

Form-B

EXCEPTIONS AND DEVIATIONS

SL. NO	REF OF BID DOCUMENT		SUBJECT	DEVIATION
	PAGE NO	CLAUSE NOS		

NOTE: This shall be submitted separately for Commercial & Technical sections.

SIGNATURE OF BIDDER: _____

NAME OF BIDDER: _____

COMPANY SEAL: _____



HINDUSTAN PETROLEUM CORPORATION LIMITED
CHENNAI NEW TERMINAL

PROVISIONS FOR SAFETY IN CONSTRUCTION

A PERSONNEL PROTECTIVE EQUIPMENT (PPE): to be used as per the job requirement?

- 1 Safety Helmets
- 2 Safety Shoes
- 3 Safety Belts with life line
- 4 Goggles
- 5 Face Protection
- 6 Breathing Apparatus

B SAFETY IN CONFINED SPACE (Working on tank -cleaning / mod.)

- 1 Only in presence of a supervisor when worker enters in confined space. Only properly trained men with sound health to be used for such jobs. Medical certificate for such men not more than a month old may be demanded by EIC

C ELECTRICAL SAFETY

- 1 Provision of first aid for electrical shock.
- 2 Provision of CO2 type fire extinguisher
- 3 Provision of minimum 3 nos of sand buckets with moisture free, dry sand

D GENERAL

- 1 Provision of "No Smoking" notices prominently displayed.
- 2 Provision of proper barricading around pit / excavated pits
- 3 Provision of Reflective sign boards ahead of barricade / material heaps
- 4 Unfinished erected structures properly tied up with guy ropes , nuts / bolts of critical section tightened during heavy winds
- 5 Provision of min. 2 nos of 10 kg DCP type fire extinguisher.

EXEPTIONS & DEVIATIONS

Sl.No	Reference in Tender Document		Subject	Deviation
	Page No.	Clause No.		

Note: This should be submitted separately for commercial & Technical Bid sections

Signature of Bidder: _____

Name of the Bidder: _____

Company Seal: _____

Bidder & Organization Details		
Name of Bidder		Bidder Response
Vendor Code		
Type of Organisation & Entity Details	Status (Prop/HUF/Partnership/Ltd Co)	
	NAME OF Proprietor/Partners/Directors)	
	Office Address with Pin Code & Telephone Number	
	Factory Address with Pin Code & Telephone Number	
	E Mail ID and address	
	Name of Contact Person & Contact Number (Landline/Mobile)	
PAN NUMBER (copy to be uploaded)		
Whether registered under NSIC/MSME (certificates to be uploaded)	If NSIC - Certificate No. & validity	
	If MSE - Certificate No. & validity	
	Whether SC/ST under MSME (Certificate attached Yes/No)	
GST Details	GSTIN number/numbers	
	Whether Composition dealer under GST Act or not. If NO , provide following details: i,ii.	
	i. Month for which latest GSTR 1 has been filed. Attach acknowledgement thereof.	
	ii. Month for which latest GSTR 3B has been filed. Attach acknowledgement thereof	

(The following declarations should be typed on the letter head of the tenderer and should be duly signed by an authorized signatory clearly stating the name and designation of the signatory)

DECLARATION ON GST

Payment of GST and filing of GST Returns to enable Hindustan Petroleum Corporation Limited to avail Input Tax Credit (ITC) correctly

With reference to Payment of GST & filing GST Returns for availing Input Tax Credit (ITC) by HPCL as per GST provisions for the Invoices raised by us, we hereby declare as follows:

- (1) We have disclosed all the facts relating to our Firm / Company to M/s Hindustan Petroleum Corporation Limited.
- (2) We hereby declare that we have agreed to pay GST to the respective GST Authorities. In this connection, we hereby agree to furnish to you proof of payment of GST.
- (3) We hereby declare that we will file GST Returns as per GST provisions. In this connection, we hereby agree and undertake to furnish you proof of electronically filed GST Returns.
- (4) We hereby agree as under:-
 - i. We will be fully responsible for complying with the GST provisions to enable HPCL to take Input Tax Credit. In case, HPCL is not able to take Input Tax Credit due to any noncompliance/default/negligence of the seller of goods/service provider, the same shall be recovered from the pending bills/dues (including security deposit, BG etc.)
 - ii. In case of rejection of ITC by the concerned Tax Authority, for non filing of GST or non-payment of GST amount by us or for any other reasons attributable to us, we hereby agree to indemnify Hindustan Petroleum Corporation Limited in full against all the loss including consequences, liabilities of any kind whatsoever, directly arising from denial of ITC including interest and penalty.

We hereby agree and confirm that –

any breach of the above declaration shall be construed as breach of the terms and conditions w.r.t. GST and Hindustan Petroleum Corporation Limited shall be at liberty to take necessary action like Holiday listing (banning of Business dealings) and/or recovering of amounts mentioned in para 4 (ii) above, from:

- a) any of our Bank Guarantee executed in your favour, if any,
- b) Retention / Security Deposit paid for any of your work, if any or
- c) Other unpaid invoices, if any raised by us on Hindustan Petroleum Corporation Limited.

Place :

Signature

Name :

Date :

Designation :

Seal.

Arbitration Clause - GTC

14.1 All disputes and differences of whatsoever nature, whether existing or which shall at any time arise between the parties hereto touching or concerning the agreement, meaning, operation or effect thereof or to the rights and liabilities of the parties or arising out of or in relation thereto whether during or after completion of the contract or whether before or after determination, foreclosure, termination or breach of the agreement (other than those in respect of which the decision of any person is, by the contract, expressed to be final and binding) shall, after written notice by either party to the agreement to the other and to the Appointing Authority hereinafter mentioned, be referred for adjudication to the Sole Arbitrator to be appointed as hereinafter provided.

14.2 The appointing authority shall either himself act as Sole Arbitrator or nominate some officer or retired officer of Hindustan Petroleum Corporation Ltd. (referred to as owner or HPCL) or retired officer of Oil PSUs or retired Senior Central Govt. Officer to act as Sole Arbitrator to adjudicate the disputes and differences between the parties. The contractor/vendor shall not be entitled to raise any objection to the appointment of such officer of the owner as the Sole Arbitrator on the ground that the said officer is/was an officer and/or shareholder of the owner or that he/she has to deal or dealt with the matter to which the contract relates or that in the course of his/her duties as an officer of the owner, he/she has/had expressed views on all or any of the matters in dispute or difference.

14.3 In the event of the Arbitrator to whom the matter is referred to, does not accept the appointment, or is unable or unwilling to act or resigns or vacates his office for any reason whatsoever, the Appointing Authority aforesaid, shall nominate another officer or retired officer of the Owner or retired officer of Oil PSUs or retired Senior Central Govt. Officer to act as Arbitrator

14.4 Such Officer nominated as Sole Arbitrator shall be entitled to proceed with the arbitration from the stage at which it was left by his predecessor. It is expressly agreed between the parties that no person other than the Appointing Authority or an officer or retired officer of the Owner or retired officer of Oil PSUs or retired Senior Central Govt. Officer nominated by the Appointing Authority shall act as an Arbitrator.

14.5 The Award of the Sole Arbitrator shall be final and binding on the parties to the Agreement.

14.6 The work under the Contract shall, however, continue during the Arbitration proceedings and no payment due or payable to the concerned party shall be withheld (except to the extent disputed) on account of initiation, commencement or pendency of such proceedings.

14.7 The Arbitrator may give a composite or separate Award (s) in respect of each dispute or difference referred to him and may also make interim award(s), if necessary.

14.8 The fees of the Arbitrator and expenses of arbitration, if any, shall be borne equally by the parties unless the Sole Arbitrator otherwise directs in his award with reasons. The Award of the Sole Arbitrator shall be final and binding on both the parties.

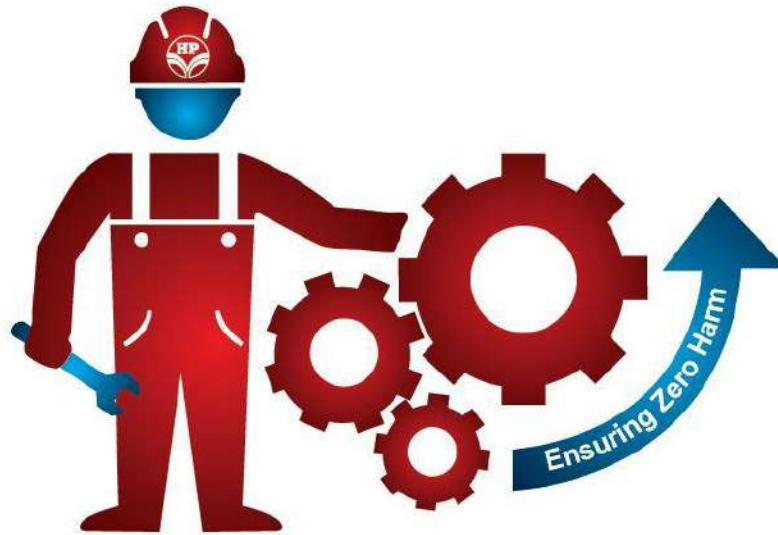
14.9 Subject to the aforesaid, the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification or re-enactment thereof and the rules made thereunder, shall apply to the Arbitration proceedings under this Clause.

14.10. The Contract shall be governed by and construed according to the laws in force in India. The Arbitration shall be held at Hyderabad and conducted in English language.

14.11 The appointing Authority is the Functional Director of Hindustan Petroleum Corporation Ltd.

CONDITION NO.5(B) AUDITS OF CONTRACT

This project is subject to inspection by various audit / vigilance agencies of Government of India / HPCL. If any inspection of works is carried out by such agencies contractor shall extend his full co-operation to these agencies in examining the records. On inspection by such agencies and in their inspection report, if it is pointed out that party has not carried out work according to guideline laid down in this tender documents and also if any recoveries in some items is pointed out therein, same shall be recovered from party's running bills / final bill. The item under dispute shall not be paid in full till inspection agency gives their no objection report.



HSE Policy for Construction



HINDUSTAN PETROLEUM CORPORATION LIMITED

E & P Department , Gresham House-2

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1.0 SCOPE

- 1.1 This document specifies guidelines on safe practices to be adhered to during construction activities in Marketing Installations of oil industry. However before commencing any job, specific hazards and its effects should be assessed and necessary corrective / preventive actions should be taken by all concerned. This document is intended only to supplement and not to replace or supersede the prevailing statutory requirements which shall be adhered to as applicable.
- 1.2 The scope of this document does not include the design aspects and quality checks during construction.
- 1.3 The purpose of this Policy is to create awareness among Project engineers, describe procedures and guidelines for ensuring safety during construction activity undertaken at Project sites. The implementation of this system will help in reducing the risks at work sites, thereby reducing possibility of any accident, fire, explosion, property damage and adverse effects on environment.
- 1.4 This Manual covers the Safety guidelines to be adopted at Project Sites both at Greenfield and Brownfield locations.
- 1.5 This Manual does not cover the design safety standards to be considered for any project.

2.0 REFERENCE

- 2.1 This document shall be read in conjunction with following:
 - General Conditions of Contract (GCC)
 - Special Condition of Contract (SCC)
 - Job Specifications
 - Any other conditions/enclosures which form part of the contract
- 2.2 For personnel protective equipment (PPE), OISD-STD-155 (Part-I & II) shall be referred to.
- 2.3 Project Sites may be either Greenfield or Brownfield locations. Work at Brownfield locations (working / operating locations) shall be governed by the Work Permit System stipulated in OISD-STD-105.
- 2.4 This policy summarizes some of the HSE requirements which are abstracted from OISD-GDN-192 (Safety Practices during Construction) and OISD-GDN-207 (Contractor Safety). However, it may be noted that all the provisions mentioned in the OISD Standards / Guidelines referred to above shall be adhered to. OISD-GDN-192 and OISD-GDN-207 have been attached with this document.
- 2.5 In case of any contradiction in provisions mentioned herein, applicability of the provisions shall be determined on the basis of the following hierarchy:
 - 2.5.1 Statutory Requirements
 - 2.5.2 OISD Standards / Guidelines / Recommended Practices
 - 2.5.3 Special requirements specified in the SCC
 - 2.5.4 Health Safety and Environment (HSE) Policy (this document)
 - 2.5.5 General Conditions of Contract (GCC)



3.0 DEFINITIONS AND ABBREVIATIONS

- a) **Hot Work:** An activity that can produce a spark or flame or other source of ignition having sufficient energy to cause ignition, where the potential for flammable vapours, gases, or dust exists. This includes all works, which produces spark, running of IC engine, breaking of concrete, use of ordinary torches, use of battery operated devices, etc.
- b) **Cold Work:** Cold Work is an activity that does not produce sufficient heat to ignite a flammable air-hydrocarbon mixture or a flammable substance.
- c) **Radiation Work:** Any activity that is carried with a source of ionizing radiation, which does not produce sufficient heat to ignite a flammable air-hydrocarbon mixture or a flammable substance.
- d) **Working at Height:** Any activity that is carried out at 2.0 meters & above on temporary structure, scaffolds or on a structure meant to do particular job safely.
- e) **Excavation:** Any job, which requires excavation/ digging of earth.
An **Excavation** is any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal. A **Trench** is a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, and the width (measured at the bottom) is not greater than 15 ft (4.6 m).
- f) **Confined Space:** It is an enclosure with known potential hazards and restricted means of entrance and exit. It is not meant for normal occupancy of people and is usually not well ventilated such as Underground tanks, vessels, boilers, storage tanks, large diameter piping, etc. The following shall be classified as confined space:
- Any excavation more than 1.50 M deep
 - Entry into floating roof tanks with roof at short leg or long leg
 - Entry in to Underground Tanks
 - Space located below ground level such as pits, drain channels etc.
- g) **Lower Explosive Limit (LEL):** LEL is the minimum concentration of a vapour in air (or other oxidant) below which propagation of flame does not occur on contact with an ignition source. This is usually expressed as volume percentage of the vapour in air.
- h) **Upper Explosive Limit (UEL):** UEL is the maximum concentration of a vapour in air (or other oxidant) above which propagation of flame does not occur on contact with and ignition source. This is usually expressed as a volume percentage of vapours in air.



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- i) **Pyrophoric Substance:** Substances that ignites spontaneously in air at ambient temperature. In hydrocarbon industry, iron sulphide is the most commonly observed pyrophoric substance and is called as pyrophoric iron.
- j) **Self-Contained Breathing Apparatus (SCBA):** It is a lifesaving personal protective apparatus consisting of a face mask: combined with a hose and source of fresh air generally in form of a cylinder of compressed air to be carried by bearer.
- k) **Work Permit issuer:** He is a designated officer authorized to issue work permit in case of following:
- Confined space working
 - Electrical Connection & welding clearance Permit
 - Height permit.

He signs & issues the permit for the particular job after receiving the recommendation from the job engineer for issuing the permit. The particular job engineer shall address & check all the checklist points of permit and then recommend the permit by signing.

- l) **Permit Receiver:** He is the designated person authorized by the Contractor to receive work permit.
- m) **Adequate, appropriate or suitable** are used to describe qualitatively or quantitatively the means or method used to protect the worker.
- n) **Brace:** A structural member that holds one point in a fixed position with respect to another point; bracing is a system of structural members designed to prevent distortion of a structure.
- o) **By hand:** The work is done without the help of a mechanized tool.
- p) **Competent Authority:** A statutory agency having the power to issue regulations, orders or other instructions having the force of law.
- q) **Competent person:** A person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill for the safe performance of the specific work. The competent authorities may define appropriate criteria for the designation of such persons and may determine the duties to be assigned to them.
- r) **Execution agency:** Any physical or legal person, having contractual obligation with the owner, and who employs one or more workers on a construction site
- s) **Owner:** Any physical or legal person for whom construction job is carried out. It shall also include owner's designated representative/consultant/nominee/agent, authorized from time to time to act for and on its behalf, for supervising/workplace or for escaping in case of danger.
- t) **Scaffold:** Any fixed, suspended or mobile temporary structure supporting workers and material or



to gain access to any such structure and which is not a lifting appliance as defined above.

- u) **Toe-board:** A barrier placed along the edge of a scaffold platform, runway, etc., and secured there to guard against the slipping of persons or the falling of material.
- v) **Worker:** Any person engaged in construction activity.
- w) **Workplace:** All places where workers need to be or to go by reason of their work.

4.0 REQUIREMENTS OF HEALTH, SAFETY & ENVIRONMENT (HSE) MANAGEMENT SYSTEM TO BE COMPLIED BY BIDDERS

4.1 MANAGEMENT RESPONSIBILITY

- 4.1.1 The contractor should have a documented HSE policy covering commitment of their organization to ensure health, safety and environment aspects in their field of operation.
- 4.1.2 The HSE management system of the contractor shall cover the HSE requirements for ensuring safe execution, including but not limited to what is specified in the scope of this document.
- 4.1.3 The Contractor shall ensure that the Health, Safety & Environment (HSE) requirements are clearly understood & faithfully implemented at all levels at the site.
- 4.1.4 The Contractor shall promote and develop consciousness for Safety, Health and Environment among all personnel working for the Contractor. Regular awareness programs, site meetings, Tool Box Talks shall be arranged on HSE activities to cover hazards involved in various operations during construction.
- 4.1.5 Arrange necessary first aid measures such as First Aid Box, trained personnel to administer First Aid, Stand-by vehicle in case of an emergency and install fire protection measures such as adequate number of steel buckets with sand and deploy adequate fire extinguishers as per the site requirement.
- 4.1.6 The Contractor shall implement a comprehensively planned and documented system for monitoring of the HSE requirements. This shall be submitted to HPCL/Owner for approval. The monitoring for implementation shall be done through regular inspections and compliance of the observations thereof. The Contractor shall get similar HSE systems implemented at his sub-contractor(s) work site/office. However, compliance of HSE requirements shall be the sole responsibility of the Contractor. Any review / approval by HPCL/Owner shall not absolve contractor of his responsibility / liability in



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relation to all HSE requirements.

4.1.6.1 Non-Conformance on HSE by Contractor (including his Sub-contractors) as brought out during review/audit by HPCL representatives shall be resolved forthwith by Contractor. Compliance report shall be provided to HPCL.

4.1.6.2 The Contractor shall ensure participation of his Resident Engineer / Site-in-Charge in the Safety Committee / HSE Committee meetings arranged by HPCL. The compliance of any observations shall be ensured at the earliest.

4.1.6.3 The Contractor shall consistently adhere to all provisions of HSE requirements. In case of non-compliance or continuous failure in implementation of any of the HSE provisions; HPCL may impose stoppage of work. In case stoppage of work is imposed by HPCL, any Cost & Time implications arising out of the duration of the stoppage shall be entirely to the account of the contractor and no claim whatsoever in this regard shall be tenable. The decision of imposing stoppage work, its duration or imposing a monetary penalty (in line with the provisions mentioned elsewhere in this document) shall rest with HPCL & shall be binding on the Contractor.

4.1.6.4 All fatal accidents, incidents involving injuries or loss of property and near misses at the worksite shall be investigated by a team of Contractor's senior personnel for root causes, with recommendations regarding corrective and preventive measures. Findings shall be documented and actions taken to avoid recurrences shall be communicated to HPCL. HPCL shall have the liberty to independently investigate such incidents and Contractor shall extend all necessary help and co-operation in this regard.

4.2 HOUSE KEEPING

4.2.1 Contractor shall ensure that a high degree of housekeeping is maintained and shall ensure inter alia the followings wherever applicable:

- a. All surplus earth and debris is removed/disposed of from the working areas to identified location(s).
- b. Unused/Surplus Cables, steel items and steel scrap lying scattered at different places within the working areas are removed to identified location(s).
- c. All wooden scrap, empty wooden cable drums and other combustible packing materials shall be removed from work place to identified location(s).
- d. Roads shall be kept clear and materials like pipes, steel, sand boulders, concrete, chips and bricks etc. shall not be allowed on the roads to obstruct free movement of men, machinery and vehicles.
- e. Fabricated steel structural, pipes & piping materials shall be stacked properly



for erection.

- f. Water logging on roads shall not be allowed.
- g. No parking of trucks / trolleys, cranes and trailers etc. shall be allowed on roads which may obstruct the traffic movement.
- h. Utmost care shall be taken to ensure overall cleanliness and proper upkeep of the working areas.
- i. Trucks carrying sand, earth and pulverized materials etc. shall be covered while moving within the premises.
- j. Only properly designed steel scaffolding materials to be used for working at heights more than 3.0 M. Double scaffolding using wooden ballis may be allowed for working at height less than 3.0 M, with prior permission of Engineer-in-charge.

5.0 SAFETY REQUIREMENT AT CONSTRUCTION WORK

A fulltime / dedicated Safety Officer should be assigned, where more than 100 workers are employed at site. For smaller jobs, the supervisor should assume the additional responsibility of safety officer.

Duties & responsibilities of the contractor's Supervisor / Safety Officer should include the following:

- i. To ensure strict compliance with work permit system by carrying out work only with appropriate work permits and after ensuring that all safety precautions / conditions in the permit are complied with and closing the same after job completion.
- ii. To ensure that required guards and standard personal protective equipment are provided, used, and properly maintained including contingency requirement.
- iii. To ensure inspection, tested, certification and maintenance of all tools and ensure removal of defective tools.
- iv. To plan the workload and assign workers to jobs in commensuration with their qualification, experience and state of health.
- v. To ensure that all the preventive measures for identified hazards (e.g. Job Safety Analysis, Job Hazard Analysis, HIRA, etc.) are in place and communicated to workers.
- vi. To take immediate corrective action against the violation of safety rules observed or reported.
- vii. To ensure that the workers likely to be exposed to hazardous chemicals/materials have access to appropriate Material Safety Data Sheets (MSDS), and provide necessary mitigation measures.
- viii. To ensure that appropriate warning signboards or tags are displayed.



- ix. To ensure that all workers have proper training for their job assignments, including use of appropriate PPE, first aid and firefighting equipment.
- x. To ensure that only medically fit person shall be engaged in work and also ensure that sick / or injured workers during course of work should receive timely and appropriate first aid and/or medical attention.
- xi. To report each incident and/or injury in accordance with established procedures and assist in investigation.
- xii. Maintain Daily HSE observation log book at site.
- xiii. Conduct Tool Box talks along with Site Engineers/ supervisors.
- xiv. Maintain the published HSE literature, HSE regulations, codes and other communications. Advise management of compliance and conditions requiring attention.

Contract workers

The duties & responsibilities of the contractor worker should include the following:

- i. To perform work safely as per the job requirement and instructions.
 - ii. To inform all concerned regarding unsafe conditions / and unsafe acts.
 - iii. To wear PPEs as stipulated and necessary for the job.
 - iv. To inform promptly to their supervisor regarding all work related incidents resulting in personal injury, illness and/or property damage.
 - v. To take all necessary and appropriate safety precautions to protect themselves, other personnel and the environment.
- This specification deals with the safety and protection to be observed in during Construction. These shall be adhered to along with all related statutory requirements/obligations including Governmental byelaws, codes, regulations of local or central authorities related to the construction work.
 - In case of complicated work like deep excavation, intricate shuttering and formwork, excavation in loose soil and below water table, stacking of excavated earth etc., work plan with necessary drawings and documents have to be prepared by the Contractor and approved by the Site Engineer (Owner).
 - All openings and other areas likely to pose danger to workers should be clearly indicated.
 - Workers & Supervisors should wear safety helmet, safety shoes and other requisite Personal Protective Equipment according to job & site requirement. They should be trained to use personal protective equipment.
 - Never use solvents, alkalis and other oils to clean the skin.
 - Lift the load with back straight and knees bent as far as possible. Seek the help in case of heavy load.
 - Ensure the usage of correct and tested tools & tackles. Don't allow make shift tools and tackles.



- No loose clothing should be allowed while working near rotating equipment or working at heights.

5.1 MEANS OF ACCESS AND EGRESS

Adequate and safe means of access (at least two, differently located) to and egress from all workplaces should be provided. Same should be displayed and maintained.

5.2 PRECAUTIONS AGAINST THE FALL OF MATERIALS & PERSONS AND COLLAPSE OF STRUCTURES

- 5.2.1 Precautions should be taken such as the provision of fencing, look-out men or barriers to protect any person against injury by the fall of materials, or tools or equipment being raised or lowered.
- 5.2.2 Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.
- 5.2.3 All openings through which workers are liable to fall should be kept effectively covered or fenced and displayed prominently.
- 5.2.4 As far as practicable, guardrails and toe-boards should be provided to protect workers from falling from elevated workplaces.

5.3 PREVENTION OF UNAUTHORISED ENTRY

- 5.3.1 Construction sites located in built-up areas and alongside vehicular and pedestrian traffic routes should be fenced to prevent the entry of un-authorized persons.
- 5.3.2 Visitors should not be allowed access to construction sites unless accompanied by or authorized by a competent person and provided with the appropriate protective equipment.



5.4 EXCAVATION

- 5.4.1 No excavation or earth work below the foundation level of an adjoining building shall be taken up unless adequate steps are taken to prevent damage to the existing structure or fall of any part.
- 5.4.2 Every accessible part of an excavation, pit or opening in the ground into which there is a danger of persons falling shall be suitably cordoned off up to a height of one metre suitably placed from the edge of the excavation as far as practicable. Red tape & warning boards shall be used.
- 5.4.3 No material or load shall be placed or stacked near the edge of the excavation or opening in the ground. The excavated material shall not be placed within 1.5 m of the trench or half of the depth of the trench, whichever is more.
- 5.4.4 Cutting shall be done from top to bottom. No undercutting of sides of excavation shall be allowed.
- 5.4.5 Materials shall not be dumped against existing walls or partition to a height that may endanger the stability of the walls.
- 5.4.6 While withdrawing piled materials like loose earth, crushed stone, sand, etc. from the stock piles, no overhanging shall be allowed to be formed in the existing dump.
- 5.4.7 No material on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or public or any other agency at work.
- 5.4.8 All excavation work should be planned and the method of excavation and the type of support work required should be decided considering the following:
- the stability of the ground;
 - the excavation will not affect adjoining buildings, structures or roadways;
 - to prevent hazard, the gas, water, electrical and other public utilities should be shut off or disconnected, if necessary;
 - presence of underground pipes, cable conductors, etc.,
 - the position of culvert/bridges, temporary roads and spoil heaps should be determined;
- 5.4.9 Before digging begins on site, all excavation work should be planned and the method of excavation and the type of support work required decided.
- 5.4.10 All excavation work should be supervised.
- 5.4.11 Sites of excavations should be thoroughly inspected:
- daily, prior to each shift and after interruption in work of more than one day;
 - after every blasting operation;



- after an unexpected fall of ground;
- after substantial damage to supports;
- after a heavy rain, frost or snow;
- When boulder formations are encountered.

5.4.12 Safe angle of repose while excavating trenches exceeding 1.5 m depth up to 3.0 m should be maintained. Based on site conditions, provide proper slope, usually 45°, and suitable bench of 0.5 m width at every 1.5 m depth of excavation in all soils except hard rock or provide proper shoring and strutting to prevent cave-in or slides.

5.4.13 As far as possible, excavated earth should not be placed within one meter of the edge of the trench or depth of trench whichever is greater.

5.4.14 Don't allow vehicles to operate too close to excavated area. Maintain at-least 2 m distance from edge of excavation. No load, plant or equipment should be placed or moved near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.

5.4.15 Adequately anchored stop blocks and barriers should be provided to prevent vehicles being driven into the excavation. Heavy vehicles should not be allowed near the excavation unless the support work has been specially designed to permit it.

5.4.16 If an excavation is likely to affect the security of a structure on which persons are working, precautions should be taken to protect the structure from collapse.

5.4.17 Barricade at 1 m height (with red & white band/self-glowing caution board) should be provided for excavations beyond 1.5 m depth. Provide two entries/exits for such excavation.

5.4.18 Necessary precautions should be taken for underground utility lines like cables, sewers etc. and necessary approvals/clearances from the concerned authorities shall be obtained before commencement of the excavation job.

5.4.19 Water shall be pumped / bailed out, if any accumulates in the trench. Necessary precautions should be taken to prevent entry of surface water in trenches.

5.4.20 During rains, the soil becomes loose. Take additional precaution against collapse of side wall.

5.4.21 In hazardous areas, air should be tested to ascertain its quality. No one should be allowed entry till it is suitable for breathing.

5.4.22 In case of mechanized excavation, precaution shall be taken to not to allow anybody to come within one meter of extreme reach of the mechanical shovel. The mechanized excavator shall be operated by a well-trained experienced operator. When not in operation, the



machine shall be kept on firm levelled ground with mechanical shovel resting on ground. Wheel or belt shall be suitably jammed to prevent any accidental movement of the machine. Suitable precautions as per manufacturer guidelines should be taken for dozers, graders and other heavy machines.

5.4.23 In case of blasting, IS: 4081-1986 & Indian Explosive Act and rules for storage, handling and carrying of explosive materials and execution of blasting operation shall be strictly adhered to.

5.5 SCAFFOLDING, LADDERS & SHUTTERING

- 5.5.1 For all work that cannot be done from the ground level or from part of any permanent structure or from other available means of support, soundly constructed scaffoldings of adequate strength shall be used as a safe means of access to places of work.
- 5.5.2 All scaffolding shall be securely supported or suspended and wherever necessary be properly braced to ensure stability.
- 5.5.3 All working platforms and stages from which workers are liable to fall shall be of adequate width depending on the type of work done and closely boarded and planked.
- 5.5.4 Every ladder shall be securely fixed at top and bottom. A ladder more than 5 m long shall have a prop.
- 5.5.5 No portable single ladder shall be over 8 m in length.
- 5.5.6 Unfinished scaffolding which is under construction shall be prominently marked as unsafe and any access points shall be closed.
- 5.5.7 Shuttering
The above remarks shall be applicable for shuttering also. Shuttering, particularly for slabs, should be treated as a scaffold. Unfinished shuttering should be marked as dangerous. Similarly the finished form work should be adequately supported & care being taken to avoid trap door effect.
- 5.5.8 Metal as material of construction
 - I. A scaffold should be provided and maintained or other equally safe and suitable provision should be made where work cannot safely be done on or from the ground or from part of a building or other permanent structure.
 - II. Scaffolds should be provided with safe means of access, such as stairs, ladders or ramps. Ladders should be secured against inadvertent movement.



- III. Every scaffold should be constructed, erected and maintained so as to prevent collapse or accidental displacement when in use.
- IV. Every scaffold and part thereof should be constructed :
 - in such a way so as not to cause hazards for workers during erection and dismantling;
 - in such a way so as guard rails and other protective devices, platforms, ladders, stairs or ramps can be easily put together;
 - With sound material and of requisite size and strength for the purpose for which it is to be used and maintained in a proper condition.
- V. Boards and planks used for scaffolds should be protected against splitting.
- VI. Materials used in the construction of scaffolds should be stored under good conditions and apart from any material unsuitable for scaffolds.
- VII. Couplers should not cause deformation in tubes. Couplers should be made of drop forged steel or equivalent material.
- VIII. Tubes should be free from cracks, splits and excessive corrosion and be straight to the eye, and tube ends cut cleanly square with the tube axis.
- IX. Scaffolds should be designed for their maximum load as per relevant code.
- X. Scaffolds should be adequately braced.
- XI. Scaffolds which are not designed to be independent should be rigidly connected to the building at designated vertical and horizontal places.
- XII. A scaffold should never extend above the highest anchorage to an extent which might endanger its stability and strength.
- XIII. Loose bricks, drainpipes, chimney-pots or other unsuitable material should not be used for the construction or support of any part of a scaffold.
- XIV. Scaffolds should be inspected and certified:
 - before being taken into use;
 - at periodic intervals thereafter as prescribed for different types of scaffolds;



- After any alteration, interruption in use, exposure to weather or seismic conditions or any other occurrence likely to have affected their strength or stability.
- XV. Inspection should more particularly ascertain that:
- the scaffold is of suitable type and adequate for the job;
 - materials used in its construction are sound and of sufficient strength;
 - it is of sound construction and stable;
 - That the required safeguards are in position.
- XVI. A scaffold should not be erected, substantially altered or dismantled except by or under the supervision.
- XVII. Every scaffold should be maintained in good and proper condition, and every part should be kept fixed or secured so that no part can be displaced in consequence of normal use.
- XVIII. If out-rigger scaffolding is to be used, it should be specifically designed and inspected before putting in use.

5.5.9 Lifting appliances on scaffolds

I. When a lifting appliance is to be used on a scaffold:

- the parts of the scaffold should be carefully inspected to determine the additional strengthening and other safety measures required;
- i. any movement of the scaffold members should be prevented;
- If practicable, the uprights should be rigidly connected to a solid part of the building at the place where the lifting appliance is erected.

5.5.10 Prefabricated scaffolds

- I. In the case of prefabricated scaffold systems, the instructions provided by the manufacturers or suppliers should be strictly adhered to. Prefabricated scaffolds should have adequate arrangements for fixing bracing.



- II. Frames of different types should not be intermingled in a single scaffold.
- III. Scaffolding shall be erected on firm and level ground.
- IV. All members of metal scaffolding shall be checked periodically to screen out defective / rusted members. All joints should be properly lubricated for easy tightening.
- V. Entry to scaffolding should be restricted.
- VI. Erection, alteration and removal shall be done under supervision of experienced personnel.
- VII. Use of barrels, boxes, loose bricks etc., for supporting platform shall not be permitted.
- VIII. Each supporting member of platform shall be securely fastened and braced
- IX. Where planks are butt-joined, two parallel putlogs shall be used, not more than 100mm apart, to give support to each plank.
- X. Platform plank shall not project beyond its end support to a distance exceeding 4 times the thickness of plank, unless it is effectively secured to prevent tipping. Cantilever planks should be avoided.
- XI. The platform edges shall be provided with 150mm high toe board to eliminate hazards of tools or other objects falling from platform.
- XII. Erect ladders in the “four up-one out position”
- XIII. Lash ladder securely with the structure.
- XIV. Using non-slip devices, such as, rubber shoes or pointed steel ferules at the ladder foot, rubber wheels at ladder top, fixing wooden battens, cleats etc.
- XV. When ladder is used for climbing over a platform, the ladder must be of sufficient length, to extend at least one meter above the platform, when erected against the platform in “four up-one out position.”
- XVI. Portable ladders shall be used for heights not more than 4 m. Above 4 m flights, fixed ladders shall be provided with at least 600 mm landings at every 6 m or less.
- XVII. The width of ladder shall not be less than 300 mm and rungs shall be spaced not more than 300 mm.
- XVIII. Every platform and means of access shall be kept free from obstruction.
- XIX. If grease, mud, gravel, mortar etc., fall on platform or scaffolds, these shall be removed immediately to avoid slippage.



- XX. Workers shall not be allowed to work on scaffolds during storms or high wind. After heavy rain or storms, scaffolds shall be inspected before reuse.
- XXI. Don't overload the scaffolding. Remove excess material and scrap immediately.
- XXII. Dismantling of scaffolds shall be done in a pre-planned sequential manner.

5.5.11 Suspended scaffolds/boatswain's chair

- I. In addition to the requirements for scaffolds in general as regards soundness, stability and protection against the risk of falls, suspended scaffolds should meet the following specific requirements.
 - platforms should be designed and built with dimensions that are compatible with the stability of the structure as a whole, especially the length;
 - the number or anchorage should be compatible with the dimensions of the platform;
 - the safety of workers should be safeguarded by an extra rope having a point of attachment independent of the anchorage arrangements of the scaffold;
 - the anchorage and other elements of support of the scaffold should be designed and built in such a way as to ensure sufficient strength;
 - the ropes, winches, pulleys or pulley blocks should be designed, assembled, used and maintained according to the requirements established for lifting gear adapted to the lifting of persons according to national laws and regulations;
 - Before use, the whole structure should be checked by a competent person.

5.6 PERSONNEL PROTECTION

- 5.6.1 Those engaged in white washing and mixing or stacking of cement bags or any materials which is injurious to the eyes, shall be provided with protective goggles.
- 5.6.2 Suitable personnel protective equipment (PPE) such as safety helmets, safety boots, safety belts, gloves for welders, clear glass safety goggles etc., as considered adequate by the Site Engineer have to be made available for the use of persons employed at the site of work and maintained in condition suitable for immediate use and Contractor shall take steps to ensure proper use of PPE by the workers.