CHAPTER-VII

RESEARCH AND DEVELOPMENT

Road Development

The main thrust of research and development (R&D) in the roads sector is to build a sustainable road infrastructure comparable to the best in the world. The various components of this strategy are improvement in design, modernization of construction techniques, introduction of improved material conforming to latest trends, evolving better and appropriate specifications, encouraging development and use of new technologies etc. The dissemination of these matters is done through the publication of new guidelines, code of practices, instructions/circulars, compilation of state-of-the-art report, seminars and presentations. The research schemes sponsored by the Department, once completed, would enable them to be adopted by user agencies/departments in their field work. The areas covered are roads, road transport, bridges, traffic and transportation techniques etc. The Department takes the help of various research and academic institutions and universities to implement the schemes.

R&D SCHEMES IN PROGRESS DURING THE YEAR

Traffic and Transportation

Development of Geographical Information System (GIS) based National Highways Information System

7.1.2 Central Road Research Institute (CRRI) has been assigned the task of developing a GIS based database for about 50,000 km length of the National Highways network, excluding the length covered under the NHDP. The proposed database, through a user-friendly digitized interactive system, will enable storing, retrieving, updating and present the information relating to traffic, road assets and relevant socio-economic data which is a key factor for planning and investment proposals of the highway projects. It will also help in strategic analysis for long-term investment decision-making and evolving most appropriate, effective and rational maintenance and rehabilitation strategies through application of Highway Development and Management tool for effective and efficient utilization of resources.

7.1.3 The project includes collection and collations of spatial and non spatial data along with digitisation of all the maps of National Highways in the

scale of 1:10,00,000. This is targeted for completion by 2008-09 at an estimated cost of Rs. 1006.18 lakhs.

Creation of complete range of testing facilities for expansion joints at CRRI

7.1.4 The scope of the work is to create complete range of facilities for expansion joints at the CRRI, New Delhi, which has the excellent facility of Dynamic-cum-Heavy Testing (DHT). Testing facilities available with the CRRI include Strong Floor Dynamic-cum-Heavy Testing Laboratory (Overall Dimension 26.1m x 46 m) and DARTEC Fatigue Testing System (FTS). Additional Equipment/Testing systems to be procured with the funds provided by the Department are as follows:

- Test Assembly for Vehicular Braking Test
- Opening Movements Vibration (OMV) Test/Cyclic Motion Test
- Fatigue Test on Expansion Joint Assemblies
- Gantry Girder System (EOT Crane)
- Alternate Backup Power Supply System
- Debris Expulsion/Pull out Test
- Ponding Test
- Test for Materials: Upgradation of the Existing Shimatzu Universal Testing Machine (UTM)
- Test set up for the chemical composition of steel and miscellaneous test for elastomeric components.

7.1.5 The total cost of the project is about Rs. 5.80 crore out of which Department's share will be Rs. 2.20 crore. It will approximately take 3 years to establish Testing Facility.

Schemes in Pipeline during the Current Year

- Preparation of Manual for Development of six lane National Highways
- Performance evaluation of bituminous mixes laid with waste plastic bags as modifier of bitumen.

- Revision of Department's Specifications for Road and Bridge Works

- Evaluation of loading effects of commercial vehicles on roads using different type of suspensions.

- Establishment of Ministry's Chair in the area of Development of Highway System in the country to promote R&D activities with one time endowment of Rs.1.00 crore to IIT, Roorkee.

Transport Research

7.1.6 Transport Research Wing (TRW) is the nodal agency that provides the requisite research inputs and analysis along with data support to the various Wings of the Department of Road Transport & Highways.

7.1.7. The TRW also undertakes collection, compilation, dissemination and analysis of data relating to road, road transport, ports, shipping, ship building, ship repairing and inland water sectors. This entails collection of data from various sources including ministries/departments of the Central government, states/Union Territories, public and private sector agencies. The information received from a multitude of sources is scrutinized and validated for consistency and comparability and compiled for quarterly and annual publications covering important aspects of the transport sector. TRW is intimately involved in building and strengthening the database, identifying information gaps and taking measures to improve the reliability and accuracy of the information.

7.1.8 In the field of road transport, the TRW has been traditionally bringing out 'Motor Transport Statistics of India' which provides data on various facets of the motor vehicles registered in the country. In view of the growing importance of road transport in the country and its contribution to the economic and social development, there was a felt need for a comprehensive and analytical publication relating to this sector. With this objective in view, a new publication titled 'Road Transport Year Book 2003-04' was brought out which contains data on motor transport parameters, analytical presentation of the increasing importance of the road transport sector, inter-modal share of traffic, contribution to GDP, etc.

7.1.9 The TRW also collects, compiles and analyses data relating to the physical and financial parameters with a view to assessing and monitoring performance of State Road Transport Undertakings (SRTUs). This information is published on a quarterly basis in 'Review of the Performance of State Road Transport Undertakings'. Publications for the quarters ending September 2004 and December 2004 as also the annual issue for the year 2004-05 were released by the TRW.

7.1.10 Basic Road Statistics (BRS) of India is a premier national level publication designed to provide comprehensive information on road network in the country. For this publication, data is collected, collated, compiled and analysed. Reconciliation of the data is also done to provide comparable time series data. Collection of data for the years 2002-03 and 2003-04 is under way.

7.1.11 To improve the Accident Reporting Data format for the country, the UNESCAP-sponsored Asia Pacific Road Accident Database/Indian Road Accident Database (APRAD/IRAD) project is in progress. Road accident related data for all states and Union Territories and 23 metropolitan cities of the country has been collected, compiled and collated in a specially developed 19 point format for the years 2001, 2002 and 2003. Collection of data for the year 2004 is in progress.

7.1.12 In order to analyse and comprehend various aspects of the road accidents and to design and improve road safety programme, the TRW is bringing out a series of Working Papers. The first Paper in this series is 'Road Accidents an Analysis' which gives a macro perspective in terms of time series analysis of road accident fatalities and persons injured and their correlation with road length, motor vehicle population and the human population of the country.

7.1.13 The TRW is engaged in building a traffic census database in terms of Passenger Car Units (PCUs) for traffic moving on National Highways. In this context, TRW has been scrutinizing and compiling traffic count data received from various states/Union Territories and estimating PCUs based on Indian Road Congress norms. PCUs of 1998 count stations spread over 23 states and roads under Border Roads Organisation for the years 2003, 2004 and 2005 have been calculated.

Earth work near Kanyakumari in progress