Lusail Real Estate Development Company

Health, Safety, Security, Environment, Logistics & Quality Department

FIRE PREVENTION & FIRE FIGHTING REQUIREMENTS IN CONSTRUCTION SITE

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Amendment Record

This document is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

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GOOD FIRE SAFETY IS ESSENTIAL

For Construction Sites

Fire safety is all about the Protection of life and Property; in the case of fires in the workplace think of the worst thing which may go wrong and you will probably find that is the case. Management of fire safety in the workplace should be Priority; effective policy and procedures, regular checks, constant observation and well trained workforce are key to Success.

The impact of fire in the workplace can be life changing on the individuals, the business or even the Lusail City and the community. Fire in the workplace make news and may lead to the Possibility of enforcement action.

In Lusail City Good Fire Safety standards are everyone's responsibility. These guidelines introduce you to the essentials of Sites Fire Safety requirements and to minimize the risk of fire in your site and ensure that you comply with the laws.

Remember that Lusail City HSE is committed to high standards of fire safety to ensure that we:

- Have a safe working environment.
- Have a healthy workplace.
- Reduce the time lost due to fire etc.
- Comply with the laws.
- Create good working conditions.
- Encourage increased Productivity.
- Provide an improved Job Security.
- Do not put our customer at risk from our action.
- Develop a good working relationship with enforcement officers.

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1. Fire Prevention and Protection Policy

1.1. Purpose & Policy Scope

The purpose of the Fire Prevention and Protection Policy at LREDC is to ensure that fires create no threat to the public or hazards to employees, and to prevent unauthorized, unregulated, and unplanned fires. Property damage from fire must be held to a minimum, as must the impact of fire and related perils on the LREDC mission and programs.

This policy requires adherence to and compliance with all applicable laws, orders, regulations, codes, standards, guides, policies, and good practices pertaining to fire prevention and protection. General fire prevention requirements and roles and responsibilities are provided by this policy.

The purpose of this policy is to create a coordinated response to the implementation of fire safety procedures and fire services installations during construction site operations in accordance with the statutory requirements which enforce LREDC objectives in mitigating injury and loss of life while promoting quality assurance through an approved Management System.

It is essential for CONTRACTORs to maintain control and compliance with this policy to facilitate the management of fire risks associated in construction site procedures and storage, and the proper use and installation of fire protection and safety systems. This policy identifies common risks which need to be adequately addressed including processes for continual improvement and the assurance of conformity to statutory requirements. Consistently implementing procedures which are suitably planned reviewed and maintained; that meet the requirements of this policy and applicable local laws will aid and assist in a manageable atmosphere, resulting in a more effective and efficient construction safety program.

1.2. Limits of These Requirements

Where these Requirements do not adequately address the CONTRACTORs responsibilities, the CONTRACTOR is required to comply with all aspects of the Qatar Civil Defence Department and any other Qatari Regulation pertaining to the design and installation for fire protection systems; and all applicable fire services Standards and guidelines from internationally recognized organizations and associations.

While this policy defines the Requirements for construction site safety service provisions and installations; the appointment of roles and responsibilities and allocation of resources both for procurement and personnel to successfully execute the obligations describe herein, needs to be implemented into the construction program at an early stage and maintained throughout.

Failure on the part of LREDC to inspect the work, witness or test the work, or discover defects, or failure to reject any part of the work performed by any CONTRACTOR shall not relieve the CONTRACTOR from any liability or obligation under this undertaking letter or under law. CONTRACTORs are required to report any deviations immediately upon becoming aware of them, and any such non-compliance shall not be covered or hidden by any CONTRACTOR. Any latent non-compliance, damage and/or defects shall not relieve the CONTRACTOR from any liability or obligation under these Requirements or at law.

1.3. Compliance with these Requirements

The CONTRACTOR shall comply, and shall ensure that all the CONTRACTORs/sub-CONTRACTORs of any tier, consultants/sub-consultants of any tier, personnel, material men, agents, vendors, and suppliers comply, with the Standards and Codes of Practice and recognized Authorities Having Jurisdiction in the State of Qatar.

Any significant problems between the coordinating appointments leading to the inability to comply with the minimum requirements herein shall promptly be reported to LREDC.

During the course of the construction program, LREDC shall perform routine inspections of jobsite conditions and documented procedures to ensure compliance with legal regulations and adherence to these Requirements and summarily perform risk assessments against deviations to evaluate possible consequences to the policy and determination of necessary corrective and preventative actions.

Should the CONTRACTOR show disregard to these Requirements or fail to comply with, implement, impose, or is deemed to be in breach of any of these Requirements mandated by, LREDC shall, without prejudice to any rights afforded to it, (whether contractual or otherwise) be entitled to impose Section 13 of the Lusail HSE General Requirements.

2. Statutory Requirements and Obligations

2.1. General

The installation shall comply with the following Statutory Requirements, Standards and Codes of Practice to which, the CONTRACTOR is expected to show an advanced level of knowledge and understanding.

2.2. Authority Having Jurisdiction (AHJ)

The CONTRACTOR shall recognize the following entities for procedural approval and implementation for compliance of all design, installations, connections, testing and commissioning and fire services related issues which may impact the coordination of evacuation strategies and First Responder Emergency Personnel.

- Ministry Of Interior State of Qatar (MOI)
- Qatar Civil Defence Department (QCD)
- Kahramaa Utilities
- Lusail HSSELQ
- Lusail Fire Prevention Division

2.3. Standards and Codes of Practice

- QCS 2010 – Qatar Construction Specifications 2010
- QCD FSH 2 – Fire Safety Provisions for Construction Worksites – Civil Defence Department
- QCD FSH 3 – Building Worksite Safety – Civil Defence Department
- NFPA- Nation Fire Protection Association
- SSFDG-CP23B- Olive Group Stage 3 – Security System & Fire Design Guidelines
- FM Listing - Factory Mutual approved materials and equipment
- UL Listing – Underwriters Laboratory approved materials and equipment
- ISO: 9001 – International Organization for Standardization for Quality Management Systems
- OHSAS: 18001 - International Occupational Health and Safety Management System Specification

Any deviations to the standards and codes of practice above proposed by the CONTRACTOR which includes, but not limited to; engineered solutions or the installation of equipment which does not comply with their manufacturer listing for intended use shall be submitted by the CONTRACTOR for review and approval prior to any works.

2.4. Health and Safety Standards

The CONTRACTOR shall fully understand and continuously participate in accordance with the Lusail Health Safety Environment (HSE) General Requirements.

This includes but is not limited to; obtaining the proper permits in accordance with Lusail HSE General Requirements Section 10; for works involving the following:

- Excavating and trenching (depths greater than 1 meter)
- Confined Space Entry (CSE)
- Hot Works
- Pressurised line testing (in excess of 60 Psi)

The CONTRACTOR must implement without fail, the objectives and Requirements of Lusail HSE in order to successfully comply with the Requirements of the Fire Prevention and Protection Policy.

3. Guidelines

3.1. General

For the duration of the construction program, the CONTRACTOR shall furnish and install adequate facilities for automatic and non-automatic fire protection systems as described in this Clause in accordance with NFPA 241 – Standard for Safeguarding Construction, Alteration, and Demolition Operations and applicable local laws and regulations.

NOTE: ALL SIGNAGE INTENDED FOR FIRE DEPARTMENT OR FIRST REPSONDER INSTRUCTION OR NOTIFICATION SHALL BE PROVIDED IN BOTH ENGLISH AND ARABIC

The provisions for Fire Prevention and Protection Program shall include the following components:

- Site Fire Safety Plan
- Emergency Procedures
- Temporary Buildings and Structures
- Temporary Enclosures / Covering Materials
- Buildings Under Construction
- Fire Department Access
- Water Supplies/Hydrants/Fire Pumps
- Combustibles Staging and Storage
- Process Hazard Protection
- Equipment Protection
- Portable Extinguishers
- Lighting and Power Supplies
- Arson and Vandalism Prevention
- Waste Management

3.2. Site Fire Safety Plan

The CONTRACTOR shall establish a Site Fire Safety Plan which is to include adequate documentation and be submitted for approval to and archived for reference by LREDC.

The Site Fire Safety Plan shall be a structured Manual type document. It shall contain detailed information covering both emergency procedures and detailed layouts of the fire prevention and protection provisions. The Manual is to provide an overview of the essential information of the fire services installations and the contents shall facilitate comprehension by people with a non-technical background.

The Site Fire Safety Plan shall be retained at the dedicated construction site command post and provided with the following pertinent information:

- Organization and responsibility for fire safety, training, record keeping, ect.
- General site fire precautions
- Construction site layout drawings
- Emergency procedures
- Process hazards protection regime
- Waste management regime
- Security measures to minimise the risk of arson and vandalism
- Inspection procedures
- Maintenance procedures

3.3. General Site Fire Precautions

This section shall include documentation in determining compliance with the fire prevention and Protection Policy. Where applicable, the following information shall be provided:

- Temporary buildings and structures
  - Building use
  - Construction type
  - Number of floors
  - Area per floor
- Temporary enclosures
  - Use
  - Construction type
  - Area
- Buildings under construction
  - Number of anticipated levels above and below ground
  - Area per floor
- Combustibles Storage
  - Type and quantity of combustible

  - Method of storage (i.e. barrel, box)
- Standpipes
  - Wet or Dry type system
  - Number of active standpipes per level
  - Total flow requirement
- Sprinklers
  - Alarm valve installation
  - Sprinkler operating criteria
  - Sprinkler head information
- Portable extinguishers
  - Construction site extinguisher schedule
- Pumps and Water Supply
  - Pump duties
  - Total water storage tank capacity and anticipated duration

3.4. Construction Site Layout Drawings

The Construction Site Layout Drawings shall be a minimum 1:100 scale and developed indicating the following:

- Layout for temporary buildings and structures
- Layout for temporary enclosures
- Layout for buildings under construction
- Emergency egress
  - Paths of travel
  - Travel distances
  - Lighting
  - Escape stairs
  - Signage
  - Assembly point
- Hoist and lifting facilities
- Compartmentation
  - Fire rated doors and walls
  - Fire isolated stairs
  - Draftstops
- Fire Alarm and Detection
  - Panel location
  - Alarm points

  - Sounder and beacon points
  - Fire blankets
- Portable extinguisher location
  - Type
  - Size
- Fire protection installations
  - Hydrants
  - Sprinklers
  - Standpipes
  - Hose reels
  - Piping location and size
  - Fire Department connections
  - Pumps and water supplies
- Fire Department access
- Designated combustible storage and waste location
  - Type of combustible
  - Storage or staging arrangement
- Location of fire source equipment and machinery
  - Type of equipment or machinery
  - Size and orientation of equipment
- Fire command centre
- Perimeter fencing and access control
- Location of designated smoking areas

The Site Fire Safety Plan shall be updated regularly and indicate any changes to the fire prevention and protection systems described above.

3.5. Emergency Procedures

The CONTRACTOR shall establish Emergency Procedures for anticipated fire incident response focused at the safe evacuation and protection of all parties involved which at a minimum, concentrate on the following:

- Nomination of personnel for Fire Warden duties
- Nomination of personnel to maintain access and prevent re-entry
- Means of giving warning through audible and visual indication
- Upon initiation of the alarm system, the required response, i.e. assembly point
- Clear access to the site and buildings is maintained at all times
- Temporary emergency lighting

- Clear signs for escape routes

Fire instruction notices must be displayed throughout the site, be of common format and located adjacent to fire alarm call points or sounders, at portable extinguisher points and at entry and emergency exits with the emergency assembly point chosen, clear of risk of QCD access route and marked in a clear and accepted way.

The fire instruction notices are only intended to serve as a reminder. All people onsite, even if just for a few hours, should receive sufficient information to know what to do in the event of a fire.

An emergency telephone facility with direct external communications access shall be provided at the Command Center for the construction site. The street address of the construction site and the emergency telephone number of the Fire Department shall be posted adjacent to the telephone.

People required to perform specific functions in the event of a fire should be given the additional instruction and training needed for them to carry out their responsibilities, such as use of fire hoses and portable extinguishers or shutting down of equipment and machinery.

The nominated Fire Warden shall be responsible for setting the standard for maintaining training and exercising the plan; particularly the register of persons on site that so roll call can be made quickly and accurately. Training should include the following:

- what to do upon discovering a fire
- how to raise the alarm
- what to do upon hearing the alarm
- the procedures for alerting and directing other contractors and visitors
- arrangements for calling the fire and rescue service
- evacuation procedures, assembly points and fire drills
- location and use of fire-fighting equipment
- location of escape routes
- how to open escape doors
- importance of fire doors
- how to stop equipment and isolate power
- not using lifts
- use and risks of highly flammable and explosive substances
- good housekeeping
- smoking policy and smoking areas

All emergency procedures and precautions shall be updated regularly to suit onsite conditions.

Where security guard services are provided, the guard(s) shall be trained in the following:

- Notification procedures that include calling the Fire Department and management personnel
- Knowledge of fire protection equipment
- Familiarization with fire hazards
- Use of construction elevators

The records custodian documents all instruction and training. The HSE Representative maintains project records at the site for the duration of the project and archives them at project close.

3.6. Underground Construction

For procedures and requirements for construction site safety and fire prevention in underground structures including tunnels, refer to Lusail Construction Safety Management Procedure Underground Construction LCSMP 30-00.

3.7. Temporary Buildings and Structures

The following requirements shall apply to temporary buildings and structures for the use of workers, office staff and storage. Where not directly addressed below, all temporary installations shall be provided and designed to endure external extremities for the duration of their use.

3.7.1. GENERAL

The CONTRACTOR shall ensure temporary buildings and structures onsite are located to comply with the following:

- Temporary buildings and structures should be located as close as possible to public roads or internal driveways
- Temporary buildings and structures shall be located at a distance no less than 4 meters to any common boundary unless provided with 1 hour fire rated walls and roof.
- Temporary building and structures used for storing combustible solids shall be located no less than 5m to other temporary buildings, structures or enclosures and buildings under construction
- Cooking facilities provided with less than 30 minute fire rated compartment (walls and floor) shall be located not less than 5m from other structures.
- Clear spaces located under temporary buildings and structures shall not be used for storage of any kind and shall be inspected regularly for the collection of unwanted waste and debris
- All electrical systems and connections to and within temporary buildings and structures, including the rating of cabling in accordance with its intended purpose shall be installed strictly in accordance with NFPA 70
- Emergency lighting systems shall be installed in accordance with NFPA 10 Chapter 7.9.

Unless practicably identifiable that a single emergency exit is sufficient, each temporary building or structure shall be provided with at least two (2) means of escape which are in accordance with QCD requirements.

Temporary buildings and structures shall be adequately ventilated.

Temporary buildings and structures shall be checked at the end of each day to ensure all equipment and appliances classified as a fire source are disconnected or switched off.

3.7.2. NON-COMBUSTIBLE CONSTRUCTION

Temporary buildings and structures used for occupancy such as office, dormitory or store constructed of shall incorporate the following precautions:

- Temporary buildings and structures with external escape corridors shall be no more than 3 stories or 10 meters in height
- Temporary buildings and structures with internal corridors serving as a common path of travel for escape shall be no more than 2 stories
- Staircases and external corridors shall be a minimum of 1m width
- Internal corridors shall be a minimum 1.5m width
- All staircases provided for emergency egress shall not be enclosed unless provided with 1 hour fire separation
- Manual fire alarm provided within 30m of every part of the building and at every exit
- Fire alarm sounders to provide a minimum of 60dB at every part of the building
- 2 portable extinguishers of 6kg next to every staircase at each floor having accommodation facilities
- 2 portable extinguishers of 1.5kg provided at each cooking area
- 1 fire blanket provided at each cooking area

3.7.2.1. Escape Distances

Travel distances from temporary buildings and structures constructed of non-combustible or steel materials where the escape route is via EXTERNAL CORRIDOR shall be as follows:

- One-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 20m
- Two-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 45m

Travel distances from temporary buildings and structures constructed of non-combustible or steel materials where the escape route is via INTERNAL CORRIDOR shall be as follows:

- One-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 15m
- Two-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 30m

3.7.3. COMBUSTIBLE CONSTRUCTION

For temporary buildings and structures constructed of combustible materials such as timber framing and composite panels, the following provisions shall apply:

- The length of any compartment shall not exceed 20m
- Non-combustible internal walls with fire rated elements no less 30 minute shall be used for compartmentation
- Minimum 30 minute fire rated doors provided for the internal corridors of each compartment

3.7.3.1. Escape Distances

Travel distances from temporary buildings and structures constructed of combustible materials where the escape route is via EXTERNAL CORRIDOR shall be as follows:

- One-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 15m
- Two-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 30m

Travel distances from temporary buildings and structures constructed of combustible materials where the escape route is via INTERNAL CORRIDOR shall be as follows:

- One-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 10m
- Two-way travel distance from most remote part of the floor to the foot of the escape staircase shall not exceed 20m

3.7.4. DORMITORIES / SLEEPING ACCOMMODATIONS

Temporary buildings and structures used as dormitories for workers shall not exceed:

- $3m^2$ per person occupancy load
- $120m^2$ area of sleeping accommodation
- More than 60 persons exit capacity per 1 meter width of staircase

Temporary accommodations intended for sleeping shall be provided with battery operated smoke alarms throughout all sleeping areas and common escape routes leading from and spaced in accordance with NFPA 72 Annex B.

3.8. Temporary Enclosures / Covering Materials

Temporary enclosures which include materials used to segregate areas, equipment and machinery shall comply with NFPA 241 Section 4.3.

Only non-combustible panels, flame-resistant tarpaulins, or approved materials of equivalent fire –retardant characteristics shall be used. Materials which are provided for this intended use from the manufacturer shall be UL Listed.

Scaffold sheeting shall be flame-retardant and UL Listed.

Where used to enclose structures, forming equipment, and similar items, the enclosing material shall be fastened securely or guarded by construction so it cannot be blown by the wind into heaters or other sources of ignition.

Temporary enclosures shall be provided with a minimum of one fire extinguisher suitable for all classes of fires that are expected inside the enclosure and be located so that the travel distance to an extinguisher does not exceed 15m.

Where internal combustion engines and associated equipment such as pumps, air compressors are provided in temporary enclosures, exhausts shall be the spark arresting type and discharge outside the enclosure at least 230mm away from combustible materials.

Temporary enclosures where the accumulation of combustible or flammable vapours is predicted or possible shall be provided with an adequate source of ventilation.

Temporary buildings and structures which are used for storing or staging flammable liquids shall be provided with all electrical wiring, connections and components which are EX rated (explosion proof)

3.9. Buildings Under Construction

The following preventative and prescriptive fire safety and protection systems shall be provided to buildings under construction and maintained throughout the construction program.

3.9.1. Advancing Fire Protection

Where possible, the permanent fire services installations shall be installed and commissioned as the building construction progresses.

At a minimum, fire rated stairs and protected paths of travel shall be completed and in service.

Where permanent installations have been provided but are not in use, clear signage shall be provided clearly indicating so.

3.9.2. Compartmentation & Draftstops

Fire walls and exit stairways, where required for the completed building, shall be given construction priority for installation.

Fire doors with approved closing devices and hardware shall be installed as soon as is practicable and preferably before combustible materials are introduced.

Where fire doors have been installed with self closing devices in service, they shall not be obstructed from closing at all times.

Fire rated walls of at least 1 hour shall be provided to separate an occupied portion of the structure from a portion of the structure undergoing construction or alterations.

Opening protection of at least 45 minutes shall be provided to separate an occupied portion of the structure from a portion of the structure undergoing construction or alterations.

Non-rated walls and opening shall be permitted when an active automatic sprinkler system is provided to separate an occupied portion of the structure from a portion of the structure undergoing construction or alterations.

Where not adequately fire separated, stairs intended for temporary firefighting access and/or emergency egress shall be provided ‘cut-off’ sprinklers on the opposite side of the access door at each level which opens directly onto an unsprinklered space.

Temporary draftstops shall be provided around all vertical openings of significant size where the possibility for smoke migration is possible. Draftstops shall be attached the underside of the slab within 200mm around the opening at a depth of 457mm.

Materials used for cladding and in other protected spaces must be of the approved type.

3.9.3. Means of Egress

Emergency egress shall be provided in accordance with NFPA 101 and based on path of unobstructed travel.

Travel distance shall not exceed the following:

- **Enclosed Structures**
  - Alternate Exits – 45m

- Dead-end – 18m

- **Semi-open Structures**
  - Alternate Exits – 100m
  - Dead-end – 18m

Every building or structure shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency.

The design of exits and other safeguards shall be such that reliance for safety to life in case of fire or other emergency will not depend solely on any single safeguard

The building or structure shall be so constructed, arranged, equipped, maintained, and operated as to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes, or resulting panic during the period of time reasonably necessary for escape from the building or structure in case of fire or other emergency.

Each level above the first story in new multi-story buildings that require two exit stairways shall be provided with at least two usable exit stairways after the floor decking is installed. The stairways shall be continuous and discharge to grade level.

Stairways serving more than two floor levels shall be enclosed (with openings adequately protected) after exterior walls/windows are in place.

For new multi-story buildings, one of the required exit stairs may be obstructed on not more than two contiguous floor levels for the purposes of stairway construction (i.e., installation of gypsum board, painting, flooring, etc.).

Alternate exit routes shall be provided during each phase of construction and be identified on the construction drawings.

Adequate and unimpeded means of egress from all parts of the works shall be available and maintained at all times in case fire.

In all buildings over one story in height, at least one stairway shall be provided that is in usable condition at all times and that meets the requirements of NFPA 101.

Stairwells provided for escape shall extend progressively upward as each floor is installed.

All exits shall be provided with stair identification signs to include the floor level, stair designation, and exit path direction as required for safe egress.

Emergency egress stairs shall be a minimum 30 minutes fire rated enclosure including doors.

Egress routes shall be a minimum of 1m wide with doors no less than 750mm.

Ramping shall be provided to all openings along the path of egress travel where the difference in floor level is 150mm or greater.

Emergency lighting shall be installed at a minimum in the following locations:

- Underground or windowless areas
- Stairs without natural light
- Internal corridors without borrowed light, which is sufficient length that the escape route would be unclear
- Where work is expected at night

Emergency lighting shall be provided in accordance with NFPA 101 with a self contained UL Listed and Approved or uninterrupted source of power supply in accordance with NFPA 70.

Emergency lighting shall be continuously inspected and maintained in good working condition.

Emergency lighting shall provide a minimum of 10.8 lux along the entire path of travel.

Emergency exit signage shall be provided in accordance with NFPA 101.

Signage shall be provided in all areas where the direction of travel to reach the nearest exit is not apparent.

Signage shall be installed so they can be clearly seen and less likely to be obscured by smoke in the event of a fire.

Exit, other than main exterior exits doors which are obvious and clearly identifiable as exits shall be marked accordingly.

Where possible, the egress path of travel shall be etched to the floor and clearly indicated with directional markings in a bold distinctive colour.

Where areas lead into 'dead end' routes or areas not intended or recommended for emergency egress, signage shall be provided which clearly indicate 'NO EXIT'

3.9.4. TEMPORARY STANDPIPES / FIRE HOSE REELS

Standpipes shall be made operational all levels, with the exception of the uppermost 3 stories, as soon as the building under construction reaches 24m in height.

Temporary standpipe installations shall be maintained so that the hose valve is located not more than one floor level below the highest form, staging and similar combustibles at all times.

Standpipes shall be conspicuously marked and readily accessible FDC (Fire Department Connection) on the outside of the building at the street level and shall have at least one standard hose outlet at each intermediate landing level.

All hose connections such as landing valves and FDC shall be 65mm Female Instantaneous type and provided with blank caps and strapped and padlocked in the closed position.

Standpipes shall be secured at each alternative floor level as the building construction progresses. Where standpipes pass through the floor slab, flexible couplings shall be provided within 300mm either side of the transition at each level.

Dry type standpipes shall be installed progressively for all buildings exceeding 8 stories or 24 meters.

Wet type standpipes shall be installed progressively for all buildings exceeding 13 stories or 45 meters.

Wet and dry standpipe stacks shall be labelled and numbered accordingly and provided with earthing and air pressure relief valves.

Standpipe piping shall be a minimum 100mm dia. steel.

There shall be a minimum of one landing valve per floor and with the total number of landing valves located to ensure that all parts of the works are within effective reach of 30m hose travel plus spray.

Where combustible materials have been installed or stored in aboveground and underground structures of no more than one level, all areas of the structure shall be within 60m hose travel distance plus spray from the nearest fire hydrant. Where no hydrant is available, hose valves shall be installed.

Dry rising mains shall be pressure tested to 13.8 bar for at least 2 hours.

Flow rates for wet standpipes shall be as follows:

- Total flow rate from the most remote landing valve is 31 L/s
- Static pressure at landing valves do not exceed 8 bar
- Residual pressure at landing valves 6.9 bar

Water supply durations for standpipes shall be 60 minutes

Fire Department Connections (FDC) shall be of the siamese type or quad boost type and housed in a protective enclosure or suitably located to prevent damage.

The position the FDC shall be on the street side of the construction site and be fully visible and recognisable from the street or point of Fire Department vehicle access.

The FDC inlet shall be located no further than 60m from the nearest fire feed hydrant and/or approved water supply.

The FDC shall be maintained so that it is free from obstructions and immediately available for the Fire Department.

Each FDC shall be provided with a listed check valve and signage indicating the floors that it serves.

The FDC shall be located so that when attached to the Fire Department pumping appliance, the suction hose does not obstruct Fire Department access

Fire hose reel systems shall be installed in accordance and conforming to the design criteria indicated in the BS EN 671-1.

Fire hose reels shall be located so that all areas can be reached with 30m of travel plus the indicated throw range.

Fire hose reels shall be provided with semi-rigid hose with a nominal bore of 19 mm or 25 mm in accordance with EN 694 with a length no greater than 30m.

Working, test and minimum burst pressure for hose reels shall be in accordance with Table 4.1 of QCS 2010.

3.9.5. AUTOMATIC SPRINKLER PROTECTION

Where storage or staging areas in buildings under construction exceed $10m^2$ floor area, an automatic fire sprinkler system shall be installed and the following shall apply:

- Floor to underside of slab heights shall not exceed 9 meters
- Minimum 500mm clear space between the top of storage and the sprinkler shall be maintained
- Sprinkler spacing shall not exceed $12m^2$
- Sprinkler coverage shall extend 4.57m beyond all edges of the storage boundary
- Duration for operation shall be 30 minutes minimum
- 189 L/min hose allowance shall be added to all sprinkler demands
- A water motor alarm complete with retard chamber shall be provided in the immediate area
- An FDC shall be installed

Provided that no plastic materials used, whether the goods itself or for covering, packing or filling, the following criteria shall apply:

- Class I commodities stored up to 3.7 meters and Class II commodities stored up to 2.4 meters high
    - Ordinary Hazard Group 1 – 6.1mm/min/m^2 over 139m^2 or the entire area
- Class II commodities stored up to 3.6 meters high
    - Ordinary Hazard Group 2 – 8.1mm/min/m^2 over 139m^2 or the entire area

The listing for commodity classification can be found in Appendix A, Table A.5.6.3 of the NFPA 13 -2013

The interior of combustible trash chutes shall be provided with not less than one temporary automatic sprinkler within a recess near the top complete with a sprinkler guard.

The temporary sprinkler in trash chutes shall be connected to any available water supply with a UL Listed fire hose or a flexible, commercial rubber hose with a diameter of not less than 19mm and a UL Listed flexible connector.

An alarm valve assembly or signalling device for temporary installations shall not be required for systems with less than 20 automatic sprinklers.

Sprinklers, where required for protection of emergency egress stair openings, shall be designed to discharge a minimum of 49 L/pm @ .5 bar.

3.9.6. Fire Detection and Alarm

A suitable means of audible alarm indication shall be provided at all times during construction.

If an electrically alarm system is adopted, the main alarm indicator board shall be situated in the base of the building, preferably at ground floor and made accessible at all time. Conventional alarm devices can be accepted. Alarm panel shall be connected directly to an appropriated power supply, such as generator set. Stand-by battery power supply shall be equipped to work for a minimum 24hr as required by QCD.

Electrically energised system shall be fitted with a sounder or siren of not less than 75dB. Detection devices is not necessary, however, manual alarm pull station or call point is required to be at each staircase or passenger hoist entrances.

In the case of manual notification devices, a hand rotated motorised gong can be accepted. In this situation, every floor area of 200sqm is to be equipped with this hand rotated motorised gong.

On smaller construction packages of single story buildings less than 100m^2, 'word of mouth' alarm indication shall be considered.

Where provided or required, all fire detection systems shall be installed in accordance with NFPA 72.

Automatic fire and smoke detection shall be provided in all enclosed levels of the structure.

Manual call points shall be provided so that the travel distance to any alarm point does not exceed 30 meters.

Manual call points shall be provided at every story exit and adjacent to every fire hose reel.

All fire alarm bells and sounders shall be accompanied by a visual alarm beacon.

Fire alarm and detection systems where installed, shall be routinely inspected each week.

3.10. Fire Department Access

A suitable location at the site shall be designated as a Command Center and provided with plans, emergency information, keys, communications and equipment as needed.

Where access to or within an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or firefighting purposes, a key box (knock box) shall be provided for Fire Department access.

Every building on the construction site shall be accessible by the Fire Department apparatus by means of roadways having all weather driving surface of not less than 6.1m of unobstructed width with the ability to withstand the live loads of fire apparatus and a minimum of 4.1m vertical clearances maintained throughout.

Adequate vehicle access for fire fighting to construction sites shall be maintained at all times until permanent fire apparatus access roads are available.

The access road shall extend to within 46m of all portions of the exterior walls of the first story of any building.

Common driveways between and around combustible storage piles shall maintain at least 4.5m wide and are to be kept clear of waste material or rubbish

The FDC and fire hydrant serving the construction site shall be free and clear from obstruction and damage and readily available to the Fire Department.

Where required, Fire Department access shall be provided to within 30m of temporary or permanent water supply (Fire Hydrant or Suction Connection).

For Fire Department response, appliance connections shall be provided at a distance no less than 12m to a building under construction.

Fire Department access shall be located so that the distance between the temporary or permanent water supply is located at a distance no greater than 30m from any Fire Department Connection.

Passenger hoists for Fire Department access requirements shall be provided for all buildings exceeding 8 stories or 24 meters.

Free access from the street to fire hydrants and to outside connections for standpipes, sprinklers or other fire extinguishing equipment, whether temporary or permanent, shall be provided and maintained at all times.

3.11. Water supplies / Hydrants/ Pumps

An approved water supply for fire protection either temporary or permanent shall be provided as soon as combustible material arrives on the site.

Where provided, temporary fire water tanks shall be of non-corrosive and non-combustible or materials and protected from accidental damage

Where the hydrant system is not installed or available, the CONTRACTOR shall provide an “effective”, capacity water storage tank which can sustain simultaneous operation of automatic and non-automatic demands and durations.

Water supplies shall have adequate capacity for the fire services installed which is to include the hose allowance where the standpipe or hydrant connection is combined with sprinklers.

Water storage tanks shall not be located within 12 meters of buildings under construction or combustible or flammable materials storage.

For wet standpipes progressively installed in buildings exceeding 13 stories or 45m, a break tank shall be provided with a minimum capacity of 11,500 litres. The break tank shall have a 100mm diameter quick infill provided with a listed check valve.

Where the hydrant system is not installed or available, the CONTRACTOR shall provide full capacity water storage for fire fighting systems. A 100mm diameter suction connection piped from the tank shall be provided adjacent to the FDC.

The use of a single 'Temporary' portable fire pump shall be allowed during construction and shall be of the diesel type and be automatically controlled by pressure switches.

The minimum capacity of the fire pump shall be 379 L/pm, capable of operating 2 fire hose reels simultaneously with a discharge pressure at the hose inlet of no less than 5 bar.

The fire pump shall be secured to an adequate foundation and shall be shaded from direct sunlight.

Pedestrian walkways shall not be constructed so that they impede access to hydrants.

Hydrant connections shall conform to NFPA 24 and be of the male instantaneous type.

3.12. Materials Staging and Storage

For the purpose of this section, the definition of storage refers to all materials which are located for retrieval as needed or where materials are staged temporarily while in use.

Storage shall be arranged in such a manner that it does not interfere with the following:

- Adequate distribution of natural light
- The proper operation of any machinery or other equipment
- The unobstructed use of passageways or traffic lanes
- The efficient functioning of automatic sprinkler systems or other firefighting equipment

3.12.1. COMBUSTIBLE SOLIDS STORAGE

The storage of plastics and rubber materials with the confines of buildings under construction shall be submitted to LDRC for review and approval prior to arrival onsite.

Where storage within a building under construction exceeds $10m^2$ floor area, supplementary automatic fire sprinkler protection in accordance with Section 3.8.5 shall be installed to the storage area.

Storage loads shall not exceed foundation tolerances and shall be arranged in a manner which prevents collapse.

Where possible, plastics should not be stored on site. This particularly applies to protective wraps and pallets for shipping. The presence of plastic materials will greatly affect the prescriptive fire protection required.

Open yard arrangement of combustible solid storage shall not exceed 4.8m in height.

Open yard combustible solid storage and staging of equipment which has been identified and a fire source shall not be located closer than 9m to buildings under construction.

Where combustible solids are stored for extended periods of time, composite breakdown of materials shall be considered and separation distances applied appropriately.

Combustible storage shall not be located within 3m horizontal distance below vertical openings in building under construction.

3.12.2. COMPRESSED GAS STORAGE

All compressed gas cylinders shall be stored in an upright position.

All stored cylinders shall be secured by a chain to ensure that they will not be accidentally knocked over.

All storage locations shall be adequately ventilated to where ambient room storage temperatures do not exceed 52°C (125°F).

When rigs are not in use, turn off valves, and bleed down and disconnect hoses, remove regulators, and place safety caps on bottles.

All cylinder storage locations shall be distinctly marked with the names of each compressed gas maintained at the location. Post “NO SMOKING — FLAMMABLE GAS” signs at all entrances to locations where flammable gases are to be stored.

Each compressed gas cylinder maintained at a storage location shall be labelled with proper identification of its contents.

All cylinders in storage shall be provided with valve protection caps at all times except when the cylinder contents which are being dispensed.

Storage locations for oxidizing gas (i.e., oxygen) and flammable gas (e.g., acetylene) cylinders shall maintain a minimum distance of 6.1m to separate the oxidizing and flammable gas cylinders.

Cylinder storage areas which contain flammable gases shall be segregated to avoid contact with a possible ignition source. Where separation distances cannot be achieved, walls of the storage area must have a fire rating resistance of at least 1 hour, and doors must be in accordance with NFPA 80.

3.12.3. FLAMMABLE AND COMBUSTIBLE LIQUIDS STORAGE

Fuel for internal combustion engines shall not be stored or staged within structures under construction, alteration or demolition.

Containers intended for gasoline and other flammable liquids to be stored in or dispersed from shall be UL Listed for such use.

Storage of flammable or combustible liquids shall not be sited in areas used for exits, stairways, or normally used for the safe passage of people.

Bulk storage and dispensing stations for flammable liquids in excess of 55 gallons shall be provided with imperforate bunding which is drained to a self-contained UL Listed receptacle.

Storage of flammable and combustible liquids outdoors, containers (no more than 60 gallons each) cannot exceed 1,100 gallons in any one pile or area. Separate piles or groups of containers by a 2m clearance and a distance of 15m from any building or structure shall be maintained.

Adequate ventilation shall be provided in storage areas where potential exists for accumulation of combustible or flammable vapours.

Flammable and combustible liquids in access of 25 gallons shall be stored in a UL Listed and Approved cabinet in accordance with NFPA requirements.

Storage areas for flammable and combustible liquids should be graded to divert possible spills away from buildings or other exposures. When provided with culverts or bunds, make provisions to drain off accumulations of groundwater or rainwater, or spills of flammable or combustible liquids.

3.13. Process Hazard Protection

All permit requirements for hazardous activities shall comply with Section 10.3 of the Lusail HSE - General Requirements. The permit to work order or copy thereof shall be retained by the operative while completing works.

Applications for permits to work shall include the location and nature or works, proposed time and duration of work and the person in direct control of the work.

Prior to the commencement of process hazards, the surrounding area shall be cleared of all loose combustible materials.

Where hot works are performed on a wall, floor or ceiling, both sides of the separation shall be inspected for combustibles prior to commencement of works.

Where combustible materials in close proximity to hazardous processes cannot be removed, flame-retardant covering or equally adequate fire protection shall be provided to the combustibles during works.

Gas-operated cutting and welding equipment using multiple oxygen and fuel gas cylinders shall be in accordance with NFPA 51.

When hot works are carried out, a dedicated fire watch shall be assigned for the duration of proposed works and continual inspection for 30 minutes thereafter.

LPG and gas fuelled equipment including propane burners shall be fitted with a UL Listed venture type flashback arrestor which is located as close as possible to the flame

Adequate ventilation shall be provided in work areas where potential exists for accumulation of combustible or flammable vapours.

Affected employees must not work so close to an electric circuit that they could contact the circuit in the course of their work, unless protected by de-energizing and using a Lock-Out Tag-Out system.

Smoking areas shall be restricted to authorized locations only. Smoking shall not be permitted inside structures, office buildings or tunnels, or within 15m of combustible or flammable materials storage areas.

Smoking areas shall be provided with a minimum of 1 portable extinguisher

3.14. Equipment Protection

Internal combustion engines and associated equipment shall be shut down and allowed to cool sufficiently prior to refuelling

Service areas for equipment shall not be located within structures under construction, alteration, or demolition

All equipment control panels which are likely for exposure shall be provided with a minimum rating of IP55 enclosure

Unless otherwise specified, all MEDIUM VOLTAGE equipment, materials (fire pump control panels) and wiring shall be suitable for use with a 3 phase + Neutral, 4 wire, 415 V, 50 Hz supply of adequate capacity and having the following tolerances:

- voltage ▯▯6 %
- frequency ± 0.1 Hz (short term ± 0.15 Hz for a duration of only a few seconds)

Unless otherwise specified, all NORMAL VOLTAGE apparatus, equipment, materials and wiring shall be suitable for use with a single-phase, 220-240V ±6%, 50 Hz. ±4%.

Electrical equipment within a flammable storage shall be in accordance with NFPA 70.

High voltage distribution locations shall be safeguarded from damage and immediate areas surrounding are free from water collection

When the sprinkler protection is being regularly turned off and on to facilitate of newly completed construction, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

Preventative measures shall be maintained to ensure that all fire services valves and associated equipment is safeguarded from damage at all times.

All supports for fire protections services and equipment shall be in accordance with the relevant NFPA or manufacturer requirements.

Drainage systems shall be properly designed and installed to remove water from sprinkler and fire hose streams.

Wherever self-propelled equipment is used underground, a fire suppression systems or a fire extinguisher rated at least 4-A:40-B:C shall be provided on that equipment.

Temporary sprinkler and hydrant control valves shall be operated only by properly trained personnel.

All installations, equipment and machinery shall be properly and regularly maintained in accordance with the manufacturers' recommendation or requirements.

3.15. Portable Extinguishers

The suitability, distribution and maintenance of fire extinguishers shall be in accordance with NFPA 10 unless otherwise required by QCD.

For open yard protection, portable fire extinguishers shall be sited so that the travel distance to the nearest extinguisher does not exceed 30m.

At least 1 portable fire extinguishers consisting of carbon dioxide and/or dry chemical type shall be provided at cylinder storage locations and sited so that the travel distance to the nearest extinguisher does not exceed 23m.

At least one portable fire extinguisher (with a rating of no less than 20-B units) shall be provided between 7.6m and 22.9m from any flammable/combustible liquid storage area located outdoors.

For buildings under construction, 1 portable fire extinguisher of 6kg minimum shall be provided for every 500m^2 of floor area or maximum travel distance to the nearest extinguisher does not exceed 23m.

At least one approved fire extinguisher shall be provided in plain sight on each floor at each usable stairway as soon as combustible materials accumulate.

Extinguishers shall be inspected not less than monthly for functionality by a qualified person(s) and ensure they are properly maintained.

When an extinguisher has been removed from service to be checked or repaired, alternate equivalent protection must be provided. Alternate equivalent protection could include replacing the extinguisher with one or more units having equivalent or equal ratings, posting a fire watch, restricting the unprotected area from employee exposure, or providing a hose system ready to operate.

A portable extinguisher shall be provided at both the head pulley and tail pulley of all belt conveyors.

3.16. Lighting and Power Supplies

Temporary wiring for electrical power and lighting installations used in connection with the construction shall comply with NFPA 70.

A project-specific assured grounding plan shall be provided in accordance with Qatari Law. The assured grounding plan shall cover all cord sets, receptacles that are not part of the building or structure, and equipment connected by cord and plug that are available for employee use.

All electrical installations shall have sufficient capacity for the intended use and designed, installed, inspected and maintained by competent personnel.

No person may install or maintain electrical equipment unless that person has been approved by the Responsible Appointment. Such personnel shall administer or strictly monitor the following functions/duties:

- Operate any circuit switching device of 480 V or greater, except motor starters and valve operators from pushbutton stations
- Test or troubleshoot electrical equipment
- Repair or alter electrical equipment
- Remove or install fuses
- Perform work on non-insulated energized circuits and apparatus over fifty (50) V.
- Without prior consideration, work within 3 meters of non-insulated energized circuits and apparatus that are not barricaded, covered, or otherwise guarded to prevent electrical shock hazards and contact by tools, equipment, or personnel shall not commence.

Cabling with a voltage at and above 100mA shall be secured and protected to all persons inherent to risk.

Flexible electrical cables shall be UL Listed and Approved and suitable for the method and location where they are used. Flexible cabling shall be used only for the following equipment or purpose:

- Wiring of temporary equipment and appliances
- Wiring for temporary fixtures
- Appliances that have been designed to permit removal for maintenance and repair if the appliance is equipped with an attachment plug energized from a UL Approved outlet and not designated for permanent installation.

Connections to portable lamps or appliances shall be provided with a UL Listed and Approved outlet and attachment plug

Connections to stationary equipment that is frequently charged with an attachment plug energized shall be UL Listed and Approved.

Flexible electrical connections shall not be used in the following ways:

- As a substitute for fixed wiring within a structure
- To run through holes in walls, ceilings, floors or similar openings which are to be otherwise to be fire stopped.

If an electrical circuit breaker trips, that breaker shall not be reinstated until a qualified electrician has investigated the tripping of the breaker.

All electrical housing components shall be periodically checked to ensure that covers and screws are securely fastened.

All electrical installations shall be periodically checked to ensure that they are safe and free from any damage or deterioration.

All electrical installations shall be thoroughly inspected prior to any additions or modifications to ensure the existing cabling and connections are safe and free from any damage or deterioration.

Socket splitting shall not be permitted. Routine inspections of electrical distribution panels shall ensure that sockets are not overloaded and plug-ins secure.

Intentional defeating of safety devices such as fuses or circuit breakers is strictly forbidden. Routine inspections of electrical connections and equipment shall ensure that safeguard components are installed and maintained.

Electrical installations shall be provided with detailed wiring schematics and manufacturer data sheets which can be retrieved at the request of LREDC.

3.17. Arson and Vandalism Protection

Open fires shall be prohibited on the construction site

The construction site shall be adequately secured from intrusion, including but not limited to children and young adults.

Where possible, perimeter fencing shall be sited as close as possible to the plot boundary enclosing the entire construction site.

Where appropriate, CCTV, lighting and security guards shall be provided.

Areas which have been determined as high risk such as flammable storage shall be separately secured inside the site with restricted access controls.

The perimeter and security fencing shall be inspected regularly for gaps or damage resulting in decreased integrity.

3.18. Waste Management

Materials susceptible to spontaneous combustion, such as oily rags, shall be stored in a UL Listed disposal container.

Accumulations of combustible waste material, dust, and debris shall be removed from buildings under construction and its immediate vicinity at the end of each work shift.

All debris, rubbish and waste materials which are to be staged temporarily shall be located at a safe distance from the structure and are properly scheduled for removal to prevent build-up.

All combustible debris, rubbish and waste material shall be disposed of properly.

Skips and waste containment shall not be located under canopies or overhanging eaves

Where skips are located within 3m to a structure, the structure shall have a fire resistive barrier which is high enough to prevent fire from reaching other flammable parts of the structure.

The construction site shall be regularly maintained for cleanliness and rubbish collection consistent as required.

Trash chutes provided to the exterior of a building shall be constructed of non-combustible materials, or protected by automatic sprinkler protection as described Section 4.5.

FIRE SAFETY GUIDELINES ON CONSTRUCTION SITES

Why there is a Fire Safety Problem on construction sites?

WHAT ARE THE PROBLEMS?

- ✓ Lack of awareness that there is a problem.
- ✓ Poor management.
- ✓ Poor planning.
- ✓ Lack of supervision.
- ✓ No clear fire safety local legislation.
- ✓ Many Ignition sources: smoking, electrical, hot work, generators, compressor, cooking.
- ✓ Fuel everywhere: gases, diesel, gasoline, timber, waste materials, packing.
- ✓ No fire detection, no sprinklers, shortage of firefighting water.
- ✓ Lack of training.
- ✓ Poor response from workers, unless motivated.
- ✓ Partial occupancy.
- ✓ New methods of construction.

WHO IS RESPONSIBLE FOR SITE SAFETY?

- ✓ The main contractor.
- ✓ Project manager/Construction manager.
- ✓ The assigned responsible Person.

WHAT ARE THE RESPONSIBILITIES OF A PROJECT MANAGER AND CONSTRUCTION MANAGER WITH REGARDS TO SITE SAFETY?

The project manager & construction manager is expected to establish systems and methods of working to achieve the following:

- ✓ The elimination of risk of injury and damage to the health of all persons affected by the company's operation and prevention of waste and damage to all property.
- ✓ Provide and maintain safe plant, equipment and working condition.
- ✓ To ensure all employees observe safe work practices at all times.
- ✓ To provide adequate training and instruction on safety to all employees at all levels to enable them to carry out their duties in a competent and safe manner.
- ✓ To acquire all safety gears/material in order to implement safety practices at work site.
- ✓ Public warning signage shall be placed adequately at the work site to keep away un-authorized persons from the work site.

What is the qualification of Responsible Person?

- ✓ Have at least a degree (diploma) qualification with field of fire safety.
- ✓ Have at least (5) continuous years of relevant practice experience in fire safety.
- ✓ Have at least fire safety courses of a recognized institute. NEBOSH-ISOSH-OSHA.

What are the responsibilities of a Safety Officer?

At every work site, a qualified safety officer shall be appointed with the following responsibilities:

- ✓ He shall have an access at all times to all areas of the work site to execute any required job as deemed necessary.
- ✓ He shall have the authority to instruct laborers to remove materials/equipments which in his opinion is a hazard.
- ✓ He shall advice the site management the requirements and responsibilities of the work site from time to time.
- ✓ He shall conduct inspection regularly, to ensure that safe working methods and safety measures are in place, and that safety rules are adhered to.
- ✓ He shall maintain an adequate system of investigation, reporting and keeping of records of accidents.
- ✓ He shall liaise with the government officers, and other authorities, as required and submit reports accordingly, when necessary.
- ✓ He shall plan and maintain safe access to and around places of work. This includes establishing a system to prevent damage, theft and injury when work is unattended.
- ✓ He shall ensure that all plant and equipment are well maintained, check for its suitability for the work, from time to time.
- ✓ To ensure that all the equipments and machineries are operated by authorized and competent personnel.
- ✓ Before the commencement of works on site an emergency evacuation procedures shall be thoroughly explained to all employees.
- ✓ Prior to any major operation on site, he shall ensure that access for the Civil Defense and Ambulance service is planned and maintained throughout the operation.
- ✓ He shall inspect the following areas on a daily basis:
  a) Scaffolding and platforms
  b) Stairways and landings
  c) Passageways and access ways
  d) Tools, materials, hoses, power cords and other hazards
  e) Materials and equipments to be secured in elevated areas
  f) Scrap timbers, concrete blocks.

FIRE MARSHAL / WARDEN DUTIES

- ✓ Check fire doors are not wedged or propped – inhalation of smoke and the products of combustion may be fatal and this is the only defense.
- ✓ Ensure escape routes are free from obstruction through good house-keeping – remember the means of escape may be required to be used by a large number of people.
- ✓ Ensure final exit doors are free from obstructions and available for use; ensure that situations such as flagstones lifting or overgrown vegetation do not restrict the doors.

- ✓ Assist with fire risk assessments when required by the responsible person.
- ✓ Assist with the development of evacuation and emergency plans particularly from their own area of responsibility.
- ✓ Ensure extinguishers are sited where they should be and are of the correct type, functional and in date of test.
- ✓ Check fire alarms can be heard in the allocated area; it is good practice to stand in different rooms/areas on each occasion the fire alarm is tested. Remember to always factor in busy times especially when machinery is working at full capacity.
- ✓ Ensure corridors and walkways are kept free of combustible materials through good housekeeping. Be particularly observant of introduced items such as notice boards or temporary storage.
- ✓ To be involved in post incident de-briefs to ensure all aspects of fire safety are effective.
- ✓ Ensure call points are accessible and not obstructed by fixtures or stock for example.
- ✓ Ensure all means of escape signs and lighting are working.
- ✓ Ensure all doors and extinguisher signage is where it should be and is legible.
- ✓ Ensure outdoor areas are well lit and allow clear routes to the assembly point.
- ✓ Ensure assembly point is clearly identified.
- ✓ Check arson risk areas and take action on any findings.
- ✓ Check electrical equipment:
- ✓ Electrical wiring, plugs and sockets are sound, correctly fused and there is no overloading.
- ✓ Cables don't run under carpets or where they can be trapped under furniture.
- ✓ Faulty electrical equipment is reported.
- ✓ Electrical equipment is tested regularly:
- ✓ Yearly for portable equipment,
- ✓ Every five years for fixed installations.

FIRE MARSHAL / WARDEN BRIEFING

One of the key roles of a fire warden is to carry out fire safety briefings for new members of staff, visitors or contractors. The fire safety briefing must be comprehensive and relevant to the workplace and should contain the following information:

- ✓ The actions to be taken on discovery a fire.
- ✓ The actions to be taken on hearing the alarm.
- ✓ How to call the fire service – remember some workplaces may have a telephone system which requires a specific number to be dialed for an outside line or they may have their own emergency systems.
- ✓ The routes to be taken as means of escape.
- ✓ How to open escape doors, slide bolts, break glass bolts, use turnbuckles or push bars.
- ✓ The evacuation plan including the assembly point.
- ✓ The significant findings of the fire risk assessment.
- ✓ How to operate and read the alarm panel (if fitted).

- ✓ The nominated roles and responsibilities in the workplace, e.g. fire wardens, person in charge of assembly point.
- ✓ Non-employees procedures – how to deal with contractors, visitors or other persons on the premises.
- ✓ Fire prevention and protection measures including alarms and firefighting equipment.
- ✓ Managing fire doors, for example not propping open, and ensuring they are accessible.
- ✓ The importance of good housekeeping in reducing fire risk/spread.
- ✓ The risks from any flammable materials.
- ✓ Special arrangements for high-risk areas or activities.
- ✓ Special arrangement for disabled persons, e.g. refuges and communications.

SITE SAFETY PLAN

A Site Safety Plan must be developed and Provide for the following:

- ✓ Organization and responsibilities of fire safety, training, record keeping etc.
- ✓ General site fire precautions, fire detection and alarm, temporary emergency lighting and fire assembly points.
- ✓ Location of designated smoking areas.
- ✓ Requirement for a hot work regime.
- ✓ Temporary buildings and accommodation.
- ✓ Fire escape routes.
- ✓ Communications and procedures for calling the fire and rescue service and for civil defense access and facilities.
- ✓ Instructions on action in the event of fire.
- ✓ Security measures to minimize the risk of arson.
- ✓ Materials storage and waste control regime.
- ✓ Maintenance and testing of temporary electricity supply.
- ✓ Flammable material storage.
- ✓ Location of fire water storage.

Large Project

- ✓ Appointment of site Fire Safety coordination and site Fire Marshal and deputies.
- ✓ Liaisons with police, Civil Defense and ambulance are essential.
- ✓ Coordination of HSE specialist from contractor/sub contractors.
- ✓ On site power generation issues to be considered.
- ✓ Changing access requirements.
- ✓ Impact of fence and hoardings.
- ✓ Arson risk to be assessed.

FIRE EMERGENCY PLAN

All emergency plans need to be clear, unambiguous and known to all who are on the site when developing plans, consider the following aspects:

- ✓ Where will workers gather after evacuation from the site (assembly point).

- ✓ Who will be in charge of the situation and what will be the role? What information and/or training will that person need to carry out these functions? Fire warden may need to be appointed to assist the person in charge.
- ✓ How will the people in charge communicate with each others?
- ✓ How will you check that everyone reached the assembly point?
- ✓ Who will contact the emergency services and how?
- ✓ Who will meet the emergency services when they arrive and provide them with information? They will need to know of any particular risks such as LPG cylinders.
- ✓ Consider adjacent premises may need evacuation and how this might be done.
- ✓ The fire service should be informed of any items in the Risk Assessment and that could affect firefighting or emergency operations e.g. chances to access or water supplies.
- ✓ If the fire and rescue service was called to a fire when the site is unoccupied, or only occupied by security staff, how will the fire and rescue service obtain relevant information to enable them to work safely and effectively? Even if the site is unoccupied they will still need to know of any particular risks, such as LPG cylinders.
- ✓ Consider workers whose first language may not be English.

The following action must be taken in any Emergency Situation:

- ✓ Make the scene safe.
- ✓ Render first aid (where necessary).
- ✓ Prevent conditions worsening (spill control, fire, etc).
- ✓ Consider evacuation (where appropriate).
- ✓ Contact emergency services.
- ✓ Report to management team (internal).
- ✓ Report to enforcers (external where appropriate).
- ✓ Initiate investigation procedures.
- ✓ When save to do so restart of business operations.
- ✓ Report findings of investigation.

The Emergency Plan should include the following:

- ✓ Action on discovery of fire.
- ✓ Action on hearing alarm.
- ✓ Details of the fire warning system.
- ✓ Details of the evacuation process.
- ✓ Means of escape – travel distances.
- ✓ Location of assembly points.
- ✓ Identification of escape routes – signs, emergency lighting.
- ✓ Details of fire-fighting equipment.
- ✓ Specific staff duties.
- ✓ Safe evacuation of people who need assistance to escape.

- ✓ Safe working practices in high risk areas.
- ✓ Procedures for calling Fire Service.
- ✓ Staff training needs and arrangement for providing training.

FIRE TRAINING

Every site must provide adequate fire safety training for his staff. The type of training should be based on the Particular features of his site and should be included the following:

- ✓ Fire prevention.
- ✓ Recognition of fire alarms and the actions to be taken.
- ✓ Understanding the emergency signs.
- ✓ Location of fire escape routes and assembly points.
- ✓ Requirements for safe evacuation (for example, non-use of lifts, do not run etc.).
- ✓ Location and operation of call points and other means of raising the alarm.
- ✓ How the fire service is called.
- ✓ Location, use and limitations of fire-fighting equipment.
- ✓ Consideration of people with special needs.
- ✓ Identity and role of fire marshals.
- ✓ Understanding of principles of combustion and classification of fire.
- ✓ How to use the firefighting equipment.
- ✓ Consideration for personal safety and the safety of others.
- ✓ Take account of the findings of the risk assessment.
- ✓ Explain your emergency procedures.
- ✓ Take account of the work activity and explain the duties and responsibilities of staff.
- ✓ Take place during normal working hours and be repeated periodically, where appropriate.
- ✓ Be easily understandable by your employees and other people who may be on site.
- ✓ Be tested by fire drills.

His training should include the following:

- ✓ What to do on discovering a fire.
- ✓ How to raise the alarm and what happens then.
- ✓ What to do upon hearing the fire alarm.
- ✓ The procedures for alerting contractors and visitors including, where appropriate, directing them to exits.
- ✓ The arrangements for calling the fire and rescue service.
- ✓ The reporting of incidents and any near misses.

THE SETTING OF PORTABLE FIRE-FIGHTING EQUIPMENT

Portable fire-fighting equipment in the form of fire extinguishers should always be sited:

- ✓ On the line of escape routes.
- ✓ Near, but not too near, to danger points.
- ✓ Near to .room exits inside or outside according to occupancy and/or risk.
- ✓ In multi-storey buildings, at the same position on each floor, for example, top of stair flights or at corners in corridors.
- ✓ Where possible in groups forming fire points.
- ✓ So that no person needs to travel an excessive distance to reach an extinguisher. Travelling more than 30 meters (by direct measurement) or 45 meters (actual) taking into account fixtures, stock and other obstructions to reach an extinguisher may be considered to be excessive. In high fire hazard areas 45 meters may be considered excessive and fire extinguishers may need to be located nearer to workers.
- ✓ Placed on a purpose designed floor stand or hung on a wall at a convenient height. If hung on a wall, this would usually be with the carrying handle about one meter from the floor to facilitate ease of handling/removal from the wall bracket.
- ✓ Away from excesses of heat, cold, dirt or dust.

MEANS OF ESCAPE

Means of escape through a minimum travel distance is a significant component of a successful emergency evacuation. The following general factors should be taken into consideration when planning means of escape.

Stairs

Staircases form an integral part of the means of escape from fire in most buildings.

If they are to be part of the escape route, the following points must be ensured:

- ✓ Fire resistant structure.
- ✓ Fitted with fire doors.
- ✓ Doors must not be wedged open.
- ✓ Wide enough to take the required number of people.
- ✓ Must lead direct to fresh air, or to two totally separate routes of escape.
- ✓ Non slip/trip and in good condition.
- ✓ No combustible storage within staircase.

Passageway

- ✓ The route should lead directly to the open air via a protected route (where necessary).
- ✓ Route to be kept unobstructed.

Doors

- ✓ Exit door are to open outwards easily (unless small number of people involved).
- ✓ Provide fire doors along the escape route.
- ✓ Fire doors along with fire resistant structures serve two purposes:

1. Prevent the spread of fire.

2. Ensure that there is means of escape for persons using the building.

- ✓ They should not be wedged open.
- ✓ Lead to open air – safety.

Emergency Lighting

Emergency lighting should be considered if escape is likely to be required in dark conditions. This could mean late afternoon in winter time, not just at night time.

Emergency escape lighting system should normally cover the following:

- ✓ Each exit door from a work area.
- ✓ Escape routes.
- ✓ Intersections of corridors.
- ✓ Outside each final exit and on external escape routes.
- ✓ Emergency escape signs.
- ✓ Fire alarm calls points and fire-fighting equipment.
- ✓ Equipment that would need to be shut down in an emergency.
- ✓ Lifts.
- ✓ Stairways, so that each flight receives adequate light.
- ✓ Changes in floor level.

Assembly Point

The assembly point is a place of safety where people wait whilst any incident is investigated, and where confirmation can be made that everyone has evacuated the premises. The main factors to consider are:

- ✓ Safe distance from building.
- ✓ Sited in a safe position.
- ✓ Not sited so that staff will be in the way of the National fire and rescue service/fire-fighting team.
- ✓ Must be able to walk away from assembly point and back to a public road.
- ✓ Clearly signed.
- ✓ More than one provided to suit numbers and groups of people.
- ✓ Communications should be provided between assembly points.
- ✓ Measures provided to decide if evacuation successful.
- ✓ Person must be in charge of assembly point and identified.
- ✓ Person to meet/brief the fire and rescue service.

The 5 Steps to Fire Risk Assessment

STEP 1

Identify the Fire Hazards

- ✓ Sources of heat/ignition
- ✓ Sources of fuel
- ✓ Sources of oxygen

STEP 2

Identify those at Risk

- ✓ Those in and around the premises
- ✓ Those who are especially

STEP 3

Evaluate the Risk; Introduce Controls

- ✓ Evaluate the risk of fire starting
- ✓ Evaluate the risk to people from fire
- ✓ Remove fire hazards
- ✓ Reduce fire hazards
- ✓ Remove the risks to people from a fire
- ✓ Reduce the risks to people from a fire
- ✓ Provide fire precautions to protect people

STEP 4

Record, Plan, Inform, Instruct and Train

- ✓ Record any major findings and action you have taken
- ✓ Discuss and work with responsible people
- ✓ Ensure an emergency plan is prepared
- ✓ Inform relevant people
- ✓ Instruct relevant people
- ✓ Provide adequate and suitable training

STEP 5

Review

- ✓ Review regularly
- ✓ Make changes if required

REASONS WHY FIRES SPREAD

Failure of Early Detection

Early detection of fire spread can be delayed by:

- ✓ No detection system or patrols.
- ✓ No alarm system in place.
- ✓ People not knowing or confusing the sound of an alarm.
- ✓ Not promptly extinguished due to no hoses or extinguishers.
- ✓ Fire starts in unoccupied area.
- ✓ Fire starts out of normal work hours.
- ✓ Building material waste may be being burnt as a normal routine and smoke and other signs of fire may not be seen as unusual.
- ✓ Numerous hot working tasks conducted – therefore smells of burning ignored.
- ✓ Frequent occurrence of small, local fires caused by hot work, and not seen as significant.

Absence of Compartments in Building Structure

Fire spread within a building can result from an absence of compartments:

- ✓ Open plan office.
- ✓ False Ceilings.
- ✓ The structure under construction or alteration is incomplete and has reduced separation between level and sections on a level.

Compartment Undermined

Fire spread within a building can result from compartments being undermined:

- ✓ Fire doors wedged open.
- ✓ Poor maintenance of door structure.
- ✓ Holes may be designed to pass through compartments and are waiting fitment of services and subsequent sealing.
- ✓ Holes cut for ducts or doorways or to provide temporary access to locate/remove equipment.
- ✓ Compartments may be progressively created in buildings under alternation, thus increasing the risk of fire spread.

Materials Inappropriately Stored

Inappropriate storage of material can cause fire spread:

- ✓ Flammable liquids not controlled – too much or in Unsuitable containers.
- ✓ Boxes in corridors, under stairways or in access routes.
- ✓ Off cuts of wood and sawdust left in the areas where work has taken place.
- ✓ Packing materials used in the process, such as shredded paper, polystyrene, bubble wrap etc.
- ✓ Pallets and plastics covering left near to ignition sources.

HOW TO REDUCE RISK IN A WORK PLACE

Risk in a workplace need to be reduces to the minimum as much as possible by assessment. In general fire precautions will always be needed to mitigate the effects of fire occurring and ensuring the safety of anyone who might be affected by it.

Risk Reduction by Protection

By considering the existing fire safety measures, the risk is controlled in the workplace and the following procedures should be considered.

- ✓ Reducing unsatisfactory structural features.
- ✓ Removes, cover or treat areas of combustible wall and ceiling linings.
- ✓ Improve fire resistance of workplace; install fire breaks into open voids.

Fire Detection and Warning

- ✓ Can fire be detected quickly enough to allow people to escape?
- ✓ Can means of warning be recognized and understood?
- ✓ Does staff know what to do if the alarm operates?
- ✓ Are fire notices posted around workplace?

Means of Escape

- ✓ How long will it take for people to escape once they are aware of a fire?
- ✓ Is this time reasonable?
- ✓ Are there enough exits?
- ✓ Are exits in the right places?
- ✓ Is there suitable means of escape for all people, including disabled?
- ✓ Could a fire happen that would affect all escape routes?
- ✓ Are escape routes easily identifiable?
- ✓ Are exit routes free from obstructions and blockages?
- ✓ Are exit routes suitably lit at all times?
- ✓ Has staff been trained in the use of the escape routes?

Means of Fighting Fire

- ✓ Is the fire-fighting equipment suitable for the risk?
- ✓ Is it suitably located?
- ✓ Is it signed where necessary?
- ✓ Have people been trained to use equipment where necessary?

Maintenance and Testing

- ✓ Check all fire doors, escape routes, lighting and signs.
- ✓ Check all fire-fighting equipment.
- ✓ Check all fire detectors and alarms.

- ✓ Check any other equipment provided to help means of escape arrangements.
- ✓ Are there relevant instructions to staff regarding maintenance and testing?
- ✓ Are those who carry out maintenance and testing competent?

Fire Procedures and Training

- ✓ Is there an emergency plan?
- ✓ Does the emergency plan take account of all reasonably foreseeable circumstances?
- ✓ Are all workers familiar with the plan, trained in its use, and involved in testing it?
- ✓ Is the emergency plan made available to staff?
- ✓ Are fire procedures clearly indicated throughout the workplace?
- ✓ Have all people likely to be present, been considered?

GOOD HOUSEKEEPING

The fire safety Provisions always help to mitigate the fire upon its occurrence at the incipient stage to minimize damage to property and injury to the worksite staff, good housekeeping and safety culture will certainly help in preventing a fire occurring.

Poor housekeeping can also lead to:

- ✓ Blocked fire exits.
- ✓ Obstructed escape routes.
- ✓ Difficult access to fire alarm calls points/extinguishers/hose reels.
- ✓ Obstruction of vital signs and notices.
- ✓ A reduction in the effectiveness of automatic fire detectors and sprinklers.

Housekeeping Checks

Fire prevention is a matter of good routine and the checklists shown below are a guide to what to look for.

List A – Routine Checks

Daily at the start of business - including:

- ✓ Doors that may be used for escape purposes- unlocked and escape routes unobstructed.
- ✓ Free access to hydrants, extinguishers and fire alarm call points.
- ✓ No deposits on electric motors.

List B – Routine Checks

Daily at close-down - including:

- ✓ Inspection of whole area of responsibility - to detect any smoldering fires, including smoking materials.
- ✓ Fire doors and shutters closed.
- ✓ All plant and equipment safely shut down.

- ✓ Waste bins emptied.
- ✓ No accumulation of combustible process waste, packaging materials or dust deposits.
- ✓ Safe disposal of waste.
- ✓ Premises left secure from unauthorized access.

List C – Periodic Inspection

During working hours- weekly/monthly/quarterly as decided:

- ✓ Goods neatly stored so as not to impede fire-fighting.
- ✓ Clear spaces around stacks of stored materials.
- ✓ Gangways kept unobstructed.
- ✓ Only essential quantities of flammable and combustible material storage in work areas.
- ✓ Materials clear of light fittings.
- ✓ Smoking rules known and enforced.

HOT WORK

A void hot work as far as possible and have the work done off site or with other methods of construction. If hot work cannot be avoided, ensure that a hot work permit system is in place and find a safe area for hot work (keep combustible materials away from any hot work). Any area of hot work must be actively monitored for at least one hour after completion and the area should revisited two hours later. This means that the hot work cannot be carried out near the end of the day (within at least two hours of the site being vacated).

If hot work cannot be avoided, ensure that a rigorous hot work permit system is in place.

Hot Work Permit

Hot Work Permits control and implement a safe system of work whenever work activities utilize heat or flame. If the risk of fire is low, it may not be necessary to implement a hot work permit; however they should always be considered.

The Authorized Person

The authorized person issues the hot work permit to work and will sign the documents to declare that all isolations are made and remain in place throughout the duration of work actively.

Specification of Hot Work Permit

Hot Work Permit should be issued for a specific time for a specific place, a specific task and issued to a designated competent person. And the authorized person will make checks to ensure that all controls to be implemented by the accepted are in place before works begins.

The Acceptor

The acceptor signs the document to declare that the terms and conditions of the permit to work are understood and will be complied with fully at all times by the entire work team. Compliance with a permit to work system includes ensuring the required safeguards are implemented and that the work will be restricted to that stated within the permit to work document.

Items included in a permit to work document are:

- ✓ Permit issue number.
- ✓ Authorized person identification.
- ✓ Location of fire-fighting equipment.
- ✓ Locations of flammable materials.
- ✓ Warning information sign locations.
- ✓ Emergency muster points.
- ✓ Details of the work to be carried out
- ✓ Signature of authorizer.
- ✓ Signature of acceptor.
- ✓ Signature for work clearance/extension/handover.
- ✓ Signature of cancellation.
- ✓ Other precaution (risk assessments, method statement, PPE).

STORAGE IN THE WORKPLACE

The objective in controlling the risk from flammable liquids is to remove all unnecessary quantities from the workplace to a recognized storage area outside the building. It is recommended that the maximum quantities that may be stored in suitable cabinets and bins in the workplace are:

- ✓ Liquids with a flashpoint below the maximum ambient temperature of the work area - no more than 50 liters.
- ✓ Other flammable liquids with a higher flashpoint of up to 6o•c - no more than 250 liters. Other control measures for storage in the workplace include:
- ✓ In a suitable container, to prevent spills and sealed to prevent loss of vapor.
- ✓ In a suitable cabinet, bin or other store container.
- ✓ In a designated area of the workplace.
- ✓ Away from ignition sources, working or process areas.
- ✓ Capable of containing any spillage.
- ✓ In a 30 min fire resistant structure.
- ✓ Provided with hazard warning signs to illustrate the flammability of the contents.
- ✓ Not contain other substances or items.

Storage in Open Air

Control measures for storage in the open air include:

- ✓ Formal storage area on a concrete pad, with a sump for spills.
- ✓ Bunded all around to take content of largest drum plus an allowance of 10%.
- ✓ Away from other buildings.
- ✓ Secure fence and gate 2m high.
- ✓ Marked by signs warning of flammability.

- ✓ Signs prohibiting smoking or other naked flames.
- ✓ Protection from sunlight.
- ✓ If lighting is provided within store it must be flameproof.
- ✓ Provision for spill containment materials.
- ✓ Fire extinguishers located nearby – consider powder type.
- ✓ Full and empty containers separated.
- ✓ Clear identification of contents.

LPG Storage and other Gases

Storage requirements for LPG and other gas cylinders include:

- ✓ Storage area should preferably be in clear open area outside.
- ✓ Stored in a secure compound-2m high fence.
- ✓ Safe distance from toxic, corrosive, combustible materials, flammable liquids or general waste.
- ✓ Stored safe distance from any building.
- ✓ If stored inside building, kept away from exit routes, consideration should be given to fire resisting storage.
- ✓ Well ventilated area-2.5% of total floor and wall area as vents, high and low.
- ✓ Oxygen cylinders at least 3m away from flammable gas cylinders.
- ✓ Acetylene may be stored with LPG if quantity of LPG less than 50 Kg.
- ✓ Access to stores should be controlled to prevent LPG etc being stored unsafely in the general workplace.
- ✓ More than one exit (unlocked) may need to be available from any secure storage compound where distance to exit is greater than 12m.
- ✓ Lock storage compound when not in use.
- ✓ Protection from sunlight.
- ✓ Flameproof lighting.
- ✓ Empty containers stored separate from full.
- ✓ Fire extinguishers located nearby - consider powder and water types.

Transport

Transport requirements for use of LPG and other gas cylinders include:

- ✓ Upright position.
- ✓ Secured to prevent falling over.
- ✓ Protection in event of accident, for example Position on vehicle.
- ✓ Firefighting equipment.
- ✓ Transport in open vehicle preferably.
- ✓ Avoid overnight parking while loaded.

- ✓ Park in secure areas.
- ✓ Driver hazard information and warning signs.
- ✓ Driver training.

General Use of LPG

General requirements for use of LPG and other gas cylinders include:

- ✓ Cylinder connected for use may be stored in the general workplace; any spare cylinders must be secured in a purpose built store until required for use.
- ✓ Fixed position to prevent falling over, or on wheeled trolley - chained.
- ✓ Well ventilated area.
- ✓ Away from combustibles.
- ✓ Kept upright unless used on equipment specifically designed for horizontal use, for example, gas powered lift truck.
- ✓ Handled carefully - do not drop.
- ✓ Allow to settle after transport and before use.
- ✓ Consider manual handling and injury prevention.
- ✓ Turn off cylinder before connecting, disconnecting equipment.
- ✓ Check equipment before use.
- ✓ Any smell of gas during use, turn off cylinder and investigate.
- ✓ Use correct gas regulator for equipment task.
- ✓ Use equipment in line with manufacturers' instructions.

Fire Safety Protection checklist in the workplace

Reducing unsatisfactory structural features.

- ✓ Removes, cover or treat areas of combustible wall and ceiling linings.
- ✓ Improve fire resistance of workplace; install fire breaks into open voids.

Fire detection and warning.

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WHAT ARE THE OTHER SAFETY MEASURES THAT NEED TO BE OBSERVED AT A WORKSITE?

- ✓ First aid kits shall be maintained on site with clear markings on their location.
- ✓ Hoisting of material shall be done under strict supervision of a qualified supervisor, who shall inspect and make sure that all materials to be hoisted are properly packed and all hoisting machines are capable of a safe lifting of the loads.
- ✓ Hoisted load shall not swing over roads or areas outside the site boundaries unless in the presence of a flagman, clearing the area before and after the hoisting operation.
- ✓ Ladders must be constructed of sound material and be in good condition. Painted ladders shall not be used.
- ✓ All cranes and lifting gears must have current test certificates.
- ✓ Cranes and hoisting equipment shall be color-coded up to date.
- ✓ Nobody shall be permitted to ride the load during a lifting operation.
- ✓ Before any excavation, approved drawings shall be obtained from the consultant or the relevant authority and the location of underground services shall be marked prior to the excavation.
- ✓ Excavation work or more than 1m deep shall be protected by a tape to warn workers. Warning lights shall be placed adequately when excavation is carried out in the night.
- ✓ Safety harness shall be worn when exposed to a potential fall of 2m and more.
- ✓ There shall be no walking along beams unless lifeline is used.
- ✓ Prior to any demolishing operation, a permit shall be obtained from the relevant authority department.
- ✓ All scaffolds and staging shall comply with the relevant standards. Scaffolding shall not be used until an approval has been obtained.
- ✓ All scaffolds shall be in good condition and free from corrosion, and must be inspected by a competent person prior to being used.
- ✓ Scaffolds shall be erected only by competent and train men in the job, working under the immediate supervision of an experience foreman, who knows the purpose of the scaffolding and the maximum load that can be placed onto the scaffolds.
- ✓ All scaffolds, from which a person may fall 2m or more, shall have the edges provided with railings not less that 1m in height above the walkway and have at least 1 intermediate rail.
- ✓ Netting shall be provided on the façade of the building where work is carried out to protect workers, and against falling objects and debris.

Site Manager should provide the Lusail HSE department with the following:

1) Site Manager

Name :

ID # :

Mobile # :

Email Address :

2) Fire Safety Marshal / Responsible Person.

Name :

ID # :

Mobile # :

Email Address :

Site Manager

The Site Manager should provide the Lusail HSE with the following in quarterly basis on his site for checking.

- ✓ Hot work permit procedures on his site and make available at all times for HSE monitoring Personnel check.
- ✓ Emergency plan-teams and training.
- ✓ Fire water tank capacity and location at all time.
- ✓ Housekeeping daily procedures.
- ✓ Storage arrangement to be checked.
- ✓ Communication system with Lusail response team and government services.
- ✓ Site Safety Plan with full requirement as L.HSE guidelines.
- ✓ Fire Emergency Plan.
- ✓ Fire Water Storage – capacity and location.
- ✓ Fire Emergency team with full details.