

## CHAPTER - 12

# TRANSPORT

1. Concerted efforts have been made by the Government to increase transport mobility alongwith offering a better transport infrastructure. However Government is equally conscious of the fact that a lot more needs to be done, to have a pro-public transport system in place so that dependence on private mode of transportation gets reduced. Efforts would be made to ensure that mobility of people at large both through mechanised vehicles (Private & Public) and also through non-mechanised vehicles get increased alongwith creating space for pedestrians and pedestrianation of some of the public places. In this chapter, the demand, infrastructure facilities and efforts put in by government to improve the system have been analyzed.

### 2. Transport Planning

2.1 Transport is a priority sector in Eleventh Five Year Plan [2007-12] of Delhi for which an allocation of Rs.15251.70 crore is proposed out of total proposed plan outlay of Rs.45000 crore. It accounts for 33.86% of the total Plan Outlay for Eleventh Five Year Plan of Delhi.

2.2 Although population of Delhi started increasing at a very high rate since 1947, the single mode of public transport continued till 2002, when first corridor of Delhi Metro was started. Govt. of Delhi has planned to provide best multi model public transport system to the citizens of Delhi which is based on a number of studies conducted so far. Some of the major studies conducted for transport planning in Delhi are given in Table.12.10

### 3. VEHICULAR GROWTH

#### STATEMENT 1

SN	Category	No. of Vehicles (In Lakh)		Decennial growth rate % [1996-97 to 2006-07]	Annual Compound Growth Rate%
		1996- 97	2006- 07		
<b>A</b>	<b>Private Vehicles</b>				
i.	Four Wheelers [Cars, Jeeps/St. Wagon]	7.06	15.99	126.49	8.64
ii.	Two Wheelers [Scooter, Motorcycle]	18.76	33.36	77.82	5.61
	<b>Sub Total</b>	<b>25.82</b>	<b>49.35</b>	<b>91.13</b>	<b>6.54</b>

SN	Category	No. of Vehicles		Decennial growth rate % [1996-97 to 2006-07]]	Annual Compound Growth Rate%
		1996-97	2006-07		
<b>B.</b>	<b>Commercial Vehicles</b>				
iii.	Auto Rickshaw	0.80	0.74	(-) 7.50	(-)1.37
iv.	Taxis	0.15	0.26	73.33	3.71
v.	* Buses	0.30	0.46	53.33	4.07
vi.	Goods Vehicle + Tractor	1.41	1.43	1.42	(-)1.11
	<b>Sub Total</b>	<b>2.66</b>	<b>2.89</b>	<b>8.65</b>	<b>(-)0.20</b>
	<b>Total</b>	<b>28.48</b>	<b>52.32**</b>	<b>83.43</b>	<b>6.06</b>

\* Including Light Passenger Vehicle and Medium Passenger Vehicles

\*\* Including ambulances and other unidentified vehicles - (7891)

- 3.1 The statement-1 shows that there has been an exponential growth in the number of vehicles, which increased from 28.48 lac in 1996-97 to 52.32 lakh in 2006-07 at an annual compound growth rate of 6.06%. Decennial growth rate is substantially higher in case of private vehicles (91.13%) as compared to commercial vehicles (8.65%). In the category of private vehicles, Cars & Jeeps have registered a decennial growth rate of 126.49%, which is highest among all the categories of vehicles followed by two wheelers (i.e. scooter, motorcycle & moped) with 77.82%. In the commercial category of vehicles, Taxis, have registered highest decennial growth rate (73.33%) followed by Buses including Light, Medium & Heavy Passengers vehicle (53.33%). Auto Rickshaws have registered a negative decennial growth rate of (-) 7.50%. The same trend has been observed if data is compared according to compound annual rate of growth. Further, year wise vehicles population & its growth trend may be seen in table 12.1 & 12.2
- 3.2 The percentage distribution of categories of motor vehicles in Delhi (Table- 12.3) shows that there has been a rapid proliferation in the number of cars/jeeps during the decade, while there has been a decline in the relative share of motorcycle & scooters, auto rickshaws, and goods vehicles. The annual growth rate of total motor vehicles (Registration) in Delhi showed a declining trend during 1994-95 to 2006-07. The percentage share of cars/jeeps to the total number of vehicles in Delhi has increased from 21.98% in 1990-91 to 30.57% in 2006-07.
- 3.3 According to a recent study by the Society of India Automobile Manufacture, Delhi has 85 private cars per 1000 population. Overall, car penetration in India, however, continues to remain low at 8 cars per 1000 population. Car density in Delhi is more than 10 times of national average.

- 3.4 There is a dispute about the actual number of vehicles plying on Delhi's roads. A large number of vehicles registered in Delhi can be seen plying on NCR town roads. Similarly, vehicles registered outside Delhi but plying on Delhi roads are of two categories (a) plying on Delhi roads while crossing Delhi territory to reach a destination outside Delhi; and, (b) now shifted to Delhi on temporary or permanent basis. Transport Department is making efforts to estimate the actual number of vehicles in Delhi by taking into account vehicles that have outlived their life due to any account, transferred to and from other States, etc.

## 4. MODES OF TRANSPORT

- 4.1 Delhi is predominantly dependent on road transport, with the railways catering to only about 1% of the local traffic. The ring rail network in Delhi is grossly underutilized. With Commencement of all three corridors of MRTS –Phase I i.e. Shahadara – Rithala, Vishwavidyalaya-Central Secretariat and Indraprastha - Dwarka, having a total length of 65.05 Km, public transport in Delhi has witnessed perceptible change as more than 4.5 lakh passenger trips are being covered by Metro. Till 2003, buses constituted about 1% of the total number of vehicles, but catered to 60% of the total traffic load, while personalized vehicles accounted for 93.73% of the total vehicles but catered to only 30% of the total traffic load. The share of buses in total number of vehicle is going down steadily since 2003. This calls for a rethinking on transport policy both from the angle of putting a pro public transport system in place and reducing number of private vehicles on roads and resultant reduction in congestion. Among personalized vehicles, motorcycles and scooters comprise about 63.75% of the total number of vehicles in Delhi, while cars and jeeps account for 30.57% of the total vehicles. (Table 12.3).
- 4.2 It is difficult to obtain complete data about man and animal-driven vehicles as there is no proper mechanism to register them. Moreover, the number of unregistered vehicles are estimated to be more than those registered with the local bodies. Registered man and animal-driven vehicles constitute about 2.55% of the total vehicle population in Delhi out of which about 60% are cycle rickshaws. Since registration of cycle rickshaws has been discontinued, the exact number of cycle rickshaws in the city may not be known.

## 5. ROAD NETWORK

- 5.1 The road network in Delhi is being developed and maintained by NHAI, PWD, MCD, NDMC, Delhi Cantonment Board and DDA. The road network in Delhi was 30923 kms (including 182 kms of National Highways with PWD and excluding highway of NHAI) in March, 2007. The growth of the road network in Delhi is shown in Table 12.6.
- 5.2 Delhi had 1922.32 km of road length per 100 sq. km area in 2001-02 as compared to national

average of 74.73 km per 100 sq. km area (2001-02). The road network has increased from 8380 km in 1971-72 to 30923 km in 2006-07 (3.7 times), while the number of vehicles has increased from 2.14 lakh in 1971-72 to 52.32 lakh in 2006-07 (24 times). The imbalance between growth of vehicles and road network in Delhi emerged in heavy traffic congestion and reduced vehicle speed which may be seen from Table 12.6 & 12.7

### 5.3 RING ROAD

The Ring Road, Outer Ring Road and other radial roads constitute a distinct feature of the road network in Delhi. Ring Road has a length of about 48 km, of which 16km is common with Outer Ring Road and NH-1. The 6-lane carriage way of the existing Ring Road had reached the saturation capacity of 110000 vehicles per day. Work of widening of Ring Road from 6 lanes to 8 lanes is already in progress in some stretches like Rajghat to Metcalf house, Raja Garden to Punjabi Bagh, Safdarjang to Dhaura Kuan, Azadpur Jn to Britannia chowk, Rajghat to Ashram Chowk. Traffic is projected to reach between 1.5- 4 lakh PCUs by 2011, which will require expansion of the Ring Road to 18- 24 lanes.

### 5.4 NATIONAL HIGHWAYS

Delhi has the distinction of having 5 National Highways passing through its territory. These are NH-1, NH-2, NH-8, NH-10 and NH-24 connecting National Capital Region of Delhi to rest of the country. These highways contribute significantly to the character of Delhi as a major trading and distribution center.

### 5.5 PERIPHERAL EXPRESSWAYS

Delhi has emerged as a major wholesale trade center for North India. It is estimated that 78% of vegetables and fruits, 49% of fuel, 44% of iron and steel and 47% of food grains traded in Delhi are destined for other States. The five national highways also bring interstate goods vehicles into the territory. This situation aggravates the traffic congestion, particularly on Ring Road, Outer Ring Road and other major roads of the city. As a solution to this problem, Western Peripheral Expressway connecting NH-1 from kundali to NH-2 near Palwal in Faridabad Distt. will be constructed by NHAI through HSIDC. The total cost of land acquisition has revised from Rs. 844 crore to Rs. 1307 crore. GNCT of Delhi provided Rs.653.50 crore, Govt. of U.P. also released its full share by 2006-0. GNCTD released Rs.147.10 crore during 2004-05, Rs.240 crore during 2005-06 and Rs. 266.40 crore during 2006-07 towards their contribution. On completion of W.P.Expressway and E.P.Expressway, Delhi will get relief from those interstate vehicles which are passing through Delhi at present although not destined for Delhi.

## 5.6 GURGAON EXPRESS WAY

NHAI has converted the road connecting Delhi to Gurgaon into an eight lane Toll Expressway. This Expressway is of 28 km length (18 Kms in Haryana + 10 Kms in Delhi). The project has been constructed on BOT basis by NHAI and opened to traffic in January, 2006.

## 5.7 NH2 By pass from Kalindi Colony, Ring Road to Haryana Border

A 14 Km. long bypass connecting Kalindi Colony to Badarpur Border is being constructed in two phases. Phase-I will be from Kalindi Colony Ring Road to Kalindi Kunj Road No. 13(A) and Phase-II will be constructed from Kalindi Kunj Road No 13(A) to Haryana Border. The Bypass will have 6 lanes divided carriageway with footpath on both sides. The phases-I Kalindi Bypass was approved by EFC on 23-3-02 at an estimated cost of Rs.100.15 crore. Target date of completion was January 05. However, the work could not progress as per schedule due to land problem which is yet to be resolved with U.P. Government. The matter is pending before High Court.

## 5.8 Road over Disused canal: -

As per Master Plan-2001, a road with 30M right of way over the exiting disused canal was to be constructed for easing out the traffic load of Vikas Marg and effective traffic dispersal from the proposed bridge over river Yamuna at Geeta Colony. This road will connect Marginal Bund Pusta Road with Karkari Mode at Vikas Marg. The scheme envisages construction of permanent RCC box drain over with four lane dual carriage way shall be constructed. EFC approved this proposal on 13-6-2003 at an estimated cost of Rs.86.97 crore. The work is in progress and targeted to be completed by March, 2008.

## 6. FLYOVER AND BRIDGES

- 6.1 The expansion of the road network and the growth in vehicular traffic in Delhi resulted in installation of traffic signals almost at every intersection within short distances. This has led to excessive time and fuel consumption for all vehicular trips. To overcome this problem by providing uninterrupted movement of traffic, a special programme to construct flyovers was started in 1998-99. During the 9th Five Year Plan, 11 flyovers/ ROB/Grade-Separators were constructed in Delhi by various agencies (PWD, DDA, DTTDC & MCD). During 10<sup>th</sup> five year plan, 22 Flyovers and 2 underpass and 2 RUB were constructed by the concerned agencies. Besides the above, following major projects have been taken up.

## 6.2 Geeta Colony Bridge

To ease out traffic load on other bridges over river Yamuna connecting east Delhi, Construction of a new bridge connecting Shantivan on western side and Geeta Colony on eastern side was approved by the EFC on 25-07-03 at an estimated cost of Rs. 117.61 crore. The length of this bridge is 560 M (14 spans of 40 M each) and width conceived is 24 M (4 lane with cycle track-cum- footpath) on either side. The work is in progress and likely to be completed by March 2008.

## 6.3 Parallel bridge over river Yamuna near Wazirabad (Signature Bridge)

The existing bridge at Wazirabad is inadequate to cater to the needs of the growing population of Trans Yamuna area especially, people residing in Yamuna Vihar, Gokulpuri, Khajoori, Nand Nagri and other areas. EFC approved a cable stayed bridge across river Yamuna down stream of existing bridge in its meeting held on 23-11-2005 at the cost of Rs 464 crore. The project is to be completed in a period of 42 months. The estimated cost has been revised to Rs. 887.29 crore. The work is to be started shortly. Construction of the proposed bridge alongwith river bank improvement works will contribute in promotion of Tourism. The project is being implemented by DTTDC.

## 6.4 Elevated Road Corridors.

The traffic on the Ring Road is estimated as 1.10 lakh PCU which is in excess of its capacity of 75,000 PCUs per day and is projected to reach between 1.5 to 4 lac PCUs by 2011. Growth of this magnitude will require expansion of the Ring Road. Since ROW of the road is limited, it may not be possible to widen the road upto desired level. As such, other viable alternatives are required to be explored. Elevated Road corridor on the entire length of 48 KM of inner Ring Road is one of them. The estimated cost of the project would be roughly Rs 2635 crore at June, 2003 prices. Pre-feasibility study conducted by IL&FS is yet to be examined and accepted by PWD.

## 6.5 Paralled Ring Road on the Bank of river Yamuna

The idea of construction of an alternative road paralalled to river yamuna from Nigam Bodh Ghat to Ashram Chowk is under active consideration to ease out the traffic load of Ring Road.

## 6.6 New Flyovers/ RUB/ Under Pass

Keeping in view the new urban extension area, development of new commercial, institutional and public places and Commonwealth Games – 2010, Govt. has decided to construct a number of flyovers , RUB, Under pass, Corridors for better traffic flow. Some of the new flyovers / RUB / Under pass proposed to be constructed by 2010 are given below in the Statement 2. Flyover and Bridge works which are in progress are given in the Statement 3.

## STATEMENT 2

### New Flyovers / RUB / Under pass / Corridors proposed to be constructed by 2010

SN	Name of Project
1	Construction of Link Road connecting National Highway 24 to Lodhi Road
2	Elevated West-East Corridor which will connect Connaught Place to East Delhi
3	Flyover at Apsara Border
4	Clover leaves on U.P.Link Road
5	Road over Bridge on G.T.Road near Shyamlal College
6	Flyover on Bahadurshah Zafar Marg
7	Road over Bridge on level crossing on Road No.68
8	6 lane road over Barapullah Nalah
9	Road over Najafgarh Drain from Meera Bagh to Wazirabad
10	East-West corridor from Rajghat to Punjabi Bagh
11	North-South Corridor from Majnu-ka-Tilla to Dhaula Kuan
12	Outer Ring Road link from Okhala to Wazirabad
13	Corridor between Wazirabad and Mukundpur Chowk
14	Corridor connecting NH-8 to District Centre, Janakpuri
15	Underpass on Vikas Marg near ITO Chungi Crossing
16	Mukarba Chowk Flyover
17	Flyover at Azadpur Intersection
18	Flyover on Ring Road at Naraina
19	Flyover at Nangloi – NH-10 Crossing
20	Flyover on Outer Ring Road at Mangol Puri Crossing

### STATEMENT 3

#### Flyover & Bridges Works in progress

S.No.	Name of Flyovers	Date	
		Start	Complete
1.	Geeta Colony Bridge	Feb., 05	April, 08
2.	ROB 63	Jan., 06	Jan., 08
3.	Mukerba Chowk	Sept., 06	Nov., 08
4.	Neela Hauz	Sept., 06	Mar., 08
5.	ITO Chungi	Nov., 06	June, 09
6.	RUB on Road No. 58-64	Dec., 06	Sep., 09
7.	Naraina	Oct., 07	Nov., 09
8.	Bhera Enclave Underpass	Aug., 07	Mar., 09
9	Mangolpuri	Feb., 07	Jun., 08
10	R.R. Kohil Marg	Feb./Apr., 07	Jun., 09
11	Shastri Nagar Pustha	Feb./Apr., 07	Dec., 08
12	Azadpur	Apr., 07	June., 09
13 -15	3 flyover IIT to NH 8	Mar./May, 07	Dec. 08/ Mar., 09
16	Nangloi, NH-10	Apr., 07	June, 09
17	Shyam Lal College	May/Aug., 07	Sept., 09

#### 6.7 17 ROB/RUB at Railway crossing

In view of common wealth games-2010, Government of Delhi decided to finance the 50% share of MCD in construction of 17 ROB/RUB at a cost of Rs 428 crore. Cost will be shared between MCD and Ministry of Railway on the basis of 50:50. Construction of RUB at Vivek Vihar Railway crossing has already been stated. RUB/ROB are indicated in the statement 4.

## STATEMENT 4

### List of 17 Locations of Railway Level Crossing

S. No.	Location	Cost Estimate (in crore)
1.	Adjacent to Roshanara Garden near Under Bridge Shakti Nagar (on Delhi-Ambala line)	40
2.	G.T. Road Industrial Area approaching towards Sawan Park (on Delhi – Ambala line)	15
3.	Near Badli at the Back of Sanjay Gandhi Transport Nagar (on Delhi – Ambala Line)	10
4.	Auchandi Road connecting G.T. Road to Badli Industrial Area (on Delhi – Ambala Line)	30
5.	Nithari Road crossing on Narela – Lampur Road (on Delhi – Ambala Line)	15
6.	Connecting Lodi Colony with Kotla/Prem Nagar near Sewa Nagar (on Ring Rail Line in Delhi Area)	30
7.	Kirti Nagar (KRTR) – Prem Nagar (on Ring Rail line in Delhi Area)	15
8.	Between Vill. Sarai Kale Khan & Nizamuddin Colony (on Ring Rail line in Delhi Area)	09
9.	Najafgarh Bijwasan Road (on Delhi – Rewari Line)	58
10.	Very near to Rohtak Road & near to Zakhira (on Delhi – Bhatinda Line)	40
11.	On Rampura Road approaching towards Rohtak Road (on Delhi – Bhatinda Line)	09
12.	Approach Road from Ring Road upto inter -section leading to Railway side Shakurbasti (on Delhi –Bhatinda Line)	08
13.	On Road connecting Mangolpuri to Rohtak Road (on Delhi Bhatinda Line)	15
14.	Sultanpuri Railway Crossing between Sultanpuri & Nangloi (on Delhi – Bhatinda Line)	64
15.	Mundka Railway crossing (on Delhi – Bhatinda Line)	15
16.	Near Vivek Vihar Railway Station (on Delhi – Gaziabad Line)	40
17.	Level crossing at Kirari	15
	<b>Total Cost</b>	<b>428</b>

## 6.8 Pedestrian Facilities - Foot Over Bridges & Traffic Signals

Traffic regulation and road construction in Delhi have consistently ignored cyclists and pedestrian including bus commuters. On main arterial roads, there are very few pedestrian crossing and only a few over bridges or subways. However, things have slowly started moving in right direction. In recent time, 8 foot over bridges has been constructed (during 2004-05 to 2007-08) at different locations like, Mathura road (Pragati Maidan), Majnu Ka Tilla, AIIMS, ISBT Kashmere gate, Nanak Pura, Maharani Bag, Venkateshwar college and I.P Marg. Escalators have been provide/being provided at this FOBs to facilitate the easy and fast movement. These measures towards construction of FOBs, however are not adequate to meet the actual requirement on the ground. There is therefore a strong need to immediately provide for adequate number of safe road crossings by way of traffic signals at appropriate places like T-points, Road junctions and major Bus Stands for cyclists, pedestrians and bus commuters alongwith construction of foot over bridges with escalators. In this way, public transport would get promoted and road safety can be enforced.

## 7. INTERSTATE BUS TERMINALS (ISBT)

MPD- 2001 suggested five ISBTs for Delhi in 2001. With the development of two new ISBTs at Sarai Kale Khan and Anand Vihar, three ISBTs are functioning at present. These three ISBTs cater to an average 3.70-lakh passengers and 5235 buses/trips per day. Two more ISBTs are proposed to be constructed at Dwarka and Narela on BOT basis. Due to change in FAR in MP 2021, there is a re-thinking to take advantage of increased FAR and accordingly design and other parameters for construction of ISBTs are getting revised. Both the new ISBTs and work of development of ISBT Sarai Kale Khan and Anand Vihar as modern ISBT would be completed before CWG-2010.

## 8. RAIL NETWORK

- 8.1 Delhi is a major junction on the rail map of India linked with all the major metropolitan cities directly. There are four main railway stations at New Delhi, Old Delhi, Hazrat Nizamuddin and Sarai Rohila, besides Container Depots at Patparganj and Tuglakabad. A new Railway Station is being developed by Northern Railway near Anand Vihar ISBT, which will help in decongestion at New and Old Delhi Railway Stations. The work has been started. There are 8 rail corridors in the National Capital Territory, which bring in more than 350 passenger trains and 40 goods trains every day.

## MASS RAPID TRANSIT SYSTEM

### 8.2 MRTS PHASE-I (65.05 KM.)

The Mass Rapid Transit System (MRTS) is an ambitious project that aims at providing a non-polluting and efficient rail-based transport system, properly integrated with the road transport system. The first phase of the project, originally estimated to cost Rs. 4,860 crore (April 1996 prices) was approved in September 1996 and was to be completed by March, 2005. Later on it was revised to be completed by March 2006 at an estimated cost of Rs.10571 crore.

The first phase envisaged the following revised plan of three corridors:

**Statement -5**

SN	Particular	Length (Km)
1	Delhi University - Central Sectt. ( Metro/Underground Corridor)	11
2	Shahdara- Rithala (Rail /surface/elevated Corridor)	22.06
3	Indraprastha-Barakhambha Road, Dwarka (Underground /elevated corridor)	25.65
4	Dwarka sub-city (Dwarka- Dwarka Sector VI)	6.50
	<b>Total</b>	<b>65.05</b>

8.3 The target dates of commissioning of different sections of Rail and Metro corridors are as follows: -

**Statement -6**

Segment Rail Corridor (RC)	Name of the Section	Targets date of commissioning	Commissioned on
RC Seg.1	Shahdara-TisHazari	31 <sup>st</sup> December, 02	24.12.2002
RC Seg. 2A	Tis Hazari-Tri Nagar	30 <sup>th</sup> September, 03	3.10.2003
RC Seg.2B	Tri Nagar-Rithala	31 <sup>st</sup> March, 04	31.3.2004
RC Seg 3	Barakhamba Road- Connaught Place- Dwarka	30 <sup>th</sup> September, 05	31.12.2005
R.C.	Brakhambha- Indraprastha	31-3-2006	Nov. 2006
Dwarka Subcity	Kakrola- Dwarka	30 June 2006	31-03-2006
<b>Metro corridor (MC)</b>			
MC1A	Vishwa Vidhyalaya- ISBT	31 <sup>st</sup> December, 04	20-12-04
MC 1B	ISBT-Central Secretariat	30 <sup>th</sup> September ,05	02-7-2005

Delhi Metro has been graded as a world class metro. Trains are available to public for six minutes frequency. The expected rider-ship is 21.82 lac passengers per day for MRTS phase-I network.

#### 8.4 MRTS PHASE-II:

After completion of MRTS phase-I, Phase- II has been taken up which envisages the following six corridors:

	TargetDate	Revised Target
1. Vishwa Vidyalaya – Jahangir Puri	6.36 Km	Oct., 08      Oct., 09
2. Central Secretariat-Qutab Minar	10.87 Km	Dec., 09      June, 10
3. Indraprastha – New Ashok Nagar	8.07 Km	June, 08      June, 09
4. Shahdara- Dilshad Garden	3.09 Km	Dec., 07      Dec., 08
5. Yamuna Bank – Anand Vihar	6.16 Km	Sept., 08      Dec., 09
6. Mundka – Inderlok	18.47 Km	Jan., 09      Mar., 10
<b>Total</b>	<b>53.02 Km</b>	

Following corridors have also been included in MRTS, Phase-II:-

7. Qutab Minar-Sushant Lok	15.93 Km	Jan., 10 (Delhi Portion)
8. Central Secretariat-Badar Pur	19.55 Km	Sep., 10
9. New Ashok Nagar-Noida Sector 32	7.05 Km	Jan., 10
10. Airport Express Link (New Delhi-IGI)	19.20 Km	Aug., 10
11. Extension of Airport Express Link to	3.50 Km	Sector – 21 Dwarka
<b>Total</b>	<b>64.23 Km</b>	

The completion cost of MRTS phase-II is estimated at Rs.8118 crore. Phase-II is expected to be completed by 2010. Construction work of Phase-II is in progress. The EIRR is expected to be 23.63% and FIRR is expected to be 8.18%

The estimated cost does not include Taxes and duties amounting to Rs.119 crore. This also does not include interest during construction (IDC) of Rs.70 crore, but include cost of land.

Government of NCT of Delhi released Rs. 404.67 crore during 2005-06, Rs.195 crore (Rs.137 crore equity and Rs.58 crore subordinate debt) towards contribution of 2005-06 and Rs. 209.66 crore as an advance payment towards contribution of 2006-07. Rs. 365.60 crore were released during 2006-07, Rs.118.34 crore (Rs. 60.34 equity and Rs. 58 crore subordinate debt) towards contribution of 2006-07 and Rs. 247.26 crore as advance equity contribution for 2007-08. During 2007-08, Rs.681.49 crore (Rs.456.49 crore equity and Rs.225 crore subordinate debt which includes Rs.82.50 crore for reimbursement of Central taxes).

## 8.5 INTEGRATION WITH OTHER MODES OF PUBLIC TRANSPORT

At present, the public transport system of Delhi is almost road based. With the coming of MRTS, particularly in influence areas of MRTS corridors, the bus system should act as a feeder so that both systems can complement each other. In other areas, the bus system will continue to be the primary mode of public transport. In this direction, DMRC has got a study done to plan the feeder system to MRTS and restructuring of existing bus routes.

For feeder system and restructuring, phase planning has been done. For implementation of these recommendations, a task force comprising DMRC, DTC and GNCTD officials was constituted who have finalised routes for the restructuring. For integration, DMRC is providing bus bays at different stations. For park and ride trips, it is providing parking facility at various stations wherever feasible and required. Feasibility study for inter change efficiency at Metro Stations has been awarded during 2006-07.

## 8.6 REGIONAL RAIL NETWORK [IRBT]

Present urban transport infrastructure including MRTS in NCT of Delhi is not sufficient to cater to the needs of the people who commute from DMA and NCR towns to Delhi for work. The road transport network is required to be integrated with the rail network. A dedicated rail network is required for daily commuters from NCR towns to Delhi. Accordingly it has been decided to strengthen the Regional Rail Network in the NCR area with the construction of the following dedicated railway corridors based on revised MOU and cost.

SN	Corridors	Length	Cost (At April, 2002 price)
1.	Ghaziabad- Sahibabad - Shahadara Rail link	14.90 Km	Rs.667.00 crore
2.	Sahibabad- Tilak- Bridge- Shivaji Bridge	17.36Km	Rs.618.00 crore
3.	Trinagar (Daya Basti)- Bijwasan- Gurgaon Rail link	29.40 Km.	Rs.954.00 crore
	<b>Total</b>	<b>61.66 km.</b>	<b>Rs.2239 Crore</b>

The project is to be implemented by Special Purpose Vehicles (SPVs). The SPVs will finance the project through debt equity of 1:1. While SPV will raise the debt from the market, financial institutions and others sources, the equity contribution of Rs.1119 crore will be made by the stake holders to the respective SPVs in the following proposition:-

1.	Contribution of MOUD	33.33%
2.	Contribution of Railways (MOR)	33.33%
3.	Contribution of all State Govt./U.T.	33.33%

The inter-state contribution between the State Govt. will be in the ratio of the length of the commuter rails systems in the respective states.

The equity share of each of the stakeholders is projected to be as follows: -

### Statement – 8

[Rs. In Crore]

Stake Holder	Shahadara-Ghaziabad	Shaibabad-Shivaji Bridge	Tri-Nagar-Gurgaon	Total Equity Share
MOUD	111	103	159	373
MOR	111	103	159	373
GNCTD	30	74	109	213
GOH	-	-	50	50
GOUP	81	29	-	110
<b>TOAL</b>	<b>333</b>	<b>309</b>	<b>477</b>	<b>1119</b>

MOU has been signed by all stakeholders. Project is pending with Planning Commission, GOI for approval.

## 9. DELHI TRANSPORT CORPORATION:

- 9.1 DTC is responsible for providing efficient public transport services to the people of Delhi at affordable prices. DTC was taken over by the Government of NCT of Delhi from the Government of India in August 1996. The performance of DTC in 1996-97 (at the time of take over) and 2006-07 may be seen at a glance in the following statement:-

## Statement-9

### PERFORMANCE OF DTC AT A GLANCE

SN	Item	Unit	1996-97	2006-07
1	Total Fleet on last date	Nos.	2682	3444
2	Average fleet	NO.	2665	3454
3	Avg. No of busses on road	NO.	1648	2814
4	Fleet utilization	%	61.84	81.47
5	Trips operated daily	Nos.	14104	18804
6	Kms. operated daily	Lakh	4.41	5.60
7	K.M. Efficiency	%	66.64	73.47
8	Earning per Bus daily	Rs.	2669	3417
SN	Item	Unit	1996-97	2006-07
9	Passengers carried daily	Lakh	15.02	26.77
10	Passengers per bus daily	Nos	911	951

## 9.2 REFORM PLAN FOR RESTRUCTURING OF DTC

Despite the best efforts made by Govt. of Delhi to improve the deteriorating financial position of DTC, it could not be made self-sustainable. To overcome the various problems being faced by DTC in the form of growing financial deficit, surplus staff, stiff competition from the private bus operators etc., Government appointed M/s Tata Constancy Service (TCS) to undertake a financial and operational review of DTC and to propose a Reform Plan for Restructuring of DTC. TCS submitted the final study reports in the month of September, 2003. The above statement shows that fleet utilization has increased to 81.47 % in 2006-07 as compared to 61.84% in 1996-97. K.M. efficiency has also increased from 66.64% to 73.47%.

**9.3** In an effort to augment the existing fleet by providing non-polluting buses, DTC has already placed purchase order for 500 Low Floor Non AC and 25 Low Floor AC CNG buses. A proposal for procurement of 4500 more modern buses has already been approved by cabinet. Procurement will start during 2008-09. Presently DTC has 2250 Bus Queue Shelters including 710 constructed during 2002-03 and 08 during 2003-04. 1000 Bus Queue shelters (BQS) constructed out of 1200 approved during 2004-05. Rests 200 were constructed during 2005-06 to 2006-07. Now all these BQS are being modernized on PPP. The work on 225 BQS has already been started.

## 10. Integrated Multi-Modal Public Transport Network

10.1 The need for High Capacity Bus Systems (HCBS) as an alternative mode of comfortable bus

transport systems for Delhi has been felt for long due to phenomenal increase in private vehicles, especially personalized vehicles on Delhi roads. Transport Department has planned to introduce LRT and Monorail in addition to HCBS, IRBT and Metro Rail in Delhi. For implementation of these new modes of Public Transport in a targeted and efficient manner, an independent SPV called Delhi Integrated Multi-Modal Transit System (DIMMTS) has been set up under Companies Act. Authorised Capital of this SPV is Rs.1000 crore. This SPV has been converted into joint venture in collaboration with IL&FS. Different Corridors for each mode of new public Transport have been identified on the basis of future traffic demands for each corridor based on traffic survey conducted by RITES in 2001. The names of selected 43 corridors for different modes may be seen at Table No.12.9

- 10.2 The proposed and selected 43 corridors of Multi Model Public Transport system will be implemented in 3 phases. The first phase will be implemented during 2005-10 followed by 2011-15 second and 2016-2020 third phase. The number of corridors of each mode to be implemented in each phase may be seen in the following Statement No.9.

System	Period of Implementation					
	2005-2010		2011-2015		2016-2020	
	Corridors	Length [Kms]	Corridors	Length [Kms]	Corridors	Length [Kms]
<b>Metro</b>	1	4	3	68	2	43
<b>IRBT</b>	1	19	1	25	-	-
<b>LRT</b>	3	35	2	29	1	10
<b>MONORAIL</b>	2	30	1	18	-	-
<b>HCBS</b>	6	87	3	28	17	179
<b>TOTAL</b>	<b>13</b>	<b>175</b>	<b>10</b>	<b>168</b>	<b>20</b>	<b>232</b>

- 10.3 The estimated cost of proposed 35 new corridors is Rs.14170 crore. The estimated cost of each phase may be seen in the Statement No.10 given below:-

### STATEMENT 11

#### COST ESTIMATE [Rs. in Crore]

System	PERIOD OF IMPLEMENTATION			
	2005-2010	2011-2015	2016-2020	TOTAL
<b>LRT</b>	2800	2320	800	5920
<b>MONORAIL</b>	2400	1440	-	3840
<b>HCBS</b>	1305	420	2685	4410
<b>TOTAL</b>	<b>6505</b>	<b>4180</b>	<b>3435</b>	<b>14170</b>

Cost assumed as follows:

LRT/MONORAIL	Rs.80 crore per Km
HCBS	Rs.15 crore per Km

**Note:** Cost of Metro and IRBT not included as these will be implemented by DMRC and NCRPB respectively

**10.4** Detailed feasibility study for 2 mono rail and 3 Light Rail Transit Corridors have been completed.

#### **10.5 HCBS/BRT CORRIDOR:**

Dr. Ambedkar Nagar-Delhi Gate:

The project was approved by EFC on 15.2.05 at a cost of Rs. 112.96 crore which has been revised to Rs. 153.05 crore to Rs. 215.89 crore. Work is in progress and is likely to be completed by June, 08.

The EFC approved other 6 BRT projects (on 12.12.07)

	<b>Estimated cost (Rs. in crore)</b>
1 Shastri Park to Karawal Nagar	128.22
2. Mool chand to Jahangirpuri	346.12
3. Kondli to Gokulpuri	360.33
4. Jamia Milia to Tilak Nagar	497.62
5. Nizamuddin to Nand Nagri	376.64
6 Rajendra Nagar to Pragti Maidan	110.17
<b>Total :</b>	<b>1819.10</b>

## **11. ROAD SAFETY**

11.1 Safety is a major component of traffic management. The phenomenal increase in the number of motor vehicles in the city coupled with limited road space, inadequate facilities for pedestrians and cyclists, irresponsible driving and violation of traffic rules has resulted in a significant number of road accidents. Though the number of accidents has shown a

decreasing trend in the last three years due to continuing efforts of all concerned agencies, there is need and scope for vast improvement in traffic management and regulation.

- 11.2 Due to tremendous increase in Vehicular population in Delhi, the number of accidents including fatal has been increasing which is attributed to several reasons. 9282 accidents cases were reported in Delhi in 2001 and 9580 in 2005 including 8983 cases of simple injuries and 2014 fatal cases. One of the most vulnerable groups to accidents is school children.
- 11.3 During 2006-07, Transport Department engaged 71 NGOs for Road Safety campaigns and released grant amounting to Rs. 55 lac. Financial aid is provided to NGOs for creating Road Safety Awareness in public, especially, among school children.

## 12. PARKING

The total vehicle population of Delhi exceeds the combined vehicle population of Mumbai, Chennai and Kolkata. The subject of parking has become a matter of serious concern and requires a carefully considered policy and planned measures to alleviate the problem to the maximum feasible extent in existing areas and for adequate provisioning with reference to future developments. Various suggestions have been made in this regard by different agencies/studies in their reports like M.P.D. 2001, MPD-2021, DUEIP-2021, Major findings and recommendation are as under.

### 12.1 Parking Norms - MPD-2001

Parking Standard MPD – 2001		Equivalent Car Spaces [ECS] per 100 Sqm of floor area
A.i.	Commercial plotted development	2.00 ECS
ii.	Metropolitan city centre i.e. Connaught Place & its extension	
iii.	Asaf Ali Road	
iv.	Press Area	
v.	Non-Hierarchical Commercial Centres	
B.i.	District Centres	1.67 ECS
ii.	Hotel	
iii.	Cinema	

<b>Parking Standard MPD – 2001</b>		<b>Equivalent Car Spaces [ECS] per 100 Sqm of floor area</b>
C.i.	Residential Group Housing	1.33 ECS
ii.	Cluster Court Housing	
iii.	Plotted Housing [Plots above 200 sqm]	
iv.	Community Centre	
v.	Local Shopping Centre	
vi.	Convenience Shopping Centre	
vii.	Nursing Home, Hospitals [Other than Govt.]	
viii.	Govt. Office	
ix.	Social & Cultural Institutions	
x.	Mixed Use	
D.i.	College, University & Public Schools	1.00 ECS
ii.	Light & Service Industry	
iii.	Flatted Group Industry	
iv.	Extensive Industry	
E	Government Hospitals	0.67 ECS
F.i.	Wholesale Trade	2.50 ECS [Including parking for loading and unloading]
ii.	Freight Complex	

For the provision of car parking spaces, the space standards shall be as under:-

- a. For open parking 23.0 sqm per equivalent car space.
- b. For ground floor covered parking 28.0 sqm per equivalent car space
- c. For basement 32.0 sqm per equivalent car space.

## 12.2 PARKING NORMS proposed in Draft MPD-2021

<b>SN</b>	<b>Use</b>	<b>Use Premises</b>	<b>Permissible Equivalent Car Spaces (ECS) per 100 sqm of floor area</b>
1	Residential	Residential Group Housing	2.0
		Cluster Court Housing	2.0
		Plotted Housing (Plots above 165 spm)	2.0

SN	Use	Use Premises	Permissible Equivalent Car Spaces (ECS) per 100 sqm of floor area
2.	Commercial	Retail Shopping, general business and commerce Wholesale, warehousing, cold storage and oil depots Hotels	2.0 - 2.4 3.0 2.0
3.	Manufacturing	Manufacturing and service industry Flatted group industry	2.0 2.0
4.	Government	Government Offices	1.8
5.	Public & Semi Public Facilities	Nursing Home, Hospitals Government Hospitals Education and Research - College, University & Public Schools  Socio-Cultural, Distributive and other Community Facility Centres Communication - Post/ Telegraph/ Telephone Centres  Religious Centres Polices Station/ Fire Station/ Disaster Management Centre	2.0 2.0 1.33  1.8 1.33  1.33 1.33
<p>? In case of parking facilities in the mixed land use area s, pooled parking areas shall be identified by RWAs and cost of development of such parking places shall be payable by the beneficiaries to the concerned authorities.</p> <p>? In case of misuse of parking area within a premises / plot the same shall be liable to be taken over by the DDA/Local Body.</p>			

### 12.3. DUEIIP Recommendations

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#### 1. Short Term Measures

- Establishment of differential parking norms and guidelines based on public transport services.
- Appropriated pricing with respect to real cost to discourage use of personalised vehicles.

- On street parking in critical areas should be banned and on street parking in residential areas to be priced.

## 2. Medium Term Measures

- New Developments and regularization of illegal activities to be approved through traffic impact assessment.
- Encourage private parking facilities and terminals in facilities areas on BOT basis.
- Provision of parking facilities in critically deficient areas with introduction of park and ride systems.

## 3. Long Term Measures

- Actions to continue to reduce parking demands
- Discouraging higher FAR/ground coverage in congested areas

### 12.4 Delhi Government formulated a Parking Policy keeping in view the directives of Court given from time to time and also the findings and recommendations of MPD 2021 and DUEIIP-21. The policy framework suggest following action plan:

- i) Removal of Unauthorised Encroachments from parking spaces
- ii) Stringent punishment for violation of land use
- iii) Increase in parking fees
- iv) Development of parking sites/Multi level parking
- v) Generating funds for financing parking infrastructure
- vi) Parking plan for Chandni Chowk and adjoining areas
- vii) Special study for improving parking in important congested areas
- viii) Development of a world class public transport system
- ix) Optimum space utilisation in cooperation with Residents' Welfare Associations
- x) Road Owning Agencies role.
- xi) Modification in Building Bye-Laws
- xii) Park and ride
- xiii) Parking facility in DTC Depots/Terminals
- xiv) Underground parking

MCD and NDMC have identified following new parking sites/multi level parking sites at busy commercial/public places to be developed with PPP approach.

## NDMC

- i. Baba Kharak Singh Marg
- ii. Hindustan Times Building, Kasturba Gandhi Marg
- iii. Sarojini Nagar

## MCD :

- i. Hemilton Road
- ii. Lajpat Nagar
- iii. Bahadur Shah Zafar Marg
- iv. Green Park
- v. Rajinder Nagar
- vi. Anupam PVR
- vii. Rajouri Garden
- viii. Sant Nagar, Ravi Bagh Market
- ix. Parade Ground
- x. Kamla Nagar
- xi. Ramlila Ground
- xii. South Extension Part I
- xiii. South Extension Part II
- xiv. Mehrauli
- xv. Greater Kailash
- xvi. Shashtri Park, Karol Bagh

Work of parking lots will start at following sites during 2008-09

## NDMC

1. Yashwant place market at Africa Avenue.
2. Bhai Veer Singh Marg
3. Baba Kharag Singh Marg

## MCD

1. Shastri Park, Karol Bagh
2. Greater Kailash Part I
3. NDSE Part I, II
4. Kamla Nagar (work awarded)
5. Parade Ground