

## CHAPTER: 2

### PARTICULARS OF ORGANISATION, FUNCTIONS AND DUTIES:-

2.1. The organizational structure to perform the duties and functions is in Annexure - I.

The Chief Engineer (General), is the Head of the Highways Department he is responsible for the over all functioning of the Department to this satisfaction of the Public. The Chief Engineer (General) Highways is assisted by three Joint Chief Engineers in the implementation of various schemes in regard to execution of works in the State. 7 Superintending Engineer / 32 Divisional Engineers and other staff are there to assisted him as functional unit in his endeavour through out the State.

2.2. The addresses of the main office and the Head of Departments under the department are given below:

Sl. No	Officer	Office Address	Office Phone
1	Chief Engineer (General) Highways	PWD Buildings, Chepauk, Chennai - 600 005.	044-28525342
2	Chief Engineer, National Highways	PWD Buildings, Chepauk, Chennai - 600 005.	044-28525701
3	Chief Engineer, Projects	Panagal Buildings, Saidapet, Chennai - 600 015.	044-22441221
4	Chief Engineer, NABARD & Rural Roads	Guindy Industrial Estate, Chennai - 600 032.	044-22317158
5	Chief Engineer, Designs & Investigation	Guindy Industrial Estate, Chennai - 600 032.	044-22323541
6	Director, Highways Research Station	Jawaharlal Nehru Salai, Chennai - 600 032.	044-22324642
7	Chief Engineer (Works), Tamil Nadu Road Sector Project	TNHB Complex, Adayar, Chennai - 600 020.	044-24464479

8	Project Director, Tamil Nadu Road Sector Project	TNHB Complex, Adayar, Chennai - 600 020.	044-24464419
9	Chief Engineer (H) Metro,	Super Bazaar Complex, Alandur Municipality Building, Alandur, Chennai – 16.	044-22314754

Opening Hour of the Office : 10.00 A.M  
Closing Hour of the Office : 5.45 P.M

2.3. Among the various infrastructure facilities, the road infrastructure in a State plays a pivotal role in the social and economic development. The development of road network paves way for the rapid growth of important sectors like industry, power, road transport etc. Road connectivity also plays an important role in improving the living conditions of the rural people. The development of a State can be assessed based on the comprehensive road network available in that State. Realising the importance and need to develop and strengthen the existing road network in the State, the Government has decided to give top priority to road development schemes.

2.3.1. The statistics of various classifications of Government roads in Tamil Nadu as on date are set out below.

Category of road	Length(Km)
National Highways(NH)	4,873
State Highways(SH)	9,384
Major District Roads(MDR)	11,288
Other District Roads(ODR)	36,096
<b>Total</b>	<b>61,641</b>

Different types of Bridges and their numbers:

Type of Bridges	Numbers
Major Bridges	1318
Minor Bridges	7710
Culverts	103935
Road over bridges in railway level crossings	179
Road under bridges in railway level crossings	57

Tamil Nadu is in the forefront in the development of road infrastructure. The density of road network in the country is 329 Km per lakh of population and the density of road Network in Tamil Nadu is 311 Km per lakh of population.

In 2007-08, the road density in the state was 286 Km per lakh of population.

Moreover, the road network in the State is 149Km per 100 Sq. Km area, which is higher than the national average length of 103 Km. This is an indicator of the well developed road infrastructure facilities in Tamil Nadu.

During the past three years rule of this Government, under plan and non - plan schemes, 8827 km length of roads have been widened at a cost of Rs.2757 crores and 37153 km. length of roads have been strengthened / renewed at a cost of Rs.4946 crores and 723 bridge works have been completed at a cost of Rs. 511 crores.

#### 2.4. Strategic Directions

The Government is keen to make this Department to function with a strategic vision. The focus of this vision is to develop the road network in the State for the sustainable economic development and for improving the living standards of the people making use of appropriate technology and the resources available within and outside the Department.

#### 2.5. Goals and Objectives

In order to cater to the increasing vehicular traffic and the demands of the road users in our State, top priority is being given for further development of road Infrastructure, Road development schemes are implemented effectively and speedily. For this, the Government have evolved the following policies.

1. To widen all State Highways to minimum of two lane.
2. To widen Major District Roads which have heavy traffic intensity to a minimum of intermediate lane.
3. To improve the Other District Roads which connect Villages with urban areas and other important roads.
4. To improve the Government roads connecting Adi Dravidar and Tribal habitations.
5. To construct Bridges, ROBs and RUBs wherever necessary.
6. To form radial roads, ring roads, bypasses, over bridges/under bridges in urban areas to relieve traffic congestion.
7. To identify new projects, strategic option study shall be conducted for the development of road and bridge works in future.
8. To monitor and ensure the quality of works takenup by this department.

9. To evolve road safety action plan to reduce casualty due to accidents and to improve the accident prone spots.
10. To construct pedestrian subways for the public in heavily congested areas for crossing the road.
11. To develop roads with heavy traffic intensity under Public Private Partnership.
12. To improve the roads linking industrial areas and newly developing industrial zones.
13. To improve roads connecting tourist and heritage centres.
14. To construct drainages in roads avoiding stagnation of water.
15. To maintain the roads properly and to plant saplings along road margins.
16. To demarcate Highway boundary and protect Highway land.
17. To coordinate and monitor the functions of the various wings of the Department in order to improve the efficiency.
18. To improve the roads connecting industrial areas and ports for the development of Industries.

## 2.6. ROADS AND BRIDGES IN THE STATE

The details of different categories of roads and bridges maintained by the Highways Department are as follows:-

### 2.6.1. National Highways

National Highways connect State capitals, Major Ports, large industrial areas, tourist centres etc. Tamil Nadu has 4500 Km length of National Highways, apart from 373 Km length of newly declared three National Highways. Out of a total length of 4873 Km of National Highways in Tamil Nadu, widening to four lane and improvement works in 3260 Km length of roads has been taken up by National Highway Authority of India (NHAI). The balance of 1613 Km of National Highways are being improved and maintained by this Department with the funds provided by Government of India.

During 2008-09, the following State Highways have been declared as National Highways by Government of India:

NH No	Name of Road	Length in Km
N.H 226 (Extn)	Perambalur – Perali – Keezhpazhur - Ariyalur - Kunnam - Thiruvaiyaru - Kandiyur - Thanjavur .	77.20
NH 230	Madurai - Poovanthi – Sivagangai - Kalayarkoil – Thiruvadanai -Thondi	96.80
NH 234	Vellore district-Pernampet, Gudiyatham, Katpaddi, Vellore, Pushpagiri, Polur upto Thiruvannamalai – Viluppuram.	199.40
	Total	373.40 Km

### 2.6.2 State Highways

These roads link district headquarters, important towns, National Highways in the State and neighbouring States. As per the policy of this Government to convert all State Highways to double lane, at present more than 82% of State Highways are widened to double lane and improved.

During the last three years, 3270 Km length of Major District Roads and Other Districts Roads have been upgraded as State Highways based on Traffic Intensity.

The total length of State Highways in Tamil Nadu is 9384 Km. In this, 7702 Km length of roads are of double and multi lane, 1412 Km length of roads are intermediate lane, 270 Km length of roads are single lane. Of the above roads 32 Km length of roads lie in forest and hilly areas which cannot be widened. The Government have taken action to widen the balance length of roads to double lane.

### 2.6.3. Major District Roads

Major District Roads connect production and marketing centres in the District and these centres in turn are connected with the National Highways and State Highways. At present, more than 60% of the length of the roads has been widened and improved.

During the last three years, 6063 Km length of Other Districts Roads has been upgraded as Major District Roads based on traffic intensity.

Out of the total length of 11288 Km of Major District Roads, 3101 Km is of double / multi lane, 8187 Km are of single / intermediate lane. Improvement of single lane stretches into a minimum of intermediate lane has been taken up.

### 2.6.4. Other District Roads

The Other District Roads connect Agricultural production centres and marketing centres with Taluk headquarters and other main roads nearby.

Most of the 36096 Km length of Other District Roads including Sugarcane Roads are of single lane. Only certain roads are of intermediate lane based on traffic intensity.

### 2.6.5. Upgradation of Roads

In view of increasing traffic, roads are being reclassified from time to time. During 2008-09 orders have been issued reclassifying 718 Km length of Major District Roads and 64 Km length of Other District Roads as State Highways and 2239 Km length of Other District Roads and 12 Km panchayat union road as Major District Roads. By this, it has become possible to improve and maintain the roads.

The details of roads upgraded and reclassified during the past three years is as follows:

Category of Road	Km
Length of roads reclassified as National Highways	640
Length of roads reclassified as State Highways	3446
Length of roads reclassified as Major District Roads	6063
Length of roads reclassified as Other District Roads	86
<b>Total</b>	<b>10235 Km</b>

- ❖ During 2001-06, 506 km length of roads have been upgraded as National Highways, 2968 km of roads have been upgraded as State Highways and 189 km of roads have been upgraded as Major District Roads. Thus, totally 3663 Km length of roads only have been upgraded.

### 2.6.6. Road Over Bridges/Road Under Bridges in lieu of Railway level crossings

There are 179 over Bridges and 57 under Bridges in lieu of Railway level crossing in Government roads. These bridges are being maintained by Railway Department and Highways Department.

During the past three years, 19 ROBs/RUBs works have been taken up at a cost of Rs. 234.35 Crores.

## 2.7 Reorganisation of the Department:

### 2.7.1. Highways Department

As part of reorganisation of the overall administration and to increase the efficiency of the Department, orders have been issued for reallocating various works taken up by the department within eight wings of the Department and Tamil Nadu Road Infrastructure Development Corporation.

#### a) General Wing:

- Overall Planning and Budgeting of Highways Department
- Establishment matters of all staff in Highways Department.

- **Maintenance of State Highways, Major District Roads and Other District Roads and bridges thereon.**
- **Implementation of Part –II schemes**
- **Execution of Calamity Relief Works like Monsoon, Flood and Tsunami.**
- **Road improvement and construction of bridges under Comprehensive Road Infrastructure Development Programme**
- **Formation of bypasses**
- **Implementation of road Infrastructure schemes under Public Private Partnership**
- **Sugarcane road development schemes**
- **Any other subject which Government may entrust from time to time.**

**b) National Highways Wing:**

- **Execution of Plan works and maintenance of roads and bridges on National Highways using the funds provided by the Government of India.**
- **Projects under Revamped Central Road Fund**
- **Road improvement works under the scheme of Economic and Interstate Importance.**
- **Road improvement under Bharat Nirman scheme**
- **Western Ghat Development Programme**
- **Hill Areas Development Programme**
- **Other centrally sponsored schemes relating to road development.**

**c) NABARD and Rural Roads Wing:**

- **Roads and bridge works with NABARD assistance**
- **Tsunami Relief works sanctioned under Asian Development Bank Assistance.**
- **Maintenance of certain Other District Roads**
- **Any other scheme, which Government may entrust.**

**d) Projects Wing:**

- **Railway Over and Under Bridges in lieu of existing level crossings under the Railway Works Programme**
- **Major Bridge works under State fund and NABARD assistance**
- **Radial Roads and Ring Roads**
- **Any other scheme, which Government may entrust**

**e) Metro Wing:**

- Execution of works under Chennai Metropolitan Development Plan. (CMDP)
- Implementation of TNUDP III works.
- Any other work which Government may entrust in the Metropolitan area

**f) Tamil Nadu Road Sector Project Wing:**

- Road upgradation works under World Bank assisted Tamil Nadu Road Sector Project
- Enhanced Periodical maintenance works
- Undertaking studies for projects to be implemented through Public Private Partnership
- Strengthening the organisational set-up and implementation of Action Plans.

**g) Investigation and Designs Wing:**

- Carrying out investigation for new bridges
- Preparation of designs for bridge works.
- Preparation of structural designs, drawings and estimates for bridge works costing Rs. 2 crores and above
- Any other scheme, which Government may entrust.

**h) Highways Research Station:**

- Research activities relating to roads and bridges
- Road safety and traffic improvement works
- Quality Control activities through Highways Research Station and regional laboratories
- Any other work which Government may entrust

**i) Tamil Nadu Road Infrastructure Development Corporation (TNRIDC):**

- Development of road and bridge infrastructure required in industrial areas.
- Any other work which Government may entrust

## **2.7.2. Institutional Development of the Department**

### **a) Revamping organisational setup**

The Government have decided to revamp the age old procedures in administrative setup of the department as per the present need. On this basis, the work of restructuring the department has already begun with World Bank Assistance. As a part of restructuring, the Government is considering to create a new organisational setup to coordinate with various wings of the department including formation of a separate planning and quality control unit.

### **b) I.S.O. Certification**

As a part of Institutional Strengthening Plan, action is being taken to obtain I.S.O (International Standard Organisation) Certification in first Phase for Coimbatore, Trichy Circles and Pudukottai and Erode Divisions of general wing and Coimbatore Division of NABARD &RR wing of this department.

Relating to this procedure internal audit committee has been formed and training is being imparted to the staff. Action will be taken to obtain ISO certification for the above circles and divisions during this year, on completion of the Internal Auditing procedure.

### **c) Computerisation**

It is decided to strengthen the administrative set up and to improve the efficiency by computerizing the various wings of the department and necessary steps have been taken up. 1779 computers at a cost of Rs.14.77 crores have been given to 751 offices under various wings of this department from Chief Engineer level to section level. Further, under this scheme 2700 staff have been given computer related training and 330 engineers have been given software related enhanced training.

Apart from this, tenders to procure Software relating to Geological Information System have been submitted to World Bank and approval is awaited.

In order to have transparent tendering procedure e-tendering system has been introduced in this department from 01.07.2007 for calling of tenders for the works costing more than Rs.10 lakhs. As the involvement of contractors in the e-submission is very minimal, action will be taken for creating necessary awareness among the contractors to implement e-submission.

### **d) Price adjustment**

While executing road and bridge projects, the works get delayed due to escalation in cost of construction materials. Realising this, the Government, have decided to implement price adjustment system for the first time in order to expedite the works and to allow price adjustment in accordance with the price variations, and issued orders accordingly in G.O. Ms. No. 60/Public Works Department Dated:14.03.2008, wherein, the system of allowing price adjustment for the works with agreement period of above 18 months has been modified and price adjustment has been extended for the works with agreement period of more than 12 months.

**Further, the Government ordered for price adjustment for works with agreement period of above 6 months, for works costing more than Rs.25 lakhs and a new method of price adjustment based on price changes for some selected items on a trial basis for a period of one year. According to this price adjustment has been made to the contractors based on the cost variations of the construction materials.**

**To make certain modifications and to implement price adjustment in the current financial year orders have been issued vide G.O.Ms.101 dated 10.6.2009. As per this G.O. price adjustment will be made to the tenders costing more than Rs.100 lakhs and tenders having contract period of more than 12 months price adjustment will be allowed for all components. If the contract period is less than 12 months, price adjustment will be applicable only to cement, steel, bitumen and POL ( Petrol, Oil and Lubricants). The G.O. will be in force for one year on a trial basis.**

#### **e) Road Management System**

Creation of road management system with collection of computerised basic data of road network of the State is under progress.

Under this Web based data collection, the details of roads, bridges and traffic intensity are being stored. With this it is possible to select and prioritise road stretches for proper road maintenance. By this, accurate planning it is possible to utilise the fund allocation in an efficient manner.

#### **f) Committee on Revised Administrative Sanction**

During execution of works by this department particularly bridge works, revised administrative sanction is required for certain works due to changes in design, increase in cost of construction material or due to additional items involved. In order to avoid the delay in issue of revised administrative sanction for individual works by scrutinising on case to case basis the Government has formed committee involving various officials at Government level vide G.O. No.289 dated 4.12.2008. The delay in issue of revised administrative sanction has been avoided and action has been taken to speed up the works.

### **2.8 Schemes Implemented by the Department:**

#### **2.8.1. Comprehensive Road Infrastructure Development Programme (CRIDP)**

Under the Comprehensive Road Infrastructure Development Programme, action is being taken for widening and strengthening the State Highways, Major District Roads and Other District Roads. Under this scheme road widening and improvement works are taken up with huge allocation in a massive scale.

During the last three years out of the total expenditure of Rs.6,165 Crores under plan works Rs.3,036Crores has been expended for this scheme alone. Utilising the above funds –

- 8,324 Km length of roads has been widened at a cost of Rs.2,082 Crores
- 6,923 Km length of roads has been improved at a cost of Rs.954 Crores.

As a whole, 15247 Km length of roads has been widened and improved and the details are as follows:

### **2.8.2. State Highways**

**Under CRIDP during 2008-09, in the First Phase sanction has been accorded to a tune of Rs.353.67 Crores for -**

- Widening 378 Km length of State Highways,
- Strengthening 441 Km length of roads.
- Construction of 98 Culverts/Minor Bridges.
- Improving 27 Black Spots.
- Improving Tourist important roads at a cost of Rs.7.80 crores.

Further under the Second Phase of the scheme, sanction has been accorded to a tune of Rs.52.83 Crores for,

- Widening and improving 72 Km length of roads
- Construction of 4 Bridges and widening 556 Culverts.
- Improving 10 Black Spots.

Out of the newly sanctioned works and spill over works 1467 Km length of road works and 60 bridges/ culverts has been completed at a cost of Rs.579.49 Crores.

A provision of Rs.422.74 crores has been made in 2009-10, for the on going and as well as for new works.

### **2.8.3. Major District Roads**

During 2008-09, in the first phase sanction has been accorded to a tune of Rs.236.50 Crores.

- Widening 291Km length of roads.
- Strengthening 497 Km length of roads.
- Construction of 55 Bridges / Culverts.
- Improving 7 Black spots.
- Improving Tourist important roads at a cost of Rs.16.72 crores

Further under second phase sanction has been accorded for Rs.37.10 Crores..

- Widening and improving 78Km length roads
- Construction of 3 Bridges and widening 239 Culverts.
- Improving one Black Spot.

Of the newly sanctioned works and spill over works 1476 Km length of road works and 41 bridges/ culverts has been completed at an expenditure of Rs.380.24 Crores.

A provision of Rs.260.68 crores has been made in 2009-10, for the ongoing as well as new works.

#### **2.8.4. Other District Roads**

During 2008-09, in the first phase sanction has been accorded for Rs.204 Crores.

- Widening and strengthening 1354 Km length of roads
- Construction of 99 Culverts / Minor Bridges.
- Improving Tourist important roads at a cost of Rs.2.55 crores

Further, under second phase sanction has been accorded for Rs.20.07 Crores .

- Improving 40Km length other district roads
- Improving 27 Km length of Sugarcane roads
- Construction of 3 Bridges.
- Improvements to 2 Black Spots.

Of the newly sanctioned works and spill over works 1668 Km length of road works and 68 bridges/ culverts has been completed at an expenditure of Rs.210.21 Crores.

A provision of Rs.219.11 crores has been made in 2009-10, for the ongoing as well as new works.

#### **2.8.5 Improvements to Other District Roads connecting Adi Dravida habitations**

This Government is implementing the scheme for improving the Other District Roads, connecting Adi-Dravida habitations, under the Scheduled Caste Sub Plan, as part of CRIDP from 2006-07 onwards.

During 2008-09, Rs.110 Crores has been expended for Widening and strengthening of 823 km of Other District Roads and construction of 32 bridges/ culverts. Out of newly sanctioned and spill over works, 853 Km length of road works and 23 bridge/culvert works have been completed at an expenditure of Rs.120.04 Crores.

A provision of Rs.122.38 crores has been made in 2009-10, for the ongoing as well as new works.

#### **2.8.6. Part II Scheme**

During 2008-09 Government sanctioned Rs.9.82 Crores for construction of 12 bridges and of which 16 km length of spill over road work and 12 bridge works have been completed at an expenditure of Rs.42.12 Crores.

A provision of Rs.16.97 Crores has been made in 2009-10, for the on going as well as new works.

### **2.8.7 Tsunami Rehabilitation Programme Tsunami Emergency Assistance Project (TEAP) with Asian Development Bank Assistance**

Under the Asian Development Bank Assisted scheme, the Government have sanctioned Rs.42.70 Crores for construction of 5 major Bridge works and one road work in Tsunami affected Thiruvallur, Cuddalore and Nagapattinam districts. Due to lesser bearing capacity of soil, the Government have accorded Rs.92.55 Crores as Revised Administrative sanction for the above works.

Clearances for taking up the bridge works were obtained from the Coastal Regulation Zone Authority, New Delhi, Fisheries Department, Chennai and Ministry of Environment & Forests, Government of India, New Delhi and all these works are now in progress.

During 2008-09, one road work costing Rs.9.22 Crores has been completed. The total expenditure for the above scheme is Rs.43.05 Crores for the year 2008-09. Action is being taken to complete all the bridge works during this financial year.

For 2009-10, a budget provision of Rs.40.22 Crores has been made for these works.

### **2.8.8. Improvement of roads and construction of bridges under centrally assisted Tsunami Rehabilitation Programme**

For the Tsunami affected places, to improve the road infrastructure, the Government have sanctioned road improvement works and construction of bridges under Tsunami Rehabilitation Programme.

a) Under this scheme Government sanctioned Rs.224.38 crores for the improvement of 423.22 Km length of roads and construction of 55 new bridges on 25.07.2007. Of these works 398.29 Km length of road works and 29 bridges have been completed. An expenditure of Rs.66.34 Crores has been incurred during 2008-09 under this scheme.

The Empowered Committee has recommended revised administrative sanction for 16 bridges due to changes in soil profile at a total cost of Rs.145.72 Crores. The Revised Administrative Sanction for the roads and bridges under this scheme is Rs.258.40 Crores. These bridge works will be takeup during current year.

b) Further, the Government have sanctioned Rs. 53.40 Crores for improvements of 47.15 km length of roads and construction of 6 High Level Bridges in Nagapattinam District during 2007-08 under NABARD & RR wing.

Among the above, design and estimate have been prepared for the 6 bridge works and Rs.53.38 Crores has been recommended as Revised Administrative sanction for bridge works only in the Empowered Committee. The total Revised Administrative sanction for all the road and bridge works is Rs.73.79 Crores. Orders have been issued in G.O.195/ Revenue / (NC IV) department dated 15.06.2009 for these works.

During 2008-09, the road works under the above scheme have been completed to a length of 31 km at a cost of Rs.10.13 Crores. During this year, 3 bridge works and road work to a length of 13 km will be completed at an expenditure of Rs.7.84 Crores.

### **2.8.9. World Bank Assisted Emergency Tsunami Rehabilitation Programme**

The World Bank has sanctioned Rs.20 crores for reconstruction of bridge connecting Keelmanakudi and Melmanakudi villages in Kanyakumari District. Detailed Project Report has been prepared for this bridge and approval of World Bank has been obtained. Tender has been called for. After completion of land acquisition for the approaches , work will be taken up during this year.

## **2.9. Chennai Metropolitan Development Plan (CMDP)**

This scheme is being implemented for improvement of road infrastructure in and around Chennai metro area. Under this, improvement to 590 Km length of roads including construction of Grade Separators, bridges, centre median and foot path at a cost of Rs. 825 Crores has been approved by Government under State fund.

The Government have sanctioned a separate post of Chief Engineer on 31.01.2008 for implementing the above works.

Upto 2008-09, 237 Km length of Road works, 36 Bridge works and Centre Median works have been completed at a total cost of Rs.301 Crores. The spill over works 236 Km length of road works, 4 bridge works at a total cost of Rs.126 Crores are in progress. Action will be taken to complete all road works and two bridge works in the current financial year.

Further the Government has accorded Administrative Sanction to 4 Grade Separators, One Road Over Bridge in lieu of level crossing and 3 High level bridges at a total cost of Rs.184 Crores.

The Details of Work are given below:

### **Bridges**

- ❖ Construction of new three lane bridge adjoining the old existing bridge at Amainthakarai in Chennai, at a cost of Rs.3.30 Crores is in progress and scheduled for completion during this year.
- ❖ Construction of a bridge at KM 4/6 of Thirumazhisai - Sathyavedu road at a cost of Rs.1.20 Crores has commenced. This work will also be completed during this year.
- ❖ Reconstruction of a bridge at KM 17/2 of GNT road near Red Hills tank at a cost of Rs.4.96 Crores is under progress. The same will be completed in this year.

## **Grade Separators**

- ❖ Construction of Grade Separator at Marmalong Bridge – Irumpuliyur road and Pallavaram –Thoraipakkam road junction at a cost of Rs.13.20 Crores is being executed by project wing and will be completed during this year.
- ❖ Construction of Grade Separator at inner ring road - N.S.K.road junction at Vadapalani at a cost of Rs. 30 Crores has been administratively sanctioned. As this location runs along the Metro Rail alignment, the proposed work will be integrated with Metro Rail Project by Chennai Metro Rail Corporation.
- ❖ For the work of construction of Grade Separator at Kodambakkam - Sriperumbudur road, Mount – Poonamallee road intersection at Porur, Revised Administrative Sanction is awaited for Rs.34.72 Crores. The land acquisition for the service road and tendering process will be completed and work will be taken up during this year.
- ❖ Construction of grade separator in the G.N.T. road at Moolakadai junction has been approved by steering committee at an approximate cost of Rs.60.20 Crores. On completion of the Detailed Project Report, the Revised Administrative Sanction will be sought for and taken up for execution during this year.
- ❖ Construction of grade separator at 2<sup>nd</sup> Avenue Annanagar and Mogappair road – Inner Ring road junction at Thirumangalam has been proposed at an approximate cost of Rs.46.46 Crores. On completion of the Detailed Project Report, the Revised Administrative Sanction will be sought for approval and will be taken up for execution during this year.

## **River Bridges**

- ❖ For the work of Providing a High Level Bridge across River Coovam connecting GWT road and Mogappair, Revised Administrative Sanction proposal for Rs.16.04 Crores has been sought for approval. On approval, the tender will be invited and taken up for execution during this year.
- ❖ For the work of construction of additional two lane bridge adjacent to the existing Thiru.Vi.Ka. bridge at Chennai (Adayar) Revised administrative sanction proposal for Rs.16.61 Crores has been sought for approval. On approval the tender will be invited and taken up for execution during this financial year.
- ❖ For the work of providing a bridge across Ennore Creek to connect Ennore Expressway with North Chennai – Thermal Power Station, administrative sanction at a cost of Rs.20 Crores has been accorded. Detailed Project Report is under preparation for the revised alignment. On completion the project will be taken up for implementation.

- ❖ During 2009-10 budget allotment of Rs.102.53 crores has been allotted for the Road improvement works, Bridge works and land acquisition works for Chennai Metro, Tiruvallur and Kanchipuram districts.

### **2.10. Tamil Nadu Urban Development Project- III**

Under this World Bank assisted scheme, 5 Road works for length of 36 km with a restructured cost of Rs.145 Crores in Chennai Metropolitan Area (CMA) has been sanctioned. Tender for 3 road works have been received and concurred by World Bank. These road improvement works will be taken up for execution in this year. For the balance 2 road works, Land acquisition, Resettlement and Rehabilitation activities are in progress. The tendering process and approval of World Bank will be obtained and work will be commenced this year.

### **2.11. Road Infrastructure Development in Oragadam Industrial Park Area**

Due to the sustained efforts of the Tamil Nadu Government to improve the road and bridge infrastructure for fast developing industries in Sriperumbudur area of Kancheepuram District the Government has sanctioned to take up the following works at a cost of Rs. 300 Crores.

- (i). Widening Singaperumalkoil – Sriperumpudur road (SH-57) (24.60 Km) to four lane in the First Phase and widening Oragadam to Sriperumbudur road to Six lane in Second Phase.
- (ii). Widening of Vandalur – Wallajabad road (SH-48) (33.40 Km) to four lane.
- (iii). Forming a Bye pass for Ponthur Village for a length of 2.39 Km in Singaperumalkoil – Sriperumbudur Road
- (iv). Forming Service road for 3 km on four sides of the junction at Oragadam
- (v). Construction of a Grade Separator (over bridge) at Oragadam junction.

In the First Phase, widening the roads to four lane and formation of bye pass to Ponthur village have been split into four packages and the same are under progress .

- 1) Singaperumalkoil – Oragadam road– 12.60 Km
- 2) Oragadam – Sriperumpudur road – 12.00 Km
- 3) Vandalur – Oragadam road – 16.60 Km
- 4) Oragadam – Wallajabad road – 16.80 Km

Total - 58.00 Km

In the first phase, 11km length of road has been completed and out of 171 minor bridge works, 26 works have been completed and balance works will be completed during the current year. Expenditure to the tune of Rs.41.13 Crores have been incurred for these works.

In the second phase, land acquisition for six laning of Oragadam – Sriperumpudur road is in progress in a fast pace.

Tenders will be called for shortly for construction of grade separator at Oragadam junction.

A provision of Rs.150 Crores has been made for these projects in 2009 -10.

### **2.12. Rajiv Gandhi Salai (IT Expressway) (Phase II):**

IT Express way (Rajiv Gandhi Salai) from Chennai Madhya Kailash to Siruseri 20 km length has been widened to six lane to World class standards, including the link road connecting Sholinganallur to East Coast Road for a length of 2 Kms have been widened to four lane at a cost of Rs.300 crores and this road has been dedicated to the people during October 2008 by the Honourable Chief Minister of Tamil Nadu. This road is being maintained by the Tamil Nadu Road Development Company and has been named as Rajiv Gandhi Salai by Honourable Chief Minister of Tamil Nadu. In the second phase, Government decided to widen the road to six lane from Siruseri to Mamallapuram in East Coast Road for 25 Km length and form a bypass for 4.67 Km length (via) Padur, Kelambakkam and Thaiyur and another bypass for 5.75Km length (Via) Kalavakkam, Thiruporur and Thandalam and sanctioned Rs.70 Crores for land acquisition works. The land acquisition has been taken up and Detailed Project Report for this work has been prepared for Rs.400 crores. Action will be taken for taking up this work on completion of land acquisition and identifying the source of funding.

### **2.13. Bypasses for important towns**

To ease the traffic congestion in Erode City Rs.22.Crores has been sanctioned for land acquisition for formation of bypasses in the First Phase from Kokarayanpet to Thindal for 14 Km, and also Rs.35 Lakhs for preparation of Detailed Project Report through consultant. Land acquisition works are in progress. On speedy completion of land acquisition works, Administrative Sanction will be issued for formation of bye passes.

Further, the Government accorded sanction for land acquisition in the First Phase for formation of bye passes to the following towns:

	<b>Length (Km)</b>	<b>Cost (in Crores)</b>
• Bypass to Ettukudi town (including road work )	1.5	1.55
• Bypass to Thuraiyur Town (including road work )	3.8	4.73
• Bypass to Thiruthuraiipoondi	3.0	0.21

Town		
• Bypass to Kancheepuram Town	8.5	2.87
• Bypass to Permbalur Town	9.0	5.36
• Bypass to Pattukottai Town	7.5	2.79
• Bypass to Thanjavur Town (Phase –II)	13.0	5.00
• Bypass to Dharapuram Town	4.9	0.63
• Bypass to Rasipuram Town	13.68	4.18
<b>Total</b>	<b>64.88</b>	<b>Rs.27.32</b>

Land acquisition for these works has been taken up. The road works will be sanctioned on completion of land acquisition.

## 2.14 NABARD ASSISTED PROJECTS

### 2.14.1. Improvements to Major District Roads and Other District Roads.

During 2008-09, spill over works of 4 bridges were taken up at a cost of Rs.7.80 Crores. Of which, one bridge work has been completed at an expenditure of Rs.2.30 Crores. The balance 3 bridge works will be completed during this financial year.

For 2009-10 a provision of Rs.2 Crores has been allotted for these works.

### 2.14.2 Construction of Bridges in Government Roads

During 2008-09, under the construction of bridges in Government roads, spill over works for construction of 140 bridges have been taken up for execution at an outlay of Rs.91.43 Crores. Of which, 92 bridges have been completed during 2008-09 at an expenditure of Rs.34.47 Crores. The remaining bridge works which are in progress will be completed during this year.

For 2009-10, a Budget provision of Rs.65.12 Crores has been allotted for this scheme.

Anticipating loan assistance from NABARD, the Government has sanctioned a new project for construction/ reconstruction of 100 bridges in State Highways, Major District Roads and Other District Roads at a cost of Rs.148 Crores.

Out of the 100 bridge works, 5 bridge works have been completed in 2008-09 at a cost of Rs.14.78 Crores. 73 bridge works are in progress and the remaining works are in tender / estimate stage. These works will be taken up for execution in the current financial year.

For the year 2009-10, a budget provision of Rs.83.00 Crores have been made for this scheme.

### **2.14.3. Rural Roads Scheme**

Under this scheme, Panchayat and Panchayat Union Roads having earthen and WBM surface will be provided with BT road connectivity to habitations with a population between 500-1000 are taken up for improvements to ODR standards.

During 2008-09, spill over works of 673 km length of roads and 39 bridges were taken up at a cost of Rs.129.20 Crores. Of these, 619 km length of road works and 19 bridge works have been completed with an expenditure of Rs.104.09 Crores. About 510 villages have been benefited with B.T road connectivity by this scheme. The remaining works which are in progress will be completed during this financial year.

For the year 2009-10, an allotment of Rs.11.90 Crores has been made for this scheme.

### **2.14.4 Providing B.T Road Connectivity To Adi Dravidar Habitations**

Under the Scheduled Caste Sub Plan, habitations where the Adi-Dravidar population is more than 50% of the total population are connected with B.T. roads.

During 2008-09, spill over works of 174 km length of roads and 11 bridges were taken up at a cost of Rs.36.18 Crores. Of which, 169 km length of road works and 5 bridge works have been completed at a cost of Rs.31.55 Crores. By doing this, 180 villages have been benefited with BT road connectivity.

For the year 2009-10, a provision of Rs.100 lakhs has been allotted for this scheme.

### **2.14.5 Bus Route Improvement Scheme**

Under this scheme, Panchayat and Panchayat Union roads, where buses are plying for more than three years are taken up for improvements as BT road to Other District Roads standards.

During 2008-09, spill over works of 179 km length of roads and 13 bridges were taken up at an outlay of Rs.39.99 Crores. Of which, 160 km length of road works and 4 bridge works have been completed incurring an expenditure of Rs. 25.64 Crores. The remaining works are in progress.

A Budget allotment of Rs.5.60 Crores has been made for these works for the year 2009-10

Further, under another scheme of improvement of bus plying Panchayat and Panchayat union roads the spill over works of 13.60 km length and one bridge work were taken up during 2008-09 at a cost of Rs.1.63 Crores. All the works have been completed at an expenditure of Rs.1.61 Crores.

In the beginning of 2008-09, the Rural Development and Panchayat Raj Department has taken a policy decision to take up improvement of Panchayat & Panchayat Union Roads by Rural development Department. As per this policy decision, the improvements to these roads are being taken up by Rural development and Panchayat raj Department.

#### **2.14.6.Reconstruction of Bridges in Cauvery Delta Areas with NABARD assistance**

Under this scheme, Government had sanctioned construction of 55 River bridges, 4 Major Bridges and improvement to 417 Km length of Sugarcane roads at a cost of Rs.204.73 crores in Cauvery Delta Districts and other districts upto 2008. Of these, 43 bridge works and 410 Km length of road works have been completed for an amount of Rs.60.12 crores. Of the balance works one bridge work and 5 Km length of two road works has been deleted. During 2008-09, an expenditure of Rs.5 crores has been incurred under this scheme.

Action is being taken to complete one road work and 6 bridge works during 2009-10. Action will be taken for the execution of balance works during this year.

#### **Construction of Major Bridges across important Rivers**

The Government has accorded sanction for construction of four major bridges across important rivers at a cost of Rs.121.50 crores anticipating NABARD loan assistance.

Sl.No	Name of Bridge	Cost (Rs. in crores)
1	Bridge across Cauvery river connecting Vangal in Karur District and Mohanur in Namakkal District.	43.50
2	Bridge across Kollidam river connecting Neelathanallur in Thanjavur District and Madhanathur in Ariyalur District.	35.00
3	Bridge across Kollidam river connecting Muttam in Cuddalore District and Manalmedu in Nagapattinam District.	32.40
4	Bridge across Vaigai river connecting Paramakudi and Emaneswaram in Ramnad District.	10.60
	Total	121.50

NABARD bank has agreed for a loan amount of Rs. 126.24 crores. Of which the work of construction of bridge in Mohanur-Vangal is in progress and the remaining three bridges are in estimate stages. These works will be taken up during this year by calling for tenders.

A provision of Rs.38.86 crores has been made for this scheme during 2009-10.

### **2.15. Inner Ring Road in Chennai City**

To ease the traffic congestion in Southern part of Chennai city, Government sanctioned formation of Southern Sector of Inner Ring Road starting from Km 14/1 of NH-45 to join at Km 13/4 of Old Mamallapuram road for a length of 9.40 Km. In the first phase 4.40 Km length of road works and Road Under Bridge (RUB) in Nanganallur road have been completed.

In the second phase, formation of road for a length of 5km is in progress. Revised Administrative sanction of Rs.67.91 crores has been given for this work, which includes construction of bridge across Adambakkam Lake at an estimated cost of Rs.15.20 Crores.

An expenditure of Rs.13.65 crores has been incurred during 2008-09

A provision of Rs.37 thousand has been made for this scheme during this year. Action will be taken to obtain additional funds depending upon the progress of the works.

### **2.16. Madurai Radial Roads**

Under Comprehensive Road Infrastructure Development Programme sanction had been accorded in the second phase comprising 14 works of 123.20 km for the work of formation of Radial road to Madurai at a cost of Rs.70.60 crores. Of which 120 km length of road works has been completed during 2008-09 with an expenditure of Rs.63.79 crores. The balance works will be completed during this year.

### **2.17. Tiruppur Ring Road**

There is heavy traffic congestion in Tiruppur town due to industrial development. To ease the traffic congestion in Tiruppur town and surrounding areas, Government sanctioned improvement of road infrastructure by formation of ring road involving a total length of 98.60 Km, two Railway Over Bridges (ROB) and six River Bridges at a cost of Rs.72.40 crores. All the road works have been completed.

Out of six river bridges, one work has been completed. It is proposed to complete three river bridges in this year. Preparation of detailed project report under progress for two railway bridges (ROB). The execution of the railway bridges will be taken up after calling of tenders.

The fund for this scheme has been allocated under Comprehensive Road Infrastructure Development Programme.

## **2.18. Construction of ROBs/RUBs across Level crossings under Railway Works Programme**

The construction of Road Over/ Under Bridges in lieu of existing level crossings on Government roads are undertaken on priority basis when Train Vehicle Units (TVU) exceed one Lakh per day. The State Government and Ministry of Railways share the cost equally for construction of Railway Over/ Under Bridges including approach and service roads.

During the six year period from 1999 to 2005, 47 ROB/ RUB works were sanctioned under Railway Works Programme. But in the years between 2006-09, the Government have sanctioned 90 number of works as detailed below.

<b>Year</b>	<b>No. of bridges</b>	<b>Cost ( Rs. in Crores)</b>
2006-07	25	409.65
2007-08	42	876.70
2008-09	23	560.94
<b>Total</b>	<b>90</b>	<b>1847.29</b>

During 2006-08, 8 ROBs/ RUBs have been completed at the cost of Rs.71 crores.

During 2008-09, 11 ROBs/RUBs across level crossings have been completed including Ellis Nagar ROB under Madurai radial roads for which expenditure incurred is Rs.102.69 crores.

It has also been decided that the officials of Railways and Highways would jointly undertake field inspection periodically for speedy approval of GADs and avoid delay in the execution.

A provision of Rs.442.51crores has been made during 2009-10 for these works.

## **2.19. Fly Over at Tirunelveli**

The Government have sanctioned construction of a fly over along Tirunelveli Bye-pass near Chellapandian statue at a cost of Rs.16.40 crores. The estimate for this work has been finalised for Rs.15.68 crores and tender settled. The work is in progress.

A provision of Rs.7.68 crores has been allotted during current year for this work.

## **2.20. HUDCO Loan Assistance Scheme for Bridges**

Under this scheme, the Government sanctioned construction of 61 bridges at a cost of Rs.60 crores. Out of these bridges, 52 bridges have been completed and 2 works were deleted. Out of the balance of 7 bridge works, 2 bridge works are proposed to be completed during this year. The tendering

process for the remaining 5 works will be completed during this year and taken up for execution.

During 2009-10, a budget provision of Rs.12.21 crores has been made for these works.

### **2.21. Sugarcane Road Development Scheme**

The cess fund collected from sugar mills are utilized for formation and maintenance of roads from sugarcane growing areas to sugar mills. The Government have ordered to undertake maintenance these roads through general wing.

Under this scheme, 65 road works have been completed. Remaining two works will be completed during this year.

During 2008-09, an expenditure of Rs.7.57 crores has been incurred.

Further, in Comprehensive Road Infrastructure Programme Phase II, improvements in 27 km length of sugarcane roads has been sanctioned for Rs.3.48 crores.

During 2009-10, a budget provision of Rs.10.00 crores has been made for these works.

### **2.22. National Highways Projects**

The total length of National Highways is 4873 km in Tamil Nadu .The National Highway Authority of India (NHAI) is taking up widening and improvement works in 3260 Km length of National Highways .In this 865 km length of road works had been completed with a cost of Rs.3649 crores. Four laning of 1369 km length of road works are in progress. Detailed project report preparation is in progress in 944 km length of road. The balance stretches are in various stages of implementation. In 1613 Km length of roads, improvement, maintenance and renewal works are taken up by the State Government from the funds allotted by the Government of India.

#### **2.22.1 Projects executed by National Highways Authority of India (NHAI)**

#### **2.22.2 National Highways Development Project (NHDP)**

Under the National Highways Development Programme viz., Golden Quadrilateral Programme, North – South Corridor Programme, Port Connectivity and Other Projects, four laning works have been taken up by NHAI.

##### **a) Golden Quadrilateral Programme**

Under this scheme, upgradation of 342 Km length of roads have been completed at a cost of Rs.1193 crores.

Rs.crores

Road	Length in Km	Estimate Amount
NH-4 (Chennai-Bangaluru) from Poonamalee to Walaja	92	285.94
NH-5 (Chennai - Nellore) from Chennai to Tada	42	185.00
NH-7 (Bangaluru - Salem) from Athipalli to Krishnagiri	61	205.28
NH-46 (Krishnagiri – Ranipet Road) Krishnagiri to Walaja	147	516.49
Total	342	1192.71

### **b) North-South Corridor Programme**

Under this scheme, widening of NH-7 & NH-47 (Salem-Cochin) to four lane for a length of 756 Km has been taken up at a cost of Rs. 4280 crores. In this, 97 Km length of road works including Krishnagiri - Thoppur road, Salem bye pass, Namakkal bye pass, Karur bye pass have been completed and 577 Km length of road works is under progress. Also, 82 Km length of road works from Chengapalli – Coimbatore and Tamil Nadu - Kerala Border excluding the stretch of road which is maintained by L&T Pvt. Ltd., has to be taken up by NHAI for widening to 4/6 lane at a cost of Rs.852 crores. The work is in tender stage. The work will be taken up for execution after completion of tender process.

### **c) Port Connectivity Project**

As part of Port Connectivity, improvement of 30 Km length of road at a total cost of Rs.600 crores has been taken up under Chennai to Ennore Port Connectivity Scheme (EMRIP). Tender is reinvited after finding alternate arrangement for funds to meet the increase in the estimate cost due to the changes that has been made in the project.

Another project for improvement of 47 Km length of road in NH-7A from Tirunelveli to Thoothukudi has also been taken up at a cost of Rs.231 crores by NHAI. Necessary action is being taken by NHAI to invite retender to complete the balance 78% of works which were not completed by the original contractor even after the lapse of agreement period.

Tenders for the work of Improvement of link road connecting Tambaram - Tiruneermalai road from Burma Colony which is in North West side of MEPZ (Madras Economic Processing Zone) to Chennai bypass at Pulikaradu at a cost of Rs.2.30 crores and the construction of new four lane road from Ennore port, Tiruvotriyur, Ponneri, Panchetti - Thatchur for a length of 25.50 Km at a cost of Rs.383 crores have been called for by the NHAI. On finalisation of tenders, the above works will be taken up for execution.

## **Elevated Expressway Connecting Chennai Port and Maduravayal**

Chennai port is located in the heart of city. Containers and heavy vehicles running from and to Chennai port take more time to negotiate Chennai City leading to delay in reaching destination, increase in operating cost of vehicles and pollution of atmosphere. To overcome the above difficulties, construction of Elevated Expressway Connecting Chennai Port and Maduravayal junction is proposed under BOT (Built Operate and Transfer) scheme which is taken up by NHAI. This project is to be executed at a cost of Rs.1655 crores. The total length of the project is 19 Km. Out of 19 Km length, 17.5 Km runs at elevated level and the balance 1.50 Km runs at the road grade. This project is the longest elevated corridor project in the country.

The Expressway utilizes the bank of river Coovam for the section between Chennai Port and Koyambedu and along NH 4 for the remaining portion from Koyambedu to Maduravoyal. The construction period of the project is estimated as 3 years. It has been estimated that Rs.258 crores would be required to resettle and rehabilitate the affected families. Further, the State Government and Chennai Port Trust have agreed to share the cost towards Land Acquisition and Rehabilitation and Resettlement equally. Necessary environmental clearance is expected from Central Government.

### **d) Other Projects for improving National Highways**

The road between Tambaram and Tindivanam, in NH-45 for a length of 93 Km was widened to four-lane during 2004-05. In continuation of the same, Four laning of the stretch between Tindivanam and Trichy for a length of 204 Km has been taken up at an estimated cost of Rs.1260 crores. Out of this 186 Km length of road works have been completed at a cost of Rs.1100 crores and the balance 18 Km length of road works is nearing completion.

The Construction of Major Bridges, Grade separators and Vehicular underpass is upgraded from two lane to three lane track in Trichy- Tindivanam (NH-45) road. Also in the following major junctions Vehicular underpass have been included and completed at an additional cost of Rs.140.00 crores.

- NH-45 and NH-45c road junction(near Vikravandy km149/8)
- Cuddalore- Chittor road junction (near Madapattu km 174/4)
- Cuddalore- Virudhachalam road junction(near Vappur km 220/2)
- Thozhudur- Thitttakudi road junction(near Thozhudur km 243/0)

Further, 125 Km length of road from Trichy to Madurai in NH-45B has also been taken up for four laning at a cost of Rs.420 crores. Out of 125 Km length, 87 Km length of road works have been completed at a cost of Rs.375 crores and the balance 38 Km length of road works is expected to be completed during this year.

Also 114 Km length of road from Karur to Coimbatore, in NH-67 has been taken up for improvement to two lane with paved shoulders and four lane in certain locations at a total cost of Rs.178 crores. Out of this 60 Km length of road

works have been completed at a cost of Rs.94crores and the balance 54 Km length of road works are expected to be completed during this year.

### 2.22.3. National Highways Development Project – Phase – III

Under this scheme, four laning of 1472 Km length of National Highways has been taken up by the NHAI under Build, Operate and Transfer (BOT) basis.

#### Status of works as follows:

- The road between Trichy - Dindigul in NH45 to a length of 88 Km at an estimated cost of Rs.560 crores has been taken up for widening for four lane and the work is in progress.
- The road between Madurai – Tuticorin via Aruppukottai in NH45B to a length of 128 Km at an estimated cost of Rs.644 crores has been taken up for widening to four lane and the work is in progress.
- In NH 66, 38 Km length of road between Puducherry – Tindivanam has been taken up for widening to four lane by NHAI at an estimated cost of Rs.285 crores and the work is in progress
- In NH 67, 56 Km length of road between Thanjavur – Trichy has been taken up for widening to four lane by NHAI at an estimated cost of Rs.280 crores and the work is in progress
- The road between Trichy – Karur in NH67 to a length of 80 Km has been taken up for widening to 2/4 lane by NHAI at an estimated cost of Rs.516 crores and the work is in progress.
- In NH68, 136 Km length of road between Salem – Ulundurpet has been taken up for widening to four lane by NHAI at an estimated cost of Rs.941 crores and the work is in progress.
- DPR has been finalized for the following roads.
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#### Total Length - 493 Km

Details of Roads	Length in Km
❖ NH 45 Extn , Dindigul-Periyakulam-Theni Road	73
❖ NH 47 & 47B, Kerala / Tamil Nadu Border – Kanyakumari and Nagerkoil – Kavalkinaru Road	71
❖ NH 67, Nagapattinam –Thanjavur Road	80
❖ NH 67 Extn, Coimbatore – Mettupalayam Road	45
❖ NH 205, Tiruthani – Tiruninravoor Road	59

❖ NH 210, Trichy – Karaikudi Road including Trichy bypass	108
❖ NH 220, Theni-Kumuli Road	57
Total	493

- **DPR is under progress for the following roads for a total length of 451 Km.**

Details of Roads	Length in Km
❖ NH 49, Madurai – Ramnad - Dhanushkodi Road	186
❖ NH 66, Krishnagiri – Tiruvannamalai -Tindivanam Road	170
❖ NH 205, Tiruninravoor- Padi Road	22
❖ NH 210, Karaikudi – Ramnad Road	73
Total	451

#### **2.22.4. National Highways Development Programme Phase – V**

The six laning of the following four lane stretches has been taken up by National Highway Authority of India

Name of Road	Length in Km	Present Stage
<b>NH 5, Chennai - Tada</b>	<b>42</b>	<b>Work is in progress</b>
<b>NH 46, Krishnagiri - Walaja</b>	<b>147</b>	<b>Tender stage</b>
<b>NH 4, Poonamallee - Walaja</b>	<b>92</b>	<b>Preparation of Feasibility report is in progress</b>
<b>NH 7, Athipalli - Krishnagiri</b>	<b>61</b>	
<b>NH 45, Tambaram - Tindivanam</b>	<b>93</b>	

#### **2.22.5. Chennai Bypass**

Under phase-I, Chennai Bypass road was constructed from Tambaram to Maduravoyal for a length of 19 Km during 2002 with two-lane carriageway at an estimated cost of Rs.75 crores. The widening of Chennai bypass (phase-I) into four lane including service roads and formation of new bypass from Maduravoyal (NH-4) to Puzhal (NH-5) has been taken up under phase-II for a length of 13 Km by NHAI at a total cost of Rs. 405 crores. Widening of Chennai bypass (phase-I) into four lane has been completed. NHAI is taking action to complete the balanceworks during this year.

### **2.22.6. Grade Separators and Flyovers In Chennai City**

The construction of grade separators and Road over Bridges to ease traffic congestion and facilitate access to Golden Quadrilateral roads, at 4 locations in Chennai city namely Kathipara junction, In front of the Chennai Airport, Koyambedu junction and Padi junction and Widening and Strengthening of the stretch between Koyambedu and Maduravoyal has been taken up at a total cost of Rs.489 crores by NHAI. Construction of grade separators at Kathipara junction and Padi junction and flyover in front of Chennai Airport have been completed and opened to traffic.

Construction of grade separator at Koyambedu junction is in progress. Widening, Strengthening and providing service roads for the stretch between Koyambedu and Maduravoyal(4 km) is in progress. NHAI has taken necessary steps for the speedy completion of the work.

### **2.22.7. National Highways Projects Implemented by the State Government**

The State wing of National Highways is maintaining a length of 1613 Km National Highways including recently upgraded 373 Km length of three National Highways from the funds provided by Government of India.

Under National Highways plan works, 38 number of works for an amount of Rs.189.22 crores have been sanctioned by Government of India for the year 2008-09. In this 334 km length of road works and 3 minor bridges have been completed at an cost of 132 crores in the year 2008-09. Balance works will be completed within this financial year.

Further, in the year 2008-09.an amount of Rs.30.00 Crores have been allotted for maintenance and periodical renewal. Utilising this allotment 110 Km length of National Highways road have been renewed.

Under the Annual Plan 2009-10, it is anticipated that allotment of Rs.150.00 Crores will be made by the Government of India.

### **2.22.8. Upgrading National Highways in Public Private Partnership (PPP)**

The Government of India has sanctioned the following roads for two laning with paved shoulders under Public Private Partnership under Design, Build, Finance, Operate and Transfer basis (DBFOT).

#### **Roads under the control of State National Highways wing**

❖ N.H.No.209, Dindigal - Coimbatore- Karnataka border road	266Km
❖ N.H.No.45A, Viluppuram – Puduchery – Nagapattinam road	194 Km

#### **Roads under the control of National Highways Authority of India**

❖ N.H.No.226, Thanjavur-Pudukkottai- Sivagangai- Manamadurai road	134Km
❖ N.H.No.227, Trichy-Lalgudi-Chidambaram road	133Km.

❖ N.H.No.67 Extn., Mettupalayam – Karnataka Border road	121.40 Km.
❖ N.H.No.45C, Vikravandy- Kumbakonam- Thanjavur road	165 Km.

Among the above, tenders have been called for preparing Detailed Feasibility Report for NH-209, 45A & 67 Extn. by the Government of India. On finalising the Detailed Project Report, these works will be taken up for implementation.

Detailed Project Report is being prepared by the NHAI for the remaining NH 226, 227 & 45C. Based on the DPR, the improvement works will be taken up in these roads.

### **2.22.9. Central Road Fund Scheme (CRF)**

The Government of India had setup the Central Road Fund with accruals from special cess levied on petrol and diesel consumed.

From this Fund, the Government of India had accorded Administrative approval for 178 Nos. of works amounting to Rs.593.60 crores for the period from 2005 to 2009. Out of these works, 85 works have been completed at a cost of around Rs.197.00 crores till March 2009. Regarding the balance 93 Nos. of works, 3 works have been deleted and 25 Nos. of works are in progress. Further, tenders for the remaining works have been called for and action is being taken to complete the above works early.

During the year 2008-09, 49 road works for a length of 352 Km and 4 bridge works were completed at a cost of Rs.109.00 crores.

The Government has allotted Rs.72.14 crores for the year 2009-10.

### **2.22.10. Economic Importance and Interstate Connectivity Scheme (E & I Scheme)**

#### **A) Economic Importance Scheme:**

During the year 2008-09, the Government of India have accorded administrative approval for 2 road works amounting to Rs.8.39 crores under this scheme. The above works will be completed during this year itself.

#### **B) Inter State Connectivity Scheme:**

1. During the year 2007-08, the Government of India had approved the work of “Construction of new bridge connecting Vellore and Katpadi, across river Palar” at a cost of Rs.16.01 crores and “Widening and improvement of Salem-Cochin road for 10 Kms” at a cost of Rs.7.79 crores. The above works are in progress and it will be completed during this year .

During the year 2008-09 an amount of Rs.13.52 crores has been spent under this scheme.

2. During the year 2008-09, the Government of India have accorded administrative approval for the work of "Providing paved shoulders and improvement of Cuddalore-Chittoor road from Katpadi – Andhra Pradesh border stretch around 7 Kms." amounting to Rs.9.36 crores. The above work will be completed during this year.

The Government has allotted Rs.22.34 crores for the year 2009-10.

#### **2.22.11. Bharat Nirman Programme**

The Government of India has given importance for the development of Rural roads. Based on that Bharat Nirman scheme is being implemented by Highways Department.

Accordingly, the Government have accorded administrative approval for upgradation of 1285.71 Km length of 294 Other Districts Roads at a cost of Rs.253.96 crores under Bharat Nirman Phase I. Out of these works, 14 works were completed and 209 works are in progress. Regarding the balance 71 Nos. of works, 5 works have been deleted and 66 Nos. of works are in tender stage. All works will be completed during current year.

#### **2.22.12. Western Ghats Development Programme (WGDP)**

Under this scheme, 11 works including improvement of roads and construction of protective walls have been completed in Erode, Coimbatore, Dindigul, Theni and Tirunelveli Districts during 2008 - 09 at a cost of Rs. 111.94 lakhs.

Further, new proposal for 8 Nos. of works amounting to Rs.104.75 lakhs in Coimbatore, Theni and Dindigul Districts is under consideration for approval by the Government.

The Government has allotted Rs.50.10 lakhs for the year 2009-10.

#### **2.22.13. Hill Area Development Programme (HADP)**

During the year 2008-09, 20 Nos. of improvement of road works have been taken up in Nilgiris District under this scheme at a cost of Rs.362.21 Lakhs. 16 works have been completed at a cost of Rs.297.09 lakhs. The balance works will be completed during this year.

During this year, new works will be taken up under this scheme. The Government has allotted Rs.309.50 lakhs for the new works in the year 2009-10.

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### **2.23. Tamil Nadu Road Sector Project (TNRSP)**

The World Bank assisted Tamil Nadu Road Sector Project is constructing roads conforming to international standards, carrying out Enhanced Periodical Maintenance of roads, executing Institutional Strengthening and policy development works. This project is taken up at the revised cost of Rs. 2442 Crores of which the World Bank loan component is Rs. 1912 Crores and the remaining Rs. 530 Crores is funded by Government of Tamil Nadu. The project

commenced in November, 2003 and steps are being taken to complete all the works by March 2010.

In the initial phase of the project, there was not much progress in the project due to delay in land acquisition, natural calamities and delay in the activities of other departments. Hence, extension for execution of the project up to March 2010 was requested.

After making a thorough study of the present progress, during its visit in March, 2009, the World Bank mission has conceded in principle the request of the Tamil Nadu Government to extend the project completion date by one year up to March 2010.

### **2.23.1 Upgradation Component**

Under upgradation component, the Northern corridor from Arcot to Thiruvarur for a length of 378 km has been taken up in a single package at a cost of Rs.768.50 Crores. The road works are expected to be completed before September,2009 except one major bridge and six Railway Over Bridges which are expected to be completed before March, 2010.

The Eastern corridor comprising three packages viz. Nagapattinam to Kattumavadi (116km), Kattumavadi to Ramanathapuram (100km) and Ramanathapuram to Tuticorin (118km) has also been taken up for upgradation. The package from Kattumavadi to Ramanathapuram had been completed and thrown open to public. In the other two packages, works are progressing fast. The road works are proposed for completion before September, 2009 except one major bridge and three Railway Over Bridges which are expected to be completed before March, 2010.

Further, the Ramanathapuram bypass work for a length of 10.40 km is in progress and will be completed before December,2009.

In respect of Kumbakonam bypass extension, procurement works will be taken up after getting the No Objection from the World Bank.

The World Bank has accorded approval for the detailed project report for the construction of Thiruvarur Bypass, On completion of the Land Acquisition for the Thiruvarur Bypass, necessary action will be initiated for taking up the road work through NHAI.

### **2.23.2 Enhanced Maintenance of Road Works :**

Under this component a total length of 1012 km of roads have been taken up for Enhanced Periodical Maintenance works at a total cost of Rs. 420 crores. Of the above, 848 km of Road works have already been completed with an amount of Rs.302.28 crores and the remaining works are expected to be completed in the current year.

### **2.23.3 Road Accident Data Management System :**

As per G.O.(2D) No.242, Home (Transport V) dept dated 13.04.2007, Government has granted the Road Accident Policy System which has been developed by the International consultants in coordination with Police, Highways and Transport departments as per the G.O (Ms) No.1659, Home (Transport V) dept dated 23.12.2008.

In this regard, so far:

- A GIS based computerized software for accident recording, storage, analysis and dissemination has been developed.
- Work on establishment of a centralized Accident Data Management cell is in progress.
- Training for filling the newly formulated accident data form has been imparted to 1560 Police personnel and an additional 650 police personnel are to be given training. The police personnel will submit the accident report to the ADGP and Transport Commissioner.
- Moreover, 60 Highways Engineers and 35 Transport officials have been given training to improve the Accident prone zones.

### **2.23.4 Public Private Partnership (PPP) :**

To carryout the Techno Economic Feasibility Study under PPP scheme, Consultants were engaged. The feasibility study for Coimbatore western bypass is under progress.

### **2.23.5 Road User Satisfaction Survey:**

Initial and mid term Road User Satisfaction Survey had been conducted by Tailor Nelson Sopras Mode Private Limited, Hyderabad and T.N.S. India Private Limited. The important findings of the mid term survey are listed below.

- Good progress was seen in HD performance and road works are being carried out in many places.
- As in National Highways, information boards, warning boards, milestones shall be provided on State Highways, Major District Roads, Other District Roads and Village Roads.
- Boards and milestones shall be properly maintained so that they are clearly visible during day and night.
- Road Safety, surface smoothness, transport facilities, air & noise pollution, aesthetics and parking facility are found to be satisfactory.
- Bad driving is the reason in a number of road accidents.
- Parking place needs to be increased and users are also willing to pay for parking.
- Action to be taken to prevent sticking of posters and advertisements on the information boards.

Road Safety awareness shall be created among the vehicle drivers. The field officers have been instructed to keep the views expressed by the Public during the Initial and mid term Road User Satisfaction Survey in mind while implementing the various scheme works.

### **2.23.6 Strategic Option Study II:**

On the basis of Strategic Option Study carried out by the Highways Department in 1995, the World Bank has sanctioned the loan assistance for the Tamilnadu Road Sector Project. Strategic Option Study of candidate roads is essential for getting loan assistance from World Bank and other International Funding agencies.

Necessary action is being made to carry out the Strategic Option Study of all the roads in Tamilnadu on the Techno & Economic basis. Necessary Request for proposal along with Terms of Reference has been sent to the World Bank for getting No Objection. On obtaining NOC from World Bank, action will be taken to engage Consultants for the above study as per World Bank guidelines. On the basis of results of Strategic Option Study-II, action will be initiated for getting loan assistance from World Bank and other International Funding agencies.

### **2.23.7 Performance Based Maintenance Contract (PBMC)(World Bank Aided) :**

The existing procedures of maintaining the roads is now being substituted by the new concept of maintaining the roads for a term of 5 years, the World Bank has approved the following roads under PBMC on a pilot basis.

Sl. No.	Name of road	Total length in Km.
1.	Mechri-Omalur Road	14.60
2.	Omalur-Sangagiri-Tiruchengode-Paramathy Road	81.00
3.	Thoppur-Mettur-Bhavani-Erode Road ( up to Bhavani)	94.00
4.	Salem – Aroor - Tirupathur-Vaniyambadi road	125.00
	<b>TOTAL</b>	314.60

Draft agreement documents have been sent to World Bank for approval. On getting the approval of the bank, the works will be taken up for implementation.

## **2.24. Periodical Renewal of Roads**

### **2.24.1. Additional Fund Allocation for Road Renewal Works.**

Proper maintenance of road infrastructure developed at huge cost under various schemes of the Government is essential. Hence, due importance is given for renewal and maintenance of Government roads and funds are allocated based on this.

For the first time, huge allocation of funds are being made from 2006-07

Year	Expenditure	Length (in km)
2006 – 2007	Rs.801.37 Crores	7889
2007 – 2008	Rs.826.26 Crores	7115
2008 – 2009	Rs.874.04 Crores	6632
<b>Total</b>	<b>Rs.2501.67 Crores</b>	<b>21636</b>

Of this Rs.103.60 Crores has been sub allocated every year for maintenance of Panchayat and Panchayat Union Roads takenup by Rural Development and Panchayat Raj Department.

Apart from this Rs.3 Crores has been allocated for forest roads during 2008-09.

Under NABARD and RR wing during the past three years, 4225 Km length of Panchayat and Panchayat Union Roads, Agricultural Development Projects Roads and Sugarcane Roads which were earlier improved from earthen to BT roads with NABARD loan assistance during 1996 – 2002 and left out without maintenance had been renewed at an expenditure of Rs.288.46 Crores. Apart from this in order to maintain Other District Roads and to share the burden of General wing, 2975 Km length of Other District Roads has been renewed at an expenditure of Rs.216.54 Crores during 2007-08 and 2008-09.

Thus higher allocation has been made for road maintenance for the past three years. The Government have provided a chance to maintain five years cycle of renewal and maintenance of roads in Tamil Nadu as per IRC norms.

The allocation for this scheme for the year 2009-10 is Rs 879.74 Crores

#### **2.24.2. New Initiatives in road maintenance**

Road maintenance works are taken up on priority basis in consultation with district administration. With the funds allocated by the Government for road maintenance, bridge maintenance works are being taken up on priority.

Action is being taken to appoint road inspectors for carrying out proper execution and supervision of maintenance works.

A web based data bank has been created and action is being taken to select and prioritise stretches for proper maintenance by this department.

#### **2.24.3. Bridge Maintenance**

Certain bridges which were constructed long back are in damaged condition. Construction of new bridges in lieu of the damaged bridges has been taken up. Apart from this special repairs works are to be taken up on priority basis to maintain bridges in good condition.

The Maraimalai Adigal bridge at Saidapet, Chennai has been rehabilitated at an approximate cost of Rs. 1 crore and the Thanthi Periyar bridge at Km 0/350-1/850 of Musiri – Kulithalai – Pudukottai – Alangudi – Peraurani – Sethubavachatram road at an approximate cost of Rs. 3 crores

## **2.25 SPECIAL ROAD PROGRAMME**

### **2.25.1. Chennai Outer Ring Road :**

The Government have proposed to take up construction of Outer Ring Road around Chennai City to reduce the traffic congestion in the existing roads and issued necessary orders for the same. This road starts from Vandalur in NH-45 and continues via Nazrathpet(NH-4), Nemilichery(NH-205), Padayanallur (NH-5) and joins in Minjur in Tiruvottiyur-Ponneri-Panchetti(TPP) road. The total length of the road is 62 km. Land acquisition works for a width of 122m have been carried out. In this, allocations are made for, 50 m width 6 lane outer ring road , 22 m width separate lane for other transport and 50m width for commercial purpose.

In Phase- I, study on the feasibility of executing this project on Public and Private Partnership (PPP) mode for a length of 30 km from Vandalur (NH45) to Nemilicherry (NH 205) has been completed. The consultants have submitted the final technical draft report and draft tender documents for this work. Based on this report, tenders have been called for, at an estimated cost of Rs.864 Crores, for taking up this work.The Government has decided to allocate a sum of rupees 300 crores for a construction period of 30 months. It is decided to offer subscription once in six months during the maintenance period of 17-1/2 years. Further 268 Hectares of private land required for forming this road have been acquired. Further action being taken to obtain 76.71 Hectares of Government land, for this project.

Land acquisition work, for Second Phase of this road from Nemilicherry to Minjur in TPP road for about 32 km length is in progress. On completion of land acquisition works, action will be taken to execute Second Phase works.

By this formation of outer ring road, heavy Vehicles and Containers trucks plying from various areas to Chennai can reach Ennore, Chennai Ports and other areas without delay.

The management of this Project has been entrusted to TNRDC.

During the year 2009-10, Rs.100 Crores has been allocated for this scheme.

### **2.25.2. Improvement of East Coast Road**

East Cost Road runs for a total length of 765 km from Chennai to Kanyakumari. In Phase-I, road stretch for 166 Km from Chennai to Cuddalore was widened to two lane at a cost of Rs.102 Crores funded by Asian Development Bank and put to use. Of this, the road from Chennai to Akkarai is maintained by Highways Department. The stretch from Akkarai to Puducherry State border for a length of 113 Km is being maintained by Tamil Nadu Road Development Company as toll road.

Considering the heavy traffic intensity in the ECR from Chennai to Puduchery State border and to avoid accidents, Government have ordered to study the feasibility for widening the road to four lane with due consideration to Environment and Social factors. Based on this, Tamil Nadu Road Development Company has taken up the feasibility study for widening the road to four lane. The Government have allotted Rs. 63.00 lakhs for the preparation of feasibility report and for undertaking environmental assessment. The Government have decided to take up further action on obtaining the feasibility report for improving the road.

**2.25.3** East Coast Road from Puduchery to Nagapattinam has been upgraded as National Highways (NH45A). The entire single lane stretches in this road will be taken up for widening to double lane.

Formation of bypass to Chidambaram town in this road has been taken up for a length of 16.90 Km at a cost of Rs. 37 Crores. In this work Construction of High Level Bridge across Vellar at a cost of Rs. 6.60 Crores is in progress.

Forming bypass to Sirkali town in this road for a length of 8.76 Km at a cost of Rs.19.18 Crores is in progress. In this work a Railway Over Bridge costing Rs. 3.58 Crores is being constructed.

Apart from this, widening and upgradation of the stretch from Nagapattinam - Thoothukudi has been taken up under **Tamil Nadu Road Sector Project** with the assistance of World Bank and works are nearing completion.

**2.25.4** The Government have decided to widen the road to two lane and improve the balance stretch of ECR from Thoothukudi – Kanyakumari for a length of 120 Km at an estimated cost of Rs. 190 Crores. Action will be taken to prepare Detailed Project Report and take up the works during current year.

## **2.26. ROAD SAFETY ACTION PLAN**

Formulation and implementation of a road safety action plan, to reduce road accidents involving pedestrians, cyclists and buses is under consideration of the Government. Loss of lives can be averted by reducing the accident rate. Hence, the Highways Department is taking steps to reduce accidents due to deficiencies in the road infrastructure. In this connection, to take up proper study and to share the details of accident data and to analyse the same then and there, following steps are proposed to be taken.

- ❖ To undertake scientific research, sharing of data related to accident among user Departments, collect and analyse accident data.
- ❖ To introduce a system of road safety measures; identify accident prone areas and take remedial action, implement design and structural improvements.
- ❖ To strengthen the Traffic Engineering Cell with adequate technical staff and modern equipment.

- ❖ To avert accidents due to speed breakers, providing new and uniform speed breakers at road junctions wherever necessary.

### **2.26.1.Improvement of Blackspots**

Out of the 307 accident Prone Spots identified in Tamil Nadu it has been decided to improve 50 location in First Phase. Based on this improvement to 17 Black spots has been taken up under TNRSP and 15 works completed.

Further 2008-09 improvement to 50 Block Spots has been taken up under CRIDP Scheme. 33 works have been completed and balance works will be completed during this year.

### **2.26.2. Junction Improvement**

As announced, Government have sanctioned Rs.12.83 Crores for formation of speed breakers, fixing of sign boards and other improvement works in order to avoid accidents occurring in junction of National Highways with other roads. Out of the selected 1283 junction, improvement to 743 road junction at a cost of Rs.5.39 Crores has been taken up by Highways Department. Action is being taken to complete these works at the earliest.

### **2.26.3 Avenue Plantation.**

On the occasion of the 84<sup>th</sup> Birthday of Hon'ble Chief Minister of Tamil Nadu during 2007, a programme of planting 3 Lakh saplings in road margins, in the roads under the control of Highways Department had been launched.

Accordingly, 3.93 Lakh saplings have been planted during 2007-08 and maintained.

During 2008-09, 2.80 Lakh saplings have been planted. Action will be taken up to implement this scheme continuously and plant around 2 lakh saplings during this year also.

## **2.27. HIGHWAYS RESEARCH STATION**

### **2.27.1. Investigation and Research activities**

The Highways Research Station at Chennai was established in 1957, and has been under taking research and testing for providing technical advice for works under taken by Highways Department.

Its main functions are as below;

- Field oriented Research
- Imparting Technical Training.
- Conducting Quality Control Inspection.

To achieve the above four laboratories at Chennai and four separate laboratories in Regional Level are functioning. They are located in Thanjavur, Coimbatore, Madurai, and Tirunelveli.

### **2.27.2. Quality control in Road works:**

Huge expenditure is made for improvement and maintenance of roads and bridges through Highways Department. To ensure quality of these works and for proper maintenance adequate test are being conducted by Highways Research Station.

Upto 2006-07, quality control tests were conducted by 13 sub – division for roads and bridges throughout Tamil Nadu (including regional laboratories in Thanjavur, Coimbatore, Madurai, and Tirunelveli)

From 2007-08, a separate quality control unit has been formed comprising 38 Assistant Divisional Engineers and 114 Assistant Engineers to conduct comprehensive testing and to improve the quality of various roads and bridge works through Highways Research Station.

These units under take tests to maintain quality of works carried out through various wing in each regular division level. By this quality control being undertaken during execution of work itself. This helps in ensuring the quality of works efficiently.

Further under reorganisation it is proposed to form a complete quality control wing by appointment of engineers by redeployment basis. Further action is being taken to form separate laboratories for each Circles.

### **2.27.3 Laboratories at Chennai**

#### **a) Soil and Foundation Engineering laboratory.**

- Give suggestion for flexible and rigid pavement design.
- Conduct all type of soil tests and give technical advice for designing suitable sub-base and base course.
- Undertake Pile load test to find the capacity of pile.
- To give technical advise on use of new materials in road formation and bridge constructions.

#### **b) Concrete and Structural laboratory**

- Suggest concrete mix design for use in various bridge construction.
- Carry out tests on cement and coarse aggregate to asses their suitability.
- Take up non-destructive test on bridge concrete members.

#### **c) Bitumen and Aggregate laboratory**

- Suggest mix design for all types of bituminous mixes like SDBC, DBM, BC and Mastic asphalt
- Undertake various tests on bitumen and aggregate

#### **d) Traffic and Transportation laboratory**

- Determining surface unevenness using bump integrator.
- Traffic volume survey and axle load survey to design pavement thickness.

#### **2.27.4. Functions of Zonal sub-laboratories.**

- Conducting deflection test on riding surface of bad stretches by equipment and give recommendation for the design of pavement.
- Conduct CBR tests on sub-grade soils on roads formed/ to be formed and render technical advice for proper design of pavement.
- Conducting Quality Control tests on materials used in road works during progress.
- Render assistance to the tests and research activities carried out at Highways Research Station, Chennai.

#### **2.27.5. Performance and Achievements**

##### **a) Investigation and Research activities**

Highways Research Station undertakes studies to offer suggestions to rectify surface deterioration, even in properly maintained roads. As it is to achieve full utilisation of bridges suggestions are being given for the rectification of the bridge after obtaining various particulars of the bridge. For avoiding accident in roads, surveys and studies are being conducted.

##### **b) Field-oriented research**

During 2008-09, the following research study are being conducted at a cost of Rs. 9.20 lakhs under Part – II scheme.

1. Comparison of seal coat type 'A,' 'B' and 'C' in bitumen laboratory.
2. Inspection of riding surface damages, due to increased load of vehicular traffic in traffic lab.

The final report will be submitted after completion of the study.

The Highways Research Station is collecting samples and conducting test for various works. During 2008-09, the test performed and mix design suggested for road and bridge works are as follows:

- Tests conducted related to the design of pavements for roads, Pile load tests, Bump Integrator Tests and other tests conducted - 14404
- Bituminous mix design prepared for roads - 285
- Finding CBR for soils and subgrade - 1667
- Concrete mix design prepared for bridges - 287

### **2.27.6. Quality Control tests**

Huge expenditure is spent for improvement and maintenance of roads and bridges through Highways Department. The Highways Research Station is conducting required tests to ensure the quality of works and proper maintenance.

The quality control works are conducted under the control of Highways Research Station for the past three years as follows.

- Number of works for which tests have been conducted - 8,576
- Number of samples collected - 67,364
- Number of tests conducted - 75,668
- Number of works identified for quality improvements and rectified - 2,374

### **2.27.7. Road Stretches prone to damages**

The Government has decided to identify and improve the roads prone to frequent failures due to poor sub soil conditions, water logging and large scale movement of heavy vehicles and action is being taken to improve the road stretches. Such bad stretches have been identified in State Highways and Major District Roads through field officers by inspection. Field inspection, collection of soil samples and soil testing are being undertaken by Highways Research Station.

The Highways Research Station recommends remedial measures for complete rebuilding of these stretches and avoid further deterioration after considering the factors for the damages.

During 2008-09, the California Bearing Ratio (CBR) test for 274 samples and Benkelman Beam Deflection test for deflection on 9 roads comprising 118.20 km have been conducted and pavement design has been given for the same.

### **2.27.8. Data Bank**

A data bank has been created for retrieving technical information on roads and bridges. All information regarding execution of plan scheme are being stored in this data bank.

In State Highways, Major District Roads and Other District Roads, out of the total 1318 Major bridges, information has been collected for 614 Major bridges and out of 7710 Minor bridges, information has been collected for 3408 Minor bridges and stored. The details of balance bridges would be collected in the current year.

Further, unique number has been given for bridges and separate action plan is being created for proper maintenance.

The traffic data collected on 4179 places in Government roads has been stored in Computers. By this it is possible to retrieve information immediately on bridges and find out the damaged bridges and repair the same. During 2008-09,

traffic census has been received from regular divisions and being stored in Computers.

During current year also information will be gathered and stored in Computers.

### **2.27.9. Training Programme for Engineers**

Training is very much essential to improve the technical aspect and clear the doubts and to obtain technical skill. To overcome technical problems during execution necessary field oriented training are being given. Highways Research Station is very much useful to obtain latest knowledge in roads and bridges in the field of investigation, design, construction and maintenance.

At present, quality control training is being imparted at Highways Research Station to all Assistant Divisional Engineers, Assistant Engineers and Junior Engineers of the Department in the field of soils, bitumen, concrete, traffic and computer. This is a continuous programme. Upto March 2009, totally 110 quality control training programmes have been conducted.

Training is being conducted in Highway Research Station to the newly appointed 211 Assistant Engineers. So far, 110 new Assistant Engineers has been given training.

The Engineers of the Highways Research Station also undergo training from CRRI(Central Road Research Institute) and NITHE(National Institute for Training Highway Engineers), New Delhi and other Institutions. Recently, Indian National Group – International Association of Bridge and Structural Engineering (ING-IABSE) has conducted a seminar on “Retaining Structures” in the month of April 2009 in Chennai. Various Engineers have participated and benefited from the seminar by taking part in it. Indian Road Congress (IRC) Mid Term council meeting has been conducted in 19 & 20<sup>th</sup> of June 2009 in Kodaikanal.

## **2.28. DESIGNS AND INVESTIGATION**

### **2.28.1. Functions**

Field Investigation and design for bridge works under taken in various wings of Highways Department are carried out by this wing. There are 7 Investigation divisions and 4 design divisions to carry out these works.

### **2.28.2. Investigation Divisions and their activities**

The Investigation Divisions are functioning with their Head Quarters in Chennai, Villupuram, Trichy, Madurai, Thirunelveli, Coimbatore and Salem.

The activities of these divisions as follows:

- Carry out field surveys at the sites proposed for bridge works.

- Preparation of Hydraulic details based on area of catchment and characteristic of water course.
- Collection of hydraulic data from the PWD.
- Carrying out subsoil exploration at bridge sites by means of exploratory bores.
- Preparation of alignment plans for Bridge works and obtaining approval

During 2008-09, alone field particulars have been given for carrying out design and estimates for 38 bridge works costing more than Rs.2 Crores each at a total cost of Rs.532 Crores.

### **2.28.3. Designs Divisions and their activities**

There are 4 Design Divisions functioning under the control of Investigation and Designs, Division, Chennai.

The activities of Designs Divisions are as follows:

- Preparation of structural Design, Drawing, Estimate and Specification report for bridge works costing more than Rs.2 Crores.
- Scrutinizing and according approval for the alternative designs furnished by the contractors along with their bids as well as during execution of bridges.
- Re-designing the foundation of bridges if the bearing capacity of the subsoil is found less and re-designing the other structural components of the bridges if it is found necessary.
- To scrutiny and give proper recommendation for issue of permit by Home Department to over-dimensional heavy vehicles to ply on Government roads based on Central Government Rules and Tamil Nadu Government Rules.
- Scrutinizing and according approval for the structural design for bridges constructed by the other departments and local bodies.
- Offering technical opinion on the design of certain specific infrastructural projects as per the recommendation of the Government of Tamil Nadu.

### **2.28.4. Works Completed by Designs Office**

During 2007-08, design, drawing and estimate for 43 bridge works and 2 road works costing Rs. 619 crores have been prepared. Detailed Project Report prepared for 2 road works by technical consultants had been scrutinized.

During 2008-09, design, drawing and estimate have been prepared for 38 bridges including 7 railway over bridges and 31 river bridges. Alternate design for 4 railway over bridges has been verified. Design of foundation for 5 bridge works have been modified. The total cost of these 47 works is Rs. 687 Crores.

During current year (2009-10), Design and Estimate for 122 bridge works at an approximate cost of Rs. 2000 crores will be taken up.