Chapter 8

Impact of Traffic Flows on System Capacity: Section Loadings & Capacity Constraints

8.1 INTRODUCTION

As brought out in Chapter 3, during 2007-08 the total inter-regional traffic in the country carried by the six modes of transport viz. Railways, Highways (road transport), Coastal Shipping, Airways, Inland Waterways and Pipelines, amounted to 2555.35 million tonnes. Associated net tonne-kilometers (NTKMs) were 1409.08 billion. The share of the four major modes i.e. Railways, Highways (roads), Coastal Shipping and Airways, which attract the focus of the present study, was 2386.98 million tonnes i.e. 93.41% of the total traffic in terms of tonnes and 1300.25 billion NTKMs representing 92.28% of total.

Of the total 2386.98 million tonnes of traffic carried by the four modes, the share of Railways and Highways amounted to 768.72 million tonnes and 1558.87 million tonnes, representing 32.20% and 65.31% of total traffic, respectively. Both the modes together accounted for 97.51% of the total inter-regional traffic. The share of Coastal Shipping and Airways amounted to 2.48% and 0.01% of the total traffic carried by the four modes. Share of Railways, Highways, Coastal Shipping and Airways in total NTKMs (1300.25 billion) was 39.08%, 54.31%, 6.59% and 0.02%, respectively. In the wake of likely growth of national economy at 7 to 8% or more in coming years, there will be substantial increase in demand for transport of goods. Growth of freight traffic will impact all the modes in future. However, Railways and Highways will continue to be the premier modes of transport for carriage of major part of the increase in traffic.

Based on a comprehensive exercise, regional demand and supply has been assessed for future years up to the horizon year of the study i.e. 2025-26 in respect of 11 bulk commodities constituting around 53% of the total freight traffic carried by rail and road transport at present. Detailed process for estimation of likely future transport demand is given in Chapter 7.

The regional demand and supply vectors so developed provided the input for the distribution sub-model run for arriving at the optimized transport demand forecast for future years. For this purpose and for section loadings, separate rail and road networks have been prepared to reflect the status of networks in future years by incorporating developmental works likely to be completed by the horizon year 2025-26. In the case of Railways, the works pertaining to gauge conversion, new lines, doubling of lines and electrification likely to be completed in the years 2012-13, 2017-18, 2022-23 and 2025-26 have been incorporated in the networks pertaining to the respective years. The eastern and western dedicated freight corridors are assumed to be in place by 2017-18. In the case of Highways, however, developments in sight have been incorporated in the networks up to 2017-18 and the same network as in 2017-18 has been adopted for the years beyond.

For assessing the likely transport demand for 'other commodities' constituting 47% of the total traffic, the existing ratio of their share in total traffic in the base year has been adopted for estimating the total future demand in different years. Based on the assessment presented in

Chapter 7, the inter-regional transport demand projections in respect of the eleven identified commodities as well as for total 52 commodities are as given in Table 8.1.

TABLE 8.1: PROJECTED FREIGHT TRAFFIC: 2012-13 to 2025-26

PROJECTED TRAFFIC (IN TERMS OF MILLION TONNES AND BILLION NTKMS)											
SN		2007-08		2012-13		2017-18		2022-23		2025-26	
	COMMODITY	Tonnes	NTKM	Tonnes	NTKM	Tonnes	NTKM	Tonnes	NTKM	Tonnes	NTKM
1	RICE	70	44	71	46	72	48	74	50	76	52
2	WHEAT	42	30	43	31	45	34	47	37	49	40
3	PULSES	34	21	34	23	35	24	35	25	35	26
4	IRON ORE	145	60	192	87	251	125	319	169	369	172
5	COAL	400	224	626	420	966	725	1,471	1148	1,899	1503
6	POL	163	58	192	97	214	126	246	169	267	200
7	LIMESTONE & DOLOMITE	20	12	61	29	126	55	214	91	280	118
8	SALT	11	10	13	12	14	13	16	15	17	15
9	CEMENT	155	71	230	115	355	188	524	287	653	362
10	FERTILISERS	55	37	71	44	81	52	92	59	98	63
11	IRON & STEEL	134	82	160	126	196	188	236	259	264	309
TOTAL 11 COMMODITIES		**1,228**	**650**	**1,691**	**1029**	**2,356**	**1579**	**3,274**	**2309**	**4,006**	**2859**
Escalation Factor		**0.53**	**0.53**								
TOTAL 52 COMMODITIES		**2328**	**1,214**	**3,204**	**1,924**	**4,464**	**2,952**	**6,203**	**4,316**	**7,592**	**5,345**
% of Growth				**6.60**	**9.64**	**6.86**	**8.94**	**6.80**	**7.89**	**6.96**	**7.39**

Based on the consideration of Break-Even Distances for optimization of flows in respect of the above eleven commodities, rail and road shares in total projected volume of traffic of these 11 commodities, emerge as in Table 8.2.

TABLE 8.2: ESTIMATED RAIL AND ROAD SHARES IN OPTIMIZED FLOWS (11 COMMODITIES)

Mode	PROJECTED TRAFFIC FOR 11 COMMODITIES (Million Tonnes)				
	2007-08	2012-13	2017-18	2022-23	2025-26
Rail	960.29 (78.20)	1301.70 (76.98)	1848.51 (78.46)	2584.87 (78.95)	3174.72 (79.25)
Road	267.71 (21.80)	389.30 (23.02)	507.49 (21.54)	689.13 (21.05)	831.28 (20.75)
Total	**1228.00 (100.00)**	**1691.00 (100.00)**	**2356.00 (100.00)**	**3274.00 (100.00)**	**4006.00 (100.00)**

Figures in parentheses show percentage share of the two modes in total traffic.

However, unless policy measures fructify for achieving an optimal modal mix, the present pattern of modal shares in commodity movement may continue. Assuming that the existing levels of rail and road transport shares in projected traffic may persist, the shares of rail and road transport in total projected freight traffic in respect of 52 commodities emerge as in Table 8.3.

TABLE 8.3: ESTIMATED RAIL & ROAD SHARES IN PROJECTED TRAFFIC

Mode	PROJECTED TRAFFIC (MILLION TONNES)				
	2007-08	2012-13	2017-18	2022-23	2025-26
Rail	769	1,058 (37.6)	1,474 (39.3)	2,049 (39.0)	2,507 (22.3)
Road	1,559	2,146 (37.6)	2,989 ((39.3)	4,155 ((39.0)	5,084 (22.3)
Total	**2,328**	**3,204**	**4,464**	**6,203**	**7,592**

Figures in parentheses show percentage increase in traffic over the period.

As a result of optimization of flows, the rail share in total projected traffic of the identified eleven commodities goes up substantially.

It is necessary to clarify that even though the listed 11 commodities constitute 53% of the total traffic, their share in total traffic carried by Railways in 2007-08 amounted to around 89% during 2007-08.

TABLE 8.4: SHARE OF 11 MAJOR COMMODITIES IN RAIL TRAFFIC

(2007-08)

SN	Commodity	Volume (Million Tonnes)	Share (%)
1	Rice	22.43	2.92
2	Wheat	12.31	1.60
3	Grams & Pulses	0.63	0.08
4	Iron Ore	121.80	15.84
5	Coal	331.77	43.16
6	POL	35.13	4.57
7	Limestone & Dolomite	13.69	1.78
8	Salt	4.62	0.60
9	Cement	78.83	10.25
10	Fertilizers	36.38	4.73
11	Iron & Steel	27.31	3.55
	Total	**684.90**	**89.10**
12	Others	83.82	10.90
	Grand Total	**768.72**	**100.00**

The estimates of future traffic show over three times increase in freight traffic between the base year and the horizon year, a period of eighteen years. With a view to assessing adequacy of transport system capacity to meet the emerging future transport demand, it is necessary to:

- Establish the status of present transport capacity and its utilization in relation to the two major modes of transport viz. Railways and Highways;
- Build a perspective of future capacity scenario up to the horizon year of the study i.e. 2025-26 based on developmental works in progress and proposed; and
- Identify areas where shortfall in capacity is likely to occur in future years.

Accordingly, an attempt is made in this chapter to address system capacity implications in handling projected freight traffic by rail and road systems in the future years.

8.2 RAIL TRANSPORT CAPACITY

The three main components that determine IR's system capacity include capacity of wagons, locomotives and line capacity. Extent of their availability to meet the transport demand ultimately determines the achievable level of operational performance of the system.

Wagons and Locomotives

IR operates its freight services with a fleet of 207,719 wagons in terms of four wheeler units comprising 59,815 covered, 97,952 open high sided, 8,720 open low sided, 31,046 other types and 10,186 brake vans/departmental wagons. Excluding the departmental wagons and brake vans, the total number of service wagons is 197533. This includes 144,193 special types of wagons like BOX 'N', BCN/A, BCX, BTPN, etc. designed to meet transport requirement of various types of

goods. IR is gradually replacing four wheeler stocks by bogie wagons like BCN, BTPN and BOX N to achieve higher payload and speed potential for optimum utilisation of line capacity.

Details of variation in wagon fleet size and total wagon capacity as well as number of BG wagons and associated average wagon capacity for the years 1990-91 and 2000-01 to 2006-07 are given in Table 2.7 in Chapter 2. It has been brought out that:

- While there has been considerable decrease in the size of total wagon fleet on IR over the years, the impact on total wagon capacity has been minimal owing to technological improvements in wagon design and re-rating of carrying capacity of wagons. (Table 2.7, Chapter 2).
- In the case of BG wagons, despite drop in the fleet size, average capacity of wagons has been going up, for similar reasons.

The present gauge wise wagon holding and carrying capacity is given in Table 8.5.

TABLE 8.5 GAUGE WISE WAGON HOLDING & CAPACITY OF IR

(2006-07)

Gauge	Number ('000)	Average Capacity (Tonnes)
BG	190	51.6
MG	7	32.1
Total All Gauges	**198***	**10.06 MT**

*Excludes departmental service wagons and brake vans.

As on 31st March, 2007, IR had a fleet of 7817 locomotives including 4769 diesel, 3003 electric and 45 steam locomotives. Use of steam locomotives is confined to running of heritage/tourist trains and a few narrow gauge hill sections.

While numbers are important, what is more important in the context of carrying capacity is the performance of rolling stock. Over a period of time performance indices of wagon and locomotive usage have considerably improved. Net tonne-kilometers per tonne of BG wagon capacity have gone up from 33289 per annum in 2000-01 to 53017 per annum in 2006-07. During the same period, wagon-kms per wagon per day on the BG rose from 179 in 2000-01 to 231.4 in 2006-07. The increase in net tonne kms. per wagon per day on BG increased from 2042 to 3242 during the same period. Wagon turn round meanwhile has gone down from 7.5 days to 5.49 days. Likewise, in engine usage, engine-kilometers per day per goods engine in use on BG have gone up from 398 in 2000-01 to 405 in case of diesel traction and from 450 to 474 for electric traction in 2006-07.

Design improvements and efficient utilization of moving units as well as operational innovations like engine-on-train system have helped IR to carry increasing levels of incremental traffic year on year, particularly higher volumes in the past couple of years.

Line Capacity

In the latest available annual line capacity statement (2006-07), Railways have classified the total BG rail network into 1036 sectional links based on available capacity and their utilization. Of these 1036 sections, over 40% i.e. 415 sections reflect capacity utilization of over 100%. Another 226 sections or 22% have utilization levels between 80% and 100%. Thus, around 62% of the total sections have reached saturation levels. 167 sections display capacity utilization level of 60 to 80%. Another 228 sections show spare capacities as their utilization lies below 60%. Details of these sections are given in **Annexures 8.1 to 8.3** in Annexure volume-2.

As would be seen from the details given in **Annexure 8.4 to 8.7** in Annexure volume-2, capacity on most of the sections on major routes between Delhi–Mumbai Central/Chhatarpati Shivaji Terminal, Delhi-Chennai and Delhi-Kolkata is severely constrained. Share of the Zonal Railways in terms of number of sections in each category of capacity utilization is presented in Table 8.6.

TABLE 8.6: SECTIONAL CAPACITY UTILIZATION ON IR

RAILWAY	TOTAL NUMBER OF SECTIONS	Number of Sections under Different Categories of Capacity Utilization			
		100% and above	Between 80% and 100%	Between 60% and 80%	Below 60%
Central	74	31	12	10	21
Eastern	84	3	33	27	21
Northern	192	77	30	34	51
North Eastern	27	12	7	3	5
Northeast Frontier	25	9	7	7	2
Southern	97	39	19	13	26
South Central	80	59	8	7	6
South Eastern	70	18	25	10	17
Western	80	31	19	9	21
East Coast	41	7	13	10	11
East Central	79	34	20	10	15
North Central	52	31	5	9	7
North Western	39	9	10	8	12
South East Central	28	15	4	4	5
South Western	47	26	9	5	7
West Central	21	14	5	1	1
TOTAL	**1036**	**415**	**226**	**167**	**228**

In the case of most of the Zonal Railways, the major routes suffer from capacity constraints and require augmentation of capacity to meet increasing transport demand in coming years. At present, major concentration of traffic is on the Golden Quadrilateral and its Diagonals of the rail network. A welcome development is the initiation of the process for construction of eastern and western dedicated freight corridors with higher axle load, double line operations, automatic signaling and limited number of stations, which would carry heavier loads at higher speeds leading to lower cost of operation. Hopefully, the corridors may come up by 2017-18. However, at present, there is no clarity about the nature and volume of traffic that may ultimately be shifted from the existing parallel routes to these corridors.

Feasibility studies undertaken so far have allocated incremental traffic to these corridors and it would take time for a firm plan on use of these corridors to emerge. It would be cost effective and in national interest to use these corridors intensively, leading to release of capacity on existing routes for possible running of more passenger trains at higher speeds. However, shifting of traffic from the existing route to dedicated freight corridors managed by a corporation would have revenue implications for the Railways concerned which may have a bearing on the extent of transfer of traffic to the corridors.

Section Loadings

To bring out impact of optimized traffic flows on line capacity, rail section loading of traffic in respect of identified 11 major commodities for the base year (2007-08) has been undertaken. The commodity wise pay-loads adopted for estimating number of trains for projected volumes of these commodities are given in **Appendix 1**.

Traditionally major trunk routes have carried the major part of traffic on the railways and the optimized traffic flows show rise over certain sections but also drop in number of trains on certain sections. In this context, results of section loading exercises in respect of some of the major routes viz. Delhi-Mumbai, Delhi Howrah and Delhi-Chennai, are presented in **Appendix 2** to **Appendix 7**. The tabulations show the existing (2006-07) number of goods trains on various sections, number of trains in 2007-08 based on shortest path as well as number of trains estimated based on optimized traffic flows. It is clarified that, while the number of trains drawn from Railways' line capacity statements pertaining to 2006-07 include both loaded and empty trains, estimates of trains for 2007-08 based on shortest path and optimized flows present only number of loaded trains on various sections.

8.3 HIGHWAYS CAPACITY

In the current study, road network has been developed to inter connect all 623 regional centroids. The road network comprises numerous links and nodes. Each section describes the road characteristics, such as; names of the two nodes, distance (km), terrain (Plain, Rolling or Hilly), type of Highways (National Highways, State Highways, Major/Other District Roads) and width in terms of number of lanes. Since, this network is developed with a specific objective to provide linkage to all the regions, road sections are not strictly adhering to the road section capacity definition, wherein a section always possesses common road characteristics.

Network used in the study shows road characteristics of major portion of the section and accordingly road sectional capacity has been assigned. Further, the section distances represent distance from one centroid (represented by the zero km of the city as perceived in the case of passenger transport distances) to another. Some of the road sections may have a part falling under the municipal limits, where the road width may be much higher to accommodate urban traffic. While developing the road network, section capacity has been defined based on the capacity of rural portion of the road section.

The longest road section considered in the study connects Kargil to Leh has an overall length of 210 km followed by Balharshah to Sirocha (195 km), Imphal to Jiribam (183km), Bikaner to Surtgarh (180 km), etc. on the other hand, the smallest road section of two kilometers has also been considered. Small sections are found mainly to offer connectivity of the regional centroid with the National Road Network. Out of the total road network of 33,16,452 km (as on 1st Jan, 2008), the current study covered about 1,54,702 km and 4688 road sections, comprising 1639 sections of NH and 56188 km, 2833 sections of SH involving 90862 km and 211 sections of MDR/ODR involving 7,652 km. Composition of road network under the extant study is summarized in Table 8.7.

TABLE 8.7: SUMMARY OF ROAD NETWORK UNDER STUDY (IN KM.)

ROAD TYPE	ROAD NETWORK 1ST JAN. 2008	COVERED			TOTAL COVERED	% COVERED TO TOTAL
		PLAIN	ROLLING	HILLY		
NH	66,790	49,440	1,021	5,727	56,188	84.1
SH	131,899	79,026	1,130	10,706	90,862	68.9
MDR / ODR	467,763	6,135	86	1,431	7,652	1.6
Rural and Other Roads	2,650,000	0	0	0	0	0.0
TOTAL	**3,316,452**	**134,601**	**2,237**	**17,864**	**154,702**	**4.7**

As revealed from the above table, National Highways which cater to about 80% of the long distance traffic, out of 66,790 km of National Highways, about 56,188 km (84.1%) has been

considered in the network. Since majority of district head-quarters which are predominantly the regional centroids of the study also, are connected with NH or SH, except a few which remained unconnected are connected through MDRs/ODRs. The same is discernible from the above table.

Unlike Railways where the capacity of the section is defined in terms of number of trains that can be run in 24 hours, road capacities are estimated in equivalent passenger car units (PCUs). Section capacity as per "Indian Road Congress (IRC) Guidelines for Capacity of Roads in Rural Areas" has been assigned. Same norms have been used for various categories of road sections under NH, SH or MDR i.e. irrespective of the road section conditions. Design service volumes in PCUs for two-lane roads for plain, rolling and hilly sections are given below:

SN	TERRAIN	CAPACITY PCU/DAY
1	Plain	15000
2	Rolling	11000
3	Hilly	7000

Similarly, to estimate average daily traffic in terms of PCUs, factors for various types of vehicles on rural roads as recommended by IRC have been used, as given in Table 8.8.

TABLE 8.8: PCU NORMS FOR VARIOUS TYPES OF VEHICLES

SN	VEHICLE TYPE	EQUIVALENT FACTOR
FAST VEHICLES		
1	Motor Cycle or Scooter	0.50
2	Passenger Car, Pick-up Van or Auto-rickshaw	1.0
3	Agriculture Tractor, Light Commercial Vehicle	1.5
4	Truck or Bus	3.0
5	Truck-trailer, Agricultural Tractor-trailer	4.5
SLOW VEHICLES		
6	Cycle	0.50
7	Cycle-rickshaw	2.0
8	Hand Cart	3.0
9	Horse-drawn vehicle	4.0
10	Bullock Cart	8.0

As discussed in the earlier chapters, goods O-D surveys were conducted at 709 check-posts to capture inter-regional goods movement. Survey locations were identified with the objective to capture maximum number of inter-regional goods vehicles; therefore survey operation at the check-post was one of the deciding factors for location of the survey point. Number of existing check-posts, such as; Toll Gates, Excise & Taxation Gates, City Octroi Posts, etc. where the goods vehicles already stop for one reason or the other, were given preference. Some of the check-post locations which are in the proximity of major cities/towns were highly affected by the urban traffic because of obvious reasons.

At each survey location, along with goods O-D survey (2-day or 7-day) 24-hour traffic count surveys were conducted, in order to work out raising factors to allow for any missed goods vehicles as well as to ascertain the existing capacity utilization of the road sections. After scrutiny and analysis of this data, the base year inter-regional goods O-D flows have been generated by adopting the cordoning approach.

While carrying out section loading exercises for the base year as well as the horizon years of the study, inter-regional goods traffic alone has been considered. Despite the fact that traffic count surveys have been carried out at all the survey locations for 24 hours, the data is inadequate to represent all the road sections covered in the study. In the light of this, based on the traffic count

results of the sample surveys locations, norms for different road sections have been worked out and implemented for matching/similar road sections. Since, traffic other than inter-regional goods movement has not been considered for section loadings, the base year flow pattern is assumed to continue. In other words, proportionate share of inter-regional traffic would continue to remain the same with the presumption that other traffic contributed by various types of passenger vehicles, intra-regional goods vehicles, empty goods vehicles, non-mechanized vehicles, etc. would also grow at the same rate during the study periods.

Using the foregoing approach, in the light of the base year share of inter-regional traffic in total traffic on different road sections, overall capacity of the section is proportionately allocated to Inter-regional Goods Traffic. The critical section is identified as the section where inter-regional traffic exceeds the assigned capacity.

Section Loading

Section loadings have been carried out by assigning the designed capacity to all the sections considered in the study area. Since traffic flows are generated by using the shortest distance path, some of the sections may show unexpected results because of the distance advantage on a particular corridor. Results of sample 4-lane highway and expressway sections are presented in Table 8.9.

TABLE 8.9: SECTION LOADINGS BASED ON 2007-08 INTER-REGIONAL GOODS TRAFFIC FLOWS

SN	HIGHWAY SECTION	DIST. (KM)	SECTION CHARACT-ERISTICS (TERRAIN/ TYPE/ LANES)	INTER- REGIONAL FLOWS (TONNES)		DESIGNED CAPACITY PCUS/DAY	CAPACITY ASSIGNED TO INTER REGIONAL GOODS TRAFFIC PCUS/DAY	ESTIMATED INTER-REGIONAL PCUS /DAY	AVAILBALE CAPACITY PCU/DAY
				ANNUAL (MILLION)	DAILY ('000)				
1	Ambala-Rajpura	21	114	36.64	100.37	60000	25200	25789	-589
2	Faridabad-Badarpur Border	10	114	67.21	184.13	60000	25200	47310	-22110
3	Gurgaon-Dunda Hera	8	115	42.97	117.72	60000	25200	30246	-5046
4	Karnal-Panipat	34	114	38.42	105.26	60000	25200	27046	-1846
5	Panipat-Samalkha	24	114	38.92	106.63	60000	25200	27397	-2197
6	Panchkula-Chandigarh	8	114	8.11	22.21	60000	25200	5708	19492
7	New Delhi-Kundli X	40	114	44.97	123.20	60000	25200	31654	-6454
8	New Delhi-Bahadurgarh	29	114	35.95	98.5	60000	25200	25308	-108
9	New Delhi-Dunda Hera	23	115	42.97	117.72	60000	25200	30246	-5046
10	New Delhi-Badarpur Border	29	114	67.21	184.13	60000	25200	47310	-22110
11	Samalkha-Murthal (SNP X-ing)	30	114	38.92	106.63	60000	25200	27397	-2197
12	Dhuruhera-Gurgaon	38	114	42.97	117.73	60000	25200	30249	-5049
13	Bawal-Dhuruhera	26	114	35.16	96.34	60000	25200	24753	447
14	Ballabgarh-Palwal	23	114	55.19	151.20	60000	25200	38848	-13648
15	Murtha (SNP crossing)-RAI X	9	114	37.74	103.40	60000	25200	26567	-1367
16	Loni Border-Ghaziabad	12	114	41.79	114.50	60000	25200	29418	-4218
17	Jalandhar-Phagwara	22	114	30.73	84.20	60000	25200	21634	3566
18	Ludhiana-Phillaur	13	114	40.46	110.84	60000	25200	28479	-3279
19	Mandi Gobindgarh-Khanna	8	114	30.70	84.12	60000	25200	21613	3587
20	Agra-Fatehpur Sikari	37	114	10.17	27.87	60000	25200	7161	18039
21	Aligarh-Hathras	34	114	4.66	12.78	60000	25200	3284	21916
22	Allahabad-Allahabad X 1	12	114	26.03	71.31	60000	25200	18323	6877
23	Allahabad-Allahabad X 2	8	114	5.43	14.89	60000	25200	3825	21375
24	Allahabad-Allahabad X 3	10	114	21.14	57.91	60000	25200	14879	10321
25	Allahabad-Mirzapur	79	114	0.19	0.53	60000	25200	137	25063

In the above exercise, daily capacity of 60,000 PCUs for 4-lane carriageway has been considered, as adopted by NHAI in various planning studies. The sections with negative sign denote that they have already exhausted their designed and accepted norms of capacity. **Appendix 8** brings out section loadings on all the existing 4-lane road sections under study. It has been observed that many of the 4-lane road sections are already under various stages of up-gradation to 6-lanes and above.

Appendix-1
Chapter 8

ADOPTED PAY-LOADS PER TRAIN FOR PROJECTED TRAFFIC

SN	Commodity	Pay-Load Per Train (Tonnes)
1	Iron Ore	3770
2	Limestone & Dolomite	3770
3	Coal	3770
4	Fertilizers (Urea)	2520
5	Pulses	2520
6	Petroleum (HSD)	2592
7	Cement	2520
8	Salt	2000
9	Iron and Steel	3770
10	Rice	2520
11	Wheat	2520

Appendix-2
Chapter 8

**SECTION LOADINGS BASED ON
OPTIMISED FREIGHT TRAFFIC FLOWS DELHI-MUMBAI CENTRAL ROUTE**

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement #	2007-08 Actual Traffic by Shortest Path ##	2007-08 Optimized flows ##
NEW DELHI-TILAK BRIDGE	10	24	71
TILAK BRIDGE-HAZRAT NIZ	4	24	71
HAZRAT NIZ-OKHLA	9	24	71
OKHLA-TUGLAKABAD	44	29	79
TUGLAKABAD-FARIDABAD	50	29	79
FARIDABAD-PALWAL	50	30	81
PALWAL-KOSIKALAN	42	30	81
KOSIKALAN-MATHURA	42	30	81
MATHURA-BHARATPUR JN.	23	20	51
BHARATPUR JN.-BAYANA JN.	23	20	50
BAYANA JN.-HINDAUN CITY	28	21	56
HINDAUN CITY-SHRI MAHABIRJI	28	21	56
SHRI MAHABIRJI-GANGAPUR CITY	28	21	56
GANGAPUR CITY-SAWAI MADHOPUR JN	28	21	56
SAWAI MADHOPUR JN-LAKHERI	32	22	67
LAKHERI-KOTA JN.	32	22	67
KOTA JN.-DADHEVI	26	19	56
DADHEVI-MORAK	26	19	56
MORAK-JHALAWAR ROAD	26	19	56
JHALAWAR ROAD-BHAWANI MANDI	26	19	56
BHAWANI MANDI-SHAMGARH	26	19	56
SHAMGARH-NAGDA JN.	26	19	56
NAGDA JN.-RATLAM JN.	34	30	73
RATLAM JN.-MEGHNAGAR	32	31	82
MEGHNAGAR-DAHOD	32	31	82
DAHOD-GODHRA JN.	32	31	84
GODHRA JN.-CHAMPANERROAD	23	18	52
CHAMPANERROAD-SAMLAYA JN.	23	18	52
SAMLAYA JN.-VADODARA JN.	23	18	52
VADODARA JN.-VISHWAMITRI	29	22	96
VISHWAMITRI-MIYAGAMKARJAN JN	29	22	96
MIYAGAMKARJAN JN-BHARUCH	29	22	96
BHARUCH-KOSAMBA JN	29	22	96
KOSAMBA JN-GOTHANGAON	29	22	96
GOTHANGAON-KOSAD	29	22	96
KOSAD-SURAT	29	22	96
SURAT-UDHNA	26	22	83
UDHNA-NAVSARI	22	20	78
NAVSARI-BILIMORA	22	20	77
BILIMORA-VALSAD	22	20	77
VALSAD-VAPI	22	20	70
VAPI-DAHANU ROAD	22	20	70
DAHANU ROAD-VIRAR	20	20	70
VIRAR-VASAI ROAD	NA	20	70
VASAI ROAD-BORIVALI	NA	1	21
BORIVALI-ANDHERI	NA	1	21
ANDHERI-BANDRA	NA	1	21
BANDRA-MAHIM JN.	NA	2	32
MAHIM JN.-DADAR JN.	NA	1	26
DADAR JN.-MUMBAI CENTRAL	NA	6	5

Note: Includes empty trains
Note: Does not includes empty trains

Appendix-3
Chapter 8

SECTION LOADING BASED ON OPTIMISED FREIGHT TRAFFIC FLOWS
MUMBAI CST - DELHI ROUTE

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement[#]	2007-08 Actual Traffic by Shortest Path[##]	2007-08 Optimized flows[##]
KURLA JN.-THANE JN.	13	5	31
THANE JN.-DIVA JN.	14	6	37
DIVA JN.-KALYAN JN.	9	12	64
KALYAN JN.-KASARA	8	7	33
KASARA-IGATPURI	8	7	33
IGATPURI-NASIK ROAD	12	7	33
NASIK ROAD-NIPHAD	12	10	35
NIPHAD-MANMAD	12	10	35
MANMAD-PANEWADI	21	11	37
PANEWADI-CHALISGAON	21	11	37
CHALISGAON-PACHORA JN.	21	11	38
PACHORA JN.-JALGAON	21	11	38
JALGAON-BHUSAVAL	32	14	43
BHUSAVAL-BURHANPUR	10	14	42
BURHANPUR-KHANDWA JN.	10	14	43
KHANDWA JN.-TALWADIYA	9	11	33
TALWADIYA-HARDA	9	10	31
HARDA-BANAPURA	9	10	31
BANAPURA-ITARSI	9	10	31
ITARSI-HOSHANGABAD	25	15	42
HOSHANGABAD-HABIBGANJ	25	14	42
HABIBGANJ-BHOPAL JN	25	14	42
BHOPAL JN-VIDISHA	26	13	40
VIDISHA-GANJBASODA	26	13	40
GANJBASODA-BINA	26	13	40
BINA-LALITPUR	30	13	38
LALITPUR-BABINA	30	13	38
BABINA-JHANSI	30	13	38
JHANSI-DATIA	29	12	32
DATIA-DABRA	29	12	32
DABRA-GWALIOR	29	12	32
GWALIOR-MORENA	29	12	32
MORENA-DHAULPUR	29	12	32
DHAULPUR-AGRA CANTT	29	12	33
AGRA CANTT-RAJA KI MANDI	29	11	31
RAJA KI MANDI-BAD	29	12	33
BAD-MATHURA	29	12	33
MATHURA-KOSIKALAN	42	30	81
KOSIKALAN-PALWAL	42	30	81
PALWAL-FARIDABAD	50	30	81
FARIDABAD-TUGLAKABAD	50	29	79
TUGLAKABAD-OKHLA	44	29	79
OKHLA-HAZRAT NIZ	9	24	71
HAZRAT NIZ-TILAK BRIDGE	4	24	71
TILAK BRIDGE-NEW DELHI	10	24	71

[#] Note: Includes empty trains
[##] Note: Does not includes empty trains

Appendix-4

Chapter 8

SECTION LOADING BASED ON OPTIMISED FREIGHT TRAFFIC FLOWS
NEW DELHI-CHENNAI ROUTE

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement[#]	2007-08 Actual Traffic by Shortest Path[##]	2007-08 Optimized flows[##]
NEW DELHI-TILAK BRIDGE	10	24	71
TILAK BRIDGE-HAZRAT NIZ	4	24	71
HAZRAT NIZ-OKHLA	9	24	71
OKHLA-TUGLAKABAD	44	29	79
TUGLAKABAD-FARIDABAD	50	29	79
FARIDABAD-PALWAL	50	30	81
PALWAL-KOSIKALAN	42	30	81
KOSIKALAN-MATHURA	42	30	81
MATHURA-BAD	29	12	33
BAD-RAJA KI MANDI	29	12	33
RAJA KI MANDI-AGRA CANTT	29	11	31
AGRA CANTT-DHAULPUR	29	12	33
DHAULPUR-MORENA	29	12	32
MORENA-GWALIOR	29	12	32
GWALIOR-DABRA	29	12	32
DABRA-DATIA	29	12	32
DATIA-JHANSI	29	12	32
JHANSI-BABINA	30	13	38
BABINA-LALITPUR	30	13	38
LALITPUR-BINA	30	13	38
BINA-GANJBASODA	26	13	40
GANJBASODA-VIDISHA	26	13	40
VIDISHA-BHOPAL JN	26	13	40
BHOPAL JN-HABIBGANJ	25	14	42
HABIBGANJ-HOSHANGABAD	25	14	42
HOSHANGABAD-ITARSI	25	15	42
ITARSI-GHORADONGRI	21	18	48
GHORADONGRI-BETUL	21	18	48
BETUL-AMLA	21	19	48
AMLA-NAGPUR JN.	18	18	47
NAGPUR JN.-BUTIBORI	31	8	28
BUTIBORI-WARDHA JN.	31	8	28
WARDHA JN.-HINGANGHAT	25	13	32
HINGANGHAT-MAJRI JN.	25	13	32
MAJRI JN.-TADALI	25	15	34
TADALI-CHANDRAPUR	25	15	34
CHANDRAPUR-BABUPETH	25	10	26
BABUPETH-BALLARSHAH	25	10	26
BALLARSHAH-MANIKGARH JN.	22	11	31
MANIKGARH JN.-SIRPURKAGHNAGAR	22	11	31
SIRPURKAGHNAGAR-BELAMPALLI	22	11	31
BELAMPALLI-MANDAMARI	29	11	31
MANDAMARI-RAMGUNDAM	29	11	31
RAMGUNDAM-PEDDAPALLI	29	11	31
PEDDAPALLI-JAMI KUNTA	29	12	33
JAMI KUNTA-HASNAPARTI ROAD	29	12	33
HASNAPARTI ROAD-KAZIPET JN.	29	12	33
KAZIPET JN.-WARANGAL JN.	18	9	38
WARANGAL JN.-DORNAKAL JN.	18	10	39
DORNAKAL JN.-KHAMMAM	21	10	39
KHAMMAM-MOTUMARI JN.	21	10	39
MOTUMARI JN.-GANGINENI	21	10	39
GANGINENI-KONDAPALLI	21	10	39
KONDAPALLI-VIJAYAWADA JN.	21	10	39
VIJAYAWADA JN.-KRISHNA CANAL	28	12	35
KRISHNA CANAL-TENALI JN.	21	8	24
TENALI JN.-NIDUBROLU	21	10	34
NIDUBROLU-BAPATLA	21	10	34
BAPATLA-CHIRALA	21	10	34
CHIRALA-ONGOLE	21	10	34
ONGOLE-BITRAGUNTA	21	10	34
BITRAGUNTA-PADUGUPADU	21	10	34
PADUGUPADU-NELLORE	21	10	34
NELLORE-GUDUR	21	11	34
GUDUR-ATTIPATTU	12	5	18
ATTIPATTU-TONDIARPET MY	12	5	18
TONDIARPET MY-KORUKKUPET JN.	17	5	18
KORUKKUPET JN.-BASIN BRIDGE	3	5	18
BASIN BRIDGE-CHENNAI CENTRAL	3	3	25

[#] Note: Includes empty trains

[##] Note: Does not includes empty trains

Appendix-5
Chapter 8

SECTION LOADING BASED ON OPTIMIZED FREIGHT TRAFFIC FLOWS
DELHI-HOWRAH ROUTE

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement[#]	2007-08 Actual Traffic by Shortest Path[##]	2007-08 Optimized flows[##]
DELHI JN-DELHI SHAHDARA	9	18	39
DELHI SHAHDARA-SAHIBABAD	11	17	34
SAHIBABAD-GHAZIABAD	39	17	34
GHAZIABAD-DADRI	24	18	31
DADRI-KHURJA JN.	30	18	31
KHURJA JN.-ALIGARH JN.	31	18	33
ALIGARH JN.-HATHRAS JN	33	20	36
HATHRAS JN-BARHAN JN.	33	19	34
BARHAN JN.-TUNDLA JN.	33	19	34
TUNDLA JN.-FIROZABAD	37	23	45
FIROZABAD-SHIKOHABAD JN.	37	23	45
SHIKOHABAD JN.-ETAWAH	36	23	44
ETAWAH-PHAPHUND	36	23	44
PHAPHUND-RURA	36	23	44
RURA-PANKI	36	23	44
PANKI-KANPUR CENTRAL	43	22	42
KANPUR CENTRAL-CHANDARI	33	21	38
CHANDARI-FATEHPUR	33	21	39
FATEHPUR-ALLAHABAD	33	21	39
ALLAHABAD-NAINI JN.	31	26	46
NAINI JN.-CHHEOKI JN.	38	26	46
CHHEOKI JN.-MIRZAPUR	37	30	52
MIRZAPUR-CHUNAR	37	34	53
CHUNAR-MUGHALSARAI JN.	56	30	52
MUGHALSARAI JN.-CHANDAULI MAJHWA	56	23	36
CHANDAULI MAJHWA-BHABUA ROAD	56	23	35
BHABUA ROAD-SASARAM	56	23	35
SASARAM-DEHRI-ON-SONE	32	23	35
DEHRI-ON-SONE-SON NAGAR JN.	32	23	35
SON NAGAR JN.-ANUGRAHA NARAYAN	32	22	34
ANUGRAHA NARAYAN-GAYA JN.	29	21	34
GAYA JN.-MANPUR JN.	29	22	35
MANPUR JN.-KODERMA	29	22	35
KODERMA-HAZARIBAGH ROAD	29	22	34
HAZARIBAGH ROAD-PARASNATH	29	19	31
PARASNATH-GOMOH JN.	29	19	31
GOMOH JN.-DHANBAD JN.	29	7	13
DHANBAD JN.-KUMARDUBI	14	6	5
KUMARDUBI-KULTI	14	6	5
KULTI-SITARAMPUR JN.	14	7	9
SITARAMPUR JN.-BARACHAK JN.	14	10	14
BARACHAK JN.-ASANSOL JN.	14	10	14
ASANSOL JN.-KALIPAHARI	44	14	20
KALIPAHARI-ANDAL JN.	44	14	20
ANDAL JN.-DURGAPUR	41	14	20
DURGAPUR-PANAGARH	41	11	17
PANAGARH-KHANA JN.	41	11	17
KHANA JN.-BARDHAMAN JN.	27	13	19
BARDHAMAN JN.-SAKTIGARH	32	12	18
SAKTIGARH-KAMARKUNDU	22	9	14
KAMARKUNDU-JANAI ROAD	22	9	14
JANAI ROAD-DANKUNI	22	9	14
DANKUNI-BALLY	11	7	13
BALLY-HOWRAH	22	9	17

[#] Note: Includes empty trains
[##] Note: Does not includes empty trains

Appendix-6
Chapter 8

SECTION LOADING BASED ON OPTIMISED FREIGHT TRAFFIC FLOWS DELHI-HOWRAH VIA PATNA

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement#	2007-08 Actual Traffic by Shortest Path##	2007-08 Optimized flows##
DELHI JN-DELHI SHAHDARA	9	18	39
DELHI SHAHDARA-SAHIBABAD	11	17	34
SAHIBABAD-GHAZIABAD	39	17	34
GHAZIABAD-DADRI	24	18	31
DADRI-KHURJA JN.	30	18	31
KHURJA JN.-ALIGARH JN.	31	18	33
ALIGARH JN.-HATHRAS JN	33	20	36
HATHRAS JN-BARHAN JN.	33	19	34
BARHAN JN.-TUNDLA JN.	33	19	34
TUNDLA JN.-FIROZABAD	37	23	45
FIROZABAD-SHIKOHABAD JN.	37	23	45
SHIKOHABAD JN.-ETAWAH	36	23	44
ETAWAH-PHAPHUND	36	23	44
PHAPHUND-RURA	36	23	44
RURA-PANKI	36	23	44
PANKI-KANPUR CENTRAL	43	22	42
KANPUR CENTRAL-CHANDARI	33	21	38
CHANDARI-FATEHPUR	33	21	39
FATEHPUR-ALLAHABAD	33	21	39
ALLAHABAD-NAINI JN.	33	26	46
NAINI JN.-CHHEOKI JN.	31	26	46
CHHEOKI JN.-MIRZAPUR	38	30	52
MIRZAPUR-CHUNAR	37	34	53
CHUNAR-MUGHALSARAI JN.	37	30	52
MUGHALSARAI JN.-KUCHMAN	15	10	19
KUCHMAN-DILDAR NAGAR JN.	15	10	19
DILDAR NAGAR JN.-BUXAR	15	4	6
BUXAR-ARA JN	15	4	6
ARA JN-BIHTA	15	10	20
BIHTA-DANAPUR	15	10	20
DANAPUR-PATNA JN.	15	10	20
PATNA JN.-FATUHA	17	9	17
FATUHA-BAKHTIYARPUR JN	19	9	17
BAKHTIYARPUR JN-BARH	16	9	17
BARH-MOKAMA JN.	14	9	17
MOKAMA JN.-HATHIDA	14	7	14
HATHIDA-LUCKEESARAI	3	4	6
LUCKEESARAI-KIUL	5	4	6
KIUL-JAMUI	4	3	5
JAMUI-JHAJHA	4	3	5
JHAJHA-JASIDIH JN.	7	3	5
JASIDIH JN.-MADHUPUR JN.	3	3	5
MADHUPUR JN.-CHITTARANJAN	3	3	5
CHITTARANJAN-SALANPUR	6	3	5
SALANPUR-SITARAMPUR JN.	4	3	5
SITARAMPUR JN.-BARACHAK JN.	14	10	14
BARACHAK JN.-ASANSOL JN.	14	10	14
ASANSOL JN.-KALIPAHARI	44	14	20
KALIPAHARI-ANDAL JN.	44	14	20
ANDAL JN.-DURGAPUR	41	14	20
DURGAPUR-PANAGARH	41	11	17
PANAGARH-KHANA JN.	41	11	17
KHANA JN.-BARDHAMAN JN.	27	13	19
BARDHAMAN JN.-SAKTIGARH	32	12	18
SAKTIGARH-KAMARKUNDU	22	9	14
KAMARKUNDU-JANAI ROAD	22	9	14
JANAI ROAD-DANKUNI	22	9	14
DANKUNI-BALLY	11	7	13
BALLY-HOWRAH	22	9	17

Note: Includes empty trains. ## Note: Does not includes empty trains

Appendix-7
Chapter 8

SECTION LOADING BASED ON OPTIMISED FREIGHT TRAFFIC FLOWS
AHMEDABAD-NEW DELHI ROUTE

LINK	Number of Trains Each Way		
	2006-07 Railways Capacity Statement[#]	2007-08 Actual Traffic by Shortest Path[##]	2007-08 Optimized flows[##]
AHMEDABAD JN.-SABARMATI	24	14	54
SABARMATI-CHANDLODIYA	25	11	37
CHANDLODIYA-KHODIYAR	6	2	8
KHODIYAR-KALOL JN.	2	1	11
KALOL JN.-AMBLIYASAN	2	1	11
AMBLIYASAN-MAHESANA JN.	2	1	11
MAHESANA JN.-SIDHAPUR	5	3	15
SIDHAPUR-PALANPUR JN.	5	3	15
PALANPUR JN.-ABU ROAD	12	6	18
ABU ROAD-BANAS	13	6	18
BANAS-SIROHI ROAD	13	6	18
SIROHI ROAD-KESHAVGANJ	13	6	18
KESHAVGANJ-FALNA	13	6	18
FALNA-RANI	13	6	18
RANI-MARWAR JN.	13	6	18
MARWAR JN.-SOJAT ROAD	3	5	15
SOJAT ROAD-BEAWAR	3	5	15
BEAWAR-AJMER JN.	3	5	15
AJMER JN.-MADAR	10	7	21
MADAR-PHULERA JN.	10	7	20
PHULERA JN.-JAIPUR JN.	13	2	7
JAIPUR JN.-DAUSA	13	3	9
DAUSA-BANDIKUI JN.	13	3	9
BANDIKUI JN.-ALWAR JN.	1	0	2
ALWAR JN.-REWARI JN	1	0	2
REWARI JN-GARHI HARSARU	3	4	25
GARHI HARSARU-GURGAON	3	4	25
GURGAON-DELHI CANTT.	3	5	29
DELHI CANTT.-PATEL NAGAR	3	5	29
PATEL NAGAR-DELHI SARAI ROHI	3	5	29
DELHI SARAI ROHI-DELHI JN	4	4	16

[#] Note: Includes empty trains
[##] Note: Does not includes empty trains

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
1	AMBALA-RAJPURA	21	114	36635933	100372	60000	25200	25789	-589
2	FARIDABAD-BADARPUR BORDER	10	114	67208582	184133	60000	25200	47310	-22110
3	GURGAON-DUNDA HERA	8	115	42967888	117720	60000	25200	30246	-5046
4	KARNAL-PANIPAT	34	114	38421663	105265	60000	25200	27046	-1846
5	PANIPAT-SAMALKHA	24	114	38919841	106630	60000	25200	27397	-2197
6	PANCHKULA-CHANDIGARH	8	114	8108555	22215	60000	25200	5708	19492
7	NEW DELHI-KUNDLI X	40	114	44966876	123197	60000	25200	31654	-6454
8	NEW DELHI-BAHADURGARH	29	114	35952325	98500	60000	25200	25308	-108
9	NEW DELHI-DUNDA HERA	23	115	42967888	117720	60000	25200	30246	-5046
10	NEW DELHI-BADARPUR BORDER	29	114	67208582	184133	60000	25200	47310	-22110
11	SAMALKHA-Murthal(SNPCrossing)	30	114	38919841	106630	60000	25200	27397	-2197
12	DHURUHERA-GURGAON	38	114	42972253	117732	60000	25200	30249	-5049
13	BAWAL-DHURUHERA	26	114	35163337	96338	60000	25200	24753	447
14	BALLABGARH-PALWAL	23	114	55187423	151198	60000	25200	38848	-13648
15	Murthal(SNPCrossing)-RAI X	9	114	37741602	103402	60000	25200	26567	-1367
16	LONI BORDER-GHAZIABAD	12	114	41791405	114497	60000	25200	29418	-4218
17	JALANDHAR-PHAGWARA	22	114	30733683	84202	60000	25200	21634	3566
18	LUDHIANA-PHILLAUR	13	114	40457516	110843	60000	25200	28479	-3279
19	MANDI GOBINDGARH-KHANNA	8	114	30702884	84117	60000	25200	21613	3587
20	AGRA-FATEHPUR SIKARI	37	114	10172251	27869	60000	25200	7161	18039
21	ALIGARH-HATHRAS	34	114	4664773	12780	60000	25200	3284	21916
22	ALLAHABAD-ALLAHABAD X 1	12	114	26029723	71314	60000	25200	18323	6877
23	ALLAHABAD-ALLAHABAD X 2	8	114	5433328	14886	60000	25200	3825	21375
24	ALLAHABAD-ALLAHABAD X 3	10	114	21136478	57908	60000	25200	14879	10321
25	ALLAHABAD-MIRZAPUR	79	114	194560	533	60000	25200	137	25063
26	BANDA-KABRAI	29	114	7818837	21421	60000	25200	5504	19696
27	BANDA-ATARRA	32	114	7498578	20544	60000	25200	5278	19922
28	BULANDSHAHR-ALIGARH	65	114	5733248	15708	60000	25200	4036	21164
29	CHITRAKUT-MAU	48	114	7587890	20789	60000	25200	5341	19859
30	ETAWAH-BEWAR	60	114	102594	281	60000	25200	72	25128
31	FAIZABAD-AYODHYA	8	114	9618688	26353	60000	25200	6771	18429
32	FEROZABAD-AGRA	50	114	16753036	45899	60000	25200	11793	13407
33	NOIDA-BULANDSHAHR	41	114	3410680	9344	60000	25200	2401	22799
34	GHAZIABAD-HAPUR	36	114	11568785	31695	60000	25200	8144	17056
35	GHAZIABAD-MEERUT	47	114	15080289	41316	60000	25200	10615	14585
36	ORAI-PUNCHH	50	114	8847060	24239	60000	25200	6228	18972
37	JAUNPUR-VARANASI	60	114	9128683	25010	60000	25200	6426	18774
38	JHANSI-JHANSI X	13	114	14175169	38836	60000	25200	9978	15222
39	JHANSI-LALITPUR	92	114	17114043	46888	60000	25200	12047	13153
40	JHANSI-BARAGAON	16	114	8927699	24459	60000	25200	6284	18916
41	JHANSI-KARERA X	18	114	17482883	47898	60000	25200	12307	12893
42	KANPUR-AKBARPUR X	31	114	10063003	27570	60000	25200	7084	18116
43	LUCKNOW-UNNAO	48	114	8032300	22006	60000	25200	5654	19546
44	MAHOBA-CHHATARPUR	51	114	10129027	27751	60000	25200	7130	18070
45	MATHURA-AGRA	54	114	56210544	154001	60000	25200	39568	-14368
46	MATHURA-KOSI	45	114	58570305	160467	60000	25200	41229	-16029
47	UNNAO-KANPUR	18	114	7076003	19386	60000	25200	4981	20219

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
48	VARANASI-VARANASI X	6	114	40448260	110817	60000	25200	28473	-3273
49	AJMER-NASIRABAD	23	114	7818004	21419	60000	25200	5503	19697
50	AJMER-BEAWAR	53	114	33719043	92381	60000	25200	23736	1464
51	ALWAR-SHAJPURA X 1	47	114	5693810	15599	60000	25200	4008	21192
52	BHARATPUR-FATEHPUR SIKRI	24	114	10172251	27869	60000	25200	7161	18039
53	BHILWARA-CHITTAURGARH	54	114	10359941	28383	60000	25200	7293	17907
54	CHITTAURGARH-MANDALGARH	81	114	9128946	25011	60000	25200	6426	18774
55	CHITTAURGARH-DEBARI	97	114	11790285	32302	60000	25200	8300	16900
56	DAUSA-JAIPUR	51	114	9698112	26570	60000	25200	6827	18373
57	DAUSA-MAHWA	64	114	8513859	23326	60000	25200	5993	19207
58	DHAULPUR-MORENA	28	114	48631804	133238	60000	25200	34233	-9033
59	DHAULPUR-AGRA	58	114	50210455	137563	60000	25200	35345	-10145
60	JAIPUR-DUDU	68	115	40030550	109673	60000	25200	28179	-2979
61	KOTA-BARAN	72	114	9216798	25252	60000	25200	6488	18712
62	UDAIPUR-RAJSAMAND	64	114	21867635	59911	60000	25200	15393	9807
63	AHMADABAD AHMADABAD X	10	114	11086568	30374	60000	25200	7804	17396
64	AHMADABAD-KHEDA X	37	115	52335766	143386	60000	25200	36841	-11641
65	BHARUCH-KARIAN	40	114	116516377	319223	60000	25200	82019	-56819
66	BHARUCH-ANKLESHWAR	12	114	102943907	282038	60000	25200	72465	-47265
67	NADIAD-KHEDA X	17	115	75465144	206754	60000	25200	53122	-27922
68	NADIAD-CHAKLASI X	8	115	81211022	222496	60000	25200	57167	-31967
69	VADODARA-DABHOI	29	114	818326	2242	60000	25200	576	24624
70	VADODARA-KARIAN	32	114	116516377	319223	60000	25200	82019	-56819
71	ANAND-BHALEJ X	14	114	18289606	50109	60000	25200	12875	12325
72	BHOPAL OBAIDULLAGANJ	37	114	16702327	45760	60000	25200	11757	13443
73	BHOPAL-SEHORE	37	114	13629173	37340	60000	25200	9594	15606
74	DATIA-JHANSI	27	114	21721446	59511	60000	25200	15290	9910
75	DEWAS-INDORE	35	114	51325037	140617	60000	25200	36129	-10929
76	DEWAS-UJJAIN	37	114	3518647	9640	60000	25200	2477	22723
77	DEWAS-SHAJAPUR	62	114	38235002	104753	60000	25200	26915	-1715
78	GUNA-LUKWASA	60	114	40649871	111370	60000	25200	28615	-3415
79	GWALIOR-MORENA	39	114	48350670	132468	60000	25200	34035	-8835
80	SHAJAPUR-SARANGPUR	26	114	37842364	103678	60000	25200	26638	-1438
81	SHIVPURI-KOTA (M.P.)	50	114	6749682	18492	60000	25200	4751	20449
82	SHIVPURI-KHANKAR X	14	114	30357729	83172	60000	25200	21370	3830
83	SHIVPURI-KARERA	49	114	17638275	48324	60000	25200	12416	12784
84	TIKAMGARH-JHANSI X	88	114	234753	643	60000	25200	165	25035
85	DURG-DURG X	5	114	30836255	84483	60000	25200	21707	3493
86	DURG-RAIPUR	42	114	29645877	81222	60000	25200	20869	4331
87	RAIPUR-GHODARI	43	114	22577152	61855	60000	25200	15893	9307
88	RAJNANDGAON-CHICHOLA	39	114	31904851	87411	60000	25200	22459	2741
89	GAYA-JAHANABAD	48	114	2057669	5637	60000	25200	1448	23752
90	PATNA-JAHANABAD	42	114	2798375	7667	60000	25200	1970	23230
91	PATNA-PHATUHA	21	114	10793397	29571	60000	25200	7598	17602
92	PATNA-HAJIPUR	14	114	18687190	51198	60000	25200	13154	12046
93	BOKARO-DUMRI	23	114	926969	2540	60000	25200	653	24547
94	DHANBAD-DHANBAD X	5	114	4823701	13216	60000	25200	3396	21804
95	CHUNCHURA-BARDDHAMAN	60	114	11249975	30822	60000	25200	7919	17281
96	CHUNCHURA-SHRIRAMPUR X	22	114	11074531	30341	60000	25200	7796	17404
97	HAORA-BALLY	5	114	17848456	48900	60000	25200	12564	12636
98	KOLKATA-ALIPUR	12	114	716298	1962	60000	25200	504	24696
99	KOLKATA-CALCUTTA	30	114	5835153	15987	60000	25200	4108	21092

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
	PORT								
100	KHARAGPUR-PANSKURA	44	114	26290899	72030	60000	25200	18507	6693
101	KHARAGPUR-MANIKPARA X	29	114	16329071	44737	60000	25200	11495	13705
102	BARGARH-SOHELA	24	114	15740552	43125	60000	25200	11080	14120
103	DEOGARH-BARAKOT	31	114	13951019	38222	60000	25200	9821	15379
104	KENDUJHARGARH-KARANJIA X	40	114	11697954	32049	60000	25200	8235	16965
105	SAMBALPUR-BARGARH	45	114	20712348	56746	60000	25200	14580	10620
106	SAMBALPUR-JAMANKIRA	39	114	18448743	50545	60000	25200	12987	12213
107	AKOLA-BALAPUR	24	114	31369772	85945	60000	25200	22082	3118
108	AMRAVATI-BEDNERA	10	114	32687006	89553	60000	25200	23009	2191
109	AMRAVATI-NANDGAON	12	114	32245392	88344	60000	25200	22698	2502
110	BANDRA-THANE	13	114	70614243	193464	60000	25200	49707	-24507
111	BANDRA-MUMBRA	14	115	42645341	116837	60000	25200	30019	-4819
112	BANDRA-PANVEL	29	114	31617899	86624	60000	25200	22257	2943
113	MUMBAI-MUMBAI PORT	30	114	20809274	57012	60000	25200	14648	10552
114	MUMBAI-JNPT	30	114	21762738	59624	60000	25200	15319	9881
115	MUMBAI-MUMBAI REFINARY	30	114	73329	201	60000	25200	52	25148
116	CHANDRAPUR-BHADRAWATI STEEL PLANT	30	114	9316121	25524	60000	25200	6558	18642
117	CHANDRAPUR-CHANDRAPUR STEEL PLANT	30	114	195063	534	60000	25200	137	25063
118	DHULE-MALEGAON	51	114	47623769	130476	60000	25200	33524	-8324
119	DHULE-SONGIR	20	114	44442703	121761	60000	25200	31285	-6085
120	DHULE-JALGAON	93	114	27197723	74514	60000	25200	19145	6055
121	JALGAON-EDALABAD	57	114	26847002	73553	60000	25200	18898	6302
122	NAGPUR-TALEGAON	97	114	30419731	83342	60000	25200	21413	3787
123	NAGPUR-BUTIBORI X	28	114	32277494	88431	60000	25200	22721	2479
124	NAGPUR-UMRED	45	114	330299	905	60000	25200	233	24967
125	NAGPUR-BHANDARA	61	114	31623531	86640	60000	25200	22261	2939
126	NAGPUR-SAONER	35	114	12914514	35382	60000	25200	9091	16109
127	NASHIK-CHANDVAD	63	114	42889438	117505	60000	25200	30191	-4991
128	PUNE-ALE	88	115	15823327	43352	60000	25200	11139	14061
129	THANE-BHAYANDAR X	15	114	36123324	98968	60000	25200	25428	-228
130	THANE-BHIWANDI	16	114	42890365	117508	60000	25200	30192	-4992
131	CHANDRAPUR STEEL PL.-BHADRAWATI STEEL PLANT	60	114	648525	1777	60000	25200	457	24743
132	MUMBAI PORT-JNPT	60	114	10460247	28658	60000	25200	7363	17837
133	KAKINADA-YAMAN	35	114	70609	193	60000	25200	50	25150
134	KAKINADA-SAMALKOT X	18	114	13602302	37267	60000	25200	9575	15625
135	KURNOOL-KALAVA X	32	114	5065083	13877	60000	25200	3565	21635
136	KURNOOL-KOTTAKOTA	96	114	23083790	63243	60000	25200	16249	8951
137	NELLORE-KAVALI	53	114	29151583	79867	60000	25200	20521	4679
138	ONGOLE-MEDARAMETLI	26	114	29967861	82104	60000	25200	21095	4105
139	SECUNDERABAD-RAMAYAMPET	69	114	28332563	77623	60000	25200	19944	5256
140	SECUNDERABAD BHONGIR	47	114	3531353	9675	60000	25200	2486	22714
141	SECUNDERABAD-DUDADA X	77	114	3178862	8709	60000	25200	2238	22962
142	SRIKAKULAM-NARASANNAPET	24	114	18298165	50132	60000	25200	12881	12319
143	VISHAKHAPATNAM-VISAG STEEL PLAN	30	114	25159	69	60000	25200	18	25182
144	VISHAKHAPATNAM-VISHAKHAPATNAM	30	114	6636821	18183	60000	25200	4672	20528

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
	PORT								
145	HYDERABAD-PARGI X	50	114	197297	541	60000	25200	139	25061
146	HYDERABAD-SECUNDERABAD	10	114	41935339	114891	60000	25200	29520	-4320
147	CHENNAI-MADRAS PORT	30	114	2223200	6091	60000	25200	1565	23635
148	CHENNAI-ENORE PORT	30	114	286503	785	60000	25200	202	24998
149	CHENNAI-TIRUVALLUR	44	114	10906204	29880	60000	25200	7677	17523
150	CHENNAI-GUMMIDIPUNDI	39	114	19841915	54361	60000	25200	13967	11233
151	DINDIGUL-TIRUCHCHRAPPALLI	95	114	2337679	6405	60000	25200	1646	23554
152	NAGERCOIL-PANAIKKUDI	24	114	622121	1704	60000	25200	438	24762
153	KARUR-DINDIGUL	81	114	5413195	14831	60000	25200	3811	21389
154	MADURAI-ARUPPUKKOTTAI	48	114	7565921	20729	60000	25200	5326	19874
155	MADURAI-SIVAGANGA	35	114	566677	1553	60000	25200	399	24801
156	MADURAI-TENI	74	114	1273635	3489	60000	25200	897	24303
157	NAGAPPATTINAM-KARAIKAL	26	114	2213762	6065	60000	25200	1558	23642
158	SALEM-DHARMAPURI X	38	114	11226696	30758	60000	25200	7903	17297
159	SALEM-SALEM PORT	30	114	441946	1211	60000	25200	311	24889
160	SALEM-NAMAKKAL	74	114	8076048	22126	60000	25200	5685	19515
161	TENI-DINDIGUL	76	114	2118679	5805	60000	25200	1491	23709
162	TIRUVANNAMALAI-GINGEE	39	114	997439	2733	60000	25200	702	24498
163	TIRUVANNAMALAI-KALLAKKURICHCHI	43	114	1151984	3156	60000	25200	811	24389
164	TIRUVANNAMALAI-UTHANGARAI	68	114	1047959	2871	60000	25200	738	24462
165	TIRUVANNAMALAI-POLUR	33	114	1024274	2806	60000	25200	721	24479
166	TUTICORIN-TUTICORIN PORT	25	114	2700285	7398	60000	25200	1901	23299
167	TUTICORIN-ETTAIYAPURAM	58	114	7961979	21814	60000	25200	5605	19595
168	VIRUDUNAGAR-TIRUMANGALAM	26	114	7471061	20469	60000	25200	5259	19941
169	BANGALORE-RAMANAGRAM	49	114	777169	2129	60000	25200	547	24653
170	BANGALORE-NELAMANGALA	27	114	14273595	39106	60000	25200	10048	15152
171	BANGALORE-CHANDAPURA X	25	114	4434286	12149	60000	25200	3121	22079
172	MANGALORE-MANGLORE X	6	114	7853636	21517	60000	25200	5528	19672
173	MANGALORE-MANGALORE PORT	30	114	9435812	25852	60000	25200	6642	18558
174	GT X -RAJPURA	27	114	32637844	89419	60000	25200	22975	2225
175	RAJPURA-PANCHKULA X	30	114	10495130	28754	60000	25200	7388	17812
176	RAJPURA-PATIALA	26	114	18799942	51507	60000	25200	13234	11966
177	PATHANKOT-KATHUA	24	114	16435497	45029	60000	25200	11569	13631
178	AKBARPUR X -BHOGANIPUR	22	114	10276911	28156	60000	25200	7234	17966
179	LONI BORDER-NEW DELHI	9	114	40054677	109739	60000	25200	28196	-2996
180	BARA X -ALLAHABAD	22	114	15063988	41271	60000	25200	10604	14596
181	SIKANDRARAO-ALIGARH	39	114	1831179	5017	60000	25200	1289	23911
182	SIKANDRARAO-ETAH	32	114	1824755	4999	60000	25200	1284	23916
183	BHOGANIPUR-ORAI	45	114	8462970	23186	60000	25200	5957	19243
184	BHONGAON-BEWAR	8	114	634983	1740	60000	25200	447	24753
185	KABRAI-MAHOBA	12	114	10062995	27570	60000	25200	7084	18116

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
186	ATARRA-CHITRAKUT	37	114	7564380	20724	60000	25200	5325	19875
187	ANRAI-MIRZAPUR	18	114	9826906	26923	60000	25200	6917	18283
188	MUGHAL SARAI X - CHANDAULI	11	114	24707496	67692	60000	25200	17392	7808
189	MAU-BARA X	40	114	8454185	23162	60000	25200	5951	19249
190	MAURANIPUR X - MAURANIPUR	15	114	14291816	39156	60000	25200	10060	15140
191	MAURANIPUR X - CHATTARPUR	21	114	14291816	39156	60000	25200	10060	15140
192	CHICHOLA-BAGHNADI	57	114	31920403	87453	60000	25200	22470	2730
193	BAGHNADI-DEORI	10	114	31920403	87453	60000	25200	22470	2730
194	SARAIPALI-GHODARI	110	114	21717796	59501	60000	25200	15288	9912
195	DURG X - RAJNANDGAON	32	114	31413940	86066	60000	25200	22113	3087
196	PALA LAHARHA KENDUJHARGARH	52	114	25962862	71131	60000	25200	18276	6924
197	BARAKOT-PALA LAHARHA	24	114	17997548	49308	60000	25200	12669	12531
198	PRADHANAPAT-DEOGARH	21	114	35491166	97236	60000	25200	24983	217
199	LOBARCHATTI-SARAIPALI	30	114	15734789	43109	60000	25200	11076	14124
200	SOHELA-LOBARCHATTI	18	114	15734789	43109	60000	25200	11076	14124
201	BANGRIPOSHI-RAJALUKH X	27	114	18267677	50048	60000	25200	12859	12341
202	RAJALUKH X - BAHARAGORA	12	114	16102701	44117	60000	25200	11335	13865
203	JASHIPUR-BANGRIPOSHI	44	114	11697954	32049	60000	25200	8235	1696
204	KARANJIA X - JASHIPUR	25	114	11697954	32049	60000	25200	8235	16965
205	JAMANKIRA-PRADHANAPAT	23	114	18448743	50545	60000	25200	12987	12213
206	SARANGPUR-PACHOR X	37	114	37842364	103678	60000	25200	26638	-1438
207	LUKWASA-SHIVPURI	36	114	40834043	111874	60000	25200	28744	-3544
208	KARERA-KARERA X	17	114	17638275	48324	60000	25200	12416	12784
209	MOHANA X - GWALIOR	54	114	30574568	83766	60000	25200	21522	3678
210	KHANKAR X - MOHANA X	40	114	30357729	83172	60000	25200	21370	3830
211	PACHOR X -BIAORA X	28	114	37842364	103678	60000	25200	26638	-1438
212	MAKSUNDANGARH X-GUNA	42	114	39813576	109078	60000	25200	28026	-2826
213	BIAORA X -BIAORA	5	114	47493172	130118	60000	25200	33432	-8232
214	SHAHPURA-SHAHPUR X 1	4	114	47046420	128894	60000	25200	33117	-7917
215	SHAHPURA X - [1] PRAGPURA	45	114	41352609	113295	60000	25200	29109	-3909
216	PRAGPURA-KOTPUTLI	16	114	41352609	113295	60000	25200	29109	-3909
217	KOTPUTLI-BAHROR	23	114	39880853	109263	60000	25200	28073	-2873
218	BAHROR-BAWAL	34	114	40369131	110600	60000	25200	28417	-3217
219	SHAHPURA X -2 JAIPUR	49	114	45564713	124835	60000	25200	32074	-6874
220	SHAHPURA X -2 SHAHPURA	10	114	46247070	126704	60000	25200	32555	-7355
221	MAHWA-BHARATPUR	60	114	8585212	23521	60000	25200	6043	19157
222	DUDU-KISHANGARH X	43	115	40030550	109673	60000	25200	28179	-2979
223	BIJOLIA-KOTA	39	114	9930858	27208	60000	25200	6991	18209
224	MANDALGARH-BIJOLIA	24	114	10146033	27797	60000	25200	7142	18058
225	JHILWARA X-RAJSAMAND	19	114	22184981	60781	60000	25200	15617	9583
226	JHILWARA X-BEAWAR	140	114	21897390	59993	60000	25200	15414	9786
227	CHITTAURGARH X-CHITTAURGARH	4	114	9142903	25049	60000	25200	6436	18764

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
228	DEBARI-UDAIPUR	12	114	11790285	32302	60000	25200	8300	16900
229	KHAIRWARA-SHAMLAJI	41	114	37032535	101459	60000	25200	26068	-868
230	SHAHBAD-BARAN	78	114	6749682	18492	60000	25200	4751	20449
231	SHAHBAD-KOTA [M. P.]	41	114	6749682	18492	60000	25200	4751	20449
232	DEBAGRAM-KATOYA	24	114	4797564	13144	60000	25200	3377	21823
233	DEBAGRAM-KRISHNANAGAR	40	114	2104959	5767	60000	25200	1482	23718
234	KATOYA-BARDDHAMAN	53	114	4422891	12118	60000	25200	3113	22087
235	RANAGHAT-CHAKDAHA	13	114	847421	2322	60000	25200	597	24603
236	RANAGHAT-KRISHNANAGAR	35	114	847421	2322	60000	25200	597	24603
237	CHAKDAHA-BARASAT	40	114	847421	2322	60000	25200	597	24603
238	RAMSAGAR CHANDRAKONA ROAD	36	114	6066464	16620	60000	25200	4270	20930
239	SONAMUKHI-RAMSAGAR	27	114	4084876	11191	60000	25200	2875	22325
240	SONAMUKHI-KAKSA	22	114	2436109	6674	60000	25200	1715	23485
241	MEDINIPUR-KHARAGPUR	9	114	4865111	13329	60000	25200	3425	21775
242	MEDINIPUR-CHANDRAKONA ROAD	35	114	4865111	13329	60000	25200	3425	21775
243	HALDIA X-HAORA	58	114	18150618	49728	60000	25200	12777	12423
244	HALDIA X-PANSKURA X	8	114	18597254	50951	60000	25200	13091	12109
245	ILLAMBAZAR-KAKSA	24	114	1580198	4329	60000	25200	1112	24088
246	MANIKPARA X - CHICHRA	17	114	16329071	44737	60000	25200	11495	13705
247	PANSKURA-PANSKURA X	7	114	17260251	47288	60000	25200	12150	13050
248	BALLY-DUM DUM X	9	114	27002963	73981	60000	25200	19008	6192
249	SHRIRAMPUR X - BALLY	25	114	11074531	30341	60000	25200	7796	17404
250	DUM DUM X - KOLKATA	11	114	27002963	73981	60000	25200	19008	6192
251	DOBHI-CHAUPARAN	40	114	19439637	53259	60000	25200	13684	11516
252	BIHTA-PATNA	21	114	10772997	29515	60000	25200	7583	17617
253	BAHARAGORA-CHICHRA	38	114	16329071	44737	60000	25200	11495	13705
254	BARHI-CHAUPARAN	21	114	19449832	53287	60000	25200	13691	11509
255	BAGODAR-DUMRI	21	114	15222913	41707	60000	25200	10716	14484
256	ALE-KALYAN	120	115	1159444	3177	60000	25200	816	24384
257	GHOTI-NASHIK	37	114	40484752	110917	60000	25200	28498	-3298
258	CHANDVAD-MALEGAON	42	114	47623769	130476	60000	25200	33524	-8324
259	DAHIVAD-SENDHWA	70	114	44458310	121804	60000	25200	31296	-6096
260	DAHIVAD-SONGIR	32	114	44442703	121761	60000	25200	31285	-6085
261	MALIKAPUR-EDALABAD	31	114	27062312	74143	60000	25200	19050	6150
262	MALIKAPUR-NANDURA	26	114	26300473	72056	60000	25200	18514	6686
263	KHAMGAON-NANDURA	19	114	33125002	90753	60000	25200	23318	1882
264	KHAMGAON-BALAPUR	23	114	33032971	90501	60000	25200	23253	1947
265	MURTAJAPUR-BEDNERA	37	114	32748293	89721	60000	25200	23052	2148
266	NANDGAON-TALEGAON	58	114	32133301	88036	60000	25200	22620	2580
267	PALADI-BHANDARA	4	114	28643517	78475	60000	25200	20163	5037
268	DUGGIPAR-PALADI	56	114	30014118	82230	60000	25200	21128	4072
269	CHAKLASI X -ANAND	10	115	80606246	220839	60000	25200	56741	-31541
270	VASAD-ANAND	19	115	97960102	268384	60000	25200	68957	-43757
271	VASAD-VADODARA	21	115	104344342	285875	60000	25200	73451	-48251
272	KUSKI X -SUNOKH X	7	114	35806620	98100	60000	25200	25205	-5

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
273	KUSKI X -SHAMLAJI	4	114	35806620	98100	60000	25200	25205	-5
274	GAMBHOL X - SUNOKH X	23	114	15488516	42434	60000	25200	10903	14297
275	SAVLI-SAVIL X	10	114	12404463	33985	60000	25200	8732	16468
276	SAVLI-UMERETH X	12	114	3617340	9911	60000	25200	2546	22654
277	BARDOLI X - PALSANA	15	114	317981	871	60000	25200	224	24976
278	CHIKHLI X -VALSAD X	24	114	61315824	167989	60000	25200	43162	-17962
279	PARDI-PARANERA X	9	114	61315824	167989	60000	25200	43162	-17962
280	PARDI-VAPI	18	114	37314545	102232	60000	25200	26267	-1067
281	VALSAD X -PARNERA X	5	114	61315824	167989	60000	25200	43162	-17962
282	PALSANA-NAVASARI	18	114	60853494	166722	60000	25200	42837	-17637
283	VEJALPUR X - NAVASARI	10	114	56985421	156124	60000	25200	40114	-14914
284	VEJALPUR X - CHIKHLI X	19	114	57242085	156828	60000	25200	40294	-15094
285	PUNCHH-MOTH	16	114	8768552	24023	60000	25200	6172	19028
286	PALAHANA-ALLAHABAD X 3	22	114	21271788	58279	60000	25200	14974	10226
287	ALLAHABAD X -2 ALLAHABAD X 3	10	114	99696	273	60000	25200	70	25130
288	ALLAHABAD X -3 MAU	68	114	35613	98	60000	25200	25	25175
289	VARANASI X - GAZIPUR	69	114	15415231	42234	60000	25200	10851	14349
290	VARANASI X - MUGHAL SARAI X	16	114	24224893	66370	60000	25200	17053	8147
291	MAURANIPUR-JHANSI X	60	114	13940416	38193	60000	25200	9813	15387
292	CHIRGAON-MOTH	23	114	8768552	24023	60000	25200	6172	19028
293	CHIRGAON-BARAGAON	15	114	8927699	24459	60000	25200	6284	18916
294	DIBAI X -ALIGARH	41	114	535984	1468	60000	25200	377	24823
295	KANPUR(URBAN) X - UNNAO	18	114	1150830	3153	60000	25200	810	24390
296	ALLAHABAD X -1 MUNGRA BADSHAHPUR	48	114	130360	357	60000	25200	92	25108
297	ALLAHABAD X -1 ANRAI	63	114	25899363	70957	60000	25200	18231	6969
298	PANAIKKUDI-NANGUNERI	22	114	3889152	10655	60000	25200	2738	22462
299	NANGUNERI-PALAYANKOTTAI	30	114	3889152	10655	60000	25200	2738	22462
300	PALAYANKOTTAI-TIRUNELVELLI	2	114	4450668	12194	60000	25200	3133	22067
301	PALAYANKOTTAI-PUDUKKOTTAI	36	114	398054	1091	60000	25200	280	24920
302	KOVILPATTI-VIRUDUNAGAR	49	114	5130517	14056	60000	25200	3612	21588
303	KOVILPATTI ETTAIYAPURAM	14	114	47311	130	60000	25200	33	25167
304	MANAMADURAI-MADURAI	45	114	1385821	3797	60000	25200	976	24224
305	TIRUMANGALAM-MADURAI	21	114	8142132	22307	60000	25200	5731	19469
306	MELUR-MADURAI	26	114	7424213	20340	60000	25200	5226	19974
307	KOTTAMPATTI-DINDIGUL	42	114	998618	2736	60000	25200	703	24497
308	DINDIGUL X - MADURAI	48	114	9654878	26452	60000	25200	6796	18404
309	DINDIGUL X - DINDIGUL	18	114	8955910	24537	60000	25200	6304	18896
310	CHITTODU-SALEM	59	114	10359109	28381	60000	25200	7292	17908
311	TIRUCHCHIRAPPALLI X - TIRUCHCHIRAPPALLI	5	114	12158044	33310	60000	25200	8558	16642
312	ATTUR-SALEM	51	114	6105614	16728	60000	25200	4298	20902
313	TIRUKKOVILUR-TIRUVANNAMALAI	36	114	98787	271	60000	25200	70	25130

Appendix-8
Chapter 8

HIGHWAYS SECCTION LOADINGS
(BASED ON 2007-08 INTER REGIONAL FREIGHT TRAFFIC)

SN	Highway Section	Distance (Km)	Section Character (Terrain/ Type/ Lanes)*	Inter- Regional Annual (Tonnes)		Designed Capacity PCUs/day	Capacity Assigned to Inter regional Goods Traffic PCUs/Day	Estimated Inter-Regional PCUs /Day	Available Capacity PCU/Day
				Annual	Daily				
314	UTHANGARAI-SALEM	75	114	507876	1391	60000	25200	358	24842
315	TAMBARAM-CHENNAI	25	114	12292105	33677	60000	25200	8653	16547
316	SRIPERUMBADUR CHENNAI	45	114	6202288	16993	60000	25200	4366	20834
317	ASPARI-KURNOOL	62	114	4320195	11836	60000	25200	3041	22159
318	ATMAKUR-KURNOOL	69	114	2317067	6348	60000	25200	1631	23569
319	PYAPALI X - KURNOOL	74	114	14201759	38909	60000	25200	9997	15203
320	GUDUR-NELLORE	39	114	28789974	78877	60000	25200	20266	4934
321	KAVALI-SINGARAYAKONDA X	31	114	29640964	81208	60000	25200	20865	4335
322	SINGARAYAKONDA X-ONGOLE	29	114	29640964	81208	60000	25200	20865	4335
323	FARRUKHNAGAR-HYDERABAD	51	114	24066538	65936	60000	25200	16941	8259
324	MEDARAMETLI-CHILAKALURUPET	43	114	20549427	56300	60000	25200	14465	10735
325	CHITYAL-HYDERABAD	84	114	53109340	145505	60000	25200	37385	-12185
326	RAJAHMUNDRY-PEDDAPURAM	16	114	39094646	107109	60000	25200	27520	-2320
327	KANAKAPURA BANGALORE	55	114	10161213	27839	60000	25200	7153	18047
328	HOSKOTE-BANGALORE	26	114	26774060	73354	60000	25200	18847	6353
329	JAIPUR (ASSAM) DIBRUGARH X	25	124	64970	178	45000	18900	46	18854
330	INDORE-CHAPRA	48	134	3725460	10207	28500	11970	2622	9348
331	HYDERABAD-SANGAREDDI	50	134	17598358	48215	28500	11970	12388	-418
332	SENDHWA-JULWANIA	24	134	44554200	122066	28500	11970	31363	-19393
333	JULWANIA-KHALGHAT	42	134	44447554	121774	28500	11970	31288	-19318
334	GUJRI-KHALGHAT	16	134	44447554	121774	28500	11970	31288	-19318
335	GUJRI-INDORE	63	134	36612347	100308	28500	11970	25773	-13803

* Represents Terrain, Type and Lanes
IN TERRAIN 1= Plain, 2=Rolling, 3=Hilly,
IN TYPE 1=NH, 2=SH, 3=MDR/ODR
IN NO. OF LANES 1=SL, 2=Intermediate Lane, 4= 4Lane and 5=Expressway