

RISK ASSESSMENT

RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

This project is a development of International Sports Academy cum Cricket Stadium which involves installation of various structures and machineries that meet the comfort and needs of its population but may also pose serious threat to the occupants in case of an accident. It is thus considered necessary to carry out a risk assessment and disaster management plan for the project.

RISK HAZARD & ITS CONTROL MEASURES

It is attempted to plan and do construction following all safety norms. However, it is not always possible to totally eliminate such eventualities and random failures of equipment or human errors. An essential part of major hazard control has therefore, to be concerned with mitigating the effects of such emergency and restoration of normalcy at the earliest.

During the Construction Phase, there is risk to the workers. Potential hazards for workers in construction include:

- Falls (from heights)
- Trench collapse
- Scaffold collapse
- Electric shock and arc flash/arc blast
- Failure to use proper personal protective equipment
- Repetitive motion injuries

Safety measures will be as follow:

a. Scaffolding:

Hazard: When scaffolds are not erected or used properly, fall hazards can occur.

Solutions:

- Scaffold must be sound, rigid and sufficient to carry its own weight plus four times the maximum intended load without settling or displacement. It must be erected on solid footing.
- Unstable objects, such as barrels, boxes, loose bricks or concrete blocks must not be used to support scaffolds or planks.
- Scaffold must not be erected, moved, dismantled or altered except under the supervision of a competent person.
- Scaffold accessories such as braces, brackets, trusses, screw legs or ladders that are damaged or weakened from any cause must be immediately repaired or replaced.

- Scaffold platforms must be tightly planked with scaffold plank grade material or equivalent.

b. Ladders

Hazard: Ladders and stairways are another source of injuries and fatalities among construction workers.

Solutions:

- Use the correct ladder for the task.
- Have a competent person visually inspect a ladder before use for any defects such as:
- Structural damage, split/bent side rails, broken or missing rungs/steps/cleats and missing or damaged safety devices;
- Grease, dirt or other contaminants that could cause slips or falls;
- Paint or stickers (except warning labels) that could hide possible defects
- Mark or tag ("Do Not Use") damaged or defective ladders for repair or replacement, or destroy them immediately.

c. Trenching

Hazard: Trench collapses cause dozens of fatalities and hundreds of injuries each year.

Solutions:

- Never enter an unprotected trench.
- Always use a protective system for trenches feet deep or greater.
- Employ a registered professional engineer to design a protective system for trenches 20 feet deep or greater.
- Keep spoils at least two feet back from the edge of a trench.
- Make sure that trenches are inspected by a competent person prior to entry and after any hazard-increasing event such as a rainstorm, vibrations or excessive surcharge loads.

d. Head Protection

Hazard: Serious head injuries can result from blows to the head.

Solution:

- Be sure that workers wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or accidental head contact with electrical hazards.
- Workers shall wear hard hats where there is a potential for objects falling from above, bumps to their heads from fixed objects, or of accidental head contact with electrical hazards.

- Hard hats are routinely inspected for dents, cracks or deterioration.
- Hard hats are replaced after a heavy blow or electrical shock.
- Hard hats are maintained in good condition.

e. Electrical Safety

- Work on new and existing energized (hot) electrical circuits is prohibited until all power is shut off and grounds are attached.
- An effective Lockout/Tagout system is in place.
- Frayed, damaged or worn electrical cords or cables are promptly replaced.
- All extension cords have grounding prongs.
- Protect flexible cords and cables from damage. Sharp corners and projections should be avoided.
- Use extension cord sets used with portable electric tools and appliances that are the three-wire type and designed for hard or extra-hard service. (Look for some of the following letters imprinted on the casing: S, ST, SO, STO.)
- All electrical tools and equipment are maintained in safe condition and checked regularly for defects and taken out of service if a defect is found.
- Do not bypass any protective system or device designed to protect employees from contact with electrical energy.
- Overhead electrical power lines are located and identified.
- Ensure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.
- All electrical tools must be properly grounded unless they are of the double insulated type.
- Multiple plug adapters are prohibited.

EMERGENCY RESPONSE PLAN (ERP)

The overall objective of an Emergency Response Plan (ERP) is to make use of the combined resources at the site and outside services to achieve the following:

- *To localize the emergency and if possible eliminate it;*
- *To minimize the effects of the accident on people and property;*
- *Effect the rescue and medical treatment of casualties;*
- *Safeguard other people;*
- *Evacuate people to safe areas;*
- *Informing and collaborating with statutory authorities;*
- *Initially contain and ultimately bring the incident under control;*
- *Preserve relevant records and equipment for the subsequent enquiry into the cause and circumstances of the emergency;*
- *Investigating and taking steps to prevent reoccurrence*

The ERP is therefore related to identification of sources from which hazards can arise and the maximum credible loss scenario that can take place in the concerned area. The plan takes into account the maximum credible loss scenario - actions that can successfully mitigate the effects of losses/emergency need to be well planned so that they would require less effort and resources to control and terminate emergencies, should the same occur.

Main hazards identified for the project include hazards pertaining to fires in buildings and fire in diesel storage areas, earthquake and LPG leakage and an ERP pertaining to these is described in the following section.

RESPONSE IN CASE OF EARTHQUAKE

Response Procedures for Occupants

If indoors:

1. Take cover under a piece of heavy furniture or against an inside wall and hold on.
2. Stay inside: The most dangerous thing to do during the shaking of an earthquake is to try to leave the building because objects can fall on you.

If outdoors:

Move into the open, away from buildings, streetlights, and utility wires. Once in the open, stay there until the shaking stops.

If in a moving vehicle:

Stop quickly and stay in the vehicle. Move to a clear area away from buildings, trees, overpasses, or utility wires. Once the shaking has stopped, proceed with caution. Avoid bridges or ramps that might have been damaged by the quake.

After the earth quake

1. After the earthquake be prepared for aftershocks.
2. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks, or even months after the quake.

Help injured or trapped persons.

1. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
2. Remember to help those who may require special assistance--infants, the elderly, and people with disabilities.
3. Stay out of damaged buildings.
4. Use the telephone only for emergency calls.

Response Procedure for Emergency Team

1. Formulate an Emergency Response Team for earthquake response. Using the public address system, inform people of response procedures discussed above.
2. Inform the necessary authorities for aid.
3. Ensure no person is stuck beneath any debris, in case of a structural failure.
4. Ensure that all occupants standing outside near the buildings are taken to open areas.
5. Ensure that the first aid ambulance and fire tender vehicles are summoned if necessary.
6. Inform the nearby hospitals if there are any injuries.
7. Check the utilities and storage tanks for any damage.

RESPONSE FOR LPG LEAKAGE

1. The affected area should be evacuated and cordoned off immediately
2. Initiate an Emergency Response Team for LPG leakage.
3. Shut down the main valves in the gas bank.
4. Ensure that only concerned personnel are present in the affected area and all other personnel and visitors are moved to the nearest assembly points.
5. Rescue trapped personnel, also check if any personnel are unconscious in the area and immediately move them outside and provide first aid. Ambulance should be summoned to take injured personnel to the nearest hospital.
6. Personnel in the nearby buildings to close all doors and windows to prevent entry of the leaked gas.

7. Source of leakage to be traced and isolated from all the other areas. And if required use pedestal fans to bring down the gas concentration.
8. In case of a fire follow the instructions in case of fire.

RESPONSE IN CASE OF FIRE

1. Required response during in the event of a fire should be described in signs located in the lobby.
2. On sighting a fire, it should be immediately informed to the environment manager giving the exact location and type of fire in detail.
3. Initiate the Emergency Response Team for fires.
4. If the fire is small, engage in extinguishing the fire using the nearest fire extinguisher.
5. Guide the Emergency Response Team staff to the emergency assembly point.
6. The Emergency Response Team should immediately inform the nearest dispensary and security force. If required a fire tender should be summoned.
7. The response team should immediately move to the point of fire and take all necessary steps to stop the fire. If the fire is not controllable and spreads then the manager in charge should inform the district authorities and call for external help.
8. The Emergency Response Team will provide immediate relief to the injured people at the scene of incident. Any injured persons should be evacuated on priority to the dispensary or one of the nearest hospitals based on their condition.

Instructions for occupants

1. Get out of buildings as quickly and as safely as possible.
2. Use the stairs to escape. When evacuating, stay low to the ground.
3. If possible, cover mouth with a cloth to avoid inhaling smoke and gases.
4. Close doors in each room after escaping to delay the spread of the fire.
5. If in a room with a closed door.
6. If smoke is pouring in around the bottom of the door or if it feels hot, keep the door closed.
7. Open a window to escape or for fresh air while awaiting rescue.
8. If there is no smoke at the bottom or top and the door is not hot, then open the door slowly.
9. If there is too much smoke or fire in the hall, slam the door shut.
10. Stay out of damaged buildings.
11. Check that all wiring and utilities are safe.

A state of the art fire fighting system is proposed for the project to prevent and control fire outbreaks. The fire fighting system will consist of portable fire

extinguishers, hose reel, wet riser, yard hydrant, automatic sprinkler system, and manual fire alarm system. The township buildings will also be provided with automatic fire detection and alarm system.

RESOURCE CONSERVATION

The project will lead to utilization of various natural resources. As an environmentally responsible corporate, the developers endeavor to conserve these resources by judicious management and recycling and strive to build up these resources where possible.

Water Resources: The project will use municipal supply during the operation phases of the project. Given the national water scenario, where availability of fresh water is fast dwindling, judicious use of the same cannot be over emphasized. Following means are proposed to be adopted for conservation of this life sustaining resource:

Limited withdrawal of groundwater: The water will be supplied during operational phase by Ghaziabad Development Authority.

Reduced use of water: To further minimize the use of available freshwater, various low flow fixtures may be provided such as Low flow flushing systems, sensor based fixtures, waterless urinals, tap aerators. Awareness will also be spread amongst the people on the following lines:

- Timely detection and repair of all leakages;
- Turning off tap while brushing teeth;
- Avoiding use of running water while hand-washing;
- Avoiding use of running water for releasing ice tray ahead of time from freezer;
- Turning off the main valve of water while going outdoor;
- Avoiding use of hose for washing floors; Use of broom may be preferred;
- Watering of lawn or garden during the coolest part of the day (early morning or late evening, hours) when temperature and wind speed are lowest. This reduces losses due to evaporation.
- Planting of native and/or drought tolerant grasses, ground covers, shrubs and trees. Once fully grown, they need not to be watered frequently.
- Avoiding over watering of lawns. Good rains eliminate the need for watering for more than a week.
- Setting sprinklers to water the lawn or garden only, not the street or sidewalk;
- Avoiding installation or use of ornamental water features unless they recycle the water and avoiding running them during drought or hot weather;
- Installation of high-pressure, low-volume nozzles on spray washers;

- Replacement of high-volume hoses with high-pressure, low-volume cleaning systems;
- Equipping spring loaded shutoff nozzles on hoses;
- Installation of float-controlled valve on the make-up line, closing filling line during operation, provision of surge tanks for each system avoid overflow;
- Washing vehicles less often, or using commercial car wash that recycles water;

Treatment and Recycling: The wastewater generated from the sites will be treated in an on-site Sewage Treatment Plant. This will enable the treated wastewater to be used for flushing and landscaping thereby reducing the requirement of freshwater for these purposes.

Rainwater harvesting: The increased hard surface of Township increases the runoff as compared to the otherwise barren land. It is proposed to harvest this rainwater runoff that will recharge the groundwater resource while reducing the burden of storm water management of the city and eventually natural water bodies. Apart from the open spaces, it is proposed to harvest the roof top rainwater. The storm water will be treated through an oil and grease trap and allowed to flow through layers of sand and gravel for filtration prior to reaching the water table, to avoid any possibility of groundwater contamination.

Construction materials: As a large integrated township project, the project will require various kinds of natural construction materials such as sand, gravel etc. It is proposed for prior estimation of required quantities of these materials and procurement only as per requirement. This will also result in cost-efficiency. Excavated soil from the project site will be used within the site to the extent feasible. Excess soil will be made available to the construction sites, as per need.

Energy: To conserve the energy resources, good practices will be followed during the construction phase such as turning off lights and equipments when not in use, ensuring fuel efficiency of motors and vehicles through proper maintenance and minimal work at night. The principles of energy conservation will also be embedded in the buildings through use of energy efficient fixtures, maximum availability of natural light and use of solar energy for street lighting.