CHAPTER 4.0

TRAFFIC AND ROAD NETWORK CHARACTERISTICS

4.1 Traffic Surveys

Extensive traffic surveys have been carried out as part of CTTS study to appreciate traffic and travel characteristics, identify issues and constraints and to develop policies and programmes for rational development of the transport system. **Table 4.1** presents the type and scope of surveys carried out.

Table 4.1: CTTS – Traffic & Travel Surveys

Sl No.	Survey Type	Scope
1	Road Network Inventory	92.6 km
2	Classified Traffic Volume Count Survey - Outer Cordon - Inner Cordon - Screen Line - Mid Block	 7 count stations, 24 hours 4 count stations, 24 hours 17 count stations, 16 hours 3 count stations, 16 hours
3	Origin & Destination Survey - Outer Cordon	 7 count stations, 24 hours
4	Intersection Turning Movement Survey	17 locations, 12 hours
5	Speed & Delay Survey	92.6 km
6	Parking Survey - On Street - On Street	 8 stretches, 12 hours 2 facilities, 12 hours
7	Pedestrian Survey	9 locations, 12 hours
8	Rail Gate Crossing Survey	4 level crossings, 24 hours
9	Intermediate Public Transport Operator User Survey - Operator - Passenger	 50 interviews 100 interviews
10	Public Transport User Survey	150 interviews
11	Truck Operator Survey	25 interviews
12	Terminal Survey - Passenger Terminal	 150 interviews
13	Household Interview Survey	4252 households

Source: VCTTS – Interim Report (CES)

Figures 4.1, 4.2, 4.3, 4.4 present the location of different surveys.

4.2 Traffic Characteristics

4.2.1 Traffic at Outer Cordon

Nearly 1.98 lakh vehicles (2.70 lakh PCUs) of various description enter/exit the city on an average day. Hyderabad road carries the largest number of vehicles (50,062). Private vehicles account of 40.1 percent followed by Public Transport (22.6%) and freight vehicle (25.4%). The share of Public Transport modes is high indicating the intense daily interaction between the city and its hinterland.

Table 4.2 and **Figure 4.5** present the traffic at outer cordon by volume and composition.

Table 4.2: Average Daily Traffic at Outer Cordon Count Stations

Location	Incoming		Outgoing		Total (ADT)	
	Vehicles	**PCUs**	**Vehicles**	**PCUs**	**Vehicles**	**PCUs**
OC1, Tadepalli (Chennai Road)	15759 (15.78%)	30027 (16.86%)	16504 (39.06%)	29025 (21.76%)	32263 (16.31%)	59052 (21.95%)
OC2*, Undavalli (Barrage Road)	19368 (19.39%)	13013 (9.59%)	16153 (16.50%)	10808 (8.10%)	35521 (17.96%)	23821 (8.85%)
OC3, Gollapudi (Hyderabad Road)	25166 (25.19%)	38156 (28.12%)	24896 (25.43%)	39629 (29.72%)	50062 (25.31%)	77785 (28.91%)
OC4, Nainavaram Road	708 (0.71%)	1148 (0.85%)	743 (0.76%)	1056 (0.79%)	1451 (0.73%)	2204 (0.82%)
OC5, Payakapuram (NuzveduRoad)	3769 (3.77%)	4006 (2.95%)	3466 (3.54%)	3818 (2.86%)	7235 (3.66%)	7824 (2.91%)
OC6, Prasadampadu (Kolkata Road)	18589 (18.61%)	30096 (22.18%)	20825 (21.27%)	31766 (23.82%)	39414 (19.93%)	61862 (22.99%)
OC7, Kanoor (Machilipatnam Road)	16534 (16.55%)	19268 (14.20%)	15304 (15.63%)	17259 (12.94%)	31838 (16.10%)	36527 (13.58%)
All Locations	**99,893 100.0%)**	**1,35,714 (100.0%)**	**97,891 (100.0%)**	**1,33,361 (100.0%)**	**1,97,784 (100.0%)**	**2,69,075 (100.0%)**

Note: Figures in bracket indicate percentage share of total
**Buses, HCVs and MAV vehicles are restricted on the Barrage Road*
Source: CES Survey, 2006

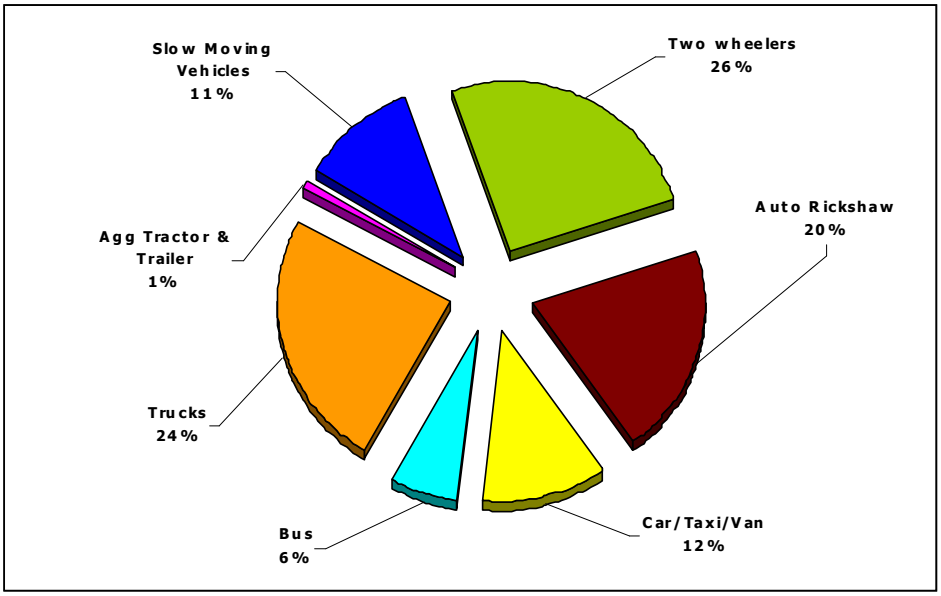

Figure 4.5: Traffic Composition at Outer Cordon

4.2.2 Traffic Desire at Outer Cordon

Of the passenger modes 5.5% of vehicles, and of goods modes 48.6% of vehicles, were non-destined (through) in nature. This indicates the urgent need for development of alternate roads to divert through traffic to release city road capacity for local and destined traffic needs.

Figure 4.6 depict the desire pattern of passenger vehicles at outer cordon. **Figure 4.7** presents the desire pattern of goods vehicles at outer cordon.

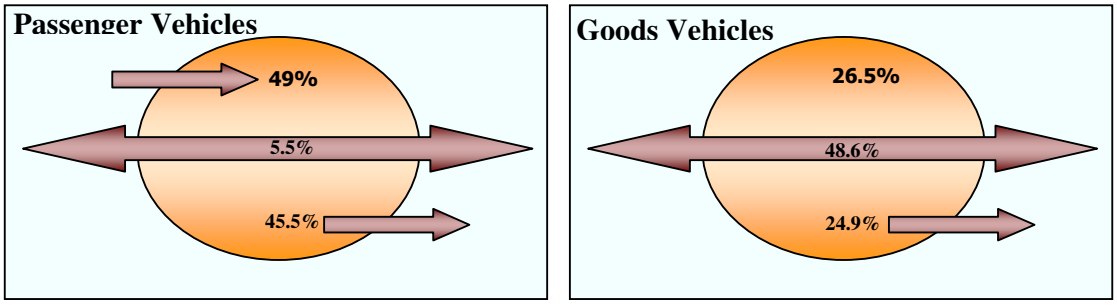

Figure 4.6 Travel Desire Pattern at Outer Cordon

4.2.3 Traffic within City

Traffic intensity on the road network of Vijayawada City is intense. It ranges between 1219 and 60571 vehicles. The composition is heterogeneous. 2-wheelers and Auto rickshaws predominate. Slow moving vehicles also have a high share. Peak hour share

ranges between 5.7% and 8.7% (Inner Cordon). Share of buses is low at 5% (Inner Cordon). **Table 4.3** presents the traffic (ADT) at different locations within the city.

Table 4.3: Average Daily Traffic

Sl. No.	Location ID	Location Name	ADT	
			Vehicles	PCUs
1	IC1	Bandar Road	52,781	45,480
2	IC2	Eluru Road	24,941	23,114
3	IC3	IC-3, Canal Road	38,464	58,373
4	IC4	Gandhi Hill Road	23,750	18,802
5	MB5	C K Reddy Road	18768	18114
6	MB6	Ramalingeswara Nagar Road	14878	10297
7	MB7	Y V Rao Hospital Road	17093	13173
8	SL1	Kalakshetram Bridge	60571	60904
9	SL2	Hanuman Pet Bridge (Ryves Cannel)	34033	37598
10	SL3	Alankar Center-Lenin Center Bridge Road	39418	34355
11	SL4	Kotta Vantena (Ryves Cannel)	41246	33461
12	SL5	Rokallapalem Bridge	28772	22093
13	SL6	Government press junction	33321	23216
14	SL7	Cement Factory - G S Raju road	31258	24663
15	SL8	Ambedkar Statue - Gymkhana club junction road	23796	16482
16	SL9	Eluru laakulu junction	18066	16644
17	SL10	Narayana swamy hotel junction	12413	11665
18	SL11	Krishnalanka - Labbipeta road Bridge	28505	20505
19	SL12	Kedareswarapeta road Bridge	21047	16300
20	SL13	Kedareswarapeta road	21731	16124
21	SL14	Budameru Bridge (Near Govt Press)	33718	23859
22	SL15	Madhura Nagar road	17734	13418
23	SL16	Near Goods Cabin Railway Gate	1219	1842
24	SL17	Near Pandit Nehru Bus Station	20455	30694

Source: CES Survey, 2006

4.2.4 Traffic Speeds

The traffic speeds on different links of the city road network are generally poor. Nearly 85% of the road network in city area and nearly 100% of the roads within Core Area have speeds less than 30 kmph. While this is the stream speed, those of buses will be much less, as they need to stop at bus stops. **Table 4.4** presents distribution of road length by average speeds. Traffic suffers from large delays. **Table 4.5** presents the average speed and delays on major corridors.

Table 4.4: Distribution of Road Length by Average Speeds

Speed (km/hr)	% of Road Length		Total
	Core Area	Other Areas	
Upto 10	0.00	0.00	0.00
> 10 and <=20	48.31	17.79	23.13
> 20 and <=30	51.69	63.15	61.14
> 30 and <=40	0.00	16.84	13.89
> 40	0.00	2.22	1.83
Total	100.0	100.0	100.0

Source: CES Survey, 2006

Table 4.5: Average Speed and Delay on Major Corridors

Name of the Road/Corridor/Section	Length (Km)	Average Travel Speed (kmph)	Average delay (sec.)	Remarks
A. Arterial / Sub-Arterial Roads :				
NH – 5 Road	5.70	41.25	117.00	Intersection
NH – 9 Road	9.10	32.17	40.00	Intersection
Bandar Road	4.30	19.28	198.00	Intersection
Eluru Road	6.80	22.18	132.00	Intersection
Nainavaram Road	2.00	26.00	Negligible	-
Old NH-9 Bypass Road	1.40	21.64	Negligible	-
B. Other Major Roads :				
Route No-5 Road (Part)	3.05	21.30	30.00	Congestion
Nirmal Convent road	0.45	27.00	31.00	Congestion
Sambamurthy Road	1.90	28.16	20.00	Congestion
Gandhinagar Road	0.45	19.35	7.00	Congestion
C K Reddy Road	2.20	23.95	Negligible	-
G S Raju Road	2.90	28.70	Negligible	-
Vishalandra Road	2.05	16.71	66.00	-
Indiragandhi Municipal Stadium Road	0.60	27.30	Negligible	-
Nakkala Road	0.00	0.00	20.00	Congestion
Dornakal road	0.00	0.00	15.00	Congestion
Museum Road	0.00	0.00	20.00	Congestion
Payakapuram Road	3.90	26.36	Negligible	-
Madhuranagar Road	1.10	22.54	Negligible	-
Kedereswaripet Road	2.3	20.5	Negligible	-
Vidyadharapuram Road	0.00	20.50	Negligible	-
Milk Project Road	1.60	21.00	Negligible	-
Tunnel Road	4.80	23.33	Negligible	-
Nehru Road	0.80	16.00	22.00	Congestion
Panja Road	1.00	23.00	11.00	Congestion
Gandhi Hill Road	0.70	24.00	Negligible	-
Gurunanak road	1.50	19.26	Negligible	-
Autonagar Road	3.30	19.93	56.00	Congestion

Name of the Road/Corridor/Section	Length (Km)	Average Travel Speed (kmph)	Average delay (sec.)	Remarks
Cresturajupuram Road	3.85	25.53	Negligible	-
Hanumanpeta Road	1.35	23.59	Negligible	-
CBD Area :				
Besant Road	1.20	14.00	42.00	Congestion
Vasthralatha Road	0.40	20.46	31.00	Congestion
Lenin Center Road	1.80	20.00	12.00	Congestion
Root No-5 Road	1.40	14.69	22.00	Congestion
Canal Road	1.80	23.70	Negligible	Negligible

Note: Negligible indicate the delay is less than 5 seconds.
Source: CES Survey, 2006

4.2.5 Traffic at Intersections

Intersections are major bottleneck points on the road network system. They also carry large volumes of traffic. Bus System needs to be given priority of movement at intersections to improve its productivity. Intersections need to be properly designed and controlled to minimize delays to all traffic in general and to buses in particular. **Table 4.6** presents the peak hour traffic volumes at major intersections.

Table 4.6: Peak Hour Traffic Volumes at Intersections

Location	Type of Junction	Morning			Evening			Total		Control
		Peak Hour	Vehicles	PCUs	Peak Hour	Vehicles	PCUs	Vehicles	PCUs	
Sitara junction	+	09 - 10	3001	2160	19 - 20	3529	2832	30454	25089	Un controlled
Kummaripalem center	T	10 - 11	4068	4642	19 - 20	4834	6029	42559	50114	Un controlled
Ashok Pillar Junction	Y	10 - 11	4251	4297	18 - 19	3934	4329	43025	45289	Un controlled
Potti Sree Ramulu Junction	T	10 - 11	2933	3232	18 - 19	3053	3581	30455	34873	Un controlled
VMC junction	+	10 - 11	4304	4007	19 - 20	4692	4585	40246	39196	Un controlled
Polioce Control Room Junction	+	10 - 11	6204	5685	18 - 19	6527	6102	68747	64540	Signal Control
Governer Pet Junction	Y	10 - 11	5445	5367	18 - 19	5916	5781	55578	55883	Un controlled
Swarna Palace hotel junction	+	10 - 11	5338	5179	18 - 19	6322	6376	58384	56316	Signal Control
Chuttugunta junction	+	09 - 10	4963	4211	19 - 20	7060	5678	52392	43108	Signal Control
Pipula road junction	+	09 - 10	3255	2342	19 - 20	3210	2405	30053	23185	Un controlled
Ramavarapupadu Junction	T	08 - 09	2090	2276	19 - 20	2650	3223	22645	27039	Signal Control
N T R Circle Junction	+	11 - 12	5712	5485	18 - 19	6948	7561	57193	57789	Un controlled
Benz Circle Junction	+	09 - 10	6647	6490	18 - 19	6845	7103	75519	77835	Signal Control
I G M Stadium Junction	T	11 - 12	3026	2412	19 - 20	4332	3578	37214	32110	Un controlled
Fire Station Junction	T	09 - 10	5554	5177	19 - 20	6698	8079	60976	66273	Un controlled
Alankar Junction	*	10 - 11	5379	4222	19 - 20	7274	5646	60594	47124	Signal Control
Puspa Hotel Junction	++	10 - 11	8620	2440	18 - 19	9184	2621	81975	25819	Un controlled

Source: CES Survey, 2006

4.2.6 Road Network Characteristics

Right of Way

The road network of Vijayawada suffers from many inadequacies. Network extent is poor, capacities are low and bottlenecks are many. The right of way (ROW) of major roads ranges between 21 m to 65 m. However in the CBD area, the range is between 11 m and 17 m. **Table 4.7** presents the distribution of road length by ROW.

Table 4.7 : Distribution of Road Length by Right of Way

ROW(m)	% Road Length
Upto 10	5.4
10 to 15	20.2
15 to 20	25.2
20 to 30	32.5
30 to 40	10.4
40 to 60	4.4
above 60	1.9
Total	**100.0**

Source: CES Surveys, 2006

Carriageway

Nearly 52% of road network has 4-lane configuration and 23% has 2-lane configuration. Nearly 61% of road length has undivided carriageway. Pedestrian footpaths are absent on almost all the length. The high levels of traffic volumes, low capacity and conflicts with pedestrian movement and parked vehicles have contributed to low level of service. Almost all stretches exhibit a V/C ratio exceeding 1 indicating the high congestion, low speeds and high delays. Improvement of road network in terms of pattern, hierarchy, right-of-way, capacity, etc. needs to be given high priority to improve traffic flows and productivity of public mass transport system.

Table 4.8 presents to distribution of road length by carriageway width.

Table 4.8: Distribution of Road length by Carriageway width

Carriageway width (m)	% Road Length
Up to 4	2.2
4 to 6	7.8
6 to 8	22.8
8 to 11	10.3
11 to 15	51.9
>15	4.6
Total	**100.0**

Source: CES Surveys, 2006