters above the working surface, or as prescribed by applicable work rules or regulations.

4.2 Definitions

Competent Worker
Any worker who is adequately qualified, suitably trained and with sufficient experience to safely perform work assigned with only a minimal degree of supervision.

Full Body Harness
A device made primarily of straps for containment of the torso and pelvic area designed to support the user during and after the arrest of an accidental fall and/or during a rescue operation and/or during work activities, depending on the group classification of the harness.

Fall Arrest Device
A device that provides a means of arresting the accidental fall of an individual.

Fall Arrest System (FAS)
A system that will stop a worker's fall before the worker hit the surface below.

Lanyard
A short flexible line, rope or strap used to secure a wearer of a safety belt or harness to a lifeline. A lanyard is affixed to the harness and its anchor point by hardware (typically snaps).

Lifeline
Is a heavy line between two anchorages which may run either horizontally or vertically. Lanyards are attached to the lifeline allowing workers freedom of movement.

Pendular Effect
In situations where workers fall and are not directly in line with their anchor point, there is a tendency for the worker to swing as the fall is arrested.

Qualified Person
A person who, by possession of a recognized degree, certificate, or professional standing, or who by knowledge, training, or experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the subject.

Rope Grab
An arrester which moves over the lifeline and requires no manual adjustment during position changes. If an individual should fall, the arrester automatically locks onto the line. (There are several variations of rope grabs available.)

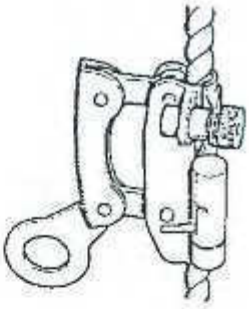

Figure 4.1(a): Rope Grab

Figure 4.1(b): Rope Grab

Shock Absorber
A component of a personal fall arrest system that is normally attached to the body support device that dissipates kinetic energy and limits deceleration forces during fall arrest.

4.3 Responsibilities

The responsibility for establishing and administration of Fall Arrest Systems (FAS) lies with the supervisor. The authority for administration of the Fall Arrest program may be delegated to a competent worker. Responsibilities include, but not limited to ensuring that:

- FAS is adequate for its intended purpose
- personnel are trained and competent to use the FAS
- equipment is inspected and maintained in accordance with manufacturers specifications and the Standard Practice for Fall Arrest

- a rescue plan is prepared and reviewed in the event a worker falls and becomes suspended
- all elevated tools are analyzed to identify as well as provide adequate fall protection systems
- compliance to recognized standards relating to fall arrest.

Responsibility for the proper care and use of personal Fall Arrest System lies with the user.

4.4 *Standards*

Generally speaking, personnel are required to wear FAS when the possibility exists for a worker to fall a vertical distance greater than 3m.

Management shall recognize that a Fall Arrest System (FAS) is the last resort and shall only be used when the work cannot be conducted within the confines of a guarded catwalk or work platform. This form of passive protection is preferred over wearing harnesses etc.

Fall Arrest Systems have the two key objectives:

1). To arrest the fall without failing under load.
2). To be capable of distributing the fall energy to the user in a manner which will minimize injury?

Historically, the safety belt has been the first choice as a personal fall arrest device. The reason being, the simple design allows workers to put the belt on and take it off quickly. This results in a higher level of (workers) compliance to fall arrest protection.

Unfortunately, safety belts are unable to distribute fall energy throughout the body. When a fall is arrested by a belt, the body jackknifes at the waist. As a result, the individual has a high probability of sustaining a severe injury to internal organs, or even compromise breathing. Potential for fracture of the spinal column exists if the lanyard is in the front or on the side.

The second area of risk relates to the post fall suspension when there may be compression of internal organs or loss of consciousness. It is for these reasons that the full body harness has been designated as a minimum standard for FAS. Also there is a greater chance of slipping out of a belt harness if the wearer falls head first.

4.4.1 *Horizontal Lifelines*

- Horizontal Lifelines shall be made of at least 10mm wire rope cable properly supported to withstand at least 24kN impact. Alternate materials for specific cases (e.g. use of synthetic fiber rope) must be pre-authorized for use.
- Horizontal lifelines shall be positioned to provide points of attachment at the waist or higher to the operator / worker utilizing them.
- Lifelines shall not be used for any purpose other than fall protection.
- Horizontal lifelines shall be installed by competent personnel and inspected prior to use by personnel who are familiar with good rigging practices.

Figure 4.2: Horizontal Lifelines

4.4.2 Vertical Lifelines

Vertical Lifelines are used for personal fall protection when vertical mobility is required and may be comprised of static lifelines made of synthetic fiber rope or cable which has been equipped with approved sliding rope grabs or they may consist of self-retracting reel type lanyard / lifelines which are attached directly to a safety harness.

These types of lifelines can be used to provide fall protection for operations such as scaffold erection and structural steel erection where tie off points are limited and vertical mobility is required.

Sliding rope grabs approved for the size of rope used are the only method for securing a safety lanyard to a vertical lifeline and must be positioned at least above the users shoulder.

Figure 4.3: Vertical Lifelines

Figure 4.4: Self-Retracting Lines

4.4.3 Lifeline Placement / Installation

All horizontal lifelines placed in skeletal steel structures (e.g. pipe racks, etc.) shall be 10mm cable as a minimum and shall be secured on each end by three cable clamps.

Intermediate supports shall be adequate to minimize sag and vertical deflection to a maximum of seven degrees under loading. These lines shall be installed and maintained by the rigging crew.

Lifelines shall be arranged to provide adequate mobility in all areas of the structure while maintaining maximum fall protection for personnel. All horizontal lifelines shall be arranged to provide tie off points at least waist high for personnel using them and are not to be used for any purpose other than fall protection.

Note: Softeners shall be used where lifelines contact sharp edges such as beam flanges.

4.5 Ladders

Permanent caged ladders may be ascended or descended without additional fall protection.

When ascending or descending ladders, personnel shall maintain a three-point-contact. Materials or tools shall not be carried in the hands whilst ascending or descending ladders.

4.6 Personnel Lifts / Hoisting Devices

Aerial Lifts (Man lift, Snorkel, Scissors, etc.)
Personnel working from these lifts shall secure their safety lanyard to the lift basket at all times.

Crane Hoisted Personnel Baskets
Personnel working from personnel baskets shall have their lanyards secured whilst aloft.

4.7 Skeletal Steel / Open Structures

Fall protection is required when personnel are required to gain access to, travel and work in skeletal steel / open structures such as pipe racks. This includes travelling on or working on any elevated surface which is not designed as a personnel work surface or walk way (e.g. pipe, cable tray, etc.).

Personnel working or travelling in elevated skeletal steel / open structures shall secure their lanyards to a life line or structure capable of supporting 24kN at all times. In lieu of lifelines, personnel may secure safety lanyards to substantial structural steel members, pipe and pipe supports. Personnel shall avoid securing lanyards to cable tray, conduit and small bore threaded pipe.

4.8 Permanent Structures / Stairs, Caged Ladders

- Personnel working or travelling in incomplete permanent structures where fall exposure exist such as floor openings and open side floors, shall be tied off when within 1.8m of any fall exposure.
- Priority shall be given to installation and securing of permanent floors and walking surfaces and all guard rails and other permanent fall prevention devices.
- When required, temporary guard rails and floor opening covers shall be installed to eliminate fall exposures. When floor opening covers are installed they must be firmly secured, capable of withstanding load capacity equal to that of the floor and be painted and/or marked to indicate, "Open hole, do not move".
- Personnel working within the confines of a completed scaffold platform equipped with all toe boards, rails, etc. may not be required to be tied off but need approval from the scaffold inspector.

4.9 Safety Nets

Safety nets may be used as secondary fall protection whenever there is a likelihood of personnel, materials, or tools falling on persons or property below. The use and installation of nets will be under the direction of an appropriately qualified person.

4.10 Inspection

Fall Arrest Equipment shall be inspected on a daily basis by the user. Should the user find any damage or note any defects, the equipment shall be taken out of service and examined by a competent person. In addition, Fall Arrest Equipment will be formally inspected when the units have been in use for six months. A written record of such inspections shall be retained on file.

Fall Arrest Equipment shall be inspected during General Planned Inspections and PPE compliance checks.

The following Fall Arrest Equipment shall be thoroughly inspected:

a) Full Body Harnesses.

- Inspect all buckles, Dee-rings and other metal components for cracks that may signal the beginning of metal fatigue, sharp or rough edges that could cut the webbing, rust or other corrosion, distortion, or other signs of wear.
- Check the metal wear pad at the base of the Dee-ring and make sure the Dee-ring pivots freely. Tongue buckles shall not be bent out of shape, shall move freely back and forth and shall overlap the buckle frame. Check that friction or quick-release buckles are not bent or distorted and engage correctly.
- Grommets shall be tight, not distorted or broken. Check for corrosion, dents, sharp edges or cracks. Discard a unit that has missing grommets or extra holes punched or cut into it.

- Make sure rivets are holding tightly and have not pulled through the webbing. Rivets shall not be bent; bent rivets will fail under stress. Pitted rivets indicate chemical damage.
- Examine all webbing, from end to end (both sides). Flex the webbing over your fingers, bending it to expose any signs of damage. Check webbing, straps, and reinforcing points carefully for wear and tear from fastening and unfastening buckles, and attaching snap hooks.
- Look for cut, pulled or broken switches, or frayed or damaged strands in the woven web. Discoloration, fused, brittle or melted fibers may indicate signs of chemical, paint, solvent, burning or heat damage.

b) Lanyards and Securing Lines

- Snap hooks and locking snap hooks shall function smoothly and not be bent or wobbly. Check that the spring closes the keeper (latch) securely against the snap nose. Locking snap hooks shall hold the keeper in a closed position. Inspect snap hooks, locking snap hooks and eyes for cracks, sharp edges, corroded or pitted surfaces, or distortion.
- Look for bent, cracked or broken rivals on web lanyard. Thimbles on rope lanyard shall not be distorted or have sharp edges. They should be held securely by the rope splice.

c) Ropes

Check that the rope is free of knots and consistent in diameter. Discard a knotted rope lanyard. Examine the rope from end to end, rotating it as you go and look for worn, broken or cut fibers. Look for damage that might be caused by welding, chemical or paints, or by exposure to heat sources. Thimble splices shall have five tucks and the hackling shall be secured from unraveling.

d) Web Lanyards

Examine webbing thoroughly from end to end as described above for full body harnesses. Pay close attention to stitching and rivets, particularly at hardware attachment points. Look for swelling, discoloration, cracks or charring from chemicals or heat damage, or other signs of deterioration or wear.

WARNING: Discard and replace equipment if there is any evidence of excessive wear, damage or deterioration, or malfunction.

4.11 Personnel Training

During site safety orientation and safety meetings, employees shall be made aware of SUPREME ENERGY fall protection policy and their obligations to these regulations.

4.12 General Precautions

- Be satisfied that you have had proper training in the use of fall protection equipment. If in doubt ask your supervisor or safety representative for assistance.
- Wear the correct size of full body harness and adjust it to fit you property. Never cut or punch extra holes or otherwise modify the unit if it does not fit or for other reasons.
- Make a visual inspection of this equipment each time you use it.
- Equipment shall be removed from service and tagged for repair or destruction whenever signs of wear or damage are found.
- Dee-rings on harnesses are to be used only for attaching lanyards or devices connecting to an anchorage point. Never attach anything other than the fall protection system connector to a Dee-ring. Never attach a lanyard elsewhere on the full body harness.
- Lanyards shall be as short as possible. This will minimize the discomfort from gravity stopping forces in a fall arrest.
- Never tie a knot in a lanyard. Knots reduce the supporting ability of a rope lanyard by 50%.
- Always use the right length of lanyard; do not tie or join two lanyards together to obtain the length required.
- Never use a ladder hook to attach a lanyard to a Dee-ring.
- A ladder snap is not designed to tie back to the lanyard. A sling or anchor strap must be used.
- Locking type rope snaps are approved to be tied back to the lanyard, however, non-locking type snaps are not.
- Lanyards with locking type snaps should be used to reduce the possibility of accidental disengagement, or roll out from the Dee-ring.
- Personal protective equipment shall not be used as slings or hoists or for other load bearing purposes. Harnesses or lanyards subjected to such alternate uses must be removed from service.

4.13 Attaching Lanyards / Connecting linkage to Anchorage Points

- Use the shortest possible lanyard. Always connect a lanyard above waist level to minimize the potential fall distance. Short lanyards reduce the possibility of a fall and minimize discomfort from gravity stopping forces in fall arrest. Shock absorbers also reduce the force of a fall.
- Select every anchorage point with care. The lanyard length and anchorage point of fall arrest device location shall never permit a free fall of more than 1.8m.
- Always check lanyard snap hook connections visually to ensure proper engagement. Do not rely on hearing an audible snap. Do not hook a lanyard around an anchor point and fasten the snap hook directly onto the same lanyard unless it is equipped with a locking rope snap.

4.14 Existing Pipe, Structures and Cable as an Anchorage

4.14.1 Fall Restraint Cable

Cable lifelines shall be a minimum of 10mm wire rope. The type required will vary with application and is to be verified with the supervisor.

Cable sag between intermediate supports of 6m - 15m spacing shall be 38mm minimum.

Note: Construction Stretch of 0.25% to 0.5% of cable length can be expected and wire rope may require periodic adjustment when used as a horizontal lifeline.

Intermediate supports shall be of sufficient height to support the cable at chest height (1.42m).

When securing to an anchorage point, the user shall take into consideration the deflection of the pipe or cable, the amount of stretch in the lanyard, the elongation of the shock absorber, plus the length of the users legs.

4.14.2 Pipe

A 51mm diameter pipe of either carbon steel or stainless steel is a safe anchorage for fall restraint lanyards under the following conditions:

- pipe is in good condition (not corroded)
- span is no greater than 6-15m
- pipe spans are continuous for at least two supports on either side of the attachment.

Permanent deflection of up to 60cm can be expected in a 51mm diameter pipe should a fall actually occur.

Do not tie off to insulated pipe of any size.

Do not tie off to electrical conduit of any size.

4.14.3 Structural Steel

- Structural members found on a 6m - 15m span will be adequate anchorage.
- All commonly used wide-flange and channel shapes are adequate.
- 64mm x 64mm x 10mm angle is considered safe provided the span is less than 6m.
- Handrails are not to be used as anchorage points.

4.15 Instructions for Care and Maintenance

- Fall protection equipment shall be treated with respect when not in use. Always store equipment in a clean, dry environment free of corrosives or harmful fumes and out of direct sunlight.

- Surface dirt and grime shall be removed from the equipment after each use. Accumulated soiling can mask signs of damage, as well as shorten the service life of the equipment. All equipment shall be cleaned by washing periodically and prior to the three month verification inspection.

4.15.1 Cleaning

- Nylon webbing or rope shall be cleaned only by sponging with a mild solution of liquid and either cold or warm water. Equipment should be wiped with a clean cloth and hung to dry out thoroughly, away from direct sunlight or excessive heat.
- Do not use solvent-based cleaners and do not apply paints or solvent markers for unit identification.

Warning: Do not attempt to repair damaged equipment. Destroy or remove it from service immediately and place a tag on it that states "DO NOT USE".

Form 4.1: Scaffolding Permit

SCF #: - - - - - - -

supremeenergy	SCAFFOLDING PERMIT		
General Work Permit Number:			
Project Name:		Location:	
Address:			
Main Contractor:		Contact:	
Reason for Scaffold:			
Scaffold Erector:			
Subcontractors to use Scaffold:			
Height:	Length:	No of Platforms:	
Duty:	Limitations:		

INSPECTION RECORD

Date	Time:	Name of Inspector: (print)	Signature	Comments

supremeenergy

PT. SE ML/RB/RD

SHE Procedure
Motor Vehicle Safety and Heavy Equipment

October 2014

ML/RB/RD-RSH/SHE-MAN-SOP21-Rev 0

Confidential, for internal use only

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Revision History

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The Supreme Energy project companies - PT Supreme Energy Muara Laboh, PT Supreme Energy Rajabasa and PT Supreme Energy Rantau Dedap are independent companies developing geothermal projects in Sumatra, Indonesia. Based on the agreement of the shareholders of the individual project companies, the Supreme Energy companies are managed in an integrated way in order to maximize the synergies in terms of use of resources and organization of their core and supporting processes. Consequently, important portions of the documentation body developed and applied within each company (manuals, procedures, description of processes, guidelines etc.) are common to all project companies. The applicability of each document to one or several project companies is reflected in the reference of each document.

Any document applicable to PT Supreme Energy Muara Laboh contains the characters "ML" in the document reference.

Any document applicable to the PT Supreme Energy Rajabasa project company contains the characters "RB" in the document reference.

Any document applicable to the PT Supreme Energy Rantau Dedap project company contains the characters "RD" in the document reference.

If a document applies to all three Supreme Energy companies, the term "Supreme Energy" may refer to any and all of these companies.

Within each document, for any reference to the project company, the term "Company" will be used. This term will refer to those companies the names of which are referred to in the document reference. The term Project refers to the project developed by the Company.

Content

1. Introduction

This procedure is developed to demonstrate the SUPREME ENERGY's commitment to safe driving as one aspect of protecting company personnel, business partner personnel, public, and property damage. The goal of the procedure is "to continuously reduce the frequency and severity of motor vehicle incidents in Company working areas". This procedure describes minimum safety requirements that must be followed to ensure the safety of driver and operator to operate light vehicle and/or heavy equipment. The company will separately develop a comprehensive motor vehicle safety program.

2. Responsibilities

It is SUPREME ENERGY policy to provide a safe working environment and expect safe driving practices from its drivers. Management and Supervisors are responsible for maintaining a safe driving environment and must lead by example. Supervisors must ensure drivers are aware of and follow safe driving practices in their respective work area. All personnel entitle to drive vehicle share the responsibility for driving safely. The effectiveness of Safe Driving Program depends on all Personnel accepting safe driving as part of their job.

Manager's Responsibilities

- Department managers or their designate are responsible for authorizing employees in their department to drive a motor vehicle.
- Department managers or their designate will only authorize employees to drive a motor vehicles if they have a valid business need and have a valid driver license.
- As a condition for authorizing employees to drive, Department managers or their designate must ensure all personnel under their supervision who drive have driving skills. For example, drivers must have a valid driver license / operator license and meeting the minimum criteria for the type of equipment they operate.
- Department managers or their designates must ensure that motor vehicles operated by personnel under their supervision are properly maintained and that basic systems essential for safe driving (lights, horn, brakes, steering, turn signals, safety belts) are functional. If a motor vehicle does not meet requirements for safe operation, it must be removed from service until repaired.
- Department managers or their designates must ensure that personnel under their supervision comply with the requirements of this SOP.

Supervisor's Responsibilities

- Supervisors are responsible for their employees have authorized to drive.
- Supervisors shall ensure their authorized employees have the necessary operating skills to drive in a safe manner for the vehicle they are authorized to drive / operate.
- Supervisors must ensure that all newly-authorized drivers are familiar with the contents of this procedure.

- Supervisors must thoroughly investigate each MVI(Motor Vehicle Incidents) and take appropriate measures if anyone is involved in a motor vehicle crash.
- Supervisors are responsible to investigate all MVIs involving their employees and submit "Report of MVI to SHE group.

Foreman / Driver Supervisor Responsibilities

Foreman / Driver Supervisor is the direct leader that has subordinate who entitle to drive vehicle, and responsible to:

- manage and supervise their drivers who are entitle to drive vehicle and ensure this procedure introduced and implemented by drivers.
- review Personnel driving exposure to minimize fatigue.
- ensure all Personnel is trained.
- set a good example by driving to "model" Company Standards in appropriate vehicle and recognize individual driving excellence.
- prepare the written preliminary report and send to SHE Representative and SHE Committee for further action. Systematically participate to investigate the incident.
- ensure compliance with company policies during Personnel's working hours.

Driver Responsibilities

- To ensure vehicle is appropriate for travel and properly maintained by contractor through regular routine inspections of mechanical condition.
- To maintain their vehicle in a safe condition including required regular inspection.
- To maintain safe driving conditions.
- To drive in a safe and responsible manner.
- To comply with traffic laws.
- To use all safeguards and safety equipment provided.
- To be familiar with and to follow the Safe Driving Practices plus any "Site Specific" rules that apply (i.e., vehicle type or equipment, area hazards, driver experience).
- To recognize when the vehicle or conditions are unsafe for driving and take appropriate action.
- To consult with their Leader / Supervisor if any doubt existing regarding safe driving.
- To correct and/or to report (verbally and/or written) any unsafe driving act or condition (including hazard identification and/or near misses).
- To take required driving training.
- To inform their Leader / Supervisor if they are taking drugs that may impair ability to drive, including medication for flu / colds and cough.

3. Motor Vehicle

Motor vehicle is all vehicles that operated for Company's needs, not included in this definition are personal vehicle and public transportation.

A motor vehicle is any mechanically or electrically powered device (excluding one moved by human power), upon which or by which any person or property may be transported or drawn upon a land highway. The load on the vehicle is to be considered part of the vehicle if an accident occurs involving it.

Motor vehicle includes:

- Light vehicle: sedan, minibus, pickup.
- Medium vehicle: bus, truck.
- Heavy Equipment: work-over rig, boom truck, dump truck, and logging truck. Not include:
  - Vehicles operated on fixed rails
  - Trailer dozer
  - Forklifts
  - Road building and maintenance machinery
  - Crane

4. Motor Vehicle Incident (MVI)

Company MVI is any event involving a motor vehicle (owned or rented by the company) that results in death, injury, or property damage, unless such vehicle is properly parked.

Contractor or Sub-Contractor MVI is any event involving vehicle (owned or rented) used by Contractor or Sub-Contractor while performing work on behalf of SUPREME ENERGY.

All MVI must be reported. There are 2 (two) classifications of MVI based on the recordability:

- Recordable MVI : an MVI that after being investigated, resulting in criteria that classified as recordable MVI. All MVI that classified in this classification should be recorded into Company's MVI record.
- Non-Recordable MVI : an MVI that after being investigated, resulting out of criteria that classified as recordable MVI. This classification should not be recorded into Company's MVI record.

The following should not be recorded as MVI:

- Minor damage where the repair cost not exceed the maximum own risk from the vehicle's insurance.
- Vehicle strikes an object which results in no damage and there is no repair required.
- Injuries that occur when entering or exiting a stopped or parked vehicle.
- Any event involving loading or unloading from a stopped or parked vehicle.

- Damage to or total loss of a vehicle solely due to environmental conditions.
- Crashes when the vehicle is properly parked.
- Flying debris i.e. rock, tree, to or from a vehicle.

The followings are not factors in terms of recordability:

- Who was responsible
- Where the incident occurred
- Who was injured
- What property was damaged
- The extent of such injury or damage

For analysis, MVI divided into 2 (two):

- Preventable MVI is any MVI that occurs when the driver fails to exercise every reasonable precaution to prevent it which results in property damage, personal injury and/or death, regardless who is injured, what property was damaged, how extent the injury was, or where the incident occurred.
- Non-Preventable MVI, is any MVI involving a vehicle used by Company which results in property damage, personal injury and/or death, that happened outside the parameters of the driver's ability to prevent it even the driver has done anything possible to avoid MVI to happen.

SHE Committee will decide the classification of the MVI after investigation.

5. Defensive Driving

Safety on the road is just as important as safety when operating dangerous machinery. A car, van or lorry can be very dangerous when used wrongly and the company's attitude to road safety reflects this.

Before driving, notice that **all drivers must ensure that they have a current valid driving license.**

Defensive driving means showing an awareness of what is going on around one. Drivers should observe not just where the road is going, but also what others on the road are doing or might do. It means, for example:

- noticing when there are children playing near the road and slowing down in case one of them runs into the road; or
- watching traffic coming the other way and anticipating whether someone might overtake and come over onto the wrong side of the road.

The first part of defensive driving is that a driver must **look all round for other traffic and road users.** Remember that road users means pedestrians and cyclists as well as other vehicles.

The second part of defensive driving is to **react correctly to any hazards.** This means being prepared to slow down or stop or pull over to avoid another road user.

Defensive driving is a skill which can be learnt both through practical experience and by attending suitable training courses.

Speed Limits are very important in defensive driving and it is designed to increase safety for all road users.

A driver will always observe speed limits and drive below the speed limit when necessary. This means slowing down:

- when the weather is bad, for example in rain or fog
- during the hours of darkness
- where there are a lot of pedestrians
- on narrow or twisty roads
- when there are other hazards such as road works.

It is essential that drivers never go faster than the speed limit, both for their own safety and that of other road users. However, speed limits are the maximum safe speed.

Speed limits are different for different vehicle types. This is because larger vehicles do more damage and take longer to stop than smaller ones. Drivers who normally drive a smaller vehicle should remember this if they have to drive a larger one.

Another part of defensive driving is to always **obey the rules of the road,** for example giving way to other traffic at junctions. In order to do this driver should **make sure they are familiar with what all road signs and markings mean.**

These tell the driver, for example, when they are approaching a possible hazard such as a junction or bend.

Things happen quickly on the road and warning signs can only cover a few of the worst hazards. A defensive driver will **be aware of potentially dangerous areas.**

This includes areas where there are children or cyclists, or where there are a lot of pedestrians, for example markets and bus stations.

A good driver will be able to:

- look, think, and plan ahead
- observe carefully the entire area moving backward
- keep the eye moving (front, sides, and behind)
- make sure other vehicle see you (get eye contact and use warning devises, horn and lights)
- read the road ahead and anticipate what is going to happen
- be prepared for others to make mistakes.

Before setting off on a journey, a defensive driver will take a number of steps to ensure the journey will be safe and comfortable:

- remember that, even in small quantities, alcohol and drugs can impair a driver's judgment and slow down their reactions
- do not drive when feeling unwell
- ensure that eyesight is good; wear spectacles if necessary
- always use a seatbelt and ensure that passengers do the same (where fitted)
- do not drive a vehicle which may be unsafe

6. Wide / Long Load Vehicle (Heavy Equipment)

Vehicles with wide or long loads are particularly hazardous for other road users. This is because;

- they take up much more road space than other traffic
- they move more slowly than other traffic
- they are difficult for the driver to maneuver.

There are some special rules which oversize vehicles shall follow;

Firstly use escorts (pilots) when needed to warn others of the presence of an oversize vehicle.
This means having other vehicles, such as light vehicle, which can go in front of the load and warn other vehicles who may need to stop or pull over to make way. The escort vehicle should carry a warning sign showing clearly what is the hazard,for example "Wide / Long Load Vehicle".

Secondly adjust speeds appropriately for the size of load.
Because larger vehicles take longer to stop and are harder to maneuver than normal size vehicles, it is even more important to travel well within speed limits and to slow down well in advance of hazards such as bends or junctions. The driver of the escort vehicle shall also remember this.

Thirdly journeys should be timed to avoid meeting other wide loads.
The route used by wide / long loads vehicle visiting the site is narrow and there are few, if any, places where two loads can safely pass each other. Drivers of wide loads should therefore coordinate their movements to avoid this situation; for example by making upward journeys on even dates and downward on odd dates.

Finally travel at night whenever possible.
By travelling at a time when there are few other road users, either in vehicles or on foot, the possible conflicts which lead to accidents can be minimized. However when driving in the dark driver should drive more slowly than in the daytime and hazards such as pedestrians or animals will be harder to see.

7. Vehicle Safety

As vehicles are used, parts of them become worn. Tires and brake pads get thinner, joints in the steering mechanism wear and become loose. All these things affect vehicle performance and safety. A vehicle which has worn brake pads takes much longer to stop. A vehicle with worn tires takes longer to stop and is much more likely to skid when stopping or cornering.

For all these reasons, it is essential that all vehicles are checked regularly to make sure they are fit to be on the road.

Daily Inspections

- All drivers should inspect their vehicles daily. Any major or safety-related defects must be reported and corrected before the vehicle is used. Minor items not affecting safe operation of the vehicle can be corrected during regularly scheduled preventive maintenance.
- For some vehicles such as buses and passenger pool vehicles, a formal pre-trip inspection should be performed and documented by the operator. The following items should be inspected:
  - Brakes should apply evenly to all wheels
  - Headlights should function properly
  - All stop lights, turn lights, rear lights, warning lights, and side-marker lights should function properly
  - Tires should be inflated to recommended pressures, have adequate tread, and should be free of cuts, breaks or other defects
  - Steering wheels should be free from excessive play. Front wheels should be properly aligned
  - Windshield wipers should wipe clean
  - Window glass should be free from cracks, discoloration, dirt, or stickers that might obscure vision
  - Horns should be functional
  - Review mirrors should be installed so that the driver has a clear view to the rear and sides of the vehicle
  - Stalling or lugging problems should be corrected
  - All instruments should work properly
  - Exhaust systems should be checked for leaks
  - Where practical to do so, the vehicle should also be equipped with a spare tire and essential tools for road repairs

Preventive Maintenance

In addition to a driver's daily inspection of a vehicle, periodic preventive maintenance is essential. A preventive maintenance program based on either mileage or operating hours of the equipment (as recommended by the manufacturer or Company procedures) should be implemented to determine when to perform routine vehicle maintenance.

A vehicle safety checklist is given at the end of this section **(Form 21.1: Vehicle Safety Checklist)**

While it takes a trained mechanic to carry out a proper vehicle inspection, any driver can do a few simple checks to make sure their vehicle is fit to use. If the steering feels "wobbly", if the brakes take a long time to work or seem to pull to one side, or there are other obvious problems, this should be reported immediately and the vehicle should not be used until it has been checked.

Before taking a vehicle out, the driver should carry out a few simple checks by walking around the vehicle and testing the equipment inside:

- tires do not look worn or flat
- lights (including indicators) are working properly
- equipment such as horn and windscreen wipers are working properly
- never drive a vehicle which appears to be unsafe
- report any faults to the vehicle maintenance supervisor.

8. Pedestrians

All road users are pedestrians sometimes. Unfortunately, when a vehicle hits a pedestrian it is the pedestrian who comes off worse. Although good driving is encouraged, it is in pedestrians' own interests to take precautions to protect themselves.

When walking on the road, pedestrians should

- beware of traffic - use their eyes and ears
- face oncoming traffic if at all possible
- take extra care where they have limited vision, such as at bends
- take extra care at places like corners where drivers will be watching other traffic
- help to protect old and young people who are less aware of the danger of traffic.

9. Road Safety Checklist

Everything in this part of the manual is important and could literally mean the difference between life and death. Employees should always remember the below tips:

- learn what is meant by defensive driving and practice it
- obey all rules of the road
- drive at or below the speed limit
- make sure you are fit to drive
- make sure your vehicle is safe and roadworthy
- remember that special rules apply to wide and long loads

- carry a first aid kit and have first aid training
- report all accidents
- when walking, beware of motor traffic
- apply safe driving practices on site as well as on the road.

10. Driver Training

Driver training should be provided to all employees who drive Company owned or leased vehicles. The training should provide a mix of classroom and on-the road instruction and should be administered by a skilled instructor. Dependent upon the situation, the following types of training may be offered:

- Basic - Training for new employees or those reassigned to a position requiring use of company or rental cars
- Remedial - Training for drivers who have had accidents
- Refresher - Periodic updating of basic training typically provided every 2-3 years. Training that is more frequent may be warranted depending upon the type of driving or other circumstances (such as new or different equipment, changes in regulations or policies, increased accident frequency, etc.)
- Special - Training provided for the operators of special equipment

Points to Cover:

- Local traffic rules and regulations for the operation of vehicles
- Company driving policies and procedures
- Defensive driving
- Local culture and attitude to driving
- Product or cargo knowledge and emergency procedures (as appropriate).
- What to do in case of an accident

Driving is primarily a learned skill. It must be practiced and reinforced if we are to achieve and maintain a high level of competence.

Defensive Driving Training (theory and practical) should be conducted at least one each two years for individual entitled to drive company-leased vehicle to refresh driving ability and competency

Defensive Driving Briefing (recommended practice and sharing lesson learned) should be conducted at least monthly.

Form 1.1: Vehicle Safety Checklist

SUPREME ENERGY
Vehicle Safety Inspection Checklist

Date:	Inspection:	Employee #:
Vehicle:	Type:	Odometer:

NO	INSPECTION	OK	UNSAFE	REMARKS
Steering and Suspension				
1.	Free play & steering wheel: ..... inches			
2.	Tires (Tread wear, Condition, Inflation)			
3.	Alignment			
Brakes and Hydraulic System				
1.	Pedal Travel			
2.	Fluid Level			
3.	Hand Brake			
Clutch and Transmission Linkage				
1.	Clutch Pedal Free Play			
2.	Clutch Linkage (free and smooth)			
Safety and Security				
1.	Seat Belt Installed and Anchored Securely			
2.	Seat Belt Condition			
3.	Seat Adjuster (moves free, lock securely)			
4.	Door Latches and Locks			
5.	Windshield and Other Window			
6.	Rearview Mirrors			
Electrical and Instruments				
1.	Headlights (High/Low Adjustment)			
2.	Tail Lights			
3.	Brake Lights			
4.	Turn Signals			
5.	Instrument Panel Lights			
6.	Windshield Wiper Operation			
7.	Windshield Wiper Condition			
8.	Horn			
9.	Warning Lights			
10.	Speedometer			
11.	Fuel Gauge			
12	Other instrument			
13.	General Wring Condition and Fuses			

NO	INSPECTION	OK	UNSAFE	REMARKS
Engine Compartment				
1.	Belt (Condition and Tension)			
2.	Hoses (General Condition)			
3.	Radiator (Condition and Security)			
4.	Battery (Secure, Condition)			
5.	Fuel Lines (Routine, Condition)			
Undercarriage				
1.	Exhaust System (Security and Condition)			
2.	Fuel Tank (Security and Condition)			
Leaks				
1.	a. Master Cylinder			
	b. Lines/Hoses			
	c. Wheel			
2.	Engine Oil			
3.	Engine Coolant/Radiator			
4.	Power Steering Fluid			
5.	Transmission Oil			
6.	Rear End/Differential Oil			
7.	Fuel			
Emergency Equipment				
1.	Jack and Lug Wrench			
2.	Spare Tire (Condition/inflation)			
3.	Warning Reflectors/Flares			
4.	First Aid Kit			
5.	Fire Extinguisher			
NO	**GENERAL VEHICLE CONDITION**	**GOOD**	**BAD**	**REMARKS**
1.	Exterior			
	a. Body Damage			
	b. Rust			
	c. Paint			
	d. Fittings			
2.	Interior			
	a. Upholstery			
	b. Housekeeping			
	Road Test			
Engine				
1.	Starting (cold)			
2.	Starting (hot)			
3.	Idling			
4.	Driving			

NO	GENERAL VEHICLE CONDITION	GOOD	BAD	REMARKS
Clutch				
1.	Engagement			
Transmission				
1.	Shifting			
2.	Noises			
Drivetrain				
1.	Smooth/Quit/Tight			
Steering and Suspension				
1.	Tracks True			
2.	Shimy/Wobble			
3.	Steering Effort			
Brakes				
1.	Stop Straight and True			
2.	Shodder/Squeal			

Checked by:	Reported to Site Sr. Leader:

Comments by SHE Representative :

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