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India Crowd Management Conference 2017

Dr R K Dave, PhD

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To,

**All Participants: Experts and Delegates
NGOs / GOs / UN agencies**

Sub: Recommendations / Outcome of "India Crowd Management Conference 2017"
(ICMC) held on 10 Feb 2017 at GIDM (Gandhinagar)

Sir,

I take this opportunity to convey my gratitude and thankfulness for your valued participation and contribution in India Crowd Management Conference 2017.

The conference was success in accomplishing it's objectives and goal.

Deliberation/discussion plays a key role in strategic planning formulation. As a small contribution towards enhancing knowledge, abilities and skills (KAS) in the field of Crowd Management at places of mass gatherings, a one-day conference – ICMC - was organized at the initiative of RESPECT (an NGO), in collaboration with Gujarat Institute of Disaster Management (GIDM), Gujarat Pavitra Yatra Dham Vikas Board (Government of Gujarat), M. K. Bhavnagar University and Gujarat Institute of Amateur Radio (GIAR) at GIDM on 10 Feb 2017.

With wide-ranging participation from emergency management personnel, responders, Government officers and subject-matter experts, ICMC deliberated on issues and challenges in managing mass gatherings, especially at places of worships, in the Indian context - the conference was at the right time well when majority of states are in process of planning relevant infrastructures and processes for crowd management at places of mas gathering.

The challenge of evolving and implementing a crowd management strategy is greater for a large and complex country like India, with huge population, very high population density, wide political, social, technology, cultural and economical disparities, limited resources and inadequate infrastructures.

India's sensitivity to terrorism has made venues and events of mass gathering more vulnerable and that demands a change in the basic design approach for crowd management planning process. Wider proliferation of ICTS (Information & Communication Technology System) has improved capacities in monitoring, measuring,

and analyzing data enabling early detection and hence prevention of disasters (specifically intentional, man-made disasters). ICTS has as-yet-unrealized potential to improve how society, the nation, and the global community can handle disasters including disasters induced by crowd or mass gathering.

State Disaster management organizations are still to accomplish major milestones as far crowd mitigation at places of mass gatherings is concerned despite their strenuous efforts. Opportunities offered by modern technologies are yet to be identified and fully exploited for reducing disaster risk across almost all key areas including crowd management. This situation stands in contrast to the considerable success enjoyed by some sectors such as Financial Services (Banking) and Transportation (Aviation) in adopting new IT technologies routinely and aggressively.

Management of mass gatherings should be integral to District and Tehsil disaster management plan. Activities of District EOC facility should include coordination, collaboration and communication services during all phases of disaster cycle (preparation, mitigation, response and recovery) including disasters induced by the mass gatherings.

Places of worship attracting regular mass gatherings in a repetitive cycle **must have on-site and off-site crowd management plans with a clarity on roles and responsibility for preparation, implementation, testing and revision of such plans. Issues related to pilgrims from other states must be addressed adequately.** Links with SDMAs of states sending sizable number of pilgrims and tour and travel agencies (including railways, bus operators) should be established for handling situations like “Kedarnath flash flood” in Uttarakhand. Volunteers play a key role in management of mass gatherings and a special drive for developing a cadre of trained local volunteers in crowd management at places of worship across the country would be extremely useful.

Conference outputs with key recommendations are attached with a request for wider circulation to all stakeholders including temple trusts and other Govt. departments.

RESPECT’s agenda is to help administrations / management and people at large in building capacity for “preventing crowd induced disasters” and in next five years there should be no death due to crowd crush or stampedes at places of worships in India.

I look forward to see you again in ICMC 2018 .

Yours sincerely,



(Dr R K Dave)

Enclosures:

1. Annexure- I: List of Experts on conference panel 2. **Annexure –II:** Recommendations



Annexure - I

India Crowd Management Conference 2017

Key Contributors and Experts on Panel		
	Names	Affiliation / Department
1	K. M. Singh, IPS (retd)	Ex- Member (NDMA)
2	Anil Kumar Sinha, IAS (retd)	Ex- Vice Chairman, BSDMA
4	Dr. S.K.Nanda, IAS (retd)	Member, Advisory Committee, NDMA
3	Ms Anju Sharma, IAS	DG, GIDM
5	A.K. Singh, IPS	Commissioner of Police, Ahmedabad
6	Ms Aswathy S. IAS	Dy. Director (LABSNAA)
7	Dr. R.K.Dave	RESPECT
8	Dr PRAVEEN GEDAM, IAS	Transport Commissioner (Maharashtra)
9	Sh. B.L.Buam, IPS	Additional Director General of Police, Meghalaya
10	Dr. S.P. Bhavnagar	Prof and Head Bhavnagar University
11	Dr. Vedant Pandya	VC, M. K. Bhavnagar University
12	Dr. Shanmuganathan Raman	IIT-Gandhinagar
13	Prof. Shashi Sharma	Strategy Management Expert
14	Piyooosh Rautela	SEOC, Government of Uttarakhand
15	Venugopal Iyanger	Cyber Security expert
16	Col Vishal Supernekar	Director at YESDA
17	Brijendra Singh	OSD, Govt. of Rajasthan
18	Marcel Naujok	LRAD, USA
19	Dr. Shanmuganathan Raman	IIT-Gandhinagar
20	Dr. Jagdish Pandya	Ex- CEO (AUDA)
21	Prof.Narnendra Ahuja	Director, ITRA, MLA, GoI
22	Ramesh V.M.	Fire and Safety, BPCL



Annexure - II

India Crowd Management Conference 2017

Dr R K Dave

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Recommendations /Outcomes of India Crowd Management Conference (ICMC) 2017

held on 10 Feb 2017, at the initiative of RESPECT (Renewing and Empowering Society's Progress & Enhancing Capacities Through Technologies) an NGO in collaboration Gujarat Institute of Disaster Management (GIDM), Gujarat Pavitra Yatra Dham Vikas Board (Government of Gujarat), M. K. Bhavnagar University and Gujarat Institute of Amateur Radio (GIAR)

Conference Objectives of "**India Crowd Management Conference**": Review existing crowd management practices in India, their effectiveness and gaps; Identify issues and challenges faced by administrations (national, state, district and local), event organizers, and emergency management practitioners; Sensitise stakeholders at all levels in hierarchy towards challenges and opportunities; Recommend new approaches for bridging gaps and strengthening crowd management at places of mass gatherings (including places of worship) based on evidences of science and global best practices.

Recommendations

Extensive deliberations during the conference focused on causes (increasing in number of tourists / pilgrims, stagnated infrastructures and limitation of space at places of worship, absence of plans and preparations, absence of education and awareness etc..) leading to increasing crowd-induced disasters at places of **worship** in recent past.

Studies on "causes and effects" of Puttingle fire tragedy (Kerala), Chamunda temple tragedy (Jodhpur, Rajasthan), and Allahabad Railway Station tragedy during Maha Kumbh were presented and discussed.

Senior officials directly responsible for management of Nasik Kumbh (Maharashtra Government), and Jagannath Yatra (Gujarat Government) very effectively presented planning aspects for successful event management.

Experts from academia, including IIT Gandhinagar, presented studies on use of modern technologies (especially video analytics and machine learning) in managing crowds at places and events of mass gatherings.

Present techno-legal regime in India for crowd management including powers conferred on state police under Police Act for crowd control was presented and discussed. Concept of FIST (Flow, information, space and time) and physiology of crowds based on density (people / sq. meter) under various scenarios were discussed for mitigation planning.

Crowd Disaster is a function of Physics and not Psychology:

“Crowd size was identified as the most critical factor for preventing disasters”.

Recent research studies suggest that the genesis of the crowd disaster lies more in the **physics than psychology**. It is all about the density of people at venues of mass gatherings. At very low density, when everybody can move freely (like a gas) and when the density goes up, then eventually peoples' movements are constrained, and it becomes more like a fluid. And then at very high densities, when people are squeezed in between other bodies, it's more like a granular material - Like sand, or rice, or small pebbles.

A crowd of people trying to get into such an event will queue up until they've moved closer and closer together, creating particularly tight compression at the front of the queue. As a crowd grows denser, people wind up accidentally touching one another – and this happens even without overt pushing or shoving. As the density increases even further, the forces would be transmitted from one body to the next, and this is the moment where forces start to add up causing turbulent waves in the crowd. The small movements of so many people aggregate into a powerful force that "crowd turbulence" actually looks like wave-like patterns.

Triggers and Threshold of Control:

At places of worship, massive crowds of people from different states may not know potential hazards, and preparedness plans may be insufficient to mitigate the potential risks. It is a disaster waiting to happen and any thing can trigger it. A closer look at crowd tragedies in India shows that causes that triggered crowd (***beyond controllable point***) incidents were - Structural, Fire/Electricity, Crowd Control, Crowd Behaviour, Security, VIP Movement, Rumours, Failure of coordination system between various stakeholders. The trigger may not cause any damage if the size of the crowd is smaller and density has not exceeded **“threshold of control”**.

Gaps in Planning Process:

Experts identified possible gaps in the current crowd management planning in India and segregated into three categories based on studies / investigation reports / press reports available on past crowd inducted disasters.

1. Hazards identification and risk assessment (HIRA) and event plan covering three important primary phases of events (Ingress, circulation and egress) are not addressed.

2. Three primary influences on the crowd (design, information and management) not addressed.
3. Crowd density guidance not given (global crowd density standards followed by few countries are - 4.7 people per square meter - standing/viewing, 4 people per square meter - queuing system, 2 people per square meter - walking)

Crowds and Crowd Management in India: Key Issues and Challenges

A high tolerance for crowds and crowded spaces in India means major events in the country are vulnerable to stampedes, according to an international expert on crowd management. As per the expert - the higher tolerance for crowded spaces in India allows for people to get closer, because they **don't feel uncomfortable until it is very packed and at that point the crowd is dangerously large**. The tipping point between what people can manage and what they feel is dangerous is very fine under this situation.

Most of the places of worship in India are situated at difficult locations with confined spaces. The old structural design creates hindrance in the quick deployment of emergency medical personnel to treat victims. Special strategies need to be developed to overcome such challenge which are "India specific".

Neither National DM Act 2005 nor National Policy on Disaster Management (NDMP 2009) mentions about issues related to crowd induced disasters. Necessary provisions should be included into NDMP (2009) during its revision. India lacks in using scientific evidences in the disaster management planning process almost at all levels. Evidences of science and technology should be the foundation for developing any crowd management plans.

There is absence of unified and authentic repository on crowd incident's investigations, lessons and learning. Disaster management authorities, International/ national media should be given full access to such investigations for telling the full stories of these disasters to increase public awareness of safety issues. This will provide people an opportunity to learn from these incidents and hopefully help prevent their repetition.

Seven Critical Capabilities are required : 1. Pre-event Intelligence Fusion and Information Exchange between various agencies / stake holders; 2. Event based customization of crowd management plan [every time plan may need a change as event may differ from the past similar events]; 3. Resource identification and deployment; 4. Real time monitoring and detection on size of gathering at key points; 5. Unified incident Command and Communications system; 6. Specialized Equipment; and 7. Inter-agency Response.

Managing Crowd at venues and events of mass gatherings - Summary of the recommendations emerging out of discussion deliberation are as given below, marked with the attention of concerning agency for each.

General Recommendation

Action at National Level:

1. Need to define mass gatherings, crowd, over crowd with respect to “Flow, Space and Time”. It is important to note that most common factor identified for crowd accidents in the past at places of worship is “over-crowding in limited space due to long wait”.
2. Need to develop standards minimum core capabilities required at various levels in hierarchy to ensure safe conduct of events of mass gatherings at any place during all phases (normal phase, on-set of incident, during incident and after incident).
3. Need to develop a national framework for crowd management plan at events and venues of mass gatherings.
4. Need for establishing techno-legal regime for effective and safe management of crowds at places of worship in India. This will need review of existing National Guide issued by National Disaster Management Authority and similar guidelines issues by various states.
5. Need to develop and establish an **independent Investigation Committee, staffed with national / international experts in relevant disciplines to thoroughly investigate the causes of these incidents. State commissions constituted after each incidents are relatively inexperienced and sometimes biased in their investigation process. Knowledge of true accounting of what actually happened is crucial for determining future directions.**
6. Need to design, develop and establish a central repository of “Lessons and learnings from past crowd induced disasters”. This should be accessible to administrations and responders at all levels. This will also provide the basis for responder training and education throughout the country.

Action at State Level: State Disaster Management Authority (SDMA):

7. Need to develop and establish State-level statutory framework for preparation, implementation and management of crowd management plans at places of mass gatherings based on the national guide.

8. Need to undertake hazards, risks and vulnerabilities assessment (HRVA) for each identified venue/location of mass gatherings (including all major places of worship in India) and integrate it into state's multi-hazard vulnerability map.
9. Need to ensure that district disaster management plans (DDMP) address crowd related vulnerabilities adequately based on each of the district's vulnerability to such hazards.
10. Need to ensure that relevant DDMP has an off-site crowd disaster response plan included in it.
11. Need to ensure that crowd disaster response plan connects well with **District Crisis Management Plan (DCMP)**.
12. Need to ensure that the Planning committee for temples and other places of worship should include - tourist operators, railways and airlines for considering inflow and outflow of pilgrims and tourists from across the country and appropriately address social / cultural / linguistic needs of people coming from diverse cultures. Railways can provide advance estimation on arrival of pilgrims on each day based on their reservation roster and capacity of trains arriving. Similarly estimation from roadways should be obtained for assessment of readiness of arrangements. Media should be a part of the planning committee and media's role should be suitably defined under a separate ESF.
13. Need to define role of EOC (state, district and on-site EOC) in management of mass gatherings. Specific DEOC having administrative control / jurisdiction of place / venue of mass gatherings should be equipped to handle crowd induced disasters.
14. Need to plan and induct "State Disaster Response Force (SDRF)" for crowd management at venues and events of mass gatherings.
15. Need to develop and issue installation standards for essential infrastructures (especially public address and other communication systems, illumination systems, etc) at venues of mass gatherings.
16. Need to establish a "preparedness audit" system for venues / events of mass gatherings.

Action at Level: State Institute of Disaster Management (SIDM)

17. Need to develop and implement education and awareness programs that will help make citizens an effective part of the crowd management at the venues and events of mass gatherings.

18. Need for customized training and education for key stakeholders (including event / venue officials and volunteers from places of worship) who are having active role in management of mass gatherings.
19. Need to develop training curriculum and credentialing system for crowd managers. Under the revised norms, it should be mandatory for event managements to appoint / deploy certified crowd manager(s) based on the magnitude of a given gathering. Crowd managers would need to renew their certificates each year at SIDM or other authorized agencies by the state.
20. Need to train and certify personnel from the “State Disaster Response Force (SDRF)” for crowd management knowledge, abilities and skills (KAS).
21. Need to establish a mechanism which will enable mandatory participation of key officials and decision-makers in pre-event training, planning and exercises. This will include officials from local self governments, district disaster management authorities and the event management agencies.

Action at Local Level: Event Management Agency

22. Need to Review and revise HRVA for within the place of worship and for surrounding areas (inflow and outflow of people) every year.
23. Need to prepare crowd management plans for events of mass gatherings in consultation with DDMA. District Disaster Management Authority may also be assigned responsibility to approve such plan(s) prepared by places of worship etc.
24. Need to prepare on-site crowd disaster response plans based on the HRVA study for the respective venues.
25. Need to plan and establish on-site EOCs in consultation with DDMA.
26. Need to assist DDMA in preparing off-site crowd induced disaster response plans.
27. Need to plan and create minimum standards of core capabilities including trained human resources, public address (information and warning) systems, etc.
28. Need to obtain permission and necessary credentialing for staff / volunteers engaged in event management.

New Approach for Crowd Management Plan for Venue of Mass Gathering

On-site and Off-Site Plan:

Conference deliberations, while reviewing past incidents, noted that the crowd induced accidents may occur within the boundary of a venue (On-site) as well as

anywhere in the surrounding areas (catchment and command areas from where people flow-in and flow-out) outside the venue (off-site) - viz. roads, bridges, public service centers like railway stations and bust stands, temporary shelters etc. Examples of *a crowd crush in 2015 killing about 15 devotees, about 10 kms away from “Bada Dhaam temple (Jharkhand) and a tragedy in the recent past during the Ganga Sagar Fair (Jan 2017, West Bengal) were cited and discussed.*

Based on the past incidents and other facts connected with venues of mass gatherings (especially places of worship) conference deliberations recommend need for On-site as well as Off-site crowd emergency response plans for venues holding events attracting large crowds from across the country at regular intervals.

A document titled - “New Planning Approach for Crowd Management Plans” - prepared by Dr. R. K. Dave circulated during conference is attached for ready reference.

Note:

- For more information please visit www.respect.org.in
- For any clarifications contact Dr. R. K. Dave at roopdave@yahoo.com.