CHAPTER- 1	
INTRODUCTION	

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Background

Ever since the beginning of history man has struggled against the elemental forces of nature to establish his mastery over the environment. Although, science and technology has made tremendous strides in the present century, the struggle has not *ceased*. Many regions of the country are vulnerable to natural disasters and are becoming increasingly vulnerable. The past decade has witnessed an extraordinary increase in the number and extent of natural disasters.

Is the disaster situation improving over the time and do the numbers of disasters show any declining trend over the years? The answer seems to be negative. Super cyclone hit Orissa resulting in gruesome devastation in the state killing 10,000 people, destroying 18 lakh houses to the ground, uprooting trees, twisting electric and telephone poles rendering million marooned for days, caressing off 4 lakh cattles and destroying nearly the entire agricultural crop. Gujarat had faced earthquake-measuring 6.9 on Richter scale and epicenter near Kutch district, that shook the very edifice of our system. More than 3.5 lakh houses were collapsed across the 7633 villages and a number of cities causing unprecedented damage and death and destruction it caused was never seen ever before. Similarly, Tsunami occurred on 26th December 2004, caused by an earthquake of 9.0 magnitude on Richter Scale in South Asia has resulted into massive destruction in the south India.

Rapid population growth, rapid urbanization in developing cities, lack of planning enforcement, illegally coming up human settlements and constantly utilization of environmental resources etc. have inevitable resulted in certainly changed environment. Studies reveal that nature and intensity of natural disasters has changed considerably. In view of this, now substantial attention

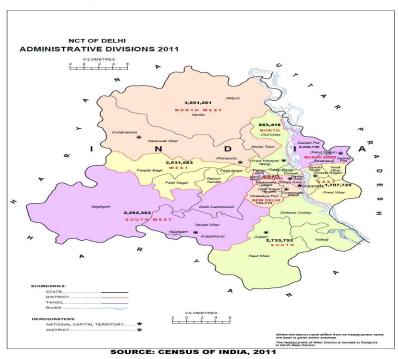
is being given to proactive strategies

in disaster

1.1. Disaster Management Cycle management (Fig. 1.1)

1.2 DELHI

The National Capital Territory (NCT) of Delhi occupies an area of 1483 sq. km and is lies between 28° 24¢15±N to 28° 53¢00+ N latitudes and 76° 50¢24+ to 77° has 20¢30+ longitudes. It has been divided into elevan Revenue Districts. Physiographically, Delhi is situated in Indo-Gangatic Plains, south of Himalayas.



Map 1.1:

Administrative Map of Delhi

Now, NCT of Delhi, a Metropolis with over sixteen million of population is extremely vulnerable to multiple disasters. The entire region of Delhi is in Seismic Zone IV, at high risk to

earthquakes. It is also vulnerable to the fires, building collapse, epidemics, bomb blasts, riots, cyclones and terrorism. Any disaster can cause unprecedented and colossal damage to Delhi.

1.3. Need of Planning in Central District of Delhi

District Central comprises of high population and densely built-in urban environment, exposed towards natural and manmade disasters. Earthquakes, fire, terrorisms and biological wars are few areas of concern in the district as well as in the Delhi. Disasters are intimately connected to the process of development. It puts our developmental efforts at risk. Urbanization and the concentration of people in hazard prone areas with unsafe buildings and dense built-in environment, magnify impact of hazards such as earthquakes, floods and urban fire icidents.

1.4 Enactment of Disaster Management Act, 2005:

There is a requirement to encourage preparedness measures and mitigation measures to reduce the impact of a disaster within community. A detailed disaster management planning containing the detail information about vulnerable areas, short term and long term measures, detailed information about the resources and preparedness and response mechanism may certainly improve the status of disaster management in the district. In order to meet the challenge posed by these various forms of disasters, the government has enacted a law (The Disaster Management Act 2005) on Disaster Management to provide for requisite institutional mechanism for drawing up and monitoring the implementation of the disaster management plan. Under this act Deputy Commissioner of the district is the chairperson of the District Disaster Management Authority.

1.5 Objectives of District Disaster Management Plan according to Act:

The following are the objectives for preparation of the district level disaster management plans:

- To identify the various hazards and hazard prone areas of the District.
- The measures to be taken for prevention and mitigation of various from of disaster, by the Department of Government at district level and local authority.
- The capacity building and preparedness measure required to be taken by the Departments of the Government at district level and local authorities in the district to respond to any threatening disaster situation.
- Creation of the best Govt. mechanism to handle any unprecedented events
- Instant response and effective decision making in disasters
- Institutionalization of disaster management in district administration
- Encouraging a culture of disaster preparedness in the district
- · Better coordination of relief and rehabilitation in the aftermath of a disaster
- Better coordination of all line departments in disaster management
- Encouraging and empowering the local community to own disaster management
- The response plan and procedures in the event of disasters provide for-
 - Allocation of responsibilities to the departments of the Government at district level and local authorities in the district.
 - Prompt response to disaster and relief thereof.
 - Procurement of essential resources.
 - Establishment of communication link.
 - Dissemination of communication link.

The district plan shall be reviewed and updated annually. Disaster management plan shall be the document owned by the respective district administration as well as all stakeholders of disaster management. It is neither a confidential document nor restricted to any particular section or department in the administration. The basic underlying principle of disaster management plan is that it has to be a part of all departments and none can fold fingers against it.

1.6 Methodology of developing district disaster management plan:

The district disaster management plan is a comprehensive and analytical document that involves inclusion of all multi-faced aspects of development and administration differently at various stages. For the purpose of systematic progress the following methodology is adopted:

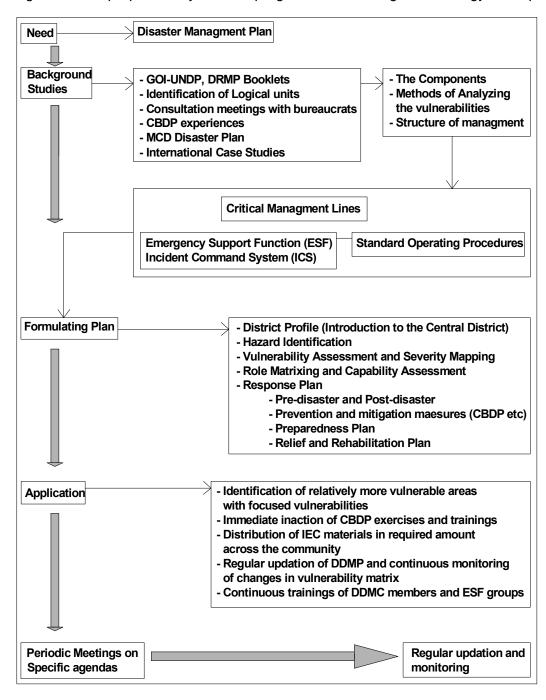


Fig 1.2. Details of Methodology

1.7 Area and Location

The District Central reflects the varied characters of metropolitan. A large area is covered by Delhi University Campus with the present day youth inhabiting its environs. The flavors of the Mughal Delhi can be felt in the areas around Jama Masjid and Lal Quila (the magnificent fortress representing the glory of its rulers and time) and the old bazaars of Sadar, Ballimaran and Chandni Chowk. And the British era still stands tall in the houses of Civil Lines. The people of different communities have inhabited the district since ages. Though the communities have been living in peace but at times, external influences or conflicts have resulted in small mishaps of riots in areas like Ballimaran, Nawab road and Fatehpuri.

The District Central also includes rural and urbanised villages:

RURAL VILLAGE: 1.Burari, 2. Jharoda Mazra Burari, 3. Kamal Pur Mazra Burari, 4. Salem Pur Mazra Burari, 5. Jagat Pur Ilaqa Delhi, 6. Jagatpur Ilaqa Shahdara 7. Mukand Pur, 8. Badar Pur Mazra Burari

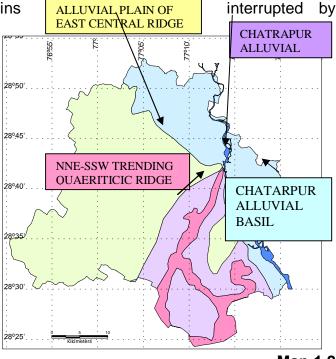
<u>Urbanised VILLAGE</u>: - 1. Wazirabad, 2. Sadhora Khurd, 3. Sadhora Kalan, 4. Nimri, 5. Delhi Mauja, 6. Civil Station

1.7.1 Physical features

(a) Geology:

Delhi consists of flat and level plains

cluster of sand dunes and a long continuous chain of rocky ridges. The sand dunes are of varying dimensions and in general trend northeast. south. Most of the geology of the State is comprises of Yamuna flood plains, alluvial plains and quartzite ridge. The soils of the Delhi area are mostly light with subordinate amount of medium texture soils. The light texture soils are represented by sandy, loamy, sand and sandy loam; whereas medium texture soils are represented by silty loam. Central District evinces similar soil composition/ texture with soils like alluvial basin, quadretritic ridge & Yamuna flood plain deposits.



Map 1.2

(b) Climate and Temperature

The climate of the Delhi region is semiarid type, with three well-defined seasons. The winter season begins at the end of November and extend till March, rainy season start from July and continues up to September. The hot summer extends from the end of March to the end of June. The temperature is usually between 21.1° C to 40.5° C during these months. Winters are usually cold and night temperatures often fall to 6.5° C during the period between December and February. The average annual temperature recorded in Delhi is 31.5° C based on the records of over the period of 70 years maintained by the Indian Meteorological Department.

(c) Rainfall

Rains always come to Delhi a little late than the predicted time. Monsoon reaches Delhi in late June and finally catches on in the end of July. The monsoon continues till middle August and in the year of good monsoon it remains till early September.

About 87% of the annual rainfall is received during the monsoon months June to September. On an average, 2.5 mm or more rain falls on 27 days in a year. Of these, 21.4 days are during monsoon months. For design considerations, rainfall intensity of 20 to 30 mm, which generally occurs in one-hour duration, has to be taken into account.

Months	Temperature (Max) in °C	Temperature (Min) in °C	Rainfall (in mm)
January	21	07	25
February	24	10	22
March	30	15	17
April	36	21	07
May	41	27	08
June	40	29	65
July	35	27	211
August	34	26	173
September	34	25	150
October	35	19	31
November	29	12	01
December	23	08	05

Table 1.1 Rainfall & Temperature

1.7.3 Administrative Divisions

The district is mainly divided into three sub-divisions/ tehsils named as Kotwali, Karol Bagh and Civil Line.

1.8 Socioeconomic Conditions of the District

1.8.1 Population and Density (Source: Census of India, 2011)

The total population of the district is 14, 27,910 with an overall density of 38122 persons per 2 sq. km. District has 4, 95,968 households, having male population of 7,78,713 and female population 6,49,197.

1.8.2 Population Composition:-

- District has 778713 male and 649197 female populations.
- District has the sex ratio, of 893 females per 1,000 males.
- District has 991181 (0-6 Age) children population;
- District has constitute to total 10, 33,085 Hindus, 3, 19,230 Muslims and 37,945 Sikh Population.

(Source: Census of India, 2011)

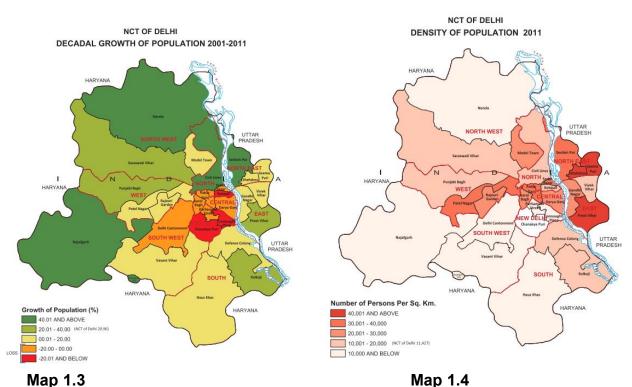
1.8.3. Disability Data:-

There are total 23551 persons with visual, speech and hearing impairments and other physical disabilities. There are 13481 males and 10070 females in the District who are having special needs.

Disability Data:-

Total number of	Persons	23551
disabled persons	Males	13481
	Females	10070

The density and decadal growth rate of population of district Central vis-à-vis other districts of Delhi are represented in the following maps.



1.8.4 Occupation Structure and Workforce Distribution

Being mostly urban in character, most of the population of the Central District is engaged in non-agricultural activities.

Since, around 37% population including women and children are most vulnerable group, DDMA © has initiated massive and continuous awareness generation, training and mock drill in all the 416 schools of District Central Delhi since 2006.

1.9 Social and Physical Infrastructure Details

1.9.1 Housing Facilities

The residential colonies in the district are of various types: Authorized colonies, unauthorized colonies, Regularized Unauthorized colonies, Resettlement colonies, Slums and JJ clusters and villages also. Table 1.3 gives brief information about the type of residential areas in each sub. division.

- RWAs: Resident Welfare Associations are the primary resource organization for any activity at community level. Therefore, identification of these is necessary. There are total 461 registered RWAs in the entire the Central District. These RWAs are part of the *Bhagidari Scheme* of the Delhi Government.
- Unauthorized colonies: Due to the absence of any Zonal Development Plan, a large number of unauthorized colonies have mushroomed up in the district. There are 55 such colonies in the district. These colonies are not following any building bye. laws and controls, hence, they are more vulnerable to any disaster.

1.9.2 Health

The infrastructure regarding health facilities is good in District Central which is also reflected in no. of government and private hospitals available in the district. The list of important hospitals and health infrastructure is placed at Annexures.

1.9.3 Education

Table 1.2. Education facilities in the district)

Education Facilities	Total
Colleges and Institutes	19
Government Schools	78
Government Aided Schools	119
Public Schools	46
M.C.D. Schools	187
Schools for disabled	02
Institute for disabled	02

1.9.4 Security and Safety related Facilities

Table 1.3 Facilities for the security and safety

Facilities	Karol Bagh	Kotwali	Civil Line	Total
Police Stations	9	12	5	26
Fire Stations	2	5	1	8

Source: D.C.P. Office – Central and Delhi Fire Services

1.9.5 Transportation

The Northern Railway Line is passing through the Northern and Eastern edge of the District, which means that the area is vulnerable to railway accidents also. Moreover, many slums have sprawled near the Railway Lines, which will be the major victims during any such disaster. The connectivity of area is good as the major roads lead to the central parts of the city.

Delhi Metro Rail:

Being one of the thickly populated districts in the State, District Central has been gifted with one of the most important and most modern transportation facilities viz Delhi Metro Rail. It connects the thickly populated Karol Bagh, Chandni Chowk and the adjacent parts of the district to other vital business and administrative centres of Delhi.

DMRC Metro stations deserve special attention in terms of Disaster Management, since all its stations and overhead lines had been constructed with a visionary foresight. It is claimed that all its constructions are strong enough to over come an average Earth Quake of 8.0 magnitudes on Richter scale. More over the underground go-downs and stations of the metro Rail could be utilized for storing relief materials in case of a disaster situation. Name of the stations coming in the territory of Central District are Vishwavidyalaya, Vidhan Sabha, Civil Lines, Kashmere Gate, New Delhi, Chawri Bazar, and Chandni Chowk on yellow line, Kashmere Gate, Tis hazari ,Pulbangash, Partap Nager, Shastri Nager, Inderlok on Red line and I.P Estate, Jhandewalan, Karol Bagh and Rajender Place on Blue line. It is connected to West, North West, North East, Central and New Delhi District.

The employee strength consists of DMRC Staff which is approximately 3-4 and the remaining are contractual staff at each station. The DMRC staff are imparted some nominal DM training, the contractual staff is not imparted any kind of training at all & neither are their antecents are verified.

At the elevated stations there is no provision for emergency exits. Normal exits points have to be used in case of emergency also. In the underground stations emergency exits are extremely small in view of number of passengers at peak hours.

It has been intimated by DMRC that in the underground stations tunnel ventilation fans are located at each end of the stations to extract the smoke from tunnel area and there are three exhaust fans located at each end of the station to extract the smoke from its

platform/ concourse area. The availability of water hose pipes and sumps as required by Fire Department has been catered to at every elevated station and in the case of 2 underground stations, 3 tanks of 1 lakh liter capacity are available. It was intimated by DMRC that no inlfamable material is allowed inside the station. DMRC is against training the contractual staff as they are changed by the private contractors time to time. A solution must be found of this problem by convincing DMRC.

There are two kinds of power backups: one for the track so that the trains can continue running and the other for the stations for which there is approximately ½ an hour power backup through UPS and thereafter by generators backup is provided. Approximately 20% lights are on alongwith all exhaust fans, tunnel ventilation (for underground stations) and air cleaning system during power backup by UPS.

At some stations, directions marks towards emergency exist are not available. At all underground stations, emergency exists are extremely narrow and will be probably hazardous and may cause stampede in case of disaster when large no of passengers will try to escape. There is no doubt that the single narrow emergency exits will not be enough especially w.r.t the ND Metro Station where the ridership is extremely high.

During a mock drill at New Delhi metro station in Dec 2009 there was no provision for the DMRC officials to guide the passengers to the emergency exits.

As far as terrorist attacks are concerned one serious issue is regarding the pillars under the elevated metro line which are unguarded. Placement of some IED explosive near any pillar and its explosion with a remote control cannot be ruled out. While we are looking at the complete management in case of disaster at metro stations the vulnerability of the pillars should not lost site of.

The parking under some of the elevated metro stations as well as above under ground metro station needs special attention and some kind of screening of vehicles is necessary in such parking areas. Presently there is no provision of it.

It was intimated by the DMRC that the monitoring by CCTVs of all stations is done in a dedicated manner at Headquarter (Barakhamba Road). But ther is no dedicated staff for monitoring at stations.

Most alarming thing is that the keys of the emergency exits were not available on call and took almost 25 minutes to find them and open the emergency exits during the inspection. This area needs immediate attention and the keys of the emergency exits; fire hose/extinguishers etc. should be immediately available. The accessibility and readiness of all equipments and exits in case of disaster needs to be checked /tested on a regular basis by the DMRC. During disaster all of them must be locatable/ reachable quickly and must be in working condition.

The availability of alternate communication facilities on break down of Landline/mobile phones needs to be taken seriously so that effective contact can be maintained by the station with their & other ESFs. Presently all stations are connected with landlines as also DMRC intercom and tetra network, the last 2 being based on towers in the metro stations. In case one tower in any metro station is down the network is bound to fail and alternative means of communication preferably wireless network would be necessary.

The role of CISF armed personnel in the stations is not exactly understood especially in the backdrop of a crowded station when there is every possibility of civilians being killed and injured in case of use of firearm. Moreover, unarmed CISF personnel seem to have a primary role in search and frisking of passengers and their capacity to attend to any disaster, in fact to be first responder in case of a terrorist attack amongst the huge crowd needs careful consideration.

The role of Metro Police (with staff strength of only 100 and having 4 Police Stations) will obviously be limited to lodging of FIRs and investigating of cases and will play only a subsidiary role to local police in case of disaster.

Most important, in accordance with the Disaster Management Act, DDMA set up in each district is the command and control center around which all Disaster Management plans should be framed. The hierarchy must be very clear so that the command and control is not lost and activities are coordinated from one authority. While there is no doubt about the role of Police as regards security, the provision of DM Act prescribing one single command structure from the Incident Commander (Chairperson, DDMA) onwards in a district should not be lost sight of.

One important distinction that is necessarily to be made is that the general flow of passengers within the station consists of the incoming and outgoing passengers and as regards use of emergency exits, the misconception may arise that the total passengers exiting through such exits would only be the passengers on the platform at a given time. However, it is necessary to understand that disaster may strike when there is a train in the station but some train or nearby line may have to be brought to the station after a disaster in another station and the passengers of such a train may all have to use the emergency exits. Accordingly, all emergency exits would need to be activated within seconds to ensure quick exit of passengers. It is also possible that disaster strikes when one/both trains are in the station obviously necessitating that the emergency exits should be good enough for the peak ridership plus the passengers waiting on the platform.

Metro stations falling in different sub-divisions:-

Table 1.4

	Kotwali		Karol Bagh		Civil Line
S.No	Metro Station	S No.	Metro Station	S.No	Metro Station
1	Tis Hazari	1	Chawri Bazar	1	Vidhan Sabha
2	Pulbangash	2	New Delhi	2	Vishva Vidyalaya
3	Inder Lok-1	3	Karol Bagh	3	Civil Line
4	Pratap Nagar	4	Jhandewalan		
5	Shastri Nagar	5	Rajender Palace		

6	Kashmere Gate
7	Chandni Chowk
8	I.P Estate
9	Inder Lok-5

Six new Metro Stations are Underconstruction in Central Distict. These Metro Stations are as follows:-

Sr. No.	Name of the Metro Station	Sub-Division
1.	Lal Qila	Kotwali
2.	Jama Masjid	Kotwali
3.	Delhi Gate	Kotwali
4.	ITO	Kotwali
5.	Mukundpur	Civil Line
6.	Mukundpur Depot	Civil Line

12 Water Supply and Sewerage System

Central District is 100% covered by Delhi Jal Board in facilitating drinking water to all types of communities. Apart from it, Central District has one existing water treatment plant at Wazirabad. It also has five overhead tanks, water reservoirs and booster pumping station in the district.

1.10 Community Planning Units

To summaries the total numbers of these units are listed in the table below:

Table 1.5: Critical Profile in Nutshell

Community Unit Type	Nos.	Sources
Resident Welfare Associations/MTA	461	D.M. Central Office
Villages	14	Tehsildar (D.M. Central)
Unauthorized Colonies	54	M.C.D.
Major Industrial areas	1	Eicher City Map
Government Offices/ Complexes (Banks and other offices)	83	Eicher City Map

Health Facilities	329	Health Deptt., Govt. of Delhi
Schools	416	Directorate of Education & M.C.D.
Colleges	19	University of Delhi
Entertainment Centers	14	Eicher City Map
Monuments	5	Eicher City Map
Other Important Locations such as Power stations, vital installations, etc.	65	Delhi Secretariat, PHQ, Sales Tax building. ITO, Shamnath Marg and IP Estate areas.

1.11 Open Areas in the District

The District Administration has identified open spaces adjacent to schools, colleges and certain other vital installations in the district that could be used for relief and rehabilitation in case of disaster. They are listed in the following table:

Table No 1.6

S.No	Location	Ramp Available
(a)	Tibbia College Karol Bagh	Available
(b)	M C Primary School Block No 66 Gaushala Road	Available
(c)	M C Primary School Pyare Lal Road	Available
(d)	Community Center Tank	Available
(e)	M C Primary School WEA Block No 13	Available
(f)	Govt Girls Senior School Prasad Nagar	Available
(g)	M C Primary School Arya Samaj Road	Available
(h)	M C Primary School Rajender Nagar Available	
(i)	M C Primary School New Rajender Nagar	Available
(j)	Gandhi Darshan	Available
(k)	Sarvodaya Bal Vidyalay Bulbule Khan	N/A
(l)	Bal Bharti School Pusa Road	Available
(m)	Sarvodaya Bal Vidyalaya Paharganj	Available
(n)	Ramjas School Pusa Road	Available
(0)	Ludlaw Castle Sarvodaya Bal Vidyalaya	Available
(p)	Nigam Pratibha Vikas Vidyala Timar Pur	Available

Table 1.7: SWOT Analysis of district profile:-

Strength	Weakness
Good communication	High population density
Good transportation facilities	Crowded markets
Communal Harmony	Congested area, scattered slums and JJ clusters
	Old unsafe, unauthorized & unplanned buildings
Compact area	structures prepared with conventional technology
	and godown
Trained Civil defence volunteers, proximity	Located near the bank of Yamuna river.
of Police Headquarters	
	Poor hygienic conditions ,habitation in low-lying
Availability of MCD equipment centers	area and poor drainage systems
Availability of MOD equipment conters	

Opportunities	Threats
Easier Capacity Building Good Response from citizens	Faulty/ hanging electrical wires, Improper garbage disposal and old defective transformers.
Proximity of Defence Establishments, equipment center and District Headquarters.	Massive number of non- earthquake resistant unauthorized construction, old structures etc. Terrorist attacks, bomb blast etc.
Availability of potential relief centers- Govt. School Building, community centers etc.	Sudden discharge of water from neighbouring states and water logging. Traffic congestion
	Presence of unprepared industrial units, godowns and warehouses like Tilak Bazar, Chawari Bazar and Bhagirath Palace.

1.12 Feroz Shah Kotla Staduim:-

History:-

The Feroz Shah Kotla is a cricket ground located at Bahadur Shah Zafar Marg, Delhi. It was established in 1883 and is the second oldest international cricket stadium still functional in India, after the Eden Gardens in Kolkata. It is located close to the 20,000 capacity Ambedkar Stadium, the home of association football club New Delhi Heroes FC. Delhi District Cricket Association (DDCA) is sole owner of the Ferozshah Kotla Cricket Stadium, located near Delhi Gate, Delhi. Kotla Cricket Stadium is one of the oldest nationally and internationally recognized venues for playing Cricket Test Matches, One Day Internationals (ODIs) and T-20 cricket matches. Besides Indian Premier League and domestic league matches are played regularly at this prestigious venue. During the cricketing events, spectators, VIP & VVIP guests attend in varying numbers, from a few thousand to almost 42000, besides a large number of security, disaster management and hospitality personnel, numbering over 3000. Security and safety of all of them becomes of paramount importance, before, during and after any event.

Role of District Disaster Management Authority:-

2011-2013:-

District Disaster Management Authority (Central) has been taking necessary action related to the orders issued by DDMA HQ regarding disaster preparedness both offsite and onsite of the venues of events held at Feroz Shah Kotla Ground. In the events held prior to year -2013, DDMA (Central) had provided facilities and staff/ Civil Defence Volunteers as hand holding gesture. A Command Post was formed at Feroz Shah Kotla Stadium, a team from Health Services was deployed, representatives from DFS, BSES, MCD, Police, DJB and MTNL (along with WLL telephones) and CATS Ambulances were also deployed. A number of visits were made to the stadium, coordination meetings & mock drills were organized, inspections were carried out, and orders /notices were issued to concerned authorities regarding disaster management preparedness to deal with any eventuality/mishap.

2013-2014:-

To ensure public safety efforts has been made by District Disaster Management Authority (Central) and a disaster management plan of feroz shah kotla stadium has been formulated by Delhi & District Cricket Association. Delhi & District Cricket Association may be the first Cricket Authority in India to formulate a Contingency & Disaster Management Plan, for safe and smooth conduct of cricket events in Feroz Shah Kotla Stadium. Hopefully the Board of Cricket Club of India, will take a note of this and recommend to other Associations owning Cricket Stadia, emulate it, so that the Cricket Matches are played in India, where it is a national craze, in a fail-safe and congenial environment.

During various events such as IPL, Champions league, Test Matches and ODIs visits are made to the stadium, by teams of District Disaster Management Authority to inspect the stadium and mock drills organised by DDCA. District Disaster Management Authority (Central) issues necessary orders /notices for preparedness to deal with any eventuality/mishap.