

**SCHEDULE – H**  
**ISRO SAFETY CODE**

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# **Contractor Safety Manual**

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## **CHAPTER 1: INTRODUCTION**

In ISRO, a good number of contract workmen are deployed to carry out construction, maintenance and other related works and these also includes accident-prone activities. The analysis of the incidents in ISRO reveals that a large number of such incidents involved contract workforce which in turn have resulted in either casualty or injury, besides leading to property damage and operational interruptions.

The reasons for accidents are mainly due to unsafe act, unsafe working condition, lack of training and awareness, inadequate safety management, equipment failure and poor house keeping. It is seen that unsafe acts and unsafe conditions contribute approximately 88% and 10% of all accidents respectively. It is also said that a safe and alert workmen are safer in unsafe condition than an unsafe and un-alert workmen in safe condition.

During execution of various works at ISRO centers/units, contractor's personnel are likely to be exposed to different types of hazards. Similarly, unsafe acts of contractor's personnel may generate hazards for Departmental staff and/or workmen of other contractors working at the site. Such unsafe acts may also pose danger to the existing installations and even to general public. In order to improve the level of safety compliance, the contractor safety is of paramount and utmost importance and there is a need to institute a good contractor safety.

This manual is prepared to facilitate safe working during execution of contract works at ISRO centers/units.

## **CHAPTER 2: PURPOSE**

The purpose of this manual is to establish, implement and execute a practical, sound and effective program for the prevention of incidents that cause or may cause injury to person or damage to property, as well as the assignment of specific responsibilities to contractors for compliance. These safety requirements have been designed to assist all contractors, their supervisors and workmen to identify, evaluate and subsequently control various activities or conditions to reduce the possibility of any undesired incident within their respective area of contract responsibility.

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## **CHAPTER 3: SCOPE**

**3.1** The provisions of this Safety Manual shall be considered minimum requirements necessary to all works performed inside the premises of ISRO centers/units and on ISRO jobs carried out outside the ISRO premises.

**3.2** All contractors are required to ensure that they and their employees, sub-contractors, suppliers, vendors and visitors, while on the ISRO job site, comply with the provisions of this manual.

**3.3** Contractors shall review and educate their employees about the stipulations of this manual that are appropriate to the work to be performed.

**3.4** This manual does not replace existing site procedures or operational specifications. Approved, site-specific procedures must be followed where applicable.

**3.5** This manual does not relieve contractors of their responsibility towards safety, health, and environmental compliance envisaged under law, code or statutory requirement.

## **CHAPTER 4: GENERAL INFORMATION**

**4.1** The purpose of the contractor safety program is to establish, implement, and execute a practical and effective method for preventing accidents, illnesses, and injuries and protecting the environment.

**4.2** This Contractor Safety Manual will help contractors and their management to recognize, to evaluate, and to control hazardous activities or conditions within their areas of contract responsibility.

**4.3** This manual defines how the safety program will be administered, identifies responsibilities, and ensures control of work area safety.

**4.4** Relevant provisions of this manual apply to all contractors. Contract agreement signed with contractors and the provisions of this manual are intended to complement each other to ensure safe working conditions; however, in the event of a conflict between the provisions of this manual and the terms of a specific contract, the matter shall be referred to the Engineer-in-charge immediately of any such conflicts.

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**4.5** The provisions of this manual apply to all ISRO centers/units; however, each center may have specific safety rules and regulations that apply when a contractor performs work in that center/unit. Contractors are responsible for following the specific safety rules and regulations applicable to the respective ISRO centers/units.

**4.6** Throughout this manual, reference to a contractor means the contractor's company and the companies of their subcontractors, consultants, vendors, and suppliers. Reference to contractor's management means personnel responsible for managing, supervising or directing contract activities and employees.

**4.7** Non-compliance of safety or environmental requirements is treated as non-compliance of contract agreement, and may result in work stoppage or employee removal from the premises. Willful or repeated non-compliance may result in contractor dismissal and contract termination.

**4.8** The Contractor Safety Manual is an important part of the ISRO's safety program and will be issued as part of the contract documents. Contractors must ensure that their employees, subcontractors, consultants, vendors, suppliers, and visitors comply with the provisions of this manual while on ISRO premises.

**4.9** The Contractor Safety Manual is a supplementary document to statutory rules, codes, and regulations having jurisdiction, and does not negate, abrogate, or minimize any provisions of these rules, codes, and regulations. It is intended to supplement and enforce the individual program of the contractor and to coordinate the overall safety effort. Contractors are responsible for the safety and health of their employees, subcontractors, consultants, vendors, suppliers, and visitors while in ISRO premises.

**4.10** Safety is considered an integral part of quality control, cost reduction, and job efficiency. Managers and supervisors are accountable for the safety performance demonstrated by their employees.

**4.11** Contractor's managers and supervisors are responsible for preventing incidents or conditions that could lead to incidents, injuries, illness, or fatalities. The ultimate success of the safety program depends on the cooperation of every employee. The contractor's management must ensure that safety rules and procedures are enforced and that effective training and education programs are employed.

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## CHAPTER 5: DEPARTMENT'S ROLE

### 5.1 Department's Representative / Engineer-in-charge

The duties & responsibilities of engineer-in-charge shall include:

- To ensure that all Contract requirements including Safety, Health, Environment & Security are complied with.
- To ensure that contractor workforce deployed is adequately qualified, trained and in state of health to commensurate with the requirements of the job.
- To ensure that the Tools / Tackles and Machinery being used are properly tested and are in sound working conditions.
- To take the required necessary corrective action immediately upon noticing or receipt of a report on noncompliance or any such condition which poses a threat to health, safety or environment. If during the course of execution of the contract, any situation of non-compliance with the contractor's safety and health plan are noticed / reported, the same will be taken up with the contractor for correction. In the event of repeated non-compliance, suitable action to be initiated as per the contract.
- To ensure that the incidents are reported to all concerned within stipulated timeframe.
- To ensure submission of a plan for safe working from contractor and approval of the same by competent person / department.
- To ensure that Work Permit System is adhered to.
- To ensure availability of all the documentation related to safety needed for the execution of contract.
- To ensure safe dismantling of all temporary facilities/connections put up by the contractor, after completion of work.
- To compile a report on the safety performance (at the conclusion of each contract or periodically such as annually for renewable and long-term contracts), which is to be considered in future when selecting contractors.

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- To coordinate with Department safety officer to ensure that all the safety requirements are complied by contractor.

## 5.2 Department's Safety Officer

The duties & responsibilities of the Safety Officer shall include:

- To assess the hazards associated with jobs in consultation with all concerned and establish safe working procedure.
- To undertake routine/surprise inspections of all work sites and record deviation and take corrective/punitive action.
- To investigate promptly the incidents (including near-miss) in order to advise corrective and/or preventive action.
- To review the safety plan submitted by the contractor.
- To verify the competency of the safety professionals of contractor based on bio-data, experience and interview.
- To check whether the proposed working arrangements are safe and satisfactory, particularly at the interface between the contractor's planned work and Department's existing facilities.
- To communicate to the contractor the imposed restrictions which may affect the work/personnel such as the temporary closure of a work site or electrical isolation of equipment.
- To identify areas of operations where specialized training is required to deal with potential dangers.
- To monitor the safety compliance of contractor on regular basis and inform engineer-in-charge time to time on compliance of safety norms.

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## CHAPTER 6: CONTRACTOR'S RESPONSIBILITY

### 6.1 Contractor's Management

Various initiatives have been taken by ISRO to improve the safety performance of contractor's work. The commitment of the contractor's management to safety is critical because each contractor is in the best position to know how to attain improved safety performance. The contractor's management needs to ensure the following:

- To implement safe methods and practices, deploy appropriate machinery, tools & tackles, experienced supervisory personnel and skilled workforce etc. required for execution.
- To ensure that the only Indian nationals are employed for the work and employees deployed are physically and mentally fit. Such employees should possess requisite skill, qualification, experience etc.
- To ensure that the background of the individual employee is verified before employing them.
- To deploy qualified & trained safety supervisor / safety engineers / safety manager reporting to the site in charge, for supervision, co-ordination and liaison for the implementation of the safety plan.
- To ensure that its employees have completed appropriate health and safety training as required. The documentation of such training imparted to all its employees should be maintained and produced for verification as required.
- To obtain all necessary licenses, permits, insurance policy of his employees and / or approvals before performing any work. A copy of the same shall be submitted to Department.
- To ensure that all the employees and those of sub-contractors have sufficient information, instruction, training and competence to enable them to carry out safely the work specified in the contract.
- To comply with all the security arrangements of Department.
- To ensure that the plant and equipment used on-site by him / his employees is correctly registered, controlled and maintained in sound working condition.

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- To ensure that all incidents including near misses are reported to all concerned immediately.
- To provide personal protective equipments required for the job and first-aid kits at work.
- To provide uniform safety gadgets for employees, whenever work is carried out in existing facility for easy identification.
- To maintain appropriate records of his employees deployed to carryout the job.

## **6.2 Contractor's Safety Officer / Job Supervisor**

The duties & responsibilities of the Contractor's Safety Officer/ job supervisor shall include the following:

- To assess the hazards associated with jobs in consultation with all concerned and establish safe working procedure.
- To establish a written record of factors which can cause injuries and illness.
- To ensure strict compliance with work permit system by carrying out work only with appropriate work permits and after ensuring that all safety precautions / conditions in the permit are complied with and closing the same after the completion of the contract.
- To undertake routine / surprise inspections of all work sites and identify and correct unsafe conditions & practices, if any.
- To check whether the proposed working arrangements are safe and satisfactory, particularly at the interface between contractor's planned work and Department's existing facilities.
- To ensure that required guards and protective equipment are provided, used, and properly maintained.
- To ensure that the workers understand the work to be done, the hazards that may be encountered, and the proper precautions/procedure for carrying out the work safely.
- To take immediate action to correct any violation of safety rules observed or reported.

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- To ensure that the workers likely to be exposed to hazardous chemicals/materials have access to appropriate Material Safety Data Sheets (MSDS), wherever applicable, and provide necessary mitigation measures.
- To ensure that appropriate warning signboards or tags are displayed.
- To ensure that workers have proper training for their job assignments, including use of appropriate PPE.
- To report each incident and/or injury in accordance with established procedures and assist in investigation.
- To conduct daily inspections to ensure compliance with safety standards, codes, regulations, rules and orders applicable to the work concerned.
- To arrange tool box meeting periodically (preferably daily) and shall continue this process to make workmen safety conscious.
- To keep a constant liaison with Engineer-in-charge / Department's representative on safety issues.
- To maintain accident and near miss record in a register.

### **6.3 Contractor's employees**

The duties & responsibilities of the contractor's employee should include the following:

- To perform work safely as per the job requirement and instructions.
- To inform all concerned regarding unsafe conditions/acts.
- To wear PPE as stipulated and necessary for the job.
- To inform promptly to their supervisor regarding all work related incidents resulting in personal injury, illness and/or property damage.
- To take all necessary and appropriate safety precautions to protect themselves, other personnel and the environment.

### **6.4 Safety training for employees of the Contractor**

Before start of any job, Contractor's safety officer/ job supervisor must train all employees. The content of the training program shall include the following:

- Use of personnel protective equipments (PPE) in general and any special PPE specific for a particular job.

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- Emergency preparedness plans specific to job site.
- Safety standards and procedures for carrying out the high-risk jobs.
- Special precaution specific for a particular site based on its hazard perception.
- Hands on training for use of PPE and fire extinguisher (if required).
- First aid

After imparting safety trainings, the gate passes will be stamped as Safety training given+ or separate safety training card shall be issued to each contractor and their employees by contractor's safety officer. Persons who have not received safety training will not be allowed to work on site.

## **CHAPTER 7: SAFETY MANAGEMENT**

### **7.1 Pre-bid safety meeting**

A pre-bid safety meeting shall be held with the contractor for high value/critical jobs in those jobs where hazard perception is high. All relevant safety standards required to be followed by the contractor to carry out a particular job should be discussed and agreed upon. In case the contractor has an own safety standard, which further strengthens the safety performance of the job may also be adopted in addition to ISRO safety standard.

### **7.2 Contractor selection**

Selecting a qualified and skilled contractor is a major step toward obtaining safe contractor performance. Proper framing of the scope of work, pre-qualification criteria, special contract requirement, experience profile of the contractor and its workmen/supervisors etc is essential for proper selection of a contractor.

The contractor's safety standard can be judged by the following attributes:

- The contractor's safety commitment, as demonstrated by its own safety programs supported by their top management.
- Experience profile of the contractor, its supervisor and work men.
- Availability of safety equipment/appliances with the contractor.
- Availability of qualified and skilled safety personnel with the contractor to monitor safety performance during the process of job.

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### 7.3 Pre-job meeting

After the contract has been awarded, a pre-job meeting with the contractor is essential to emphasize and reiterate the safety requirements / procedures / standards etc, which has otherwise also been included in the tender documents. The discussion is more important as the group carrying out the job may not be the same who prepare the bid or attended the pre-bid meeting. This meeting shall be attended by safety officer and Engineer-in-charge. The topics for pre-job meeting will consist of atleast the following:

- To provide specific information to contractors and make workers aware on the hazards associated with job assigned.
- To provide information about risk mitigation measures available at the place of work.
- To specify security rules and regulation related to access arrangements and safety rules such as fire protection. First aid arrangement, works permit systems etc.

### 7.4 Issue of gate pass

Issue of gate pass is more of a security issue than a safety issue. However, this system can also be used effectively for safety interventions. The following may be adopted to use the gate pass for safety controls:

- A photo gate pass should be issued to contractor and their employees.
- No contractor and their employees shall be allowed to enter inside any ISRO centers/units for carrying out job unless the safety training/briefing has been given to them and stamping of gate pass or safety training certificate has been issued to them.

### 7.5 Safety infringement system for contractors

All contractors and their employees working in ISRO centers/units shall comply with the requirements of ISRO safety norms and standard. Violation of the safety norms will be dealt according to penalty system for contractors. The Contractors must endeavour to avoid penalty by encouraging, motivating and making their employees aware about all

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the safety regulations. The purpose of this scheme is to ensure safety of the personnel and property. A few of the non-compliances are as under:

- Not wearing/improper wearing of personal protective equipment at work site.
- Working without valid work permit.
- Working at height without safety belt/fall protection arrangement.
- Use of substandard scaffolding (such as substandard platform in terms of access, guard rail, toe guard and gaps on platform surface, non-use of sole plate/base plate, sagging scaffold etc.)
- Non-fencing/barricading of excavated area.
- Not providing shoring/strutting/proper slope for the excavations.
- Dumping excavated earth on edge of excavation / at a place other than designated one.
- Use of domestic LPG cylinder for cutting purpose.
- Taking electrical connection without using ELCB.
- Using damaged welding cable, faulty joints in cable.
- Non-availability of standby person on man way during entry into confined space.
- Use of firewater for purpose other than fire fighting.
- Not providing fire extinguisher for hot work as per permit conditions.
- Non- reporting of near miss incident.
- Over speeding/rash driving
- Mis handling of gas cylinders and use of improper tools.
- Non-deployment of safety supervisor/supervisor responsible for safety at work.
- Poor housekeeping.
- Use of mobile phone, camera etc., which has been prohibited.

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## 7.6 Penalty for non-compliance

7.6.1 The following penalties shall be imposed on the contractor by the Department and shall be deducted from his running/final bill.

Sl. No.	Non-compliance of Safety Regulations	Penalty
1	Non-use of PPE like Helmet / Safety shoes etc.	Rs.50 / day / item / person
2	Working without valid special work permit	Rs. 1000 / per occasion
3	Non-use ELCB, Use of non-standard socket, poor cable joint, laying wire / cables on roads, electrical jobs by incompetent person, use of more than 24V power in confined space.	Rs.200/ per item per day
4	Working at height without safety belt, using non-standard scaffolding and not arranging fall protection arrangement.	Rs. 500/ per case per day
5	Handling of compressed gas cylinders without trolley, double gauge regulator & improper storage & handling or use of improper tools.	Rs. 100/ per item per day
6	Non fencing / barricading of excavated areas	Rs. 500/ per occasion
7	Use of domestic LPG for cutting purpose	Rs. 500/- per occasion
8	Not providing shoring / strutting / proper slope and dumping at a place other than designated ones.	Rs. 500/- per occasion
9	Over speeding / rash driving, (> 25Km/Hr) or wrong parking.	Rs. 100/- per occasion
10	Non-provision of fire fighting equipment as per permit conditions.	Rs. 200/- per item per day

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11	Non-availability of standby person on man way during entry into confined space.	Rs. 500/- per occasion
12	Use of firewater for purpose other than fire fighting.	Rs. 200/- per occasion
13	Non- reporting of near miss incident.	Rs. 1000/- per occasion
14	Non- reporting of cases of injury	Rs. 2000/- per occasion
14	Use of mobile phone, camera etc., which has been prohibited.	Rs. 500/- per person
15	Non-deployment of safety officer / safety supervisor responsible for safety at work site.	Rs. 500/- per day/ per person
16	Poor Housekeeping	Rs. 200/- per day
17	Failure to comply any safety conditions as per job safety plan.	Rs. 500/- per occasion

**7.6.2** Safety officer or any other officer authorised by concerned ISRO centers/units will report safety violations to the concerned section head for imposing necessary penalty.

**7.6.3** Engineer-in-charge shall ensure that the penalty amount has been deducted from the running bill of contractor.

**7.6.4** Imposing any penalties for violation of safety norms does not absolve the Contractors from their contractual obligation / responsibility.

**7.6.5** Contractors shall own full responsibility for any accident and injury to any of their employees or property due to violation of safety norms.

## **7.7 Provision of Job Supervisor / Safety Supervisor/ Safety Officer /Safety Manager**

All contractor shall have job supervisor/ safety supervisors/safety officers except for the non-critical jobs such as general housekeeping, supply of casual labour, gardening, grass cutting etc.

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The contractor of contract value of above **10 lakh and up to 50 lakhs** shall have job supervisor, who will be trained by safety department of concerned ISRO centers/units. For this purpose he will be deputed to safety department for one days prior to the start of the site work. Job supervisor in turn will train the contractor's employees on safety.

For contract value of above **50 lakhs and up to 5 crores** shall have safety supervisor. Safety supervisor shall be minimum intermediate with good communication skill and shall be able to read and understand English and speak local language. He shall have experience as safety supervisor for a period of minimum one year. Safety department of concerned ISRO centers/units will interview safety supervisor prior to the start of the site work and depending upon his performance during interview, the requirement of period of experience can be reduced.

For contract value of over 5 crores the requirement of safety professionals shall be as follows:

<b>Contract value</b>	<b>Safety Officer</b>	<b>Safety Supervisors</b>
Above 5 Crore upto 50 Crore	1	1
Above 50 Crore and up to 100 Crore	1	2
Above 100 Crore and above	1	3

## **CHAPTER 8: REPORTING OF ACCIDENT**

**8.1** Contractor shall report all cases of injury (including first aid) and near miss incident to the engineer-in-charge and safety officer of Department immediately after the incident.

**8.2** Contractor shall also help the safety officer to carryout the investigation and analysis and make available their employees for interrogation.

**8.3** All incidents of fire shall be immediately informed to fire station through telephone.

**8.4** Emergency phone numbers of fire station, safety officer, near by hospital shall be displayed at prominent place at work site.

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## **CHAPTER 9: STATUTORY REQUIREMENT**

**9.1** Contractor should not employ any labour below 18 years of age on the site.

**9.2** Contractor shall comply with all statutory requirements, rules, regulations and notifications in relation to employment of his employees issued time to time by the concerned authorities.

**9.3** Contractor to obtain insurance cover of his employees at his own cost. Department shall not be responsible for any loss, damage, and pilferage of his property and /or his employees.

**9.4** Contractor shall observe Provisions of Factories Act in respect of working hours, holiday, rest intervals, leave and overtime to his employees.

**9.5** The liability for any compensation on account of injury sustained by an employee of the contractor will be exclusively that of contractor.

## **CHAPTER 10: GENERAL SAFETY PROVISIONS**

### **10.1 General safety rules / norms to be observed by the Contractors**

**10.1.1** The Contractor shall take all safety precautions during the execution of awarded work and shall maintain and leave the site safe at all times. The Contractor shall comply with all applicable provisions of the safety regulations, clean up programme and other measures that are in force at the site.

**10.1.2** The Contractor shall provide and maintain all lights, guards, fencing, warning signs, caution boards and other safety measures and provide for vigilance as and where necessary or as required by the Engineer-in-charge or by any duly constituted authority for the protection of workers or for the safety of others. The caution boards shall also have appropriate symbols. Waste material shall be dumped only at identified place and shall be periodically removed and disposed.

**10.1.3** Adequate lighting facilities such as floodlights, hand lights and area lighting shall be provided by the Contractor at the site of work, storage area of materials and equipment and temporary access roads within his working area. The Contractor shall obtain written approval of the Engineer-in-charge to the lighting scheme and place of tapping prior to its installation.

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**10.1.4** The Contractor shall plan his operations so as to avoid interference with the other Departmental works, other contractors or sub-contractors at the site. In case of any interference, necessary coordination shall be sought by the contractor from the Department for safe and smooth working.

**10.1.5** The Contractor and his sub-contractor, if any shall comply with the instructions given by the Safety Engineer or his authorised nominee regarding safety precautions, protective measures, house keeping requirements, etc. The Safety Engineer with due intimation to Engineer-In-Charge shall have the right to stop the work of the Contractor, if in his opinion, proceeding with the work will lead to an unsafe and dangerous condition. Engineer-In-Charge shall get the unsafe condition removed or provide protective equipment at the contractors cost. The contractor can employ his own Safety Engineer or nominate one of his officers for liaison with Departmental Safety Engineer for ensuring compliance of all safety rules. Contractor shall ensure that all his workmen are aware about the nature of risk involved in their work and have adequate training for carrying out their work safely.

**10.1.6** Contractor or their employee shall not interfere in day-today routine plant activities / works except the work assigned to them, shall not loiter in the areas other than their work jurisdiction, as well as shall not temper / operate / touch the machineries / equipments / auxiliaries with which they are not concerned. Also, the contractor shall strictly instruct their staff not to sit or take rest at / near / below running plants, auxiliaries, systems or any place which is risky, hazardous & prone to accident.

**10.1.7** The contractor shall be held responsible for non-compliance of any of the safety measures and delays, implications, injuries, fatalities and compensation arising out of such situations or incidents.

**10.1.8** Smoking is prohibited. Mobile phone, cameras, matches, lighter and any other source of ignition are not permitted inside ISRO centers/units.

## **10.2 Personal Protective Equipment**

The contractor is responsible to provide all necessary standard make (ISI approved) personal protective equipment (PPE) / safety gadgets suitable to give sufficient

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protection against hazards involved in their work / job to their employees, as per the job requirement and insist / enforce their staff to put on the same while at works and ensure that the PPEs are properly used and maintained in a condition suitable for immediate use. The contractor shall have sufficient stock of various PPEs to avoid any shortage of supply and shall take adequate steps to ensure proper use of equipment by those concerned. The ongoing work is liable to be stopped at any time if the contractor's staff is found working without PPEs.

**10.2.1** All persons employed at site shall use safety helmets. For other types of works, persons working in that area shall also use safety helmets, if advised by Safety Engineer/Engineer-In-Charge.

**10.2.2** Workers employed on mixing asphaltic materials, cement and lime mortars shall use protective goggles, protective foot wear and hand gloves.

**10.2.3** Persons engaged in welding and gas-cutting works shall use suitable welding face shields. The persons who assist the welders shall use suitable goggles. Protective goggles shall be worn while chipping and grinding.

**10.2.4** Persons engaged in or assisting in sand/shot blasting operations and cleaning the blasting chamber shall use suitable gauntlets, overalls, dust-proof goggles, boots and protective hood supplied with fresh air at the minimum rate of 9 m<sup>3</sup>/hr.

**10.2.5** All persons working at heights more than 4.5 m above ground or floor and exposed to risk of falling down shall use safety belts, unless otherwise protected by cages, guard railings, etc. In places where the use of safety belts is impractical, suitable net of adequate strength fastened to substantial supports shall be employed.

**10.2.6** All two-wheeler motorcycle and scooter drivers shall wear crash helmets inside the facilities.

**10.2.7** When workers are employed in sewers and inside manholes, which are in use, the Contractor shall ensure that the manholes are opened and are adequately ventilated at least for an hour. After it has been well ventilated, the atmosphere inside the space shall be checked for the presence of any toxic gas or oxygen deficiency and recorded in the register before the workers are allowed to get into the manholes. The manholes

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opened shall be cordoned off with suitable railing and provided with warning signals or caution boards to prevent accidents. There shall be proper illumination in the night.

**10.2.8** The following is the list of various PPEs to be used for various works / worksites.

#### List of safety equipments

01	Industrial Safety Helmet	For protection of head against falling objects or during fall of person from height.
02	Safety Goggles (Grinding, Welding, etc).	For protection of eyes against flying particles / dust, chemical splash, spark, arc, flashover etc.
03	Face shield (Half or full)	For protection of face against flying particles / dust, chemical splash, spark, arc, flashover etc.
04	Earplug / Ear muffs.	For ear / hearing system protection while working in high noise level area.
05	Apron (Rubber / PVC / Leather / Cotton).	For body protection against chemicals, oils, sharp edged objects, heat, hot objects etc.
06	Gloves (Rubber/PVC, Leather, Electrical shock proof).	For protection of hands against chemicals, oils, sharp edged objects, heat, hot metals/objects, electricity etc.
07	Safety shoes	For protection of leg/feet against falling objects, sharp edged objects, heat, hot metals/objects, electricity etc.
08	Safety Belt (full body) / Rope /Life line / Fall prevention system etc.	For fall prevention while working at heights or in depth, working in vessel or in confined space.
09	Dust Respirator	Protection of respiratory system against dust.
10	Air supply respirators	Working in oxygen deficient zone.

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### 10.3 Electricity

The following are provided for general guidance of the Contractor and shall be read as specific requirement, in addition to complying with Indian Electricity Act, Indian Electricity Rules and IS Specifications.

**10.3.1** Only qualified electricians familiar with code requirements are allowed to perform electrical work.

**10.3.2** Employees are not permitted to work near an unprotected electrical power circuit unless they are protected against electrical shock by de-energizing the circuit and grounding it, or are protected by effective insulation or other means, and are wearing required personal protective equipment.

**10.3.3** For purposes of electrical load and power planning, the contractor shall furnish, the estimated load requirement of electric power for the execution of the contract works in terms of maximum Kilo Watt or KVA demand during various periods/months along with the details of the electrical equipment/machinery with their individual load details and location/locations of power supply required for availing temporary electric power supply in the standard format.

**10.3.4** The electric power supply will be generally made available at one point in the works site of the contractor by the Department.

**10.3.5** All three phase equipment shall be provided with double earthing. All light fixtures and portable equipment shall be effectively earthed to main earthing.

**10.3.6** All earth terminals shall be visible. No gas pipes and water pipes shall be used for earth connection. Neutral conductor shall not be treated as earth wire.

**10.3.7** The Contractor shall not connect any additional load without prior permission of Department.

**10.3.8** Joints in earthing conductors shall be avoided. Loop earthing of equipment shall not be allowed. However tappings from an earth bus may be done.

**10.3.9** Electrical equipment and installations shall be installed and maintained as to prevent danger from contact with live conductors and to prevent fires originating from

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electrical causes like short circuits, overheating etc. Installation shall not cause any hindrance to movement of men and materials.

**10.3.10** Materials for all electrical equipment shall be selected with regard to working voltage, load and working environment. Such equipment shall conform to the relevant standards.

**10.3.11** Electric fuses and/or circuit breakers installed in equipment circuits for short circuit protection shall be of proper rating. It is also recommended that high rupturing capacity (HRC) fuses be used in all circuits. For load of 5 KW or more earth leakage circuit breaker of proper rating shall be provided in the circuits.

**10.3.12** Wires and cables shall be properly supported and approved method of fixing shall be adopted. Cables shall not be left on floor/ground. Loose hanging of wires & cables shall be avoided. Lightning and power circuits shall be kept distinct and separate.

**10.3.13** Reinforcement rods or any metallic part of structure shall not be used for supporting wires and cables, fixtures, equipment, earthing etc.

**10.3.14** All cables and wires shall be adequately protected mechanically against damages. In case, the cable required to be laid under ground, it shall be adequately protected by covering the same with bricks, Plain Cement Concrete (PCC), tile or any other approved means.

**10.3.15** All armoured cables shall be properly terminated by using suitable cable glands. Multi-stranded conductor cables shall be connected by using cable lugs/ sockets. Cable lugs shall preferably be crimped. They shall be of proper size and shall correspond to the current rating and size of the cable. Twisted connections will not be allowed.

**10.3.16** All the Distribution Boards, Switch Fuse units, Bus bar chambers, ducts, cubicles etc. shall have MS enclosures and shall be dust, vermin and waterproof. The Distribution Boards, switches etc. shall be so fixed that they shall be easily accessible.

**10.3.17** The Contractor shall provide proper enclosures/covers of approved size and shape for protection of all switch boards, equipment etc. against rain.

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**10.3.18** Isolating switches shall be provided close to equipment for easy disconnection of electrical equipment or conductors from the source of supply, when repair or maintenance work has to be done.

**10.3.19** Adequate working space shall be provided around electrical equipment, which requires adjustment or examination during operation.

**10.3.20** All connections to lighting fixtures, starters or other power supplies shall be provided with PVC insulated, PVC sheathed twin/three/four core wires to have better mechanical protection for preventing possible damage to equipment or injury to personnel. Taped joints shall not be allowed and the connections may be made in looping system. Electric starter of motors, Switches shall not be mounted on wooden boards. Only sheet steel mounting or iron framework shall be used.

**10.3.21** Only PVC insulated and PVC sheathed wires or armoured PVC insulated and sheathed cables shall be used for external power supply connections of temporary nature. Weatherproof rubber wires shall not be used for any temporary power supply connections. Taped joints in the wires shall not be used.

**10.3.22** Contractor shall ensure that power factor for their loads shall be maintained at 0.85. In case the power factor falls below 0.85, necessary capacitor units shall be provided by the contractor.

**10.3.23** All portable appliances shall be provided with three-core cable and three-pin plug. The third pin of the plug shall invariably be earthed. It shall be ensured that the metal part of the equipment shall be effectively earthed.

## **10.4 Vehicle Safety**

**10.4.1** Only authorized, licensed drivers are permitted to operate vehicles or equipment.

**10.4.2** Permission is required for vehicular entry into all ISRO centers/units. When entering in ISRO centers/units, the Contractor's vehicles and belongings are subject to screening.

**10.4.3** All Contractor's employees shall be transported to and from the job site in a safe manner. Each passenger shall have adequate seating. Standing up in a moving vehicle is strictly prohibited.

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**10.4.4** The maximum speed limits in ISRO premises is 25km/hr. All traffic instructions displayed shall be followed.

**10.4.5** Reckless driving and horseplay is prohibited.

## **10.5 House Keeping**

**10.5.1** The Contractor shall at all times keep his work spot, site office and surroundings clean and tidy from rubbish, scrap, surplus materials and unwanted tools and equipment so as not to create unsafe condition or fire hazard.

**10.5.2** Welding and other electrical cables shall be so routed as to allow safe traffic by all concerned.

**10.5.3** No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public.

**10.5.4** Cleaning of the work area at the end of the day and upon completion of work is a part of the job.

**10.5.5** The Engineer-in-charge has the right to stop work if the Contractor fails to improve upon the housekeeping after having been notified.

## **10.6 Fire Safety**

All necessary precautions shall be taken to prevent outbreak of fires at the site. Adequate provisions shall be made to extinguish fires should they still break out.

**10.6.1** Quantities of combustible materials like timber, bamboos, coal, paints, etc., shall be the minimum required in order to avoid unnecessary accumulation of combustibles at site.

**10.6.2** Containers of paints, thinners and allied materials shall be stored in a separate room which shall be well ventilated and free from excessive heat, sparks, flame or direct rays of the sun. The containers of paint shall be kept covered or properly fitted with lid and shall not be kept open except while using.

**10.6.3** Fire extinguishers, if advised by Department safety officer, shall be located at the site at appropriate places.

**10.6.4** Adequate number of workmen shall be given education and training in fire fighting and extinguishing methods.

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## 10.7 Safety Work Permit

The Work Permit System is an important tool for ensuring safety. Every Contractor must comply with this Work Permit System without fail.

**10.7.1** In order to ensure safety of work for hazardous operation (such as entry into confined spaces, welding/cutting on equipment/pipes where explosion hazard is present, Radiography works, works on high voltage and main medium voltage lines, blasting, working at height, road works etc.) special Safety Work Permits (SWP) shall be raised. The Safety Work Permits shall also to be obtained for any other work as recommended by Safety Engineer.

**10.7.2** The Contractor shall strictly ensure all the safety conditions and requirements stipulated in the Safety Work Permit are met. The decision of the Safety Engineer shall be final in this regard.

**10.7.3** Special notes:

- Before starting any work, contractor must obtained work permit.
- Extension of permit must be taken in advance if job is to be executed further.
- The conditions of permit must be satisfied at all the time.
- For obtaining permit, contractor must send qualified person/supervisor for taking permit who has sufficient knowledge about the job.
- The work permit is to be kept in the actual work site during execution.
- The Department's representative may any time check the permit and permit conditions and has the authority to stop the job.

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## **CHAPTER 11: SPECIFIC SAFETY PROVISIONS**

Based on nature of work contract, safety precautions specific to the nature of work to be observed by the contractor are as follows: **(To be written by Engineer-in-charge based on nature of work)**

**Safety rules/norms/precautions to be observed by the contractor based on the nature of work shall be written in this chapter. Engineer-in-charge is responsible to include the specific safety provisions based on the nature of work with the help of Department's Safety Officer.**

**Specific safety provisions related to some of the works are shown as an example in Annexure-1**

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## Annexure-1

### Specific safety provisions to be observed by the contractors

#### **A.0 Work related to Construction activities**

#### **A.1 Scaffolding**

Accidents are also caused by the ladders falling or the climber losing his balance or failure of scaffolds. As such, utmost care should be taken as ladder and scaffolding are extensively used for maintenance and construction purpose. Some of the safe practices as listed below are to be observed before commencement of work.

**A.1.1** Adequate and safe means of access and exit shall be provided for all work places, at all elevations. Using of scaffolding members (avoiding a ladder) for approach to high elevations shall not be permitted.

**A.1.2** Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short duration work as can be done safely from ladders. Ladder shall be of rigid construction having sufficient strength for the intended loads and made either of good quality wood or metal and all ladders shall be maintained well for safe working condition.

**A.1.3** Short ladder must not be tied together to give greater lengths. All ladders of 6 m or above should be tied to the structure on which they are resting to prevent from slipping. An extra worker shall be engaged for holding the ladder if ladder is not securely fixed. If the ladder is used for carrying materials, suitable foot holds and handholds shall be provided on the ladder. The ladder shall be given an inclination not steeper than 1 in 4 (1 horizontal and 4 vertical). Ladders shall not be used for climbing carrying materials in hands. While climbing both the hands shall not be free.

**A.1.4** The free length must extend by 1.5 meters above the point of landing but should not be more than 1/4<sup>th</sup> of the ladder length. No portable single ladder shall be over 9 meter in length. Metal ladders may not be used for electrical work.

**A.1.5** Scaffolding or staging more than 3.5 m above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a standard guard rail properly attached, bolted, braced or otherwise secured at least 1.0

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m high above the floor or platform of such scaffolding or staging. The guard rail shall extend along the entire exposed length of the scaffolding with only such opening as may be necessary for the delivery of materials. Standard railing shall have posts not more than 2 m apart and an intermediate rail halfway between the floor or platform of the scaffolding and the top rail. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure. Scaffolding and ladder shall conform to relevant IS specification (IS: 3696). Timber/Bamboo scaffolding shall not be used.

**A.1.6** Working platforms of scaffolds shall have toe boards at least 15 cm in height to prevent materials from falling down.

**A.1.7** Every member of scaffolding must be of sound construction. Steel planks used in scaffolds should be carefully inspected and should be tied on both sides with suitable fixing arrangements to the pipes. Scaffolding must not be overloaded.

**A.1.8** The Steel pipe & clamp to be used must be of good quality. The spacing between the vertical & horizontal members of the scaffolding should not be more than 1.5m and 1 meter respectively. The scaffolding should be further strengthened with cross bracing and stays.

**A.1.9** The scaffolds should be provided with short climbs ladders for safe ascending / descending of workmen in the job. Only those workmen who are well trained / experienced in erecting scaffolding should be engaged for scaffolding work. The men working in the actual erection / dismantling of the scaffolding and all persons using the scaffolding must use suitable PPEs.

**A.1.10** A sketch of the scaffolding proposed to be used shall be prepared and approved by the Engineer-in charge, prior to start of erection of scaffolding. All scaffolds shall be examined by Engineer-In-Charge before use.

**A.1.11** Working platform, gangways and stairways shall be so constructed that they shall not sag unduly or unequally and if the height of the platform or gangway or stairway is more than 3.5 m above ground level or floor level, they shall be closely boarded, shall have adequate width for easy movement of persons and materials and shall be suitably guarded.

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**A.1.12** The planks used for working platform shall not project beyond the end supports to a distance exceeding four times the thickness of the planks used. The planks shall be rigidly tied at both ends to prevent sliding and slippage. The thickness of the planks shall be adequate to take load of men and materials and shall not collapse.

**A.1.13** Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent fall of persons or materials by providing suitable fencing or railing.

**A.1.14** Safe means of access shall be provided to all working platforms and other elevated working places. Every ladder shall be securely fixed. No single portable ladder shall be over 9 m in length. For ladders up to 3m in length the width between side rails in the ladder shall in no case be less than 300 mm. For longer ladders this width shall be increased by at least 20 mm for each additional meter of length. Step spacing shall be uniform and shall not exceed 300 mm.

**A.1.15** Adequate precautions shall be taken to prevent danger from electrical lines and equipment. No scaffolding, ladder, working platform, gangway runs, etc. shall exist within 3 meters of any uninsulated electric wire. Whenever electric power and lighting cables are required to run through (pass on) the scaffolding or electrical equipments are used, such scaffolding structures shall have minimum two earth connections with earth continuity conforming to IS Code of Practice.

## **A.2 Excavation, trenching and earth removal**

All excavation work should be planned. The method of excavation and type of support work required should be decided considering the stability of the ground & affect on adjoining buildings, roads, underground pipes, cables or any other structures.

**A.2.1** All excavation work should be supervised and inspected for any defect regularly.

**A.2.2** Safe angle of repose while excavating trenches exceeding 1.5m depth upto 3.0m should be maintained. Based on site conditions, provide proper slope, usually 45° and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock or provide proper shoring and strutting to prevent cave-in or slides. The excavated material shall not be placed within 1.5 m of the edges of the trench or half of the depth

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of the trench, whichever is more. Cutting shall be done from top to bottom. Under no circumstances mining or under-cutting shall be done.

**A.2.3** All trenches 1.2 m or more in depth shall be supplied with at least one ladder for each spacing of 30m in length or fraction thereof. Ladder shall be extended from bottom of the trench to at least 1 m above the surface of the ground.

**A.2.4** Open excavations shall be fenced off by suitable railing and warning signals installed, so as to prevent persons slipping or falling into the excavations. Don't allow vehicles to operate too close to excavated area. Barricade should be provided.

**A.2.5** The Contractor shall ensure the stability and safety of the excavation, adjacent structures, services and the works.

### **A.3 Concreting**

Shuttering and supporting structures shall be of adequate strength and approved by Engineer-In-Charge. This shall be ensured before concrete is poured. The procedure approved by Engineer-In-Charge shall be followed for mixing, transporting and pouring of concrete.

### **A.4 Demolition**

Before any demolition work is commenced and also during the progress of the work:

**A.4.1** All roads and open area adjacent to the work site shall either be closed or suitably protected. Appropriate warning signs shall be displayed for cautioning approaching persons.

**A.4.2** Before demolition operations begin, the Contractor shall ensure that the power on all electric service lines is shut off and the lines cut or disconnected at or outside the demolition site. If it is necessary to maintain electric power during demolition operation, the required service lines shall be adequately protected against damage. Persons handling heavy materials /equipments shall wear safety shoes.

**A.4.3** No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.

**A.4.4** Entries to the demolition area shall be restricted to authorised persons only.

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## **B.0 Work related to overload/ Hoisting equipment**

Accidents do happen while working overhead or due to failure or unsafe use of hoisting equipment. As such, adequate care must be taken to prevent it. The following are some of the precautions to ensure safety of the workmen engaged by the Contractor.

**B.1** Contractors involved in handling of any material overhead must install necessary barricades, warning signs or take any other steps necessary to prevent others from walking / standing beneath the load.

**B.2** Hoisting machines, tackles including their attachments, anchorage & supports must conform to the good mechanical construction, sound materials and adequate strength and free from patent defect and shall be preserved in good condition.

**B.3** All equipments like crane, chain blocks, sling, rope including all other material handling equipments must have valid load test certificates.

**B.4** Thorough inspection and load testing of lifting machines and tackles shall be done by a competent person at least once every 12 months and records of such inspection and testing shall be maintained.

**B.5** Every crane driver or hoisting appliances operator shall be properly qualified and no person below the age 21 years should be in charge of any hoisting machine.

**B.6** Every hoisting machine and all gears shall be plainly marked with the safe working load. No part of any machine or gear shall be loaded beyond the safe working load.

**B.7** In case of Department's machine, the safe working load shall be notified by Engineer-in-charge. For Contractor's machines, the Contractor shall notify the safe working load to Engineer-in-charge.

**B.8** Motors, gearing transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with safe guards.

**B.9** No cranes shall be left unattended with hanging load and on completion of work, the boom/jib of the crane may be brought down and kept in horizontal condition.

**B.10** No crane including hydra crane shall be allowed to move on road with suspended load.

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## **C.0 Work related to Piping**

### **C.1 Welding and Gas Cutting**

**C.1.1** Welding and gas cutting operations shall be done only by qualified and authorised persons and as per IS specifications and Code of Practice.

**C.1.2** Welding and gas cutting shall not be carried out in places where flammable or combustible materials are kept and where there is danger of explosion due to presence of gaseous mixtures.

**C.1.3** Welding and gas cutting equipment including hoses and cables shall be maintained in good condition.

**C.1.4** Barriers shall be erected to protect other persons from harmful rays from the work. When welding or gas cutting is in elevated positions, precautions shall be taken to prevent sparks or hot metal falling on persons or flammable materials. Adequate ventilation shall be provided while welding in confined space.

**C.1.5** Suitable type of protective clothing consisting of fire resistant gauntlet gloves, leggings, boots and aprons shall be provided to workers as protection from heat and hot metal splashes. Welding shields with filter glasses of appropriate shade shall be worn as face protection.

**C.1.6** Welding and gas cutting shall not be done on drums, barrels, tanks or other containers unless they have been emptied, cleaned thoroughly and it is made certain that no flammable material is present.

**C.1.7** Fire extinguisher shall be available near the location of welding operations. Fire Safety Permit shall be obtained for working at vulnerable areas and operating areas before flame cutting/welding is taken up.

**C.1.8** Tarpaulin, if used should be of fire retardant.

**C.1.9** For electric (Arc) welding the following additional safety precautions shall be taken:

- When electrical welding is undertaken near pipe lines carrying flammables, such pipe lines shall not be used as part of earth conductor but a separate earth conductor shall be connected to the machine directly from the job.

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- Personnel contact with the electrode or other live parts of electric welding equipment shall be avoided.
- Extreme caution shall be exercised to prevent accidental contact of electrodes with ground.

**C.1.10** The cylinders containing poisonous / toxic or inflammable / explosive gas like Oxygen, Acetylene, Hydrogen, Ammonia, Chlorine, CO<sub>2</sub> etc shall be handled safely taking due cares. To handle / shift such cylinders a special trolley / cage meant for it must be used but in no case it should be rolled.

**C.1.11** No domestic LPG cylinder is allowed for Hot Work such as Gas Welding / Gas Cutting.

**C.1.12** A person must remain in the area for a minimum period of 30 minutes after hot work is completed to ensure the site is safe. Welding machine shall be switched off after the completion of work.

## **C.2 Grinding**

**C.2.1** All portable grinders shall be used only with their wheel guards in position to reduce the danger from flying fragments should the wheel break during the use.

**C.2.2** Grinding wheels of specified diameter only shall be used on a grinder- portable or pedestal - in order not to exceed the prescribed peripheral speed.

**C.2.3** Goggles shall be used during grinding operation.

## **C.3 Painting**

**C.3.1** The Contractor shall not employ women on the work of painting with products containing lead in any form. Only men above the age of 18 years shall be employed on the work with lead paint.

**C.3.2** Smoking, open flames or sources of ignition shall not be allowed in places where paints and other flammable substances are stored, mixed or used. A caution board, with the instructions written in national/regional language, "SMOKING - STRICTLY PROHIBITED" shall be displayed in the vicinity where painting is in progress or where paints are stored.

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**C.3.3** When painting work is done in a closed room or in a confined space, adequate ventilation shall be provided. If adequate ventilation cannot be provided, workers shall wear suitable respirators.

**C.3.4** Epoxy resins and their formulations used for painting shall not be allowed to come in contact with the skin. The workers shall use plastic gloves and/or suitable barrier creams.

**C.3.5** Workers shall thoroughly wash hands and feet before leaving the work. Work clothes shall be changed and laundered frequently.

## **D.0 Radiography**

**D.1** Only properly trained, qualified personnel shall be allowed to use radiation-producing equipment or handle radioactive source.

**D.2** All radiation works shall be covered under ~~%~~ Radiation Permit+ on work permit system.

**D.3** Radiography works may be carried out preferably after office hours or on holidays.

**D.4** The following are some basic rules to be followed:

- The ionisation radiation source shall not be left unattended.
- Radiation film and dose meter shall be used.
- The exposed area shall be clearly identified, barricaded by rope or other effective means and internationally recognised symbol for radiation shall be placed around the perimeter of any area which may be affected by radiation.
- Contractor shall coordinate with safety officer to ensure that the dose rate at barricade does not exceed 0.75 milirems per hour.

## **E.0 Work related to maintenance of Machine**

**E.1** Disconnect the electrical power before starting the mechanical maintenance of the machine.

**E.2** During the maintenance of machine, it should be doubly ensured that the machine does not move unexpectedly causing injury to the person involved.

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**E.3** Foolproof lockout system or power lock off system should be followed. Power lock off system shall include the electrical power, energy stored in springs, suspended parts or any other potential power sources.

**E.4** A highly legible information plate should be kept near the machine under maintenance giving the details of work being carried-out, warning instructions etc., to enable the workers, supervisors or any visitors to keep away.

**E.5** Removal of such plates immediately after the maintenance, repair etc., shall be ensured.

**E.6** Instructions from the machine manufacturers service/installation book should be followed during maintenance of the equipment.

**E.7** Only trained personnel should be employed for carrying out maintenance, repair, adjustment etc.

**E.8** Identified tools should be used to carryout such works.

**E.9** Guards should be replaced immediately after the maintenance work.

**E.10** After mechanical maintenance, machine should be tested at no load condition only.

**E.11** Chips and debris must be swept up and properly disposed.

## **F.0 Transportation of Propellants**

**F.1** The tankers shall be operated only in the approved route between the production units and ISRO centers. The contractor shall not be permitted to operate the tankers in other routes except in case of road blockage or other eventualities.

**F.2** The tanker speed should not exceed 40 km/h.

**F.3** Combustible materials should not be carried with prime mover or tanker.

**F.4** As far as possible, all journeys to be completed during daylight hours and the tankers should be parked at night in those places as indicated in the guidelines to driver.

**F.5** No Intoxicated person should be allowed to be in or in attendance on the vehicle at any time. No unauthorized person permitted inside the tanker.

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**F.6** One set of tools, PPEs, CCE license, Materials safety data sheet (MSDS), Transport Emergency (TERM) card, first aid box, fire extinguisher should be carried by the driver.

**F.7** All Information about the movement of the vehicle including its halts has to be logged.

**F.8** Red flags have to be displayed on both sides of the cabin and at the rear of the Vehicle.

**F.9** After every two hours of running, the vehicles should be halted in an open area and checked for:

- Any leak
- Working pressure (within 2.5. 3 kg/cm<sup>2</sup>)
- Positions of all valves (to conform to the checklist position)
- Undue heat generated through rubbing of tyres on the chassis, deflation of tyres, faulty brakes or any other abnormal condition.

**F.10** No major repairs should be carried out while the propellant is in the vehicle. However, replacement of any of the fittings of the pressure vessel such as dummy closures not involving any high temperature work may be done.

**F.11** During refuelling of the vehicle, the electrical circuit should be switched off and the vehicle should be earthed using a bonding cable.

**F.12** The vehicle should be stopped before passing through unguarded level crossing and started only after ensuring that it is safe to proceed further.

**F.13** In the event of storm or lightning during the journey, the vehicle should be parked in an open area, away from trees. The vehicle should not be parked close to any building or stopped in any populated area except when absolutely necessary.

**F.14** The vehicle should not be left unattended at any time. Other than the authorized drivers no one should be allowed in or near the vehicle except for the purpose of loading and unloading.

**F.15** If an accident or breakdown occurs enroute, the authorized person(s) should be informed on telephone immediately by the driver.