DISASTER MANAGEMENT PLAN

RESIDENTIAL DEVELOPMENT WITH SHOPS

At

S. No. 190, 191/1, 191/3, 191/5, 193/2pt, 193/2pt, 193/3, 193/4, 193/5, 193/6, 193/7, 198/1A, 198/1B, 216/2 at village Kolshet, Tal. Thane, Dist. Thane, Maharashtra

M/s. SAI PRABHAT BUILDCON LLP

Prepared by

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REVISION NO. 2 **COPY No.: 1**

Enclosure - 3

DISASTER MANAGEMENT PLAN:

Disaster management is defined as the discipline of avoiding and dealing with natural risks. The whole process involves a preparation plan for the impending disaster, action in response to a disaster, and support and strength to rebuild a community after the occurrence of a disaster. Disaster management is very important for any building. It makes the occupant aware of the various disasters possible in a building, prevention & procedures, training in disaster management, and after-disaster procedures for building objects.

In general, disaster management is a continuous process that aims to manage and minimize hazards. Under disaster response, there are a variety of actions to take like evacuation quarantine, mass decontamination, and the like. Disaster management has its own advantages. Some of these are:

- Reduces the effects of a disaster's aftermath
- Gives the chance to survive, no matter what kind of a disaster occurs and irrespective of when it occurs
- Gives you peace of mind from the uncertainties of close encounters to unexpected and dangerous natural events
- Minimize the effects of the accident on people and property
- Initiate the rescue and medical treatment of casualties;
- Bring the incident under control
- Preserve relevant records and equipment for the subsequent enquiry into the cause and circumstances of the emergency
- Investigate and take steps to prevent recurrence of similar incidents
- Inform and collaborate with statutory local and state authorities

DMP follows the Basic structure as shown in Figure 1

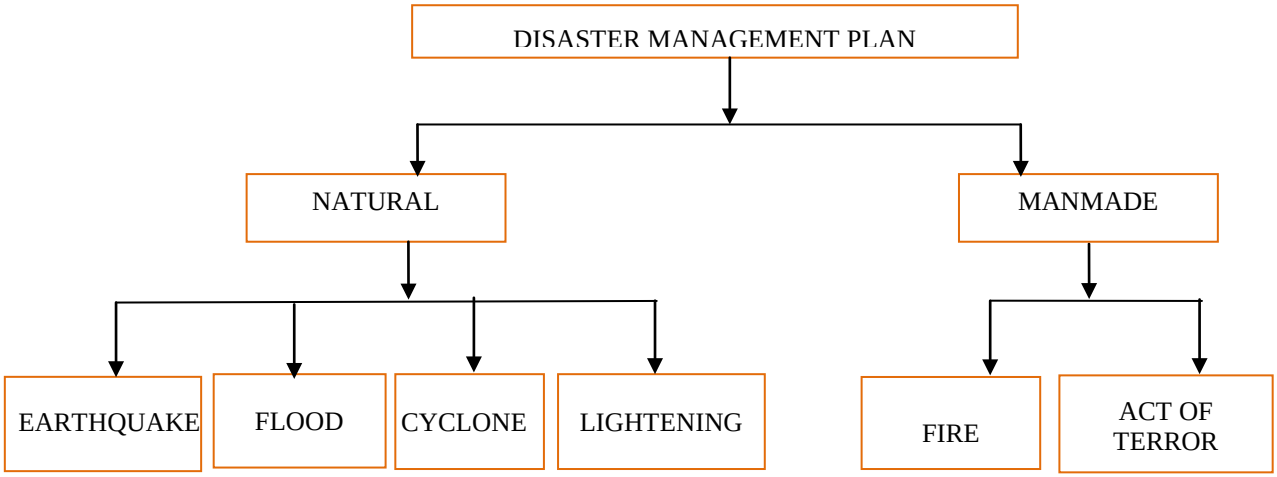

Fig. 1: Basic Structure of DMP

A. CONSTRUCTION PHASE

1.1 Risk assessment and Vulnerability analysis of possible disasters

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 development.

Hazard Identification: Physical, Chemical, Mechanical, Electrical, Vibration & occupational health hazards during construction phase

Risk of body injury, Injury to eyes, fatal accident, Fire and explosion, Hearing loss etc.

- ***Are you using (Tick Boxes)***

[√] plant/equipment
[√] portable electrical equipment
[√] pressure vessels/boilers
[√] hazardous substances
[√] scaffolding
[√] ladders
[√] lifts/hoists/cranes/dogging/rigging/load shifting machinery

- ***Does the project/task involve (Tick boxes)***

[√] using tools/equipment with moving part(s)
[√] using tools/equipment that vibrate
[x] working with x-rays ,or lasers
[√] electrical wiring
[√] asbestos removal
[√] welding
[√] hazardous waste
[√] excavation / trenches (>1.5m)
[√] working around electrical installations
[√] working near traffic
[√] working at a height (>3m)
[√] working in isolation.
[√] working in a confined space
[√] manual handling
[√] repetitive or awkward movements
[√] lifting or moving awkward or heavy objects
[x] demolition work

- ***Is there (Tick boxes)***

[√] noise
[√]dust/fumes/vapours/gases
[√]extreme températures
[√] risk of fire/explosion
[√] slippery surfaces/trip hazards
[x] poor ventilation/air quality
[x] a poorly designed work area for the project/task

1.2 Mitigation Measures & preparedness

For any projects/tasks that present a high or extreme risk, a Safe Work Method Statement must be completed.

- ***Note how you will control the risk following the priorities listed to the right. This may include controls like redesigning the workplace, using guards or barriers, ventilation, using lifting equipment or personal safety equipment.***

1. Eliminate the hazard
2. Installing Safety net for height fall
3. Keep the hazard and people apart
4. Change work methods
5. Conducting induction training, safety training & mock drills.
6. Use personal protection

- ***Note any specific risk assessments required for high-risk hazards. Check whether any hazards noted in step 2 require further assessment or action***

[√] hazardous substance risk assessment
[√] test and tag electrical equipment
[√] Inspection of scaffolding
[√] confined spaces risk assessment
[√] sound level test

- ***Note Permits/Licenses/Registration required***

[x**]** Demolition work
[√] Electrical wiring
[√] Pressure vessels
[x] Friable asbestos removal
[x] Ionizing radiation sources
[√] registers for chemicals, Personal

protective Equipment, training, ladders, lifting gear

- ***Note certificates of competency/licenses for operators***

[√] Scaffolding
[√] Rigging
[√] Load shifting machinery operation
[x] Pesticide application
[√] Crane operation
[√] Hoist operation

- ***Note emergency systems required***

[√] first aid kit
[√] extended first aid kit
[x] emergency stop button
[√] additional emergency procedures
[√] Fire control
[x] remote communication mechanism
[x] others

Table 1: Risk and Mitigation measures

Sr. No.	Operations	Risk	Mitigation Measures
1.	Tower Crane	Injury, Fatal accident, Contact with high voltage live wires	Certified by Competent person, Operated by trained & Certified personal, Preventive maintenance, Use work permit system, Use of PPA/PPE Safe Operating Procedures (SOP)
2.	Construction/material Hoists	Personal injury Accidents	Only approved hoist to be used by trained employees with safe area demarcation Inspection by competent person, Safe work instruction, Correct Use, Training, Testing before use for SWL Use of PPE/PPA, Fencing Use of PPA/PPE
3.	Passenger lift	Fatal /major Accident	Certified/approved passenger lift to be used by trained employees, With safe area demarcation, Use of PPA/PPE
4.	Portable electrical equipment	Burn/fatal	To be checked before use by Approved Electrical safety official/Use of PPA/PPE
5.	Pressure vessels	Pressure air Rupture	Compressors, For Jack Hammer, AHU (Air conditioning)Ice Plant, Inspection of Safety valve, proper rubber fittings, Vibration to be avoided Use of PPE/PPA, Training
6.	Hazardous substances	Fire, explosion Toxic release Unhygienic Dust	Storage of Bulk Fuel. Paints, Plastic Plywood Combustible, Store as per HAZMST Rules. PPE/PPA Training
7.	Scaffolding	Fall from Height Fatal accident	Introduction of Working on Height permit system, PPE/ PPA/ safety belt /Training
8.	Ladders	Accident, Injury	Proper selection, Inspection, PPE/PPA, Training
9.	Lifts	Accidental, Injury Even Fatal	Inspection by competent person, Safe work instruction, Correct Use, Training, Testing before use for SWL,

Sr. No.	Operations	Risk	Mitigation Measures
			Use of PPE/PPA
10.	Material handling cranes	Accidental, Injury Even Fatal	Inspection by competent person, Ergonomic training, Use of PPE/PPA, Safety Guards
11.	Using tools/equipment with moving part(s)	Nipping, Injury to Hand , Electrical Shocks Leg Injury	Proper selection of Hand tool, Periodic Inspection, Use of proper hand glove, PPE/PPA, Training, Safety guard in case of Grinder
12.	• Using tools/equipment that vibrate • Electrical wiring • Asbestos removal • Welding	• Vibration hazard • Electrical shocks • Asbestosis • Eye, Body Burns Toxic gases inhalation	Inspection by competent person, Ergonomic training, Use of PPE/PPA, Safety Guards
13.	Working around electrical installations/working near traffic / working at a height (>3m) / Working in isolation. Working in a confined space/ demolition work	Electrical shocks, Injury, Fatal accident, Hazard of toxic, Gases inhalation	Work by Authorized trained person, Indian electrical safety rules to be followed, Work permit system, Work environment in confined space, Use of PPE/PPA
14.	Work environment 1. Noise 2. Dust/fumes/vapours/ gases 3. Extreme températures 4. Slippery surfaces/ trip hazards 5. Poor ventilation/ air quality 6. A poorly designed work area for the project/ task	Accidental Injury, Occupational Hazards, Rashes, Burn , Skin deceases	Enclose noise source, Lubrication, Min time exposure, Use of PPE/PPA, Good Housekeeping, Illumination survey, Trainings

a) Prepare SOP's for each disaster and for evacuation when necessary: All SOP's are attached as an enclosure to forms

❖ **EXCAVATION ACTIVITY**

➢ **Excavation Risks:**

- The most common hazard at any work site is the threat of cave-in. A cave-in occurs when walls of an excavation collapse
- Accidental contact with utility lines
- Crushing and striking hazards posed by mechanized equipment
- Atmospheric Conditions
- Materials/Equipment falling into excavation site
- Struck by Accidents
- Asphyxiation
- Explosion
- Fall Hazard

- **Mitigation:**
  - Re-route traffic whenever possible, and keeping only the heavy; Construction equipment needed near the excavation
  - Keeping the spoil pile at least 2 feet back from the edge of the excavation
  - Pumping water out of the excavation before any one enters it
  - Using protective systems when required
  - Establish and maintain a safety and health program for the worksite
  - Provide adequate systematic policies, procedures, practices
  - Wear warning vests when near traffic
  - Trained employees to operate heavy equipment
  - Passing order to Stay away from loads being handled by lifting/digging equipment
  - Use barricades, hand or mechanical signals, stop logs to keep operators safe
  - Barricade or cover wells, pits, shafts
  - Use appropriate PPE's.
  - Trenches 4 m or more feet deep need a safe means of egress
    - Stairway
    - Ladder
    - Ramps
  - Means of egress shall kept fixed and secure
  - Keep surface materials approx 2 feet from the edge of excavation sites
  - Emergency evacuation drill will be carried before monsoon
  - Emergency lighting arrangement shall be in place

❖ **OTHER CONSTRUCTION ACTIVITIES**

- **Other Risk & Hazard area during construction activities:**
  - Tower crane lifting
  - Gas cutting & welding
  - Bar Bending & Bar cutting
  - Plywood cutting & drilling
  - Height working
  - Material storage

- **Mitigation for other risk & hazard area:**
  - After safety officer inspection tower crane shall be operated under the direction of EHS engineer. Electrical cables & it's condition & working shall be examined by competent person periodically. Fork and sling will be examined by engineer and worker before operating. Certified employee will be appointed for job
  - Trained & experienced employee will be appointed for gas cutting & welding activities. Appropriate safety measures will be taken for cylinder storage and its equipments. Pressure regulator valve, nozzles, blow pipe, flexible hose and flash back arrester shall be checked by safety officer before workers operating. Appropriate PPE's shall be given to employee & also will ensure its use. Hand held helmet with filter lens shall be provided to welding/cutting operator to prevent his eye vision
  - Trained & experienced employee will be appointed for bar bending & cutting activities. Sufficient space will be provided for job. Appropriate PPE's shall be given to employee & also will ensure its use
  - Trained & experienced employee will be appointed for Ply cutting & drilling. Sufficient space will be provided for job. Appropriate PPE's shall be given to employee & also will ensure its use
  - Safety belt, harness and lifeline with PPE's shall be provided to workers working at height. Such activities will be carried out under safety supervisor's supervision
  - All noise creating machines shall be installed with insulation & rubber padding
  - All the materials should be stacked on the leveled ground, all the materials should be

stacked, providing good aisles between them for receiving the materials

- Diesel & Petrol above 1000 litres or 32 litres shall be stored as per The Petroleum Act

Initially with first preference Safety team had been formed to control & reduce the possible hazards and risk which may occur. A detail of safety committee is been described below:

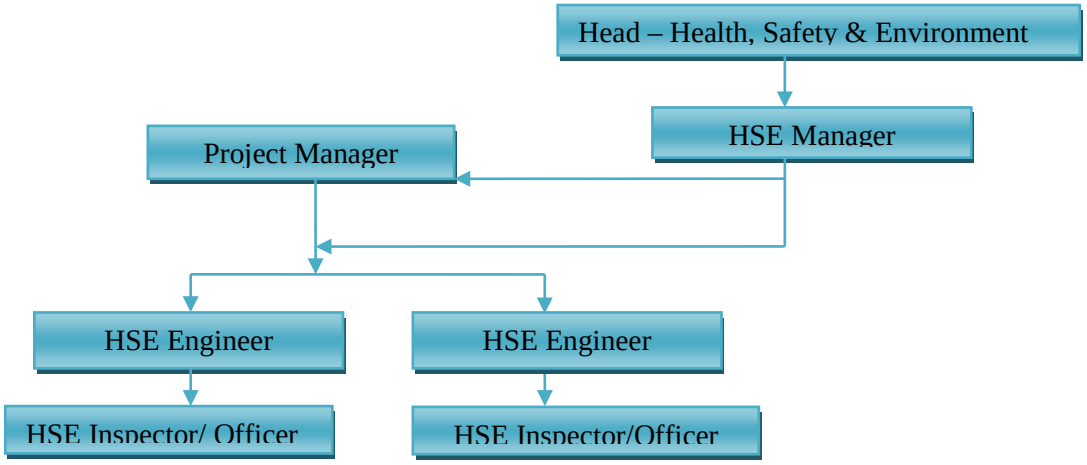

Fig 2: Organization chart of Safety Committee

➢ **Roles & Responsibilities:**

Position: Project Manager

The responsibilities and duties shall include the following:

- Responsible for completion of the project with the relevant statutory rules and regulations.
- Responsible to ensure that all staff & workmen are competent to perform their tasks safely in Disaster
- Ensuring that workmen is effectively implemented engineers solutions during evacuation process
- Establishing adequate control measures for the employee's fitness in order to avoid fatigue, stress, extended working etc.
- Make arrangement and ensure that required inventory resources are available or not to tackle disaster
- Make arrangement of fund from the management to purchase required equipments for tacking any disaster.

Position: HSE Manager

The responsibilities and duties shall include the following:

- Take necessary actions and decisions during an excavation
- Allotting an certified contractors for an job
- Ensure the quality and durability of all necessary equipments and aids required for construction
- Ensure the quality and durability of all necessary equipments required to tackle any disaster
- Should contact outer bodies, police, fire brigade & emergency rescue team for evacuation during any disaster
- Should prepare a team and allot the roles & responsibilities to team members for an evacuation during any Disaster
- Go through the checklist filled by an HSE Engineer to maintain the safe working

Position: HSE Engineer

The responsibilities and duties shall include the following:

- Understanding the HSE requirements of the Project from this Plan, HSE Management Systems, HSE Manual & following the same in execution of the work
- Ensuring the workmen under him wear the necessary personal protective equipments respective to the job
- Eliminating all unsafe conditions in their work area
- Keeping the work area neat & clean
- Know the critical activities of his job based on the HSE Risk Assessment and ensure implementation of the control measures
- To follow all work permit system as per client requirements or HSE Management System before starting of similar work
- To report all near miss cases / reportable LTI /dangerous occurrences / fatality to HSE Engineer immediately
- Informing the concerned authority as per the emergency response plan

Position: HSE Inspector/Officer

The responsibilities and duties shall include the following:

- Disseminate and Communicate HSE Policy, HSE Management System requirements to site personnel.
- Provide necessary advice, information and support in the effective implementation of the HSE Management System requirements and this HSE plan.
- Updating the HSE Plan to the requirements of the activities being carried out when there is a revision.
- Plan and conduct Internal HSE training programs, initiate drive to promote HSE awareness and performance
- Dangerous occurrences & recommend appropriate corrective measures.
- Convene HSE Committee meeting & minute the proceedings for circulation & follow-up action
- Advice & co-ordinate for implementation of Work Permit System
- Plan procurement of PPE & safety devices and inspect before use as per laid down norms.
- Report to CHSEM on all matters pertaining to status of HSE and promotional program at site level.
- Facilitate screening of workmen and conduct HSE induction
- Monitoring administration of First Aid.
- Conduct Fire Drill, Procure, inspect and arrange to maintain Fire Extinguishers.
- Organize campaigns, competitions & other special emphasis programs to promote HSE in the workplace
- Record, First Aid Cases, Near Miss Cases & Accidents to all project personnel
- Maintain all HSE related documents
- Update HSE training records

Position: Section / Area In-charges

- Ensure that all the workmen engaged under him are selected through the screening system & have undergone site HSE Induction before assigning any task at site
- Ensuring compliance of basic HSE rules and applicable specifications by
    - Taking prompt action of site inspection and hazard findings
    - Closing all the points identified in inspection reports
    - Ensure HSE Risk Assessment is done for all the jobs under him

All Employees

The responsibilities and duties shall include the following:

- Report all unsafe acts and condition to the immediate supervisor
- Start work only when conditions are safe and stop work when it is unsafe

- Operate equipment only when authorized and prescribed manner.(If applicable)
- Report any injury or accident immediately

Sub-Contractors

All Subcontractors/Vendor/Supplier/Third Party performing services at the Project site shall be subject to this plan requirement

- Shall understand the HSE code of conduct for subcontractors and sign the same as a token of acceptance before starting the activity
- Subcontractor, his Supervisor and his workmen shall adhere all the laid down HSE rules & Regulations while working at site, follow the instruction / advice of Site engineer & HSEO from time to time

c) Maintenance of systems/equipments necessary for tackling disasters

- Maintenance of systems/ equipments necessary for tackling disaster will be done periodically by an competent person after getting checked during mock drill

d) Warning System

- Security will do the announcement by fan horn or reflex horn speaker
- Provision of fire alarm switch at security room.

e) Organize extensive training for disaster managers and assistants

- Quarterly Training will be arranged by Sai Prabhat Buildcon LLP for disaster managers and assistants

1.3 Response Plan

❖ **Emergency Preparedness and response plan for construction phase**

An emergency having medium risk (cautionary risk) to high risk (critical risk) associated with it needs to be treated as **non-tolerable** or **unacceptable**. Projects use *Periodic Management Attention* and *Continuous Management Attention* as a strategic tool to manage cautionary risk and critical risk respectively.

Accordingly, Project Specific Emergency Response Plan is evolved incorporating five components;

- Prevention
- Preparedness
- Response
- Recovery
- Mitigation

Table 2: Components Of Emergency Preparedness & Response Plan

Components	Explanation/Associated Elements
Prevention	Prevention may not be always practical in case of natural disasters. But certain planning consideration can help minimize the impacts during above emergency situation. Contrary, towards man-made emergency, prevention can be quite effective. Example- incidents and occupational diseases can be prevented by applying various controls; elimination, substitution, engineering, administrative & personal
Preparedness	It involves developing mechanism towards emergency preparedness a. Defining EPR team structure at project level b. Demarcation of roles, responsibility & authority c. Determining line of command and control d. Allocation of resources including training e. Developing & maintaining inventory of emergency management equipment's

	Preparedness also involves periodical testing through planned **Mock Drill& Table Top exercises**
Response	Response is execution of preparedness plans and typically involves, a. Put preparedness plan in execution b. Evaluate its effectiveness i.e. determine the gap between the plan and the execution c. Revisit plan and improve it in view of gap analysis (as part of Mitigation) d. Incorporate the learning's for continual improvement
Recover	Response is followed by **recovery** wherein projects need to take steps to bring back normalcy as soon as possible. The focus should be to maintain **continuity of business** by minimizing / eliminating disruptions and delays. Typically recovery involves the following (but not limited to) a. Clear up from the incident or help the people involved overcome their mental trauma b. Consultation and coordination with contractors, suppliers and internal functions to streamline the work and the supply c. Repair/renovate offices, Labour camps, stores, work fronts, machinery/equipment d. Sanitization of entire area including canteen and utilities- water supply, wash rooms, & toilets/urinals e. Pest Control f. Preventive Health Check-up & consultation g. Reorganizing workforce and re-inducting them
Mitigation	Mitigation involves taking steps to ensure no re-occurrence is possible, or putting additional plans in place to ensure less damage is done next time. This should feedback in to the preparedness stage, with updated plans in place to deal with future emergencies.

Plan Components	**Incident**
Prevention	• PPE shall be mandatory on site for all. Edge barricading to all openings on the floor, ducts and excavated places. • Safety and warning signage shall be placed at hazardous areas. Safety induction and TBT shall be carried out on site for all workforces.
Preparedness	• Continuous supervision of safe working environment. • Special training shall be conducted on site to deal with any type of incident. • Sufficient stretcher shall be kept on site for immediate response during incident. Availability of first aider, first aid box and medical health center. • Preparedness for mention incident types as per below table:

Type of Incident	Mock Drill	Table Top Exercise	Audit
Fall of person from height.	Yes	Yes	Yes
Structure collapse.	Yes	NA	NA
Fall of any material from height.	No	Yes	Yes
Excessive bleeding.	NA	Yes	Yes
Failure material hoist or any lifting equipment.	NA	NA	Yes
Electrical shock / Electrocution.	NA	Yes	Yes
Unconscious victim	Yes	NA	NA

	within a confined space.			

	Mock Drill (Frequency & methodology): Incident evacuation drill shall be carried out quarterly. line of Method :- • Emergency siren will be blown. • Head Count • Rescue the victims. • First Aid for minor injury. • Victim will be moved to hospital. • Emergency stopped up siren will be blown.
Response	• As to see the effectiveness of the Preparedness plan for an Incident it shall be executed at site as per the plan. • Its effectiveness shall be evaluated to understand the gap between the plan and the execution on the basis of timelines, roles and responsibilities given to EPRT members.
Recovery	• The sufferer of the incident shall be provided with adequate medical facilities to recuperate from the incident.
Mitigation	• Additional plans will be put up in place to avoid any kind of incidents on site during work.
Identify site disaster manager for handling disasters with clearly enumerated functions	• HSE manager will handle disaster with his safety team with clearly enumerated functions during construction phase • Sai Prabhat Buildcon LLP will appoint an HSE manager for handling disaster by keeping in view of his English knowledge, fire safety exposure, communication skill and his contact with public & local NGO's

Plan Components	**Fire**
Prevention	• All the flammable material shall be kept at a designated place. • Fire extinguishers, buckets etc. Shall be put up all across the site. • Operational Training for fire extinguishers will be given to all.
Preparedness	• Fire prevention accessories shall be maintained at site. • Installation of Fire hydrant, smoke detector & sprinkler systems on site. • Assembly point and fire exit shall be notified at a specific place for all to gather whenever the fire takes place on site. • Fire exit shall be away from debris. Contact nos. of local Fire brigade and Fire Marshalls as well as nearest hospitals shall be displayed all over the site. • The site shall be having its own First Aid Center and ambulance.
	Mock Drill (Frequency & methodology) Emergency evacuation drill shall be carried out quarterly. • Emergency siren will be blown. • All workers will be gathered at Assembly point. • Head Counting • Rescue the victims. • Fire will be put out by fire Marshalls or fire brigade. • Emergency stopped up siren will be blown.
Response	• As to see the effectiveness of the Preparedness plan for Fire it will be executed at site as per the plan. • Its effectiveness shall be evaluated to understand the gap between the plan and the execution on the basis of timelines, roles and

	responsibilities given to EPRT members.
Recovery	• To recover from the Fire; Immediate renovation shall be done for offices, Labor camps, stores, work fronts, machinery/equipment, also all this will be recovered with the help of insurance. • Immediate reorganizing of work force will be done to maintain continuity of business without any delay.
Mitigation	• Additional plans will be put up in place to ensure less destruction and losses should occur during fire. • And for this additional insurance plan will be introduced. Fire Drill will be reorganized time to time to compact with future emergencies.

Plan Components	**Earthquake**
Prevention	• Inspect every item that could fall, spill, break or move during an earthquake. • Follow safety codes & building codes for building earthquake resistance structure when constructing a project. Project should be inspected by structural engineer. • Heavy items shall be moved away from where people work. • Fixed equipment and heavy machinery shall be secured to the floor.
Preparedness	• Disaster management accessories shall be maintained at site. • Assembly point shall be notified at an open specific place for all to gather whenever the earth quake takes place on site. • Emergency contact nos. shall be displayed all over the site. • All workforces shall follow the EPRT member's instruction.
	Mock Drill (Frequency & methodology): Emergency evacuation drill shall be carried out quarterly. line of Method :- • Emergency siren will be blown. • All workers will be gathered at Assembly point. • Head Counting • Rescue the victims. • Emergency stopped up siren will be blown.
Response	• Preparedness plan effectiveness shall be evaluated to understand the gap between the plan and the execution on the basis of timelines, roles and responsibilities given to EPRT members.
Recovery	• To recover from the Earthquake incident Check with insurance bodies for life & property damages and Immediate Repair/renovation shall be done for offices, Labor camps, stores, work fronts, machinery/equipment. • Immediate reorganizing of work force shall be done to maintain continuity of business without any delay. • Moral support shall be given to workmen to come out from the Confrontation.
Mitigation	• Additional plans shall be put up in place to ensure less damage and losses should occur during earthquake. • Earthquake and other EPRP shall be updated time to time to deal with future emergencies.

Plan Components	**Monsoon**
Prevention	• Proper dewatering and drainage system shall be implemented on site to avoid flooding. • Site is under flood area or not, this shall be confirmed through the local emergency management office.

	• To avoid electrical hazard during monsoon ELCB system shall be used. In addition, to all the electrical cable joints shall be properly insulated.
Preparedness	• Monsoon preparedness checklist shall be circulating to all concern contractor & internal site team • Dewatering pumps shall be purchased and placed all over the site during monsoon. • Drainage system shall be specially designed for flooding so that water log jam is avoided. • All construction equipment/machinery/official documental records shall be ready to shift at a safe place where flood could damage the same. • All Electrical Distribution equipment shall keep under weather proof shade on proper elevated platform. • Emergency lighting arrangement shall be in place.
	Mock Drill (Frequency & methodology): Emergency evacuation drill will be carried before monsoon. line of Method :- • Emergency siren will be blown. • All workers will be gathered at Assembly point. • Head Counting • Rescue the victims. • Emergency stopped up siren will be blown
Response	• As to see the effectiveness of the Preparedness plan for monsoon it shall be executed at site as per the plan. • Its effectiveness shall be evaluated to understand the gap between the plan and the execution on the basis of response timelines, roles and responsibilities given to EPRT members.
Recovery	• To recover from the monsoon disaster Immediate Repair/renovation shall be done for offices, Labor camps, stores, work fronts, machinery/equipment. • Pesticides shall be used all over the flooded or water logged area to avoid any health contamination on site. • Medical check-up for all workforces shall be done to ensure and control epidemic situation on site.
Mitigation	• Additional plans (as per observation during mock drill) shall be put up in place to ensure less damage and losses should occur during monsoon. • Monsoon prevention plans shall be updated time to time to deal with future emergencies.

Plan Components	**Occupational Diseases**
Prevention	• Respiratory PPEs, hand gloves, face shield, ear plug etc. and other safety precautions shall be taken care of to avoid the occupational diseases. • Adequate information shall be given to all workers regarding occupational hazards and its prevention. • Educate the works for knowing the important of PPE's to understand its importance. • Special training sessions shall be conducted on site to ensure that occupational hazards are eliminated through use of proper means of safety.

Preparedness	• Adequate information shall be given to all workers regarding occupational hazards and its prevention. • Educate the works for knowing the important of PPE's to understand its importance. • Special training sessions shall be conducted on site to ensure that occupational hazards are eliminated through use of proper means of safety.
	Mock Drill (Frequency & methodology): NA
Response	• As to see the effectiveness of the EPRP for Occupational Diseases it shall be executed at site as per the plan. • Its effectiveness shall be evaluated to understand the gap between the plan and the execution on the basis of timelines, roles and responsibilities given to EPRT members.
Recovery	• To recover from the occupational diseases continuous improvement on site safety conditions shall be observed. • Periodical health checkup shall be done for specialized worker who are exposed to hazards material on daily basis.
Mitigation	• Awareness programme will be placed time to time to reduce the effect of occupational diseases.

1.4 Control Room

a) Earmark a specific area to function as control room for disaster management

- Security Control Room during Construction phase is at the main entry gate:
- The traffic in the area comprises
  - Regular workers
  - Vendors

Table 3: The control room is at the main entry gate. Entries are controlled as follows:

i)	Regular workers	•	Recognition
		•	Distinct ID Card
		•	ID through card reader
iii)	Vendors	•	Temporary pass with time validity (with the consent of Resident)

b. Display proper maps-Telephone nos. of disaster controlling authorities showing firefighting equipments

- Fire Brigade contact number is provided below in operation phase and all contact nos. will be displayed during construction by safety committee

c. Prepare & disseminate pamphlets on each disaster for occupants covering Do's and Don'ts for each type of disaster

- Do's and don'ts for each type of disaster is been provided in SOP's which is attached as an enclosure to forms

1.5 On-Site of disaster

a) Site disaster manager to take charge and give guidance over public address system

- Project manager will take charge and give guidance over public address system
- Assembly point shall be identified and marked. Mega phone shall be used to address the emergency to employees.

b) Call for outside assistance of fire brigade, Hospital, ambulance

- HSE Manager will call for outside assistance of fire brigade, Hospital, ambulance

c) Network with State, district and ward level control rooms

- Ward level details are provided below in operation Phase

d) Ensure adequate warning before switching off power

- All announcements will be done with good quality equipments
- HSE Engineer will ensure with HSE Inspector that all worker are stopped working and shut downed the machines & equipments before switching off emergency control switch

e) Assure workers of continuous communication and take all measures to keep up their morale

- Project manager will do continuous announcements by various methods to keep up workers morale

f) Guide workers on the steps being taken for evacuation in a systematic manner

- This requirement will be handled by dedicated trained staff/volunteers

g) Take steps to reduce/ eliminate panic

- Periodical training to internal Volunteers & Officers.
- Periodical mock drills to all Workers, Officers, volunteers and staff.

h) Liaise with Law & order Machinery

- Project manager will liaise with police Fire Brigade, Civil Defense & BEST etc

1.6 Preventive Maintenance

a) Regular maintenance of Equipments & Systems

- Periodical maintenance will be carried by certified, competent and skilled employed contractors at regular intervals.

B. OPERATION PHASE

1.7 Risk assessment & vulnerability analysis of possible disaster

❖ **Hazard Identification And Safety Assessment**

➢ **Identification of potential structural hazards existing in the area**

- Structural safety of the building needs to be assessed with regards to its safety from hazards like earthquakes, cyclones, floods and fire.

➢ **Identification of potential non-structural hazards existing in the area**

- DMC plan shall be in that position to identify the potential hazards that frequently occur in that area. It is therefore necessary for us to identify potential hazards to which the building might be exposed. For this a hazard assessment shall be conducted by taking into account the history of disasters that have occurred in that area for the last 20 - 25 years. Based on the hazard assessment, the members of the DMC will prepare the Disaster Management Plan.

➢ **Points to remember while coordinating a survey**

- Through survey of the building and surrounding area such as low lying area, nallah, pitch hill or any municipal tank etc.
- The areas which would cause problems in an earthquake, flood, cyclone, fire are identified.

❖ **Possible disasters** : Fire/ Flooding / Earthquake / Bomb Explosion / Terror Attack / Structural Problems / Lightening / Power Failure / Fire – Smoke /Electrical Fires / Manmade Emergency / Fall From Height.

❖ **Disaster Response Team**

Initially the Disaster Management Committee will be formed by the developer/society members. The Society In-charge/Security In-charge will be competent enough to handle various disasters, and will be In-charge to look after the complete process of DMC (Disaster Management Committee). DMC will be divided into three groups namely: Co-ordination group, Disaster Awareness group, and Disaster Response group. The roles and responsibilities of various groups are defined in subsequent paragraphs.

The building will have one Security In-charge/Society In-charge (and alternate), one assistant Security guard (and alternate) who will direct the evacuation of persons from their respective areas as quickly as possible in a safe and controlled manner. The list of building evacuation team members is maintained by Disaster management committee.

The given figure 3 demonstrates the structure of organization structure of the Disaster Management Committee.

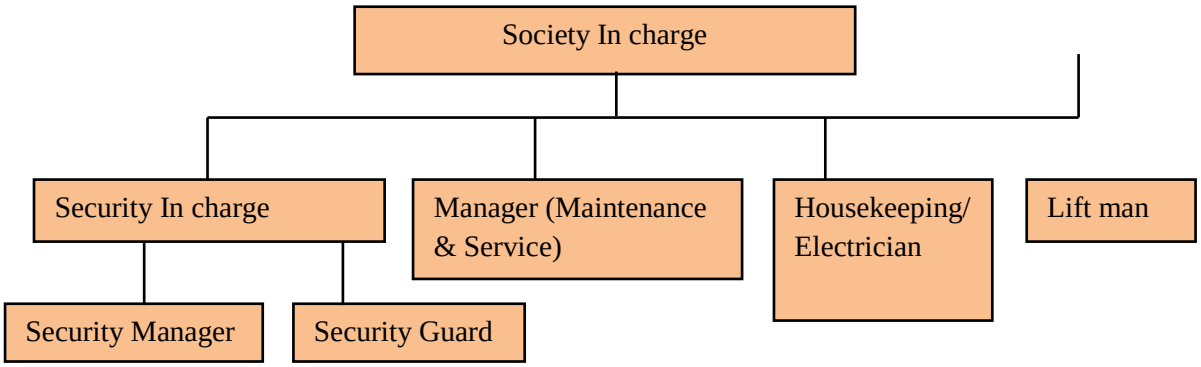

Fig 3: Organization chart of the Disaster Management Committee

➢ **Roles And Responsibilities Of Disaster Management Committee**

- Look into the structural safety requirements of the building for various hazards (earthquake, fire, floods, cyclone, etc.) Get the buildings assessed for the hazards identified and take prompt remedial measures, as required
- The members of the DMC shall have an understanding of the disaster management policy and planning principles
- Evaluation of the Disaster Management plan
- Carrying out the mock drill twice a year
- Updating of the plans at regular intervals (at least once a year, and after any significant disaster) to ensure that the plan is workable
- Earmark fund arrangements for carrying out preparedness and mitigation measures in the building
- Declaring emergencies and implementing the emergency plan
- Implementing evacuation procedures
- Contacting emergency services (fire, police, ambulance) and utilities
- Establishing a command post, chain-of-command and reporting procedures
- Assessing and obtaining emergency services, supplies and equipment
- Ensuring the safety of staff and volunteers at all times during an emergency
- Arranging for off-site storage and work facilities
- Arranging the transfer of collections to a safe site
- Recording the movement of collections
- Implementing and supervising salvage procedures for collections

- Contacting, training and supervising volunteers
- Documenting all aspects of the response / recovery procedures
- Meeting with the press
- Preparing post-emergency reports

➢ **Society In-charge/ Security In-charge**
- Ensures that the appropriate outside emergency agencies have been notified
- Coordinates the activities of all building emergency staff and floor in-charge
- Coordinates all occupant notification and makes sure that any necessary evacuation or relocation begins
- Ensures adequate monitoring and control of all building life safety systems and equipment
- Confirms that any investigation of the fire or source of the fire alarm, or initial suppression of a fire, is performed
- Arranges for responding emergency personnel to be met at the designated entrance of the building and give an up-to-date report on the incident (including its location and any reported injuries), the status of security and building fire life safety systems, and the location and status of all evacuees and building emergency staff addressing the incident (building information forms, notification of specific hazards, floor plans, essential keys and access cards, etc., also should be readily available)
- Ensures that every incident is thoroughly documented and that required notifications and reports to the appropriate authorities are carried out

Table 4: Responsibility Matrix

Goal: To keep the disaster management plan up to date 24X7		
Objectives: To safeguard the occupants and neighbors in the event of disaster		
Scenario	**Who is responsible**	**When to contact and how**
Lift failure	Society In-charge/Security In-charge/lift man	Lift does not move. From the lift, use the alarm. If outside use phone (internal) or reverse alarm system (not running on electricity or battery backup
Fire in building (limited area)	Security In-charge, Society In-charge	Press the nearby fire alarm or call to control room
Fire in large area (floor)	Security In-charge, Society In-charge	Press the on floor and down floor fire alarm or call to control room
Fire in utility areas	Security In-charge	Press the utility area fire alarm or call to control room
Electrical failure	Electrician	If power goes off only of your floor then call to the control room for electrician
Water supply interruptions	Security In-charge, Maintenance & Service manager	If water don't come to only your home then contact control room
Building damage (minor)	Security In-charge, Maintenance & Service manager	If any leakages to your floor or home then contact control room and note complaint and also raise the point in general society meeting
Building damage (major)	Society In-charge	If any fall of plaster to your floor or outside home, major cracks then contact control room and note complaint and also raise the point in general society meeting
Audible and Visible Alarms	Society In-charge	If alarm doesn't work during periodical checkup then call control room and note complaint

Emergency Staff	Security In-charge	If any disaster occurs then call control room for help

1.8 Mitigation & preparedness

a) Prepare SOP's for each disaster and for evacuation when necessary

- All SOP's for each Disaster and for evacuation is been prepared, attached as an enclosure to forms

I. NATURAL DISASTER:

❖ **Earthquake: Seismic Environment & Precautions**

Mitigation Measure:

- As per the Seismic Zoning Map of India, Thane region falls under Seismic Zone-III. The structural design is base on following Indian standard codes of Practice and shall render the buildings safe and stable

❖ **Floods:**

Particularly in Thane, areas having poor drainage characteristic get flooded by accumulation of water from heavy rainfall.

Mitigation measures would be taken by Proponents to manage flood disasters:

- Storm water system would be checked and cleaned periodically
- Vulnerability of basements should be mapped
- Dewatering pumps shall be installed at vulnerable locations
- Provision of Storm water drainage system with adequate capacity. These drains shall have silt and oil and grease traps to avoid pollution of water in drains outside the plot
- Minimizing the incremental runoff from the site with the help of rain water harvesting tank
- Proper management of channelization of storm water from site by using proper internal SWD system and one discharge point of having adequate capacity
- Ensure discharge of storm water from the site is clear of sediment and pollution

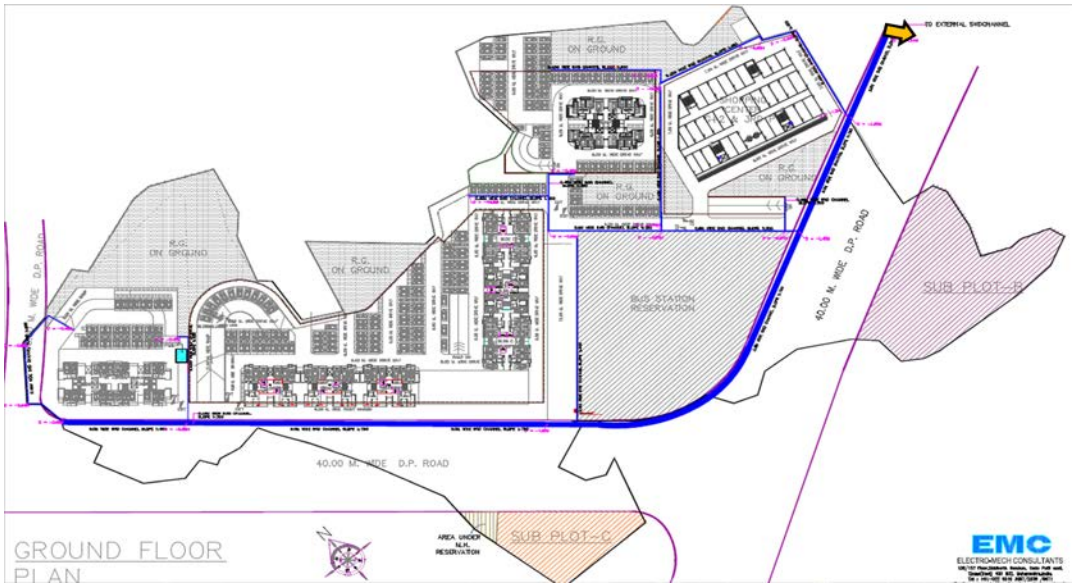

Fig 4: SWD Layout

❖ **Cyclones:**

Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. They are usually accompanied by violent storms and bad weather.

There is no history of any cyclone in this area. However in such an instance the occupants should be advised to stay in the shelter in tightly secured windows and doors. The glass of windows etc. should be covered with paper/cardboards to avoid glass breaking due to flying objects outside.

❖ **Lightning:**

Lightning is an atmospheric electrostatic discharge accompanied by thunder which typically occurs during thunderstorms and sometimes during volcanic eruptions or dust storms. It often leads to physical damage to the building and occupants. It can also lead to short circuits, failure of power supply and fire.

Mitigation measure:

- Lightning arrestor systems shall be provided for entire project to abate the impact of lightning hazard.

II. Man Made Disaster

❖ **Bombs & Other Terrorist Activities**

Bombs can be constructed to look like almost anything and can be placed or delivered in any number of ways. The probability of finding a stereotypical- looking bomb is almost nonexistent. The only common denominator among bombs is that they are designed to explode. Most bombs are homemade. Only the imagination of and the resources available to the bomber limit their design. When searching for a bomb, suspect anything that looks unusual. Let the trained technician determine what is or is not a bomb. Follow the checklist given below:

- Addressee unfamiliar with name and address of sender
- Improper or incorrect title, address, or spelling of name of addressee
- Handwritten or poorly typed address
- Return address and postmark are not from same area
- Excessive postage or unusual stamps used versus metered postage
- Special handling instructions on package (special delivery, to be opened by addressee only, foreign mail, and air mail, etc)
- Restrictive markings (personal, confidential, etc)
- Excessive securing material such as wrapping, tape, or string
- Oddly shaped or unevenly weighted packages
- Bulky, lumpy, or rigid envelopes
- Protruding wires or metal, strange odors
- Mail arrives before or after a telephone call from an unknown person who asks whether the recipient has opened it or who requests that he or she opens it

This is only a general checklist. When an item is in question, the best protection is to make personal contact with the sender of the package or letter but not to open it.

Mitigation Plan

➢ **Safety Procedure**

To cope with a bomb incident, it is necessary to develop two separate but interdependent plans. The bomb incident plan provides the detailed procedures to be implemented when a bombing attack is threatened or executed. A physical security plan, which is covered in detail in the next section, provides protection of property, personnel, facilities, and material against unauthorized entry, tracespass, damage, or other illegal or criminal acts.

To carry out these plans, a definite chain of command must be established to instill confidence and avoid panic. This is easy if there is a simple structure, or one business, in the building. However, in a multiple-tenant building a representative from each tenant should attend a planning conference. A leader—the Society In-charge, Security In-charge—should be appointed and a clear line of succession delineated. This chain of command should be printed and circulated to all concerned parties. There should also be a command center to act as a focal point for telephone or radio communications. The management personnel assigned to operate the center should have the authority to decide what action is to be taken during the threat. Only those with assigned duties should be permitted in the center, and alternates need to be appointed in case some-one is absent when a threat is received. In addition, an updated blueprint or floor plan of the building should be obtained and kept in the command center.

Contact the police department, fire department, or local government agencies to determine if any assistance is available for developing a physical security plan or bomb incident plan. If possible, have police or fire department representatives and building and tenant staff inspect the building for areas where explosives are likely to be concealed; make a checklist of these areas for inclusion in command center materials.

- **Other Security Mitigation Measures to Reduce the Threat of Bombs**

Controls should be established to positively identify personnel who have authorized access to critical areas and to deny access to unauthorized personnel. These controls should include inspection of all packages and materials being taken into critical areas, as well as the following:

- Security and maintenance personnel should be alert for people who act in a suspicious manner, as well as objects, items or parcels that look out of place or suspicious. Surveillance should be established to include potential hiding places (e.g., stairwells, restrooms, and any vacant space) for unwanted individuals. Designated patrols of such areas will assist in this endeavor.
- Doors or access ways to certain areas—mechanical rooms, mailrooms, computer rooms, data centers, switchboards, and elevator control rooms— should remain locked when not in use. It is important to establish a procedure to keep track of keys. If keys cannot be accounted for, locks should be changed.
- Good housekeeping also is vital. Trash or dumpster areas should remain free of debris. A bomb or device can easily be concealed in the trash. Combustible materials should be properly disposed of, or protected if further use is anticipated.
- Detection devices may be installed at entrances to high-risk tenant areas, and CCTV should be used in areas identified as likely places where a bomb may be placed. This, coupled with posting signs indicating that such measures are in place, is a good deterrent.
- Perhaps entrances and exits can be modified with a minimal expenditure to channel all visitors through someone at a reception desk. Individuals entering a building after normal business hours would be required to sign a register indicating the name and suite or floor number of the person they wish to visit. Employees at these reception desks could contact the person to be visited and advise him or her that a visitor, by name, is in the lobby.
- Security Control Panel with Video Door Phone, Gas Leak Detection, Panic Switch for each hotel rooms.

- **Responding to Bomb Threats**

Instruct all personnel, especially those at telephone switchboards, on what to do if a bomb threat call is received. It is always best if more than one person listens in on the call. To do this, a covert signaling system should be implemented, perhaps by using a predetermined signal to a second reception point.

A calm response to the bomb threat caller could result in obtaining additional information. This is especially true if the caller wishes to avoid injuries or deaths. If told that the building is occupied or cannot be evacuated in time, the bomber may be willing to give more specific information on the bomb's location, components, or method of initiation.

➢ **Vital Actions**

The person making the threat is the best source of information about the bomb. When a bomb threat is called in, the person taking the call should do the following:

- Keep the caller on the line as long as possible. Ask him or her to repeat the message. Record every word spoken by the person. (Some building managers and individual tenants may provide audio recorders for this purpose; others by policy do not)
- Pay particular attention to background noises such as motors running, music playing, and any other noise that may give a clue as to the location of the caller
- Listen closely to the voice (male or female), voice quality (calm or excited), accent, and any speech impediment. Immediately after the caller hangs up, report the threat to the person(s) designated by management to receive such information
- Report the information immediately to the police department, fire department, and other appropriate agencies. The sequence of notification should be established in the bomb incident plan
- When a written threat is received, save all materials, including any envelope or container. Once the message is recognized as a bomb threat, further unnecessary handling should be avoided. Every possible effort must be made to retain evidence such as fingerprints, handwriting or typewriting, paper, and postal marks. These will prove essential in tracing the threat and identifying the writer. Although written messages usually are associated with generalized threats and extortion attempts, a written warning about a specific device may occasionally be received. It should never be ignored.

❖ **Aircraft Collisions: Manmade disaster**

A building is vulnerable to the remote possibility that an aircraft flying off-course could collide with it or aircraft collide chances may occur. Obviously, the additional height, as compared with other structures, makes them more susceptible. To prevent such collide aircraft warning light shall be installed.

➢ **Aircraft Warning Lights**

- Aircraft warning lights are high-intensity lighting devices that are attached to tall structures that are used as collision avoidance measures. Such devices make structures more visible to passing aircraft and are usually used at night, although they may be used during the day as well. These lights need to be of sufficient rightness in order to be visible for miles around the structure.

➢ **The lights generally come in two forms:**

- Red lamps that are either constantly illuminated or turn on and off slowly in a cycle of a few seconds.
- The luminaires will have an effective intensity of required candelas
- All luminaires will be supplied with minimum capacity required Volt A.C. powers connected to the emergency maintained system.

b) Prepare Inventory of Resources (Rescue equipment, medical equipment for emergencies, ambulances, hospitals, NGOs and disaster management related material and personnel

All the resources available in the building need to be listed out like: Fire Control System, Sensors

Table 5: List of Inventory of Resources – Operation Phase

Sr. No.	Description	Resource	Location
1.	Rescue Equipment	Steel ropes, ropes, chains, breathing apparatus, harness, torches, radium signal & symbol sign boards, walky talky, dust masks, tyres, Hammer, shovel, spade, mud pan etc.	At Security/BMS control rooms of ground floor level near entry & exit of residential & MCGM parking

2.	Medical Equipments for emergencies	Wheel chairs, Stretchers, First aid box containing general medicines and equipments	At Society Office room of ground floor level and first aid box also provided in Security/BMS control rooms of ground floor level near entry & exit of residential & MCGM parking
3.	Other emergency tools	Spare Fire extinguishers, hydraulic jacks, crab winch, pulleys	At Fire control room of Sale Building.
4.	Other basic utilities and needs	Plastic bucket, plastic glass, plastic plates, blankets, some utensils and required food grains	At Fire control room of Sale building And Society office room at Sale building.
5.	Other details of the building configuration	Total number of floors in the building The total number of rooms in the building Open areas where evacuation is possible Stairs and lifts locations and uses Open verandas and roof tops	Appropriate info will be displayed at each floor and same sheets will also be kept in Fire control room & Administration office for use during emergency. Appropriate signs and symbols will be displayed on each floor for evacuation & exit

- **Document Inventory:**
  1) Safe work manual for electrical repairs 2) SOP for inspection of Gas pipe line 3)Periodic checks of Active fire protection systems 4) Ambulance, Hospitals and NGO's contacts nos will be maintained in register

c) Maintenance of systems/ equipment necessary for tackling disaster

- All the life saving appliance such as breathing apparatus, Fire extinguishers, Alarm & Public address system to be maintain properly and effectiveness of these should be checked during Mock Drill.

d) Warning Systems

- Society In-charge will announce audio warning in case of fire, lightning or likely flood situation. Each family head will be informed by Security section for preparation by telephone.
- Sirens would be tested at noon on the first Saturday of each month. If you hear the sirens at any other time, than following steps should be taken:

Shelter	Go inside your room or your car and shelter inside to avoid exposure
Shut	Shut doors and windows. Building ventilation systems should be shut off if possible
Listen	Go to near the information source for building emergency information

- **Fire, Warning system & Mitigation measures**
  - Fire is mainly caused in residential complex/buildings due to negligence, short circuits and malfunctioning of gas regulator, tube and such related products. Hence, all the electrical works and material of the building would adhere to the standards. Fire extinguisher equipment would be evaluated periodically to ensure that it is in working conditions by security manager. If any faulty equipment is observed then it would be repaired or replaced by Society. The map for the evacuation plan would be provided to all the occupants.

  - **Fire Alarm & Detection System (warning System)**
    - The fire alarm panel shall be located at the ground floor level with complete alarm and annunciation of the fire alarm and fire protection system
    - Repeater panel shall be located at designated locations as per requirement
    - Recess bell and flashing strobe light would be installed at each floor

e) Devise system for two-way communication with the affected persons in the building especially in lifts and rooms

- Planned for P.A System.
- Internal Phone in Lift will be available. Intercom in residential units

f) Organize extensive training for disaster managers and assistants

- **Training Program:** Regular mock drill will be conducted and same will be reported to Disaster Management Committee

Table 6: Safety Drill and Maintenance Needs Updates

Sr. No.	Types of Drills	Frequency of drill	Who must attend	Date of drill and any issues : Log book
1	Earthquake safety	6 months	All occupiers	Log book
2	Fire safety	3 months	All occupiers	Log book
3	Fire and any other equipment maintenance	3 months	Security	Must report to Security In-charge and maintain a log book
4	Lift security	3 months	Security, Maintenance & Service manager	Must report to Security In-charge and maintain a log book
5	Water management	3 months	Security, Maintenance & Service manager	Must report to Security In-charge and maintain a log book
6	Safety kit check	6 months	Security, Maintenance & Service manager and Members.	Maintain Log book

Mock drills are conducted to train building occupant and to test the various elements of your response plan in order to evaluate and revise it. During a disaster, life-protecting actions must be taken immediately. There will not be time to decide what to do next; everyone must already know how to react appropriately. After a disaster, further life protecting actions such as emergency evacuation or first aid administration may be necessary; well trained staff will guarantee that these crucial steps are taken as quickly as possible. Drills and exercises are an extremely important part of the preparedness plan because they

- Teach the occupants of a building how to respond to the complications of an actual disaster
- Helps to evaluate how well all parts of the emergency plan work together and how well the occupants have been trained

➢ **Earthquake**

- Follow the mitigation plan as given in Earthquake section of this DMP
- Practice drop, cover, and hold
- Evacuate building in less than 4 minutes using different exits
- Look out for colleagues, friends, etc.
- Stay away from weak areas
- Help those who need assistance

➢ **Fire / Chemical Accident / Drill**

- Follow the mitigation plan as given in Fire & Fire Alarm section of this DMP
- The need to prepare for sudden accidents needs awareness and sufficient knowledge
- To know Why and how to handle an accident is important
- Information
- Practice mock drills every month

- **Flood Drill**
  - Follow the mitigation plan as given in Flood section of this DMP
  - Listen to flood warning and recognize changes in weather
  - Make announcements about precautionary measures
  - Provide food, water, sheets, and beds in the place where people will assemble
  - Explain how to remain safe outdoors
  - Shift money and other valuables
  - Put off electricity
  - Remove or close down gas connections

1.9 Response Plan

a) Identify site disaster manager for handling disaster with clearly enumerated functions

- Society In charge will operate building with clearly enumerated functions during operation phase form BMS/Security control room located at ground floor level near MCGM Entry/Exit gate.

Sai Prabhat Buildcon LLP will elect a Site disaster manager for handling disasters with clearly enumerated functions by keeping in view the following qualification
Qualification required for Disaster Manager (Society In-charge) to be selected and appointed

- He should be resident of colony.
- Must be trained in civil defense
- Should have knowledge about human management
- Should have Technical knowledge about Fire Fighting
- He should know local language to contact mutual help from Fire, MSEDCL. Police Hospital, Nearby NGO, Industries etc Officials

1.10 Control Room

a) Earmark a specific area to function as control room for disaster management

- 24 x 7 fully functional Security/ BMS control room will there at ground floor level of the buildings near entry and exit of the residential & MCGM parking.
- Provision Fire control panel room at ground floor level
- Provision of Security Cabin for sale building.

Security/ BMS during operation phase is at the entry & exit gate:
The traffic in the residential area comprises

- Family members of residents
- Regular servants
- Vendors
- Visitors to the residents
- Representatives of public bodies, couriers companies etc.
- The traffic could be mobile or pedestrian

b) Display proper maps Telephone nos. of disaster controlling authorities showing fire fighting equipments, refuge floors, sprinklers system etc.

- **Safeguard Requirements for Natural and Manmade Disasters:**
  - List of nearest clinics and hospitals shall be maintained for medical emergency as also any other eventuality. The table below will be ready and will be distributed to all members within the building and later for off-site plan to neighborhood. These information need to be updated every six months before safety drills. The information thus updated should also be shared with occupants.

Table 7: Emergency numbers surrounding "Project Site"

Hospital		
Hiranandani multispecialty Hospital	Approx 0.60 km	--
Kevalya Hospital	Approx 1.65 km	022 2597 3396
City Life Hospital	Approx 2.23 km	022 2589 8833
Shree Sai hospital	Approx 2.32 km	92232 83064
Police Station		
Kasarvadali Police Station	Approx 2.80 Km	022 2597 2040
Kapurbavdi Police Station	Approx. 4.28 km	--
Police (Traffic)		
Traffic police station - Thane West	Approx 3.20 km	022 2542 4936
Fire Station		
Balkum Fire station - Thane	Approx. 3.20 km	022 2536 6401
Electricity Board		
MSEDCL	Approx 6.70 km	022 2261 9100
Railway station		
Thane railway station	Approx 7.60 km	--
BEST (Transport)		
Waghbil Naka bus stop	Approx 1.45 km	--
Thane bus depot	Approx 7.30 km	--
MTNL		
Ghodbunder Road - Thane West	Approx 2.40 km	022 2437 1900

➢ **Fire fighting equipments, fire extinguishers, sprinklers system etc.**

Hazard occurrence may result in on-site implications like:

- Fire and/or explosion through electric fire;
- Leakage of flammable material and leading to fire;

The following are the types of fire protection system proposed for all building premises as per

- T.M.C. rules and Byelaws
- National building Code of India 2005 Part 4
- Requirements set by Chief Fire Officer, T.M.C.

- Fire extinguishers at dedicated location
- Providing adequate drinking water provision at each refuge floor
- An alternative source of power supply from separate substation as well as trough diesel generator with change over switch shall be provided for fire pumps, fire lifts , staircase and corridor lighting
- Fire detection system
- Automatic sprinkler system
- Public address system is proposed to provide
- Adequate ventilation shall be provided for the basement and each basement shall be separately ventilated.
- In case of leakage of LPG without fire and inability to stop the flow, precautions should be taken to avoid ignition of source

➢ **Type of Systems Proposed:**

Following are the various Fire Protection systems proposed:

- **Fire Fighting Tank:**
  - Over head Fire fighting tanks have been provided
  - Underground fire fighting tank has been provided with 1000 cum capacity for all buildings
  - The tanks shall be connected to 2 nos. electrical main pump & 1 no. stand by pump & jockey pump. all the tanks compartments are interconnected with equalizer connection.

- **Pumping System:**
  - Fire pumps are manufactured as per BIS and selected based on that the pumps should deliver water at terrace with minimum pressure of 3.2 Kg/sq.cms
  - 4 nos. Fire pumping station proposed in the building as per specify in national building code 2005

- **Hydrant System:**
  - The external hydrant pipelines shall be laid as high pressure zone ring main.
  - The ring main will be below the gr. level for tap of peripheral courtyard hydrant at 45 m intervals.
  - External yard hydrants shall be suitably located at Basement, stilt, parking level, upper floor lift lobby
  - The Wet riser system piping shall be GI Heavy Grade (Class C) as per relevant IS standards and local fire authority norms
  - Minimum pressure of 3.5 kg/cm^2 will be ensured at the remotest hydrant point with the provision of orifice plate in the tap of main
  - Yard hydrants at every 45 m of periphery of the building with single headed hydrant valve, 2 x 15 mtrs. long fire hoses and branch pipe with nozzle

- **Automatic Sprinkler Systems**
  - Sprinkler spacing shall be designed as per IS 15105: 2002.
  - Sprinkler Systems shall be at Basement, stilt, parking level, upper floor lift lobby and inside each flat
  - Drencher system at each basement and parking level
  - The Automatic sprinkler system piping will be GI heavy grade (Class C) as per relevant IS standards.
  - Minimum pressure of 2 .5 kg/cm^2 will be ensured at the remotest sprinkler point with the provision of Orifice plate near the tap-off point from the individual vertical riser .
  - One cabin will be housed near any one of the riser to house the spare sprinklers, spanner, first-aid box.

- **Fire Detection and Alarm System**
  - Provision of heat and smoke detectors in Basement, Stilt, podium and common corridor
  - Analogue Addressable Fire Alarm panel shall be located at ground floor level.
  - The spacing between detectors will be as per IS:2189 – 2008
  - The panel will have a battery (SMF) back up of 24 hrs
  - The spacing between devices (Call Points & Hooters) shall be as per IS: 2189:1999.
  - The fire alarm panel will accommodate minimum 99 detectors / devices in each loop

- **Portable Fire Extinguishers**

Portable fire extinguishers of chemical powder ABC type of 10 Kg capacity, Dry Chemical powder ABC type 5 kg capacity shall be provided as first aid fire extinguishing appliances. These extinguishers shall be suitably distributed in the entire Complex building in accordance with IS: 2190.

- **Emergency & Escape Lighting**
  Emergency Lighting shall be powered from a source independent of that supplying the normal lighting. The escape lighting shall be capable of:
  - Indicating clearly and unambiguously the escape routes
  - Providing adequate illumination along such routes to allow safe movement of persons towards and through the exit
  - Ensuring the fire alarm call points and fire fighting equipments providing along the escape routes can be readily located
  - Signs shall be provided at all exits, emergency exits and escape route

- **Staircase & Fire escape lifts**

Staircase	Lifts
2 nos. of width 1.50 m.	3 lifts/building

- **Leakage of LPG without fire:**
  Cordon off the area around 30 meters radius so that no vehicle or source of ignition approaches the area. Attempt must be made to close the control/ manual valve.
  - Open all windows to increase ventilation and hence prevent buildup of vapor cloud. Avoid getting entrapped in the cloud vapor
  - Water sprays should be used to disperse the vapor cloud
  - Warn the surrounding areas to put off all naked flames

➢ **Power Failures**

Failure of electrical power to building will have a serious impact on its operations, particularly if the failure occurs during normal operating hours when the building is fully occupied. A power failure may be a brownout (a partial reduction in service) or a total blackout.

Power failure can be caused either by man-made or natural events. Man- made causes may include drivers who collide with utility poles or power transformers, human error in operating equipment within the building or outside it (such as at the utility company supplying the power), or malicious tampering. Natural events include storms, floods, and earthquakes.
Power failures also can cause computer memory loss and equipment damage. If the power loss is anticipated, computers and computer systems can be shut down before it occurs. If no prior notice is received, the equipment should still be turned off as quickly as possible to avoid potential serious damage to the electrical system from the sudden surge of power when it is first restored. Computer systems, particularly mainframes, often are equipped with an uninterruptible power supply (UPS); and personal computers often are equipped with surge protectors to reduce the chance of damage when power fluctuates, surges, or is lost.

Buildings have emergency and standby power systems to provide safety and comfort to building occupants during interruptions in their normal power supply. These systems also provide power to operate building communication systems and to provide a minimum number of elevator functions. Both functions are critical to buildings during power failures.

- **Power failure backup**

Emergency power systems are a type of system, which may include lighting, generators, fuel cells and other apparatus, to provide backup power resources in a crisis or when regular systems fail. Emergency power systems can rely on generators, deep cycle batteries, and flywheel energy storage or hydrogen fuel cells.
A diesel generator is the combination of a diesel engine with an electrical generator (often called an alternator) to generate electric energy. Diesel generating sets are used in places without connection to the power grid or as emergency power-supply if the grid fails. The packaged combination of a diesel engine, a generator and various ancillary devices (such as base, canopy,

sound attenuation, control systems, circuit breakers, jacket water heaters and starting system) is referred to as a generating set or a genset for short.

- **Emergency Power Backup:**
  Diesel generator of capacity 2 D.G. Sets of capacity 380 kVA & 625 kVA and 3 D.G. Sets of capacity 600 kVA each is been proposed at site. The diesel generator will backup common area lighting, lobbies, staircase & lifts etc Emergency backup for the (Common loads, Environmental management facilities) essential load will be provided.
  The generating capacity to be installed will provide Essential power requirements of all systems/services. Auto Mains Failure (AMF) scheme is proposed for DG Sets.

- **Notes:**
  Ratings of D.G. sets will be reviewed after finalization of all designs and before inviting tenders.
  It is proposed to install emergency backup only for Essential loads using Diesel Generating Sets for supply of power when mains power is not available. Running of D.G sets in parallel with supply or parallel operation of D.G. sets / USS is not proposed.

- **Maintenance of the DG:**
  The vendor will provide the AMC for 3-5 Years as a part of contract. On expiration, the AMC will be renewed on annual basis.

- **Uninterruptible power supply (UPS)**
  An uninterruptible power supply, also uninterruptible power source, UPS or battery/flywheel backup is an electrical apparatus that provides emergency power to a load when the input power source, typically the utility mains, fails. A UPS differs from an auxiliary or emergency power system or standby generator in that it will provide instantaneous or near-instantaneous protection from input. This will be used to backup important server and computer system.

c) Display evacuation plan in times of disaster

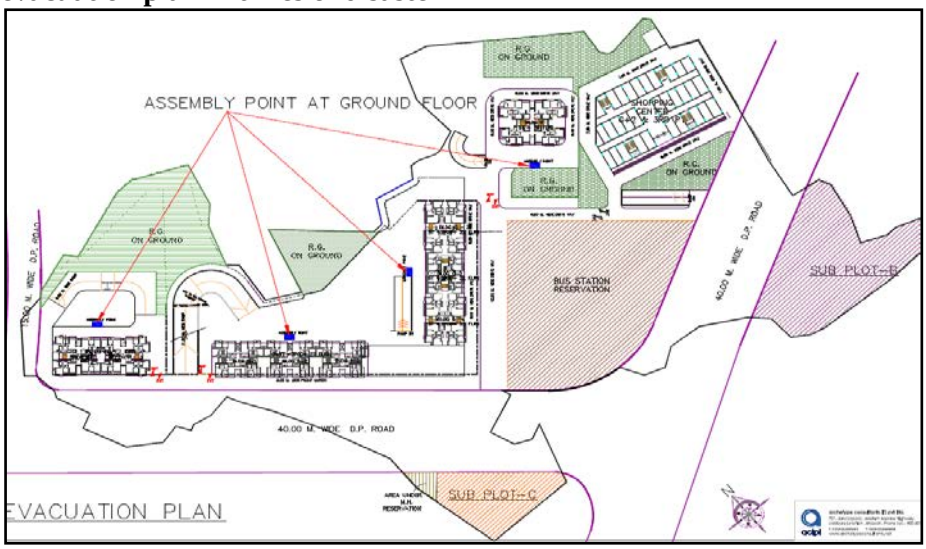

Fig 5: Evacuation layout

- **Evacuation**
  - Stay calm; do not rush or panic
  - Safely stop your work
  - If safe, gather your personal belongings; take prescribed medications with you
  - If safe, close doors and window but do not lock them
  - If in parking lot, immediately park your car so that the access to other vehicles as well as people are not hampered and proceed to the nearest exit by staircase or as guided.

- Location of all exit corridors, exit stairs and exit serving the building would be marked and provided during commissioning stage.
- An evacuation team consisting of building management, the building Society In-charge, security, Security In-charge, and floor response personnel should be organized and trained. This should be coordinated with all building tenants and designed in conjunction with developing the bomb incident plan. The team will be trained in how to evacuate the building during a bomb threat. The order in which to evacuate—for instance, by floor level should be established.
- Evacuate the floor levels above and below the danger area to remove occupants from danger as quickly as possible. Training in such an evacuation usually is made available by building management, with advice supplied by local law enforcement and the fire department.
- The evacuation team also may be trained in search techniques, or there may be a separate search team. Volunteers should be sought for this function; however, Security In-charge, search monitors, and the like could be assigned to the task. To be proficient in searching the building, search personnel must be thoroughly familiar with all hallways, restrooms, false ceiling areas, and other locations in the building where an explosive or incendiary device could be concealed. Thus it is extremely important for the evacuation or search team to be thoroughly trained and familiar with both the inside of the building and immediate outside areas. When a room or particular area has been searched, it should be marked or sealed with a piece of tape and reported as clear to the appropriate supervisor.
- The team will be trained only in evacuation and search techniques and not in the techniques of neutralizing, removing, or otherwise having contact with the device. If a device is located, it should not be disturbed. However, its location should be well marked and the route to it noted.

Refuge area

Building No.	**Location of refuge area**
Building A1, A2, B1, B2, B3, C1, C2 and C3	6^{th} , 9^{th}, 14^{th} and 19^{th} Floor
Building D	6^{th} , 9^{th}, 14^{th} , 19^{th} and 24^{th} Floor

- **Fire Engine Access Movement**

  The site layout & Fire Engine Movement has been shown, for the site.

  An adequate space has been provided to escape and access for fire-fighting equipment and vehicle

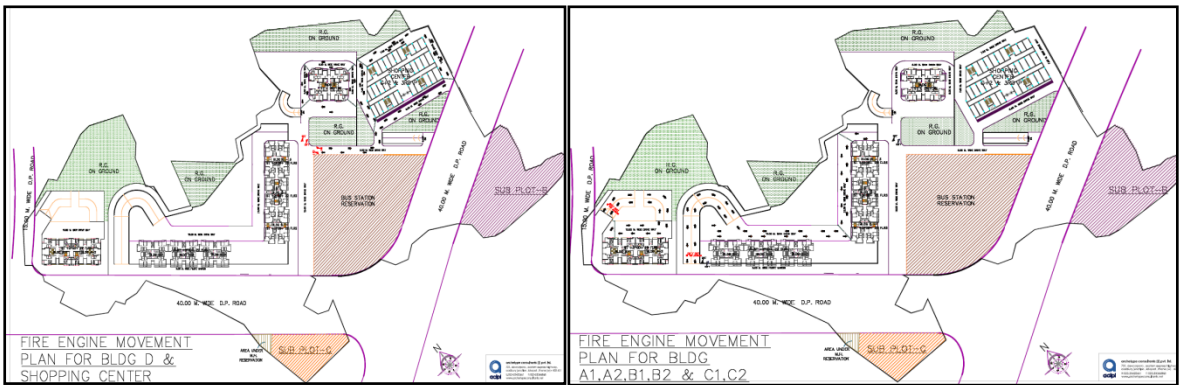

Fig 6: Fire Engine Movement Plan

- **Demonstration/ Civil Disturbance Procedures**

  Most demonstrations are peaceful and if one is conducted near or in your building, carry on work as usual. Avoid provoking or obstructing demonstrators. Should a disturbance occur, call Police for assistance.

  If protestors enter your building, let them. Try to carry on work as usual. If the noise becomes too loud, or the crowd too large, feel free to close and lock your podium gate– this decision

needs to be taken by society manager or managing committee of society in conjunction with local police authority only. Proceed to the EAA and wait for additional instructions.

d) Prepare and disseminate pamphlets on each disaster for occupants covering Do's and Dot's for each type of disaster

- Do's & don't in Flood/earthquake /fire are given in Standard Operation Procedure attached as an enclosure to forms.

1.11 On-Site of disaster

a) Site disaster manager to take charge and give guidance over public address system

- Society In-charge will take charge and give guidance over public address system during operation phase from BMS / Security control room or Fire control panel room.

b) Call for outside assistance of fire brigade, Hospitals, ambulances

Table 8: Emergency numbers of Fire Brigade, Hospitals & ambulances

Hospital		
Hiranandani multispecialty Hospital	Approx 0.60 km	--
Kevalya Hospital	Approx 1.65 km	022 2597 3396
City Life Hospital	Approx 2.23 km	022 2589 8833
Shree sai hospital	Approx 2.32 km	92232 83064
Fire Brigade		
Balkum Fire station - Thane	Approx. 3.20 km	022 2536 6401
Ambulance		
Sai Prasad Ambulance	Approx 3.30 km	98691 80699
Pushpak Cardiac Ambulance Service	Approx 3.15 km	022 2543 8499

c) Networks with state, district and ward level control rooms

- The response structure given in the ward plan essentially limits itself to micro-level intervention. When more than one ward are affected, BMC control room which is the co-ordinating authority, would expect the ward officers to co-ordinate the activities at the ward level with the line agencies such as Fire Brigade, Police etc. The responsibilities for all the ward level functionaries have been identified by T.M.C.

d) Ensure adequate warning before switching off power

- All announcements will be done with good quality equipments.
- Switching off power will be done only after having current status of the all building facilities from concern In-charge.
- With the help of CCTV camera will confirm that if any trapped in basement & lift during the disaster
- Parking In-Charge and lift man will ensure that no occupants is trapped inside the building and Security In-charge will confirm with Parking In-Charge and lift man
- Emergency Electrical switch is provided, it will be operated by only authorized person under instruction of Security In-charge

e) Assure occupants of continuous communication and take all, measures to keep up their morale

- Periodical mock drill will be arranged by the Society In-charge / Security In-charge
- Through training & info will be given to occupants about the available rescue sources, rescue plans

- Assurance will be given to occupants that evacuation will be done by trained volunteers, so occupants will be trained that how to co-operate with volunteer during disaster

f) Guide occupants on the steps being taken for evacuation in systematic manner

- This requirement will be handled by dedicated trained staff/volunteers
- In case lift power supply is shutdown all the lifts will stop at floor level and door will automatically open

Procedures for people during emergencies:

- By law building occupant may be required to evacuate when the fire alarm is raised
- For floors beyond 10, evacuation has to be done to the nearest refuge area through staircase exit only
- The floor diagram will be provided to every floor which can show the entry and exit during evacuation
- Proper sign showing the exit route, Primary evacuation routes leading to the designated assembly point (solid lines) would be provided
- Use the nearest stairs and proceed to the nearest exit. Do not use the elevator
- If in parking lot, immediately park your car so that the access to other vehicles as well as people are not hampered and proceed to the nearest exit by staircase or as guided
- Duck under the nearest sturdy object and hold onto it until tremors stops. If you are not near a sturdy object, make yourself as small as possible and cover your head and neck when earthquakes occurs
- In case of fire, move away from fire and smoke. Close doors and windows if time permits. Touch closed doors. Do not open them if they are hot

Procedures for people with disabilities during emergencies:

In all emergencies, after an evacuation has been ordered:

- Evacuate people with disabilities if possible
- Do not use elevators, unless authorized to do so by police or fire personnel. Elevators could fail during a fire or a major earthquake
- Check on people with special needs during an evacuation. A "buddy system", where people with disabilities arrange for volunteers (neighbors) to alert them and assist them in an emergency, is a good method
- Attempt a rescue evacuation ONLY if you have had rescue training or the person is in immediate danger and cannot wait for professional assistance
- Always ask someone with a disability how you can help BEFORE attempting any rescue technique or giving assistance. Ask how he or she can best be assisted or moved, and whether there are any special considerations or items that need to come with the person

g) Take steps to reduce/ eliminate panic

- Periodical training to internal volunteers & members.
- Periodical mock drills to all occupants, members, volunteers and staff.
- Evacuation assurance to occupants by trained personals or external force volunteers during emergency

h) Liaise with law and order machinery

- Society In-charge after occupancy of project will liaise with police Fire Brigade, Civil Defense & BEST etc.

1.12 Preventive Measure

- Arrangement of periodical training for each disaster & equipment
- Provided Fire detection & fighting systems

- Automation will be there for warning system
- 24x7 fully trained Security staff
- One Copy of SOP to all Occupants
- Do's & Don'ts template at designated location of each buildings
- Preventive maintenance to all machineries & equipments
- Tagging of date for last preventive maintenance on every emergency equipments
- Video & plan wise evacuation training to volunteers for emergency
- Provision of 6 m wide one way drive in 2^{nd} to 4^{th} podium, 9m wide two way drive on ground & 1^{st} podium, 13 m wide one way drive on 1^{st} & 2^{nd} basement and 6m one way drive on 3 basement

a) Regular inspection of equipment and systems mandated by Chief Fire Officer in the NOC granted

- Regular inspection will be carried out by competent and dedicated engineer of O&M employed contractors at regular intervals for all kinds of equipments & system
- Preventive maintenance will also be carried out after checking equipments during an mock drills.

b) Scrupulous adherence to approved plan of building and protection of system put in place to handle disaster

- No violation or changes will be done
- In Operation stage at the time of entry, emergency preparedness plan's training shall be conducted and reoriented after every drill conducted

c) Regular maintenances of equipment and systems

- Periodical maintenance will be carried by certified, competent and skilled employed contractors at regular intervals.
- Maintenance room provided

Budgetary allocation towards Disaster Management Plan:

- During Operation Phase:
  - Set up cost: 2164.79 lacs
  - Operation & Maintenance cost: 21.65 Lacs/yr

  Detailed break up of DMP costing is attached as **Enclosure 1**

Summary:

Prepare occupants in your building ahead of time for emergency evacuations. Know your building occupants. Train staff, faculty, and students to be aware of the needs of people with disabilities and to know how to offer assistance. Hold evacuation drills in which occupants participate, and evaluate drills to identify areas that need improvement. Plans must cover regular working hours, after hours, and weekends. Everyone needs to take responsibility for preparing for emergencies. People with disabilities should consider what they would do and whether they need to take additional steps to prepare. "Emergency Guidelines for People with Disabilities" may be available from your Building Coordinator.

Conclusion

M/s. Sai Prabhat Buildcon LLP will periodically review and update the Disaster Management Plan and will take the initiative to institutionalize the relationship between all Emergency Security and Rescue Forces (e.g. Police, Municipality, Fire Brigade, Medi-Care Centres etc.)

Annexure - I

COST TOWARDS DISASTER MANAGEMENT – CONSTRUCTION PHASE

S.no	Disaster	Mitigation measures during construction phase	cost (Rs.) in lacs
1	Excavation	Shore piling	50.00
2	Site Health & Safety	**H&S for Workers**	3.25
		Safety Shoe, Cover All, Goggles, Gloves - Cotton, Gloves - Rigger, Safety Jacket, Safety Helmet, Safety Harness	9.75
		H&S Room	1.00
		H&S for Staffs	
		Safety Helmet	0.40
		Safety Shoe	1.51
		Safety Jacket	0.40
		Safety Harness	0.32
		First Aid (Staffs & Workers)	5.21
		Welfare	5.50
		Safety Training	0.50
		Safety Certificates	0.50
		Safety Signboard, Warning Tapes & Paints	2.25
		Fire Extinguisher	
		Fire Extinguisher DCP 4.50kg	0.15
		Fire Extinguisher CO_2 10Lbs	0.30
		Perform Maintenance	1.53
		Safety nets for Podium	0.75
		Safety nets for Tower Area	1.75
		Outside green net	1.50
		12mm Wire Rope	0.28
		Heavy Duty Clamp	0.79
3	Tower crane (2 Nos.)	Periodic check & 3rd party certification, Preventive maintenance, Audit & Certified by Competent person, Operated by trained & Certified person.	45.00
4	Man and Material Hoist (2 Nos.)	Certified/approved hoist to be used by trained employees for access and evacuation.	12.00
		Total cost	**144.641**

COST TOWARDS DISASTER MANAGEMENT – OPERATION PHASE

S.no	Disaster	Mitigation measures during construction phase	cost (Rs.) in lacs
1	Flood	Emergency Dewatering cutter pump	4.68
		sump pump in basement	15.60
		SWD system with oil and grease traps	3.00
		Provision of sprinkler drain system	4.68
2	Earthquake	Earth pits	2.00
		Cost of structural safety	0.00
3	Lightening	Lightening Arrester	3.80
		Earth Strips for Lightening Arrester	0.30
4	Fire	D.G.Set (5 Nos.)	280.50
		Earth Strips for D.G. Set	2.00
		Fire Fighting System with (with All pumps)Wet Risers, External Hydrant System, Sprinkler System, Drenchers (@ Fire break Floor& Podiums) Fire Extinguishers, Fire Buckets, Signages & FHC doors	474.87
		Fire Elevators (Service)	447.58
		Fire Elevators (Passenger)	223.79
		Earth strips for Elevators	0.61
		Earth Pits for Fire Elevator	2.70
		Fire Alarm System	105.53
5	Ventilation	Mechanical Ventilation System and Staircase & Lift Lobby and Pressurization System	481.62
6	aircraft collision	Aircraft Warning Lights	6.00
7	CCTV & PA system	Installation cost for CCTV and Hooters and other PA system	105.53
		Total- Set up cost	**2164.79**
		Operational and Maintenance (10 %)	**216.48**

SAI PRABHAT BUILDCON LLP	Safety Standard Operating Procedures	Safety Department
		Pages:
Issued By:	Approved by:	Effective Date:

INDEX

Standard Operating Procedure – Safety Department	
Subject: Excavation Or Trenching	**Number: 01**
Effective Date:	**Page: 1-2**

1. **Objective:** To carry excavation work smoothly and control accidents generally occurs due to excavation hazard & risk.

2. **General Information:**

Excavation and trenching are among the most hazardous construction operations. Excavation is any man-made cut, cavity, trench, or depression in the earth's surface formed by earth removal. A trench is defined as a narrow underground excavation that is deeper than it is wide, and is no wider than 15 feet (4.5 meters).

2.1 Excavation Risks:

- The most common hazard at any work site is the threat of cave-in. A cave-in occurs when walls of an excavation collapse
- Accidental contact with utility lines
- Crushing and striking hazards posed by mechanized equipment
- Atmospheric Conditions
- Materials/Equipment falling into excavation site
- Struck by Accidents
- Asphyxiation
- Explosion
- Fall Hazard

2.2 Preparedness:

- Re-route traffic whenever possible, and keeping only the heavy; Construction equipment needed near the excavation
- Keeping the spoil pile at least 2 feet back from the edge of the excavation
- Pumping water out of the excavation before any one enters it
- Using protective systems when required
- Establish and maintain a safety and health program for the worksite
- Provide adequate systematic policies, procedures, practices
- Wear warning vests when near traffic
- Trained employees to operate heavy equipment
- Passing order to Stay away from loads being handled by lifting/digging equipment
- Use barricades, hand or mechanical signals, stop logs to keep operators safe
- Barricade or cover wells, pits, shafts
- Use appropriate PPE's.
- Trenches 4 m or more feet deep need a safe means of egress
    - Stairway
    - Ladder
    - Ramps

- Means of egress shall kept fixed and secure
- Keep surface materials approx 2 feet from the edge of excavation sites

2.3 Access and Egress

- Safe access and egress to all excavations, including ladders, steps, ramps, or other safe means of exit for employees working in trench excavations 4 feet (1.22 meters) or deeper. These devices must be located within 25 feet (7.6 meters) of all workers.

3. Roles & Responsibilities

3.1 Roles & responsibility of Safety Manager :

1. Will restrict the entry of un protected trench.
2. Arrange protective system to 5 feet (1.5 meters) deep or greater trenches before permitting the entry.
3. Arrange protective system be designed by a registered professional engineer to 20 feet (601 meters) deep or greater.

3.2 Roles and responsibilities of Safety Officer:

1. Inspection of trench condition daily before workers entry to eliminate excavation hazard.
2. Ensuring heavy equipments are away from the trench edges.
3. Ensuring surcharge load at least 2 feet (0.6 meters) from trench edges.
4. Test for low oxygen, hazardous fumes and toxic gases before workers entry.
5. Inspect trench at the start of each shift.
6. Inspect trench following a rainstorm.
7. Provision of PPE's for the workers.

3.3 Roles and responsibilities of Site Engineer:

1. Check the barricades of all edges do they are on their place or not.
2. Check the excavated debris is unloaded away from the trench
3. Inspect ladders, steps; ramps are in safe conditions for workers use.
4. Ensure the use of PPE's by excavation workers
5. Ensure the worker is following safe working procedure or not.
6. Take PEP talk daily for workers before starting the work.
7. Immediate reporting to the safety manager in case of any accident & its recording.
8. Immediate reporting to the safety manager in case of finding any unsafe condition.
9. Arranging first aid facility or ambulance immediately in case of injury to any personnel.

3.4 Roles and responsibility of worker:

1. Follow the Site Engineers/ officer direction for work.
2. Use of provided PPE's while working.
3. Immediate reporting to Site Engineer/ officer in case of any danger.
4. Keep tools at its proper place after completing the work.

Standard Operating Procedure – Safety Department	
Subject: Tower Crane	**Number: 02**
Effective Date:	**Page: 3-5**

1. **Objective:** To carry lifting, shifting and material handling task without any damage to the human and property and also to avoid accidents generally occurs due to tower crane operation

2. General Information

2.1 Operating rules for crane operators

1. The crane should be centered over the load before starting the hoist to avoid swinging of the load as lifting starts. Load should not be swung by cranes to reach areas not under or within reach of crane.
2. Crane should be operated smoothly to avoid jerk & abrupt movements of the load. Slack must be taken from the sling & hoisting ropes before the load is lifted.
3. The crane hoisting ropes should be kept vertical. Crane must not be used for side pulls.
4. The area should be clear and all persons in the area aware when load is lifted. This is to be ensured by a warning signal while lifting, lowering & while moving. Additional warning signal to be used in high traffic density area.
5. The load should be checked to be certain that it is lifted high enough to clear all observations and personnel when moving.
6. Loads must not be carried over people, especially loads carried by magnets. Load or part of loads, held magnetically may drop. Failure in power to magnets will result in dropping of the load unless backup power supply is furnished.
7. Lift should not be attempted beyond the rated load capacity of the crane, sling ropes chains etc.
8. On all capacity near capacity loads, the hoist brakes should be tested by returning the motor switch or push button to the OFF position after raising the load a few inches of the floor. If the hoist brakes do not hold the load should be set on the floor and the crane not further operated. The defect should be reported immediately to the supervisor.
9. Before moving a load, load slings, load chains or other load lifting devises must be fully seated on the saddle of the hook.
10. The block should never be lowered below the point where less than two full wraps of the rope remain on the drum. Should all the rope get unwrapped from the drum, it should be rewound in the drum groove in the correct direction and seated properly in the groove otherwise the rope may get damaged and the hoist limit switch will not operate to stop the hoist in the high position.
11. At no time a load should be held suspended from the crane with the power **"ON"** unless the operator is at the operator's switch. Under this condition the load should be kept as close as possible to the floor to minimize the possibility of an injury if the load should drop.
12. When a hitcher is used, it is the joint responsibility of the crane operator and the hitcher to see that hitches are secure and that all loose materials has been removed from the load before starting a lift.

13. Sling hooks hanging loose should not be used to lift loads (if slings hooks are not needed, they should be properly stored)
14. All slings or ropes should be removed from the crane hooks when not in use (Dangling slings or hooks hung in sling rings can inadvertently snag other objects when moving the crane)
15. The crane should not be operated if the limit switches are out of order or if ropes show defects or wear.
16. Crane operators should not use limit switches to stop the hoist under normal operating conditions.
17. Limit switch should not be blocked adjusted or disconnected in order to go higher than what switch will allow.
18. Electrical limit switches or warning devises should never be bypassed.
19. Upper limit switches and lower limit switches should be tested in stopping the hoist at the beginning of each shift or as frequently as may be directed.
20. Load limit switch or overload devices must not be used to measure loads being lifted. This is an emergency switching device and is not to be used as a production operating control.
21. A crane should never move or bump another crane that has a warning signal displayed.
22. Contact with runway stops or other crane shall be made with extreme caution. The operator must take particular care for the safety of persons on or below the crane and only after making certain that persons on the other cranes are aware of what is being done.
23. If plugging protector is not provided, the controller must always be stopped momentarily in **OFF** position before reversing (A slight pause is necessary to give the braking mechanism time to operate.)
24. In case of an emergency or swing inspection, repairing, cleaning or lubricating a warning sign or signal should not be displayed and the main switch should be locked in OFF position.
25. A attempt should never be made to close a switch that has an **OUT OF ORDER** or **DO NOT OPERATE** card on it. It is necessary to make a careful check to determine that no one else is working on crane, before removing the card.
26. If the electrical power is disrupted, the controllers must be placed in **OFF** position and kept there until power is again available.
27. Before closing main or emergency switches, all controllers must be in **OFF** position before reversing expect to avoid accidents (a slight pause is necessary to give the breaking mechanism time to operate)
28. Before leaving the crane the operator should perform the following:
    a) Raise all hooks to an intermediate position
    b) Spot the crane at an approved designated location
    c) Place all controls in **OFF** position
    d) Open the main switch to the **OFF** position
    e) Make visual check before leaving the crane

3. Roles & Responsibilities:

3.1 Roles & responsibility of Project Manger:

1. Will allot an certified contractor for this tower crane work
2. Will check weekly report of an tower crane operation

3.2 Roles and responsibilities of Safety Officer:

1. Will inspect the tower crane installation with its engineer
2. Will check daily maintenance report done by its engineer

3. Will take care of the comfort of the tower crane operators by doing rotation shift wise
4. Will ensure that operator is certified and competent for the operation
5. Will ensure the medical checkup report of the operator before allotting for the job
6. Should provide required PPE's

3.3 Roles and responsibilities of Site Engineer:

1. Should direct and supervise tower crane operation
2. Should check the use of necessary PPE's
3. Should ensure that no one stand below the tower crane while operation
4. Will ensure presence of fist aid box in the tower crane cabin

Standard Operating Procedure – Safety Department	
Subject: Scaffolding- Fixed And Mobile	**Number: 03**
Effective Date:	**Page: 6-7**

1. **Objective:** To avoid the fall accident while working on scaffold

2. **General Information**

2.1 Potential Hazards

- Collapse of scaffold due to overload, sinking into ground, struck by site traffic, insufficient bracing, unlocked castors.
- Incorrect assembly of scaffolding (insufficient planks, mismatched parts, no guard rails, fittings unsecured, work platform split or has gaps)
- Material handling hazards (force, posture, lifting, lowering, pushing/pulling and vibration)
- Struck by falling objects
- Slip/Trip/Fall
- Exposure to weather
- Sprains/Strains
- Electrocution

2.2 Pre-Operational Safety Checks:

- Ensure all components are well maintained. Do not use components that are in poor condition.
- Do not mix components from differently branded scaffolding systems.
- Read and follow the manufacturer's specifications, assembly instructions and warning labels.
- Inspect scaffold before its first use and at the start of each day. Ensure scaffold remains level and plumb at all times. Incomplete or defective scaffolds must never be accessed. Use barricades, danger tags or warning signs to prevent unauthorized access.
- Ensure edge protection (hand rails, mid-rails and toe boards) is provided at every open edge of a work platform
- Familiarize yourself with safe work procedures for the task.
- Wear appropriate personal protective equipment such as safety footwear (with slip-resistant soles), safety glasses and head protection.
- Review weather conditions before starting. Do not work during a storm, wet conditions or high winds.

2.3 Operational Safety Checks:

- Castor brakes are to be applied at all times while the mobile scaffold is stationary.
- Access is to be only by way of an internal ladder. No climbing is allowed on the scaffold itself.
- Only work on fully planked work platforms. Ensure that working platforms are kept clear of debris and obstructions along their length. DO NOT leave tools and equipment on scaffolds.

- Scaffold is not to be moved while workers are on the scaffold work platform.
- Limit the number of workers on a scaffold at any one time. More than one worker should be present as a safety precaution.
- DO NOT exceed the safe working load of the scaffold.
- DO NOT to make any unauthorized alterations to the scaffold (such as removing guard rails, planks, ties, toe boards and braces).
- DO NOT permit workers or other persons to stand directly below a scaffold.
- DO NOT drop materials from the platforms.
- DO NOT fix high voltage leads and cables to the scaffolding.
- NEVER use ladders or makeshift devices on top of scaffolds to increase height.
- Adhere to the work practices itemized on the safe work method statement.
- If identified controls are insufficient, cease work, revise processes, implement new controls and resume work. Document any changes on the SWMS/risk assessment.

2.4 Safety Tips:

- DO NOT use scaffold unless you have been trained in its safe use and operation.
- Inspect scaffold before its first use and at the start of each day.
- Do not work in isolation when using scaffolding.
- Scaffolding less than 4 m is to be supervised by a competent person.
- Work on mobile scaffold above 6 m must be undertaken by licensed scaffolder
- Scaffold must be inspected by safety officer after installation before use.

3. Roles & Responsibilities:

3.1 Roles & responsibility of Safety Manager :

1. Will allot an certified personnel for this scaffold installation
2. Should ensure the quality and durability of scaffold system and its necessary parts

3.2 Roles and responsibilities of Safety Officer:

1. Will inspect the scaffold installation with civil engineer
2. Will check daily maintenance report done by its engineer
3. Should check report of scaffold condition
4. Should provide required PPE’s

3.3 Roles and responsibilities of Site Engineer:

1. Should inspect the scaffold thoroughly periodically
2. Should ensure lifeline hooks at risky area work
3. Should ensure daily maintenance of scaffold
4. Should check the use of necessary PPE’s

3.4 Housekeeping staff

1. Check and maintain all scaffold parts. Repair or discard and replace any damaged pieces immediately.
2. Lubricate moving parts of all fittings.

Standard Operating Procedure – Safety Department	
Subject: Bar Bending	**Number: 04**
Effective Date:	**Page: 8-9**

1. **Objective:** To avoid the fatal and other injuries while working bar bending machine

2. **General Information**

2.1 Pre-Operational Safety Checks:

- Guards or safety devices must never be removed or adjusted, except by an authorized person for maintenance purposes.
- Working parts (ie. hinges) should be well lubricated and working surfaces kept free of rust and dirt.
- Ensure no slip/trip hazards are present in workspaces and walkways.
- Be aware of other personnel in the immediate vicinity and ensure the area is clear before using equipment.
- Familiarize yourself with all machine operations and controls- refer to 'User Manual'.
- Faulty equipment must not be used. Immediately report suspect machinery.

2.2 Operational Safety Checks:

- Never use this machine for bending metal that is beyond the machine's capacity with respect to thickness, shape, or type. Refer to the manufacturer 'User Manual'.
- Never attempt to wire, strap, or spring steel sheets in this machine.
- Adjust for thickness of work piece – rotate adjusters either ends of clamp bar.
- Insert work piece and align bending edge of clamp bar & bending-beam with the bend line of the work piece.
- Press and hold the 'START' button (this applies pre-clamping pressure to the work piece).
- Using other hand lift handle (this applies full clamping) and continue bend to required angle.
- Keep clear of moving handles and bending-beam.
- Slotted or short clamp bars should be used for bending box shapes – refer to 'user manual'.

3. **Roles & Responsibilities:**

3.1 Roles & responsibility of Safety Manager :

1. Should arrange to provide standard ISI coded machine for the job

3.2 Roles and responsibilities of Safety Officer:

1. Should provide sufficient place for the job & storage
2. Should provide adequate quantity required PPE's for the job

3.3 Roles and responsibilities of Site Engineer:

1. Should inspect the working area thoroughly daily
2. Should ensure the use of necessary PPE's
3. Should ensure working procedure is in correct manner or not
4. Should check out any oil spillage on machine or bars while preventive maintenance
5. Should check for preventive maintenance tag
6. Should ensure that worker is competent or not

3.4 Housekeeping staff

1. Ensure machine is turned off after use.
2. Return all accessories to storage racks.
3. Leave the work area in a safe, clean and tidy state.

4. Safety Tips

4.1 Do's for workers job:

- Safety glasses must be worn at all times in work areas
- Appropriate footwear with substantial uppers must be worn
- Long and loose hair must be contained
- Close fitting/protective clothing must be worn

4.2 Don'ts for workers job:

- Rings and jewelery must not be worn
- Gloves must not be worn when using this machine
- DO NOT use this machine unless a teacher has instructed you in its safe use and operation and has given permission

Standard Operating Procedure – Safety Department	
Subject: Bar Cutting	**Number: 05**
Effective Date:	**Page: 10-11**

1. **Objective:** To avoid the fatal and other injuries while working bar bending machine

2. **General Information**

2.1 Pre-Operational Safety Checks:

- Ensure fixed guards are in place to prevent hands or other parts of the body from entering the trapping space.
- Guards or safety devices must never be removed or adjusted, except by an authorized person for maintenance purposes.
- Working parts should be well lubricated and free of rust and dirt.
- The area around the machine must be adequately lit and kept free of materials, which might cause slips or trips.
- Be aware of other personnel in the immediate vicinity and ensure the area is clear before using equipment.
- Familiarize yourself with and check all machine operations and controls.
- Ensure cutting table is clear of scrap and tools.
- Faulty equipment must not be used. Immediately report suspect machinery.

2.2 Operational Safety Checks:

- Do not attempt to cut material beyond the capacity of the machine.
- Never attempt to cut rod, strap or wire with this machine.
- Use correct lifting procedures when handling large sheets of material.
- Take extreme care during the initial feeding of the work piece into the machine.
- The work piece should always be held sufficiently far back from the edge being fed into the guillotine.
- Ensure fingers and limbs are clear before actuating the guillotine.
- Hold material firmly to prevent inaccurate cutting due to creep.
- When cutting ensure feet are positioned to avoid contact with the foot operated lever

3. **Roles & Responsibilities:**

3.1 Roles & responsibility of Safety Manager :

1. Should arrange to provide standard ISI coded machine for the job

3.2 Roles and responsibilities of Safety Officer :

1. Should provide sufficient place for the job & storage
2. Should provide adequate quantity required PPE’s for the job

3.3 Roles and responsibilities of Site Engineer:

1. Should inspect the working area thoroughly daily
2. Should ensure the use of necessary PPE's
3. Should ensure working procedure is in correct manner or not
4. Should check out any oil spillage on machine or bars while preventive maintenance
5. Should check the fineness of the cutter blade
6. Should check for preventive maintenance tag
7. Should ensure that worker is competent or not

3.4 Housekeeping staff

1. Remove all off cuts and place them in either in the storage rack or waste bin.
2. Leave the work area in a safe, clean and tidy state.

4. Safety Tips

4.1 Do's for workers job:

- Safety glasses must be worn at all times in work areas
- Appropriate footwear with substantial uppers must be worn
- Long and loose hair must be contained
- Close fitting/protective clothing must be worn

4.2 Don'ts for workers job:

- Rings and jewelery must not be worn
- Gloves must not be worn when using this machine
- DO NOT use this machine unless a teacher has instructed you in its safe use and operation and has given permission

Standard Operating Procedure – Safety Department	
Subject: Fire during Construction	**Number: 06**
Effective Date:	**Page: 12-13**

1. **Objective:** To avoid the burn injuries, loss of property and delay in work schedule.

2. **General Information:**

Construction fire are generally occurred due to the improper storage of shuttering oil, diesel, uncovered electric cables, unsafe practice of gas welding & gas cutting, unsafe stacking of empty & filled LPG & acetylene cylinder and unsafe act by workers sometimes.

Planning Consideration:

- Sensitize your employees and workforce about fire safety: how to prevent fires in the workplace, how to contain a fire, how to evacuate the facility, where to report a fire.
- Instruct personnel to use the stairs in a fire. Instruct them to crawl on their hands and knees when escaping a hot or smoke-filled area.
- Conduct evacuation drills. Post maps of evacuation routes in prominent places. Keep evacuation routes including stairways and doorways clear of debris?
- Assign fire wardens for each area to monitor shutdown and evacuation procedures.
- Establish procedures for the safe handling and storage of flammable liquids and gases. Establish procedures to prevent the accumulation of combustible materials.
- Provide for the safe disposal of smoking materials.
- Establish a preventive maintenance schedule to keep equipment operating safely.
- Place fire extinguishers in appropriate locations. Train employees in use of fire extinguishers.
- Ensure that key personnel are familiar with all fire safety systems.
- Determine the level of response your facility will take if a fire occurs

3. Role & responsibility

3.1 Role & responsibility of Safety Officer :

1. Provide adequate place for storage of Shuttering oil, diesel and cylinders separately
2. Contact fire brigade & police in case of fire for evacuation & law work by having talk with Main Controller.
3. Provide sufficient no of required fire extinguishers as per requirement at designated location
4. Provision of adequate no of sand buckets& water at security cabin, storage room and welding area.
5. Provision of PPE’s to workers
6. Ask for emergency response team for action in case of emergency by informing to Main Controller

3.2 Role & responsibility of Site Engineer :

1. Ensure the leakage of oil & diesel daily
2. Ensure the stacking of empty and filled cylinders is done separately or not
3. Ensure the use of PPE's by workers
4. Supervise the working procedure of gas welding & cutting
5. Check the condition of noses, hose pipe & flash back arrester before the welding process
6. Arrange for the periodical fire training
7. Conduct mock drill

3.3 Role & responsibility of Worker/Housekeeping:

1. Follow the orders of Head Marshall while working
2. Do stacking of cylinder as per the Head Marshall direction or as per training
3. Check drum before storing of oil & cover it by lid
4. Don't smoke in oil & diesel storage room
5. Report to Head Marshall immediately in case of any danger
6. Wear PPE's daily before going for the job

3.4 Role & responsibility of First Aid In-charge:

1. Organize evacuation by serious patient, priority wise shift them by **first aid person** to safe place for First aid /Artificial breathing
2. Identify the number of burnt patients & make arrangement for shifting to burn ward by **first aid person**
3. Ensure that **first aid person** had supported oxygen cylinder the one who had breathing problem due smoke inhalation for long period
4. Ensure that **first aid person** had supported saline the one who had became weak due to trapping

Standard Operating Procedure – Safety Department	
Subject: Flood during Construction	**Number: 07**
Effective Date:	**Page: 14-15**

1. Objective: To avoid the loss of lives, loss of property and delay in work schedule.

2. General Information:
Flood generally occurred due to natural heavy monsoon.

Planning Consideration:

- Ask your local emergency management office whether your facility is located in a flood plain. Learn the history of flooding in your area. Learn the elevation of your facility in relation to streams, rivers and dams.
- Review the community's emergency plan. Learn the community's evacuation routes. Know where to find higher ground in case of a flood.
- Establish warning and evacuation procedures for the facility. Make plans for assisting employees who may need transportation.
- Inspect areas in your facility subject to flooding. Identify records and equipment that can be moved to a higher location. Make plans to move records and equipment in case of a flood.
- Purchase a National Oceanic and Atmospheric Administration Weather Radio with a warning alarm tone and battery backup. Listen for flood watches and warnings.
- Flood Watch: Flooding is possible. Stay tuned to radio. Be prepared to evacuate. Tune to local radio and television stations for additional information.
- Flood Warning: Flooding is already occurring or will occur soon. Take precautions at once. Be prepared to go to higher ground. If advised, evacuate immediately.
- Consider the need for backup systems:
    - Portable submersible pumps to remove flood water.
    - Alternate power sources such as generators or gasoline-powered pumps.
    - Battery-powered emergency lighting.
- Ask your insurance carrier for information about flood insurance. Typical property and casualty insurance does not insure against flood loss. Consider the feasibility of mitigating loss from flood at your facility.
- Here are three methods:
    - Permanent measures are taken before a flood occurs and require no human intervention when flood waters rise. They include:
        - ✓ Filling windows, doors or other openings with water-resistant materials such as concrete blocks or bricks. This approach assumes the structure is strong enough to withstand floodwaters.
        - ✓ Installing check valves to prevent water from coming in where utility and sewer lines enter the facility.
        - ✓ Reinforcing walls to resist water pressure. Sealing walls to prevent or reduce seepage.
        - ✓ Building watertight walls around equipment or work areas within the facility that are particularly susceptible to flood damage.

- ✓ Constructing floodwalls or levees outside the facility to keep flood waters away.
- ✓ Elevating the facility on walls, columns or compacted fill. This approach is most applicable to new construction, though many types of buildings can be elevated.

- o Contingent measures are taken before a flood but require some additional action when flooding occurs. These measures include: -Installing watertight barriers called flood shields to prevent the passage of water through doors, windows, ventilation shafts or other openings. -Installing permanent watertight doors. -Constructing movable floodwalls.
- o Emergency measures are generally less expensive than those listed above, require substantial advance warning and do not satisfy the minimum requirements for watertight flood proofing as set forth by the National Flood Insurance Program. They include:

3. Role & responsibility

3.1 Role & responsibility of Safety Officer:

1. Arrange for the pumps for dewatering
2. Announce flood threat from control room
3. Direct Emergency rescue team for the evacuation of workers

3.2 Role & responsibility of Site Engineer:

1. Ensure that all workers are evacuated or shifted to upper level
2. Ensure that submersible pumps are working during mock drills
3. Plan and conduct regular mock drill
4. Ensure that emergency electrical switch is switched off

3.5 Role & responsibility of First Aid In-charge:

1. Organize evacuation by serious patient, priority wise shift them by **first aid person** to safe place for First aid /Artificial breathing
2. Ensure that **first aid person** had supported oxygen cylinder the one who had breathing problem due to trapping in flood
3. Ensure that **first aid person** had supported saline the one who had became weak due to trapping

Standard Operating Procedure – Safety Department	
Subject: Flood	**Number: 08**
Effective Date:	**Page: 16-19**

1. Objective: To safeguard the lives of occupant's by evacuation and mitigation measures during flooding conditions or flooding.

2. General Information:

2.1 Category of flood disaster

- Category IV: Low Flood (Water level between Warning Level and Danger Level)
- Category III: Moderate Flood (Water Level below 0.50m. less than HFL and above Danger Level)
- Category II: High Flood (Water Level less than Highest Flood Level but still within 0.50m. of the HFL)
- Category I: Unprecedented Flood (Water Level equal and above Highest Flood Level (HFL)

2.2 Understandings:

- Flood disasters category will be different and may require evacuation of Occupants and customers from residential from category I to III.
- It is important to understand the nature of threat and the procedures to be adopted.
- All agencies from Building Management to security department should involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behavior.
- Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies.
- All evacuations will be ordered only by the State Relief Commissioner, District Magistrate & Collector, Police, Fire Brigade or by the Security Officer.

2.3Evacuation Planning

- Shelter sites should be within one hour's walk and three miles (5 km) of dwellings.
- The evacuation routes should be away from the flood-prone areas.
- Evacuation routes should not include roads likely to be submerged in flood, but may include pathways.
- Ensure proper evacuation by seeking community participation along the following lines:
    - Evacuation should be undertaken with assistance from community leaders
    - Care should be taken to see that evacuation routes are not blocked.
    - It is always preferable to encourage the entire family to evacuate together as a unit.

- In case of inadequate transport or limited time, encourage community for emergency evacuation in the following order:
  I. Seriously injured and sick
  II. Children, women and handicapped
  III. Aged persons
  IV. Able-bodied. [An evacuation plan on a priority basis helps avoid stampede and confusion.]

2.4 Emergency Evacuations Procedure:

- Families should be encouraged to take along adequate supplies of water, food, clothing and emergency supplies.
- The families should be encouraged to assemble at project main assembly point

SOP of Building occupants evacuation under supervision of Building Management

3. Role & Responsibility

3.1 Role & Responsibility Facility Manager

1. Keeps watch on flood forecasting stations received by Metrological dept/civil authorities/ TV/Paper.
2. Communicate or Display steps /arrangement during likely Flood situation
3. All evacuations should be reported to DM & Collector or District Superintendent of Police immediately.
4. Arrange equipments and life saving appliance available at assembly point
5. Monitor Flood Evacuation operation and coordinate with external agencies for help.

3.2 Role& responsibility of Security In-charge

1. He should arrange adequate supply of water in closed unbreakable containers.
2. He should do adequate supply of non-perishable packaged food and dry rations.
3. He should arrange clothing and rain gear, blankets and bed sheets, towels.
4. He should do arrangement of Buckets, plates, glasses, mugs made of plastic, Battery-powered radio, torch, lantern, matches, and Personal medicines.

3.3 Role& responsibility Manager/Electrician

1. He should do coordinate with Security In-charge to ensure that no one trapped inside lift before switch off Lift supply
2. He should provide D G Supply to flood light system continuously to assembly point & dewatering pumps
3. He should arrange power supply to Control room & Telecommunication equipments

3.4 Role& responsibility of Manager Environmental facilities

1. He should ensure that no flood water enter in aeration tank
2. He should ensure that no STP waste water overflow in basement parking area

3.5 Role& responsibility of Security guard

1. He should do control stamped of Panic crowed

2. He should watch and ward assembly point resident
3. He should Control robbery & theft of colony/building flats

3.6 Role& responsibility of Parking In-charge

1. Evacuate people trapped in basement parking
2. Arrange systematic car flow out from basement parking
3. No ramps should block due to panic driving
4. On submersible pump of basement for the removal of water from basement.

3.7 Role& responsibility of Elected Building Chairman

1. Organize group of resident
2. Guide them to safe place
3. Advice team leader their duties
4. Instruct & confirm that all light/oven/gyser/LPG Cylinder /Gas line taps are closed properly
5. Confirm that all resident of floor wise /wing wise locked their flats

3.8 Role& responsibility of First Aid Team Leader

1. Organize evacuation by serious patient priority wise shift them to safe place for First aid /Artificial breathing
2. Identify who need extra support on Raft/rubber boat
3. Support by saline/oxygen cylinder who submerged
4. Identify the fainted person and do the needful procedure for getting normal.

3.9 Role& responsibility of Evacuation Team Leader

1. Provide Life jacket /boats/raft who need extra support on Raft/rubber boat

4. Safety Tips

4.1 Do's to stay safe during a flood:

- If flooding occurs, go to higher ground and avoid areas subject to flooding.
- If water rises in your home before you evacuate, go to the top floor, attic, or roof.
- Listen to a battery-operated radio for the latest storm information.
- Turn off all utilities at the main power switch and close the main gas valve if advised to do so.
- If you've come in contact with floodwaters, wash your hands with soap and disinfected water.

4.2 Don'ts to stay safe during a flood:

- Do not attempt to walk across flowing streams or drive through flooded roadways.
- Don't swim through fast flowing water
- Don't drive through a flooded area
- Don't get carried away by rumors and don not spread rumors.

5. The Road to Recovery

As soon as floodwater levels have dropped, it's time to start the recovery process. Here's what you can do to begin restoring your home.

- If your home has suffered damage, call your insurance agent to file a claim.
- Check for structural damage before re-entering your home to avoid being trapped in a building collapse.
- Take photos of any floodwater in your home and save any damaged personal property.
- Make a list of damaged or lost items and include their purchase date and value with receipts, and place with the inventory you took prior to the flood. Some damaged items may require disposal, so keep photographs of these items.
- Keep power off until an electrician has inspected your system for safety.
- Boil water for drinking and food preparation until authorities tell you that your water supply is safe.
- Prevent mold by removing wet contents immediately.
- Wear gloves and boots to clean and disinfect. Wet items should be cleaned with a pine-oil cleanser and bleach, completely dried, and monitored for several days for any fungal growth and odors.

Standard Operating Procedure – Safety Department	
Subject: Earthquake	**Number: 09**
Effective Date:	**Page: 20-30**

1. **Objective:** To safeguard the lives of occupant's by evacuation and mitigation measures during earthquake
2. **General Information:**

2.1 Category & Magnitude

- **Category Light/Minor In Rishter scale** as in year 2010 there was said to be an earthquake which was felt in many suburbs of the city and in the Thane region with a magnitude of 2.3 on the Richter scale. Likewise a similar one, but with heavier magnitude, i.e. around 4 was said to happen in the year 2009 in many western parts of Mumbai. Hence, it could be said that the earthquakes are always happening in Mumbai, then and there, just that the after effects of the earthquake is not worst to list out in the headlines. But always, there were rumors of earthquakes in Mumbai and the pressure is always building up in the city. This is majorly due to the reason that Mumbai does fall under the category of seismic zone 3 with high vulnerability to the occurrence of earthquakes.

- **Magnitude Class of Earthquake:**

Earthquakes are also classified in categories ranging from minor to great, depending on their magnitude.

Class	Magnitude
Great	8 or more
Major	7 - 7.9
Strong	6 - 6.9
Moderate	5 - 5.9
Light	4 - 4.9
Minor	3 -3.9

2.2 Understanding:

- An **earthquake** is the perceptible shaking of the surface of the Earth, which can be violent enough to destroy major buildings, other properties, vegetation and kill thousands of people.
- It is important to understand the nature of threat and the procedures to be adopted.
- All agencies from Building Management to security department should involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behavior.
- Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies.

- All evacuations will be ordered only by the State Relief Commissioner, District Magistrate & Collector, Police, Fire Brigade or by the Security Officer.

2.3 Operational Consideration:

1. Inspect facility for any item that could fall, spill, break or move during an earthquake. Take steps to reduce these hazards/ aspects:
   a. Move large and heavy objects to lower shelves or the floor.
   b. Hang heavy items away from where people work.
   c. Secure shelves, filing cabinets, tall furniture, desktop equipment, computers, printers, copiers, and light fixtures.
   d. Secure fixed equipment and heavy machinery to the floor. Larger equipment can be placed on casters and attached to tethers, which attach to the wall.
   e. Add bracing to suspended ceilings, if necessary.
   f. Install safety glass where appropriate. -Secure large utility and process piping.
   g. Keep copies of design drawings of the facility to be used in assessing the facility's safety after an earthquake.
   h. Review processes for handling and storing hazardous materials. Have incompatible chemicals stored separately.
   i. Check for earthquake insurance.
2. Have WLL network
3. Designate areas in the facility away from exterior walls and windows where occupants should gather after an earthquake if an evacuation is not necessary
4. Conduct table top exercise and audits. Provide personnel with the following information: -In an earthquake, if indoor, stay there. Take cover under a sturdy piece of furniture or counter, or brace
5. Check for transportation routes such as highways, bridges, overpasses, rail lines and airport runways for evacuation or rescue operation

2.3 Evacuation Planning

All building occupants will be shifted to an nearest Open land or flat location within the city or few kilometer away.

Sequence of evacuation:

1. First Site controller will arrange announcement of evacuation plan
2. Secondly site controller will arrange crèches for the evacuation of small babies
3. Then site controller will arrange different route for disabled and handicapped people by some special arrangement
4. Then site controller will arrange some special facilities for the evacuation of old people.
5. Then site controller will arrange first aid facilities and medical treatment to all injured people.
6. Then all occupants will be evacuated to safe place by DM members as per the direction given by site controller

7. Then site controller will arrange for the search and removal of dead bodies and its handover to concern ward/police/ or family to avoid spreading of diseases.

3. Roles & responsibilities:

3.1 Roles & responsibilities of Facility Manager to all levels/departments

1. Keep watch on aftershocks scale and frequency received by Metrological dept/civil authorities/ TV/Paper.
2. Communicate or Display steps /arrangement during likely Earthquake situation
3. All evacuations should be reported to DM & Collector or District Superintendent of Police immediately.
4. Arrange equipments and life saving appliance available at assembly point
5. Monitor Earthquake Evacuation operation and coordinate with external agencies for help.
6. Arrange basic necessity of human for all evacuated building occupants
7. Monitor the food, water & blanket distribution to all evacuated building occupants.
8. Collect updates about the situation time to time from site controller/ first aid person/security or other local people daily.

4. Earthquake procedure:

a. During all earthquake (all occupants)

Inside the Building (Do's & don't)

- Duck under the nearest sturdy object and hold onto it until tremors stops. If you are not near a sturdy object, make yourself as small as possible and cover your head and neck.
- If you stand in a doorway, brace yourself against the frame and watch out for a swinging door or other obstruction.
- Avoid windows, filing cabinets, bookcases, and other heavy objects that could fall or shatter.
- Stay under cover until tremors stops, then leave the building and go to the EAA, refuge area or another designated location. Report to your roll taker.
- If safe, before evacuating, neutralize / turn off any flammable source (cooking gas, electricity etc.) that could lead to further danger.

Outside the Building (Do's & don't)

- Move away from trees, signs, buildings, electrical poles and wires, fires, and smoke.
- Protect your head with your arms from falling debris.
- Proceed to the EAA or a pre-designated alternate assembly area. Report to your roll taker.
- Stay alert for further instructions.
- Don't stand below any shade, quickly move to open area as soon as possible.

b. After a MAJOR Earthquake *(violent shaking motion).* Evacuation Wardens shall:

- **Check for injuries to personnel in your area.** Do not attempt to move seriously injured persons unless they are in immediate danger. Render first aid assistance if required.

- Be familiar with the location of first aid and kits, fire alarms and extinguishers as well as personnel with first aid kits.
- Check for fires or fire hazards, spills of flammable or combustible liquids, or leaks of flammable gases.
- Turn off ignition and heat sources if properly trained and it is safe to do so.
- Shut off all gas sources if trained to do so.
- Exit the building, if possible
- Do not reenter until the building has been declared safe by trained emergency personnel
- **Use the telephone system only for urgent matters.** Call or send a runner to the Emergency Operations Center or Unit Response Center to notify them of any needed assistance and emergencies that may exist. Use handheld radios if telephone services are not available.
- Expect Aftershocks.

c. After a MINOR Earthquake

- Restore calm.
- Examine your area for damage. Evacuation Directors may use checklist to help assess if the building should be occupied, evacuated, and/or re-entered. Look for:
    - Damaged, leaking or ruptured utility lines (gas, water, electrical, telephone, computer network)
    - Toppled furnishings or equipment
    - Spilled hazardous materials
    - Damaged building components such as ceilings, walls, beams, columns, doors
- Evacuate the building if damage is found or the power is out. Report evacuation to Safety In-charge. Do not reenter until the building has been declared safe by trained emergency personnel.

5. Standard Operating Procedure (SOP)

A. Search & Rescue:

Objective

To trace and locate people who are physically trapped and distressed, people who are living in buildings, to rescue these persons, move them to the safe locations identified in advance and to organize further care.

Composition of the Disaster Management committee:

Ten to twelve young, physically and mentally strong men and women with following skills sets will constitute the search and rescue (S & R) task force: driver, swimmer, cutter and climber. All

members will have a basic knowledge of first aid and who normally reside in the building during the expected disaster season.

Pre-Disaster Preparedness Activities for Earthquake:

- The DMC will familiarize themselves with existing response mechanisms of the Government at all levels to ensure effective coordination and reduced response time during disasters.
- The **Facility Manager** may arrange for the necessary S&R equipment with the help of local self-government, industrial houses and NGO as and when required.
- The **Security In-charge** will keep the equipment in a safe place, use the equipment properly and maintain it well.
- The **Security In-charge** will have with it a detailed map of the building indication vulnerable areas, individuals and households, safe areas safe shelter, evacuation routes and transport arrangements.
- The **Security In-charge** will devise search strategies and rescue plans, which are hazard specific.
- The DMC will organize themselves into pairs (buddy system).
- The DMC will have back up teams ready so that shifts and the rotation of personnel can be organized.
- The DMC will prepare themselves mentally for what they expect to see and what they can expect in terms of emotional responses to themselves and others.

During Earthquake:

- The DMC will if caught inside stand with their backs against a strong indoor wall.
- The DMC if outside during the earthquake will run to an open space away form trees, buildings and electric lines.
- The DMC if in a moving vehicle will stop and stay inside.

Standard Operating Procedures for Earthquake: Post Disaster

- Before undertaking any search and rescue operation the DMC will make a preliminary assessment and plan their response based on the following criteria:

Degree of Damage and Risk	**Should an Intervention be attempted**
Heavy/High	No. Too dangerous. Secure the perimeter and restrict access into the structure
Moderate/Medium	Perform only quick and safe removals, limit on site medical treatment of checking for breathing, stopping major bleeding and treating for shock. Limit the number of rescuers involved
Light/Low	Yes. Locate victims, check airway, breathing and circulation of those unconscious's and prioritize removal of victims to the designated treatment area.

- The **Facility Manager** will conduct a general hazard assessment to determine the possible hazards that they may encounter during the operation.
- The **Security In-charge** will make a quick head count and maintain a list of missing persons.
- The **Security person** will conduct a physical search involving a systematic movement across the site whilst listening to calls for help.
- The **Security person** will clear debris and fallen trees in order to reach trapped victim.
- The **Facility Manager** will activate hazard specific rescue plans for the following rescue scenarios resulting from a earthquake.
    - Rescuing drowning victims.
    - Rescuing victims trapped under a collapsed structure.
    - Rescuing victims stuck up on trees of hanging form buildings.
    - Rescuing victims trapped in a structure in which there is a raging fire.
    - Rescuing victims who have fallen into a well.
    - Rescuing victims involved in read and rail accidents and trapped in a vehicle in an awkward position for example behind a steering wheel.
- The **Facility Manager** will communicate with the Block and District levels on matters of additional assistance in terms of manpower and equipment.
- The **Security In-charge** will coordinate closely with the first aid team to administer primary health care to rescued victims.
- The **Security In-charge** will coordinate with the evacuation team to shift rescued persons to an open space/tents in case of aftershocks.
- The **Security manage** will coordinate closely with families and the sanitation team to ensure that dead bodies are identified and cremated.
- The **Security In-charge** will coordinate with relief team to direct rescued victims to available relief assistance: water, food, public information and temporary shelter.
- The **Security In-charge /Security person** will act as support persons to firemen, home guards, police and other external agencies during the search and rescue operation.
- The **Security In-charge** will communicate correct information of rescued persons to the Block/District Emergency Operation Centre and local community as well.

Development/ Mitigation Activities.

The DMC can train other members of the building to form search and rescue sub-groups/back up teams as well as assist the police and home guards at social events and mass rallies.

B. Relief Co-ordination:

Objective:

To co-ordinate the first stage response to the disaster by establishing contact with the Block control room, civil society organizations and NGOs and organize the distribution of assistance in terms of food, water, medicines, temporary shelter materials, blankets, household kits, candles and so on in a fair and equitable manner.

Composition of the Disaster Management committee:

The DMC for relief coordination will be comprised of ten to twelve people including representatives of all the buildings, important figure heads and respected leaders of the city, women members of SHGs and the owner of the fair price shop.

During Earthquake:

- The DMC will if caught inside stand with their backs against a strong indoor.
- The DMC will if outside during the earth quake will run to an open space away form trees, buildings and electric lines.
- The DMC if in a moving vehicle will stop and stay inside.

Standard Operation Procedures for Earthquake: Post Disaster

- The **Facility Manager** of buildings will conduct a complete damage and needs assessment.
- Based on a preliminary needs assessment in line with the following check list the **Facility Manager** of building will communicate their preferences to the Block Emergency Operation Center and NGOs.
    - The size, scope and likely duration of the distribution of relief material.
    - The estimated number of people affected and demographic characteristics.
    - Local capacity and resources as well as what will be required externally.
    - The needs of the groups affected.
    - Access to the affected population and the best methods for making assistance available.
- The **Security In-charge** will do assessment findings to other Task Force groups, local authorities, and civil society organizations.
- The **Facility Manager** will establish a distribution center or community kitchen and immediately begin distributing what is locally available within the Building for emergencies until external assistance arrives.
- The **Security In-charge** will ensure that food and other materials are distributed in an equitable manner addressing the needs of the most vulnerable.
- The **Security Manager** will prioritize the elderly persons, pregnant women, children and injured persons in relief distribution.
- The **Security In-charge** will maintain a list of the households receiving assistance.
- The **Facility Manager** will provide information on the quantity and type of ration to be distributed for each distribution cycle.
- The **Security In-charge** communicates with individuals and institutions along the supply chain in order to highlight anticipated shortfalls or problems with the supply of food and other commodities.
- The **Security In-charge** will make a physical inventory of stocks when external assistance arrives.
- The **Facility Manager** will co-ordinate with the communications group to keep people informed about the government policies which entitle them to assistance in cash and kind.
- The **Facility Manager** will work closely with the communication group to stay in constant touch with Block level Officials and external aid agencies.
- The **Security In-charge** will organize a general meeting to evaluate the experience, internalize learning and ensure accountability when the relief phase is over.
- The **Security Manager** will keep the undistributed relief material in a safe place/godown and preserve the stock.

Development/Mitigation Activities:
The DMC will develop stocks of dry food, medicines and temporary shelter materials within the buildings, maintain these stocks, replenish them and account for them.

C. Early Warning and Communication:

Overall Objectives:
To ensure that: (a) the warning of the impending disaster reaches every single household, thereby allowing people to take timely action to protect their lives and property (b) accurate information is provided regularly as events unfold (c) information flows quickly and reliably upwards to Block level and downwards from Block level to Building level.

Composition of the Disaster Management committee:
Ten to twelve members, who can communicate orally confidently and accurately, are literate, mobile and energetic, who have a land line phone, mobile phone, radio or television and or read the newspapers regularly.

Development/Mitigation Activities:
The group will be involved in raising awareness of hazard specific do's and don'ts by distributing leaflets and putting up posters within the buildings. The group will also maintain the communications equipment stored in the communications room * which will be open to the members for accessing news.

* Control room will be provided by PP main entry gate

D. First Aid and Health:

Objective
To provide primary health care to the ill or injured until more advanced care is provided and the patient is transported to a hospital.

Composition of Disaster Management committee:
The group will be comprised of three to seven people who are literate, have some health related knowledge or are working in medicine and are respected members of the community.

Pre-Disaster Preparedness Activities for Earthquake:
- The **First aid head** will maintain a list of pregnant women, infants, the disabled, sick and old in the buildings to ensure that their medical needs are met.
- The **First aid head** will keep a First Aid kit ready and ensure that expired drugs are replaced with new ones.
- The **First aid person** will distribute basic medicines (chlorine tablets, ORS packets and so on) and demonstrate their use, to families in advance.
- The **First aid person** will keep stretchers/local alternative ready to carry injured people.

During Earthquake:
- The DMC will if caught inside stand with their backs against a strong indoor.

- The DMC will if outside during the earth quake will run to an open space away form trees, buildings and electric lines.
- The DMC if in a moving vehicle will stop and stay inside.

Standard Operation Procedures for Earthquake: Post Disaster

- The **First aid head** will attend to the injuries and trauma of rescued people.
- The **Fist aid person** will help doctors and paramedics shift the ill and the injured to hospitals.
- The **First aid head** will isolate cases with infectious diseases and prevent them from spreading.
- The **First aid person** will provide preventive medication if there is a danger of epidemics like cholera, gastroenteritis, dysentery, and malaria spreading.
- The **First aid head** will inform the relief group about medical supplies that are running low.

Development/Mitigation Activities:

The group will work with the local PHC during normal times, assisting in government programs such as polio and leprosy cams and imparting training to other interested volunteers in the building. The group will also launch an awareness campaign about HIV/AIDS.

E. Evacuation and Shelter Management:

Objectives

To construct/identify, maintain and make repairs to the temporary earthquake shelters, to evacuate people on receipt of a warning and to make all the necessary arrangements to accommodate evacuees during a earthquake.

Composition of Disaster Management committee:

The group will constitute between ten or twelve people with knowledge of construction and preferable including a civil engineer.

During Earthquake:

- The DMC will if caught inside stand with their backs against a strong indoor.
- The DMC will if outside during the earth quake will run to an open space away form trees, buildings and electric lines.
- The DMC if in a moving vehicle will stop and stay inside.

Standard Operation Procedures for Earthquake: Post Disaster

- The **Facility Manager** will organize for tents and materials for the construction of temporary shelters to be provided to the local community.
- The **Security Manager** will help the community to reconstruct their permanent shelters (providing and identifying local material which can be used for reconstruction)
- The **Security In-charge** will help NGOs and their engineers in conduction general meetings and other rehabilitation and reconstruction related activity.
- The **Security Manager** will monitor the rehabilitation and reconstruction process of the community.

Development/Mitigation Activities:
The DMC will contribute to government programs and the reconstruction programs of other NGOs and aid agencies operating in the city. The DMC will undertake a program to raise awareness of seismic and earthquake safe construction techniques and technologies which build upon local knowledge and construction skills.

Disaster Psychology:
Since all the task force members will be in constant contact with survivors it is important that they understand the distinct emotional phases that survivors go through.

Stage	Characteristics
The Impact phase	Survivors do not panic; they may display no emotions and do what they must to keep themselves and their families alive.
The Inventory phase (period which immediately follows the Disaster)	Survivors assess damage and try to locate other survivors. During this phase routine social ties are disrupted in favor of the more functional relationships required for initial response activities such as search and rescue.
Rescue phase	Emergency rescue services and DMC members arrive on the scene and survivors are willing to take their directions without protest. They trust that the rescuers will help address their needs so that they can then get their lives together quickly. DMC members must be easily identical with helmets, armbands and so on.
Recovery phase	Survivors may feel that rescue and relief efforts are not proceeding quickly enough and this coupled with a sense of frustration with insurance and compensation claims aggravates stress levels. Frustration may be directed towards DMC members.

In the post-disaster scenario as people pick up the pieces of their lives shattered by calamity they may experiences the following psychological and physiological conditions.

Psychological	Physiological
Fear of recurrence	Loss of appetite
Frustration	Headaches
Self-blame and blame towards others	Stomach cramps and diarrhea
Feeling overwhelmed	Hyperactivity
Sadness and grief	Increase in alcohol or drug consumption
Coordination and memory problems	Fatigue and low energy
Denial	Nightmares and sleeplessness, Mood swings

It is important for all DMC members to remember the following:

- Talk to the survivors and encourage them to express their feelings and physiological needs.
- Listen attentively to what the person has to say.
- Respond with empathy, understand the concerns of the individual and reassure them that such feelings are expected.
- Keep information confidential and respect their confidence.

Standard Operating Procedure – Safety Department	
Subject: Fire	**Number:10**
Effective Date:	**Page:31-34**

1. Objective: To avoid burn injuries of the occupants & working staff, loss of occupant's property & building property and to avoid fatal accident.

2. General Information:

2.1 Classes of Fire:

There are six classes of fire i.e. class A, class B, class C, class D, class E & class F.

- **Class A:** Class A fire occurs generally due to wood, paper, fabric, plastic and most kind of trash.
- **Class B:** Class B fire occurs generally due to flammable liquids (for example gasoline, petrol, diesel etc.)
- **Class C:** Class C fire occurs generally due to burning of gases (for example natural gas)
- **Class D:** Class D fire occurs generally due to combustible metals* such as magnesium, potassium, titanium and zirconium [* Exception of the metals that burn in contact with air and water (for example sodium)]
- **Class E:** Class E fire occurs due to electrical equipments which are potentially energized
- **Class F:** Class F fire occurs due to unsaturated cooking oils in well insulated cooking appliances located in commercial kitchens.

2.2 Understanding:

- Fire is a process in which substances combine chemically with oxygen from the air and typically give out bright light, heat and smoke; combustion or burning.
- It is very important to understand the nature of threat and the procedures to be adopted.
- All agencies from Building Management to security department should involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behavior.
- Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies.
- All evacuations will be ordered only by the State Relief Commissioner, District Magistrate & Collector, Police, Fire Brigade or by the Security Officer.

SOP of Building occupants evacuation Under supervision of Building Management

3. Role & Responsibility

3.1 Role & Responsibility Facility Manager

1. Keeps watch on Main receiving stations, Parking areas and other fire likely hazard areas by CCTV/Safety Officers reports/ Security reports/any other personnel report.

2. Communicate or Display steps /arrangement which will be helpful during fire situation.
3. Ensure the working of sprinklers/ smoke detectors & fire alarms periodically.
4. Ensure the working of fire hydrant system and also ensure that all necessary required equipments of hydrant system are available on their designated locations.
5. Ensure the working of all fire pumps & standby pumps periodically
6. All evacuations should be reported to DM & Collector or District Superintendent of Police immediately.
7. Arrange equipments and life saving appliance available at assembly point
8. Monitor Fire Evacuation operation and coordinate with external agencies for help.
9. Conduct mock drill for occupants in every six months.
10. Arrange periodical training session for an emergency team.
11. Arrange wheel chairs, crèches to rescue team during emergency.

3.2 Role & responsibility of Security In-charge

1. Will arrange adequate water supply source for fire brigade tankers for putting off fire.
2. He will do adequate provision of applicable fire extinguishers as per class of fire, sand buckets & other equipments for controlling fire.
3. He will arrange dust masks, smoke masks, blankets and SCBA.
4. He should do arrangement of walky-talky, torch, First aid, personal medicines & Ambulance service.
5. He will give direction to rescuers for the evacuation of occupant's priority wise for eg.

   I- Injured or affected persons will be evacuated first
   II- Handicapped & disabled persons will be evacuated by providing wheel chairs etc.
   III- Women's & small children will be evacuated will specials arrangements
   IV- Other occupants will be evacuated by other alternative arrangements
   V- Dead bodies will be removed very soon and will be handed over to family or responsible departments for identification.
6. Will take current information from managers of the electric supply & STP/OWC during fire accident.

3.3 Role & responsibility Manager/Electrician

1. He should coordinate with Security In-charge to ensure no one is trapped before switch off Lift supply
2. He should provide D G Supply to evacuation light system continuously to assembly point & refuge areas
3. He should arrange power supply to Control room & Telecommunication equipments

3.4 Role & responsibility of Manager Environmental facilities

1. He should ensure that fire should not travel till electric panel of STP
2. He should ensure that fire should not travel till diesel operating pumps & temporary storage area of diesel & oil
3. He should arrange to enclose the OWC room if not got caught by fire or will arrange members to empty the OWC room from garbage stored there.

3.5 Role & responsibility of Security guard

1. He should control stamped of Panic crowed
2. He should watch and ward assembly point resident
3. He should give direction to the emergency rescue team
4. He should control robbery & theft of buildings flats

3.6 Role & responsibility of Parking In-charge

1. Evacuate people trapped in basement parking by coordinating with evacuation team leader or site controller
2. Arrange systematic car flow out from basement parking
3. No ramps should block due to panic driving
4. Continuous reporting of the basement parking situation to the Site controller/Chief Site Controller
5. Ensuring that all occupants had evacuated from the basement parking & parking floors
6. Inform exact fire location of basement to fire brigade team to control.

3.7 Role & responsibility of Elected Building Chairman

1. Organize group of resident
2. Guide occupants to safe place
3. Advice Evacuation team leader their duties
4. Instruct & confirm that all light/oven/geyser/LPG Cylinder /Gas line taps are closed properly
5. Confirm that all resident of floor wise /wing wise left their flats temporally till fire get in control by fire brigade team

3.8 Role & responsibility of First Aid Team Leader

1. Organize evacuation by serious patient, priority wise shift them by **first aid person** to safe place for First aid /Artificial breathing
2. Identify the number of burnt patients & make arrangement for shifting to burn ward by **first aid person**
3. Ensure that **first aid person** had supported oxygen cylinder the one who had breathing problem due smoke inhalation for long period
4. Ensure that **first aid person** had supported saline the one who had became weak due to trapping

3.9 Role & responsibility of Evacuation Team Leader

1. Ensure that evacuation team had rescued all occupants has been evacuated from fire area
2. Ensure that fire brigade team had rescued all occupants from fire check floor & refuge floor.
3. Ensure that all occupants had been shifted to safe location from building assembly points and main assembly points
4. Arrange adequate provision of required

4. Safety Tips

4.1 Do's to stay safe during a fire:

- If fire occurs, first switch off all gas line knobs & electrical switches.
- Close all windows to cut the oxygen source and then leave the home.
- If fire rises in your home before you evacuate, go to the nearest refuge area as soon as possible.
- Turn off all utilities at the main power switch and close the main gas valve of the building if advised to do so.
- If your clothes catch fire, Stop Drop and Roll to put them out.
- Apply antiseptic or take treatment from first aid person as soon as possible if you got affected from fire.
- When leaving, close doors behind you and pull any fire alarms you may pass.
- Stay low — beneath the smoke where the air is clearer and safer to breathe.
- Cool burns quickly with water — get medical attention immediately.
- Keep a wet handkerchief or piece of cloth/ sari on face during evacuation

4.2 Don'ts to stay safe during a fire:

- Do not panic, evacuate calmly and quickly perpendicular to wind direction through the designated escape route
- Never ignore fire or smoke alarms.
- Leave the building immediately — do not stop to collect belongings.
- Don't pay attention to the rumors and don't spread rumors.

Standard Operating Procedure – Safety Department	
Subject: Lightning	**Number: 11**
Effective Date:	**Page: 35-37**

1. Objective: To avoid burn injury, fire catch, damage of occupant's & building property& fatal accident caused due to lightning storm.

2. General Information:
2.1 Introduction:

Lightning is a sudden electrostatic discharge during an electrical storm between electrically charged regions of a cloud (called intra-cloud lightning or IC), between that cloud and another cloud (CC lightning), or between a cloud and the ground (CG lightning).

- It is important to understand the nature of threat and the procedures to be adopted.
- All agencies from Building Management to security department should involved in evacuation must have a common understanding of their roles and responsibilities in order to avoid confusion and panic behavior.
- Different situations demand different priorities and hence the responsibility for ordering evacuation is assigned to different agencies.
- All evacuations will be ordered only by the State Relief Commissioner, District Magistrate & Collector, Police, Fire Brigade or by the Security Officer.

2.2 Types of lightning

- **Intra-Cloud:** The most common type of lightning. It happens completely inside the cloud, jumping between different charge regions in the cloud. Intra-cloud lightning is sometimes called sheet lightning because it lights up the sky with a 'sheet' of light.
- **Cloud to Cloud:** Lightning that occurs between two or more separate clouds.
- **Cloud to Ground:** Lightning that occurs between the cloud and the ground.
- **Cloud to Air:** Lightning that occurs when the air around a positively charged cloud top reaches out to the negatively charged air around it.
- **Bolt from the blue:** A positive lightning bolt which originates within the updraft of the storm, typically 2/3rds of the way up, travels horizontally for many miles, then strikes the ground.
- **Anvil Lightning:** A positive lightning bolt which develops in the anvil, or top of the thunderstorm cloud, and travels generally straight down to strike the ground.
- **Heat Lightning:** Lightning from a thunderstorm that is too far away to be heard.

2.3 Lightning Safety Tips (will be displayed by Security In-charge in building):

- The best shelter from lightning is inside a large enclosed structure, such as your home or school. No place outside is safe during a thunderstorm. Once inside, stay away from any windows and doorways, electrical appliances, lighting, electric sockets and plumbing, such as toilets and showers.
- If you can't get to a house, a vehicle with a solid metal roof and metal sides (such as a bus) is a reasonable second choice. Avoid contact with the windows. Close the windows and lean away from the door. Don't touch anything metal, such as the steering wheel, ignition, gear shifter or radio.
- Stay inside for 30 minutes after you last see lightning or hear thunder. People have been struck by lightning from storms centered as far as 10 miles (16 kilometers) away.
- Find a low spot or depression and crouch down as low as possible, but don't lie down on the ground. Lightning can move in and along the ground surface, and many victims are struck not by bolts but by this current.
- Stay away from:
  - Tall isolated objects (trees, flag poles, light poles, lawn, telephone poles)
  - Wide-open areas (garden, terrace, balcony on height)
  - Water related activities (swimming pool, fountains etc.)
  - Open vehicles (battery car, riding lawn mowers, trucks & open jeep)
  - Metal (fences, bleachers, tools etc.)
- Avoid using electrical devices. When a lightning storm rages outside, it's a good idea to avoid using electrical devices inside. This means you should avoid using the telephone during a lightning storm. Also, it's advisable that you turn off the television, turn off your computer, and any other electrical device. Although very rare, it's possible that the electrical surges caused by the lightning storm can travel through your telephone line or electrical wiring. ***Cordless phones and cell phones are considered safe.***
- Use of surge protector. Surge protectors are safety plugs designed to automatically protect electrical devices in case lightning should strike. They try and reduce the amount of surge before it reaches your equipment. Surge protectors are highly recommended for all computers and electrical appliances. Using a surge protector can not only help prevent damage being done to your expensive electrical devices, but can also prevent fire in case lightning strikes. However, as long as lightning has a conductive path, there is risk of damage.
- Lightning arrestor must be installed to the buildings which should be grounded.
- Every individual should remove metal or jewelry worn or carried by him/her during lightning.

3. Roles & Responsibilities

3.1 Roles & Responsibilities of Facility Manager:

1. Will ensure the working of lightning arrester periodically.
2. Will ask electric supply manager to switch off the power till the lightning gets stops.
3. Will ensure all facility room electric supply is been switch off by taking info from concern In-charge, Parking In-charge & Security In-charge.