

HINDALCO

PROJECT SAFETY MANAGEMENT STANDARD

HINDALCO INDUSTRIES LIMITED



Project Safety Management Standard

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1.0	Introduction:
	<p>Hindalco's commitment to Health and Safety of our employees, associates and all stakeholders is more than just a series of policies and programs. The commitment lives at the core of our culture and guide every decision that we make. Project construction worker safety and health continues to be an important concern for Hindalco since construction industry has consistently experienced higher injury and illness rates compared to manufacturing and mining.</p> <p>Improvement in project safety management practices is needed to lower the level of risk and improve worker safety and health performance. There is a great deal of knowledge of specific successful management practices with Hindalco, from past project experiences, which can be used to enhance construction safety and health performance of the projects. Hindalco wants to practice these successful management practices or strategies to prevent injuries, illnesses, and fatalities at their ongoing project sites. These are often "above and beyond" regulatory compliance.</p> <p>Instead of re-inventing the wheel, contractors, who are interested in improving their safety performance, can implement proven best practices narrated in this during different project phases (e.g. Design or Construction) within their projects, thereby improving their project safety and health performance. Hindalco shall provide all kind of help in this endeavour.</p>
1.1	Purpose
	The purpose of the Project Safety Management standard is to provide comprehensive coverage of best practices for all phases of a construction project from project planning, design, project start-up, construction, commissioning, and closeout. The standard's scope is limited to safety management, administration, and programs in construction.
1.2	Scope
	The standard spells out safety expectations from Hindalco Project management team, contractors & subcontractors including all tiers of contractors as requirements stipulated are applicable to all phases of project implementation till commissioning of plant / facilities and completely handing it over to operation team
1.3	Regulatory Reference
	All regulatory requirements referenced in this are based on Building and other Construction Workers (BOCW) act for green field projects and The Factories Act for brown field projects. However, the contains several safety management best practices learned during due course from various contractors which often go beyond the regulatory requirements. Entire Hindalco project team and all contractors shall note it. It may also be noted that the materials available in this are intended to provide general information about the subject matter covered. They are not meant to provide legal advice.

1.4	References	
	<ul style="list-style-type: none"> a. Building and other Construction Workers (BOCW) Act b. The Factories Act and Rules framed there under c. Hindalco Permit to Work and Permit formats d. Hindalco Incident and Accident Investigation e. Hindalco Electrical Safety f. Hindalco Hot Work Safety g. Hindalco Fire Safety h. Hindalco Road and Vehicular Safety and guideline made there under <ul style="list-style-type: none"> I. Passenger vehicle safety guideline II. Mobile cranes and & specialised equipment and vehicle hiring rules. i. Hindalco Hazard Identification & Risk Assessment (HIRA) 	
1.5	Definitions, meanings and abbreviations	
	Work Group	
	Permit Applicant (PA)	The official, either from Hindalco or Contractors, who applies for permission to conduct job in prescribed format to Area Owner (AO). He will also act or nominate a Permit Holder when the work is under way.
	Area Owner (AO)	The shift in-charge or a designate or package owner with responsibility for an area or project package. He is directly responsible for the control of work in that area. He is the person responsible for the Endorse or Validate and Re-validate the permits each shift, and finally for Cancelling Permits.
	Approving Authority (AA)	The Hindalco official who has overall responsibility for the project or area or his/her designate who is authorized to approve the permit and to agree the work description, validity period for the permit, preparations and review / initiate / add precautions.
	Accident	An event or incident with injury.
	Incident	An event without an injury
	Near Miss	An incident which may cause accident of any severity
	Reportable Accident	
	Restricted Work Case	The person is temporarily assigned to another job, usually of a less demanding physical nature, until recovery allows them to return to his/her normal work.



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	First Aid Case	First Case includes managing and caring for a patient for the purpose of combating disease or disorder. It normally involves just one visit to industrial health physician.
	Medical Treatment case	Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder. It normally involves more than one visit to industrial health physician.
	Recordable Injuries	
	Loss Time Injury	The injured person is absent from work for one or more scheduled workdays after the day of the accident
	Loss Time Injury Frequency Rate (LTIFR)	$(\text{Total No of Reportable Injuries} \times 1000000) / \text{Total Man hours Worked}$
	Loss Time Injury Severity Rate (LTISR)	$(\text{Total No of Manday lost} \times 1000000) / \text{Total Man hour Worked}$
	Recordable Injury Frequency Rate (TRIFR)	$(\text{Total No of Recordable Injuries} \times 1000000) / \text{Total Man hours Worked}$



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2	Procedure for implementation of requirements of the
2.1	General Safety Rules for the Hindalco Project Sites
	<ul style="list-style-type: none"> • See and Be Seen: <ul style="list-style-type: none"> ○ All the persons entering inside the project site shall be wearing high visibility vest, Safety shoes with fluorescent strips, safety helmet with visible strips pasted on it. In case of special uniform to be worn by certain trades like electrician's wear arc flash suits, both trousers / shirts shall have minimum two strips all around stitched. ○ All the passenger vehicles (Motor Bike / four-wheeler) shall have Day Running Light (DRL) on. Visibility of motor bike and four-wheeler shall be increased / reinforced by additional fluorescent strips pasted in addition to fluorescent lights / feature legally required. ○ For earthmovers, excavators, cranes where counterweight / back portion of the vehicle swings, edges of the counterweight / back portion of the vehicle shall be pasted with fluorescent strips. ○ Illumination in the work area shall be adequate
	<ul style="list-style-type: none"> • All the incidents / accidents must be captured and reported to Hindalco site management as soon as possible, but not later than four hours after the incident / accident
	<ul style="list-style-type: none"> • All the incidents / accidents must be investigated using structured techniques like Failure Mode Effect Analysis (FMEA) or Why-Why analysis etc. Category 5 & 4 accident or near miss having potential for category 5 & 4 injury accident shall be investigated by "TapRoot". Hindalco
	<ul style="list-style-type: none"> • All vehicles, commercials or passenger, shall ply at speed not more than 20 Km / Hour
	<ul style="list-style-type: none"> • All passenger vehicles shall have three-point retractable seat belt for each seat.
	<ul style="list-style-type: none"> • Age of heavy equipment, machinery or commercial vehicles brought at project site shall not be more than 10 years.
	<ul style="list-style-type: none"> • Operation and Maintenance Manual of heavy equipment, machinery or commercial vehicle brought at project site shall be available with that equipment, machinery or vehicles. All the inspections, checks and maintenance mandated by operation and maintenance manual shall be adhered with.
	<ul style="list-style-type: none"> • Age of passenger vehicles brought at project site shall not be more than 5 years.
	<ul style="list-style-type: none"> • Thorough hazard identification, risk assessment and identification of controls followed by permit to work is necessary to carry out any work at Hindalco project site.

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	<p>Vehicles and Pedestrian Entry and exit points</p> <ul style="list-style-type: none"> Separate entry and exit points should be established for heavy machinery/vehicle access, to strengthen pedestrian safety at high traffic points.
	<ul style="list-style-type: none"> Environmental conditions or Extreme weather conditions can cause serious safety hazards. On-site emergency plan should provide clear guidelines for workers who need to stop work in the event of natural disaster, severe environmental conditions or other emergency circumstances.
	<ul style="list-style-type: none"> Conduct daily site inspections and safety meetings Jobsites should be inspected before and after each workday to address any safety concerns such as tools left lying around or damaged equipment. Jobsites should also be inspected throughout the day to identify any potential hazards and monitor workers to make sure they are working safely. Hold a brief safety meeting before work begins each day to go over what tasks are scheduled to be performed along with the safety procedures to be followed. Be sure to address any concerns or issues and acknowledge the good practices observed from the prior day.
2.2	<p>SELECTION OF CONTRACTORS</p> <p>Contractors in this chapter refer to general contractors, subcontractors, and sub-tier contractors.</p>
	<p>Prequalification based on safety background.</p>
	<p>The selection of contractors should be based on past safety performance. This is to be done using a well-established safety management best practice called contractor safety pre-qualification.</p>
	<p>To assess the past safety performance of the contractors and rate them on safety front, the questionnaire provided in Annexure II of Hindalco Contractor Safety Procedure shall be used. Attached as Annexure-A: Pre-Qualification Criteria Checklist</p>
	<p>For application of this annexure, if the cost of contract is more than 20 Crores, then contractor shall be considered as major or else minor. The primary rationale behind this practice is to establish and use a pre-qualification process to select contractors who are likely to complete a construction project safely.</p>
	<p>For the pre-qualification process, Hindalco is required to obtain the safety performance information from contractors with the help of a form typically called “Pre-qualification Safety Questionnaire”, with predefined marks for each field. It is very simple and straightforward to fill.</p>
	<p>To avoid any errors, omission, or misrepresentation about safety performance metrics, it is always better to verify the information provided by the contractors by requiring them to submit support documentation. Typically, the following documentation, for each of the last three calendar years, is requested from the contractors as part of the pre-qualification process.</p>

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	<p>The process is designed to quantify and hence Hindalco shall get marks scored by each contractor at the end of this exercise. If a contractor scores more than 85% marks in this exercise, shall be considered acceptable by default. The contractor scoring marks less than 85% but more than 60% will be considered acceptable with rider that they shall improve their score within three months. The contractors scoring less than 60% will be considered non-acceptable.</p>
	<p>The assessment of the contractors based on the safety metrics is the most critical step in the selection process because it is identifying a safe contractor, whom it will allow to bid or perform work on Hindalco projects. Panelled Contractors List shall be prepared post this exercise.</p>
	<p>Enquiry shall be floated to contractors from Panelled contractors list.</p>
	<p>Setting up Hindalco's Safety Expectation</p>
	<p>Job specification(s) shall include entire safety expectations of Hindalco for the job it is employing contractor. It is to ensure Hindalco to clearly communicate their safety expectations for the project, so that contractors can allocate resources appropriate to the expectations of Hindalco and properly arrive at the cost.</p>
	<p>Pre-bid meeting</p> <p>There remains small but finite possibility that management of contractor has not completely / explicitly understood the safety expectation of Hindalco after going through "Job Specification". Thus, pre-bid meeting is essential to ensure that contractor has understood the safety expectations of Hindalco in totality, before quoting for the project / job.</p>
	<p>As a minimum, following officials shall be available for pre-bid meeting.</p> <p>From Hindalco side</p> <ul style="list-style-type: none"> • Representative of commercial / contracting department • Representative of MCoE • Representative from site project management • Safety representative from corporate and/or project site <p>From Contractor's side</p> <ul style="list-style-type: none"> • Proprietor or his authorised representative capable taking financial decisions • Safety Professional who can understand safety requirements, their commercial implications and can explain it to proprietor or authorised representative.
2.3	<p>On-boarding of contractor</p>
	<p>Following shall be ensured during the contractor's manpower, gadget, equipment and machinery mobilisation at Hindalco project team at site.</p>
2.3.1	<p>Checking, Inspection and testing of the contractor's gadgets and equipment:</p>

	<ul style="list-style-type: none"> The contractor is expected to submit list of all the gadgets, equipment, tools, tackles, machines and vehicles at the Hindalco Project site. Fulfill the requirement mentioned in Health and Safety guidelines for Contractors (Annexure-E) Hindalco Subject Matter Experts (SMEs) shall inspect / check all the gadgets / equipment at site entrance itself. Example: Electrical SME shall check electrical gadgets for electrical fitness, internal material handling SME shall check cranes, lifting tools and tackles etc. SMEs shall also ensure that gadgets/equipment brought by contractor are complying with applicable legal requirements of the state. Example: Certificate issued for the fitness/healthiness of lifting slings by competent persons recognized by factories inspectorate of the state Colour coded Label as per colour of the quarter of inspection shall be pasted along with test/inspection finding once testing/inspection is done.
2.3.2	Manpower & Legal Compliance verification / Gate Pass preparation
	1. Legal compliance related with labour laws by HR. Collection of essential documents etc.
	2. Documentation for creating entry passes
	3. Checking medical and physical fitness of the contractor manpower: All persons brought by the contractor must undertake medical and physical fitness tests commensurate with the job they are going to do. Example crane driver/operation shall have to undergo colour blindness test and welder/fitter/cutter etc. shall have to undergo acrophobia/height phobia tests.
	4. All workmen of contractor's must be able to read and understand safety warnings and signages clearly. This must be ensured as minimum qualifying criteria for hiring any workmen. Hiring of workmen for jobs which requires specific skills for example welding, electrical works, rigging, driving LMVs or HMTVs, Operating cranes / MEWPs etc. must have valid applicable statutory license, certificates and passes as per HIL site safety management guidelines.
2.3.3	Temporary Office setup and portable cabins
	<p>Temporary office set-up: The absence of proper facilities on a project site can lead to a domino effect of problems. Workers face discomfort and inconvenience, impacting morale and productivity. Delays can occur due to logistical issues like finding restrooms or designated eating areas. Safety hazards may arise if proper storage for tools and equipment is lacking.</p> <p>However, a well-equipped temporary office created at project office or portable cabin acts as a set up. It transforms a construction site into a functional and organized workspace. By providing essential features, temporary offices or portable cabins contribute significantly to:</p> <ul style="list-style-type: none"> Improved worker comfort and satisfaction Enhanced productivity and efficiency

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- Increased safety and security
- Streamlined operations and logistics

Portable cabins, also known as porta-cabins, are temporary structures that serve a multitude of purposes on construction sites. They provide essential facilities for workers, from basic amenities like restrooms and break rooms to dedicated office spaces and storage areas.

Checklist for ensuring safety at temporary office set up or porta-cabin.

SN		Yes	No	NA	Remarks	
A	Electrical					
1	Power supply to Porta-Cabin shall be provided through main distribution board rigidly fixed and equipped with isolation switch, miniature circuit breaker (MCB) and Residual circuit device (RCD / RCCB / ELCB) rated for 30 mA fault current.					
2	Each porta-cabin shall be earthed by two independent earth circuits leading two independent earth pits.					
3	Each temporary office structure shall be earthed as many as required depending on size but not less than two independent earth circuits leading two independent earth pits.					
4	Electrical Circuits are clearly identified electrical equipment used are rated for indoor as well as outdoor use.					
5	All permanent wires shall be rated for minimum 415 V / 25 Amp rating					
6	Flexible cords are not used as permanent wiring except for individual al appliances like PC, AC etc.					
7	Flexible cords are maintained in good condition without splices, deterioration or damage					
8	Three phase / high amperage electrical appliances like refrigerator, water heater, oven etc. shall be provided with independent circuits with switch and independent RCD rated for 30 mA fault current					
9	Access to electrical switches and circuit brakers is clear and not obstructed					
10	All the wiring is reaching completely into the electrical panel / JB and terminated through gland or properly secured					

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11	Flexible wires / cords are safely routed so as not create tripping hazard					
12	Power switch outside porta-cabin to ensure no power is on when it is not manned					
B	Fire Prevention and Fighting Arrangement					
1	All fire extinguishers used (except for protecting computers, electronics/electrical gadgets and equipment) are stored pressure multipurpose type i.e. suitable to extinguish all types of fires.					
2	At least one fire extinguisher is deployed per 100 Sq. meter area					
3	Fire Extinguishers are inspected once a month by competent person					
4	Smoke detector(s) are installed and are in working condition					
5	Smoke detectors are inspected once a month by competent person					
6	Fire & Safety equipment in temporary office / porta-cabin are unobstructed and visible					
7	Interior (walls, floor and ceiling) is made of non-combustible material					
8	Porta-cabin is provided with two escape doors and temporary office with two distinct escape routes with exists					
9	Occupants are trained on use of fire extinguishers and escape routes					
10	Fire mock drills are conducted at least once for temporary office.					
C	Miscellaneous					
1	Are rodent and paste control devices placed and in perfect working condition					
2	Wild vegetation around temporary office / porta-cabin(s) are removed at least up to distance of 10 meters					
3	Housekeeping around is neat and clean and dry & wet store & disposable arrangement					
4	No gas cylinder (except one meant for kitchen) / paint drums is stored inside temporary office or porta-cabin					
5	Warning signs and safety posters appropriate to sites are displayed					

	<p>construction workers can be trained onsite. Post completion of project this facility will be handed over to operations team for their training.</p> <ul style="list-style-type: none"> Induction and site-specific training by Hindalco safety professional at site: <p>Entire manpower brought by contractor shall undergo site specific induction training. In this training, safety professional shall explain about site specific safety rules, housekeeping, facilities available at site, laying of electrical cable and connections, PPE donning, Permit to Work (PTW), incident reporting procedures etc.</p>
2.3.6	<p>Kick-Off Meeting with all contractor's senior management</p> <p>Kick-off meeting should cover at least following:</p> <ul style="list-style-type: none"> Formal welcome Re-emphasis of safety expectations of Hindalco To know whose who Establishing channels of communication / identification counterparts <p>Provide system access / Wi-Fi / phones etc.</p>
2.3.7	<p>Adherence to Contractor safety Management</p>
	Job / Role specific safety training by Field Contract Administrator (FCA) or representative of package owner(s)
	Make the contract management team aware of HIL CSM and relevant check sheets for contractor's performance assessment.
	Training Plan for all Contractors' site incharges, safety officers etc. for all Corporate Safety s and compliances.
2.4	<p>Monitoring Project Work for Safety</p>
2.4.1	<p>Permit To Work System & LOTOTO</p>
	For any job to be carried out at Hindalco project site, officials of contractors will have to obtain written permission in prescribed format (hereafter it will be called as permit to work).
	If the job does not involve high risk activity in it, then job can be done using "General work, Equipment / Area Clearance permit". This permit is two tier permits and involves only permit applicant (PA) and Area or Package Owner from Hindalco.
	If the job involves one or more high risk activity(ies) in it, then job can be done using respective high-risk permit along with "General work, Equipment / Area Clearance permit". The high-risk permits are three tier permits and involves in addition to Permit Applicant (PA) and Area or Package Owner, Approving Authority also from Hindalco.
	List of "High Risk Activity"



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	<ol style="list-style-type: none"> Hot work (work involving open flame / fire / spark etc.) Work at height more than 2 meters Excavation of earth Confined space / vessel / equipment entry Electrical work involving voltage more than 215 Volts Lifting the load more than 2 tones by lifting tools and machines like cranes Equipment / pipeline opening or breaking 					
	Below is Authorizing Signatories Levels for PTW					
	Type of Permit to Work	WG	PA	AO	AA	Head Project
	General Work Permit (Cold Work)	✓	✓	✓		
	Hot Work Permit	✓	✓	✓	✓	
	Work at Height Permit	✓	✓	✓	✓	At Night
	Excavation Permit	✓	✓	✓	✓	At Night
	Electrical Work Permit	✓	✓	✓	✓	
	Hazardous Chemical Pipeline Breaking / Equipment Opening Work Permit	✓	✓	✓	✓	
	Confined Space / Vessel Entry Permit	✓	✓	✓	✓	At Night
	Lifting of Heavy Load (more than 5T)	✓	✓	✓	✓	At Night
	All permits are normally issued with validity from 8AM to 6PM with extension up to 10PM in some special circumstances is possible.					
	Hazard identification and risk assessment using structured technique of Job Safety Analysis (JSA) is required to be completed and attached while requesting permit to carry out the job.					
	The JSA / Risk Assessment exercise shall be done using Hindalco prescribed format for the same. Hindalco uses following 5 X 5 matrix for risk assessment and same shall be used to arrive at risk					
	Permit is required to be displayed at workplace (PTW Not Displayed prominently will be considered as PTW not taken)					
	A job having more than one high risk activities, permits appropriate to those activities shall be required to be obtained. Example welding work at height: Permit for work at height as well as for hot work shall have to be obtained					
	Permit applicant shall at a time apply for permits not more than five jobs					
	All energy sources shall be isolated and energy level shall be brought to zero level and locked out and then tagged. Try out shall be carried out by PA post lock out and tag out.					
	Following color coded locks shall be used <ol style="list-style-type: none"> Operation / lock out controller – Green Lock 					



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	<p>2. Mechanical Maintenance – Red Lock</p> <p>3. Electrical Maintenance – Blue Lock</p> <p>4. Instrument & Control – Yellow Lock</p>
	<p>Permit Closure must post completion of the job within 2 hours.</p> <p>After completion of work Permit issuer shall physically check and ensure that the following are cleared before closing of PTW:</p> <p>Grounds, Tools, Spares, Personnel, Debris, Scrap, fire hazards like red hot splatters on combustible materials etc.</p>
	<p>The PA is normally a Hindalco official however in some specific circumstances contractor's officials also can be given authority to work as permit applicant if he or she possess following</p> <ul style="list-style-type: none"> Degree in engineering or Diploma in engineering or science graduate 2 years of working experience for engineering graduate and five years of working experience for Diploma engineer or Science Graduate He / She has undergone a day long training on Hindalco permit system and understood it. Post training his / her written competency test is carried out and he / she has scored more than 85% marks in test and cleared the oral interview simultaneously conducted by below defined respective Area Owner (AO), Approving Authority and Hindalco Safety professional.
2.4.2	Hazard Identification, Risk Assessment (HIRA) & Establishing Control
	It is the pre-requirement for obtaining the PTW
	It is the responsibility of Permit Applicant (PA). It must be carried out with the help of and involving work group (WG) after visit to workplace by PA.
	Hazard identification shall be carried out using structure technique called as “ Job Safety Analysis (JSA) ” to identify hazard(s) associated with each step / activity involved in the job. While doing this exercise both job specific hazards and hazards due to interaction with other job(s) or environment/situation shall be taken into consideration.
	Once the hazards are identified using JSA, risk assessment using Hindalco Risk Matrix (Annexure-B: HIL HIRA FORMAT_RISK MATRIX) shall be carried out first considering existing control measures preexisting or available with contractors. If risk is significant (is in orange or red zone), it is compulsory for permit applicant to identify additional control measures and redo the risk assessment.
	While identifying additional control measure(s), hierarchy of establishing controls shall be taken into consideration. Administrative controls, PPE or any other operator/technician (human) dependent control is not considered as strong controls.

JSA (Hazard Identification) and Risk Assessment shall be documented in format prescribed by Hindalco (Annexure B). The format shall be attached with the permit to work for which permit is applied to area / package owner

2.4.3 Inspections, testing and tagging

1. Periodic inspections and testing: The contractor must ensure quarterly inspections, through his/her authorized person / subject matter experts (SMEs) authorized by Hindalco of all gadgets & equipment and shall label them according to the following table. The gadgets and equipment shall include, but not limited to welding machines, cutting sets, power tools, power distribution boards, ladders, portable fire extinguishers, fall protection equipment, lifting and rigging equipment like slings, web-slings, chains & shackles and scaffold couplings and tubes

Quarter 1 (Jan to March)	Red Colour sticker / label / Band
Quarter 2 (April to June)	Blue Colour sticker / label / Band
Quarter 3 (July to Sept)	Yellow Colour sticker / label / Band
Quarter 4 (Oct to Dec)	Green Colour sticker / label / Band

2. Statutory inspections / HPT testing etc.: Contractor must maintain register of applicable legal requirements for his gadgets and equipment. The register shall include following but not limited to

SN	Gadget / Equipment	Frequency	Objective evidence
1	Web slings	Yearly	Certificate from Competent Person
	Metal wire slings	Yearly	Certificate from Competent Person
	Chain slings	Yearly	Certificate from Competent Person
	Chain pully blocks	Yearly	Certificate from Competent Person
	Full body harness	Yearly	Certificate from Competent Person
	Lifting Jacks	Yearly	Certificate from Competent Person
	Crane (lifting machine)	Yearly	Certificate from Competent Person
	Vehicle road fitness	Yearly	Certificate from Competent Person

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		ABC type fire extinguishers	Monthly Inspection & HPT once three years	Register entry for monthly inspection and HPT certificate from authorised party	
		CO2 fire extinguishers	Monthly Inspection & HPT once three years	Register entry for monthly inspection and HPT certificate from PESO authorised party indicating permanent expansion & loss of tear weight	
		Oxygen Gas cylinders	HPT once five years	HPT certificate from PESO authorised party indicating permanent expansion & loss of tear weight	
		Argon Gas cylinder	HPT once five years	HPT certificate from PESO authorised party indicating permanent expansion & loss of tear weight	
		Dissolved Acetylene Cylinder	Inspection once five years	Inspection certificate from PESO authorised party.	
		Portable gas detectors	Monthly	Register entry duly countersigned by official from building admin.	
		Residual Current Circuit Breaker (RCCB) or Earth Leakage Circuit Braker (ELCB)	Quarterly	Register Entry / Field labelling by authorised persons from Electrical Department.	
		Smoke Fire Detectors	Once a quarter using aerosol.	Register entry.	
	Special Gadgets / Equipment / Facility inspection & Testing				
	<p>Contractor shall have certified scaffold erector(s) to erect scaffold as prescribed by . While erection of the scaffold is on, under erection scaffold shall be tagged orange colour tag. On scaffold, tagged with orange colour tag, only authorised scaffold erector(s) shall be allowed to work.</p> <p>Post completion of scaffold erection it shall be inspected by qualified, certified and authorized scaffold inspector. Green tag shall be attached in place of the orange tag if it is approved by the scaffold inspector for use or else orange tag shall be replaced with Red Tag. Nobody shall be allowed to use red tagged scaffold.</p>				

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Red tagged scaffold shall be reoffered to the scaffold inspector post correction of faults in it and shall be used only after clearance by the scaffold erector and after placing green tag.

2.4.4 Special Precautions for High-Risk activities like work at height, confined space entry, excavation, lifting heavy/asymmetric loads-

All High-risk activities shall be addressed through hierarchy of controls as per priority of risk mitigation plan.

1. Elimination
2. Substitution
3. Isolation
4. Engineering control
5. Administrative control
6. PPE

By ensuring the 100% HIL PTW procedure as per HIL/CORP/MCoE-SFT/QP/032 Guidelines and specific work permit formats.

General Work & Equipment Clearance Work Permit From HIL-PWF-1	 General Work & EC permit_HIL-PWF-1 RE
Hot Work Permit HIL-PWF-2	 Hot work Permit_HIL-PWF-2 RE
Work at Height Permit HIL-PWF-3	 Work at Height Permit_HIL-PWF-3 RE
Excavation Permit HIL-PWF-4	 Excavation Permit_HIL-PWF-4 RE
Electrical Work Permit HIL-PWF-5	 Electrical Permit_HIL-PWF-5 RI
Confined Space Entry HIL-PWF-6	 Confined Space Work Permit_HIL-PWF-7 RE
Hazchem pipeline breaking and equipment opening HIL-PWF-7	 Hazardous C Pipeline Breaking -HIL-PWF-6
Heavy and Asymmetric Material/Load Lift HIL-PWF-8	Not Approved

2.4.5

Requirement of Safety Professionals and safety supervisors:

Each contractor employing five hundred and more employees (worker and staff together) shall employ one qualified safety professional and one qualified safety supervisor per hundred employees.

Qualification of safety officer and safety supervisor as stated below.

Safety Officer: B.Tech./ B.E. in Mechanical/ Electrical/ Civil and ADIS/ PDIS from CLI/RLI or from state board of technical education with Five years of experience at large construction site post ADIS/ PDIS.

Safety Supervisor: Bachelor of science in Physics, Chemistry, Maths group and ADIS/ PDIS from CLI/RLI or from State Board of Technical Education with three years of experience at large construction site post ADIS/ PDIS.

2.4.6

Precautions during extreme weather condition:

One of the major challenges to meet Project timelines is safety concerns arising due to extreme weather conditions. As weather events like major storms and heatwaves seem to grow in severity and frequency each year, navigating the challenge of weather uncertainties is more important while planning of Projects.

A. Hot weather during summer: Summer heat poses significant risks to construction workers, including heat exhaustion and heat stroke. It's essential to differentiate between the two and recognize the signs and symptoms early on. Heat exhaustion typically manifests as excessive sweating, weakness, nausea, and dizziness, while heat stroke is more severe and can lead to unconsciousness, seizures, and even death if left untreated.

Here are some essential safety precautions for construction sites during the summer months:

- 1. Hydration Stations:** Set up hydration stations throughout the site with plenty of water, electrolyte drinks, and shaded rest areas. Encourage workers to drink water frequently, even if they don't feel thirsty.
- 2. Heat Awareness Training:** Conduct regular training sessions on heat-related illnesses, their symptoms, and preventive measures. Ensure all workers are aware of the risks associated with working in high temperatures.
- 3. Adjust Work Schedule:** Schedule strenuous tasks for cooler parts of the day, such as early morning or late afternoon. Minimize outdoor work during peak sun hours (typically between 11 a.m. and 3 p.m.).
- 4. Personal Protective Equipment (PPE):** Provide and enforce the use of appropriate PPE for hot weather, such as lightweight, breathable clothing, wide-brimmed hats, sunglasses, and sunscreen with high SPF.

- 5. Frequent Breaks:** Implement a frequent break schedule to allow workers to rest in shaded or air-conditioned areas. Encourage them to take short breaks to cool down and hydrate regularly.
- 6. Monitoring Signs of Heat Illness:** Train supervisors to recognize signs of heat-related illnesses such as heat exhaustion or heat stroke. Have a protocol in place for immediate medical attention if someone shows symptoms.
- 7. Ventilation and Cooling Measures:** Utilize fans, misting systems, or portable air conditioning units to provide relief in enclosed or indoor work areas. Ensure proper ventilation in confined spaces to prevent heat buildup.
- 8. Lighter Workload:** Consider reducing the workload or extending project timelines during extreme heat conditions to minimize the risk of heat-related incidents.
- 9. Regular Inspections:** Conduct regular inspections of the site to identify potential hazards related to heat exposure, such as hot surfaces, inadequate ventilation, or insufficient shade.
- 10. Emergency Response Plan:** Develop and communicate a comprehensive emergency response plan specific to heat-related incidents. Ensure all workers know whom to contact and what steps to take in case of an emergency.
- 11. Stay Informed:** Monitor weather forecasts and heat advisories regularly. Adjust safety measures accordingly based on changing weather conditions.

By implementing these precautions, contractors can ensure the safety and well-being of workers on construction sites during the hot summer months.

B. High speed wind and storms:

Contractors must anticipate and act ahead of weather-related events to implement necessary safety measures that protect both the construction site and the public. The following key actions should be taken before severe weather impacts a project:

High Speed Wind Preparedness Plan

A comprehensive high-wind preparedness plan should include:

1. **Task Planning** – Assess risks and schedule tasks accordingly.
2. **Pre-Storm Preparation** – Secure materials, equipment, and structures.
3. **Emergency Response Team** – Establish a team to handle crisis situations.
4. **Post-Storm Inspection & Repairs** – Evaluate and repair any damage after the storm.

Monitoring & Preparation

- Continuously track weather forecasts and advisories issued by India Meteorological Department (IMD) / National Centre for Medium Range Weather Forecasting (NCMRWF) / Indian Institute of Tropical Meteorology, Pune (IITM).
- System and team dedicated to keep track of Weather alerts on daily basis.
- Allocate sufficient time to secure materials, equipment, and the project site.
- Implement the high-wind preparedness plan before shutting down operations.

Site-Specific Safety Measures

1. Storage of Materials & Debris

- Store materials and debris at least 10 feet away from building perimeters unless enclosed.
- Secure materials using bands or tie-downs to prevent displacement.
- Remove loose materials from roofs, setbacks, and balconies.
- Ensure floor slab hole covers are securely anchored.
- Properly secure re-shores along open-sided building perimeters.

2. Masonry Walls Under Construction

- Secure and brace masonry under construction to prevent collapse.
- Pay special attention to perimeter masonry walls.
- Protect masonry openings from water infiltration.

3. Steel Framing

- Brace and secure steel frames and light gauge decking.
- Secure all planks to supporting structures.
- Remove loose bolts and cans from floors and leading edges.

4. Curtain Wall & Façade

- Secure and reposition curtain wall materials away from building perimeters.
- Ensure all installed units are properly anchored.

5. Concrete Construction Formwork

- Remove or secure formwork not weighed down by concrete.
- Secure loose formwork materials to prevent dislodgment.

6. Perimeter Netting, Guardrails & Cocoon Systems

- Clean, retract, and secure horizontal netting.
- Replace damaged netting to prevent flapping.
- Inspect and secure vertical perimeter netting, cabling, and guardrails.
- Ensure cocoon systems are properly secured per manufacturer or engineer recommendations.

7. Supported Scaffolds

- Remove debris and inspect tiebacks.
- Secure planking to prevent dislodgment.
- Consult engineers regarding netted scaffolding for wind load adjustments.

8. Suspended Scaffolds

- Lower scaffold rigs to the ground and secure them.
- Remove or secure lifelines to prevent damage.
- Shut off electrical power to hoist motors.

9. Construction Fences & Barriers

- Brace and secure fences for wind resistance.
- Inspect and replace damaged components.

10. Sidewalk Sheds

- Remove debris from shed tops.
- Secure planking and inspect parapets.

11. Excavation & Underpinning

- Conduct pre- and post-storm inspections.
- Ensure support of excavation (SOE) systems are completed per approved plans.
- Maintain dewatering operations with backup generators.

12. Tower Cranes

- Follow manufacturer wind action plans.
- Inspect all tie-ins, collars, and base connections.
- Protect the mast base to ensure proper drainage.
- Raise hook blocks with no load before storms.

13. Mobile Cranes

- Retract booms, stow jibs, and secure the crane body.
- Secure crawler cranes per manufacturer guidelines.

14. Exterior Hoists

- Secure mast connections, outriggers, and landing plates.
- Remove debris from the hoist cab and surrounding area.
- Shut down electrical power and cease operations in high winds.

By proactively preparing and executing these measures, contractors can safeguard their construction sites and mitigate risks associated with extreme weather conditions

2.4.7 Housekeeping, orderliness and cleanliness:

Following provisions must be ensured by the contractors:

1. Dedicated layout of allocated area for the contractor.
2. Contractor's facilities like Parking, Office, Lunch / Rest Rooms, Segregated Storages, Raw Materials, Construction goods, workshop etc. to be demarcated with proper fencing and VIS.
3. Disposal systems for all types of wastes including food, sewage, metallic, hazardous wastes etc. must be ensured through / legal means and assures through regular inspection and audits.



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4. Access pathways for all workers should always be maintained, free from any unsafe conditions like open drains, pits, exposed rebars, heavy / goods vehicles, cranes, hanging objects, etc. such that during shift change and break hours there should be no overcrowding. Before breaking any safe pathway, alternate safe pathways must be ensured with proper VIS to create proper visibility of new alternate route.
5. All vehicles, including passenger vehicles & two wheelers, must be parked only at a designated parking place.
6. Used items like empty drums, cans, epoxy / paint buckets, broken ladders, packaging materials like wood, steel strips, thermocol etc. must be stored safely and to be disposed as per / legal norms.

2.5 Incident, accident capturing, reporting to Hindalco and investigation

Contractor shall capture and report each incident, accident or near miss either verbally or by text message or e-mail to Hindalco Site Management within four hours of happening.

Providing medical attention and treatment to victim shall be priority in case of injury accident.

Contractor shall preserve accident scenario / site till arrival of authorized Hindalco officials / safety professional if it is not providing ongoing threat.

Investigation shall start as soon as possible, and first information report shall be furnished to Hindalco site management within 24 hours.

Hiding incident, near miss or accident is considered as one biggest safety violation shall result into capital punishment including termination or contract.

At Hindalco, injury accidents are categorized as mentioned below.

Category of injury Accident	Nature of Injury
Cat 1	First Aid Case (FAC)
Cat 2	MTC or Health effects requiring medical treatment at a hospital or by an offsite medical practitioner
Cat 3	RWC or health effects including temporary partial disability / occupational illness, affecting work performance in the short to medium term. The injured can work but needs a different role than normal for a temporary period
Cat 4	LTI / Multiple RWC from an accident or occupational illness with irreversible health damage
Cat 5	One Fatality or more or Total Permanent Disability case

For category Cat 5 and Cat 4 injury accidents and near-misses having potential Cat 5 and 4 type injuries, contractor shall have to involve Hindalco officials in

	investigation and investigation shall be carried out using “TapRoot” methodology and software platform.														
	Cat 3,2 and Can 1 incident can be investigated by using “Why-Why” analysis or FMCA by team of official from contractor.														
	Investigation report of the incident shall be submitted by contractors within 10 days.														
	<p>Each contractor, based on injury accidents happened in area under his/her control will have to calculate following safety indices. For this reason, accidents / incidents of subcontractors of the main contractors are considered as injuries on account of main contractor.</p> <ol style="list-style-type: none"> 1. Loss Time Injuries Frequency Rate (LTIFR i.e. loss time injuries per million manhours work) 2. Loss Time Injuries Severity Rate (LTISR i.e. man-days lost due to loss time injuries per million manhours work) 3. Total Recordable Injury Frequency Rate (TRIFR i.e. Total Recordable injuries per million manhours work) 														
	Each Contractor shall have to display their safety performance at prominent location outside their office in format prescribed below.														
	<table border="1"> <tr> <td colspan="2">Name of Contractor:</td></tr> <tr> <td>No of Fatality</td><td></td></tr> <tr> <td>No of Loss Time Injuries</td><td></td></tr> <tr> <td>No of Recordable Injuries</td><td></td></tr> <tr> <td>LTIFR</td><td></td></tr> <tr> <td>LTISR</td><td></td></tr> <tr> <td>TRIFR</td><td></td></tr> </table>	Name of Contractor:		No of Fatality		No of Loss Time Injuries		No of Recordable Injuries		LTIFR		LTISR		TRIFR	
Name of Contractor:															
No of Fatality															
No of Loss Time Injuries															
No of Recordable Injuries															
LTIFR															
LTISR															
TRIFR															
2.6	Emergency and Emergency Response including Rescue														
	<p>First aid centre for the Construction Workers</p> <p>The following first aid services should be available at first aid centre:</p> <ol style="list-style-type: none"> 1. Adherence to HIL’s First Aid and Emergency Handling procedures 2. Medical Surveillance and Bio-monitoring 3. Proper Occupational Health Centre providing Emergency Care Services and management 4. Adequate wholesome potable drinking water 5. Proper Sanitation services 6. First Aid services including First Aid Boxes and Appliances, Ambulance Room (if available at site) 7. Immunization Services 8. Ambulance Services 9. Referral Services 10. Health education including advisory services on personal hygiene, environmental sanitation and safety 														

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	<p>11. Medical record, upkeep and maintenance</p> <p>12. Notification of occupational diseases, poisoning etc. to the concerned HIL administration</p> <p>13. Others as decided by the Competent Authority</p>
	<p>Following requirements must be ensured to meet emergency at every Contractor's site:</p> <ol style="list-style-type: none"> 1. Cardio-Pulmonary Resuscitation (CPR) trained persons 2. A First Aid Kit / An automated external defibrillator (AED) 3. Advance full body harness for work at height equipped with suspension trauma device 4. Minimum two sets of self-contained breathing apparatus (SCBA) are required for contractor's workers rescue who are expected to work in confined space / vessels / pits 5. Multipurpose ABC Portable Fire Extinguishers of 10 / 5 Kg capacity 6. Ambulance facility to cater "Golden Hour" in case of Serious injury or Health conditions. 7. Rescue teams having rescue kit, training about all high-risk activities and IRATA certification. They can provide rescue in case of emergencies like confined space entrapment, engulfment, fall from height, drowning etc. <p>For detailed specification and requirements for Hiring Rescue Team is as per Annexure-D: Specifications for Hiring Rescue Agency.</p>
3.0	<p>Deviation / Exemption from requirement of :</p> <p>In case of any deviation or exemption needed from this , a Management of Change (MOC) Approval must be obtained from the Project Head and communicated to Corporate Safety at all stages of MOC.</p>



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	Attachment 1
	GENERAL / COLD WORK PERMIT
	Refer Permit to Work System procedure with Permit to Work Form, HIL-PWF-1 (SHEET 1 & 2)
	Safety Precautions for General / Cold Work Permit
	The following precautions (though not necessarily exhaustive) should be observed in relation to the performance of General / Cold Work permit:
	1) For work involving the opening-up or de-energizing of equipment, the Lock, Tag and Try Procedure must be followed.
	2) If equipment is to be opened up, it should first be depressurized, drained and purged of hazardous material under valve isolation, before positive mechanical isolation can be achieved.
	The effectiveness of the valve isolation should be tested and if it is found that a valve is passing, appropriate measures will have to be adopted. These may include shutting additional valves or taking further equipment out of commission, The possibility of the presence of wax or ice under a valve should be considered, as subsequent melting would defeat the isolation. Where valve isolation is used, the valves should be locked off with chain and padlock or other equally effective device, to ensure that they are not opened inadvertently.
	3) If toxic gases could be present, suitable breathing apparatus should be specified.
	4) The possibility of the presence of pyrophoric material should be considered before admitting air. If necessary, the equipment should be water flushed/filled before opening up and wetted down afterwards.
	5) Where hazardous materials such as hydrocarbons and chemicals are involved, mechanical isolation should consist of spading, blanking or disconnecting.
	6) An exception to this requirement would be some cases of minor work when locked off valving would suffice, providing the isolation is proved to be effective by opening drains on the equipment and proving those drains to be clear.

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	7) This exception is not made in the interests of expediency but recognizes that swinging spades or making disconnection can be equally, or more hazardous, than some examples of minor work.
	8) Work should not be attempted on any equipment where the possibility exists of hot material escaping, e.g. Temperature exceeds its flash point, boiling point or auto-ignition temperature. The material should be allowed to cool before draining and extra care shall be exercised when checking isolation integrity.
	9) Particular care is required in achieving and proving isolation when equipment operates under a vacuum
	10) Wherever practicable, a formal maintenance preparation procedure should be written for any equipment where hazards such as hot material or vacuum operation are encountered.
	11) Where driven machinery is to be worked on, the prime mover should be positively isolated and any switch gear locked off as per the Lock, Tag and Try Procedure.
	12) Appropriate protective equipment must be specified.
	13) The area around any work site must be appropriately identified and barricaded, if necessary, to prevent other personnel in or passing through the area from being exposed to hazards.

Attachment-2

HOT WORK PERMIT

Refer Permit to Work System procedure with Permit to Work Form, HIL-PWF-1 (SHEET 1 & 2)

Safety Precautions for Hot Work Permit

Whenever possible, Hot Work should be avoided in hazardous areas within operational hydrocarbon processing facilities. If Hot Work cannot be avoided, the following are recommended precautions that should be observed:

- 1) A valid, authorized and approved Hot Work Permit must be issued with a clearly defined declaration that it is safe to commence the intended work.
- 2) All relevant isolations described on the Hot Work Permit should be validated.
- 3) The equipment to be worked on shall be positively isolated, both mechanically and electrically. Mechanical isolation shall be achieved either by disconnection, or by blanking following the isolation procedure.
- 4) The equipment shall be freed of liquid and gas by depressurizing, draining, venting, purging and flushing.
- 5) In lined vessels or equipment containing pockets, recesses, double bulkheads, etc. precautions shall be taken to ensure that no material is trapped behind the lining. This may require cold drilling and steaming through behind the lining followed by gas testing. Where it is not possible to achieve gas free in the equipment or there is a doubt that all potentially hazardous materials have been removed, the space shall be made inert with nitrogen or water filled during hot work.
- 6) Any combustible material, including paper cartons, oily rugs and grass, located nearby shall be removed. Oil spills or deposits around the work site shall be cleaned up. Where it is not practical to remove combustible materials they shall be suitably covered or wetted with water.
- 7) Drain covers and surface manhole covers within 15 m from the work site shall be properly sealed throughout the work period to prevent emission of flammable vapours
- 8) Any potential source of flammable gas or vapor emission, such as sampling point, vent or drain situated within 15m of the work site shall be rendered safe by sealing. If there is a potential release of flammable gas or vapor in the vicinity of hot work, it may be necessary to monitor the atmosphere using continuous gas monitors which will alarm on detection.

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9)	The results of the initial gas test and the requirements for ongoing monitoring must be clearly defined on the Hot Work Permit.
10)	When in a Zone 1 or 2 hazardous areas, continuous gas monitoring should be considered.
11)	For welding, grinding and other allied processes, the following specific precautions should be followed.
12)	The area should be inspected and verified that it is free of combustibles and monitored during Hot Work, to detect vapours resulting from the work.
13)	All open drains in the area should be covered. All potential sources of flammable vapour/ liquid in the area, such as vents, sample points, drains and relief valves, should be checked and made safe.
14)	Suitable fire suppression equipment such as a fully charged extinguisher and, where possible, a fire hose should be run out and pressured up.
15)	In process areas, sparks must be totally contained by a habitat to prevent them from dropping below or travelling some distance from the worksite.
16)	When the exposure period is long, or the potential for a gas release high, a suitable pressurized welding habitat should be constructed. This habitat should be pressurised with air from a safe source.
17)	A nominated competent Fire Safety Watcher must be in attendance whenever the work being carried out requires the use of a naked flame or involves welding, grinding or allied processes.
18)	Clear instructions must be given to the Permit Holder and the nominated Fire Safety Watcher with regard to the procedure to be followed in the event of an emergency. This should include the requirement to immediately stop work in the event of an emergency alarm, and not to commence work again until the Permit to Work has been re-validated.
19)	Flammable and ignitable materials and debris have been moved at least 35 feet from the hot work area or covered and protected with fire resistant material or else fire watch provided. (Combustibles within 30 feet of the work area have been shielded from sparks and open flames).
20)	Ducts, conveyor systems, and augers that might carry sparks to distant combustibles must be protected or shut down
21)	If welding is to be done on a metal wall, partition, ceiling, or roof, precautions must be taken to prevent ignition of combustibles on the other side, due to conduction or radiation of heat

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	22)Smoke/fire detectors/alarms in the immediate area of the hot work have been temporarily disabled until the hot work is completed.
	23)Adequate ventilation is being used (especially when welding/cutting materials with painted or metal coated surfaces).
	24)Cracks or holes in floors, walls, and ceilings (including ductwork) are covered or plugged
	25)Welders have been protected from electrical hazards. Metal equipment and materials have been adequately grounded.
	26)Hot work equipment is operable and in good repair. Gas cylinders have been leak tested.
	27)Welding machines have been inspected.
	28)A multi-purpose dry chemical, portable fire extinguisher must be located such that it is immediately available to the work and is fully charged and ready for use.
	29)Respiratory protection is mandatory unless an adequate monitored airflow away from the welder and others present can be established and maintained
	<u>Fire watch/hot work area monitoring.</u>
	<ul style="list-style-type: none"> • Fire watch will be provided during and continuously for 30 minutes after work, including during any work breaks. • Fire watch is supplied with suitable types of extinguishers. • Fire watch is trained in use of this equipment and in sounding alarm. • Fire watch may be required for adjoining areas, above and below. • Hot work area inspected 30 minutes after job is completed. • Cell phone or radio to dial Fire Station Number is available.

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	Attachment-3
	CONFINED SPACE ENTRY PERMIT
	Refer Permit to Work System procedure with Hot Work / Confine Space Work Permit to Work Form, HIL-PWF-1 (SHEET 1 & 2)
	1) Confined Space Entry Preparation
	<ul style="list-style-type: none"> Entry into a permit-required confined space shall not be made unless an entry supervisor has assured that the following procedures have first been completed: <ul style="list-style-type: none"> An entry permit is initiated by signing the Confined Space Entry Log, obtain a blank Entry Permit and fill it out. The permit will indicate: <ul style="list-style-type: none"> The specific confined space to be entered. Nature of work is to be performed. The length of time estimated to complete the work. Permits are only valid for 8 hours. A permit may be extended for another 8 hours provided that acceptable conditions are re-certified and test results entered on the permit. <ul style="list-style-type: none"> What date and time the work will be started. What personnel, names and titles, will perform the work. Name and title of person acting as the "Attendant". All pumps or lines which may convey flammable, injurious, or incapacitating substances into the confined space shall be disconnected, blinded, (double blocked or bled), or effectively isolated by other means to prevent the development of dangerous levels of air contamination or oxygen deficiency within the space. The closing of valves alone, or the closing of valves and locking or tagging of them, is not considered effective protection. The disconnection or blind shall be so located or done in such a manner that inadvertent reconnection of the line or removal of the blind is effectively prevented. The atmospheric testing equipment must be "field checked" prior to testing the atmosphere in the confined space. Atmospheric testing must be conducted for oxygen levels between 19.5% and 23.0% by volume and the percentage found is to be entered on the permit. The last calibration date of the oxygen detector must be entered on the permit. Atmospheric testing must be conducted for flammable gas, vapors or mists in excess of 10% of its LEL and results noted on the permit. The last calibration date of the combustible gas indicator must be entered on the permit. The confined space must be flushed or emptied of all dangerous substances and then tested for known toxic substances for the Permissible Exposure Limit (PEL) Enter the value of the PEL on the permit. Electrical and mechanical hazards must be removed or prevented from causing a hazardous situation.

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	<ul style="list-style-type: none"> ♦ Associates entering a permit-required confined space with a hazardous atmosphere must be provided with an appropriate retrieval device, retrieval line and an appropriate respirator. The associate must have received and have documented training on the use of a respirator. <p>2) If a hazardous atmosphere is present atmosphere testing shall be conducted every hour that the confined space is occupied and results noted on the permit.</p> <p>3) If there is a problem, necessary action shall be taken to ensure the safety of those involved. The attendant is to contact the applicable rescue team and inform them of the conditions when they arrive on the scene. NOTE: Under NO circumstances is the attendant to enter the confined space.</p> <p>4) When the work has been completed the Entry Supervisor shall sign the permit as being completed and all conditions in the confined space have been returned to normal, the space is closed and properly marked.</p>
	<p>5) Entry into Vessel or Confined Space</p> <p>5.1) The PA shall inform the AO when they are ready to enter the confined space. At this time, the authorized gas tester will recheck the atmospheric conditions to re-establish the safe conditions prior to the initial entry.</p> <p>5.2) Each entrant, when entering a vessel or confined space, must print their name in full, and indicate the time on the vessel and confined space entry log. When exiting, they must initial the log and indicate the time.</p> <p>5.3) Both PA and AO shall closely monitor the space through attendant to ensure that all safety requirements and permit conditions are maintained.</p> <p>5.4) The authorized gas testers will carry out gas tests at the specified frequency and record the results on the permit until the work is completed.</p>
	<p>6) Job Completion and Acceptance</p> <p>6.1) When the job is completed, the Performing Authority and attendant ensures that all personnel have left the vessel or confined space before signing off the work permit and returning it to the Facility Owner.</p> <p>6.2) The Facility Owner/Approving Authority shall check the job site to confirm that all personnel have exited from the vessel or confined space. He will also ensure that all other associated permits are returned for cancellation and then will sign-off all three copies to show that the permit is now withdrawn.</p> <p>All personnel (including contractors) entering a vessel or confined space and attendant / standby personnel, shall be instructed as to the nature of the hazards, precautions to be taken, the use of protective and emergency equipment and the emergency escape route.</p>

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Safety Precautions for Vessel and Confined Space Entry

The following precautions (though not necessarily exhaustive) should be observed in relation to the entry into vessel and confined space:

The vessel or confined space must be properly purged, cleared, and positively isolated from all process and utility systems by physically disconnecting the piping or by blanking.

Isolation should be as close to the vessel as is practical. If lines are isolated remote from the vessel, then it must be insured that the line from the isolation point to the vessel has been cleared and remains free of process material or energy sources.

Blanks must be designed to withstand the operating pressure of the process or source of energy and fabricated of material compatible with the process. For larger diameter blanks, where installation is impractical, an alternate method may be used to insure that a pressure increase upstream of the blank does not rupture the blank.

Proper tagging and locking must be completed before any work is started.

If the vessel is equipped with power driven internal appliances such as mixers, the switchgear should be disconnected, locked and tagged. If the vessel contains electrical conductors, they must be properly earthed, screened etc., before entry. An Electrical Work Permit is required for the above job.

Electric tools, lights, and equipment used in vessel entry shall be operated at 24 volts or 240V if protected with an Earth Leakage Circuit Breaker (ELCB) or Residual Current Circuit Breaker rated at 10mA tripping value. Where possible, electrical leads should be routed through an opening other than the opening used for entry of people.

Consideration should be given to the possible sources of flammable or toxic gases in the environment outside the vessel or confined space and precautions

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taken accordingly. Examples of sources are drains, sample points, vents, relief valve outlets etc.

The possibility of flammable, explosive, or toxic materials which may have been absorbed in the shell material and may be released on heating must be considered prior to burning or welding.

All surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 0.6m from the area of heat application or employees shall be protected by air-supplied respirators and if applicable, protective clothing.

Burning shall be done only with the cylinders located outside the space and hose connections shall be checked for leakage prior to making entry. Remove all hoses from the space or disconnect the hoses from the cylinders at the end of work, during lunch periods, etc. Welding shall be done only with welding machines left outside the space.

Depending on the nature of the entry, the work being carried out and the protective equipment being worn, it may be necessary to restrict the length of time personnel may remain in the enclosed space without a break.

Adequate ventilation must be maintained throughout the period of work within the enclosed space. Each task must be assessed to ensure the adequacy of the ventilation and if necessary to consider using educator / blower.

Entry is only authorized when all deposits, scale and sludge liable to give off dangerous vapor have been removed. The air inside the confined space must be monitored constantly at an interval of not more than 2 hours and the results recorded and displayed at the entry point of the enclosed space. Tests shall be made first for Oxygen content, then explosibility, and then toxic vapors or gas. Oxygen content must be between 19.5% to 21% and the atmosphere free from flammable gases (0% LEL) and hazardous concentration of toxic vapors or dusts. Gas monitoring must be conducted in locations where it is representative of the atmosphere. The gas tests shall be carried out again just before re-entry if the workers leave the vessel for tea or lunch break.

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A full body harness must be worn by each individual entering a vessel or confined space. A lifeline shall be attached to the harness of at least one person in the work group. A spare full body harness and lifeline must be provided at the entry point. If the configuration of the vessel or the large number of people and locations involved render an attached lifeline impracticable, a minimum of 2 lifelines must be kept ready at the vessel entry point.

At least one standby person must be at each opening used to enter the confined space. A 30-minute self-contained breathing apparatus or air supplied respirator with separate self-contained five-minute emergency escape set, a flashlight, and a horn or some other reliable methods for summoning additional assistance must be readily available. The standby man's primary responsibility is to be attentive to the personnel inside the confined space.

A rescue plan must be developed for each vessel or confined space entry to enable timely rescue of individuals if an emergency occurs. The rescue plan shall include:

- How to summon the rescue team in a timely manner including designated alarm box
- What methods of rescue must be implemented to retrieve individuals
- Type and availability of, and responsibility for equipment needed for rescue
- Potential chemical and physical hazards of the area and of the vessel or confined space. All applicable MSDS sheets must be attached.
- Information and drawing of vessel or confined space configuration (e.g. detail drawing showing vessel height, diameter, number and size of manways, distance between platforms, etc.)
- Area map showing location of vessel or confined space.
- Availability of a mechanical means, such as a tripod with a lifting device for removing a person from the confined space, if the person is 1.5m or more below the opening to the confined space.

While working inside a vessel or confined space access to lower levels should be restricted if overhead work endanger personnel working at the lower level. Portable ladders used for access and egress shall be kept in place at the vessel entry point throughout the work period.

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Hazard	Location	Condition	Symptoms	Sources
Oxygen Deficiency	Electrical pits, silos, sewers, valve pits, tanks, sumps	Normal air = 20.9% Oxygen OSHA safe entry limit \geq 19.5%	Headaches, ringing in the ears, confusion, difficulty breathing, loss of muscle control, unconsciousness	Corrosion of metal, replaced by gases generated by organic digestion
Oxygen Enrichment	Any enclosed space	OSHA maximum safe entry limit \leq 23.5% Oxygen	None, extreme fire or explosion hazard	Oxygen from an oxy-acetylene torch
Toxic Chemical Exposure	Building sewer systems, infiltration into the space form a leaking source	OSHA PEL=s or ACGIH TLV=s	Usually accompanies by strong odors or eye and throat irritation with headache and nausea	Volatile solvents, welding fumes, paint vapors, combustion gases, or organic decay
Electrical & Mechanical	Exposed live wiring, tanks or vats containing rotating shafts	Non-zero energy state (Use lockout/Tag-out Procedures)	Electrocution or physical trauma to the body	High voltage pits, mixing tanks, process vessels
Heat Stress/ Burns	Steam tunnels, crawl spaces with steam or hot water	High ambient temperatures or physical contact with hot surfaces or hot water or steam	Heat cramps, heat exhaustion, heat stroke, burns	Steam tunnels, power plant boilers, hot process tanks
Explosive	Sanitary sewers, fuel storage tanks	Flammable or explosive range in air. OSHA safe entry limit \geq 10% of the LEL	Same as an oxygen deficient atmosphere or chemical exposure	Decaying organic wastes, solvents



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Atmosp here				
Fall Protecti on	All vertical locations \geq 4 feet in depth	No permanently fixed ladder, wet or uneven internal surfaces	Severe physical injury	Pits, sumps, vats, tanks

Confined Space Decision Matrix

<u>CONFINED SPACE OPENING</u>	Atmosphere Guaranteed <u>Safe to Breathe</u>	Atmosphere NOT Guaranteed <u>Safe to Breathe</u>
Vertical - Unrestricted	Body Harness Life line if possible. Safety tackle must be on hand.	Self-contained breathing apparatus, body harness and attached life line. Safety tackle must be in position.
Vertical – Restricted (<i>less than 18" in any dimension</i>)	In addition to body harness a wrist harness and Life line if possible. Safety tackle must be on hand.	Self-contained breathing apparatus, body & wrist harness and attached life line. Safety tackle must be in position.
Horizontal - Unrestricted	Body harness. Life line if possible.	Self-contained breathing apparatus. Body harness and attached life line.
Horizontal - Restricted (<i>less than 18" in any dimension</i>)	Body & wrist harness. Life line if possible.	Self-contained breathing apparatus, body & wrist harness and attached life line.
Boiler or vapourizer (<i>special case as interior configuration prevents rescue by pulling on harness</i>).	Sked stretcher and personnel trained in its use must be at hand during vessel entry.	NO ENTRY MAY BE ATTEMPTED.

Attachment-4

Electrical Work Permit

Refer Permit to Work System procedure with Electrical Permit to Work Form, HIL-PWF-1 (SHEET 1 & 2)

Electrical Hot Work

Electrical Hot Work on equipment rated more than 240 VAC to ground is strictly prohibited.

If Electrical Hot Work to be done at voltages above 120VAC up to 240 VAC to ground, the following conditions must be met:

Supervision of the person assigned to do the work and/or the Plant Electrical Engineer must personally survey the job with the person that will be doing the work to identify alternative methods necessary to avoid working on exposed energized electrical conductors or circuit parts that have not been placed in an electrically safe working condition.

Only qualified persons shall be permitted to work on electrical conductors or circuit parts that have not been placed in an electrical safe work condition, and the qualified person(s) must agree that the job can be performed safely. A standby person shall be required.

A hazard/risk analysis of the task shall be conducted to determine the electrical safe approach distances associated with the task.

A detailed job plan written specifically for the task should be prepared. The job plan should list:

- ◆ A step-by-step outline of the work to be performed.
- ◆ The required personal protective equipment and any other safety-related instructions (ie, body positioning).
- ◆ Any additional safety equipment required.
- ◆ An Emergency Response Plan which identifies the location of the nearest phone and lists emergency numbers.

The supervisor of the persons assigned to perform the work or a member of the site's Electrical Safety Team shall verify that the persons have:

- ♦ Thorough job instructions and a complete understanding of the work to be done.
- ♦ Thorough safety instructions.
- ♦ Appropriate tools and safety equipment.

Supervision of the persons assigned to do the work and/or the Plant Electrical Engineer shall be present at the job location, initiate the procedure when all safety requirements have been completed, and remain at the job location until the work is complete. At least one other person qualified in CPR and having knowledge of how the circuit can be de-energized must be present.

Electrical Proximity Work

Electrical Proximity Work on 240 Vac or more to ground is strictly prohibited. When restricted work at voltages above 120VAC up to 240VAC to ground cannot be avoided the person(s) performing the task shall:

- Have approval of the responsible E & I supervisor or the shift leader if the conductors or circuit parts are energized at greater than 120 volts nominal.
- Perform an electrical hazards/risk analysis to determine the degree and extent of the hazard, required level of job planning, and the appropriate PPE for the job.
- Voltage rated gloves and rubber mat (electrically rated for $\geq 1000V$) are required.
- Where possible, install a physical, insulated barrier to prevent inadvertent contact with exposed energized conductors or circuit parts.
- Have a standby person if the work involves conductors or circuit parts, energized above 120 volts nominal.

Electrical Hazardous Work:

When Electrical Hazardous work is required, the person performing the task shall:

- Be a "Qualified Person".
- Perform a hazard/risk analysis to determine the degree and extent of the hazard, required level of job planning, and the appropriate PPE for the job.
- If the need arises for an unqualified person to cross the hazardous approach boundary perform a minor task, or to look at equipment, a qualified person must advise him or her of the possible hazards and the appropriate PPE and ensure that person is otherwise safeguarded.

NOTE: Under no circumstances shall an unqualified person be allowed to cross the Proximity approach boundary.

Attachment-5

Excavation Work Permit

Refer Permit to Work System procedure with Excavation Work Permit Form, HIL-PWF-3

An Excavation Work Permit serves as a clearance to carry out excavation work in conjunction with an appropriate work permit such as Cold Work Permit or Hot Work Permit, etc.

Any excavation work to be carried out on Hindalco site that exceeds 15 cm into the ground shall be covered by an Excavation Work Permit. This includes planting of trees, installation of road signs or flag poles and driving of piles which involves digging or breaking of earth. However, any use of mechanical excavator will require an Excavation Work Permit regardless of depth. An Excavation Work Permit is also required for work involving breaking or drilling of concrete including wall of buildings with concealed wiring

The following safety precautions, though not necessarily exhaustive, shall be observed where applicable in the course of excavation work to prevent injury and property damage:

1. Before an attempt is made to excavate, the Performing Authority must know the exact locations of underground facilities.
2. No excavator or other digging machine shall be allowed to excavate close to underground facilities that must be left in place. A proximity limit for machine operations shall be established and the excavation completed by hand digging. When work has to be done over or around electrical cables, special precautions must be stated in the permit. If the underground cables, service tiles or any other piping are discovered in the course of excavation, the job must be suspended and the Approving Authority must be notified immediately. When mechanical excavator is used, a full-time contractor supervisor must be present at the site to guide the operator of the excavator and supervise the excavation. Close proximity digging with any machinery SHALL require a Hindalco person who is knowledgeable of the underground facilities.
3. Where a trench to be excavated exceeds 1.5m in depth, adequate piling, shoring and bracing shall be provided against the bank or side to prevent it from collapsing.

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Piling, shoring and bracing used in a trench excavation to protect persons against falling or sliding material shall be of adequate strength. Planks used as sheet piling shall be at least 50mm thick. The maximum spacing between horizontal stringers or wales shall be such as to keep the planks within their safe bending stress. Shores and braces shall be of adequate dimensions for stiffness and shall be so placed as to be effective for their intended purposes. Each end of each stringer piece shall be separately braced.

Where trenching of more than 4 m in depth is done, such protection shall be constructed in accordance with the design and drawings of a professional engineer.

4. In every excavation exceeding 1.2m in depth, there shall be provided ladders, stairways or ramps to furnish safe access to and egress from such excavation.
5. Excavated material should be placed at least 0.6m from the edge of the excavation, unless toe boards or other effective barricades have been installed to prevent fallback. The excavated material should be kept away from the drains and access ways.
6. Open sides of an excavation where a person may fall in shall be guarded by adequate protective barricades and suitable warning signs shall be put up at conspicuous positions. If the trench is 3m or deeper, barricades made of rigid materials instead of ropes must be used. Covering of trench with canvas sheet or the like without such barricades is strictly prohibited.
7. Pick-and-shovel people working in excavations should be kept far enough apart to prevent injury to one another.
8. All road-crossing trenches must be covered by steel plates of sufficient strength for vehicles to pass through.
9. Vessel and Confined Space Entry Permit may be required before any person is allowed to enter a trench exceeding 1.5m in depth as the atmosphere in it may not be safe for entry. Special attention should be paid to those trenches being dug within process area or any place where there are possible sources of flammable or toxic gas emission. Such emission sources may be from the nearby equipment or the pipes underneath the trenches.

Excavation Checklist

1. General Inspection of Jobsite:

- A. Excavations, adjacent areas, and protective systems inspected by a competent person daily before the start of work.
- B. Competent person has the authority to remove employees from the excavation immediately.
- C. Surface encumbrances removed or supported.
- D. Employees protected from loose rock or soil that could pose a hazard by falling or rolling into the excavation.
- E. Hard hats worn by all employees.
- F. Spoils, materials, and equipment set back at least two feet from the edge of the excavation.
- G. Barriers provided at all remotely located excavations, wells, pits, shafts, etc.
- H. Walkways and bridges over excavations four feet or more in depth are equipped with guardrails and toeboards.
- I. Warning vests or other highly visible clothing provided and worn by all employees exposed to public vehicular traffic.
- J. Employees required to stand away from vehicles being loaded or unloaded.
- K. Warning system established and utilized when mobile equipment is operating near the edge of the excavation.
- L. Employees prohibited from going under suspended loads.
- M. Employees prohibited from working on the faces of slopes or benched excavations above other employees.

2. Utilities:

- A. Utility companies contacted and/or utilities located.
- B. Exact location of utilities marked.
- C. Underground installations protected, supported, or removed when excavation is open.

3. Means of Access and Egress:

- A. Lateral travel to means of egress no greater than 25 feet in excavations four feet or more in depth.

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- B. Ladders used in excavations secured and extended three feet above the edge of the trench.
- C. Structural ramps used by employees designed by a competent person.
- D. Structural ramps used for equipment designed by a registered professional engineer (RPE).
- E. Ramps constructed of materials of uniform thickness, cleated together on the bottom, equipped with no-slip surface.
- F. Employees protected from cave-ins when entering or exiting the excavation.

4. Wet Conditions:

- A. Precautions take to protect employees from the accumulation of water.
- B. Water removal equipment monitored by a competent person.
- C. Surface water or runoff diverted or controlled to prevent accumulation in the excavation.
- D. Inspections made after every rainstorm or other hazard-increasing occurrence.

5. Hazardous Atmosphere:

- A. Atmosphere within the excavation tested where there is a reasonable possibility of an oxygen deficiency, combustible or other harmful contaminant exposing employees to a hazard.
- B. Adequate precautions taken to protect employees from exposure to an atmosphere containing less than 19.5% oxygen and/or to other hazardous atmospheres.
- C. Ventilation provided to prevent employee exposure to an atmosphere containing flammable gas in excess of 10% of the lower explosive limit of the gas.
- D. Testing conducted often to ensure that the atmosphere remains safe.
- E. Emergency equipment, such as breathing apparatus, safety harness and lifeline, and/or basket stretcher readily available where hazardous atmospheres could or do exist.
- F. Employees trained to use personal protective and other rescue equipment.
- G. Safety harness and lifeline used and individually attended when entering bell bottom or other deep confined excavations.

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	6. Support Systems:	
	A. Materials and/or equipment for support systems selected based on soil analysis, trench depth, and expected loads.	
	B. Materials and equipment used for protective systems inspected and in good condition.	
	C. Materials and equipment not in good condition have been removed from service.	
	D. Damaged materials and equipment used for protective systems inspected by a registered professional engineer (RPE) after repairs and before being placed back into service.	
	E. Protective systems installed without exposing employees to the hazards of cave-ins, collapses, or threat of being struck by materials or equipment.	
	F. Members of support system securely fastened to prevent failure.	
	G. Support systems provided in ensure stability of adjacent structures, buildings, roadways, sidewalks, walls, etc.	
	H. Excavations below the level of the base or footing supported, approved by an RPE.	
	I. Removal of support systems progresses from the bottom and members are released slowly as to note any indication of possible failure.	
	J. Backfilling progresses with removal of support system.	
	K. Excavation of material to a level no greater than two feet below the bottom of the support system and only if the system is designed to support the loads calculated for the full depth.	
	L. Shield system placed to prevent lateral movement.	
	M. Employees are prohibited from remaining in shield system during vertical movement.	

	Attachment-6	
	Work at Height Work Permit	
	Refer Permit to Work System procedure with Work at Height Permit Form, HIL-PWF-2	
	The following Hazards may be encountered during the work at height:	
	<ul style="list-style-type: none"> • above or below ground level fall > 2M 	
	<ul style="list-style-type: none"> • on roof/ floor / platforms/ pipe racks or walls 	
	<ul style="list-style-type: none"> • near open edges of roofs/ floors, tanks or openings in roofs, floors or walls 	
	<ul style="list-style-type: none"> • at height using equipment (MEWP, tower scaffolds, ladder, stepladders, harnesses 	
	<ul style="list-style-type: none"> • near or adjacent to fragile materials 	
	<ul style="list-style-type: none"> • near unguarded shafts or excavations or trenches, pits 	
	<ul style="list-style-type: none"> • on unstable structure or erecting scaffolds 	
	<ul style="list-style-type: none"> • on fragile/ brittle / sloping/ uneven/ unstable/ wet / slippery surfaces or open-edges 	
	<ul style="list-style-type: none"> • on mezzanine level with no guards/ handrail 	
	<ul style="list-style-type: none"> • confined work space / low ceiling / restricted access or egress / limited walking surface 	
	<ul style="list-style-type: none"> • near live cables / overhead power lines 	
	<ul style="list-style-type: none"> • roof/ platform/ racks structures unsafe 	
	<ul style="list-style-type: none"> • fall of loose material / chemicals or objects 	
	<ul style="list-style-type: none"> • using equipment to gain height to do work. 	
	Risk assessment must ensure:	
	<ul style="list-style-type: none"> • All work at height is properly planned and appropriately supervised • Those working at height are competent and medically fit. • The place where work at height is done is safe • The risks from fragile surfaces are properly controlled 	

	<ul style="list-style-type: none"> Equipment for work at height is suitable and properly inspected and maintained The weather conditions are taken into account and all work is stopped if weather conditions endanger health or safety. Procedures in case of emergency are planned for 	
	<p>Existing structures must be stable, they must support the weight of workers and the equipment or materials they may need. Platforms must be footed on firm ground or on a stable structure to prevent them from moving. For example, scaffolding should generally be tied to an existing structure. Duckboards / crawling ladders should be provided over fragile roofs and light roofs. Where people could fall through holes or openings in a platform floor guard rails, boards or other barriers such as toe boards should be erected. Wherever possible, safety net shall be used to arrest fall from height. For ascending and descending, fall arrest system with grab hook shall be used. Full body safety harness should have two ropes with anchoring hooks and preferably shall be anchored to two independent anchor points. Your risk assessment should help you to choose the most suitable type of equipment to use</p>	
	Reduce the risks of objects falling from height	
	When people are working at height it is essential to consider the risk of objects falling onto somebody or something below.	
	Any hand-held equipment such as drills, saws, buckets can be dropped and knocked over the edge of a platform or walkway. Materials such as nails, pieces of wood and debris can also represent a significant hazard	
	<p>The following must be in place before work starts</p> <ul style="list-style-type: none"> Barriers and signs are to be erected. Barriers are to be removed as soon as possible. Beware of objects falling from above the worksite. Take care not to drop objects when working at height 	
	The following Key steps must be observed during to prevent objects falling:	
	<ul style="list-style-type: none"> Platforms should be constructed so that materials or objects can't fall and cause injury to anyone or anything below. Close boarded platforms are usually sufficient. For work over public areas, a double-boarded platform with a polythene sheet in between the boards prevents small items such as nails and bolts from falling. 	



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	<ul style="list-style-type: none"> • Toe boards also prevent items from being kicked off the edge of platforms. • Providing a covered walkway is another way to protect people below. • If you're using a cradle, harness or mobile elevated working platform (MEWP), mesh or netting can be used underneath the equipment to prevent anything falling and causing injury or damage. • Covered chutes are an effective and quick method of removing debris from work areas, and much safer than throwing over the side of a platform into a skip below. • Tools such as drills and trowels can be attached to safety lines - if they're accidentally dropped, the line prevents them falling below the work area. 	
	<ul style="list-style-type: none"> • A minimum of two persons is required for this work. • Ensure personnel in surrounding area are warned before the activity starts. • Ladders (when used) to be secured. • Lifting to stop if the load cannot be seen clearly. • Mobile cranes and mobile access towers, to be lowered and secured in transit position when moving. • Only essential work at height to be carried out in darkness. All hazards to be assessed before starting work. • Process equipment is not to be used for hand/foot holds or for supporting lifting gear or scaffolding. • Tools and equipment to be secured to avoid their being dropped. • When work on overhead cables is in progress, no passage underneath the cables is allowed except via approved routes protected by netting slung under the cables. • Work at height in exposed areas is to stop when mean wind speed exceeds 30 kts. • Work at height to stop if there is a possibility of a lightning strike or sand storm 	•

Pls refer PTW formats for Attachments 7 & 8 as below title document.

Attachment 7	Hazchem pipeline breaking and equipment opening HIL-PWF-7
Attachment 8	Heavy and Asymmetric Material/Load Lift HIL-PWF-8

Attachment-9

Monitoring, Auditing and Review of the Permit Work System

Monitoring of the system consists of regular checks carried out by supervisors responsible for managing the operation and effectiveness of the Permit to Work System.

Auditing is a systematic examination of the operation and effectiveness of the PTW System. Auditing is performed in accordance with written procedures and checklists and should concentrate on the evaluation of objective evidence.

System Review is an annual examination of the system, carried out after completion of the annual audit of the PTW System. It is to consider audit findings, proposal for change and other relevant information, to assess what changes are required to the system to optimize its effectiveness.

The objectives of Monitoring and Audit of the PTW system are:

- To establish whether the PTW system is being used as an effective hazard management tool.
- To check whether the PTW system is meeting it's stated objectives.
- To provide an opportunity for identifying improvements required to the PTW system and to the audit system itself.
- To check whether people are complying with system requirements.

The objectives of the System Review are:

- To review proposals for change to the PTW system to decide whether they should be incorporated.
- To review audit findings, incident reports and other relevant data to decide whether they indicate a need for improvements to the system.

Auditing of the Permit to Work System

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As part of normal daily duties, the authorized signatories and the area authority should carry out routine monitoring of permits. On a spot check basis they should make checks such as:

- Are the relevant hazards correctly identified on the permits?
- Are the permits and other associated documents displayed at the worksite?
- Has the documentation been completed and authorized correctly?
- Is the specified safety equipment in place, in good condition and being used correctly?
- Are the specified precautions adequate and being implemented?
- Has the work party been briefed on the work, and the requirements of the permit, and have they understood the briefings?

Quarterly Audit

Audits of the PTW system in an audit area are carried out **every 3 months**. Results of the audits should be analysed, and the audit should examine a number of different PTW Activities. Individual Permits may also be audited in detail.

Corporate EHS Team PTW System Audit

Corporate EHS team shall conduct EHS Audit on the PTW system.

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