

PREPARATION OF GUIDELINES FOR ESTABLISHMENT OF EMERGENCY OPERATIONS CENTRE (EOC)



USAID
FROM THE AMERICAN PEOPLE



समृद्धि और
Ministry of Home Affairs
Government of India



Empowered lives.
Resilient nations.

Submitted By:

Resilience Innovation Knowledge Academy (RIKA) India Private Limited

PREPARATION OF GUIDELINES FOR ESTABLISHMENT OF EMERGENCY OPERATIONS CENTRE (EOC)



TABLE OF CONTENTS

EXECUTIVE SUMMARY	IV
1. INSTITUTIONAL ARRANGEMENTS FOR THE ESTABLISHMENT OF EMERGENCY OPERATION CENTRE (EOC)	1
1.1 Provisions supporting the establishment of EOC	1
1.2 Institutional mechanism for the establishment of EOC	2
1.3 Financial arrangement for the establishment and functioning of EOC	3
2. CORE PRINCIPLES FOR EOC MANAGEMENT	4
3. KEY FUNCTIONS OF EOC AND OPERATIONAL GUIDELINES	6
3.1. Functions of EOC during and post-disaster phase	6
3.1.1 Early warning and dissemination	6
3.1.2 Activation of emergency plans and SOPs	8
3.1.3 Resource mobilization and demobilization	9
3.1.4 Communication and coordination	12
3.1.5 Public relations and information management	14
3.1.6 Conflict resolution	15
3.2. Functions of EOC during normalcy	15
3.2.1 Planning	15
3.2.2 Hazard monitoring for risk assessment and risk communication	16
3.2.3 Resource Management	16
3.2.4 Development and updation of resource inventory and databases	17
4. RISK-INFORMED SITE IDENTIFICATION AND DESIGN REQUIREMENTS	19
5. ORGANIZATION STRUCTURE AND INSTITUTIONAL MECHANISM FOR FUNCTIONING OF EOC	29
5.1 Command Staff	29
5.2 General Staff	32
6. ICT INFRASTRUCTURE	34
6.1 Communication linkages	34
6.2 ICT infrastructure and services at EOC	35

6.3	Connectivity and interoperability	36
6.4	ICT-based services of EOC	37
7.	TRAINING AND CAPACITY BUILDING	38
8.	ANNEXURES	42
Annexure 1:	Incident reporting formats	42
Annexure 2:	Some of the existing IMS	45
Annexure 3:	Checklist of key consideration for the establishment of the city EOC	47

LIST OF FIGURES

Figure 3.1:	Illustration of location-based warning/ alert system	8
Figure 3.2:	Key activities under resource mobilization	10
Figure 3.3:	Screenshots of existing tools of resource mobilization	11

LIST OF TABLES

Table 1.1:	Proposed composition of the expert committee for the establishment of EOC	2
Table 3.1:	Designated central agencies for issuing hazard-wise early warning and alerts	7
Table 4.1:	Suggested non-structural measures for the city EOC	19
Table 7.1:	Suggested list of resources for the EOC	40

PREPARATION OF GUIDELINES FOR ESTABLISHMENT OF EMERGENCY OPERATIONS CENTRE (EOC)

EXECUTIVE SUMMARY

Rapid urbanization and exponential urban growth in India in the past few decades have been accompanied by increased underlying vulnerabilities and exposure to various natural, human-induced and technological hazards. Climate change has further adversely altered the frequencies and severity of these hazards giving rise to complex and cascading urban risks. In the backdrop of this, urban local authorities and stakeholders have a critical role in understanding, mitigating, and managing the urban risk and their associated impacts on different sections of society and different sectors of the economy.

In this regard, it is pertinent to equip the urban local governance with adequate institutional and infrastructural systems for fulfilling these critical roles towards safeguarding their residents and infrastructure from disaster and climate risks. City-level Emergency Operation Centre (EOC) is one such critical infrastructure and facility that augments the capacity of local authorities and other stakeholders not only for a coordinated and timely response but also in undertaking myriads of mitigation and preparedness activities right from risk communication, hazard monitoring, early warning generation, dissemination, resource management, decision making, etc. The EOC establishes effective linkages among key stakeholders at the different administrative levels and aids in the smooth and collaborative functioning of these stakeholders with the support of various physical, human, and ICT infrastructure. An effective EOC system rests on the principle of accountability, unified command, unity of command, chain of command, etc. Overall, the EOC acts as a central command and control unit at the city level and supports the effective discharge of various disaster risk management functions.

The current study for the development of Guidelines for Establishment of Emergency Operation Centre (EOC) is being undertaken under the umbrella project 'Developing Resilient Cities through Risk Reduction in the context of Disaster and Climate Change' of USAID-Gol-UNDP. The project covers six cities, namely Cuttack (Odisha), Navi Mumbai (Maharashtra), Shillong (Meghalaya), Shimla (Himachal Pradesh), Visakhapatnam (Andhra Pradesh) and Vijayawada (Andhra Pradesh). The project has two main objectives:

- i. Reducing disaster risk in urban areas by enhancing institutional capacities to integrate climate risk reduction measures in development programmes as well as undertaking mitigation activities based on scientific analysis;
- ii. Better preparing urban communities with increased capacities to manage climate risks

Structure of the guidelines

The guidelines for the establishment of EOC are divided into seven chapters catering to critical aspects of EOC governance, administration, functioning, and maintenance not only during disaster response but also during normalcy. The key chapters are:

1. Institutional arrangements for the establishment of EOC

The chapter identifies the existing institutional, financial, legal, and policy-based provisions for the establishment of EOC. It lays down suggestive arrangements (institutional, legal, and financial) for the establishment of EOC at the city level including the composition of dedicated committees/ groups, and roles & responsibilities of involved stakeholders, provisioning of financial resources, monitoring, etc.

2. Core principles for EOC management

The chapter lays down the core principles and concepts for the management of emergency operations and will envisage guiding all the actions and measures recommended in the guidelines. Broadly, these will include the principle of scalable/ adaptable management structure, accountability, unity of command, the chain of command, transfer of command, the span of control, etc.

3. Key Functions of EOC

The chapter lays down in detail the key functions of an EOC before, during, and after a crisis/ hazard event. Some of the key functions during times of normalcy include planning, development of resource inventory, database management, establishing communication linkages, training and capacity building of human resources, hazard monitoring, risk communication, etc. During and post-disaster, some of the key functions include early warning and dissemination, activation of emergency plans and SOPs, resource mobilization, communication and coordination, demobilization of resources, information management, public relations, conflict resolution, media management, etc.

4. Risk informed site identification and design requirements

The chapter lays down criteria and minimum standards for the identification of a suitable site and design for the establishment of EOC in the city. Amidst other structural and architectural considerations, the criteria are informed by factors like multi-hazards risk profile of the city, consideration of local risks, all-weather accessibility to the site, security aspects, concepts of resilient and green buildings, use of local and appropriate construction material & practices, etc.

Besides, the chapter enlists some key physical infrastructure and key facilities for ensuring the effective and efficient functioning of EOC. It provides a suitable illustrative layout for the suggested infrastructure which can be contextualized based on the requirement of specific cities.

5. Organization structure and institutional mechanism for functioning of EOC

The chapter lays down the suggestive organization structure for EOC at the city level along with detailed roles and responsibilities under various heads of organizational structure namely

operations, planning, coordination, and finance. Under these functions, the guidelines will include aspects of human resource management, resource management, policy, plans, IRS, SOPs, ESFs, financial mechanisms, procedural aspects, etc.

6. ICT infrastructure

The chapter discusses various essential and suggestive options for information, communication, and technology infrastructure required for the effective functioning of EOC. These include aspects of integration with existing early warning, surveillance, and communication systems; provision of web-based resource management systems, web-based incident management systems, web-based decision support systems, database management, channels and mode of information flow among key stakeholders; applications of new and emerging technologies; applications of low-cost technologies in absence of/ during disruptions in internet services; adoption of advanced technology to enhance emergency operations and information management; maintenance of all warning, communication systems, and instruments in working conditions, etc. This chapter will imbibe the critical concepts of an effective communication system including agility, reliability, multi-level redundancy, inter-operability, etc.

7. Training and capacity building

The chapter lays down the mechanism for assessing the training needs of the staff and other stakeholders of EOC and undertaking the required capacity-building measures. These include training on aspects of EOC management, incident reporting, information dissemination, risk communication, roles and responsibilities under laid down SOPs, inter-agency coordination, database management, etc. Capacity-building measures will also include the provision of undertaking regular table-top and on-field simulation exercises.

INSTITUTIONAL ARRANGEMENTS FOR THE ESTABLISHMENT OF EMERGENCY OPERATION CENTRE (EOC)

1.1 Provisions supporting the establishment of EOC

Some of the key provisions and recommendations at the global and national level supporting the establishment of an EOC for strengthening the DRM mechanism at the sub-national level are discussed below.

The Sendai Framework for Disaster Risk Reduction (SFDRR) emphasizes enhancing disaster preparedness and capacities for effective response. Effective disaster response requires the continued functioning of infrastructure and services that support emergency planning and response. It is supported by strong cooperation and coordination among the key stakeholders of DRM including government departments, authorities at different levels, private agencies, voluntary organizations, etc. Such critical functions and multi-stakeholders linkages are supported by the EOC. This necessitates strengthening and investing in risk and emergency communication systems, multi-hazards early warning systems, and telecommunications systems along with having in place the trained and skilled human resources. In addition to disaster response and related coordination, the EOC also plays a critical role in supporting various actions, targets and recommendations envisaged in the SFDRR. These include supporting the decision-makers by the provision of appropriate disaster risk information, data, maps; supporting access to real-time reliable datasets; providing a platform to diverse stakeholders, practitioners, and experts to dialogue and manage disaster risks; facilitating the inter-agency coordination & liaising; supporting the stockpiling, allocation, and management of emergency resources; etc.

Similarly, at the national level, the need for EOC is implicitly underscored in various provisions of the Disaster Management Act, 2005. The Act mandates having in place adequate communications systems, early warning systems along with setting up a suitable mechanism for dissemination to masses. The Act also calls for stockpiling and management of relief and rescue material at the sub-national level and ensuring effective coordination during disasters. These are among the various critical functions an EOC performs.

The National Policy on Disaster Management 2009 explicitly talks about strengthening and establishing the EOC at various levels including the metro. The policy lays down that such EOCs should be duly equipped with “contemporary technologies and communication and facilities” which should be maintained and regularly upgraded. In addition to this, the Policy emphasizes the immense role of local authorities including the Urban Local Bodies (ULBs) in enhancing the preparedness and capacities of the districts and state, especially during the response, relief, and rescue activities. The EOC at the city level has a paramount role to play in this regard. As part of building disaster resilience and investing in various structural measures for Disaster Risk Reduction (DRR), the National Disaster Management Plan (NDMP) 2019 recommends the establishment of EOC at the sub-national level and has recognized the responsibilities of the respective Disaster Management Department, State Disaster Management Authorities (SDMAs), and ULBs for the same.

The Prime Minister’s 10 point Agenda for Disaster Risk Reduction (DRR) promotes localization of disaster risk reduction and calls for “leveraging technology to enhance the efficiency of DRM efforts”. It advocates the adequate use of different technologies and their applications for strengthening the early warning systems for multiple hazards. In addition, the Agenda stresses the effective utilization of social media and mobile-based technologies for DRR. The EOC is a facility that supports such functions at different levels.

1.2 Institutional mechanism for the establishment of EOC

For the establishment of the city EOC or upgrading an existing one, the respective City Disaster Management Committee (CDMC) or respective Municipal Commissioner, in absence of CDMC, should constitute an expert committee comprising of the following suggested members:

Table 1.1: Proposed composition of the expert committee for the establishment of EOC

S. No.	Suggested members	Designation
1.	Municipal Commissioner/ Chairperson of CDMC	Chairperson
2.	Head, Disaster Management Department/ Section in the city	Deputy Chairperson
3.	Head, Revenue Department/ Section in the city	Member
4.	Head, Finance Department/ Section in the city	Member
5.	Head, Public Works Department/ Roads & Buildings Department/ Section in the city	Member
6.	Seismologist, geologist, hydrologists, civil and structural engineer, architect, ICT expert, DRM expert, and other such experts as deemed necessary by the Chairperson	Members
7.	Representative, respective DDMA/SDMA	Member
8.	Representative, respective SDRF/NDRF battalion	Member

The key functions of the expert committee so formulated are:

1. The expert committee should undertake the risk assessment of the existing control room or EOC, if the same needs to be upgraded, and submit an actionable report with key gaps, bottlenecks, and suitable recommendations to address and overcome them.
2. In case the city EOC needs to be established as a green-field project, the expert committee should be informed by the guidelines along with the hazard and risk profile of the city and identify a suitable site for establishing the city EOC.
3. The expert committee in both cases should understand the local contexts of the city including demographic profile, population-at-risk, population density, most effective ways of risk communication considering the literacy, digital and internet penetration in the city, etc. and develop a report for supporting the contextualized implementation of the current guidelines for establishing the city EOC.
4. Based on the above, the expert committee should lay down technical and financial proposals detailing the site requirement, proposed site (if any), key functions, resources, and facilities along with the budget/ financial plan for the establishment of EOC to the City Administration/

CDMC for approval which may, in turn, submit the same to respective SDMA/ Disaster Management Departments, if required.

5. On approval, the expert committee may support the City Administration/CDMC in planning and identifying the suitable financial channels along with alternate funding mechanisms such as public-private partnership (PPP), Corporate Social Responsibility (CSR), etc. for construction and procurement of necessary facilities and services.
6. If necessary, the expert committee can formulate different sub-committees to perform various dedicated functions. Such sub-committees may also include a Project Implementation Unit (PIU) and a Monitoring & Evaluation (M&E) sub-committees for ground implementation and overseeing the execution of the establishment of the EOC.

1.3 Financial arrangement for the establishment and functioning of EOC

Based on the recommendations of the XIV Finance Commission for the year 2020-21, 10% of the State Disaster Response Funds (SDRF) are to be allocated towards capacity building. The recommendations further lay down that the preparedness and capacity building grants should be utilized for undertaking training and capacity building activities, purchase of emergency equipment, and emergency response facilities for enhancing the preparedness to respond effectively. In the backdrop of this, some part of the capacity building component of the SDRF can be earmarked for the establishment, strengthening, and maintenance of the city EOC by the respective State Disaster Management Authorities (SDMAs)/ Revenue and Disaster Management Departments.

In addition to these, the CDMC or the Municipal Commissioner may also explore convergence developmental schemes and projects at the city level such as the Smart City Mission that may support part or all of the necessary components for the establishment and functioning of the city EOC. Besides, the expert committee may identify and recommend alternative sources of funding/ investment feasible at the city level such as different PPP models, CSR, outsourcing model of functioning, etc.

CORE PRINCIPLES FOR EOC MANAGEMENT

The following are some of the core principles for the management of EOC. Efforts should be made to imbibe the same throughout the process of establishing and managing the EOC such as human resource management, information management, resource management, laying down the EOC Operational Manual, emergency Standard Operating Procedures, planning, emergency management, scaling of operations, etc.

Scalable/ adaptable management: The principle of scalable or adaptable management lies at the core of the functioning and management of the EOC. It allows the EOC to activate itself fully or partially depending on the ground situation, type of incident, and scale of impacts of the incidents. This principle ensures the efficient utilization of available resources for the management of the incident and supports organizational flexibility.

Accountability: The principle of accountability is crucial for EOC management as it brings together various departments and agencies who are required to perform varied functions. Thus, in the absence of the principle of accountability, multi-stakeholders engagement can result in duplication or omission of some crucial functions of EOC.

Unity of command: The principle of unity of command ensures that each personnel is supervised by one dedicated personnel. This principle is important for EOC management to avoid confusion or duplication of work allocation/ orders to subordinates from multiple supervisors in the crucial time of disasters.

Chain of command: The principle of chain of command establishes a hierarchy in an organization whereby streamlined orders are passed from highest to lowest authorities in the organization and the reverse order of reporting is followed from the lowest to the highest authority. The principle of chain of command is recommended for the EOC management for enhancing accountability, improving the flow of information, and ensuring smooth coordination across the organization.

Transfer of command: Due to various reasons such as the large scale of the incident which overwhelms the capacity of the local response agencies and team or arrival of experts or more qualified personnel, etc. sometimes it becomes necessary for the teams to undertake the transfer of the command. Thus, the principle of transfer of command at the EOC ensures smooth handover of charge to the appropriate authority.

Manageable span of control: The principle of the manageable span of control says that only a limited number of personnel/ elements can be effectively managed directly by a supervisor. Ideally, a supervisor can effectively manage five organizational elements under his/ her direct control¹. In case the number becomes higher than 5 or lower than 3, it calls for re-organization of the structure for the effective functioning of the organization. This principle is crucial for EOC management as the functioning of EOC during major disasters involves the deployment of a large number of human resources and hence if the principle is not imbibed adequately, it may lead to organizational ineffectiveness of the EOC and fatigue of the supervising positions.

1 National Disaster Management Guidelines on Incident Response System

KEY FUNCTIONS OF EOC AND OPERATIONAL GUIDELINES

3.1. Functions of EOC during and post-disaster phase

The primary function of the EOC is to act as a centralized command and control centre for the management of disasters. EOC is envisaged to become the nerve centre for collection, analysis, and dissemination of critical information including that on affected sites and different involved agencies & stakeholders. During emergencies, it provides a strategic platform that brings together decision-makers, representatives of key line departments/agencies and facilitates them with field-based data and information for laying down operational and logistic incident action plans for management of the incident in a coordinated way. Thus, while the tactical decisions and implementation are undertaken by the specialized response and operational teams on the ground, EOC provides strategic guidance and planning for the overall management of disasters and facilitate the effective and efficient functioning of the ground teams. The key functions an EOC should perform during and post-disasters can be broadly categorized into:

3.1.1 Early warning and dissemination

Depending on the hazard profile, the city EOC should support the function of generating/ receiving an early warning and wide dissemination of the same to decision-makers, response & relief agencies, and the general public at large. This is one of the very critical functions of EOC as this triggers the activation of EOC for emergency management and the required sections, branches, and groups of the Incident Response System along with emergency SOPs. For certain hazards such as floods, cyclones, tsunami, etc. there are existing technologies to generate timely early warnings while for other hazards such as fires, chemical and industrial accidents, etc., it is difficult to generate an early warning but alerts are generated only after the occurrence of such events. This requires different mechanisms to be put in place at the EOC. This includes firstly, a top-down mechanism whereby the city EOC receives early warnings from the authorized state and national agencies and disseminates them down to stakeholders and communities at the city level. Secondly, for hazards where early warning could not be generated, the city EOC should have a bottom-up mechanism to receive incident alerts from the ground, activate the response agencies, and disseminate the information to stakeholders at various levels for additional assistance and record. Thus, along with the establishment of mechanisms for receiving or generating early warnings, it is also important to put in place a dissemination mechanism for ensuring timely and accurate information.

To undertake the function of early warning and dissemination, the EOC may consider the following:

- i. Establish multi-hazard early warning systems at the EOC
- ii. Establish linkages with external agencies at the national and sub-national level recognized for providing early warning services for different hazards such as IMD, CWC, INCOIS, to receive timely and real-time updates directly at the city EOC
- iii. Establish linkages with EOCs at the district and state level and departmental/ ministerial control rooms to receive timely updates from the field and higher authorities

- iv. Identify key stakeholders and establish communication channels to disseminate the warnings and alerts to them
- v. Establish communication channels and technologies to ensure last-mile dissemination to the general public

Table 3.1: Designated central agencies for issuing hazard-wise early warning and alerts

Hazards	Dedicated agency	Concerned ministry
Avalanches	Snow and Avalanche Study Establishment (SASE)	Ministry of Defence (MOD)
Cold Wave	India Meteorological Department (IMD)	Ministry of Earth Sciences (MOES)
Cyclones	<ul style="list-style-type: none"> • IMD • Regional Specialized Meteorological Centre (RSMC) • Tropical Cyclone Warning Centres (TCWC) for different regions 	MOES
Droughts	<ul style="list-style-type: none"> • Central Drought Relief Commissioner (CDRC) • Crop Weather Watch Group (CWWG) 	Ministry of Agriculture and Farmers' Welfare (MAFW)
Earthquakes	IMD	MOES
Epidemics	Ministry of Health and Family Welfare (MHFW)	MHFW
Floods	Central Water Commission (CWC)	Ministry of Jal Shakti (MOJS)
Heat Wave	IMD	MOES
Landslides	Geological Survey of India (GSI)	Ministry of Mines (MOM)
Tsunami	India National Centre for Oceanic Information Services (INCOIS)	MOES

Source: NDMP, 2019

For dissemination, the EOC can explore tools such as satellite phones, HAM radios, telecast and broadcast on local TV and radio channels, through display boards at strategic locations, sirens/loudspeakers at emergency shelters, community radios, social media, etc. For hazards whose impacts are localized and need alerting only a specific section of the population of the city such as in case of road accidents, gas leakage, building collapse, the EOC can make use of interactive location-based cell broadcast technology. This will help the EOC in targeting the warning/ alert to a specific area (figure 3.1) and its people even without requiring their mobile numbers for doing so which ensures that the privacy of the population is not breached. Such an interface also allows two-way communication with the targeted population whereby they can interact with emergency services by provision of an authorized contact number. Besides, such a location-based technology for information dissemination can support customization of the message/ information for the targeted location.

Another critical aspect that should be ensured at EOC for the dissemination of early warnings and alerts is developing standard templates for the messages/ information to be disseminated.

Such a template should ensure that the disseminated message is concise, specific, and in the local language or bi-/multi-lingual. Special care of different principles of risk and emergency communications should be considered while developing such templates for ensuring that they are well-received and trigger envisaged action by the receivers.



Figure 3.1: Illustration of location-based warning/ alert system

3.1.2 Activation of emergency plans and SOPs

The EOC should act as a repository of the City Disaster Management Plan (CDMP), hazard-wise SOPs along with other disaster management plans and SOPs of the respective district and state. The onus of the regular updation of these plans and SOPs lies with the head of respective agencies and line departments. Respective City Disaster Management Committees (wherever present) or the respective Municipal Commissioner should establish a mechanism whereby the updated and actionable plans and SOPs are made available to the EOC at a pre-decided date every year. This date can be the beginning of the financial year or pre-monsoon period or any other suitable date based on the local context or hazard profile of the city.

Such plans should lay down the Incident Response System (IRS) at the city level with clear identification of different officers and staff (identified through their designations to avoid any transfer-induced vacancy) who would assume different positions of the IRS. The detailed layout of the overall IRS and its different sections should be both digitally available at the city EOC and be displayed at appropriate rooms of the EOC where it can be promptly referred by the EOC Manager/ In-charge, Incident Commander, and different section chiefs for undertaking incident planning at the EOC.

This is crucial because, on receipt of the early warning/ alert or the actual occurrence of the disaster (where the warning is not possible), the EOC activates Incident Response System (IRS) along with the emergency plans and SOPs. Activation of these plans and SOPs triggers the pre-identified nodal officers to report to the EOC and initiate the necessary actions as per the plans and SOPs without waiting for formal orders. As the IRS gets activated, the Incident Commander (IC) takes charge of the EOC and takes constant updates on the incident. Accordingly, the IC activates the required sections, branches, and groups of the IRS and warn/ deploy the required Incident Response Teams (IRTs). If the IC feels that the incident cannot be effectively managed from the EOC, he/she orders for establishing a temporary Incident Command Post (ICP) near the site of the incident. In the latter case of establishing a temporary ICP, the digital resources of the EOC such as digital copies of plans, SOPs, IRS templates, assessment formats, ESFs, resource inventories, etc. are found to be very useful. To effectively undertake this function, the EOC should ensure that the required plans, SOPs, and resource inventories are accessible by the EOC and its authorized staff and stakeholders even remotely.

3.1.3 Resource mobilization and demobilization

For the management of the incident, EOC requires both human resources (response agencies, administrative, experts) and material resources (equipment, tools, vehicles). The resource mobilization process at the EOC includes the steps represented in figure 3.2.



Figure 3.2: Key activities under resource mobilization

Mobilization of resources

The resources are mobilized depending upon the nature and extent of the impacts of the incident. In the case of major incidents, the need for resources is often dynamic due to varying local situations, and the EOC should be able to timely record and assess the need and gaps in resources. This function of EOC becomes crucial to ensure that the required functional resources are made available at the right place, at right time, and in the right quantity. Resource mobilization also needs to be cost-effective. This requires EOC to record and maintain the updated status of available and allotted resources.

To support these functions, different digital tools for incident management that support the maintenance of resource inventory and undertaking need and gap assessment of resources should be made available in the EOC. Such tools being digital can be accessed even from remote locations and by different stakeholders who can be pre-identified and provided with authorized logins. The digital nature of tools supports quick and real-time updation of resource inventory as and when an existing resource turns defunct or needs repair/service or a new resource is procured or hired. The need for resources from different incident sites (in case of major disasters) can also be studied and analyzed using these tools. Screenshots of some of the existing tools are represented in figure 3.3 for reference.

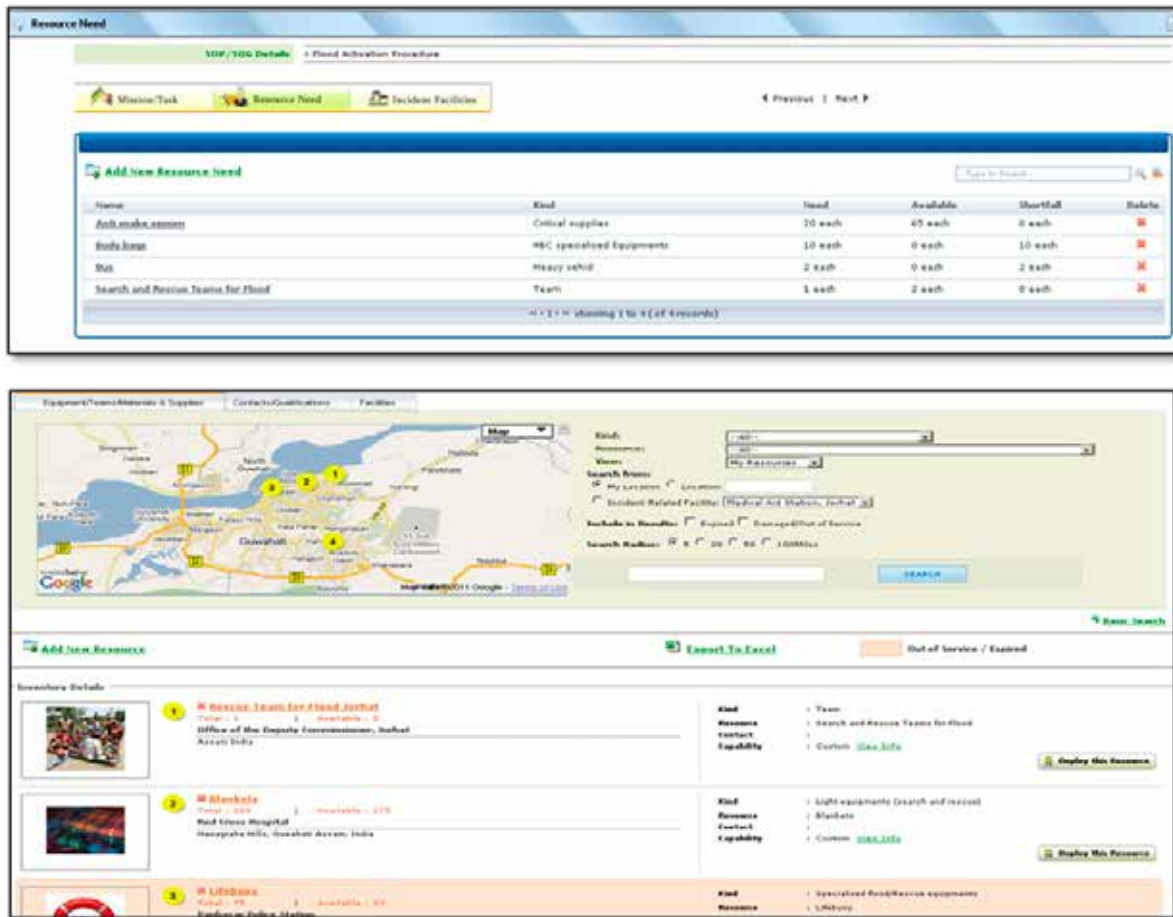


Figure 3.3: Screenshots of existing tools of resource mobilization

As evident from the screenshots, the tool provides a list of required resources, the required quantity, available quantity, and the shortage. The tools also allow for the addition and deletion of resources which helps in a better understanding of the resources deployed and required at the site of a specific incident. Having this information from multiple sites of incidents, decision-makers can undertake prompt and efficient mobilization of available resources and raise a request for additional assistance. Further, the mapping of locations of resources and their visual display through GIS maps inform the decision-makers on their approximate distance from the affected sites which helps in estimating the time required for their mobilization. In the absence of such digital databases, such resource inventory can also be maintained in the EOC in physical records; however, this involves key challenges in quick updation and timely circulation of the same to concerned stakeholders.

For supporting various activities under resource mobilization and the related tools, suitable templates and mechanisms should be established at the EOC in consultation with concerned stakeholders. To ensure the effective use of these templates and tools by both the decision-makers and command staff in the EOC and general staff on the field, these should be translated into the official language of the concerned state or should be bi-/multi-lingual.

Demobilization of resources

Each of the resources mobilized for an emergency involves cost and hence the EOC needs to undertake planning for the timely demobilization of resources as part of incident action planning itself. To undertake this role, EOC as part of the IRS should activate a separate unit for demobilization with no added responsibilities. The key role of EOC in this regard is to collect and analyze information on the status of resources and support the activated sections of IRS in the timely return of resources. This can be effectively performed with the help of digital tools used for resource mobilization. Under this, resources that have served their envisaged roles can be marked appropriately by the general staff. This helps the decision-makers at EOC to understand the status of mobilized resources, i.e. which are to be retained and which need to be demobilized. Resources demobilized from one incident site may also need to be mobilized to another disaster site. Demobilization of resources also involves aspects of making payments for the resources which have been hired on rent or involve charges. Thus, an effective demobilization helps in the cost-effective management of resources.

For effective resource management, the key activities to be performed at the EOC by different activated command and general staff include:

- i. Collation of information on the status of mobilized resources
- ii. Laying down terms for utilization and return of resources mobilized from external agencies
- iii. Ensures the physical safety of the deployed resources through possible tools such as GPS trackers, CCTVs, drones, physical inspection, etc.
- iv. Supporting the prompt transfer of resources from one site to another or demobilization after use
- v. Supporting all the required procedures to maintain time and cost records of the resources and facilitating timely processing of all the claims in this regard
- vi. Making available the required information on resource availability and deployment to the activated sections and branches of IRS

3.1.4 Communication and coordination

Communication and coordination are the bedrock on which all other critical functions at EOC depend. The EOC should ensure two-way communication and coordination mechanisms. These include two types of communication, namely, internal communication among the first responders, and staff and officials at EOC and the city administration, and external communication among the EOC and the general masses. The established communication channels should support the following critical activities at the EOC:

- i. Receiving timely disaster alerts and warnings from the authorized agencies and the site of the incident

- ii. Dissemination of the received information to all relevant stakeholders and the general public
- iii. Coordination among key stakeholders for undertaking strategic and operational planning for incident management
- iv. Coordination of the EOC with the various activated sections, branches, group, and IRTs on ground
- v. Establishing linkage between command and general staff of the IRS
- vi. Liaising with other stakeholders and EOCs in neighboring cities, district, and state

The internal communication among the city administrative system, personnel at EOC, and the response agencies should be duly recorded at the EOC (preferably digitally) so that the real-time ground situation for the response agencies can be easily accessed by the decision-makers at the EOC. Maintenance of communication logs at the EOC ensures clarity among stakeholders and avoids duplication of efforts during the management of the incident; thus supporting incident planning and resource management among other functions. The external communication channels at the EOC should be established with the identified local media agencies and the general public using various means like social media, display boards, websites, mass messaging, etc.

Thus, for ensuring the smooth functioning of these activities, the EOC and the CDMC with the support of communication experts should lay down the emergency communication plan and establish robust communication channels at the EOC. While establishing and maintaining the communication channel and network, the EOC should ensure that alternate means of communication are available for ensuring adequate redundancy. The EOC should also ensure that various communication channels and network which link the EOC with other stakeholders are inter-operable and can be well-integrated so that functioning across these platforms is user friendly and less time-consuming. Besides, considering the challenges of power disruption during major disasters, the EOC should also ensure that the communication network and channels are such that the involved technologies are less power-intensive.

The function of communication and coordination is also supported by some of the existing tools of incident management systems. Such tools allow adding the pre-identified stakeholders to the contact list of the tool. On activation of IRS and emergency plans and SOPs, the EOC Manager/ In-charge as per the direction of the IC or automatically (depending on the prior settings of the system) can send the required communication to the personnel added to the contact list. To ensure redundancy, the EOC may also establish communication channels through mail groups, SMS groups, Whatsapp groups, and other such social media platforms. In addition, the EOC should support face-to-face interaction and meetings among the stakeholders.

The EOC should put in place a system of integrated communication. The integrated communication includes the following key components:

- i. Hardware supporting the transfer of data and information
- ii. Communication planning for making effective use of communication channels and resources
- iii. Procedures and processes for implementation of the communication plan

Under this, various communication networks should be established by the EOC based on the size and complexity of the incident. These include:

- i. **Command net** which puts in place linkages between the command staff and general staff of IRS

- ii. **Tactical nets** are established for each of the activated branch, divisions, and groups of IRS depending on the needs of the incident and availability of communication resources (hardware and available frequencies). These can be established by specific agencies, departments, or for a specific geographical area or to undertake a specific emergency function
- iii. **Support nets** are established for the management of major disasters/ incidents for effective management of traffic and resources
- iv. **Ground-to-air net** is established to ensure smooth coordination for undertaking ground-to-air operations if the need arises
- v. **Air-to-air net** is established, if required, for coordination between the aircraft deployed for undertaking air operations

For ensuring all key relevant stakeholders are well-informed and skilled to effectively use the laid down communication channels, the EOC should support awareness and synchronization of communication frequencies among stakeholders from multiple agencies.

3.1.5. Public relations and information management

The EOC should issue incident-specific information and instructions to all concerned stakeholders. For this, the EOC should verify the data and information received from different unauthorized sources including that received on the citizens' helpline number before its further dissemination. On its due confirmation, the EOC should forward the verified information/ reports to all relevant departments/ agencies for necessary actions. After this, the concerned department/ agency should provide regular situation update to the EOC. The EOC should maintain a proper logbook of incoming and outgoing calls and information shared along with the specific timestamp. This aids the EOC in enhancing the productivity of the involved stakeholders by overcoming the information gap. The information logs should also be actively shared and used for maintaining proper records of the incidents. EOC should ensure that on de-activation of the IRS and emergency, the information logs should be shared with the city authorities and departments/ agencies for assessing the actions undertaken, identifying challenges for improvement, and minimizing the response time during future emergencies.

Under the activated IRS, the Information and Media Officer (IMO) under the supervision of the IC is responsible for ensuring proper information and media management. IMO is required to keep himself/herself and the EOC updated on the status of the incident such as damages, losses, updated needs. In the city EOC, IMO plays an important role in informing the general population about the regular and updated status of the incident site. He/she is responsible to brief the print and electronic media, initially on an hourly basis and later in the mornings and evenings at the appointed timing. The IMO ensures that any misinformation, confusion, or fake news in the media and social media are duly clarified during the media briefings for the interest of the general good.

3.1.6 Conflict resolution

Due to the involvement of various departments, agencies, and stakeholders including the external response and aid agencies, conflict situations can arise between stakeholders operating in the same or adjacent incident sites due to different interpretations of Incident Action Plan (IAP) or emergency actions, ego and personality clashes between the commanders. The EOC through the

IC should be able to timely detect and resolve their conflicts before they start to adversely affect the emergency operations and management at EOC. For this, EOC should establish a grievance redressal mechanism that ensures the confidentiality of the personnel flagging the critical issues. The EOC Manager/ In-charge or the IC should undertake prompt and appropriate actions based on the flagged issues to mitigate them from escalating.

3.2. Functions of EOC during normalcy

To effectively undertake all the emergency roles discussed above, the EOC needs to undertake various functions in normalcy (non-disaster period) to prepare itself. The primary function of the EOC during normalcy is to plan, implement, and enhance the capacity of its personnel and staff along with strengthening the EOC infrastructure to undertake the envisaged roles and facilitating the return to normalcy at the earliest. During normalcy, the EOC undertakes the following key roles:

3.2.1 Planning

Planning is one of the most important activities which supports its functioning. Based on the hazard profile of the city the EOC has to plan its day-to-day functioning and hazard monitoring to be in a ready state to face any untoward situation. During the pre-disaster phase, CDMC or the Municipal Commissioner should ensure that the Hazard, Risk, And Vulnerability Assessment (HRVA) of the city is undertaken and informs the development of risk-informed DM plans and SOPs. DM Plans and SOPs at the city and those of various departments should be reviewed, updated, and made available at the EOC. The staff and officials at the EOC should be duly aware of these plans and SOPs to better understand their respective roles.

The different key aspects of these plans and SOPs such as the institutional mechanism for DRM, communication linkages among the stakeholders, response activation mechanism, hazard-wise action plans, hazard-specific do-s & don't-s, critical databases, resource inventories, Emergency Support Functions (ESFs), IRS, etc. should be displaced at suitable locations of the EOC where they aid in undertaking emergency planning and quick decisions. These should also be made digitally available to the pre-identified and authorized users who can access these remotely.

3.2.2 Hazard monitoring for risk assessment and risk communication

Through various surveillance and monitoring tools such as GIS tools, CCTV cameras, physical surveillance along with regular monitoring of the websites of recognized ministries and the departments such as IMD, INCOIS, etc., the EOC undertakes the study of ground situation. Visual integration of these tools can be undertaken by establishing Supervisory Control and Data Acquisition (SCADA) at the EOC. This supports the EOC in assessing the information for evaluating risk evaluation and undertaking prompt risk communication as necessitated by the ground situation. Such systems help the EOC in minimizing the response time and generating timely alerts to not only response agencies and personnel but also the population-at-risk.

3.2.3 Resource Management

Resource management is one of the major challenges of effective disaster management. During normal times, resources are procured and placed as per the envisaged threats and availability of

resources. Tactical resources consist of all personnel and major items of equipment available or potentially available for deployment to incident sites. Equipment resources include the personnel required to operate/staff them. Resources can be described both by kind and by type. This has many aspects such as lack/availability of resources, correct identification of resources required and sources where they are available, appropriate deployment and monitoring, difficulties in the effective deployment of limited resources on one hand, and handling and managing the abundant resources which are often made available in aftermath of a disaster by the external response and aid agencies on the other hand.

Under resource management, the EOC should be able to select the right resources, ensure resource safety, and be cost-effective. Maintaining the status of all resources assigned to the incident is an important aspect of resource management. For this reason, it is strongly recommended that the various kinds of resources used for emergency management be typed and recorded whenever possible. Understanding the specific capabilities of the various kinds of available resources helps the decision-makers plan and deploy the right type and quantity of resources best suited to perform the envisaged activities. While undertaking resource management, the EOC should imbibe the following key principles of resource management:

- i. Planning is the management process of evaluating the situation, determining objectives, selecting a proper strategy, and deciding which resources should be used to achieve those objectives most efficiently and cost-effectively. In IRS, resource planning is ongoing and directed toward the emergency period.
- ii. Organizing is a continuation of the management process after planning, whereby the essential personnel and equipment resources are brought together into a formalized relationship. The organization chart found in the Incident Response system and which is an integral part of the Incident Action Plan is the mechanism for grouping functional units into a cohesive general organization. Providing essential staffing is also considered a part of the organizing activity
- iii. Directing is the process of guiding and supervising the efforts of resources toward the attainment of specified control objectives. A very important part of directing resources, particularly during the tense situation of emergencies, is providing proper motivation, leadership, and delegation of authority. In IRS, providing direction is accomplished by assigning responsibility and authority for specific activities as appropriate throughout the organization. This accomplishes several objectives:
 - Uses other people's knowledge and skills
 - Completes the tasks without unnecessary delay
 - Enhances training and personnel development
 - Provides a more meaningful work environment
- iv. Controlling involves evaluating the performance of an organization and its components, and applying the necessary corrections to make sure that the performance is constantly directed toward accomplishing the established objectives.

3.2.4 Development and updation of resource inventory and databases

The resource inventory acts as a backbone for EOC to undertake effective resource management. In this regard, the EOC in support of the city authorities should develop a resource inventory (preferably in digital form) for the city. This resource inventory should include resources (human and

equipment, vehicles, etc.) available with different departments, response & emergency agencies within the city's jurisdiction, and nearby. These also include enlisting the key resources available at the city EOC and those available with the neighboring/ nearest EOCs, DEOCs, SEOC such as the communication equipment, monitoring and surveillance systems, search & rescue equipment, emergency resources, etc. The EOC should ensure that available resources with the government, voluntary and private sectors should be listed as part of the resource inventory. This should include a list of nodal officers/ point of contact along with contact details of all line departments and emergency services such as police & fire stations, hospitals, clinics diagnostic centres, medical stores, and ambulance services in the city. These should also be displayed in the EOC prominently. EOC should also have a provision of displaying digital or physical maps, enlargements depicting the affected area, resources deployed, facilities established under IRS such as Incident Command Post, Staging Area, Incident Base, Camp, Relief Camp, Heli-base, Helipad, etc. for supporting emergency planning and decision making.

Besides, the EOC should also integrate the resource inventory with the existing inventories developed under different programs and schemes of the district, state, and national government. The inventory should also identify the key vendors and suppliers with whom the emergency supplies can be promptly procured or hired. The CDMC or the Municipal Commissioner should formulate tie-up and agreement with these identified vendors and suppliers along with finalization of crucial provisions for terms-of-use and payments.

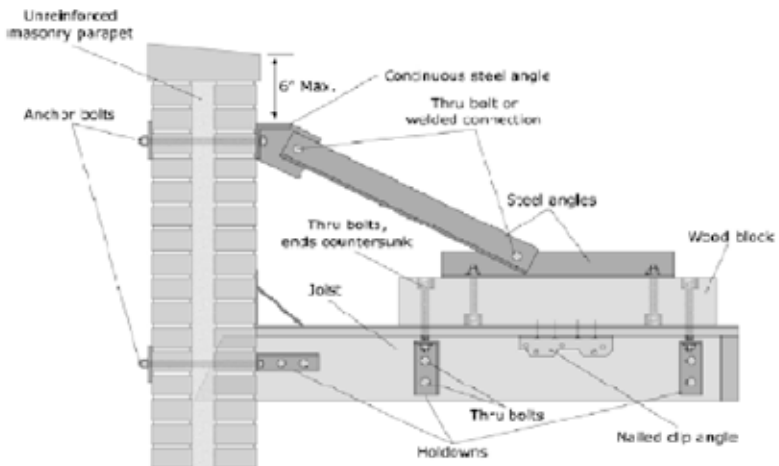
Along with the resource inventory, different databases including the demographic details, hazard, and vulnerability profile, socio-economic profile of the city, ward; registered and verified voluntary and community-based organizations, etc. should be made available at the EOC for better planning and easy availability of information during emergencies. Updation of the resource inventory and databases is an essential function of the EOC during normalcy through respective line departments and agencies. The database of all nodal offices from different departments, resource owners, and agreements/rate contracts with the private agencies should be kept up to date without fail. The updation is crucial due to the feature of regular transfer of the government officials.

RISK-INFORMED SITE IDENTIFICATION AND DESIGN REQUIREMENTS

The EOC is the critical infrastructure that supports various emergency and life-saving functions during disasters aids in prompt restoration and continuity of essential services. Thus, it is of paramount importance that EOC infrastructure and services are themselves not affected during the disasters. Besides, the EOC must be easily accessible in an all-weather by the key stakeholders. The EOC is normally located next to the office of the Municipal Commissioner who mostly acts as Incident Commander. However, it is recommended that the site selection for the establishment of a new EOC is guided by a detailed study that undertakes multi-hazard hazard, vulnerability, and risk assessment of the proposed site. In this regard, it is recommended that the Municipal Commissioner formulate a dedicated committee comprising of structural engineers, civil engineers, DRM practitioners, subject matter experts such as seismologists, hydrologists, etc. to undertake the desired study leading to the identification of a suitable site. Apart from considering the major hazards such as earthquakes, floods, cyclones, tsunami, landslides, industrial and chemical hazards, biological and public health emergencies, the study should also consider the local hazards with the potential to impact or disrupt the functioning of the EOC. Among others, these include consideration of NATECH (natural hazards triggering technological disasters) events along with consideration of technological glitches leading to failure of the power grid, internet network failure, disruption of communications channels, etc.

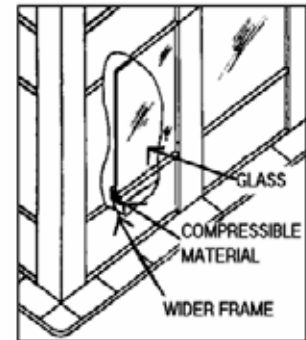
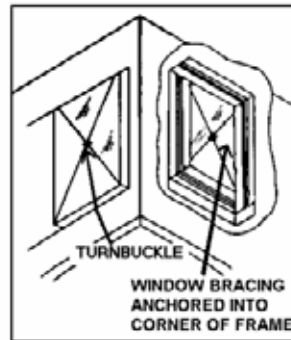
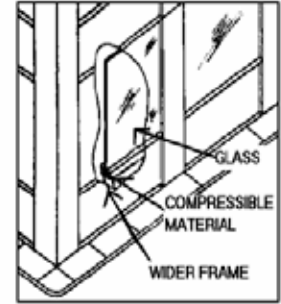
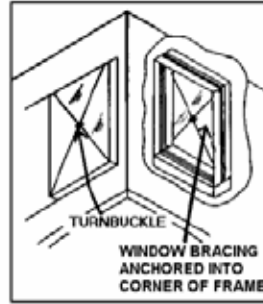
After undertaking risk-informed site identification, the EOC should undertake various structural and non-structural mitigation measures along with ensuring disaster-resilient construction, material, and design. Some of the non-structural mitigation measures that should be considered while establishing a new city EOC or strengthening an existing one are listed in table 4.1.

Table 4.1: Suggested non-structural measures for the city EOC

Non-structural elements and suggestive measures	Illustration
Exterior elements of EOC building	
<p>i. Parapets</p> <p>Brace the parapets from the rear using steel angle braces anchored into the parapet and connected to the roof framing</p>	 <p>Note: Typical brace configuration shown; parapet and roof conditions may vary widely. Provide appropriate weatherproofing and flashing details.</p>

ii. Windows

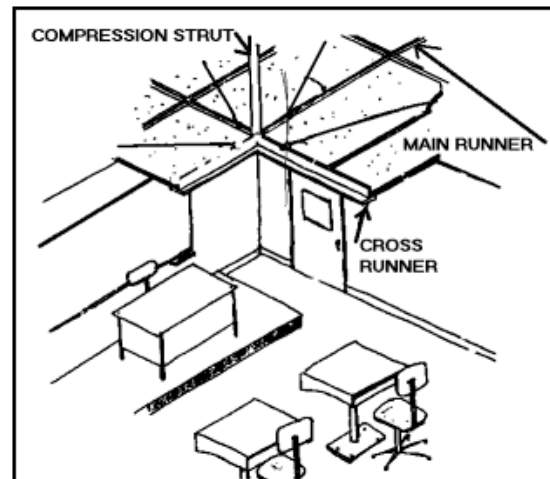
- Anchor windows using steel tie rods to the corners of the window frame and connected by a turnbuckle
- Use specially designed windows with wider frames having a compressible material between the frame and the window glass to avoid direct contact between the window and the frame
- Replace conventional glass with tempered glass which is stronger and breaks into smaller and less dangerous fragments
- Use wire-reinforced glass or adhesive film to hold glass fragments together, reducing damage and falling hazards



Interior elements of EOC building

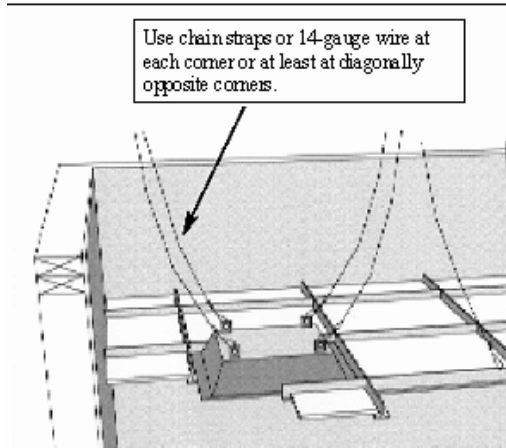
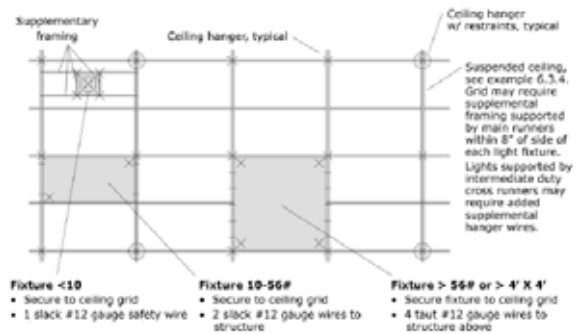
i. Suspended ceilings

Install four-way diagonal wire bracing and compression struts between the ceiling grid and the supporting floor



ii. Overhead lighting fixtures

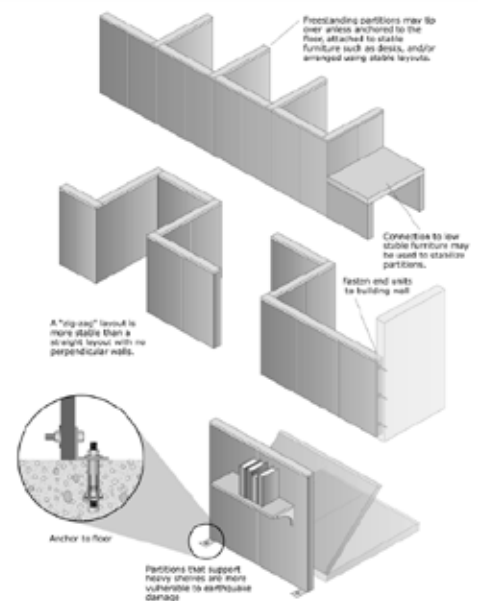
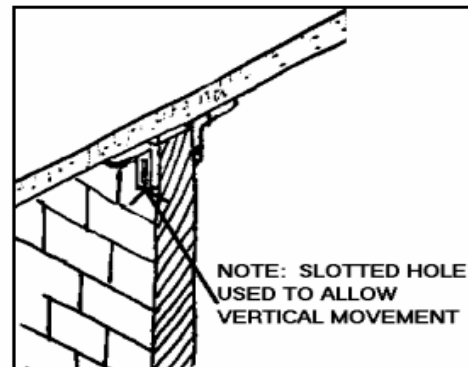
- Add independent wire ties connected from each fixture corner to the supporting floor
- A threaded metal conduit can protect the electrical wiring and support the fixture and wire straps or cages may prevent fluorescent tubes from falling



- Notes:**
- Provide positive attachment from recessed fixture to braced ceiling grid (must resist 100% of weight in any direction).
 - Provide 1, 2 or 4 #12 gauge wires to structure depending on weight of fixture (< 10#, 10# - 56#, > 56#), respectively.
 - Provide engineering of vertical and lateral supports for heavy fixtures or where existing ceiling not adequately braced.
 - For exposed fluorescent light bulbs or fixture lenses subject to falling, secure in place with 2 wires that wrap beneath the lens or bulbs and attach securely to the fixture.
 - Avoid locating light fixtures at floating edges of ceiling unless detailed to move with ceiling grid. Alternatively, install fixture on wall independent of ceiling and provide required ceiling clearance all around.
 - Proprietary clips are available that may eliminate the need for safety wires; check jurisdiction for pre-approved details.

iii. Interior partition

- Provide steel channels at top of the partition to provide lateral support and allow some floor or ceiling movement without imposing any loads on the partition
- Anchor the demountable partitions to the floor or building wall
- A zig-zag layout of demountable partitions is more stable than a straight layout with no perpendicular walls

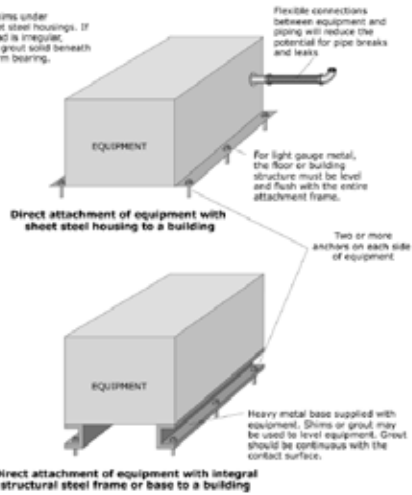


Building utilities of the EOC

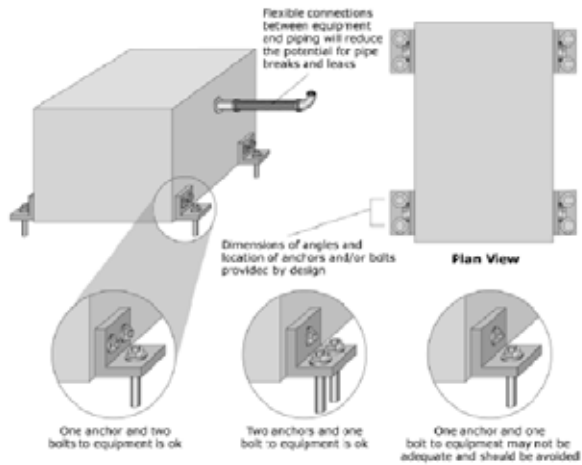
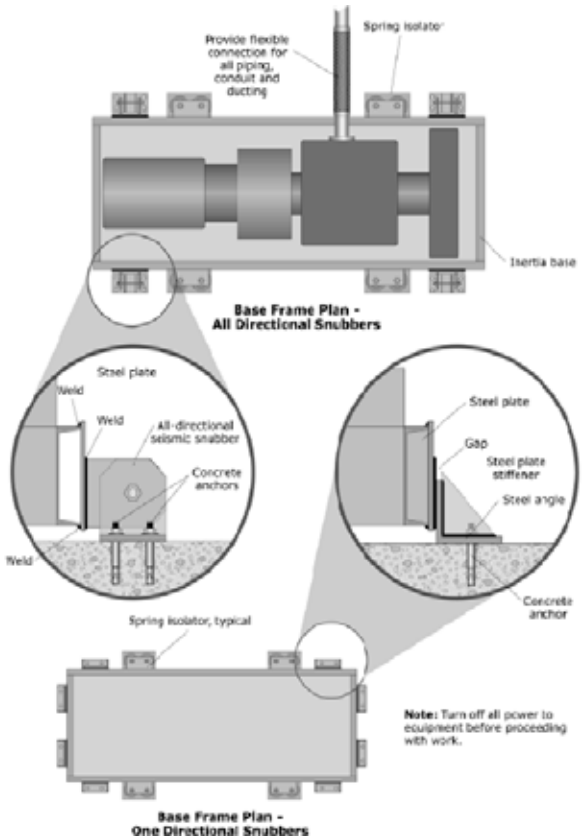
i. Heavy Equipment

- Preferably, anchor heavy equipment directly to the floor or other suitable part of the building
- Ensure flexible connections between equipment and piping to prevent breakage or leakage
- If isolators are used, securely anchor them and equip them with snubbers that allow small movement, but prevent the equipment from moving beyond the limits of the springs

Note: Do not add shims under equipment with sheet steel housings. If the concrete floor/slab is irregular, reinforce housing or grout solid beneath equipment for uniform bearing.

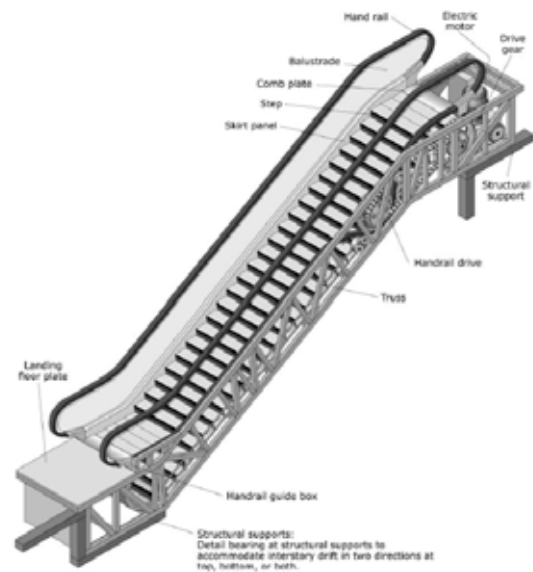
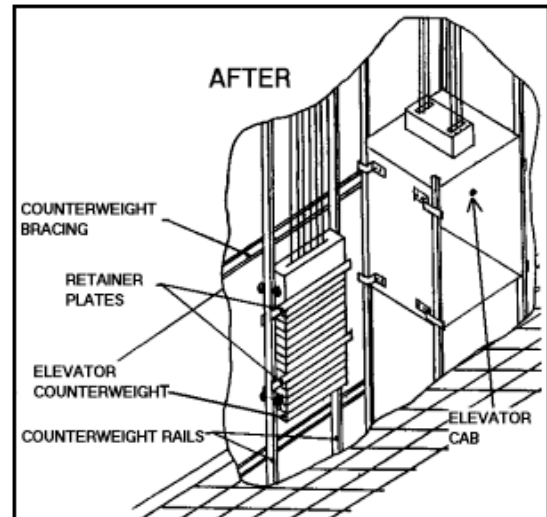


Direct attachment of equipment with integral structural steel frame or base to a building



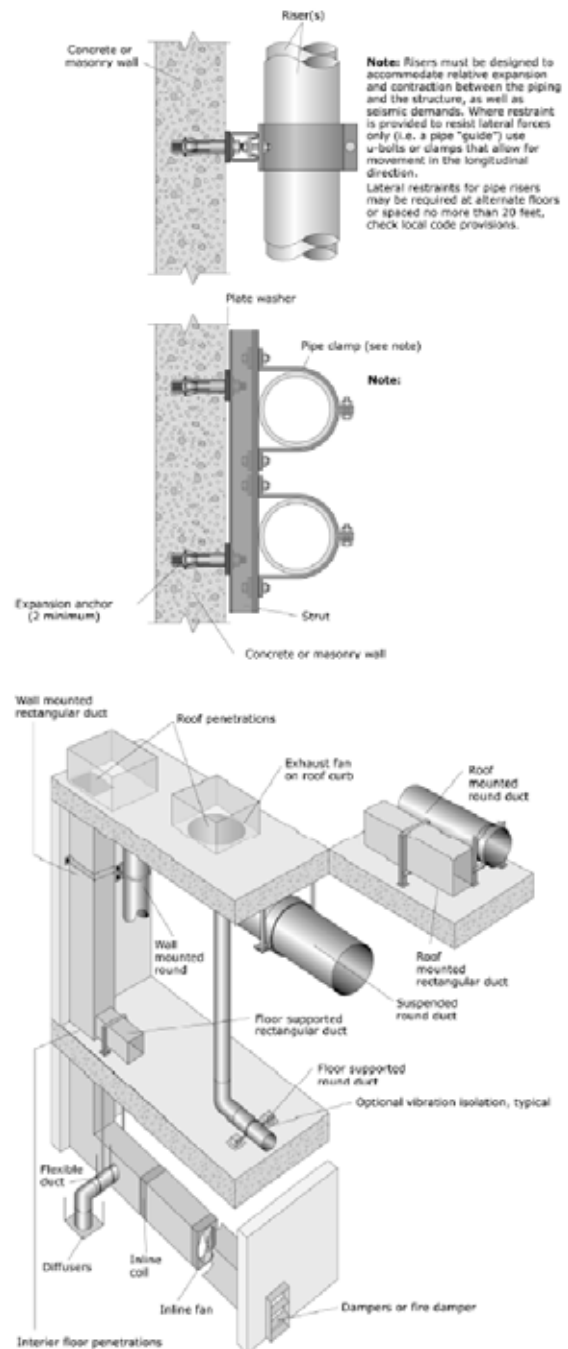
ii. Elevators and escalators

- Properly secure the counterweights by bracing the rails. Both bracing and rails should be securely anchored to the building with lag bolts or bracing.
- Add retainer plates to the top and bottom of the counterweights and to the cabs to prevent the counterweights from becoming dislodged from the rails
- Anchor elevator machinery and controller units to prevent the units from sliding or toppling
- Place guards on the rail brackets so that ropes, chains, and/or cables will not snag
- Provide detail bearing at structural supports to the escalator to accommodate inter-story drift in two directions at top, bottom or both



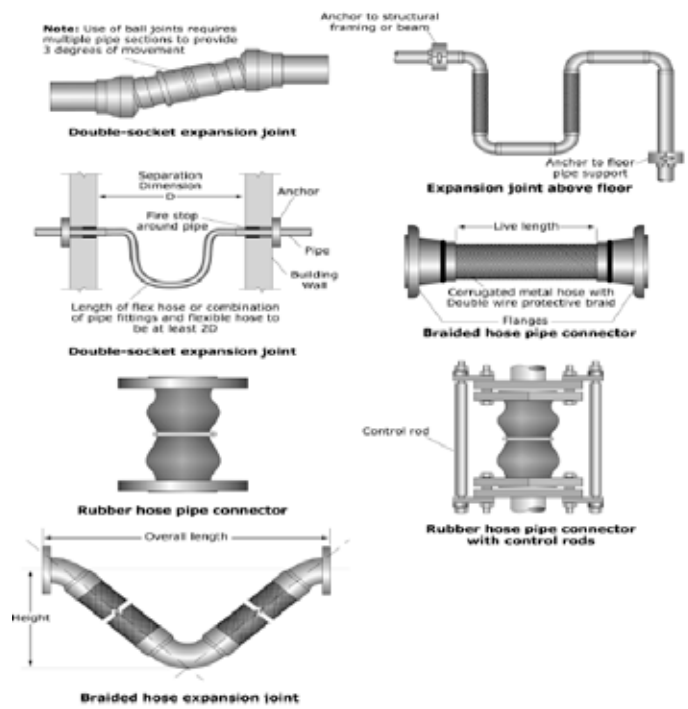
iii. Supply lines of gas, water, wastewater, electrical conduits, and HVAC ductwork

- Anchor and brace tanks and cylinders with metal straps
- Secure compressed gas cylinders, if any, to the wall using two lengths of chain around the cylinder
- Ensure design of wall mounted pipe risers accommodates relative expansion and contraction between the piping and the structure
- Where restraint is used to resist lateral forces only, use U-bolts or clamps that allow for movement in the longitudinal direction
- Restraint at or near penetration to limit relative movement between pipe and slab, ceiling, etc.
- Brace and restrain overhead utility pipes and HVAC ducts using hangers, straps, or angle braces
- Brace larger horizontal pipes, ducts, and fittings at every joint, branch, and change of direction



iv. Connections

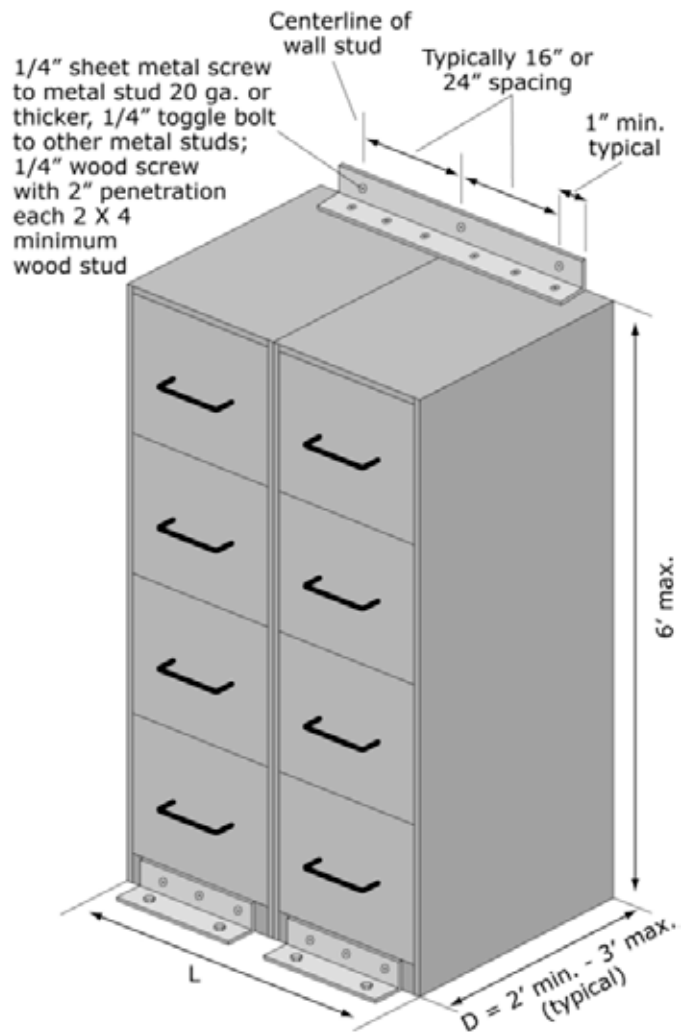
- Install flexible connection pipes or conduits between the equipment and their supply lines
- Flexible lines should follow a U-shaped or curving path to allow relative movement in all directions
- Consider installing seismic gas shut-off valves that cut the flow of gas when ground movement occurs, thus, preventing fires and explosions that can occur from ruptured gas lines
- Alternatively, consider installing a gas protection system that stops the flow of gas when a sensor detects a gas leak or higher than the expected flow rate



Building contents of the EOC

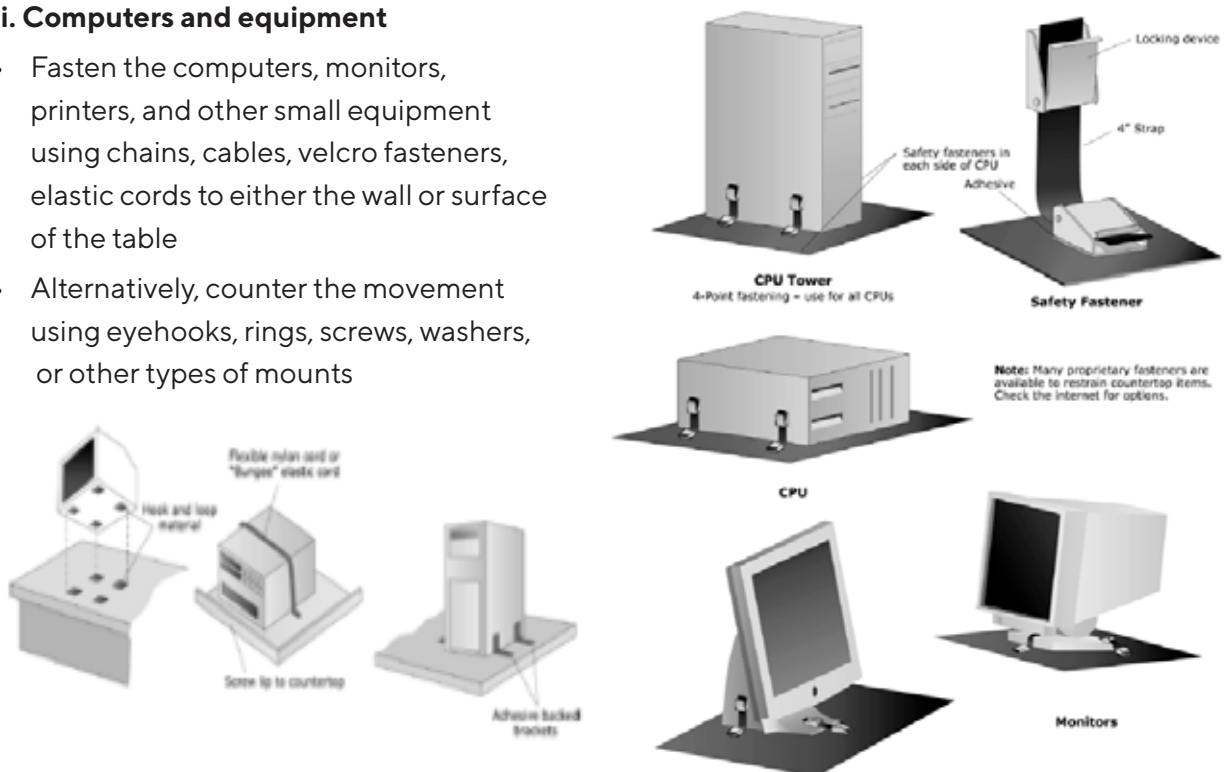
i. Heavy furnishings like file cases, shelves, office & school cabinets

- Anchor file cases, shelves, and cabinets using angle brackets that are bolted to the floor and/or the walls
- Wherever possible, redistribute heavy items to lower shelves or drawers to stabilize the weight



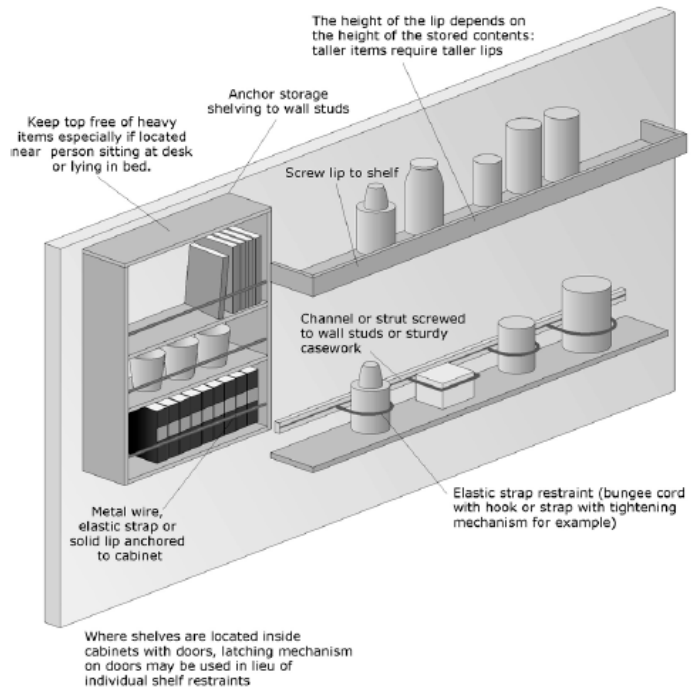
ii. Computers and equipment

- Fasten the computers, monitors, printers, and other small equipment using chains, cables, velcro fasteners, elastic cords to either the wall or surface of the table
- Alternatively, counter the movement using eyehooks, rings, screws, washers, or other types of mounts



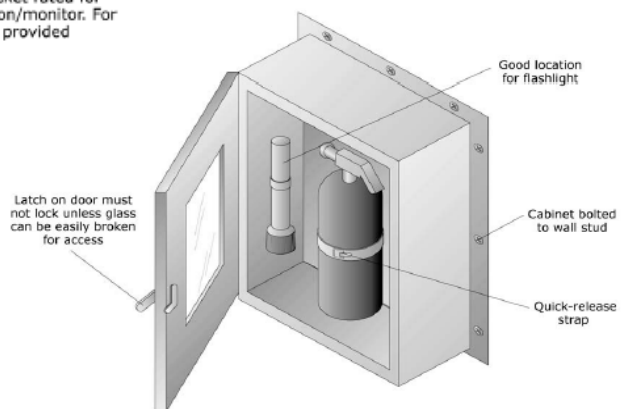
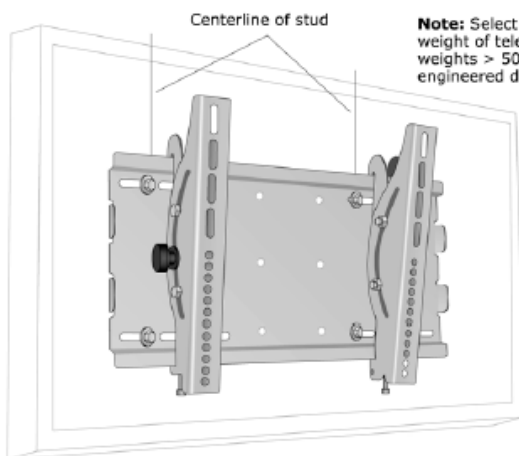
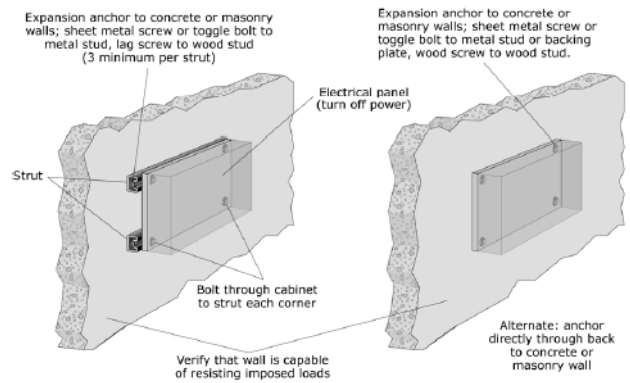
iii. Hazardous materials

- Install seismic- activated shutoff valves on supply lines of hazardous materials with flexible connections provided at the storage tanks
- Prevent chemical containers, if any, from falling using elastic straps, shelf lips, or cabinet door locks



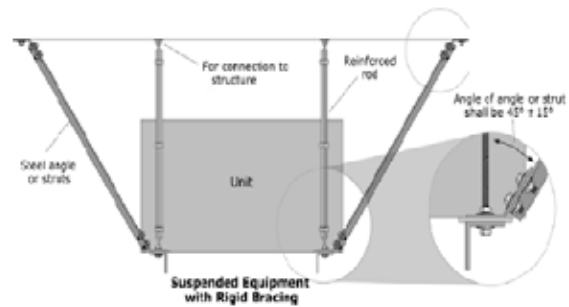
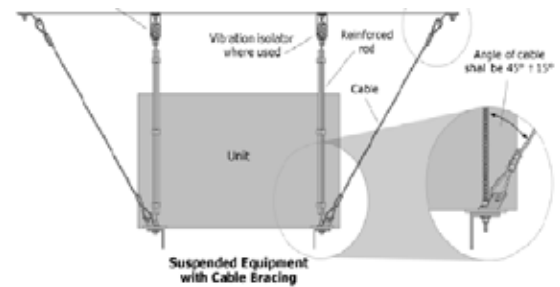
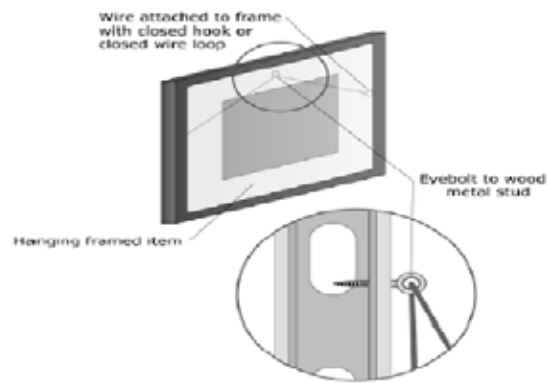
iv. Wall-mounted panel, television, monitors, etc.

- Install expansion anchor to the wall for wall-mounted control panels
- Alternately, anchor the panel directly through back to the wall
- Anchor the fire extinguisher to the wall in a cabinet bolted to the wall using a quick-release strap or otherwise



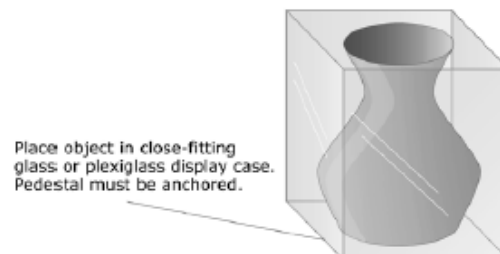
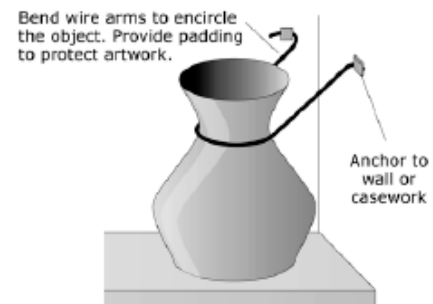
v. Suspended objects

- Provide rigid/ cable bracing to suspended equipment



vi. Pots

- Use bend wire arms to encircle the object and anchor it to the wall or casework
- Provide padding to protect the artwork
- Place the object in a close-fitting glass or plexiglass display case and anchor the pedestal



In addition to various disaster-resilient measures in the construction and design, the EOC should ensure universal design principles while designing, planning, and constructing accessible spaces and buildings along with their internal & external elements like ramps and steps, handrail, adequate space for wheelchairs, etc.

Depending on the geographical location of the city, appropriate materials on the external surface of the EOC building should be used to mitigate the potential urban heat impact. Materials with high albedo tend to reduce the temperatures of built-up surfaces by absorbing less incident solar radiation. Light-colored building surfaces or paints/ coatings with high albedo also help in decreasing the energy consumption of the HVAC system in the building. The EOC building may also use natural lights and ventilation to reduce its energy consumption during day time.

The case of Taipei City EOC (refer to Component 1 report) provides useful insight about various redundancy measures the EOC has undertaken for ensuring the continued functioning of the EOC for at least 72 hours without external aid. Further, the National Policy on Disaster Management

2009 also recommends provisions of portable platforms for ensuring connectivity and better management of emergency operations in remote areas hit by disasters. In case of the worst possible scenario, if the city EOC itself becomes non-functional, using the web-based Incident Management System (IMS) tool, anyone can manage any incident of any scale from any geographic location. For this, it is required that the operators should have a laptop/desktop and an internet connection to activate the city EOC. Keeping in mind this kind of challenge, it is recommended to host the IMS tool in multiple servers across the State data centers of NIC. Annexure 2 illustrates some of the existing web-based IMSs.

Based on the above laid down considerations, the EOC layout and key in-house facilities in the EOC should include:

- i. A minimum of 1,000 square feet of space for the establishment of the EOC
- ii. Room/ designated area for hazard monitoring and surveillance
- iii. Room/ designated area for Incident Commander and different Section Chiefs under IRS to plan, operate, and take decisions
- iv. Conference room
- v. Adequate space with proper infrastructure to accommodate the participating agencies and departments
- vi. Media room/ designated area for media debriefing or holding press conference
- vii. A restroom for the staff to take rest in case of long duty hours. The facilities should be adequate for at least 3 persons
- viii. Kitchen/ pantry with all facilities
- ix. Ladies and gents toilet rooms
- x. UPS room
- xi. An electric room for DG sets and reserve diesel. The size of the room depends upon the size of the DG set. The DG set should be able to support the power backup facility for at least 48 hours. The power backup should have a combination of both UPS (with solar charging facility) along DG sets. There should be enough diesel stock at the EOC to run the DG sets continuously for 8 hours. The power output of the DG sets should be calculated as per the equipment and instruments.
- xii. Assembly area
- xiii. Refuge area in case of multi-floored building
- xiv. Proper emergency and other signages

ORGANIZATION STRUCTURE AND INSTITUTIONAL MECHANISM FOR FUNCTIONING OF EOC

The human resources at the EOC include the routine staff of the EOC who undertakes day-to-day functions of the EOC during normalcy and the designated officers and administrative staff from different line departments who assume various roles under the IRS for the emergency management. The routine staff facilitates the IRS designated officers and administrative staff in the functioning of the EOC during emergencies. The routine staff of the EOC is generally deputed from the Disaster Management Department/ Office of Municipal Commissioner as EOC In-charge or Control Room operator. However, it is recommended that 3 dedicated Shift Managers (each for a shift of 8 hours) and two Executives should be deputed/ recruited for the day-to-day functioning of the EOC without any other additional charges or duties. This ensures 24*7 functioning of the EOC in 3 shifts of 8 hours each. Besides, 1 team leader should also be deputed/ recruited as an Emergency Manager both for normalcy and during emergencies.

For IRS designated human resources, it is recommended that all staff posted in the Municipal Corporation should holding two appointments, one their normal duties and the other appointment as per their IRS role. They should be handling/taking over IRS appointments too at the time of posting/ retirement/ pre-mature retirement to ensure effective institutionalization of emergency roles and IRS duties.

The organization structure and the institutional mechanism should be guided by the National Disaster Management Guidelines on Incident Response Systems (IRS). Accordingly, the roles and responsibilities of key functionaries in EOC under IRS are briefly discussed below.

At the city level, mostly the Municipal Commissioner is the IC. A senior officer from the Municipal Corporation is made in charge of the EOC. During normalcy, the nodal officers from all concerned line departments in the Municipal Corporation and other stakeholders may not always be present in the EOC, but during disasters, they are mobilized to the EOC along with respective resources.

The IRS is built around five major functions that are applied to any incident whether it is large or small. A major advantage of the IRS is that it offers great flexibility for activation i.e. only the required sections, branches, and groups of the IRS can be activated depending on the impact and magnitude of the incident. However, if there is a need to expand the organization, additional positions exist within the IRS framework to meet any need virtually. As per the IRS, EOC has Command and General Staff and three sections of Planning, Operations, and Logistics.

5.1 Command Staff

The Command Staff performs the following key staff functions that are the responsibility of the Incident Commander till the Command Staff positions are established:

- i. Public information and media relations
- ii. Maintaining liaison with assisting and cooperating agencies
- iii. Ensuring the safety of IRTs and community

In some incidents, any one of these functions can consume much of the Incident Commander's time. Therefore, it is important to recognize their importance and quickly fill the positions if necessary.

Roles and Responsibilities of Incident Commander (IC)

- i. IC ensures IRTs are formed, trained and IRS is integrated with the City DM Plan. This may be achieved by issuing a Standing Order by the Municipal Commissioner
- ii. Ensure web-based /on-line Decision Support System is in place in EOC and connected with IRTs
- iii. Ensure that the toll-free emergency number for DM, fire, police, and medical support is linked to the EOC for response, command, and control
- iv. Delegate authority to the sub-unit commanders, wherever and whenever required
- v. Activate IRTs as and when required
- vi. Appoint/deploy, terminate, and demobilize IRTs, as and when necessary
- vii. Decide overall incident objective, prioritize, and ensure that various objectives do not conflict with each other
- viii. Ensure IAP/s is/are prepared and duly implemented
- ix. Remain fully briefed on the IAP and its implementation
- x. Coordinate all response activities within the city premises
- xi. Give directions for the release and use of resources available with any department of the Municipal Corporation, private sector, etc. in the city
- xii. Ensure that Armed Forces located in and around the city are involved in the planning process and their resources are appropriately dove-tailed if required
- xiii. Ensure that when Armed Forces arrive in support for disaster response, their logistic requirement, like camping ground, potable water, electricity, and requirement of vehicles, etc are taken care of
- xiv. Ensure that the NGOs carry out their activities in an equitable and non-discriminatory manner
- xv. Ensure that the fail-safe communications are in place
- xvi. Ensure that contact details of all ESFs is prepared and are available at EOC, ESF, and with IRTs
- xvii. Ensure provision for accountability of personnel and a safe operating environment
- xviii. Mobilize experts and consultants in the relevant field to advise and assist, as deem necessary
- xix. Procure exclusive or preferential use of amenities from any authority or person
- xx. Conduct post response review on the performance of IRTs and take appropriate steps to improve performance

Roles and Responsibilities of Officer-in-charge EOC

- i. To ensure that all the nodal officers are in EOC during the disaster or impending disaster
- ii. To ensure that DM Plans of all the line departments are updated and kept in EOC
- iii. Resources envisaged for management of perceived disasters are in place/ordered as required
- iv. Monitor deployment of resources. Additional demand for resources to be processed and those which are not required by any of the IRT to be demobilized

- v. Ensure that the contact details of all the stake-holders are readily available in the form of a directory as also emergency numbers are displayed prominently in the EOC
- vi. Get feed-back from the IRTs and inform the Incident Commander
- vii. Brief the media periodically at fixed timings on the status of managing the disaster
- viii. Keep the DDMA and SDMA informed. Seek help from them if and when required

Information & Media Officer

The Information & Media Officer (IMO) is responsible for developing and releasing information about the disaster/incident to the news media, incident personnel, and other appropriate agencies and organizations. Only one IMO is assigned from the Municipal Corporation. The IMO may have assistants as necessary, and the assistants may represent assisting agencies or jurisdictions. The IMO should consider the following when determining a location to work from at the incident:

- i. Be separate from the EOC, but close enough to have access to information
- ii. Adequate space for media relations and press/media briefings must be established
- iii. Information displays and press handouts may be required
- iv. Tours and photo opportunities may have to be arranged for VIP functionaries and for documenting the incident

Liaison Officer

A liaison officer liaises with the various government and non-government agencies. He/she also ensures that the outside stakeholders are provided the requisite information and assists the IMO in conflict resolution in case there is one between the different participating agencies.

Safety Officer

The key role of the Safety Officer (SO) is to develop and recommend measures for assuring personnel safety, and to assess and/or anticipate hazardous and unsafe situations. The SO ensure measure to address unsafe situations by working through the chain of command. However, the SO may exercise emergency authority to directly stop unsafe acts if personnel are in imminent life-threatening danger.

5.2 General Staff

Under IRS, the General Staff consists of Operation, Planning, and Logistic Sections. The sections are briefly discussed below.

Operations Section

The Operations Section is responsible for managing all tactical operations at an incident. The build-up of the Operations Section is generally dictated by the number of tactical resources involved and the span of control considerations. There is no precise guideline for when the Operations Section is activated for an incident. In some cases, depending upon the complexity of the incident and the desires of the Incident Commander, it may be the first section to be established. In other situations, the IC may elect to maintain control of operations and establish Logistics, Planning,

and, if necessary, Finance/Administration functions as separate sections before designating an Operations Section, which can have the following branches under it, depending on the size and enormity of the disaster:

- i. Transportation Branch
- ii. Response Branches
- iii. Staging Areas
- iv. Ground or surface-based tactical resources
- v. Aviation (Air) resources – helicopters and maybe fixed-wing aircraft

Planning Section

In IRS, the Planning Section is responsible for managing all information relevant to an incident. When activated, the Planning Section Chief who is a member of the General Staff manages the Section. The Planning Section collects, evaluates, processes, and disseminates information for use at the disaster/incident site. Dissemination can be in the form of the Incident Action Plan, formal briefings, or through map and status board displays. Some incidents may require personnel with specialized skills to be temporarily assigned to the Planning Section. These persons are called Technical Specialists. Depending on the nature of the disaster and the type of impacts, these technical specialists may include chemists, structural engineers, hydrologists, geologists, meteorologists, training specialists, etc. Four units under the Planning Section can be activated as necessary. These are:

- i. Resources Unit
- ii. Situation Unit
- iii. Documentation Unit
- iv. Demobilization Unit

The Planning Section Chief determines the need to activate or deactivate a unit. If a unit is not activated, then the responsibility for that unit's duties remain with the Planning Section Chief.

Logistic Section

Logistics Section looks after administrative and financial support to the incident management. The Logistics Section, except aviation support, provides all incident support needs. The Air Support Group in the Air Operations Branch handles aviation support. The Logistics Section is responsible for the following:

- i. Facilities
- ii. Transportation
- iii. Communications
- iv. Supplies
- v. Equipment maintenance and fueling
- vi. Food services
- vii. Medical services
- viii. Ordering resources
- ix. Finance & Administration

The Logistics Section Chief may assign a Deputy Chief for the management of the Logistics Section. A Deputy is most often assigned when all designated units (listed below) within the Logistics Section are activated. On very large incidents, or incidents requiring a large number of equipment or facilities, the Logistics Section may be divided into three branches led by a Branch Director. A Branch Director reports to the Logistics Section Chief. This is most often done for the span of control reasons, resulting in a more manageable organization. The three branches are:

- i. Support Branch with Resource Provisioning Unit, Facilities Unit, Ground Support Unit
- ii. Services Branch with Communication Unit, Food Unit, Medical Unit
- iii. Finance Branch with Time Unit, Procurement Unit, Compensation/Claims Unit, Cost Unit

Different personnel who required to perform these critical roles are identified during normalcy so that automatic response starts without waiting for formal orders from the authorities. The personnel are preferably identified by the respective administrative designation (ex-Officio positions) and not by names so that they do not fall vacant in case of transfer of the government officials.

ICT INFRASTRUCTURE

The EOC has a critical function of constantly taking stock of the emerging situation and assisting the RO/ IC in mobilizing the respective line department's resources, manpower, and expertise along with appropriate delegated authorities for the on-scene Incidence Response Teams (IRT). EOC should keep the RO informed of the changing situation and extend the required support. Also, the EOC constantly needs to communicate with senior officers, first responders at disaster sites as well as organizations supporting various DRM activities. This crucial responsibility of the EOC can be discharged most effectively only if it has the required information through a failsafe communication facility and an ideal information technology solution with a Decision Support System (DSS). Besides, such web-based connectivity help in accessing situational awareness, decision support, and multi-agency coordination. This allows all collaborating agencies and departments inside and outside the EOC to share information, make decisions, activate plans, deploy IRTs, perform and log all necessary response and relief activities and make the EOC effective.

6.1 Communication linkages

The communication linkages between decision-makers at various levels and operational response teams/personnel at the disaster site have to be highly reliable (nearly 100%). Unfortunately, at the time of emergencies such as natural or man-made disasters, the first casualty is the public telecommunications infrastructure of wired phones and wireless (cell phones) phones as well as other communication network resources. Public communication networks are affected during disasters due to multiple causes including:

- i. Non-availability of mains during floods due to failure of electrical generation/transmission equipment or switching off of supply to prevent electrocution
- ii. Back-up power supply equipment for cell phone systems or telephone exchanges installed on the ground floor or in basements being flooded,
- iii. Damage to buildings housing communication equipment and transmission towers due to earthquakes or
- iv. Severe congestion of cellular as well as landline telephone network switches due to the sudden rush of traffic after major disasters

The following communication linkages at the EOC should support the following:

- i. Fail-safe communication facilities with last-mile connectivity
- ii. Reception of disaster alerts from agencies such as IMD, CWC, State Irrigation department, CCTV feed from Police, etc.
- iii. Collection of data on parameters responsible for disasters such as rainfall, the release of water from dams, snowfall, etc.
- iv. Reception of data necessary for Decision Support System (DSS)
- v. Collection of data for State Disaster Resource Network (SDRN)
- vi. Establishing audio / videoconferencing with senior officers of various organizations responsible for DM activities as well as from disaster sites for better coordination to facilitate an effective response to disaster situations
- vii. Round the clock call center-based coordination center for communication with, government officials, public, NGOs, etc.

6.2 ICT infrastructure and services at EOC

Considering the crucial role of the city EOC and inter EOC communication links during such emergencies, it is proposed to set up a well-equipped city EOC with reliable information and communication network employing both terrestrials as well as satellite-based systems with adequate redundancy for expected reliability (>99.5%). Further, the National Policy on Disaster Management 2009 strongly recommends the integration of various existing communication systems such as Ham radios into the risk communication systems.

The envisaged functional roles of the ICT infrastructure and services at the EOC include:

- i. To interconnect various nodes during all phases of DRM and to support telephone, radio, and data communications
- ii. Effective and efficient emergency information management
- iii. Effective and efficient incident management using decision support system infrastructures and related services at State EOC essential for emergency planning, information analysis, information exchange, communication, collaboration, and coordination.
- iv. Flexible call centre infrastructures and services to satisfy information management service during normalcy as well as during emergencies.
- v. Issuing public alert and warning
- vi. Secure and controlled access to sensitive areas in the EOC building

The following key aspects should be considered for establishing the ICT infrastructure at the EOC:

- i. Equipment proposed for deployment at the incident site should provide long-distance and on-site communication facilities (for rescue forces). This equipment automatically aligns with the satellite and has a short set-up time (normally less than 30 minutes).
- ii. The Emergency Communications Network (ECN) should be operational on a 24*7 basis.
- iii. The ECN is expected to facilitate effective disaster response by maintaining continuous communication between the EOC at City, State, District, and Command centers specifically set-up at the incident site using specially designed mobile EOC or portable emergency communication systems.
- iv. The ECN should support information management (data, video, and voice communications) and incident and information management systems during all stages of disaster management.
- v. The ECN should provide a voice, data, and video communication facility (minimum data rate @ 512 Kbps).
- vi. The ECN should be based on different communication technologies to provide the required level of redundancy to achieve high reliability. The network should use the following network resources:
 - Public telephone (including mobile) network
 - Wireless radios (base stations as well as handheld sets and repeaters) operating in Very High Frequency (VHF) band at State and District Headquarters and disaster sites
 - Fixed, Portable, and vehicle-mounted Very Small Aperture Terminals (VSAT) network using Satellite capacity
 - Satellite phones (as and when permitted by regulatory authorities)

- vii. The ECN should have data distribution capability so that information regarding incident build-up can be conveyed to the district and vulnerable sub-division level authorities as well as other government agencies at the state level.
- viii. The ECN should interconnect all State, district, and sub-divisional level EOCs and should serve DMC for enhancing emergency management capabilities in the state.
- ix. The overall functional requirements of EOC should commensurate with the functional requirements of EOC.

6.3 Connectivity and interoperability

The ICT infrastructure and services should fulfill the following requirements of connectivity and interoperability:

- i. Horizontal and vertical connectivity between the city EOC, DEOC, SEOC, ESF(s), and public telecom based EOC backbone
- ii. Synchronization of the communication capabilities of the NDRF, Armed Forces, paramilitary forces with local communication set up. There should a proper plan so that all can connect in case of a large-scale disaster or failure of the local communication system
- iii. Voice connectivity on VHF radio between the city EOC, DEOC, and SEOC, should be available
- iv. Connectivity between the city EOC, DEOC, SEOC, and location(s) of the incident using VSAT network at nominal 128 Kbps. The data rate should be able to be increased to 512 Kbps from affected districts EOCs and ERVs
- v. High-speed internet connectivity of 8 Mbps data rate at the city EOC, DEOC, SEOC to support information management services
- vi. Data communication redundancies at the city EOC using MPLS VPN or Internet broadband links at 2.0 Mbps rates should be provided at all DEOCs
- vii. Establish LAN within the city EOC
- viii. Establish LAN using the wireless medium at ERVs

6.4 ICT-based services of EOC

The EOC through its ICT infrastructure should support the following ICT-based services:

- i. Fixed and mobile communication system (terrestrial, wireless, and satellite)
- ii. Data communication
- iii. Unified communication with interconnection capability between different communication technologies (e.g., wireless, VSAT, etc.)
- iv. Video conferencing services
- v. Video/ data analysis
- vi. Incident response application
- vii. Incident Management Information Service
- viii. Call centre and Alert and Warning service
- ix. Internet links including antivirus software
- x. Web or Crisis Information Management Portal
- xi. Database Management services

TRAINING AND CAPACITY BUILDING

Training of EOC staff and personnel should be a continuous part of EOC functioning. The EOC should conduct training sessions on the usage of equipment, tools, applications, and services available at the EOC with the help of Original Equipment Manufactures (OEM) periodically. This will help them to safely and confidently use the tools & equipment for a faster and safer response. The OEM can also train the operator and in charge of respective resources in undertaking their regular maintenance. Regular training helps the administration and staff and officials of EOC to keep the equipment and facilities in good running condition.

The key stakeholders in ensuring the effective functioning of the EOC are administrators of the various government departments of the city and other levels. The EOC should undertake the training and capacity building of the key personnel of the EOC including those with designated IRS roles. Thus, it is recommended that these officials are made aware and duly trained in understanding the functioning of the EOC, the nuances of the IRS, and other related aspects of incident management. It is crucial to familiarize them with their roles and responsibilities under the IRS through subject experts and field practitioners. Besides, it is also required that they understand the key formats and templates which need to be filled during the management of the incident. In this regard, it is recommended that the key personnel with designated IRS roles are trained in support of the National Institute of Disaster Management (NIDM), Ministry of Home Affairs (MHA), or the State Public Administration Institutes or the Administrative Training Institutions (ATIs) on the following training modules developed by NIDM and approved by NDMA. For understanding the training needs of the key functionaries and the regular staff of the EOC, it is recommended that the CDMC or the Municipal Commissioner undertake the Training Need Assessment (TNA) of the staff and other stakeholders involved in the normal and emergency functioning of the EOC. The TNA assessment should include:

- i. Studying the roles and responsibilities of all the stakeholders in the EOC
- ii. Perusing the profile of the employees who are likely to assume roles in the functioning of the EOC
- iii. Giving a small quiz on the IRS to check their present level of understanding
- iv. Analyzing the gap in their understanding of their role in EOC
- v. Making a training schedule to cover the gap

The training modules and courses can further be contextualized with the help of respective State Disaster Management Authorities (SDMA) or the State Institute of Disaster Management (SIDM) and may broadly include:

- i. Incident Response System – Basic and Intermediate Training Module
- ii. Incident Response System – Incident Commander Training Module
- iii. Incident Response System – Safety Officer Training Module
- iv. Incident Response System – Liaison Officer Training Module
- v. Incident Response System – Integrated Planning Section Chief Training Module
- vi. Incident Response System – Advanced IRS Training Module
- vii. Incident Response System – Operations Section Chief Training Module

- viii. Incident Response System – Logistic Section Chief Training Module
- ix. Incident Response System – Area Command Training Module

Training courses thus prepared should be tested through the tabletop and mock exercises and telephone battles. Any additions/deletions in the training course should be carried out after every simulation exercise and actual disaster. The suggestive components for the training course include:

- i. Preparation of IAP
- ii. Resource management
- iii. Incident monitoring and reporting
- iv. Information dissemination
- v. Emergency communication
- vi. Risk communication
- vii. Inter-agency coordination
- viii. Database management
- ix. Media briefing
- x. Emergency communication
- xi. Management of EOC

Similarly, the training should include hands-on training on filling and interpreting some of the forms/ templates laid down by the city, district, state, or central authorities. Annexures 1 illustrates some of these forms designed by the NDMA for notifying incident losses and for daily reporting of incidents for sessional events.

Another critical aspect of capacity building of the EOC is the procurement of essential equipment, services, and other resources. The EOC Manager/ In-charge under the guidance of the CDMC or the Municipal Commissioner should lay down the procedure and mechanism for undertaking procurement for the EOC. This should include delineating the financial capacity of the authorized personnel to sanction and approve the expenditure made/ proposed to be made towards procurement during normalcy and emergency.

Table 7.1 lists some of the suggested resources for the city EOC for supporting various ICT services.

Table 7.1: Suggested list of resources for the EOC

S.No.	Details of Facility	Quantity	Remarks
1.	Disaster Management Information Portal	1	-
2.	IP based terrestrial and communications network to interconnect all EOCs at different levels and offices of ESF departments, offices of senior government functionaries	1	-
3.	Satellite phone handheld type	1	-

4.	Decision support system ²	1	-
5.	EWS system including hardware and software		As per the vulnerability profile of the city and geographical area
6.	VSAT terminal	1	C band or extended C band
7.	Emergency Response Vehicles (ERVs)	1	To be stationed at the most vulnerable area of the city
8.	Vehicle-mounted with HF, VHF, and a satellite telephone for deployment in the affected area to provide immediate connectivity with the EOC and ICPs	1	-
9.	Desktop computers	4	With 21-inch HD monitors
10.	Database server	1	Can also be used for multiple city EOCS within one district
11.	Voice recorder for the inbound and outbound calls at the helpline service of EOC	1	-
12.	Video conferencing facility	1	IP based with multiple site connectivity.
13.	Router and switches	1	-
14.	EPBX system	1	With 8 port intercom card and 4 port external input card
15.	Mobile phones	4	Android or IOS
16.	42-inch LED monitors	4	Smart TV
17.	Laptop	4	For supporting remote functioning of the EOC
18.	Heavy duty all in one printer	1	Scan, print, and copy.
19.	5 KVA UPS	1	4 hours power back up for ICT equipment
20.	25 KVA DG	-	Power backup for the entire EOC

² Web-based/online Disaster Support System with the availability of the following components:

- Standardization of command structure with the details of the earmarked and trained personnel in IRS.
- Proactive planning facilities
- Comprehensive resource management system
- Geographic Information System (GIS) and land use planning
- Modeling capability for predicting casualties and resources for large scale incidents, including CBRN emergencies

ANNEXURES

Annexure 1: Incident reporting formats

1. Format for reporting the incident loss

Repair of Damaged Infrastructure of Immediate Nature (Rs. in Lakh)						as of: 20/11/2020	
Department	Sector	Item	Damage in Physical Terms	Requirement of funds for repair of immediate nature	Out of (₹), amount available from annual maintenance budget	Out of (₹), amount available from related schemes/ programmes/ other sources	Out of (₹), amount proposed to be met from SDRF/ NDRF in accordance with list of works indicated in the Appendix to the revised items & norms
1	2	3	4	5	6	7	8
Department of Health & Family Welfare	PHCs/CHCs	No. of Primary/ Community Health Centres damaged	0	0	0	0	0
Energy Department	Electrical Lines	11 KV Lines damaged	0	0	0	0	0
Energy Department	Electrical Lines	33 KV Lines damaged	0	0	0	0	0
Energy Department	Electrical Lines	Distribution Transformers damaged	0	0	0	0	0
Energy Department	Electrical Lines	LT line damaged (KM)	0	0	0	0	0
Energy Department	Electrical Lines	No. of primary Substations damaged	0	0	0	0	0
Housing & Urban Development Department	Rural/Urban Water Supply	No. of Platform damaged	0	0	0	0	0
Housing & Urban Development Department	Rural/Urban Water Supply	No. of rural piped water supply system damaged	0	0	0	0	0
Housing & Urban Development Department	Rural/Urban Water Supply	No. of tube Wells damaged	0	0	0	0	0
Housing & Urban Development Department	Urban Roads	Length of drain damaged(Km.)	0	0	0	0	0
Housing & Urban Development Department	Urban Roads	Length of Road damaged (Kms.)	0	0	0	0	0

2. Format for reporting the ground situation

Daily Report on Rainfall & Flood South-West Monsoon 2020

State : Odisha

Name of the District : All Districts

Report Date: 20/11/2020

Sl No.	Rainfall	During last 24hours	Cumulative since 1st June, 2020
A.	Rainfall position (Rainfall in mm)		
1	Details of Rainfall (Station-wise)		
B	Cause of floods		
C	Extent of damage		
3	Total number of Blocks in the State	314	
4a	Number and names of affected Blocks	No block data found	
4b	No. and names of affected ULBs	0	
4c	No. of Wards Affected	0	
5a	No. of affected villages	0	
5b	No. of villages marooned	0	
6a	Population affected	0	
6b	No. of population remained marooned	0	
7a	No. of human lives lost Block-wise (Give the name & address and specific cause of death such as swept away, drowning in flood, wall collapse due to flood, snakebite due to flood, etc.)	0	
7b	No. of persons missing (Give the name & address)	0	
7c	No. of persons injured (Give the name & address and specific cause of injury)	0	
8a	No. of cattle/livestock affected	0	
	i) Big	0	
	ii) Small	0	
8b	Number of Cattle lost	0	
	i) Big	0	
	ii) Small	0	
8c	No. of Poultry bird lost	0	
D	Crops affected	0	
9	Crops area affected (in ha.)	0	
10	Estimated value of damaged crop (Rs in Lakh)	0	
E	House Damaged	0	

3. Format for reporting the impacts of the incident

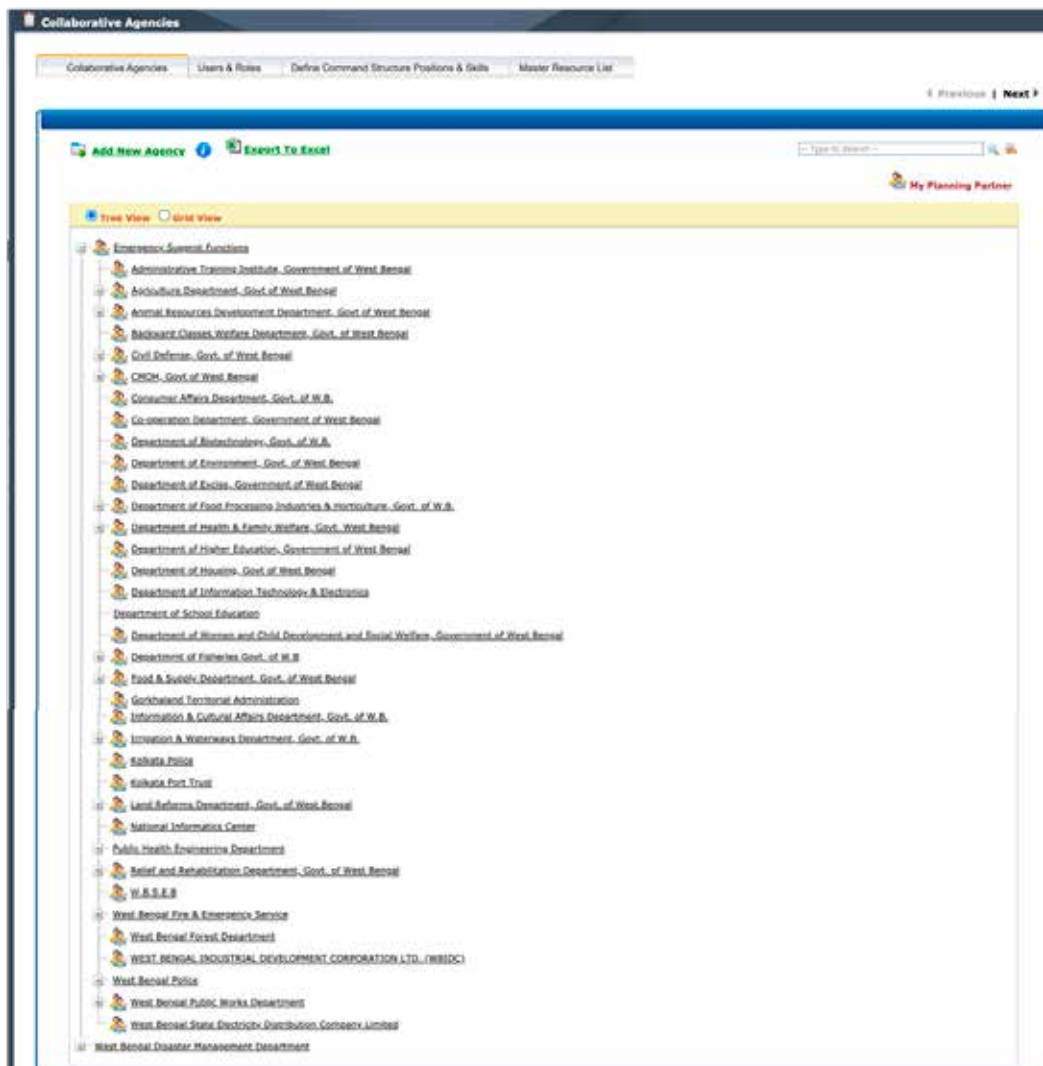
Information relating to :	INCIDENT CYCLONE			
Name of the District : All District	Report Date : 20/11/2020	Time : Morning		
1. Average Rainfall in District				
2. No. & names of Blocks affected		No block data found		
3. No. of GPs affected		0		
4. No. of Villages affected		0		
5. No. of ULBs affected		No ULB data found		
6. No. of wards affected		0		
7. Population affected		0		
8. No. of villages and population marooned	a. Cumulative :	No. of Village : 0	Population : 0	
	b. Remain marooned today :	No. of Village : 0	Population : 0	
9. Population evacuated	a. Cumulative : 0	No. of Centres : 0	Population : 0	
	b. Position today : 0	No. of Centres : 0	No. of Persons : 0	
10. No. of free kitchen centres/relief centres opened	a. Cumulative : 0	b. Operating Today : 0		
11. No. of NDRF/ODRAF/Fire service teams deployed	NDRF : 0	ODRAF : 0	Fire Service Team : 0	
12. No. of boats deployed				0
13. Human casualty	Casualty : 0	Injured : 0		
14. Livestock affected	0			
15. Livestock casualty	Large : 0	Small : 0	Poultry : 0	
16. Approximate crop area affected (Hectare)				0
17. No. of houses damaged (Approx)	0			
18. Emergent relief distributed	Rice (Qntl.) : 0	Chuda (Qntl.) : 0	Gur (Qntl.) : 0	

Annexure 2: Some of the existing IMS

1. Screenshot of a web-based IMS



2. Screenshot of West Bengal IMS



Annexure 3: Checklist of key consideration for the establishment of the city EOC

Parameter	Yes	No
How close is it to the Municipal Commissioner Office?		
Does the EOC have enough space to accommodate all the ESFs operating from there? It should have a main room for the EOC, a conference room, a room for Incident Commanders, and cubicles for the City EOC functionaries and nodal officers?		
Does it have enough open space to accommodate the resources, like ambulances, fire tenders, police vehicles, vehicles of the nodal officers, heavy machinery like bulldozers and excavators, water bowsers, vehicles carrying relief material, etc.?		
Does the EOC have DM Plans and SOPs of all the line departments of the city administration? Are they updated?		
Does the EOC have DM Plans of the District and the State?		
Have the Communication Plan, Evacuation Plan, and Medical Plan along with the CDMP been updated		
Are the updated contact details of all the important officials of the city, nodal officers of the line departments, responders like SDRF, NDRF, Armed Forces, etc. available in the EOC		
Are the emergency numbers of police, fire services, ambulance services, hospitals, SDRF, and NDRF displayed prominently in the EOC		
Does the EOC have maps and charts of the city depicting the resources available, resources deployed, and additional resources required in near future?		
Does the EOC has updated resource inventory on resources (personnel, equipment, and materials) within the city (with the city, line departments, and with the private sector) and outside the city (within the District and State)		
Does the EOC have a decision support system?		
Does the EOC has LED, projection system, printer, computers, phones, adequate lighting systems, etc?		
Does the EOC have a media room		
Does the EOC undertake tabletop and mock exercise and record the lessons learned to improve the plans and SOPs		

