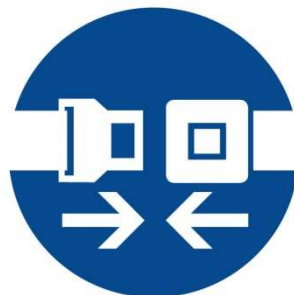
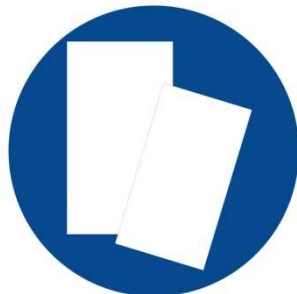


# DESIGN CRITERIA AND STANDARDS

Group General DCS  
Health & Safety

Edition March 2016

**HEIDELBERG  
TECHNOLOGY CENTER**  
HEIDELBERGCEMENT Group



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## 1 Introduction

- a) This document is the Design Criteria and Standard for the safety requirements that shall be satisfied during the execution of the project work with the goal of providing all personnel working at project locations with a safe and healthy work environment.
- b) The Employer and Contractor together shall strive to reduce all risks on site with the goal of completing the Works with 'Zero accidents, injuries and occupational illnesses by emphasizing prevention
- c) The requirements in the Particular Design Criteria and Standards overrule the general requirements of the Design Criteria and Standards, in case of discrepancies.

## 2 Definitions

The following words and expressions shall have the meanings hereby assigned to them:

Term	Explanation
Contractor	Means the entity named as contractor or Seller in the main contract.
Employer	Means the entity named as employer or Buyer in the main contract.
DCS	Or " <b>Design Criteria and Standards</b> " means the documents as referred to in Annex 5 or the Employer requirements hereof, and including any specifications and other Employer requirements in respect of the Works to be carried out by the Contractor, if any, and any Variation to such document.
PDCS	Or " <b>Particular Design Criteria and Standards</b> " means the documents as referred to in Annex 4 or the Employer requirements hereof, and including any specifications and other Employer requirements in respect of the Works to be carried out by the Contractor, if any, and any Variation to such document.
Site	Means the location as identified in the main contract where the Permanent Works are to be delivered or executed.
Works	Means all the work and design to be performed by the Contractor including temporary work and any Variation as specified in the Contract and the Employers Requirements.

Table 1

## 3 Codes and Standards

- a) The design, manufacturing, installation and construction of all works, shall conform to the local Codes and Standards of the country of the works and shall conform to the Codes and Standards mentioned in the DCS.
- b) The design and construction of the Works must be carried out in accordance with the regulations and requirements of all relevant legal authorities.

## **4 Site Health & Safety Plan**

- a) Contractor shall ensure that all aspects of this DCS and as defined elsewhere in the agreement are addressed in its proposed Site Health & Safety Plan (H&S Plan).
- b) Contractor shall specifically describe processes for identifying and managing Safety, Health, Environment, Security and Operational (Construction / Commissioning) risks in his H&S Plan.
- c) The project specific H&S Plan that shall address at least the following issues:
  - 1. Contractors Health and Safety management and the team
  - 2. Site access
  - 3. Training
  - 4. Risk assessment
  - 5. Safe work procedures
  - 6. Emergency preparedness plan
  - 7. Use of Employer site equipment
  - 8. Work inspections
  - 9. Health & Safety Exhibit's
  - 10. Reporting
  - 11. House keeping
- d) The Site Health & Safety Plan is to be submitted and approved by the Employer before commencement of any site activities.
- e) The suggested table of contents for preparing the Site Health & Safety Plan is provided in the Project Template file.

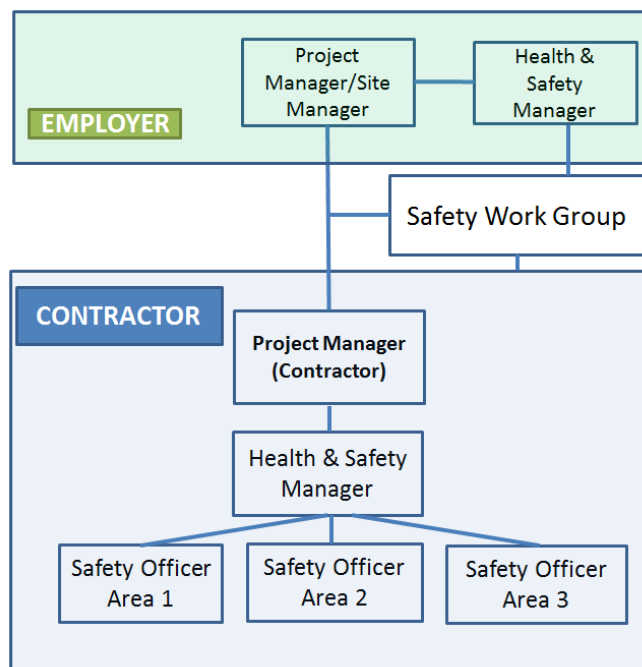
## **5 Safety Organization at Site**

- a) Contractor shall provide an organizational structure to administer safety effectively.
- b) The safety organization shall flow along the line organization, shall include everyone and shall provide the opportunity for groups to meet regularly to discuss health and safety related matters and address areas of vulnerability in meeting the project goals.
- c) In practice the organization for safety shall comprise of safety work groups and regular safety meetings that are attended by all personnel.

### **5.1 Roles and Responsibilities**

- a) The Employer's H&S Manager is the contact person for the Contractor regarding:
  - 1. Overall H&S plan
  - 2. H&S action plans
  - 3. Audits & Reports
  - 4. All other H&S issues

- b) A Safety Work Group shall be jointly formed and is comprised of the Contractor's supervising engineers of various work locations along with the Contractor's safety officers.



**Figure 1: Typical Safety Organization**

- c) The group will review safety performance, risk at working locations, specific safety requirements, share problems and good practices, resolution, cascade safety communication and updates, etc ...

## 6 Contractor's Basic Responsibilities

- Contractor shall communicate to Employer immediately after mobilization their safety organization chart and nominate the persons responsible for the various safety functions including safety officers and supervisors.
- Contractor shall be fully responsible for the management of issues relating to the safety, health and welfare of all of the Contractor's employees.
- In case of any specific area of work relating to the contractor's scope, contractor will be responsible for health & safety of any visitor coming in that area including the employees, agents and visitors of the Employer.
- Contractor shall be fully responsible for the management of the impact that the Project has on the environment.
- Contractor shall immediately notify Employer of any 'Near Misses'. This shall be subject of detailed investigation and communicated to Employer as soon as possible.
- Contractor shall be responsible for any rectification work necessary arising from breach of the H&S Plan and bear all the associated costs.

- g) The H&S requirements shall also be incorporated into all sub-contracts. Contractor shall audit sub-contractors (using competent auditors) and show the results and closeout rate of corrective actions to Employer.
- h) Contractor shall develop an effective mode of communication to ensure the project safety requirement for implication on project site understood by all the employees/sub-contractors, and post such requirements both in the English Language and Local Language at clearly visible places.
- i) Contractor shall ensure that there is at least one Safety Officer for every 75 workers working at site unless a local regulation requires more.
- j) For the site in which work force numbers less than 500, Contractor will employ a minimum of one Safety Officer for every 50 workers
- k) Contractor shall ensure appropriate sanitation provisions, including at least the following components: potable water, non-potable water, toilets, washing facilities, change room, eating and drinking areas Contractor shall provide appropriate housing for foreign workers.
- l) Copies of any governmental agency citation notices served to Contractor shall be submitted to the Employer immediately. Subsequently the action proposed by the Contractor in mitigation of the notices shall be discussed with the Employer immediately.

## **7 Country Specific Requirements**

- a) Contractor shall make itself conversant with the local laws and regulations and all applicable Safety and Health requirements prevailing in the country of operation.
- b) The H&S plan will be prepared by the Contractor as according to the requirements specified in this document and applicable in Particular conditions, and improve upon it with any additional requirements applicable under the local laws, regulations and directives of the government agencies having jurisdiction over the site.
- c) Contractor shall take reasonable steps to identify future legislation that might impact the H&S and environmental requirements for the operational phase of the Project, and identify requirements for achieving compliance.
- d) Contractor shall actively consult with its contacts within the industry and with Regulatory Authorities to identify future compliance requirements. The Employer shall provide support where ever appropriate.

### **7.1 Contractors Health and Safety Management Team**

- a) Contractor shall designate a qualified individual as the Health and Safety Manager on full time basis, and at least one deputy H&S coordinator designated to attend all Employers' safety meetings.
- b) The H&S Manager shall be able to communicate in the language of the Contract.
- c) The H&S Manager or a deputy H&S coordinator shall be present at the Site at all times.
- d) The H&S Manager shall participate in the establishment of an appropriate Site H&S Plan during the planning phase of the Works.
- e) Contractor shall assign an adequate number of full-time safety officers/supervisors for planning and supervision of H&S activities in the Works (s stated in section 6).

- f) H&S officers shall be qualified according to country regulations.
- g) Contractor shall ensure that H&S officers have sufficient time to fulfil his duties.
- h) During project execution the Contractor's H&S Manager and safety officers / supervisors shall be responsible for the preparation, implementation and documentation of all Health and Safety activities, including but not limited to:
  - 1. Verifying conformity with safety standards and labor protection regulations
  - 2. The organization of periodic H&S meetings with the Employer, as defined in this document
  - 3. The review and approval of all work plans and methods
  - 4. The periodic inspection of Contractor's work and storage areas to ensure safe conditions and practices
  - 5. Providing full cooperation in the conduction of inspections by Employers'
- i) During the initial period at Site, till the establishment and mobilization of the safety team (but not later than 3 months from date of mobilization) the Contractor's Construction /Site Manager will be by default the H&S Manager for this initial period.

## **7.2 Site Access**

- a) Site access to work place shall be denied to individuals that have not received adequate H&S instruction and training based on the function and reasons to enter site.
- b) Contractor shall provide all Contractor and sub-contractor's personnel with their individual Identification Card (ID). Each ID card shall include the personnel's personal information, including photo, name, department, position, job title, number etc. Also the ID card will confirm that the person has received the required H&S training and is medically fit for performing the assigned work.
- c) Workers shall be required to wear their ID cards at all times. Workers without an ID card will not be allowed on-site.
- d) All other visitors to Site shall receive a general ID Card clearly marked for temporary access.

## **7.3 Contractor employee training**

- a) Contractor shall train and instruct its employees to meet the general expectations and specific requirements for the works.
- b) This training shall cover all applicable local laws and regulations.
- c) Each employee shall receive adequate training to work independently even without the presence of supervisors. After the training each employee is deemed to be competent to perform the work and given access to the site location.
- d) The Training received before start of work, would include but not limited to:
  - 1. Employers' Health and Safety requirements and rules
  - 2. Emergency and rescue plan, fire protection



3. Local laws, rules and regulations
  4. Safe work procedures relevant for the project
  5. Correct use of Personal Protective Equipment (PPE)
  6. Personal safety rights and regulations
  7. Basic safety requirements
  8. Site specific hazards
  9. Near miss and accident reporting
  10. Housekeeping
  11. Disciplinary actions
  12. Other topics as required by Employer's H&S Manager
- e) Contractor's H&S Manager shall prepare a list of courses each employee is required to attend. This list has to be agreed with/approved by the Employer.
- f) Contractor shall maintain documents certifying the completion and signed acceptance of training by each employee. Lack of signed or lost documents certifying completion and acceptance of training will be treated as "training not attended" and will cause disciplinary measures.
- g) If requested by the Employer, the Contractor shall provide proof of capability of the employees having received the training, by means of physical demonstration.
- h) Contractor shall use the regular safety meeting forum and give feedback on the training and other H&S issues that require follow up.
- i) Contractor shall provide specific training courses on important activities such:
1. Lock out – Tag out procedures
  2. Electrical Hazards
  3. Hot work
  4. Hazard material handling
  5. Working at heights
  6. Work in confines spaces
  7. Compressed air hazards
  8. Hydraulic system hazards
  9. Fire prevention
- j) The trained person shall sign a declaration of understanding and acceptance of the training.

#### **7.4 Risk assessment**

Contractor shall conduct a risk assessment / job safety analysis assessing the specific risk of each local circumstance. Depending on the results of the risk assessment the

Contractor shall develop appropriate safe work procedures before starting work. The Employer's typical Template shall be followed.

## **7.5 Safe work procedures**

- a) Safe work practices shall be documented and implemented based on the results of the risk assessment.
- b) All written work practices and procedures shall be reviewed periodically in order to ensure that they are appropriate for the changing conditions of the jobsite.
- c) Contractor shall ensure that the Safe Work Procedures and action plans specific for the project location, addresses all the H&S topics as described in this document and all other appropriate specific topics including but not limited to:

- 1. Safety team composition, roles and responsibilities
- 2. Hazard prevention program and communication protocol
- 3. Environmental guidelines and regulations
- 4. Disciplinary actions for infractions of safety rules
- 5. Traffic and transport rules
- 6. Housekeeping requirements
- 7. Sanitation requirements including disposal for all forms of waste
- 8. Job Site assessment, preparation and clean-up
- 9. Work site security
- 10. Fire protection
- 11. Emergency response/ first aid
- 12. Reporting of accidents
- 13. Heat stress protection
- 14. Hearing conservation /Noise protection
- 15. Use of alcohol, drugs, and medications on site
- 16. Ground clearing
- 17. Road construction
- 18. Rail construction
- 19. Excavation, trenching and shoring
- 20. Concrete installation hazards
- 21. Certification and license for use of mobile and special equipment
- 22. Operation of mobile equipment
- 23. Use of scissor lifts and boom trucks
- 24. Protection from fall from heights
- 25. Protection from falling objects
- 26. Structural steel erection
- 27. Welding and cutting, grounding of welding equipment
- 28. Piping

- 29. Compressed gas cylinders
- 30. Storage and use of flammable, explosive or dangerous materials
- 31. Lead painting and application of protective coatings: skin, eye, breathing and chemical protections
- 32. Use of power tools
- 33. Rigging and signal system for areas under suspended loads
- 34. Electrical safety
- 35. Design, construction, installation and use of temporary power lines and power panels
- 36. Arc-flash inspection and protection
- 37. Illumination for night work
- 38. Guarding of equipment

## **7.6 Emergency Preparedness Plan**

- a) Contractor shall prepare a general emergency and rescue plan considering the specific risks of the Works and taking the changing conditions during the project execution period into account.
- b) The plan shall consider at least:
  - 1. Appropriate number of skilled medical personnel. Depending on the local situation and the result of the overall risk assessment, this might include permanently available doctors, paramedics, nurses and first aid personnel
  - 2. Implementation of site health plan and preventive medicine activities including regular health and hygiene inspections of the project area and camp
  - 3. Appropriate facilities to perform the following tasks:
    - i. Treatment of non-emergency medical conditions
    - ii. Initial emergency response, resuscitation and stabilization of critically ill or injured patients
    - iii. Management and administration of medical instruments and medicines
  - 4. Evacuation coordination from Site to a location where further treatment can be performed
- c) If professional medical services are not available within an adequate time due to a remote location of the project site or due to a general lack of appropriate medical services in the area the Contractor shall make arrangements for first aid, ambulance service and medical facilities on site for the treatment of industrial injuries and illnesses.
- d) If **advanced** professional medical services are not available due to a remote location of the project site or due to a general lack of appropriate medical services in the area, the Contractor shall make special arrangements for a contract with the nearest

acceptable Hospital or any other adequate service provider having the required facilities.

## **7.7 Use of Employer's equipment**

Contractor's employees are not allowed to access or operate any Employer's equipment, open any vessel doors, gates, valves, turn anything on or off, etc. without specific instructions or authorization from the Employer's representative.

## **7.8 Work inspections**

- a) The Contractor shall set up daily inspections of its work and schedule periodic H&S inspections of storage areas to control safe conditions and practices. These inspections shall begin immediately after mobilization to site and shall be continued until the works are finished.
- b) The Contractor shall provide a copy of inspection minutes to the Employer's H&S Manager not later than one week after each inspection.
- c) The Contractor shall implement a system to follow up the findings of the inspections as well as the results of the corrective actions. Any identified non-compliances shall be remedied immediately.
- d) Non-compliance findings during the daily work inspections can be used as a project / personnel's key performance indicators (KPI), with a defined time frame for closure of these findings, say 24 hours or one week.
- e) Safety Audits will be carried out at regular intervals by the Employer.

## **7.9 Health and Safety Exhibits**

The Contractor shall establish an on-site health and safety location with at least the following items:

- a) Safety communication notice boards
- b) Emergency contact lists
- c) H&S statistic boards
- d) Safety posters, e.g. emergency procedures first aid
- e) Minimum required PPE
- f) First Aid Boxes in an adequate number based on number of workers and size of site
- g) Eye Wash stations and portable bottles
- h) An example of a scaffolding containing all typical elements (stairs, handrail, toe bar and foundations) to be used for Working at Height training
- i) Location and technical equipment for trainings, e.g. training room equipped with computer, projector, screen, speakers, etc.

## **7.10 Reporting**

- a) The Contractor shall report any “Near miss”, medical treatments, lost time injuries, and/or any accident involving bodily injury, fire, oil spills, significant materials leakage, environmental pollution or similar incidents to Employer’s H&S Manager
- b) The Contractor shall report in writing any Severe or Fatal Accidents, being on-site or off-site, to Employer’s H&S Manager within 24 hours, using the Reporting Sheet template, with copy to the Employer’s Project Manager. The detailed report shall follow subsequently after thorough investigation on the causes, reasons, future preventions and action plans, but not later than a week from the incident.
- c) The Contractor shall keep all records as required by the applicable laws and the Employer’s site requirements. The Employer’s templates shall be followed where applicable.
- d) All reporting of safety statistics shall be based upon the definitions given in the Employers Guideline for Reporting of Health & Safety data.

## **7.11 Housekeeping**

- a) The Contractor shall maintain good housekeeping at all times and shall keep aisles, walkways, floors, and working areas clean and free of obstructions, slip hazards, and trip hazards.
- b) The Contractor shall maintain the site such that it is free from loose material which can fall.
- c) The Contractor shall keep access to emergency exits, fire extinguishers, fire hose stations, and other emergency response equipment clear at all times.
- d) The Contractor shall keep a reasonable degree of order by properly disposing of accumulated rubbish and waste material. Contractor shall start cleanup remediation upon completion of any work or as deemed necessary by the Employer.
- e) Scrap, trash, and other wastes shall be placed in designated containers. Scraps & trash shall be cleaned daily.
- f) Work areas shall be cleaned up as the job progresses. Cords and hoses shall be routed, preferably overhead, in a manner that will not present a tripping hazard.
- g) All materials, tools, and equipment shall be stored in a stable position (tied, stacked, or chocked) to prevent rolling or falling.

## 8 Personal Protective Equipment (PPE)

### 8.1 Type of PPE

The following PPE shall be used for the described activities in table 2 below:

No.	Type of PPE	Activity to be used in
1	Safety helmet	For all activities while in construction site
2	Safety footwear	For all activities while in construction site
3	High visibility vests/ clothing	For all activities while in construction site
4	Eye protection  (Safety glasses, welding goggles, face shields)	For all activities while in construction site (if not explicitly exempted). Specific eye protections is required based on type of work, e.g. welding, cutting, grinding, chipping, drilling,
5	Safety helmet with chin straps	For all activities while working at a height and where is a risk of falling
6	Safety boots	For all activities while in construction site with muddy/wet conditions
7	Anti Slip outfit	For all activities in construction site with slippery/icy conditions
8	Safety harness with double lanyard and shock absorber	While working at a height and where is a risk of falling
9	Life lines, fall arrester & safety net	While working at a height and where there is a risk of falling.
10	Arc flash protection unit	Working at electrical energized switchgears that are not arc flash protected by design
11	Ear plugs, earmuffs	In high noise level area (above 75 decibel limits) like pavement breaking operation, in running Diesel Generators area, raw mill and grinding mill areas
12	Dust respirators & nose masks (at least FFP2 or similar standard)	In dusty atmosphere like cleaning job, sandblasting, refractory application, dismantling jobs etc.
13	Hand gloves – cotton/leather/rubber	In almost all activities like fabrication job, material handling, tools handlings, grinding, welding, scrap removal, cutting, bar bending, carpentry jobs
14	Face shields	During metal grinding operations and hot work (e.g. welding, cutting, grinding, chipping, drilling)
15	Apron	Any hot working application
16	Leg guard	Cutting, sand blasting
17	Confined space extraction devices	When working inside confined spaces

Table 2

## **8.2 Supply & Usage of PPE**

- a) The Contractor shall supply all workers and visitors under its responsibility with proper PPE free of charge.
- b) The Contractor shall ensure that all their employees and all Sub-Contractor's employees properly use these PPE.
- c) All Persons on Site shall use PPE as required by applicable laws, regulations or Employer's provisions.
- d) All necessary PPE shall be kept available for the use of all Persons on Site and maintained in a safe working order suitable for immediate use.
- e) The Contractor shall ensure that PPE complies with accepted standards and is used and maintained according to the manufacturer's instructions, independent of any additional requirements by law.
- f) All persons working at heights shall use safety harnesses connected to secure anchor points with appropriate safety lines, if no collective fall protection gear is possible. Preference shall always be given to the installation of appropriate collective fall protection gear.
- g) In general appropriate clothing is required. Specifically, wearing of sports shoes, sandals, etc. is forbidden and violators will be denied access to the work site.

## **9 Specific Health and Safety Measures**

### **9.1 Excavation**

- a) Contractor shall provide competent personnel for excavations. For any excavation greater than 1.20 meters in depth, the sides of the excavated areas shall be protected from cave-ins by adequate shoring, benching or sloping
- b) Contractor shall ensure that a qualified, competent person inspects all excavation, shoring, benching and sloping before any personnel is allowed to enter the excavated area.

### **9.2 Work at height**

- a) Contractor shall plan work at heights where there is a risk of fall and injury. A prior risk assessment is to be made and appropriate actions initiated.
- b) Personnel's who intend to work at height shall be adequately and verifiably trained, and shall be medically fit for this type of work.
- c) Special emphasis shall be placed on the appropriate use and condition of fall protection equipment, be it collective (e.g. scaffolds, barriers, lifts, and railings) or personal protective measures (fall restraint or arrest equipment).
- d) For steel construction and handling, to maximum possible, the assembly shall take place at ground level along with final hand railings. This will reduce the number of necessary lifts as well as providing fall protection from the very beginning.

### **9.3 Scaffolding**

- a) Suitable scaffolding shall be provided for all works that cannot be done safely from the ground or from solid construction.
- b) Contractor shall use scaffolding, poles and fittings made of steel. Platforms shall be made of reinforced wooden planks.



- c) Working platforms, scaffoldings or staging's above the ground level or floor level shall be closely boarded, shall be of adequate width and shall have a guard rail properly attached (bolted, braced and otherwise reinforced) at least 1 meter high above the floor.
- d) Guardrails shall be installed along the entire length and the sides of each working platform, scaffolding and staging, with only such openings as may be necessary for the entry of people or for the delivery of materials.
- e) Such scaffolding or staging shall be fastened / fixed to the building or permanent structure, to prevent it from swaying.
- f) Contractor shall provide certification that design and installation of scaffolding is in accordance to good design practice and all applicable codes and regulations.
- g) The Contractor shall provide proof of daily inspection of each scaffold section carried out by a qualified inspector.

#### **9.4 Ladders**

- a) Usage of ladders shall be avoided whenever possible. In case avoidance is not possible, ladders shall only be used for access and for a short time.
- b) Contractor shall ensure that the condition and suitability of ladders shall be checked by a qualified person before its first use and checked by the Worker before each usage.
- c) Contractor shall provide working instructions about the correct use of ladders.

#### **9.5 Barricades**

- a) Contractor shall erect and maintain barricades required in connection with his operation to guard or protect especially the following areas:
  - 1. Excavations
  - 2. Work at height areas
  - 3. Hoisting areas
  - 4. Areas considered hazardous by Contractor or Employer
  - 5. Employer's existing property likely to be damaged by Contractor's operations
- b) For this purpose caution tapes (ropes, signage and yellow/red caution tape) is not satisfactory. Barricades shall be strong enough to prevent access. Crossing of barricades is not allowed.
- c) Barricades shall be signed with company name, date and time.
- d) Barricades of any type shall be completely disassembled / removed upon completion of the work.
- e) Barricades and hazardous areas adjacent to normal routes of travel shall be marked by red flashers or approved substitute lanterns at night.



## **9.6 Manual lifting devices, Cranes and Hoists**

- a) Contractor shall use only tested and certified equipment, tools, blocks, straps, chokers, shackles, chains, ropes, etc, and shall periodically test them to ensure good working condition of such equipment, tools, chains, ropes, etc.
- b) Use of cranes and hoists including their attachments, anchorage and supports shall conform to the following minimum standard conditions:
  - 1. Cranes and hoists shall be installed and secured as per the original manufacturer's instructions
  - 2. Cranes and hoists shall be of good mechanical construction, sound materials and adequate strength and shall be kept in good working orders.
  - 3. Every rope used in hoisting or lowering materials or as means of suspension shall be of durable quality and adequate strength and free from defects.
  - 4. Frayed ropes shall not be used.
  - 5. Every crane driver or hoist operator shall be properly trained and shall be conversant with safety regulations for the use of such equipment and rigging.
  - 6. All cranes and hoists shall be clearly marked with the safe working load.
  - 7. Tall cranes shall be equipped with on-board wind measurement devices to prevent working under high wind conditions.
  - 8. Walking under suspended loads is strictly forbidden.
- c) Contractor shall prepare critical lift plans for lifts of large, heavy and/or unusual pieces.
- d) Critical lift plans shall be prepared and signed by a certified crane operator and shall include but not be limited to:
  - 1. Description of lift
  - 2. Schematic drawing showing the geometry of the lift and piece(s) to be lifted
  - 3. Estimate calculation of the lifted weight, including hooks, blocks, chokers, straps, and lifting frames
  - 4. Manufacturer's specification of crane with lifting table, showing the conditions for the planned lift in the crane performance table
  - 5. Schematic showing how the lift is suspended with estimated weight on each point and welding calculations of lifting lugs
  - 6. List of blocks, shackles, pins, straps, chokers, pins, and other equipment required for the lift.
  - 7. Emergency plan for rescuing personnel in case of crane malfunction with suspended load
- e) Contractor shall provide critical lift plans to the Employer prior to each critical lift and obtain Employer's acceptance signature and maintain it in his files.
- f) Motors, gearing, transmissions, electric wiring and other dangerous parts of hoists shall be provided with efficient safeguards. Rigging shall be by such means as to prevent the accidental falling of the suspended load.

## **9.7 Lock out – tag out procedures**

- a) Contractor shall take proper lockout/ tag out measures to achieve a zero energy state before undertaking any cleaning, maintenance, repair or unlatching work in a danger zone of machinery or equipment, and before performing tasks on machinery or equipment. Once the machinery or equipment has been correctly disconnected, isolated from its energy sources, and all power storages such as pressure tanks, springs, etc. are depleted and/or released, it shall be physically locked out, tagged out and tried to verify that it cannot move.
- b) Contractor shall supply personal locks for his employees. Larger areas may be locked out at energy distribution centers.
- c) Contractor shall clearly mark all energized areas and areas that are ready for remote start with highly visible signs.
- d) Contractor shall ensure that all remote starts are announced with audible and visible start-up warning signals.

## **9.8 Confined spaces**

- a) Due to the high risk potential of work in confined spaces, these tasks require a thorough planning in cooperation with the Employer's H&S officer/supervisor. In most cases work in confined spaces will be restricted by appropriate work permit systems.
- b) Contractor shall, in all cases, put in place emergency rescue systems. The wearing of body harnesses and appropriate life lines is mandatory both to prevent falls and for emergency rescue. All Persons on Site undertaking work in confined spaces shall be adequately and verifiably trained and aware about the inherent risks.
- c) Work in confined spaces always shall be supervised all the time by a guardsman outside the confined space to be able to start emergency action immediately.
- d) Contractor shall provide written procedures to the approval of Employer prior to performing work in confined spaces

## **9.9 No Smoking Areas**

"No smoking" areas shall be clearly defined and "No smoking" notices prominently exhibited. Smoking within these areas shall be strictly prohibited.

## **9.10 Personnel Transport**

- a) Driving shall be done in strict accordance with local laws.
- b) Drivers and passengers of any vehicle shall use seatbelts at all times the vehicle is in motion.
- c) The use of hand held mobile phones when driving a vehicle is prohibited.
- d) Contractor shall provide safe means of transport for his personnel's, which are equipped with individual seat belts. No personnel's will be transported on open pick-up trucks, flat-bed trucks, high walled trucks or similar improper modes of transport.
- e) All employees shall be dropped off at the site entrance or in the specified, dedicated parking area to ensure they are properly screened prior to entering the Site.

## **9.11 Ammunitions, Drugs, Alcohol, Weapons, Explosives**

- a) Any kind of ammunition, explosives or weapons is strictly forbidden on Site.
- b) Contractor shall enforce measures to ensure an alcohol and drug free work place.

- c) The consumption, possession or sale of alcoholic beverages, drugs or any banned or illegal substances is prohibited on Site. The abuse of alcohol and controlled substances on Site is a serious safety threat to all personnel involved.
- d) Persons under the influence of any of the above mentioned substances shall not be allowed to enter Site and shall be forced to leave the Project location.
- e) Individuals may be tested for drugs and alcohol traces, when involved in an accident or anytime as requested by the Employer.
- f) Violation of these guidelines is a condition for disciplinary measures

### **9.12 Mobile equipment**

- a) Technical conditions of all vehicles shall be in accordance to local road and traffic conditions
- b) Speed limits have to be observed on Site and on public roads
- c) Special care has to be taken when reversing and for movements without sufficient visibility. Reversing maneuvers have to be announced by an audible warning. Alternatively properly trained banksman can be used.

### **9.13 Hot Work Control**

- a) Hot Work such as riveting, welding, flame cutting or other fire or spark producing operations, during the scope of the Project, will be performed after the Contractor has trained its employees and sub-contractors on Hot Work Control Procedures.
- b) Implementation of a permit system is compulsory to ensure all safety requirements are noted and maintained. This permit shall be signed/ approved by the Employer's H&S Manager or the Site Construction Manager
- c) The risk assessment prior to commence hot work has to include
  - 1. Identification of specific requirements for hot work within confined spaces, including ventilation requirements.
  - 2. Fire prevention and protection requirements during hot work and determination when a fire watch is required
  - 3. PPE requirements including clothing, helmets, eye protection, and screens (as needed)
  - 4. Ensure task training requirements are met.

### **9.14 Electrical Safety**

- a) Electrical safety will be required during and after electrical energization.
- b) It will be the responsibility of the Contractor to implement and train its employees and sub-contractors on a 'Electrical Safety procedures', including but not limited to the identification of specific clothing, PPEs and tool requirements. Contractor shall ensure that all personnel's performing operation tasks on electrically energized equipment carry proof of having received such training.
- c) Only after a formal and written approval of the Employer and a particular risk assessment, working under voltage is allowed.

- d) Implementation of a permit system is compulsory to ensure all safety requirements are noted and maintained. This permit shall be signed/ approved by the Employer's H&S Manager or the Site Construction Manager

### **9.15 Hazard identification, Evaluation and Control**

- a) The purpose of Hazard identification, evaluation and control program is to identify situations at the workplace that could cause injury or illness and deal with those situations before their consequences.
- b) For hazardous substances, mainly explosives, flammables, fuel, corrosive products, toxic products, Contractor shall obtain the Material Safety Data Sheet (MSDS) or other form containing all relevant information from the manufacturer along with necessary documents such as but not limited to:
  - 1. Storage conditions
  - 2. Conditions and instruction for use,
  - 3. Disposal techniques
  - 4. Emergency measures
- c) Contractor shall ensure that these products are properly labelled with clear visibility, and communicate clearly special safety instructions to the personnel's handling the hazardous substances.
- d) Contractor shall ensure the safe and environmentally sound storage, transportation, identification, security, and handling of hazardous materials used in performance of the work.
- e) If Contractor requires the use of explosives in performance of the work, it shall provide Employer with written notification regarding the proposed use, storage, and handling of such explosives prior to the start of the blasting operations, and shall ensure the blast is managed and controlled by personnel properly qualified for the type of work.
- f) Contractor shall have a documented process for the management of chemicals and hazardous materials, including radioactive sources, utilized in the course of executing project activities.
- g) Contractor shall maintain MSDS for all chemicals and other hazardous materials used in performance of the work, and shall perform all work consistent with the use specifications and other information in such MSDS.

### **9.16 Dust Control**

The Contractor shall ensure that dust is kept within the acceptable limits to the Public and Safety Authorities and do not cause a nuisance to the general public or neighboring facilities.

### **9.17 Noise Control**

- a) Contractor shall ensure noise assessments are conducted.
- b) Contractor shall test with a sound level meter with equipment in both the operational and non-operational mode to determine high and low-end noise levels.

- c) Contractor shall document results and retain them on file. Areas with noise levels greater than 75 dB require the wearing of hearing protection devices.
- d) Contractor shall ensure that these areas are adequately marked/ signed and communicated to personnel during safety meetings and induction training.
- e) The Contractor shall provide their workers with proper hearing protection and instructions for use.

## **10 Bonus, Rewards & Penalties**

Bonus, rewards and penalties shall be mutually discussed and agreed upon between the Contractor and the Employer.

## **11 Safety Audit and Observation**

### **11.1 Auditing Program**

Contractor shall develop and implement a routine auditing program and provide assurance to Employer that the requirements of their Site H&S Plan are being met. Periodic Audit will be done by Employer's representatives to confirm compliance of H&S procedures and practices. The outcome of the daily work inspections (chapter 6.8) have to be considered in these routine audits.

### **11.2 Audit Interval**

Implementation of the Contractor Site H&S Plan and practices shall be audited monthly, as a minimum requirement.

### **11.3 Non-Compliance with Requirements**

- a) The audit procedure shall include a provision to enable immediate cessation of any construction or operational activities where a high level of danger to safety is identified and to take immediate action to remove such danger, or if impossible, minimize the danger as far as possible.
- b) Any non-compliance with the Contractor Site H&S Plan identified, even outside the auditing process, shall require the necessary rectification actions by the Contractor, so as to ensure compliance with the requirements of the Contractor's Site H&S Plan. Contractor actions shall include but not be limited to, additional training of employees, revision of procedures and development of additional procedures. The Contractor will be responsible for all associated costs of such actions.

## **12 Communication and List of Reports**

- a) Following communication process shall be followed:
  - 1. Weekly safety meeting, jointly with Employer
  - 2. Monthly meeting of Contractor's safety work group
  - 3. Safety review meeting once in two months
  - 4. Tool box meeting specific to the requirement to job before starting of any job

- b) The Contractor shall report on safety performance as per following list:

No.	Subject	Submitted to:
1	Report on accidents, fatalities and dangerous occurrences.	Employer immediately after an incident occurs
2	Contractor's Weekly Safety Meeting report	Employer's H&S Manager
3	Contractor's Monthly H & S report on Injuries, fire incident, near misses, mishaps, fatalities, etc ...	Employer's H&S Manager
4	Tool box meeting	No separate report required
5	Safety work group meeting	Minutes to be forwarded to Employer's H&S Manager

### 13 Subsequent works

- At completion of each portion of the Works the Contractors shall check all affected areas to ensure safe working conditions.
- All guards shall be rebuilt and, if appropriate, tested to ensure the safe use any kind of equipment. If applicable this has to be done according to the manufacture's provision.

### 14 Disciplinary Measures

- If the Contractor does not comply with the applicable laws, regulations and safety standards, the Employer may demand immediate corrective action.
- In addition, the Employer may demand from the Contractor to immediately withdraw and replace any personnel who do not comply with any applicable laws, regulations and safety standards
- The Employer reserves the right to conduct its own H&S inspections to verify the Contractors' H&S performance. If during H&S inspection or safety audits, performed either by the Employer or the Contractor, a hazardous condition is identified, the Contractor or the Employer shall issue a "Correction Notice" to the Contractor's employees or sub-contractor employees.
- The Contractor and their Sub-contractors shall immediately organize their personnel to correct the hazardous condition as soon as receiving such notice, and complete the correction within the time limitation indicated in the "Correction Notice", then report the results of correction and effects of the measures which are taken to the Employer, maintaining a copy of the Correction Notice and results in the archives of Contractor safety department.