CHAPTER-III

STUDY AREA

3.1 STRETCH OF GOLDEN QUADRILATERAL HIGHWAY IN THE STUDY AREA
3.2 NATIONAL HIGHWAYS IN INDIA
3.3 GOLDEN QUADRILATERAL HIGHWAY STRETCH IN INDIA
3.4 NATIONAL HIGHWAYS IN KARNATAKA
3.5 GOLDEN QUADRILATERAL STRETCH IN KARNATAKA
3.6 CONCLUSION
CHAPTER-III

STUDY AREA

Golden Quadrilateral highway stretch as present study area is nothing but a part of former National Highway No.4. Though the whole N.H.-4 (Golden Quadrilateral) stretches from Thane (Maharashtra) to Chennai (Tamil Nadu). Our study area is from Mulbagal in the East to Tumkur city in North West. It lies around 13° North latitude and between 76°-78° East Longitude (See Fig.3.1).

The former National highway No.-4 in the study area was two lanes. It is unable to handle high traffic density and high speeds at many places, inadequate, congestion, low safety. Due to these reasons, the Government of India has decided to launch a program of upgrading and widening of national highways corridors. Besides speedy implementation of the Golden Quadrilateral and the North South and East West corridors, addressing the deterioration of large stretches of National Highways.

The total length of Golden Quadrilateral highway stretch in the study area is about 170 km between Mulbagal to Tumkur. It is 23.07% Golden Quadrilateral in Karnataka and 2.90% Golden Quadrilateral in India. It runs through Kolar, Bangalore Rural, Bangalore Urban and Tumkur districts. It connects major towns and cities in these districts. They are Mulbagal, Kolar, Hosakote, K.R. Puram and Karnataka State capital Bangalore city in the East. Also it touches Peenya, Nelamangala, Dabaspet and Tumkur city in North and North West directions.

For the purpose of convenience of study and also there are some physiographic aspects, which help for its segmentization. The entire stretch of Golden Quadrilateral highway in the study area has been broadly divided into two sections. They are,
3.1 STRETCHES OF GOLDEN QUADRILATERAL HIGHWAY IN THE STUDY AREA

3.1.1 Mulbagal-Bangalore Stretch of Golden Quadrilateral

This is a 100 kms stretch of Golden Quadrilateral from Mulbagal to Bangalore. It accounts 14.29% of Golden Quadrilateral stretch in Karnataka and within study area it accounts for 58.82%. It is an eastern part of Golden Quadrilateral stretch. This stretch passes through the districts of Kolar, Bangalore rural and Bangalore urban. It runs through major cities, towns and taluk headquarters like Mulbagal, Kolar, Hoskotre and K.R. Puram. In South east Karnataka this stretch passes through red soils and a rain shadow region of peninsular India. Agriculturally dry land crops such as ragi, maize, jowar and groundnut etc., are cultivated in its hinterland.

Infact this section and its adjoining areas were former vegetable, milk and fruits supplying zones from early times to Bangalore city. Even now farming community of Kolar district areas leads in horticultural crops like mango, chikko and guava. Floriculture mainly concentrated along the Golden Quadrilateral from Hoskotre to Narasapura in Kolar district. The stretch between Mulbagal and K.R.Puram are not leading industrial centres but yet near Mulbagal, near Kolar, around quadrilateral stretch of Bangalore city there is a growth of secondary functions. In almost its 20 km stretch around the Bangalore city this Golden Quadrilateral passes through densely urbanized and industrial zone of Bangalore. In the east direction of Golden Quadrilateral K.R.Puram is one the important suburban industrial town of Bangalore. Many industries like electronics SKF, Volvo (bus and truck manufacturer), prestige home appliances, Mahadevapura hinterland. ITI little away from the highway towards south west of the highway, the software technologies parks, HAL and other industries are located along the Golden Quadrilateral. Because of the I.T. industries development. Bangalore urban area is growing very fast towards white field. Bangalore is one of the important metropolitan cities of India. It is a state capital and centre of educational and industries. Bangalore is the centre of
software industry of a state and also in the world. In fact the Golden Quadrilateral touches some of these industrial as well as knowledge based industrial areas of Bangalore metropolis.

3.1.2 Bangalore-Tumkur Stretch of Golden Quadrilateral Highway:

This is a 70 km stretch of Golden Quadrilateral from Bangalore city to Tumkur city. It accounts 10.00% of Golden Quadrilateral stretch in Karnataka and within study area it accounts for 41.18%. It is a Northern and North Western part of Golden Quadrilateral. This stretch passes through the Bangalore urban, Bangalore rural and Tumkur districts. It runs through major cities and towns like Jalahalli, Nelamangala, Dabaspet (Sompura) and Tumkur city. This part of Golden Quadrilateral stretch passes through red soil region. The important agricultural crops are ragi, groundnut, arecanut paddy and coconut. Tumkur city is an educational, commercial, industrial and agricultural town. Many agro-based industries like oil extraction, rice mills coconut processing coir industries were developed along the Golden Quadrilateral (See Fig.3.1).

The development of Golden Quadrilateral stretch in study area has highly affected the settlements and occupation of people in terms of primary, secondary and tertiary functions. Highway development has brought changes in occupational structure, particularly taking out people from primary occupation to tertiary functions.

Former National Highway-4 was responsible for the location and development of a host of small and medium scale a variety of industries in this stretch. Almost after 1960 hundreds of lorry transport cargo handling and other automobile related functions have developed adjacent formed NH-4 and present which is recrystenel Golden Quadrilateral. Peenya industrial area, Yeshwanthapura industrial area, northern part of Rajajinagar industrial area are almost closer to this stretch of Golden Quadrilateral. The industrial districts of like Rajajinagar industrial area in western part of Bangalore and Gokul industrial area in Bangalore north are also closer in the recent decade there is a rapid growth of industries, beyond city limit of along Golden Quadrilateral. This has let a sort of industrial corridor development with highway
related functions probably in another few decades this is going to merge with Tumkur industrial area and Tumkur city.

The widening, upgrading, good maintenance and converting of road lane from two lane to four/six lanes of NH-4 in the study area is more beneficial for smoother movement of passengers, agricultural products, food grains, vegetables, fruits and flowers from agricultural hinterlands like Kolar, Mulbagal, Hoskotre, Nelamangaa and Tumkur to modern and equipped markets like Bangalore, Chennai, Mumbai and Poona.

Golden Quadrilateral stretch of the study area helps to reduce the traffic flow. It has been providing an impetus to truck transport throughout India. Special Economic Zones (SEZ’s) have been developed in the vicinity of Golden Quadrilateral highway in study area (Nandagudi), which have not only added the volume of traffic but also have enhanced the pace of land use including agriculture.

The stretch between Mulbagal and Tumkur is a major industrial zone of India i.e., Southern industrial zone where there are many industrial centres. Particularly around Bangalore metropolis lie the industrial corridors in east west direction between Bangalore and Kolar via Hoskote. There on equally important industrial areas towards North West along N.H.4 towards Tumkur along this stretch of Golden Quadrilateral near Bangalore, there are leading transport related functions which have link with other parts of India.

National highways particularly N.H.-4 (Golden Quadrilateral) Bangalore-Pune highway carrying millions of tonnes of perishable and non-perishable agricultural items to distant markets. N.H.-4 has been upgraded and spruced upto ensure the smooth flow of men and materials. This is particularly true in the speedy movement of perishable agricultural products like vegetables, fruits and flowers.

From Bangalore city N.H.-4 i.e., part of this Golden Quadrilateral highway takes north western direction. In North West this stretch passes through red soil, which region is rather undulating terrain of south western peninsular India. This is a
part of rain shadow region of southern peninsular India. Tanks and tubewell irrigation are supporting the cultivation of ragi, rice, groundnut, pulses, coconut, arecanut, maize and sunflower like oil crops. Golden Quadrilateral highway not only facilitates their increased cultivation and also helps their fast transportation. Golden Quadrilateral highway stretch forms an artery running in the heart of Karnataka in a rich and evolving horticultural, floricultural and vegetable growing areas.

Recently completed (2013) Golden Quadrilateral highway stretch in study area is heralding benefits to towns and their hinterlands. It is promoting the land uses and development activities related economic liberalization and globalization in Karnataka and in India. This highway provides impetus for the growth of intermediary small towns, big cities with a host of new functions like petrol bunks, hotels, vulcanizing centres, showrooms, motor garages etc., between Mulbagal to Tumkur. Petrol bunks are distributed on either side of the study area and providing good services to commuters. More number of modern motels and conventional Indian dhabas (way side eateries) are located form Bangalore city to Tumkur city in North West and Bangalore city to Mulbagal in Eastern stretch of Golden Quadrilateral highway. They are providing essential services related motor vehicles, quality food to travelers, general commuters, and also transport vehicle operators.

Infact this stretch of Golden Quadrilateral between Hoskote to Tumkur has seen far reaching conversion of land uses and functions from rural to urban particularly into transport related functions like vulcanizing centres, godowns, motels, gas stations etc.

Recently completed national level major transport network of Golden Quadrilateral highway is much awaited piece of developmental initiative in India. At the same time most of the urban settlements which come under the influence of this highway have elongation of urban land uses affecting the urban morphology of respective towns and cities.

Some Special Economic Zones (SEZ’s) have been developed in the vicinity of Golden Quadrilateral highway which have not only added the volume of traffic and
also have enhanced the pace of land use including agriculture. Some of them are yet to develop fully due to conflict between the government and farming community. Many a times valuable agricultural land is lost for such SEZ’s while in some stretches marginal and wastelands have been recklessly brought under non agricultural land uses. Nandagudi (Hoskote taluk, Bangalore rural) such SEZ’s have massive transformation of agricultural areas along Golden Quadrilateral highway.

**Golden Quadrilateral Highway (Study Area) and its Connectivity:**

India has the second largest road network in the world, spanning approximately 3.3 million kilometers. It comprises Express Ways, National Highways, State Highways, Major District Roads, Rural Roads and others.

Under former Honourable Prime Minister Atal Bihari Vajpayee, India launched a massive upgradation programme of National Highways in 1999. It is known as National Highway Development Project (NHDP). In which the highways connecting the four metropolitan cities of Golden Quadrilateral Stretch, and the North-South and East-West connecting corridors have been fully paved and widened into four lane /six lane highways. Some of the busier National Highways sectors in India have been converted into four /six lane express ways- for example, Delhi-Agra, Delhi-Jaipur, Ahmedabad-Vadodara, Mumbai-Pune, Bangalore-Mysore, Bangalore-Chennai, Hyderabad–Vijayawada, Kolkata-Delhi and Chennai-Kolkata.

The National Highway Authority of India (NHAI) is the nodal responsible for construction, upgrading and maintaining most of the national highways network. It operated under the Ministry of Road Transport and Highways. The National Highways Development Project (NHDP) is a major effort to expand and upgrade the network of highways. NHAI often uses a public-private partnership model for highway development, maintenance and toll collection.

Phase-V of the National Highway Development Project is to convert all 5846 KM of the Golden Quadrilateral highways to six lane highways /express way. National highways form the economic backbone of the country and have often
facilitated the development along their routes and new towns have sprung up along major highways. Highways also have large numbers of small restaurants and inns (known as dhabas) along and serve as truck shops.

### 3.2 NATIONAL HIGHWAYS IN INDIA

The National Highways are regarded as the main arteries which run through the length and breadth of the country. They are connecting the state capitals, important towns and cities, major industrial centres important trade and commercial centres and major ports of a country. The total length of the National Highways in India was about 71,772 km in 2011. At present India has 92,851 km of National Highways in 2014. National highways consist only 1.7% of India’s total road network but they carry about 40% to 45% of the road traffic. Now the number of National Highways in India is 235 (2011). Some of the important National Highways in India are

**North Zone :**

- **NH-1** : Delhi-Jalandhar-Amritsar
- **NH-2** : Delhi-Agra-Allahabad-Kolkata
- **NH-7** : Varanasi-Bangalore-Kanyakumari
- **NH-8** : Delhi-Jaipur-Mumbai in North zone

**South Zone**

- **NH-4** : Pune-Bangalore-Chennai
- **NH-9** : Pune Sholapur-Hyderabad-Vijayawada in West zone
- **NH-13** : Solapur-Bijapur-Chitradurga
- **NH-17** : Panvel-Mangalore-Kozhikode
- **NH-45** : Chennai-Dindigul
NH-47 : Salem-Thiruvanthapuram-Kanyakumari

NH-48 : Mangalore-Hassan-Nelamangala in South zone

**East Zone**

NH-32 : Gobindpur-Asansol-Jamshedpur

NH-34 : Kolkata-Durgapur-Dalkhola in East Zone and

**Central Zone**

NH-25 : Lucknow-Jhansi-Shivpuri

NH-59 : Ahmadabad-Raigarh-Indore in Central zone etc.

The National Highway-7 is the longest National Highway of India connecting from Varanasi in Uttar Pradesh to Kanyakumari in Tamilnadu with a distance of 2369 km and passes through Bangalore and Hyderabad. Most of the National Highways in India are two lanes. Some of the busier National Highways in India have been converted into four/six or eight lane highways. National Highway Authority of India (NHAI) is responsible for construction, upgrading and maintenance of most of the national highways under the ministry of road transport and highways.

Under former honourable Prime Minister Atal Bihari Vajpayee in India, launched a massive programme of highway upgrades, called the National Highway Development Project (NHDP). NHDP Phase-I and II consist of the development of National Highways to four or six lane standards of the following routes:

1. Golden Quadrilateral highway network connecting four largest metropolises of India like Delhi, Kolkata, Chennai and Mumbai via Bangalore with a distance of 5846 kms.

2. North-South Corridor connecting from Srinagar in Jammu and Kashmir to Kanyakumari in Tamilnadu and East West Corridor from Silchar in Assam to Porbandar in Gujrat with a distance of 7300 kms.

3. Road connectivity of major ports of the country to National Highways.
3.3 GOLDEN QUADRILATERAL HIGHWAY STRETCH IN INDIA

The Golden Quadrilateral Highway is one of the major and express highways in India. The former Honourable Prime Minister of India Mr. Atal Bihari Vajpayee laid the foundation stone for the project on January 6\textsuperscript{th} 1999. It included construction of a few new express highways and extension of the existing road to four or six lanes.

The Golden Quadrilateral is a highway network, connecting India’s four top metropolitan cities like Delhi, Kolkata, Chennai and Mumbai (See Fig.3.2). It also connecting many of the major industrial, agricultural and cultural centres of India. It passes through middle of Indo-Gangetic plains, along east coast, in South Central India, in Western and heart of North Western India.

In the total 71,772 (2011) kms of length of national highways in the country, this vital stretch of Golden Quadrilateral national highway network accounts for about 5846 (8.1%) of entire national highways distance. The Golden Quadrilateral highway network connecting 13 states of India as follows, Delhi, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Gujarat, Rajasthan and Haryana.

The Golden Quadrilateral project is phase one of the NHDP. It establishes transportation links between major cities of India, such as New Delhi, Kolkata, Chennai, Pune, Mumbai, Gandhinagar, and Jaipur. In South it links to Bangalore Chennai and Vishakapatnam, provides link to other major cities of South India, further through other roads. In east it connects Chennai with Kolkata. They are leading commercial, educational, agricultural and also a belt of agro based industrial centres (See Fig.3.3).

The Golden Quadrilateral has four sections namely,

Section-I: Delhi-Kolkata Stretch of Golden Quadrilateral Highway
Section-II: Kolkata- Chennai Stretch of Golden Quadrilateral Highway
Section-III: Golden Quadrilateral from Chennai to Mumbai
Section-IV: From Mumbai-Delhi
GOLDEN QUADRILATERAL STRETCH IN INDIA: IMPORTANT TOWNS AND CITIES

Fig. 3.3
Section-I : Delhi-Kolkata Stretch of Golden Quadrilaterial Highway:

This is a 1453 km (24.85% of total length of Golden Quadrilaterial highway) stretch of National highway No.-2 from Delhi to Kolkata which was former historical grand trunk road (See Fig.3.4 and Table-3.1 and Graph-3.1, Graph-3.1).

**TABLE NO.3.1**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Segment</th>
<th>Total Length (In kms.)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Delhi to Kolkata</td>
<td>1453</td>
<td>24.85</td>
</tr>
<tr>
<td>2.</td>
<td>Chennai to Mumbai</td>
<td>1290</td>
<td>22.07</td>
</tr>
<tr>
<td>3.</td>
<td>Kolkata to Chennai</td>
<td>1684</td>
<td>28.81</td>
</tr>
<tr>
<td>4.</td>
<td>Mumbai to Delhi</td>
<td>1419</td>
<td>24.27</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5846</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Source:* National Highway Authority of India (NHA).

It runs through Uttar Pradesh, Bihar, Jharkhand and West Bengal. It connects major cities in these states such as Delhi, Faridabad, Mathura, Kanpur, Allahabad, Varanasi, Durgapur and Kolkata. It is basically rich Indo-Gangetic plain. Physiographically it is level area and annually it is prone for floods. However towns and cities are rich in agricultural resources, agro based industries and other urban functions. Some of them are regional capitals. Towards its eastern end it runs through rich mineral belt and industrial conurbation of India in West Bengal. There by it is probably the busiest National Highway Stretch in India.
GRAPH NO.3.1:

STRETCH WISE TOTAL LENGTH OF GOLDEN QUADRILATERAL (GQL) HIGHWAY IN INDIA

- Delhi to Kolkata: 24.27
- Chennai to Mumbai: 28.81
- Kolkata to Chennai: 24.85
- Mumbai to Delhi: 22.07
DELHI-KOLKATA STRETCH OF GOLDEN QUADRILATERAL HIGHWAY

Fig. 3.4
Section-II: Kolkata- Chennai Stretch of Golden Quadrilateral Highway:

This is a 1684 Km (28.81% of total length of Golden Quadrilateral highway) stretch from Kolkata to Chennai (See Fig.3.5) is a part of East coast highway. It consists of N.H.6 (Kolkata to Kharagpur), NH-60 (Kharagpur to Balasore) and NH-5 (Balasore to Chennai). It passes through the states of West Bengal, Orissa, Andhra Pradesh and Tamil Nadu. It runs through eastern coastal plain where cyclones often affect the life and transportation. In the whole stretch, it passes through eastern major river deltas from Mahanadi to Penneru. However the region rich in agricultural resources. From Kolkata, Golden Quadrilateral highway stretches in West Bengal and Orissa. It passes through eastern fringe of Chota Nagpur plateau which is the famous mineral belt of India. Major Iron and steel industries, Iron ore, Bauxite, manganese like basic mineral ores along with metals are processed handled and even exported from this region. Vishakapatnam is a naval head quarter with a host of heavy industries like zinc, iron and steel, petroleum refinery, chemicals etc. Further Golden Quadrilateral stretch touches important cities of Andhra Pradesh like Vijayawada, Nellore ultimately it reaches Chennai. Chennai is one of the important metropolitan cities of India and it is a major harbour and a great industrial centre.

Section-III: Golden Quadrilateral from Chennai to Mumbai:

It is a 1290 km (22.07% of total length of Golden Quadrilateral highway) stretch from Chennai to Mumbai. It constitutes mostly NH-4. It comprises two major segments like Chennai to Bangalore and Bangalore to Mumbai. In which first one has our study area (Fig.3.6).

1. Chennai-Bangalore Stretch of Golden Quadrilateral:

This segment like Chennai to Bangalore connects important cities and towns like where Ranipet, Vellore, Chittor. This part of Golden Quadrilateral stretch from Chennai to Bangalore to begin with it has a coastal plain topography. Further it stretches itself into peninsular hilly region of Andhra Pradesh and Karnataka.
In fact, present study area is a part of this Golden Quadrilateral stretch of former NH-4 very close to Chennai. We can see industrial areas like Ranipet then it also has other industrial towns enroute into Andhra Pradesh and Karnataka. Mulbagal is a small taluk headquarter not a big industrial centre. However it is another town very close to Bangalore city now it is almost part of Eastern Bangalore. This region from Chittor to Bangalore is a rain shadow region of peninsular India. Agronomically dry land crops and horticultural crops are cultivated often they move in the highway to big cities like Bangalore and Chennai (See Fig.3.6).

2. Bangalore-Mumbai Stretch of Golden Quadrilateral:

Former NH-4 continues from Bangalore through Karnataka in north westerly direction (See Fig.3.6). It touches some of the industrial and district headquarters like Tumkur, Chitradurga, Harihara, Davangere, Hubli, Dharwad and Belgaum. To begins with from Bangalore upto 200 km, it runs through peninsular hilly terrain of south Karnataka. From Davangere onwards till the border town Nippani in Karnataka it forms the region of undulating deccan lava region with black cotton soils. In the former southern plateau region, ragi, rice, groundnut, coconut and horticultural crops are cultivated. It has a major industrial hub of South India which including Bangalore city. It has a variety of engineering and metallurgical industries, transportation hubs, agro-based industrial centres (Tumkur, Chitradurga, Davangere and Hubli). Hubli, Belgaum and Dharwad are the leading industrial centres in the north west. The region has sugar industries, cotton textile and other engineering and tobacco processing industries. Off late, the entire stretch of Golden Quadrilateral in Karnataka has seen the increasing cultivation of horticultural crops specially floriculture.

Further in Maharashtra Golden Quadrilateral stretch has towns and cities like Meeraj, Sangli, Satara, Karad, Pune, Thane and ultimately it ends up in Mumbai (See Fig.3.6). To begin with its stretch of Golden Quadrilateral dominates agro based industrial centres (sugar, agro processing and even engineering industries). From Pune Golden Quadrilateral enters into one of the highly developed industrial area of India, namely Pune, Mumbai industrial region. It is rich in automobiles, engineering,
machineries and the like. Mumbai being the largest metropolis of India. It is a largest port and western gateway of India. It receives agricultural, industrial raw materials and for its industries also handles a variety of imported items through this highway along with other modes of transportation.

Section-IV: From Mumbai-Delhi :

This is a 1419 km (24.27% of total length of Golden Quadrilateral Highway length of Golden Quadrilateral highway stretch). Golden Quadrilateral which runs between Mumbai and Delhi. It constitutes parts of NH-8 (Delhi- Kishangar), NH-79A (Ajmeer bypass) NH-79 (Nasirabad to Chitturghar) and NH-76 (Chittaurgarh to Udupur) (See Fig.3.7).

1. Mumbai-Ahmedabad Stretch of Golden Quadrilateral :

From Mumbai Golden Quadrilateral as a part of National Highway No.-8 connects Ahmedabad via famous industrial cities of western major industrial zone of India. They are Vapi, Surat, Vadodara, Anand and Ahmedabad. Further its goes to via Mehasana. Further into Rajasthan towards Delhi Industrial zone.

This stretch of Golden Quadrilateral from Mumbai to Ahmedabad has major industrial towns and cities of western major industrial zone of India. It is a major petro-chemical complex of India, Bombay high and Cambay region of Gujarat has leading petroleum refineries and petro-chemical complexes. Refined petroleum and petroleum by products like plastic, fertilizers and petrochemicals, move along this stretch of Golden Quadrilateral. This section is also famous for textile industries (Mumbai, Surat) Diamond and jewellary (Surat) dairy industries (Anand) and other agro based industries in Gujarat region (See Fig.3.7).

2. Ahmedabad to Delhi Stretch of Golden Quadrilateral :

Golden Quadrilateral touches arid Rajasthan but it passes through major cement, textiles, marbal and building construction industrial products, producing regions of India.
Ultimately in its northern end, Golden Quadrilateral enters the major automobile and engineering industrial hub of India namely Gurgaon, Faridabad and Delhi region (See Fig.3.7).

Some section of Golden Quadrilateral were planned in its early stage itself has key areas on the highways. NH-2, NH-5 and NH-8 of the Golden Quadrilateral to be extended to six lanes to make it an express way and ensure smooth flow of traffic. Bypasses have also recently constructed around larger towns and cities to provide uninterrupted passage for highway traffic.

Major contractors involved the project of Golden Quadrilateral are Punj Lloyd, R.N. Shetty Larsen and Turbo, Nagarjuna constructions, Hindusthan constructions company Ltd. Etc.

The Golden Quadrilateral stretch provides vast opportunities for transport of agricultural products from the hinterland to major cities and ports for exports. Development and growth of urban settlements, urban related spatial process like petrol bunks, motels, dhabas (Indian way side restaurants) with modern facilities. Golden Quadrilateral stretch helps to development of new industrial centres, and transportation related commercial establishments. It also helps to reduce the traffic flow. Finally it provides an impetus to smoother movement of products and people with in India and in access to even outside India too.
3.4 NATIONAL HIGHWAYS IN KARNATAKA

The road network of Karnataka comprises of National Highways, State Highways, Major District Roads, Village and Municipal roads. At present there is 2,30,690 (2014) km roads of all category.

TABLE NO.3.2
ROADS IN KARNATAKA 2013-14

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Types of Roads</th>
<th>Length (in Km)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>National Highways</td>
<td>6326</td>
<td>2.74</td>
</tr>
<tr>
<td>2</td>
<td>State Highways</td>
<td>19135</td>
<td>8.29</td>
</tr>
<tr>
<td>3</td>
<td>Major District Roads</td>
<td>49684</td>
<td>21.54</td>
</tr>
<tr>
<td>4</td>
<td>Village Roads</td>
<td>155545</td>
<td>67.43</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>230690</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Chief Engineer, P.W.D., Communication and Building South, K.R. Circle, Bangalore.

The National Highways are very important highways connecting metropolitan cities, state capitals, important cities and towns and ports etc. The total length of National Highways in Karnataka was 1269 kms in 1971. It has been increased to 6326.15 kms in 2014. At present there are about 24 national highways. Which traverse the State with a road length of 6326.15 kms (See Fig.3.8 & Graph 3.2 and Table-3.3 and Graph-3.3).
GRAPH NO.3.2
ROADS IN KARNATAKA 2013-14

67.43
21.54
8.29
2.74

National Highways  State Highways  Major District Roads  Village Roads
## TABLE NO.3.3
### NATIONAL HIGHWAYS IN KARNATAKA, 2014

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>National Highways</th>
<th>Distance in km</th>
<th>%</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NH-13</td>
<td>714.66</td>
<td>11.30</td>
<td>Shollapur–Mangalore section</td>
</tr>
<tr>
<td>2</td>
<td>NH-04</td>
<td>699.59</td>
<td>11.06</td>
<td>Chennai –Bangalore-Poona Section</td>
</tr>
<tr>
<td>3</td>
<td>NH-150A</td>
<td>618.62</td>
<td>9.78</td>
<td>Jewargi–Chamarajanagar Section</td>
</tr>
<tr>
<td>4</td>
<td>NH-234</td>
<td>509.50</td>
<td>8.05</td>
<td>Maglore–Thiruvannamalai Section</td>
</tr>
<tr>
<td>5</td>
<td>NH-218</td>
<td>412.00</td>
<td>6.51</td>
<td>Hubli–Bijapur-Hunnabad Section</td>
</tr>
<tr>
<td>6</td>
<td>NH-206</td>
<td>370.63</td>
<td>5.86</td>
<td>Tumkur-Honnavar Section</td>
</tr>
<tr>
<td>7</td>
<td>NH-63</td>
<td>368.60</td>
<td>5.83</td>
<td>Ankola–Gooty Section</td>
</tr>
<tr>
<td>8</td>
<td>NH-275</td>
<td>367.46</td>
<td>5.81</td>
<td>Bantawala-Bangalore Section</td>
</tr>
<tr>
<td>9</td>
<td>NH-48</td>
<td>319.50</td>
<td>5.05</td>
<td>Bangalore-Mangalore Section</td>
</tr>
<tr>
<td>10</td>
<td>NH-17</td>
<td>300.10</td>
<td>4.74</td>
<td>Panaji-Mangalore Section</td>
</tr>
<tr>
<td>11</td>
<td>NH-50</td>
<td>260.81</td>
<td>4.12</td>
<td>Karnataka-Maharastra Border-Lakshmisagar to Nanded Section</td>
</tr>
<tr>
<td>12</td>
<td>NH-209</td>
<td>203.52</td>
<td>3.22</td>
<td>Bangalore-Dindigal Section</td>
</tr>
<tr>
<td>13</td>
<td>NH-367</td>
<td>156.62</td>
<td>2.48</td>
<td>Bhanapur-Gaddanakari Section</td>
</tr>
<tr>
<td>14</td>
<td>NH-212</td>
<td>151.00</td>
<td>2.39</td>
<td>Kollegal-Kozhikode Section</td>
</tr>
<tr>
<td>15</td>
<td>NH-7</td>
<td>134.01</td>
<td>2.12</td>
<td>Bangalore-Hosur-Hyderabad section</td>
</tr>
<tr>
<td>16</td>
<td>NH-150</td>
<td>125.30</td>
<td>1.98</td>
<td>Gulbarga-Yadigir Section</td>
</tr>
<tr>
<td>17</td>
<td>NH-207</td>
<td>121.30</td>
<td>1.92</td>
<td>Dabaspet-Devanahalli-Hosur Section</td>
</tr>
<tr>
<td>18</td>
<td>NH-169A</td>
<td>87.60</td>
<td>1.38</td>
<td>Thirthahalli-Udupi Section</td>
</tr>
<tr>
<td>19</td>
<td>NH-4A</td>
<td>84.12</td>
<td>1.33</td>
<td>Belgam-Panaji</td>
</tr>
<tr>
<td>20</td>
<td>NH-9</td>
<td>75.01</td>
<td>1.19</td>
<td>Poona-Hunnabad Section</td>
</tr>
<tr>
<td>21</td>
<td>NH-150E</td>
<td>74.00</td>
<td>1.17</td>
<td>Gulbarga-Akalkote</td>
</tr>
<tr>
<td>22</td>
<td>NH-167</td>
<td>74.00</td>
<td>1.17</td>
<td>Hagari Karnataka Border Section</td>
</tr>
<tr>
<td>23</td>
<td>NH-173</td>
<td>72.10</td>
<td>1.14</td>
<td>Mudigere to Kadur Section</td>
</tr>
<tr>
<td>24</td>
<td>NH-67</td>
<td>26.10</td>
<td>0.41</td>
<td>Gudlupet – Mettupalyam Section-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6326.15</strong></td>
<td><strong>100 %</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Chief Engineer, National Highways, K.R. Circle, Bangalore.
GRAPH NO.3.3
DISTANCE OF NATIONAL HIGHWAYS IN KARNATAKA, 2014-2015
The important national highways in Karnataka are

1. **NH-13**: it is the longest National Highway in Karnataka. From Sholapur of Maharashtra, it enters Bijapur, passes through Alamatti, Hungund, Ilkal, Hospet and reaches Chitradurga. From here it directs towards south west through Channagiri, Shimoga, Thirthahalli, Koppa, Sringeri, Karkala, Mudabidri and reaches Mangalore. Between Sringeri and karkalla it passes through ghats. This highway is a major link between Mangalore and its hinterland of central and northern Karnataka. It is about 715 km long in Karnataka. Though NH-13 is not part of the Golden Quadrilateral stretch, it cuts Golden Quadrilateral at Chitradurga, where by the trucks and other vehicles on this highway have nation wide access through Golden Quadrilateral. However, if you come to NH-7 itself on one side in south west it emanates from new Mangalore port, which is a major port on the west coast of India. As Mangalore, has refineries, fertilizers and other manufacturing units along with imported items even western ghats plantation products pass through this highway into interior of Karnataka particularly part of Northern Karnataka. Probably from North Karnataka and even from Sholapur, textiles, cement, iron and steel (Hospet Jindal steel company etc) are increasing move through the important and largest national highway of Karnataka. Some of the items even further move both towards south as well as north west along Golden Quadrilateral.

2. **NH-4**: It is about 700 km long in Karnataka. It traverse the entire state from South East to North West. It enters the state from east near Mulbagal town in Kolar district. It passes through Kolar, Hosakote, Bangalore city, Tumkur, Chitradurga, Davangere, Hubli, Dharwad and Belgaum then it enters to Maharashtra state. There are plenty of class-III towns other than the class-I and class-II towns, which are just mentioned on this stretch of NH-4 which is the south eastern stretch of Golden Quadrilateral. There are a quite a good number of emerging towns which are getting urban status after the completion
of four/six lane national highway. Their number is comparatively high along the Golden Quadrilateral stretch in the state. To name a Narasapura (Kolar district). From Hoskote- Bangalore metropolitan regional development area starts, which comprises, most stretch of NH-4 from Hoskote to Bangalore on from Bangalore Nelamangala which dominates in transport infrastructure related urban functions. From Nelamangala itself is very fast growing town in Bangalore rural district and the influence of Golden Quadrilateral. Between Nelamangala and Tumkur we see rapid growth of non-agricultural land uses particularly industrial and transport infrastructure related land uses. Some of the motels nodes with transport related functions are showing the signs of urban settlements. It is about 700 km long in Karnataka.

3. **NH-218**: It is about 412 km long, connects Bijapur with Hubli. It passes through Navalgund, Naragund and reaches Bijapur. NH-218 is further extended in the North Karnataka. From Bijapur it passes through Devara Hippargi, Sindgi, Mortagi and Jevargi. Further North crossing the river Krishna it continues through Farhadabad to reach Gulbarga. As this highway circles in black cotton regions of Northern Karnataka, connecting industrial towns like Hubli, with others. It carries a variety of manufacturing industrial products cotton, cement and steel etc.

4. **NH-206**: It is almost at the central part of Karnataka. It connects Honnavar with Tumkur further with Bangalore through NH-4. It passes through Sagar, Shimoga, Bhadravathi, Tarikere, Birur, Kadur, Arasikere, Tiptur and Gubbi. This national highway connecting important industrial towns from Bangalore to Honnavar via Shimoga normally handles manufactured products from Bangalore, for their distribution in these towns and cities and hinterlands. Interms from Western Ghats, variety of plantation products like coffee, tea, rubber, fruits and other agricultural and horticultural products move towards Bangalore. The total length of NH-206 in Karnataka is about 370.63 km.
5. **NH-63**: It is similar to NH-48 and run from west to east in the northern part of the state. Beginning from Ankola of the west coast passes through Yellapur, Kalhatgi to reach Hubli. From Hubli it runs eastwards through Gadag, Koppal, Hospet, Bellary, Guntkal to reach Gooty where it meets NH-7. The total length of NH-63 is about 368.60 kms. It was rather newly build national highway connecting newly developed industrial area of Hubli and Hospet with coastal zone particularly Karwar port. This highway particularly handle iron ore, Manganese, from Hospet, Bellary regions towards Karwar port. As Karwar is naval port and its sub port handles mineral raw materials export rather than import of major items. However some of the manufactured items from Hubli or even Golden Quadrilateral enters this highway which ultimately reach even Goa and other west coast towns and cities.

6. **NH-48**: It is the National Highway traversing the entire state from east to west in the southern part. **Beginning from Bangalore-Nelamangala** it runs westward through Kunigal, Channarayapatna, Hassan, Sakaleshpura and reach Uppinangadi and Mangalore. Mangalore is a major port, imports timber, LNG (Liquid Natural Gas) and other manufactured items (capital goods) from abroad. Its total length is about 319.50 kms. They passes through this highway cutting across difficult Western Ghats into eastern plateau regions of Karnataka and beyond. In the absence of huge pipelines and it to be completed Mangalore Bangalore railway links this highway handling thousands of LNG carrying tankers and other trucks including ‘N’ number of passenger vehicles. As western ghats and coastal region of Karnataka has many reputed religious shrines. Motor cars and passengers buses move along this highway in remarkable numbers. From Bangalore side a variety of industrial products move along this highways towards Mangalore. This highway handles huge quantity of granite stone, even manufactured stone and tiles for export. Some of the plantation products from Karnataka are exported.
7. **NH-17**: It is the National Highway running along the west coast of the state with a length of 300.10 kms. The middle portion of the highway lies in the state. All the major towns and harbours on the west coast of the state are on this highway between Karwar in the north and Mangalore in the south. Ankola, Kumuta, Honnavar, Bhatkal, Baindur, Kundapur, Udupi are the important towns of the state all along this highway. As this NH-17 connects the famous western major industrial zone of i.e., from Ahmedabad via Bombay, Pune via Bombay to further down Goa then all western coastal towns of Karnataka into Kerala. This study of western industrial zone indicates centres like Pune, Mumbai,Sent motor vehicles. Petro-chemicals pharmaceuticals and other varieties of petro chemicals transport this highway into Goa, Karnataka, and Kerala. From south that is from Kerala, Travancore (fertilizers) Kochin (spices, fishes etc.,) petroleum products into northern Kerala into Karnataka and Beyond.

8. **NH-209**: It passes from Bangalore to Dindigal recently (1999) the government of India, declared certain stretch of national highways in Karnataka as well as other part of India. Once such national highway declared in southern Karnataka is Bangalore Dindigal national highway, which bear No.209. It starts from Bangalore passes through some class-III towns like Kanakapura, Malavalli, Kollegal, Chamrajbnagar in Karnataka and further enters via Dhimbum ghat into Tamilnadu towards Sathyamangalam. This highway carries textiles and industrial products in both directions. The total length of NH-209 is about 203.52 kms.

9. **NH-212**: It enters the state from Kerala and connected to Gundlupet. It continues to Mysore through Begur and Nanjanagud. From Mysore it continues eastwards via T.Narasipura and it is connected to NH-209 near Kollegal. The total length of the highway is about 150 km in Karnataka. From Karnataka side this highway carries a variety of manufactured goods from Bangalore-Mysore towards Kerala. As Kerala is in sort of essential
commodities even vegetables, milk and other industrial products from Karnataka side, passes through this national highway. From Kerala side, plantation products like coffee, pepper, copra, arecanut, tea, fruits like Banana comes into Karnataka.

10. **NH-7**: It is the longest national highway of India running between Varanasi to Kanyakumari. The state has about 128 km stretch of this highway which passes through Chikkaballapur, Devanahalli and Bangalore. This is a part of north and south corridor of India which was conceived by former Honorable Prime Minister Atal Bihari Vajapavee at the time of construction of Golden Quadrilateral highway itself. Actually it touches Karnataka near Gudibanda town in Chikkaballapura district. Then it passes through Chikkaballapura and Bangalore city. From Bangalore city it continues towards Tamil Nadu in South easterly direction via the great industrial area of Bangalore metropolis namely electronic city. Researcher has observed within Bangalore district this stretch of National Highway has been converted into multilane highway and also elevated express way. This stretch handles probably the busiest motor vehicles density along the national found in Karnataka. This is also due to Bi-Nodal industrial development like electronic city/ Bommanahalli industrial area in Karnataka and other adjacent node, Hosur industrial area. However NH-7 goes beyond Hosur industrial. Further into Tamilnadu connects Salem, Dindigal, Madurai, Tirunelveli, Nagar Koyali and ultimately southern most terms as tourist town Kanyakumari.

11. **NH-207**: It is around Bangalore for about 122 km. Beginning from NH-4 beyond Nelamangala. It passes through Doddaballapura, Devanahalli, Sarjapura, and connected to NH-7 which reaches Hosur. A closer observations shows, this stretch of national highway connects different segments of Golden Quadrilateral North-South corridors and sub urban industrial zone of Bangalore city. One can imagine the kind of industrial products both finished and semi-finished products manufactured in Bangalore
industrial region are passing through this stretch in different part of India and even to various major ports like Chennai, Mumbai and Mangalore for export Volvo, automobiles and earth moving equipments, electrical machineries and host of finished industrial products and moved into different segments of Golden Quadrilateral corridor.

12. **NH-4A**: It connects Belgaum with Panaji. This is short stretch of national highway connecting National Highway-4 from Belgaum via western ghats to Panaji which inturn lies on NH-17. Highway No.-17 is the west coast national highway starts from Kanyakumari passes through Thiruvananthapuram, Kochi, Calicut, Mangalore, Karvar, Panaji further Ratnagiri to Mumbai. This is a highway carries some essential agricultural cum horticultural crops into Goa inturn marine products and others to hinterland of Panaji. In its lower stretches of Goa it carries iron ore, manganese like raw mineral resources for export through Voskodagama port.

13. **NH-9**: The National Highway traverse the Bidar district from west to east through Humnabad connecting Sholapur in the west and Hyderabad in the east. It is about 75 km in the state. This shortest stretch passes through Bidar carrying a variety of industrial products from Hyderabad to Sholapur and beyond. From Maharashtra side that is Mumbai and Pune, a variety of manufactured products passes through this highway towards Sholapur further Hyderabad via Bidar.

14. **NH-67**: it is the shortest stretch of a national highway in Karnataka. It is only 27 km long. It connects Gundlupet with Mettupalyam national highway. As this shortest stretch of national highway connecting Mysore-Gundlupet with Ooty and beyond. Probably it handles fruits, vegetables and cotton textiles considerable number of tourism vehicles passenger vehicles passes through this stretch to Ooty.
3.5 GOLDEN QUADRILATERAL STRETCH IN KARNATAKA

Golden Quadrilateral stretch in Karnataka is nothing but national highway No.-4. Karnataka state forms western limb of this super highway. It passes through almost in the heart of Karnataka in north western, south eastern, eastern directions. It has a total stretch of 737 kms in the state it accounting for 12.61% of its, entire length. Where Golden Quadrilateral highway has a total length of 5846 kms In India. In Karnataka it starts from Kolar district with first town Mulbagal, runs to west and touches state capital Bangalore. It goes almost north northwestern direction throughout the state. The entire stretch of Golden Quadrilateral stretch in Karnataka touches, Mulbagal, Kolar, Hosakote, Bangalore, Tumkur, Chitradurga, Davangere, Haveri, Hubli, Dharwad and Belgaum, like district headquarters and other towns in their districts in Karnataka. They are class-I and II towns and also leading commercial, agrobased industrial centres and educational towns, Nippani is the north western most town of Karnataka on Golden Quadrilateral (See Fig.3.9).

NH-4 Constitutes roughly 90% of the Golden Quadrilaterals Mumbai-Chennai segment. The highway is popularly known as Poona-Bangalore road, was declared as National Highway in 1956- in the very first set of declaration of national highways in the country. This is vital stretch of national highway from. North Western Maharashtra border to east coast of Chennai, it passes via the heart of Karnataka has major engineering industrial centres like Hubli, Davanagere, Tumkur and Bangalore. For the purpose of convenience of study and also there are some physiographic aspects which help for its segmentization. The entire stretch of Golden Quadrilateral highway in Karnataka has been broadly divided into three sections, they are,
3.5.1 Eastern stretch of Golden Quadrilateral highway in Karnataka:

From **Mulbagal to Bangalore**: This is a 100 kms (13.57% of its entire length in Karnataka). From Mulbagal to Bangalore, is a part of eastern part of Golden Quadrilateral stretch (See Fig.3.10). It touches NH-7, off late it has been developed into North-South corridor. This north-south corridor runs between Varanasi to Kanyakumari. Like this NH-7 there are a few more national highways which touches Golden Quadrilateral in and around Bangalore. There is one more newly declared national highway that is NH-209 from Dindigal to Bangalore. Another recently declared national highway is NH-212, it runs between Bangalore-Ooty. Another national highway touches our study area is NH-48 which runs between Mangalore-Bangalore. The Golden Quadrilateral stretch passes through the districts of Kolar, Bangalore rural and Bangalore urban. It runs through major cities, towns and taluk headquarters such as Mulbagal, Kolar, Hoskote and K.R.Puram. In south east Karnataka this stretch passes through red soils and a rain shadow region of peninsular India. Agriculturally dry land crops such as ragi, maize, jowar, groundnut etc., are mainly grown.

In fact this section and its adjoining areas were former vegetable, milk and fruits supplying zones from early times to Bangalore city. Even now farming community of Kolar district areas leads in horticultural crops like Mango, Chikko and Guava. Floriculture mainly concentrated along the Golden Quadrilateral from Hoskote to Narasapura in Kolar. Kolar district is a leads in Eucalyptus plantation, infact Golden Quadrilateral provides direct lorry transportation the stalk to Harihar poly fibre factory.

In almost its 20 kms stretch around the Bangalore city this Golden Quadrilateral passes through densely urbanized and industrial zone of Bangalore. Some of the important industrial areas through which Golden Quadrilateral passes Bangalore are K.R.Puram and Peenya. Tumkur road industrial area towards Nelamangla over the years agricultural area has dwindles giving way to urban oriented land uses.
EASTERN STRETCH OF GOLDEN QUADRILATERAL HIGHWAY IN KARNATAKA
Bangalore is one of the important metropolitan cities of India. It is a state capital and it is also known as the silicon valley of India. It is the centre of educational institutions, and industries. Bangalore is the centre of software industry of state and also in the world. Infact the Golden Quadrilateral touches some of these industrial as well as knowledge based industrial areas of Bangalore metropolis.

3.5.2 Middle Stretch of Golden Quadrilateral Highway in Karnataka:

This stretch of Golden Quadrilateral is about 365 km (49.53) stretch from Bangalore city to Davangere (See Fig.3.11). It touches NH-206, Tumkur and Honnavar. It was formerly B.H.Road. It deviates from NH-4 from Tumkur towards North-West. Another important national highway touches the Golden Quadrilateral is NH-13, which starts from Mangaore to Chitradurga. However this runs between Mangalore and Sholapur passes via Hospet and Bijapur. Middle stretch of Golden Quadrilateral highway runs through the district of Tumkur, Chitradurga, Davangere and Haveri.

Golden Quadrilateral in its middle stretch, it passes through major cities and towns in these districts such as Tumkur, Sira, Hiriyur, Chitradurga, Davangere, Harihar, Ranibennur and Haveri. This stretch passes through red soils upto Sira, then gradually enters from red soils into black soils. Where in dry lands, crops like ragi, soya, jowar, cotton maize and pulses, sunflower, groundnut, chilies are predominate. Tanks and tubewell irrigation which support cultivation of coconut, arecanut and small stretches of paddy. It surrounds have dry deciduous scrub and thorny vegetations.

Tumkur, Chitraduraga, Davangere and Haveri in the central stretch, which are agro industrial towns, Tumkur city is an education, commercial, industrial and agricultural town. Agriculture is the main occupation of the people in this part of Golden Quadrilateral stretch. Crops like ragi, maize, paddy, cereals and pulses are mainly grown. Many agro based industries like textiles, silk, coconut processing, coir industries were developed in towns along the Golden Quadrilateral. Other industries are granite processing, machinery components, electronic equipments (TVS) cement etc.
Recently (2014) a major SEZ has been initiated between Tumkur and Sira along Golden Quadrilateral. It is a food processing park in Tumkur. It will be developed India’s largest food processing park. It has coming up in 110 acres of land at Vasanthanarasapura industrial area, near Tumkur in Karnataka. It was inaugurated by the Honorable Prime Minister Narendra Modi on September 2014. It is a public-private partnership model. A Mumbai based private company, future group (of Big bazaar fame) has got the tender for the project, under the ministry of food processing. The India food park, located around 70 km from Bangalore on the Golden Quadrilateral. The food park will provide infrastructure facilities for food processing along the value chain from the farm to the market. A special purpose vehicle, integrated food park private ltd., has been set up in Bangalore to implement the project, storage units will be opened at Kolar, Chikkaballapur, Doddaballapur, Shimoga and Chikkamagalur to collect fruits and vegetables from farmers. It is indirectly benefits the farming community. Farmers will be able to directly sell their products at the integrated food park include the central processing centre, collection centre or the primary processing centre. A supply chain network connects the collection centre and the central processing centre to these demand centres consists many various towns and cities in India and also export destinations. Golden Quadrilateral connects nearest major ports and harbours like Chennai and Mumbai for export.

Chitradurga is a city and the headquarters of Chitradurga district. Chitradurga is a historical and agricultural town. The important crops of Chitradurga are rice, ragi, jowar, maize, pulses and oil seeds and commercial crops like sugarcane, cotton and tobacco are mainly cultivated. Many agro-based small scale industries like coconut based small scale industries like coconut oil extraction, coconut coir etc. Other industries are cement and granite processing industries were developed along the Golden Quadrilateral. Chitradurga is rich in mineral resources like copper, quartz, building stone, iron ore and granite. Chitradurga also has some recently developed sites of wind energy.
Davangere is an important industrial city on Golden Quadrilateral in the middle stretch. The city is located on Golden Quadrilateral (NH-4) at a distance of about 265 km from the state capital. Davangere is the heart of Karnataka. It is well connected by road to Pune-Mumbai, Goa, Bangalore, Mangalore and Chennai through Golden Quadrilateral. Davangere is an educational centre it is known for its higher education. It is also a major trading centre in central Karnataka. It is well acclaimed as the Manchester of Karnataka for housing many cotton mills, now most of them are closed. Around half of the Davangere district is irrigated, thanks to the Bhadra reservoir. Many rich cash and food crops like rice, arecanut, maize and cotton are being cultivated. Many agro based industries like sugar industries, cotton textiles, rice mills and silk industries are concentrated in Davangere and around it. Hence this is highly both industrial and agriculturally rich stretch of Golden Quadrilateral in Karnataka.

Haveri now a district headquarters and important town on middle stretch of Golden Quadrilateral in Karnataka. Where as Ranibennur is an another trading town in this stretch of Golden Quadrilateral. Ranibennur has rich agricultural hinter land, where commercial crops like cotton, sugarcane, banana, chilies are extensively cultivated. They are traded through this town and often they near major metropolis like Pune, Mumbai, Bangalore and Chennai. Further Golden Quadrilateral links Pune and Bangalore while passing through the centre of the Haveri district. Golden Quadrilateral provides essential infrastructure for industrial development. Other crops cultivated between Haveri and Hubli are cotton, jowar, maize, paddy, groundnut, chilies and coconut are predominant in this region. Mango, chikko, banana and lime are the horticultural crops grown in the agricultural land. In its middle stretch of Golden Quadrilateral in Karnataka has many class-II, agro-based industrial and commercial towns like Haveri, Ranibennur and Bydagi.
3.5.3 North Western Stretch of Golden Quadrilateral Highway in Karnataka:

This stretch of Golden Quadrilateral is about 272 km (36.19%) from Haveri to Belgaum (See Fig.3.12). It touches another National Highway that is NH-63 from Hubli to Ankola. Another National Highway is NH-218, it runs between Hubli and Bijapur and another national highway that is NH-4A passes through Belgaum to Panaji. The North Western stretch of Golden Quadrilateral passes through the districts of Haveri, Hubli, Dharwad and Belgaum and also connects to important towns and cities like Shiggaon, Hubli, Sankeshwar etc. The twin cities of Hubli and Dharwad collectively referred to as “Hubli Dharwad is the second largest conurbation in Karnataka after Bangalore. The city of Hubli, situated about 20 kms south east of Dharwad. It is the commercial centre and business hub of north Karnataka region. Crops like cotton, chilies and peanuts are grown in the surrounding rural agricultural areas. Hubli is a major trading centre. Hubli as wide cluster of industries and has more than a lakh small and medium industries. The Government of India has set up a software technology part on Pune-Bangalore road near Hubli.

This is one of the beautiful stretch of Golden Quadrilateral highway in Karnataka. It passes through panoramic semi Western Ghats but fully black cotton soil region. Under this physical conditions crops like jowar, maize, cotton, paddy, sunflower, sugarcane chilies and coconut grooves are being cultivated. Second broad agricultural crops under the influence of highway in this stretch are mango, chikko guava, vegetables and flower cultivation is on rise in this section. Beetle leaves, cultivation can be seen beyond Haveri scattered teak and plantation grooves are also common here. Between Hubli and Dharwad and Dharwad and Belgaum towns, highway passes through dense urban and sparsely build industrial land uses with declining agriculture but horticulture persists.

Golden Quadrilateral highway in North Western side as Hubli and Dharwad city which is a second important urban centre of Karnataka, while Dharwad being an educational and industrial town. Hubli and Dharwad is a developing industrial hub in Karnataka after Bangalore.
NORTH WESTERN STRETCH IN GOLDEN QUADRILATERAL IN KARNATAKA
With more than thousands allied small and medium industries. Dharwad has one of the largest automotive assembly factory developed by Tata motors. It has a commercial vehicle manufacturing and assembly facilities at Dharwad (Belur industrial estate). Other industries of Dharwad are machine tools industries, electrical, good products and leather industries etc.

Belgaum is the commercial hub and divisional headquarter of north Karnataka. General agricultural land use consist of dominating sugarcane in Belgaum, tobacco cultivation near Nippani. Sankeshwar and Nippani are the terminal last two towns of Karnataka along Golden Quadrilateral in Belgaum district. They are commercial towns which have agrobased industries. There are sugar mills, between Dharwad and Meeraj. However they are in Karnataka lie on Golden Quadrilateral like, here Hubli, Sankeshwar and Hugarkurdh. This North Western stretch of Golden Quadrilateral is a source of vegetables, fruits like agricultural crops. It is beautiful experience to see mango (Dharwad Alphonso and Navalur guava orchards) along Golden Quadrilateral. There are continuous stretch of mango orchards which lie beyond Dharwad towards Kittur on either side of Golden Quadrilateral highway. Both flat agricultural and even undulating semi hilly lands have been increasingly brought under the mango, chikko orchards. Further near Belgaum city itself many agro based industries like sugar and cotton textiles, aluminium industries (INDALCO) (Fig.3.13), heavy machine tools, engineering and automobile industries have been developed along the Golden Quadrilateral stretch. Surrounding of Belgaum city that is (Belgaum- Goa road) a special economic zones (SEZ’s) is being set up. It is closer to the Pune. Bangalore highway to cated the precission engineering requirements of the global aerospace, automotive and industrial vehicles.
3.6 CONCLUSION

Our study area is from Mulbagal in the east to Tumkur city in the North west. The total length of the Golden Quadrilateral Highway in the study area is about 170 kms. The expansion and widening of Golden Quadrilateral is more beneficial to several states Karnataka, Andhra Pradesh, Maharashtra, Tamilnadu, Rajasthan, Gujarat, Uttar Pradesh, West Bengal etc., for movement of men and materials. Golden Quadrilateral is one of the important and second longest National Highway in India with a total length of 5846 km. Several sections of Golden Quadrilateral Highway is useful to development of heavy metallurgical and agro-based industries because highway passes through rich agricultural areas, coastal plains and famous mineral belts of India. Golden Quadrilateral Stretch in Karnataka forms western limb of this highway in Karnataka. It starts from Kolar district with first town is Mulbagal runs to west and touches state capital Bangalore. In almost its 20kms stretch around the Bangalore city this Golden Quadrilateral passes through densely urbanized and industrial zone of Bangalore. Hence Golden Quadrilateral is more useful to movement of raw materials from the source to industries and finished products from industries to wide market. It runs almost North, North Western direction throughout the state. Golden Quadrilateral also provides good road network with other National highways. In Study area, Golden Quadrilateral passes through Kolar, Bangalore rural and Bangalore urban and Tumkur. They are class-I towns, Golden Quadrilateral in study area are more beneficial to farming community because it connects wide market of Bangalore and Tumkur. Recently SEZ’s has been initiated between Tumkur and Sira and Hoskte and Kolar along the Golden Quadrilateral Highway in study area.