



## **KURDISTAN REGIONAL GOVERNMENT (KRG)**

MINISTRY OF CONSTRUCTION AND HOUSING (MOCAH)

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### **HEALTH, SAFETY AND ENVIRONMENT MANUAL BOOK FOR CONSTRUCTION PROJECTS**

(FOR PROJECTS WITH THE BUDGET OF BETWEEN ONE AND TEN BILLION IRAQI DINARS)

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## ABBREVIATION

KRI	Kurdistan Region - Iraq
KRG	Kurdistan Regional Government
MOCAH	Ministry of Construction and Housing
PPE	Personal Protective Equipment
WHO	World Health Organization
HSE	Health, Safety & Environment
LPG	Liquefied Petroleum Gas
MEWP	Mobile Elevated Work Platform
OSHA	Occupational Safety and Health Administration



## 1 INTRODUCTION

The Health, Safety, and Environment Manual (hereafter referred to as “this Manual”) has been developed to identify the minimum requirements for the government’s committee and supervisory teams in general, Construction Contractors, Subcontractors and their lower-tier subcontractors (hereafter referred to as “Contractor”) which require personnel to perform construction activities at the Ministry of Construction and Housing (MOCAH’s) directorates.

Kurdistan region of Iraq (KRI) has experienced large development in all areas in the past years; however, it is only at the early stages of the transaction and required the improvement of construction health, safety and environment standards in line with accepted international best practice. These standards which also denotes by security or safety affairs for the work environment in engineering projects defined by the World Health Organization (WHO Healthy Workplace Framework and Model [https://www.who.int/occupational\\_health/healthy\\_workplace\\_framework.pdf](https://www.who.int/occupational_health/healthy_workplace_framework.pdf)) to ensure the safety of all who work inside the project site in a manner to provide physical, social, and physiological welfare.

Standards related to health and safety should get more priority in MOCAH’s contracts, as many contractors strive to compete on price alone and in order to win contracts; they are forced to cut costs. Unfortunately, cutting construction costs usually results in the relegation of perceived indirect services, such as health, safety and environment management to a low value item on the tender submission and bill of quantities. Our vision is to carefully address HSE and try to give more importance to safety instruction implementation in the fields of construction, also any internal training and seminars for our staffs to increase the awareness and the importance of this instruction are recommended.

This document has been developed by Kurdistan Regional Government (KRG) - Ministry of Construction and Housing (MOCAH) under the supervision of a committee consists of (Eng. Saman Khalid, Eng. Shamal Abdullah, Eng. Solav Ibrahim, Eng. Bawer Shakir and Eng. Bayar Taqueadeen) and with the minimum requirements for both MOCAH and of contractor’s staff engaged on client projects where MOCAH has been assigned responsibility for health, safety and environment.

## 2 OBJECTIVE

The purpose of this Manual is to promote the health and safety of MOCAH’s employees and contractor’s staff by imposing standards for control and specific requirements to avoid danger from specific hazards during contract work on projects with a view to:

- a. Avoiding accidents, diseases and hazard effects on the health of workers arising from work activities required by employer as part of conditions of employment in construction.
- b. Ensuring adequate design and implementation of construction projects.
- c. Providing means of analyzing from the point of view of safety, health and working conditions, construction processes, activities, technologies and operations, and of taking adequate measures of planning, control and execution.

Anyone who works or visiting the workplaces is obliged to comply with this manual’s terms and conditions.



### 3 DUTIES AND RESPONSIBILITIES

In general terms, the HSE rule prescribes the following major duties for contractors, supervisors, workers, and committees/representatives:

Contractors are responsible for:

- Providing a safe and healthy workplace including the necessary plan, equipment, systems, and tools which are properly maintained.
- Providing information, training, instruction, supervision and facilities to protect the health and safety of workers.
- Establishing, supporting, and consulting with HSE committees and/or Workplace HSE representatives on all matters to improve workplace HSE including regular safety inspections of the workplace.
- This effectively means that the contractors/employers are expected to carry out suitable and sufficient risk assessments for any undertakings that are likely to cause harm to employees, visitors, member of public, equipment and/or environment.
- The Engineer may ask tenderers to produce evidence of current insurance coverage for their staff for whole contract duration.

Supervisors are responsible for:

- Ensuring workers under their direction know and comply with health and safety requirements.
- Ensuring workers under their direction receive adequate supervision.

Workers are responsible for:

- Cooperating with management, supervisors and the Occupational Health and Safety committee or Workplace Health and Safety representative.
- Following safe work procedures and using mandatory personal protective equipment (PPE).
- Traditional clothes are forbidden to be worn during construction works especially for (working at height, working in excavation, scaffolding works, installation of rebars & shuttering works). These kinds of clothes might cause serious injuries.
- Reporting hazards (such as unsafe situations and activities) to their supervisor immediately.

HSE committees and/or HSE representatives are responsible for:

- Seeking to identify aspects of the workplace that may be unhealthy or unsafe.
- Participating in workplace inspections.
- Receiving complaints from workers as to their concerns about health and safety in the workplace.
- Making recommendations to management to protect the health, safety, environment and welfare of workers at the workplace.
- Establishing and promoting HSE educational programs for workers.



## 4 RISK ASSESSMENT

In order to reduce the hazards in workplace as much as possible, contractors are required to ensure that risk assessments are carried out for their activities with a view to identifying the hazards of their work along with the control measures that shall be used to decrease the risk of incidents. The risk assessment provides a useful tool to contractor management in identifying the risks of the work and prioritizing high risk activities so that adequate action can be taken.

The following five steps to risk assessment should be followed:

- Step 1 – Identify the hazards.
- Step 2 – Decide who might be harmed and how.
- Step 3 – Evaluate the risks and decide on precautions.
- Step 4 – Record the findings and implement them.
- Step 5 – Review the assessment and update if necessary.

Contractors are obliged to ensure that the risk assessment procedure they develop is simple and easy to follow. Training must be provided to those who directly involved in preparing risk assessments either in client side or contractor.

Some general points to guide contractors through each of the 5 steps are provided below:

### **Step 1: Identify the hazards:**

Check the workplace carefully and identify activities that could reasonably be expected to cause harm. Worst case scenario must be taken in consideration in order to not dismiss a hazard just because you are not aware of any harm being caused previously. It is a good idea to talk to the workers and supervisors who have experience of the work being carried out and may be aware of some objects caused or nearly caused harm in the past. Contractors should also check their incident records or other similar projects incident records as those incidents could help in understanding the hazards that are present in the work activity.

### **Step 2: Decide who might be harmed and how:**

Contractors have to identify the groups of worker that could be harmed by the hazard. The obvious group is the workers that are involved with the activity being carried out but contractors also need to consider others that could be affected. This includes everyone who could be passing the area where the activity is being undertaken. Type of the harm should be identified by contractor that could result from the hazard. For example, public pedestrian could be exposed to vehicles hazards and crushing injuries if they are passing the entrance to a busy construction project.



### **Step 3: Evaluate the risks and decide on precautions:**

Contractors should evaluate the risk and decide on the action that must be taken to reduce the risk to an acceptable level taking into account the effort required in terms of time, money and effort. Wherever possible contractors should look to eliminate the hazard completely but this is often not possible so risks must be controlled. The risk assessment must identify the control measures that will be taken which could be in the form of physical controls, supervision, training or personal protective equipment (PPE).

### **Step 4: Record the findings and implement them:**

Contractors must record and archive their risk assessments in writing either in hard copy or electronically. A simple template for the risk assessment can be developed and completed each time that a risk assessment is required. The risk assessment findings are important to be communicated to those that will be affected or those that will have certain responsibilities.

### **Step 5: Review the assessment and update if necessary:**

Contractors are required to review and update their risk assessments as often as possible especially in the case of construction works since the work environment is continually changing and this shows the importance of the risk assessment being reviewed regularly to ensure that it still fits the work being carried out. It is better to set a review date on the risk assessment when it is prepared. Contractors have to review risk assessment in the following cases:

- After occurrence of an incident.
- In case of introducing of new equipment or processes.
- If there are any other work impacts on the activity that has been assessed.
- On annual basis.

**Ministry of Construction and Housing – Iraq (MOCAH)** expects from contractors to maintain records of risk assessments in accordance with their written procedures on site. This includes evidence that the key findings of the risk assessment have been communicated to those who may be affected by or involved with the activity.

## **5 EMERGENCY PLANNING**

Contractors are required to ensure that plans are made to deal with emergency situations that may occur both on site and within site offices. In each case the contractor has to develop an emergency management plan which should reflect the scale and complexity of the site or offices covered. In all cases, the emergency management plan should always be as simple and concise as possible and contain all the information which required to ensure that emergency situations can be managed successfully.

Emergency management planning should start with a risk assessment to identify the areas for potential emergencies. The emergency management plan should firstly identify the types of predictable emergencies that may occur; this information can be determined from the risk assessment undertaken for the site and site offices.

Typical emergency situations include but are not limited to:

- Storms and severe weather.
- Flooding.
- Construction activity emergency i.e. scaffold or excavation collapse.
- Gas leaks.
- Power failure.
- Fire.
- Explosion.
- Terrorism threat.
- Pandemic disease cases.

The contractor must ensure that all those given responsibilities under the emergency management plan are trained and competent to fulfill their duties. The contractor will be responsible for ensuring that the emergency management plan is reaped on at least a six monthly basis. Practice drills should be undertaken which reflect the nature of the work and risks to personnel.

## 6 CONTRACTOR MINIMUM REQUIREMENTS

The purpose of this section is to provide health, safety and environment guidance to contractors to assist them in complying with local Kurdistan Region Government standard requirements.

Following, minimum requirements are mandatory for the contractors who work with the Ministry of Construction and Housing.

### 1- Personal Protective Equipment;

PPE is the personal equipment “that must be worn” by those who are working in construction workplaces to minimize exposure to hazards that may cause serious injuries and illnesses.



- 1- No mandatory PPE worn, No duty.
- 2- PPE shall be provided free of charge to workers as required by the contractors.
- 3- Instruction on how to inspect PPE shall be provided to workers.
- 4- PPE shall be stored in the shade out of direct sunlight.



## **2- First Aid on Site;**

First aid is emergency care that must be given immediately to an injured person at the workplace. The aim for first aid is to stabilize injured workers until is taken care of by Medical staffs. In critical cases, first aid may be necessary to keep the victim alive. Employer is expected to provide:



- 1- A suitably stocked first-aid kit for places of works where there are activities with potential to cause harm.
- 2- Information for employees about first-aid arrangements.
- 3- Regular inspection for the first aid kits.
- 4- For all projects, contractors are required to appoint a qualified person in the workplace (as a first aider) to look after the first aid kits and give first aid treatment in the event of an injury or illness or calling an ambulance in a critical emergency cases.

## **3- Toolbox Meeting**

Toolbox meeting will be held on a daily basis at the start of each day or shift to reinforce the focus on safety topics.



- 1- Keep it short. Toolbox talks should be no longer than 5 – 10 minutes.
- 2- Focus on safety topics relevant to the work being done that day.
- 3- Get workers involved by asking questions.
- 4- Have employees inspect tools, equipment and PPE.
- 5- Share lessons learnt from previous incident, accident or near miss reports.

## **4- Manual Handling;**

Manual handling is transporting or supporting of any objects or materials by lifting, holding, carrying, pushing, lowering, or pulling by one or more workers.



- 1- Avoid the need for hazardous manual handling and try to use automation and lifting equipment as much as possible.
- 2- Assess the risk of injury from any manual handling task that cannot be avoided.
- 3- Reduce the risk of injury from manual handling, so far as is reasonably practicable.
- 4- For a long lift, plan to rest the load midway on a table or bench to change grip.
- 5- Providing information and training to workers on tasks, the use of equipment and correct handling techniques.



## 5- Slip, Trip & Fall

In general, slips and trips happen due to a misfortune of footing between the shoe and the walking surface or accidental contact with a fixed or moveable object which may lead to a fall.



- 1- Create Good Housekeeping Practices (CHP).
- 2- Reduce Wet or Slippery Surfaces.
- 3- Avoid Creating Obstacles in Aisles and Walk-ways.
- 4- Create and Maintain Proper Lighting.
- 5- Wear Proper Shoes.
- 6- Control Individual Behavior.

## 6- Work in Excavations;

Excavation work usually means work involving the removal of soil or rock from a site to form an open face, hole or cavity using hand tools, machinery or explosives. Excavating or trenching work can be highly dangerous and may lead to death or severe injuries if not carried out safely.

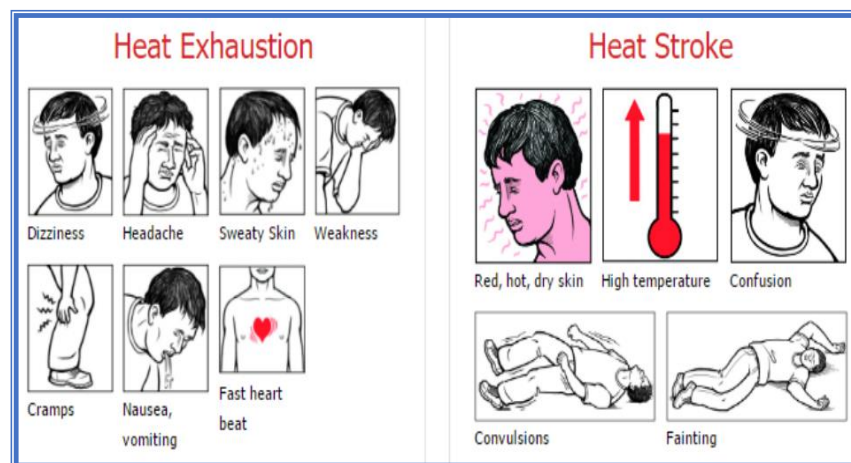


- 1- Identify all the underground facilities in conjunction with the relevant authority within the area to gain formal permission.
- 2- Excavation sides must be prevented from collapsing by shoring or battering and safe ladder access must be provided.
- 3- Warning sign in terms of ribbon and poles with reflectable stall day and night must be provided to prevent falls into the excavation.
- 4- Keep heavy equipment away from trench edges. Also, keep surcharge loads at least 0.6 meters from trench edges.
- 5- For deep and big excavations, test for low oxygen, hazardous fumes and toxic gases is required.
- 6- Inspect trenches at the start of each shift.

## 7- Working in Hot Weather;

With a large proportion of construction work taking place outdoors, it's important to make sure that the workforce are prepared and that health and safety is considered when working in the hot weather of summer. Below points are very important to be followed.

- 1- Hydration is key: Drink water every 15-20 minutes, even if you're not thirsty.
- 2- Rest in a cool, shaded area: It's important to rest in the shade area "if possible" in order to properly cool down especially between 10am and 15pm.
- 3- Have a plan in place: Having a plan to deal with high temperatures is critical for any construction company. At a minimum, supervisors should know and aware about what temperatures will require more frequent breaks.
- 4- Know the signs: The Occupational Safety and Health Administration (OSHA) offers the diagrams below to help monitor signs of illness.



- 5- Modify schedules: Try to schedule strenuous jobs and hot jobs for the cold parts of the day. Consider scheduling maintenance work during the colder months, if possible. It is also important to support employees' adaptation to higher temperatures by starting small working hours and gradually increasing their work times each day until they become accustomed to the weather.

Nowadays, heat diseases and deaths can be prevented and appropriate measures can be taken to mitigate the risks.

### 8- Working At Height;

Work at height' means work in any place where, if there were no proper protection in place, a person could fall down from a weak roof or scaffolding and causing a serious injury.



- 1- Ensure a permanent robust/stable work platform is available for the workers to safely gain access to the work location or equipment.
- 2- If above is not practicable, construct a scaffold with strong ladders and guardrails.
- 3- If above is not practicable, use a Mobile Elevated Work Platform (MEWP).
- 4- ONLY if the above is not practicable, use safety harnesses along with other applicable PPE for the labors who work at height.
- 5- When use PPE, THINK of fall prevention rather than protection i.e. use personal work restraint systems rather than fall arrest systems. Training to understand the risk of falls must be provided.

### 9- Scaffolding;

Scaffolding is a temporary structure used to support a work crew and materials to assist in the construction, maintenance and repair of buildings, bridges, and all other structures.



- 1- Scaffolds must be robust enough to support a work crew or materials they carry.
- 2- Scaffolds must be equipped with guardrails, toe-boards, no-space planks, and stable ladder.
- 3- It must be designed, erected, inspected, labelled and dismantled by competent, trained persons only.
- 4- Scaffolds must be inspected on weekly basis or after any occurrences that may have caused damages.
- 5- Harnesses must be worn by scaffolders as far as possible.
- 6- Scaffold ties and sheeting or netting requirements must be carefully considered in accordance with the design.

### 10- Vehicle Traffic Management;

Traffic management is a guidance and control of both stationary and moving traffic, including pedestrians, bicyclists and all types of vehicles.



- 1- Proprietary signage must be provided in accordance with local statutory requirements.
- 2- Adequate warning must be provided by signage well ahead at least 500m of the hazard or required action.
- 3- Lighting must be checked regularly and maintained immediately as required.
- 4- Positioning and use of safety barriers must take into consideration.
- 5- Flagmen must be made available during the intensive construction working hours on the road to manage the traffic.
- 6- At the end of each working day, the vehicles and equipment should be properly & safely parked out of the road and well barricaded by reflect-able signs and hazard tapes to avoid any potential accident during the night.
- 7- All machines should be mechanically well maintained every day before using it especially brake and lightings.

### 11- Pedestrian Segregation;

Create safe walk-way (Pathway) zones by clearly defining pedestrian pathways.



- 1- Safe pedestrian walkways must be established using barriers and baulk timbers.
- 2- Pedestrians must be segregated from vehicles along all main routes.
- 3- Walkways shall be kept clear of debris and leveled to provide safe access.



## 12- Lifting Operations;

Lifting operation is a mechanical process concerned with the lifting and lowering of various loads in all construction projects.



- 1- All cranes must be in a good condition and tested by a third-party at least every 12 months.
- 2- Crane operators must be in possession of a recognized competency certificate and physically fit.
- 3- There must be a lifting plan created for heavy complex lifting operations by qualified and experienced HSE Officers and Performers or Engineers.
- 4- Create permit to work and risk assessment to cover all the risks associated with any lifting operations.

## 13- Fire Prevention;

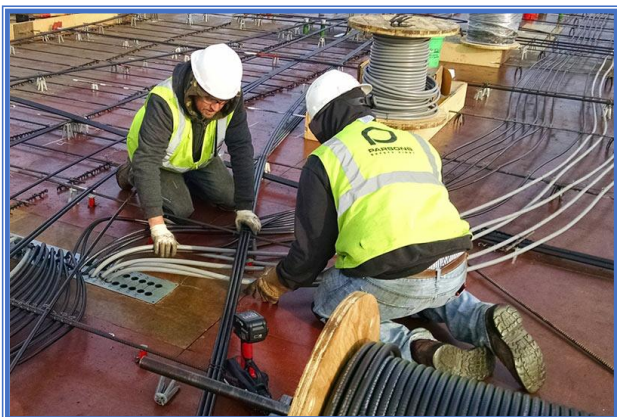
The goal of fire prevention is to educate the workers to take basic precautions to prevent potentially harmful fires and be educated about surviving them on the work sites.



- 1- Combustible construction materials shall be stored away from sources of heat and ignition.
- 2- Flammable liquids, Liquid Petroleum Gas (LPG) and other bottled gases must be strictly controlled.
- 3- Means of raising the alarm must be established on the site and in the offices.
- 4- Clear responsibilities must be assigned to personnel on site.

## 14- Electrical Safety;

Electrical safety is a method of organizational measures and technical means to avoid harmful and dangerous effects on workers from electric current, electric arc, electromagnetic field and static electricity.



- 1- Electrical tools must be checked before use to ensure they are not damaged.
- 2- Cables must be in good condition and free from makeshift repair or damaged sheathing.
- 3- Persons using electrical tools must be trained and briefed on the risks and control measures associated with electricity.
- 4- Electrical tools must be adequately stored to minimize damage.

### 15- Access and Housekeeping;

Housekeeping is not just cleanliness. It includes keeping work areas neat and tidy, maintaining a workplace free of slip and trip hazards, and removing of waste materials.



- 1- Rubbish must be cleared on a regular basis in order to facilitate safe access around the site.
- 2- Trip hazards such as trailing cables must be minimized along main access routes.
- 3- Materials should be stacked safely on a proper and level base.
- 4- Clear signage must be posted whenever a particular area or a walkway is not safe for people.

### 16- Site Security;

Providing an appropriate level of work site security services, as it will protect the site and restrict entry to only authorized personnel.



- 1- The site must be fenced to prevent persons entering the site as far as reasonably possible.
- 2- Night shift guard must be available in the workplace to protect materials and equipment in site from any potential thefts. Taking in consideration the day and night during weekends and holidays.
- 3- Site Security should be uniformed and, trained and established to check and control the access.

### 17- Health and Safety During any Pandemic;



The Health and Safety management must maintain their HSE policy during any pandemic and support all the "responses to COVID-19" by the KRG. HSE has recognized the threat presented by COVID-19 and other potential pandemics on companies and their workers.

During any pandemic situation especially COVID-19, visits to the work sites which will be conducted in line with social distancing regulations and guidelines.

All construction activities must be guided by the specific requirements and characteristics of the sectors that regulate and in line with advice from the KRG and Ministry of Health.

## 7 THE COLOR LANGUAGE

This section includes some essential advices for both supervisor directorate and contractors' staffs which should keep and implement in project site.

### A- Signage Colors;

MOCHA and its contractor must ensure that their staff and workers are aware of the different types of signage, their color coding and meanings. All signs will have a pictogram as well as text indicating the condition required. For example;

<b>Red</b>	<b>Prohibitive</b>	<b>(Must not do)</b>
No Smoking, No unauthorized entry, Do not touch, No vehicles, etc.		
<b>Blue</b>	<b>Mandatory</b>	<b>(Must do)</b>
Wear hard hat, Wear eye protection, Wear hearing protection, Sound home, etc.		
<b>Yellow</b>	<b>Caution</b>	<b>(Hazard warning)</b>
Fragile roof, High voltage, Asbestos, Forklift trucks, Low headroom, etc.		
<b>Green</b>	<b>Safe Condition</b>	<b>(The Safe way)</b>
First aid, Escape route, Assembly Point, Eye wash, Emergency phone, etc.		









- Some signs may contain a combination of two or more conditions for example;





**B- Safety Helmet Color;**

The color of safety helmet depends on site, department, company, industry and sometimes geography. However, below are some of the helmet colors.

Color	Image	For
White		Managers, Engineers, Supervisors and Foremen.
Blue		Electricians, Carpenters and other technical operators apart from civil workers.
Green		Safety Officers, health and Environment personnel.
Red		Fire Fighters.
Orange		Lifting operatives, Banksman slingers / signalers or traffic marshals but mainly lifting operatives wear orange hard hats so the crane operator can pick them out from other operatives. Also, can be used by road crews.
Yellow		General laborers and earth moving operators.
Brown		Welders and workers with high heat application.
Grey		Site Visitors.



## 8 APPENDIX A

HAZARD REPORT			
<b>Company:</b> _____ <b>Project:</b> _____			
<b>Date:</b> _____			
<b>Submitted by:</b> _____		<b>Signature:</b> _____	
<b>Submitted to:</b> _____			
<b>The following hazard has been identified in relation to your work:</b>			
<b>Risk Level:</b> <input type="checkbox"/> Class A (High) <input type="checkbox"/> Class B (Low) <input type="checkbox"/>			
<b>Location:</b>			
<b>To be completed by Supervisor:</b>			
<b>Action Required:</b>			
<b>By Whom:</b> _____ <b>By When:</b> A. Within 24-48 hrs <input type="checkbox"/> B. Within 7 days <input type="checkbox"/> C. Within 7-14 days <input type="checkbox"/>			
<b>Corrective Action:</b>			
<b>Completed By:</b> _____ <b>Time:</b> _____ <b>Date:</b> _____			
<b>Signature:</b> _____			
<b>Confirmed By:</b> _____ <b>Time:</b> _____ <b>Date:</b> _____			
<b>Signature:</b> _____			



### REGISTER OF INJURY

**Details of Injured Person:**

NAME: Surname: \_\_\_\_\_ Given Name(s): \_\_\_\_\_  
Sex (M/F): \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ Contact Phone: \_\_\_\_\_  
EMPLOYER: Business Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ Contact Phone: \_\_\_\_\_

**Accident/ Incident Details:**

Description of Events:

Date of Injury: \_\_\_\_\_ Time of Injury: \_\_\_\_\_ am/pm

Task/ operation undertaken at the time of injury: \_\_\_\_\_

Physical location (area) where the injury occurred: \_\_\_\_\_

Type of injury (eg. Bruise, cut, fracture, grit in eye, etc.): \_\_\_\_\_

Part of body injured (eg. Arm, leg, head, etc.): \_\_\_\_\_

Cause of Injury (what happened): \_\_\_\_\_

Treatment given/ Action taken: \_\_\_\_\_

**Person Completing the Form:**

Surname: \_\_\_\_\_ Given Name(s): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ am/pm

Did the person stop work? ☐ Yes ☐ No

Has a referral for further treatment been issued? ☐ Yes ☐ No

## 9 REFERENCES

<https://www.hse.gov.uk/construction/>

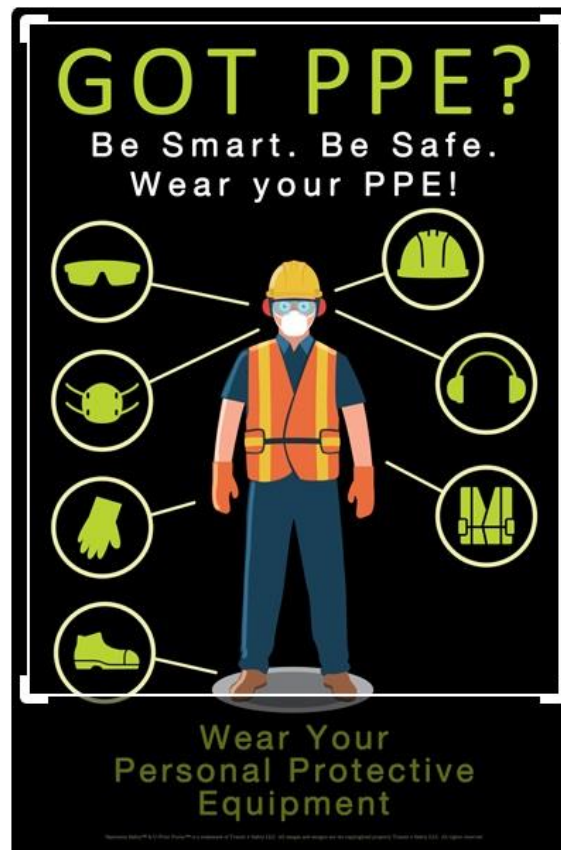
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