Managing Crowd at Events and Venues of Mass Gathering

A Guide for State Government, Local Authorities, Administrators and Organizers

2014

NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

GOVERNMENT OF INDIA

Contents

Foreword

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Concerned at the recurring stampedes at places of mass gathering, including religious places, and typically ad-hoc responses to those, the National Disaster Management Authority (NDMA) has embarked on formulating an integrated and structured approach to crowd and disaster management at such places. This document is a step in that direction, with an objective to *"guide the organizers, administrators, and other stakeholders for effective crowd management at the places of mass gathering*". Professionalization of managing crowds is a relatively new concept worldwide and has developed as a response to disasters at events around the world.

The National Guide on Crowd Management has been formulated after wide consultations with all the stakeholders and all technical and operational issues have been incorporated. The guide would assist and help stakeholders at all levels in Governance to formulate, implement and manage crowd management systems for places of mass gathering. Crowd management plans for events and venues of mass gathering would seamlessly cascade with disaster management plans prepared at various levels in state administrative hierarchy.

The guide also envisages planner to use modern technological tools/models for effective and efficient decision making in overall process of crowd management.

I am indeed extremely happy to acknowledge the strenuous work done and immense personal contribution made by Shri T. Nanda kumar (Ex- member, NDMA) and of my colleague, Shri K Saleem Ali in coordinating with the members of the Core Group as well as the other Stakeholders in the country during the entire process of developing national Guide.

I also express my gratitude for the academic and professional contribution from Prof. Chetan Soman and Prof. Sachin Jayaswal of IIM (Ahmedabad) and the members of the Core Group of experts in assisting the NDMA in the formulation of the Gide.

I am certain that the National Guide will help all stakeholders including State Governments, local authorities and organisers/ administrators of event and venues of mass gathering, in overall planning and establishing required systems for effective crowd Management.

(M. Shashidhar Reddy)

Acknowledgment

Dr. K. Saleem Ali
Member (NDMA)

Looking to the fact that crowd management is professionally a newer subject worldwide, immense efforts were put into collection and analysis of relevant data, literature on current crowd management practices in India and the global best practices. The NDMA Core Group played a crucial role in this process I express my sincere thanks to all the Members of the Core Group for their invaluable contribution in preparing the National Guide on Crowd Management.

To move away from erstwhile “crowd control” approach to “Crowd Management” approach would need strategic planning at all levels starting from the events and venues of mass gathering to that of district and State level DM Plans. Hazard, Risk and Vulnerability analysis (HRVA) at the places of mass gathering with pre-event scenario would be the basis for preparing for overall all three phases of any sever incident (response, recovery and mitigation). HRVA would also enable generation of decision support system for most efficient and effective rescue and relief operations during the crowd related disaster Scenario.

Since this document is expected to act as a guide for the State / Local authorities and event organisers / administrators on Crowd Management at Places of Mass Gathering, it has been kept short and generic, but pragmatic. The empirical evidence from past disasters and the theoretical inputs have been used as guiding principles to derive guidelines in the form of action points, checklists, and tools etc. It is hoped that the intended readers will benefit from this document in making an event safe, hassle free and memorable for their visitors...

I acknowledge with thanks the valuable contribution received from Dr. P.K.Mishra, Director General (GIDM), Shri Anil K Sinha, Hon'ble Vice Chairman, and Bihar State Disaster Management Authority (BSDMA).

Valuable feed backs received from various states and other agencies during national consultation were appropriately absorbed into the National Guide and I acknowledge and express sincere thanks to each participating State and other agencies in the workshop and National Consultation.

I acknowledge contribution made by Dr R. K. Dave, Sr. Specialist (Policy and Plans) for his contribution in review / revision of the guide and coordination of activities involved in overall developmental process.

Finally I would like to express my gratitude to our Vice Chairman, Shri M. Shashidhar Reddy for his continued guidance and support which was critical in overall preparation of National Guide. My gratitude and sincere thanks are also to Shri T. Nanda Kumar, former member NDMA, who imitated this process and made valuable contribution in bringing National Document to its final shape.

It is sincerely hoped that these National Guidelines will help stakeholders at different level of administration/ organisers/ other agencies to plan and prepare strategies for effective and efficient "crowd management" that would contribute significantly in achieving NDMAs vision to build disaster resilient India.

(Dr. K Saleem Ali)

1. Introduction

1.1. In the last few years, India has witnessed many natural disasters (Tsunami, earthquakes, floods, cyclones etc.) and is at risk to man-made disasters (fire, stampedes, etc.) as well. These disasters, natural, man-made or hybrid, typically, result in a large number of casualties along with societal agony and a huge economic loss. Acknowledging this, India decided (by an act of the parliament: Disaster Management Act, 2005) to move from a reactive and response centric disaster management approach to a proactive and holistic one. The Disaster Management act (Chapter 1, Section 2 (e)) defines disaster management as follows:

"Disaster management" means a continuous and integrated process of planning, organizing, coordinating and implementing measures that are necessary or expedient for-

- prevention of danger or threat of any disaster;
- mitigation or reduction of risk of any disaster or its severity or consequences;
- capacity-building;
- preparedness to deal with any disaster;
- prompt response to any threatening disaster situation or disaster;
- assessing the severity or magnitude of effects of any disaster;
- evacuation, rescue and relief;
- rehabilitation and reconstruction;

1.2. The Government of India has established various bodies like National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA), District Disaster Management Authority (DDMA), National Institute of Disaster Management (NIDM), and National Disaster Response Force (NDRF). NDMA, SDMA, DDMA have the primary responsibility of laying down the policies, plans, and guidelines for disaster management at National, State, and local level respectively. NIDM is responsible for planning and promoting training and research in the area of Disaster Management while NDRF is constituted for the purpose of specialist response to a threatening disaster situation or disaster.

1.3. NDMA has already formulated guidelines for Earthquakes; Tsunamis; Cyclones; Flood; Managing Urban Flooding; Drought Management; Landslides; Nuclear and Radiological Emergencies; Chemical Disaster (industrial); Chemical (terrorism) disaster; Medical Preparedness and Mass Casualty Management; Biological Disasters; Psycho-Social Support; Formulation of State Disaster Management Plans; Incidence Response System; National Disaster Management Information and Communication System; Scaling, Type of Equipment and Training of Fire services; and Handbook for Training and Capacity Building of Civil Defence and Sister Organizations.

1.4. However, the recurring stampedes at places of mass gathering, including religious places, railway stations, sports/social/political events etc. are a great concern too. With population explosion, urbanisation, a lot of people visiting religious congregation, malls etc. there is a probability of increase in such events. NDMA felt the need for formulating an integrated and structured approach to crowd and disaster management at public places and has embarked on the same. This document on 'Crowd Management' is a part of this journey. The crowd disasters, in general, are man-made disasters which can be completely prevented with proactive planning and flawless execution by dedicated groups of well-trained personnel.

1.5. The objective of this publication is—

" to navigate and enable state governments / local agencies and the administrators / organisers of events and venues of mass gathering to prepare appropriate guidelines and plan for effective and efficient crowd management".

As crowd disasters are local events, disaster management is primarily the responsibility of the organizers and local/district administration with support, guidelines from the state and the national authorities.

1.6. The scope of this document is —

1. To Learn from the past crowd disasters; understand the causes and the triggers behind them.
2. To provide a framework for administrators to plan and manage events better.
3. To provide practical guidelines to venue managers and event organizers, so as to manage the crowd and ensure their safety through clearly laid out implementation procedures.
4. To collate the current legal provisions for crowd control and management.
5. To acknowledge the role of science and technology in crowd management and identify the research threads
6. To spell out the role of media in crowd management
7. To provide a roadmap for capacity building for crowd management.

And thereby come out with detailed guideline for integrated approach to crowd management. The integrated approach for the crowd management can be pictorially represented as given in figure. 1:

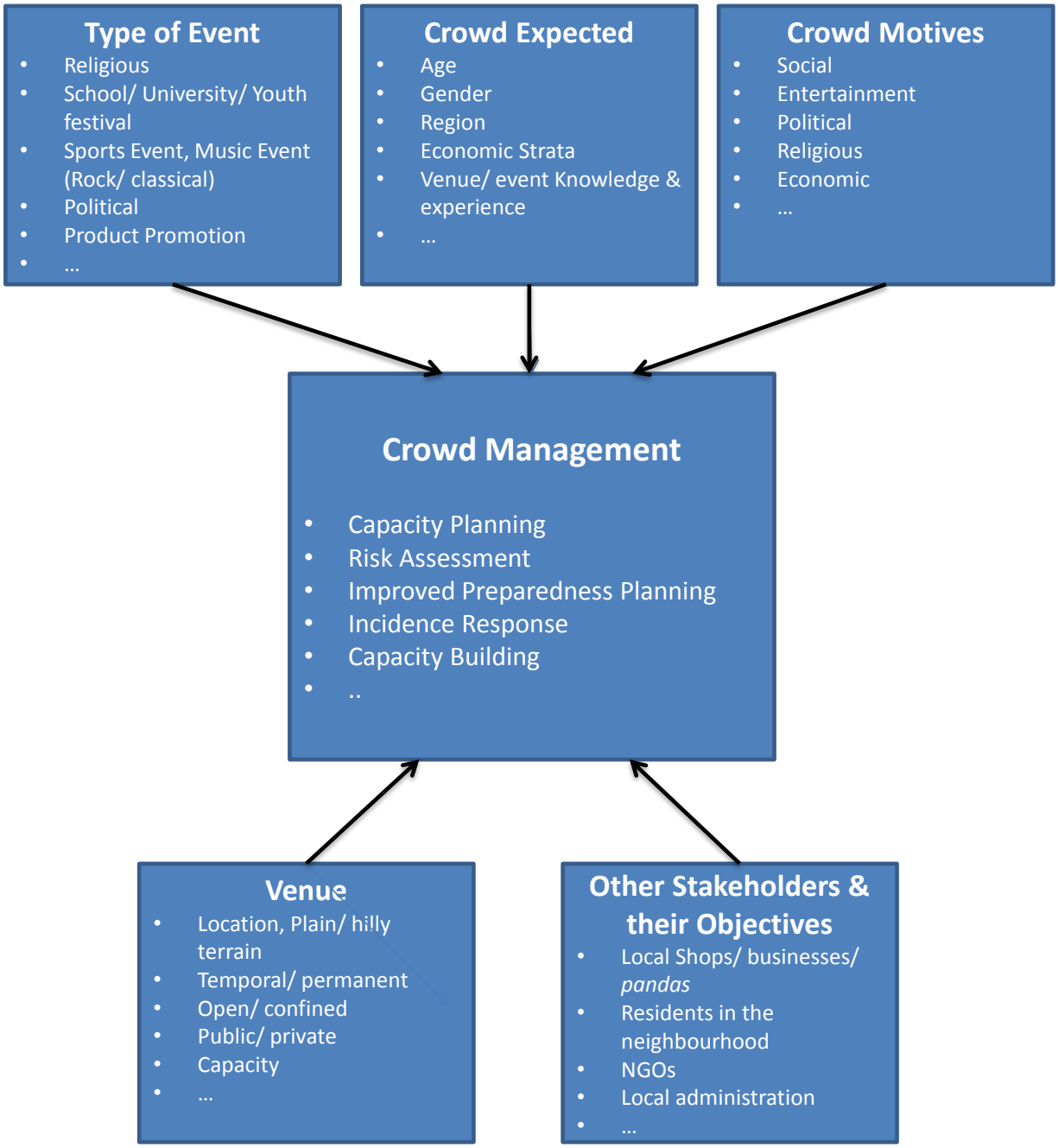


Figure.-1: An Integrated Approach for the Crowd Management

2. Review of Crowd Disasters

2.1. Introduction

In this chapter, we first look at some of the recent crowd disasters in India and try to understand the causes and triggers behind those (along with those happened worldwide), and try to see underlying patterns and then synthesize them into a generic crowd disaster process. Most of the action points appearing in the following chapters also emerge from the causes behind these disasters from the history. Table given below lists a sample of recent crowd disasters in India.

A Sample of Recent Crowd Disasters in India

Sr. No.	Place and Date of Disaster	Casualties
1	Dabwali, Haryana, 23 December 1995. Fire at a school function held in a *shamiyana* (tent)	446
2	Baripada, Odisha, 24 February 1997. Fire at a religious congregation	206
3	Uphaar Cinema, Delhi, 13 June 1997. Movie goers trying to come out of a smoky cinema hall.	59
4	Sabarimala Stampede, Kerala, 14 January 1999	52
5	Charbaug Railway Station Stairs, Lucknow, Uttar Pradesh, 28 September 2002	19
6	Nasik Mahakumbhamela , Maharashtra, 27 August 2003	29
7	Wai, Satara, Shri Kalubai Yatra Mandhardev,Maharashtra, 25 January 2005	293
8	Naina Devi temple stampede in Bilaspur, Himachal Pradesh, 3 August 2008	162
9	Chamunda Devi temple, Jodhpur, Mehrangarh Fort Rajasthan, 30 September 2008	249
10	Ramjanaki Temple, Pratapgarh, local ashram, Uttar Pradesh, 4 March 2010	65
11	Sabarimala stampede , Kerala, 14 January 2011	102

12	Railway Station, Allahabad, while boarding train Uttar Pradesh, 10 February 2013 (During Maha Kumbh Mela)	36
13	Ratangarh, Datia, a stampede on a bridge where a section of railings broke Madhya Pradesh, 13 October 2013	121

2.2. Causes and Triggers for Crowd Disasters

In this section, we report the causes and triggers behind these and other disasters. These have been compiled from various inquiry commissions (see appendices 2.1-2.6 for excerpts from the inquiry reports for some of the crowd disasters), news reports and websites (e.g. http://www.gkstill.com/ExpertWitness/CrowdDisasters.html)[1] on crowd disasters in India and around the world. Broadly, these have been categorised into 6 categories, namely Structural, Fire/Electricity, Crowd Control, Crowd Behaviour, Security, and Lack of coordination between various stakeholders.

2.2.1. Structural

- Structure collapse of
  - Barricades/ bamboo railings/wire fence/ Metal barrier
  - Makeshift bridge.
  - Temporary structure.
  - Railings of the bridge caused by panic triggered by rumours.
- Barriers on the way
- Poor guard railings, poorly lit stairwells
- Difficult terrain (famous religious sites built on top of hills that are difficult to access)
- Slippery/muddy roads
- Narrow streets with illegal vendors on sides; sloped gradient; bad weather leading to crushing
- Windowless structure, narrow stairs
- Narrow and very few entry/exits
- Absence of emergency exits
- unauthorised construction surrounded by high brick walls preventing evacuation

2.2.2. Fire/Electricity

- Fire in a makeshift facility or a shop
- Cooking in a makeshift facility
- Wooden structure/ quick burning acrylic catching fire
- Fire at illegal structure

[1] Accessed on March 4, 2013.

- Non-availability of fire extinguisher/fire extinguishers not in working condition
- Unauthorized fireworks in enclosed places
- Inappropriate points of manufacturing and sale of fireworks
- Building and fire code violations
- Lack of adequate flood lighting of the assembly area and the path ways use by the crowd
- Electricity supply failure creating panic and triggering a sudden exodus
- Illegal electric connections
- Inappropriate fittings such as MCB, Aluminium wires instead of copper wires etc.
- Short circuit from electrical generator, (synthetic) tent catching fire.
- Elevators catching fire, people on higher floors panic, steep stair designs

2.2.3. Crowd Control

- More than anticipated crowd at store/mall/political rallies/ examinations/ religious gatherings/ public celebrations
- Underestimation of audience, staffing, services
- People allowed in excess of holding capacity due to overselling of tickets for an event
- Limited holding area before the entrance
- Lack of access control
- Closed/locked exit
- Sudden opening of entry door
- Reliance on one major exit route
- Uncontrolled parking and movement of vehicles
- Callous indifference in regulating traffic
- Lack of adequate and strong railings to marshal the queue.
- Lack of sectoral partitions to segregate assembled crowd
- Lack of proper public address system to control crowd

2.2.4. Crowd Behaviour

- A wild rush to force the way towards entrance/exits
- Crowds attempting to enter a venue after the start/closing time
- A collision between large inward flows and outward flows
- Rush during distribution of disaster relief supplies
- A large number of pilgrims trying to board a ferry for a sacred island site
- Free distribution of gifts/toys/food/Prasad/alms/blankets/cash/clothes triggering a surge and crush
- Tussle to catching a glimpse/autograph of a celebrity
- A large (much more than expected) anxious and competitive crowd gathering because of limited period promotional events at malls
- Rush to get covered/free/unnumbered seats at the venue
- Scramble to get event tickets
- Crowds trying to re-enter the venue (flows inward/outward flows mixed)

- Religious leaders taking a route (in wrong directions) in violation of orders in force
- Unruly and irresponsible crowd behaviour
- Angry crowd due to delay in the start of the event/late trains
- Last minute change in platform for train arrival/departure resulting in lots of movements within short time window
- Mad rush to leave a school
- Mad rush to exit/parking space
- Sudden flow of people in reverse direction
- Rush during distribution of disaster relief supplies
- Sudden mass evacuation because of a natural disaster
- Rumours of landslide caused by rains leading to rush down a narrow stairway

2.2.5. Security

- Under deployment of security personnel to regulate to control crowd.
- Lack of adequate scientific planning in making police arrangement to deal with crowd with proper sectoral deployment under an officer with adequate manpower and the each sector reporting to the senior police personnel in charge of the police arrangement.
- Lack of proper wireless deployment with clutter free call arrangement between sector in-charge and officer in-charge of the police arrangement
- Inadequate briefing of security personnel on crowd control before deployment
- Lack of adequate dress rehearsals before actual deployment
- Lack of adequate observation towers with PA system and back up force with proper wireless communication with the tower to monitor and regulate crowd
- Lack of adequate CCTV surveillance of the crowd with PA system to control monitor and guide as and when required
- Lack of adequate briefing of the personnel manning the observation towers, CCTV and PA system on dealing with problems in effective manner as and when they see and observe the crowd
- Absence of walkie-talkies for the police on duty
- Absence of public announcement systems or effective wireless system with the police
- Lack of adequate anti sabotage check of the entire area and sanitizing the same against terrorist, extremist and separatist attack
- Lack of adequate road opening parties to secure the routes of pilgrimage
- Lack of adequate door frame metal detectors and frisking of pilgrims entering the pilgrimage area or persons entering the gathering area
- Fights within groups of the crowd and with police, other officials etc
- Weapon brandished in the crowd
- Ineptitude of the police in effectively managing the crowd and enforcing prohibitory orders
- Security agency firing/teargas/using force leading to panic and stampede
- Crowd forced against sharp metal fencing

2.2.6. Lack of Coordination between Stakeholders

- Coordination gap between agencies (e.g. Commissioner / Superintendent of Police and District Magistrate; PWD, Fire Service, Forest officials, Revenue officials, Medical officers and shrine management etc.)
- Poor infrastructure (Plans on paper but no implementation due to lack of funds, resources, or will)
- Inadequate water, medical assistance, public transport/parking facilities
- Lack of understanding of the range of duties entrusted
- Communication delays
- Vacant/late/delayed posting of key personnel
- Local decision to remove barricades on administrative route to allow a small group of pilgrims

3. Planning for Crowd management strategy and arrangements

This chapter describes the important aspects of planning for events/ places of mass gathering. These include understanding the visitors, various stake holders and their needs; Crowd Management Strategies; Risk Analysis and Preparedness; Information Management and Dissemination; Safety and Security Measures; Facilities and Emergency Planning; and Transportation and Traffic Management.

3.1. Understanding Visitors and Stakeholders

3.1.1. The basic element of event/venue planning is to understand the visitors. This, however, is largely determined by the type of event (religious, youth festival, school/university event, cricket/sports event, music concerts, political gathering); season in which it is conducted; and the type and location of the venue (temporal/permanent, open/confined spaces, bus stand, rail/metro station, plain/hilly terrain). Based on this and from prior knowledge and experience, one can and should attempt to determine the type of crowd expected (age, gender, region, locals/visitors, people with special needs etc.) and their estimated numbers. An attempt has to be made and the intelligence has to be gathered about the motives of various visitors (social, entertainment, political, religious, economic etc.) and unwanted visitors (theft, disruption, terror etc.).

3.1.2. Event/venue managers must identify the various stakeholders and acknowledge their objectives as well. For example, while planning the events, shrine management and security personnel desire high degree of orderliness but local shop owners, priests, and their economic interests cannot be ignored. Certain routes habitually used by locals must be kept in mind. An arrangement has to be made for the media personnel. Community stakeholders (PRIs, CBOs, NGOs, business associations, schools/colleges, and neighbourhood societies/ associations/*mohalla* committees) should be encouraged to take ownership in events.

3.2. Crowd Management Strategies and arrangement

This section provides guidance on crowd management strategy and arrangements required during the arrival of crowds; during the event at the venue; and during the departure. The various elements of crowd management strategy are: a) Capacity Planning (long term and short term), b) Understanding Crowd Behaviour, c) Crowd Control, and d) Stakeholder approach. The integrated view of the crowd management has been already discussed in previous chapter and pictorially represented as figure 1.

3.2.1. Capacity Planning

3.2.1.1. In India, religious places have high probability of crowd disasters. Obviously, their locations have also played some role in crowd disasters. A large number of religious sites in the country have following characteristics:

- Located atop hills/mountains with difficult terrain
- Mostly narrow, winding uphill pathways along steep hillsides
- Access routes encroached by vendors making the access more narrow
- Lack of adequate flood lighting during night fall
- In existence for many centuries
- Access routes are prone to landslides and other natural dangers; Chances of accidents are high

3.2.1.2. Development of Shrine locality could be difficult in many places, but it is absolutely necessary to develop infrastructure for Crowd Management, as these places are seeing a huge increase in number of visitors. There is a need for **Long Term Perspectives** for infrastructure development which should depend on popularity, periodicity of event, weather, terrain, local population etc. Staging points should be Planned for physical or virtual locations through which each visitor must pass. Each staging point should have sufficient facilities for rest, food, water, hygiene. An effective way of counting/monitoring visitors passing through a staging point should be installed to regulate the flow. Plan for physical or virtual locations through which each visitor must pass. Each staging point should have sufficient facilities for rest, food, water, hygiene. An effective way of counting/monitoring visitors passing through a staging point should be installed to regulate the flow. **Multiple routes** should be encouraged (normal, express, emergency) with varying "route gradient". This will also help in movement of typically vulnerable groups (children, people with special needs etc.)

3.2.2. Understanding Crowd Behaviour

Individual behaviour in a crowd is sometimes influenced by the behaviour of others. The individuals within a crowd may act differently than if they were on their own. The unlawful actions of a few people can result in larger numbers following them. Research has shown that understanding of crowd behaviour has led to community based approach to crowd control instead of force based control. For example, the excessive wait at places of worship may result in a few devotees climbing up the fences which could lead to a large number following them causing overcrowding in another area. It is therefore essential to identify and separate such miscreants at the earliest. Such miscreants should be immediately quarantined and removed. Action should be taken immediately with tact and firmness, without inviting undue attention from the general public, which may be there if force is used.

Inappropriate or poorly managed control procedures may precipitate crowd incidents rather than preventing them. For example, police reacting to a group of unruly people may chase them in a

direction opposite to the incoming crowd, which may create a collision, and hence a disaster. Special attention should also be given to border of the venue and the floating crowd moving there because the mischief is usually caused at such places.

3.2.3. Crowd Disaster Process

3.2.3.1. The reasons mentioned in the previous section can again be classified into a) Structural Failure, b) Human errors, c) Natural causes. On occasions, these have been caused by a) High attendance Levels, b) as a reaction to Action by Performer, or c) Improper/inadequate arrangements. As a result, there is either panic or an excitement in visitor's mind which further leads to evacuation or crowding respectively. When this happens, as explained by Fruin (1993), the FIST circumstances namely crowd **F**orce, the **I**nformation (false or real) upon which the crowd acts, the physical **S**pace (seating area, chairs, corridors, ramps, doors, lifts etc.) involved, and the **T**ime duration of the incident (rapid ingress/egress) play a very important role resulting in either overcrowding (high crowd density: a large number of people per unit area) or high desired velocity (accelerated movements). On occasions, this has led to deaths because of crushing, suffocation, and trampling. Historically, compressive asphyxia has been the most common reason for deaths in crowd disasters. This crowd disaster process adapted from Fruin, 1993; Zhen et al, 2008 is as given below in figure 2.

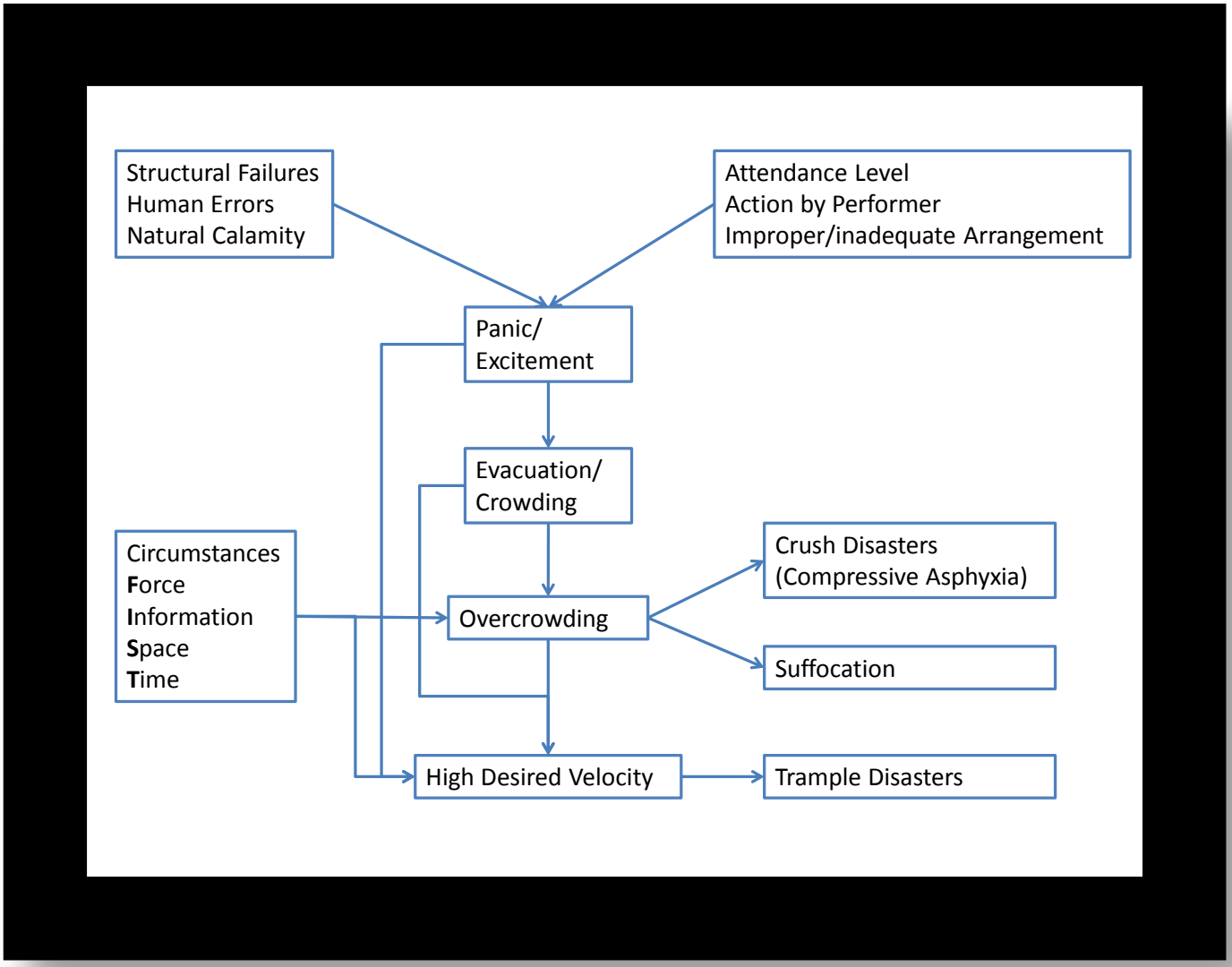


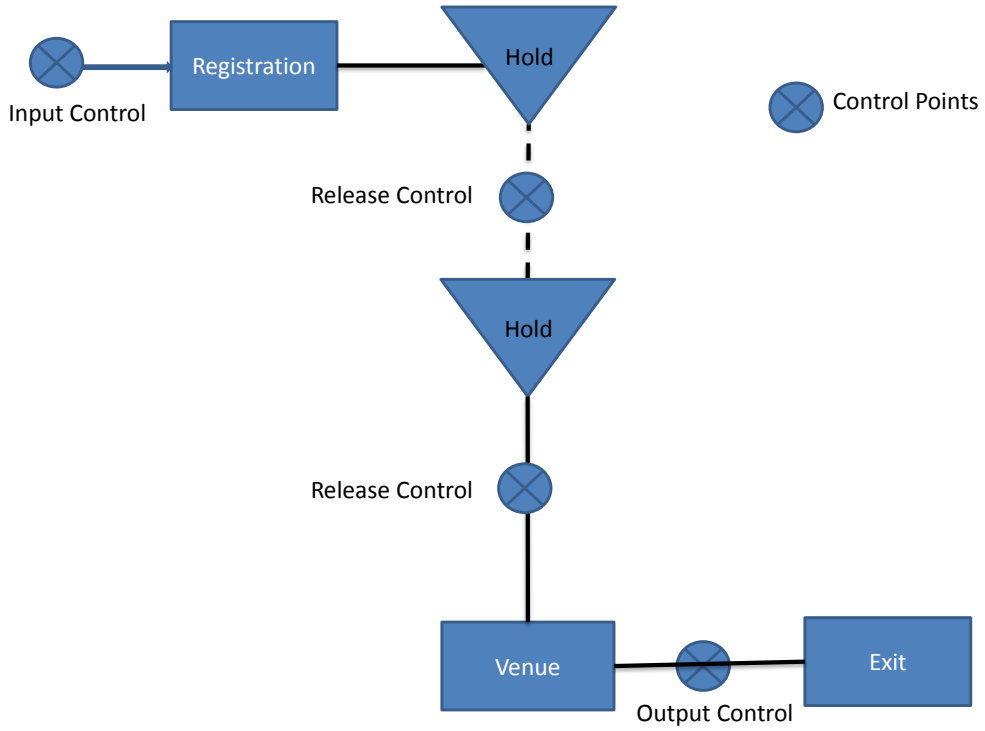
Figure 2: Crowd Disaster Process

3.2.3.2. A mere glance through the list of causes of crowd disasters suggests that most of them are man-made, which can be completely prevented with proactive and holistic planning and flawless execution. A thorough assessment of arrangements made at places of mass gathering against the above list of potential causes, should dramatically reduce the chances of a disaster.

3.2.3.3. Majority of the crowd disasters in India and developing countries have occurred at religious places while stadia, venues of music concerts, night clubs, & shopping malls have been the typical places of disasters in the developed countries. With population explosion and rapid urbanisation, Indian cities are likely to be susceptible to crowd disasters at such venues in the days to come.

3.2.4. **Crowd Control**

The guiding principle for crowd control should be managing demand – supply gap through i) Controlling the crowd inflow, ii) Regulating the crowd at the venue, and iii) Controlling the outflow, if needed. The same is represented in the diagram given below:



3.2.4.1. Hence in order to **understand demand** we need to understand the (i) historical numbers, crowd arrival patterns, growing popularity, type of visitors (ii) the Identify mass arrival time windows creating peaks (season, days of the week, time in the day, festivals, holidays etc.), (iii) Advance ticket booking/registration (iv) Public transport timetables

3.2.4.2. In order to **Understand the Supply** we need to calculate (i) the capacity at the venue: seating capacity; worships, offerings or prayers possible per hour etc. (ii) Calculate the capacity of holding areas/ queue complex

3.2.4.3. At number of places, demand simply outstrips supply, leading to overcrowding. Because of this, there is a need for an input control i.e. restricting the number of entries. A mandatory registration process makes this possible. The other possibilities are through influencing arrivals. This can be done through:

- Informing off-peak times
- Have priority queues, visitors with advanced/internet booking, VIP visits during off-peak times

- Promote use of a certain mode of transport
- Adjusting the event time keeping in mind regular peak traffic times around the venue
- Informing current crowd strength and the expected wait time

3.2.4.4. With demand outstripping supply, queues cannot be avoided. At number of places, it is impossible to increase supply capacity because of religious beliefs or the topological reasons. In such cases, since the wait is unavoidable the only possibility is to make it comfortable. The crowd psychology studies (e.g. Chase et. al. 2010) recommend the following softer aspects of managing queues:

- Do not overlook the effects of perceptions management
- Determine the acceptable waiting time for your visitors
- Install directions that entertain and physically involve the visitors
- Get visitors out of line (e-service etc.)
- Only make people conscious of time if they grossly overestimate waiting times
- Modify visitor arrival behaviour (e.g. inform non-peak hours)
- Keep resources not serving visitors out of sight
- Segment visitors (by personality, age, special needs etc. to provide differentiated attention and/or service)

3.2.4.5. Hence there is any urgent need to have following aspects in mind while planning for crowd control

- Adopt a long-term perspective
- Never underestimate the power of a friendly server(Attempt to) Identify the makeup and motivations of the expected crowd ahead of time to anticipate challenges
- Crowd Controlled Staff should be Uniformly dressed (high visibility)
- Crowd Control Staff Should be in a position to communicate with each other and also to the crowd
- Make sure that there are ample entrances and exits (including administrative/ emergency route) at the event, and they remain unobstructed
- Monitor Crowds

3.2.5. Stakeholder Approach

3.2.5.1 Organizers/Temple trusts, Law enforcement agencies must rethink crowd control and encourage community stakeholders (NGOs, Business Associations, Schools/ colleges, Neighbourhood societies/associations/Mohalla committees) to take ownership in events for unity of purpose, faster decisions/response, better coordination etc. a **Unified Control Structure** is recommended. The key roles and responsibilities of various stakeholders is given in the Appendix 3.1.

3.2.5.2. A Unified Control System brings the agencies with different functional authorities, roles, and responsibilities to work together effectively without affecting individual accountability. Under a Unified Control System, a single, coordinated Incident Action Plan will direct all activities. The control room in charge at the Incident Response System (see chapter 4) will exercise a single control and all stakeholders will seek the same purpose in conducting emergency operations.

3.3. Risk Analysis and Preparedness

It is widely acknowledged that "Prevention is better than cure", and the first aim of any Crowd Management process is to prevent a serious situation from developing. Disasters may often be prevented from happening through careful identification of causes/threats; assessing the risks posed by them.

3.3.1. Identify threats/causes

Planners can draw upon a wealth of existing information to identify the range of threats/causes of disasters at a given place of mass gathering. First, the planning team members should share their own knowledge of threats the venue and its surrounding community has faced in the past or may face in the future. They should work with the administration or SDMA/DDMA to get information regarding the potential threats/causes in the community that can cause a disaster. This process must include ex-officers/administrators, involved in the past events in that area, who can bring a wealth of knowledge about the demography, resources available, limitations, gaps, possible problem areas etc.

3.3.2. Risk Assessment and Planning

3.3.2.1. Once the potential threats/causes of disasters are identified, their risk should be assessed. Assessing risk should involve understanding the probability that a specific potential threat/cause will occur; its effects and their severity; the time the visitors need to be warned about the threat; and how long the threat may last. A site assessment may include a review of the site access/exit; structural integrity of buildings; compliance with applicable architectural standards for access and functional needs; emergency vehicle access.

3.3.2.2. It is recommended that all event organizers/planners conduct Failure Mode and Effect Analysis (FMEA). This methodology involves rating every possible hazard on the dimensions of a) Severity, b) Frequency of Occurrence, and c) Difficulty of detection on a scale of 1-10 to arrive at an overall Risk Priority Number (RPN). Higher the severity, higher the frequency of occurrence, higher the difficulty of detection, the score assigned would be higher. The basic premise is that if a disaster can be foreseen, the probably of occurrence is high. For every hazard, actions are then warranted to reduce/remove the risks. See Table 3.1 below. This exercise should be taken up by every functional department as well.

Table 3.1: Sample FMEA Sheet

Sample Failure Mode and Effect Analysis (FMEA) Sheet

Process/ Item / Function	Potential Failure Mode(s)	Potential Effect(s) of Failure	Severity	Potential Cause(s)/ Mechanism(s) of Failure	Occurrence	Current Control Methods	Detection	Risk Priority Number (RPN)	Recommended Action(s)	Responsibility & Target Completion Date	Action Results: Actions Taken	New Severity	New Occurrence	New Detection	New RPN
Emergency Evacuation	Emergency Exit Blocked	Loss of lives, delay in rescue	9	Illegal structures, commercial activities	8	Fire, Building Inspections	2	=9*8*2 = 144	Clear the exit routes with the help of law enforcement agencies	Site manager will be talk to local police officers and administration.	Police complaint lodged.				
Fire Safety	Availability and condition of Fire Extinguishers	Fire spreading resulting in loss of property and lives	7	Stolen; Even inspectors do not know how to operate; Poor positioning of extinguishers at site.	6	Fire, Building Inspections	2	=7*6*2 = 84	Create and follow inspection schedule. Training of personnel	Mr. XXX will supervise fire prevention activities.	Mock fire drill is planned to assess preparedness.				

3.3.2.3. In addition to the FMEA study, the following guidelines are drawn for the emergency planning purposes.

1. Identify the safest and most efficient evacuation method for every hazard.
2. Clearly identify the emergency assembly area. Consider including in venue maps.
3. Clearly identify and document roles and responsibilities for hazard type and risk levels.
4. Establish benchmarks for evacuation time for different hazards and set the improvement targets (e.g. see Table 3.2).
5. Deploy computer simulations, conduct time and motion study for the above.
6. Use mock drills, audits, exercises etc. to assess emergency preparedness.

Table 3.2: Sample Emergency Preparedness Assessment Indicators

Category	**Indicator**
Fire Protection	• Average Response Time • Number of Fire Stations, Distance between them
Emergency Medical Services	• Average Response Time • Number of Medical Personnel • Number of first-aid kits available
Other Emergency Functions	• Established Emergency Operations Centre, Facilities • Drills and Exercises
Risk Assessment of Potential Hazard Conditions	• Frequency of Crowd Assembly (Routine, Periodic, One-off) • Risk Priority Number for each of the hazard (failure) mode • Frequency of Hazard Occurrence, Severity, Difficulty of Detection/Control

3.3.2.4. In the following pages (Exhibit 3.1), we present a Rapid Venue Assessment (RVA) methodology to do a quick scan audit of various dimensions of crowd management practices (Table 1 of RVA methodology) at any venue. It involves answering only 20 Yes/No questions (see Table 2 of RVA methodology). In case of a doubt between a "Yes" or a "No" on a given dimension, the auditor should answer "No". Higher the number of "Yeses", more satisfied the auditor will be with the crowd management practices.

3.3.2.5. Venue/Event managers can create more detailed, functional checklists (say, e.g., fire safety audit checklist) to suit their context, location, season etc.

3.3.3. Develop Course of Action

3.3.3.1. A course of action should be prepared by answering the following questions for every threat/cause/gap identified (Source: FEMA 2013)

- What action should be taken for a given cause?
- Who is responsible for the action?
- When does the action take place?
- Where does the action take place?
- How long should the action take and how much time is actually available?
- What has to happen before the action?
- What happens after the action?
- What resources and skills are needed to perform the action?
- How will this action affect specific populations, such as children, the elderly, and individuals with disabilities and others with access and functional needs?

3.3.3.2. After selecting courses of action, the planning team should identify the resources necessary to accomplish each course of action, and then match them against the available resources. This step helps planners identify resource gaps that need to be bridged.

Exhibit 3.1 Rapid Venue Assessment

Rated by:_____ Rapid Venue Assessment

Tour Date:_____ Table 1: Rating Sheet Venue:_____

No	Measure / Score → Ratings	Related questions in RVA questionnaire	Poor	Below Average	Average	Above Average	Excellent	Best in Class	Scores
			1	3	5	7	9	11	
1	Visitor experience and satisfaction	1, 2, 20							
2	Safety, Security, & order	3-5, 20							
3	Visual Controls and Information Management	2, 4, 6-10, 20							
4	Queue Control	7, 11, 20							
5	Crowd flows; space use	7, 12, 13, 20							
6	Crowd Levels (Density, Velocity)	7, 11, 20							
7	People teamwork, skill level, & motivation	6, 9, 14, 15, 20							
8	Disaster Preparedness	16, 20							
9	Ability to Manage Complexity, Emergency, Growth	8, 17, 20							
10	Coordination amongst stakeholders	18, 20							
11	Commitment to Disaster Management System Deployment	15, 17, 19, 20							
	Totals →								

Venue	Rapid Venue Assessment (RVA) Date	
No	Table 2: Assessment Questionnaire	Yes/No
1	Are visitors welcomed and provided information about venue location, layout, services (stay, food, local transport, open hours etc) available?	
2	Are visitor satisfaction and service quality studies conducted and are results circulated to relevant stakeholders?	
3	Is the approach to the venue, venue, and exit paths safe, clean, orderly, and well lit?	
4	Does a visual control system identify and locate crowd density and velocity?	
5	Does everything (medical, fire, electrical facilities, parking etc) have its own place, and is everything stored in its place?	
6	Are up-to-date emergency preparedness goals and performance measures for those goals prominently posted to the concerned?	
7	Are people held at various holding areas rather than uncontrolled flow movements?	
8	Are clearly identified roles, responsibility, and reporting instructions available with relevant stakeholders?	
9	Are updated maps of location, layout, ingress, egress, emergency routes available to all security, NGO teams?	
10	Can the current state of the critical points in and around the venue be viewed from a central control room on a CCTV or a website?	
11	Are release processes (timing and number of people) clearly defined for the holding area at each stage?	
12	Are people movements as short and less in numbers as possible (locations of information source, storage space for footwear/belongings, toilets, drinking water outlets etc)?	
13	Are inbound and outbound movement routes, to and from venue, different and non-intersecting?	
14	Are venue managers, security teams, NGOs, Community Members etc are trained, empowered, and involved in improvements of disaster management processes?	
15	Do event organizers and other stake holders appear committed to continuous improvement?	
16	Is a timetable available for safety audits, preventive drills and exercises?	
17	Is there an effective project management process, with cost and timing goals, for upgradation of infrastructure/facilities at and around the venue ?	
18	Is there a well documented, multi-agency coordination process--with clearly laid out communication links, frequency of ineteraction etc--in place?	
19	Have key hazards been identified and prevention methods used to mitigate these hazards?	
20	Are you happy with the arrangements? Would you visit the venue as a common visitor?	
	Total number of Yeses	

3.4. Information Management and Dissemination

The review of past disasters indicates that in the absence of necessary information, people may slow down/panic; change their direction during their movements leading to undesired flows and/or undesirable behaviour. While the absence or poor information management in itself can be a source of crowding, the appropriate information and its dissemination can be a useful weapon in managing crowds. Communicating with visitors and providing them with the correct information is a very critical factor in all situations viz. normal, disaster/emergency, and disaster recovery. Similarly, timely information exchange between various stakeholders viz. event management, government administration, security agencies, NGOs, media, and local population etc. will go a long way in ensuring that crowd gathering events run smoothly and successfully without any untoward incidents.

3.4.1. Information System for Visitors:

I. A proper briefing by the organizers, administration and the police making the crowd control arrangement in the local electronic media/press as curtain raiser before the event so that the persons attending the gathering are aware of the arrangements and no way to contact for relief
II. Terrain, weather and climate (a medical fitness certificate may be required at certain places)
III. An advisory on what is recommended, allowed and not allowed to be carried along (torch, food, water, medicine, winter clothing etc.)
IV. Maps with places of importance (event venues, hotels, food joints, hospitals police stations etc.)
V. Event route maps with entry/exit points, locker rooms etc.
VI. List of activities at the venue(s), and opening times
VII. Typical peak days/times; expected waiting time
VIII. Police, Fire, Ambulance numbers
IX. Registration requirements, virtual queue if any
X. Transport mode choices to go to/from the venue

3.4.2. During the visit:

I. Dos and don’ts to ensure smooth movement of crowd
II. Food, Water, toilets, police posts, information points
III. Routes in and around event venue
IV. Access to first-aid facilities
V. Suitable entry/exit for emergency situations
VI. Time to join virtual queue and approximate waiting time.

3.4.3. Information / Data for Venue/Event Organizers

Venue/Event Organizers and administrators should have the following data/information

I. Past data on number of arrivals, patterns
II. Likely arrival times, means of arrival and needs (e.g. Sabarimala Special Trains)

3.4.4. Documentation for Process Orientation

The venue/event managers may follow the documentation as given below to bring in process orientation to crowd management:

I. Site planning, Master Plan
II. Contingency Planning Document
III. Process for identifying hazards
IV. Process for managing hazards
V. Preparedness assessment check lists for fire/electrical safety for building/structures, queue control and management procedures,
VI. Time and motion studies to determine holding capacity
VII. Communication plan (internal/external, before the event/in case of emergency)
VIII. Capacity building plan, Involvement of community, NGOs. Training need assessment
IX. Key contacts
X. Process for the end of event meeting and documentation. This is very important as these documents will preserve the institutional memory and can act a knowledge source for the generations to come.

Appendix 3.2 Provides a sample outline for Crowd Management plan for an event/venue.

3.4.5. Information / Data for Security Personnel

Security Personnel should have the following information with them; carry out through briefing and dry run of the entire department one/two days before the event and also carry out mock drill for disaster management:

I. A detailed map showing entry/exit routes, holding areas, location of emergency services etc.
II. Intelligence on visitors, likely problematic visitors
III. Timing of peak activities, the routes and venue details
IV. Critical control points
V. Fire safety drills
VI. Command and control chains
VII. Evacuation and response plans

3.4.6. Information / Data for Local Residents

Local Residents should be provided the following information

- Various events, activities and their timings
- Evacuation and response plans
- Channels for information to be passed
- Temporary road closures, parking restrictions etc.

3.4.7. Information Management

1. If appropriate, delay the sharing of information. For example, if it is preferred that passengers should wait in the large holding areas in the railway station rather than on the crowded, congested platform, the platform number information need not be displayed or announced too much in advance.
2. Train/bus timetables may be displayed at various locations and in local dailies and not just at railway stations and bus stands. Up-to-date train running status, especially for the trains running late, can be displayed at appropriate locations to avoid crowding at the railway stations.
3. Avoid putting the information source at or close to entry/exit point or other bottlenecks where information seekers are likely to block the movement of the other visitors.

3.4.8. Signage

The event organizers have lots of option for information dissemination

- Type of sign information (e.g., security, medical, lost and found, promotions);
- Size and dimension, shape, height, width, depth;
- Material (e.g., cloth, plastic, flag panels, billboards, streamers, colours, audio-visual);
- Wording and language specifications; and
- Location

3.4.9. Information delivery & Choice of Media/Mode

As mentioned earlier the choice depends on type of the event (religious, festival, school/university event, cricket/sports event, music concerts, political gatherings), type of venue (bus stand, railway/metro station, school/college, Open ground/closed hall), type of crowd expected (sex, age, region, regular/occasional visitors, locals/outsiders etc.).

Appendix 3.3 provides a sample sitemap for event/venue website.

3.5. Safety and Security Measures

As seen in Chapter 2, Crush Disasters happen for variety of reasons like a) The Game/Event starting without us, b) Overbooking, c) Mad rush by few in panic/excitement, d) No assigned seat numbers, e) Door Buster i.e. heavily discounted retail sales etc. It is postulated that most of these incidents are avoidable by deploying various safety and security measures.

3.5.1. Generic Safety and Security Guidelines

- Watch towers at all vantage locations with reserve with wireless communication net work to assist in case of problem
- CCTV monitoring of the entire crowd sector wise at the main control room
- Mini UAV for observing the overall crowd in case the crowd spread is too big
- Deployment of sector wise proper barricades based on crowd pattern and terrain wise
- Have communication channels (PA system etc.) to send a message to the crowd
- Monitor crowd for developing hazard points

- Deploy snake line approach Ensure that the areas, where barricades like chains are erected, are kept well lit and visible to visitors during night lest they may trample upon it and if there is heavy rush, that could result in stampede.
- At number of religious places of mass gathering located atop hills/mountains, it is frightening for pilgrims to do their religious journey along with the speeding ponies/horses in both the direction. Shrine authorities should explore and expedite the possibilities of alternate track for pilgrims on pony/horses. Until this gets completed, arrangements should be made to deal with the route cleaning issue and staff associated with it.
- Discourage general admission
- Have alternative routes for releasing excessive crowd pressure
- Have plans to take care of VIP visitors. Do not hesitate to refuse entry to VIPs if assessment indicates that it will add to safety concerns.
- Ask foreigners to register and report regularly.
- Ensure emergency exits are not barricaded, blocked or otherwise inaccessible
- The shops, if possible, have to be confined to one side of the road and there should be a space of 3 or 4 metres in between cohorts of 5-6 shops so that one could escape through such space in the event of unexpected rush.
- The visitors should be encouraged to throw food wastes, plastic bottles etc. in clearly identified garbage bins lined up in large numbers across the roads. This will not only help in creating hygienic conditions but will also avoid panic situations arising out of any dog/monkey/elephant menace.

3.5.2. Specific Fire and Electrical, Structural Safety Guidelines

- Enforce fire safety standards
- Ensure that generator, distribution boxes, circuit breakers are in isolated place away from the mischievous crowd elements. There should adequate fencing and security, if required. The electrical appliances should have protection from the weather too.
- There should be safe and clearly labelled storage of fuel (e.g. diesel to be used by generators).
- Attempts should be made to minimize tripping hazards (electrical cables, wires) coming in the way of crowd movements and ensure that these are covered.
- Ensure that there is sufficient number of fire extinguishers at critical control points and those are of appropriate type (water/foam/powder) for the use.
- Sufficient number of Fire hydrants and First aid Kits should be available at site.
- Sufficient number of water tanks should be erected.
- Only authorised vendors should be involved in cooking and catering. Identity cards may be issued. Random checks should be conducted by police and/or event organizers so as to ensure that only genuine licensees are engaged in sales. NGOs should be encouraged to report the irregularities observed.
- Establish the load bearing (holding) capacity of the structures. Ensure that the structure is capable of handling the anticipated crowd turnout. Have a factor of safety.

- Ensure that lifts, stair-ways are well-lit, are in working condition and have unblocked access.
- Ensure that all the structures and electrical wiring/appliances are certified for safety by technically qualified personnel as designated by the government or as specified in the orders as to who should certify.

3.5.3. Cautious Use of Ropeways, Helicopter services

At a number of places of mass gatherings, venue managers have (or have proposed) alternate routes for visitors in the form of ropeways, helicopter services. While these will definitely help in emergency situations, and normally reduce a) the congestion on the regular routes, b) journey time, a mad rush for these services is observed. There should be, in general, stricter security norms for these. These services should be reasonably priced, else there will merely be a shift in crowding from the regular routes to ropeways and helicopter services. The limited opening hours and carrying capacity for these services may also lead to black market of ticket sales, VIP name dropping, and crowd heart-burns.

3.5.4. Typical Functions of Security Agencies at the Venue of the Mass Gatherings

I. Meet stakeholders to discuss time, place, weather, and attendance issues
II. Determine intention, motivations of the gathering (political, religious, entertainment etc.)
III. To work closely with event organizers in pre-planning
IV. Have regular internal/external Communication/Briefing with other stake holders
V. Visit venue to understand access routes, holding (queue complex) area, communications issues
VI. Continuously assess the situation and required resources personnel, vehicles, barricades and other equipment, as appropriate.
VII. Deploy the key personnel well in advance.
VIII. Establish clear criteria for the use of force for the dispersion
IX. Clearly define the roles and responsibilities for various hazard and risk levels.
X. To assist in managing crowd situations through established (as outlined in event management plan), continuous communication
XI. Overall Security and sanitising the venue through anti sabotage check
XII. Physical frisking after passing through door frame metal detector
XIII. Ticket/Permit Checking
XIV. Regulating the flows
XV. Crowd Control through monitoring, observation and intervention
XVI. Carry out dry run of the deployment and carry out mock disaster management drill well in advance with due publicity.
XVII. Crime and theft prevention
XVIII. Barricade staffing
XIX. Baggage screening
XX. Police department should give adequate publicity on the security arrangement made for the occasion and solicit cooperation and support from the stake holders through electronic and print media well in advance

XXI. Traffic and Parking management including traffic arrangement for safe corridor for movement of victims/causality to the nearby hospital in case of disaster.

3.5.7. Deployment of Barriers

3.5.7.1. Barricades, roadblocks and fencing may be deployed in target areas as deemed fit. These can be deployed to control the flow of pedestrians, hostile groups, and vehicles. The type and material of the barriers (see the adjoining table) should be in line with the intended purpose, crowd density and force expected. For example, roadblocks for vehicular movements should be made up of large, heavy objects and should cover the complete width of road including footpath, if any. Care should be taken that the barriers should be strong and safe as people, at time, may lean against them. The flexible barrier design that allows exit which would open at the instance of the manager (emergency exits) may be a preferred choice. All the barriers should be visible and area lighted properly in case the gathering is for the night.

Type of Barrier	Material	Purpose
• Barrier/fencing • Portable (temporary)/permanent • interlocking/standalone	• Wire mesh • Steel • Plastic • Concrete bollards • Wood • Bamboo • Sandbags etc.	• Controlling flow of pedestrians/vehicles • Directing the flow • Blocking the movement • Area delineation: Separating the groups, marking the boundaries • Safety and Security etc.

3.6. Facilities and Emergency Medical Services

3.6.1. Although it is commonly known that immediate medical attention after a fatal incident can save lives; presently, probably, there is no official requirement or standard for first aid rooms and on-duty medical personnel at places of mass gatherings. No wonder that some of the event/venue managers avoid/postpone investments in medical services/staffing infrastructure to save their funds. The shortage of medical, paramedical, public health professionals adds to the woes of others. The implications are loud and clear: Medical Preparedness is one of the weakest links in crowd disaster management.

3.6.2. The need is to develop mechanism for awareness creation, ensure availability of trained first-aid staff, kits, adequate stretches, emergency life saving medicines and devices, ambulances, mobile hospitals/teams, hospital disaster management plans, and addressing concerns in public health. The state/district administration should accordingly equip, train and prepare the doctors and the other staffs of the medical department.

3.6.3. Similarly, there are no standards on requirements of food, drinking water, and sanitation facilities. Improvements on these fronts too can go long way in managing visitors' experience and perception.

3.6.4. The following section provides generic guidelines in improving Facilities and Emergency Medical Services.

3.6.5. Improvement Guidelines

1. Determining the type and capacity of medical facilities/staffing/ambulances required
    - Understand the crowd profile (age, gender etc.)
    - Understand the impact of terrain, season etc.
    - Gather the medical problems reported historically (e.g. breathlessness is common at religious places atop hills)
    - Number of people expected and possible crowd management hazards, possible injury types
    - What is the current response time? Is it acceptable?

2. A fully equipped medical unit can be stationed at the venue during the major events/festive seasons with all lifesaving facilities.
3. Ambulances should be located in a way that they always have unblocked, escape route.
4. Have an up-to-date list of all local hospitals, primary health centres including private nursing homes, and mobile hospitals with their capacities.
5. Have a list of paramedics and civil defence society members who have undergone first-aid training, cardio-pulmonary resuscitation (CPR) training and training in transportation of disabled visitors
6. Establish direct communication link for first aid rooms and/or medical support facilities with local hospitals.
    - Hotline/emergency public phones for visitors to contact medical staff
    - Broadcast locations of first-aid/medical support rooms
    - Contact standby ambulances with staff trained for emergency care
7. Ensure availability of life saving drugs, vaccines, stretchers, oxygen cylinders etc.
8. There is a need and a great possibility in involving all sectors of community and private sector in capacity/capability building either through donations and/or community services.
9. All the hospitals should develop their disaster management plan especially highlighting casualty management and disease outbreak.
10. Arranging psycho-social support and mental health services for disaster survivors.
11. Ensure adequate drinking water supply and separate sanitation facilities for ladies and gents (with clear markings and signage) at a large number of carefully chosen points on all routes to avoid overcrowding at any of those. Clearly state cleaning schedule.

12. Place a large number of garbage bins with clear and readable markings on all routes. Ensure that there is a regular waste disposal activity and there are no overflowing bins.
13. There should be sufficient number of resting and refreshment facilities en-route. Covered shelters with seating benches will ensure orderliness even during rests.
14. Ensure that bathing *ghats*/ bathrooms, if any, are well maintained and have sufficient space. Deploy flow control, if needed.
15. Ensure that there are sufficient lockers/cloak rooms to keep belongings and to deposit footwear, if required.
16. A number of missing children Booths and first aid posts may be located at various points.
17. A number of public telephone booths may be located at various points.
18. Maps of the venue with key locations, routes, opening hours, and "you are here" signage should be located at various points.
19. The arrival/departure of trains/buses may be displayed at various points.
20. Ensure that there is parking and access for mobility impaired.
21. Ensure that all the facilities are well lit.
22. Carry out mock drill for medical evacuation well in advance.

3.6.5. Emergency Medical Services

It is recommended that all the venue/event managers should document their current Facilities and Emergency Medical Plans for disaster management and prepare a Roadmap for improvement in Facilities and Emergency Medical services in next 5 years. For an elaborate discussion on hospital emergency medical planning, please refer to GOI-UNDP (2008).

3.7. Transportation and Traffic Management

3.7.1. Consideration of available transport facilities, parking and traffic flow is very important in event site selection, crowd control, and also in emergency evacuation. The guiding principles in transportation and traffic management should be to use public transport as much as possible and minimize the impact of undesirable crowd and traffic.

3.7.2. The following section provides generic traffic management guidelines for police/traffic control staff, visitors, and local residents/NGOs.

1. Inform the traffic control staff about the event requirements, expected turnout, key event location and timings. Assess the impact of location, events close to the main venue, construction work (if any) on traffic.
2. Assess the parking space required.
3. Erect observation towers with PA system, wireless communication with the traffic police controlling the movement of vehicles in the parking space and binoculars for identifying vehicle numbers, for observing and regulating the traffic in the parking area.

4. Clearly identify parking spaces for 2/3 wheelers, cars and buses. The public transport system needs to be terminated a reasonable distance away from the venue of interest. This will help in avoiding direct rush into the venue.
5. The above principle applies for private vehicle operators and private vehicles also. This termination of vehicular movement must be supported by other means of transport (for the elderly/handicapped as per needs) towards the venue or by walk. The idea is to ensure gradual entry into the queuing system rather than a surge.
6. Restrict entry of vehicles (and type) beyond parking lot.
7. Regulate and arrange parking of vehicles. Maintain orderliness.
8. The venue of termination of public/private transport system must be large and must have clearly marked ingress and egress route.
9. Visit/check parking spaces regularly before the event.
10. Are visitors aware of the nearest railway station and bus stand and existing timetables? Are there any special buses/ trains arriving/ departing? Ensure that the visitors are aware of the peak times.
11. Coordinate with railways and bus operators well in advance so that they don't announce too many special trains/buses unilaterally.
12. Calculate the staffing requirement at parking spaces, railway station, bus stands, road intersections and pedestrian crossings.
13. Prohibiting vehicular traffic on certain roads around event is, generally, helpful in avoiding uncontrollable rush of people.
14. If roads leading to/from venue are narrow and sans divider, consider one-way movements only. Avoid inbound/outbound crossings.
15. Introduce shuttle bus services between key locations.
16. Clearly identify and label administrative/emergency routes which would be closed for vehicular and pedestrian movements. Pick appropriate fencing on these routes to prevent possible blocking by unauthorised movements.
17. Ensure that the emergency routes are weatherproof.
18. Consider charging high parking fee for private vehicles to discourage them from using those.
19. Consider charging high halting fee to discourage overstay
20. Provide shelters on the routes/ bus stop.
21. Ban unnecessary shops; remove illegal structures on the roads.
22. Movement of VIPs, foreign dignitaries, and diplomats should be on a separate route, if available. Consider using administrative/emergency route, otherwise.
23. Ensure that the routes are well lit.
24. Construct barricades to streamline flows or block movements at appropriate place as deemed fit.
25. Consider constructing temporary waiting halls en-route the venue. Ticketing, numbering and registration system can be put up at these gateways to limit the number of visitors or regulate their movements.
26. Inform the local residents/NGOs about the timing of the events and key locations and possible congestion areas.

27. Inform them about route planning around the event dates. Clearly mention the no entry zones, one-way etc. Distribute route maps in the form of pamphlets, publish in local dailies, TV channel and put the same on hoardings at key locations.
28. Consider introducing free/subsidised shuttle services for locals a few days before the event so that they won't get no entry/one way surprises which they may while using their own vehicles.
29. Introduce traffic control plan a few days before the event so that the locals can get used to it.

3.7.3. Emergency Transportation Plan

1. Create a contingency/emergency plan to allow quick deployment of buses, ambulances, vans etc.
2. Calculate the inventory required of such vehicles, drivers required and clearly establish instructions for their use.
3. Identify the appropriate locations for standby ambulances.
4. Clearly define emergency routes from the venue to the hospitals nearby.
5. Involve locals, NGOs, CBOs, PRIs, Ward members etc. to use their local knowledge.
6. Clearly lay down the procedures for removal of barricades: under what circumstances, who decides that etc.

However for a better clarity five Dos and Don'ts is tabulated in Appendix 3.4.

4. Execution of Plan

4.1. IRS in General

4.1.1. Efficient functioning of command and control is single most important component of Crowd Management. As per the best laid out practices, command and control should have unity and chain of command with built in organizational flexibility, manageable span of control, an integrated information management and communication system, media management and personal accountability. All the police arrangement for the crowd management prepared in consultation with the administration should invariably have incident response plan as part of the comprehensive crowd management arrangement. The seniority level of the officers involved in the entire arrangement should be commensurate to the anticipated crowd based on the local experience. It goes without saying that a well planned, well rehearsed and well executed crowd control management plan will always be successful. Wherein there won't be any requirement for disaster mitigation. Even if there any disaster, the management of disaster would also be successful.

4.1.2. Analysis of various disasters, including the crowd disasters, clearly brings out that there are a number of shortcomings like—

a) Lack of an orderly risk assessment and systematic planning process;
b) Unclear chain of command and supervision of response activity;
c) Lack of proper communication plan and inefficient use of available resources;
d) Lack of predetermined method / system to effectively integrate inter-agency requirements into the disaster management structures and planning process;
e) Lack of accountability because of ad-hoc nature of arrangements and no prior training for effective performance by the first responders;
f) Lack of coordination between the first responders and individuals, professionals and NGOs with specialized skills during the response phase;
g) Lack of adequate dry run of entire deployment and mock disaster management drill.

4.1.3. However to overcome these deficiency especially in response system, NDMA has come out with Guidelines on Incident Response System (IRS). These guidelines emphasise:

a) Systematic and complete planning process;
b) Clear cut chain of command;
c) System of accountability for the incident response team members;
d) Well thought out pre-designated roles for each member of the response team;
e) Effective resource management;
f) System for effectively integrating independent agencies into the planning and command structure without infringing on the independence of the concerned agencies;
g) Integration of community resources in the response effort and
h) Proper and coordinated communications set up.

4.2. The Incident Control Staff

4.2.1. Control Room

The senior most administrative officer of the area concerned shall be in charge of the control room to deal with the incident. He shall be assisted by the senior most officers of the police department, medical department, PWD, Forest, Fire Service and publicity. Major roles and responsibilities of each of the functionary of command staff are given in the succeeding paragraphs:

4.2.2. Roles and Responsibilities of IC

4.2.2.1. The IC will:

i. Obtain information in consultation with all the stake holders of integrated crowd management plan on:
   a) availability and procurement of resources;
   b) requirement of facilities like ICP, Staging Area, Incident Base, Camp, Relief Camp, etc.;
   c) availability and requirements of Communication system;
   d) future weather behaviour from IMD; and
   e) any other information required for response from all available sources and analyse the situation.
ii. determine incident objectives and strategies based on the available information and resources;
iii. assess requirements for maintenance of law and order, traffic etc. if any at the incident site, and make arrangements with help of the local police;
iv. establish appropriate IRS organization with operational Units/ sub units based on the span of control and scale of the incident;
v. establish ICP at a suitable place. There will be one ICP even if the incident is multi-jurisdictional. Even a mobile van with complete communication equipment and appropriate personnel may be used as ICP.
vi. ensure that the IAP (Incident Action Plan) is prepared;
vii. ensure preparation of IAP and ensure team members are briefed on performance of various activities as per IAP, ensure it will be reviewed every 24 hours and circulated to all concerned;
viii. ensure that planning meetings are held at regular intervals.
ix. ensure that adequate safety measures for responders and affected communities are in place;
x. ensure proper coordination between all Sections of the IRT, agencies working in the response activities and make sure that all conflicts are resolved;
xi. approve the deployment of volunteers and such other personnel and ensure that they follow the chain of command;
xii. authorise release of information to the media;

xiii. review public complaints and recommend suitable grievance redressal measures to the RO (Responsible officer);
xiv. ensure that the NGOs and other social organizations deployed in the affected sites are working properly and in an equitable manner;

4.2.3. Roles and Responsibilities of Administrative Officer (AO)

4.2.3.1. The AO will**:**

i. maintain a list of concerned line departments like police, Pwd, electricity board, medical and forest, private agencies (CBOs, NGOs, etc.) and their representatives at various locations;
ii. carry out liaison with all concerned agencies including NDRF and Armed Forces and line departments of Government;
iii. monitor Operations to identify current or potential inter-agency problems;
iv. participate in planning meetings and provide information on response by participating agencies;
v. ask for personnel support if required;
vi. keep the IC informed about arrivals of all the Government and Non-Government agencies and their resources;
vii. help in organizing briefing sessions of all Governmental and Non-Governmental agencies with the IC;
viii. perform such other duties as assigned by IC.

4.2.4. Roles and Responsibilities of Police Officer (PO)

4.2.4.1.The PO's function is to develop and recommend measures for ensuring safety of personnel, and to assess and/or anticipate hazardous and unsafe situations. The PO will be assisted by PWD, Health Department & Fire Department in discharging this duty. He will be authorised to stop or prevent unsafe acts. PO may also give general advice on safety of affected communities.

4.2.4.2.The PO will:

i. recommend measures for assuring safety of responders and to assess or anticipate hazardous and unsafe situations and review it regularly;
ii. ask for assistants and assign responsibilities as required;
iii. participate in planning meetings for preparation of IAP;
iv. review the IAP for safety implications;
v. obtain details of accidents that have occurred within the incident area if required or as directed by IC and inform the appropriate authorities;
vi. review and approve the Site Safety Plan, as and when required;
vii. perform such other duties as assigned by IC.

4.2.5. **Roles and Responsibilities of the Media Publicity Officer (MPO)**

4.2.5.1. **The MPO will:**

i. prepare and release information about the incident to the media agencies and others with the approval of IC;
ii. monitor and review various media reports regarding the incident that may be useful for incident planning;
iii. organize IAP meetings as directed by the IC or when required;
iv. coordinate with IMD to collect weather information and disseminate it to all concerned;
v. perform such other duties as assigned by IC.

4.3. Activation of IRS

4.3.1. Keeping in view the nature of event there must be proactive deployment of incident system. The event will dictate nature of the organization of IRS and requirement of resources. For smaller incidents one may not even require the deployment of full organization; however care must be taken not to amalgamate the tasks of various components but to depute one officer for more than task.

4.4. Unified Control

4.4.1. Unified Control is an authority structure in which the role of incident commander is shared by two or more individuals, each already having authority in a different responding agency. Unified control is one way to carry out command in which responding agencies and/or jurisdictions with responsibility for the incident share incident management. A Unified Control may be needed for incidents involving multiple jurisdictions or agencies.

4.4.2. If a Unified Control is needed, Incident Commanders representing agencies or jurisdictions that share responsibility for the incident manage the response from a single Incident Control Post (ICP). A Unified Control allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility, or accountability. Under a Unified Control, a single, coordinated Incident Action Plan will direct all activities.

4.5. Setting-up ICP/MCP/EOC

4.5.1. It is important to acknowledge that all disasters are local events as they take place within boundaries and jurisdiction of a local government body; and therefore, entire planning and response starts with the local capabilities and resources which may later be augmented by community and external resources. Based on the magnitude and nature of the disaster, ICP and/or Mobile Command Post may be setup in addition to Emergency Operations Centre.

4.5.2. The agencies dealing with the everyday emergencies (fire, road accidents, medical etc.) are generally the same to start the response to disasters, which require the coordinated efforts of multiple government and private agencies. It is, thus, important that every emergency and disaster should initially be tackled by well-trained and well-equipped first-respondents, viz. police, fire brigade, medical etc., directed by an incident commander.

4.6. Emergency Operations Centre[2]

4.6.1. The establishment of an Emergency Operations Centre, which in a way is a nerve centre, is mandatory due to likelihood of occurrence of disaster that can take place due to crowding. The main functions are a) data collection and analysis, b) make decisions to save life and property and c) disseminate decisions. This centre should be established at a prominent location with high visibility so that it can initiate immediate action in case of any eventuality. It should preferably be established under the local civil administration with representatives from police, medical set up, the concerned shrine administration etc. The centre will contain the latest telephone numbers of all important response centres like hospitals, ambulance, fire services, and responsible government functionaries whose instructions matter to resolve issues.

4.6.2. In the following section, steps and measures needed to establish Emergency Operations Centre and its responsibilities are enumerated. The Incident Command System (ICS) provides a flexible management structure and system for conducting emergency operations.

4.6.3. Guidelines for Establishment of Emergency Operations Centre

1. This centre will by far possible, be near to the vicinity of the subject it is going to control.
2. The centre should be in a safe area where it is not affected by any type of disasters, both man-made and natural, so that it can exercise control over its task under any condition.
3. A Grid Map of the entire area under jurisdiction will be prepared to facilitate accuracy in pinpointing the troubled area and activate appropriate response.
4. This map will contain all relevant data like position of volunteers/police, ambulances, fire services, medical emergency room, ticket location etc.
5. All the staff involved in this activity will have a particular call sign and the grid map person. This will give them leverage in pre-empting a particular activity that ensures safety of the crowd or if they are nearest to the spot, it will aid them in initiating corrective action and feedback to the control centre.
6. This centre will exercise positive control over the crowd movement to and from the event venue.
7. This centre will not act under pressure of any sort from any individual or agency requesting speedy access to event/venue. At the same time, it will exercise total discretion in allowing the same only if not doing so may lead to safety and security concerns.

[2] Largely based on inputs from AFP-2012 batch, IIM Ahmedabad

8. The centre will be the hub for information flow about the crowd movement, both up and down.
9. All emergency support services will be coordinated from this centre.
10. This centre will exercise direct control over the already parked ambulances, fire services and regulating their movement, in and out of the disaster prone area.
11. This centre will pre-validate and decide the level & distance of accessibility of emergency services in the disaster area to avoid congestion and quick turnaround, there by speeding up the movement of cases and vehicles.
12. The centre is also responsible for validating the main routes for crowd movement and alternative routes (marked as standby for ingress and egress).
13. The centre will exercise/regulate the positioning of food stalls, public facilities, watering points, rest areas and display systems for easing the flow of crowd and their anxiety level.
14. The entire communication network i.e. the public address system, wireless setup, display system etc. will be controlled by a dedicated team under the supervision of one competent person, who will in turn report to the chief of Emergency Operations Centre.

4.6.4. Elements at Emergency Operations Centre

4.6.4.1.The elements in an Emergency operations centre are given below.

(a) **Integrated Communications System:** The centre will have the following elements: **CCTV**: Positioning of Close Circuit Camera at every grid point (Camera Movement/Direction control vested with Communication centre) can give instant to instant information on the situation at ground to the control centre. The grid number of the location must be incorporated into the cameras display so as to generate clarity of information regarding location. This makes the system more accurate.

(b) Public Address System: The Public Address system must be laid out with speakers at all key points along the route. The cabling must be secure and put through a conduit properly. This is essential to prevent PA system failure en-route. The entire control for usage must be with the emergency control centre. This will also extend up to the location where the Ambulances are parked under normal conditions. The Ambulance staff must respond to any call made on the PA system.

(c) Announcers: There should be at least three commentators including ladies, who can make announcements in the local language and in other dialects (based on the demography) to facilitate good clear communication. They should be well versed with the emergency evacuation plans, alternate routes, location of facilities, route map and must have access to the crowd situation at the venue. Over and above they must be accessible to the public through a public relations officer and a responsible police officer or equivalent to help the public.

(d) Display system: The display system (Television) must be positioned at various points giving a variety of information to the people in the crowd like the ‘Average service time

today is ___', 'it will take '__' minutes for the service', some devotional songs which will reduce the anxiety level of the crowd in line. The display system must be multi-lingual to cater for the varied crowd.

(e) Base Station with Repeater (Wireless): This system on its own will have a range of 2-3 Km only in simplex mode of operation under Line of sight conditions. With a base repeater station, it will have a range of 10-12 km which is desirable and will help contact local police stations/hospitals through the wireless on Duplex mode of operation. The frequency plan for crowd management must be augmented with appropriate call signs and channel allocation for correct point-to-point communication. If the main city is far off, additional repeater stations may be employed. It should be remembered that wireless mode of communication must augment those held by the police forces deployed and must not have frequency clash. Five MHz channel spacing is mandatory between transmitted and received frequencies. There should be at least a three member team at the emergency control centre to ensure trouble free communication. Initial preparation for installation must involve validation of communication through trial contacts across the route being followed.

(f) Medical Emergency Section: This section has to obtain direct & dedicated hotlines to the hospitals which are already earmarked for meeting the requirement of any disasters. This section will have the phone numbers of all the doctors, hospital wise. There will be at least 10 wireless sets for direct communication with the hospitals in case of communication failure. It would, however, be ideal if triage, evacuation, and mobile facilities move to places rather than the other way.

(g) Security Control Centre:

The main responsibility of this centre will be to control the crowd, identifying unwanted elements capable of initiating trouble and maintain law and order through its forces which are deployed in the field. It also ensures positioning of surplus forces at critical bottleneck locations for crowd management.

It is very clear that the communications systems are the backbone of the Emergency Operations Centre. A lot of redundancy has to be built in their design so as to prevent complete outage.

4.6.5. Sample Response Plan

4.6.5.1.We take a hypothetical case where there is an accident and about ten people are hurt. Fortunately, the presence of mind of the volunteers prevents the mishap from escalating into a big one. The Response plan outline will be as follows:

(a) **(T + 00:03:00)** Call on wireless from volunteer to emergency control centre, giving the grid map coordinates, the number of causalities & type of injury.

(b) **(T + 00:07:00)** Emergency Operations Centre (EOC) informs Medical centre to call for an Ambulance and to move it to the nearest possible point for causality evacuation. EOC puts hold on entry into the system temporarily.

(c) **(T + 00:10:00)** It ascertains the level of emergency at the troubled spot through the CCTV system. Commentators ease the fears of the crowd so that they don't panic. It moves Surplus force to help in evacuation and balance the volunteer force in crowd management.

(d) **(T + 00:15:00)** Medical centre appraises hospitals to be on standby, while EOC informs city traffic police to provide free passage through the traffic to the designated hospital.

4.6.5.2.A similar response plan can be prepared by venue/event managers for every hazard and risk level. A clear documentation of chain of command (who will do what and when?) has to be in place.

For Further reading:

[1] NDMA, 2010, National Disaster Management Guidelines—Incident Response System.

5. Role of Media

5.1. In crowd management, media can play the following roles (Sinha, 2008):

- Educational: media can play the role of educating public about the possible disaster threats, ways to prevent them and how to be better prepared in the face of a disaster.

- Critical: media can critically evaluate the disaster management plans to highlight the gaps for correction.
- Suggestive: media can help generate, through debates/discussions, expert opinions on long term policies for disaster management and relief measures.

5.2. Role of Media in Disaster Management

5.2.1. In spelling out the role of the media, we follow the classification by SEEDS Asia in their presentation (2008): role of media before, during, and after a disaster.

5.3. Role of media BEFORE a disaster

- Analysis of sources of risks: media can help bring to the attention of the authorities the potential sources of disaster for proactive preventive measures. It can also play a role in preparing the community by training them and making them aware about do's and don'ts to avoid such a disaster or during a disaster.
- Controlling law and order situation: media can keep a watch on anti-social elements and highlight suspected anti-social activities, which can help avoid crowd disasters. They can also assist the law and order machinery in restoring peace and harmony.

5.4. Role of media DURING a disaster

- Can play a vital role in broadcasting accurate information from the site of the disaster to the anxious public, which may help prevent rumours and hence panic.
- Can advise the public about Do's and Don'ts to contain the effects of the disaster. For example, it can inform the public about the other potential secondary risk, and advise them accordingly.
- Can help the authorities and aid groups by highlighting the needs of the survivors. Can also help them in reaching out to those affected by the disaster, their families and friends to inform them about the relief measures being taken.
- Can help public contact their affected families and friends.
- Can facilitate resource mobilization (e.g., help raise funds and material through appeals) for the relief operations. It can inform public about the several modes of contributions.

5.5. Role of media AFTER a disaster

- Can inform the public on post-disaster rehabilitation efforts being made by authorities and aid groups. It can thus also help maintain a public pressure on the authorities to act sincerely.
- Can help investigate the causes of the disaster for the concerned authorities to help prevent it in future.
- Can help generate expert opinions through debates/discussions for better prevention of such a disaster or better preparedness in the event of a repetition of such a disaster.

5.6. Event/venue Managers' Engagement with Media

Given the important role played by the media, event/venue managers should proactively engage with the media personnel on a continual basis. Here are some of the suggestions for the same:

- Assign an information officer for the event/venue, who can act as a nodal point of contact for the media personnel.
- Use a mix of media pool (TV, Radio, Print etc.) for information dissemination to the visitors.
- Establish a dedicated area for the media personnel during the event.
- Proactively provide information to the media rather reacting to the queries.
- Consider putting media personnel along with enforcement agencies, if appropriate.
- Provide media personnel the minimum training on how to avoid exposing themselves to the risks involved in the coverage of a disaster.
- Provide the required training to overcome trauma arising from witnessing mass casualties in a disaster.
- Develop policies and procedures for electronic and social media.
  The use of electronic / telecommunication devices and social media have grown up significantly all over the country. The effective policies, procedures and arrangements can help the organizers in making the events successful. The possible application areas are
    - Connect with prospective visitors
    - Updated, accurate information dissemination about the venues/ event schedules
    - Providing weather, traffic update, advisory, timely warnings, emergency notifications
    - Providing ways to visitors for connecting with Police, Emergency Services
    - Search, Evacuation, and Rescue Operations

5.7. Code of Conduct for Media Covering Places of Mass Gathering

Given the important role of media in crowd management at places of mass gathering, it needs to act responsibly. The Supreme Court of India in its judgement (2012) on the case of 26/11/2008 terrorist attack on Mumbai has commented that "..it is beyond doubt that the way their operations were freely shown (on TV) made the task of the security forces not only exceedingly difficult but also dangerous and risky." The Press Council of India: Norms of Journalistic Conduct, 2010 lays down the code of conduct for media to be followed. The following codes, which are pertinent to the coverage of places of mass gathering, should be proactively provided to media personnel to be reminded of their responsibilities:

- Media must be objective, factual and sensitive. It shall eschew publication of inaccurate, baseless, graceless, misleading or distorted material. Unjustified rumours and surmises should not be set forth as facts.
- Media must inform and educate the people, not alarm or scare them.

- Natural or man-made hazards become disasters through acts of commission and omission of the society. Therefore, the disastrous impact can be minimized by preventive action taken by all the stakeholders including the media.
- Media should give wide publicity to the do's and don'ts and the potential benefits of disaster mitigation so that the society follows them before, during and after the occurrence of the disasters. People should be detailed on standard guidelines. The issues of children and women which are the most vulnerable groups during and after disaster should be handled carefully by the media.
- It is necessary to have complete cooperation between the media and all governmental and non-governmental agencies. The extent of the coordination and cooperation between them determines the nature, the degree and the scale of the preparedness to prevent or meet the disasters.
- The investigative journalist should resist the temptation of quickies or quick gains conjured up from half-baked incomplete, doubtful facts, not fully checked up and verified from authentic sources by the reporter himself.
- Intrusion through photography into moments of personal grief shall be avoided. However, photography of victims of accidents or natural calamity may be in larger public interest.

6. Role of Science and Technology

6.1. In this chapter, we first review some of applications of Information and Communication Technology (ICT) in crowd management. Some of the advances in ICT, research trends which we should monitor and investigate ourselves are also highlighted.

6.2. Use of ICT in Crowd Management

6.2.1. The availability of advanced ICT at affordable prices will ensure that these are going to be main enablers to improve the crowd experience and crowd control in the years to come. The following table summarizes the most common technologies and their typical usage.

ICT for Disaster mitigation and Prevention	**ICT in Disaster response and relief**
Technology • GIS, Remote Sensing • Radio, Television, telephone • SMS, UMS, Cell Broadcasting, Internet/Social Media • RFID • Space based sensors and balloons	Technology • PA system, SMS, UMS, Cell Broadcasting, Inter-operability of mobile service providers • Emergency lighting, alarms • RFID Tags • Registration database software • Space based sensors and balloons
Typical Usage • Early warning system, Potential Risks, Vulnerabilities • Registration of visitors, Virtual Queues, RFID • Information dissemination • To regulate flow of visitors • Prepositioning of resources	Typical Usage • To ensure rumours do not spread • Registering missing persons • Search and rescue • Keeping track of relief organizations, Camps of displaced persons • Insurance processing • Resource inventory management

6.3. Contemporary ICT issues

6.3.1 Registration Database

It is desirable to have registration of all the visitors. A database system should be deployed to capture demographic details (gender, age, and place etc.) of the visitors. This data would be useful in capturing underlying patterns, if any, which can help in making better arrangements. The mandatory registration of visitors is an extremely important step in "input control" in queue management. At some of the popular shrines, this registration is also the insurance cover for the visitor.

6.3.2 Integrated Computer Systems

6.3.2.1 It is observed that, while computers have been deployed at various route points to control crowd, they currently work as standalone systems. For example, a visitor registration slip generated by a computer system at the entrance of the venue may not be read by a) a computer connected to a bar code scanner at a security check post on the way to the main

venue or b) a computer system which assigns group number to the visitors before their release to the main venue.

6.3.2.2 In absence of an integrated information system, it is not possible to ascertain whether visitors with a particular registration slip have arrived at the venue, which could be useful in case of unfortunate catastrophes or for insurance claims. This also prevents the organizers from being able to collect vital statistics like the average time taken by visitors from registration counter to check post to the main venue. Such a measurement system is needed to monitor and control the crowd movement in an efficient and effective way.

6.3.3 Online registration:

A lot of places of mass gatherings (e.g. Vaishnodevi Shrine, Sabarimala Shrine) have started online registration of pilgrims, and its popularity is bound to increase with time. This registration process could be used to influence the arrival pattern. For example, pilgrims with online registrations may be allowed entry to the queue complex only during comparatively lull periods.

6.3.4 Deployment of new age identification tags:

The temple boards/event managers should seriously consider the use of bar-coded bands, RFID tags, or biometric smart cards instead of the traditional paper slips, which get soiled very easily. These tags will carry the basic information of the visitors. As visitors move through the system, the scanners deployed at various locations could be used to keep track of their movements along with timings. This can also help track the exact number of visitors at various locations (which is currently not possible at most of the places) and can further enable better control of the traffic flow along the route. RFID tags will also be useful for tracking purposes in case of a catastrophe/stampede and in identification for insurance claims, if needed. Although this new system will bring its own set of challenges, the deployment of these identification and timer tags is highly recommended.

6.3.5 Geographical Information Systems

Geographical Information Systems (GIS), wherever possible, should be deployed in location planning, layout, alignment of roads, structural assessment of parking lots, helipads, laying utility lines (water, electricity, gas) etc. It can also be used to determine the hazard location, space management, and determination of evacuation paths. Satellite-based advanced technologies and GPS enabled GIS will play a critical role in years to come.

6.3.6 Closed-Circuit Television Camera / UAV etc:

6.3.6.1 Closed-Circuit Television (CCTV) cameras are becoming cheaper day by day and should be deployed for surveillance and early detection of emergency. A central control room should be setup to observe critical hazard points including entry/exit gates, bottlenecks, narrow stretches, parking lots etc. at the venue. The typical indicators in crowd monitoring

are space between people, number of people in hazard area, Crowd build-up in an area, Crowd behavioural changes (viz. pushing, rushing) etc.

6.3.6.2. More advanced cameras have motion-detection and email alert features which are important from crowd management point of view. The control room should be appropriately staffed by trained personnel. It is also essential to clearly state trigger and action points for various values of crowd density and accelerating movements. A direct communication link should always be available between central control room and security personnel deployed in the vicinity of CCTV cameras.

6.3.6.3 Utilization of UAV. Light duty UAV should be utilized for monitoring the crowd behaviour.

6.3.6.4 It is recommended that all the venue/event managers document a) their current ICT plans for disaster management and b) A Roadmap for ICT Deployment in next 5 years.

6.4 Research Trends

6.4.1 Image processing

6.4.1.1. The advances in image processing technology along with CCTV stream are going to see more and more usage in crowd management practices. Systems have been developed by the researchers for real time analysis of crowds to detect a possible emergency. Typically, these systems have methods to determine crowding situations and corresponding plan of actions. The crowd density (local and global) and accelerating movements are determined using object characterization (number of pixels and shape of objects etc.). The complete path network, generated using location plan, positioning of barricades, obstacles, entry/exit points etc., is then used to determine shortest evacuation plan using GIS.

6.4.1.2. A development of real time crowd monitoring using infrared thermal sequence has also been reported. Forward Looking InfraRed (FLIR) cameras, typically used in military applications are deployed and software modules developed for determining crowd density.

6.4.2. Crowd Simulation

6.4.2.1. Crowd simulation studies are becoming an important cross functional research area. A number of simulations have been developed recently to a) Evaluate the capacity of venue/ holding area, b) Evaluate various crowd evacuation strategies, c) Evaluate and compare flow control strategies, d) Estimate evacuation time, e) Estimate crowd density and force at entry/exit gates/ barricades etc.

6.4.2.2. As seen in Chapter 2, structural failures have also been cited as reason for crowd disasters on numerous occasions. Sagun et al (2008) observe that the inappropriate building and structural designs, often, contribute to the problem and hence recommend that

building designs must incorporate the issues related to movement of building users like way finding, crowd flow, control, alarm and communication systems etc. in addition to the traditional dimensional, structural and environmental concerns.

6.4.2.3. Possible research themes (not exhaustive) include:

1. Empirical evidence of adherence to Life and Crowd Safety guidelines from the National Building Code, 2005.
2. Review/define guidelines for designs to ensure better safety of visitors within large public spaces like railway/metro stations, stadia etc.
3. Study crowd behaviour and exit preferences through evacuation mock drills.
4. Develop simulation software to model crowd behaviour and movement in buildings; Develop and test scenario based cases.

6.5 Crowd Behaviour and policing strategies

As mentioned in earlier chapter 3, crowd behaviour is different than that of behaviour of individuals constituting the crowd. It is very essential to understand the mood, emotions, and characteristics of the crowd from the policing point of view. The perceived image of policing by the use of force at all places, all times, and all occasions needs to be corrected. There is a need to appreciate and document cases of highly effective policing in crowd management without the use of the force. The policing required for the casual crowd at an accident site or a fair would obviously be different from the one required at a political rally. When would force be useful, when would persuasive and psychological control tactics work are just some of the research questions worth pursuing.

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7. Legal Provisions

7.1. Introduction

In India there are various legal provisions to regulate and manage crowd that have stood the test of time. The focus on crowd management in places of mass gathering and role of Police and District Magistrate should be understood in background of various legal aspects. The word crowd has a legal definition in law. Here are the definitions associated with the gathering of people.

Crowd: A large number of people gathered together, typically in a disorganized or unruly way.

Mob: A large crowd of people, especially one that is disorder by and intent on causing trouble or violence.

Assembly: A group of people gathered together in one place for a common purpose.

Unlawful assembly: Unlawful assembly is a legal term to describe a group of people with mutual intent of deliberate disturbance of the peace.

Riot: Is a form of civil disorder characterized often by what is thought of as disorganized groups lashing out in a sudden and intense rash of violence against authority, property or people.

Before we look at the legal aspects for crowd management, it is important to acknowledge a) Right to assemble, and b) The difference between an unlawful assembly and a riot. The article 19 (1) (b) of the constitution of India provides citizens right to assemble peacefully and without arms. This right includes the right to hold the meetings and take out processions. In India, the assembly for religious and social events is very common. However the individual's right and liberty is precedented by the public order under article 19 (3). The Government has therefore, been empowered to impose reasonable restrictions on the right to take out processions or hold meetings which are likely to lead to a disturbance of public tranquillity. It is under this philosophy that public order maintenance is done. The public assembly becomes unlawful (under section 141 of the Indian Penal Code) when it becomes unruly, which can cause damage to life and property. When the members of the unlawful assembly use force or violence, it turns into a riot (under section 146 of the Indian Penal Code).

7.2. Duty of Police and Magistrates

7.2.1. All towns in the country, however large or small have a particular area and routes dedicated for the purpose of holding public meetings. The police and the district administration have a duty to facilitate these meetings, in which citizens exercise their fundamental right of public assembly. At the same time, living in a democracy requires the observance of certain rules, to allow the State to discharge its responsibility of maintaining peace and security for everyone at all times. They are given prior information about the

nature and time of protest and the route to be used by the procession. If these steps are taken, the police and the administration cannot do anything that will interfere in holding peaceful protests.

7.2.2. The police have to play a key role in crowd control no matter what is the type and nature. It has to be very quick in its initial response to a crowd situation. When a crowd is predictable or foreseeable, such as a rally, fair etc., the police must keep itself in readiness to respond to it in a professional, competent, and humanitarian manner.

7.2.3. Police officers and Magistrates have been entrusted with certain powers and duties to deal with unlawful assemblies. Section 23 of the Police Act of 1861 states that "*it shall be the duty of every police officer to prevent the commission of offences and public nuisances; and to apprehend all persons whom he is legally authorized to apprehend and for whose apprehension sufficient grounds exist*."

7.2.4. The police response to a crowd will vary, just as the nature and effects of the crowd will vary and such crowd control should be an integral part policing. Police shall work to achieve following objectives:-

- To save lives
- To prevent escalation of casualty
- To relieve suffering
- To safeguard the social fabric
- To protect property
- To facilitate criminal investigation as well as departmental, public or judicial enquiry, if any ordered.
- To restore normality as soon as possible.

7.3. International Standards

As a responsible member of the international community, India is bound by United Nations standards, which are the basis of many of our laws and regulations. **To reiterate, the UN Basic Principles state that the use of force in dispersing non-violent unlawful assemblies should be avoided and if that is not possible, then minimum force** should be used. In the case of violent unlawful assemblies, **firearms should only be used if less dangerous means are not available and only to the minimum extent** necessary.

To aid the magistrates and the police in their discharge of crowd management duties, there are various regulatory, preventive provisions, and punitive actions that they can take under various laws. These are briefly mentioned in the next section.

7.4. Sample of Key Legal Provisions

In this section, we document and comment on relevant sections of existing acts and rules (representative and not exhaustive) which are applicable for the effective crowd management. In particular, we briefly review provisions of the Disaster Management Act 2005, the Police Act 1861, Madras City Police Act 1888, Kerala Police Act 2011, UP Melas Act 1938, Cinematograph Act 1952, and Delhi Cinematograph Rules 1953.

7.4.1 Disaster Management Act 2005

There are number of provisions in the Disaster Management Act which are applicable for crowd management.

- Sections 24 and 34 provide powers to control and restrict vehicular and human traffic to/from vulnerable and affected area.
- Section 33 allows district authority to require any officer or any department at district or local level, if necessary, for disaster management tasks.
- Section 41 mentions that it is a function of local authority to ensure that all construction projects under its jurisdiction conform to extant standards and specifications.
- Sections 51, 52, 53 make obstruction in discharge of duties, false claims for obtaining benefits consequent to the disaster, and false warning on disasters punishable offence.
- Section 58 deems company/individual in charge of the conduct of the business at the time of disaster to be guilty of contravention.
- Section 65 gives power of requisition of resources, provisions, vehicles etc. for rescue operations.

7.4.2. The Police Act 1861

The crowd management related provisions in this act are as follows:

- Section 15 allows quartering of additional police in disturbed or dangerous districts.
- Section 17 allows appointment of residents of neighbourhood as special police officer during the period of disturbances.
- Section 30, 30A allows the regulation of public assemblies and processions and licensing of the same.
- Section 31 makes police duty bound to keep order on public roads.

7.4.3. Madras City Police Act 1888

The crowd management related provisions in this act are as follows:

- Section 34 makes places of public resort to be compulsorily licensed.
- Section 35 makes eating houses, hotels, wine shops, fencing school, etc. to be compulsorily licensed.
- Section 41, 41A gives power to regulate assemblies, meetings and processions in public places, etc.

- Section 61 gives police and fire service to remove obstructing persons/structures in case of a fire.
- Section 71 has penalty causes for certain offences, like elephant and camel drives/rides, obstructing thoroughfare, organizing assemblies without proper lighting arrangements etc., in public places.
- Section 74 prescribes penalty for lighting bonfire, burning straw, discharging fire-arm, etc. in or near any public place.
- Section 76, 76A provide powers to cancel or suspend any license for the breach of conditions of license.

7.4.4. Kerala Police Act 2011

The provisions of Kerala Police Act 2011 related to crowd management are:

- Section 37 allows entry of police in private places for the purpose of ensuring security or for preventing imminent danger.
- Section 45 gives special powers for regulation of vehicular, human traffic; suspend arms and explosive licenses in the disturbed area.
- Section 64 recommends deployment of community policing to give general assistance to the police in the discharge of their duties.
- Section 67 allows taking over possession of building and premises for preventing riot.
- Section 68 gives senior most police officer present at the accident or disaster place powers to order as the circumstances may warrant as to the behaviour of all persons.
- Section 69 allows certain actions, like closure of certain streets etc., on occasion of fire, disaster or accident.
- Section 76 gives power to temporarily reserve any street or public place by public notice.
- Section 79 allows district police chief to permit, control or regulate any public assembly for the maintenance of law and order or preservation of public peace or public safety.
- Section 81 allows notification of Special Security Zone on account of high security threats.

7.4.5. UP Melas Act 1938

The crowd management related provisions in this act are as follows:

- Section 6 gives district magistrate power to impose toll and fees for any vehicle for animal entering, registration of animals sold within the Mela area.
- Section 7 gives district magistrate power to prescribe frees for license to play any professions, trade or calling in the Mela area.
- Section 8 gives officer-in-charge authority to allot sites for market places, bathing places, recreation and entertainment places, officials etc. in the Mela area.
- Section 9 allows district magistrate to make rules to provide generally against the outbreak or spread of fire.

- Section 10 allows officer-in-charge to demolish any structure which in his judgement necessary for preventing the fire from spreading.

7.4.6. Cinematograph Act 1952

The crowd management related provisions in this Central act are as follows:

- Section 10 makes cinematograph exhibitions to be licensed compulsorily and section 11 makes district magistrate the licensing authority.
- Section 12 states that licensing authority shall not grant license unless adequate precautions have been taken in place for the safety of persons attending exhibitions therein.

7.4.7. Delhi Cinematographs Rules 1953

The rules stipulate number of spectators that can be accommodated in the building. There are mandates and suggestions for seating arrangement, gangways, staircases, exits, parking arrangements, and fire precautions.

7.5. Comments

As is evident from the discussion in the previous sections, there are lots of provisions in the existing acts and rules for effective crowd management. However, enforcement and implementation are the key challenges faced by government administrators and law enforcement agencies. Dabwali Fire tragedy and Uphaar Cinema Tragedy are the typical examples of enforcement issues. The casual approach in issuance and renewal of permits by municipal authorities without proper scrutiny and documentation was criticised by the High Court and the Supreme Court as well. Lack of sufficient manpower in permit granting bodies, political pressure, urge on the part of event organizers to hold an activity, more and more deployment of unskilled/untrained private security and stewards to save cost, greed to use emergency/reserved exit way space for commercial activities are some of the typical issues in enforcement. Stricter penalties/revoking licenses for construction/fire safety violations, random checks and inspections, certification and training of private security agencies/personnel are some of the possibilities going forward. The building/fire/electrical safety license issuing authorities should be sensitised again and again so that one can't play with the lives of the human beings and one shouldn't compromise on the extant safety standards in the country.

The Supreme Court cases related to the compensation to the victims of Uphaar Cinema Tragedy and Dabwali Fire tragedy also provide learning. The Supreme Court observes that it is time consuming and expensive to get legal liability damages, which exist solely as a remedy out of private law action in tort, as no statutory formula has been laid down. The Supreme Court also expresses the need for a comprehensive legislation dealing with tortuous liability of the state and thinks that it is high time that a sophisticated jurisprudence of public law liability is developed like in UK and the European Court of Justice. While this may take time, we think that, event/venue managers, in their own interest, should get liability insurance for their visitors, on their own. For example, Shri Maa Vaishnodevi Shrine Board has insurance cover against any accidental casualty for those who take the holy pilgrimage.

Subsequently, liability insurance should be made mandatory for all the events and venues of mass gatherings. At number of places of gatherings, the organizers can think of an entry fees which will include a component of disaster insurance coverage for loss of life, injury and hospitalisation. Thus, an insurance cover can assist organizers in disaster relief and risk transfer.

We propose that the primary responsibility of the proactive crowd safety and management should be with the event/venue management and organizers. This will ensure that they make appropriate arrangements; and develop and execute holistic disaster management plans, which will be scrutinised and/or approved by the competent authority from time to time. A debate is warranted whether to have legal provisions to hold organizers responsible and liable for human disasters during the event/at their venue.

8. Capacity Building

8.1. Introduction

8.1.1. There is a dire need to enhance and upgrade skill levels of those involved in crowd management processes. With the presence of NDMA, there is a clear trend away from the reactive to proactive disaster management approach. To sustain this, a huge capacity building exercise will have to be conducted from grass root level to the top. The next section presents some of the broad steps in that direction.

8.2. Service Quality Framework for Capacity Building

8.2.1. As mentioned throughout the report, the entire system should be geared towards providing a safe, hassle free and memorable experience to its visitors. Servqual model proposed by Parasuraman et al (1998), attempts to measure the quality of service rendered. This survey based instrument administers a questionnaire to the visitors to understand their expectations from the venue/ event (before their actual visit) on the dimensions of 1) Tangibles, 2) Reliability, 3) Responsiveness, 4) Assurance, and 5) Empathy. After visits, another set of matching questionnaire is administered to understand the visitors' perception of the service rendered on the same five dimensions. If the perceptions exceed the expectation, the service quality is considered as acceptable; otherwise, the instrument identifies the gaps in service delivery mechanism i.e. on what dimension the service is lagging. The event/ venue organizers need to work towards building capacity in these gap areas. Table 8.1 shows Servqual's five dimensions for events/ venues.

Table 8.1 SERVQUAL's Five Dimensions for Events/ Venues

1. Tangibles	• Physical facilities and their appearance and cleanliness ○ Access, Routes, Medical, Hygiene, information kiosks etc. • Waiting times : For prayers/visit/service, entry, exit • Facilities to make wait comfortable
2. Reliability	• Providing hassle free experience as promised • Providing accurate and timely information • Adherence to the schedule of the events and venues
3. Responsiveness	• Accessibility of staff, volunteers, police, helplines etc. • Willingness of staff and volunteers to help visitors and provide prompt service • Capabilities and preparedness to help visitors
4. Assurance	• Credibility and reputation of event/venue organizers • Knowledge and courteousness of the staff, volunteers to inspire trust and confidence amongst visitors • Sense of security and safety amongst visitors
5. Empathy	• Approachability of staff, volunteers, police etc. • Caring attitude in helping and supporting (more so for children, women, and elderly visitors)

(Adapted from Parasuraman et al, 1988)

8.3. Research, Education and Training

a. State police and administration should involve local universities and college for carrying out study as part of project work of the students. The studies so carried should be utilized by state police and administration for further improvement in the crowd management technique.

b. More researchers should also be encouraged to take up studies in crowd behaviour and psychology.

c. Encourage research to determine acceptable crowd density, velocity in various types of terrains, locations. There are no established norms for these. Encourage development of crowd movement simulations.

d. Develop case studies, like the ones developed by IIM Ahmedabad on Tirupati Tirumala Devasthanam, and Vaishnodevi Shrine, in crowd management and control. These cases have decision focus. The participative learning using the case methodology is, typically, appreciated more than the regular lecture based classes.

e. Institute awards to recognise best practices. Conduct workshops, conferences, and competitions etc. for knowledge transfer.

f. While acknowledging that while all event managers can do Servqual study, not all of them would have resources to fill the gaps on their own. And hence the stakeholders' approach is recommended like involvement of voluntary organizations, youth and students.

g. If sufficient number of police personnel and volunteers are not available, the service of student police and volunteers of National Service Scheme can be utilized for pilgrim service, cleaning etc.

h. In large number of places NGOs, youths and civil defence workers etc. render yeomen service. There services should be streamlined and synthesized with security& stewarding services.

i. The training curriculum for the basic training of state police for constable, sub inspectors and DYSPs should be revisited to usher in new crowd management technique

j. Short duration training programmes, conferences should be conducted. The intended audience initially is police, security staff. There is a clear need and trend of using softer aspects of crowd control as against force use.

k. All venue/event managers should do training needs assessment for their personnel. Security personnel, NGOs, Civil defence volunteers should be given MFR training.

l. Design for evacuation: Structural engineers, architects should be given exposure to techniques, design/material changes deployed to ensure quick evacuation in case of emergency.

m. Development of multimedia cases should be encouraged & Videotapes of crowd events can be used in conducting training programme.

n. Develop and conduct training programme on managing internal/external communication during crisis response and recovery including training of media personnel

o. State Disaster Management Plan / District Disaster Management Plan / City & Town Disaster Management Plans will suitably include management practices for disasters owing to mass gatherings at venues (including places of worship) and provide capacity building and response support. NDMA would also create a central knowledge management repository of incidences, and lessons learnt.

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Appendix

Appendix 2.1: Uphaar Cinema Tragedy

(Source: Delhi High Court Judgment, II (2003) ACC 114, 2003 ACJ 1631, 2003 IIIAD Delhi 321)

On Friday, 13th June, 1997, during the matinee show at Uphaar cinema, located in Green Park area of south Delhi, a transformer, of Delhi Vidyut Board installed in the ground floor parking, caught fire. The entire balcony area and the stairs leading to the balcony in the cinema were so full of smoke that it had become impossible for many of the patrons to go out of the building and as a result thereof 59 people, which included infants and children, lost their lives because of asphyxiation and about 103 other persons sustained injuries in trying to get out.

The Delhi High Court was of view that the Licensee of the Uphaar Cinema, the licensing branch of the Delhi Police, the Delhi Vidyut Board (DVB) and the Municipal Corporation of Delhi (MCD) were all responsible for having contributed to the spreading of fire and smoke by their acts of omission and commission; and they are all jointly and severally liable for payment of compensation to the victims of the unfortunate incident. The negligence on the part of DVB in maintaining the transformers and the repairs were the root cause of the incident, i.e. the starting of the fire. Cinema owners violated municipal by-laws by making several unauthorised alterations in the structure (in particular raising a parapet wall so as to use the area between the wall and the transformer room for commercial purposes) contributing to the incident. Closing one of the exits in the balcony and reducing the width of gangways, contrary to a Cinema Hall rules, impeded the free and quick exit of the patrons. Illegal, overcrowded, haphazard parking in a stilt floor increased the fire hazard and also blocked the said area to be used as an exit in emergency. MCD failed to point out the alterations in the structure. The licensing authority also failed to note violations and take remedial action. It went on issuing temporary permits for a period of more than 13 years, when rules clearly contemplated that the temporary permits could not be renewed for a period of more than six month.

Appendix 2.2: Dabwali Fire tragedy

(Source: Decision of Punjab-Haryana High Court, 2009; Civil Writ Petition No. 13214 of 1996)

On December 23, 1995, DAV Public School, Dabwali was holding its annual prize distribution function at Rajiv Marriage Palace. A pandal, with a seating capacity of 500-600, comprising steel super structure of GI sheets on the top and partially covered on the three sides by curtains with a false ceiling supported with bamboo sticks, had been setup for the function. However, on the day of the function, there were about 1500 persons including men, women and children at the venue. The pandal caught fire due to a short circuit in an electric generator. The fire spread too quickly and blocked the main entrance and as 1500 people tried to escape through the only exit door (proving to be too small to let everyone under the pandal run to safety), a stampede happened. A total of 446 persons, mostly children and women, died and more than nearly 200 persons suffered burn injuries, disfiguring some of them beyond recognition.

A one-man commission was setup for determining the negligence of those connected with the incident. The High Court accepted the findings of the fact recorded on the question of negligence on the part of School Managing committee and Rajiv Marriage Palace leading to the fire incident. In their anxiety and over enthusiasm, the school managing committee, failed to take care and look into all the aspects of security. The venue didn't possess and had not applied for any construction completion certificate neither had they obtained any license from the municipal committee for running the palace. The owners of the Marriage Palace had never obtained a "No Objection Certificate" from the Fire Officer nor made any arrangements for any fire fighting equipment and other such essential services before putting the venue to use. There wasn't any arrangement for Fire-brigade and/or ambulances in the event of an emergency arising during the function either. The commission also found that the officers of the Haryana Electricity Board were totally negligent in the discharge of their duties. The commission was also critical of officials of the municipal committee for not checking the unauthorised construction in their town.

The High Court further observed that "Payment of compensation to those, who survived or the next of kin of those, who did not, may never heal their wounds completely nor make any material difference in the ground realities unless all those concerned do some introspection to identify the causes for such tragedies and take corrective steps to prevent their recurrence in future. That is because human tragedies of such magnitude are more often than, not caused as much by lack of care and caution, as by the all-round failure of public authorities statutory or otherwise in the due and proper discharge of their functions and duties especially those concerning enforcement of safety measures".

Appendix 2.3: Kumbh Mela Stampede, Nashik

(Key Excerpts from the Magisterial Enquiry Report)

On August 27, 2003, 29 pilgrims (26 men and 3 women) died after fellow pilgrims trampled upon them.

Causes:

(i) There was a pressure of people at various points at the barricades
(ii) There was a sudden flow of people in reverse direction
(iii) Sadhus allowed to move in procession on elephant and in jeeps along "shahimarg" along with pilgrims
(iv) Unforeseen ingress of pilgrims on the "shahimarg" from various points
(v) People stooping to pick up coins by Sadhus (not corroborated)

Some observations made by the enquiry:

(i) … it appears that further efforts to restrict crowd access to the Shahisnan route were not vigorously prosecuted.
(ii) Seeing the mood of the crowd, a decision was taken to remove barricades on an administrative route partially and allow groups of 50 pilgrims to proceed to Ramkund.
(iii) …even some sadhus returned by the same shahisnan route in violation of the orders in force
(iv) ..communication gap,…lack of understanding of the range of duties entrusted
(v) ..tragedy was the outcome of unruly and irresponsible crowd behaviour coupled with ineptitude of the police in effectively managing the crowd and enforcing prohibitory orders

How could have the tragedy been avoided?

(i) Inflow, outflow movement regulation/ enforcement (Sufficient force at control points)
(ii) Information dissemination: Pilgrims, agencies
(iii) Coordination between agencies (e.g. CP and DM), Posting of key personnel well in advance
(iv) Regulating movement of public in the city
(v) Would CCTVs have helped?
(vi) Sadhu Management, Mela Act like UP?
(vii) Project Management Approach?

Appendix 2.4: Shri Kalubai Yatra Mandhardev at Wai, Satara, Maharashtra

(Key excerpts of Justice Rajan Kochar Commission of inquiry)

On January 25, 2005, a stampede took place at the temple premises killing 293 and injuring 250-300 people visiting. Fires and gas cylinder explosions that followed, added to the panic. All the deaths were caused because of suffocation. There were no deaths because of fire.

Causes:

(i) Wrong Crowd estimates (More pilgrims expected because of Tuesday)
(ii) Temple compound not big enough to hold large number of pilgrims
(iii) Narrow, steep, wet (slippery), winding path with (illegal) vendors (some having gas cylinders) on both sides
(iv) Illegal electric connections
(v) Inadequate safety, security (no watchtowers, public address systems), fire, water, and medical assistance
(vi) Poor Infrastructure (Only plans, no implementations)
(vii) Lack of coordination among various stake holders

There was negligence on the part of the temple trust and the State Electricity Distribution Company in discharge of their duties.

Appendix 2.5: Sabarimala Tragedy

(Key Excerpts from Justice Chandrasekhara Menon Commission of Inquiry)

On January 14, 1999, 52 pilgrims were killed and several injured in a tragedy at Pampa hill top.

Cause:

The tragedy happened because of uncontrolled crowding of pilgrims at the Hill Top in Pamba and the rushing down by pilgrims, immediately after seeing the Makarjyothi, towards parking places and bus stand. Some people stumbled upon and others fell over them near Kerala State Electricity Board's building.

Some Observations made by the commission:

- Strict liability is on the State, to see that the right to life of a citizen is properly safeguarded. Breach of duty of care by the State, the Devaswom Board, and the Electricity Board.
- A large number of pilgrims crowding at Hill Top, Nilakkal and Sannidhanam, much above the capacity of those places for holding people. It is surprising to see that no steps have been taken.

Possible steps to avoid disasters

- Setting up a high coordination committee
- Developing alternate roads, widening existing ones
- Restriction of entry of vehicles (and type) beyond parking lot
- Regulating and arranging parking of vehicles
- Introduction of shuttle bus services
- High parking fee
- Shelters on the route
- Banning unnecessary shops
- Discourage overstay (high halting fee)
- Restricting entry to Sannidhanam
- Ticketing and numbering system at gateways to limit no. of pilgrims
- Constructing barricades, lighting system, waiting hall
- Drawing up a Master-Plan

Appendix 2.6: Hillsborough Disaster, Sheffield, England

On April 15, 1989, a disaster happened at the start of the FA cup semi-final match between Liverpool and Nottingham Forest football clubs. A total of 96 fans lost their lives while 766 were injured. Entry to the Liverpool fans was slow because of very few turnstiles and a concentrated arrival of large numbers in a short time. There was overcrowding outside the stadium before the kick-off and to ease the pressure, exit gates were opened. However, these gates opened into a tunnel which directed fans into already crowded 2 pens (enclosures). The continuing inflow of fans led to breaking of crush barriers and fans fell on each other.

The inquiry into the disaster (Taylor Report, 1990) established the main cause as a failure of police crowd control. One of the latest reports on the incidence stated that to oversee a "full public disclosure of relevant government and local information", the report of Hillsborough independent panel (2012), also observes that flaws in responding to the emerging crisis were rooted in institutional tension within and between organisations. This was reflected in: a policing and stewarding mind-set predominantly concerned with crowd disorder; the failure to realise the consequences of opening exit gates to relieve congestion at the turnstiles; the failure to manage the crowd's entry and allocation between the pens; the failure to anticipate the consequences within the central pens of not sealing the tunnel; the delay in realising that the crisis in the central pens was a consequence of overcrowding rather than crowd disorder.

Apart from the harsh comments on policing along with the intermittent failure of communication by radio, both the above cited reports are also critical of clubs for inadequate facilities, FA for its choice of grounds, and the city council for its inefficient and dilatory safety certificate.

Appendix 3.1 Roles and Responsibilities of Important Stake Holders

(Related to Crowd Management)

Visitors

1. To get acquainted with the venue/event, routes, facilities and emergency procedures
2. To abide by the laws, and local regulations in place (fire, traffic, …) at the venue
3. To exert peer pressure on miscreants involved in fighting, pushing, provoking crowds etc. which may lead to heightened safety risks
4. To hold on when there is an obstruction and request the crowd behind to hold on till the obstruction is removed. Once the obstruction is removed the person to held on to request the crowd behind not to rush and move normally.
5. If a person slip and falls down the crowd the person behind the person or in the front of the person who has fallen should hold on till the fallen person is either lifted or brought to a safe position and repeat the drill as given in point 4.
6. To report emerging situation
7. To provide feedback and exert pressure on venue/event managers to have continuous improvements in facilities and the arrangements

Event Organizers/ Venue Managers

1. To acknowledge and accept the obligation to facilitate visitors in having safe, hassle free, and memorable experience at the venue/ event
2. To develop, implement, review, and revise the crowd management plan by working closely with various stakeholders
3. To comply with the central, state, local laws and regulations
4. To get all the necessary approvals from local administration, police, fire, PWD and electricity departments etc.
5. To share details of event schedules, venue, transport, medical, food, hygiene, and emergency facilities etc. with the concerned stakeholders

Police

1. To maintain the law and order at events/venues and adjacent public property in close cooperation with local administration, event/venue managers, and the necessary support of the local community
2. To actively participate in venue assessment and preparedness checks
3. To restrict, guide, and regulate crowd and traffic movements
4. To prevent the commission of offences and public nuisances by close and regular monitoring at critical hazard points
5. To provide a prompt and humanitarian response to any threatening disaster situation in order to prevent escalation of casualty and to save lives

Civil Defence/ NGOs/Volunteers/Village Disaster Management Teams

1. To inform the local issues to the event/venue Managers, Police, and the administration
2. To constitute various focused group/committees viz. traffic control, people flow control, information, medical assistance, food, water & sanitation, mock drill etc.
3. To help in search & rescue and to provide first aid in case of emergency
4. To mobilise local resources (food, shelter, clothing, vehicles, …) in case of disaster
5. To assist in relief distribution and recovery

DDMA

1. To follow and implement NDMA/SDMA policies, plans, and guidelines for disaster management
2. To help event/venue organizers in providing a safe, hassle free, and memorable experience to the visitors through facilitation and law enforcement
3. To create awareness about hazards, vulnerabilities and possible preventive actions at place of mass gatherings among government departments, educational institutes, NGOs, local communities
4. Capacity building of dedicated resource teams to carry out various crowd management tasks through facilitation, training, certification, appreciation etc.
5. To develop and implement a coordination mechanism among various stakeholders, especially government departments
6. To ensure that events are managed through approved plans prepared by the organisers / administrators.
7. Organise regular exercises and drills with the trustees / administrators managing places of worships
8. Undertake regular “preparedness and mitigation” audit of such places from time to time to identify gaps.

SDMA

1. To lay down guidelines to be followed by state government departments / DDMAs for the prevention of crowd disasters at places of mass gatherings.
2. To establish standard operating procedures (SoP) for activation of State / District Emergency Operations Centres during events of mass gathering
3. To conceptualise and formulate special programmes and projects as a part of the national initiative to avoid man-made crowd disasters.
4. To provide necessary resource support / to district authorities for capacity building
5. To establish SoP for mobilisation of necessary resources from other state and central Government for rescue and relief in case of any catastrophic incident/ emergency.

Appendix 3.2: Sample Outline for Crowd Management Plan for Event and Venues

Purpose:

Event has a combination of gathering including workers and visitors from different area. Negligence on the part of the owner of the premises (venue) and/or the organisers of the event can result in injury to either workers or visitors and may, sometime, manifest into disastrous situation. Owner / Organisers / Administrator have a common law duty of care toward persons involved with the event – including the audience, performers, suppliers and event staff.

This document outlines procedures and measures one can implement to provide a safe event. The document also facilitates essential inputs for event approving / licensing authorities, for effective assessment of required safety and security measures in the plan corresponding with the event type. Crowd management plan for event and venues is also intended to cascade with city / town and district disaster management plan.

Scope:

Though venues and events may differ, the application of certain common principles and standards of good practice can reduce the uncertainty associated with planning and organizing for a safe and successful event. This document advocates a common sense approach to event organisation by focusing on:

1. Planning the event
2. Providing a safe venue
3. Staff organisation
4. Preparing for the unexpected
5. Documentation
6. Event Stakeholders
7. Plan Evaluation and Revision

Crowd management must take into account all the elements of an event especially the type of event (Mela, religious events, Bandh, Dharna, circus, sporting, theatrical, concert, rally, parade, etc.), characteristics of the facility, size and demeanour of the crowd, methods of entrance, communications, crowd control, and queuing.

Authority:

Event Management will abide by all applicable legislations / regulations / norms including Safety, Health and Welfare, licensing requirement of indoor /outdoor events, Fire Services (responsibility for fire safety on persons in control of premises), Waste Management etc.

NDMA is responsible for laying down, policies, plans and guidelines for DM. As prescribed in **National DM Policy (3.2.1),** NDMA will take such other measures as it may consider necessary, for the prevention of disasters, or mitigation, or preparedness and capacity

building, for dealing with a **threatening disaster situation** or disaster. Central ministries/ departments and State Governments will extend necessary cooperation and assistance to NDMA for carrying out its mandate.

National DM Policy (5.1.5) states that -It is of utmost importance that **critical infrastructure** like dams, roads, bridges, flyovers, railway lines, power stations, water storage towers, irrigation canals, delta water distributor network, river and coastal embankments, ports and other civic utilities are constantly monitored for safety standards in consonance with worldwide safety benchmarks and strengthened where deficient.

As per National Policy on Disaster Management (3.2.9) - local authorities (Panchayati Raj Institutions (PRI), Municipalities, District and Cantonment Boards and Town Planning Authorities which control and manage civic services) will ensure capacity building of their officers and employees for managing disasters, carry out relief, rehabilitation and reconstruction activities in the affected areas and will prepare DM Plans in consonance with guidelines of the NDMA, SDMAs and DDMAs.

Planning Process:

The organisers / Administrator of events and venue of mass gathering would work with Local / district emergency management agency and community partners, including first responders (SDRF, fire, police and health), during the planning process. This collaboration makes more resources available and helps to ensure the seamless integration of all responders in overall crowd management process. The core planning team should include, but not limited to, representatives from the event / venue organisation, as well as representative(s) from neighboring community, local authorities and first responder.

The planning team should be small enough to permit close collaboration, yet large enough to be representative of the place of mass gathering, its congregation, and its community partners. It should also be large enough as to not place an undue burden on any single person. Planning team should work on a consensus framework with defined roles and responsibilities for each member of the team. Team's main tasks shall include - Identification of threats and hazards, ascertain risk, priorities threats and hazards, and determine goals and objectives finally develop a plan and establish a plan review and maintenance procedure.

License / Registration /Approval and Permission:

During the advance planning stage organisers / venue owner / administrator should determine if they or any of their suppliers require a particular license or statutory agency approval to conduct the event and/or a specific aspect of the event. As the event organisers, it is their responsibility to ensure that (where required) they are in possession of the appropriate license or approval on the day of the event. To this end you they seek information from the relevant agencies and apply well in advance of committing to an event activity. It is also their responsibility to ensure that their suppliers possess (where required) a current license or approval and organisers / administrator should verify they are in compliance with the license or permission and any conditions attached.

License / Registration /Event Application:

The events are approved as per local bylaws. This is necessary that event application has all important information's needed for ascertaining safety aspects from all angle. An indicative list of components and sub-components to be included in event application is as given below.

Event application will have, but not limited to following details

1. Event / Venue details

1.1 Event Location
1.2 Brief history of the event/venue
1.3 Duration of event (schedule and timing)
1.4 Expected number of people
1.5 Admission arrangement (Open to public / by invitation/tickets etc)
1.6 Details of activities and how/when/where they will take place
1.7 Event management structure ((set out the key management personnel)
1.7.1 Functions of key personnel (Event Controller, Safety Officer and Health and Sanitation in- charge)
1.8 Event control and communications (location of central control room, who will be there, what means) Of communication will be used for reporting)
1.9 Any particular arrangements (special needs spectators, pre-launch ceremonies etc.)
1.10 Overview of large equipment and temporary structures (staging, sanitary facilities, lighting etc.)
1.11 Contact details and of Event organisers / administrator and venue owner

2. **Site Plan**: The site plan must include maps showing location and details of

2.1 Transportation hubs (Bus-stops, Railway stations, Taxi stands etc.)
2.2 Places for stay
2.3 Information kiosks
2.4 Places of interest at the venue/event
2.5 Meeting points
2.6 Entry and exit points at event venue
2.7 Holding area(s), queue complex(s), routes for movement
2.8 Watch towers at vantage locations for observing and monitoring the crowd.
2.9 CCTV coverage at all vulnerable locations to be monitored at the control room.
2.10 Sector wise deployment of Policemen with sector wise responsibility and wire less communication net work between watch towers, CCTV control room and deployment inside the crowd.
2.11 Police *chowkies*/stations
2.12 Reporting places for lost/stolen/found items, missing persons etc.
2.13 Parking lots
2.14 Health facilities
2.15 Shopping areas
2.16 Food joints

2.17 Hazard points
2.18 Emergency Exits
2.19 Emergency Assembly Points
2.20 First Aid services
2.21 Emergency services (Fire, Ambulances,)
2.22 Emergency Operations Center, Incident Command Posts etc.

3. Hazard and Risk Assessment

This is necessary for event management to undertake a risk assessment of those hazards which could cause harm to staff and/or members of the public attending the event. A risk assessment is a systematic approach to the control of hazards and should be done in relation to the physical characteristics of the venue, likely audience behaviour, technical installations, nature of performance etc. It involves the identification of foreseeable hazards, evaluating the risks associated with them and considering what needs to be done to reduce the risks to an acceptable level. The process should be comprehensively documented and recorded. Write down all the activities and attractions, which make up the event and identify ways in which people (employees, the public and any contractors) could be harmed.

Completed risk assessment should be written down and the necessary control or mitigation measures should be included in the safety section of your overall event plan (it may be necessary to obtain professional advice in conducting a thorough risk assessment). During and after the event, continuously evaluate your risk assessment to determine the effectiveness of the measures and procedures that were put in place.

4. Safety& Security Plan:

Safety

Risk assessment forms the basis for designing the safety / security plan. Following are the salient components, but not limited to, of the event safety plan

4.1 Safety Policy Statement
4.2 Event Risk assessment
4.3 Signage (information service provided), installing PA system etc
4.4 Critical control points Location, type, and purpose of barricading (based on the risk assessment)
4.5 Crowd management (number of home guards/volunteers/police/others, responsibilities, location etc.)
4.6 Plans to involve home guards, civil defence, and community stake holders (how, when,)
4.7 Security agencies deployed (license details, in case of private agencies)
4.8 Entry and exit arrangements (routine and designation of emergency routes and assembly areas)
4.9 Fire precautions (means of escape, safe holding capacity calculations, fire safety equipment)
4.10 Structures (schedule of completion, certifying engineer)
4.11 Electrical installations (lighting, auxiliary power provision)
4.12 Environmental issues (noise, sanitation, catering, garbage / waste, drinking water, etc.)

4.13 Vehicular access and exit (transport plan for site traffic and car parking arrangements)
4.14 Medical/First Aid Provision (numbers required, location, ambulance, equipment)
4.15 On site traffic management (where deliveries will be made, any parking etc.)
4.16 Emergency power and lighting arrangements
4.17 Firework permit, if applicable
4.18 List and Locations of Food vendors using gas cylinders
4.19 Fire and electrical safety assessment plans, mock drills, and action taken reports
4.20 Communication plan (internal/external, before the event and in case of emergency)
4.21 Command and control hierarchy

Security:

4.22 Screening and credential checks for suspicious persons
4.23 Unattended packages
4.24 Concealment areas

5. Preparedness & Capacity Building

General Measures and Consideration

5.1 Emergency Operation Center (Control room)
5.2 Public Information
5.3 Awareness – (local as well as wide area)
5.4 Services and Utilities
5.5 First aid and basic health services
5.6 Visitors flow management
5.7 Access for emergency resources including ambulances
5.8 Hazard in the area and mitigation measures
5.9 Services for people with special needs / disabled
5.10 Transportation and Traffic Management
5.11 Safety and Security Plan
5.12 Lost and found
5.13 Contractors and supplier management plan
5.14 Chain of command
5.15 Incident monitoring & reporting system
5.16 Training and exercising

Approach to Capacity Building

5.17 Institutional capacity building
5.17.1 Management/ policy makers
5.17.2 Police, fire, health services
5.17.3 Others
5.18 Community capacity building

5.18.1 Civil defence
5.18.2 NGOs/ CBOs
5.18.3 Volunteers
5.18.4 Schools/colleges
5.19 Skill up-gradation, follow-up training programmes, certificate courses
5.20 List of trained personnel with contact details and specialisation

6 Health, Hygiene and Medical Services

6.1 List of approved food vendors
6.2 Drinking water availability (location, sources,)
6.3 Toilets (location, numbers for males and females, cleaning schedule, and responsibility etc.)
6.4 Waste Management (garbage bin arrangements, waste collection schedule, recycling plans)
6.5 Plans to include local community members
6.6 Medical problems reported historically (impact of weather, terrain,.. etc.)
6.7 Medical facilities (number of beds, equipment available etc.), staff (number of doctors, surgeons, paramedics, nurses etc. and their expertise), number of ambulances available (with/without life support systems) and their locations
6.8 Contact details, facilities and capacity of local hospitals, primary health centres, mobile hospitals, standby staff etc.
6.9 Plan for first-aid training to volunteers, security personnel etc.
6.10 A 5-year roadmap for improvements in facilities and emergency medical services (which facilities, how much, where, who will finance etc.)

7.0 Emergency Response Plan

Response plan guides the development of the more operationally oriented annexures. Its primary audience consists of the event/venue management/ authorities, local emergency management officials, and the community (as appropriate). The elements listed in this section should meet the needs of this audience while providing a solid foundation for the development of supporting annexes.

Major components of response plan will include (but not limited to)

- Incident Response System
- Emergency Operations Centres
- Response flow chart(s)
- Hazard/Incident specific responsibility charts for emergency functions
- Alert mechanisms, early warnings etc.
- Procedure for the activation of plans, resource mobilization, seeking external help, coordination with different agencies
- Media management and information dissemination

- Functional annexures

Functional annexure - The functional annexes detail the goals, objectives, and courses of action of functions (e.g., evacuation, shelter, security, medical and health services, missing persons, relief supplies etc) that apply across multiple threats or hazards. Functional annexes discuss how the event and venue (including house of worship) manages a function before, during, and after an incident. Following is the list of major functional annexures:-

- Traffic Management Plan
- Medical Plan (in consultation with relevant Health Authority)
- Event Communications (including Wireless radio frequency channels to be used by event staff in schematic format)plan
- Schedules (time-line erection and tear down of temporary structures, staging etc.)
- Emergency procedures (the publication of these procedures should be restricted to event staff and the statutory agencies) for stopping the event
- Action in the event of a bomb scare
- Action in the event of Fire
- Action in the event of any other emergency incident (Including Natural and human made disasters)
- Evacuation of the venue

List of other annexures:

- Damage/need assessment format
- Emergency telephone directory should include telephone numbers (mobile and Landlines) of key personnel and external agencies, such as the emergency services contacts and key suppliers.
- List of NGOs/CBOs functioning in the vicinity
- List of training/technical institutes
- SOPs/checklists/formats for reporting etc.

Layout Maps:

- Emergency response vehicle access routes
- Location of meeting points and assembly areas
- Ambulance parking, medical facilities
- Location of all temporary structures
- Pedestrian circulation routes
- Emergency evacuation routes
- Parking facilities
- Drinking water points, sanitary facilities and trading locations

8.0 Event / Venue Plan Management: Rehearsal, review and revision

8.1 Train Stakeholders on the Plan and Their Roles - Everyone involved in the plan needs to know their roles and responsibilities before, during, and after an incident. Key training components include:

8.1.1 **Hold a meeting.** At least once a year, hold a meeting to educate all parties on the plan. Go through the plan in order to familiarize these stakeholders with it.

8.1.2 **Visit evacuation sites.** Show involved parties not only where evacuation sites are located, but also where specific areas, such as, media areas, emergency resources area and triage areas will be located.

8.1.3 **Give stakeholders appropriate and relevant literature on the plan, policies, and procedures.** It may also be helpful to provide them with quick reference guides that remind them of key courses of action.

8.1.4 **Post key information throughout the building.** It is important that congregants are familiar with and have easy access to information such as evacuation routes and shelter-in-place procedures and locations. Ensure information concerning evacuation routes and shelter-in-place procedures and locations is communicated effectively to congregants with disabilities or others with access and functional needs.

8.1.5 **Familiarize congregants with the plan and community partners.** Bringing Police, fire, and EMS personnel and community partners that have a role in the plan, as well as other staff / organizations that use the venue to talk about the plan will make congregants and others more comfortable working with these partners. This may include community partners who are congregation members.

8.1.6 **Train stakeholders on the skills necessary to fulfill their roles.** Persons will be assigned specific roles in the plan that will require special skills, such as first aid, how to use IRS, and the provision of personal assistance services for children, the elderly, and individuals with disabilities and others with access and functional needs

8.2 Exercise the Plan

The more a plan is practiced and stakeholders are trained on the plan, the more effectively they will be able to act before, during, and after an incident to lessen the impact on life and property. Exercises provide opportunities to practice with local emergency management officials and community partners, as well as to identify gaps and weaknesses in the plan. The exercises below require increasing amounts of planning, time, and resources. Ideally, event / venue managers / administrators will create an exercise program, building from a tabletop up to a more advanced exercise, like a functional exercise.

8.2.1.1 **Table-top exercises** are small group discussions that walk through a scenario and the courses of action an event / venue will need to take before, during, and after an incident. This activity helps assess the plan and resources and facilitates an understanding of emergency management and planning concepts.

8.2.1.2 During **drills**, local emergency management officials, community partners, and relevant event / venue personnel use the actual event grounds and buildings to practice responding to a scenario.

8.2.1.3 **Functional exercises** are similar to drills, but involve multiple partners. Participants react to realistic simulated events (e.g. rumour of bomb threat, bridge collapse etc.), and implement the plan and procedures using IRS.

8.2.1.4 Full-scale exercises are the most time-consuming activity in the exercise continuum and are multiagency, multi-jurisdiction efforts in which resources are deployed. This type of exercise tests collaboration among the agencies and participants, public information systems, communications systems, and equipment. An emergency

operations center is established (usually by the local emergency management agency) and IRS is activated.

8.3 Review, Revise, and Maintain the Plan

Planning is a continuous process that does not stop when the plan is published. Plans should evolve as lessons are learned; new information and insights are obtained; new threats or hazards emerge; and priorities are updated. Reviews should be a recurring activity. Planning teams should establish a process for reviewing and revising the plan.

Some organizations have found it useful to review and revise portions instead of reviewing the entire plan at once. Certain events will also provide new information that will be used to inform the plan. Places of conglomeration (including house of worships) should consider reviewing and updating their plan after the following events:

8.3.1 Actual emergencies
8.3.2 Changes in policy, personnel, organizational structures, processes, Facilities, equipment, or membership size
8.3.3 Formal updates of planning guidance or standards
8.3.4 Formal exercises
8.3.5 Threats or hazards change or new threats or hazards emerge
8.3.6 Changes in the house of worship's demographics (e.g., changing Language needs) or site assessment

It is recommended that plan should be reviewed on an annual basis and after a major incident or exercise whichever is earlier.

9.0 Event Approval:

The approving authority / organisation will cross check adequacy of all information provided by the event management with safety checklist and satisfy themselves before issuing such permission. Hazard and risk assessment at venue is the responsibility of venue owner / event organisers / administrator.

The approving authority / agency will also consult city / Town and district disaster management planning authorities / agencies as may be felt necessary.

9.1 Event / Venue Crowd Management Plan:

The draft plan will be circulated by the local authority to all relevant departments within the local authority and DDMA and will be made available at the local authority offices for viewing by any member of the public. This enables any interested party to make observations on the proposed event to the local authority that is the licensing authority for such events.

Local authority may set a timeline in relation to an event requiring an outdoor / indoor event (with mass gathering) license.

It should be mandatory for event organisers and all suppliers to obtain certificate of safety for the device / equipment having potential to add to the vulnerability of the site. The indoor installations will need an inspection and certification for fire safety.

The provisions for the collection and disposal of waste from an event site is a matter of concern to the local authority and need detailed inspection of waste management during and after the event is over.

Appendix 3.3 Sample Sitemap for an Event/Venue Website

Home	— Event Title
	— Latest Schedule, news/ announcements
	— Gallery
	— Downloads (Information booklets etc.)
	— Contact details, Follow us on Social Media
About Venue/ Event	— Places of interest (in and around)
	— Event details
	— Schedule
	— Opening hours
	— History
	— Objectives
	— Management
	— Accolades, Certificates
	— Endowments
	— Master plan
Plan a Visit	— Event Registration
	— How to reach?
	— Public Transport
	— Maps
	— Weather
	— Food, Clothing, health certificate requirements
	— Accommodation
	— Do's and Don'ts
	— FAQ
Facilities	— Entry, Exit, Route maps
	— Food, Water, Health and hygiene Facilities
	— Places of stay (In and around, Free/paid)
	— Cloak Rooms
	— Rate card for Taxis, *Palkis etc.*, Parking lots
	— Souvenir, Gift Shops
	— Banks, Post offices
	— Security Arrangements (What to carry, not to carry etc.)
	— Do's and Don'ts
	— FAQ
Information Centre and Help	— Physical Locations
	— Enquiries and Announcements
	— Weather details
	— Visitors Statistics
	— Lost & Found
	— Police

	— Local administration
	— Emergency Services
	— Do's and Don'ts
	— FAQ
Contact	— Event/ Venue Manager
	— Media Cell
	— Citizen Cell
	— Donors'/ Sponsors' Cell
	— Service Quality Cell o Grievance Redressal o Feedback
	— Want to engage with us?
	— Follow us on social media

Appendix 3.4 Five Do's and Don'ts for Various Stakeholders

Visitors

Do's	Don'ts
1. Travel light. Carry medicines, if advised by doctors. 2. Register for the event. 3. Get acquainted with the venue location and layout: entry/exit points, routes, stay/ food/ medical facilities. 4. Follow rules and regulations. Where there is obstruction in the front don't push through or push back. Hold and alert the others behind to hold till the obstruction is removed. 5. Note emergency contact numbers.	1. Don't carry valuables, unnecessary food and clothing. 2. Don't trust strangers. Don't stay/eat at unauthorised places. 3. Don't rest/sleep on roads, at entry/exit points. Don't litter. 4. Don't jeopardise your own safety by pushing, fighting, provoking the peers. 5. Don't panic and spread rumours.

Organizers

Do's	Don'ts
1. Know your visitors. 2. Own up responsibility and accept obligation to provide safe, hassle free, and memorable experience to visitors. 3. Develop comprehensive crowd management plan a. Identify the hazards and their likely impact. b. Decide whether arrangements are adequate or more needed. c. Act, Review, and Revise. 4. Work closely with various stakeholders. Have regular communication and meetings. 5. Comply with laws and regulations in place.	1. Don't rest on laurels from the past incident-free periods. 2. Don't continue with the event if you yourselves are not sure about the venue arrangement. 3. Don't admit visitors beyond the holding and movement route capacities. 4. Don't compromise on safety and security agencies to save money. 5. Don't delay reporting of signs of build-up of an emergency situation.

Security Agencies

Do's	Don'ts
1. Do risk assessment and check venue suitability. 2. Develop a system for restricting, holding, regulating number of people arriving and entering the venue. 3. Work closely with event organizers and other stakeholders. Coordinate actions. 4. Establish clear criteria for use of force, opening the exits, removing the barricades etc. 5. Monitor, monitor, and monitor. Plan rehearse and execute	1. Don't allow the event to happen if crowd management preparedness is found wanting. 2. Don't use force, unless no other option left. 3. Don't get provoked. Don't act emotionally. 4. Don't ignore the thousands of peaceful visitors, in dealing with a handful of rowdy ones. 5. Don't consider other security agencies deployed as competitors.

Local administration

Do's	Don'ts
1. Assess venue to determine intention, motive of the gathering. 2. Help venue/event manager develop crowd management plan. 3. Have regular internal/external communication with stakeholders. 4. Develop dedicated resource teams of NGOs and civil defence for various crowd management activities. 5. Run crowd hazard awareness campaigns.	1. Don't allow the event to happen if crowd management preparedness is found wanting in either of the areas of fire prevention, adherence to structural safety, electricity, hygiene, medical, traffic etc. 2. Don't ignore the local economic activities around the venue and possible impact of displacement. 3. Don't forget the power of random inspections and mock drills. 4. Don't forget that places of mass gatherings have the potential to act as a showcase for harmonious balance between human activity, resource use and minimum environmental impact as opposed to typical resource guzzler and garbage producing place. 5. Don't discriminate against anyone in rescue and relief.

Media

Do's	Don'ts
1. Do raise alarms if crowd management preparedness is found wanting. 2. Play a constructive role for the smooth crowd movements at the venue/event. 3. To give wide publicity to Do's and Don'ts and potential mitigation plans and their likely benefits well in advance. 4. Provide timely, factual and unbiased information before/ during/ after a disaster. 5. Review rescue, relief, and rehabilitation work by the government machinery.	1. Don't infringe upon privacy of the victims and their families. 2. Don't sensationalise the incidence on the basis of incomplete information for gaining commercial mileage. 3. Don't act emotionally. Don't provoke and get provoked. 4. Don't make value judgements. 5. Don't interfere and obstruct rescue operations.

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