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FUNCTIONAL PLAN

TRANSPORT SECTOR

NATIONAL CAPITAL REGION

NCR Planning Board
Ministry of Urban Affairs & Employment
IHC, Lodhi Road
New Delhi

AT A GLANCE

367

PERIMETER PLAN (1995-2004)

FOR DELHI

(Rs. Crore)

- Perimeter Expressway
- Elevated Expressway on Ring Road
- Feeder Transit System (H.S.T.S.)
- North-south underground corridor

COST - 7350

REGIONAL RAPID TRANSPORT SYSTEM

- Dedicated tracks upto DMA towns, doubling of northern portion of the ring rail, additional tracks along Ghaziabad - Meerut, Ghaziabad - Kurja and Delhi-Palwal tracks.

COST - 1830

FOR DMA/SATELLITE TOWNS & COUNTER MAGNETS

Studies

COST - 15

UPGRADATION OF NATIONAL HIGHWAYS

- Delhi-Panipat NH-1
- Delhi-Faridabad-Hodal NH-2
- Delhi-Gurgaon-Behror NH-8
- Delhi-Bahadurgarh-Rohtak NH-10
- Delhi-Ghaziabad-Hapur NH-24

COST - 540

EXPRESSWAYS

- Faridabad-NOIDA-Ghaziabad
- Ghaziabad-Meerut
- Panipat-Kundli-Ghaziabad

COST - 3450

GRIDS

- Inner
- Outer

COST - 630

DEVELOPMENT FUND

100

TOTAL COST : 13,990

TOTAL PLAN (1995-2011)

FOR DELHI

(Rs. Crore)

1. Elevated Expressway on Ring Road
2. Feeder Transit System (HSTS)
3. Perimeter Multimode Transport Corridor (Rail & Road)
4. North-south underground corridor

COST - 9760

REGIONAL RAPID TRANSPORT SYSTEM

1. Ring Rail
2. Five Radial Rail corridors to Panipat, Meerut/Khurja, Palwal, Rohtak & Rewari

COST - 3920

FOR DMA/SATELLITE TOWNS & COUNTER MAGNETS

HSTS (Tramways)

COST - 4550

UPGRADATION OF NATIONAL HIGHWAYS

1. Delhi-Panipat NH-1
2. Delhi-Faridabad-Hodal NH-2
3. Delhi-Gurgaon-Behror NH-8
4. Delhi-Bahadurgarh-Rohtak NH-10
5. Delhi-Ghaziabad-Hapur NH-24

COST - 540

EXPRESSWAYS

1. Faridabad-NOIDA-Ghaziabad
2. Ghaziabad-Meerut
3. Panipat-Kundli-Ghaziabad
4. Loni-Noida-Surajpur-Bulandshahr-Khurja

COST - 5700

GRIDS

1. Inner
2. Outer

COST - 1790

DEVELOPMENT FUND

100

TOTAL COST : 26,350

NATIONAL CAPITAL REGION PLANNING BOARD

FUNCTIONAL PLAN FOR TRANSPORT SECTOR IN NCR

1.0 INTRODUCTION:

The section 16 of the National Capital Region Planning Board Act 1985 provides for preparation of functional plans by the Board, with the assistance of the Planning Committee, for the proper guidance of the participating States and the Union Territory after the Regional Plan has come into operation. Section 2 (d) of the National Capital Region Planning Board Act defines 'Functional Plan' as a plan prepared to elaborate one or more elements of the 'Regional Plan'. Functional plan for the Transport Sector is one of such plans. As in the case of the Regional Plan, which is a statutory document, the Functional Plan for the transport sector is also statutory and therefore, the policies and programmes contained in the document, after due process of approval by National Capital Region Planning Board and notification thereafter, would be binding on all concerned.

2.0 NEED:

In the context of the developments proposed in the Regional plan, there is going to be intense traffic movement between NCR towns and Delhi and also among each other. This shall also be supported from the fact of enhanced role envisaged for these towns. As such, total transportation system of region must be viewed as a single multi-mode system and strategies for transportation planning should be evolved treating the region as a single zone for planning. Further, the existing transport infrastructure should be optimized for maximum output in terms of capacity and efficiency of traffic operations and for better transport environment.

The functional plan for transport sector stems from the following considerations :

- a) The Regional Plan-2001 is a policy document, wherein certain broad policies and strategies for the transport sector have been mentioned but not sufficiently elaborated ;
- b) Problems faced by implementing agencies in projectizing these strategies in the absence of such detailed elaboration ;
- c) Need for proper institutional, regulatory and fiscal framework support for the transport sector plan ; and
- d) Need to integrate various mass transport systems being planned for Delhi.

OBJECTIVES :

To plan a transport system by treating the region as a single zone for planning purposes especially with a view to :

- a) Provide a transport planning framework that is robust and clear and responsive to the inevitable and changing circumstances.
- b) Provide direction and priority for specific transport projects identified in the plan.
- c) Identify the implementing agencies and fixing the responsibility for the development of transport projects.
- d) Provide a broad financial strategy for financing the transport projects

THE REGION:

The National Capital Region (NCR) extends over an area of 30,242 sq.km., comprising Delhi and parts of the three adjoining States namely, Haryana, Rajasthan and Uttar Pradesh as under:

- a) National Capital Territory of Delhi (1,483 sq.km.)
- b) Haryana Sub Region (13,413 sq.km.) comprising Faridabad, Gurgaon, Rohtak and Sonapat Districts; Rewari and Bawal Tehsils of Mahendragarh District and Panipat Tehsil of Karnal District, constituting 30.33% of the area of the State.
- c) Rajasthan Sub-region (4,493 sq.km.) comprising six tehsils of Alwar district, namely, Alwar, Ramgarh, Behror, Mandawar, Kishangarh and Tijara constituting 1.31% of the total area of the State.
- d) Uttar Pradesh Sub-region (10,853 sq.km.) comprising three districts, namely, Meerut, Ghaziabad and Bulandshahr, constituting 3.68% of the area of Uttar Pradesh.

THE REGIONAL PLAN - 2001:

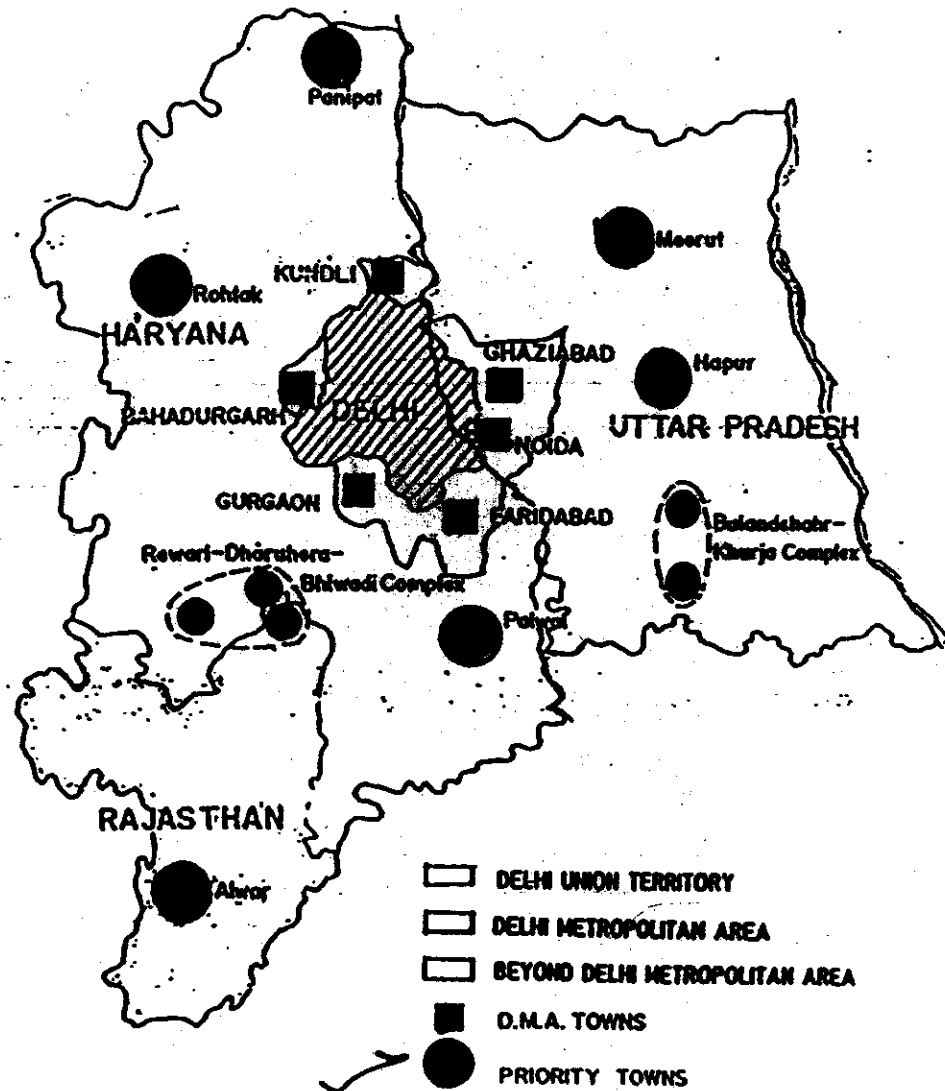
OBJECTIVE:

The main objective of the Regional Plan - 2001 is to evolve harmonised policies for control of land use and development of infrastructure in the region so as to avoid any haphazard development of the region and contain the growth of Delhi by deflecting 2 million population to the region.

6.2 POLICY ZONES

Three distinct zones have been identified viz., Delhi, Delhi Metropolitan Area (DMA) and rest of the region stipulating a restricted growth of Delhi, moderate growth of DMA towns and induced growth of the priority towns and complexes in the rest of the region

DELHI METROPOLITAN PRIORITY TOWNS AND POLICY ZONES

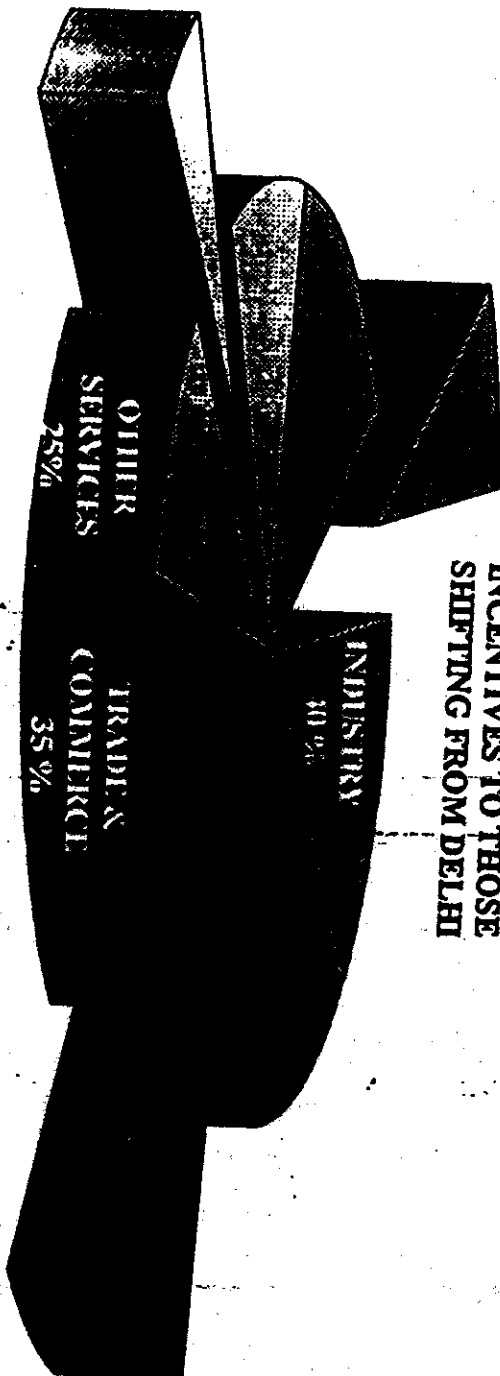


REGIONAL PLAN FOCUS
SHIFT ECONOMIC ACTIVITIES AND JOBS OUTSIDE DELHI

JOBS TO BE SHIFTED - SIX LAKHS

**NO LARGE & MEDIUM
INDUSTRIES IN DELHI**

**INCENTIVES TO THOSE
SHIFTING FROM DELHI**



**ONLY OFFICES HAVING PROTOCOL
LIAISON AND MINISTERIAL FUN-
CTIONS REMAIN IN DELHI. OTHERS
GIVEN INCENTIVES TO MOVE OUT**

**DECENTRALISATION AND
DISPERSAL THROUGHOUT
THE REGION**

6.1 TRANSPORT PLAN:

Regional Plan-2001 has identified transport as one of the key sectors of development in the regional context. The transport sector envisages an organized transport network in conformity with the major objectives of organizing vertical and horizontal links both across and between the settlements identified for priority development to reduce the pressure of population and economic growth on the metropolis.

6.2 EXISTING TRANSPORT CHARACTERISTICS:

Transport Network:

The existing primary road transport network in National Capital Region exhibits a pattern of "radial corridor" development. There are at present five national highways and twelve state highways in the region forming the backbone for the traffic movement in the region. In addition, there are seven orbital corridors which provide the linkages among important urban centres of the region.

The rail network in the region comprises both Broad Gauge (BG) and Metre Gauge (MG) lines covering three zonal railways and five divisions.

Traffic & Transport characteristics - Road and Rail:

- ◆ The generation of total daily passenger movement by all modes in the Region was 0.88 million trips in 1987. This figure was estimated as 2.35 million trips in 1994. These trips are projected to increase to 3.07 million and 4.25 million by 2001 and 2011 respectively.
- ◆ The component of public transport (Bus & Rail) out of the total trips was estimated as 62% in 1994. This is projected to rise to 65% in 2001 and 70% in 2011.
- ◆ The component of the freight traffic out of the total traffic was estimated as 5% during 1994, and is expected to rise to 10% during 2001 and 12% during 2011.

ROAD NETWORK

The existing road network in the region is radial in nature. There are nine major corridors which form the backbone for the traffic movement in the region. In addition there are seven orbital corridors which provide the linkage between the urban centres. Delhi has been the nucleus with major corridors converging into it.

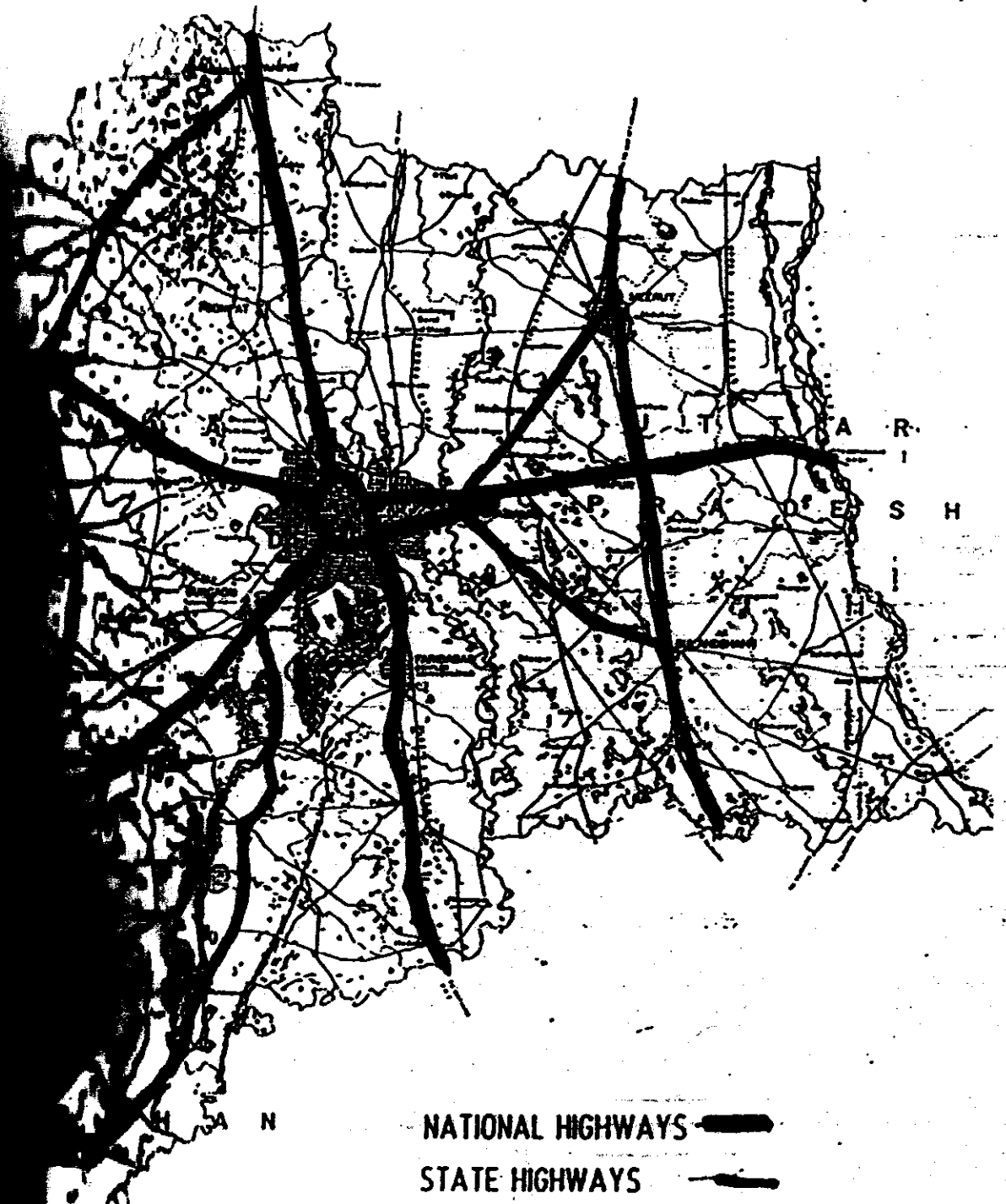
These roads are :

1. Delhi - Ghaziabad - Hapur - Garhmukteswar (NH 24)
2. Delhi - Faridabad - Palwal - Hodal (NH 2)
3. Delhi - Gurgaon - Behror (NH 8)
4. Delhi - Bahadurgarh - Rohtak - Meham (NH 10)
5. Delhi - Sonapat - Panipat (NH 1)
6. Delhi - Ghaziabad - Meerut (SH 45)
7. Delhi - Ghaziabad - Bulandshahr - Khurja (SH-22)
8. Delhi - Gurgaon - Sohna - Alwar (SH 20)
9. Delhi - Loni - Baghpat - Baraut (SH 57)

The seven orbital links are :

1. Panipat - Gohana - Rohtak (SH 16)
2. Rohtak - Jhajjar - Rewari (SH 15)
3. Rewari - Sohna - Palwal (SH 12 - 18 - 28)
4. Palwal - Khurja
5. Bulandshahr - Hapur - Meerut (SH 18)
6. Meerut - Baghpat
7. Baraut - Panipat

EXISTING TRANSPORT NETWORK (ROAD)



NATIONAL CAPITAL REGION

Table : Traffic levels on the sections of the Regional roads

S.No.	Name of the Section	Traffic Level (PCUs/Day)			Optimum Traffic level (2 lane) (PCUs/Day)
		1991	2001	2011	
1.	Panipat - Gohana	12479	23788	43415	15000
2.	Meerut - Baghpat	9323	19429	31984	15000
3.	Khurja - Bulandshahr	14450	33171	53279	15000
4.	Hapur - Meerut	9083	18533	27906	15000
5.	Rohtak - Jhajjar	11915	21521	38719	15000
6.	Sonepat - Kharkhoda	12115	21258	22705	15000
7.	Bulandshahr - Hapur	10435	18337	31993	15000
8.	Gohana - Rohtak	9365	17785	32632	15000
9.	Rewari - Sohna	8848	18129	31207	15000
10.	Jewar - Khurja	7186	8568	13215	15000
11.	Kharkhoda - Rohtak	6534	11735	19869	15000
12.	Baghpat - Sonepat	4675	8186	15938	15000
13.	Jhajjar - Rewari	6087	11463	21199	15000
14.	Sohna - Palwal	5568	11348	20787	15000
15.	Palwal - Jewar	2443	3861	6839	15000
16.	Jhajjar - Farruknagar	3626	8002	12824	15000
17.	Gurgaon - Faridabad	3626	6124		15000
18.	Farruknagar - Gurgaon	3626	5829		15000

Source : DPR on Regional Roads

6.2 RAIL NETWORK :

The rail network in the region consists of the following radial lines converging in Delhi:

1. Delhi Area (Broadgauge)
2. Delhi - Shakur Basti - Rohtak (70 km-Broadgauge Double line unelectrified)
3. Delhi - Shahdara - Shamli (94 km - Broadgauge Single line unelectrified)
4. Delhi - Ghaziabad - Meerut (68 km- Broadgauge Double/Single line unelectrified)
5. Delhi - Ghaziabad - Hapur (57 km-Broadgauge Single line electrified)
6. Delhi - Ghaziabad - Khurja (Broadgauge Double line electrified)
7. Delhi - Tuglakabad - Palwal (61 km - Broadgauge Tripple line electrified)
8. Delhi - Sonepat - Panipat (89 km - Broadgauge Double line electrified)
9. Delhi - Gurgaon - Rewari - Alwar (83 km - Broadgauge/Metergauge Single line unelectrified)

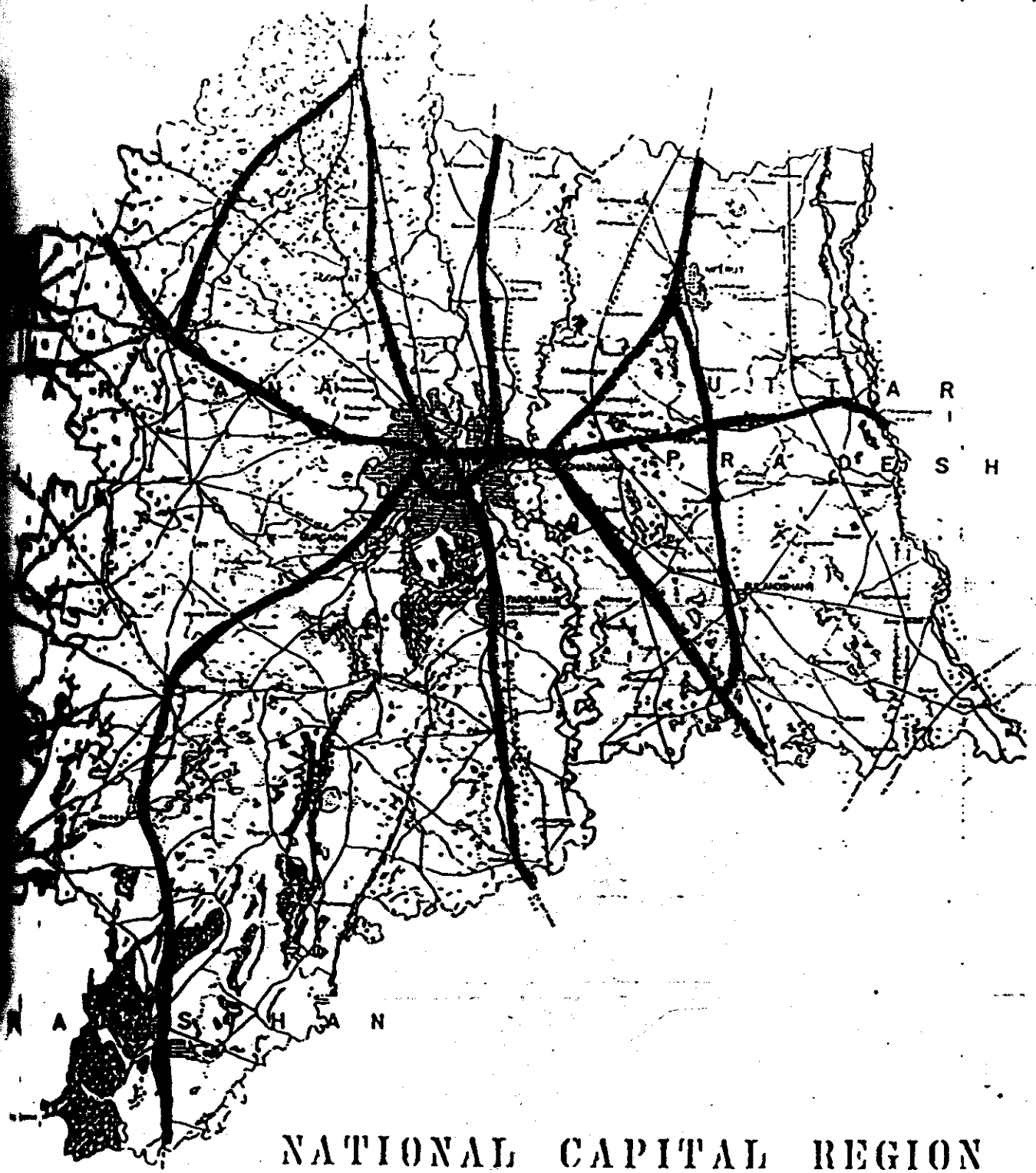
The following feeder routes converge in Delhi Area:

- | | | |
|----|--------------------------|-----------------------|
| 1. | Mughal Sarai-Delhi | at Ghaziabad |
| 2. | Moradabad-Delhi | at Ghaziabad |
| 3. | Saharanpur-Delhi | at Ghaziabad |
| 4. | Saharanpur-Shamli-Delhi | at Delhi Shahdara |
| 5. | Ambala Cantt-Delhi (DUK) | at Delhi/New Delhi |
| 6. | Bathinda-Delhi (SPR) | at Delhi/New Delhi |
| 7. | Mathura-Delhi (C.Rly) | at Tuglakabad |
| 8. | Rewari-Delhi (BG Line) | at Delhi Cantt. |
| 9. | Rewari-Delhi (MG Line) | at Delhi Queen's Road |

1. DELHI AREA - Sub Sections:

S.No.	SUB-SECTIONS	EXISTING STATUS
1.	Delhi-Delhi-Shahdara	Double Line
2.	Delhi-Shahdara-Sahibabad	Double Line
3.	Sahibabad-Ghaziabad	Quadruple Line
4.	Sahibabad-Tilak Bridge (26 km)	Double Line (GAL)
5.	New Delhi-Tilak Bridge (2.8 km)	(Main line and GAL) (Quadruple Line)
6.	Tilak Bridge-Nizamuddin (3.55 km)	(GAL) Double Line
7.	Nizamuddin-Okhla (3.66 km)	(GAL) Double Line
8.	Okhla-Tughlakabad (6.85 km)	(GAL) Double Line
9.	Nizamuddin-Lajpat Nagar (2 km)	(DAL) Double Line
10.	Okhla-Lajpat Nagar (3 km)	(DAL) Double Line
11.	Lajpat Nagar-Patel Nagar (17.39 km)	(DAL) Double Line
12.	Patel Nagar-Rampur Cabin (2.51 km)	(DAL) Double Line
13.	Rampura Cabin- Naya Azadpur (3.2 km)	Single Line
14.	Rampura Cabin-Shakurbasti	Double Line
15.	Delhi-Kishanganj-Dayabasti	Double Line
16.	Subzimandi-Naya Azadpur	Double Line
17.	Tilak Bridge-Nizamuddin	(Main Line) Double
18.	Nizamuddin-Tughlakabad	(Main Line) Double
19.	Delhi-New Delhi	Double Line
20.	Delhi-Subzimandi	Double Line
21.	New Delhi-Subzimandi	Double Line
22.	New Delhi-Kishanganj	Tripple Line
23.	Delhi-Delhi-Kishanganj	Double Line

EXISTING TRANSPORT NETWORK (RAIL)



NATIONAL CAPITAL REGION

Running Multi-urban Passenger services :

The following passenger services are running in Delhi area :

- (i) EMU services
- (ii) Suburban shuttle trains
- (iii) Long distance passenger trains

The EMU services are running on the following corridors :

- (i) Delhi/New Delhi - Ghaziabad;
- (ii) Delhi/New Delhi - Palwal;
- (iii) Delhi/New Delhi - Shakurbasti; and
- (iv) On ring railway between Nizamuddin-New Delhi - Patel Nagar/Shakurbasti-Safdarjung-Nizamuddin in clock-wise and anti-clockwise directions.

The sub-urban shuttle trains are running on the following corridors :

- (i) Delhi/New Delhi - Palwal/Mathura
- (ii) Delhi/New Delhi - Rohtak/Bhiwani
- (iii) Delhi/New Delhi - Panipat/Kurukshetra
- (iv) Delhi/Delhi Shahdra - Shamli/Saharanpur
- (v) Delhi/New Delhi - Meerut Cantt
- (vi) Delhi/New Delhi - Hapur
- (vii) Delhi - New Delhi - Aligarh

Table : Current status of passenger carrying trains on each radial (1994)

Name of the radial	Sub urban	EMU	Total
1. Ghaziabd - Aligarh	4	-	4
2. Delhi - Palwal	2	11	13
3. Delhi - Panipat	5	-	5
4. Delhi - Rohtak	8	-	8
5. Ghaziabad - Meerut	1	-	1
6. Ghaziabad - Hapur	1	-	1
7. Delhi - Rewari (BG)	1	-	1
8. Delhi - Ghaziabad	2	15	17
9. Ring railway	1	5	6
Total eachway	25	31	56
Total bothways	50	62	112

Table : Projection of Freight and Passenger trains to be handled in Delhi area -Daily

N.No	Design Year	Projected Freight Trains	Projected Long Distance Passenger Trains
1.	1992-93 (base year)	29.1	354
2.	2000-01	37.4	392
3.	2010-11	48.8	460
4.	2020-21	57.9	520
5.	2030-31	66.0	564

Source: Northern Railways Study.

7.0. DEVELOPMENT PROPOSALS - ROAD

i) Upgradation (4-laning) of the following National Highways

- National Highway No.1	- Delhi to Panipat;
- National Highway No.24	- Delhi to Hapur;
- National Highway No.2	- Delhi to Palwal;
- National Highway No.8	- Delhi to Behror and
- National Highway No.10	- Delhi to Rohtak and Hansi.

ii) Construction of the following expressways

a) Faridabad - Noida - Ghaziabad expressway

A detailed feasibility study was conducted with the technical assistance of Asian Development Bank. The salient features of the study are:

Length	: 56 Km.
Construction Cost	: Rs. 623 Cr.
Land Acquisition Cost:	Rs. 129 Cr.
Total Cost	: Rs. 751 Cr.
EIRR (Include. Time benefits)	36.26 %

b) Ghaziabad-Meerut (with a spur to Delhi) expressway (60 Km)

c) Delhi - Panipat Expressway (parallel to NH 1).

At the border of Delhi, it is proposed to branch off into two segments, one will connect to the orbital expressway in Delhi at Kundli/Narela with a spur to outer ring road and the other will take off to Ghaziabad (on a new alignment) to meet F-N-G and Ghaziabad - Meerut expressways. (120 km approx.)

In addition to the above expressways, we suggest following expressway on new alignment beyond 2001:

**i) Delhi - Loni - Noida - Surajpur - Bulandshahr - Khurja (To Aligarh)
(150 Km)**

We suggest that since expressways are interconnecting the National Highways and diverting their through traffic from converging to Delhi, the Ministry of Surface Transport should consider declaring them as National Expressways and take up the responsibility of developing them. If necessary amendments of the existing law may be made.

Also the Ministry of Surface Transport may provide requisite funds in their budget for contributing to atleast 12.5% of their cost to match the contribution of the concerned States. This would go to pay for the cost of the land acquisition. The rest of the funds could come from private sector.

iii) Widening (4 laning) of Grid Roads

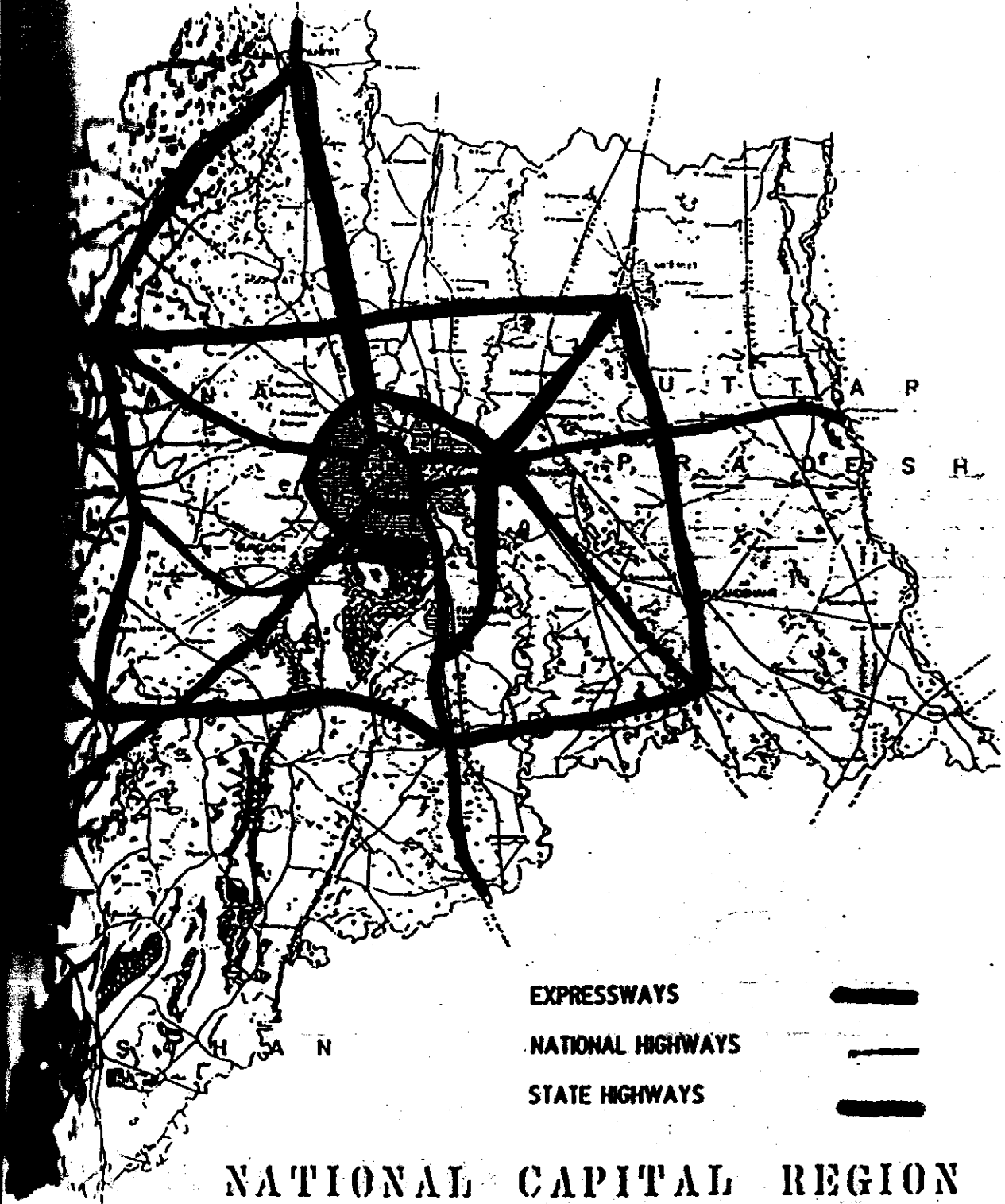
a) Inner Grid:

- i) On new alignments to connect Murthal to Baghpat, and**
- ii) Strengthening and widening of existing alignments on Rohtak-Sonepat-Murthal, Baghpat-Meerut and Jhajjar-Gurgaon-Faridabad stretches.**

b) Outer Grid:

- i) Strengthening and widening of existing alignment on Palwal-ohana-Rewari - Jhajjar, Rohtak - Gohana - Panipat, Meerut - Hapur - Bulandshahr - Khurja - Palwal, Khurja - NCR boundary (south), Meerut-NCR boundary (north) and Bhivadi-Tijara-Kishanganah-Alwar stretches.**

PROPOSED TRANSPORT NETWORK



NATIONAL CAPITAL REGION

iv) Perimeter Expressway

There is a need to develop an orbital road corridor of expressway standard circumscribing Delhi (85 km) to siphon off the inter-city (regional) traffic. Though the Govt. of Delhi is contemplating such a proposal, the location and also to connect the Directional Terminals needs to be examined in detail keeping in view the overall perspective of the Regional plan objectives and also to link it with a Perimeter Rail Corridor.

v) Elevated Expressway on the Existing Ring Road in Delhi

The present plan of MOST for an elevated HSTS on the Ring Road will be inadequate to cope up with the projected demand, so an Expressway is proposed.

DEVELOPMENT PROPOSALS -RAIL

REGIONAL RAPID TRANSIT SYSTEM (RRTS)

There are about 4 lakh commuters come into Delhi every day from NCR. This will increase to 7.5 lakh by 2001. This figure will be even higher with the implementation of NCR plan, which aims at deflecting 2 million population out of Delhi. Out of the total number of commuters-about 40% come by rail. The commuters from NCR use 5 main rail corridors viz. Palwal, Rewari, Rohtak, Panipat and Ghazibad/Meerut/Khurja. Railways are running only token services on these lines. In the absence of any integration with the ring rail system, the commuters are literally on the roads straining road transport system of Delhi.

We feel that a larger and broader complementary system, which would connect the central portions of Delhi with the NCR towns can provide relief to the over crowded core of Delhi and help in the dispersal of various activities to the NCR Towns. The strategy is based on the utilization of the following elements :

i) Ring Rail

ii) Underground Rail line from Viswa Vidyalaya to Central Secretariat

iii) Radials (Rail) from Delhi to Regional towns

iv) High Speed Tramway System (HSTS) in Delhi to feed the above ring and radials.

iv) High Speed Tramway System in the Regional towns

v) Directional Terminals

vi) Perimeter Rail Corridor

In order to satisfy the future commuter traffic requirements the following are required to be done :

- a) Construction of two additional (dedicated) lines along the existing ring rail (34 km).
- b) Construction of two additional (dedicated) electrified lines along the radials upto priority towns

Electrification :

1. Delhi - Rewari- Alwar (120 Km)
2. Delhi - Rohtak (59 km)
3. Ghaziabad - Meerut (47 Km)
4. Ghaziabad - Hapur (37 Km)
- Total 263 Km

Additional Lines :

	Projected Trips (2011)	
	Total	Assigned (Rail)
1. Delhi -Ghaziabad (20 Km)	4,60,000	3,22,000
2. Ghaziabad - Khurja (83 km)	400,000	2,80,000
3. Delhi - Palwal (61 Km)	300,000	2,10,000
4. Delhi - Panipat (89 Km)	300,000	2,10,000
5. Delhi - Rohtak (70 Km)	300,000	2,10,000
6. Ghaziabad - Meerut (47 km)	200,000	1,40,000
7. Ghaziabad - Hapur (37 Km)	140,000	9,80,000
8. Delhi - Rewari-Alwar (120 Km)	300,000	2,10,000
Total	527 Km	

- c) Provision of appropriate HSTS in Delhi to act as a feeder system to the ring and radial rail transport system
- d) Construction of Under Ground Rail Corridor from Viswavidyalaya to Central Secretariat via ISBT
- e) Provision of HSTS network in regional towns to satisfy intra - urban transport needs.
- f) Construction of Rail Directional Terminals in Delhi

Presently, the long distance passengers are being served at New Delhi, Old Delhi, Hazrat Nizamuddin and Sarai Rohilla Railway Stations and ISBT's at Kashmiri Gate and Sarai Kale Khan. In order to accommodate the future traffic the Delhi

Master Plan suggested four Rail Directional Terminals in Delhi. They are located at four directional locations in Delhi viz. Anand Vihar, Tuglakabad, Bhartal and Holambikalan. Out of these Anand Vihar is being developed as a passenger terminal to cater to the long distance passengers from the East as well as for the trans Yamuna population in Delhi. Land for this terminal has already been acquired. The proposal to develop the rest of the terminals is being considered by the Ministry of Railways.

g) Perimeter Rail Corridor :

In order to segregate Inter city and Intra-city rail passenger/freight traffic, it is proposed to have an orbital rail corridor (approx. 150 Km) circumscribing Delhi inter-connecting Directional rail terminals and Integrated Freight Complexes envisaged in the Delhi Master Plan. As per the traffic assignments done by us, the demand on this corridor is 130,000 passenger trips/day.

To accommodate both the road and rail corridors, it is suggested to have 300 Metre Right of Way.







Immediate requirements

- a) Dual Track along Northern portion of the ring rail from Dayabasti to Nizamuddin via New Delhi.
- b) Dedicated rail tracks from Delhi to DMA towns (Ghaziabad, NOIDA, Faridabad, Bahadurgarh, Gurgaon and Sonapat).
- c) Additional rail tracks along Ghaziabad-Meerut, Ghaziabad-Khurja & Delhi-Patwal line.
- d) North-south underground corridor in Delhi.
- e) Feeder Transit System in Delhi (HSTS).

The entire rail component, including underground railway, of the RRTS will be under the control of Ministry of Railways.

REGIONAL RAPID TRANSPORT SYSTEM



-  DEDICATED RAIL LINES
-  UNDERGROUND RAIL
-  ELEVATED EXPRESSWAY
-  PERIMETER RAIL
-  DIRECTIONAL TERMINALS
-  PERIMETER ROAD

OPERATIONAL POLICIES :

In order to have uniform transport operations in the region, we suggest a uniform transport policy and rational fare structure immediately followed by a single transport fare for inter state transport and intermediate public transport vehicle operations respectively.

At present in the region, the bus services are provided by Delhi transport Corporation (DTC), Haryana Roadways, Uttar Pradesh State Road Transport Corporation and Rajasthan State Road Transport Corporation under a bilateral agreement. For uniformity of services in the region, the entire region should be a single zone for planning, routing and scheduling of services for avoiding duplication of services and competition among them. For this purpose all State Road Transport Undertakings can either enter into an agreement in lines of NOIDA with DTC or the number of services should be increased over the existing bilateral arrangements among Delhi, U.P, Haryana and Rajasthan.

As the supply of Bus services under Public Sector would not be able to meet the growing demand in the region, introduction of private bus services under fixed schedules on routes similar to private bus operation system under DTC should be identified and a regulatory framework may be evolved.

PROPOSAL FOR AIRPORTS:

In view of the growing air traffic within the region, we suggest the development of an International Airport at a suitable location within the region to act as an alternative to the existing International Airport in Delhi. In addition, it is also suggested to develop satellite air terminals within the region.

Mass Transport System within NCR Towns:

By the year 2001 the intra-city traffic within the major Regional Towns as well as the Magnet Towns would increase tremendously, which requires an integrated mass transport system within these towns. The following towns will be the candidates to have a city mass transport system beyond 2001.

- Meerut
- Faridabad
- Rohtak
- Noida
- Panipat
- Muzaffarnagar
- Kurukshetra - (Dharuhera - Bhiwadi)
- Gurgaon
- Alwar
- Delhi - (Okhla - Okhla)
- Delhi - (Okhla - Okhla)

Magnet Towns

usually

with

operator

NCR Planning Board suggests development of a High Speed Tramway System (HST) in the towns, where the population would be in the range of 5 to 8 lakh by 2011. Meerut, already there is a proposal to develop LRT system costing Rs. 1300 Cr.

INVESTMENT PLAN (1995 - 2010)

Total investment requirement for various transport sector proposals has been estimated as under:

DELHI

NATIONAL HIGHWAYS :	Length (Km)	Cost (Cr.)
a) 4-laning of Faridabad-Hodal section (NH-2)	70	140
b) 4-laning of Gurgaon-Behrur (NH-8)	102	204
c) 4-laning of Bahadurgarh-Rohtak-NCR Boundary (NH-10)	78	156
d) 4-laning of Ghaziabad - Hapur (NH-24)	20	40
e) 4-laning of Delhi- Panipat (NH-1)	Progressing under WorldBank	
	Total	540

EXPRESSWAYS:

	Length (Km)	Cost (Cr.)
a) Faridabad-NOIDA-Ghaziabad Expressway	56	750
b) Ghaziabad-Meerut Expressway	60	900
c) Panipat-Kundli-Ghaziabad Expressway	120	1800
d) Loni-Noida-Surajpur-Bulandshahr-Khurja Expressway	150	2250
	Total	5700

J. REGIONAL ROADS:

	Length (Km)	Cost (Cr.)
a) Inner Grid Road (4 lane)	189	590
b) Outer Grid Road (4 lane)	391	1200
	Total	1790

**PERIMETER MULTI MODE TRANSPORT CORRIDOR
(Perimeter Road & Rail)**

a) Land Acquisition of 300 Mt. wide corridor	800
b) Perimeter Expressway road	1000
c) Perimeter Rail	1000
d) Directional Terminals	600
Sub Total	3400

S. REGIONAL RAPID TRANSIT SYSTEM

a) Dedicated dual tracks upto NCR Towns and along the ring rail	3920
b) North-south underground corridor between Vishwavidyalaya-Central Secretariat	2200
c) Elevated Expressway over ring road	750
d) Feeder Transit System (HSTS)	3400
TOTAL	10270

6. URBAN TRANSPORT SYSTEMS

1. High Speed Tramway System in NCR towns (350 Cr. per town)	4550
GRAND TOTAL	26250

FIRST PHASE (1995-2004)

1. National Highways	540
2. Expressways	3450
3. Inner & Outer Grid (2 lanes)	630
4. Perimeter Multi Mode Transport Corridor (Feasibility, land acquisition and 2 lane Expressway)	1000
5. RRTS	
a) Dedicated tracks upto DMA Towns	960
b) Dual Track along Northern ring	370
c) Additional Tracks along Ghaziabad-Meerut, Ghaziabad-Khurja & Delhi-Palwal tracks	500
d) North-south underground corridor	2200
e) Elevated Expressway over ring road	750
f) Feeder Transit System	3400
6. Project Development	100
TOTAL	13900

FINANCING STRATEGIES

The projects listed for being taken up in the first phase of the Investment Plan are in fact required to be implemented under the aegis of either the Central Ministries (i.e. M.O.S.T., Railways, etc.) or the State Government or both. However in view of the new development strategy, it is proposed to intimately involve the private sector for the financing the Regional Transport Projects, which are likely to cost around 13,900 crores. Accordingly these projects are being divided into two categories:

(A) Developmental Projects

These projects are absolutely essential for the basic development of transport activities in the NCR but may not be commercially viable. As such, in view of their necessity and importance they are required to be taken up through the Central and State budgetary sources. Of course, in certain cases where budgetary sources are not immediately available, for their immediate financing, help may be taken from the international financing agencies like World Bank, ADB, OECF, etc. and the repayment of these loans may be made in due course out of the future plans.

Other Projects:

It is felt that in implementation of all other projects, private sector can be beneficially involved. As such, various options of public and private participation for funding these projects have been considered and based on that the following modes have been suggested:

i) Rail Projects:

Vide general letter dated 22nd February, 1995 Railways have recommended to the State Governments to accept the pattern of investment as adopted by CIDCO in New Bombay. By this formula, total project cost would be shared as under:

- Railways - 1/3rds
- State Agencies - 2/3rds

Part of the cost of the State agencies could be loaned by NCRPB. State agencies would recover their investment through property development either locally or on overall basis.

ii) Road Projects:

Most of the Expressway projects and Feeder transit systems (tramways) are proposed to be taken up on BOT basis by involving private capital. There would broadly be two type of projects:

- a) which are commercially viable yielding an FIRR more than Bank rates and can be fully funded by the private sector.
- b) the projects which may be viable in the long run but the FIRR worked out for them is much below the bank rates and as such require some elements of subsidy. This subsidy can be either in the form of direct financial inputs from the sponsoring agency or in the form of land development rights being provided by the authorities to the operators whose profits can subsidise to improve the FIRR. A rational mix of the two systems could be worked depending on the bid offers received from BOT operators.

NATIONAL HIGHWAYS:

Regarding upgradation of National Highways, the Ministry of Surface Transport has taken the full responsibility of completing the 4-laning of all the National Highways traversing in NCR by the year 2001. The VIII Plan programme of Ministry of Surface Transport for upgradation of these National Highways from 2-lane to 4-lane envisages:

- **National Highway No.1 - Delhi to Panipat:**

(An on-going Seventh Plan Programme). Widening and upgradation of this stretch to be completed by 1994-95.

- **National Highway No.24 - Delhi to Hapur:**

Provision for land acquisition made in 1991-92 budget. Work to be taken up immediately and completed by 1996-97.

- **National Highway No.2 - Delhi to Palwal**

Widening of this stretch is in progress since 1990 (under the Asian Development Bank Assistance) and will be completed in 1995-96.

- **National Highway No.8 - Delhi to Behror:**

Work on the Delhi-Gurgaon section (which is the only stretch to be widened to 6-lane) will commence in 1995-96 and on the Gurgaon-Behror stretch in 1993-94. Both these projects will be completed by 1998-99 (IX Plan).

- **National Highway No.10 - Delhi to Rohtak and Hansi:**

Work on the stretch extending from Bahadurgarh to Rohtak is to commence in 1993-94 and be completed by 1998-99 (IX Plan) while the stretch beyond Rohtak upto NCR boundary at Hansi is proposed to be both taken up and completed during the IX Plan.

The total cost of Rs.540 crores, for the upgradation these National Highway projects is proposed to be met out of the central budget of the Ministry of Surface Transport since these are essential developmental projects.

EXPRESSWAYS:

Regarding Expressways since they have not been declared as National Expressways, the MOST has declined to take up these. However, we are of the view that, the expressways in NCR should be declared as National Expressways immediately. These expressways can be taken up on Build, Operate and Transfer (BOT) basis.

The feasibility study for one of the Expressways (F.N.G. Expressway) has shown that though ultimately the Expressway starts to pay for itself but initially some inputs in the form of equity are required from the Govt. side. In this case it has been suggested by the consultant that of the total estimated cost of Rs.751 Crores, an amount of Rs.200 Crores, covering land acquisition cost of Rs.130 Cr. and upfront contribution Rs.70 Cr., be provided as an equity. This contribution is expected to improve the project FIRR from about 8% to 16%. Another method of improving the FIRR by offering land development rights for some area in the vicinity of this Expressway is also being considered so that financial burden on the Government can be minimised.

However, for the other proposed expressways, an amount of Rs. 700 Crores have been assigned for investment by the sponsoring authorities as under:

M.O.S.T / N.H.A.I	: Rs. 350 Crs.
N.C.R.P.B & States	: Rs. 350 Crs.

(as per the approved NCR financing pattern)

REGIONAL GRID ROADS:

The investment plan for the 8th five year plan prepared by NCRPB has stipulated that the development of regional roads (outer grid and inner grid) would be the responsibility of the NCR participating State Governments namely, Govt. of Haryana and Govt. of Uttar Pradesh. The NCR Planning Board keeping in view the meager resources available with these Governments has requested the MOST to finance these roads through World Bank assistance. Further, the NCR Planning Board is willing to finance the cost of the land acquisition for these roads as per the following pattern:

Share of NCR Planning Board	75%
Share of Concerned State Government	25%

PERIMETER MULTI MODE TRANSPORT CORRIDOR AND DIRECTIONAL TERMINALS.

The 300 Mts. wide perimeter corridor encircling Delhi provides for PERIMETER EXPRESSWAY, PERIMETER RAILWAY AND THE DIRECTIONAL TERMINALS. In the I phase it is proposed to acquire the land for the entire 300 metre wide corridor along with the directional terminals at an expected cost of around Rs.800 Crs. and to construct a 2-lane expressway.

The cost of land acquisition (approx. Rs. 800 Cr) would have to be borne by the G.N.C.T. Delhi whereas the construction of the expressway in the I phase, its expansion in the II phase, and ultimately construction of the perimeter rail and development of directional terminals are proposed to be taken up through the private sector on BOT/BOLT basis. However, this would involve a policy decision to allow the Private BOT/BOLT

to develop commercial centres above/within the Direction terminals, whose help can help recover the investments required to be made by them.

REGIONAL RAPID TRANSIT SYSTEM:

MRTS has a number of components which are to be executed by different agencies. The financing pattern of these projects falls in different financing pattern according to its requirements as follows.

Laying of dedicated tracks upto DMA towns, dual tracks along the Northern Ring Road and additional tracks along Ghaziabad-Meerut, Ghaziabad-Khurja and Delhi-Patwal tracks, are the projects that are essential required to be executed by the Railways and are proposed to be taken up on sharing basis (CIDCO Pattern). Accordingly, the Railways would share one-third of the cost (Rs.610 crores) and the rest of the two-third of the cost (Rs.1220 crores) would be shared by the participating States, while the NCR provide loan assistance for the same to them. The State can recover the same through overall property development.

The North-South Underground Metro Corridor is also proposed to be taken up by the Railways on 'sharing basis'. The railways would bear 1/3 cost of the project while 2/3 cost be borne by the N.C.T., for which a loan assistance can be provided by the NCRPB as per financing pattern of 22% State share and 78% NCRPB share. A major part of the cost is proposed to be recovered through property development.

The anticipated traffic volumes on the ring road are 1,73,000 PCU's per day during 2001 and 3,35,000 PCU's during 2011. As such this transport link will get choked. For meeting the requirements of 2011 traffic, 4 to 6 additional lanes are required. Since no land is physically available for this major expansion, it is proposed that a 6-lane elevated expressway be constructed on the top of inner ring road. The FIRR in this case is expected to be much higher than the bank rate and, therefore, the elevated expressway can profitably be taken up on BOT basis.

The Feeder Transit System (H.S.T.S.) can be directly taken up on BOT basis by the Private Sector, on the basis on which offers have been invited by Ministry of Surface Transport.

ROADWAY SYSTEM IN NCR TOWNS

It should be taken up on BOT mostly in the private sector.

PLANE PROPOSALS ARE SUMMARIZED BELOW:

Project	Mode of Financing	Sources/Extent of Funds (Rs.Cr.)					Remarks	
		Central Budget MOST RAILWAYS	State Bud- get	NCT Bud- get	NCRPB Funds	Private Sector		Total
Regional Highways	C.B.F.	540					540	
Express Ways	B.O.T.	350	88		262	2750	3450	Recovery through toll & property development.
Regional roads	S.B.F.		630				630	Loans to be taken by state Govts. from WorldBank /NCRPB and to be refunded subsequently out of State plan funds.
100 kilometer wide mode transport corridor including directional terminals	B.O.T.		800			200	1000	Initial work for rail corridor may also be taken up on B.O.L.T. basis.

Item	Mode of Financing	Sources/Extent of Funds (Rs.Cr.)						Remarks	
		Central Budget	State Budget	NCT Bud- get	NCRPB Funds	Private Sector	Total		
RA Towns	Sharing Basis	610	215	360	645		1830	Recovery through property development	
Tracks along ring	Sharing Basis	750		1450			2200	OECF loan is being arranged	
Trucks						750	750	Recovery through toll	
Transit System					3400		3400	Financing through property development.	
Development					100		100		
		890	1360	933	2610	1007	7100	13900	

Say Rs. 14000 Cr.

Central Budgetary Funds
 State Budgetary Funds
 Build, Operate, and Transfer
 Build, Own, Lease and Transfer

Represent cost of dual track on Northern ring already agreed to by NCT.

Accordingly the following amounts of funds would tentatively have to be arranged by different organizations upto 2004 so that these projects can be implemented.

Central Government	-	Rs. 890 Crores
M.O.S.T.	-	Rs. 1360 Crores
Railways	-	
State Governments	-	Rs. 933 Crores
NCT Delhi	-	Rs. 2610 Crores
NCRPB	-	Rs. 1007 Crores
Private Sector	-	Rs. 7100 Crores
	Total	Rs. 13900 Crores