Chapter 8
ROAD AND TRANSPORTATION PLANNING
The whole focus of this particular section of the thesis report is to mainly review the existing status of the transportation system, the road network in the city of Kanpur. All the elements that have been reviewed and also assessed include:

- The Current System of Transport
- Characteristics of the Road Network
- Characteristics of Traffic

8.2 EXISTING TRANSPORT SYSTEM IN KANPUR

The city of Kanpur is one that is mainly dependent upon the private buses as well as the tempos for the purpose of intra-city passenger travel of passengers. Indeed there are about 80 private buses as well as 980 auto rickshaws as well as tempos that are plying in Kanpur city. Previously there were many city buses that were operated by the U.P.S.R.T.C. in order to cater to the urgent need of the commuters. In recent times, the U.P.S.R.T.C. has in fact gone ahead and asked for the replacement of about ten buses that belong to the old fleet. A main mother station along with 7 daughter stations happen to be under construction presently and a thousand fresh CNG taxi permits were allocated.

As many as 5,000 cycle-rickshaws operate in the city of Kanpur. These are mostly
used for the purpose of making short trips. Without a good mode of public transportation to bank on the people of Kanpur are forced to entirely depend upon the personalized modes for being able to sustain existing economic activities. One can witness a phenomenal growth in the rise of motor cycles over the last ten years in the city of Kanpur. The motor two vehicles have grown in number from about 2.7 hundred thousand in the year 1999 to about 4.5 Lakhs in the year 2006. These are also used for the purpose of trips.

GOODSTRANSPORTSYSTEM: [D.(1990), Moudon, A.V. (Ed.)(1987)102,103]

Although the intra-city transportation by the light commercial vehicles is something that is allowed always within the inner CBD circle, however their movements and their operations augment the congestion that is there in main market area slowing down the movement of traffic.

Goods transport in Kanpur by the handcarts, the cycle carts, the buffalo carts as well as by several other slow vehicles happen to be used normally during the daytime in the area that encircles the Ambedkar Road, the Mall Road, the Canal Road, the Kidwai Nagar Road, the Baradevi Road, the Chawla Market Road, the Fazalganj Road and the Eye Hospital Road. In the present day, as many as five hundred Kharkharas, two hundred bullock cart, three hundred and fifty handcart and four hundred [City Development Plan Kanpur] trolleys can be seen plying within Kanpur for the transportation of various goods. The light goods vehicles like the mini-trucks goods the tempo and the goods autos are those that create traffic congestion in the intra-city goods operation in the ambit of the circle that has been mentioned above.

8.2.2 VEHICLEPOPULATIONINKANPUR

City
The vehicle registration numbers for the city of Kanpur that have been derived from the R.T.O. can be seen in table 8.1. The numbers of the vehicles registration happen to be mainly the two wheelers for the years between 1999 and 2006, this being followed by cars.

**Fig.-8.1 Registered Vehicle Population**

![Share of registered Vehicles in Kanpur (2006)](image)

Source: Regional Transport Office 2006
Table 8.1 VehicleRegistrationData for Kanpur City

City Development Plan Kanpur, (jnnurm), jps associates (p) ltd., 2006, 30]

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2-Wheelers</th>
<th>Cars</th>
<th>Bus</th>
<th>Auto</th>
<th>Truck</th>
<th>Total</th>
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<td>1999-00</td>
<td>21494</td>
<td>5831</td>
<td>47</td>
<td></td>
<td>1351</td>
<td>28723</td>
</tr>
<tr>
<td>2000-01</td>
<td>25112</td>
<td>4464</td>
<td>95</td>
<td>102</td>
<td>582</td>
<td>30355</td>
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<tr>
<td>2001-02</td>
<td>26470</td>
<td>4604</td>
<td>47</td>
<td>98</td>
<td>480</td>
<td>31699</td>
</tr>
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<td>2002-03</td>
<td>35510</td>
<td>5637</td>
<td>66</td>
<td>277</td>
<td>1299</td>
<td>42789</td>
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<tr>
<td>2003-04</td>
<td>39192</td>
<td>5962</td>
<td>63</td>
<td>336</td>
<td>1391</td>
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<td>6737</td>
<td>65</td>
<td>46</td>
<td>2014</td>
<td>48374</td>
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<td>39352</td>
<td>6415</td>
<td>84</td>
<td>119</td>
<td>1727</td>
<td>47697</td>
</tr>
</tbody>
</table>

Source: Regional Transport Office, 2006

8.2.3 GROWTH OF MOTOR VEHICLES

A huge gap exists between the supply and the demand for public transportation in the city of Kanpur. As a result a huge rise has occurred in the number of personalized vehicles that operate on both a slow as well as fast mode. Such a growth rate in the number of motor vehicles in Kanpur can be seen in table 8/2. 9 % happens to be the average rate of growth for vehicles in Kanpur between the years between 1999 – 2006. Of the total composition of registered motor vehicles in Kanpur, the two wheelers are known to comprise as much as eighty four percent.

8.3 ROAD NETWORK CHARACTERISTICS
Kanpur is a city which has a radial form networking NationalHighway.

Fig.-8.2 Road Surfaces in Kanpur

![Road Surface Quality in Kanpur](image)

The PrithvirajChauhanRoad and the PankiRoad constitute a few of the major road networks in the city of Kanpur. All the road furniture in Kanpur such as the signage, the signals etc. are not being expanded in keeping with the rise in both vehicles and population. More than seventy one percent of the roads in Kanpur are those that are completely saturated. About twenty seven percent of the roads in Kanpur are known to have a width of only thirty meters. Owing to encroachment as much as fifty percent of road usage or capitalization of existing roads has completely deteriorated.
8.3.1 ROADSURFACEQUALITY

The surface quality of more than seventy percent of the roads in the city of Kanpur is very poor. About thirty percent maybe regarded as of a decent standard. What plagues the road system in the city of Kanpur is the fact that the system of carriageway is also one that is quite inadequate as a result of which the road capacity is considerably lowered. Road service in Kanpur is therefore much more inferior to what it can be.

2.3.2 SPEEDANDDELAYSONROADSYSTEMS

The road system of Kanpur that has been the focus of this study offer poor service. Sixty five percent of the total length of the road is offers the traffic streamspeed of justup to 20 km/h in the peak periods while the average journey as well as running speeds is about 17.4km/h saturationOne cannot see a significant variation between the twospeeds and thisindicates the saturation-flow conditions in the Kanpur road systems.

8.3.3 LEVELOFSERVICEOFROADSYSTEM

The level of the service that is offeredby the roads something that depends upon the volume of the traffic and the capacity of all the road sections. Now based on capacities as have been recommended by the IRC, the Volume-Capacity ratios (V/C ratio) in Kanpur have been worked out. More than twenty six percent of the road lengths in the city of Kanpur are known to have the V/C ratios that are more than about 0.8 which in turn denotes a forced traffic condition thus being the worst level of service. Majority of the core roads in the city of Kanpur particularly in the saturation junctures are known to have more than just one of the VC rations. Such roads are those that tend to be largely unutilized because of poor surface quality and encroachment. The journey speed on these roads is something that has been found to be at an all-time low and remedial measures need to be suggested in order to being about an improvement in this regard.
8.4 TRAFFIC CHARACTERISTICS

An unprecedented growth in the number of vehicles, particularly motorized ones, in the city of Kanpur has resulted in huge traffic problems over here.

There were as many as 5.4 lakh\(^{[30]}\) motorized vehicles that were registered in the city of Kanpur till the month of March in 2006. The two-wheelers in Kanpur share the constituted 84 percent of the entire number of registered vehicles. In addition to eighty buses and thirty-five mini buses, as many as nine hundred and eighty tempos are known to look into transportation options in the city.

8.4.1 AVERAGEDAILYTRAFFIC(ADT)ATOUTERCORDON

Kanpur on a daily basis sees as many as 89468 vehicles enter as well as exit the outer areas of the city. Of the various roads, the large and historic Unnao Road is the one that carries the maximum traffic volume with an average daily traffic flow of as many as 24472 vehicles while the G.T. Road at the area of Mandhana is one that accounts for the least amount of traffic in the city.

8.4.2 AVERAGEDAILYTRAFFIC(ADT)ATINNERCITYLOCATIONS

The GT road, Baker Road, MG Road, Kalpi Road are the most heavily trafficked roads in the city of Kanpur. As many as thirty thousand vehicles are known to run over these roads over duration of sixteen hours.

8.4.3 TEMPOAUTO RICKSHAW MOVEMENTS

In the absence of an adequate public transport system via bus, intra-city transportation needs are looked into by nine hundred and eighty buses and tempos. Mall Road and Ambedkar Road
are areas where the tempo movement is known to be especially high often resulting in severe traffic congestion over here.

8.4.4 PARKINGDEMANDANDSUPPLY

There is a high demand for parking destinations in Kanpur especially in the inner CBD or core area of the city. Owing to the high level of traffic congestion, off street parking areas need to be devised in order for transportation flow in the city to be one that is smooth and hassle free. For this purpose, it has been recommended that underground parking facilities be constructed. As many as four multi storied buildings with basement areas have already been identified for the purpose of transforming these into parking stations.

8.5. ISSUESCONCERNINGMOBILITY

Somebasicissuesareasfollows:

8.5.1 TRAFFICMOVEMENT

- The railwayline that lies between the city of Kanpurand the town of Farrukhabad is one that divides thecityinto thenorthand the south cityand the total11levelcrossingsfalls in between the mainKanpurcity as well as southcity that is on another side of the G.T.road. In Kanpur, Thetrafficmovementis one that is restrictedover therailway crossingsfrom the Jarib Chawki areato the Kalyanpur area on the G.T.road and the frequenttraffic jamcan be seen through the entire length of theG.T. roadowing to the passage of trains.

- The city of Kanpur was always connected to the industrial estate at the Dada Nagar area and in Pankithrough the Dada Nagartri-junctionas well as theVijaycrossing. The hightrafficmovement in thiscorridor is known to cause frequentTraffic jams on a frequent basis.
There is a regular and slow moving traffic by the vehicles that is the hand cart, the buffalocart in between transportnagaras well as tradingcentressuch as Gurmand and Bansmandi. The goods, that reach the transportnagar first, happen to be carted to the wholesalers in the inner city followed by its re-packaging again and then transported back to the transport nagar in order for further distribution to various other cities.

In the eastern U.P. and part of Bihar, traffic jams have been increased a lot because of this and measures need to be taken to curb the traffic flow as much as possible.

There exists a railway godown in Kanpur between the Jhakarkati ROB and the Kanpur Central. Goods get offloaded in this godown after which this are sent of Dada Nagar, Fazal Ganj and Panki. A need is there for the rail godowns to be shifted.

### 8.5.2 LOW CORRIDOR SPEED DUE TO SLOW TRAFFIC COMPOSITION

Due to the heterogeneous composition of the Autos, the Tempos, the Rickshaws, the Cycles, the two-wheelers, the cars and various other small vehicles the traffic movement in Kanpur is very slow. Absolutely no division exists for routes meant for the slow and fast moving vehicles which cause congestion as well as increase the city’s traffic problems. One important reason for traffic congestion is the fact that road surface quality tends to be quite poor which in turn also affects the proper and steady movement of vehicles. Roads such as the Ramadevi Chauraha, the Vijay Nagar Road, the Fajalgang Road and the Station Road happen to be facing very bad surface quality and during the season of winter the movement of traffic tends to be one that is even more slow and alarming.

### 8.5.3 POOR INTERSECTION AND NON-FUNCTIONAL SIGNAL

The intersections in Kanpur are those that are very poorly designed. An urgent need exists
for bringing about improvements in various traffic intersections in the city of Kanpur. For instance the traffic signals which do not function properly and which tend to slow down the movement of traffic are those that need to be removed immediately and new ones are to be installed in their place.

8.5.4 POORROADSURFACE

The Transportation and the movement of the vehicles depend greatly on road surface quality. The road surface quality is poor in Kanpur on grounds of bad maintenance. Some of the main problems that are related to the road surface quality in the city of Kanpur in located in the intra-city areas.

Some of the basic issues with regard to parking in Kanpur are as follows: The parking supply in the city is one that presents a grim picture of the traffic situation in Kanpur. There is an unpredictable growth in motor vehicles as a result of which demand for parking tends to grow by the day. All the commercial establishments that are found along the arterial roads in the city are those that need high parking space provisions for visitors, employees and owners. Owing to inadequate supply when it comes to lots for off street parking, the supply is one that is predominantly met through the excessive use of very cheap road spaces which in turn slows down traffic even further and worsens the parking situation in Kanpur. There is also an absence of stringent measures for regulation as well as the absence of a good parking policy.

8.5.6 NO TEMPO TERMINALS

The local passengers in Kanpur depend entirely on the tempo as well as mini buses for intra-city movement as well as transportation. What is more, there are absolutely no terminals that are provided in Kanpur for the tempo operation. Some space is provided near Sirsaya ghat which practically tends to be ignored by all the tempo operators which is practically ignored by the operators. Operations are all known to end
as well as begin by the side of the road. A good example of an area that has chaotic traffic conditions right in the intersections of Kanpur is Bara Chauraha.

8.5.8 TRAFFICCONGEST, AMBIENTAIRQUALITY

The number of the diesel driven vehicles in Kanpur only account for about 22 percent but these are sufficient to create thick smoke that adds to the visual obstruction in Kanpur and which results in the increased particles of dust in the air. The traffic congestion in Kanpur takes place in all significant crossings right from the Kalyanpur area to the Jarib Chowki area on the G.T.Road. All the results of the Ambient Air Quality show that suspended particulate matter (SPM) ranges between 780-788 ug/m³ at the time when the crossings happen to be open and tends to shoot up as high as 4415 ug/m³ at a time when the crossings get closed down for the movement of trains. It was at Gumti MO 5 that the highest amount of particulate matter was observed.

8.5.10 INADEQUATESTAFF

The present requirement of the constables in the traffic cell of Kanpur is at 600 while only four hundred constables (about sixty six percent of the total force) are sanctioned. Of this total sanctioned amount only about fifty percent of the force is available for the control of traffic movements.

8.5.11 INADEQUATETRAFFICSIGNSSANDROADMARKINGS

Scholars have observed that the traffic signs as well as road marking in the city of Kanpur have not ever been marked in the majority of the arterial roads in the city which in turn has resulted in reduced safety options for citizens and irregular traffic movement in general.
8.5.12 ENCROACHMENTS

The majority of the Kanpur roads are those that are encroached by the vendors that are engaged in selling fruits as well as other items owing to which the public mobilization also happens to be occurring. The market areas like the Birhana Road have many encroachments right on the side of the road. This has led to widespread traffic jam, huge congestion on the roads and a complete slowing down when it comes to traffic movement.

8.5.13 INADEQUATE PEDESTRIAN FACILITIES

Other than just a few roads, most roads in Kanpur lack footpath. There are no zebra crossings that can allow for the smooth and hassle-free movement of pedestrians along the road.

8.6 STRATEGIES FOR TRAFFIC MANAGEMENT

8.7 KEY ACTIONS

- There is a need for constructing a flyover over the Vijaynagar crossing along with widening of the existing RoB thus connecting area of Vijaynagar crossing right over to Dada Nagar.

- All the main centers for trade like the Naya Ganj, the large Bansmandi, the old and popular Hatia etc. need to be relocated to the Transport Nagar in Kanpur from the inner city areas.

- The railway godown that lies between the Jhakarkatti ROB and the Kanpur Central needs to be shifted towards the Panki Railway yard which is located in the city’s outskirts for the purpose of avoiding traffic congestion in the city.
➢ There is a requirement for six ROB’s between the Jarib Chowki and the Kalyanpur area and also at the Shyam Nagar, the famous Dada Nagar, the large Govind Nagar as well as the area that runs parallel to the Govind Bridge.

➢ All the main crossings and the tri-section ought to be well-equipped with several traffic lights as well as glow signs for regulating traffic movement in a proper manner in Kanpur.

➢ Through the use of CNG buses, the public transportation system in Kanpur needs to be developed.

➢ All the slow-moving animals as well as manual carting vehicles ought to be phased out in a gradual fashion with these being replaced by three wheelers and CNG buses.

➢ Loaders and tempos need to make their way out of the city’s transportation options.

➢ The KNN and the KDA are looking to develop car parking lots in specific parts of Kanpur so that traffic on the road and congested parking spaces can be reduced to a great extent.

➢ Areas for the suitable parking of buses and cards are also to be identified and developed in Kanpur.

➢ All the sanctioned posts are to be filled up as soon as possible so that an adequate number of constables can be posted over here. The deterioration in the law and order situation in Kanpur can be met rather well by taking such a step.

Measures also need to be taken for the regulation of traffic in the city of Kanpur in the peak hours. Encroachment in the traffic intersections is something that can be checked through regular monitoring.
Public transportation bays have to be constructed as soon as possible.

The tempo boarding in Kanpur should be something that is well displayed but these should not be allowed to enter within fifty meters of the intersections.