

Client:



Projects we serve:

- **HT/LT Electrical Motor Repair & Rewinding**
- **Manufacturer of (AC/DC) Motor HT Coils, Traction Motor Coils, Electro Magnet Lifting Coils**
- **On Site Dry Ice Cleaning Service of Industrial Equipment's**
- **AMC for Operation & Maintenance of Industrial Utilities Service Plants**
- **Site Engineering & Project Management Consultancy (PMC)**



Industrial Quality Health Safety Environment Plan

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Quality, Health, Safety & Environment

गुणवत्ता, स्वास्थ्य, सुरक्षा और पर्यावरण

ଶୁଣ, ସ୍ୱାସ୍ଥ୍ୟ, ନିରାପତ୍ତା ଓ ପରିବେଶ

ଗୁଣବତ୍ତା, ସ୍ୱାସ୍ଥ୍ୟ, ନିରାପତ୍ତା ଏବଂ ପରିବେଶ ।



Safety First

हर हाल में सब समये प्रहू प्रमखरे

Rev.	Date	Description	Author	Checked by
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1. Introduction

1.1 Project Information

Project Name :

- **HT/LT Electrical Motor Repair & Rewinding**
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Client:

1.2 Purpose

This QHSE Site Plan defines the minimum requirements for practices and procedures to be complied with by construction contractors. It should be noted that every contractor has a legal obligation to provide safety in the work place both for his employees and for any other person and to ensure compliance with environmental legislation.

This QHSE Site Plan can be used as per Singson OHSE Manual and TQS requirements in order to control the contractor. The contractor shall agree that they will conduct their work according to the Indonesia regulations, QHSE requirements and specific safety standards set for the project.

The Contractor shall be responsible for compliance with all regulations and rules set for the project and are directly responsible for the safety of their employees.

1.3 Scope

This specification applies to all contractors as well as the subcontractors and suppliers that they employ to perform specific activities on the project site within Singson scope of work only.

Singson shall consult to the client for any other concerned activities which are not under Singson scope of work. The client shall be responsible to solve all of the problems concerned to these activities.

This specification shall supplement all national, provincial, or local codes and external standards in force within the country where this specification is being applied. If there is a conflict between this specification and the applicable code or standard, the Contractor shall be notified immediately for resolution.

Failure of this specification to reference specific national, provincial or local regulations does not excuse the contractor as well as its subcontractors and suppliers or their employees from following those regulations that might be applicable to the scope of work being performed by the contractor.

1.4 Standard Legislation Documents

Below is the list of applicable legal documents from the Indian Government and International Safety Law that this contractor and its subcontractors are required to comply with during their course of work on this Project site. This list only reflects the minimum requirements. This contractor and its sub-contractors are subject to further legal documents when as where it is required.

- The contract labor (regulation & abolition) central rules,
- The contract labor (regulation & abolition act, 1970)
- Abstract under payment of gratuity act, 1972
- The payment of bonus rules, 1975
- Abstracts of the Minimum Wages Act, 1948 and the rules made thereunder



1.5 Safety Regulations

Singson and his Client require the very high standards of safety on its construction sites. Contractors must ensure that their management commitment, planning, resourcing, quality systems, training, and execution in the field strive for the highest standards and continual improvement.

This specification addresses conditions of work and the manner in which Singson and his Client expect work on its premises to proceed. Its intent is to establish a reasonable, minimally acceptable level of safety for all personnel located at Singson and his Client work-site during the construction period. Should any unforeseen considerations or problems arise, they shall be resolved by mutual agreement recognizing that personnel safety is of paramount importance.

The contractor shall ensure strict compliance with these construction safety procedures, as well as with all applicable national, provincial, and local regulations. The most stringent of the applicable governmental regulations or this specification shall apply should a conflict arise.

Singson and his Client require the contractor's senior management to make a personal commitment to the standard of safety on the project and to sign and send on company letterhead, a Safety Commitment Letter to the site, where it will be posted.

Singson and his Client also require the contractor's site management team and supervisors to sign their own personal letter of commitment to the safety of the job site that will be posted at the jobsite.

The contractor acknowledges its duty to furnish each of its employees and places of employment, free from recognized hazards and unsafe conditions causing, or likely to cause, death or serious physical or material harm. The contractor agrees to comply with all safety and health standards promulgated under the national, provincial, and local regulations as amended. The contractor acknowledges that the sole responsibility for the safety of contractor's employees, and for compliance with the national, provincial, and local regulations regarding such employees, rests with contractor.

During the performance of its work, the contractor, its employees, subcontractors, agents, and invitees shall strictly comply with all safety, fire, health, and other applicable rules and regulations of Singson and his Client. The contractor shall familiarize itself and each of its employees, subcontractors, suppliers, agents, and invitees with such rules and regulations. If any of them violate any such rules and / or regulations, the contractor shall cause such persons to be dismissed permanently from the project. Singson and his Client reserve the sole right to determine if such act, or failure to act, constitutes a violation or deviation of any such rules and regulations.

The contractor expressly agrees to review its safety and health program for the work with Singson and his Client before beginning any work and during the performance of the work. The contractor shall be able to demonstrate to Singson and his Client, during the performance of the work, that it is fully complying with all applicable laws, rules, and regulations. The contractor agrees to indemnify and hold harmless Singson and his Client from any expense, claim, penalty, or resulting fines directly or indirectly from the contractor's failure to comply with the aforementioned safety and health standards. The contractor further understands and agrees that any violation of applicable safety and health laws, rules, or regulations shall be sufficient cause for termination by Singson and his Client pursuant to the General Conditions for Site Services.

The contractor shall, at its own expense, cooperate with Singson and his Client in all reasonable safety precautions in connection with the project. The contractor shall comply with all requirements of Singson and his Client or any governmental authority having an interest in the work concerning the secrecy of any part or aspect of the work or of the project. The contractor shall not permit any person to enter upon the premises of Singson and his Client at the site of the work or elsewhere, except according to the safety and security requirements of Singson and his Client, or such governmental authority having an interest in the work.

The contractor agrees to indemnify and hold harmless Singson and his Client from prohibiting any contractor's or subcontractor's employees, agents, or invitees from entering onto the project site if, in the sole opinion of Singson and his Client, such employee, agent, or invitee fails to comply with the above-mentioned safety and health laws, rules, and regulations.



1.6 Mobilization Phase / Kick off Meeting

Prior to the start of any work, Singson and his Client representative shall review the safety specifications via a kick-off meeting with the construction contractor(s) and their subcontractors at the job site to ensure that all parties understand the safety rules and regulations applicable to that job site.

Before starting any construction project, Singson and his Client and contractor representatives shall perform a site safety assessment, identifying any unsafe conditions or potential hazards, and take the necessary steps to correct or minimize the unsafe condition / hazard. The contractor shall document the safety audit or assessment and issue it to Singson and his Client representative.

- Items to be considered might be items such as customer processes, traffic flow (Routes into and out of the jobsite), fabrication areas, equipment storage or lay down areas, Overhead power lines and obstructions, neighboring facilities, underground utilities, Emergency response, emergency evacuation and assembly locations, work permit procedures, And operating vent locations. Items from the Site Risk Assessment shall be included.

Each contractor shall develop new ideas and approaches to promote safety awareness at the site.

All contractor personnel must receive necessary training and testing before performing any work on site. This training shall be documented and available to Singson and his Client representative. Singson and his Client need Training Matrix to be provided by contractors via a kick-off meeting day.

Singson and his Client requires that the contractor undertake workplace risk assessments and job hazard analyses, and that they use these as the basis for a full written method statement that the contractor must produce for each part of the work he has to do. These risk assessments and method statements must be according to regulatory and Singson and his Client requirements.

The contractor shall implement a Job Safety Analysis program and also Pre-Task Planning.

The contractor shall be required to provide their own standard personal protection equipment (PPE) and safety equipment. When additional hazards arise because of the nature of the contractor's activities on-site, the contractor need to provide specialized equipment (e.g., analysers, gas detectors, air blower, tripod rescue set, Walkie-Talkie, Volt-Ampere-Ohm measurer etc.). Personnel operating specialized equipment shall be properly trained in its use.

When contractors are providing material / substances considered as chemicals, a Material Safety Data Sheet (MSDS) or product information shall be provided by the contractor. The contractor shall also furnish information on storage, handling, and disposal for materials and substances they bring onto the site. The contractor shall also provide manifests for disposed materials upon request from the Singson and his Client representative(s).

The contractor must ensure that its employees are provided with the necessary tools and equipment to safely perform their assigned tasks. All tools shall be in good working order and be inspected periodically to ensure their proper operation. The contractor shall provide their employees with the necessary training before starting to use these tools and equipment to perform work on-site.

Excessive overtime by construction workers is not only costly and results in productivity losses, but has also been proven to decrease safety awareness and increase incidents. With this in mind, approval by the Singson and his Client representative is required for a work week in excess of 16 overtime hours. Spot or periodic overtime is acceptable, but requires Singson and his Client approval for periods exceeding two weeks.

The contractor, in conjunction with the Singson and his Client representative, shall conduct a practical drill to test the site emergency response plan. The frequency of drill shall be every two months and drill scenarios shall include: fires, electrocution, fall from height, fall and hung on lifeline, and confined space rescue. The initial drill shall take place no less than four weeks after mobilization.

A hard-hat logo that identifies the contractor must be used. In addition to the contractor logo, only hard-hat stickers are required. All other hard-hat attachments might be allowed at the Singson and his Client representatives' discretion.



1.7 Health and Safety Culture

There is a positive correlation between good health and safety culture and good health and safety performance. Commitment at all levels, trained managers and workforce, well communicated procedures and standards, good co-operation between employee groups, business units and contractors, and clear lines of responsibility all contribute to positive control of risk.

1.7.1 Developing Positive Health and Safety Culture

The contractor will do their best to address the following factors to effect cultural change on the project site:

- Senior management to show commitment
- Ensure ownership of health and safety is established at every level within the organization
- Ensure effective communication is implemented
- Provide training for all employees, including supervisors
- Ensure there is a shared perception of risks
- Ensure standard of acceptable behavior is implemented across the whole organization
- Learn from experience through monitoring and review (audits)

2. Responsibilities & Organization

Protecting the health and safety of employees or members of the public is an essential part of risk management and must be led by senior management.

During the construction phase the HSE coordinator of the main contractors will be available on site. The HSE coordinator shall supervise all safety aspects, apply safety requirements and if necessary apply corrective measures. The HSE coordinators shall report to the Construction Manager/Singson QHSE Coordinator, which is also the overall HSE coordinator on site.

2.1 Singson Project Manager

The Project Manager shall perform, but not be limited to, the following:

- Balances Singson's and client's interest;
- Is authorized to take those actions necessary to achieve the project objectives;
- Is responsible for the adequate sourcing of the project team, the project organization and the project procedures;
- Liaises with participating departments / disciplines;
- Is responsible for the execution of the project in accordance with the contract;
- Safeguards quality, time (planning and progress), budgets and HSE;
- Sees to complete, correct and timely flow of information to all stakeholders (client, LDE's, others);
- Initiates design reviews also with regard to safety for construction and operation and follows up the corrective measures.

2.2 Singson Construction Manager

A CM leads the site supervision team for a project and represents Singson on the construction site. The duties of the CM cover, but are not limited to:

- Coordination of supervision on the correct execution of the activities of Contractors /venders in accordance with the approved drawings, schedules and prescribed rules and instructions;
- Reporting of progress and other relevant matters regarding site activities to Client via the PM;
- Taking appropriate measures in case of disruption of progress;
- Review of the Health and Safety plans prepared by all Contractors;



- Checking the maintenance of the resources, materials and equipment made available or purchased, including checking that the goods obtained are in accordance with the regulations, permits or the HSE plan, as well as the statutory provisions;
- Provision of Personal Protective Equipment (PPE), if not yet supplied by the DM to Singson personnel, and to visitors and ensuring instruction of those involved in its use and application;
- For setting up emergency procedures, evacuation plans etc. if necessary and where not provided for in the HSE plan;
- Ensuring that HSE forms a fixed item on the agenda of site meetings;
- Instruction of Singson employees and visitors on the construction site;
- Adherence to all procedures related to HSE on the construction site by all parties involved, such as:
 - Organize “first day” safety instructions to (Contractors) personnel;
 - Ensure Contractors organize toolbox meetings in accordance with requirements Safety Checklist Contractors (SCC certificate);
 - Organize work permit system, Task Risk Analysis (if needed);
 - Organize incident investigations in accordance with Singson HSE manual.
- Check RFC engineering documents on high level based on construction experience;
- Taking appropriate measures in case of poor workmanship or quality issues;
- Preparation of site facilities (site offices, ICT-facilities, etcetera).

2.3 Singson Discipline Supervisor

Their duties cover, but are not limited to:

- Supervision of the correct execution of the activities of contractors/vendors in accordance with the approved drawings, schedules and prescribed rules and instructions;
- The identification of major deviations, the preparation of a report and the direct information of all those involved in this;
- Including the health, safety and environmental aspects of that part of the work which he is supervising, in his work meetings with CC, subcontractors and vendors involved;
- Checking whether for activities which he is supervising the necessary work permits are present;

2.4 Singson HSE Co-ordinator

The HSE supervisor shall perform, but not be limited to, the following:

- Organize a kick-off safety meeting at the start of the work;
- Organize a daily / weekly / bi-weekly / monthly HSE meeting for all site representatives;
- Review and QHSE plan submitted by the Contractors and provide their comments to Client for approval;
- Promoting the awareness of HSE within his team and with all other stakeholders in a project;
- Carrying out inspections, controlling the progress of action points and filing reports;
- Daily walk through the sites and report all unsafe acts and situations;
- Prepare and submit daily / weekly / bi-weekly / monthly safety performance form to QHSE;
- Making sure that all his employees received the Safety Induction;
- On-job training and coaching to site representatives;
- Making sure that everyone at site are using proper and appropriate PPE including visitors (management, Client, etc.);
- Filing of unsafe act, near miss, and incident report at site and copy to QHSE and PM to the main office;
- Reporting immediately of any accidents at site to QHSE and PM;
- Verifying that safety plan is approved and / or approved except as noted;
- Verifying that method statement of all major activities has been submitted, reviewed and approved by the Client / CM;
- Verify / Approve proposed modifications / revisions to technical submissions;
- Arrange regular toolbox for all contractor supervisor and promote awareness of safety;
- Making sure that Contractor shall arrange a tool box meeting on regular basis and for major activities.



2.5 Contractor / Sub Contractor HSE Co-ordinator

Contractors HSE Co-ordinators must comply with the following activities, and are responsible for providing safety supervisor to ensure requirements are compiled at all times. Appointed Safety Coordinator / Safety personnel shall have adequate experience, at least 2 years in safety profession and shall comply strictly with the requirement of 1 Safety supervisor for 25 workers. The HSE supervisor shall perform, but not be limited to, the following:

- Safety introduction training to each of his employees prior to work
- Conduct weekly safety meetings with all personnel weekly.
- Monitor site safety continuously. The primary objective is to establish awareness that each person is responsible for his / her own safety and the safety of co-workers.
- Thoroughly investigate all accidents and near misses with supervision and individuals involved in the incident.
- Administer all safety tracking and incident reporting requirements including completing First Aid Reports, Near Miss Incident Report and Property Damage, and Occupational Injury and Illness
- Investigation Report.
- Conduct safety inspections.
- Prepare the contractors' QHSE plans and submit to Singson and his Client for approval.
- Maintain the QHSE reporting system as per requirements of Singson and his Client (daily, weekly, bi-weekly, monthly...)
- Administer all safety-training requirements (e.g., induction, confined space, and hazard communication).
- Be trained to handle medical emergencies and administer first aid and CPR.

2.6 Employees

Health and safety rights and responsibilities of employees include:

- Co-operation with employer – correctly wear any personal protective equipment provided,
- Report any dangerous situation or unsafe act,
- Have the right to receive information, instructions and trainings,
- A duty of care to themselves, and other persons, by working safely – following safe system of work and procedures to carry out their task.

3. Communication

An organization can develop extensive management systems and procedures, but if these are not actively communicated at all levels they are worthless and will not be implemented.

Communication is the process of conveying, imparting or exchanging information. Effective communication is an essential business tool with the aim of getting the right message to the right persons at the right time.

All relevant information regarding site-specific risks will be communicated between all parties prior to the operations commencing. The contractor must maintain a representative on site who is available to receive and implement safety instructions from Singson at all times when work is being undertaken by the contractor.

Some of the methods of communicating important health and safety information will be:

- Singson's QHSE Picture Catalogue;
- Notice boards;
- Newsletters;
- Site induction;
- Safety briefing;
- Safety meetings;
- Toolbox talks;
- Method statements;
- Safety bulletins;
- Safety alerts;
- Consultation meetings with safety or site nominated representatives.



Vital QHSE information and its message will be relayed to site personnel in a structured manner. Personnel must be made aware of any significant event which caused or had the potential to cause serious harm or damage. They must be informed what was the basic cause, the root cause and mitigation to prevent recurrence. QHSE issues can be discussed in an open forum or in confidence. Site personnel must be given the opportunity not only to raise occupational health and safety issues but also solutions.

3.1 Meetings

Meetings will be held to monitor QHSE performance e.g., pre-contract safety, health and environment meetings, regular progress meetings, 4 weekly planning for QHSE. Contractors shall be invited to attend. Minutes must be taken and circulated to all attendees plus others who may be affected by the activities. Times of meetings will be discussed by site personal and all persons will be made aware.

Each contractor shall conduct weekly safety meetings with all contractor personnel and its subcontractors. Minutes and attendee's signatures shall be kept and submitted to the Singson and his Client and / or Singson and his Client representative. The safety meetings shall allow some time for open discussion on safety issues. Other topics [e.g., productivity, scheduling, quality assurance / quality control (QA/QC), and administration] shall not be integrated into the safety discussions.

3.1.1 Meeting Agenda

- Site plan
- Emergency preparedness plan
- Storage and equipment
- Fabrication workshop
- Material inspections / checks
- Waste handling
- General
- Inductions and toolbox talks
- Security
- Non-conformance reports
- Joint inspection patrol
- Time keeping
- Incidents / accidents
- Questions / comments

3.2 Induction

All contractor personnel shall be required to receive an initial induction by the contractor's safety officer regarding contractor safety procedures and the requirements of this specification. Escorted visitors and delivery personnel shall be provided with protective equipment for those individuals visiting the site.

After contractor personnel receive their initial induction, they will be given a hard-hat sticker by Singson's safety officer, indicating compliance, and shall sign a statement indicating they will abide by all safety rules and regulations. Their names shall be given to Singson and his Client for record. For extended projects, the induction shall be renewed every two months. During and any time after the formal Induction process, site personnel will be given the opportunity to raise any QHSE concerns they have which, if relevant, be addressed and closed out by Singson Site Management.

All people who are required to go on site will receive specific information and applicable training on such topics as:

- Definitions
- Project Access
- Housekeeping
- Working at Heights
- Excavations
- PPE
- Plant Equipment
- Confined Space
- Lifting Works
- Electrical
- Toolbox talks
- Working Permits
- Manual Handling
- Hazardous Chemicals
- Basic Rules
- Hazards on Project
- Signage and Color Coding
- Site Plan
- Emergency Fire Procedure
- Emergency First Aid Procedure
- Emergency Evacuation Procedure
- Accident / Incident Reporting



3.3 Safety Training

The contractor shall ensure that all personnel working on the site have been properly trained and are competent to perform the tasks to which they have been assigned, and that the level of supervision of any particular discipline is commensurate with the level of experience of the operatives within that discipline. All training shall be documented (recorded in "writing") and available to the Singson and his Client representative.

The contractor shall be required to instruct each employee in the recognition and correction of unsafe acts and conditions and the regulations applicable to the contractor's work environment. The employee shall use these instructions to control or eliminate any hazards or other exposure to illness or injury.

The contractor shall have an adequate number of competent person(s) (with supportive documentation) as required by for various work applications (e.g., excavation, respirators, scaffolding, and confined space).

It is recommended that an additional coloured sticker be used and worn by all new contractor personnel on-site for the first two weeks. This will allow other workers to recognize new personnel and help them to become familiar with site safety requirements and hazards.

The contractor shall acquaint each contractor employee with the safety and emergency equipment available and the procedures to be followed in each type of accident occurrence.

A daily informal 10–15-minute toolbox meeting shall be held at the beginning of each shift, and all contractor personnel shall attend. This will allow the contractor and Singson and his Client to inform workers of present or expected site conditions and review safety-related items for planned work.

Singson and his Client representative will actively participate in the safety process and leadership on the site. As part of this process the contractor shall invite the Singson and his Client representative to participate in the safety inductions, weekly safety meetings, and safety toolbox meetings.

The contractor safety program shall include hazard communication training and documentation regarding chemical use, storage and handling.

Visual aids shall be a part of every accident-prevention program. Visual aids such as posters, films, safety signs, and bulletin-board displays shall be used on a routine basis. These signs shall be in the workers' native language to maximize the effect of the message.

Some activities will require specific skills training and the operator will need to produce valid certification of competency before undertaking safety critical activities e.g.:

- Working at Height;
- Hot Work;
- Confined Space Entry;
- Use of breathing apparatus;
- Approved inspector of scaffolding and equipment, etc.



3.3.1 Training Schedule

TOPIC	EMPLOYEES	FREQUENCY
Induction	All	3x per week (Mon, Wed, Fri)
Toolbox talks	All	everyday
Specific works training		
Hot works	Employees involved in the specific task	Fortnightly continual
Housekeeping		
Electrical		
Safety body harness		
Scaffolding		
Angle grinders		
Noise	All	
Basic safety and health at work (k3)		
Excavations		
Workplace hazards and risk control		
Plant equipment		
Hand tools		
Manual handling	Employees involved in the specific task	
Cranes		
Hazardous chemicals		
Vibration	All	
Radiation		
Fire safety		
Emergency drills		

3.3.2 Training Procedure

All Contractors must notify and send the list of attendees to Singson 3 days before training is to take place. The list must be signed and stamped by contractor's manager.

Singson to inform contractors the exact date, time when the training course will take place. Singson will provide attendance certificates for personal that attend the training.

- **Note:** Singson provides the above listed trainings as a guideline and reference, this does not certify that employees are qualified and certified to do the specific work; contractor needs to ensure workers are competent in the required fields.



3.4 Interventions

The primary objective of QHSE inspections and audits is to protect personnel, contractors and the public from hazards arising from our work activities and to seek improvement in working conditions in terms of health, safety and welfare.

Singson Project and Construction managers have the authority to stop works if there is, or likely to be, contravention of the requirements of our QHSE Management System. Failure, by contractors, to rectify the situation in their works will entitle Singson to make other arrangements and reimburse the cost.

3.4.1 Non-Conformity

The non-fulfilment of a requirement or a deviation from contractor according to QHSE Plan.

Singson will prepare and submit NCR's for any unsafe act or unsafe condition, in order to prevent reoccurrence.

- **Corrective Action** – the action taken to eliminate the cause of an existing problem (non-conformance) in order to prevent recurrence.
- **Preventive Action** – the action taken to eliminate the cause of a potential problem (non-conformance) in order to prevent occurrence

3.4.2 Non-Conformity Procedure

ACTION	▶	<ul style="list-style-type: none"> • Non Conformity Identified.
▼		
REPORTING	▶	<ul style="list-style-type: none"> • Nonconformity report to manager. • Investigate the cause of the nonconformity and identify appropriate corrective action. • Appropriate corrective action approved and implemented.
▼		
REVIEW	▶	<ul style="list-style-type: none"> • Nonconformity report is closed out and forwarded to the QOHSE Coordinator. • Review nonconformity, update register and include data in the Monthly Metrics Report.
▼		
COMMUNICATE	▶	<ul style="list-style-type: none"> • Forward copy of the monthly report to the sector management team. • Input nonconformity data into central knowledge bank • QOHSE Coordinator collates and reports to management team.
▼		
CLOSE OUT / LESSONS LEARNT	▶	<ul style="list-style-type: none"> • Input nonconformity data into central knowledge bank. • QOHSE Coordinator collates and reports to management team.



3.4.3 Auditing

Singson is committed to achieve continual improvement in all aspects of its business. The information from audits, lessons learned, corrective & preventive actions and other key performance indicators subject to ongoing management review enables the measurement and evaluation of our quality, capabilities, and customer satisfaction.

Singson QHSE Manager will conduct monthly safety audits during construction phase and submit report to client and contractor of the findings.

Furthermore Singson QHSE Co-ordinators will conduct fortnightly OHSE Inspections just focusing on particular items, so we can see where contractor needs improving:

- Housekeeping
- Safety task assignments
- PPE
- Respiratory protection
- Fall protection
- Scaffolding / ladders
- Barricading
- Hand and power tools
- Lock out tag out
- Fire protection
- Generators and compressors
- Gas cylinders – welding and cutting
- Cranes and rigging equipment
- Confined space
- Excavations
- Rest areas
- Store rooms
- Emergency safety equipment
- Lifting plans and procedures
- Emergency response teams
- First aid
- Accident / incident investigations
- Training programs
- Permit to work systems
- Site management
- Site conditions
- Safety attitude of site personal
- OHSE plans
- Risk assessments
- Site access
- Emergency preparedness
- Working at heights
- Traffic management
- Power supply
- Welfare facilities

3.5 Site Safety Inspections

As a minimum, contractor supervision and employees shall check the work area daily at the beginning and at the end of each work shift or more frequently depending on site activities and conditions to ensure safe working conditions (e.g., housekeeping, stable shoring, soil conditions, safe access and egress, and that all flames are extinguished).

Over and above the daily inspections Singson and his client will conduct weekly Joint Inspections to ensure any unsafe acts and unsafe conditions are highlighted and contractor is made aware of the conditions. Contractor is responsible to ensure all unsafe conditions are rectified and made safe as per deadline dates specified on Joint Inspection.

3.5.1 Equipment Inspection

Before any tools and equipment is to come onto site, contractor must follow the following procedure:

- Contractors have got “register in / out” forms at the guard House.
- Contractors must inform Singson of all construction materials that will be used on site before they are brought onto site.
- Construction Materials must be filled in on the “register in” form, and contractors to keep one copy and security to keep one copy.
- Construction Materials, Tools & Equipment must be inspected by Singson before allowing them onto site.
- Contractors must complete “register in” form for the tools and equipment only approved by Singson.
- Security to keep the original form. Contractors keep the copy.
- Contractors Safety Supervisor must inspect tools and equipment periodically.
- Only use tools and equipment that has been checked by Singson.
- If Singson find any unsafe tools and equipment, Singson has the authority to immediately remove them from the site.



3.5.2 Equipment Inspection Schedule

Items mentioned below may vary depending on site activities.

Tag colours for quarterly inspections are as follows:

January – March : **RED**
 April - June : **GREEN**
 July - September : **BLUE**
 October - December : **YELLOW**

EQUIPMENT	FREQUENCY
Fire extinguishers	Initial inspection, monthly
Welding equipment	Initial inspection, 3 months
Portable electrical equipment	Initial inspection, monthly
Rebar cutter	Initial inspection, 3 months
Bar bender	Initial inspection, 3 months
Cranes	Initial inspection, 6 months
Plant equipment	Initial inspection, 6 months
Piling equipment	Initial inspection, 6 months
Slings	Initial inspection, 3 months
Hooks	Initial inspection, 3 months
Water pumps	Initial inspection, 3 months
Stamper	Initial inspection, 3 months
Electrical distribution boxes	Initial inspection, 2 months
Electrical extension cables	Initial inspection, 2 months
Scaffolding	Initial inspection, 3 months
Body harness	Initial inspection, 3 months
Cement mixer	Initial inspection, 3 months
Generators	Initial inspection, monthly
PPE security post	Initial inspection, monthly
First aid box	Initial inspection, monthly
Chemical store room	Initial inspection, monthly
Portable toilets	Initial inspection, monthly



4. Site Organization

4.1 Housekeeping and Storage

One of the most important factors in accident and injury prevention is practicing good housekeeping. When work areas are orderly and clean, workers can do their job more efficiently. Housekeeping order is "maintained" not "achieved." Cleaning and organization must be done regularly, not just at the end of the shift. Integrating housekeeping into jobs can help ensure this is done. A good housekeeping program identifies and assigns responsibilities for the following:

- Clean up during the shift;
- Day-to-day cleanup;
- Waste disposal;
- Removal of unused materials;
- Inspection to ensure cleanup is complete.

Often, ineffective or insufficient storage planning results in materials being handled and stored in hazardous ways. Knowing the project layout and the movement of materials throughout the workplace can help plan work procedures and worker training is an essential part of any good housekeeping program. Workers need to know how to work safely with the products they use and their correct disposal.

Other benefits of a clean and orderly workplace are that it helps workers think clean. Good housekeeping is an inexpensive way to improve workers attitudes and morale. It really is not that hard to set-up a plan. It may require a little enforcement in the beginning but over time it will become a habit for our people and contractors because they will see the advantages of keeping things clean and in order.

During the course of construction, the contractor shall properly organize all activities on the job site to the extent that good housekeeping shall be practiced at all times. These shall include, but not be limited to, the following:

- As the job progresses, work areas must be kept clean at all times.
- All materials, tools, and equipment must be stored in a stable position to prevent rolling or falling. Materials and supplies shall be kept away from the edges of floors, hoist ways, stairways, and floor openings. When exterior walls are being built, materials and supplies shall be kept away from the perimeter of the building.
- A safe access way to all work and storage areas must be maintained. All stairways, corridors, ladders, catwalks, ramps, passageways, and work platforms shall be kept clear of loose material and trash.
- Forms, scrap lumber (timber), and all other debris shall be cleared from work areas, passageways, stairs, and in and around buildings or other structures. Nails or other sharp projections shall never be permitted to protrude from forms, lumber (timber), or any other material.
- Scrap must be clean at workplace before, during and after work shift, waste bins must be empty to designated bigger bins every day.
- Welding rod stubs shall not be left on the ground or work platforms. Welders shall be issued appropriate containers for collection of weld rod stubs.
- Combustible scrap and debris shall be removed before, during and after work shift as regular intervals. Waste bins must be empty to designated bigger bins every day for transferring out of site. Safe means shall be provided to facilitate such removal.
- The contractor shall be required to provide an adequate number of waste containers to ensure a clean working area at all times. The contractor shall safely load and transport all refuse and debris to a suitable disposal area away from the job site and make disposition in a legal manner. When more than one contractor is working for Singson and his Client on a site, contractors shall alternate, on a weekly basis, cleanup of common areas (such as parking lots, established eating areas and roadways). Contractors shall always clean their own areas.
- The construction parking areas shall be maintained clean and free of paper, cans, and other debris at all times.
- The eating areas shall be maintained in a clean and orderly condition. Trash containers shall be placed in these areas and frequently emptied. Eating and drinking are not permitted in construction work areas nor in existing operating plant process areas.
- Electric cable shall be kept at the minimum height of 2.1 m (7 ft) overhead or laid flat outside of walkways. At a minimum of once per working day, the contractor shall roll up all electric cable, welding leads, and reposition only those required. For the master cable across the traffic road, the minimum height shall be 8 m overhead with the warning-tag.
- Tools and equipment shall not be strewn about where they might cause tripping or falling hazards. At the end of each workday, tools and equipment shall be collected and stored in the tool room or craft tool boxes.
- Each employee shall be instructed to practice required housekeeping as part of assigned duties.

The contractor shall designate or provide an adequate number of individuals to maintain cleanliness in the site and work area. The work areas shall be maintained, on a daily basis, in a "broom swept or debris free" condition throughout the shift with excess material either neatly stored or removed to storage or disposal areas.



If the contractor fails to neither clean-up work areas in a timely manner nor provide an adequate number of personnel, the Singson and his Client representative(s) will pursue other methods, resulting in these costs being back charged to the respective contractor.

The following are some examples of what can be done to ensure our sites and offices are maintained in an orderly condition:

- Never leave tools in a position where they can fall and injure someone;
- Always tidy up after completing a job;
- If you see any material or equipment in a position that it is likely to cause an accident, move it to a safe place;
- Keep walkways and all other routes free from obstructions at all times;
- Encourage others to follow your efforts in good housekeeping;
- Material must always be stored neatly and tidily and should never be over-stacked so that they become falling hazards;
- Material must be stored in compliance with the manufacturer's recommendations;
- If working with oil and lubricants, then have some means of cleaning up any spillages;
- Suspend power and lighting cables where practicable and avoid trailing them across walkways;
- Clean up waste as it is created; small waste can be bagged, larger waste stacked and disposed of in a correct manner;
- Beware muddy sites – these will greatly increase risks of slips. Keep walkways clear of mud where practicable and keep footwear as clean as possible and ensure loose mud is removed prior to climbing ladders etc.;
- Sketch a plan to show areas on the site where there a material lay down areas, storage & disposal points.

4.1.1 Control of Substances Hazardous to Health (COSHH)

When purchasing and using materials, efforts will be made to eliminate or substitute hazardous substances with a suitable non-hazardous substitute. Where hazardous substances are used, Material Safety Data Sheets (MSDS) must be obtained from the manufacturer / supplier and COSHH Assessment prepared and attached to the risk assessment and outlined in the method statement. Records must be maintained to show that the information has been briefed to relevant personnel.

4.1.2 Storage of Hazardous Flammable Materials

Suitable storage facilities must be provided for hazardous material to:

- Ensure all Highly Flammable Liquids (HFL) are stored in proper ventilated areas away from direct sunlight or heat source;
- Ensure all compounds are secure i.e. lockable and with appropriate signage;
- Ensure provision of emergency equipment i.e. fire extinguishers, fire blankets;
- Only use proprietary clearly marked containers for the storage and distilling of HFL;
- Ensure provision of spill kits and establish emergency response procedure;
- Only store quantities of HFLs in accordance with current Highly Flammable Liquids & Liquefied Petroleum Gases Indonesian regulations;
- Ensure no smoking is allowed in proximity to or during re fuelling;
- Ensure adequate time for cooling down of machinery engines etc. before re fuelling;
- Ensure any mobile bowsers are double contained and have lockable valve and nozzles;
- Ensure any containment system is suitable and sufficient in relation to the quantity of HFL store;
- Take additional care when re fuelling plant and equipment ensuring all filler caps are replaced correctly

4.1.3 Storage of Flammable Gas & Oxygen Cylinders

Suitable storage facilities must be provided for Gas & Oxygen Cylinders to:

- Ensure all Liquid Petroleum Gases (LPG) are stored and transported upright in proper ventilated areas away from direct sunlight or heat source;
- Ensure all compounds are secure i.e. lockable and appropriate signage;
- Ensure provision of emergency equipment i.e. fire extinguishers, fire blankets;
- Ensure provision of an established emergency response procedure;
- Only store quantities of LPGs in accordance with current Highly Flammable Liquids and Liquefied Petroleum Gases country regulations;
- Do not smoke in proximity to or during reconnection of bottles to equipment;
- Ensure bottles are located away from burning equipment i.e. bitumen boilers Min 3Mts distance. Do not store adjacent to electrical or overhead equipment;



- Regular inspection and leak test on LPG bottles and attachments i.e. valves hosing;
- Take account of manual handling when moving bottles i.e. use proprietary bottle trolley;
- Never leave LPG bottles or attachments unattended "particularly in areas accessible to the public;"
- Issuing of hot work permits;
- If working in confined space with LPG fed equipment "remember an excavation can become a confined space" always locate bottles outside ensuring valves are turned off when not in use;
- Do not mix the storage of LPG bottles and oxygen bottle.

4.1.4 Labelling

Hazardous materials and waste must be labelled to prevent spills, accidents, and wasteful use of a chemical product; prevent unintentional and unwanted mixing of different wastes.

4.1.5 Chemicals Inventory

An inventory of hazardous chemicals being used on site must be developed by the project team and maintained. In the event of a significant fire on site, this information must be given to the emergency services when they are called to a site in an emergency.

4.2 Security Arrangements

The security needs are considered for the site / project at the planning stage and reviewed throughout the contract. Special attention is made to deter access by children and to protect the members of the public. All visitors are directed to the site office from where access into the construction area is controlled.

Some of the points that must be addressed are:

- Security arrangements for offices;
- Security arrangements for stores;
- Security arrangements for site compounds;
- Security arrangements for plant and equipment;
- Measures to protect children / public.

4.3 Control Measures for Access to Projects

The following control measures for security / access to the site during working hours must be addressed:

- All contractors and visitors must identify themselves to site / office security and fill in an attendance log book on entering site / office;
- Contractor and visitor vehicles may be subject to inspection on entering and leaving site – dependent on client contract conditions;
- Ensure that all contractors receive a detailed QHSE Induction and that visitors receive the shorter visitor induction before entering the active work area;
- All visitors will be expected to wear applicable PPE at all times while in active work areas;
- Arrangements must be in place to issue contractors and visitors with an ID Card;
- Visitors may be required to provide a list of their equipment prior to entering site.

These are just a few examples of what should be considered when implementing security control measures.

4.4 Contractors Security Responsibilities

Contractor's security responsibilities are:

- Ensure all plant and equipment is secured in compound area;
- Ensure all keys and starting devices are removed from plant and equipment;
- Liaise with main contractor on all security matters that arise.



4.5 Traffic Management Plans and Walkways

The majority of construction transport accidents result from the inadequate separation of people and vehicles. This can usually be avoided by careful planning, particularly at the design stage, and by controlling vehicle operations during construction work.

The following actions will help keep people and vehicles apart and should be considered:

- **Entrances and Exits** - Provide separate entry and exit gateways for pedestrians and vehicles
- **Walkways** - Provide firm, level, well-drained pedestrian walkways that take a direct route where possible
- **Crossings** - Provide a clearly signed and lit crossing point(s)
- **Visibility** - Ensure there are no obstructions to block driver visibility when on or leaving site.
- **Obstructions** - Do not block walkways so that pedestrians have to step onto the vehicle route
- **Segregation Barriers** - Provide barriers to segregate people from vehicles whenever possible
- **Controlling Speed** - Implement Site Speed Limits
- **Reversing** - Providing transport reversing points and spotters to control the movement
- **Routes for heavy plant** - E.g. cranes & piling rigs
- **Information** - Position of the main Site Notice Boards
- **Loading / Unloading** - Specific off-loading areas
- **Welfare** - Layout of site compound and welfare / office facilities
- **Car parking** - Area (inside & outside) construction area for workers and visitors
- **First Aid posts** - Provide a clean environment where people can get initial treatment
- **Emergencies** - Fire Muster Point and address / route to the nearest A&E Hospital
- **Underground hazards** - Identify and mark existing buried services
- **Temporary Works** - Protect temporary work structures from vehicle movements
- **Storage** - Provide waste disposal areas
- **Smoking** - Provide designated smoking area
- **HAZCHEM** - Provide contained storage areas for liquid chemical storage
- **Non hazardous** - Waste storage areas e.g. general waste form offices, etc.
- **Drainage** - Protect foul and surface water drains and other watercourses
- **Wheel Wash system** - A system used for ensuring vehicle mud is not deposited on the road way.

4.6 Signs, Signals and Barricades

Standard safety sign for the construction is included in the contractor cost. The location and quantity of safety sign needed to be decided by Singson and Client QHSE managers.

At locations where potential hazards exist, the contractor shall post, install, maintain, and enforce signs, signals, and barricades that direct personnel or vehicles. Signs and signals shall be in the workers' native language or reflect a pictorial representation to maximize their effectiveness.

Where toxic materials from an adjacent site may drift onto the project site or there is a significant amount of elevated work above 10 m (33 ft), the contractor shall provide windsocks to indicate direction and force of wind.

Barricades must be rigid, 1,070 mm (42 in) high, square, plumb and level. Barricades shall be kept 1,220 mm (4 ft) back from the edge of excavations, openings, or edges of roofs and be strong enough to stop someone from walking into the excavation or openings.

Flagging or warning tape is not effective barricades because it breaks easily. Flagging may be used in conjunction with barricades.

The contractor shall attach danger tags to a piece of equipment (or part of a structure) to warn of potential or immediate hazards.

During the initial phase of the contract and at periodic intervals afterwards, the Singson and his Client the alarm system and the procedures for events such as process upsets and evacuations shall be reviewed with all contractor personnel. Copies of the procedures will be available from the Singson and his Client representative for posting. The contractor shall cooperate with the Singson and his Client representative with emergency practice drills.

When flag people are used, they must wear highly visible reflective outer garment.

Crane and hoist signals used shall be the same as approved by the national, provincial, or local government regulations. Contractor must use warning flag-safety sign to isolate the hoisting-lifting area. (Singson and his Client will provide the sample of warning flag).

Warning Tape Designations:



- Yellow warning tape shall be defined to mean "Observe Area and Proceed with Caution."
- Red tape shall be defined to mean "Danger—Do Not Enter Without Permission."

4.6.1 Safety Sign Colour Scheme

For construction projects, the site sign will have four coloured elements:

- **RED** - Forbidden, Danger or Alarm;
 - **YELLOW** – Warnings;
 - **BLUE** – Must be used;
 - **GREEN** – Emergency Information, Escape, etc.
-
- **RED** is used in forbidden (prohibition) signs to signify dangerous behavior, and to identify and locate stop, shutdown, and emergency cut out devices and Fire Fighting Equipment (FFE).

Forbidden

Are round with a white background and red border and diagonal cross bar (the red must take up at least 35% of the sign area). Pictograms must be black and placed centrally on the background without obliterating the cross bar. The sign means that something must not be done.

Fire Safety Signs

Are square or rectangular with a white pictogram on a red background (the red to take up at least 50% of the sign area). These signs identify and show the location of Fire Fighting Equipment (FFE).

- **YELLOW** is used in warning signs to indicate possible danger.

Warning Signs

Are triangular with a yellow background (the yellow to take up at least 50% of the sign area) and a black border. The pictogram, placed centrally, must be black. This sign warns of a particular hazard or danger.

- **BLUE** is used in mandatory signs to signify the specific behavior or action that is required to be taken.

Must be used

Are round with a blue background (the blue to take up at least 50% of the sign area) and white pictogram. These signs state what specific behaviour or action is expected, or what protective equipment must be worn.

- **GREEN** is used to show the direction of emergency escape routes and exits, and the location and identification of First Aid facilities. It can also be used to indicate a return to normal, for example a non-dangerous state or safe condition.

Emergency Escape or First Aid (Safe Condition) Signs

Are square or rectangular with a white pictogram on a green background (the green to take up at least 50% of the sign area). These signs indicate safe conditions such as First Aid facilities or emergency routes.

4.7 Welfare Arrangements

The main contractor must provide adequate welfare facilities. The type and amount of provision will be decided by the main contractor's risk assessment and number of workers on site. In addition to the provision of these facilities below, regular maintenance and cleaning of them is required. Where applicable clean canteen facilities for consuming food and hot drinks



must be available and regularly cleaned. Particularly dirty work that is hazardous to health may require the provision of additional washing / showering and changing facilities.

Personnel on site	No of WC's	No of Urinals	No of Wash Basins	*Notes:
1 - 25	1	2	2	<p>For every 35 persons above 170 on site, and extra WC is required.</p> <p>For every 50 persons above 170 on site, an extra urinal is required.</p> <p>Wash basins must be suitable for the immersion of the hand and forearm.</p> <p>Hot and cold running water must be supplied.</p>
25 - 50	2	2	3	
51 - 75	3	3	4	
76 – 100	4	3	4	
101 – 135	5	4	5	
135 – 170	6	5	6	

4.8 First Aid Arrangements

The First Aid requirements on site will be decided upon following a risk assessment based on; the activities, location and guidance in the following table:

Category of Risk	No of Employed at Location	Minimum Number of First Aid Personnel
High e.g. construction sites and depots with workshops, manufacturing or processing facilities	<ul style="list-style-type: none"> Fewer than 5 5– 50 More than 50 Where there are hazards for which additional first-aid skills are necessary 	<ul style="list-style-type: none"> At least one Appointed Person At least one First Aider One additional first aider for every 20 employed In addition, at least one first aider trained in the specific emergency action

***Note:** Appointed Person (Somebody who can call Emergency Services); First Aider (Somebody who is trained to administer first aid)

Posters must be displayed stating location of First Aid boxes, First Aiders, Appointed Persons and actions in case of an accident in offices and on projects.

The contractor shall provide its workers with qualified medical emergency personnel to handle and treat all first aid and injuries requiring medical attention.

4.8.1 First Aider

The contractor shall appoint at least: one senior first aider. He / she are responsible for:

- First aid actions.
- Other medical needs of all staff at the Site relating to common acute illness, emergency case.
- Calling ambulance, accompanying with the patient/victim to the hospital for further medical treatment, if needed.

All occurred fees will be in charge by the contractor.

The contractor shall appoint one additional full-time first aider for every 20 employees, who have a valid certificate in first aid training and cardiopulmonary resuscitation (CPR). The certified personnel shall wear hard-hat logos that identify them as such. If the work area is large or spread out, multiple certified personnel are required to ensure that all workers are within five or less minutes of help.



The first aid facilities, at a minimum, will be encouraged to be self-equipped at contractors' workplace to serve at OT night shift and week-end, and shall include the following:

- First aid supplies shall be easily accessible and, at a minimum, consist of a well-stocked, first aid kit. The contractor, consulting with medical personnel or industrial hygienist, shall determine the type, quantity, and location of the first aid supplies that are appropriate for injuries anticipated at the site. Often pre-packaged first aid supplies from a commercial service will be adequate; however, each site must make a determination of the need for additional supplies based on the circumstances at the site.
- To remove injured personnel from elevated areas, the contractor shall provide either a stretcher and containment straps or a basket with bridle or adequate device that meets applicable governmental requirements and regulations.
- The telephone numbers of physicians, hospitals, and ambulances shall be conspicuously posted. Included shall be after-hours contacts.
- A telephone to contact emergency response personnel and for medical consultation.
- In addition, the contractor shall have an area set aside that will contain either a bed or an area to allow an individual to lie down. This bed or area shall be kept clean and free of materials. This area shall not be used for any other purpose than as a first aid station.

4.9 Fire Prevention and Emergency Planning

The contractor shall develop a fire-protection program to be followed throughout all phases of the construction work and shall provide for the fire-fighting equipment according to governmental requirements, these specifications, and the requirements appropriate to the type of construction being performed. This program shall include, but not be limited to, the following:

- All fire-fighting equipment provided by the contractor shall be conspicuously located, free for access, periodically inspected, tagged with inspection date and maintained in good operating condition. Defective or discharged equipment shall be replaced immediately.
- The contractor shall give particular attention to training contractor personnel in the use of fire extinguishers and their limitations.
- The telephone number(s) of the nearest appropriate fire department(s) and emergency response teams shall be conspicuously posted.
- Smoking areas will be designated by the Singson and his Client representative(s). The contractor shall provide suitable receptacles and fire extinguishers in these designated areas. Smoking shall be prohibited in areas where flammable or combustible liquids and materials are used or stored.

When in or near an operating facility, the Singson and his Clients' fire-fighting equipment may be employed in an emergency, but in no event shall the contractor rely on the Singson and his Clients' extinguishers or other equipment. All fires and type(s) of extinguishing equipment used to fight them shall be promptly reported to the Singson and his Client representative.

4.9.1 Fire Prevention Actions

- The preparation of an Fire Risk Assessment & Emergency Evacuation Plan;
- The provision of fire extinguishers and fire blankets;
- The means of raising the alarm;
- Identifying assembly evacuation areas;
- Appointment of Fire Marshals;
- Undertaking fire drills;
- Regular inspection of firefighting equipment e.g. fire hydrant system, extinguishers and warning systems.
- Prohibiting on the use of bonfires;
- Careful storage of flammable liquids/gases;
- Control of lights / heaters needed to be left burning overnight;
- Hot work permits issued by Singson.



4.9.2 Fire Extinguishers

Fire extinguishers must be serviced at least annually. Visual inspections on fire extinguishers must be carried out at monthly inspections. Notices are prominently displayed throughout the site and welfare areas stating the actions in case of fire.

4.10 Occupational Health Surveillance

Contractor must provide site clinic and must put in place systematic, regular and appropriate procedures to detect early signs of work-related ill health among employees exposed to certain health risks; and acting on the results.

For any "special" works, needing detailed procedures and record keeping e.g. working at height or hazardous substance, guidance will be sought from the QHSE Coordinator whether the employee needs to undergo a health assessment by qualified practitioner and also a daily fitness assessment.

5. Risk Assessments

5.1 Purpose

To ensure we provide a safe workplace and have zero impact on the environment we require all projects to assess the risks to our workforce, contractors and others who may be affected by our activities e.g. the public and the environment.

The aim is to prevent accident, illness, environmental harm, property damage and general loss. It is carried out by identifying risk and using appropriate control measures to minimize or eliminate the risk.

5.2 Risk Assessment

A risk assessment is simply a careful examination of anything that may cause harm to the workforce or others during the course of the work. Once this is done, we will then be able to decide upon the most appropriate action to take to minimize the likelihood of anyone being hurt. The aim is to prevent accident, illness, environmental harm, property damage and general loss.

Most activities create potential hazards that need to be controlled. To eliminate or reduce the risk of injury / damage, risk assessments will be prepared by the company or individual undertaking the activity. The general public must be considered during the assessment process where applicable. Some low risk activities e.g. office duties may not require documented Risk Assessments.

We must ensure that contractors have produced a risk assessment for most construction activities. The risk assessment must be reviewed by Singson and any significant risk control must be outlined in a Method Statement which must be approved by Singson before work can start.



5.3 Risk Ranking

The following Risk Ranking system can be used to assess most project conditions and activities.

Likelihood of harm				Action required to eliminate or reduce risk	
Risk	First Aid Treatment	Major Injury	Death / Permanent Disability	Risk Scale	Action Required
				Low Risk	No actions but monitor any changes to activity which may increase the risk level.
				Possible Risk	Risk requires control to reduce to as low as is reasonably practicable (ALARP).
Virtually Impossible	Low Risk	Possible Risk	Risk	Risk	Correction is required – ensure that controls are put in place which eliminate the risk or reduce to ALARP.
Is Possible	Possible Risk	Risk	High Risk	High Risk	IMMEDIATE ACTION REQUIRED – ensure that risk is assessed by competent person and introduce new control measures which eliminate the risk or reduces to ALARP, maintain close supervision.
Can Be Expected	Risk	High Risk	Very High Risk	Very High Risk	STOP WORK – ensure that the risk is assessed by a competent person and introduce new control measures which eliminate the risk or reduces to ALARP, maintain close supervision.

6. Method Statements / Job Safety Analysis (JSA)

A method statement / job safety analysis sets out how a job or process will be carried out, including all the control measures that will be applied. It can also provide information for other contractors working at the site about any effects the work will have on them and help the main contractor to develop an overall QHSE plan for the construction phase of a project. The method statement also provides information to the person(s) doing the activity about how the work is expected to be done and the precautions that they should take.

Method statements / JSA should include most of the following information:

- Description of task;
- Details of means of access;
- Protection of existing work locations;
- Personal protection requirements;
- Safety of others (public, other employees);
- Other health precautions;
- Plant and equipment to be used;
- Maintenance requirements for above;
- Training requirements;
- Waste disposal requirements;
- Emergency procedures for each works mentioned in the method statement;
- Related risk assessment.

Contractor's method statements / JSA must be submitted 7 days in advance of the work start date and must be reviewed and accepted by Singson and his Client prior to work commencing. All methods of work must be devised to eliminate risk or to reduce risk to as low as reasonably practicable.

Method Statements / JSA must be briefed to relevant personnel. If the method of work is changed then the method statement is revised, reviewed and approved again by Singson and his Client before the change is introduced.

Contractor can request copy of Singson's JMS (Job Method Statement) if needed.



6.1 Permit to Work (PTW)

PTWs form an essential part of a safe system of work for many construction / maintenance activities. They allow work to start only after safe procedures have been defined and they provide a clear record that all foreseeable hazards have been considered. As phases of work are carried out, including handovers, work completion and final hand back to the occupier in a safe condition, so the steps are signed off and countersigned.

A PTW is needed when maintenance work can only be carried out if normal safeguards are isolated or when new hazards are introduced by the work.

***Note:** Failure to comply with the permit regulation will be cause for immediate dismissal from the job site.

The following matters should be covered in a PTW. A competent person should sign for each stage of the PTW:

- Authorization for the PTW;
- Description of work / tests to be completed;
- Hazards identified;
- Signs / notices to be placed / isolations / lock-offs to be carried out;
- PPE to be used and other precautions to be taken;
- Date / time work to be started and finished;
- Facility to extend the PTW;
- Acceptance of work;
- Acceptance of completion of work.

Permits to work are required for any and all construction work in the operating areas of existing plants and when working in energized, pressurized, or hazardous areas on grass roots construction sites.

Specific examples for which permits to work are required include:

- Entrance into any vessels, tanks, towers, pits, sewers, confined spaces, and similar enclosures. A confined-space entry permit will require the contractor to provide standby personnel outside the confined space at all times.
- Hot work.
- Any operation for which the hazard of fire exists or there is the possibility of injury.
- Non-destructive testing, such as radiographic and magnaflux testing.
- Electrical work involving an energized system.
- Pressure testing and work on pressure systems.
- Start of a fire, use of an open flame, or any other heat-generating or spark-producing device such as drilling, chipping, soldering and welding.
- Entrance of vehicles and workers into operating areas.
- Abrasive blasting of tanks, vessels, piping, or other objects.
- Operation of a gas engine, open electric heater, operating an electrical switch, or ordinary plug-in connections in hazardous areas.
- Performance of any excavation or digging. In addition to the permit, approval of the plant engineer might be required.

Singson's PTW are as follows:

- Confined space entry
- Crane and abnormal loads
- Excavation and break in
- Excavator permit
- Forklift permit
- Heavy equipment permit
- Hot work permit
- Isolation certification
- Live electrical working
- Overtime working
- Permit for false and temporary works
- Permit to access lift shaft



- Permit to demolish
- Permit to hoist
- Scaffolding permit
- Working at heights (roofing)
- General working permit

Permits to work will be issued on a shift basis. At the conclusion of each shift, a planning meeting will be held among Singson and his Client representative along with contractor personnel to decide which permits will be required the following as attachment file.

It is imperative that the conditions stated on the permit(s) are exactly identifiable to the actual work conditions. When the nature or conditions of a job change in any way, when new tools are required, or different methods are employed to perform the work other than those originally covered in the initial permit, work shall stop immediately, and a new permit shall be obtained. The permit is good for only the work it describes. Work may not progress until the situation can be carefully analysed and a new permit is issued for the new conditions.

Communication is the key to enhancing the effectiveness of the work-permit system. Operators, plant supervisors, contractor employees, contractor supervision, and the Singson and his Client representative shall all be aware of the work permit process and the specific requirements of each permit. This allows each to review the ongoing work and look for possible changing conditions or deviations during his/her daily work routine. Permits will be issued to contractor supervision only, ensuring their knowledge and involvement. After the permit has been issued, but before any work has been performed, the contractor copy of the permit shall be read and initialled by the Singson and his Client representative. This ensures Singson and his Client representative's knowledge and involvement. After the Singson and his Client representative have initialled the permits, the contractor supervisor shall distribute the permit to contractor employees performing that work. The contractor supervisor shall also ensure that the contractor employees read and understand the permit requirements.

- These permits shall be posted in the work area. Plastic holders with magnetic clamps provide ease of display and protect the permits from weather. If the permit cannot be posted, it shall be carried by one of the contractor workers in that area. Permits shall not remain in the contractor's offices.
- Singson and his Client personnel, and the Singson and his Client representative(s), as a routine, will periodically question workers as to the location of the permit and its requirements.
- The Singson and his Client representative(s) will issue daily work permits throughout the course of construction for those systems that are energized, pressurized, or in which a hazard exists and the system areas have not yet been turned over to the Singson and his Client.

7. Personal Protective Equipment (PPE)





The minimum PPE to be worn at Singson site locations on will be:

- Safety Helmet;
- Safety Glasses
- High Visibility Vest;
- Safety Footwear.

When required by the specifications, governmental requirements, by plant operating procedures, or the Singson and his Client, the contractor shall require employees to wear appropriate personal protective equipment (PPE) for all tasks for which there is an exposure to hazardous conditions or for which there is a need to use such equipment to reduce the hazards to employees.

The contractor shall train its employees in the proper selection, use, inspection, and maintenance of all PPE. The most stringent requirements shall take precedence.

Approved industrial hard hats with colour coding for Hardhat, long-sleeved shirts, full-length trousers, and safety-toed leather shoes / boots are the minimum required equipment and must be worn at all times when on the job site. Short-sleeved shirts may be permitted at the discretion of the Singson and his Client representative and will depend on weather conditions, type of work, work environment, and task being performed. When Long sleeves are required, they shall not be worn rolled up. Short trousers are prohibited.

The appropriate safety glasses shall be considered to be required for each special task such as cutting, welding, toxic, hazardous materials, solvent, thinner, oil & gas and grease, etc., as mentioned in following part. Safety glasses with rigid side shields attached to the frame shall be worn and conform to applicable national, regional, and local standards. Safety-glass cleaner shall be made readily available to all contractor employees on site.

Dark or shaded safety glasses shall not be worn indoors or outdoors when outside lighting conditions are poor. The contractor shall supply his employees with the appropriate clear lens safety glasses for use under these conditions.

Safety-toed leather shoes/boots are required for contractor workers on site. Other personnel who are on site to manage construction, commissioning, technical support, or perform any other type of work (other than simply visiting) must also wear safety-toed leather safety shoes/boots. The contractor shall review if there are site-specific requirements that may dictate special requirements, i.e., acceptable sole materials.

Cut-resistant-type gloves, e.g., Kevlar, good to have when working with any material that has sharp edges, e.g., sheet metal installation/removal or banding material, where the chance of cuts or lacerations are likely to occur.

When the possibility of airborne particulates exists (e.g., with rock wool packing or dust), goggles shall be worn over the eyes, and a respirator shall be worn over the mouth and nose.

When the possibility of loose particles or flying projectiles exists (e.g., as with chipping, brushing, chiselling, jack hammering), goggles and a full-face shield shall be worn. Loose, baggy, or frayed clothing shall not be worn around operating tools or equipment.

Rings or hand jewellery shall be removed while performing any electrical, machinery work or working at height on-site.

Appropriate hearing protection and use training, such as ear plugs or muffs, shall be worn for exposure to sounds above 85 dBA. The contractor shall provide appropriate use training according to its hearing conservation program. The contractor shall provide the noise meter for noise checking.

The contractor shall have extra hard hats, safety shoes and reflective vest available on site for visitors.

Before entering any area where toxic fumes or oxygen-depleted atmospheres are possible or suspected to exist, the contractor must ensure that proper safety equipment is used, including recovery lines, wristlets, and a backup person. A permit must be obtained before entering this area. Before entry, the atmosphere must be checked by use of an oxygen and/or lower explosive limit (LEL) analyser.

When working in wet and muddy conditions, rubber boots may be worn. If the boots are the slip-over type, they shall have a steel toe and mid-sole or shank for protection against protruding objects.

Those personnel with long hair, defined as hair that extends below the collar of a shirt, shall have their hair pulled together and shall not hang freely or shall be tucked up inside their hard hat.



The contractor shall supply fire retardant clothing (FRC) in FRC-required plant areas. The clothing shall be of 4.5-ounce minimum material weight. Singson and his Client might require a higher fabric weight garment for specific tasks or activities. When FRC is required, FRC garments must be the outermost layer. This requirement, if applicable, will be detailed in a project-specific document.

7.1 Welding, Cutting and Grinding

A face shield with a flip-up lens and safety glass that attaches to a hard hat is required to be worn. No less than a #10 filter with a plastic cover on both sides of the filter shall be used. The appropriate shade numbers shall be used for the specific type of welding process being performed. Safety glasses with rigid side shields shall be worn under the hood, thereby allowing the welder to grind as well as weld without raising or removing the hood.

For grinding with power tools, a face shield attached to a hard hat in conjunction with safety glasses and side shields is required. With Singson and his Client' approval the contractor may use a clear-plastic face shield with a formed-brow guard attached to a hard hat; however, goggles must be worn instead of safety glasses.

Flying chips and weld slag travel a considerable distance and might be dangerous to other personnel in the area; therefore, screens or shields are required to contain these chips and slag.

Gloves shall be worn to protect hands and wrists. Heavy-leather work gloves, flame-resistant jackets, aprons or similar clothing made of leather or other suitable material and providing complete protection to the arms and torso shall be worn as protection against radiated heat and sparks when welding, torch cutting, or grinding. Clothing shall be free of oil and grease.

Approved cutting-torch goggles must be worn under a full-face shield. Use at least a #3 filter with a plastic cover plate on both sides of the filter.

7.2 Inspections

The contractor will ensure that all lifting equipment, fall prevention systems (e.g. harness), fall protection systems (e.g. scaffolding & safety nets) and PPE will be subject to an inspection and test regime by daily pre use checks, recorded weekly inspections, and planned preventative maintenance including thorough examination by competent personnel. All work equipment identified as defective that affects its safe operation will be immediately withdrawn from use. Safety critical equipment, such as scaffolding can be tagged "Safe for Use" following inspection and approval by a competent person.

All other work equipment will be maintained in accordance with the manufacturer's instructions. Visual checks will be undertaken daily for all hand held tools prior to use with regular servicing and inspection scheduling in accordance with the manufacturer recommendations.

8. Working Conditions

8.1 Manual Handling

No person shall be required to lift, carry or move any load so heavy as to cause them injury. Manual handling assessments must be incorporated into the contractor risk assessments. Wherever possible, manual handling tasks will be replaced by the use of mechanical aids. Where readily available, bagged cement and similar products will be supplied in a maximum size of 25kg.

If it is deemed necessary to lift manually then the original risk assessment must be reviewed and control measures to reduce personal harm are to be briefed to the individuals concerned.



8.2 Working at Heights

A place is “at height” if a person could be injured falling from it even if it is at ground level e.g.:

- Work with a Mobile Elevated Work Platform, Tower Scaffold, Ladder;
- Work on a roof, vehicle, plant, telegraph pole;
- Work next to an excavation;
- Work with harness, rope access or cradles.

8.2.1 Hierarchy of Control

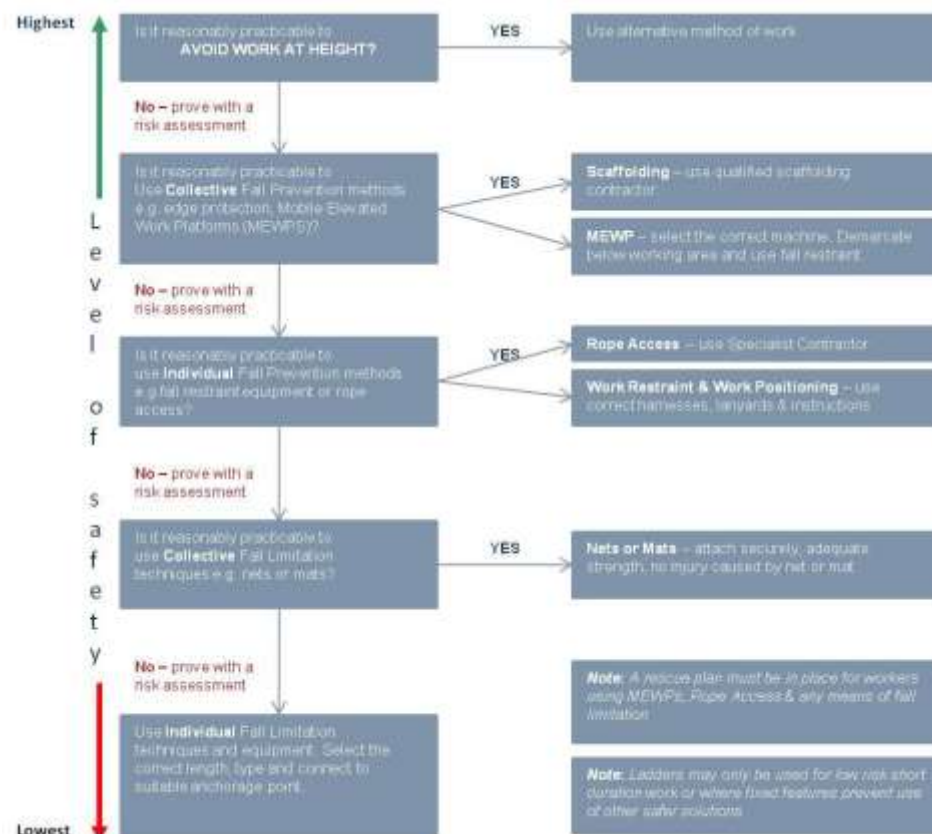
Project management will introduce a hierarchy for managing and selecting equipment for work at height. Singson will always:

- Avoid work at height where we can;
- Use work equipment or other measures to prevent falls where we cannot avoid working at height;
- Where we cannot eliminate the risk of a fall, use work equipment or other measures to minimize the distance and consequences of a fall should one occur;
- Ensure all workers are aware of activities overhead which may impact on them;
- Ensure access to areas where overhead work is being undertaken is barricaded to prevent unauthorized access.

To meet these criteria, the contractor will ensure:

- All work at height is properly planned, organized and briefed via a Method Statement or Job Safety Analysis (JSA) process;
- Those involved in work at height are competent and have validated certification;
- The risks from work at height are assessed and appropriate work equipment is selected and used;
- The risks from fragile surfaces are highlighted controlled and protected;
- Equipment for work at height is inspected and maintained. e.g. access scaffolding, mobile elevated platforms and ladders;
- Access systems will be tagged “Safe to Use” via an approved system e.g. Scaffoldtag following erection and inspection

8.2.2 Working at Height Decision Tree





8.2.3 Fall Protection

Fall protection is required in any elevated work area that is more than 1.8 m in height or above the hazardous area and has no protection to prevent workers from falling (i.e., handrails, mid rails, and toe boards). It is the intent of this specification to provide continuous fall protection except while climbing up or down ladders less than 7 m (24 ft) in height.

Examples for which fall protection is required, (but is not limited to) are:

- Sloping roofs or flat roofs without handrails or a warning system.
- Open-sided elevated floors or platforms.
- Suspended scaffolds, platforms, or stages.
- All steel erection.
- Work in pipe racks.
- Work in or near the edge of structures that are partially complete (i.e., handrails, mid rails, toe plate that is missing, platforms with grating that is not secured).

8.2.4 Use of Fall Protection Equipment

- When working within a scaffold, the worker need tie off at all time.
- For tank construction the worker shall be protected by being tied off to a lifeline attached to the side of the tank or be tied off within the confines of a rolling or stationary scaffold.
- When working in an elevated pipe rack, workers shall be protected either by tying off overhead to a temporary lifeline, pipe, or steel or by being protected with a safety net. Even when workers are tied off, they shall be on a suitable work platform that is at least 460 mm (18 in) wide that is adequately secured from displacement. If a work platform cannot be suitably placed due to surroundings or configuration, a risk assessment shall be completed to assess how to accomplish the work tasks safely. Standing directly on pipe (insulated or non-insulated), conduit, steel beams, cable tray shall not be permitted.
- When working in a structure or on a platform and the handrail, mid rail, or toe plate is incomplete, the worker shall be tied when working within 3.1 m (10 ft) of the edge. The worker shall also tie off when working on a platform where the grating has not been secured.
- The contractor shall make whatever provisions necessary to install retractable reels, rope grabs, lifelines, and attachment lugs on steel being erected before setting steel in place such that the worker will have fall protection while connecting and unhooking.
- Retractable reels or rope grabs must be installed for use when ascending and descending all uncaged scaffold ladders, extension ladders, as well as permanent ladders over 7.3 m (24 ft) above the ground surface. Workers are allowed to climb stepladders without a retractable reel or rope grab; however, the employee must tie off when at the work location.
- When working from inside a telescoping boom man lift or scissors lift, workers must be tied off at all times.
- Rope grabs shall be used in conjunction with a harness and lanyard for fall protection while ascending and descending or for use on sloped surfaces. Vertical lifelines shall be of 16 mm (5/8 in) synthetic rope and shall be used with approved rope grabs designed for use with 16 mm (5/8 in) rope. Distance between the worker and the rope grab shall be as short as possible with a maximum length of 2m (6 ft). Lifelines shall be properly weighted or pre-tensioned at the bottom to ensure designed movement of the rope grab along its length and to curtail the lifeline's sway. Lifelines shall also be terminated at the bottom to preclude the rope grab from falling off the rope. Adequate clearance of obstructions shall be provided for lifeline elongation.

8.2.5 Types of Fall Protection Equipment

- A full-body harness with dual shock-absorbing lanyards is the preferred method of fall protection (Note: only using dual shock-absorbing lanyards when working above 4.0 m. If the height level is lower than 04m can use a full body harness without shock-absorbing lanyards. Encouraging using full body harness with shock-absorbing for any situation)
- Personal fall-arrest systems shall be rigged so that an employee can neither free fall more than 1.6 m (5 ft) nor contact any lower level.



- Anchor points and harnesses shall be capable of supporting 22,200 Newton's (5000 lb.) for each individual connecting to the anchor point.
- Electrical conduit, plastic piping, or other inadequate anchorage points shall not be used for tie-offs.
- Temporary lifelines shall be placed on elevated structures that are without means of fall protection (i.e., top tier of a pipe rack). A minimum of 6.5 mm (1/4 in) wire-rope cable or a minimum of 16 mm (5/8 in) nylon or 20 mm (3/4 in) manila rope shall be used. The lifeline shall have a minimum breaking strength of 22,200 Newton's (5000 lb.). When determining the size of the lifeline, consideration shall be given to the number of people attaching to the line between anchorage points at one time.
- Lanyards shall have locking snap hooks attached to the ends. The locking type has a self-closing, self-locking keeper that remains closed and locked until pressed and unlocked open for connection or disconnection. The locking snap hook provides the best protection against rollout of the lanyard. The use of none-locking snap hooks is prohibited.
- Note: The lanyard shall be stowed in a manner that it does not create a tripping or snagging hazard while being used.
- Retractable lifeline systems shall be used with a harness. They shall be used when working on elevated work areas within which other means of attachment are not possible. They shall be connected only to the "D" ring of the safety harness.

8.2.6 Inspection of Equipment

Equipment used for fall-protection shall be inspected before each use. A visual inspection must be performed by the user to ensure safe equipment condition. Any damaged or defective parts or equipment shall be removed from service immediately.

Some items to watch for during inspection include the following:

Stitching	Cuts
Rivets	Abrasions
Buckles	Acid Damage
Buckle taps	Dry rot
D-Ring	Burns
Connection points	General appearance
Test of PPE stability	Hanging / falling 150kg object

8.2.7 Fall Protection Supervisor

- The contractor shall assign a competent qualified employee to be in charge of the fall protection program. That person shall be responsible for the installation, maintenance, and repair of all lifelines and safety nets. Anyone needing installation, maintenance, repair of any lifeline or safety net shall contact the fall protection supervisor.
- The fall protection rigging supervisor shall be in charge of the correct installation of all lifelines in applications such as pipe racks, structures, building roofs, and tank walls/roofs, whichever applies.
- Demonstration of use: Contractors shall demonstrate and train all of their employees on the proper use of fall protection equipment and procedures.

8.2.8 Ladders

The use and erection of ladders shall comply with governmental requirements.

These shall include, but shall not be limited to:

- Each user shall visually inspect each ladder for defects before use.
- While ascending or descending a ladder, personnel shall not carry anything that will prevent holding onto the ladder with both hands. A hand line shall be used, if necessary, to raise or lower materials and hand tools.



- Ladders shall be securely tied off at the top to a permanent structure or object either supported by a second person during climbing/working on such ladder.
- When working from ladders, the worker shall face the ladder and keep three-point-contact rule at all times, and never use three top rungs of the ladder.
- All ladders shall have appropriate shoes or footings.
- Workers shall not stand with their waist above the top step of a stepladder without wearing a safety harness that is tied off to a local structure or an anchor point located overhead.
- Stepladders shall not be used leaning against a wall, structure, or equipment. Stepladders may not be climbed while in any of these positions.
- Metal ladders shall not be used unless an integral part of scaffolding. Wood, Fiber-glass ladders are preferred because they protect against electrocution hazards.
- Job-built ladders or ladders fabricated at the site are not acceptable, unless approved by the Singson and his Client representative and constructed in accordance with national, provincial or local requirements.

8.2.9 Scaffolding

The use and erection of scaffolds shall comply with governmental requirements.

These shall include, but not be limited to:

- The contractor shall designate a competent person, as defined by national, provincial, and local regulations, to determine the feasibility, appropriate training, and fall protection required during erection, use, and dismantling of a scaffold. This person shall possess the necessary credentials and training to be able to inspect, certify, and authorize changes to ensure a complete and safe system.
- All scaffolds shall be erected level and plumb and be on a proper base support or directly connected to structural members capable of supporting all design loads (i.e., dead and live loads, and factor of safety). No unsecured counterweight scaffold support shall be used. Platforms shall be secured to the scaffold structure.
- If a ladder is used for access, it shall extend above the landing platform a minimum of 1065 mm (42 in) for step through or 1525 mm (60 in) for side-step ladders. For manufactured scaffold the ladder shall be mounted on the 1525 mm (60 in) side of the scaffold frame. Access to the platform shall be through a swinging safety gate that will act as part of the handrail system. Safety chains shall be installed on all scaffolds at all non-continuous handrail points or openings and may be used instead of the swing gate. The length of any one-ladder run shall not exceed 6.7 m (25 ft), and a landing shall be provided between vertical ladder runs.
- For heavily accessed scaffolds, stairs shall be used instead of ladders.
- Appropriate handrails, middle rails, toe boards, and cleats are required. When timber planks are used for decking, they shall be tied down or secured to the scaffold structure at both ends.
- The contractor shall provide the proper provisions for the safe lifting / hoisting of scaffold poles, fittings, and boards. Lifting equipment must be designed to prevent the possibility of the scaffold falling over if the load snags.
- When work is to take place under or near scaffolds or there is a high risk of falling work items, mesh or screen material [25 mm (1 in) square opening, maximum] shall be installed to cover the opening from the toe board to the mid guardrail.
- All scaffolds shall be inspected by the competent person before initial use, after repositioning or modification, and on a weekly basis thereafter. After each inspection a scaffold inspection tag shall be affixed to each scaffold noting the status. No scaffold shall be used without a current tag or when uncorrected deficiencies have been identified. Scaffold Tags may be obtained from the Singson and his Client representative.
- Scaffolds that are hung from a structure shall have redundant support (e.g., safety chains and cables) supporting the decked area.
- Safe working loads on scaffolds shall not be exceeded and scaffold shall be posted to inform personnel of the load restrictions.
- Rigging and hoisting shall never be done from scaffold handrails or braces.
- Ladders shall not be used to extend the height of a scaffold by placing them on the working deck of the scaffold.
- Only pre-manufactured or tubular and coupling scaffold materials are permitted. Components used to join or attach scaffold members shall only be provided by the same manufacturer.



8.2.10 Vehicle Mounted, Elevated and Rotating Aerial Devices

- Only personnel instructed or trained in the safe and proper operation of the aerial device using the manufacturer's operator plan, the user's work instructions, applicable government regulations, and "hands on" training shall be authorized to operate an aerial lift. Operator certification shall be available for Singson and his client inspection.
- Boom and basket load limits specified by the manufacturer shall not be exceeded. All units shall be accompanied by a manufacturer's operator plan and have identification, operation, and instruction placards, decals, plates, or the equivalent that are readily visible.
- Lift controls shall be tested each day before use to determine that such controls are in safe working condition. Daily inspection shall also include visual and audible safety devices, hydraulic and pneumatic systems, instructing components, operational markings, and electrical apparatus. Corrective actions shall be recorded in writing. An annual inspection shall be performed and documented by a qualified person. Inspection documentation shall be available to the Singson and his Client representative.
- Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
- A body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift. Attaching to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.
- Articulating boom and extendible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift except in case of emergency.
- An emergency-stop control shall be available at the platform.
- If outriggers are provided, they shall be used to meet the unit's stability requirements according to the manufacturer's recommendations. Ground conditions shall be evaluated to determine if mats need to be placed under outriggers.
- All platforms shall have top and mid guard rails, toe boards, and an access gate.
- Prior to moving, the operator shall confirm that there is adequate head and body clearance.
- Gasoline- or diesel-powered man lifts shall not be operated inside a closed building or confined space. The use of electrically powered man lifts or propane are recommended for this application. If there is no alternative to the use of fuel-powered man lifts in this application, the contractor shall develop a plan and submit it to the Singson and his Client representative for approval.

8.2.11 Safety Nets

Safety nets shall be provided when workplaces are more than 7.5 m (25 ft) above the ground or when the use of ladders, scaffolds, platforms, temporary floors, safety lines, or body harnesses is impractical. Nets shall extend the following distances beyond the edge of the work surface:

- 2.5 m (8 ft) when the distance between the working level and net is less than 1.5 m (5 ft).
- 3.05 m (10 ft) when the distance from the working level to the net is between 1.5 m (5 ft) and 3 m (10 ft).
- 3.96 m (13 ft) when the distance from the working level to the net is over 3.05 m (10 ft).

The nets shall meet acceptable performance standards of 17,500 foot-pounds minimum impact resistance and shall be tested before use. Edge ropes shall provide a minimum breaking strength of 22,200 Newton's (5000 lb.)

- For the test, a test weight [181 kg (400 lb) bag of sand] shall be dropped from a height of 7.5 m (25 ft) into the center of the net (which is considered to be the weakest point of the system).

8.2.12 Openings in Floors, Walls and Stairwells

- All holes or openings through floors, decking, or walls at all elevations shall have properly sized hole covers or be barricaded immediately. Floor openings shall be guarded by standard railings and toe boards or a cover. All open-sided floors or platforms that are 1 220 mm (4 ft) or more above adjacent floor or ground level shall be guarded by standard railings or the equivalent on all open sides except where there is an entrance to a ramp, stairway, or fixed ladder.



- A cover shall be secured so it cannot slip appreciably beyond the edge of the hole and be sturdy enough to hold the intended load that will be placed over it. Covers shall be labelled in large letters with the word "hole."
- Equipment or material shall not be stored on hole cover.
- On all structures of two or more floors, stairways, ladders, or ramps shall be provided for employees during the construction period.

8.2.13 Rescue Plan

When contractor will be doing any working at height activity then need to provide rescue plan.

8.3 Excavations, Trenching and Shoring

Excavation can be dangerous due to the risk of a trench collapse and the possibility of disturbing underground services, such as a gas main.

Before any excavation work commences, the contractor must obtain from Singson an approved Permit to Excavate. This will highlight the need to ensure:

- A suitable and sufficient assessment of the risks involved is undertaken and safe systems of work made clear to those involved in the works;
- Utility plans showing the location of underground services are to be obtained;
- The plans are interpreted by a competent person;
- Where the plans cannot be interpreted the utility company will be consulted for advice;
- A cable locator will be used to mark the position of the services up to 1 meter outside the excavation area;
- Local authority plans showing drainage, foul water, etc., are to be obtained;
- Suitable excavation equipment will be used and trial holes dug to confirm the location of the services;
- Mechanical excavation will not be used closer than 0.5 meter to the service;
- In the event of a service being damaged the utility company will be informed. The area may need to be evacuated and the emergency services called where there is a risk to life or property;
- Exposed services will be supported and protected to prevent movement and the risk of damage by other works.

The area must be cleared and approved by the Singson and his Client representative before the start of excavation. For work within an existing operating area. An excavation may be classified as a confined space.

The contractor shall ensure that a competent person is onsite full time during excavation, shoring, and when there are open trenches. Excavations and shoring shall be inspected, at a minimum, daily or when conditions change. A copy of the competent person certificates(s) shall be made available to the Singson and his Client representative.

All soils shall be considered granular soils such as sands and gravels (referred to Class "C" in the United States) unless a soils testing laboratory determines and documents otherwise.

An excavation work permit is required for any excavation that penetrates the ground more than 1000 mm. This permit shall be obtained from the Singson and his Client representative.

All excavations within 1,000 mm (3 ft) of a known active underground pipeline, conduit, or cable shall be hand probed and dug using insulated tools. If the underground utility cannot be located, all work at that location shall stop and the Singson and his Client representative shall be notified immediately.

In addition to potholing, hand-probing, and notification of the one-call system, the contractor shall employ the use of metal detectors and other underground location devices to aid in locating underground lines and obstructions.

All excavations must have safe access ways, be properly barricaded, and at night have flashing light at the perimeter of excavation.

All excavations 1,220 mm (4 ft) or deeper into which personnel might be allowed to enter (no matter how briefly) shall be shored, benched, and/or sloped or shall comply with governmental requirements if they are more stringent.



Spoil dirt or excavated material may be used to barricade one side of a ditch or similar excavation. All dirt must be piled at least 1,220 mm (4 ft) back from the edge of the excavation and must be at least 1,065 mm (42 in) high when used as a barricade.

Access and egress ladders are required in any excavation at a maximum of 7.5 m (25 ft) of lateral travel from personnel within the excavation or according to governmental requirements if they are more stringent.

Excavation walls shall be inspected by a competent person before personnel enter and after a heavy rain or thaw. Shoring shall be inspected daily or more often in extremely wet weather.

Nobody is permitted to enter an excavation while equipment is being operated next to the edge.

Special attention shall be given when working near to drilled piers and other potential cave-in hazards.

8.4 Vibrations

Exposure to vibration is reduced to acceptable levels by using appropriate plant and equipment and reducing the period of use of such plant and equipment.

Contractor must look for alternative work methods which eliminate or reduce exposure to vibration. E.g. using a breaker attachment on an excavating machine to break concrete rather than using a hand-held breaker. Make sure the equipment selected for tasks is suitable and can do the work efficiently. Equipment that is unsuitable, too small or not powerful enough is likely to take much longer to complete the task and expose the operative to vibration for longer than is necessary.

The contractor must select the lowest vibrating tool that is suitable and can do the work efficiently and limit the use of high-vibration tools wherever possible. E.g. to cut large holes in brickwork, use a diamond-tipped hole cutting drill with a rotary action rather than a tungsten-tipped hole bit which requires rotary and hammer action. (See European Hire Association's Colour Coding System in RAMPS 059 Vibration).

The contractor must provide the operative with protective clothing when necessary to keep them warm and dry. This will encourage good blood circulation which should help protect them from developing vibration white finger. Gloves can be used to keep hands warm, but should not be relied upon solely to provide protection from vibration.

8.4.1 European Hire Association's Colour Coding System

(ms ²)	Exposure Time
2	16 Hrs
2.4	8 Hrs
4	4 Hrs
5.6	2 Hrs
8	1 Hr.
11.2	30 mins
15.8	15 mins
19.4	10 mins
27.4	5 mins
61.3	1 min

Vibration in m/s ²	Maximum daily usage time in hours	
1 green – below 5	8 Hrs maximum daily use	8 Hrs
1 amber – 5 to 10	2 Hrs maximum daily use	2 Hrs
1 red / no label – over 10	Consult supervisor	the Assess the risk



8.5 Painting and Sandblasting

- All solvent waste, oily rags, and flammable liquids, such as paint thinner, shall be kept in fire-resistant containers until removed from the worksite. Non-compatible materials that might create a fire hazard shall be separated from each other by either a barrier having a fire-resistance rating of at least one hour or a distance of 6.1 m (20 ft).
- Because of possible severe health implications, there shall be no silica sand used for any abrasive blasting operations. The contractor shall use only an abrasive blast media that has been approved by the Singson and his Client representative. It is preferred that abrasive blasting does not take place on site.
- Spray painting is not permitted unless the contractor obtains approval from the Singson and his Client representative to deviate from this requirement before performing the work.
- If lead is encountered on the project, the contractor shall be required to comply with all governmental requirements. The contractor shall train the employees on the hazards of lead, respiratory protection, and review its safety plan with its employees. The contractor shall submit its safety plan to the Singson and his Client representative for review before working with material containing lead.

8.6 Hand and Power Tools

All hand- and electric-power tools, and similar equipment, whether provided by the contractor or contractor employees, shall be maintained in a safe operating condition. All electric-power tools must be checked by a qualified person and measure tool before passing the construction gate and initial use, and then monthly thereafter with Singson and his Client safety officer and Electric Expert's witness. The contractor shall implement an identification program, i.e., colour coding, indicating that the tools have been properly inspected. Damaged tools shall be removed immediately from service or repaired. Tools shall be used only for the purpose for which they were designed. All users must be properly trained in their safe operation.

Any tools that are designed to have guards and handles must have those guards and handles unaltered and in place at all times. Any worker removing a guard, handle, or using an unguarded tool will be subject to dismissal from the job site.

The power supply for electrical tools shall be disconnected when either not in use or changing items such as blades, bits, and discs.

Loose clothing, rings, or other jewellery shall not be worn around operating tools or machines. Sleeves shall be kept buttoned. Industrial leather gloves shall be worn when using tools.

8.6.1 Grinders and Abrasive Wheels

- Grinders are particularly hazardous; workers shall be trained in their use.
- While the grinders are rotating, the operator shall ensure that operator is in a balanced position and that the momentum of the disc will carry the tool away from the operator if it becomes stuck.
- Persons performing grinding operations must be trained in their use and maintenance. Wheels must be selected for the particular application. Wheels must be marked to identify grain size and the bond type. Wheels must have the same or higher safe working speed than the tool. Thin abrasive "cutting" wheels shall not be used.
- All abrasive wheels shall be closely inspected and ring-tested by a competent person before mounting to ensure that they are free from cracks or defects.
- Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place
- Lock-on devices shall not be used, and all tools will be equipped with "deadman" switches. In addition, it is recommended that the on/off switch have a safety plugging that must be engaged before starting the tool.

8.6.2 Powder Actuated Tools

Powder-actuated tools use a powder charge, inside a cartridge, to drive a fastener or stud into a surface, such as concrete or steel. Only personnel who are trained and certified may be allowed to use them. A copy of the certification shall be made available to the Singson and his Client representative upon request.

The following rules shall be enforced:



- All special guards and muzzle fittings provided by the manufacturer shall be in place and in use. They prevent injury from ricocheting studs or flying chips.
- The tool shall be kept unloaded until it is time to drive a stud. This is especially important during transportation and storage. A loaded tool shall not be left unattended.
- The correct powder loads and setting shall be selected for the material that is being penetrated according to the manufacturer's instructions. The other side of a wall shall be evacuated and barricaded in case the stud is driven through it and out the other side.
- Neither a loaded or empty tool shall ever be pointed at any part of a person's body.
- These tools shall not be used near explosives or flammables.
- The operator shall have a stable work surface and be in a balanced position to absorb tool recoil. Powder-actuated tools shall not be used while standing on a ladder.
- Eye goggles, hearing protection, and face shields are required when operating powder-actuated tools.
- Each day before the tool is loaded; it shall be tested according to manufacturer's recommendations.
- Fasteners shall not be driven into hard or brittle materials.
- Pneumatic-Actuated Tools are very similar to powder-actuated tools, except a pressurized gas (e.g., air, N₂, CO₂,) is used as the propelling force. The most typical applications are nail and staple guns.

8.7 Welding, Cutting and Grinding

The contractor shall perform welding and cutting according to governmental requirements. These shall include, but not be limited to, the following:

- When working in an existing facility, welding, cutting, or any spark-producing activity shall be done only after a safety work permit, with any special instructions, has been issued by Singson and his Client
- All exposed, combustible materials located below or in the vicinity of the welding and cutting area must be removed to a safe location. If removal is impractical or impossible, the combustible materials shall be either covered with a non-asbestos, fire-retardant material, or protected by an adequate spark catcher to contain all sparks and slag. A spark catcher or fire-retardant barrier shall be provided on elevated work to prevent welding slag or sparks from injuring personnel located or passing below these areas.
- The contractor shall protect all materials from damage resulting from weld slag. All existing or previously installed equipment, instruments, electrical wire, tubing, thin-wall piping, and other items that could be damaged by slag shall be covered with a fire-retardant material or protected by an adequate spark catcher to contain sparks and slag.
- A fire extinguisher must be located within the immediate area of any welding, cutting, grinding, or open-flame work. A fire watch shall be provided when cutting or welding is performed in locations where a fire might develop. The fire watch must remain in place at least 30 minutes after completion of hot work activities to monitor the area for smoldering fires unless requirements are defined otherwise in the Safety Work Permit
- The user must inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches, and cylinders before they are put into operation. Any defective items shall be replaced or repaired prior to being placed into service.
- Adequate ventilation shall be provided while torch cutting, welding, soldering, or working on galvanized material and while working within enclosed spaces. Ventilation and respirator requirements shall be determined after proper air-quality testing has been performed. Depending on coating content, cutting coated steel and rebar might require the use of respirators.

8.7.1 Welding

- All welding must have a separate and adequate ground cable pulled from the welding machine and connected to the item being welded near this weld. Grounding to plant equipment or structures is not permitted.
- Special precautions shall be taken when operating welding machines within 15 m (50 ft) of either a control room or field control panels. Damage might occur to this sensitive equipment through their grounding systems.
- The contractor shall provide weld screens as required to protect personnel in adjacent areas from weld flash.
- At the end of each shift (or when not in use for extended periods), all welding machines shall be turned off.



8.7.2 Torches

- All fittings, couplings, and connections shall be "leak free." Because of potential leaks, torches shall never be placed and left in a confined space such as a vessel, vessel skirt, sumps, or enclosures.
- Oil and grease shall be kept away from properly cleaned oxygen regulators, hoses, and fittings. Wrenches, dies, cutters, or other grease-covered tools shall not be stored in the same compartment with oxygen equipment since this increases flammability risks.
- Cylinders and hoses shall be placed in an area within which they are not exposed to sparks and slag from a welding or cutting operation. Hoses shall be run overhead whenever appropriate.
- Acetylene and oxygen cylinders must have safety devices to limit over-pressure, a flash arrestor installed on the outlet of the regulator, and a check valve at the inlet of the torch. A flash back arrestor installed on the torch handle itself is preferred. (Some torches are equipped with built-in check valves; these are acceptable substitutes for in-line check valves.)

8.7.3 Cylinders

- Compressed gas cylinders must be secured vertically to an adequate support while in storage or transit. The protective cap shall be in place during storage and transit. Cylinders shall be secured in a cylinder cart or rig truck while in use.
- Cylinders shall not be laid on their side. Under no circumstances shall an acetylene cylinder be laid down. They must be stored in the vertical position, as this could cause a chemical reaction if leakage from the cylinder mixes with certain other chemicals/gases.
- Cylinders shall be raised to upper levels with an appropriate basket and rigging gear. Do not lift cylinders with slings or by the protective cap.
- Do not strike an arc on cylinders.
- Cylinders shall not be used as rollers.
- Oxygen cylinders in storage shall be separated from fuel-gas cylinders and combustible materials (especially oil or grease) by either a minimum distance of 6.1 m (20 ft) or a non-combustible barrier at least 1.6 m (5 ft) high that has a fire-resistance rating of at least one-half hour.
- Cylinders shall not be carried by individuals; other methods such as wheeled bottle carts shall be used.
- Gas cylinders, including oxygen, shall not be used to operate pneumatic tools, pressurize a container, blow out lines, or as a substitute for compressed air or other gases.
- The pressure shall be released from torch hoses before breaking the connections.
- Cryogenic liquid containers, called Dewars, for oxygen, nitrogen, and argon may be used on site instead of cylinders. Special attention shall be given to transporting and lifting them. The ring handle on the top is designed to protect the valve and shall not be used for lifting. A set of specifically designed lugs with appropriate rigging is required. Workers shall be instructed on the hazards and proper handling of cryogenic liquids if Dewars are used on site.

8.7.4 Radiography

- Each radiographer supervisor and assistant shall maintain an up-to-date copy of their license, license conditions, and other required records. A copy shall be made available to the Singson and his Client representative upon request.
- Whenever radiography is performed at a location, a radiographer supervisor must be accompanied by at least one other qualified radiographer or assistant. The additional qualified individual shall observe the operations and be capable of providing immediate assistance to prevent unauthorized entry of personnel into the exposure zone. Radiography shall not be performed if only one qualified individual is present.
- During each radiographic operation, the radiographer or the other individual present shall maintain continuous direct visual surveillance of the operation to protect against unauthorized entry into a high-radiation area.
- Conspicuous posting of "restriction of access" warning signs must be provided for all areas where industrial radiography is being performed. In addition, the radiographers must set up a barrier according to national, provincial, and local governmental requirements or a minimum of 10 m from where the source will be used, as a method of notifying others of this activity.

The radiographer supervisor shall:



- Ensure that radiation safety activities are being performed according to approved, national, provincial or local procedures and regulatory requirements in the daily operation.
- Ensure that personnel monitoring devices are calibrated and used properly by occupationally exposed personnel, and that records are maintained of the monitoring results.
- Ensure that at all times during radiographic operations each individual conspicuously wear, on their body, a combination of a direct-reading dosimeter, an operating alarm rate meter, and a film badge.
- Maintain copies of current operating and emergency procedures.
- Ensure appropriate control handling and use of licensed sealed sources and radiographic exposure devices so that no person is likely to be exposed to radiation doses in excess of the regulatory exposure limits
- When possible, radiography shall be performed when there are minimal personnel on site.
- When others are on site, a safety work permit shall be obtained for radiographic activities.

8.8 Electrical Work

All electrical work, installation, and wire capacities shall be according to governmental regulatory requirements, area classifications, and recognized industrial codes.

The construction and installation of permanent and temporary electrical power transmission and distribution lines shall comply with governmental regulatory requirements. All temporary power systems shall comply with the following guidelines:

General:

- Power cable must be of double insulation.
- Proper ground-fault protection shall be provided. Ground-fault circuit interrupters (GFCI or ELCB) are required in potentially wet areas and for outdoor, temporary-construction power receptacles. GFCI must have its rated leakage of 30mA for hand help power tools, and 100mA for heavy duty power tools.

Aboveground:

- Suspended, energized wires shall not be allowed in areas of crane, equipment, vessel loading and maintenance access.
- Splices in suspended wires shall be used as a last resort and shall be structurally supported so that the splices do not carry tension.
- All suspended wires shall be insulated.
- All suspended wires shall be a minimum of 6.1 m (20 ft) above the ground across traffic area. All suspended wire below 6.1 m (20 ft) must be of double insulation.
- In case electric cable of electric hand tools is not long enough to hang at height, the warning sign must be put on place.

Belowground:

- All wire below the ground surface shall either be encased in intermediate metallic conduit (IMC) or equal conduit and buried a minimum of 300 mm (12 in) or shall be encased in polyvinyl chloride (PVC) conduit and buried a minimum of 600 mm (24 in).
- All underground temporary power shall be identified by flagging or staking to show its exact locations. Flagging and staking shall be maintained throughout the project. It is recommended that these conduits be encased in red-dyed concrete when located in either high-traffic or heavy-equipment travel areas.
- Avoid installation areas that are expected to require future excavation.
- The contractor shall be required to provide frequent warning signs for both aboveground and belowground installations throughout the site. All temporary distribution panels shall be properly identified and posted.
- Procedures to lock-out/tag-out an electrical device in an operating plant might vary with the type of equipment and type of process. The Singson and his Client representative shall review each situation.
- Work to be performed in an energized substation or electrical building area will require that an additional permit be issued by the Singson and his Client representative. The contractor shall ensure that proper electrical grounding straps/earth grounds are installed at the incoming power line. This precaution protects workers in the substation or electrical building from exposure to hazardous energy caused by inadvertent energisation of the incoming line.
- All electrical tie-ins to existing energized circuits and equipment shall be closely coordinated with the Singson and his Client representative. No circuits shall be energized or de-energized without the approval of the Singson and



his Client representative. Safety work permits, tag-out, and lock-out procedures shall be reviewed by the Singson and his Client representative and shall be strictly followed.

- Before performing work, all breakers, switches, and oil circuit breakers (OCB) shall be tagged and locked out by both the contractor and the Singson and his Client representative.
- Precautions shall be taken to ensure that any open wiring is inaccessible to unauthorized personnel.
- Electrical work requires the use of danger tags. Additional information on tagging follows:
- A construction electrician shall lock all electrical switches first, and then place the tag.
- All tags placed by each electrician shall be accompanied by the electrician's lock.
- Before starting work, the switch shall be tried after locking and tagging to ensure that the correct switch is locked and tagged.
- Barricades and warning signs shall be erected a minimum distance of 3 m (10 ft) away from all areas where testing (i.e., megger, hi-pot) is being performed. All such areas must be attended by contractor personnel during the test.
- Stripping of wire insulation shall be performed by using only proper knives (short-bladed and thick-handled) or specifically designed wire-stripping tools. The slicing action shall always be away from the worker. It is recommended that cut-resistant gloves (e.g., Kevlar) be worn when stripping wires.
- Illumination: The contractor shall ensure that construction areas, aisles, stairs, ramps, runways, corridors, offices, shops, and storage areas within which work is in progress are adequately lighted with either natural or artificial illumination.
- Flash Fire Protective Clothing (FFPC) or suits, dielectric gloves, and face shields shall be required according to governmental or Singson and his Client requirements when working on energized circuits, operating switchgear and medium voltage (380/480 volt) and above switches. This might apply also to standby personnel.
- The use of non-insulated metal fish tapes is prohibited in new or existing conduits. Insulated metal fish tapes, non-metallic fish tapes, or a vacuum and string system are the only accepted methods. If insulated metal fish tapes are used, the insulation integrity must be inspected on a periodic basis. The use of any fish tape in conduits containing 480-volt power conductors is not permitted unless approved by the Singson and his Client representative.
- Conductive articles of jewelry and clothing (such as bracelets, rings, key chains, necklaces, etc., metalized aprons, cloth with conductive thread, metal headgear, or unrestrained metal frame glasses) shall not be worn where they present an electrical contact hazard with live parts, unless such articles are rendered nonconductive by covering, wrapping, or other insulating means.

8.8.1 Lock Out Tag Out (LOTO)

- Danger tags are required for work on operating systems and when work is energized, pressurized, or hazardous. They shall be used to prevent the operation of switches, valves, or pieces of equipment when personal injury might occur or equipment might be damaged. Lock-out shall be used to physically prevent unauthorized personnel from adjusting the locked device and provide control when multiple authorized personnel are involved. Examples when lock-out / tag-out shall be used include electrical work, pressure testing, tie-in, when attaching to a pressurized or energized system, or equipment maintenance.
- Each worker shall place his/her own lock and tag, which shall be signed and dated. After completion of the work, each worker shall remove only his/her own lock and tag either at the end of each shift or agreed-to alternative time period (i.e., multi-shift/day tasks). The used tag shall be destroyed and a new tag shall be used when needed.
- Only the standard danger tag shall be used.
- Devices shall not be locked and tagged unless approval has been received from contractor supervision and the Singson and his Client representative.
- When working on a grassroots site or in an operating facility, the local operating procedures shall be referenced and followed. Verify electrical equipment or circuits are de-energized prior to performing any work. Use of approved test equipment and Singson and his client procedures, i.e., "Test before Touch" shall be implemented.
- The following procedure is intended to maintain a consistent method of facilitating correct lock-out/tag-out requirements for all contractor activities throughout the duration of the project. All workers shall receive training by Singson and his client or contractor supervision. The contractor shall document this training.
- All energy isolating devices shall be capable of being locked out and tagged out. They shall be appropriately identified according to the following procedures and regulations. Any energy isolating device that is not equipped with an integral lock-out mechanism shall be "chained out" and tagged out, or if chaining is not possible, an engineering control approach shall be applied to control hazardous energies completely. Energy-isolating or



mechanical-energy devices include, but are not limited to, electrical disconnects and breakers, valves, pumps, heaters, spring hangers, and load or weigh cells.

- The monthly safety audit for LOTO system of contractors shall be carried out by Singson and his Client representative.

8.9 Confined Space Entry

Confined space means a space that satisfies any or all of the following conditions:

- Is large enough and so configured that personnel body can enter and perform assigned work, including bulky tank areas with more than 1.1m of height (CIP tank, CO2 storage tank.)
- Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, hoppers, and pits are spaces that might have limited means of entry).
- Is not designed for continuous personnel occupancy.
- Has potential for engulfment hazards.
- Is an excavation in which either a hazardous material or atmosphere is present or suspected of being present. Chemical plants and refineries may classify a depth greater than 1,220 mm (4 ft) as a confined space because of the presence of heavy gases within these facilities.
 - Confined-space entry is considered the breaking of the plane of an opening into the space by any part of the body.
 - Site-specific training for contractor personnel will be required before they are permitted to enter into a confined space.

A hazardous atmosphere is one that might expose personnel to the risk of death, incapacitation, injury, or acute illness from one of the following causes:

- Oxygen concentration below 19.5% or above 23.5%
- Flammable-gas concentration above 10% of its lower flammable limit (LFL)
- Airborne combustible dust that exceeds its LFL
- Toxic gases exceed permissible limits
- Any atmospheric condition that is immediately dangerous to life or health.
- The contractor shall be provided the gas detector.

The Singson and his Client representative and the contractor's safety supervisor will evaluate the site conditions on a weekly basis, or more often as changing conditions dictate, to determine which areas on site are considered to be confined space. This is very important, as conditions will change during the course of construction, often affecting the classification status of a confined space.

A Classification II and III, confined space area requires that the entrance(s) be controlled by both blocking the entry to prevent unauthorized personnel from entering and posting a sign that prohibits entry.

8.9.1 Confined Space Classification

Classification I:

Entry permit and attendant not required (non-permit-required confined space): Safety surveillance audits shall be performed by the contractors' safety supervisor on a regular basis. **Classification I** confined space consists of all of the following:

- Continuous natural ventilation alone can maintain the space in a safe environment provided there are sufficient openings or openness to allow for complete air circulation in the area where work would be performed.
- There is no potential hazardous atmosphere.
- Does not contain a material that could engulf personnel.
- Does not have a configuration that could trap an individual.
- Does not have a configuration that could asphyxiate an individual.
- Does not contain any other serious safety or health hazards.

Examples:



- New construction (in-progress)
- Open field pipelines free of known hazards

Classification II:

Entry permit required and attendant not required: Safety surveillance audits shall be performed by the contractor's safety supervisor on a regular basis. A workplace risk assessment might be required.

- It applies to new construction work that undergoes changes that diminish access or ventilation as the job progresses, but is not yet defined as a **Classification III** Confined Space. This classification shall be applied very conservatively. If there is any doubt, implement the most stringent confined space requirements. Appropriate procedures and justification shall be documented when implementing **Classification II** confined spaces.

Classification III:

Entry permit, attendant, and rescue personnel required: Safety surveillance audits shall be performed by the contractor's safety supervisor on a regular basis. A **Classification III** confined space consists of any of the following:

- There is a potential for hazardous atmosphere.
- Contains a material that would engulf personnel while entering or while working within this space.
- Has a configuration that could either trap or asphyxiate an individual.
- Contains other serious safety or health hazards.

Examples:

- Desiccant-filled vessels, loading or inspecting
- Cleaning, painting, or lining where vapours or fumes are present
- Annular space insulation installation
- Vessel or process equipment previously in service
- Electrical hazards
- Whenever it is deemed that additional control and monitoring shall be maintained

8.10 Steel Erection

Structural steel erection shall comply with governmental requirements. This shall include, but not be limited to, the following:

- During the placing of structural members, the load shall not be released from the hoisting line until the members are secured at each connection with not less than two bolts (or the equivalent) that are drawn up wrench tight.
- Before extra members are assembled, all primary structure joint bolts must be in place. Under no circumstances shall the second level of the structure be erected until all the primary structure joint bolts of the first elevation are installed and torqued.
- Taglines or guidelines shall be used for controlling loads.
- Multiple loads shall not be lifted simultaneously by a single crane or lead line.

Erection of stairs, handrails, and grating shall be performed concurrently with the structure being erected. Erection of the next level may not proceed until they have been completed.

9. Plant Equipment

Singson and his client require that a contractor only supplies work plant and equipment that is correct and suitable for the job and ensures that the equipment is maintained and kept in good working order.



“Adequate” training in the safe and correct use of the equipment must be given to “users / operators”. Managers / supervisors should be aware of the general safe working requirements of the equipment.

9.1 Plant Operation

9.1.1 Competency Certification

Plant operators will be required to carry with them at all times their certification of competency to operate the relevant plant. Any operator arriving on site without the requisite certification will not be allowed to operate any plant or equipment until proof of their competency has been produced. Records of operator proficiency will be maintained in the relevant site file.

9.1.2 All Round Visibility (Reversing Movements)

Where the mobile work equipment driver’s direct field of vision is inadequate to ensure safety when travelling or when about to move, then visibility aids or other suitable devices must be provided so far as is reasonably practicable. Singson require that operators of mobile equipment should be able to see anyone who may be put at risk when any control is operated. Therefore if direct vision is impaired, then mirrors or more sophisticated visual or sensing facilities may be necessary.

Examples of devices, which can aid the driver’s vision, include:

- Plane, angled or curved mirrors;
- Radar;
- CCTV systems.

The selection of these devices for use on mobile work equipment is a matter of risk assessment, taking into account of the purposes for which the devices are provided and their ability to improve driver visibility.

9.1.3 Roll Over Bars & Seat Belts

Where there is a risk of mobile work equipment rolling over, protective measures such as cabs or roll bars, are to be fitted to stop the machine rolling more than 90° (onto its side), thereby minimizing the risk of a person being crushed. The cabs or roll bars should give adequate clearance for operatives to escape if the equipment does completely overturn.

Where roll over protection systems are fitted seat restraints must be fitted to equipment and operators instructed to wear them at ALL times. This requirement may also apply to equipment fitted with a fully enclosed cab if there is a risk that a person being thrown from their seat could be injured by coming into contact with the inside of the cabs structure.

Restraining systems must be fixed to a strong anchorage point on the main structure of the equipment.

9.1.4 Inspection

The contractor will ensure that all lifting equipment e.g. cranes, mobile elevated work platforms, forklifts etc., will be subject to an inspection and test regime by daily pre use checks, recorded weekly inspections, and planned preventative maintenance including thorough examination by competent personnel.

9.1.5 Plant Repair

All on-site plant repairs must be subject to a risk assessment and also the issue of a Permit to Work approved by the Project / Construction Manager.



9.2 Lifting Operations

9.2.1 Moving Heavy Loads

When moving heavy loads around, there are some practical things that should be done to prevent accidents. Firstly, loads should never be moved over people at work. If a load needs to be moved where workers or members of the public are present, the area must have barriers or other means to ensure no one is allowed to walk under the load while it is moving.

Secondly, a trained and certificated banks man (spotter) should always be used when moving heavy loads by crane. A Banks man is someone who watches the moving load at all times, and who communicates with the crane driver. Often, the driver of the crane is unable to see the load, especially during touch-down, so it is essential that good communication exists between the banks man and the driver.

Tag lines are used to guide the load away from other structures as it moves from the pick-up point to the touch-down area. Tag lines, which are usually attached to the load, are guided by members of the lift crew.

9.2.2 Lifting Equipment

The first thing to consider is the equipment. All equipment used for lifting or moving heavy loads should be properly constructed. For example, equipment carrying a CE mark ensures that it has been constructed to international standards. In addition, equipment that meets these standards will have documented test procedures that should be adhered to before using the equipment. Certain types of lifting equipment, such as cranes, must be inspected by a qualified engineer on a regular basis.

9.2.3 Lifting Accessories

This means the various items used for attaching the load to the lifting equipment. Load means any load or item being lifted or lowered including people.

The following are examples of lifting equipment or operations:

- A rope or pulley used to lift a bucket of cement on a building site;
- A crane, mobile crane, tower crane, etc.;
- A vehicle tail lift;
- A mobile elevated working platform (MEWP) (Cherry picker);
- A loader crane fitted to a lorry for delivery purposes;
- Tripod and man riding winch.

The following are examples of lifting accessories:

- Chains;
- Slings;
- Eyebolts;
- Shackles;
- Lifting beams;
- Ropes, wire cables, hooks;
- Rescue harnesses.

9.2.4 Lifting Plans

For operations that use cranes, a formal Lift Plan or Hoist Permit must be prepared. Lift plans are a type of risk assessment, whereby the hazards of the operation are carefully considered, the risks are calculated, and suitable control measures are identified and put in place. Before any lift proceeds, the lift plan should be discussed with the lift team, because it gives everyone concerned with the lift an opportunity to ask questions about their role in the operation.

The main purpose of a Lift Plan or Hoist Permit is that it will prompt you to consider control methodologies such as:

- Eliminating conflicting movements;



- Ensuring that all lift equipment (including lifting accessories) are subject to test and inspection regimes;
- Ensuring only competent crane personnel i.e. operator, slinger, signaler and banks men are deployed;
- Ensuring that weather constraints are recognized and monitored;
- Ensuring effective communication from ground to operator is understood and unique to each crane.

9.2.4.1 Initial Conditions

The working area must be cleared to allow the crane assembly and lifting operations to take place in a safe manner without endangering site personnel. All enabling works must be completed prior to crane arrival.

All personnel not directly involved with the lift must be kept out of the crane assembly and rigging areas. If necessary the working area should be barricaded or otherwise secured against unauthorized entry.

The Crane Supervisor shall make himself known to all relevant personnel and conduct a method statement briefing prior to commencing operations.

Under no circumstances shall the crane be moved for lifting purposes if not under instruction from the Crane Supervisor.

All cranes that are left unattended for a period of time must be left in a safe condition (jib retracted or laid down if possible) with NO load on the crane hook. Cranes must be shut down and ISOLATED as per the manufacturer's instructions, secured and locked.

Lifting operations must stop during high winds, storms or when there is a risk of lightning strikes.

9.3 Cranes

All crane work must be pre-planned to ensure the safety of the process. It is the responsibility of the contractor and/or crane equipment supplier to ensure any crane used at Singson and his Client construction site is in safe working condition. Documentation must be supplied with the crane and reviewed by project management prior to any work.

Documentation required:

- The crane has been inspected and maintained in accordance with the manufacturer's specifications OSHA, ASMA B.30 standards or local equivalent. (follow all the checklist by Singson and his Client)
- The crane complies with all applicable regulatory or special requirements of the site. Cranes will be equipped with an anti-two-blocking device.
- Operator's plan must be available in the cab of the crane.
- The crane has a current annual inspection by a person qualified to inspect and certify cranes and legislation requirement.
- Logs for daily, weekly, monthly and annual inspections are available in the crane cab for inspection.
- The operator must have a current crane safety-training card or documentation verifying the operator's qualifications to operate this specific type of crane. The crane operator will be licensed by the local authority having jurisdiction.
- Written safe crane operating procedures are available in the cab of the crane. These are to be written by the contractor. The operator's plan may not be used in lieu of separate safety procedures.

At no time will a crane be operated with computer systems or limit switches in a non-functioning or override condition. The weight of the load must be known (not estimated) or means taken to accurately weigh the load before any pick. All outriggers must be fully extended and set on stable ground and solid cribbing before any lift. All rigging gear is inspected before each use. Damaged equipment must be immediately taken out of service. All rigging gear must be rated safe capacity for the lift. Use of a dedicated signal person must be considered in site planning. Christmas treeing of loads (more than one load rigged from the hook) is prohibited. No personnel will ride the hook. Critical picks, any lift that is 80% or greater of the rated capacity of the crane pick configuration, will require a lift plan.

Critical pick is if collision, upset, or dropping could result in any one of the following:

- Unacceptable risk of personnel injury or significant adverse health impact (on or off site).
- Significant release of a hazardous material or other undesirable conditions.
- Undetectable damage that would jeopardize future operations or the safety of a facility.
- Damage that would result in unacceptable delay to schedule or other significant program impact such as loss of vital data.



- If the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.

Due to the seriousness of crane safety procedures, any operator or supervisor who violates these procedures will be subject to immediate disciplinary action, up to and including removal from the site.

Multiple cranes on site (whenever two or more cranes are in use on a site) the following procedures must be followed:

- Crane Lift operating meetings will be held before work starts. Attending:
 - Operators.
 - Dedicated signal personnel and riggers.
 - Foremen of crews using cranes.
- A written working lift plan, Work plan, JSA must be submitted as part of the project safety plan to project management for the use of multiple tower cranes, including a tower crane and mobile cranes, prior to work on a site. Crane Lift Plan meetings must be hold between Safety Officers, Supervisors, project owners / engineers to verify and approve such plan before lifting.
- Radio communications between all operators and signal personnel.
- Quadrants of operation clearly defined.

9.4 Equipment Register

All contractors will supply Singson Site Management and keep up to date an asset register of all plant and equipment used on this project.

10.Environment

10.1 Environmental Impact Assessment and Controls

A site specific environmental impact assessment (EIA) has to be to identify elements of impact associated with site activities and the surrounding environment. E.g. trees, watercourses, habitat, local ecology, neighbours etc. The significant findings must be listed below together with the specific control measures.

A Site Waste Management Plan (SWMP -which follows), must be completed for all projects to identify waste streams at various stages of the project and to also identify suitable and sufficient means of control and disposal of such waste arising.

The hazards and control measures must be communicated to the relevant personnel during site induction.

10.2 Site Waste Management Planning (SWMP)

Steps 1 – Appoint someone to assist with the SWMP – Waste Coordinator

Step 2 - Waste Identification

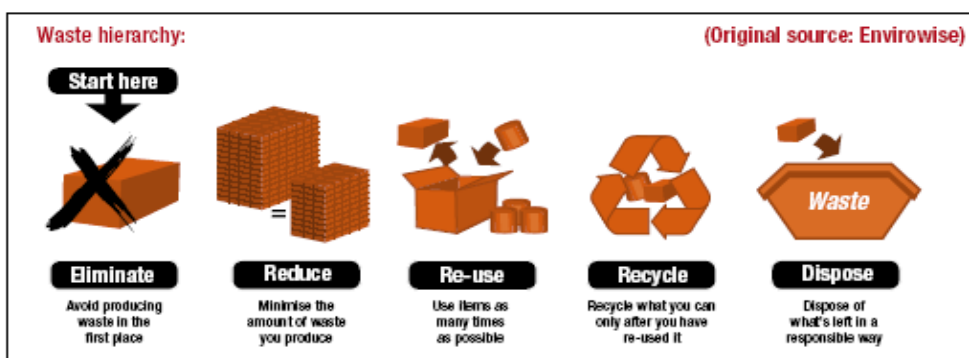
Step 3 - Identifying your Waste Management Options

Step 4 – Identify where and how you will dispose of your waste

Step 5 – Make sure your on-site materials and waste handling is well organized

Step 6 – Communicate the plan and carry out the right training

Step 7 – Measure your waste





10.3 Waste Management

The contractor is responsible for the removal and safe disposal of their waste and surplus materials from the building / works and the maintenance of a clean and tidy work area in accordance with country legal requirements.

10.3.1 Solid Waste

Recyclable solid wastes include: wood, cardboard, glass, paper, aluminium, plastic, ferrous metals (copper, stainless steel, and so forth) must be collected and segregated from domestic waste to reduce generated waste and increase recycled waste (Reduce, recycle).

Acknowledge that Contractor shall not permit removal of waste(s) from the Site for personal or other use.

10.3.2 Hazardous Waste

Normally, all used oil, used lubricant, residue chemical/painting, empty chemical/painting containers, printer cartridges, printer ink, contaminated clothes and PPE by chemicals or oil, medical waste will be considered as hazardous waste. Contact Singson and his Client Representative to be further advised types as well as the disposal method of hazardous waste at construction site. Describe method to properly collect, identify, and label Hazardous Wastes.

Identify the disposal plan, including removal of Hazardous Materials brought on- site by Contractor. All hazardous waste generated at Singson and his Client must be managed by authorized suppliers according to local law requirement.

10.3.3 Waste Water

- When the construction of a section or system of the project has reached a stage of completion such that commissioning, testing of that equipment or system may start, it will be generated wastewater (ww). The contractor must report to Singson and his Client HSE team on their wastewater quality by sampling and analyzing or by their available analysis result in similar previous process.
- Water flush permit must be submitted to and approved by Singson and his Client HSE team before discharge such ww. Dumping them into storm drainage or domestic wastewater with exceeded standard discharge limit of domestic ww will be forbidden at site. According to the local legislation, the contractor will be in charge of discharge and treating such ww.
- In case Singson and his Client construction site have finished its own wastewater treatment plant, either the sewage system is available, Singson and his Client HSE team will support the contractor how to discharge their occurred ww in proper way.

10.4 Noise

Controlling noise, to protect operatives hearing, to comply with Singson requirements, is carried out by making noise assessments.

10.4.1 Noise assessment

To ensure workers are not exposed to harmful noise levels of 80dB or above, the contractors must:

- assess the risks to their workers from noise at work;
- take action to reduce the noise exposure that produces those risks;
- provide the workers with hearing protection if the harmful noise levels cannot be reduced by using other methods;
- make sure the country legal limits on noise exposure are not exceeded;
- provide workers with information, instruction and training;
- Carry out health surveillance where there is a risk to health.



10.4.2 Noise Protection Zones

In places where workers might be exposed to harmful noise levels, an "ear protection zone" must be established, using the proper noise PPE sign. Anyone going into an ear protection zone, even briefly, must wear proper protection.

Potential noise issues that may impact on local residents must be recognized. Control measures such as agreed starting times and active monitoring of noise levels from plant, equipment and processes will be undertaken.

11. Accident & Incident Investigation & Reporting

Every contractor and their subcontractors shall keep occupational injury and illness records for its employees in accordance with governmental regulations where applicable. These records shall be available (either at the contractor's home office and applicable job site) for review by the Singson and his Client representatives and posted according to applicable governmental regulations

The contractor shall report immediately to the Singson Management and his Client representative(s) any and all occupational injuries and illnesses, as well as all near misses that occurred at the job site. This shall be followed up by submitting a written report to the Singson and his Client representative(s) within 24 hours of occurrence.

The contractor (field and home office management as a minimum) shall investigate each accident to determine the root cause(s) and implement future corrective measures. A review meeting will be required with the contractor, Singson and his Client representative(s).

The Singson and his Client representative(s) (any person on site who has been identified as being responsible for this activity) will immediately notify their supervisor or responsible party of all serious accidents or near misses. The Singson and his Client representative and contractor management shall participate in the accident investigation and shall follow up with the submittal of an accident report on the appropriate Singson and his Client form. This report shall be submitted within 48 hours after the incident occurs.

A Root Cause Analysis (RCA) shall be conducted for all cases with days away, recordable injuries, and serious near misses. The contractor shall make available all parties involved in the incident including injured employee, witnesses, and supervision for this activity.

Each site shall encourage the reporting of Near Miss incidents and encourage participation in a Site Safety Committee.

11.1 Reporting

All injuries to persons including members of the general public, environmental incidents, dangerous occurrences or "Safety Concerns", must be reported to Singson and his Client HSE team immediately.

In the event of a fatal accident or where a major or lost time injury is suspected, the person in charge of the operation must immediately notify Singson and his Client HSE team and the investigation team will be set up to investigate such incidents, report must be submitted during 24hours since the even happened.

11.2 Investigation

Accidents, incidents, environmental incidents, dangerous occurrences and/or near misses will be investigated to ascertain causes and make recommendations to prevent recurrence. Any accident or incident deemed recordable will be reported to Singson and his Client appropriately.

11.3 Records

All accidents must be reported to Singson and his Client, Singson and his Client SHE team where they will be updated on an Accident / Incident Database.



11.4 Emergency Case

In the emergency case, all the people need to follow The Evacuation Plan apply for the construction site. No running in any case is accepted. The evacuation assembly point as well as the locations of safety facilities must be indicated clearly on the site map. All members of SHE teams (Client, Singson and Contractor(s)) shall be able to identify the shortest route(s) for local emergency support agents (Ambulance, Medical centre, Fire Fighting Brigade, Police Forces...) approaching the site.

All injuries should be attended to immediately. Seek help if you are in doubt; contact the First Aiders on site or Singson and his Client SHE team members.

Contact numbers shall be identified and posted at site:

CONTACT	TELEPHONE NUMBER
Fire brigade	To be defined
Ambulance	To be defined
Police	To be defined
Hospital / Clinic	To be defined
Client	To be defined
Singson HSE Officer	To be defined
Contractor	To be defined

11.5 General

- In case of an accident always ensure it is safe to give aid e.g. isolate electricity before touching the victim.
- Never enter into a confined space to help a victim without taking preventive measures.
- In case of Lost Time Incident, appoint someone to secure and safeguard the site.
- Depending on the circumstances the final reporting on an accident shall not take more than 14 days. The final reporting on a near miss and observed risk shall not take more than 7 days.
- Fatalities shall be reported immediately to OHSE coordinator, Singson Director and Managing Director by the best and quickest means.
- LTI shall be reported immediately to OHSE Coordinator.
- LTI / Serious Accident if deliberately not reported by a Singson employee, this shall result in immediate termination of the employment contract;
- Incident Frequency shall be calculated and reported every month, based on formulas.

$$\text{Incident Frequency} = \frac{\text{No. of Lost Time Injuries} \times 1\,000\,000}{\text{No. of Man Hours Worked}}$$

- Final outcomes of all significant incidents shall be shared appropriately to prevent a repeat elsewhere



11.6 Accident / Incident Reporting Procedures

OCCURRENCE	IMMEDIATE RESPONSE	NOTIFICATION	INVESTIGATION / REPORTING	CLOSE OUT / LESSONS LEARNT
Fatal industrial accident	1. Suspend operations 2. Make area safe and secure	1. Emergency services immediately 2. PM / CM / QHSE immediately 3. Inform country authorities	1. Start investigation immediately 2. Perform investigation as per incident investigation guidelines 3. Identify critical factors. Possible immediate and possible system causes using the SCAT Chart 4. Liase with emergency services 5. Compile draft incident report 6. Ensure corrective actions are clearly identified and recorded	1. Final report 2. Approve report 3. Decide on actions 4. Implement plan 5. Check implementation
Injury / ill health				
First aid	1. Apply first aid	1. PM / CM verbally		
LTI / serious industrial accident	1. Suspend operations 2. Make area safe and secure 3. Apply first aid	1. Emergency services immediately 2. PM / CM / QHSE immediately	1. Start investigation immediately 2. Perform investigation as per incident investigation guidelines 3. Identify critical factors. Possible immediate and possible system causes using the SCAT Chart 4. Compile draft incident report 5. Ensure corrective actions are clearly identified and recorded	
Material damage	1. Suspend operations 2. Make area safe and secure			
Environmental impact	1. Suspend operations 2. Stop at the source 3. Eliminate risk of spreading			
Near miss		1. Report to PM / supervisor 2. Hand over to QHSE representative		
Unsafe act				
Unsafe condition				



15. Appendix

15.1 Definitions

Absence as a result of an industrial accident	The total number of working days lost as a result of an industrial accident. The maximum absence allowed following an industrial accident is 260 working days.
Acceptable Risk	Risk that has been reduced to a level that can be tolerated by Singson having regard to its legal obligations and our OHSE Policy
ALARP	As low as reasonably practicable
Continual Improvement	Recurring process of enhancing OHSE Management to improve performance consistent with policy, achieved by audits, reviews, etc.
Contractor employee	A person employed by a (sub) contractor at locations where Singson has responsibility for OHSE
Corrective Action	Action to eliminate the cause of a detected nonconformity or undesirable situation, which addresses actual problems
Environmental impact	An occurrence that which, as a result of human activity, affects the environment and is a cause of interference in environmental conservation
Fatal industrial accident	An industrial accident that results in the death of the person involved either immediately or within 30 days of the accident.
Hazard	Any situation, substance, activity, event, or environment that could potentially cause injury or ill health
Hazard identification	A process that involves recognizing that an OHSE hazard exists and then describing its characteristics
Ill Health	Identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work related situation.
Incident	Work related event(s) in which an injury or ill health or fatality occurred, or could have occurred. An accident is an actual occurrence. A near miss, near hit, close Call and dangerous occurrence are types of incidents that could have occurred.
Industrial accident	An unintended occurrence during a period of paid work that results in physical injury or illness.
Industrial accident without lost time ("first aid" accident)	An industrial accident (see above) in which the person involved is at work on the next normal working day.
Industrial accident with lost time	An industrial accident that results in the person involved being absent for the whole shift for at least the next normal working day.
Lost Time Injury (LTI)	An accident or incident which occurred in the workplace (or while traveling between workplaces) which caused the person being absent from work for the
Material damage	An event that causes an interruption in operations or damage to property which has serious short and long-term implications



Near Miss	An unintended occurrence that does not result in an injury / damage but had the potential to do so under different circumstances.
Nonconformity	The non-fulfilment of a requirement or a deviation from QHSE Plan.
OHSE	A term that refers to all of the factors and conditions that affect or could affect occupational health, safety and environment in the workplace
OHSE Objective	OHSE goal in terms of performance that Singson has set itself to achieve. The objective should be measurable and consistent with the policy
OH&S performance	Measuring the effectiveness of Singson's controls and comparing OH&S results and achievements against the policy, objectives, or any other suitable
OHSE Policy	Overall intentions and direction of Singson related to our OHSE performance as formally expressed by the Singson Board of Directors
Preventive Action	Action to eliminate the cause of a potential nonconformity or other potential undesirable situation
Procedure	Specified way to carry out an activity or a process. Procedures may or may not be documented
Record	Document stating results achieved or providing evidence of activities performed.
Risk	Combination of the likelihood of an occurrence of a hazardous event or exposure(s) and the severity of injury or ill health that can be caused by the
Risk Assessment	Process of evaluating the risk(s) arising from hazards, taking into account the adequacy of any existing OHSE controls and deciding whether or not the risk is
Serious industrial accident	An industrial accident that leads to the person involved being admitted to hospital for more than 24 hours or results in an amputation or fracture.
Singson employee	A person employed by Singson both within Indonesia and globally, including trainees, freelancers and temporary staff.
Unsafe act	Performance of a task or other activity that is conducted in a manner that may threaten the occupational health and/or safety of workers
Unsafe condition	A condition in the work place that is likely to cause personal injury or property damage. .
Workplace	Office, Construction Site or mode of transport travelling between work locations.



15.2 Risk Assessment Flow Chart

Activities and condition within an operation that have the potential to cause significant risk of injury to an employee, contractor, client, member of the public or an environmental impact are subject to a formal Risk Assessment and production of a Method Statement.

RESPONSIBILITY	PROCEDURE	DOCUMENTATION
Project Manager	Competent personal are identified and trained in risk assessment techniques.	
Construction Pre Start		
Project Manager	Pre Start Project Risk Assessment Schedule. Project team will undertake a total cyclical project risk assessment to identify key hazard, risk and control measures. This information will used to plan and implement significant risk control before work commences	Risk Inventory & Evaluation (RIE)
Construction phase		
Project Manager	Significant hazards & environmental impacts associated with the conditions & activity are identified and control measures are determined following the hierarchy of control: <ul style="list-style-type: none"> • Elimination – remove hazard completely • Reduce – to an acceptable level of risk • Isolate – people and hazards e.g. fit guarding • Control – safe systems of work, training and supervision. • PPE – the last resort. 	Risk Inventory & Evaluation (RIE) Corporate Generic RAMPS. Contractor produced Risk Assessment
Approval		
Construction Manager	Contractor Risk Assessments & Method Statements are appraised and approved to ensure they are suitable for the activity and conditions and that briefing to staff, visitors and operatives are delivered. Major Risk will be subject to an additional review and approval process by the Project Manager.	Contractor produced Risk Assessment / Proof of review
Construction Manager	The risk assessment is approved and where required, amended following an incident or when the scope of the activity changes significantly and re-briefed where required.	Reviewed Risk Assessment. Meeting Minutes



15.3 QHSE Management Tools

Serial	Topics	Document number	TID Control Tools
QS01	Safety procedure & rules	7316001	QHSE plan
		7316002	Monthly Safety report
		7316003	Emergency flow chart
		7316004	Emergency Procedure
		7316005	Safety audit
		7316006	HSE work procedures
		7316007	Security activities checklist
		7316008	Training Recording
		7316009	Daily Report
		7316010	Equipment out register
		7316011	Induction Record
		7316012	Labour safety requirement
		7316013	Material outgoing checking chart
		7316014	Minutes of Safety violation
		7316015	procedure of register tools in the site
		7316016	procedure of register tools out the site
		7316017	procedure of register visitor in the site
		7316018	Procedure of visitor equipment in- out site
		7316019	Procedure of HSE training
		7316020	Project safety Regulation
		7316021	Responsibility for contractor safety supervisor
		7316022	Acknowledgement safety induction
		7316023	Individual records of contractor
		7316024	Name list of personnel for safety induction training
		7316025	Daily Checklist – Excavation
		7316026	Tool box record sheet
		7316027	OHSE Joint Inspection log
		7316028	Emergency Action
		7316029	Safety procedure and Inspection
		7316030	House keeping
		7316031	Labour safety requirement
		7316032	E. 000.180.072 Briefing OHSE attendance form
		7316033	E. 000.180.071 Induction Declaration and Sign Off



		7316034	OHSE induction project
		7316035	Safety induction visitors
		7316036	E.000.180.014 Accident incident notification form
		7316037	List of important tel numbers
		7316038	E. 000.180.050 Emergency preparedness plan
		7316039	Equipment inspection schedule
		7316040	E. 000.180.006 Inspection checklist for site
		7316041	E. 000.180.048 OHSE audit checklist
		7316042	E. 000.180.055 Register of Inspection of Excavation
		7316043	E. 000.180.057 Register of Inspection of Scaffold and Ladders
		7316044	E. 000.180.070 Concern report
		7316045	000.180.082 Contractor picture catalogue
		7316046	List of equipment that need certification
		7316047	Safe form
		7316048	E. 000.180.067 Suspended operations
		7316049	HSE Requirements sent to contractor
		7316050	E. 000.180.045 Site safety blueprint
		7316051	HSE minutes of meeting
		7316052	180.000.002 Corporate OHSE Manual
		7316053	E180.000.001 Corporate TQS manual
		7316054	E. 000.180.051 Environmental plan and site waste management
		7316055	HSE Environmental Protection & Hygiene Program
QS02	Crane	7316056	E. 000.180.045 Lifting Operations - Lift Plan
		7316057	Crane preliminary inspection
		7316058	Daily Crane Operation Checklist
		7316059	Daily pile rig check list
		7316060	Lifting Checklist
		7316061	Weekly pile rig maintenance sheet
		7316062	Wire rope Sling Inspection Report
		7316063	E. 000.180.056 Register of Inspection of Lifting Equipment and Mobile Plant
QS03	Electrical Equipment	7316064	Check List - Distribution Boards
		7316065	Check List - Welding Machine
QS04	Vehicles	7316066	Heavy equipment Inspection



		7316067	Forklift Inspection Check sheet
		7316068	Vehicle inspection report
		7316069	List of heavy equipment on site
QS05	Work permit	7316070	Isolation Certification
		7316071	Working at Height or Roof
		7316072	E. 000.180.059 Permit to enter confined space
		7316073	Job Method Statement
		7316074	E. 000.180.064 Permit for hot work
		7316075	Crane & Abnormal Loads
		7316076	Excavation & Break-in
		7316077	E. 000.180.061 Permit to excavate
		7316078	Live Electric Working
		7316079	Overtime Work
		7316080	Procedure of Issuing PTW
		7316081	Heavy Equipment Permit - crane
		7316082	Excavator Permit
		7316083	Fork lift Permit
		7316084	Scaffolding permit
		7316085	General Working Permit
		7316086	E. 000.180.063 Permit for false and temporary works
		7316087	E. 000.180.058 Permit to access lift shaft
		7316088	E. 000.180.060 Permit to demolish
		7316089	E. 000.180.075 Permit to hoist
7316090	E. 000.180.061 Permit to work on electrical equipment		
QS06	Safety Signs	7316091	Caution - Face shield
		7316092	Caution - Safety glasses
		7316093	Caution -Safety harness
		7316094	Danger - Crane is working
		7316095	Danger - Do not Enter
		7316096	Danger - Electric
		7316097	Danger - Flammable Gas
		7316098	Danger - Live Electric Cable
		7316099	Assembly Point
		7316100	Think tidy
		7316101	Warning- No Smoking



		7316102	Working At Height In Progress
		7316103	ID Card
		7316104	Safety awareness signs
		7316105	Safety sign construction site
		7316106	E. 000.180.053 Signage catalogue
		7316107	Stickers
		7316108	Promotion on construction sites
QS07	Material Control	7316109	Material delivered
		7316110	Material certificate summary list
		7316111	Material receiving report
		7316112	Outgoing material gate pass
QS08	NCR	7316113	E 180.180.039 NCR format for site
QS09	Trainings	7316114	Hot works
		7316115	Housekeeping
		7316116	Electrical
		7316117	Safety body harness
		7316118	Scaffolding permit
		7316119	Angle grinders
		7316120	Basic safety and health
		7316121	Noise
		7316122	Excavations
		7316123	Workplace hazards and risk control
		7316124	Plant equipment
		7316125	Hand tools
		7316126	Manual handling
		7316127	Cranes
		7316128	Hazardous chemicals
		7316129	Vibration
		7316130	Radiation
		7316131	Fire safety
		7316132	Emergency drills



15.4 Guidance on Inspecting Excavations

A competent person must inspect excavations and complete the register. Stop work if the inspection shows the excavation to be unsafe.

Place of Work or Work Equipment	Timing and Frequency of Checks, Inspections and Examinations			
	Inspect at intervals not exceeding 7 days (see note 1)	Inspect before work at the start of every shift	Inspect after any event likely to have affected its strength or stability	Inspect after accidental fall of rock, earth or other material
Excavations which are supported to prevent any person being buried or trapped by an accidental collapse or a fall or dislodgement of material	✓	✓	✓	✓
Cofferdams and caissons	✓	✓	✓	

*Notes:

Although an excavation must be inspected at the start of every shift, only one report is needed in any seven-day period. However, if something happens to affect its strength or Stability, and / or an additional inspection is carried out, a report must then be completed.



15.5 Guidance on Inspecting Scaffolding and Ladders

A competent person must inspect scaffolds and ladders and complete the register. Stop work if the inspection shows the scaffold or ladder to be unsafe.

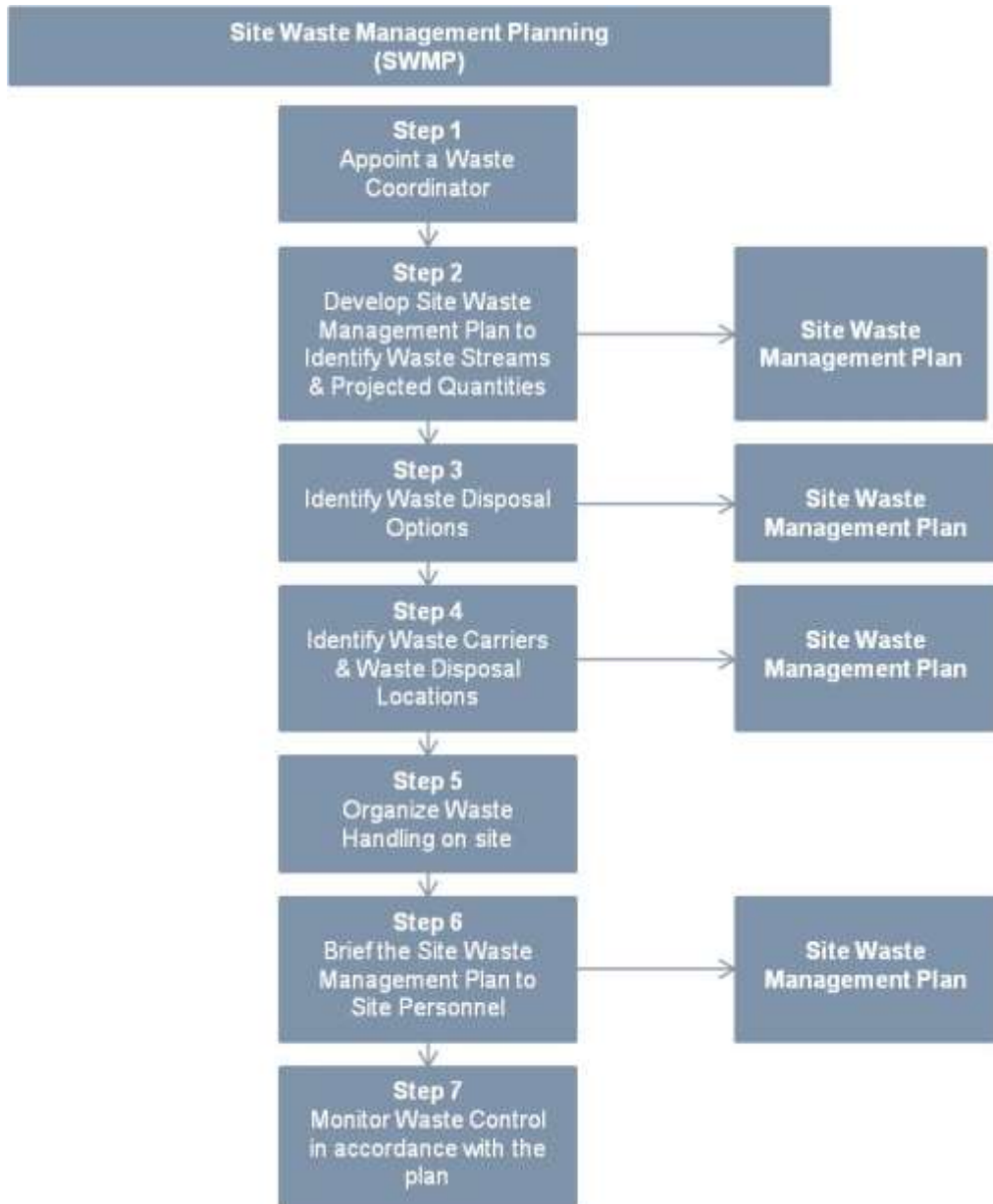
Place of work or work equipment	Timing and frequency of checks, inspections and examinations							
	Inspect before work at the start of every shift (No report required) unless defect found)	Inspect after any event likely to have affected its strength or stability (e.g. high winds)	Inspect after installation or assembly in any position (see note 1 & 2 below)	Inspect at suitable intervals	Inspect after exceptional circumstances which are liable to jeopardize the safety of work equipment	Inspect at intervals not exceeding 7 days (see note 3)	Check on each occasion before use (Report Not Required)	Thorough Examination (see note 3)
The surface and every parapet or permanent rail of every existing place of work at height							✓	
Guard rails, toe boards, barriers and similar collective means of fall protection	✓	✓	✓	✓	✓			
Scaffolds and other working platforms (including tower scaffolds and MEWPs) used for construction work and from which a person could fall.	✓	✓	✓		✓	✓		✓
All other working platforms	✓	✓	✓	✓	✓			✓
Collective safeguards for arresting falls (e.g. nets, airbags, soft landing systems)	✓	✓	✓	✓	✓			
Personal fall protection systems (including work positioning, rope access, work restraint and fall arrest systems)			✓	✓	✓			✓
Ladders and stepladders	✓	✓		✓	✓		✓	



***Notes:**

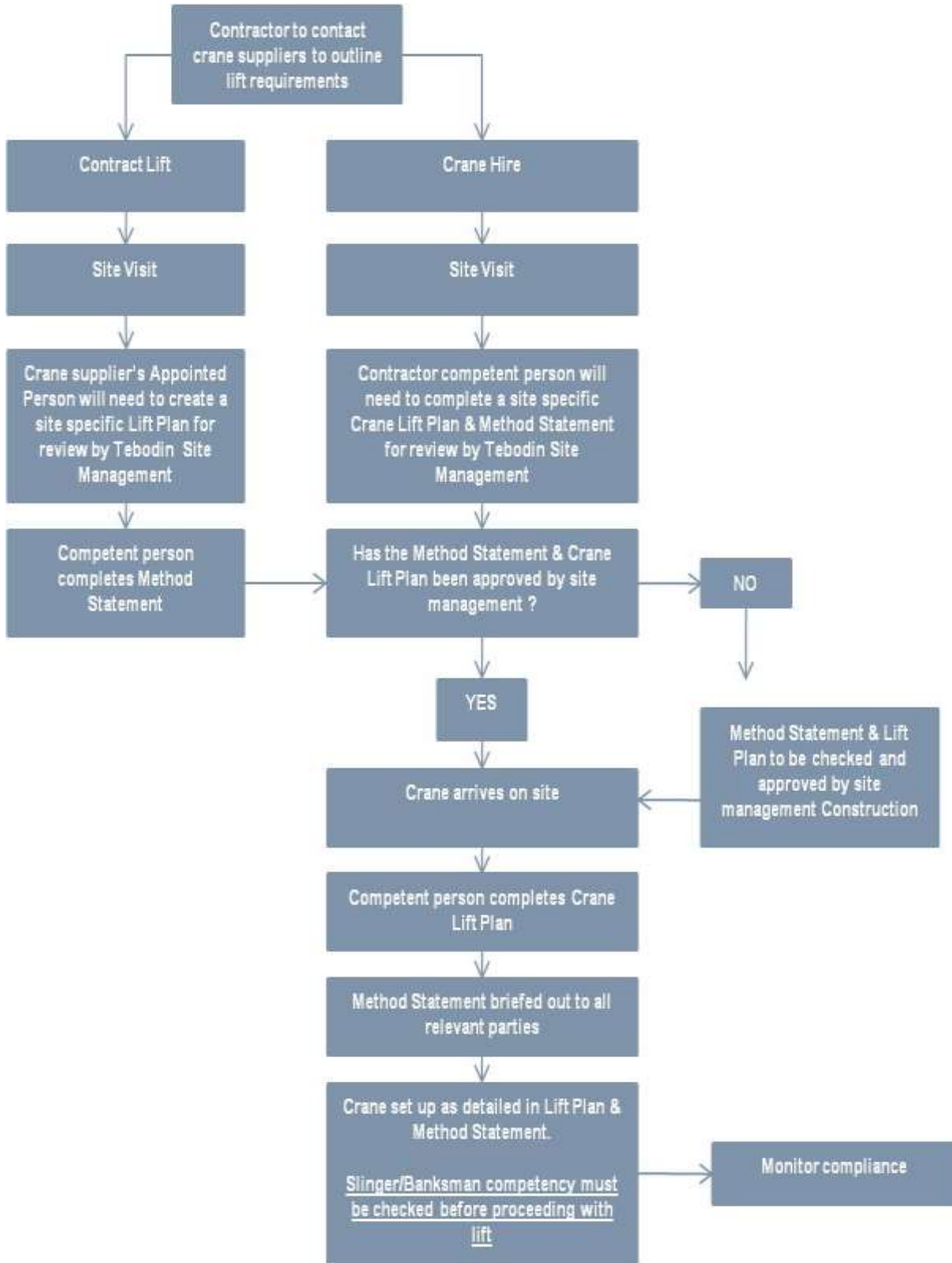
- 'Installation' means putting into position and 'assembly' means putting together. You are not required to inspect and provide a report every time a ladder, tower scaffold or mobile elevated work platform (MEWP) is moved on site or a personal fall protection system is clipped to a new location.
- An inspection and a report are required for a tower scaffold or MEWP after installation or assembly and every seven days thereafter, providing the equipment is being used on the same site. If a tower scaffold is reassembled rather than simply moved, then an additional, pre-use inspection and report is required. It is acceptable for this inspection to be carried out by the person responsible for erecting the tower scaffold, providing they are trained and competent. A visible tag system, which supplements inspection records as it is updated following each pre-use inspection, is a way of recording and keeping the results until the next inspection.
- All work equipment subject to additional India legal requirements, thorough examination and inspection.

15.6 Site Waste Management Plan





15.7 Lifting Process Chart





15.8 Crane & Lifting equipment Inspection Matrix

Type of Equipment	Inspection Requirements	Period of Thorough Examination
Lifting chains, chain slings, spreader beams, lifting frames ring hooks, shackles, swivels, eyebolts, turnbuckles, wire ropes & slings, strops, fibre ropes, slings & all textile based slings.	Visually check for obvious defects in accordance with training / experience immediately prior to use.	6 Monthly by competent person. Colour coding 6 monthly
Body harness	Visual inspection of all webbing stitching and attachments every month, and before use.	6 monthly by competent person
Mobile cranes	Daily pre-use checks and weekly inspection by trained operator.	12 monthly* by competent person (6 monthly if used for lifting persons)
Lorry mounted cranes	Daily pre-use checks and weekly inspection by trained operator.	12 monthly by competent person
Excavator	Weekly inspection by trained driver.	12 monthly by competent person
Overhead cranes (motorized or manual)	In accordance with the manufactures' instructions.	12 monthly by competent person
Vehicle tail lifts, maintenance lifts	In accordance with the manufacturers' instructions	12 monthly by competent person
Hydraulic jacks and screw jacks	Periodic visual inspection depending upon usage	12 monthly by competent person
Fixed lifting beams	Periodic visual inspection depending upon usage	12 monthly by competent person
Mobile elevating work platforms (MEWP's)	Daily pre-use checks and weekly inspection by trained operator.	6 monthly by competent person
Passenger and goods lifts	In accordance with the manufactures' instructions.	6 monthly by competent person
Scissors lifts (fixed)	Refer to manufacturers' instructions	6 monthly by competent person
Teleporters (all terrain)	Daily pre-use checks and weekly inspection by trained operator.	12 monthly by competent person
Fork lift trucks	Weekly inspection by trained driver	6 monthly competent person
Flood lighting winches	None	12 monthly by competent person
Tie down straps for lorry loads.	Weekly visual inspection by trained driver.	Not required



15.9 Safety Sign Construction Site

PROJECT NAME
WE MAKE IDEAS WORK

Client Logo

Contractor Logo

HARD HATS
EYE PROTECTION
EAR PROTECTION
FOOT PROTECTION

HIGH VISIBILITY VEST

The Required PPE above
MUST BE WORN
IN THIS AREA

ALL VISITORS MUST
REPORT TO
SECURITY BEFORE
ENTERING THE SITE.

Taboan Indonesia 2014

15.10 SCAT Chart (Systematic Cause Analysis Technique)

SCAT Chart - Systematic Cause Analysis technique - SCAT Chart

DESCRIPTION OF ACCIDENT OR INCIDENT

EVALUATION OF LOSS POTENTIAL IF NOT CONTROLLED

LOSS SEVERITY POTENTIAL O Major (A) O Minor (B) O Low (C)	TYPE OF CONTACT O High (A) O Moderate (B) O Low (C)	FREQUENCY OF EXPOSURE O Moderate (B) O Low (C)
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1. LOSS SEVERITY POTENTIAL (A, B, C)

1. Major (A) - Fatality or permanent disability	2. Minor (B) - Temporary disability or lost workdays	3. Low (C) - First aid, minor injury, or property damage
4. Property damage (over \$100,000)	5. Property damage (under \$100,000)	6. Property damage (under \$50,000)

2. TYPE OF CONTACT (A, B, C)

7. Contact with live electrical parts	8. Contact with moving machinery	9. Contact with falling objects
10. Contact with sharp edges	11. Contact with hot surfaces	12. Contact with toxic substances

3. FREQUENCY OF EXPOSURE (A, B, C)

13. Continuous exposure	14. Frequent exposure	15. Occasional exposure
16. Rare exposure	17. Infrequent exposure	18. Very rare exposure

4. LOSS POTENTIAL (A, B, C)

19. Catastrophic	20. Serious	21. Minor
22. Moderate	23. Low	24. Negligible

5. CAUSE CATEGORIES

6. UNDERLYING CAUSES

7. PERSONNEL FACTORS

7.1 Inadequate Physical/Physiological Capacity
(See CA's 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.52, 2.53, 2.54, 2.55, 2.56, 2.57, 2.58, 2.59, 2.60, 2.61, 2.62, 2.63, 2.64, 2.65, 2.66, 2.67, 2.68, 2.69, 2.70, 2.71, 2.72, 2.73, 2.74, 2.75, 2.76, 2.77, 2.78, 2.79, 2.80, 2.81, 2.82, 2.83, 2.84, 2.85, 2.86, 2.87, 2.88, 2.89, 2.90, 2.91, 2.92, 2.93, 2.94, 2.95, 2.96, 2.97, 2.98, 2.99, 3.00, 3.01, 3.02, 3.03, 3.04, 3.05, 3.06, 3.07, 3.08, 3.09, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, 3.45, 3.46, 3.47, 3.48, 3.49, 3.50, 3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60, 3.61, 3.62, 3.63, 3.64, 3.65, 3.66, 3.67, 3.68, 3.69, 3.70, 3.71, 3.72, 3.73, 3.74, 3.75, 3.76, 3.77, 3.78, 3.79, 3.80, 3.81, 3.82, 3.83, 3.84, 3.85, 3.86, 3.87, 3.88, 3.89, 3.90, 3.91, 3.92, 3.93, 3.94, 3.95, 3.96, 3.97, 3.98, 3.99, 4.00, 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 4.09, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, 4.49, 4.50, 4.51, 4.52, 4.53, 4.54, 4.55, 4.56, 4.57, 4.58, 4.59, 4.60, 4.61, 4.62, 4.63, 4.64, 4.65, 4.66, 4.67, 4.68, 4.69, 4.70, 4.71, 4.72, 4.73, 4.74, 4.75, 4.76, 4.77, 4.78, 4.79, 4.80, 4.81, 4.82, 4.83, 4.84, 4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 5.00)

8. MATERIALS

8.1 Inadequate Physical/Physiological Capacity
(See CA's 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14, 2.15, 2.16, 2.17, 2.18, 2.19, 2.20, 2.21, 2.22, 2.23, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.31, 2.32, 2.33, 2.34, 2.35, 2.36, 2.37, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.46, 2.47, 2.48, 2.49, 2.50, 2.51, 2.52, 2.53, 2.54, 2.55, 2.56, 2.57, 2.58, 2.59, 2.60, 2.61, 2.62, 2.63, 2.64, 2.65, 2.66, 2.67, 2.68, 2.69, 2.70, 2.71, 2.72, 2.73, 2.74, 2.75, 2.76, 2.77, 2.78, 2.79, 2.80, 2.81, 2.82, 2.83, 2.84, 2.85, 2.86, 2.87, 2.88, 2.89, 2.90, 2.91, 2.92, 2.93, 2.94, 2.95, 2.96, 2.97, 2.98, 2.99, 3.00, 3.01, 3.02, 3.03, 3.04, 3.05, 3.06, 3.07, 3.08, 3.09, 3.10, 3.11, 3.12, 3.13, 3.14, 3.15, 3.16, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23, 3.24, 3.25, 3.26, 3.27, 3.28, 3.29, 3.30, 3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37, 3.38, 3.39, 3.40, 3.41, 3.42, 3.43, 3.44, 3.45, 3.46, 3.47, 3.48, 3.49, 3.50, 3.51, 3.52, 3.53, 3.54, 3.55, 3.56, 3.57, 3.58, 3.59, 3.60, 3.61, 3.62, 3.63, 3.64, 3.65, 3.66, 3.67, 3.68, 3.69, 3.70, 3.71, 3.72, 3.73, 3.74, 3.75, 3.76, 3.77, 3.78, 3.79, 3.80, 3.81, 3.82, 3.83, 3.84, 3.85, 3.86, 3.87, 3.88, 3.89, 3.90, 3.91, 3.92, 3.93, 3.94, 3.95, 3.96, 3.97, 3.98, 3.99, 4.00, 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 4.09, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, 4.49, 4.50, 4.51, 4.52, 4.53, 4.54, 4.55, 4.56, 4.57, 4.58, 4.59, 4.60, 4.61, 4.62, 4.63, 4.64, 4.65, 4.66, 4.67, 4.68, 4.69, 4.70, 4.71, 4.72, 4.73, 4.74, 4.75, 4.76, 4.77, 4.78, 4.79, 4.80, 4.81, 4.82, 4.83, 4.84, 4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 5.00)

9. CONTROL ACTION NEEDED (CAN)

9.1.1. Personnel	9.1.2. Materials	9.1.3. Methods	9.1.4. Management
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10. UNDERLYING CAUSES

10.1. Inadequate Physical/Physiological Capacity	10.2. Inadequate Knowledge/Skill	10.3. Inadequate Information/Communication	10.4. Inadequate Resources	10.5. Inadequate Organization/Structure	10.6. Inadequate Procedures/Methods	10.7. Inadequate Management/Supervision	10.8. Inadequate Motivation/Attitude	10.9. Inadequate Safety Culture	10.10. Inadequate Risk Assessment	10.11. Inadequate Hazard Identification	10.12. Inadequate Control Measures	10.13. Inadequate Training	10.14. Inadequate Supervision	10.15. Inadequate PPE	10.16. Inadequate Maintenance	10.17. Inadequate Inspection	10.18. Inadequate Auditing	10.19. Inadequate Reporting	10.20. Inadequate Investigation	10.21. Inadequate Corrective Action	10.22. Inadequate Preventive Action	10.23. Inadequate Review	10.24. Inadequate Feedback	10.25. Inadequate Learning	10.26. Inadequate Improvement	10.27. Inadequate Innovation	10.28. Inadequate Change Management	10.29. Inadequate Risk Management	10.30. Inadequate Compliance Management	10.31. Inadequate Regulatory Management	10.32. Inadequate Industry Practice	10.33. Inadequate Best Practice	10.34. Inadequate Benchmarking	10.35. Inadequate Performance Measurement	10.36. Inadequate Incentives/Disincentives	10.37. Inadequate Recognition	10.38. Inadequate Accountability	10.39. Inadequate Roles/Responsibilities	10.40. Inadequate Authority	10.41. Inadequate Delegation	10.42. Inadequate Empowerment	10.43. Inadequate Support	10.44. Inadequate Encouragement	10.45. Inadequate Motivation	10.46. Inadequate Commitment	10.47. Inadequate Involvement	10.48. Inadequate Participation	10.49. Inadequate Consultation	10.50. Inadequate Collaboration	10.51. Inadequate Cooperation	10.52. Inadequate Synergy	10.53. Inadequate Teamwork	10.54. Inadequate Coordination	10.55. Inadequate Collaboration	10.56. Inadequate Cooperation	10.57. Inadequate Synergy	10.58. Inadequate Teamwork	10.59. Inadequate Coordination	10.60. Inadequate Collaboration	10.61. Inadequate Cooperation	10.62. Inadequate Synergy	10.63. Inadequate Teamwork	10.64. Inadequate Coordination	10.65. Inadequate Collaboration	10.66. Inadequate Cooperation	10.67. Inadequate Synergy	10.68. Inadequate Teamwork	10.69. Inadequate Coordination	10.70. Inadequate Collaboration	10.71. Inadequate Cooperation	10.72. Inadequate Synergy	10.73. Inadequate Teamwork	10.74. Inadequate Coordination	10.75. Inadequate Collaboration	10.76. Inadequate Cooperation	10.77. Inadequate Synergy	10.78. Inadequate Teamwork	10.79. Inadequate Coordination	10.80. Inadequate Collaboration	10.81. Inadequate Cooperation	10.82. Inadequate Synergy	10.83. Inadequate Teamwork	10.84. Inadequate Coordination	10.85. Inadequate Collaboration	10.86. Inadequate Cooperation	10.87. Inadequate Synergy	10.88. Inadequate Teamwork	10.89. Inadequate Coordination	10.90. Inadequate Collaboration	10.91. Inadequate Cooperation	10.92. Inadequate Synergy	10.93. Inadequate Teamwork	10.94. Inadequate Coordination	10.95. Inadequate Collaboration	10.96. Inadequate Cooperation	10.97. Inadequate Synergy	10.98. Inadequate Teamwork	10.99. Inadequate Coordination	11.00. Inadequate Collaboration
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16. Attachments

16.1 Risk Assessments

- Scaffold erection
- Welding
- Asbestos
- Bench mounted grinders
- Bulk earthworks
- Chainsaws
- Charging batteries
- Compressor and pneumatic power tools
- Concrete works
- Demolition
- Disc cutters and abrasive wheels
- Disposal of waste material
- Dumpers
- Erection and removal of lighting columns
- Excavations
- Fire prevention
- Fork lift trucks
- Gas welding and burning
- Use of hand tools
- Installation of temporary electrical supplies
- Lead and lead compounds
- Working at heights