



AARTI
INDUSTRIES
LIMITED

AARTI INDUSTRIES LIMITED

HSE Terms & Conditions - Minimum Requirements for Contractors

Date: 25.4.2019

Rev: 00

HSE Terms & Conditions - Minimum Requirements for Contractors

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1.0 Purpose

To define basic rules, regulations and minimum requirements that contractors are to comply with to ensure the Health and Safety of contractors employees and any other persons who may be affected by activities that the contractor undertakes, to ensure effective security measures are implemented and ensure that all necessary precautions are taken to protect the environment.

2.0 Scope

All contractors have to maintain minimum health and safety standards and to ensure this, document "HSE Terms & Conditions - Minimum Requirements for the Contractors" has been made.

Contractors will be notified which contractor safety document applies to their activities but as a guide the following activities will come within the scope of this document:-

- ☐ All construction projects
- ☐ All O&M contractors doing routine work in plant areas
- ☐ Any contractor with more than 10 people on site (including housekeeping contractors, catering)

There may be few conditions which may not be applicable to small contract services, such condition would be excluded under mutual agreement of contractor and AIL. Final decision on such exclusion will be with AIL. e.g. of small contract services are as follows:

- ☐ Smaller service contractors (e.g. repairing/ maintenance of office building, equipment, air conditioning etc)
- ☐ Small events (e.g. erection of tents / catering for events)
- ☐ Minor construction / maintenance work (single job of short duration with less than 10 people)
- ☐ Manpower supply contracts
- ☐ Smaller resident contractors (e.g. medical service provider)

This document is applicable to all AIL sites

3.0 Safety Management System

3.1 AIL Safety Policy

Contractor shall comply with the Company's Safety Policy statements (ref. Appendices A and the guidelines and requirements given in this document. Company's objectives can be summarized as:

- **Zero Fatalities**
- **Zero Lost Time Injuries**
- **Zero Medical Treatment cases**
- **Zero chemical release/ exposure**

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- **Zero environmental non-compliances**
- **Zero Fires**
- **Proactive actions on Legal compliances**

- The above aspirations shall be extended to all personnel involved in the Work and to all Work Areas.

AIL reserves the right at all times to audit and review Contractor's facilities, services and/or performance of its activities in respect of compliance with the approved Safety Plan for the Work.

The contractor shall adhere consistently to all provisions of Safety requirements. In case of non-compliance or failure in implementation of any of the Safety requirements, AIL reserve the right to impose financial penalties as defined in Appendix D.

Any AIL representative shall have the right to stop the Work if they witness or identify any unsafe practices by either Contractor or their Subcontractors. Contractor shall have a process to review, remedy and record such violations. Work may only resume when authorised by AIL Safety Manager. Any associated downtime costs shall be borne by the Contractor.

3.2 Contractor Safety Management System

Contractor shall have an effective Safety Management System compatible with AIL's requirements guidelines for Safety Management Systems or other comparable guideline. The Safety Management System shall require that the Contractor:

- a) Has an Safety Policy and supporting programs, procedures and standards in place
- b) Manages its activities in alignment with Company Safety policy
- c) Complies with Applicable Laws and Contract Safety requirements
- d) Identifies the hazards associated with the Work and ensure preventive actions in place
- e) Identifies & control security risks associated with the Work Areas
- f) Implements appropriate procedures and controls to minimise any potential adverse Safety effects
- g) Sets Safety objectives and targets and measures, records, appraises and reports its Safety performance.

Contractor shall notify AIL of any areas of misalignment, or conflicting requirements, between Contractor and AIL's Safety policies.

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Contractor shall define via a bridging document how it will interface with the AIL's Safety Management System, and its Subcontractors. A copy shall be issued to AIL.

Contractor shall ensure the requirements of the bridging / interface document are fully understood by Contractor's personnel prior to commencement of the Work.

Contractor Safety Management System shall include the following elements:

- a) Leadership and accountability
- b) Policy and strategic objectives
- c) Organisation, responsibilities and resources, planning
- d) Hazards and effects assessment management
- e) Procedures and rules
- f) Incident reporting and investigation
- g) Emergency response planning
- h) Safety Management system implementation and performance monitoring
- i) Auditing and review.

3.3 Contractor Safety Plan

Contractor shall develop a Safety Plan that addresses the Safety risks specific to the nature of work undertaken and the management of controls to eliminate or mitigate the risks to an acceptable level.

Contractor shall finalise a project-specific Safety Plan/s and submit the same to AIL for review and approval within thirty (30) days from the Effective Date of contract.

Contractor shall update the plan/s throughout all phases of the Work. Subsequent updates shall also be reviewed and approved by AIL.

The Safety Plan shall address the minimum requirements set out in this Document, and demonstrate:

How the Contractor will undertake Safety management tasks and responsibilities

- a) How an effective and coherent Safety Management System will be implemented for the Work, and how this will be communicated to all personnel at all levels (including subcontractor and supplier personnel)
- b) That the Contractor's Safety Management System is in accordance with the AIL's Safety Management System
- c) The means by which hazards affecting personnel, assets and the environment will be identified and assessed, and how the risks associated with these hazards will be managed throughout all of the Work phases in which the Contractor is involved including survey work,

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fabrication and construction, pre-commissioning and commissioning and start-up through to Provisional Acceptance

d) That incident response and recovery measures will be in place as required for all Work phases, and how these measures will be executed and maintained in readiness

e) The means by which hazards affecting personnel, assets and the environment during the commissioning, operation, maintenance and decommissioning of the Facility will be identified and assessed and how measures to manage the risks associated with these hazards will be incorporated into the design of the facilities, system operating guides, maintenance manuals, etc. as applicable.

f) How risks will be evaluated and how it will be demonstrated that measures have been taken to mitigate risks to a level that is 'As Low As Reasonably Practicable' (ALARP) for the Work and for the operation of the Facilities

g) That a program of formal hazards and effects assessments (formal safety assessment) will be implemented. Contractor Safety Plan shall identify and schedule all assessments that will be performed throughout the Work

h) Describe the full system of plans and procedures that will be implemented to promote safe and environmentally responsible work practices during all phases of the Work

i) Describe key performance indicators used to measure Safety performance and how Safety performance will be measured and reported to the AIL

j) Implement scheme for rewarding good safety behavior by issuing, tokens, mementos, monetary incentives to motivation & encourage all employees to strive for excellence and achieve an injury free workplace.

k) That regular Safety audits, inspections and reviews will be scheduled, comprehensive incident reporting will be achieved and a system of continuous improvement will be implemented for the management of Safety.

3.4 Leadership and Accountability

It is AIL policy to protect the health, safety and security of its employees, to minimise the risk to the public from its operations and to protect the natural environment. Contractor shall ensure that all Contractor's personnel are briefed in, understand, and strictly adhere to the Company policies and directives on health, safety, security and the environment as included in this document.

Contractor's management shall demonstrate leadership and commitment through actively participating in all aspects of Safety, supporting open dialogue and by allocating sufficient

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resources to fulfill their obligations to Safety requirements. They shall set clear goals, objectives and targets and ensure that performance is evaluated against them.

Contractor's management shall ensure that Safety responsibilities, authorities, accountabilities and competencies are clearly defined, documented, communicated and exercised at all levels.

Contractor's management shall ensure that individual and team contributions to Safety performance are recognized and considered during performance appraisals.

3.5 Policy and Strategic Objectives

Contractor shall ensure that its Safety Management System, its Safety policy and its Project Safety Plan are compatible with AIL Safety policy and objectives.

AIL operates a weapons, alcohol and drug free policy at all Work Areas. Contractor shall comply and ensure that Contractor's and Subcontractor's personnel comply with AIL requirements in this respect.

Contractor shall ensure that its Safety policy and Safety Plan are available at all Work Areas to all AIL personnel and Contractor's personnel, also to be available in a language understood by all and shall ensure that all Contractor's personnel comply with the requirements of both the Safety Policy and Safety Plan.

Contractor shall ensure that all its policy statements covering aspects of the Work are signed and dated by the Chief Executive.

3.6 Organisation, Responsibilities and Resource Competence

Contractor shall provide sufficient and appropriate manpower and supervision in his organisation; with clear responsibilities and reporting structure to ensure that Safety performance is not compromised.

Contractor shall provide specialist Safety advice and supervision and respond to Safety issues when required. Contractor shall:

a) Provide adequate numbers of Safety Supervisors/Managers, HSE Officers and Security Officers on all Work Areas. **As a minimum one HSE officer at each work location over 30 workers.**

b) Formally demonstrate the level of competence of all Safety Supervisors, HSE Officers and Security Officers

c) Ensure that Safety Supervisors, engineers are made available seven (7) days prior to mobilisation of Work, in order that they can receive induction of AIL's expectations for Safety performance.

Safety Managers, Engineers and Supervisors shall be subject to Company approval via submitted resumes of qualifications and experience.

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Safety Supervisors shall have formal safety, Science (BSc/MSc)/engineering education, appropriate certifications and experience.

AIL reserves the right to interview Safety Managers, Supervisors, Engineers prior to commencing mobilization and to request the replacement of persons not considered suitable for the role.

Safety Competence Requirements

Contractor shall ensure all personnel are:

- a) Aged eighteen years or above.
- b) Medically, physically and mentally fit to carry out the duties to which they are assigned in respect of the Work, and be in possession of a medical fitness certificate as per 'Building & other construction work (BOCW) Act 1996, the BOCW Central Rule 1998 and The Factories Act 1948 and other applicable law.
- c) Technically competent and experienced in the tasks assigned to them as part of the Work. Contractor workmen should be verified or interviewed (Competency Test) by AIL (project execution) & record as per category like welder, Grinder, Rigger, Operator, Electrician etc

Personnel Induction and Safety Training

Contractor shall ensure that the workforce (including Subcontractors) have the necessary competency, including relevant training to safely carry out the Work. Contractor shall provide details of the current standard of workforce and additional training requirements identified to meet contract requirements.

Contractor shall conduct Site induction training for all personnel, including Contractor, Subcontractor personnel, Third Parties and any other authorised visitors to Site prior to deployment at site. Training undertaken shall include as a minimum:

- a) Site Safety rules and regulations
- b) Personal protective equipment (PPE) requirements
- c) Environmental sensitivity and protection
- d) Cultural sensitivity and community relations
- e) Site entry rules and security aspects
- f) Safety and warning signs
- g) Actions to be taken in the event of an emergency including emergency signals, evacuation procedures, muster/assembly points, communications in an emergency and the procedure for calling on the assistance of emergency response teams

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- h) Work Procedures / Permit-to-Work (PTW) system
- i) Occupational Health and Medical Facilities
- j) Road Transportation Safety
- k) Hazard Awareness and Incident / Near Miss Reporting.

Contractor shall use the Induction training as a first step in educating the workforce in Safety requirements. Contractor shall have an ongoing program of Safety training, and shall establish a Workforce Training Plan for Company review.

The orientation program shall be frequently updated to reflect the work currently in progress, and the risks envisaged. All elements of this orientation shall be reinforced during ongoing training and daily “tool box” talks.

Upon completion of contractor induction training, persons will be further required to participate in orientation training organized by AIL.

The training requirements of the Workforce shall be regularly reviewed with regard to the tasks that they will be required to perform, and appropriate training shall be given and procedures generated in a timely manner prior to commencing the tasks. Examples of further training such as may be required by selected members of the workforce shall include, but not be limited to, the following:

- a) Safe work practices
- b) Working at height and fall protection equipment
- c) Job Safety Analysis (JSA)
- d) Management and Supervisory enhanced Safety training
- e) Handling of substances hazardous to health (chemicals, radioactive sources, etc.)
- f) Lifting Pressure Isolation
- g) Permit to work (PTW)
- h) Confined Space Entry, including use of breathing apparatus
- i) Lock out / tag out
- j) Defensive driving & vehicle safety
- k) Lifting safely (cranes, winches, pulley blocks, rigging)
- l) Behavioural based safety (BBS)

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Safety training program shall be frequently updated as may be required to reflect the current stage of construction, the work currently in progress, and the risks envisaged.

Contractor shall train, from within the workforce, Health and Safety Officers and shall ensure that Subcontractors have adequately trained Health and Safety Officers. The training shall include:

- a) Basic first aid / Cardiopulmonary Resuscitation
- b) Specialised health and safety training (e.g. breathing apparatus, confined space entry, first aid fire fighting etc.)
- c) Working at heights, scaffolding
- d) Permit to work (PTW)
- e) Job Safety Analysis (JSA)
- f) Accident/incident investigation techniques
- g) Emergency response and medical evacuation.

A record of all Safety training shall be maintained by the Contractor and available for inspection by AIL on request.

All training (including any oral presentation, written presentation material, video presentation) shall be conducted in the English / Hindi language, or in a language more appropriate for the audience.

All training program material shall be made available for review upon request.

Subcontractors

1. Contractor shall be held accountable for the Safety performance of their Subcontractors, including provision of required PPE.
2. Contractor shall ensure that all its Subcontractors receive a copy of, and comply with the requirements of, the Contractor's Project Safety Plan approved by AIL. All aspects of this document shall equally apply to Subcontractors.
3. Contractor shall review all Subcontractors' bid packages for full compliance with Contractor and AIL Safety requirements before any award.

For each Subcontractor, the Contractor shall provide official notice in writing to AIL of:

1. The arrangements under which the Subcontractor will be either integrated into, or interface with, the Contractor Safety Plan including measures taken by Contractor or Subcontractor to ensure satisfactory Subcontractor Safety performance.

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2. Subcontractor shall provide Contractor with a Safety Plan that is in compliance with Contractors Safety Plan unless under the direct control of the Contractor.
3. The Subcontractor Safety Plan shall be approved by Contractor and reviewed by AIL.
4. Contractor shall ensure that each Subcontractor has an adequate number of full-time Safety representative's onsite to provide appropriate coverage for the work being undertaken.
5. Each Subcontractor shall have at least one full time Safety representative unless the activities of such Subcontractor are under the direct control and supervision of the Contractor Safety Manager, in which case the Subcontractor shall designate one of its employees as Safety Coordinator to represent the Subcontractor in Safety matters.
6. Contractor shall proactively lead all Subcontractors in Safety awareness.

Safety Communications

1. Contractor shall, where applicable, ensure before commencing the Work that all companies, organizations and communities that could potentially be affected by such activity have been notified.
2. Contractor shall conduct safety meetings at least once in two weeks, attendees to be recorded and minutes of meeting to be produced.
3. Contractor shall conduct daily toolbox meetings at Work Areas, records of toolbox meeting and attendees to be maintained.
4. Where applicable, Contractor's arrangements for emergency communications shall be integrated with the requirements of the Site / Work Area and third parties.
5. Any individual worker shall have the right, to identify and report to a Safety Supervisor, work that they feel is being done unsafely. Contractor shall have a process to review, remedy and record such action.

Safety Promotion and Awareness

1. Contractor shall establish a mechanism for communication and feedback of Safety issues and performance among its staff and Subcontractors on the Work Areas and to Company representatives.
2. Contractor shall establish an effective structure and schedule for Safety meetings involving all Contractors' personnel assigned to the Work, to promote communication and involvement in Safety matters. AIL reserves the right to attend such meetings.
3. Contractor shall meet with AIL Safety Representative at least weekly to discuss Safety matters, concerns and trends.
4. Contractor shall meet with all Subcontractor representatives at least weekly to discuss Safety matters, concerns and trends. AIL reserves the right to attend such meetings.

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Safety Inspection

1. Contractor Site Supervision shall carry out Safety checks of their assigned work areas prior to commencement of each work shift.
2. Contractors Incharge shall, as a minimum, conduct weekly Safety inspections and monthly Safety audits of the ongoing Site work to ensure compliance with the Safety Management System, and report findings to AIL, findings of inspections and audits to be documented and kept.
3. AIL reserve the right to attend such inspections/audits.
4. Contractors safety personnel to perform daily inspections of work areas and any non-conformities identified must be brought to the attention of work supervisor for action. A daily report to be produced and submitted to the contractor site in charge detailing all issues identified and action taken till issues closed out.

3.7 Risk Assessment and Management

1. Contractor shall ensure that, for its activities, a documented risk assessment procedure and risk register is in place and operating. This risk assessment procedure shall be suitable and sufficient to appropriately assess the health, safety, security and environmental (including community/social) risks involved. A copy of procedure shall be issued to AIL for approval prior to conducting risk assessments.
2. Contractor shall be responsible for ensuring timely delivery of all risk assessments of its activities, covered in the scope of work, in order to meet the work schedule, the AIL Safety Plan and regulatory requirements.
3. Contractor shall from the hazard assessment, identify risk reduction measures to prevent, control, mitigate and recover, including work methods and work sites procedures, emergency response plans, etc.
4. Contractor shall be responsible for the identification and assessment of risks associated with the operation and maintenance of the Facilities and shall incorporate risk reduction measures into the design of the Facilities to manage the risk.
5. Contractor shall manage risks by the application of inherently safe design principles; preference shall be given to prevention measures, then control measures and then mitigation and recovery measures. Preference shall be given to design measures ahead of procedural measures to manage risk.

3.8 Safety Procedures and Rules

Safety Procedures

1. Contractor shall provide procedures to cover hazardous operations. These will be available to all Contractor's personnel and Subcontractors in their working language. The contents shall be related to individual job descriptions. A copy of each procedure shall be provided to AIL (in English) for review.

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- Contractor shall provide a written procedure for obtaining Company's permission to deviate from Safety policies and procedures. This will be available to all Contractor's personnel and Subcontractors in their working language. A copy shall be provided to AIL (in English).

Basic Safety Rules

- Contractor shall provide all its employees and Subcontractors with basic Safety rules based on and developed from AIL requirements (including AIL Standing instructions on Sustainability), and a copy provided to AIL.
- Contractor shall ensure that all Contractor and Subcontractor personnel and visitors to the Work Areas shall abide by all health, safety, security and environmental rules of the Company when entering, working at and leaving the Work Areas.
- Restricted access to contract labor which is approved by AIL engineer /supervisor will be followed by contractor workers mandatorily, Contractor site incharge will ensure the same. Any wandering of contract labor in unwanted areas may be dealt with penalties.

Basic site rules will include but not limited to the following:

☐ When entering the company premises are the following personnel protective equipment (PPE) is mandatory. PPEs shall be complying of IS, EN, ANSI & other best in class standards as applicable. AIL reserve the right to review, check contractor worker PPEs and it's management. AIL may recommend the make and specific standard of PPEs as per the requirement and company policy. All personnel protective equipment should be provided by contractor as per IS standard & should be approved by AIL.

Contractor shall ensure to follow such recommendations.

o Safety helmet

o Safety shoes or boots

o Safety glasses/goggles

o Proper working clothes with full sleeve shirt of cotton

o Hand gloves for use when working ,must be carried by the person within plant areas

o Hearing protection for high noise areas

☐ Be aware of the hazards around you at all times

☐ Do not allow others to work unsafe

☐ Do not touch/interfere with plant or machinery equipment if you are not authorized to do so.

☐ Inspect all tools and equipment daily before use

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- ☐ Do not take shortcuts
- ☐ No tampering /disabling of any safety devices
- ☐ No throwing of objects/materials from any height/level
- ☐ Use tool carrying bag for carrying tools tackles while climbing up/down from height / scaffolding etc. Ensure tool securing point while working at height to prevent tool fall from height.
- ☐ Maximum speed limit must be followed. Vehicles to be driven with due care and attention at all times
- ☐ Vehicles to be fitted with CCOE approved spark arrestors
- ☐ Seat belts to be worn by all passengers
- ☐ Half sleeve shirts are not allowed inside AIL plant area

Personnel in breach of this rule shall not be allowed future access to Site under any circumstances. Similarly, anyone attempting to gain access to the Site while under the influence of alcohol or drugs, GUTKA, TAMBAKU shall not be allowed future access. Contractor shall develop a disciplinary code of practice and take appropriate disciplinary action as warranted. AIL reserves the right to carry out random drug/alcohol, GUTKA, TAMBAKU screening of persons entering AIL sites, or for any person/persons who is suspected to be under the influence of drugs or alcohol.

Permit-to-Work (PTW) System

AIL operate a Permit to Work system, there are two types of permits that operate throughout all AIL locations,

- ☐ Based on the classification of job we have classified 10 types of permits.

For non-routine non-hazardous jobs

1. General permit

For non-routine hazardous jobs, we have classified 7 Class 1 permits and 2 job specific permits

1. Height Work Permit
2. Confined Space Work Permit
3. Hot Work Permit
4. Hazardous Work Permit
5. Fragile Roof Work Permit
6. Digging and Excavation Work Permit
7. Electrical Safety Work Permit

Special permit

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8. PP/HDPE/FRP Work Permit
9. De choking Work Permit

#	Type of Permit	Link of template
1	General	General Work Permit
2	Class 1	Height Work Permit
3	Class 1	Confined Space Work Permit
4	Class 1	Hot Work Permit
5	Class 1	Hazardous Work Permit
6	Class 1	Fragile Roof Work Permit
7	Class 1	Digging and Excavation Work Permit
8	Class 1	Electrical Safety Work Permit
9	Specific Job Permit	PP/HDPE/FRP Tank Work Permit
10	Specific Job Permit	De Choking permit

Definition of the permits

1. General Work Permit

To be an issue for all non routine jobs which involves two or more individuals/ departments

2. Height Work Permit

This Work Permit is to be used when

- Workplace surface level is **1.5 metre** high from nearest level. Where employees may be exposed to fall from one level to another level of height more than 1.5 meter.
- Workplace surface is unstable, fragile, slippery, unsafe to move when surface changes, not sure of strength or capability of support loads, workplace surface angle is more than 7 degree, no proper protection at the edge of working platform, walkways or roof, places where handgrip may be lost or places which require ladder or scaffolding to reach

3. Confined Space Work Permit

By definition, a confined space:

- Is large enough for an employee to enter fully and perform assigned work;
- Is not designed for continuous occupancy by the employee; and

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- Has a limited or restricted means of entry or exit.

These spaces may include underground vaults, tanks, storage bins, pits and diked areas, vessels, silos and other similar areas.

By definition, a permit-required confined space has one or more of these characteristics:

- Contains or has the potential to contain a hazardous atmosphere;
- Contains a material with the potential to engulf someone who enters the space;
- Has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or
- Contains any other recognized serious safety or health hazards

4. Hot Work Permit

This Work Permit is to be used in works where heat is used or generated for example electric/gas cutting, grinding, drilling, welding etc in the plant area/confined space/vessel. For zone 0 & zone 1 hacksaw cutting to be done with hot work permit. **For hot work in confined space/vessel both hot work and confined space permit to be filled including in workshop.**

5. Hazardous Work Permit

This Work Permit shall be used when planned to dismantle pipelines, equipments, vessel, decontaminating pipelines and equipments with possibility of containing hazardous chemicals (Hazardous chemicals are those chemicals which are listed in Schedule -1 of MS&IoHC Rules).

6. Fragile Roof Work Permit

This Work Permit shall be used when planned to fit/remove roof sheet, changing of corroded "J" hooks irrespective of MOC of sheet, from roof of a plant, building, shade etc. Sheet removal / fitting job(s) should be done by skilled and experienced persons Only.

7. Digging and Excavation Work Permit

This Work permit shall be used when planned digging, excavation, floor breaking by manual or by machine(s). Work must start after referring to layout(eg. electrical cables, pipelines, drainage etc)

8. Electrical Safety Work Permit

This Work Permit shall be used when a job is planned on Electrical Installations (e.g. CT/PT, VCB, Transformer, PCC, MCC etc) This Permit shall be approved by Electrical Head/Manager/Engineer

9. PP/HDPE/FRP Work Permit

This Work permit should be used when a job is planned on PP/HDPE / FRP Tank(s)

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10. De choking Work Permit

This Work Permit shall be used when planned to remove choke of pipeline(s), valves, Heat Exchangers, pumps etc. Person doing the job should refer to plant/material specific checklist for choke removal.

The permit system also comprises of a number of checklists which need to be completed and attached to the permit that has been requested/issued.

Contractors shall strictly adhere to the AIL Permit to Work (PTW)

In conjunction with the PTW, AIL have implemented a lock out/tag out (LOTO) procedure for specific high risk construction activities e.g. confined space/vessel entry, and for the progressive commissioning of the Facility (in particular for powering up electrical panel boards and circuits, both permanent and temporary) contractors shall, implement and comply with the same LOTO system.

AIL EIC will be the requester, and AIL operations will be the Issuer of permits. Work cannot be started till a permit has been requested, all precautionary measures have been taken and permit is issued for a particular task. Contractor personnel will supervise the task at all times ensuring that all the recommended precautionary measures are in force and been strictly adhered to at all times.

Conditions for Radiography activity: - Radiography should be carried out only outside of normal working hours to ensure no person is present in radiation exposure area. Following points should be considered during radiography activity.

- All site personnel are to comply with the Radiography Permit to Work requirements.
- The radiography agency employed by the CONTRACTOR shall be duly approved by BARC.
- Only the authorized Radiation Protection Officer / Radiographer (RPO) shall handle Radioactive Equipment as required by the Atomic Licensing Board Act.
- Radioactive Material shall be placed under the direct control of the RPO and under no circumstances shall radioactive material be handled without the attendance of the RPO.
- The specific location and time of the radiography shall be advised in the Radiography Permit to Work.
- Radiography Permits shall not be issued until the area of the work has been checked and all personnel, other than personnel performing the radiography work, are directed out of the work area.
- Radiography Permits issued for other tasks shall be reviewed and rescinded if necessary in order to prevent unauthorized personnel from being within the regulated area.
- The designated RPO performing radiography shall be responsible for establishing boundaries around the radiography work area with Magenta and Yellow barricade tape and signs showing magenta letters and symbols on a yellow background, to warn personnel that hazardous work is in progress.
- This shall include structures or those working at different elevations. Additionally at every

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corner boundary a flashing light should mark the perimeters where the work is being performed.

- Only persons approved in the Radiography Permit shall be allowed inside the radiography boundary.
- Stairs, ladders or other means of access to the restricted area must be tape barricaded and the radiation caution sign in place.
- All personnel involved in radiography shall be equipped with personnel monitoring devices to control the level of exposure to radiation. Established maximum exposure levels shall not be exceeded.
- Where radioactive isotopes are to be stored at the SITE, an approved isotope storage container and pit shall be constructed away from normal traffic.
- A lockable security fence shall surround the pit. Signs indicating the hazardous nature of the stored materials and emergency telephone number/s of contact personnel shall be displayed at the security fence.
- The location and design of the isotope storage container shall have AIL approval.

Conditions for Hydrojetting activity: - Hydrojetting activity is associated with high water jet pressure hazard. Contractors will ensure that all equipment, hoses, water gun etc are suitable and in good condition. System should have proper safety controls to prevent injury during Hydrojetting operation like foot paddle control with person doing jet cleaning, calibrated pressure gauges, dedicated supervision at pump etc.

3.9 Incident Reporting and Investigation

Reporting of Incidents

Contractor shall ensure that all incidents (including near misses) are openly reported, investigated and analyzed. Contractor shall report all incidents involving injury to persons or loss of or damage to equipment, Fires, loss of containment arising from Contractor or Subcontractor activities, in all Work Areas.

All incidents involving fatality or a Lost Time Injury (LTI) shall be immediately notified to AIL verbally and shall be confirmed by completing an incident notification form and submitting it to the AIL representative by end of shift of the incident..

All incident reporting shall be in accordance with AIL Incident reporting, and investigation procedure and shall use the appropriate Report Forms. All incident reports shall be sequentially numbered.

Incident Investigation

Contractor shall interface with AIL's Incident Reporting, and Investigation requirements. Contractor shall immediately investigate and act upon any incidents notified by AIL.

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Contractor shall investigate all incidents as required using appropriate skilled personnel, with leadership from outside the project if required.

If possible following an incident, the scene / debris should be left untouched for inspection by accident investigators / loss adjusters. No attempt should be made to repair items damaged during an incident which resulted in an accident or casualty. However, where good housekeeping and safety considerations preclude this, then records of the incident (including photographs, witness statements, etc.) must accurately describe and corroborate the detailed particulars of the incident. If moved prior to inspection, debris should be retained for examination wherever possible.

Contractor shall provide AIL with a copy of any report or statement or written evidence concerning any accident, incident, medical condition, dangerous event or near miss which occurs during the performance of the Work or within AIL premises (or any other information indicating the existence of adverse safety conditions of which Contractor's Personnel may become aware) by end of shift.

All incidents above a near miss shall be subject to full root causes investigation by the Contractor and a fully detailed report provided to AIL within three (3) Days of the incident. AIL reserves the right to participate in any incident investigation led by the Contractor in connection with the Work.

AIL reserves the right to investigate any incidents, wherever they occur, and shall have unrestricted access at all reasonable times to the scene of the incident, personnel and records of the Contractor and any Subcontractor for this purpose (subject only to any statutory or contractual obligation prohibiting disclosure of any such records by the Contractor or privileged information). Contractor shall include in all subcontracts rights of access for AIL as described herein.

Contractor shall cooperate and participate as necessary with any AIL -led investigation of such incidents.

Contractor shall document and report immediately to AIL any incidents of environmental damage, any unforeseen activity or event which could have led to environmental damage, pollution and uncontrolled release of hydrocarbons or other hazardous chemicals, breaches or potential breaches of environmental regulations or complaint from local groups, organizations including enforcement agencies or individuals.

All incident investigation reports shall clearly describe the corrective actions to be implemented in response to an incident. AIL reserves the right to review and approve the actions to be implemented.

Contractor shall maintain an effective follow-up procedure to ensure the recommendations of incident investigations are fully implemented and shall inform AIL of progress of implementation of such recommendations.

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3.10 Emergency Response Procedures

Contractor shall establish and implement an Emergency Response Plan and Emergency Response Procedures related to the Work. Contractor shall consult with AIL to ensure appropriate interfaces with AIL requirements.

Contractor's Emergency Response Plan shall be part of the Safety Plan, or if implemented as a separate document, then it shall be submitted to AIL within thirty (30) days from the Effective Date of contract. It shall detail provisions and procedures for proposed actions in the event of:

- a) An incident involving serious injury or death to any person at Work Areas
- b) A major incident involving third party equipment
- c) Any release of chemicals, hydrocarbons or waste materials (except as part of planned disposal) to the local environment
- d) Serious illness, including that needing evacuation
- e) A security threat to the Work Areas
- f) Outbreak of contagious disease within the Workforce
- g) Any other significant hazards identified in the Contractor's hazard identification exercise.


Contractor shall produce emergency response bridging documents to cover the extent of the Work. This shall include bridging between:

- a) Contractor and AIL
- b) Contractor and its Subcontractors
- c) Contractor and AIL other Contractors working at the Site
- d) Contractor and any external link.

Contractor shall ensure competency of their personnel and those of their Subcontractors in its emergency response procedures through a program of drills and testing, and shall provide to AIL a program and record of attendance for each employee.

If required by AIL, Contractor shall participate in emergency response exercises. AIL shall arrange these exercises unless, at its sole option, AIL requires Contractor to organize them.

Contractor shall establish Emergency Rescue Teams that shall be able to respond within the shortest possible time, and have emergency first aid treatment capability as required by the Emergency Response Plan. The teams shall carry out all training as required by the Emergency Response Plan.

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Contractor shall be responsible for the provision, and maintenance, of suitable emergency response equipment. Emergency equipment required will be subject to the duration of contract, size and nature of work undertaken.

As part of the Emergency Response Plan, Contractor shall Co-ordination with AIL Emergency Response Team (ERT).

3.11 Safety System Implementation and Performance Monitoring

General

Contractor shall establish a Safety performance monitoring program and provide a copy of the monitoring program, and monthly performance reports to AIL that provides the implementation status of the Project Safety Plan and bridging / interface document, including pro-active Safety activities.

Contractor shall encourage a behavior based safety culture within the workplace, where all injuries and near misses are formally recorded and freely discussed. These topics shall be standard agenda items at all “toolbox” talks and at periodic Safety meetings.

Contractor shall implement a Behaviour Based Safety (BBS) process on site aiming at:

- a) Training observers from workforce keeping a ratio of at least 1 observer for each 20 workforce members
- b) Systematically observing workforce compliance with the identified behavior and positively reinforcing desired behavior through feedback and coaching
- c) Identifying, through root cause analysis workforce behavior that impacts on Safety performance (with reference to specific risks)
- d) Producing numerical ratio of safe/unsafe behavior
- e) Analysing and addressing any unsafe behavioral trends and correcting system failures.

Contractor shall provide a copy of the Safety monitoring program, and regular reports to AIL.

Contractor shall provide AIL with copies of all correspondence received from or sent to any person concerning Safety matters relating to Contractor and Subcontractor activities as part of the Work.

Safety Performance Reporting

Contractor shall provide a weekly and monthly report of the following parameters for the period:

- a) Fatalities
- b) The number of lost time incidents (LTI)
- c) Medical treatment cases (MTC) including medical evacuations
- d) First aid cases (FAC)

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e) Road Traffic Accidents (RTA)

f) Loss of contaminants

g) Near misses

With regard to parameters (a) to (d) above, the reporting shall distinguish between those incidents that result from:

a) An injury

b) An illness

c) An injury arising as a direct consequence of a security related incident (e.g. mugging, robbery, fighting, etc.).

For all of the above parameters, reporting shall include the number of incidents during the period, the cumulative numbers of these incidents and frequency of occurrence (related to cumulative man-hours expended for the Work), and trending of each type of incident.

The reporting shall cover all Contractor personnel engaged in the Work, including all Subcontractors, stating the average manpower, total number of man-hours worked and lost both during the week/month and cumulatively.

For clarification of the above please refer Appendices C of this document for definitions of each.

3.12 Housekeeping

Contractor shall be responsible for all waste/scrap generated as a result of their activities, contractors are to adopt a 'clean as you go' strategy, whereas all waste/scrap to be cleared from areas on an end of shift/daily basis and kept in bins/skips, prior to removal. The contractor is wholly responsible for the segregation, removal and disposal of all garbage/waste/scrap generated. Contractor shall engage dedicated housekeeping gangs to maintain a high standard of housekeeping at all times.

Contractor shall ensure that an adequate number of waste bins/receptacles are provided (at own cost) at locations. Contractor shall actively discourage the disposal of garbage/litter/waste directly onto the ground or surrounding areas.

3.13 Waste Management

Contractor is responsible to ensure all waste/garbage/scrap is disposed of responsibly, ensuring minimal environmental impact and in accordance to local legislation.

If any waste falls under the category of "hazardous waste", the contractor must ensure that appropriate measures are defined, documented and implemented for the appropriate handling, storing and disposal of said waste, as defined in "The Hazardous & other Wastes (Management and Transboundary movement) rules 2016.

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All documentation regarding the disposal of Hazardous waste, including invoices for disposal must be maintained and available at all times.

3.14 Auditing and Review

Contractor shall establish a schedule for Safety audit / inspection and follow-up for its activities and those of its Subcontractors, and provide a copy of the schedule to AIL. As a minimum, the schedule shall include weekly Safety inspections and monthly Safety audits of the Work Areas to ensure compliance with the Safety Management System. Contractor shall carry out audits / inspections in accordance with the schedule and provide a copy of the results to AIL.

Contractor shall provide all input and support as AIL deems necessary to ensure all Safety activities (audits, inspections, etc.) that AIL initiates are successfully carried out and the actions arising are closed out to AIL satisfaction.

This shall include unrestricted access at all reasonable times to the personnel facilities, equipment, materials, and records of the Contractor and any Subcontractor (subject only to any statutory or contractual obligation prohibiting disclosure of any such records by the Contractor or privileged information). Contractor's Personnel shall be available for interview as part of AIL audits and reviews.

Upon request, Contractor shall supply AIL with copies of all reports and documents regarding Safety matters that it is required by legislation to maintain together with such other reports and information as AIL may require.

Contractor shall maintain and make available for inspection upon request all registers, records and any other documentation on environmental aspects of the activities being carried out or on the environmental management system implemented by Contractor

Contractor's senior management shall review every six months performance against their company-wide Safety objectives and targets. In addition, Contractors shall regularly review their Safety Management System, Safety policies and Safety strategic objectives to ensure their continuing adequacy and effectiveness.

Contractor management shall review and update Safety management controls as appropriate and shall provide AIL with revised documentation for review and approval.

4.0 HEALTH

4.1 Occupational Health

Contractor shall establish an Occupational Health Program appropriate for the Site conditions and shall provide details to AIL.

The program shall include health risk assessment and the implementation of control measures (e.g. awareness campaigns, training, physical controls, procedural controls, PPE, vaccinations etc), recovery procedures and monitoring programs for the following categories of health hazard as a minimum:

a) Chemical hazards (incl. solids, liquids, dusts, fumes and aerosols)

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b) Noise exposure

c) Vibration exposure

d) Manual Handling

e) Ionising and non-ionising radiation exposure

f) Heat stress

g) Lighting levels

h) Indigenous diseases applicable to the country and to the specific location of the Site (e.g. HIV/AIDS, malaria, etc.).

Contractor shall conduct a Health Risk Assessment of the Facilities operation, as part of the design of the Facilities. Contractor shall adopt risk management measures in the design to reduce the risk of harm to personnel employed in the operation and maintenance of the plant to as low as reasonably practicable.

Contractor and their Subcontractors shall ensure that noise levels from plant, equipment and processes for which they are responsible are reduced at source, to below eighty-five (85) dBA at 1 m. Exceptions to the noise level allowed shall be notified to AIL for approval.

Where noise levels exceed eighty-five (85) dBA at 1 m or time weighted exposures over accepted international standards (maximum levels shall be 85 dBA over an average 8 hour working day; equivalent to 82 dBA for a 12 hour day), these areas shall be adequately marked and suitable hearing protection shall be provided to persons who are exposed to the high noise levels.

Contractor and Subcontractor personnel who may be exposed to high noise levels shall have an audio-metric baseline established and annual monitoring to detect hearing abnormalities.

Contractor shall provide adequate washing and toilet facilities or ensure access to the same for the entire workforce including any Subcontractors, visitors, etc. These facilities shall be cleaned, disinfected and maintained regularly and the disposal of sanitary waste shall conform to statutory requirements.

4.2 First Aid and Medical Facilities

Contractor shall provide adequate number of first aid boxes and trained, certified first aiders at work site who will be capable of providing emergency first aid treatment in consultation with AIL Management. Contractor is required to arrange tie-up with local hospital for periodical medicals, treatment of injured persons or medical cases from Site or labor Camp(s). These services shall be available to all employees at the Site, including those of Subcontractors, and Third Parties, throughout the duration of the Work. Contractor shall inform AIL of tie-up detailing name, location and contact details of said hospital.

Contractor shall be aware that the level of health in the locality with diseases such as Malaria being endemic. The medical services must factor in the high probability that the workforce will

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be affected and establish effective control programs to ensure fitness for work and protect other workers.

Contractor shall ensure that the medical services are operational from the very beginning of Site work.

Contractor shall provide the following medical services:

- a) Emergency response, prior to evacuation to Occupational Health Centre(OHC), where the Injured Party (IP) can be stabilised before evacuation for further treatment if required.
- b) Provide on-going training to staff both of a general first aid type and more extensive training to safety and rescue teams on the Site.

4.3 Pest Control

Contractor shall adopt and maintain at all times good housekeeping standards to prevent the accumulation/storage of food waste /garbage which could encourage pests. Contractor is responsible for, and is to arrange for the removal and disposal of all waste material (food waste, garbage, debris etc) in accordance with relevant laws, from the work site, and labor camps.

Contractor shall provide a pest control service with properly trained staff and sufficient equipment and pesticides to carry out regular spraying, fogging, baiting of the work site and construction camps.

Contractor shall minimise, as far as practicable, creation of standing water bodies in which mosquitoes or other disease carrying vectors could breed.

Contractor shall prohibit the keeping of any animals as pets by the Workforce at site.

4.4 Health Promotion

Drugs and Alcohol

Under no circumstances shall drugs or alcohol be permitted in AIL premises. Contractor shall ensure that this is rigorously applied. Anyone found using drugs, GUTKA/ TAMBAKU or drinking alcohol while on duty or within the premises of AIL shall not be allowed future access under any circumstances. Similarly, anyone attempting to gain access to the Site while under the influence of alcohol or drugs, GUTKA/ TAMBAKU shall not be allowed future access. Contractor shall develop a disciplinary code of practice and take appropriate disciplinary action as warranted

Smoking - Smoking and bringing matchbox, lighter, cigarettes, agarbatti inside are strictly prohibited within any of AIL premises.

Health Surveillance - Contractor shall arrange for the health assessment of Contractor and Subcontractor personnel. All personnel shall be assessed at pre-employment according to statutory requirements, standards that are in accord with the demands of the job to be

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undertaken. Continuous health surveillance of employees shall continue throughout their employment at Site.

5.0 Safety

5.1 Hazardous Materials and Substances

Contractor shall submit and get approval for a comprehensive list of all materials and substances to be used during the Work (including maintenance work e.g. spray for rust removal etc) and identify any potentially hazardous materials and substances to be used in Work Areas to AIL.

Contractor shall provide guidance information and Material Safety Data Sheet (MSDS) regarding the safe use, storage and disposal of all hazardous materials and substances.

Contractor shall take all measures to eliminate the use of toxic or corrosive substances that pose hazard to personnel or the environment. Contractor shall ensure that the following materials will not be used;

- a) Construction and insulation materials containing asbestos (including CAF gaskets containing asbestose)
- b) Cadmium plated bolts
- c) CFCs / Halons.

In the event a hazardous substance is required, special and inclusive precautions shall be used to eliminate risk of personnel exposure and emergency contingency plans shall be developed as appropriate.

Contractor shall ensure that at all times hazardous materials and substances are suitably packaged, labeled, stored and have been assessed in accordance with "The Manufacture, storage, import of hazardous chemical Rules, 1989(amended 2000) requirements. Contractor will ensure no chemical will be handled in loose plastic bottles inside AIL premises.

It is the responsibility of Contractor and Subcontractor to properly dispose of any hazardous substance brought into Work Areas or generated during the Work in accordance with all Applicable Law and international standards.

Contractor shall maintain an inventory of all chemical substances supplied to Work Areas, together with an MSDS for each chemical substance. No chemical substances shall be allowed to enter the Site without prior review of the current MSDS by Contractor's Safety Officer. The MSDS shall be retained by incoming goods receipt, and copied to the user on issue (in a suitable language for the Workers using the chemicals).

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Contractor and Subcontractor shall prepare health hazard assessments regarding any hazardous substance likely to be used or generated during the Work, including details of precautions taken. Personnel engaged to work with hazardous substances shall be properly trained on associated hazards, take appropriate precautions, be provided with the recommended PPE and have access to Material Safety Data Sheets (MSDS).

Contractor shall conduct a risk assessment of personnel exposure to hazardous substances during the operating phase of the Facilities and shall seek to eliminate the need for hazardous substances, promote the use of less hazardous alternatives, and incorporate measures to reduce the risk of personnel exposure in the facilities design phase.

5.2 Fire Protection Plan

Contractor shall submit a Fire Protection Plan detailing all necessary firefighting equipment for fire control and containment at the Work Areas for the duration of the Work for Company review.

Contractor shall provide suitably trained and equipped Fire Teams. Contractor shall ensure that personnel are trained in fire fighting; that fire wardens are appointed; and that fire drills take place on a frequent periodic basis. Fire Drill Plans shall be submitted to AIL.

5.3 Safety Equipment and Safety Signs

Contractor shall submit a list of safety equipment to be used at Site to AIL, along with all relevant outline specification information, for review and approval e.g. Fire extinguisher, fire blanket etc.

Contractors shall ensure that all safety equipment is maintained in safe working condition at all times and comply with current regulations and, where appropriate, have valid certification. Contractor shall keep appropriate inspection and maintenance schedule and records and test certificates, and make them available for review by AIL if required. Inspection schedule shall clearly identify inspection and test frequency for critical items.

Contractor shall ensure that all safety and warning signs utilized on Site comply with international standards and are clearly understood. Pictograms shall be used, and consideration shall be given to the need to provide any accompanying text in language/s that will be easily understood by the workforce.

5.4 Lifting Equipment

All items of lifting equipment, including, but not limited to, cranes, hoist, winch, chain pulley block, jack, tools & tackles etc is required to be thoroughly examined and certified by an independent examiner: Third Party Inspected (TPI)

a) Before being brought into use for the first time;

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- b) After any substantial alteration or repair;
- c) Every 12 month. (copies of TPI's to be submitted to AIL)

Register of all lifting tools & tackles to be maintained.

All lifting tools & tackles to have unique identification number displayed. If identification number not available on lifting tools & tackles, then this lifting tools & tackles should be removed from site area.

The Safe working load (SWL) must be clearly displayed on all lifting devices.

All cranes must be fitted with a Safe Load Indicator (SLI) in working condition. SLI shall have the capability to continuously monitor and display the current load on the hook. This must automatically compare the current load with the rated capacity of the crane at the operating configuration. SLI must provide both visual and audible warnings at preset parameters to warn operator of overload/ dangerous condition.

Note: The use of cranes exceeding fifteen years of service is prohibited. In case of any crane more than 15 years age, it needs approval from Corporate Safety Head with all other TPI certificate compliance.

5.4.1 Lifting plans

A detailed lifting plan shall be prepared for all lifts classed as 'critical lifts' which includes but not limited to lifts;

- A. Above 5 tons
- B. Utilizing more than one lifting device
- C. Over operating process units or near power lines

Detailed lifting plans for all **critical** lifts are to be submitted to AIL for approval. Plan to include, but not limited to, drawings to scale, equipment to be used, TPI certificates for all equipment to be utilised, configuration of crane, calculations, rigging diagram.

For lifts up to 1 tons, lifting plan to be prepared by trained rigger which shall detail equipment to be used, rigging method, calculations etc and submitted to the supervisor in charge.

Note: The use of Hydra/Farana cranes is strictly prohibited for material transportation from one place to another place.

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5.5 Working at height

5.5.1 Working platforms

The preferred system for working at heights requires the use of fixed platforms with guardrails or handrails fitted, and approved for use by a competent person, for personnel working at raised elevations. Fixed platforms may include:

- Aerial lifts (boom, scissor and snorkel types) used in accordance with manufacturers recommendations.
- Industrial trucks that are fitted with specifically designed personnel work platforms
- Scaffolding that has been erected to meet all requirements and is appropriately tagged as per AIL SOP- and IS 3696 PART 1, IS 2750, IS 4014
- Man lifts, specifically designed and third party inspected and certificated (TPI).

5.5.2 Fall arrest equipment

Where work at height must take place without a fixed working platform, fall arrest equipment shall be used at all times.

Devices to prevent falls shall be installed so as to restrain a person such that they are unable to reach an unguarded edge over which they could fall. Devices include full body harness with double lanyards -Poly amide lanyard & snap hooks (Half body safety belts & single lanyard are prohibited) safety net, and secure anchorage.

Fall arrest equipment is designed to arrest a fall in such a way as to minimise the distance dropped and to prevent high deceleration forces that could cause injury.

Harnesses, inertial reels, lanyards and lifelines, shall not be used for purposes other than protection of personnel.

5.5.3 Access to work at height

Safe means of access/egress must be provided to all work locations at height by such means as; aluminum ladders, ladder towers etc. The climbing of bracing / scaffolding or frames is strictly prohibited. Usage of tool bag is mandatory, in case person is carrying tools along with him while climbing up & down.

5.5.4 Scaffolding

All scaffolding erection, modification and dismantling must be carried out by a AIL approved Scaffold Company. For major project work contractors may be allowed to build their own scaffolds but the contractor will need to be able to demonstrate that it has the competence to comply with the full requirements of the AIL scaffolding procedure before this approval will be given.

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The following is a list of basic requirements to be adhered to for erecting and dismantling scaffolds, this list of requirements is not exhaustive and only designed to guide, for full requirements please see AIL Scaffold Erection, Dismantling procedure and IS 3696 PART 1, IS 2750, IS 4014. Scaffolds must have but not limited to:

- a. Guard rails on all open sides: top rail 950mm above the work platform surface, middle rail 475mm above the work surface.
- b. Scaffolding to be erected on stable level ground.
- c. Scaffold to be erected in accordance with AIL scaffold erection and dismantling procedure.
- d. Toe boards 150 mm on all sides
- e. Working platform to be in good condition, secured and be covering the whole platform area that can safely accommodate the persons working with tools and equipment.
- f. An access ladder secured to the scaffold rising 1 meter above the landing platform, and away from obstacles that interfere with safe use of the ladder.
- g. Inspected by trained and authorized scaffolding supervisor and approved with appropriate scaffolding fitness tag, signed and dated by the certified Scaffolding Inspector.
- h. Scaffold to have unique identification number. This unique identification number should be mentioned in permit.
- i. Scaffold fitness to be re-validated weekly.
- j. All scaffolding to be registered with the maintenance department and all inspection records to be maintained for individual scaffolds.
- k. For work of more than a short duration/routine nature, and where there is risk of dropping objects, the area below is to be netted, and appropriate signage erected, along with hard barricading preventing access and warning of the dangers from work being carried out overhead.
- j. Scaffolding material should be lifting by PP rope (size 14 mm to 16 mm) with canvas lifting bag & usage of Gin Pulley.
- h. Straight ladder should not be used round rungs. Substandard ladder should not be used.
- i. Scaffolding competent person must be deploy & he will ensure for erection / dismantling of scaffolding & follow tag system.
- j. Above 20 mtr. scaffolding erection, scaffolding drawing must be submit to the AIL.
- k. Tool bag must be used for carrying tools tackles while working on height, climbing up & down.

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5.6 Electrical

All electrical installations shall comply with all statutory requirements, the current National Electric Code, Indian Electrical Rules and Regulations.

Contractors shall ensure that;

- a) Only competent, trained and ITI certified electricians work on electrical installations
- b) Electrical equipment, including PPEs (certified, rated adequately e.g. arc flash suits (including helmet, faceshield, suit, shoes, hand gloves of arc flash protection)), tools used are properly selected, installed and used.
- c) All temporary installations are tested prior to been energized.
- d) Temporary electrical distribution boards are of metallic construction and are provided with double parallel earthing
- e) Each instillation to be protected against overload, short circuit and earth leakage by means of MCB's and ELCB's of proper ratings.
- f) Each distribution board must identify the location of isolation point for incoming supply
- g) All MCB's / ELCB's to have identification, and to be tested daily prior to use to ensure operation. These to be also tested and recorded by the competent electrician on monthly basis.
- h) If extension leads are to be used, these must be of three core Phase, Neutral and Earth complete with correct plug top and metallic extension sockets
- i) The practice of inserting naked wires direct into socks is strictly prohibited
- j) Electrical cables to be free from damage/defects, if a cable sustains damage this must be replaced.
- k) Temporary taped joints in electrical cables is strictly prohibited
- l) All electrical cables shall be protected from damage by means of routing cables overhead (minimum 2 meters above), or by means of underground with minimum depth of one meter and covered with bricks prior to backfilling. Note any cables buried must be protected from impact by means of laying cables on bed of sand and covered with bricks prior to backfilling. Cable route markers must be displayed identifying buried cable routes.
- m) Overhead Electrical Lines:

Minimum clearance between construction machinery and electrical lines shall be maintained as given below:

Electrical Lines	Clearance
11 kV and below	3.00 Mtr
33 kV and below	3.60 Mtr
132 kV and below	4.70 Mtr
273 kV and below	5.70 Mtr
400 kV and below	6.50 Mtr

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If the clearance is less than those specified above, it shall be ensured that the overhead power lines shall be shutdown and the residual charges grounded before commencing to use the construction machinery.

5.7 Compressed gas cylinders

If compressed gas cylinders are to be used then the following must be complied with to ensure safe operation for all, this commences from point and time of entry into the AIL premise, till such time cylinders exit the same.

- a) All cylinders must be received with protective safety collar fitted, and cylinders not having the safety collar must be rejected at point of delivery.
- b) Cylinders must be kept in vertical position and secured at all times, this includes transporting around site. Rolling of cylinders is prohibited.
- c) Cylinders to be stored in a well-ventilated shed, ideally location to be away from drains or buildings containing persons and possible sources of ignition.
- d) Cylinders to be segregated type wise and full from empty, segregated areas to be labeled detailing type and status (empty or full)
- e) When in use, cylinder key must be available at all times at the location of the cylinders used, ideally this will be attached to cylinder troll by means of chain, to enable isolation in event of leak or emergency.
- f) When in use each cylinders regulator is required to be fitted with a pressure gauge and flashback arrestor. Cutting torch should
- g) All associated hoses to be checked for damage, splits or cracks that could result in release of contents.

5.8 Tools and Equipment

All tools and equipment brought onto AIL premises must be fit for purpose and in good working order.

All contractors are required to list all tools and equipment that he requires to bring onto AIL premises; these will be inspected upon arrival at site and any tools or equipment that is rejected will not be allowed to enter.

5.9 PPE Requirements

1. Contractor shall provide all of its workers with all necessary PPE at all Work Areas.
2. In addition the Contractor shall ensure that PPE is provided for Subcontractor personnel, Company personnel and other visitors to the Work Areas.
3. PPEs shall be complying of IS, EN, ANSI & other best in class standards as applicable.
4. AIL reserve the right to review, check contractor worker PPEs and it's management.
5. AIL may recommend the make and specific standard of PPEs as per the requirement and company policy. Contractor shall ensure to follow such recommendations.

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6. In case AIL issue PPEs or other tools to contractor workers, it is responsibility of Contractor to ensure return of same in good condition.
7. As a minimum, all personnel and visitors to the Work Areas shall wear a hard hat, eye protection, safety gloves, safety footwear and working cloths of cotton with full sleeves.
8. Contractor shall ensure that there are adequate stocks of PPE at the Work Areas at all times.
9. Contractor shall put in place a procedure for recording issue of PPE to personnel together with follow up inspection and replacement. Contractor will ensure safe disposal system for damage & used PPEs also.

Contractor shall provide their workforce with the following mandatory PPE items, and where applicable/required such additional PPE to be provided and shall ensure that the items meet international standards:

Mandatory PPE

- a) Safety helmet (hard hat)
- b) Safety glasses/goggles
- c) Safety boots (Gum boots for Civil workers for e.g. concrete mixing work)

Additional task specific

- d) Gloves
 - f) Safety harness
 - g) Hearing protection
 - h) Special equipment for hazardous / unusual activity.
 - i) Dust masks
 - j) High visibility vest or reflective bands on working cloth / coveralls
 - k) Full sleeves shirt is mandatory in Plant area.
1. Contractor shall conduct risk assessments for all activities requiring the use of PPE, determine the specification of the required PPE, and provide additional and/or specialist PPE as required (e.g. safety harnesses, hearing protection, dust masks, respirators, etc.).
 2. Safety harnesses must comply with EN361 and have two lanyards which must be capable of limiting a fall to two meters or less, with self-locking snap nooks.
 3. For all elevated work above two meters safety harness must be attached to a life line or structural that is capable of supporting the person or persons.
 4. Contractor shall provide all personnel involved in welding activities, or working in areas classified as a hazardous zone, with flame retardant overalls to EN 531.

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5. Use of Fire Blanket to arrest welding splatter: Specification of Firetex or equivalent CERA V3 M Welder's Blanket with Temperature Limit: 1260° C to be used.
6. The approved fire blanket is 3.2 mm to 3.5 thick with 1700 degree melting point.
7. Contractor shall ensure that all PPE is worn properly at all times and is maintained in good condition and within date.
8. Contractor shall take appropriate disciplinary action against any personnel failing to correctly use the appropriate PPE.

5.10 Excavation

1. Sloping & Benching technique or any other suitable technique like shoring and sheet piling methods shall be implemented as per the type of soil and geological test report. Minimum sloping angle should be 60° degree.
2. Excavated soil shall be dumped at a distance that it does not become over burden and lead to collapse of soil.
3. Heavy equipment and vehicles shall be kept back from the excavated sides at a distance not less than the depth of the excavation or at least 6 mtrs for excavation deeper than 6 mtr.
4. Excavation shall be provided with hard barricade. Warning light/light reflector shall be provided in the right.
5. Ramp provided for the vehicles shall not be used by the workmen and it shall be ensured that Brake and hand brake of the vehicles are intact. Vehicles certified by AIL engineer with safety engineer only shall be used.
6. A separate access such as ladder or stair tower or ramp shall be provided for workmen. If ladder is provided it shall be anchored suitably against sliding and extended 1 mtr above ground level. In case of stair tower, it shall be sufficiently anchored at every 6 mtrs/
7. Wherever the water table /water-logging is found ensure dewatering is done prior to the start of work such that work is carried out in reasonably dry conditions.
8. Mechanical excavation will be allowed beyond 2 feet depth in plant area. Manual excavation to be done up to 2 feet in plant area. In other area, example green field area it would be decided by AIL engineer based upon underground piping/ cable etc clearance.

9. Trenching : Underground utilities

- a) Before commencing excavation work, the site engineer shall look for the presence of underground utilities using detector and checking for the presence of matters.
- b) Trial pits shall be excavated manually before using the equipment to identify the underground utilities. Workmen involved shall be essentially use safety shoes, electrical safety hand gloves & insulated crowbars and other tools.
- c) Work permit shall be taken from the owner of the utility, the utility shall be de-energized/emptied and all the safety requirements mentioned in the permit shall be complied with including signature from all functions.

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d) In case of underground utilities electrical cables, the cable shall also be checked through electrical cable detector and to be de-energized and if the excavation is to be done manually, the tools like crowbar ,spade etc.shall be well insulated to prevent electrical shock.

e) All the exposed underground utilities shall be supported when excavation is open.

10. Excavated Soil/Collapse of soil

a) Excavated material shall be kept away from the edge of the trench to provide a clear berm of a width of not less than one-third the final depth of excavation.

b) In special cases,where the disposal area is limited or where the application of this requirement is impracticable , the site engineer may adopt a berm of reduced width in any case not less than 1 mtr, provided the material being excavated is sufficiently stable and shoring is provided to carry the additional load. Excavation walls shall be dressed to remove loose materials and boulders, which can fall inside.

c)Sloping is one of the techniques,which can be adopted in the sites where adequate area is available in the right of way.Angle of repose to be maintained varies based on the compressive strength of the soil.

11. Ground Water seepage leading to collapse of soil

a) Dewatering shall be done to prevent water accumulation.

b) A suitable location for the discharge of pumped water shall be identified.

c) If water table is high , well pointing technique can be implemented for dewatering purpose.

12. Fall of Vehicles / Construction Equipment

a) Heavy equipment and vehicles shall be kept back from the excavated sides at a distance not less than the depth of trench or at least 6 mtr for excavation deeper than 6 mtr.

b) Adequate and well anchored stop block shall be provided on the surface to prevent operating vehicles from falling accidentally into excavation pit.

c) Workmen shall be provided and wear fluorescent jackets to control the traffic with flags.

d) The trench shall be provided with hard barricades or earthen bund.Warning light/light reflectors shall be provided to warn the vehicles drivers in the right.

13. Electrical Hazards: if dewatering pump is operated electrically , the supply shall be routed through RCCB of 30mA and the pump shall be earthed.

14. Fire Hazards:If dewatering pump is operated by the use of engine,refueling shall be done only when the engine not running.

15. Rotating parts: Al rotating and moving parts of the dewatering pump shall be guarded.

16. Fall of dewatering pump: Dewatering pump shall be secured so that it does not fall inside the trench. It shall be placed on flat surface at a safe distance from the excavation.

17. Existing structure:

a) No excavation or earth work below the level of any foundation of a building or structure shall be commenced unless adequate steps are taken against collapse of the structure or excessive settlement.

b) Foundations , adjacent to and below which excavation is to be made, shall be supported by adequately designed sheet piling or shoring, as long as the excavation remains open.

c) Excavated materials shall not be piled against walls as this may endanger the walls.

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18. Fall of persons / Materials

- Hard barriers /earthen bund,warning signs and warning lights . Light reflectors shall be provided to prevent fall of persons/vehicles inside.
- Cross over bridge with guard rail shall be provided across the trench for the local people and animals.
- Ladders shall be used to enter or leave the excavation. The ladder shall extend at least 1 mtr above the ground level.
- The sides of the excavation shall be provided with benching to avoid rollover of materials.
- Materials shall not be stored or moved so closely to the edge of the excavation that they could fall down.

6.0 Travel Safety

- Contractor shall encourage safe driving habits.
- Contractor will ensure prescribed safe speed limit inside AIL premises and also encourage his employees to follow safe speed limit outside also.
- All vehicles shall be provided PUC certificate,Insurance , Registration details, Driver details & third party inspection details.
- Contractor shall source suitable vehicles for the terrain and for their intended purpose and shall take due account of safety features.
- Contractor shall only use vehicles fitted with seat belts for driver and all passengers.
- All vehicles shall have reversing warning lights and audible alarms.
- Contractor shall maintain all vehicles in good working order.
- Vehicles used inside plant area must be fitted with CCOE approved spark arrestor.
- Contractor will ensure that vehicle for bringing workmen should be of passenger vehicle with seat arrangement. Person should not be standing. Also non-passenger vehicle like Tractor trolley should not be used for workmen transportation.
- For heavy equipment movement like crane, FARANA, Hydra flag man to control movement, parking, reversing, directing driver to be provided for each vehicle.

7.0 Labor Laws

- Compliance of all applicable local and national labor laws/legislation must be ensured.
- Details of labor strength (number of persons) to be informed to AIL with a copy of labor license to be submitted to AIL H.R department.

7.1 Welfare measures

Contractors must ensure that welfare condition and facilities provided by AIL are maintained in good condition. Contractor will ensure that worker take their food at designated location only. Where contractor has to provide canteen facilities for work force, it should be prior approval by

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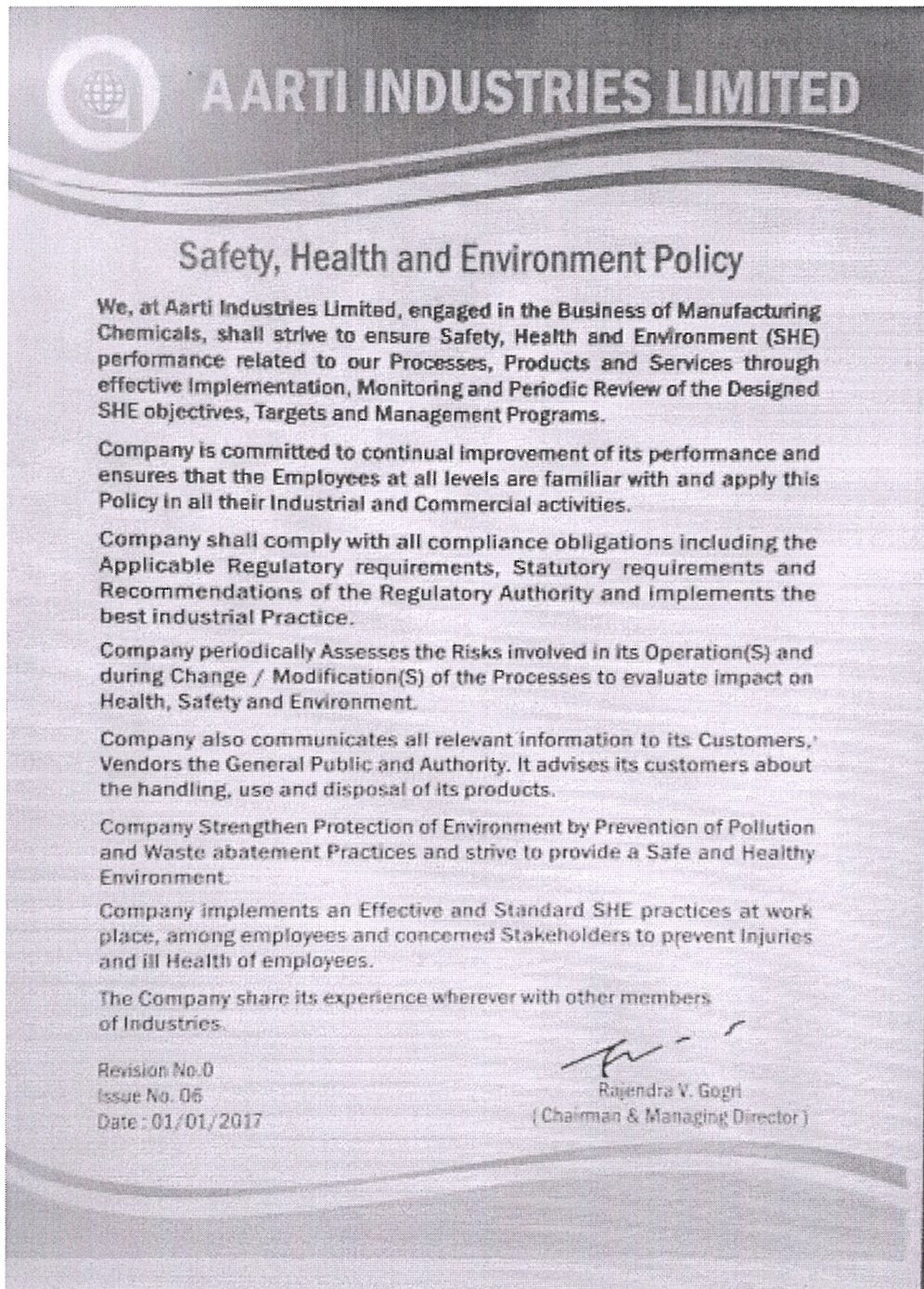
AIL management. Housekeeping around such facilities must be ensured at all times. Audits of the canteens to be done on a regular basis documented and retained for reference.

AIL reserve the right to audit any contractor canteen or other welfare facility at any time.

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APPENDIX A - AIL HSE POLICY



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APPENDIX B**CONTRACTOR HSE CODE OF PRACTICE****General**

- **Should be aware of**
 - Ø Company HSE Policy,
 - Ø Country HSE Legal and other requirements,
 - Ø Roles & responsibilities of him and his employee on HSE.
 - Ø Emergency preparedness of the work he carries out
 - Ø HSE Code of Practices and procedures of the AIL
- **No workmen below 18 years and above 58 years of age shall be engaged for a job**
- **Should ensure pre employment medical check up for all employees and engage only those who are FIT FOR DUTY (certified by medical examiner)**
- **Shall deploy qualified HSE personnel as per company's requirement.**
- **Should have third party certified employees for the categories needed for the project.**
- **All employees must undergo HSE induction.**
- **Shall send his employees for job specific training conducted by the AIL**
- **Shall ensure that the employees use the appropriate PPEs (e.g. helmet, safety harness, safety shoe, goggles, mask, hand gloves etc.).**
- **Shall conduct/ join the daily Tool box talk before starting the activity.**
- **Shall follow the Permit to Work established at the site**
- **Shall adopt the HSE norms and procedures of the company for all activities.**
- **Shall ensure adequate supervision at workplace. Shall ensure that all persons working under them shall not create any hazards to self or to co-workers.**
- **Employees should not horseplay or tamper with any safety equipment.**
- **Must ensure good housekeeping in his area of activity.**
- **Employees should follow the electricity rules and procedures strictly.**

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- Smoking and alcohol is strictly prohibited at site
- Adequate precautions should be taken to prevent and protect fire incident.
- Ensure the camp, living rooms, canteen , toilets etc. are maintained neatly and hygienically.
- All incidents should be reported to the concerned AIL Engineer/supervisor.

Code of practice & Procedure Manual

The Code of practice and Procedures of the project which will be given in the electronic format is to be followed.

Acceptance of Contractor

I have read all the contents and had understood the HSE requirement. I shall strictly adhere to all norms in all our areas of working.

Signature : Name of the Contractor: M/s: Seal with date:	Signature : Name of the Project Manager: Date:
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APPENDIX C**Definitions of classification of Injuries /Incidents**


Fatality	Any work related fatality within a company site
Lost Time Accident, / Injury (LTA / LTI) - Reportable	Any injury where the person is not fit to work for 48 hours or more following an accident.
Medical Treatment case (MTC)	Any case which is more serious than a first aid case but which does not result in a lost time accident. This would include the following <input type="checkbox"/> Any case sent to external hospital for treatment <input type="checkbox"/> Any cut requiring stitches <input type="checkbox"/> Any broken / fractured bones
First Aid Case (FAC)	Any small injury which requires basic first aid treatment either by a first aider or at the Occupational Health center.
Potential Nearmiss	Any incident which does not result in an injury or other form of accident but which in other circumstances could be fatality/ LTI potential or could result in On site / OffSite emergency.
Near miss	Any non-process related incident which does not result in an injury or other form of accident but which in other circumstances could have done so. This also includes unsafe acts and unsafe conditions.
Fire	A fire is defined as 'an undesirable event which emits heat, smoke and/or flame, which has the potential to cause damage.
Dangerous Occurrence (DO)	Any process system failure which could have led to an injury incident under slightly different circumstances . Examples: <input type="checkbox"/> Malfunction of quenching valve <input type="checkbox"/> Popping of PSV or other unplanned release to Vent / flare <input type="checkbox"/> Failure of a rupture disk or other safety device <input type="checkbox"/> Failure of pressure vessel, pipeline, lifting equipment or collapse of structures, damage to property etc <input type="checkbox"/> Unusual or unexpected runaway reaction whether or not within design parameters of the equipment
Chemical spillage	Chemical spillage more than 1 kg are referred as Chemical spillage incident
Chemical exposure	Unintentional, undesired event of Chemical release in atmosphere

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Transport incident	All transport incident of internal or external including chemical spillage, injury, road traffic accident onsite/ offsite Any collision between a moving vehicle and any other moving vehicle or stationary object	

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APPENDIX D**Penalty Clause for Non-Compliance to Safety norms**

Sl No	Site Safety norms Violation	Penalty Amount
1	A, Failure to provide or use mandatory personal protective equipment (PPE)-Helmet, Safety shoes, gloves, Glasses/Goggles. B, Failure of contractor to provide task specific PPE to work force when required.	Rs 1000/- per day/Item/ Person.
2	Working without valid AIL Work Permit/Clearance	First time Rs.5,000/- Second time Rs 10,000/- Third time Rs 15,000/-and so on
3	Failure to comply with specific requirements of permit to work for the following activities : A, Hot work B, Confined space entry C, LOTO	Rs.10,000/-
4	Unsafe electrical practices which could include but not limited to: A, not installing ELCB, B, using taped cable joints, C, using naked wire without top plug into socket, D, no earthing E, other	Rs.5000/- per item
5	Working at height without fall protection, e.g. double lanyard full body harness, latching on with lanyard, using non-certified scaffolding (signed and valid green tag)	Rs10,000/-
6	Unsafe/improper storage & handling of compressed gas cylinders 1. No trolley 2.Jubilee clips 3.Approved double stage gas regulators 4.Flash back arrestor at torch end and cylinder end. 5.Damaged pressure regulator	Rs.5000/- per set
7	Failure to provide/carry out : A, hard barricading of excavated areas B, provide and maintain two means of access/egress. C, site survey prior to commencing excavation D, shoring/shuttering/proper slope or benching E, minimum distance of 1.5 meters clear of any excavated material form edge of excavation	Rs.5000 per occasion.

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8	Use of any lifting equipment, tools or tackles which does not have a valid third party inspection certificate with unique identification number (TPI)	Rs10,000/- per item
9	Traffic rules violations like over speeding of vehicles, rash driving, wrong parking, not using seat belts, vehicles not fitted with reverse warning alarms, use of mobile while driving.	Rs.5,000/- per occasion.
10	Failure of contractor's site in charge to attend monthly safety meetings.	Rs.5,000/- per meeting.
11	Failure to maintain safety records by Contractor Safety personnel.	Rs.10,000/- per month.
12	Failure to submit the monthly HSE report by 5th of subsequent month to Engineer-in-Charge.	Rs.10,000/- per occasion and Rs.1000/- per day for further delay.
13	Poor Housekeeping	Rs.5,000/- per occasion
14	Non-compliance with statutory formalities (workers ESI/ WC policy) / Factory act & other legal requirements)	Rs.5,000/- per occasion
15	Failure to report any accident / incident/ Fire/ loss of containment/ medical treatment case	Rs.50,000/- per occasion
16	Smoking inside AIL premises	Rs.10,000/-per occasion and person blacklisted.
17	GUTKA inside AIL premises	Rs.5,000/- per occasion
18	Any violation not covered above	To be agreed by AIL Zone Head

Note.

In the event of repeated non-conformances/violations then further higher penalties will be imposed as agreed by Zone Head/Project Head & Safety Head