UNITED CONTRACTING WORKS PVT. LTD.

Engineering Division:
* Fire Protection & Detection System
* Plumbing, Sanitary & Drainage System
* Annual Maintenance Contracts

CIN No. : U74140DL2015PTC279235

PROJECT SAFETY PLAN

SUBMITTED BY
UNITED CONTRACTING
WORKS PVT. LTD

SCOPE OF WORKS

LISTS OF MAJOR MACHINERY & EQUIPMENT:

a) Hand tools - Screw driver, pliers, hammer, wrench etc.
b) Power tools - Hand Drill m/c, cutting off m/c, grinding m/c, chipping m/c, etc.
c) Welding Machine
d) Scaffolding, ladders etc.
e) Lifting Tools & Tackles, cran

PROJECT SAFETYPLAN

COMMITMENTS FOR OCCUPATIONAL SAFETY & HEALTH:

United Engineering Worksrecognizes that the People are our most important asset. So we are committed to identify & mitigate potential Health & Safety hazards in all our activities in site which may pose a risk to our employees, liability to the CLIENT or having potential for disruption of site Operations.

OCCUPATIONAL SAFETY & HEALTH POLICY & OBJECTIVES

PURPOSE:

To provide a system for formulating the Safety Policy for the organization and showing the intension of the Management with respect to Safety.

POLICY FORMULATION:

The Safety Policy of the organization has been formulated addressing: -

- The nature and scale of safety risks of the organization.
- Top Management's commitment to the continual improvement, compliance to relevant Safety legislations and regulations.
- Compliance of the available Safety Guidelines related to the work we perform

The Safety Policy has been issued by the Top Management of the Company. The policy stands good and we are committed for its implementation at the project. The same reads as fo

The Policy will be made known to all employees and others involved with the Project's construction activities through display at conspicuous locations at site and through discussions within the departments.

We will make the policy available to the public on request.

SAFETY OBJECTIVES

In order to meet the requirements of the Organization's Safety Policy the following objectives have been set.

1. Minimize risk to our employees and other interested parties who may be exposed to Safety risks associated with our activities.
2. Continual improvement of the Safety Management System.
3. Reducing the frequency of all accidents and incidents and minimize the days lost.
4. Train and retrain the Site Personnel for enhancing their competence and expertise.
5. Develop use of Personal Protective Equipment (PPE) and improve safety culture.
6. Integrate Safety with other project execution processes.

1. RESPONSIBILITY FOR SAFETY: -

Individual responsibility of the:

DESIGNATION	SAFETY RESPONSIBILTY
Project Manager	Understand Company Safety Policy and appreciate the responsibility allocated to each grade
	Determine at the planning stage · The most appropriate order and method of working · Allocation of responsibility with subcontractors and others · Hazards which might arise from overhead or underground power lines and other situations which might lead to unnecessary improvisations on site.
	Facility for welfare and sanitation.
	Provide instruction to establish working method, to explain the sequence of operations, to outline potential hazard, at each stage and indicate precautions to be adopted.
	Check over working methods and precautions with the site team before work starts.
	Ensure that work, once started is carried out as planned and the Construction regulations and other relevant legislation are observed at site.
	Make certain that section heads; engineers supervisors and foremen understand & follow the safety rules during their work.
	Take appropriate disciplinary action against the repeated violator of the stated safety rules.
	Arrange resource for implementation of safe operational practice at site
Safety Officer / Supervisor At Site	Carry out safety inspection of work area, work method, men, machine & materials and other tools and tackles
	Conduct training & awareness programs at site including Tool box

	Liaison with client's safety representative with regard to safe job execution at site.
	Representing the organization in contractor's safety meeting.
	Conduct investigation of all incidents/dangerous occurrences and recommended appropriate safety measures.
	Plan procurement of Personnel Protective equipment's and safety devices and inspect before use as per laid down norms
	Design & campaign, safety programs to promote safety in the work place
	Conduct fire drill and facilitate Emergency preparedness.
	Advice and Co-ordinate for implementation of work permit system.
	Facilitate inclusion of safety elements into work method statements.
Project / Site Engineer	Ensure that all machineries, equipment's, plants deployed at site are safe and fully efficient; is guarded and equipped with safety devices and is tested in accordance with the Construction Regulations.
	Make sure that all operators are employed only on equipment for which they have been thoroughly trained.
	Attend promptly to all plant defects notified or call the attention of Site Management to the need for dangerous plant, machinery and equipment to be put out of service until it can be properly repaired.
	Ensure that, where necessary, required Personnel Protective equipment's are provided and worn.
	Check that hired equipment and vehicles are safe and those, where appropriate copies of current test certificates are available.
	Check that periodic tests, inspections and maintenance are carried out.
	Proactively carryout the hazardous situation related to the job under their control and to adopt the necessary precaution after consulting the safety engineer.
Site Supervisor	Organize sites so that work is carried out to the required standard with the minimum risk to men, machinery & materials.
	Make sure that suitable protective clothing is available, where appropriate and that is used.

	Give all workmen / technicians precise instructions on their responsibilities for correct working method; see that they do not require taking unnecessary risk.
Workmen / Technicians	Follow the safe work method to execute the assigned job
	Use the PPEs provide to them all time during their job.
	Don't indulge in horse play
	Follow the site safety rules without failure
Sub-Contractors	Be familiar with the Construction Regulations and other legislation applicable to the work on which their gangs are engaged and insist that those Regulations are observed.
	Restrain men from taking unnecessary risk.
	Report defects in plants & equipment's.
	Ensure that new employees particularly unskilled workmen learn to take safety precautions.
	Discourage horseplay and reprimand those who consistently fail to consider their own wellbeingand that of others around them
	Set a personal example.
	Incorporate safety instructions in routine orders and see that they are obeyed.
	Attend the trainings conducted

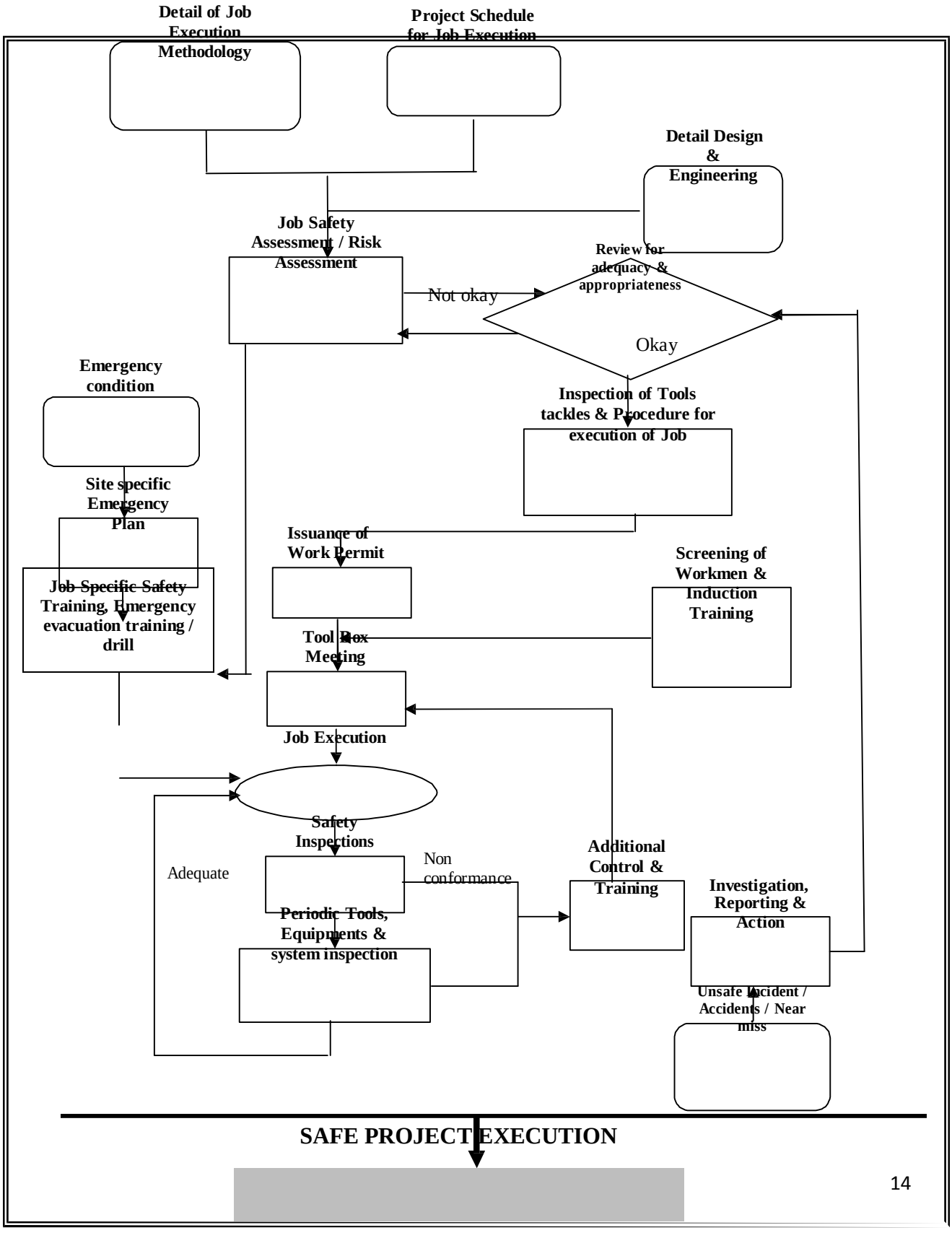
2. Award & Recognition program

United Engineering Worksdo recognize the importance of award & recognition as a part of safety management system. All our employees including sub-contractors employees will be monitored and recognized for their effort toward achieving the safety targets of the project. During safety week campaign (In the month of March each year) they should be awarded as per organization policy for the same. The same to be communicated to all the workers at site during the site induction program.

Safety awareness through display

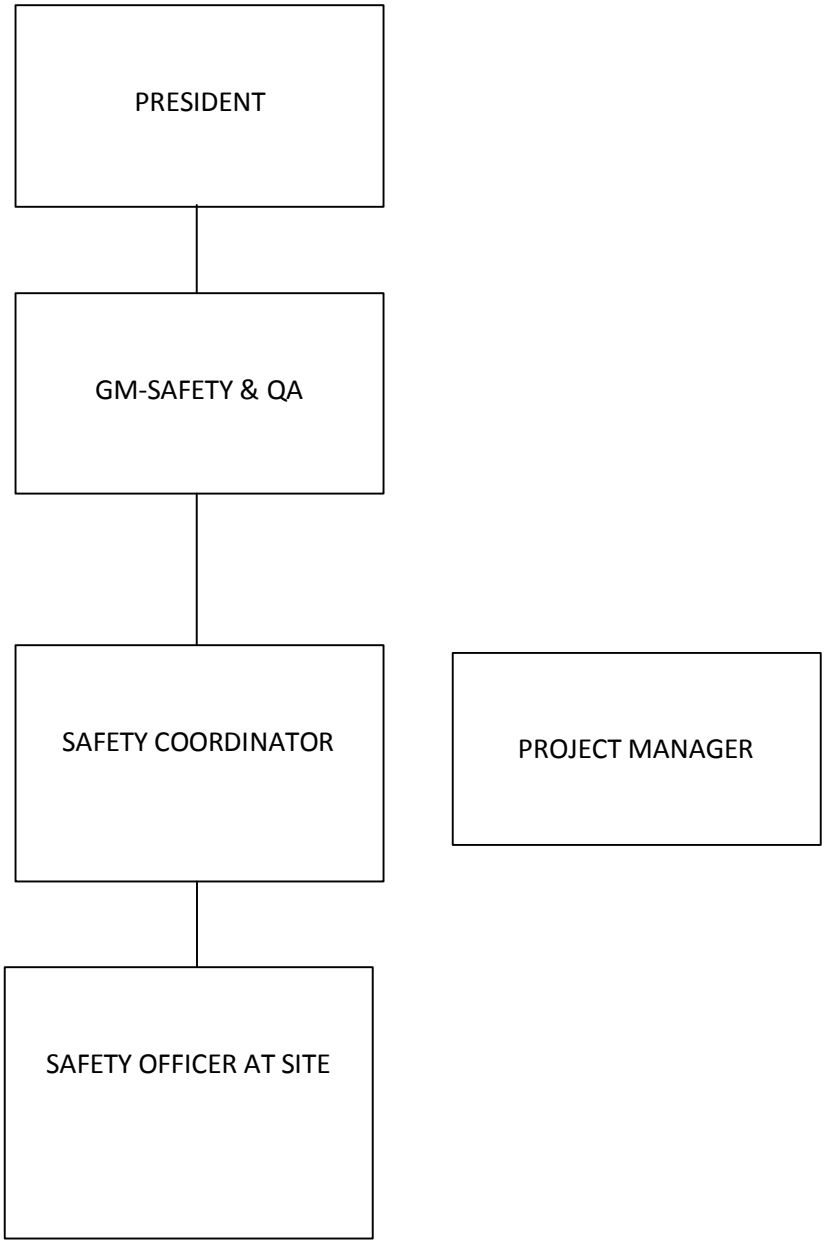
- Adequate number of safety banners and posters shall be arranged and displayed at prominent location of the site as per site requirement
- Safety week shall be observed at site for generating enthusiasm among site personnel, other EHS occasion as per contract document shall also be observed with due importance.

3. PROCESS FLOW CHART FOR SAFE EXECUTION OF PROJECT:



4. SAFETY ORGANISATION

Reporting relationship of the safety function in the form of flow chart



5. SAFETY COMMITTEE REQUIREMENTS AT SITES

Safety officer will form a safety committee, including project manager as chairman and engineers, safety supervisors/officers, contractor representatives and client safety representative can be called as witness, safety committee will conduct meeting once in a month to discuss the site safety issues and find the solution for the same.

6. WHILE COMMENCING OF SITE

6.1 Risk assessment/JSA requirement during site mobilization

At the time of commencing any construction work and anticipated project hazard & risks control measures analysis shall be performed. The project hazard & risks control measures analysis shall identify the following:

1. The anticipated activities including temporary activities of the project.
2. The types of hazards likely to be associated with each anticipated activities.
3. The control measures necessary to protect site workers from the identified hazards.
4. Critical activities and the related protective measures must be designed, supervised, approved, or inspected by a competent person.
5. Adequate means of personal protection for the people working at site.
6. Any site specific safety rules and regulations.
7. Any other specific Safety requirements from the client.

6.2. Legal requirements

Relevant legal requirements should be complied time to time and some of the legal requirements are given below

1	Indian electricity act 2003 rules 1956
2	Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996
3	Workmen compensation act 1923 along with allied rules
4	Child labor prohibition and regulation act 1986

6.3 Induction of workmen

During commencement of work by an individual he will undergo site specific induction training and record of the same shall be maintained and he will be issued an ID card without this he will not allowed to work at site.

7. GENERAL SITE SAFETY INSTRUCTIONS

Personal protective Equipment:

All PPE should as per National / International standards.

Head Protection:

Hard Hat / Safety Helmet to be used with chin strap attached to chin for all the activities in the site and provided with ventilation hole for comfort

All hard hats/safety helmets should be inspected and a record maintained of their condition. No damaged Helmet should be in use. Damaged helmet to be replaced immediately. At least10% extra stock of helmet, from the total number of manpower to be maintained at site. Helmet should never be used for any other activities (i.e. to hold paint & other material) other than head protection.

Hand Protection

Appropriate Gloves shall be used where any risk of hand injury due to cut, burn, abrasion is present due to the work practices, e.g. welding, cutting, rigging, fabrication etc.

Foot Protection

Safety shoe shall be worn by site personal considering the nature of works where foot injury may takes place, i.e. crushing injury due to material fall, penetration of sharp objects and ensure that footwear maintained clean and dry.

Hearing protection

Generally Hearing protection (ear plugs / muffs)shall be worn by personnel involved in work areas where continuous noise level exceed 85dBA for entire shift of 8 hours, or where impact noise exposure exceeds 120dBA.

Additionally Hearing protection shall be used where it is required so by the site specific hazard

Eye Protection

Proper Safety glasses shall be worn by everyone in all designated construction areas where there is a chance of eye injury due to flying dust, welding flash, penetration of sharp objects etc.

Full face shields shall be worn for welding & gas cutting operation.

No safety eyewear made of plastic or polymer shall be used for welding, gas-cutting or any other hot work

Damaged, smoked out safety glasses to be replaced immediately with a new one.

Respiratory Protection

- Approved type of dust mask shall be used where excessive dust will be generated during operation e.g. Chipping or concrete breaking operations etc.
- Dust- Mist respirator shall be used where there is a chance of excessive organic fumes / vapors generation/

Safety Belts

- Safety belts shall be worn by all personnel working at a height greater than 2M above the ground level
- Only full body harness with double lanyard shall be used for this purpose.
- Safety belt should be used for all the height work greater than 2M including working on properly constructed working platform
- Anchorage for the lifeline must be provided and in absence of any suitable anchorage point one temporary guide rope tied with two permanent structures, must be provided.

Hi Visibility jacket

- Hi visibility jacket must be worn by all employees including workmen, security and other employees who are working under the S&W at sites

Scaffolding

- All bamboo, wooden and aluminium scaffolding is prohibited. Standard Metal scaffolding is permitted
- Scaffolding shall be properly designed and erected, with its intended use in mind, where additional, anticipated loads are to be applied like bus duct erection and similar activities; the structure shall be redesigned and modified accordingly. (See working at height requirements), scaffold should be checked and tagged by the concerned as specified in HSE assurance plan (Article-32)

Fabrication and Welding

- Hot work permit shall be required prior to beginning work.
- Gas cylinders shall be stored upright and fitted with safety caps when not in use. Gas cylinders shall not be lifted by the nozzle, rolled, or used as rollers themselves.
- No makeshift valves for gas cylinders are allowed. Only use industrial type and standard fittings.
- Provide Flash back arrestor/non return valve at both (regulator as well as torch) end
- Prior to use, all equipment shall be thoroughly checked to ensure that:

- All connections are tight, all fittings such as gauges, flashback arrester etc. are functioning correctly, hoses are in good condition and free from signs of cracking.

- Avoid Kinking, twisting binding or crushing of cables.
- Ensure that all the Welding equipments are suitably earthed.
- Use right type of tools for the jobs.
- Do not let cables trail across the floor.
- All switch boards, extension boards, etc. should be protected from rain & water, no water logging should be allowed around switch boards.
- Electrical safety practices shall be followed all the time.
- One co2 fire extinguisher to be kept near the hot work area
- Area to be kept free from combustible material

House keeping

- Housekeeping shall be maintained all the time at work site
- Do not accumulate unwanted materials near the machines which may cause fire hazards. Segregation of waste material shall be done and the collection & disposal to be made as per site requirements.
- Separate housekeeping team may be engaged if required.

Excavation

- An excavation permit shall be required prior to beginning work.
- A warning or protective barricade along with hard barricade shall be provided around every excavation area. Excavated materials shall be piled at least three feet back from the edge of the excavation.
- Proper cutting angle (slop / angle of repose) to be maintained in any excavated pit or trench depending on the soil condition.
- Shoring, hard barricading shall be considered for an excavated area depending upon the working condition & area of operation.
- Every excavation shall have a safe access way.
- All excavation walls shall be inspected before being entered and after a heavy rain.
- No one is permitted in an excavation while construction equipment is working next to the edge.

8. SITE SAFETY PROCEDURES

- Site entry- Personnel, equipment and materials shall enter and exit the site only after taken permission from the client's representative
- Specific procedures and safety orientation/induction shall be followed.
- Running is permitted only during an emergency.
- Smoking is only allowed at designated areas or as per site requirements.
- Dike / secondary containment shall be provided for oil storage
- Safety signs and specific site safety rules should be followed strictly.
- Requirements of Work permits shall be followed strictly as per the site specific requirements,
- if doing work at night take night work permit from the concerned authority
- Barricade shall be provided for all construction works as necessary as per customer requirement
- First Aid Box should be kept handy inside the stores and site office and tie up with nearest hospital to be made for further treatment if required
- All job related injuries or hazardous material exposures shall be reported
- Proper stacking of material to be practiced all the time at site. Stacking height should not cross more than chest height where manual material handling shall be done.
- Stacking of pipes / other materials which may roll shall be followed safe stacking method with stopper at base
- Basic Personal Protective Equipment like Safety Helmet, Safety Shoes and Protective goggles are to be provided for all entering the site, visitors needs to have entry pass and they should be briefed about site safety norms before entering site.
- Working personal with loose garments / Dhoties shall not allow for performing in critical activities. Loose shirttails must be tucked into pants.

9. TRAINING

- "Training-Education" is one of the most important elements of any safety program. The training content should be able to demonstrate that the personnel working at site are conversant with and adhere to all relevant occupational health & safety legislation, codes of practice, manufacturer's and supplier's specifications, including site safety and environmental instructions.
- The safety training shall be provided considering the hazard associated and the control measure for all the critical activities of the site, which includes Safe access, Height work, safety in Fabrication job, proper usage of PPEs, Electrical Safety, Machine tools & hand tools safe usage, Safety in hot work, Excavation job etc.
- Planner for Safety training shall be prepared for the site considering the different requirements and criticality of the activities.
- Induction safety training shall be organized for all the S&W persons working in the site including management staff, engineers, supervisors, technician, helpers and sub-contractor peoples.
- The induction training shall include:
  - Company Safety program & policy
  - Reporting responsibilities at different level regarding safety matters
  - Site / project specific safety guidelines
  - Emergency evacuation process
  - First – aid facilities etc.
- Client's Induction training to be followed strictly and it shall be ensured that no person will work in United Engineering Workssite without attending the Project specific Induction training.
- Tool box training to be conducted for specific safety topics in groups prior to start any operation. At least weekly one topic should be chosen and the tool box training to be conducted for different groups as per the monthly training planner.
- Prior to start any critical activities (e.g. bus duct erection .) training on safe work method to be discussed among work force and specific emphasis to be given upon the hazards involved & the safety control measure to be followed for that activities.
- Records of all the training shall be maintained in the stipulated format.
- Please refer the ARTICLE- 30 for training matrix for different cadre of workmen

10. SAFETY INSPECTION & AUDIT:

It is essential to conduct formal safety inspections at least once in a month in order to prevent deviations from the safety standards. Reports should be submitted.

Safety audit should cover but not limited to:

- Site Organization
- Accident control
- Hygiene facilities
- Electrical systems
- Fire prevention
- Safe Work procedures
- Mechanical equipments
- Staking & storage of material
- House keeping practices
- Daily site inspection logs
- Protective equipments
- Safety training, Tool box talks
- First aid arrangement and first aid register
- Traffic control

Daily walkthrough safety inspection shall be carried out by site safety representative. The hazards identified and the action taken against those hazards shall be recorded in Daily safety inspection Log.

Specific inspection of tools & tackles, Electrical systems, PPEs, etc. being used for the project activities shall be carried out as per the HSE assurance plan (Article-32).

The outcome of the inspections and auditing shall be discussed with Site management and with the branch safety coordinator of United Engineering Worksfor further improvement in safety performance.

11. HAND AND POWER TOOLS

- All hand and power tools, and similar equipments are to be maintained in a safe condition and all power tools must be tested & tagged.
- When power- operated tools have provisions for safety guards, they must be equipped with such guards when in use.
- Any belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment are to be guarded, if such parts are exposed to contact by workers, or otherwise create a hazard.
- Machine guarding must be provided to protect the operator and other employees from hazards created by point of operation, nip points, rotating parts, flying chips, and sparks.
- The guarding is to be in conformity with any appropriate standards therefore, or in the absence of applicable specific standards, is so designed and constructed as to prevent the operator form having any part of his body in the danger zone during the operating cycle.
- The following are some of the machines, which usually require point of operation guarding: guillotine cutters, shears, alligator shears, power presses, milling machines, power saws, jointers, portable power tools, forming rolls etc.
- When the periphery of the blades of a fan is less than (2.128 m) above the floor or working level, the blades must be guarded. The guard must have openings not larger than (1.27 cm).
- Employees using hand and power tools are exposed to the hazard of falling, flying, abrasives, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases. All personal protective equipment shall meet the requirements and be maintained according to National / International Standard.
- All hand held powered platen sanders, grinders with wheels 5.08 cm diameter or less, routers, planners, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks one- fourth of an inch wider or less, are to be equipped with only a positive " on-off" control.
- All hand held powered drills, tapers, fastener drivers, horizontal, vertical, and angel grinders with wheels greater than 5.08 cm in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools, are to be equipped with a momentary contact " on-off" control, and may have a lock- on control, provided that turnoff can be accomplished by a single motion of the same finger, or fingers that turn it on.
- All other hand- held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, are to be equipped with a constant pressure switch that will shut off the power when the pressure is released.

Hand Tools

- Workers must learn to recognize the hazards associated with the different types of tools, and the safety precautions necessary to prevent injury from those hazards.
- Do not use broken, defective, burned, or mushroomed tools. Report defective tools to the supervisor for replacement.
- Always use the proper tools and equipment for any task you may be assigned to do. For example: do not use a wrench as a hammer, or a screwdriver as a chisel.
- Do not leave tools on scaffolds, ladders, or any overhead working surfaces, Rack, bins, hooks, or other suitable storage space must be provided and arranged to permit convenient arrangement of tools.
- Do not strike two hardened steel surfaces together (i.e., two hammers, or a hammer and hardened steel shafts, bearings etc.).
- Do not throw tools from one location to another, from one worker to another, or drop them to lower levels.
- When necessary to pass tools or material under the above conditions, suitable containers and/ or ropes must be used.
- Wooden tool handles must be sound, smooth, and in good condition, and securely fastened to the tool.
- Sharp- edged or pointed tools shall never be carried in employee's pockets.
- Only non-sparking tools shall be used in locations where sources of ignition may cause a fire explosion.
- Tools requiring heat-treatment shall be tempered, formed, dressed, and sharpened by workmen experienced in these operations. Wrenches, including adjustable pipe end and socket wrenches are not to be used when jaws are sprung to the point that slippage occur.

Power tools-Electrical

Electric tools present several dangers to the user; the most serious is the possibility of electrocution. Only assigned, skilled operators shall operate power tools (operators must be provided with separate training and same to be mentioned in the ID card as power tools operator). The following safe work procedures shall be implemented and enforced at all United Engineering Worksprojects:

- All electrical power operated tools are to be double insulated or grounded
- Loose clothing, long hair that is not secured, gloves, rings and other jewelry shall not be worn around rotating equipment. Sleeves should be kept buttoned and rolled up.
- Materials should be secured when power tools are applied to it.
- Each power tool should be examined before use, for damaged parts, loose fittings, and frayed or cut electrical cords. Defective tools should be tagged and taken out of service.
- Put off the power supply before perform any tool change, other setting / adjustment activities while working with power tools.
- Interlocking devices shall be in working order and shall never be bypassed.
- All tools shall be checked periodically as per the HSE assurance plan (Article-32) and tagged. Tagging system should be followed at all United Engineering Workssites.
- The use of electric cords for hoisting or lowering tools is not permitted.
- Tools must have either a three-wire cord with ground and be grounded, double insulated, or powered by a low-voltage isolation transformer. A Earth Leakage circuit breaker (ELCB) must be used to prevent the worker from electrical shock hazards.
- Never remove the third prong from the plug.
- Electric tools shall be operated within their design limitations.
- Gloves and safety footwear are recommended during use of electric tools.
- When not in use, tools shall be stored in a dry place,
- Electric tools shall not be used in damp or wet locations.
- Work areas shall be well lighted.

12. ELECTRICAL SAFETY PRACTICES – GENERAL

- All electrical cables must be in good condition free from any physical damage.
- All electrical cables running across walkways, roads, etc.: Shall be sufficiently covered against damage or shall be suspended at least 2 meters in the height.
- All Electrical Distribution Boards shall be protected with ground fault circuit interrupters,
- All electrical cables, boxes, power tools and other equipment shall be checked regularly against physical damage prior to start its operation.
- All electrical power tools must be double- insulated type.
- GFCIs / ELCBs to be tested periodically as per the HSE assurance plan (Article-32). The record for the same to be maintained.
- Only Metal Clad industrial Plug socket to be used to draw electrical power from an extension board and DBs
- Never draw electrical power by inserting necked wire for any temporary purpose and for whatsoever urgency in any United Engineering Worksproject sites.
- Earthing should be as per IS 3043.
- All metallic part of any electrical powered equipment, including welding machines shall be provided with body earthing.
- Electrically non conductive materials shall be used for securing lighting strings to supports.
- All stationary / fixed type equipments other than portable power tools used for fabrication job must be provided with separate starter / switching device. Only portable electric equipment shall be permitted to draw power from a power socket directly.
- For lighting and other indoor job if domestic socket is used, that must be shuttered type.
- All DBs or switchboards shall be kept lock during normal condition.
- Temporary lights shall be equipped with guards to prevent accidental contact with the bulb.

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- Temporary lights shall be equipped with. Heavy-duty electric cords with connections and insulation maintained in safe condition.
- Temporary lights shall not be suspended by their electric cords, unless cords and lights and lights are designed for these means of suspension.
- Splices shall have insulation equal to that of the cable.
- Extension cords shall be protected against accidental damage as may be caused by traffic, sharp comers or projections and pinching in doors or elsewhere.
- No Flexible wire shall be used at site for any activities in United Engineering
- Worksproject site. During handover/Pre-commissioning/Charging time please ensure
- LOTO (Lock out and
  Tag out) procedure to be followed.

  Ensure proper shutdown of the system as required after seeking permission of client and other agencies as required.
- After completion of the activity the system can be charged only after proper communication with client and relevant other agencies and the tag to be removed only by the electrician engaged in that job after ensuring the safety of the equipment.
- Caution and danger board to be pasted in electrical equipment's
- Permit to electrical works to be followed as per Indian electricity rules-1956 (annexure-V)
  No work to be carried out on electrical lines under adverse weather conditions
- Standard rubber hand gloves to be provided for working at electrical lines and rubber mat to be provided wherever required
  All machinery's to be earth protected & the earth resistance value to be periodically tested & recorded

13. SAFETY IN ELECTRICAL TESTING AND COMMISSIONING:

- It is important to understand that electrical testing & commissioning activity some time generates voltage & currents that can cause harmful or even fatal electric shock.
- Do not perform an electrical testing activity at an electro static discharge (ESD) work area.
- Only experienced and qualified personal are allowed to perform testing activity.
- The work area to be barricaded/fenced against entry of unauthorized people and"caution-Testing activity under progress" signage to be displayed.
- Die-electric withstand test equipment shall be connected to a good ground for protection of operator.
- Test equipment and device under test should be positioned in the safest manner possible; the testing engineer should not have to reach over the device under test in order to start, stop or adjust the testing equipments.
- Risk of a testing engineer accidentally touching the devices under test while the test is in progress shall be eliminated.
- Make sure that return circuit of the tester should not be open as in that case, the enclosure of the equipment under testing can become energized and will lead to severe consequences.
- In case of DC testing the equipment under testing should be discharged prior to open the testing circuit by using a hot stick probe to remove the possibility of hazards due to stored energy.
- Testing engineers working near exposed energized electrical circuit should be trained for emergency requirements for quick response.
- During testing make sure that the external safety ground connection is secure.
- Always connect the return lead of the test equipment first.
- Prior to starting the test double-check and verify that the test connections are being made properly
- In case of any problem during testing turnoff the high voltage first.
- Make sure the equipment under testing has been discharged properly before touching the connection during DC testing
- Appropriate safety PPE, including safety shoes, and safety helmets must be used during testing and pre-commissioning activities.

14. COMPRESSED GAS SAFETY

- Compressed Gas such as oxygen, acetylene, Carbon dioxide, Nitrogen, Argon cylinders shall be handled with care, properly supported in an upright position away from any source of heat and securely tied off.
- All compressed gas cylinders in use shall have valve key on the valve. All cylinders not in use shall have the protection valve cap in place and shall be stored in a designated outside the work area.
- During handling from one work is to other all compressed gas cylinders should be secured on a cylinder trolley. Usage of loose cylinders should be avoided.
- Compressed gases, including air, shall not be used for cleaning clothes, the body or work areas.
- When gas cylinders are required to be lifted by hoisting equipment, a basket, cradle or similar handling device shall be used. Slings directly attached to cylinders are strictly forbidden.
- Cylinders shall never be lifted by the protective valve cap.
- Do not strike an arc on cylinders.
- Do not use cylinders as rollers.
- Before connecting regulators to cylinders, carefully crack open the cylinder valve to blow out any foreign particles. Close the valve. After the regulator is connected, ensure that the second stage of the regulator is closed. Stand to one side and open the cylinder valve slowly.
- Open valves on all fuel gases except acetylene (propane, mapp, natural gas etc.) completely to backseat valve and prevent leaking. Acetylene valves should be opened one quarter turn only.
- Do not exceed 15 psi on the torch when using acetylene.
- Cutting nozzle to be cleared regularly and kept clean to prevent flash back.
- Use proper hose preferably with pressure testing certificate and rated for that purpose.
- When lighting a torch (1) open the fuel gas valve (2) light the torch (3) then open the oxygen valve. Use an approved spark lighter. Do not use matches, cigarette lighters, or cigarettes light a torch. Reverse the order to shut down the torch.
- Keep oil and grease away from oxygen regulators, hoses and fittings.
- Inspect all hoses, gauges, and torches before each use.
- **ISI marked Flash back arrestors and non-return valves should be provided both at cutting torch and regulator end.**

15. WELDING

- Welding equipment shall be installed so that it can be seen continuously by the welder during welding activities.
- Welding equipment shall not be placed in the path of falling sparks.
- Welders and welder helpers must use adequate eye and face protection while welding.
- Body earthing must be provided for welding machine connection.
- Welding leads shall have proper insulation. Welding cables with damaged insulation should be removed from operation.
- Bare conductor should not be used (iron re-bar) as return lead for welding circuit.
- Electrical power cable & earthing lead should not be crisscross each other.
- Cable terminal box should be of good condition providing adequate safeguarding from accidental touch with electricity.
- Proper cable Lug (aluminium for aluminium welding cable & brass for copper cable) shall be provided for welding cable connection.
- Welding electrode holder shall have Knuckle Guard to prevent accidental touch with the metallic part of the holder.
- All the welding machines used at the United Engineering Worksproject sites should be checked as per HSE assurance plan (Article-32). The record for the same has to be maintained.
- Current control device to be in proper order in any welding machine.
- Welding Stubs to be collected in designated bins after the day's work and be disposed off to the vendor as per housekeeping and waste management plan

16. CRANES, MATERIAL HOISTS AND OTHER LIFTING EQUIPMENT & TOOLS

- All cranes and other lifting equipment including slings & D shackles shall have a valid statutory "load test certificate" before entering worksite. This equipment shall be inspected on a regular basis, and a valid test certificate shall be available at the times the equipment is on the worksite.
- All lifting gear and material must have valid certificates from competent authority. The area where hoisting activities are being carried out shall be roped / barricaded off. Personnel inside the rope area shall be only those directly employed on the hosting activity. No one is allowed to walk under the suspended load or boom under load.
- Safe working load to be clearly displayed on the lifting gear and marked on the lifting tackles e.g. slings and "D" Shackles.
- Over loading is totally prohibited. The total material weight has to be verified prior to lifting.
- Only trained, authorized operators to handle cranes.
- Tag lines shall be used to control all loads. The tag line shall not be wrapped around the hands or body.
- Cranes with live booms are not permitted on site.
- Make sure at least two wraps of wire ropes remain on the drum when the load hook is in the extreme low position.
- Boom angle indicator & load chart must be available with the cranes.
- Slings & other lifting tackles should be inspected at regular interval as per HSE assurance plan (Article-32) and shall be discarded if find damaged deformed or reduced dia.
- Chain pulley block must have a valid test certificate and must be inspected for its locking arrangement and any damaged chain links.
- Riggers and equipment operators shall know the weight to be handled and the capacity and proper use of handling devices (cranes, forklifts, chain falls, come alongs, clamps, chokers and shackles) before proceeding.
- Detail inspection & risk assessment to be carried out and the safety precaution / control to be in place prior to start any critical lifting operation.
- All outdoor heavy lifting operations to be suspended if the wind speed exceeds 40 kmph.
- Over load tripping devices must be provided on the hoists and cranes.

17. SCAFFOLDING AND LADDER SAFETY

Tubular Scaffold & Frame Scaffold

- Scaffold must be provided for all work which can not be safely done from the ground or part of the building.
- Ladders, properly secured, can be used – but only for light work which can be done with one hand
- Scaffold must be erected, altered, or dismantled only under competent supervision and, as far as possible, by experienced persons. All scaffolding materials must be inspected before use to check that they are up to standard.
- Scaffold must be kept in good order and every effort made to prevent the accidental displacement of any part.
- In a scaffold when platforms are being moved to the next level, the existing platform is left undistributed until the new bearers have been set in place and braced prior to receiving the new platforms.
- No rigging shall be done from scaffold handrails, mid rails, braces.
- Adjusting screws shall not be extended more than 12" of thread.
- Scaffolds under which personnel are to pass shall be provided with ½" mesh, 18 gauge wire screen or equivalent between the toe board and handrail.
- No make shift components / spares to be used against the actual designed components.
- Proper lock pins to be used to lock the bracings.
- The following points to be checked before using scaffolding:

Check from the ground:

- Base plates and sole plates, particularly as there is only a single line of standards.
- Line of standards and ledgers. Standards vertical
- Spacing of putlogs.
- Working platform. Check line and even support of boards: over-hang: lapped boards and fillets.
- Guardrails and toe boards
- Security of boards, toe boards and guardrails
- Longitudinal bracing
- Means of access

Check on the scaffold:

- Spade end of putlog fully home (75 mm in brickwork bed joint)
- Ties, particularly on lift below working platform or, in early stages, rakers on alternate standards.
- Platform loading (Not overloaded)
- Security and correct use of fittings, couplers, etc.
- Condition of tubes and fittings
- Damage from fallen material
- Security of stacked materials.

Freestanding Mobile working scaffold

- These scaffolds shall be used for activities like conduiting, cable tray work etc. and scaffold should be placed on firm and even surface
- Mobile Scaffold towers top plat form shall not be higher than 3.5 times of the minimum base dimension, unless secured to a permanent structure. (I.e. if the width of the scaffold tower is 2M. then the height of the top platform should not exceed 3.5 times of 2M, e.g.7M)
- Where space permits, all scaffold platforms shall be equipped with standard 42" high handrails rigidly secured (not wired) and standard 21" high mid rails, completely decked with safety plank or manufactured scaffold decking and equipped with rigidly secured toe boards on all four sides. Decking planks shall be secured in place. Planks shall overhang end supports a minimum of 6" and a maximum of 12".
- Rolling scaffolds shall be used only on a stable level, smooth surfaces, or the wheels shall be contained in wooden or channel iron runners. Personnel shall watch for overhead clearance when moving a scaffold. Casters shall be pinned.
- Bricks, tiles, blocks and similar material shall not be stacked higher than 24" on the scaffold deck.
- A scaffold shall be tied off or stabilized with outriggers while working on it.
- After the inspection scaffolds must be tagged
  Green tag-Safe for use
  Red tag-Unsafe for use
  and tags must be signed by the inspector who carried out inspection of scaffolds, and same procedure should be followed for ladders as well.

17.3. Ladders

- All ladders shall be of proper length and in good condition. The use of ladders with broken or missing rungs or steps, broken or split side rails or with other faulty of defective construction is strictly prohibited in United Engineering WorksProject Site.
- Use of metallic ladders in close proximity to live electric wiring is strictly prohibited.
- Use of ladder in a horizontal position as walkways or as scaffolds is strictly prohibited.
- All ladders shall extend at least 1m above the level to be served.
- No portable single ladder should be more than 6m in length. The spacing of rung shall be 250 to 300 mm.
- All ladders shall be placed at a maximum verticality of 4:1 (4 vertical to 1 horizontal) having clear access at top and bottom.
- The ladder should be securely lashed or otherwise fastened to prevent its slipping.
- The feet of the ladder should be placed on a substantially firm and level base, and not on any other loosely kept / held objects, like barrels.
- Wooden boxes etc. Never place a ladder in front of a door that open towards the ladder, unless the door is locked, blocked or guarded.
- While ascending or descending the user shall face the ladder. Use both hands and place his feet at the side rather than the middle of the rungs.
- Do not work from the top rungs of any straight or extension ladder. Do not
- work or stand on the top of a stepladder.
- Step ladders shall not be in use with damaged spreaders lock.
- Extensive usage of ladders as only means of access is not permitted at United Engineering Workssite. Use of Extension Ladder & Step ladder must be avoided as far as possible at site.
- **Inspection of ladders shall be carried out as per HSE assurance plan (Article-32) in United Engineering Workswork site.**

18. WORKING AT HEIGHT

The following points to be taken care during working at height:

- All the workers will be explained safe work execution plan and related safety precaution to be adopted.
- Proper usage of PPEs (full body harness with proper anchorage & Safety Helmet with chin strap in place) shall be ensured at the time of working.
- A communication system have been established and explained to the workers.
- Adequate illumination has been ensured in case of night work.
- Work-area inspected prior to starting of the job.
- Area below the workplace shall be barricaded as per the site rules, especially below hot- works.
- Workmen provided with bag/ box to carry bolt, nuts and hand tools.
- All work platforms to be of adequate strength and ergonomically suitable (i.e. if 32 mm Wooden board is used for platform, adequate support to be provided in every 1mt., for 38 mm. board maximum span length should not exceed 1.5 mt.)
- Fabricated make shift arrangements are checked for quality and type of material welding, anchoring etc.
- Workmen are instructed to strictly compliance to anchor the safety belt during higher elevation (more than 2M of height) job.
- Proper arrangement made (life line etc.) for anchoring the safety belt.
- Fall protection device (Fall arrestor) to be used for height work wherever required

19. MATERIAL HANDLING OPERATIONS MANUAL / MECHANICAL

Material handling alone is found to be responsible for twenty five percent of total accidents that take place in industry.

Manual Handling Of Materials:

- Some of the common injuries during manual handlings are:
  - Cut fingers due to sharp edges.
  - Burns due to handling of hot articles.
  - Foot injuries due to dropped articles.
  - Fingers getting caught underneath an object while placing it on the floor.
  - Strains to wrist or fingers because of awkward handling of articles.
  - Slipped discs due to improper posture in lifting an object.
- The following precautions are required to the observed while lifting and carrying an article manually.
  - Ensure that projecting nails, sharp edges or burns etc. are removed before lifting a material.
  - Personal protective equipment such as safety gloves, safety shoes are to be used during lifting and carrying heavy, sharp edged article.
  - If the weight is too heavy for one person to lift, then more than one person shall be engaged for the job
  - Load that is carried should not obstruct the view of the carrier. Ensure that the path way is not blocked by obstacle.
  - When more than one person is engaged, it is safer to have persons of similar capability, height etc.
  - Ensure proper lifting technique.
  - Ensure Firm grip over object to be lift by the palm and not the finger.
  - Ensure manual handling for heavy load to be kept as low as possible.

Mechanical Handling of Materials:

- Some of the incidents that take place during mechanical handling of materials are as follows:
  - The sudden failure of a wire rope or a chain.
  - The employee's hand getting caught between the object lifted and the sling used.
  - Slipping or oscillating of the load at the time of lifting.
  - The load while being traversed by overhead cranes faces a structural or other obstruction and cause accident.
- The following precaution should be taken to prevent any incident due to mechanical material handling:
  - Competent supervision
  - Proper PPEs is a must
  - Use of guide rope during material lift with a crane
  - Check for access, material objection & road condition prior to do the material handling
  - Ensure adequate lighting during night time
  - No over loading of the lifting equipment
  - Check all the lifting tackles for its operable condition

20. BARRICADES :

- Temporary Barricades with caution tapes shall be provided around work areas to provide a visual guard to prevent unwanted movement of persons, including excavations, holes, and openings in floors, roofs and elevated platforms and underneath any raised load / overhead job / hoisting work.
- Barricades shall be about 42" (one meter) high and maintained square and level.
- For a longer job for several weeks in a same area and a physical protection is required, Hard Barricading / Protective barricading shall be installed, e.g. Wooden post, Fabricated steel frame etc. Hard barricading shall be fixed rigidly into the ground to withstand some load.
- Hard barricading should be designed to withstand at lease 200 lbs of force in any direction with minimal deflection.

21. GUARDING OF OPENING & CUT- OUTS:

- There should be no opening in any work platform except for allowing access to such working platform.
- All holes or openings through floors or decking at all elevations shall be provided with hole covers made of. Re-bar mesh shall be placed over the opening or the hole shall be guarded by a railing with toe board.
- Material and equipment shall not be stored on a hole cover.
- Every hole cover shall have a sign reading "WARNING – TEMPORARY COVER – DO NOT REMOVE UNLESS AUTHORISED" or shall otherwise identified
- A hole cover shall be cleated, wired or otherwise secured so it cannot be slipped sideways or horizontally beyond the hole.
- Every hole cover shall extend adequately beyond the edge of the hole.

22. HOUSE KEEPING

- The worksite and premises shall be maintained in a healthy, clean and sanitary condition. The walkways and roadways shall be maintained clean.
- Special attention shall be given to remove of slipping and tripping hazards and to proper stacking of materials. The stacking height to be maintained at chest level wherever possible.
- Stack or place materials, tool and other equipment in such way that no hindrances to occur in actual work area.
- Remove trash and debris daily from the worksite and premises including nails & welding stubs.
- Remove combustible scrap daily from work site and collect the same in designated bins as described in housekeeping & waste management plan
- Separate house-keeping person to be engaged if required.
- House keeping shall be checked regularly during daily site safety inspection.

23. VEHICLES AND TRAFFIC MOVEMENT AT SITE

- United Engineering Workspersonnel engaged at site shall comply with all site rules, regulations and signs regarding traffic and vehicles at all times.
- Hauled material that overhangs the sides or ends of a truck shall be marked according to applicable regulations.
- Loads shall not be suspended from a cable that allows swinging beyond the sides of a truck or crane.
- Vertical clearance of the route to be used shall be checked prior to moving equipment or high loads.
- Prior to moving oversized loads, Safety assessment shall be carried out and a safe execution plan is to be in place.
- Condition of the Vehicles / Cranes, being used in site shall be inspected fortnightly as per the monthly safety inspection plan.
- Tool box talks shall be conducted on Defensive driving for the driver / operator. Maximum Speed limit for all the vehicles should be restricted as 15 kmph or as per site safety rule

24. FIRE PREVENTION

- Hot work (Welding, cutting) activities to be carried out under strict monitoring & in designated area at site as far as possible.
- One co2 fire Extinguisher shall be made available at job site where hot work is being conducted.
- Work permit to be taken for any hot work in critical area.
- Extinguishers, and other emergency equipment shall not be covered or blocked, Fire extinguisher and sand bucket to be kept near stores and site office as marked in the floor plan
- Suitable fire extinguishers shall be provided in all the critical areas at site like store, fabrication yard. DG area, fuel storage area, main electrical panel area etc.
- Fire extinguishers shall be maintained in operational condition all the time and inspection to be carried out on regular interval.
- Flammable materials, such as fuel oil, etc., must be properly contained, clearly identified, separately stored in a designated area and kept clear of working areas. By no means are the fuel oil and Gas cylinders allowed to be kept in the main store with other materials.
- Work area to be kept free of waste material. Proper housekeeping shall be maintained.
- All Electrical cable, power tools & other electrical equipments like welding machine, power saw etc shall be checked periodically as per the monthly site safety program in order to minimize fire risk from them.
- Training on fire extinguishing shall be carried out for electricians & technicians.
- Emergency nos. shall be kept handy & displayed in prominent location for any fire emergency.
- Mock drill shall be carried out.
- In case of emergency follow site evacuation procedure, please get a copy from client/PMC/Principle contractor, we shall follow emergency exit route plan of client/PMC/Principle contractor

25. Risk Assessment Procedure

In United Engineering Works"Risk Assessment" is an important step in protecting our employees
& Business. We recognized that "Risk Assessment" is a careful examination of what in our activities, could cause harm to the people and the environment as a hole, so that we can verify whether enough control is in place or we should take additional precaution to prevent Harm.

To evaluate a Risk of a particular job we follow the five simple steps.

1. Identify the hazards associated with the job.
2. Decide who might be harmed and How
3. Evaluate the risk and decide on adequacy of existing precaution
4. If required plan some additional control measure.
5. Record & review the assessment and update as necessary

Most of the Risk associated with our jobs are well known to us and necessary control measures are in place. We already recognized the most significant & critical activities, of the projects we do, that has a potential to lead disastrous outcome & harm to people or environment.
But through "Risk Assessment" process we shall check that we have taken reasonable precaution to avoid that injury / harm.

When thinking about the "Risk assessment" Remember:

- A Hazard is anything that may cause harm, such as – live electricity, working on ladders, lifting of load at a height etc.
- The Risk is the chance, high or low, that somebody could be harmed by the hazards, together with an indication of how serious the harm could be
- For carrying out risk assessment we need to think through the hazards & controls required in the project site we work, based on the types of the hazards & associated risks.

During Risk assessment we have to quantify the risk involved in particular activities in terms of

Hazard – What can go wrong?
Consequences – How bad could it be?
Likelihood – How often it might occur?

To assess the risk level against an acceptable criteria.

RISK ASSESSMENT PROCESS FLOW CHART

Identify the activity for Risk Assessment

Break the activity into steps and list down all the sub activities

Identify hazards involved in each steps based on the past data & experiences

Assess the risk of each step considering its likelihood of occurring (probability) & consequence (severity)

Develop solutions to eliminate or control Risk

Determine residual Risk level

TOO HIGH

OK

Get Risk assessment approved for use.

RISK LEVEL DETERMINATION MATRIX

The identified hazards will be evaluated in accordance with their probability and severity, and classified in the categories indicated below

PROBABILITY RATING CRITERIA:

Probability (P) (Likelihood of hazardous event occurring)	1. Improbable	close to zero probability
	2. Remote	unlikely but conceivable
	3. Possible	may occur, could well occur
	4. Probable	may occur several times, not surprising, occurs frequently, to be expected, likely

SEVERITY RATING CRITERIA:

Severity (S) (Degree of consequence)	1. Negligible	minor injuries such as small cuts and bruises, first aid cases, negligible environmental
	2. Minor	injury with short term effect, minor / short term environmental impact
	3. Severe	major injury or disability or ill health with long- term effect reportable under Legislation; single fatality, environmental pollution with major / prolonged effect,
	4. Extreme	multiple fatalities, environmental catastrophe

RISK MATRIX

PROBABILITY	SEVERITY			
	1. Negligible	2. Minor	3. Severe	4. Extreme
1. Improbable	-	-	LOW	MEDIUM
2. Remote	-	LOW	MEDIUM	HIGH
3. Possible	LOW	MEDIUM	HIGH	EXTREME
4. Probable	LOW	HIGH	EXTREME	EXTREME

RISK CATEGORIES / CONCLUSIONS

A: EXTREME: Hazard must be avoided (or the level of risk reduced significantly and reliably by additional controls)
B: HIGH: Hazard should be avoided (or the level of risk reduced significantly and reliably by additional controls)
C: MEDIUM: Risk to be controlled as far as reasonably practicable (existing control to be monitored strictly, additional control not required)
D: LOW: Risk is controlled as far as reasonably practicable – No further control measure necessary

RISK ASSESSMENT FORMAT

Project:	**Activity:**	
Date of Risk Assessment:	**Analyst/ Reviewer:**	**Reference No:**

Sequence of Activities	Potential Hazards / Env. Aspects (*Hazard / Env. Aspect Description & related Risk / Env. Impact*)	Personnel / Equipment / Environment at Risk	Existing Control Measure	Initial Risk			Additional Control Measure	Residual Risk			Remarks
				Probability	Severity	Risk Rating		Probability	Severity	Risk Rating	

26. INCIDENT/ACCIDENT REPORTING & INVESTIGATION

- Reporting Accident, Incident and **near misses** (Near miss is defined as an unintentional unsafe occurrence that could have resulted in an injury, fatality, or property) shall be carried out and reported to the higher-ups.

- Every work related injury or illness, regardless of severity, must be reported immediately by the worker to the site safety supervisor. All reported injuries and illnesses are to be investigated in accordance with this.

- **Accident investigations are conducted for:**
  - Injury or illness involving medical attention
  - Significant property or equipment damage
  - Injury or incident that has hospitalization potential
  - Loss of member of the body
  - Severe disfigurement

- **Procedures to be followed in case of incident/accident:**

  - Immediately provide medical attention for the affected employee(s)
  - Notify Safety Coordinator of respective branch and Project coordinator by telephone immediately
  - Follow up with **incident report (within 24 hours) in the stipulated format.**
  - For any major incident or potential near miss cases perform an Accident investigation of the incident/ accident and complete the **Incident Investigation Report**
  - Ensure that corrective actions have been implemented.
  - Copies of the Incident Investigation Report will be reviewed for completeness and proper corrective action, and shall be maintained

Note: In the case of any incident or near miss, the incident investigation report also needs to be maintained.

27. MONTHLY SAFETY PERFORMANCE REPORTING:

The project manager / in-charge must forward a report on a monthly basis (i.e. no later than the 3rd of the following month) to the United Engineering WorksSafety Dept. in the prescribe format to monitor the following items:

- Summary of Accidents/Incidents within the past month.
- The number of total man-hours worked on the project that month
- Loss time due to accident / incident.
- Work to take place in the upcoming month.
- Tool box talks conducted
- Monthly safety audit and meeting related information

28. EMERGENCY PROCEDURE

- Details of assembly points, exit routes, location of fire points and type of fire equipment and contact persons will be made known to all workmen's
- Everybody at site will be made aware of emergency plan by displaying the above information at the office and site for everyone.
- Required training will be imparted to all concerned
- Proper storage facility will be incorporated for flammables as per the MSDS provided by the manufacturer.

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29. **PPE's Matrix**

PPE's Matrix

S&W Personnel & Contractors Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Helmet- Green	Helmet- White With + Sign	Helmet- White	Helmet Blue	Helmet-Red	Helmet- Yellow	Safety Shoes	Full Body Harness	Ear Muffs / Plugs	High Viz Jackets	ID Card- Contractor	ID Card- Visitor	Welding Shield	Leather Gloves	Cutting Goggles
S&W Personnel															
Safety Engineer		√					√		√	√					
Safety Supervisor	√						√			√					
Site Personnel			√				√		√	√					
Electricians					√		√		√	√					
Visitor / Guests			√				√		√	√		√			
Contractor															
Contractor's Representative				√			√			√	√				
Gas Welding						√	√			√	√		√	√	
Gas Cutting						√	√			√	√			√	√
Electric Arc Welding						√	√			√	√		√	√	
Working at height (2 M)						√	√	√		√	√				
Working In High Noise Area						√	√		√	√	√			√	

NOTE: This is a General Guideline. PPE's Matrix & Responsibility shall be finalized by the Project Manager along with the Site Officer, Safety Manager & Contractor before the commencement of site activity.

31. Others- Welfare Facilities at Site:

- Adequate supplies of drinking water shall be made available in site.

- All containers used for distribution of drinking water shall be clearly marked as “DRINKING WATER” and not to be used for any other purpose.

- Portable container used for storing drinking water shall have tight fittings lids and be equipped with tap these shall be kept free from contamination.

- No Drinking water point shall be situated within six meters of any Washing place, Urinal or latrine

- First aid boxes shall be placed at conspicuous locations regularly inspected and contents shall be replenished.

- **Records of incident, first aid cases and other visits to the hospital shall be maintained and evaluated to identify recurring problems and corrective measures shall be implemented by the site management.**

ARTICLE 32:

HSE ASSURANCE PLAN

	ACTIVITY	PERFORMER	FREQUENCY	REMARKS
1	Safety committee meeting	Internal	Monthly	To be conducted by the safety officer
2	Safety induction for workers and for the Staff members	Site Safety In charge	Prior to engaging the workers / staff for site activity	All personnel to be engaged for site activity should under go safety induction compulsorily, without this they will not allowed to work
3	Conducting tool box training at site	Site Safety In charge	Daily /prior to new activity	
4	Tools and equipment inspection	Site Safety In charge	Quarterly and prior to use	Project engineer in coordination with the safety in charge shall carry out inspection activity.
5	Inspection of the Scaffolding and temporary structure for working at height	Site Safety In charge	Weekly, Completion of erection and prior to use and after any Change in the work condition.	Site in charge shall identify the competent person
6	Electrical safety inspection	Site Safety In charge	Once in month checked & tagged	Site Engineer in coordination with the Safety in charge shall carry out inspection activity & tags to be attached
7	Inspection of fire extinguisher	Site Safety In charge	Every three month	
8	Inspection of first aid facility	Safety officer	Once in a month	
9	Safety inspection	Safety coordinatorat branch level	During site audit	Concerned person should accompany the Safety coordinator
10	Certification of Fitness for all the equipment	Project Engineer	When the equipment first enters the site and before starts using the equipment	Project Engineer in coordination with the Site Safety in charge shall carry out inspection activity.
11	Safety statistical report	Site Safety In charge	Every month	Man hours worked can be calculated at actual basis
12	Third party inspection of the lifting tools and tackles	Competent person as per the Factories Act	Once in a year	Project Engineer in coordination with the Site Safety In charge shall verify the certificate prior to hire the cranes etc.
13	House keeping	Site engineer	As required	Separate gang & Timings

Safety Reports to be Maintained

Reports	To be Maintained
Monthly activity plan	Every month
Electrical inspection report (including PDB location)	Every month
Tool box talk report	Daily
Daily Site Inspection report	Daily
Fire extinguisher inspection report.	Every 3 month
Equipment inspection report. (for crane, scissorlift, JCB etc)	Before using them at site
Monthly HSE report (including monthly man hours report)	Every month
Scaffolding / Ladder inspection report.	Every weekly
Welding Machine & Gas Cutting set Inspection checklist.	Monthly
Portable tools inspection checklist.	Quarterly
Third party certificate for all lifting tools and tackles.	Before using them at site.
SHE committee Meeting	Monthly
PPEs Inspection Report.	Monthly
Permit System in line with site requirements.	Daily basis/weekly
ELCB Inspection Report.	Monthly
Incident Investigation Report including near miss cases.	
Emergency contact phone numbers.	To be displayed at site

ANNEXURES

<u>MONTHLY SAFETY ACTIVITY & TRAINING PLANNER</u>

(For the month of________________)

Name of the Site:

SUN	MON	TUE	WED	THU	FRI	SAT
	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:
	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:
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	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:	Date: Safety activity: Tool Box topic:

Signature of Site Safety In-charge______________________

SITE ORIENTATION FORM

Name of Employee: **(Print Name)**	**Reference No:**
Name of Project:	**Date:**
Company:	**Person Conducting the Orientation:**

The following topics are to be reviewed with all employees during their initial site orientation.

Topics

1. Information to acquaint the employee with special safety requirements of the work site, including security and traffic regulations;
2. Description of the nature of the project;
3. Accident reporting procedures;
4. How to report unsafe acts or conditions;
5. Site disciplinary procedures;
6. Personal protection equipment requirements;
7. Hazards prevalent for the work being performed (fall protection, trenching, ladder usage, scaffold safety, etc.); and
8. Emergency Communication
9. Other _____

Comments:

By signing this site orientation form, I hereby acknowledge that the basic site safety controls outlined above have been thoroughly reviewed with me and that I agree to obey by the contents of the site Safety Requirements.

_____

_____

Employee Signature Date

Note: Any employee questions regarding the Safety Requirements should be directed to the SNWPL Safety Representative.

DAILY SAFETY INSPECTION REPORT

Project:_____ **Date:** _____

SL. No.	Observation	Action Taken	Responsibility	Remarks

Signature of Site Safety In-charge:_____

	TOOL BOX TALK RECORDS		
PROJECT :		LOCATION :	
DATE :		SUPERVISOR :	
TOPIC DISCUSSED :			

ACTIVITIES	HAZARDS	CONTROL MEASURES

Sr. No.	NAME	SIGN	Sr. No.	NAME	SIGN
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

NAME & SIGN OF SAFETY SUPERVISOR:

Date:_____

Sr. No.	Contents	Yes / No	Remarks
A	**Cable**		
1	Whether the condition of Cable is checked?		
2	Are cables received from other site checked for insulation resistance before putting them into use?		
3	Are all main Cables taken either underground/ overhead?		
4	Are welding cables routed properly above the ground?		
5	Are welding & electrical cables overlapping?		
6	Is any improper joining of cables-wires prevailing at site?		
B	**DBs/ SDBs**		
1	Is earth conductor continued unto DB / SDB?		
2	Whether DBs & extension boards are protected from rain / water?		
3	Is there any over loading of DBs / SDBs?		
4	Are correct / proper fuses & CB's provided at main boards & sub-boards?		
5	Is energized wiring in junction boxes, CB panels & similar places covered all times?		
C	**ELCB**		
1	Whether the connections are routed through ELCB?		
2	Is ELCB sensitivity maintained at 30 mA?		
3	Are the ELCB numbered & tested periodically & test results recorded in a logbook countersigned by competent person?		
D	**Grounding**		
1	Is natural earthing ensured at the source of power (main DB at Generator or Transformer)		
2	Whether the continuity & tightness of earth conductor are checked?		
3	Mention the gauge of earth conductor used at site.		
4	Mention the value of Earth Resistance.		
E	**Electrically Operated Machines / Accessories**		
1	Whether the plug top provided everywhere?		
2	Are all metal parts of electrical equipment & light fittings / accessories grounded?		
3	Are Halogen lamps fixed at proper places?		
4	Are portable power tools maintained as pr norms?		
5	Any other information		

Signature of Site Safety In-charge:_____

ELCB TEST RECORDS

Project:_____ Date: _____

Date of testing	ELCB number & location	Is ELCB sensitivity maintained at 30 mA?	Test Result / Observation	Last tested on	Next Due date	Any other Comments	Signature of Authorized person

Check list for Work at Height

Site / Location :
Date and Time :
Name of Auditors :

Sr. No.	Check Points	Location-1		Location-2		Location-3		Location 4	
		Yes	No	Yes	No	Yes	No	Yes	No
1	Whether the work is performed at a height more than 2 meters?								
2	Is the work at height permit Required? Is it obtained?								
Ladder:									
3	Whether ladder/scaffolding pipe/clamps etc used are in good condition having marking of inspection?								
4	Whether ladder is placed at solid and leveled surface?								
5	Whether ladder is placed with an angle with horizontal ground > 75^0								
6	Whether the ladder used is OK? No broken rung, The rung spacing ≤ 12" etc								
7	When one person is climbing ladder, no material is in his hand and ladder is hold by another person at bottom?								
8	In case of rolling ladder its shoe brakes are applied.								
9	Is ladder tied up at upper end and its upper portion extended above 1 m from platform.								
10	While ascending and descending the ladder person faces toward the ladder or not? Does he maintain 3 point contact?								
11	Other observations for ladder:								

Scaffold :		**Location-1**		**Location-2**		**Location-3**		**Location 4**	
		Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
12	Is there any scaffold erection in progress? If yes whether only trained riggers are employed for the job under competent supervision?								
13	Whether scaffolding has been erected on rigid / firm / leveled surfaces only? Are base plates provided for scaffolding posts?								

Sr. No.	Check Points	Location-1		Location-2		Location-3		Location 4	
		Yes	No	Yes	No	Yes	No	Yes	No
14	Are the scaffolding in plumb and level?								
15	Are all braces bearer and clamps secured all sections pinned or appropriately secured?								
16	Are all the wheel / castors locked?								
17	Is there a safe and convenient means of access such as ladder (i.e. Without climbing on cross brace)?								
18	Are the gratings placed in order without undue gaps and secured properly?								
19	Is every work platform fitted with handrail (42" high), knee rail (21" high)?								
20	Are all compounds inspected for defects such as broken welds, corroded members and missing locks, bent or dented tube?								
21	Is the front / face of the scaffold within 14" of the work?								
22	Does the scaffold have a height to base ratio of at least 4:1?								
23	Is scaffold height above 6 mtr? If yes is it fastened with structure?								
24	Is electrical safety distance maintained?								
25	Is the scaffold legs are under digged or on the edge of excavation or above ground?								
26	Are properly anchored safety belts being used while working on scaffold?								
27	In case any painting or insulation work carried out without properly secured scaffold?								
a	Arrangement is made by providing life line (≥ 1" dia PP rope)?								
b	Do the workmen fasten their lanyard with life line?								
c	Is there any ladder provided for access to work location?								

Signature of Site Safety In-charge_____

(All the Ladders, Scaffolding platforms or any other arrangements for height work is required to be checked in this format periodically.)

HOT WORK PERMIT

The Hot work will be carried out in the area specified and precautions are taken to avoid o any untoward incident.

The Following measures have been taken:

1. Barricading the area	:	YES / NO
2. Posting of warning Signs	:	YES / NO
3. Providing Fire Extinguisher	:	YES / NO
4. Provided Leather aprons	:	YES / NO
5. Provided Welding Shield	:	YES / NO
6. Remove al combustible material	:	YES / NO
7. Covered all materials which are At approx 15 feet distance	:	YES / NO

I have personally checked and assure that all the above conditions are fulfilled and I am personally responsible for any lapse. We may be permitted to work from _____to _____ on ……. Please extend the date till…….. Since there is no change in the welder and location.

Contractors Name and Signature with date and time.

Department / Area where work is carried out.

We have ensured that there are no combustible materials in the vicinity and adequate precautions are taken by.

Permission is granted to carry out the work on…….and further work will be allowed only after ascertaining that all precautions are taken.

SAFETY ENGINEER / PROJECT MANAGER
The Work is extended to be carried out from

……. To……..

Safety Steward's remark

WORK CARRIED OUT SAFELY YES / NO

Date:

Signature
Returned to SAFETY ENGINEER / PROJECT MANAGER
I Copy: Contractor
II Copy: To be displayed

HAND & POWER TOOLS CHECKLIST

Project:_____ Date:_____

Yes/No	
	Are all tools and equipment (both company and employee owned) used by employees at their workplace in good condition?
	Are hand tools such as chisels and punches, which develop mushroomed heads during use, reconditioned or replaced as necessary?
	Are broken or fractured handles on hammers, axes and similar equipment replaced promptly?
	Are worn or bent wrenches replaced regularly?
	Are appropriate handles used on files and similar tools?
	Are employees made aware of the hazards caused by faulty or improperly used hand tools?
	Are appropriate safety glasses, face shields, etc. used while using hand tools or equipment which might produce flying materials or be subject to breakage?
	Are jacks checked periodically to ensure they are in good operating condition?
	Are tool handles wedged tightly in the head of all tools?
	Are tool cutting edges kept sharp so the tool will move smoothly without binding or skipping?
	Are tools stored in dry, secure locations where they won't be tampered with?
	Is eye and face protection used when driving hardened or tempered spuds or nails?
	Are grinders, saws and similar equipment provided with appropriate safety guards?
	Are power tools used with the correct shield, guard, or attachment, recommended by the manufacturer?
	Are rotating or moving parts of equipment guarded to prevent physical contact?
	Are all cord-connected, electrically operated tools and equipment effectively grounded or of the approved double insulated type?
	Are effective guards in place over belts, pulleys, chains, sprockets, on equipment such as concrete mixers, and air compressors?
	Are portable fans provided with full guards or screens having openings 1/2 inch or less?
	Are ground-fault circuit interrupters provided on all temporary electrical 15 and 20 ampere circuits, used during periods
REMARKS:-	

Signature of Site Safety In-charge:_____

EQUIPMENT INSPECTION RECORD

Date: _____

Inspector: _____

Equipment Name: _____ Serial Number: _____

Equipment Location: _____

General Condition: _____

Were any defects or safety hazards noted? YES NO

If yes, specify: _____

If you answered yes to the previous question, was equipment taken out of operation immediately and reported to supervisor? YES NO

If yes, please note supervisor: _____

If repairs are necessary, specify: _____

Note any parts in need of replacement:

1. _____ 5. _____
2. _____ 6. _____
3. _____ 7. _____
4. _____ 8. _____

Additional Comments: _____

_____ _____

Inspector's Signature Date

CHECKLIST OF THE FIRE EXTINGUISHERS

Project:_____ Date:_____

Type of FFE	Checks to be carried out	Status ok / Not ok	Status ok / Not ok	Status ok / Not ok	Status ok / Not ok	Status ok / Not ok	Status ok / Not ok
Co_2	ID no.						
	Kgs. Cap.						
	1. Weight of Cylinder	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	2. Safety lock pin	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3. Discharge Hose	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	4. Valve operation	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	5. Visual inspection	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	5.1 Color	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	5.2 Label	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
Foam	ID no.						
	Liters. Cap.						
	1. Valve operation	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	2. Discharge Hose	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3. Visual inspection	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3.1 Color	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3.2 Label	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
DCP	ID no.						
	Kgs. Cap.						
	1. Moisture	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	2. Plunger & Safety pin	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3. Visual inspection	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3.1 Color	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok
	3.2 Label	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok	ok / Not ok

PPE SUPPLY REGISTER

Name of recipient	ID Number	Item(s) issued/replaced	Issue Date	Recipient's signature confirming they have received the listed PPE and appropriate training in its use.
			/ /	
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PROJECT SAFETY PLAN

HOUSE KEEPING CHECKLIST:

DATE:_____

SL NO	CHECK POINT	YES/NO	REMARKS
1	Worksites clean and orderly?		
2	Work surfaces kept dry or appropriate means taken to assure the surfaces are slip-resistant?		
3	All spilled materials or liquids cleaned up immediately?		
4	Combustible scrap, debris and waste stored safely and removed from the worksite promptly?		
5	Metallic scrap removed from site promptly?		
6	Work areas adequately illuminated?		
7	Separate house-keeping team engaged if required?		
8	The walkways and roadways maintained cleanly without any obstruction?		
9	Whether materials stacked properly in stores to protect from rain water? Whether stacking height maintained at chest level?		
10	Appropriate signage's and safety posters displayed at sites?		

ACCIDENT / INCIDENT REPORT

PROJECT SITE: DATE:

NAME OF THE PROJECT MANAGER :

NAME OF THE CONTRACTOR :
(In case of sub-contractor personnel)

1. Name & Address of the injured person :

2. Age & Date of Birth :

3. Sex :

4. Occupation :

5. Time of Accident :

6. Exact place of Accident :

7. Description of Accident
(State exactly what injured person was doing just before & at the time of accident)

8. Name or names of person who witnessed the accident :

9. Nature or extent injury :
(Eg. Fracture, Scald, Bruise, Cut Injuries etc.)

10. Location of injury (Part of the body) :

(Eg. Leg, Hand, Head etc)

11. Details of First aid given & further measures taken:

12. Accident is due to
(Immediate Cause & Underlying Cause) :

13. Remedial measures taken to prevent recurrence :

SIGNATURE
(PROJECT MANAGER / SITE IN CHARGE)

Cc: 1. Branch Office
2. Safety Manager
3. Site File.

MONTHLY SAFETY REPORT

(For the Month of_____)

Name of Site: **Location:**

Division / Business Unit: ***Electrical / Mech / Generator*** **(Strike out which is not applicable)**

Name of Project Manager / Site-In charge:

Manpower Data:

Site Name	Safety Coordinator	Average no. of employees worked			Man-hours Worked		
		S&W	Contractor	Sub-contractors	S&W	Contractor	Sub-contractor

Loss Time Data:

No. of Loss Time Incident			Name of the injured	Mandays Loss due to Incident			Mandays loss continuing from previous months		
S&W	Contractor	Sub-contractors		S&W	Contractor	Sub-contractors	S&W	Contrctors	Sub-contractors

Positive Performance measurements:

No. of Near-miss Incident Reported	No. of safety Training Hours (including Tool Box Talks)	No of Safety audit completed	No. of Safety meeting (including Client's safety meeting)

Reported By:_____

Signature: _____

HOUSE KEEPING
&
WASTE MANAGEMENT
PLAN

1.**Waste Management**

Purpose of waste management is:

1) To establish system for collection, transfer, storage and disposal of Wastes generated from different site activities.
2) To ensure that:

a) Hazardous wastes generated from site activities are identified and collected

b) The Hazardous wastes are disposed of either to authorized scrap contractors

1.1 SCOPE:

The procedure is applicable to all wastes generated due to activities/operation/services carried at sites. Currently the following have been identified as Wastes:

i) Nonferrous Metal Scrap, generated specifically from scraps cable

ii) Iron scrap generated during cable tray fixing, etc.

iii) Welding Stubs

iv) Insulation/plastic Material

v) Packing materials

PROCEDURE:

The wastes are generated mainly from the following site activities/operations/services:

- Welding & fabrication Operations.
- Conduiting & cabling activities
- Cable tray work

2.**COLLECTION OF WASTES:**

Welding Stubs:

Welding Stubs or remaining of welding rods to be collected into a separate container. The same will be kept in a designated place further disposal.

Nonferrous Metal (copper & aluminium) Scrap:

Copper & aluminum cable cuttings and earth strips shall be collected separately and to be kept in the designated area after segregation.

Iron Scrap:

Proactive measures to be taken for reducing scrap generation. Whenever the iron scrap are generated, they are temporarily stored in an identified area within barricade to avoid any unsafe occurrences and transferred to scrap dealer time to time for recycling.

Insulation Material:

Proactive measure to be taken for reducing scrap generation. Whenever the insulation scrap generated, they are temporarily stored in an identified area within, barricade and transferred to scrap dealer time to time.

Packing materials/wooden scarp:

Collect the packing materials and wooden scrap materials in one place and dispose the same as per site specific requirements

3.**STORAGE OF WASTES:**

The storage of different types of wastes identified as above can be done by:

Nonferrous Metal (copper & aluminium) Scrap:

Nonferrous metal scrap like copper & aluminium is generated from cable cuttings & earth strips. The same will be segregated properly and be kept in their designated place for disposal to the vendor for recycling time to time.

Iron Scrap

Iron scraps are stored in an identified area within scrap yard within barricade.

3.3 Welding stubs:

Welding stubs must be collected and stored in a hazardous waste bin