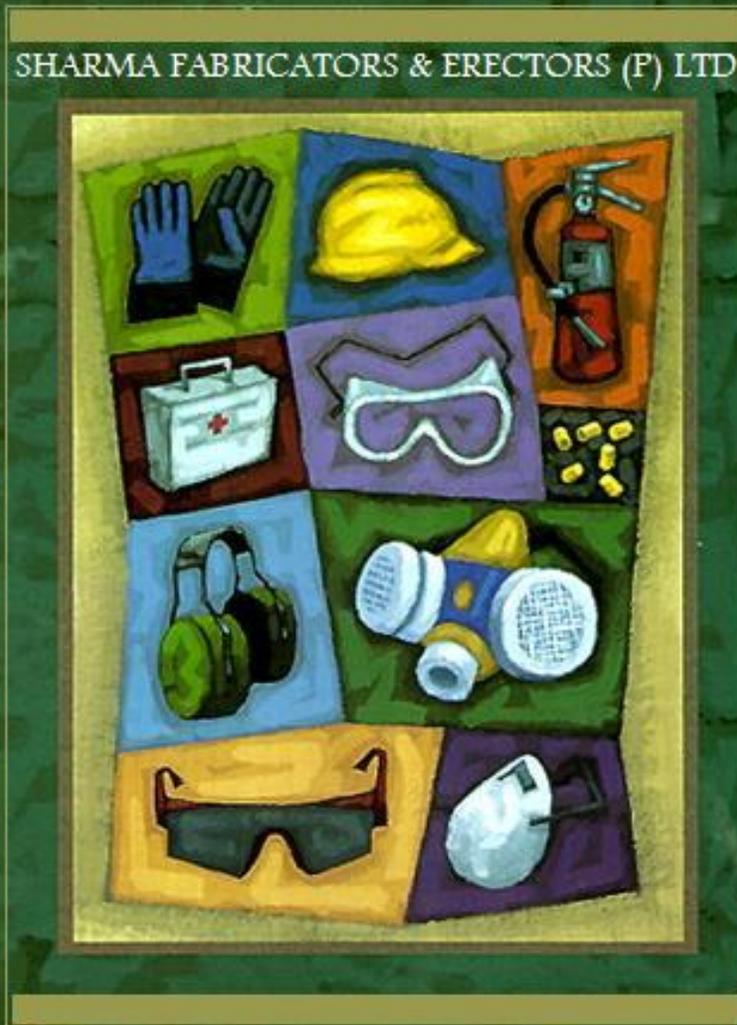


THE SAFETY AND HEALTH HANDBOOK

SHARMA FABRICATORS & ERECTORS (P) LTD.



SFE SAFETY MANUAL Doc No: F/ PROJECT- /06-01, as part of ISO 9001:2008

SHARMA FABRICATORS & ERECTORS PROPRIETORY

sfeindia.com

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SAFE:

STAY ACCIDENT - FREE EVERYWHERE

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Each year some 2 million workers suffer disabling injuries at work. Add to these injuries the gradual loss of hearing, eyesight and respiratory health experienced by other workers and you have an excellent case for using PPE—personal protective equipment—on the job.

Know Your Hazards

Workers are often unaware of the dangers in their work environments. Accidents happen fast, and many workers simply do not notice the effects of cumulative hazards until it's too late to do anything about them. Here are the facts about specific hazards in the workplace and what you can do to protect yourself.

CHECKLIST FOR USERS:

- Check for leaks & signs of wear before each use.
- Wear PPE properly. Ask your Safety Officer you're not sure.
- Use the right size.
- Follow strict guidelines for removing contaminated PPE.
- Report any problems while using PPE.

“Bodyguards” for Extreme Hazards

Think about it. Your company isn't likely to waste good money buying, and training you to use, protective equipment that you don't need. They do it because it's to their benefit to have you on the job rather than in a hospital. The good news is that designers are making lighter, stronger, more comfortable (and, in some cases, more fashionable!) PPE than ever before.

FOREWORD

This safety handbook is developed to provide workers with an information resource for safety concerns. This contains some practical and useful safety guidelines to serve as habits and rules that will help Sharma Fabricators and Erectors (P) Ltd.(SFE) workers to achieve a safer attitude and a safer work environment. Its purpose is to assist in the identification and control of workplace hazards and thereby promote a safe and healthy environment for workers.

It is the duty of each worker to comply with the company safety policy and to co-operate with the management of the company to ensure that the work place remains as safe as possible. If any person is in any doubt as to whether anything is safe or unsafe then he must assume that it is unsafe until further guidance has been given by their Site Incharge (SI) or by the Safety Officer (SO).

The representatives or SO/ SI of the company are fully committed to maintaining safe systems of work and fully recognizes their overall responsibility for safety in the work place. From time to time, you may receive updated information regarding any changes in policy.

SFE is confident that the observance of these rules will be no hindrance to the progress of work & will assist in avoidance of accidents.

Safety Matters & gives you peace of mind

PROTECTIVE CLOTHING & EQUIPMENT

YOUR PERSONAL LINE OF DEFENSE



THE RISK:

IF YOU KNOW IT, YOU AVOID IT.

**LEARNING
NO.1**



PROTECT YOURSELF FROM OVERHEAD HAZARDS



If you work in an area where things can fall on your head, your best protection is a hard hat. Because they are made of plastic molded under high pressure, hard hats resist not only impact, but water, oil, acid and electricity.

A hard hat has a built-in suspension system that acts as a shock absorber to cushion a blow. Even if the hat is dented or shattered by something that falls on it, it still takes the force out of the blow. But to provide the greatest possible protection, a hard hat needs to be properly maintained.

Wear It Right

What protects you most when you wear a hard hat is the shock-absorbing space between the hard shell of the hat and your head. So whatever you do, don't interfere with the suspension.

Suspension is greatly diminished if you wear a regular hat or parka hood under your hard hat. Instead, request a winter liner if you need extra warmth. Storing your work gloves between the shell of your hard hat and its suspension also diminishes protection. Keep that space between the headband and the shell free and clear so you'll have all the cushioning possible if something falls on you.

Keep Spare Parts for Your Hard Hat

The outer shell of a hard hat is supported by a suspension cradle that attaches to a headband. This headband keeps the shell away from your head and provides a cushion if you're struck by a falling object. Since the headband and cradle are crucial to your protection, it's a good idea to inspect them periodically. If they show signs of wear and tear, replace them. Some companies keep extra cradles and headbands on hand for this purpose.

Add Extra Protection

There are a variety of extra features available for use with hard hats. Hard hats with reflective trim, for example, can give you extra protection against traffic accidents if you work at night or in dark areas.

A chin strap is useful if you're exposed to strong winds. An eye shield made of transparent plastic can be attached to some hard hats; this shield secures under the brim and lies flat against the brim when not in use. Brackets to support a welding mask or miner's lamp are also available.

INSTRUCTION CHART

1. ACTIVITIES FOR SAFETY OFFICER (SO) BEFORE START OF THE PROJECT:

1. SO shall obtain the "permission letter to start work" from the concerned person of the Client before commencement of work.
2. To conduct safety related induction training for the workers. During induction, SO must ensure that the workers are made familiar with the proper use of all the safety devices or features, personal protection equipments & clothing required for their well being.
3. The SO must apprise himself with laws of the state/ country where the project is to be undertaken. He should undergo safety & security training for the stipulated programs & number of hours as is mandatory.
4. SO to have a meeting with the Client/ Site Incharge (SI) & explain them the safety plans drawn by him for the project work & make "minutes of the meetings" & take signatures of all present after all of them agree.
5. "Hot Work Permit" is to be obtained before start of any work by SO involving fire or naked flame from concerned authorities as per procedure laid out by the client/ country.

ZERO COMPROMISE TOWARDS SAFETY

6. SO to also ensure that SI or concerned designated supervisors must have their presence on the site before start of the work & thereafter.
7. SO must check that all scaffoldings are erected with rigid metal pipes with proper & secure clamping arrangement. All temporary ladders & stairs must be rigid & properly secured.
8. SO at site shall ensure that all additional requirements for working inside confined space like trenches, inside vessels or tanks etc., are met as required.
9. SO should ascertain that the work area doesn't have any poisonous gas or foul air & inflammable material.
10. SO should inspect that any device, item, material, equipment or machinery provided for use of workers at the work place is properly maintained & is equipped with adequate safety features as required by local regulations.
11. SO should clearly define rest duration & location & drinking water facility to the employees.
12. SO should ensure that the mess cook/ helper is in tidy clothes & have plastic head-net & gloves.
13. Provides the information regarding the first line of defence & emergency numbers in case of any mishap. (Kindly read page no.16)
14. It is the responsibility of SO that suitable warning & safety signals & symbols are displayed according to the nature of work at the site.



**LEARNING
NO.2**



PROTECTIVE GOOGLES & GLOVES

If your job involves hazards from dust, flying objects or particles that may strike you from in front, you should be using some form of safety glasses. If you normally use a faceshield in operations such as welding, you also need to wear safety glasses under your faceshield. The good news about safety glasses is that you can now get them in attractive styles that are at home in both the workroom and the boardroom.



Safety gloves must be worn

Kinds of Safety Glasses

It is important to remember that standard safety glasses protect against impact from the front only. For this reason you can also get safety glasses with side shields to provide limited protection from the side for tasks such as sanding, buffing, and drill-press work.

According to the Survey, hands are the body parts most frequent injured on the job. Many of these injuries can be avoided if you follow precautions and wear the proper hand protection for your job.

Care and Use

Your safety glasses are designed to protect you from accidental injury. They will not withstand repeated impact or abuse, however. Inspect them regularly for scratches, cracks or other wear and replace them if they are scratched, bent or uncomfortable.

Taking care of your glasses according to company policy and, above all, using them, will help you "look" your best on the job.

Using Gloves Properly

Make sure you wear gloves that are the right size. Gloves that are too small tire your hands and wear out quickly, while too-large gloves interfere with your dexterity and increase the likelihood of an accident. Check with your supervisor before wearing gloves around machinery with moving parts—they can get caught.

Make the Right Match

HAZARDS	GLOVES
1. Electricity	rubber gloves with insulated liners (Colour coded for high-voltage protection)
2. Spark, rough surfaces, scraping	leather gloves
3. Mild heat, cold, sharp edges	fabric gloves

Here are some of the signs to be displayed at appropriate places:



No Entry to Unauthorized Personnel



No forklift trucks



Do not touch



not drinkable water



No smoking or open flame



Do not extinguish with water



Fire extinguisher



Fire hose reel



Direction to follow



Fire telephone



Attention: Biological risk



Risk of falling



Overhead load



Corrosive substance



Safety gloves must be worn



Safety helmet must be worn



Safety boots must be worn



Safety belt must be worn



Safety overalls must be worn



Eye protection must be worn

**LEARNING
NO.3**

SAFETY SHOES ARE NECESSARY FOR



GUIDELINES:

Keeping workers aware of potential hazards of slippage during a tool box meeting may prevent the happening or reoccurrence of future accidents.

Provided to protect against heavy objects such as barrels or tools that might roll onto or fall on your feet and sharp objects such as nails or spikes that might pierce ordinary shoes.

Impact-resistant toes and heat-resistant soles protect against hot surfaces common in roofing and paving.

PROTECTION AGAINST FOOT INJURIES.....



2. WHEN WORKERS REPORT AT THE WORK SITE:

GENERAL WORK HABITS FOR WORKERS:

1. Workers must report at the site on the scheduled time for 'tool box talk' (TBT).
2. It is compulsory for all workers to wear or use mandatory safety & protective equipment as directed by the SO.
3. Any worker found to be under influence of alcohol or intoxicants at the time of reporting for work/ during the work hours shall not be allowed to work. Smoking will be allowed only in the designated areas.
4. Workers shall comply & co-operate with the SO & other co-workers to protect their own occupational health & safety & that of the other workers/ persons in or around the workplace.
5. It is the duty of workers to obey warning safety signs that are displayed at the site & defined by the SO.

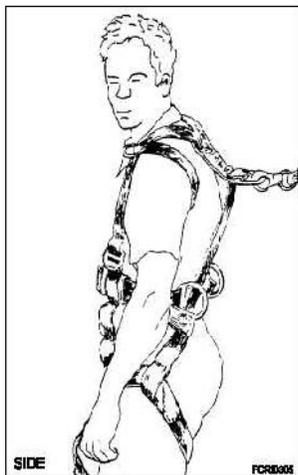
RESPONSIBILITY OF SAFETY OFFICER:

1. To conduct TBT every day before start of work.
2. Maintain attendance record of TBT participants with the subject, signature & date.
3. The SO should inform the workers regarding certain areas that are designated hazardous & appropriate notices must be supplied & displayed.
4. Must insure that worker's insurances are always valid.

Personal Protective Equipment

	Shoes It is recommended that approved safety high ankle shoes be worn to protect your feet.
	Hard Hats Hard hats shall be worn in all designated & construction areas. Visitors are included in this requirement.
	Eye Protection Proper eye protection must be worn when the nature of the operation presents a potential eye or face injury. Examples of these hazards include: Flying objects, dust, hot or splashing metals, harmful rays, caustics or acids.
	Gloves Appropriate gloves & aprons shall be worn when handling hazardous chemicals & abrasive materials. Gloves should be replaced when the signs of wear & tear are apparent.
	Respiratory Equipment Approved respiratory equipment shall be worn when the worker is exposed to toxic chemicals or dusts, spray paints, or other inhalation hazards.
	Jewellery The wearing of rings or other jewellery is not recommended on the job, particularly if working around moving or rotating parts.
	Phosphorescent Clothing Makes you clearly visible even in the dark.
	Boiler Suit & Safety Belts

**LEARNING
NO.4**



- ❖ Provide participants a general understanding of the safe and efficient use and care of fall arrest equipment.
- ❖ It is the user's responsibility to inspect the harness prior to each use and to calculate fall distances for the current task.
- ❖ To calculate fall distance, you must know the length of your lanyard and its shock absorbers maximum length. You also need to know the height of the work surface.



3. DURING THE WORKING HOURS:

FOR THE WORKERS:

1. The workers should familiarize themselves with the contents of the 'Safety Handbook'. In case of doubt must contact the SO for clarification.
2. Every worker is required to put into practice the instructions about safety measures & danger warnings.
3. All the workers are desired to use all 'Protective Personal Equipment' & report immediately to the SO of any defects in them.
4. All workers should know the names & phone numbers of the SO & SI in order to communicate them incidence of any accident.
5. Out of personal initiative, workers are not needed to carry out any operations which are not their part of duties or which may compromise their safety & that of their co-workers.
6. The house keeping standards for the site should be known, understood & practiced by all workers.
7. No food is to be consumed or left outside the dining area.

FOR THE SAFETY OFFICER:

1. It is mandatory for the SO & SI to have the 'Safety Handbook' handy at all times while at work or otherwise.
2. SO must ensure that entire safe working practices are under continuous supervision.
3. SO shall put into place all the necessary system for preventing accidents & professional diseases & carry out periodic check & maintenance.
4. SO shall check that all personnel working at height must have safety belt/ fall arresters worn compulsorily & end of the belt must be secured to a rigid & permanent anchor point at adequate height.
5. SO must ensure that metal ladders should not to be used where there is any possibility of ladder coming in contact with an electrical conductor to avoid any accident.
6. It is the responsibility of SO to inspect & monitor the fire fighting equipments, tools & tackles & safety operate procedure.

4. SPECIAL PRECAUTIONS FOR:

WELDING SAFETY:

1. Wear appropriate PPE required for the job (approved goggles with the safety lens & welding helmet).
2. Keep welding leads and burning hoses clear of passageways.
3. Inspect all leads, grounds, clamps, welding machines, hoses, gauges, torches and cylinders before each use. Remove defective equipment from service, tag and notify it to the SO.
4. All welding must be protected from earth faults by providing ELCB.
5. "B & C" type's fire extinguishers must be available near the welding machines.
6. Identify shower area & eye washing area before start of work.

GAS CUTTING SAFETY:

1. Wear appropriate safety PPE required for the job.
2. All hoses, gauges, cutting torches & gas regulators shall be inspected before each use & maintained in healthy condition.
3. When lighting a torch, open the gas valve on the torch before opening the oxygen valve. Use an approved spark lighter. Do not use matches or cigarettes to light a torch.
4. All gas cylinders used for gas cutting must be kept on trolleys & strapped/ fastened with chains. Cylinders must be transported on these trolleys.
5. Identify shower area & eye washing area before start of work.

**LEARNING
NO.5**

SLINGSAFETY



SAFE USAGE PRACTICES:

- ❖ Keep loads balanced to prevent overloading slings.
- ❖ Always lift loads straight up.
- ❖ Never rest a load on a sling, or pinch a sling between the load and the floor.
- ❖ A sling should not be pulled from under a load when the load is resting on the sling.
- ❖ Make sure the hook is always over the center of gravity of the load before lifting it.
- ❖ Do not apply a load to a twisted, knotted or kinked chain.
- ❖ Do not force or hammer hooks or chains into position.

**LOAD CAPACITY & SLING
ANGLES**

Reduction Factor	Angle From Horizontal	Tension Factor (TF)
1.000	90°	1.000
0.996	85°	1.004
0.985	80°	1.015
0.966	75°	1.035
0.940	70°	1.064
0.906	65°	1.104
0.866	60°	1.155
0.819	55°	1.221
0.766	50°	1.305
0.707	45°	1.414
0.643	40°	1.555
0.574	35°	1.742
0.500	30°	2.000

SLING SPECIFICATIONS ALONG WITH COLOUR CODE

ROUND SLINGS	ENDLESS & DUPLEX SLINGS	LIFTING MODE	Vertical	Choke	0° Basket	Basket 0-45°	Basket 45-60°
Average dia (mm)	Typical width (mm)	LIFTING FACTOR	x 1	x 0.8	x 2	x 1.4	x 1
		COLOUR	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
18	35	VIOLET	1.0	800kg	2.0	1.4	1.0
20	60	GREEN	2.0	1.6	4.0	2.8	2.0
22	75	YELLOW	3.0	2.4	6.0	4.2	3.0
25	100	GREY	4.0	3.2	8.0	5.6	4.0
27	125	RED	5.0	4.0	10.0	7.0	5.0
32	150	BROWN	6.0	4.8	12.0	8.4	6.0
38	200	BLUE	8.0	6.4	16.0	11.2	8.0
46	250	ORANGE	10.0	8.0	20.0	14.0	10.0
58	300	ORANGE	2.0	9.6	24.0	16.8	2.0
70	*	ORANGE	15.0	12.0	30.0	21.0	15.0
75	*	ORANGE	20.0	16.0	40.0	28.0	20.0
90	*	ORANGE	25.0	20.0	50.0	35.0	25.0

WIRE ROPE SLING CAPACITIES

6 X 19 AND 6 X 37 IMPROVED PLOW STEEL - IWRC 5/1 DESIGN FACTOR

WIRE ROPE SIZE	G & T CARBON SHACKLE MINIMUM SHACKLE SIZE FOR A Ditch-1 AT LOAD CONNECTION		ANGLE 120°		90°		60°	45°	30°
1/4	5/16	1120	820	2200	1940	1500	1120		
5/16	3/8	1740	1260	3400	3000	2400	1740		
3/8	7/16	2400	1840	4600	4200	3400	2400		
7/16	1/2	3400	2400	6800	5900	4800	3400		
1/2	5/8	4400	3200	8800	7800	6200	4400		
9/16	5/8	5900	4000	11200	9900	7900	5900		
5/8	3/4	6300	5000	13600	11800	9500	6300		
3/4	7/8	8800	7200	19500	16900	13600	8800		
7/8	1	13200	9600	26400	22800	18600	13200		
1	1 1/8	17000	12600	34000	30000	24000	17000		
1 1/8	1 1/4	20000	15800	40000	34600	28000	20000		
1 1/4	1 3/8	28000	19400	52000	45000	36000	28000		
1 3/8	1 1/2	30000	24000	60000	52000	42000	30000		

* RATED CAPACITIES BASED ON PIN DIAMETER OR HOOK NO LONGER THAN THE NATURAL EYE WIDTH (1/2 X EYE LENGTH) OR LESS THAN THE NOMINAL SLING DIAMETER

HEAVY LOAD LIFTING SAFETY:

1. Test every load before lifting by pushing the object lightly with hands or feet to see how easily it moves.
2. Make sure the weight is balanced and packed so it won't move around.
3. Keep your body facing the object while lifting it & also keep the object close to the body. Twisting while lifting can hurt your back.
4. "Lifting with legs" should be done only when you can straddle the load. To lift with legs, you have to bend your knees, not your back, to pick up the load. Keep your back straight.

SLING SAFETY PROCEDURE:

1. There are four primary factors to take into consideration when safely lifting a load. They are:
 - ❖ the size, weight and centre of gravity of the load;
 - ❖ the number of legs and the angle the sling makes with the horizontal line;
 - ❖ the rated capacity of the sling;
 - ❖ the history of the care and usage of the sling.
2. Before making a lift, check to be certain that the sling is properly secured around the load and the weight & balances of the load have been accurately determined.
3. Make sure that the load is not lagged, clamped, or bolted to the floor.
4. Guard against shock loading by taking up the slack in the sling slowly. Apply power cautiously so as to prevent jerking at the beginning of the lift & accelerate or decelerate slowly.
5. Check the tension on the sling. Raise the load a few inches, stop, and check for proper balance and that all items are clear of the path of travel.
6. Keep all personnel clear while the load is being raised, moved, or lowered. Crane or hoist operators should watch the load at all times when it is in motion.
7. Never allow more than one person to control a lift or give signals to a crane or hoist operator except to warn of a hazardous situation.

FENCING SAFETY:

1. Safety fences should use wherever necessary for the physical protection of people or the property constructed.
2. These fences can be made of structural steel & many other materials. These safety fences are engineered in such a way that it can be easily installed and removed.



**LEARNING
NO.6**

S TEPS TO USE FIRE EXTINGUISHER.....



PULL: The safety at the top of the extinguisher.



AIM: The nozzle horn at the base of the flame.

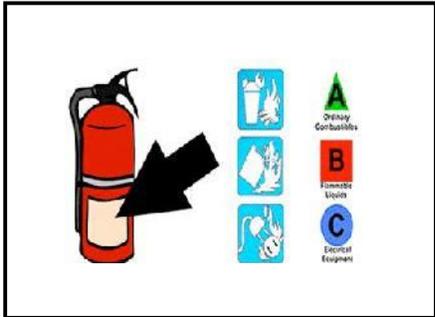


SQUEEZE: Press the handle.



SWEEP: From side to side at the base of the fire until it goes out.

TYPE OF FIRE EXTINGUISHERS:



FIRE PROTECTION:



Learning the location of fire extinguishing equipment and fire alarms in your work areas is important.



Flammable liquids shall be kept in approved safety cans for use in small amounts and for transportation. These containers shall be clearly labelled and stored in a separate, protected area.



Always obey "No Smoking" signs.



FIRE SAFETY

REMEMBER..... YOUR SAFETY IS Y/OUR RESPONSIBILITY

1. Take time to become familiar with your surroundings & to plan your escape in the event of fire.
2. You should identify nearby location & type of the nearest fire extinguishers on the site & know how to use them.
3. Call& report the fire immediately. Know your building address and speak calmly & clearly.
4. Do not cover or hide fire protection equipment and fire alarms from view.
5. Remove any combustible materials (such as flammable liquids, wood, paper, textiles, packaging or plastics) from within about 10 metres of the work.
6. Accidents involving personal injury or property damage must be reported to your SO.
7. Fire extinguishers are labelled as to the kind of fire they will be effective against. You must read the label to be sure you have the appropriate equipment to extinguish the fire. Labels will indicate:

- Class A - wood, paper, grass, cloth
- Class B - grease, oil, flammable liquids
- Class C - energized electrical equipment

CONTACT IN EMERGENCY:

COUNTRY:

FIRST-AID BOX:

Available at:

EMERGENCY:

a) Emergency Telephone No.:

b) Nearest Hospital Name:

Telephone No. :

c) Level of Reporting:

Site in charge (Name):

Telephone No. :

Safety Officer's Name:

Telephone No.:

Other concerned person

Name:

Telephone No.:

Speaks ENGLISH &

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