

Disaster Management Plan in Government Museum, Chennai

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Resumen

Manual de gestión de riesgos del Museo Gubernamental de Chennai

La gestión de riesgos en los museos está experimentando un auge considerable en calidad de instrumento preventivo, sobre todo por lo que respecta a la utilización de nuevas medidas de seguridad. Por primera vez en la India, el Museo Gubernamental de Chennai ha publicado un manual sobre gestión de riesgos destinado exclusivamente a los profesionales de los museos. Entre los temas abordados en dicho manual, figuran: los distintos tipos de catástrofes y las diversas maneras de afrontarlas; las responsabilidades que debe asumir cada miembro del equipo encargado de las situaciones de emergencia; y la elaboración del plan de gestión de las catástrofes. Todos estos temas forman parte de la fase de preparación contra posibles desastres a los que conviene prestar gran atención: incendios, inundaciones, conflictos armados, bombardeos, robos, etc. La capacitación de los profesionales de los museos para el desempeño de tareas de prevención, seguridad y otras similares, tiene que efectuarse con frecuencia en colaboración con los jefes de servicios y departamentos de las instituciones museísticas, a fin de reducir considerablemente los riesgos.

Résumé

Manuel de gestion des risques du Musée du Gouvernement de Chennai

La gestion des risques dans les musées voit son importance accrue en tant qu'outil de prévention, surtout en ce qui concerne l'utilisation de nouvelles mesures de sécurité. Le Musée du Gouvernement de Chennai a publié, pour la première fois en Inde, un manuel pour la gestion des risques dont l'usage est exclusivement réservé aux professionnels des musées. Les divers types de catastrophes, leur gestion, les activités à mettre en place aux moments d'urgence, les responsabilités de chaque membre de l'équipe responsable, les plans de gestion des désastres, etc., font partie de la phase préparatoire pour faire face à des événements auxquels on doit toujours rester attentif, par exemple les incendies, les inondations, les bombardements, les conflits armés, les vols, etc.

La formation des personnels des musées aux tâches de prévention, sécurité et autres, doit être menée régulièrement en collaboration avec les chefs de services et les départements des institutions concernées afin de réduire significativement les risques.

Introduction

Disaster means a great or sudden misfortune or terrible accident. This, in the case of a museum, can be flood, heavy leakage in the roof of a building, infestation with biological agents, fire, an earthquake, other man-made problems such as a religious war, bombing or theft. Disaster can be natural or man-made. Whatever the type of disaster, when it occurs, it is very difficult to safeguard the antiquities and human beings in the museum. Therefore a disaster management plan is required for a museum to handle the disaster before, during and after it occurs. This paper deals with the Disaster Management Plan, the preventive measures and the recovery measures taken in the Government Museum, Chennai.

A Disaster Management Plan

Disaster management is very important for any museum. It makes the staff aware of the various disasters possible in a museum, prevention procedures, training in disaster management, and after-disaster procedures for museum objects. When I joined as Joint Relief Commissioner of Relief Measures (Government of Tamil Nadu in 1985-86) the discipline of disaster management was in a nascent state. I had occasion to participate in a World Health Organization seminar and a workshop in at the Administrative Staff College of India in Hyderabad, held in 1985-1986. At that time, disaster management consisted of flood and drought management. Chemical and industrial disasters were new. The Bhopal tragedy had just struck, but preparedness was a new experience. I had prepared a flood and drought management manual. It reflected the state of technology then. Personal computers were just beginning to be known. Most district collectors had telephones, which operated on the central battery system – the receiver had to be lifted and the operator would connect the desired number. Today, technology has made a quantum leap with cellular phones giving access to all locations and powerful portable computers which can be linked via mobile phones. This would have been the stuff of science fiction then. However, my previous experience has made me aware of the need for anti-disaster planning and management. The recent fire in the General Post Office, a heritage building, was an eye-opener.

A fire fighting drill was organised for the staff of the Government Museum, Chennai, and staff associated with the museum during December 2000. It was conducted in batches with the help of the Fire Service Department staff and the supplier of the fire fighting equipment. It so happened that on December 21, 2000, during a school function in the Museum Theatre, the front curtain caught fire. The museum staff, with the help of fire extinguishers recently installed in the theatre and the training they had just received, swiftly plunged into action within seconds, extinguished the fire and saved a priceless heritage building in Chennai. Action has subsequently been taken to strengthen fire-fighting equipment in district museums too.

Disaster Preparedness Plan

Having a Disaster Preparedness Plan means a museum has implemented action to prevent disasters from occurring and has prepared by developing the necessary procedures to effectively respond to and

recover from a disaster when it does occur, thereby reducing the impact on the staff, the collection and the museum.

It is a document containing information on the standard operating procedure to be adopted in an emergency caused by any disaster. By its comprehensive nature, it saves the time used in thinking in emergencies. With training drills it ensures a quick response from the people involved. It does not respond to emergencies — it is people who do that. It ensures that staff are familiar with the plan and their roles in it, and that they have the resources, training, and authority to undertake their duties and responsibilities. This information has to be made up-to-date and the plan practised regularly. Emergency preparedness does not stop once a written disaster management plan is completed.

Disaster Response Team

A disaster response team should be organised in the institution. It should have the co-ordinator, conservator, civil engineer, electrical engineer, fire officer, revenue officer, police officer, health officer and others. They should be given specified duties and meet regularly to review the situation in the institution.

Duties of the Disaster Response Team

The duties of the Disaster Response Team are multifarious:

- declaring emergencies and implementing the emergency plan;
- implementing evacuation procedures;
- contacting emergency services (fire, police, ambulance) and utilities;
- establishing a command post, chain-of-command and reporting procedures;
- accessing and stabilising the environment;
- assessing emergency services, supplies and equipment;
- obtaining emergency services, supplies and equipment;
- ensuring the safety of staff and volunteers at all times during an emergency;
- arranging for off-site storage and work facilities;
- arranging the transfer of collections to a safe site;
- recording the movement of collections;
- contacting, deploying and supervising museum staff;
- implementing and supervising salvage procedures for collections;
- contacting, training and supervising volunteers;
- documenting all aspects of the response / recovery procedures;
- signing purchase orders;
- meeting with the press;
- preparing post-emergency reports.

Emergency Plan

1. Authority Statement

When there is a disaster, the head of the institution authorises staff, employees and volunteers to deal with the emergency. The head of the institution's disaster response team is vested with the authority to declare a state of emergency and to make appropriate use of whatever resources are necessary.

II. Policy Statement

During a disaster, the museum declares its priorities to be:

1. protection of life;
2. protection, recovery and stabilisation of the collection of records.

To achieve this, it authorises the bypassing of normal procedures.

III. General Instructions

1. Wherever necessary, visible emergency exit signs must be posted clearly;
2. on hearing an alarm or information from staff, all persons shall evacuate the museum buildings;
3. copies of the emergency plan should be readily available to the disaster response team;
4. the disaster response team has authority in all practical matters for the duration of the emergency.

Appendices

There should be details of information as required below to take swift action during any disaster:

1. complete staff list with addresses and phone numbers;
2. emergency response team call-out list with phone numbers (check weekly);
3. public emergency service phone numbers (check annually);
4. phone and fax numbers, e-mail IDs of other sources of emergency support and appropriate Public Works authorities (check annually);
5. phone and fax numbers, e-mail IDs and addresses of local suppliers of equipment, materials, freezing services, ambulance, accommodation and services that might be required (check annually);
6. building information, with plans showing location of water, electricity, gas and compressed air circuits and all switches and cut-off points (update annually);
7. lists of emergency equipment and materials held in stock with quantities and location (check stock and update monthly);
8. lists and locations of fire-fighting equipment and first aid supplies (check monthly and update monthly);
9. location of safe copies of records of the collections and Disaster Plan;
10. distribution of "Disaster Plan" and "Appendices": I, II & III to all staff; III at points 1 and 2 in every room; Appendices 2 and 3 beside every telephone.

Signature of head of institution and date.

Checklist

A checklist is a must to assess the condition of the damage to the property. A conservator may be summoned to advise, if necessary. There are many conservation procedures to rescue affected manuscripts and art objects. Curators, archivists, librarians and the collection managers, keepers, caretakers and others concerned may contact suitable persons for the conservation of affected objects after the recovery of the objects has been completed.

Emergency Contact List

State Emergency Services	Name	Phone Number
Fire Service	Fire	101
Police	Patrol	100
Police	Traffic	103
Ambulance	Ambulance	102
Hospital	Medical Officer	
Tahsildar	Revenue	
Electricity Services		
Corporation or Municipality or Town Panchayat		
	Health Officer	
Metropolitan and Water Supply and Sewage Board	Health Office Complaint Cell	
Public Works Department	Assistant Engineer (Civil)	
	Assistant Engineer (Electrical)	
Regional Meteorological Centre	Area Cyclone Warning Centre	
Insurance Company		
Police	Technical Services & Finger Print Bureau	
Data Diffusion Squad		
Pest Control		
Transportation		
Secretariat	Secretary of the Concerned Department	
Head of the Institution		
Officials of the Museum		

The Chennai museum has the response team to handle the disaster management. Regular fire-fighting drills and discussions with officials of fire and rescue services, police department, etc., are conducted to help contain disasters.

Fire

Fire is one of the devastating agencies in museums and similar institutions where organic materials such as manuscripts, textiles, art objects and natural history specimens are present. One must take all precautionary measures to contain fire and therefore avoid fire. One must know the elements of disaster preparedness to avert fire, to safeguard objects during fire and salvage activities after fire. The various elements of disaster preparedness are:

1. before a disaster;
2. during a disaster;
3. after a disaster.

Fire Safety

Fire is one of the major devastating agencies, which completely destroys objects, both organic and inorganic, within a short time. Even metallic objects such as lead or tin will be damaged by fire. Fire safety is an important aspect to be looked after. In addition to meeting environmental standards, institutions such as museums, archives and libraries should meet fire safety standards for the protection of artefacts.

Causes of Fire

Fire in a museum can be caused by various factors:

1. electrical and mechanical factors, due to failure of air-conditioners, over-loading, etc.;
2. chemical factors, due to the use of chemicals, paints, etc., in the galleries;
3. human factors, such as smoking or deliberate lighting of fires.

Fire Safety Systems

There are various fire safety systems available. They are electronic automatic fire detection and alarm systems, gas-based automatic fire detection and extinguishing systems (CO₂ / FM 200 / NAFS III / INERGEN flooding system), automatic sprinkler systems ("Wet Pipe", i.e. a system where water is constantly maintained within the sprinkler piping; when a sprinkler activates this, water is immediately discharged onto the fire; or "Dry Pipe", i.e. a sprinkler system with pipes filled with pressurised air or nitrogen, rather than water, and "Pre-action" using the basic concept of a dry pipe system, i.e. water is not normally contained within the pipes, but is held by a pre-action valve); a medium velocity water spray system, a high velocity water spray system, low and high expansion foam systems, a fire hydrant system (both wet riser and down comer systems), and water mist, one of the promising technologies involving the use of fine water droplets, known as micromist: these systems discharge limited quantities of water at very high release pressure of approximately 1000 PSI producing droplets of less than 20 microns in diameter and with exceptionally high efficiency cooling and fire control using significantly small volumes of water.

Halon 1301 (CF₃Br) fire suppression systems have found quite wide application in certain parts of libraries, record storage facilities, museums and the like. Due to its high atmospheric ozone depletion potential, Halon 1301 is no longer available for fire protection purposes. Alternatives available include NAFS-III (a blend of hydrochlorofluorocarbons), FM-2000 (heptafluoropropane, CF₃CHF₂CF₃) and the inert gas system, INERGEN. INERGEN may well serve as an environmentally acceptable alternative to Halon 1301 for critical parts of library facilities. INERGEN (derived from the words "inert" and "nitrogen") is a mixture of nitrogen, argon and carbon dioxide. The specific gravity of INERGEN is 1.05, which is similar to air and therefore human beings could safely remain in the room during trial operations or accidental release of INERGEN. Of course one should leave the room when fire is involved, not because of the extinguishing agent, but because of the toxic gases released by the fire.

Automatic sprinkler systems (wet, dry or pre-action) are the preferred protection for libraries and, in the present state of development, are virtually failure-proof. Fire detection and alarm facilities are the next choice and, again current technology provides very easy warning (and summoning of fire brigade) with greatly improved resistance to false alarms.

Clean agent systems, with new breathable options, are suitable for many parts of library installations. Fire protection technology is available; all we need is more dialogue between library, museum administrators and fire protection engineers.

To avoid floodwater, the drainage system in the campus was recently improved. The buildings are at a high level, at least 3 to 6 feet above the ground level in the area.

Earthquake

In an earthquake, the ground movement seldom causes death or injury. If the museum is a high-rise building, damage will be substantial. Most casualties occur from falling objects or flying building materials such as broken glass or dislodged bricks. Fire can be caused by electrical short-circuiting or chemical spills; water damage can be caused by burst pipes; showcases and open exhibits will fall and glass showcases may crack.

In the Event of an Earthquake

- Human safety is the first priority;
- take cover in a supported doorway or under sturdy furniture;
- stay away from glass windows, doors, display cabinets, bookcases;
- do not hold sharp tools.

After the Earthquake

- Be prepared for aftershocks;
- extinguish all fires with the proper type of fire extinguisher;
- contact emergency services (phone number);
- check for broken water pipes and shorting of electrical circuits;
- turn off all water at the main valves;
- check for water leaks;
- turn off all electrical appliances at the power point;
- open doors carefully and watch for falling objects;
- carefully move outside and away from the building;
- do not re-enter the building until instructed by emergency personnel.

No measures have been taken in this museum to contain earthquakes as the area is not prone to earthquakes.

Bomb Threats

Bombing is now quite common in public offices where miscreants seek to achieve their goals. For any public place with public movement it is essential to stop miscreants entering with bombs. Metal detectors may be

used to check the entry of unwanted metal materials, thereby avoiding the entry of lethal weapons and bombs.

Security checks are conducted every day and no large baggage is allowed inside the museum. Surprise checks are also made inside the gallery. Vehicles are not allowed near the galleries.

Theft and Burglary

Proper control measures may prevent thefts and burglaries in museums and can be both manual and mechanical (including electronic).

The Government Museum in Chennai has provided preventive measures to avoid theft and burglary and will install electronic facilities with a modern control room, alarms for important artefacts, galleries, etc., connected to a computer which will record all persons and events.

Manual Methods

The museum has internal security with gallery guards to guard objects on display in the galleries. The security personnel are from the department and also from TEXCO. External security is by departmental staff, TEXCO and the State Police. A police outpost guards the campus around the clock. The compound wall has been raised to stop anyone scaling the walls. There is only one entry/exit to the museum. To avoid any antisocial elements coming onto the campus, an entrance fee of 2 rupees is charged for every visitor.

Electronic Methods

The Government of Tamil Nadu has approved the payment of 8,300,000 rupees to install an electronic surveillance system in the museum. This will have cameras to detect any unwanted occurrences in the gallery, breaking of glass showcases, fire and smoke detection, etc. The work has been entrusted to ELCOT and will include an automatic sprinkler system and alarms to deal with fire, theft, etc.

Staff Training

Training is the process of changing a given behaviour pattern to a desired behaviour pattern. Training is important for the following reasons:

- trained manpower is not readily available on the market;
- training condenses the experience that others have gained over several years;
- training removes the anxiety of workers as to whether they can do the job successfully;
- training helps the institution have a well-coordinated team;
- training helps equip a person to do the job in the shortest time possible.

A balanced training programme develops personal knowledge, skills and the right attitude. Effective training programmes for those who work in museums are fundamental in ensuring that our museums are equipped

to face the challenges. Since every one has a role in the success or failure of the disaster management of a museum, training is essential. Training should not apply to junior staff only. Junior staff must be given long detailed training so that they learn the subject thoroughly from the beginning. A short-term training programme should be given to experienced staff members at regular intervals so that modern trends are covered. Many directors and senior staff urgently need to improve management and financial expertise and it should not be just a one-off, but must combine any necessary up-grading throughout an individual's career.

In the Government Museum, Chennai, training in fire-fighting is regularly given to the staff. Museum Fire Safety Day is celebrated annually. Fire safety equipment is refilled and training is offered on how to fight a fire with the help of the Fire and Rescue Services Department. Staff are also trained in museum upkeep and maintenance so that disaster management is easier for the museum administration.

Tackling a Fire

On December 21, 2000, a fire broke out in the Museum Theatre, an exquisite heritage building modelled on the old Globe Theatre, London and built in 1896 AD. The fire was put out in 30 seconds, as the gallery guards and theatre personnel had been trained only a week earlier in how to put out a fire using fire extinguishers. The only damage was to the old velvet curtain.

Work was done recently on the theatre, water-proofing the roof and stucco work on the cornices and walls, replastering, repairing stained glass, refurbishing the seats, lighting, flooring and so on. It is now a grand sight. The 151st anniversary celebrations of the museum were held on June 19, 2003, and were attended by the President of India, the Governor, Chief Minister and others who praised the conservation and refurbishment work.

Conclusion

Whatever the system adapted to avoid disasters, it is essential to monitor and review the position regularly. The success of disaster management depends on the involvement and dedication of the staff of the museum. "Eternal vigilance is the price of freedom and preservation of artefacts and heritage".

References

ARTIM, Nick. "An Introduction to Automatic Fire Sprinklers, Part I." and "An Introduction to Automatic Fire Sprinklers, Part II: System Types ". In: *WAAC Newsletter* [Western Association for Art Conservators], Vol. 15, No. 3, Sept. 1994, p. 20-27 and Vol. 17, No. 2, May 1995, p. 23-28.

GOVERNMENT OF TAMIL NADU. *Proceedings of the International Seminar on Conservation of Stone Objects with Special Reference to Lime Stone Objects*. Egmore, Chennai, Commissioner of Museums, Government Museum, 2003.

JEYARAJ, V. *Handbook on Conservation in Museums, Chennai*. Egmore, Chennai, Commissioner of Museums, Government of Tamil Nadu, 2002.

KANNAN, R. *Manual for Disaster Management in Museums - Government Museum*. Egmore, Chennai, Commissioner of Museums, Government of Tamil Nadu, 2001.

LEE, B.M. "Fire Protection for Libraries: a Technology Update". In: *Redefining Disasters: A Decade of Counter-Disaster Planning. Proceedings, 20-22 September 1995*. Rev. ed. Sydney, State Library of New South Wales, 1996. ISBN 0-7310-6602-2.

STRANG, Thomas J.K. "Museum Pest Management". In: *A Systematic Approach to the Conservation (Care) of Museum Collections* / ed. by Stefan Michalski. Ottawa, Canadian Conservation Institute, 1992.