

## **1.0 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN**

The Risk Assessment Study for the upcoming Proposed Expansion of "ATS LE GRANDIOSE" under construction Project, at Plot No. - SC-01/C-A1, Sports City, Sector - 150, Noida, Uttar Pradesh has been conducted by functional area expert Team. The risk assessment has been carried out with consideration of some probable worst case scenarios like Fire and explosion. There will be no major hazards noticed as this is a group housing project. There may be minimum chances of fire in diesel storage area of group housing project or due to electric short circuit. Thus with such probabilities & considerations of hazards & risk, Risk Assessment Study has been carried out by proponent as pre-project conceptual RA study. The Disaster & Onsite Emergency Management plan has also been prepared as a part of RA study assignment.

### **1.1 RISK ASSESSMENT FOR THE PROJECT**

Risk assessment forms an integral part of study. Risk assessment study deals with identifying and evaluating the magnitude of impending risks to which the neighboring population is exposed due to occurrence of accidents involved in the project construction and implementation. This assist in illustrating the guidelines for preparation of disaster management plan which will be executed to handle the situation if any emergency occurs.

#### **1.1.1 FIRE RISK**

Fire is mainly caused due to carelessness short circuit.

At the proposed Group Housing Project, hazard occurrence may result in on-site implications like:

- Fire and/or explosion;
- Natural calamities like earthquake, cyclone etc.

In spite of the clear gravity of the above scenarios, these types of fire have happened infrequently. More typically, fires in complex yield only partial structural damage. However, losses of life and property can still be substantial.

Emergency prevention through good design, operation, maintenance, and inspection are essential to reduce the probability of occurrence and consequential effect of such eventualities. However, it is not possible to totally eliminate such eventualities and random failures of equipment or human errors, emissions, and unsafe acts cannot be ruled out. An essential part of major hazard control has therefore, to be concerned with mitigating the effects of such Emergency and restoration to normally at the earliest.

It is increasingly acknowledged by safety authorities, such as the Loss Prevention Council, that the use of curtain walls (versus traditional wall construction) in multi-story structures adds to the risk of fire spread in these structures. Filler material used in curtain walls is often not adequately fire-resistant, allowing the quick spread of fire throughout a structure in structures fitted with curtain walls, significant losses have been reported in facilities without sprinkler.

In emerging economies where construction has outpaced infrastructural development, fire brigades may not be adequately equipped to deal with high-rise fires.

### **1.1.2 PUBLIC SAFETY**

The incidence of fire or other disasters occurs is often endangers the safety of the persons residing in the structure, in the event of an emergency. People present in such structures often do not know proper emergency procedures, aggravating fire, and/or causing injury and death.

The only way of reducing the damage to public life and property is by conducting fire safety drills and installing well equipped fire safety equipments such as smoke detectors, heat sensors, fire panels, and fire alarms.

It is recommended that mock-drills should be carried out at least once in six months.

### **3.1.3 TERRORISM**

Appropriate security measures should be taken in and around to ensure limited access to key areas, such as attached parking garages where bombs can be easily placed. Project management should carry out surprise checks.

## **1.2 DISASTER MANAGEMENT PLAN**

### **3.2.1 Definition**

Disaster Management Plan for any unit is necessarily a combination of various actions which are to be taken in a very short time but in a present sequence to deal effectively and efficiently with any disaster, emergency or major accident with an aim to keep the loss of men, material, machinery etc. to the minimum.

A major emergency in an activity/project is one which has the potential to cause serious injury or loss of life. It may cause extensive damage to property and serious disruption both inside and outside the activity/project. It would normally require the assistance of emergency services to handle it effectively.

**Disaster is called when following one or the other or more incidents occur:**

- Risk of loss of human lives-ten or more in one single situation
- A situation which goes beyond the control of available resource of the plant.
- A situation apparently may not have much loss but its long-term severity can affect loss of life, production and property.

**Disaster occurs due to:**

- Emergencies on account of: fire & electrocution
- Natural calamity on account of: Flood, earthquake/cyclone/storm/cloud burst/lightning.
- External factor on account of : food poisoning, sabotage

**Objectives:**

- To identify type of major disaster that may occur in the proposed project site
- To collect data on the type of disasters, this has happened already in similar projects.
- To prepare an action plan to handle disaster

### **3.2.2 Disaster Management Cell**

The main functions of the Disaster Management Cell are to prepare a detailed Disaster Management Plan, which includes:

- Identification of various types of expected disaster depending upon the type of the industrial unit.

- Identification of various groups, agencies, departments etc. necessary for dealing with a specific disaster effectively.
- Preparation – by intensive training of relevant teams/groups within the organization to deal with a specific disaster and keep them in readiness.
- Establishment of an early detection system for the disaster.
- Development of a reliable instant information/communication system.
- Organization and mobilization of all the concerned departments/ organizations / groups and agencies instantly when needed.

### **3.2.3 Emergency Planning for Disaster due to Fire**

Cable rooms, transformer, unit, auxiliary transformers, oil tanks, etc. within the project are the likely areas for which disaster management plan is to be made to deal with any eventuality of fire. Stores, workshop, canteen, and administrative building will be included.

### **3.2.4 Classification of Fire**

#### **Class (A)**

Fire involving combustible materials like wood, paper, cloth etc.

#### **Class (B)**

Fire due to liquid materials like oil, diesel, petroleum products, and all inflammables.

#### **Class (C)**

Fires involving domestic and industrial gases like butane and propane etc.

#### **Class (D)**

Metal fires etc.

#### **Class (E)**

Electrical fires due to short circuiting etc.

### **3.2.5 Need of Establishing a Fire Fighting Group**

A small spark of fire may result into loss of machines and the damage by fire may account for high economic losses. This type of losses can be avoided by preventing and controlling the fire instantly for which fire-fighting group will be established.

Establish which would house and keep in readiness, the following types of equipment and arrangements.

- CO<sub>2</sub> extinguishers

- Dry powder chemical extinguishers
- Fire brigade
- Fire hydrant

In order to avoid fire in cable galleries, all the power and control cables of FRLS type (Fire Resistant Low Smoke) will be used.

### **3.2.6 Inspection**

Fire alarm panel (electrical) will cover the entire township. The inspection group will periodically inspect fire extinguishers in fire stations and machines and other places.

The groups will display emergency telephone number boards at vital points.

The group will regularly carry out general inspection for fire.

### **3.2.7 Procedure for Extinguishing Fire**

Person noticing the fire should attempt to isolate and extinguish the fire with the available equipment and inform or arrange to inform the security regarding the following:

- Location of the fire
- What is burning
- The Extent of fire
- Callers name and number
- Do not disconnect unless the person on the other side repeats the message or acknowledges it.
- Security on duty coordinators will respond to the scene of the incident
- Arrange to send the necessary firefighting equipment to the scene of the incident
- In the meanwhile, the pipe system will be operated to obtain maximum pressure on output. In case cables are within the reach of fire, power supply will be tripped and the cables shifted.
- Extinguish the fire with the available equipment.

### **Fire Fighting with Water**

Adequate and reliable arrangement is required for fighting the fire with water such as:

- Provision for Fire brigade and Fire hydrant.

- Arrangement of pipelines along and around all vulnerable areas.
- Provision of valves at appropriate points to enable supply of water at the required place/area or divert the same to another direction/pipeline.
- Provision of overhead tanks which will be providing with the water during power failure and it would work by the gravitational force.
- The water required for fire reserve will be stored in underground and terrace tanks.

### **Fire Fighting with Fire Extinguishers**

To deal with fire – other than carbonaceous fires, which can be dealt with by water – suitable fire extinguishers are required to do the job effectively. It is therefore, necessary to keep adequate number of extinguishers in readiness at easily approachable places. Adequate number of fire stations would be:

- Further, other spray groups from the system will be diverted to the spot.
- After extinguishing the fire, the area will be well prepared for reuse.
- Use of extinguishing media surrounding the fire as water, dry chemicals (BC or ABC powder), CO<sub>2</sub>, Sand, dolomite, etc
- Special Fire Fighting Procedures; Keeping the fire upwind. Shutting down of all possible sources of ignition, keeping of run-off water out of sewers and water sources. Avoidance of water in straight hose stream which will scatter and spread fire. Use of spray or fog nozzles will be promoted, Cool containers will be exposed to flames with water from the side until the fire is out.

### **3.2.8 Accidental Release Measures;**

For Spill Cleanup well Ventilation, Shutting off or removal of all possible sources of ignition, absorbance of small quantities with paper towels and evaporate in safe place like fume hood and burning of these towels in a safe manner), Use of respiratory and/or liquid-contact protection by the Clean-up personnel will be promoted.

## **4 ENVIRONMENTAL MANAGEMENT CELL**

Apart from having an EMP, it is also necessary to have a permanent organizational set up charged with the task of proposed project will create a department consisting of officers from various disciplines to co-ordinate the activities concerned with the management and implementation of the environmental control measures.

Basically this department will undertake to monitor the environmental pollution levels by measuring stack emissions, ambient air quality, water and effluent quality, noise level etc. either departmentally or by appointing external agencies wherever necessary.

In case the monitored results of environmental pollution are found exceeding the allowable values, the environmental management cell will suggest remedial action and get these suggestions implemented through the concerned project authorities. The Environmental Management Cell (EMC) will handle all the related activities such as collection of statistics of health of workers and population of the region, afforestation and green belt development.

## **5 ONSITE EMERGENCY PLAN**

### **5.1 Introduction**

The views of the possible hazards that can arise various measures shall be adopted to prevent the occurrence of a major accident. This comprises of:

- Built in safety measures and alarms etc.
- Standard safe operating and maintenance procedures permit system etc.
- Training of all the involved staff in normal and emergency operating procedures.
- Training of all employees in safety, firefighting and first aid.

However, in spite of these precautions, it is required to foresee situation of major accident and plan for taking timely action to minimize the effects of such incident on the safety and health of the worker as well as those living around the premises.

### **5.2 Emergency Situations**

These are defined as the following

- Any fire or explosion in the premises
- Any smoke outside / inside premises
- Exercise fire drill.

## **6 PREPARATION OF PLAN**

### **6.1 Alarm System**

A siren shall be provided under the control of Security office. In case of emergencies this will be used on the instructions to shift in charge that is

positioned round the clock. The warning signal for emergency shall be as follows:

- Emergency Siren: Waxing and waning sound for 3 minutes.
- All clear signal: Continuous siren for one minute.

## **6.2 Communication**

Internal telephone system EPBX with external P&T telephones would be provide for communication purpose. The other shortlisted basic actions to be taken are as under:-

- Immediate action is the most important factor in the emergency control because the first few seconds count.
- Immediate steps to stop fire and raise alarm simultaneously.
- Personnel without any specific duties should assemble at the nominated place.
- All vehicles except those that are required for emergency use should be moved away from the operating area in an orderly manner at pre nominated route.
- Electrical system except the lighting and fire fighting system should be isolated.
- If the feed to the fire cannot be cut off, the fire must be controlled and not extinguished.
- Block all roads in the adjacent area and enlist police support for the purpose, if warranted.

## **6.3 Fire Protection System**

### **6.4 Fire Fighting System**

The fire protection system for the unit is to provide for early detection, alarm, containment, and suppression of fires. The complete fire protection system will comprise of the following.

#### **a) Portable fire extinguishers**

Various areas of the project will have one or more of the above system depending upon the particular nature of risk involved in that area.

#### **b) Portable Chemical Fire Extinguishers**

These are intended as a first line of defense, and hence will be stationed at strategic locations in different buildings and also for outdoor facilities. Portable fire extinguishers will be foam type; carbon dioxide type and multipurpose dry chemical (MPDC) type.

## **6.5      First Aid**

A first aid centre with adequate facilities shall be provided. There will be a provision of medical tie up with the local nursing home in case of emergency. An Ambulance shall also be provided at site to carry affected people to hospital.

## **6.6      Security**

The security requirements of the company premises shall be taken care of by CSO assisted by the in charge. The team, apart from the normal security functions will manage the role required during a disaster management operation as a part of the crisis control team.

## **6.7      Safety**

The required safety appliances shall be distributed at different locations of the project to meet any eventualities. Poster/placards reflecting safety awareness will be placed at different locations in the project area.

## **6.8      Evacuation Procedure**

As the major hazard is only due to fire, which has more or less localized impact no mass evacuation, procedures are required. Evacuation would involve only the people working very close to the fire area.

## **6.9      Emergency Control Center**

Provision is made to establish an Emergency Control Centre (ECC) from which emergency operations are directed and coordinated. This centre is activated as soon as on-site emergency is declared.

## **6.10     Communication Equipments and Alarm Systems**

This kind of equipment is absolutely vital for notifying accident; make the emergency known both inside and outside of the facility, and coordinating, the response actions among the various groups involved in response operations.

In particular, this equipment is used to communicate within the facility; communicate between the facility and outside organizations; and inform the public.

Different communications systems can vary in effectiveness, depending on the task. The most common types installed in the project are given below.

## **6.11     Sirens**

These are audible alarm systems commonly used in facilities. In case of any emergency siren will be operated short intermittently for 1.5 minutes.

An alarm does more than just emergency warning. It also instructs people to carry out specific assignments, such as reach to assembly point for further instructions and actions, or carry out protective measures; this can be achieved only if the people are familiar with the alarm systems and are trained to respond to it.

#### **6.12 Personal Protective Equipments**

This equipment is used mainly for three reasons; to protect personnel from a hazard while performing rescue/accident control operations, to do maintenance and repair work under hazardous conditions, and for escape purposes. Effective command and control accomplish these functions necessitates personal trained in this On-site Disaster Management Plan with adequate facilities and equipments and equipment to carry out their duties and functions. These organizations and the facilities required to support their response are summarized in the following subsections.

#### **6.13 Procedure for Testing & Updating the Plan**

Formulation of a Disaster Management Plan cannot possibly be an end by itself. It needs to be tested by holding of periodical mock emergency simulation and drill. Any shortcomings revealed during such exercise should thereafter be corrected by amending the plan. The plan should be for times to come; hence it must be reviewed at periodic intervals. The plan should be also reviewed and updated when:

- Major alteration or extension of existing structure is carried out.
- Major change in habitation or land use of the neighborhood takes place.
- Important telephone numbers used are altered.

Mock drills activating the Disaster Preparedness plan should be conducted periodically for ensuring its efficiency during emergency as well as for refinement and up gradation. These drills based on the plan will help achieve its objectives of the Disaster Management Plan.

Simulated emergency preparedness exercises and mock fire fighting exercises including mutual aid scheme resources and in conservation with district emergency authority to be carried out time to time.

#### **6.14 Post Emergency Follow Up**

- All cases of fire occurrence, no matter how small, must be reported promptly to the Coordinator for follow up.
- Under no circumstances should fire extinguishing equipment once used be returned to its fixed location before it is recharged/ certified fit by the Fire chief/ Safety Manager.
- Used fire extinguishers must be laid horizontally to indicate that they have been expended.

#### **6.13 Disclosure of Information to Worker & Public Awareness System in Existence & Anticipated**

- Safety awareness among workers by conserving various training programmes and Seminars, competition, slogans etc.
- Practical exercise.
- Distribution and practices of safety Instructions.
- Safety Quiz contests.
- Display of Safety Posters & Safety Slogans.
- Developing Safety Instructions for every Job and ensuring these instructions/booklets or manuals by the workers.

### **7 FIRE & ELECTRICAL SAFETY MANAGEMENT**

- Fire Tender route with access to each unit / building.
- Provision of emergency fire exits, fire escape staircase.
- Fire Sprinklers & Fire Alarm system.
- Fire fighting equipments will be divided into water and foam based fire fighting depending upon the nature of fire.
- Portable Fire extinguisher

### **8 CONCLUSION**

As discussed, it is safe to say that the project is not likely to cause any significant risk, as adequate risk assessment measures will be adopted.

