



- work on the outside without a safety harness attached by a lifeline to a rung, ring or other secure anchorage;
 - put tools between the safety harness and the body or in pockets not intended for the purpose;
 - haul heavy materials or equipment up and down by hand to or from the workplace on the chimney;
 - fasten pulleys or scaffolding to reinforcing rings without first verifying their stability;
 - work alone;
 - climb a chimney that is not provided with securely anchored ladders or rungs;
 - Work on chimneys in use unless the necessary precautions to avoid danger from smoke and gases have been taken.
- X. Work on independent chimneys should not be carried on in high winds, icy conditions, fog or during electrical storms.

5.13 HANDLING AND LIFTING EQUIPMENT:

5.13.1 General Provisions

Following are the general guidelines to be followed with regard to all types of handling and lifting equipment in addition to the guidelines for specific type of equipment dealt later on.

- I. There should be a well-planned safety program to ensure that all the lifting appliances and lifting gear are selected, installed, examined, tested, maintained, operated and dismantled with a view to preventing the occurrence of any accident;
- II. All lifting appliances shall be examined by competent persons at frequencies as specified in "The Factories Act".
- III. Check thoroughly quality, size and condition of all lifting tools like chain pulley blocks, slings, U-clamps, D-shackles etc. before putting them in use.
- IV. Safe lifting capacity of all lifting & handling equipment, tools and shackles should be got verified and certificates obtained from competent authorities before its use. The safe working load shall be marked on them.
- V. Check periodically the oil, brakes, gears, horns and tire pressure of all moving equipment like cranes, forklifts, and trailers etc. as per manufacturer's recommendations.
- VI. Check the weights to be lifted and accordingly decide about the crane capacity, boom length and angle of erection.



- VII. Allow lifting slings as short as possible and check packing at the friction points.
- VIII. While lifting/placing of the load, no unauthorized person shall remain within the radius of the boom and underneath the load.
- IX. While loading, unloading and stacking of pipes, proper wedges shall be placed to prevent rolling down of the pipes.
- X. Control longer jobs being lifted up from both ends.
- XI. Only trained operators and riggers should carry out the job. While the crane is moving or lifting the load, the trained rigger should be there for keeping a vigil against hitting any other object.
- XII. During high wind conditions and nights, lifting of heavy equipment should be avoided. If unavoidable to do erection in night, operator and rigger should be fully trained for night signaling. Also proper illumination should be there.
- XIII. Allow crane to move on hard, firm and leveled ground.
- XIV. When crane is in idle condition for long periods or unattended, crane boom should either be lowered or locked as per manufacturer's guidelines.
- XV. Hook and load being lifted shall remain in full visibility of crane operators, while lifting, to the extent possible.
- XVI. Don't allow booms or other parts of crane to come within 3 meters reach of overhead electrical cables.
- XVII. No structural alterations or repairs should be made to any part of a lifting appliance, which may affect the safety of the appliance without the permission and supervision of the competent person.

5.13.2 Hoists

- I. Hoist shafts should be enclosed with rigid panels or other adequate fencing at:
 - ground level on all sides;
 - all other levels at all points at which access is provided;
 - All points at which persons are liable to be struck by any moving part.
- II. The enclosure of hoist shafts, except at approaches should extend where practicable at least 2 m above the floor, platform or other place to which access is provided except where a lesser height is sufficient to prevent any person falling down the hoist way and there is no risk of any person coming into contact with any moving part of the hoist, but in no case should the enclosure be less than 1mt in height.



- III. The guides of hoist platforms should offer sufficient resistance to bending and, in the case of jamming by a safety catch, to buckling.
- IV. Where necessary to prevent danger, adequate covering should be provided above the top of hoist shafts to prevent material falling down them.
- V. Outdoor hoist towers should be erected on firm foundations, and securely braced, guyed and anchored.
- VI. A ladder way should extend from the bottom to the top of outdoor hoist towers, if no other ladder way exists within easy reach.
- VII. Hoisting engines should be of ample capacity to control the heaviest load that they will have to move.
- VIII. Hoists should be provided with devices that stop the hoisting engine as soon as the platform reaches its highest stopping place.
- IX. Winches should be so constructed that the brake is applied when the control handle is not held in the operating position.
- X. It should not be possible to set in motion from the platform a hoist, which is not designed for the conveyance of persons.
- XI. Winches should not be fitted with pawl and ratchet gears on which the pawl must be disengaged before the platform is lowered.
- XII. Hoist platforms should be capable of supporting the maximum load that they will have to carry with a safety factor.
- XIII. Hoist platforms should be equipped with safety gear that will hold the platform with the maximum load if the hoisting rope breaks.
- XIV. If workers have to enter the cage or go on the platform at landings there should be a locking arrangement preventing the cage or platform from moving while any worker is in or on it.
- XV. On sides not used for loading and unloading, hoist platforms should be provided with toe-boards and enclosures of wire mesh or other suitable material to prevent the fall of parts of loads.
- XVI. Where necessary to prevent danger from falling objects, hoist platforms should be provided with adequate covering.
- XVII. Counterweights consisting of an assemblage of several parts should be made of specially constructed parts rigidly connected together.
- XVIII. Counterweights should run in guides.



- XIX. Platforms should be provided at all landings used by workers.
- XX. Following notices should be posted up conspicuously and in very legible characters:
- a) on all hoists:
 - on the platform: the carrying capacity in kilograms or other appropriate standard unit of weight;
 - on the hoisting engine: the lifting capacity in kilograms or other appropriate standard unit of weight;
 - b) on hoists authorized or certified for the conveyance of persons:
 - on the platform or cage: the maximum number of persons to be carried at one time;
 - c) on-hoists for goods only:
 - On every approach to the hoist and on the platform: prohibition of use by persons.
- XXI. Hoists intended for the carriage of persons should be provided with a cage so constructed as to prevent any person from falling out or being trapped between the cage and any fixed part of the structure when the cage gate is shut, or from being struck by the counterbalance weight or by articles or materials tailing down the hoist way.
- XXII. On each side in which access is provided, the cage should have a gate fitted with devices which ensure that the gate cannot be opened except when the cage is at a landing and that the gate must be closed before the cage can move away from the landing.
- XXIII. Every gate in the enclosure of the hoist shaft which gives access from a landing place to the cage should be fitted with devices to ensure that the gate cannot be opened except when the cage is at that landing place, and that the cage cannot be moved away from that landing place until the gate is closed.

5.13.3 Derricks

I. Stiff-leg derricks

- a) Derricks should be erected on a firm base capable of taking the combined weight of the crane structure and maximum rated load.
- b) Devices should be used to prevent masts from lifting out of their seating.
- c) Electrically operated derricks should be effectively earthed from the sole plate or framework.
- d) Counter weights should be so arranged that they do not subject the backstays, sleepers or pivots to excessive strain.
- e) When derricks are mounted on wheels:
 - a rigid member should be used to maintain the correct distance between the wheels;



- They should be equipped with struts to prevent them from dropping if a wheel breaks or the derrick is derailed.
- f) The length of a derrick jib should not be altered without consulting the manufacturer.
- g) The jib of a scotch derrick crane should not be erected within the backstays of the crane.

II. Guy derricks

- a) The restraint of the guy ropes should be ensured by fitting stirrups or anchor plates in concrete foundations.
- b) The mast of guy derricks should be supported by six top guys spaced approximately equally.
- c) The spread of the guys of a guy derrick crane from the mast should not be more than 450 from the horizontal.
- d) Guy ropes of derricks should be equipped with a stretching screw or turnbuckle or other device to regulate the tension.
- e) Gudgeon pins, sheave pins and fool bearings should be lubricated frequently.
- f) When a derrick is not in use, the boom should be anchored to prevent it from swinging.

5.13.4 Gin poles

- I. Gin poles should:
 - a) be straight;
 - b) consist of steel or other suitable metal;
 - c) be adequately guyed and anchored;
 - d) be vertical or raked slightly towards the load;
 - e) Be of adequate strength for the loads that they will be required to lift/move.
- II. Gin poles should not be spliced and if a gin pole is composed of different elements, they should be assembled in conformity with their intrinsic material strength.
- III. Gin poles should be fastened at their feet to prevent displacement in operation.
- IV. Gin poles, which are moved from place to place and re-erected, should not be taken into use again before the pole, lifting ropes, guys, blocks and other parts have been inspected, and the whole appliance has been tested under load.



- V. When platforms or skips are hoisted by gin poles, precautions should be taken to prevent them from spinning and to provide for proper landing.

5.13.5 Tower cranes

- I. Where tower cranes have cabs at high level, persons, capable and trained to work at heights, should only be employed as crane operators.
- II. The characteristics of the various machines available should be considered against the operating requirements and the surroundings in which the crane will operate before a particular type of crane is selected.
- III. Care should be taken in the assessment of wind loads both during operations and out of service. Account should also be taken of the effects of high structures on wind forces in the vicinity of the crane.
- IV. The ground on which the tower crane stands should have the requisite bearing capacity. Account should be taken of seasonal variations in ground conditions.
- V. Bases for tower cranes and tracks for rail-mounted tower cranes should be firm and level. Tower cranes should only operate on gradients within limits specified by the manufacturer. Tower cranes should only be erected at a safe distance from excavations and ditches.
- VI. Tower cranes should be sited where there is clear space available for erection, operation and dismantling. As far as possible, cranes should be sited so that loads do not have to be handled over occupied premises, over public thoroughfares, other construction works and railways or near power cables.
- VII. Where two or more tower cranes are sited in positions where their jibs could touch any part of the other crane, there should be direct means of communication between them and a distinct warning system operated from the cab so that one driver may alert the other of impending danger.
- VIII. The manufacturers' instructions on the methods and sequence of erection and dismantling should be followed. The crane should be tested before being taken into use.
- IX. The climbing operation of climbing tower cranes should be carried out in accordance with manufacturers' instructions. The free-standing height of the tower crane should not extend beyond what is safe and permissible in the manufacturers' instructions.
- X. When the tower crane is left unattended, loads should be removed from the hook, the hook raised, the power switched off and the boom brought to the horizontal. For longer periods or at times when adverse weather conditions are expected, out of service procedures should be



followed. The main jib should be slewed to the side of the tower away from the wind, put into free slew and the crane immobilized.

- XI. A wind speed measuring device should be provided at an elevated position on the tower crane with the indicator fitted in the drivers' cab.
- XII. Devices should be provided to prevent loads being moved to a point where the corresponding safe working load of the crane would be exceeded. Name boards or other items liable to catch the wind should not be mounted on a tower crane other than in accordance with the manufacturers' instructions.
- XIII. Tower cranes should not be used for magnet, or demolition ball service, piling operations or other duties, which could impose excessive loading on the crane structure.

5.13.6 Lifting ropes

- I. Only ropes with a known safe working capacity should be used as lifting ropes.
- II. Lifting ropes should be installed, maintained and inspected in accordance with manufacturers' instructions.
- III. Repaired steel ropes should not be used on hoists.
- IV. Where multiple independent ropes are used, for the purpose of stability, to lift a work platform, each rope should be capable of carrying the load independently.

5.14 VEHICLE MOVEMENT

- 5.14.1 Park vehicles only at designated places. Don't block roads to create hindrance for other vehicles.
- 5.14.2 Don't overload the vehicle.
- 5.14.3 Obey speed limits and traffic rules.
- 5.14.4 Always expect the unexpected and be a defensive driver.
- 5.14.5 Drive carefully during adverse weather and road conditions.
- 5.14.6 Read the road ahead and ride to the left.
- 5.14.7 Be extra cautious at nights. Keep wind screens clean and lights in working condition.
- 5.14.8 All vehicles used for carrying workers and construction materials must undergo predictive/preventive maintenance and daily checks
- 5.14.9 Driver with proper valid driving license shall only be allowed to drive the vehicle



- 5.14.10 Routes shall be leveled, marked and planned in such a way so as to avoid potential hazards such as overhead power lines and sloping ground etc.
- 5.14.11 While reversing the vehicles, help of another worker should be ensured at all times
- 5.14.12 An unattended vehicle should have the engine switched off
- 5.14.13 Wherever possible one-way system shall be followed
- 5.14.14 Barriers/fixes stops should be provided for excavation/openings to prevent fall of vehicle
- 6.10.15 Load should be properly secured
- 5.14.15 The body of the tipper lorry should always be lowered before driving the vehicle off.
- 5.14.16 Signs/signals/caution boards etc. should be provided on routes.

5.15 ELECTRICAL

5.15.1 General Provisions

- I. Only persons having valid licenses should be allowed to work on electrical facilities.
- II. No person should be allowed to work on live circuit. The same, if unavoidable, special care and authorization need to be taken.
- III. Treat all circuits as "LIVE" unless ensured otherwise.
- IV. Electrical "Tag Out" procedure MUST be followed for carrying out maintenance jobs.
- V. Display voltage ratings prominently with "Danger" signs.
- VI. Put caution/notice signs before starting the repair works.
- VII. All electrical equipment operating above 250V shall have separate and distinct connections to earth grid.
- VIII. Proper grounding to be ensured for all switch boards and equipment including Portable ones prior to taking into service.
- IX. Make sure that electrical switch boards, portable tools, equipment (like grinding machine etc.) don't get wet during their usage. If it happens, stop the main supply, make the tools dry and then only use them. Check proper earthing. All temporary switch boards/ KIOSKS put up at work site should be suitably protected from rain and the level of same should be high enough to avoid contact with water due to water logging.
- X. Don't work wet on electrical system.
- XI. Don't overload the electrical system.



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- XII. Use only proper rated HRC fuses.
- XIII. Industrial type extension boards and Plug sockets are only to be used.
- XIV. **ELCB for all temporary connections must be provided. Use insulated 3-pin plug tops.**
- XV. All power supply cables should be laid properly and neatly so that they don't cause hindrance to persons working and no physical damage also takes place to the cables during various construction activities.
- XVI. All Power cables to be properly terminated using glands and lugs of proper size and adequately crimped.
- XVII. Use spark-proof/flame proof type electrical fittings in Fire Hazard zones as per area classification under OISD-STD-113.
- XXVIII. Check installations of steel plates/pipes to protect underground cables at crossings.
- XIX. Don't lay unarmored cable directly on ground, wall, roof or trees. All temporary cables should be laid at least 750 mm below ground and cable markers should be provided. Proper sleeves should be provided at road crossings. In case temporary cables are to be laid on wooden poles/steel poles, the minimum cable heights should be 4.5 M.
- XX. Maintain safe overhead distance of HT cables as per Indian Electricity Rules and relevant acts.
- XXI. Don't connect any earthing wire to the pipelines/structures.
- XXII. Don't make any unsafe temporary connections, naked joints/wiring etc.
- XXIII. Ensure that temporary cables are free from cuts, damaged insulation, kinks or improper insulated joints.
- XXIV. Check at periodic intervals that pins of sockets and joints are not loose.
- XXV. Protect electrical wires/equipment from water and naked flames.
- XXVI. Illuminate suitably all the work areas.
- XXVII. All switchboards should be of MS structure only and incoming source should be marked.
- XXVIII. Hand lamps should not be of more than 24V rating.
- XXIX. Fire extinguishers (DCP/CO₂/Sand buckets) should be kept near temporary switch boards being used for construction purposes. Don't use water for fighting electrical fires.
- XXX. Insulating mats shall be provided in the front and back end of switch boards.
- XXXI. All parts of electrical installations should be so constructed, installed and maintained as to prevent danger of electric shock, fire and external explosion. Periodic checking/certification of



electrical safety appliances such as gloves, insulating mats, hoods etc. to be done/witnessed along with maintaining a register at site signed by competent authority.

- XXXII. A notice displaying following, should be kept exhibited at suitable places:
- prohibiting unauthorized persons from entering electrical equipment rooms or from handling or interfering with electrical apparatus;
 - containing directions as to procedures in case of fire, rescue of persons in contact with live conductors and the restoration of persons suffering from electric shock;
 - Specifying the person to be notified in case of electrical accident or dangerous occurrence, and indicating how to communicate with him.
- XXXIII. No other cables/pipes to be laid in trench used for electrical cables.
- XXXIV. Utmost care should be taken while excavating Earth from cable trench to avoid damage or any accident.
- XXXV. Sub-station floor cut-outs meant for switch board installations to be covered wherever installation is incomplete.

NOTE: A Residual Current Operated Circuit Breaker (RCCB) or Earth Leakage Circuit Breaker (ELCB), when installed, protects a human being to the widest extent. RCCB or ELCB should be provided as per Indian Electricity Rules.

5.15.2 Inspection and maintenance

- All electrical equipment should be inspected before taking into use to ensure suitability for its proposed use.
- At the beginning of every shift, the person using the electrical equipment should make a careful external examination of the equipment and conductors, especially the flexible cables.
- Apart from some exceptional cases, work on or near live parts of electrical equipment should be forbidden.
- Before any work is begun on conductors or equipment that do not have to remain live:
 - the current should be switched off by a responsible authorized person;
 - precautions should be taken to prevent the current from being switched on again;
 - the conductors or the equipment should be tested to ascertain that they are dead;
 - the conductors and equipment should be earthed and short-circuited;
 - Neighboring live parts should be adequately protected against accidental contact.



- V. After work has been done on conductors and equipment, the current should only be switched on again on the orders of a competent person after the earthing and short-circuiting have been removed and the workplace reported safe.
- VI. Electricians should be provided with approved and tested tools, and personal protective equipment such as rubber gloves, mats etc.
- VII. All conductors and equipment should be considered to be live unless there is a proof of the contrary.
- VIII. When work has to be done in dangerous proximity to live parts the current should be cut off. If for operational reasons this is not possible, the live parts should be fenced off or enclosed by qualified staff from the sub-station concerned.

5.15.3 Testing

- I. Electrical installations should be inspected and tested and the results recorded.
- II. Periodic testing of the efficiency of the earth leakage protective devices should be carried out.
- III. Particular attention should be paid to the earthing of apparatus, the continuity of protective conductors, polarity and insulation resistance, protection against mechanical damage and condition of connections at points of entry.

5.16 DEMOLITION

5.16.1 General provisions

- I. When the demolition of any building or structure might present danger to workers or to the public:
 - a) necessary precautions, methods and procedures should be adopted, including those for the disposal of waste or residues;
 - b) The work should be planned and undertaken only under the supervision of a competent person.
- II. Before demolition operations begin:
 - a) structural details and builders' drawings should be obtained wherever possible;
 - b) details of the previous use should be obtained to identify any possible contamination and hazards from chemicals, flammables, etc.;
 - c) An initial survey should be carried out to identify any structural problems and risks associated with flammable substances and substances hazardous to health.



- d) The survey should note the type of ground on which the structure is erected, the condition of the roof trusses, the type of framing used in framed structures and the load-bearing walls;
 - e) a method of demolition should be formulated after the survey and recorded in a method statement having taken all the various considerations into account and identifying the problems and their solutions;
- III. All electric, gas, water and steam service lines should be shut off and, as necessary, capped or otherwise controlled at or outside the construction site before work commences.
 - IV. If it is necessary to maintain any electric power, water or other services during demolition operations, they should be adequately protected against damage.
 - V. As far as practicable, the danger zone round the building should be adequately fenced off and sign posted. To protect the public a fence 2m high should be erected enclosing the demolition operations and the access gates should be secured outside working hours.
 - VI. The fabric of buildings contaminated with substances hazardous to health should be decontaminated. Protective clothing and respiratory devices should be provided and worn.
 - VII. Where plant has contained flammable materials, special precautions should be taken to avoid fire and explosion.
 - VIII. The plant to be demolished should be isolated from all other plant that may contain flammable materials. Any residual flammable material in the plant should be rendered safe by cleaning, purging or the application of an inert atmosphere as appropriate.
 - IX. Care should be taken not to demolish any parts, which would destroy the stability of other parts.
 - X. Demolition activities should not be continued under adverse climatic conditions such as high winds, which could cause the collapse of already weakened structures.
 - XI. To prevent hazards, parts of structures should be adequately shored, braced or otherwise supported.
 - XII. Structures should not be left in a condition in which they could be brought down by wind pressure or vibration.
 - XIII. Where a deliberate controlled collapse technique is to be used, expert engineering advice should be obtained, and:
 - a) it should only be used where the whole structure is to come down because it relies on the removal of key structural members to effect a total collapse;
 - b) It should only be used on sites that are fairly level and where there is enough surrounding space for all operatives and equipment to be withdrawn to a safe distance.



- XIV. When equipment such as power shovels and bulldozers are used for demolition, due consideration should be given to the nature of the building or structure, its dimensions, as well as to the power of the equipment being used.
- XV. If a swinging weight is used for demolition, a safety zone having a width of at least one-and-a-half times the height of the building or structure should be maintained around the points of impact.

Demolition of structural steelwork

- I. All precautions should be taken to prevent danger from any sudden twist, spring or collapse of steelwork, ironwork or reinforced concrete when it is cut or released.
- II. Steel construction should be demolished tier by tier.
- III. Structural steel parts should be lowered and not dropped from a height.

5.17 RADIOGRAPHY

- 5.17.1 All radiography jobs shall be carried out as per BARC Safety Regulations
- 5.17.2 During field radiography, nearby area around the radiation source should be cordoned off.
- 5.17.3 If the field radiography is to be done at the same location repeatedly, it is advisable to provide either a wire fencing around or a temporary brick enclosure.
- 5.17.4 Special permission/permit should be taken for radiography from area-in-charge.
- 5.17.5 As far as possible, field radiography should be done only during night time when there is little or no occupancy there.
- 5.17.6 Radiation warning signals should be pasted all along the cordoned off area.
- 5.17.7 Entry into the restricted area by unauthorized persons should be strictly prohibited during exposure.
- 5.17.8 The radiation level along with the cordon should be monitored by a suitable and well-calibrated radiation survey meter.
- 5.17.9 All personnel working with radiography sources should wear appropriate protective equipment and film badges issued by BARC.
- 5.17.10 Protection facilities such as manipulator rod, remote handling tongs, lead pots, radiation hazard placards and means of cordon off shall be available at each site.
- 5.17.11 The radiography source shall never be touched or handled directly with hands.



- 5.17.12 The package containing radiography cameras and sources should never be carried by public transport like bus, train etc.
- 5.17.13 Radiography sources and cameras, when not in use, should be stored inside a source pit with lock and key arrangement as approved by BARC.
- 5.17.14 The storage room should preferably be located in an isolated area of minimum occupancy and radiation level outside the storage room should not exceed 0.25 mR/hr as per BARC Regulations.
- 5.17.15 In case of an accident (due to loss or of damage to radiography source), action should be taken in line with BARC Safety Rules/Guidelines.

5.18 GRIT SHOT/ SLAG BLASTING/ SPRAY PAINTING

- 5.18.1 Blasting for surface preparation should be used only after approval from competent person.
- 5.18.2 Air Compressor used for grit/shot/slag blasting/painting should have guard and positioned away from the work place.
- 5.18.3 Exhaust of the prime mover, if IC engine is used, should be fitted with PESO approved spark arrester (in case of work in hazardous area) and directed away from the work place.
- 5.18.4 In case of motor driven compressor, the body of the motor as well as the compressor to be properly earthed.
- 5.18.5 The hoses used for compressed air should be of proper quality, and health of the same to be ensured through regular check/ test.
- 5.18.6 The operator of grit/shot/slag blasting/painting should wear suitable PPE's including mask and the area should be cordoned off.
- 5.18.7 Adequate measures to be taken to suppress dust/spray particle.
- 5.18.8 When these activities are done in confined places, adequate measure to be taken including monitoring Oxygen level and ensuring proper ventilation.
- 5.18.9 Proper fire fighting arrangements are to be made where spray painting is in progress.
- 5.18.10 Some paints and their supplements are toxic also and emit offensive smell. PPE to workers should be suitable to address this issue.
- 5.18.11 "No Smoking Zone" boards should be displayed prominently in paints shop/ spray paint area.

5.19 FIRE PREVENTION AND FIRE FIGHTING

- 5.19.1 All necessary measures should be taken by the executing agency and owner to:
 - I. avoid the risk of fire;



- II. control quickly and efficiently any outbreak of fire;
- III. bring out a quick and safe evacuation of persons.
- IV. Inform unit/fire station control room, where construction work is carried out within existing operating area.

5.19.2 Combustible materials such as packing materials, sawdust, greasy/oily waste and scrap wood or plastics should not be allowed to accumulate in workplaces but should be kept in closed metal containers in a safe place.

5.19.3 Places where workers are employed should, if necessary to prevent the danger of fire, be provided with:

- I. suitable and sufficient fire-extinguishing equipment, which should be easily visible and accessible;
- II. an adequate water supply at sufficient pressure meeting the requirements of various OISD standards.

5.19.4 To guard against danger at places having combustible material, workers should be trained in the action to be taken in the event of fire, including the use of means of escape.

5.19.5 At sites having combustible material, suitable visual signs should be provided to indicate clearly the direction of escape in case of fire.

5.19.6 Means of escape should be kept clear at all times. Escape routes should be frequently inspected particularly in high structures and where access is restricted.

5.20 LIGHTING

5.20.1 Where natural lighting is not adequate, working light fittings or portable hand-lamps should be provided at workplace on the construction site where a worker will do a job.

5.20.2 Emergency lighting should be provided for personnel safety during night time to facilitate standby lighting source, if normal system fails.

5.20.3 Artificial lighting should not produce glare or disturbing shadows.

5.20.4 Lamps should be protected by guards against accidental breakage.



5.20.5 The cables of portable electrical lighting equipment should be of adequate size & characteristics for the power requirements and of adequate mechanical strength to withstand severe conditions in construction operations.

5.21 PLANT, MACHINERY, EQUIPMENT AND HAND TOOLS

5.21.1 General Provisions

- I. Plant, machinery and equipment including hand tools, both manual and power driven, should:
 - a) be of proper design and construction, taking into account health, Safety and ergonomic principles.
 - b) be maintained in good working order;
 - c) be used only for work for which they have been designed.
 - d) be operated only by workers who have been authorised and given appropriate training.
 - e) be provided with protective guards, shields or other devices as required.
- II. Adequate instructions for safe use should be provided.
- III. Safe operating procedures should be established and used for all plant, machinery and equipment.
- IV. Operators of plant, machinery and equipment should not be distracted while work is in progress.
- V. Plant, machinery and equipment should be switched off when not in use and isolated before any adjustment, clearing or maintenance is done.
- VI. Where trailing cables or hose pipes are used they should be kept as short as practicable and not allowed to create a hazard.
- VII. All moving parts of machinery and equipment should be enclosed or adequately guarded.
- VIII. Every power-driven machine and equipment should be provided with adequate means, immediately accessible and readily identifiable to the operator, of stopping it quickly and preventing it from being started again inadvertently.
- IX. Operators of plant, machinery, equipment and tools should be provided with PPEs, including where necessary, suitable ear protection.

5.21.2 Hand tools

- I. Hand tools should be repaired by competent persons.



- II. Heads of hammers and other shock tools should be dressed or ground to a suitable radius on the edge as soon as they begin to mushroom or crack.
- III. When not in use and while being carried or transported sharp tools should be kept in sheaths, shields, chests or other suitable containers.
- IV. Only insulated or non-conducting tools should be used on or near live electrical installations.
- V. Only non-sparking tools should be used near or in the presence of flammable or explosive dusts or vapours.

5.21.3 Pneumatic Tools

- I. Operating triggers on portable pneumatic tools should be:
 - a) so placed as to minimize the risk of accidental starting of the machine.
 - b) so arranged as to close the air inlet valve automatically when the pressure of the operator's hand is removed.
- II. Hose and hose connections for compressed air supply to portable pneumatic tools should be:
 - a) designed and tested for the pressure and service for which they are intended;
 - b) fastened securely on the pipe outlet and equipped with the safety chain, as appropriate.
- III. Pneumatic shock tools should be equipped with safety clips or retainers to prevent dies and tools from being accidentally expelled from the barrel.
- IV. Pneumatic tools should be disconnected from power and the pressure in hose lines released before any adjustment or repair is made.

5.21.4 Electrical Tools

- I. Low voltage portable electrical tools should generally be used.
- II. All electrical tools should be earthed, unless they are "all insulated" or "double insulated" tools which do not require earthing.
- III. All electrical tools should get inspected and maintained on a regular basis by a competent electrician and complete records kept.

5.21.5 Engines

- I. Engines should:
 - a) be installed so that they can be started safely and the maximum safe speed cannot be exceeded.
 - b) have controls for limiting speed.
 - c) have devices to stop them from a safe place in an emergency.



- II. IC engines should not be run in confined spaces unless adequate exhaust ventilation is provided.
- III. When IC engines are being fuelled:
 - a) the engine should be shut off.
 - b) care should be taken to avoid spilling fuel;
 - c) no person should smoke or have an naked light in the vicinity.
 - d) a fire extinguisher should be kept readily available.
- IV. Secondary fuel reservoir should be placed outside the engine room.

5.22 MISCELLANEOUS

5.22.1 The Contractor shall provide necessary cordoning off barricades and lights to prevent accidents.

5.22.2 To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the Contractor shall be open to inspection by the Engineer-in-Charge.

5.22.3 All sources of ignition shall be prohibited in areas where flammable liquids are stored, handled and processed. Suitable warning and 'NO SMOKING' signs shall be posted in all such places. Receptacles containing flammable liquids shall be stacked in such a manner as to permit free passage of air between them.

5.22.4 All combustible materials shall be continuously removed from such areas where flammable liquids are stored, handled and processed. All spills of flammable liquids shall be cleared up immediately. Containers of flammable liquids shall be tightly capped.

5.23 REPORTING OF ACCIDENT

5.23.1 All accidents, major or minor must be reported immediately. The Contractor, will provide first aid to the injured person immediately and the injured person shall report to the first aid station along with the 'INJURED ON WORK' form duly filled in and submit to the Officer of the First Aid Station.

5.23.2 Serious Injury

In case of serious injury, the following procedure shall be adopted by the Contractor:

- I. Provide First Aid at his own First Aid Station.
- II. Take the injured person to the Hospital along with the "INJURED ON WORK" form duly filled in.
- III. Reporting the accident to the Owner/Engineer by the Contractor.



5.23.3 Fatal Accident

Fatal accident must be reported immediately to the Engineer/Owner as well as to the Police.

6.0 DETAILS OF HSE MANAGEMENT SYSTEM BY CONTRACTOR

6.1 ON AWARD OF CONTRACT

Prior to commencement of work, the Contractor shall submit his Health, Safety and Environment policy and HSE Plans for approval by HPCL. The Contractor shall participate in the pre-start meeting with HPCL to finalize HSE Plans including the following :

- Job procedure to be followed by Contractor for activities covering - Handling of equipment, Scaffolding, Electric Installation etc., describing the risks involved, actions to be taken and methodology for monitoring each activity.
- HPCL/Owner review / audit requirement.
- Organization structure along with responsibility and authority records / reports etc. on HSE activities.

6.2 DURING JOB EXECUTION

Implement approved Health, Safety & Environment management procedure including but not limited to as brought out under above sections. Contractor shall also ensure to:

- a. Arrange workmen compensation insurance, registration under ESI Act, third party liability insurance etc., as applicable.
- b. Arrange all HSE permits before start of activities (as applicable) like hot work, confined space, work at heights, storage of chemical / explosive materials and their use and implement all precautions mentioned therein.
- c. Timely submission of completed checklist on HSE activities, Monthly HSE report, accident reports, investigation reports etc. as per HPCL requirements. Compliance of instructions on HSE shall be done by Contractor and confirmed immediately to HPCL.
- d. Ensure that Resident Engineer / Site-in-Charge of the Contractor shall attend all the Safety Committee / HSE meetings arranged by HPCL. Only in case of his absence from site that a second senior most person shall be nominated by him in advance and communicated to HPCL.
- e. Display at site office and work locations caution boards, list of hospitals, emergency services available etc.
- f. Provide posters, banners for safe working to promote safety consciousness.
- g. Carryout audits / inspection at sub-contractor works as per approved HSE document and submit the reports for HPCL review.
- h. Assist in HSE audits by HPCL, and submit compliance report.
- i. Generate & submit HSE records / report as per HSE Plan.



- j. Appraise HPCL on HSE activities.

HPCL Engineer in-Charge would monitor and record the safety performance of the contractor during the execution of the job and this performance would be given adequate weightage at the time of renewal of Registration / Vendor Rating.

6.3 TRAINING

General Safety Training to all categories of contractor employees should be imparted before induction and annually thereafter. No person should be allowed to enter the installation without undergoing this training. This training program should cover:

- i) Mandatory uses of PPE like Cotton clothes, Helmet, Safety Shoes, Full Body Safety harness, dust masks, safety goggles, etc.
- ii) Probable Hazards related to industry
- iii) Job specific hazards
- iv) Important Telephone No / Escape route
- v) First Aid
- vi) Use of Fire extinguisher
- vii) Location of assembly points
- viii) Procedure of calling fire crew in case of any emergency
- ix) Wind direction

Yearly training program should be carried out for contractor worker and the records should be maintained. The training program should cover at least the following:

- i) Worker responsibility for safety of himself and work area.
- ii) Associated hazards with the job and job area including electrical shock hazards.
- iii) Importance of First Aid fire-fighting equipment, their use & operations
- iv) Communication system at the installation
- v) Fire / Accident Reporting procedure
- vi) General Safety rules
- vii) Safety Measures during execution of job such as:
 - Welding / Cutting / Grinding
 - Working at height
 - Confined space entry
 - X ray / radiation
 - Erection / Dismantling of scaffolding
 - Tank construction and repairs



- Handling of chemicals etc.
 - Hydrojetting
 - Leak testing of pipelines and equipment (hydro and pneumatic testing)
 - Grit / other methods of blasting for surface preparation blasting etc.
 - Chemical cleaning & pickling
 - Catalyst loading & storage
 - ELCB
- viii) Importance & use of PPE
- ix) Emergency Routes
- x) Assembly Points
- xi) Job Specific Training

7.0 ADDITIONAL GUIDELINES TO BE FOLLOWED FOR PROJECTS IN OPERATIONAL TERMINAL/DEPOT PREMISES AND UNITS WITH HYDROCARBONS

In addition to general safety precautions as outlined above for the activities, following additional safety precautions need to be taken for the sites within the operating area or nearby, where presence of Hydrocarbons cannot be ruled out.

7.1 Police Verification

- Contractor must submit Police Verification of Antecedents of all workmen engaged by for executing jobs within HPCL premises.

NOTE:

- Every person other than HPCL Employee or a casual visitor entering HPCL premises would be governed by the above conditions.
- The term 'Supervisor' would mean any person who oversees the works of a group of Workmen. All other persons will be considered as 'Workmen'.
- Violation of any of the above conditions of Safety would attract penal actions, including termination of the Contract/Registration.
- Meticulous adherence to these requirements would be checked by HPCL.
- All safety precautions, safety norms & safety practices as required by the Terminal/Depot shall be followed by the contractor and his workers. All safety/ security/ statutory requirements have to be strictly adhered to by the Contractor and his employees.



7.2 Compliance to Work Permit System

- No job shall be carried out without a valid permit. Permit should be in line with OISD-STD-105 "Work Permit System".
- Provisions as mentioned in OISD-STD-105 have to be strictly adhered to and records maintained.
- Do not carry out any work without valid Work Permit issued by the authorized person in the HPCL premises as per Work Permit System.
- Comply with all the Fire/Safety/Excavation/Radiography Permit conditions specified in the Permit and clearances given from time to time.
- Display Permit at Worksite for random checking by the HPCL officials.

7.3 Smoking Regulation

- i) Smoking should be prohibited in all places containing readily combustible or flammable materials and "No Smoking" notices be prominently displayed. Smoking is strictly prohibited inside Terminal/Depot premises. Match box, cigarette lighters, cigarettes, bidis, any other inflammable materials are not permitted inside Terminal/Depot and have to be deposited with the Security before entering the premises.

7.4 General Safety Precautions, Fire Fighting Equipment, Emergency Preparedness

- Fire-extinguishing equipment should be well maintained and inspected at suitable intervals by a competent person. Access to fire-extinguishing equipment such as hydrants, portable extinguishers and connections for hoses should be kept clear at all times.
- All supervisors and workers should be trained in the use of fire extinguishing equipment, so that adequate trained personnel are readily available during all working periods.
- Audio means to give warning in case of fire should be provided where this is necessary to prevent danger. Such warning should be clearly audible in all parts of the site where persons are liable to work. There should be an effective evacuation plan so that all persons are evacuated.
- Notices should be posted at conspicuous places indicating:
 - (a) the nearest fire alarm;
 - (b) the telephone number and address of the nearest emergency services.
- The work site shall be cleared of all combustible materials, as sparks and molten metal coming from the welding job can easily ignite combustible materials near or below the



welding site. If the combustible materials cannot be removed from the area, the same shall be properly shielded.

- Adequate number of dry chemical type fire extinguishers (DCP) shall be made available in the work area. Also fire protection facilities like running hoses etc. as per permit should be complied with.
- Wherever required, welding screens shall be put up to protect other equipment in adjoining areas against flying sparks. Material used should be metal / fire proof blanket / water curtain.
- Welding or cutting of vessels / equipment used in Hydrocarbon / hazardous flammable chemicals shall be done after ensuring hydrocarbon free area and verifying the same with the suitable hydrocarbon detector.
- The confined space / equipment shall be made gas free (hydrocarbon and toxic) and cleaned and the same shall be ensured with the help of suitable gas detectors.
- Adequate precautions against pyrophoric material shall be ensured.
- **Non-sparking tools must be used while carrying out work in hazardous areas.**
- In confined spaces and other places where flammable gases, vapours or dusts can cause danger, following measures should be taken:
 - (a) only approved type electrical installations and equipment, including portable lamps, should be used;
 - (b) there should be no naked flames or source of ignition;
 - (c) oily rags, waste and clothes or other substances liable to spontaneous ignition should be removed without delay to a safe place;
 - (d) Air operated ventilation system should be provided.

7.5 **Mobile Regulation**

Mobile phones are strictly prohibited inside licenced premises. Any person found with mobile phone inside licenced premises shall be suspended from entering the premises with immediate effect. Mobiles have to be deposited with the Security before entering the premises.

7.6 **Traffic Safety**

- Contractor's drivers must get themselves familiarized with HPCL roads and traffic regulations on certain roads.
- Only vehicles with diesel engines fitted with PESO approved and certified spark arrestors are allowed to enter the premises.
- All vehicles entering or leaving the HPCL must stop at the security gates, for checking by the security personnel.
- **The maximum speed limit for vehicles within the premises is 10 KMPH.**



- Anyone driving a motor vehicle must be in possession of a valid driving license for that class of vehicle.
- Transport vehicles permitted inside the HPCL premises shall be parked in the designated parking areas only.
- Contractor's employees will use designated HPCL entrance and will proceed directly to the contractor's job site by way of HPCL roads. They shall not pass through HPCL operating area.
- Contractor's employees should not wander from their job site, nor loiter around HPCL operating units, control houses etc.
- Vehicles or other mobile equipment shall not be parked in any manner that will block fire hydrants, fire equipment, building exits, walkways etc.
- It shall be the responsibility of the contractor to ensure that materials are properly stacked in the transport vehicles to avoid items dropping from the vehicles while in transit.
- Bicycles can be used inside HPCL premises on need basis. However, pillion rider on bicycles is not permitted.
- Crane Operator should not allow anybody to sit on vehicle body.
- Transportation of contract personnel not permitted by goods carrier like Tractor trolley, forklift, Dumper etc.

8.0 WORK PERMIT SYSTEM

8.1 INTRODUCTION

The objectives of the Work Permit System are to exercise control over the construction activities by assigning responsibilities, ensuring clear cut communication between interested functions & safety considerations to the job, its hazards & the precautions required. It ensures that the work is properly defined & authorized and project personnel are aware what is going on, precautions to be taken are specified and the persons executing the job understand the nature and extent of hazards involved.

Work Permit System is an important element of safety management system and implementation of this in true spirit shall help in ensuring a safe working environment, thereby reducing possibility of injury to personnel, protect property, avoid fire, explosion & adverse effect on environment.



8.2 WORKS THAT MAY REQUIRE PERMIT

Normally all maintenance, repair, construction work shall be carried out with a proper work permit. The nature of jobs requiring work permits and the formats shall be as stipulated by the owner / Site In-charge.

Some of the activities that normally require work permits are mentioned below :

- Construction
- Demolition
- Welding work
- Working in confined space
- Work at height
- Electrical Work
- Erection and dismantling of scaffold
- Radiography

8.3 TYPES OF WORK PERMITS / CLEARANCES

8.3.1 ELECTRICAL CONNECTION & WELDING CLEARANCE PERMIT

This permit covers provision of safe electrical connections.

8.3.2 WORKING AT HEIGHT

This permit covers safe access/platform/working arrangement at height for carrying out the job. The permit shall be issued after checking the Pre-erection Checklist for Scaffolds.

Before erection, when scaffold materials are kept at site of erection, "Pre Erection Checklist for Scaffold" shall be carried out in prescribed format.

All tubular scaffolds need to be checked and certified before being used.

Workmen required to work at height should submit requisite medical certificate.

8.3.3 RADIOGRAPHY CLEARANCE

This permit authorizes radiography of weld joints.



8.4 GENERAL REQUIREMENTS OF WORK PERMIT

- 8.4.1 Permits and clearances shall be in printed forms, in duplicate or triplicate, depending on nature of job, serially numbered, Format Number and different colour code should be adopted for different types of permits and clearances. Where ever Online Work Permit System of HPCL is available, the same shall be used for issuance of work permits.
- 8.4.2 Duly signed "Dos and Don'ts" for related jobs shall be attached with each permit and safety guidelines mentioned shall be complied at work site.
- 8.4.3 Depending on nature of jobs, type of permit required shall be decided.
- 8.4.4 In case of Permit for working at heights, the following is to be ensured:
- I. All tools should be carried in tool kits to avoid their falling.
 - II. Throwing or dropping of material / equipment from height is prohibited.
 - III. Avoid jumping from one member to another of a structure. Use proper passageway.
 - IV. Both hands should be free, while climbing the ladder. Bypassing the steps of ladder should be avoided.
 - V. Avoid movements on overhead beam without proper fall protection.
- 8.4.5 For Radiation Permit jobs, the following shall be ensured:
A warning or protective barricade of 1 m height should be provided around the surrounding area, meeting the distance requirement as mentioned in permit and radiation signs & symbols to be displayed prominently by the Permit Receiver.
- 8.4.6 Permit issuing authority shall satisfy that permit conditions are met before issuing permit. It is also to be ensured that permit conditions are maintained in course of execution of the job.
- 8.4.7 All concerned shall be trained on Work Permit System for proper implementation. One day training shall be mandatory for signatory of permit and further, he shall attend a refresher course at a gap not exceeding 2 years. Project Head shall keep a record of such trainings and ensure that no untrained person is signing the permit. He shall also initiate action in advance to train the person, whose validity is expiring.

8.5 SURRENDERING OF WORK PERMIT

On completion of a work, the permits (original with copies) shall be signed by the receiver and returned to the issuer. The issuer shall retain the copies of various permits in chronological order in a folder for a period of minimum 3 months from the date of closure of permit or from the date of commissioning of facilities, whichever comes later.



In case of serious lapse or violation of permit conditions, where safety of the working personnel or equipment is likely to be affected, the execution of the job can be stopped by permit issuing authority or any other personnel authorized by the management for the purpose.

In case of any accident or fire at the work site, the permit shall get automatically cancelled. Fresh permit shall be obtained for restarting the job.

8.6 SURVEILLANCE AND WITHDRAWAL OF PERMIT

The permit issuing authority and executing authority shall inspect the work site frequently to ensure that permit conditions are being complied and maintained.

Officers shall make surprise checks at the sites where jobs against work permit are in progress. Surprise checks shall be carried out on a structured checklist and findings shall be documented. Date and time of such surprise checks shall be recorded. The corrective measures shall also be taken.

The permit can be withdrawn by issuing authority or any person authorized by management in case of violation of permit condition, Site emergency or any other unsafe situation.

8.7 TRAINING AND AWARENESS

Any person who is authorized to issue or receive the work permit shall be imparted training for a period of not less than one day covering various aspects of work permits' system. Further all the persons authorized to issue/ receive the work permit shall be given a minimum of one day training once in a year on the work permit system and records maintained.

Training and awareness programs are to be organized from time to time for issuer & receiver of permit to make them conversant about work permit system. These programs should include "class room" as well as "on the job training" like

- Filling of permits, assessing hazards and correction, Work Permit procedure
- Atmosphere monitoring with portable gas testers.
- Use of PPE including SCBA & airline respirators
- Carrying out different jobs safely

Awareness programs should be arranged in the form of "Class room training" as well as "On the job training" for contractors (Supervisor and their workmen) about work permit system.



8.8 REVIEW

Review of work permit system shall be carried out at least once in two years or following a major and/or high-potential incident / accidents or change in statutory requirements / norms.

8.9 AUDIT OF WORK PERMIT SYSTEM

The Work Permit System shall be audited at least annually by a multi-disciplinary team constituted by management for the purpose. For the audit, detailed format shall be developed by the Department. The audit shall include checking of procedure for permit / clearances being followed and physical check at site. The guidelines for audit checklist are as follows:

- The permit, clearances and format have been properly filled up and recommendations are mentioned categorically.
- The permit signatories are trained and they have been trained within 2 years. Check the content of training program to assess the coverage on "Work Permit System". Ask questions from workmen, supervisors, and signatories of permit about their knowledge on subject to assess the effectiveness of training program.
- Check for training record of toolbox talk and effectiveness of training.
- Check for detailed procedure including closing of permits, record keeping.
- Check work sites to observe deviation from procedures, permits, clearances and format.

8.9.1 Safety Meeting

Action points related to safety issues related to the project is discussed. Weekly meeting shall be conducted by contractors for the entire work force.

8.10 Pre-Job Meeting / Pep talks

The Pre-Job Meeting is meant for consultation before start of activity. At this meeting the "pre-job checklist" shall be handed over and worked out with all persons involved.

- These are meant for developing safety awareness and to remind the various safety measures and rules to be followed by the working group
- During the talk, the safety precautions for various activities and general HSE rules would be highlighted.
- Ensure active participation, interaction of workmen and encourage them to share their similar experiences of other sites
- The records of Pep talks are to be maintained and a copy of the same is to be sent to Project Head/HQO.



8.11 Tool Box Meetings

Toolbox meetings are a kind of consultation wherein executing employees will be informed about the actual work. A toolbox meeting is a medium to inform executing employees.

- The meetings will be organized by Contractors/Sub-contractors at their respective work locations daily.
- The meeting would be held with the concerned staff / workmen involved in the specific job. In the meeting the safety measures and the procedures to be adopted would be conveyed to all concerned after discussing/assessing associated risks prevailed in the work activity.
- The meeting would be held on need basis and conducted by Site Engineer/Foremen/EHS coordinator as and when changes of procedure/machinery and for new teams.
- The records of Tool Box meetings are to be maintained and a copy of the same is to be sent to Project Head.

9.0 NON COMPLIANCE OF SAFETY AND HEALTH PROVISIONS

The compliance of the Safety and Health provisions are of utmost importance. HSE Manager/Officer, HPCL has the right to order stoppage of work till rectification is carried out to the satisfaction of HSE Manager/Officer. All stoppage on this account will be at the entire risk cost and consequence of the erring individuals/contractors.

9.1 DISCIPLINARY ACTION

Non-compliance of Safety and Health and Environmental provisions will result in disciplinary action as given below:

Violations	Action
First instance	Written warning & monetary penalty of Rs. 1000 /-
Second instance	Written warning & monetary penalty of Rs. 5000 /-
Third instance	Removal from site



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- In case of unsafe conditions, the work will be immediately suspended till safe conditions are restored / safety compliance is ensured.
- In case of unsafe acts by individuals (for eg. not wearing PPEs etc.), the person will not be allowed to work till the compliance is ensured.
- In case any person brings himself or others in direct life threatening situations or where he/she creates a large material loss, the offender will be immediately removed from the Site
- The contractor who regularly, repetitively violates the provisions will be removed from the site.

9.2 PENALTIES

All contractors working for HPCL have to strictly follow safety norms as per rules and regulations. Contractors who violate safety norms while executing the job will be penalized.

Safety violations can be reported by Safety Engineer (HPCL), Safety Supervisor (contractor), HPCL personnel, Inspecting authorities or any person working at the site. All Safety violations shall be reported to the Location in- charge / Project In-charge.

Penalties for violation / non -adherence of various safety norms are given below:

PENALTY CLAUSE	SAFETY VIOLATION TYPE	PENALTY
1	Non-usage of PPEs like Safety helmet / Safety shoes / Safety goggles / safety gloves / Face Shield / Respiratory protection etc. by the contractor personnel.	As per 10.1
2	Working without valid work permit / Violation of any of the conditions specified in the permit / JSA.	Work to be suspended till issuance of Work Permit. First instance : Written Warning & penalty of Rs. 10,000 /- Second instance : Written warning & penalty of Rs. 20,000 /- Third instance : Removal from site



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3	Carrying out electrical jobs by un-authorized person / Non deployment of the licensed electricians for electrical job.	As per 10.1
4	Non-usage of safe electric practices at work site : <ul style="list-style-type: none">- non-installation of ELCB,- not providing earthing connections for electrical appliances,- not providing emergency isolation switches,- using poor joints of cables,- using naked wire without top plug into socket,- laying wire / cables on the roads etc.	As per 10.1
5	Working at heights without safety belt / Non-usage of the full body safety harness and fall back arrester with life line properly anchored by the workers while working at height	As per 10.1
6	Non-standard / unsafe platform/ladder, Non-standard / unsafe Scaffolding, not having proper arrangement for fall protection, not providing safety nets etc.	As per 10.1
7	Throwing up/down any material from height or not making proper provision to bring down material safely from height	As per 10.1
8	Unsafe handling of compressed gas cylinders : <ul style="list-style-type: none">- no trolley, jubilee clips, double gauge regulator- improper storage / handling- keeping compressed gas cylinders in horizontal position etc.	As per 10.1
9	Non fencing / barricading of excavated areas. Unsatisfactory fencing / barricading of excavated areas, Not providing proper shoring /strutting /proper slope and Not keeping the excavated earth at least 1.5 meter away from excavated area	First instance : Written warning & penalty of Rs. 20,000 /- Second instance : Removal from site
10	Use of domestic LPG for cutting purpose	Rs. 1000 /- per instance
11	<ul style="list-style-type: none">- Usage of untested and uncertified pressure vessel.- Usage of untested and uncertified lifting tools/tackle.	Rs. 5000 /- per instance
12	Not providing sufficient illumination / ventilation at the work site, including confined spaces	Rs. 5000 /- per instance



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13	<ul style="list-style-type: none">- Driving without valid license- Over speeding of vehicles- Driving vehicles without PESO approved and certified spark arrestors within working locations- Un-authorized road closure / blockage- rash driving / overtaking within working locations- wrong parking- parking the vehicles at non-designated places inside premises- parking in front of any fire-fighting equipment etc.	First instance : Written Warning & penalty of Rs. 10,000 /- Second instance : Written warning & penalty of Rs. 20,000 /- Third instance : Removal from site
14	Riding on material handling vehicles or trolleys or hydra.	As per 10.1
15	Non-display of name board, permit, etc. at site	Rs. 500/- per instance
16	Non-deployment of safety supervisor / supervisor responsible for safety at work site	Rs. 5000/- per week or part thereof
17	Failure to maintain safety register and record by Contractor Safety Supervisor or Supervisor responsible for safety.	Rs. 1,000/- per week or part thereof
18	Failure to submit monthly safety report by the 5th of the next month to the Engineer-in-Charge	Rs. 1,000/- per week or part thereof
19	Failure to adhere to the incident reporting system	Rs. 10,000/- per instance



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10.0 CONSTRUCTION HAZARDS, THEIR EFFECTS & PREVENTIVE MEASURES

ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
(A) EXCAVATION Pit Excavation upto 3.0m	Falling into pit	Personal injury	Provide guard rails/ barricade with warning signal Provide at least two entries/ exits. Provide escape ladders.
	Earth Collapse	Suffocation/ Breathlessness Buried	Provide suitable size of shoring and strutting, if required. Keep soil heaps away from the edge equivalent to 1.5m or depth of pit whichever is more. Dont allow vehicles to operate too close to excavated areas. Maintain at least 2m distance from edge of cut. Maintain sufficient angle of repose. Provide slope not less than 1:1 and suitable bench of 0.5m width at every 1.5m depth of excavation in all soils except hard rock. Battering/benching the sides.
	Contact with buried electric cables Gas / Oil Pipelines	Electrocution Explosion	Obtain permission from competent authorities, prior to excavation. Locate the position of buried utilities by referring to plant drawings. Start digging manually to locate the exact position of buried utilities and thereafter use mechanical means.
Pit Excavation beyond 3.0m	Same as above plus Flooding due to excessive rain / underground water	Can cause drowning situation	Prevent ingress of water Provide ring buoys Identify and provide suitable size dewatering pump or well point system
	Digging in the vicinity of existing Building / Structure	Building/Structure may collapse Injury / loss of property	Obtain prior approval of excavation method from local authorities. Use under-pinning method. Construct retaining wall side by side.
	Movement of vehicles/ equipment close to the edge of cut.	May cause cave-in or slides. Persons may get buried.	Barricade the excavated area with proper lighting arrangements. Maintain at least 2m distance from edge of cut and use stop blocks to prevent over-run. Strengthen shoring and strutting.



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ACTIVITY	TYPE OF HAZARD	EFFECT OF HAZARD	PREVENTIVE MEASURES
Narrow deep excavations for pipelines, etc.	Same as above plus Frequent cave-in or slides	May cause severe injuries or prove fatal	Battering/benching of sides. Provide escape ladders.
	Flooding due to Hydro- static testing	Drowning situation may arise	Same as above plus Bail out accumulated water. Maintain adequate ventilation.
Rock by excavation blasting	Improper handling of explosives	May prove fatal	Ensure proper storage, handling & carrying of explosives by trained personnel. Comply with the applicable explosive acts & rules.
	Uncontrolled explosion	May cause severe injuries or prove fatal	Allow only authorized persons to perform blasting operations. Smoking and open flames are to be strictly prohibited.
	Scattering of stone pieces in atmosphere	Can injure people	Use PPE like goggles, face mask, helmets etc.
Rock excavation by blasting (Contd.)	Entrapping of persons / animals.	May cause severe injuries or prove fatal	Barricade the area with red flags and blow siren before blasting.
	Misfire	May explode suddenly	Do not return to site for at least 20 minutes or unless announced safe by designated person.
Piling Work	Failure of pile - driving equipment	Can injure people	Inspect Piling rigs and pulley blocks before the beginning of each shift.
	Noise pollution	Can cause deafness and psychological imbalance.	Use personal protective equipment like ear plugs, muffs, etc.
	Extruding rods/casing	Can injure people	Barricade the area and install sign boards.
	Working in the vicinity of 'Live-Electricity'	Can cause electrocution / Asphyxiation	Keep sufficient distance from Live-Electricity as per IS code. Shut off the supply, if possible. Provide artificial/rescue breathing to the injured.
(B) CONCRETING	Air pollution by cement	May affect Respiratory System	Wear respirators or cover mouth and nose with wet cloth.
	Handling of ingredients	Hands may get injured	Use gloves & other PPE.



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	Protruding reinforcement rods.	Feet may get injured	Provide platform above reinforcement for movement of workers.
	Earthing of electrical mixers, vibrators, etc. not done.	Can cause electrocution/ asphyxiation	Ensure earthing of equipment and proper functioning of electrical circuit before commencement of work.
	Falling of materials from height.	Persons may get injured	Use hard hats. Remove surplus material immediately from work place. Ensure lighting arrangements during night hours.
	Continuous pouring by same gang	Results in fatigue and may lead to accident.	Insist on shift operation. Provide adequate rest to workers between subsequent pours.
	Revolving of concrete mixer/ vibrators	Parts of body or clothes may get entrapped.	Allow only mixers with hopper. Provide safety cages around moving parts. Ensure proper mechanical locking of vibrator.
Super-structure	Same as above plus Deflection in props or shuttering material	Shuttering/props may collapse and prove fatal	Avoid excessive stacking on shuttering material. Check the design and strength of shuttering material before commencement of work. Rectify immediately the deflection noted during concreting.
	Passage to work place	Improperly tied and designed props/planks may collapse	Ensure the stability and strength of passage before commencement of work. Do not overload and stand under the passage.
(C) REINFOR- CEMENT	Curtailment and binding of rods	Persons may get injured	Use PPE like gloves, shoes, helmets, etc. Avoid usage of shift tools.
	Carrying of rods for short distances/at heights	Persons may get injured (hand & shoulders)	Provide suitable pads on shoulders and use safety gloves. Tie up rods in easily liftable bundles. Ensure proper staging.
	Checking of clear distance / cover with hands	Rods may cut or injure the fingers	Use measuring devices like tape, measuring rods etc.
	Hitting projected rods and standing on cantilever rods.	Persons may get injured and fall down	Use safety shoes and avoid standing unnecessarily on cantilever rods. Avoid wearing of loose clothes.
	Falling of material from height	May prove fatal	Use helmets. Provide safety nets.



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	Transportation of rods by trucks/ trailers	Protruded rods may hit the persons	Use red flags/lights at the ends. Do not protrude the rods in front of or by the side of drivers cabin. Do not extend the rods beyond 1/3 rd of deck length or 1.5m whichever is less.
(D)WELDING AND GAS CUTTING	Welding radiates invisible ultraviolet and infra-red rays	Radiation can damage eyes and skin.	Use specified shielding devices and other PPE of correct specifications. Avoid Thoriated Tungsten electrodes for GTAW
	Improper placement of oxygen and acetylene cylinders	Explosion may occur	Move out any leaking cylinders Keep cylinders in vertical position. Use trolley for transportation of cylinders and chain them. Use flashback arrestors.
	Leakage/ cuts in hoses	May cause fire	Purge regulators immediately and then turn off. Never use grease or oil on oxygen line connections and copper fittings on acetylene lines. Inspect gas carrying hoses regularly. Always use red hose for acetylene & other fuel gases and black for oxygen.
	Opening-up of cylinder	Cylinder may burst	Always stand back from the regulator while opening the cylinder. Turn valve slowly to avoid bursting. Cover the lug terminals to prevent short circuiting.
	Welding of tanks, container or pipes storing flammable liquids	Explosion may occur	Empty & purge them before welding. Never attach the ground cable to tanks, container or pipe storing flammable liquids. Never use LPG for gas cutting.
(E) RADIOGRAPHY	Ionizing Radiation	Radiation may react with the skin and can cause cancer, skin irritation, dermatitis, etc.	Ensure Safety regulations as per BARC / AERB before commencement of job. Cordon off the area and install Radiation warning symbols. Restrict the entry of unauthorized persons. Wear appropriate PPE and film badges issued by BARC / AERB.



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	Transportation and Storage of Radiography source	Same as above	<p>Never touch or handle radiography source with hands.</p> <p>Store radiography source inside a pit in an exclusive isolated storage room with lock and key arrangement. The pit should be approved by BARC / AERB.</p> <p>Radiography source should never be carried either in passenger bus or in a passenger compartment of trains.</p> <p>BARC / AERB has to be informed before source movement.</p> <p>Permission from Director General of Civil Aviation is required for booking radio isotopes with airlines.</p>
	Loss of Radio isotope	Same as above	<p>Try to locate with the help of Survey Meter.</p> <p>Inform BARC / AERB</p>
(F) ELECTRICAL INSTALLATION AND USAGE	Short circuiting	Can cause Electrocutation or Fire	<p>Use rubberized hand gloves and other PPE.</p> <p>Don't lay wires under carpets, mats or doorways.</p> <p>Allow only licensed electricians to perform on electrical facilities.</p> <p>Use one socket for one appliance.</p> <p>Ensure usage of only fully insulated wires or cables.</p> <p>Don't place bare wire ends in a socket.</p> <p>Ensure earthing of machineries and equipment.</p> <p>Do not use damaged cords and avoid temporary connections.</p> <p>Use spark-proof flame proof type field distribution boxes.</p> <p>Do not allow open/bare connections.</p> <p>Provide all connections through ELCB.</p> <p>Protect electrical cables/equipment from water and naked flames.</p> <p>Check all connections before energizing.</p>
	Overloading of Electrical System	Bursting of system can occur which can lead to fire	<p>Display voltage and current ratings prominently with 'Danger' signs.</p> <p>Ensure approved cable size, voltage grade and type.</p> <p>Switch off the electrical utilities when not in use.</p> <p>Do not allow unauthorized connections.</p> <p>Ensure proper grid wise distribution of Power.</p>



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	Improper laying of overhead and underground transmission lines/cables	Can cause electrocution and prove fatal	Do not lay un-armoured cable directly on ground, wall, roof of trees. Maintain at least 3m distance from HT cables. All temporary cables should be laid at least 750 mm below ground on 100 mm fine sand overlying by brick soling. Provide proper sleeves at crossings/ intersections. Provide cable route markers indicating the type and depth of cables at intervals not exceeding 30m and at the diversions/termination.
(G) FIRE PREVENTION AND PROTECTION	Small fires can become big ones and may spread to the surrounding areas	Cause burn injuries and may prove fatal	In case a fire breaks out, press fire alarm system and shout "Fire, Fire". Keep buckets full of sand & water/ fire extinguishing equipment near hazardous locations. Confine smoking to 'Smoking Zones' only. Train people for using specific type of fire fighting equipment for different classes of fire. Keep fire doors/shutters, passages and exit doors unobstructed. Maintain good housekeeping and first-aid boxes Don't obstruct access to Fire extinguishers. Do not use elevators for evacuation during fire. Maintain lightning arresters for elevated structures. Stop all electrical motors with internal combustion. Move the vehicles from dangerous locations. Remove the load hanging from the crane booms. Remain out of the danger areas.
	Improper selection of Fire extinguisher	It may not extinguish the fire	Ensure usage of correct type of fire extinguisher meant for the specified fire. Do not attempt to extinguish Oil and electric fires with water. Use foam cylinders/C0 ² /sand or earth.



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	Improper storage of highly inflammable substances	Same as above	Maintain safe distance of flammable substances from sources of ignition. Restrict the distribution of flammable materials to only minimum necessary quantity. Construct specifically designed fuel storage facilities. Keep chemicals in cool and dry place away from heat. Ensure adequate ventilation. Before welding operation, remove or shield the flammable material properly. Store flammable materials in stable racks, correctly labeled preferably with catchment trays. Wipe off the spills immediately.
(H) VEHICULAR MOVEMENT	Crossing the Speed Limits (Rash driving)	Personal injury / Accidents	Strictly adhere to the speed limits and traffic rules. Always expect the unexpected and be a defensive driver. Use seat belts/helmets. Blow horn at intersections and during overtaking operations. Maintain the vehicle in good condition. Do not overtake on curves, bridges and slopes. Do not force the driver to drive fast and round the clock. Do not day dream while driving.
	Adverse weather condition	Same as Above	Read the road ahead and ride to the left. Keep the wind screen and lights clean. Do not turn at speed. Recognize the hazard, understand the defense and act correctly in time.
	Consuming alcohol before and during the driving operation	Same as above	Alcohol and driving do not mix well. Either choose alcohol or driving. If you have a choice between hitting a fixed object or an on-coming vehicle, hit the fixed object. Quit the steering at once and become a passenger. Take sufficient rest and then drive.
	Falling objects/ Mechanical failure	May prove fatal	Ensure effective braking system, adequate visibility for the drives, reverse warning alarm. Proper maintenance of the vehicle as per manufacturer instructions.



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<p>(I) PROOF TESTING (HYDROSTATIC / PNEUMATIC TESTING)</p>	<p>Bursting of piping. Collapse of tanks. Tanks flying off.</p>	<p>May cause injury and prove fatal</p>	<p>Prepare test procedure & obtain Consultant / owner's approval. Provide separate gauge for pressurizing pump and piping/equipment. Check the calibration status of all pressure gauges, dead weight testers and temperature recorders. Take dial readings at suitable defined intervals and ensure most of them fall between 40-60% of the gauge scale range. Provide safety relief valve (set at pressure slightly higher than test pressure) while testing with air / nitrogen. Ensure necessary precautions, stepwise increase in pressure, tightening of bolts/nuts, grouting, etc. before and during testing. Keep the vents open before opening any valve while draining out of water used for hydro-testing of tanks. Pneumatic testing involves the hazard of released energy stored in compressed gas. Specific care must therefore be taken to minimize the chance of brittle failure during a pneumatic leak test. Test temperature is important in this regard and must be considered when the designer chooses the material of construction. A pressure relief device shall be provided, having a set pressure not higher than the test pressure plus the lesser of 345 KPa (50 psi) or 10% of the test pressure. The gas used as test fluid, if not air, shall be non-flammable and non-toxic.</p>
<p>(J) WORKING AT HEIGHTS</p>	<p>Person can fall down</p>	<p>May sustain severe injuries or prove fatal</p>	<p>Provide guard rails/barricades at the work place. Use PPE like full body harness, life line, helmets, safety shoes etc. Obtain a permit before starting any work at height above 3 meters. Fall arrestor, safety nets etc. must be installed. Provide adequate working space (min. 0.6 m). Tie/weld working platform with fixed support. Use roof top walk ladder while working on sloping roofs. Avoid movement on beams.</p>



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		May hit the scrap / other material stacked at the ground or in between	Ensure proper housekeeping. Keep work place neat and clean. Remove scrap immediately.
	Material can fall down	May hit the workers working at lower levels and prove fatal	Same as above plus, Do not throw or drop materials or equipment from height. All tools to be carried in a tool-kit, bag or on working uniform. Remove scrap from the planks. Ensure workers are wearing helmets & safety shoes.
(K) CONFINED SPACES	Suffocation / Drowning	Unconsciousness / Death	Use respiratory devices, if required. Avoid overcrowding inside a confined space. Provide exhaust fans for ventilation. Do not wear loose clothes, neck ties etc. Ensure conditions of the work permit are fulfilled. Check for presence of hydrocarbons, O2 level. Obtain work permit before entering a confined space. Ensure that the connected piping of the equipment which is to be opened is pressure free, fluid has been drained, vents are open and piping is positively isolated by a blind flange.
	Presence of foul smell and toxic substances	Inhalation can pose threat to life	Same as above plus Check for hydrocarbon and Aromatic compounds before entering a confined space. Depute one person outside the confined space for continuous monitoring and for extending help in case of an emergency.
	Ignition/ flame can cause fire	Person may sustain burn injuries or explosion may occur	Keep fire extinguishers nearby. Remove surplus material and scrap immediately. Do not smoke inside a confined space. Do not allow gas cylinders inside a confined space. Use low voltage (24V) lamps for lighting. Use tools with air motors or electric tools with max. voltage of 24V. Remove all equipment at the end of the day.



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(L) HANDLING AND LIFTING EQUIPMENT	Failure of load lifting and moving equipment	Can cause accident and prove fatal	Avoid standing under the lifted load and within the operating radius of cranes. Check periodically oil, brakes, gears, horns and tyre pressure of all moving machinery. Check quality, size and condition of all chain pulley blocks, slings, U-clamps, D-shackles, wire ropes, etc. Allow crane to move only on hard, firm and leveled ground. Allow lifting slings as short as possible and check gunny packing at the friction points. Do not allow crane to tilt its boom while moving. Install Safe Load Indicator. Ensure certification by applicable authority.
	Overloading of lifting equipment	Same as above	Safe lifting capacity of derricks and winches written on them shall be got verified. The max. safe working load shall be marked on all lifting equipment. Check the weight of columns and other heavy items painted on them and accordingly decide about the crane capacity, boom and angle of erection. Allow only trained operators and riggers during crane operation.
	Overhead electrical wires	Can cause electrocution and fire	Do not allow boom or other parts of crane to come within 3m reach of overhead HT cables. Hook and load being lifted shall preferably remain in full visibility of crane operators.
(M) SCAFFOLDING, FORMWORK AND LADDERS	Person can fall down	Person may sustain severe injuries and prove fatal	Provide guard rails for working at height. Face ladder while climbing and use both hands. Ladders shall extend about 1m above landing for easy access and tying up purpose. Do not place ladders against movable objects and maintain base at 1/4 unit of the working length of the ladder. Suspended scaffolds shall not be less than 500 mm wide and tied properly with ropes. No loose planks shall be allowed. Use PPE like helmets, safety shoes etc.



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	Failure of scaffolding material	Same as above	Inspect visually all scaffolding materials for stability and anchoring with permanent structures. Design scaffolding for max. load carrying capacity. Scaffolding planks shall not be less than 50x250 mm full thickness lumber or equivalent. These shall be cleated or secured and must extend over the end supports by at least 150mm and not more than 300mm. Dont overload the scaffolds. Do not splice short ladders to make a longer one. Vertical ladders shall not exceed 6m.
	Material can fall down	Persons working at lower level gets injured	Remove excess material and scrap immediately. Carry the tools in a tool-kit bag only. Provide safety nets.
(N) STRUCTURAL WORKS	Personal negligence and danger of fall	Can cause injury or casualty	Do not take rest inside rooms built for welding machines or electrical distribution system. Avoid walking on beams at height. Wear helmet with chin strap and full body harness while working at height. Use hand gloves and goggles during grinding operations. Cover or mark the sharp and projected edges. Do not stand within the operating radius of cranes.
	Lifting / slipping of material	Same as above	Do not stand under the lifted load. Stack properly all the materials. Avoid slippage during handling. Control longer pieces lifted up by cranes from both ends. Remove loose materials from height. Ensure tightening of all nuts & bolts.
(O) PIPELINE WORKS	Erection/ lowering failure	Can cause injury	Do not stand under the lifted load. Do not allow any person to come within the radii of the side boom handling pipes. Check the load carrying capacity of the lifting tools & tackles. Use safe Load Indicators. Use appropriate PPE.



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	Other	Same as above	Wear gum boots in marshy areas. Allow only one person to perform signaling operations while lowering of pipes. Provide night caps on pipes. Provide end covers on pipes for stoppage of pigs while testing / cleaning operations.
(P) GRIT BLASTING	Pollution in neighboring area, hit by grits and high pressure air	Can cause personal injury	Ensure the blasting is done in enclosed shed. Keep safe distance from blasting operations. Wear positive pressure blast hood or helmet with view window, ear muff/plug, gloves, overall or leather coat /apron, rubber shoes.

ANNEXURE – 7a (SPECIMEN)

7a. GENERAL TERMS & CONDITIONS OF WORKS CONTRACT

1 PRELIMINARY

- 1.1 This is a Contract for execution of job as defined in tender document at the specified location
- 1.2 The tenderer for the abovementioned item of work is the company/ proprietary concern/ individual (as per details & address mentioned in the unpriced bid) and undersigned (digitally) is authorized to submit the bid on behalf of tenderer.
- 1.3 The terms and conditions mentioned hereunder are the terms and conditions of the Contract for the execution of the work mentioned under item 1.1 above.
- 1.4 It is the clear understanding between Hindustan Petroleum Corporation Limited and the tenderer that in case the bid of tenderer is accepted by Hindustan Petroleum Corporation Limited and an intimation to that effect is so issued and also a Procurement Order is on the tenderer this document shall form part of the Contract between the parties and terms and conditions hereunder would govern the parties interest.
- 1.5 Interpretation of Contract Documents: All documents forming part of the Contract are to be taken mutually explanatory. Should there be any discrepancy, inconsistency, error or omission in the contract, the decision of the Owner/Engineer-in-Charge/Site-in-Charge shall be the final and the contractor shall abide by the decision. The decision shall not be arbitrable. Works shown upon the drawings but not mentioned in the specification or described in the specifications without being shown on the drawings shall nevertheless be deemed to be included in the same manner as if they are shown in the drawings and described in the specifications.
- 1.6 Special conditions of Contract : The special conditions of contract, if any provided and whenever and wherever referred to shall be read in conjunction with General Terms and Conditions of contract, specifications, drawings, and any other documents forming part of this contract wherever the context so requires. Notwithstanding the subdivision of the documents into separate sections, parts volumes, every section, part or volume shall be deemed to be supplementary or complementary to each other and shall be read in whole. In case of any misunderstanding arising the same shall be referred to decision of the Owner/ Engineer-in-Charge/Site-in-Charge and their decision shall be final and binding and the decision shall not be arbitrable.

It is the clear understanding that wherever it is mentioned that the Contractor shall do/performance a work and/or provide facilities for the performance of the work, the doing or the performance or the providing of the facilities is at the cost and expenses of the Contractor not liable to be paid or reimbursed by the Owner.

2. DEFINITIONS

In this contract unless otherwise specifically provided or defined and unless a contrary intention appears from the contract the following words and expressions are used in the following meanings;

- 2.1 The term "Agreement" wherever appearing in this document shall be read as "Contract".
- 2.2 The "Authority" for the purpose of this Contract shall be the **Chairman and Managing Director** or any other person so appointed or authorised.
- 2.3 The "**Chairman and Managing Director**" shall mean the Chairman and Managing Director of HINDUSTAN PETROLEUM CORPORATION LIMITED or any person so appointed, nominated or designated and holding the office of Chairman & Managing Director.
- 2.4 The "**Change Order**" means an order given in writing by the Engineer-in-Charge or by Owner to effect additions to or deletion from or alterations into the Work.
- 2.5 The "**Construction Equipment**" means all appliances and equipment of whatsoever nature for the use in or for the execution, completion, operation or maintenance of the work except those intended to form part of the Permanent Work.
- 2.6 The "**Contract**" between the Owner and the Contractor shall mean and include all documents like enquiry, tender submitted by the contractor and the procurement order issued by the owner and other documents connected with the issue of the procurement order and orders, instruction, drawings, change orders, directions issued by the Owner/Engineer-in-Charge/Site-in-Charge for the execution, completion and commissioning of the works and the period of contract mentioned in the Contract including such periods of time extensions as may be granted by the owner at the request of the contractor and such period of time for which the work is continued by the contractor for purposes of completion of the work.
- 2.7 "**The Contractor**" means the person or the persons, firm or Company whose tender has been accepted by the Owner and includes the Contractor's legal heirs, representative, successor(s) and permitted assignees.
- 2.8 The "**Drawings**" shall include maps, plans and tracings or prints thereof with any modifications approved in writing by the Engineer-in-Charge and such other drawings as may, from time to time, be furnished or approved in writing by the Engineer-in-Charge.
- 2.9 The "**Engineer-in-Charge or Site-in-Charge**" shall mean the person appointed or designated as such by the Owner and shall include those who are expressly authorised by the owner to act for and on its behalf.
- 2.10 "**The Owner**" means the HINDUSTAN PETROLEUM CORPORATION LIMITED incorporated in India having its Registered office at PETROLEUM HOUSE, 17, JAMSHEDJI TATA ROAD, BOMBAY - 400020 and Marketing office at the address mentioned for this purpose in the tender header or their successors or assignees.
- 2.11 The "**Permanent Work**" means and includes works which form a part of the work to be handed over to the Owner by the Contractor on completion of the contract.
- 2.12 The "**Project Manager**" shall mean the Project Manager of HINDUSTAN PETROLEUM CORPORATION LIMITED, or any person so appointed, nominated or designated.

- 2.13 The "**Site**" means the land on which the work is to be executed or carried out and such other place(s) for purpose of performing the Contract.
- 2.14 The "**Specifications**" shall mean the various technical and other specifications attached and referred to in the tender documents. It shall also include the latest editions, including all addenda/corrigenda or relevant Indian Standard Specifications and Bureau Of Indian Standards.
- 2.15 The "Sub-Contractor" means any person or firm or Company (other than the Contractor) to whom any part of the work has been entrusted by the Contractor with the prior written consent of the Owner/Engineer-in-Charge/Site-in- Charge and their legal heirs, representatives, successors and permitted assignees of such person, firm or Company.
- 2.16 The "Temporary Work" means and includes all such works which are a part of the contract for execution of the permanent work but does not form part of the permanent work conforming to practices, procedures applicable rules and regulations relevant in that behalf.
- 2.17 The "Tender" means the document submitted by a person or authority for carrying out the work and the Tenderer means a person or authority who submits the tender offering to carry out the work as per the terms and conditions.
- 2.18 The "Work" shall mean the works to be executed in accordance with the Contract or part thereof as the case may be and shall include extra, additional, altered or substituted works as maybe required for the purposes of completion of the work contemplated under the Contract.

3. SUBMISSION OF TENDER

- 3.1 Before submitting the Tender, the Tenderer shall at their own cost and expenses visit the site, examine and satisfy as to the nature of the existing roads, means of communications, the character of the soil, state of land and of the excavations, the correct dimensions of the work facilities for procuring various construction and other material and their availability, and shall obtain information on all matters and conditions as they may feel necessary for the execution of the works as intended by the Owners and shall also satisfy of the availability of suitable water for construction of civil works and for drinking purpose and power required for fabrication work etc. Tenderer, whose tender may be accepted and with whom the Contract is entered into shall not be eligible and be able to make any claim on any of the said counts in what so ever manner for what so ever reasons at any point of time and such a claim shall not be raised as a dispute and shall not be arbitrable.

A pre-bid meeting may be held as per the schedule mentioned in the tender.

- 3.2 The Tenderer shall be deemed to have satisfied fully before tendering as to the correctness and sufficiency of his tender for the works and of the rates and prices quoted in the schedule of quantities which rates and prices shall except as otherwise provided cover all his obligations under the contract.
- 3.3 It must be clearly understood that the whole of the conditions and specifications are intended to be strictly enforced and that no work will be considered as extra work and allowed and paid for unless they are clearly outside the scope, spirit, meaning of the Contract and intent of the Owner and have been so ordered in writing by Owner and/or Engineer-in-Charge/Site-in-Charge, whose decision shall be final and binding.

- 3.4 Before filling the Tender the Contractor will check and satisfy all drawings and materials to be procured and the schedule of quantities by obtaining clarification from the Owner on all the items as may be desired by the Tenderer. No claim for any alleged loss or compensation will be entertained on this account, after submission of Tender by the Tenderer/Contractor and such a claim shall not be arbitrable.
- 3.5 Unless specifically provided for in the tender documents or any Special Conditions, no escalation in the Tender rates or prices quoted will be permitted throughout the period of contract or the period of actual completion of the job whichever is later on account of any variation in prices of materials or cost of labour or due to any other reasons. Claims on account of escalation shall not be arbitrable.**
- 3.6 The quantities indicated in the Tender are approximate. The approved schedule of rates of the contract will be applicable for variations upto plus or minus 25% of the contract value. No revision of schedule of rates will be permitted for such variations in the contract value, including variations of individual quantities, addition of new items, alterations, additions/deletions or substitutions of items, as mentioned above. Quantities etc. mentioned and accepted in the joint measurement sheets shall alone be final and binding on the parties.
- 3.7 Owner reserve their right to award the contract to any tenderer and their decision in this regard shall be final. They also reserve their right to reject any or all tenders received. No disputes could be raised by any tenderer(s) whose tender has been rejected.
- 3.8 The Rates quoted by the Tenderer shall include Costs and expenses on all counts viz. cost of materials, transportation of machine(s), tools, equipments, labour, power, Administration charges, price escalations, profits, etc. etc. except to the extent of the cost of material(s), if any, agreed to be supplied by Owner and mentioned specifically in that regard in condition of Contract, in which case, the cost of such material if taken for preparation of the Contractor's Bill(s) shall be deducted before making payment of the Bill(s) of the Contractor. The description given in the schedule of quantities shall unless otherwise stated be held to include wastage on materials, carriage and cartage, carrying in and return of empties, hoisting, setting, fitting and fixing in position and all other expenses necessary in and for the full and complete execution and completion of works and in accordance with good practice and recognised principles in that regard.
- 3.9 Employees of the State and Central Govt. and employees of the Public Sector Undertakings, including retired employees are covered under their respective service conditions/rules in regard to their submitting the tender. All such persons should ensure compliance to the respective/applicable conditions, rules etc. etc. Any person not complying with those rules etc. but submitting the tender in violation of such rules, after being so noticed shall be liable for the forfeiture of the Earnest Money Deposit made with the tender, termination of Contract and sufferance on account of forfeiture of Security Deposit and sufferance of damages arising as a result of termination of Contract.
- 3.10 In consideration for having a chance to be considered for entering into a contract with the Owner, the Tenderer agrees that the Tender submitted by him shall remain valid for the period prescribed in the tender conditions, from the date of opening of the tender. The Tenderer shall not be entitled during the**

said validity period, to revoke or cancel the tender without the consent in writing from the Owner.

In case the tenderer revokes or cancels the tender or varies any of terms of the tender without the Consent of the Owner, in writing, the Tenderer forfeits the right to the refund of the Earnest Money paid along with the tender.

3.11 The prices quoted by the Tenderer shall be firm during the validity period of the bid and Tenderer agrees to keep the bid alive and valid during the said period. The Tenderers shall particularly take note of this factor before submitting their tender(s).

3.12 The works shall be carried out strictly as per approved specifications. Deviations, if any, shall have to be authorised by the Engineer-in-Charge/Site-in-Charge in writing prior to implementing deviations. The price benefit, if any, arising out of the accepted deviation shall be passed on to the Owner. The decision of Engineer-in-Charge shall be final in this matter.

3.13 The contractor shall make all arrangements at his own cost to transport the required materials outside and inside the working places and leaving the premises in a neat and tidy condition after completion of the job to the satisfaction of Owner. All materials except those agreed to be supplied by the Owner shall be supplied by the contractor at his own cost and the rates quoted by the Contractor should be inclusive of all royalties, rents, taxes, duties, octroi, statutory levies, if any, etc. etc.

3.14 The Contractor shall not carry on any work other than the work under this Contract within the Owner's premises without prior permission in writing from the Engineer-in-Charge/Site-in-charge.

3.15 The Contractor shall be bound to follow and ensure compliance to all the safety and security regulations and other statutory rules applicable to the area. In the event of any damage or loss or sufference caused due to non-observance of such rules and regulations, the contractor shall be solely responsible for the same and shall keep the Owner indemnified against all such losses and claims arising from the same.

3.16 At any time after acceptance of tender, the Owner reserves the right to add, amend or delete any work item, the bill of quantities at a later date or reduce the scope of work in the overall interest of the work by prior discussion and intimation to the Contractor. The decision of Owner, with reasons recorded therefor, shall be final and binding on both the Owner and the Contractor. The Contractor shall not have right to claim compensation or damage etc. in that regard. The Owner reserves the right to split the work under this contract between two or more contractors without assigning any reasons.

3.17 Contractor shall not be entitled to sublet, sub contract or assign, the work under this Contract without the prior consent of the Owner obtained in writing.

3.18 All signatures in tender document shall be dated as well as all the pages of all sections of the tender documents shall be initialed at the lower position and signed, wherever required in the tender papers by the Tenderer or by a person holding Power of Attorney authorising him to sign on behalf of the tenderer before submission of tender.

3.19 The tender should be quoted in English, both in figures as well as in words. The rates and amounts tendered by the Tenderer in the Schedule of rates for each item and in such a way that insertion is not possible. The total tendered amount should also be indicated both in figures and words with the signature of tenderer.

If some discrepancies are found between the rates given in words and figures of the amount shown in the tender, the following procedure shall be applied :

- (a) **When there is a difference between the rates in figures and words, the rate which corresponds to the amount worked out by the tenderer shall be taken as correct.**
- (b) **When the rate quoted by the tenderer in figures and words tallies but the amount is incorrect, the rate quoted by the tenderer shall be taken as correct.**
- (c) **When it is not possible to ascertain the correct rate in the manner prescribed above the rate as quoted in words shall be adopted.**

3.20 All corrections and alterations in the entries of tender paper will be signed in full by the tenderer with date. No erasures or over writings are permissible.

3.21 Transfer of tender document by one intending tenderer to the another one is not permissible. The tenderer on whose name the tender has been sent only can quote.

3.22 The Tender submitted by a tenderer if found to be incomplete in any or all manner is liable to be rejected. The decision of the Owner in this regard is final and binding.

4. DEPOSITS

a) EARNEST MONEY DEPOSIT (EMD)

The tenderer will be required to pay a sum as specified in the covering letter, as earnest money deposit along with the tender either thru a crossed demand draft or a non-revokable Bank Guarantee in favour of Hindustan Petroleum Corporation Limited, from any Scheduled Bank (other than a Co-Operative Bank) payable at P[^]ã!ããã & in favour of Hindustan Petroleum Corporation Limited, P[^]ã!ããã. The proforma ^} &[•^ããã The earnest money deposit will be refunded after finalisation of the contract.

Note: Public sector enterprises and small scale units registered with National Small Scale Industries are exempted from payment of Earnest Money Deposit. Small scale units registered with National Small Scale Industries should enclose a photocopy of their registration certificate with their quotation to make their quotation eligible for consideration. The Registration Certificate should remain valid during the period of the contract that may be entered into with such successful bidder. Such tenderers should ensure validity of the Registration Certificate for the purpose.