

**BIHAR ROAD SECTOR DEVELOPMENT  
--NEW DIMENSIONS**

**A REPORT OF THE SPECIAL  
TASK FORCE ON BIHAR**



**GOVERNMENT OF INDIA**

**NEW DELHI  
September 2007**

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Chairman

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## **EXECUTIVE SUMMARY AND RECOMMENDATIONS**

### **EXECUTIVE SUMMARY**

Bihar is a landlocked state in the middle of Gangetic region with major rivers passing through it and endowing it with rich alluvial soil. It also has a rich history and cultural tradition.

While Bihar has the potential of being the granary of India and a great tourist hub it suffers from pervasive poverty characterized by the poor level of infrastructure. Improvement in the transport infrastructure and more particularly the rapid development and strengthening of the road network in the State could provide the requisite impetus for its economic development.

The existing road network of around 81700 Kms in the State is as follows:-

**Table – 1 Road Network**

<b>Category</b>	<b>Pucca</b>	<b>Kutch</b>	<b>Total (in Kms)</b>
NH	3629.00	0.00	3629.00
SH	3232.22	0.00	3232.22
MDR	7714.25	0.00	7714.25
ODR	2828.00	990.00	3818.00
Village	27400.00	35861.63	63261.63
<b>Total</b>	<b>44803.47</b>	<b>36851.63</b>	<b>81655.10</b>

The network is inadequate both in capacity and quality to meet the needs for the development of the State economy. For improving the network a beginning should be made to bring the National Highways and State Highways (4 laning of NHs and 2 laning of SHs) upto the required predefined standards, improving the major district roads and meet the stipulated target of 2009 for rural connectivity. At the same time necessary institutional arrangements need to be put in place.

The key issues for creating a good road network in the State would relate to the arrangements to be made that would help remove the existing deficiencies on a sustainable basis through a proper system of operation and maintenance and by the construction and widening of existing roads based on their strategic importance and traffic demands.

Deficiencies in the network are in the form of (i) Inadequate road capacity needing widening; (ii) Insufficient pavement thickness needing properly designed pavement; (iii) Poor riding quality needing resurfacing and partial strengthening; (iv) Congested city sections needing bypasses; Railway level crossings needing ROBs; (v) Substandard curves needing realignment; (vi) Submergible stretches needing raising; (vii) Poor surface drainage facilities in built-up areas needing

peripheral drains; and (viii) Stage constructions, needing-immediate construction of the final layer of designed bituminous course.

The Institutional deficiencies that impact on the poor condition of the network are mainly (i) Poor design efforts, (ii) Lengthy tendering procedures and consequent delay in award of works, (iii) Lack of good contractors, (iv) Poor performance of the contractors, (v) Erratic supply of bitumen and finally law and order problems (this appears to have been mitigated to some extent now).

The organizational and manpower requirements can be best met by increasingly introducing models that provide for private delivery of public service (in this case roads) or outsourcing of functions involved in the service delivery.

For removing the deficiencies and improving the National Highways (NHs) the responsibility may be appropriately distributed by MoSRT&H between the NHAI and the State Government. Apart from the NHs with the NHAI under the NHDP programme, some more length could be given to them for operation and maintenance through the annuity basis. Some of the more important corridors could be developed by the State itself on a PPP model.

The network of State Highways needs to be expanded to adequately provide for improved road penetration. To improve the State Highway network a separate Road Infrastructure Company may be set up which could take up projects for implementation on an autonomous basis.

The State is proposing to finance the programme of State Highways/Major District roads from the State Plan, assistance from Government of India and institutions such as World Bank/ADB/IBRD/NABARD. These efforts would require strenuous follow up and perseverance. Private sector financing is also now being looked for.

Bihar could actively look at the Public Private Mode for infrastructure development that has been successfully attempted on National Highways and some States. A well defined policy may need to be enunciated which would prevent legal objections and allow levy of Tolls for the use of facilities. A scheme for viability gap funding may be introduced.

For underpinning the PPP effort a separate Road Development Fund may need to be created with dedicated and identified sources of funds which will enable a credible frame work for the success of private sector participation. The models of the Central Road Fund and other State Road Funds could be studied.

An ambitious programme for rural connectivity is underway. This would provide connectivity to all villages with population of 500 and above by March 2009 and for the remaining by March 2011. The progress of the programme, however, is slow and efforts need to be made to expedite implementation.

The development of rural roads should be solely under the Bihar Rural Road Development Agency (BRRDA) which should fully involve the Panchayati Raj Institutions rather than the Road Construction Department. The Rural Road Manual, an IRC publication, should govern the technical specification for rural roads. The implementation of the Chief Minister, Rural Road Scheme to connect habitation with population between 500 and 1000 needs to be emphasized.

A large programme on road construction would help the development of a good construction industry. For attracting good contractors some large size contracts and long term output and performance based maintenance contracts may be introduced.

A Road Board under the Chief Minister could oversee the implementation of large programmes and Highways Authority/Road Infrastructure Corporation may be set up for its autonomous implementation.

## **RECOMMENDATIONS**

### **General**

1. The State has an extensive network which however is generally in poor condition and quite inadequate. There is thus an urgent requirement for improvement in the condition of the network if it is to serve the objective for rapid development in the State.
2. With the recent conversion of State Highways to National Highways, there is some imbalance in the network. State Highways could be at least twice the length of the National Highways running through the State. More of the Major District roads could be classified as State Highways.
3. For each of the categories the standards and specifications may be prescribed. With the standards and specifications adopted, a plan may be drawn up for improving and upgrading the road network in the State. Based on the availability of likely funding, the plan may be appropriately phased. The first phase must include bringing the National and State Highways upto pre defined standards (4 laning for NHs and 2 laning for SHs) and achieving the goal for rural connectivity of 2009 and 2011.
4. The status of roads should be reviewed once every five years for possible upgradation, capacity enhancement, strengthening etc and the network improvement plan suitably modified.

### **National Highways in the State**

5. Out of the total length of 3629 kms of National Highways in the State, 719 kms have been taken up for four laning under Phases I and II of the NHDP by the NHAI. Phase I has been completed and work is going on

in Phase II. The State Government is extending active cooperation and help to NHAI for land acquisition, utilities shifting, sourcing of materials etc so as to prevent any avoidable delays. This needs to be actively pursued.

6. Another 890 kms of National Highways have recently been approved for four laning under NHDP Phase III on the BOT format. To ensure successful implementation, the State Government must pursue with NHAI/Government of India as also the industry for obtaining bids and closing the bid process.
7. The State Government have proposed another three corridors of National Highways, comprising the Buddhist circuit, for four laning with JBIC funding. These are Biharsharif-Nalanda-Rajgir-Bodhgaya(85 kms); Patna-Gaya-Bodhgaya-Dobhi(125 kms); Hajipur-Vaishali-Kesharia (97kms). Government of India in the Ministries of Finance, Tourism and Surface Transport may be asked to pursue with JBIC for their concurrence and approval.
8. For the sections of the National Highways that the State Government wish to take up on BOT basis, the discussions with ILFS and IDFC maybe continued for structuring these projects. However for the projects to qualify for viability gap funding from the Government of India, it will be necessary to follow the prescribed procedure.
9. The Patna-Ranchi section should be developed as an expressway under NHDP-VI. This could be further extended in a four lane configuration to Paradip port via Jamshedpur-Bahragora-Bhubneshwar to function as a High Speed Economic Corridor.
10. For the balance National Highways, the State Government should prepare a plan for bringing them to two lane configuration with hard shoulders and renewal coat for improving riding quality. Funds may be obtained from the MORTH for this purpose as per this plan. Effort should also be made to include some of this length under NHDP IV which will provide for improvement on two lane configuration with hard shoulders.

### **State Highways**

11. After recent conversion to National Highways, the balance length of State Highways left was 2035 kms. This entire length has been taken up for improvement to two lane configuration with hard shoulders under the Rashtriya Sam Vikas Yojana being funded by the Government of India. The work on this should be closely monitored for implementation.
12. To rectify the imbalance between the National and State Highways, the State Government have already declared 1054 kms of Major District

Roads as State Highways and propose to declare another 500 kms as State Highways. Even after this there is considerable scope for upgrading more length to State Highways which may be examined.

13. For bringing the newly declared State Highways to standard specifications, the State Government has started discussions for ADB funding. Government of India may help to secure the ADB loan for the State for their State Highways project.
14. Any length not covered by ADB funding could be taken up under a State Highways PPP project.

### **Major District Roads**

15. The balance length of around 7500 kms of Major District Roads maybe brought upto at least good standard intermediate lane category. The State Government has taken up work on 4500 kms and propose to take up another 2000 kms in 2007-08 and 1000 kms in 2008-09. These are being funded through State's own resources, ADB and NABARD funding. This needs to be pursued.

### **Village Roads**

16. Village connectivity is to be pursued under the Pradhan Mantri Gram Sadak Yojana which requires that all habitations with population of 1000 and above should have all weather connectivity by 2009. The progress so far in the State has been slow with 9200 habitations in this category still unconnected. Since the funding for the programme is available from the Government of India, under various programmes, the State Government need to take all urgent measures regarding execution and supervision to ensure the achievement of the target.
17. The State Government have now drawn up a detailed year wise plan to connect all villages/habitations with all weather roads in a given time frame. Under the programme all villages with population upto 500 are to be connected by March 2009 and balance by March 2011. This is an ambitious programme and would need very close monitoring and supervision to ensure success.
18. The Bihar Rural Road Development Agency should be appropriately strengthened and given the requisite autonomy for implementation of the programme. The Panchayati Raj Institutions should be fully involved with the programme. The technical specifications should be in accordance with IRC's Rural Road Manual.
19. There is also need to ensure long term maintenance of assets being created under this programme. In this regard the design criteria for the roads should be evaluated to ensure easy maintenance.

## **Public Private Partnership and Financing**

20. The State Government is in discussion with IL&FS and IDFC for undertaking BOT projects on National Highways with viability gap funding from the Government of India. Based on the experience from these projects, a Public Private Partnership policy framework should be evolved under which State Highways could also be taken up for implementation. The PPP policy framework may also incorporate provision for tolling on improved and upgraded sections of State Highways.
21. The State Government have initiated discussions with funding agencies such as JBIC, ADB, NABARD etc for various projects and these may be pursued vigorously. Government of India may be asked to help secure the funding.
22. For a sustainable development of the road network, a stable source of funding is necessary. A statutory Road Fund with identified and dedicated sources of funding maybe set up on the lines of the Central and several other State Road Funds. The Road Fund will help to provide credibility for leveraging funds for the road projects.

## **Institutional Arrangements**

23. An autonomous Road Board may be constituted to oversee the programme and administer the Road Fund. A Road Development Authority or Corporation may be set on the lines of the Madhya Pradesh model for an autonomous implementation of projects and for undertaking projects on the PPP format.
24. The Authority/Corporation may evolve a model to outsource functions of design, supervision and construction along with systems for independent proof checking and audit.
25. Financially sound and fully equipped contractors may be attracted by offering large size contracts on National and State Highways projects in order to modernize road construction methods. Smaller local contractors may be allowed as sub contractors to acquire experience.
26. Long term maintenance contracts may be entered into on the basis of Output and Performance based contracts. An earmarked stream from the Road Fund and the revenues collected from tolls should be dedicated for maintenance.

27. An efficient system of dispute resolution may be put in place and fully incorporated into the contracts so as to ensure that project implementation does not get held up on account of disputes.

In the end it is important to ensure an environment to be created which would enable the development of a truly modern road network. Clearance of sites from utilities and availability of materials should be streamlined and a law regulating development along National and State Highways be enacted.

## **Preamble**

**The aspects of connectivity play a vital role in the economic growth process of a Nation or a State. This is particularly so from the point of view of investors to invest and support development initiatives as well as from the point of view of locals for meeting their requirements of goods and services. Market expansion and penetration are the two major pillars for sustainable socio-economic development and both these require quality physical infrastructure support. This is particularly so in the early stage of economic development process. The marketable products of varied nature and their value addition, the core of development process, are deeply influenced by the nature of infrastructure support. Availability of good quality physical infrastructure also helps improve the investment climate, both internally and externally.**

**In an open and global economy, Multinational Enterprises have their own unique role to support development process. They consider the quality of infrastructure available to be specially important while deciding to locate their industrial set ups for export market. This is particularly so in efficiency – seeking production locations. Bihar is in need of all these.**

## **BACKGROUND**

### **A. Introduction**

1. Bihar is a landlocked State lying in the middle Gangetic region-with an area of 94164 square kilometers. It is surrounded by Uttar Pradesh on the west, Jharkhand on the south, West Bengal on the east, and Nepal on the north. Major rivers including the Ganga, Sone, Kosi, etc pass through the State-giving it a rich alluvial soil. The State has a rich history and cultural tradition-making it a major religious and tourist destination.

2. Population in Bihar is mainly rural - with agriculture as the main source of economic activity and the industrial sector being one of the smallest amongst the major States. Agriculture itself suffers from cycles of floods and droughts with consequent impact on people's incomes and levels of living. Rate of unemployment remains very high and poverty is pervasive.

3. The general lack of development is characterized by the absence of good quality infrastructure and thus any development of the State has to be underpinned by provision of good infrastructure - both physical and social. In this regard, proper connectivity and transport links for delivery of services, transaction of commerce, connection with growth centers, and development of tourism are considered to be most critical. Proper connectivity has far reaching implications on the social and economic life of the State. This would have direct impact on employment generation and reduction of poverty.

4. Bihar has the potential of emerging as the granary of India and a major national and international hub for fruits and vegetables – considering the rich soil and water profile. Efficient transport systems will improve links between farmers and markets with improved level of farm productivity leading to faster expansion of growth generating opportunities. Improved transport systems will also provide a boost to tourism in the State with its history of civilization and culture and in particular the Buddhist circuit. Bihar is a conduit for traffic to Nepal and the north eastern states and efficient transport links in Bihar will facilitate the movement to these important regions.

5. While there is an extensive and well developed rail system passing through Bihar and considerable potential exists for development and utilization of inland waterways, rapid development and strengthening of the road network will provide momentum for accelerating the process of economic development in the State. It is, therefore, necessary to examine the state of road infrastructure in Bihar and

provide the approach and strategy for improvements, upgradation, extension of the network and to help bring robustness in this sector.

## **B. Existing Network**

6. The total length of road network in the State is around 81700 Kms. The network is inadequate both in terms of capacity and quality. Even the National Highways is deficient with a large part of it recently converted in poor condition due to flood damage. Development has also been confined along certain corridors and large part of the State is still bereft of good connectivity. Existing network of roads in Bihar is as follows:

**Table – 1 Road Network**

<b>Category</b>	<b>Pucca</b>	<b>Kutch</b>	<b>Total (in kms)</b>
NH	3629.00	0.00	3629.00
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<b>Total</b>	<b>44803.47</b>	<b>36851.63</b>	<b>81655.10</b>

7. The objective of a plan for the development of the road network would be to remove deficiencies and bring about improvements that would serve the needs of a modern road transport system and meet the requirements of a rapid expanding economic growth process in the State. Resources for this purpose would need to be identified and appropriate policy and institutional arrangements put in place.

8. The first phase of the plan may attempt to bring the National Highways and the State Highways upto the required pre-defined standards, improving the Major District Roads, and meeting the stipulated target for 2009 of village connectivity. The phase may also see that necessary institutional arrangements are in place.

### KEY ISSUES RELATING TO ROAD SECTOR IN BIHAR

9. After reorganization of Bihar into Bihar & Jharkhand, the total length of NH in Bihar is 3,629 kms. Of these some are single lane, some are intermediate lane, and some are double lane. These existing roads are mostly in bad state, the serviceability index being very poor. Deficiencies are explicit in the following forms (i) Inadequate road capacity needing widening; (ii) Insufficient pavement thickness needing properly designed pavement; (iii) Poor riding quality needing resurfacing and partial strengthening; (iv) Congested city sections needing bypasses; Railway level crossings needing ROBs; (v) Substandard curves needing realignment; (vi) Submergible stretches needing raising; (vii) Poor surface drainage facilities in built-up areas needing peripheral drains; and (viii) Stage constructions, needing immediate construction of the final layer of designed bituminous course.

10. The Sector's performance has been constrained due to (i) delay in award of works due to lengthy tendering process; (ii) lack of good contractors and poor response necessitating re-tendering (the contractors of other areas do not want to go to Bihar); (iii) slackness on the part of the contractors for timely completion; (iv) erratic supply of Bitumen (only source is Barauni, Indian Oil Corporation); (v) problem in geometric alignment, inadequate lane width, poor drainage, weak pavement and structures; (vi) absence of safety measures; and (viii) law and order problems<sup>1</sup>.

11. Further, one of the key risks in toll based road projects – local political risk, is perceived to be very high in Bihar, which has kept road developers away. Given the high magnitude of road upgradation under NHDP being implemented in various parts of India, Bihar actually competes with other States in attracting private developers/contractors to participate in projects. Less than 8% of the 81,655.10 kms of roads in Bihar are national or state highways. Approximately 45% of the road network is unpaved. Further, about 70% of the inhabited areas in the State are not connected by motorable roads, which is the highest in the country. The challenge is to expand coverage of high quality roads, with a sharper focus on the following:

- (i) The NHDP programme Bihar is included in the national Golden Quadrilateral as well as the East West Corridor Projects undertaken by National Highways Authority of India (NHAI) with additional 890 Kms under NHDP Phase-III;
- (ii) Supplementary World Bank funding for PMGSY roads in 4-5 districts; and

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<sup>1</sup>This issue has been rather resolved during last one year.

- (iii) Introduction of Chief Minister's Rural Roads Scheme to connect habitations with populations between five hundred and one thousand people.

12. However, in reality the affairs of road developments in the State has been poor and the conditions of the existing road networks including those of NH roads have been one of the worst in the country. While the construction of new roads/widening of the existing NHs and high traffic State roads are important, it is equally important to properly maintain the existing roads (both State and NH roads). Hence, a two pronged strategy needs to be worked out for: (a) Operation and maintenance including repairs of the existing roads, and (b) Construction and widening of the existing roads depending on strategic importance and traffic density.

### **Operation, Maintenance and Repairs of the Existing Roads**

13. The responsibilities for development and up-keeping of National Highways (NHs) in the country rest with the Department of Road Transport and Highways under the Central Ministry of Shipping, Road Transport & Highways. The actual maintenance work is, however, executed through Public Works Department of the concerned State Government. The funds for development and maintenance of NH roads are allocated by the Planning Commission to the Ministry every year. These funds are then allocated to the respective States by the Ministry depending upon the length of National Highways in the States and their capacity to utilize the funds. The State Governments undertake actual repairs/construction and maintenance of the works planned to be executed each year through their Public Works Departments and for this they are paid 9% of the work cost as agency charges. However, as this model is not giving the desired result, it is suggested that the following can be adopted to improve upon the condition of the existing NH:

- (i) Currently, the maintenance of NH roads other than the Golden Quadrilateral and NSEW Corridor is the responsibility of the Road Construction Department of the State Government. The condition of these NH roads in the State is deteriorating due to poor operations and maintenance. To overcome this, the State Government can identify certain important stretches of NH road and coordinate with the Central Ministry of Shipping, Road Transport & Highways (MoSRT&H) for bringing those stretches under the purview of NHAI for supervision of maintenance works. MoSRT&H can directly reimburse the allocated maintenance fund to NHAI instead of Road Construction Department of Bihar. The handover of NH maintenance can be done in phased manner, depending on the importance of the stretches.
- (ii) The Operation and Maintenance (O&M) of some of the NH roads can be given to third party by way of competitive bidding. NHAI can be involved in tendering exercise for awarding these projects to

add credibility to the process. Initially, the O&M contracts can be awarded on annuity basis and the payment to successful bidders could be routed through NHAI. In turn, NHAI shall be reimbursed by MoSRT&H out of the allocated funds from Planning Commission.

### **New Road Construction / Widening of Existing Roads**

14. The MoSRT&H and the Road Construction Department, Government of Bihar can jointly take necessary steps for creating a conducive environment in the State towards attracting a few key road developers/contractors for improving the road development scenario. The Road Construction Department of the State Government has to take initiatives in this regard and could start consultation process with some of the leading road developers and contractors in the country viz. Gammon, L&T, DS Constructions, Ideal Road Builders Pvt. Ltd., Sadbhav Engineering Ltd. etc., with a view to understanding their concerns for construction of roads in the State. Further, the State Government has to take proactive actions towards land acquisition, utility shifting etc., required for timely completion of road construction. Even for projects under NHDP, which are administered by NHAI, these activities are the responsibilities of the State Government Agencies and are carried out through separate State support Agreement. In this regard, the following options can be explored:

#### **a. National Highways**

15. There are stretches of NH, which have become congested affecting smooth flow of traffic on these Highways. Some of these stretches are given in Annexure-1. These stretches are two laned and need to be widened. The following process could be adopted in this regard:

- (i) Identify and prioritize the NH stretches depending on strategic importance and traffic flow for widening (4 laning). Initially, invite bids for smaller stretches (smaller length) that may evince interest to more number of bidders. This will also help in faster implementation of projects;
- (ii) NHAI shall be involved in the tendering exercise. The initial few projects shall be awarded on annuity basis.
- (iii) The bid shall be invited only after completion of land acquisition / Right of Way, environmental approval and shifting of utilities, if any.

#### **b. State Highways**

16. The State has 2,383 kms of State Highways. However, the conditions of road developments in the State have been poor. Bihar has relatively low road penetration despite its high population density, with only 77 Km total road length per 100 sq km. compared with 169 km in Orissa, 118 km in Tamil Nadu, and 97

km in Uttar Pradesh. To improve as well as expedite the process of Road Development, the following steps are suggested:

- (i) Create a separate Road Infrastructure company (RIC) in the lines of that created by other States. The company will facilitate the creation of new road network in the State as well as operation and maintenance of the key stretches of the existing road network;
- (ii) Public Private Partnership on development of new roads by awarding project on BOT basis. Further, to enhance the financial viability, grants or equity participation or both could be provided by RIC. The State Government has to identify a dedicated sources fund for RIC; and
- (iii) Create a dedicated Road Development Fund (RDF) to capitalize RIC. These funds can be mobilized through fuel cess, levy on petroleum products, special levy, sales tax on vehicle, infrastructure cess etc.

### **c. Rural Roads**

17. The State has 63,261 kms of rural roads. Investment in rural roads contributes directly to the decline of poverty and improvement of quality of life in rural areas. The investment in rural roads would directly contribute to the growth of agricultural output, increased use of fertilizers and commercial banks expansion. Most rural roads in Bihar have a very low initial traffic volume as the conditions of these roads are poor. To improve the rural road network, following steps are suggested:

- (i) Rural road technologies generally used in India are largely traditional and had not undergone any major changes. Technologies were generally borrowed from those developed for highways, without realizing the potential savings that can be achieved if the technologies are developed according to the specific needs of the rural roads. The Rural Road Manual (an Indian Roads Congress (IRC) special publication) has now been developed for technical specifications of rural roads. This can be used for developing future rural road network in the State.
- (ii) Projects in the State related to the roads are typically carried out by Road Construction Department. It lacks focus and is entirely driven by process rather than goals. The State Government can hand over the Other District Roads (ODR) and Village Roads (VR) to Panchayati Raj Institutions (coming under the Panchayati and Rural Development Department) in a phased manner.  
The State has more than 9000 Panchayats comprising 38 District Panchayats, 531 Intermediate Panchayats and 8471 Gram

Panchayats (Village Panchayats). About 1,37,000 elected representatives run the affairs of these Panchayati Raj Institutions (PRIs). These PRIs have the potential to develop into network for communication, knowledge dissemination and information sharing. Since the State has a peculiar problem of attracting contractors for road construction, the State Government has to take initiatives to convince these PRIs of the need for road networks and seek their active support during construction stage for construction and maintenance of the roads.

- (iii) The State Government can create a nodal body whose sole purpose will be developing and maintaining rural roads. There should be less bureaucracy and more transparency in the organizations. The recently set up Rural Road Agency should be assisted to develop the expertise of developing and maintaining rural roads.

## SECTORAL STRUCTURE

### A. National Highways

18. A total length of twenty seven National Highways pass through the State and provide the means of communications to Nepal and the North Eastern States with the rest of the country. The total length of National Highways in the State is 3629 kms of which about 2455 kms were State Highways that were notified as National Highways only during the 9<sup>th</sup> and 10<sup>th</sup> Plan periods. The Government of India, through the National Highways Authority of India (NHAI), has taken up the National Highways Development Project (NHDP) for the four – six laning of selected National Highways. Under the first three phases of the NHDP, the following National Highways sections in Bihar have been taken up:

(i) **NHDP–I (Golden Quadrilateral)**

NH-2 UP border Karamnasa to Barachatti near Barhi – total length 206 kms

(ii) **NHDP–II (East – West Corridor)**

UP border at Gopalganj (NH-28) to Kishanganj (NH-31) through Piprakothi (NH-28), Muzaffarpur (NH-28, 57), Darbhanga (NH-57), Farbesganj (NH-57), Purnea (NH-57, 31) – total length 513 kms

(iii) **NHDP–III**

It is proposed to take up the following sections under this phase:

Purnea-Khagaria-Begusarai-Barh-Bakhtiyarpur (NH-31)	255.00 Kms
Bakhtiyarpur-Fathua-Patna-Arrah (NH-30)	100.80 Kms
Arrah-Buxar (NH-84)	74.00 Kms
Patna-Hazipur-Chapra (NH-19)	80.00 Kms
Chapra-Gopalganj (NH-85)	92.00 Kms
Hazipur-Muzaffarpur (NH-77)	48.20 Kms
Muzaffarpur-Sitamarhi-Sonbarsa (NH-77)	90.00 Kms
Piprakothi-Motihari-Raxaul (NH-28A)	67.00 Kms
Mokamah-Munger (NH-80)	70.00 Kms
Forbesganj-Jogbani (NH-57A)	13.00 Kms
<b>Total</b>	<b>890.00 Kms</b>

19. Phase–I of the NHDP i.e. the Golden Quadrilateral, is complete and this section of NH-2 passing through the State is now four laned connecting Kolkata on one side and Delhi on the other. While the responsibility for the maintenance will be with the NHAI, the State Government must provide the requisite regulatory measures to control development alongside this road. NHAI propose to enhance capacity of the G.Q. to six lanes and this aspect would need to be pursued by the State Government.

20. As regards the Phase-II, the NHAI has awarded the contracts for the entire 513 kms and it is expected that this corridor will be ready by 2009. The State Govt. has set up an active coordination mechanism with the NHAI to address any difficulties or problems relating to availability of material, shifting of utilities, removal of trees etc., and this should be maintained on a continuing basis.

21. Phase-III of the NHDP was announced nearly four years ago but the progress has been very slow. A reason for this appears to be the perceived lack of interest amongst the investors for taking on the traffic risk under the BOT format. However these 890 kms, comprising three main corridors, serve vital strategic and economic interests

- (i) about 90% of the supplies to the entire north-east and Sikkim pass through the Patna-Bakhtiyarpur-Mokameh-Begusarai-Khagaria-Purnea (NH-30 & NH-31);
- (ii) the Patna-Muzaffarpur-Sitamarhi-Sonbarsa corridor along with Motihari-Raxaul-Forbesganj-Jogbani segments constitutes the supply route to Nepal and around 90% of Nepal's imports passed through these corridors; and
- (iii) the Buxar-Patna corridor (NH-84 & NH-30) connects with the above 2 corridors and supplies to the north-east and Nepal from other States of India use this corridor.

22. In view of the strategic importance of these corridors, it would be desirable to proceed with their implementation. In case private entrepreneurs are unwilling to take the traffic risk, then it would be appropriate for the NHAI to take over this risk and have these implemented on an annuity basis. The State Government would need to follow this up with the Government of India and NHAI on a regular basis. A map of the State showing the NHDP sections is attached (Exhibit-1).

23. An aspect of the perceived risk of undertaking a road project in Bihar was related to the law & order situation and the general level of governance in the State. In the past, road projects in the State have suffered on account of difficulty in obtaining materials, shifting utilities, removal of trees, and the presence of mafias extorting money from construction agencies. However, the new dispensation in the State has improved law and order and governance, and there appears now a more vibrant atmosphere in the State with a sense of security and investors from all over the country are being attracted to the State. This will greatly help in getting investment in the State.

24. The balance of around 2000 kms of National Highways in the State consists mainly of sections that were notified as National Highways only in the 9<sup>th</sup> and 10<sup>th</sup> Plan periods. Most of these roads are in the flood affected zone of north Bihar and are in a very poor condition. Only around 360 kms is two lanes and the rest is only intermediate or single lane with a lot of sections missing also. It is

important that immediate attention be paid to take up improvement measures for this balance length. It is recommended that at least 1000 Kms. of the above be taken up for two laning with hard shoulders under NHDP IVA.

25. On its part, the State Government has proposed four laning of the following sections of National Highways comprising the Buddhist Circuit.

- Biharsharif-Nalanda-Rajgir-Bodh Gaya (95 Kms)
- Patna-Gaya-Bodh Gaya-Dobhi (125 Kms)
- Hajipur-Vaishali-Kesharia (97 Kms)

It is proposed that this may put up for funding by JBIC with counterpart funding by the State. Government of India in the Ministries of Finance, Surface Transport and Tourism may be requested to take this up with the JBIC/Japanese Government.

26. The State Government has also proposed taking up of another 524 Kms on BOT basis. The sections proposed are:

- Munger-Bhagalpur (56 Kms)
- Bakhtiyarpur-Biharsharif-Nawada-Rajauli (107 Kms)
- Bihta-Mahabalipur-Aurangabad (118 Kms)
- Arrah-Mohania (116 Kms)
- Bypass connecting Bihta and Mokama (127 Kms)

The State Government has been discussing these projects with IDFC and IL&FS for being taken up on BOT basis - with the proposal that viability gap funding be met by the Government of India. The initiative on the part of the State Government is to be commended and the Government of India may consider this favourably for viability gap funding. The State Government on its part must ensure that the proposals are drawn up in line with the policy for viability gap funding.

27. In addition, the State Government wishes to take up the following road and bridges projects.

- a road beside river Ganga in Patna (21 Kms);
- a bridge across the Ganga between Arrah and Chapra;
- a bridge across the Ganga between Bakhtiyarpur & Pateri (Samastipur);
- replacement of super structure of the Mahatma Gandhi Setu of Patna.

These projects will cost around Rs. 2700 crores and are proposed through the BOT route with viability gap funding from the Government of India.

28. Government of India has taken up a project under NHDP VI to construct 1000 Kms. of express ways in different segments. The Patna -Ranchi corridor would be eminently suitable for being taken up for an Expressway. This would not only connect the two State Capitals with long standing economic, social and

cultural links (and therefore heavy traffic) but would spur the rapid economic development of both the States. This will also have a bearing on tackling the growing extremism festering in southern Bihar and Jharkhand.

29. It is also suggested that the highway connecting Patna and Ranchi be extended in a four lane configuration to Bhubaneswar and Paradip port. This will provide speedy access to both Bihar and Jharkhand to a port, which is so important for both these two States – for their emerging opportunities in the export sectors and for importation of desired imports. It will also benefit Nepal as most of the imports of Nepal use this alignment. This corridor can also serve as the Eastern Industrial Corridor, paralleling the Western Industrial Corridor connecting Delhi and Mumbai.

30. For the remaining length of National Highways, the State Government should draw up a plan for bringing them to two lane configuration with hard shoulders and improved riding surface. The funding for this may be obtained from the annual grant of the MORTH and should be done so as to achieve the improvements by 2009 end. At least 1000 Kms. could be provided for under NHDP IV where such two lane improvement is being taken up.

## **B. State Highways & Major District Roads**

31. After the last notification for upgradation of State Highways to National Highways, the respective lengths stood at 3629 kms National Highways and 2178 kms of State Highways. To rectify this anomalous position, the State Government has recently declared an additional length of 1054 kms of roads as State Highways. Even after the recent declaration of additional State Highways, the length of National Highways in the State is still in excess of the State Highways and therefore more length could be added to the State Highways. A broad inclusive criteria could be adopted for this purpose and the prescribed specification could incorporate the minimum configuration of two lanes in a 12 meters formation with 7 meters carriageway and 1.5 meters paved shoulders on either side as the norm for the State Highways. For the Major District Roads category, the minimum specification could be the intermediate lane standard with some MDRs of State Highway standard. The State Government should develop a time bound programme to achieve these minimum standards on the State Highways and Major District Roads.

### **Recent initiatives**

32. The State has received an allocation of Rs. 3000 crores from the Government of India under the Rashtriya Sam Vikas Yojana now called Backward Region Grant Fund to upgrade the entire length of the old State Highways. Under this, the State Highways will be improved to two lane configuration. The scheme is being implemented by the CPWD and IRCON and the target is to complete the works by 2008-09. Most of the works have now been awarded (about 95 percent) and are in progress. The progress, however, needs to be monitored closely.

33. The Government also proposes to improve the recently notified State Highways (1054 kms) and bring them upto the standard specification for State Highways with an investment of Rs. 1500 crores. The detailed project reports have been prepared and discussions have been initiated for Asian Development Bank (ADB) funding and an ADB mission has since visited the State. The project loan is expected to be ready by early 2008.

34. The Government is also proposing to notify an additional length of 500 kms as State Highways and to bring this up to the State Highways specifications with an investment of Rs. 600 crores with a second loan from ADB. If the ADB funding as proposed by the State Government becomes available, the entire network of State Highways as presently constituted would be improved to the standard two lane configuration with hard shoulders. It would be desirable that this effort of the State Government is fully supported by Government of India. To the extent ADB funding is not available, then based on the experience on the National Highways BOT projects, a State Highway PPP project may be taken up for balance length of State Highways.

35. After the proposed conversion of 1554 kms to State Highways, the balance length of Major District Roads left would be 7714 kms. The State Government proposes to upgrade the entire length to intermediate lane standard during the 11<sup>th</sup> Plan period with funding to be sourced from State Plan, ADB, NABARD (Rural Infrastructure Development Fund – RIDF) and the Central Road Fund (RDF), (Map showing the 2-Laning of State Highways is annexed as [Exhibit 2](#)).

### **C. Village Roads**

36. Village connectivity is being provided under the 100% centrally sponsored scheme, namely the Pradhan Mantri Gram Sadak Yojna which is now one of the components of the Bharat Nirman Yojana. Under the PMGSY, all the unconnected habitations having population greater than 500 (in plain area) are to be provided with all weather road connectivity in a time bound manner. The scheme earlier proposed connectivity to all habitations with population above 1000 by the end of year 2003. This has now been changed to 2009.

37. All the Programmes related to Village Roads (VR) and Other District Roads (ODR) are being looked after by Rural Works Department of Bihar - with the help of a registered agency, viz. Bihar Rural Road Development Agency (BRRDA).

The Connectivity Goals before PMGSY are as follows:

**Table 2 – Connectivity Goals**

	Category	No. of unconnected Villages	Length of Roads (km)	Approx. Cost (cr.)
Construction of Link Routes	For 1000+ population	13582	29087	10500
	For 500-999 population	6203	6663	2300
	For 250-499 population	3497	3274	1300
	Upto 250 population	2904	2274	900
	Total	26186	41298	15000
Upgradation of Rural Through Routes			12746	5000

38. The 1<sup>st</sup> Phase of PMGSY (year 2000-01) consists of 299 roads with a total length of about 860 km - having a total allocation of Rs.149.90 crore to provide connectivity to 629 habitations. The total expenditure till June, 2007 is estimated Rs.124.76 crore, completing 231 roads (Total length about 634.135 km).

39. Under the PMGSY Phase-II (Year 2001-03), Rs.302.98 crore has been sanctioned for 670 roads with a total length of about 1540 km to provide connectivity to 1236 habitations, against which Rs.150 crore had been released to the State in the month of December, 2003, Rs. 60 crore in May, 2005 and Rs. 66.92 crore in Oct.'06. The total expenditure upto June 2007 is Rs.236.00 crore, completing 507 roads covering a total length of about 1063.80 km. The total expenditure under Phase-I & II upto June 2007 is Rs.360.76 crore against the total allocation of Rs.426.82 crore completing 738 roads.

40. To expedite the work of PMGSY in the State, the work of Phase-III & onwards is being directly implemented by the Ministry of Rural Development, Govt. of India, through 5 nominated Central Government Agencies, viz, NBCC, NPCC, CPWD, NHPC and IRCON. An MoU was signed to this effect on 31<sup>st</sup> August, 2004. A total of Rs. 2528.82 crore for construction of 6938 km roads have been cleared by MoRD and the total expenditure upto June'07 is Rs. 670.10 crore completing 1285.73 km. The Department has taken up upgradation of Through Routes from State Plan also. In the year 2006-07, a total of 3954 km of roads have been taken up at a total cost 1072.43 crore.

41. Thus, the present target under Bharat Nirman Yojana:-  
(Connectivity Targets for 1000+ population, with details in Table-3 below) is as follows:

No. of Villages of 1000+ population	- 22382
- Connected	- 8800
- Unconnected	- 13582

**Table 3 – Connectivity Targets**

	No. of unconnected Villages	Length of Link Routes to be constructed (km)	Length of Through Routes to be upgraded (km)
Initial Target	13582	29087	12746
Taken up in Phase – I & II	1865	2400	0
Taken up in by NEAs	2483	2373	4565
Taken up under State Plan 06-07			3954
Present Target	9234	24314	4227
Approx. Cost (Rs. cr.)		9700	1700

42. The work required to be done to achieve the connectivity by 2009 is substantial and needs special efforts and arrangements. The progress in 2005-06 and 2006-07 has not been satisfactory as the following details will show:

	New Connectivity				Upgradation	
	Length (Km)		No. of Habitations		Target	Achievement
	Target	Achievement	Target	Achievement		
2005-06	1666	595	896	0	0	195
2006-07	3929	240.74	2062	193	2394	585.78

The direct implementation by Central Agencies has not been sufficient to achieve the target and at the rate the State may not be able to receive the full advantage from the scheme. The State Government has accordingly decided to take up the rest of the work itself. For this, the work of DPR preparation and process management has been outsourced and under the time frame for completing the remaining work under the Bharat Nirman Yojana by March'09, the work has been started as per the following schedule :-

**Table 4 – Bharat Nirman Yojana - Work Plan for 1000+ Population**

Financial Year	Phase	Agency	Roads To be Taken Up (in km)	No. of Villages to be Benefited	DPR Submission at NRRDA/ Competent Authority	Date of start of Work	Completion of Work	Fund requirement (in Rs. Cr.)
2007-08	I	BRRDA	2000	650	July'07	Sept'07	Mar'08	800
	II	BRRDA	3000	970	Nov'07	Feb-08	Nov'08	1200
2008-09	III	BRRDA	10000	3230	Jan'08	May-08	Nov'09	4000
	IV	BRRDA	13541	4384	Apr'08	June-08	Mar'09	5400
Total			28541	9234				11400

43. For the benefit of the unconnected habitations with population between 500-999, simultaneously the State Government has started Mukhya Mantri Gram Sadak Yojana from the year 2006-07. The Target, Achievement and Future Work Plan (with details in Table-5 below) are as follows:-

Connectivity Targets for 500 – 999 population

No. of Villages of 500 - 999 population - 10053  
 - Connected - 3850  
 - Unconnected - 6203

**Table 5 - Target Work Plan**

	No. of unconnected Villages	Length of Link Routes to be constructed (km)	Approx Cost (in Rs. Cr.)
Total Target	6203	6663	2332
Taken up in 2006-07 under MMGSY	2730	3000	903
Present Target	3473	3663	1429

Work Plan for 500-999 population

Financial Year	Roads To be Taken Up	No. of Villages to be Benefited	DPR Submission	Date of start of Work	Completion of Work	Fund requirement (in Rs. Cr.)
2007-08	2000	1890	Sept'07	Nov'07	Mar'08	800
2008-09	1663	1583	Apr'08	Jun-08	Mar'09	600
Total	3663	3473				1400

44. Apart from these, the State Government is also planning to provide connectivity to all unconnected habitations with population below 500 in the following manner. (The details in Table-6 below):

**Connectivity Targets for below 500 population**

No. of Villages below 500 population - 6578  
 - Connected - 177  
 - Unconnected - 6401

**Table 6 – Target Work Plan**

	No. of unconnected Villages	Length of Link Routes to be constructed (km)	Approx Cost (in Rs. Cr.)
Present Target	6401	5548	2200

**Work Plan for below 500 Population**

Financial Year	Roads To be Taken Up	No. of Villages to be Benefited	DPR Submission	Date of start of Work	Completion of Work	Fund requirement (in Rs. Cr.)
2009-10	3274	3497	June'09	Sept'09	Mar'10	1300
2010-11	2274	2904	June'10	Sept'10	Mar'11	900
Total	5548	6401				2200

45. Thus, the total fund requirement for the above project can be summarized as follows :-

**Table 6 – Funding Target**

Financial Year	C connectivity programmes				Source of funding
	1000+	500-999	<500	Total	
2007-08	6000	800	-	6800	PMGSY/BNY/WB/State Plan
2008-09	5400	600	-	6000	PMGSY/BNY/WB/State Plan
2009-10	-	-	1300	1300	PMGSY/BNY/State Plan
2010-11	-	-	900	900	State Plan
G.Total	11400	1400	2200	15000	

46. Contract Management and Construction Supervision works are being outsourced. For close supervision and monitoring, the department is procuring 72 divisions with their total technical structure from other departments. Core Network is being updated. On-Line Monitoring Systems in PMGSY have been introduced and this is being extended to other schemes also. E-tendering is being introduced. Apart from these, steps for training and capacity enhancement of contractors have been taken. The progress so far has been slow and the success of these measures will depend a great deal on the autonomy that is allowed to the Rural Road Development Agency to enter into contract arrangements for outsourcing. Furthermore, the Agency must evolve monitoring and supervision arrangements that involve the various Panchayati Raj Institutions to ensure people's involvement with the programme.

47. Arrangements need to be put up in place for the long term maintenance of the huge asset, with an Asset value of about Rs. 20000 crore, being created. In this context, the Department is preparing a maintenance policy. The average fund requirement for the routine maintenance of these roads is around Rs. 400 cr. per year. The specifications of the roads constructed in different areas are also being re-examined to facilitate the maintenance activity in the State.

### PUBLIC – PRIVATE DEVELOPMENT MODE

48. In India's economic growth process, Public-Private Mode of infrastructure financing has already started showing results. Bihar so far is far behind in implementation of this Mode. Therefore, an area of reform the State Government needs to urgently explore<sup>2</sup> is the entry of the private sector for financing as well as management of roads through appropriate mode of Public-Private partnership. This will not only result in additional resources for the Sector but will also provide for better quality of roads and more effective network management.

49. The experiment of Build-Operate-Transfer (B OT) projects has succeeded in several places. A well-developed legislation would enable private sector participation (as witnessed in Gujarat) and prevent legal objections to the imposition of tolls for the use of the facilities that are developed. In many states, the existing Motor Vehicle Tax (in an amended form, in some states) is being used for the purpose. States can also adopt models and prepare concession agreements similar to those implemented at the national level. Further, to enhance the financial viability, grants or equity participation or both could be provided by RIC. The State Government has to identify a dedicated sources fund for RIC. The project on BOT basis can be toll based or annuity based. The advantages of BOT projects include, but are not limited to, the following:

- (i) The government receives the benefit of the private sector to mobilize finances and to use the best management skills in construction and O&M;
- (ii) Private participation ensures efficiency and quality by using the best available technology and equipment; and
- (iii) Projects are conducted in a fully competitive bidding situation. Thus, they are completed, at least theoretically, if not actually, at the lowest possible cost.

Certain main features of this Mode are as follows:

#### **BOT – Toll-Based Projects**

The concessionaire is responsible for the construction and maintenance of the project highway, and generates revenues through toll collection during the period of concession (which varies from 20 years to 30years). After the completion of the concession period the project highway is transferred to State Government/RIC. Under this approach, the concessionaire assumes the traffic risk.

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<sup>2</sup> The State Government has already set up a High Level Committee on this issue.

## **BOT- Annuity-Based Projects**

Under this concept, the concessionaire is responsible for the construction and maintenance of the project highway, and State Government/RIC would pay the concessionaire a semi-annual payment (annuity). The concession contract is awarded to the bidder quoting the lowest annuity amount. Under this approach, there is no direct reference to the number of vehicles using the highway, and hence the traffic risk is borne by RIC. However, the government (RIC) retains the right to charge toll from users at any stage of the project. In addition, it also retains all rights relating to property development, advertising along the project site and other revenue-generating sources.

50. However, even for these projects on BOT basis to be successful under private sector participation, the State Government needs to take the following steps before the projects are awarded under BOT basis:

- (i) Budgetary allocations to provide for viable gap funding (VGF) for the project. VGF has been described as an annual grant, which is limited to the revenue shortfall amount to make good the gap between the expected rate of return and the actual rate of return of the project. The bidding will take place on the basis of the net present value (NPV) of the grant sought by the concessionaire, with the lowest NPV being selected to award the contract on BOT basis. The grant can be restricted to 40% of the project cost; and
- (ii) Carry out all preparatory work including land acquisition and utilities removal. Right of way (ROW) to be made available to concessionaires free from all encumbrances.

51. There are a few road projects that are implemented / under implementation under PPP model in different States, which are shown in Annexure-2.

52. To make this Mode effective, the State Government should consider creation of a separate Road Development Fund (RDF) for development of roads or to provide seed capital for the road projects, which require viability gap funding. The objective of the RDF would be to assist the commercialization efforts of the State Government over the long term and hasten development of high quality and affordable road infrastructure in the State. This could help private sector participation not only in commercially viable projects, but also in the projects, which are not commercially viable on stand-alone basis. The proposed RDF may have the following revenue streams as sources of funds:

- (i) All money received from the Central Road Fund established under the Central Road Fund Act, 2000;
- (ii) Some percentage of the tax collected by the State Government under the provision of Motor Vehicle Taxation Act;

- (iii) All fees, fines and other amounts collected by the State Government;
- (iv) All payments made by the Concessionaire as per the Concession Agreements (CA) executed for different road projects;
- (v) Grants or loans or advances made by the GoI, the State Government or any other institution; and
- (vi) Income from treasury operations.

53. The RDF would be primarily used to provide financial assistance for road related projects in any of the following manner:

- (i) Payments / Guarantees for payments to be made under the concession agreements – annuity payments, shadow toll payments, capital grants, termination payment and other payments like payment and other payments like payment to independent engineer, legal consultant, etc.; and
- (ii) Financial assistance – subordinate loans, capital subsidies, equity investments, guarantee and other non-fund based assistances.

54. It will be useful for the State Government to enunciate their policy measures in this regard so as to attract the private sector. Financial institutions like IDFC and ILFS with whom the State Government is already in discussion can be deployed as advisors for helping in drawing up the policy and the financial structuring of implementation models. Legislative measures may be required for setting up of toll roads and for private operators to collect tolls.

55. Enforcement of a User Fee on improved sections of National and State Highways will provide dedicated revenues and introduce discipline in providing improved levels of service. Four lane sections of National Highway can be tolled and the State Government may follow suit in selected improved sections of State Highways. The criteria for tolling should be the level of traffic rather than any ability to pay. The introduction of user fees will also provide flexibility in structuring BOT projects.

56. The success of PPP ventures in the road sector will depend on the credibility of the commitments, including financial commitments, to be made by the State Government. Towards this end, the setting up of a dedicated Road Fund under a legislative dispensation and into which assigned revenues could be regularly deposited, can serve as a useful instrument. Such Road Funds have been successfully used to develop road networks in various countries, including now some States in India. As in the case of the Central Road Fund, certain prescribed levies or cess could be paid into the Road Fund. In addition, the allocation from the Central Road Fund to the State and User fees could also form part of the Fund. The Fund could be used to leverage investment into the sector and also provide for the State contribution towards counter-part funding against borrowings.

**FUTURE POLICY DIRECTION AND STRATEGIES**

57. Since Road Sector in Bihar is expected to play a major role in bringing accelerated process of economic growth, there is a need for adopting a sound sectoral development strategy and a clear policy direction. The main features of these are outlined in the following paras.

**A. Policy Direction**

58. Despite the constraint of funds that Bihar has, the State must take a bold decision of 4-laning of all National Highways and 2-laning of all State Highways. This would have far reaching benefit to Bihar in opening market opportunities for its goods and services.

59. There should be a whole hearted commitment to achieve the targets set out for rural connectivity.

60. Considering frequent flooding of North Bihar districts with their huge population, a policy decision be taken for its major roads in North Bihar to be concrete built (RCC). This would provide longer stability to the constructed roads in North Bihar.

**B. Construction Industry**

61. The large programme proposed to be undertaken would need good construction agencies equipped with adequate technical personnel and modern construction machinery. In the absence of regular work in the past, such agencies are unlikely to be available in the State and therefore in the first instance would need to come from outside. Good agencies from outside the State would come and invest their resources only if they perceive a good opportunity in terms of the contract sizes being offered. Contract sizes would therefore need to be determined carefully having regard to the need for the introduction of modern construction methods and developing the local industry.

62. A local road construction industry can develop around a large programme if work is seen to be available on a regular basis over a long period of time. In the beginning, the local agencies could associate themselves with qualified construction companies who come from outside and acquire the necessary technical and managerial skills to enable them to subsequently qualify on their own. The long term performance based maintenance contracts would also encourage the local agencies to invest in modern road equipment and upgrade their technical skills. A company like SREI could also set up the arrangements for making such construction equipment available on lease for the local agencies.

63. In this regard, SREI International Finance has set up a subsidiary called QUIPO to provide construction equipment to local contractor on a lease basis. They are now setting up first three Branches at Patna, Bhagalpur, Muzaffarpur. This would help expedite the process of road construction in the State. Other districts of Bihar may need such facilities considering the volume of construction works.

64. To help promote capable local contractors in the construction industry, renting of construction equipment on a regular basis and to expand the connectivity would have the following major advantages:

- (i) No capital outlay burden;
- (ii) Supplement construction capacity during peak demand;
- (iii) Faster response to market;
- (iv) Additional capacity built up with no risk or long term liability;
- (v) Immense flexibility of fleet;
- (vi) Lower maintenance cost;
- (vii) Maintenance by specialized personnel without investment in maintenance, infrastructure and manpower;
- (viii) No manpower related issues;
- (ix) No risk of obsolescence; and
- (x) Focus on core competency.

### **C. Other Institutional Aspects**

65. There are a number of institutional measures that need to be adopted by Bihar and these could include the following:

#### **(a) Approach to Organizational and Manpower Needs**

66. The State Government is now keen to engage in a major effort to remove deficiencies in the physical and social infrastructure in the State. The Task Force on its part would like to recommend measures to help the Government in this task. No major effort of the scale required can be successful, however, without the requisite institutional and organizational framework in place.

The evident lack of success of the existing framework can be seen in the major deficiencies in the provision of services by the Government. The failure of several key development departments to fully and efficiently utilize their allocations from the Central or State budgets points towards cumbersome procedures and inadequate capacity of the existing State machinery. While the flow of financial resources, both public and private, can be improved, their beneficial impact can come only from the ability of the organizational and institutional framework to properly utilize these resources. The success of the recommendations of the Task Force and the efforts made by the State Government would therefore be critically dependent on the institutional capacity supported by the system.

The sheer magnitude of the task would, on the face of it, create a large demand of manpower. In most areas it will be difficult to meet this requirement. Given also the evidence of past performance, nor will it appear the most desirable course to follow. Fortunately now models are available in most areas of Government endeavour, and particularly the infrastructure field, where private sector structures and skills are harnessed to meet the public demand of infrastructure. These models would not only help to add enormously on an immediate basis to the existing institutional capacity but also bring about greater efficiency by replacing government procedures with private sector felicity in decision making. This also leads to better accountability as the public sector agency can better concentrate on performance monitoring and output realized rather than the day to day running of the public service.

Private delivery of public services would, apart from reducing public sector requirements of manpower, also be more cost effective. In many cases using private capital will free budgetary resources for other requirements and also ensure the timely flow of money by avoiding constraints of public sector financing.

Private sector involvement could be for operating delivery of the entire service or for providing some of the individual functions included in the service provision. In the provision of a road service, for instance, either the whole service could be privatized or some functions involved such as design, construction, construction supervision, operation & maintenance could be out-sourced to private entities. Under the build, operate and transfer (BOT) format, the private sector is entrusted with the provision of the service as a whole i.e. design, construction and operation & maintenance. Government has only to ensure the financial sustainability through an appropriate policy framework that provides for user charges or direct payments by way of annuity or grants. Even where a road project is to be done by Government itself, the different functions involved such as design, construction, engineering supervision of construction, quality audit etc can be out-sourced to private entities leaving Government functionaries with the limited but important responsibility of policy development and management oversight. Similarly in the power sector, the new Electricity Act provides for private players to engage in the supply and distribution of power and this could be seen with a view to enhancing efficiency and reduce the public sector organizational burden. With the unbundling of the Electricity Boards into separate areas of generation, transmission and distribution, there is the possibility of privatizing any one of these functions. Proceeding on these lines will call for different types of skills from Government organizations with consequential impact on numbers required.

A similar analysis could be done with respect to other areas today routinely associated with a public sector delivery organization to determine the necessity of the need to maintain the provisioning of service in the public sector. Even where the provision of the overall service has to be in the public sector, the

possibility of various sub-functions being out-sourced would need to be determined. In the social services sector, particularly in the rural areas, the involvement of local bodies and the Panchayati Raj institutions in the delivery of services has to be examined. The Government and the Administrative Reforms body set up by it should carry out this exercise on an urgent basis with a view to enhancing the capacity and improving efficiency of the public services delivery system.

### **(b) Road Board**

67. The programme for construction and its success would need to be supervised in a systematic manner. It is proposed to constitute an Autonomous Road Board under the Chief Minister with selected members of State Government and some outside experts to guide and oversee the programme, manage the Road Fund, and allocate Resources for the programme. The Road Construction Department suitably augmented for the purpose can provide the secretariat for the Board.

### **(c) Highways Authority/Road Infrastructure Corporation**

68. To provide for the appropriate structure for greater role for private sector delivery of service it may be useful to have a separate organization, say the State Highways Authority/Road Infrastructure Corporation in Bihar, on the pattern of NHAI/other State Road Corporations, which may be made responsible for the implementation of the programme. Thus, while the Government/Road Board would determine the extent of the programme, the subsequent steps including the preparation of design and preparation of project reports, the finalization of tenders, the award of contracts, the appointment of contractors and consultants, the management of the contracts etc., could be with this Authority. This will ensure efficient decision making with regard to the implementation of the programme and also help build up expertise in outsourcing of technical work, in the understanding of FIDIC and other new forms of contracts as also in the understanding and taking forward of the PPP concept.

### **(d) Outsourcing**

69. The practice hitherto of the Department handling all aspects of work is no longer the accepted method and is unlikely to suit the requirements of the large programmes being proposed. The Department or the Authority/Agency set up for the purpose can continue to perform the role of the employer but the technical work of preparation of project reports and construction supervision may be outsourced. For this purpose the FIDIC form of contract with some suitable local provisions may be adopted and the concept of the Independent Engineer introduced. This will help in quality improvement and timely completion of works.

#### **(e) Public Private Partnership**

70. The experiment of BOT projects has succeeded in several places. The system covers award of projects on BOT basis to private sector through proposed RIC. Further, to enhance the financial viability, grants or equity participation or both could be provided by the Road Board (RB). The State Government has to identify a dedicated sources fund for the RB. The project on BOT basis can be toll based or annuity based.

#### **(f) Creation of Road Development Fund (RDF)**

71. Creation of a separate RDF for development of roads or to provide seed capital for the road projects would require viability gap funding. Many States (such as Tamil Nadu and Kerala) have created a dedicated road fund to aid road projects. These States have also ensured that other levies collected from the transport sector flow into the Fund such as fuel cess, levy on petroleum product, sales tax on vehicles and special levy on spares to create a larger pool of funds. These practices have worked and Bihar should try to adopt such practices for its road financing. The RDF will help to provide credibility for leveraging funds for the road projects.

#### **(g) Funding from External Sources**

72. Funding from multilateral institutions like the World Bank, ADB, JBIC, etc., as provided by them in other States for overall development of State Highway projects be vigorously pursued. The costs of these funds are cheaper than that available in the market. The total funding is usually 70 per cent of the total project cost, with the balance amount being funded by the concerned State Government.

#### **(h) Funding from NABARD**

73. NABARD funds rural development projects through Rural Infrastructure Fund (RIDF). RIDF-I was launched in 1995-96 with an initial corpus of Rs.2000.00 crore through contributions both from public and private sector having shortfall in the agricultural lending subject to a maximum of 1.5% of the shortfall of the net bank credit to agriculture. Since 1996-97 i.e. RIDF-II, sources of deposits from commercial banks has been broad-based by including shortfall either in direct finance to agriculture and / or shortfall in priority sector lending. Only ongoing Irrigation, Flood Protection, Watershed Management projects were financed under RIDF-I as a 'last mile approach' to facilitate completion of the projects delayed on account of financial constraints. The financing of rural Road & Bridge projects was started during RIDF-II. The projects pertaining to eligible sectors under each RIDF tranche are submitted by the State Governments through their Finance Department to NABARD's Regional Offices. The project proposals are scrutinized and appraised by the Regional Office with the help of Consultants by conducting desk and field appraisal. Appraisal reports submitted by the ROs

are then scrutinized by State Projects Department at HQ before placing the same to Project Sanctioning Committee (PSC) for consideration of sanction. This source of Fund should be explored by the State Government.

#### **D. Other Measures**

74. Several other measures that need to be adopted by Bihar for sustained development in the Road Sector are as follows:

- (i) Financially sound and fully equipped contractors may be attracted by offering large size contracts on National and State Highways projects in order to modernize road construction methods. Smaller local contractors may be allowed as sub contractors to acquire experience.
- (ii) Long-term maintenance contracts may be entered into on the basis of Output and Performance based contracts. An earmarked stream from the Road Fund and the revenues collected from tolls should be dedicated for maintenance.
- (iii) An efficient system of dispute resolution may be put in place and fully incorporated into the contracts so as to ensure that project implementation does not get held up on account of disputes.
- (iv) It is important to ensure an environment to be created which would enable the development of a truly modern road network. Clearance of sites from utilities and availability of materials should be streamlined and a law regulating development along National and State Highways be enacted.
- (v) There is a need to vigorously pursue the program under Pradhan Mantri Gram Sadak Yojana. All attempts be made to accelerate the execution of the program and to improve the supervision in order to ensure achievement of the target.
- (vi) There is a need to establish a system of evaluation and monitoring of the program implementation and provide for social audit at all the key funding levels to ensure the benefits of the road projects.

## CONCLUSIONS

75. Bihar has taken necessary steps to move the State towards development path. For Bihar to emerge as the granary of India and the national as well as international hub for export of fruits and vegetables, one of the major constraints has been poor transportation connectivity. Total length of road network in the State is around 81,700 km. For last twenty years, this network has been completely neglected. The road network is inadequate both in capacity and quality to meet Bihar's development requirements.

76. The new Government of Bihar has taken bold initiatives to improve the connectivity. The first phase of the new connectivity initiative includes focus on National Highway and State Highways – with a plan to bring them up to the required pre-defined standard. The second phase focuses on rehabilitation / construction of major District Roads and establish connectivity to estimated 2009 villages.

77. The major identified constraints to this Sector has been a weak construction industry, lack of good contractors, deficient operating rules and tendering procedures, inadequate technical staff and their lack of incentives and motivations, erratic supply of Bitumen and other construction materials, and absence of safety measures. Operation and maintenance of existing road network has been very poor. The new Government has taken several policy and institutional measures to overcome the deficiencies of the past and there is considerable improvement in the law and order situation – creating conducive environment for the road construction works throughout the State. Last one year's progress in this Sector can be considered remarkable. Unfortunately, severe flooding of North Bihar has badly damaged the road infrastructure – which has added further burden to the State exchequer.

78. With the support of the Central Government, last one year has shown considerable progress on National Highways under NHDP-I and NHDP-II. A number of proposals under already approved NHDP-III are at advanced stage of preparatory work and negotiations are underway with several private sector parties for finalizing PP Mode operations in the road sector. Altogether, NHDP-III accounts for 890 km. of constructions –with a connectivity for several vital links of Bihar. The State Government has also accorded high priority to State Highways and District roads – with Central allocation of Rs.3000 crore under Rashtriya Sam Vikas Yojana. The scheme is being implemented by Central agencies, i.e. CPWD and IRCON.

79. The real challenge is for village roads which are under Pradhan Mantri Gram Sadak Yojana (part of Bharat Nirman Yojana) – with 100% Central

financing. The total length under this program is estimated at 9,700 km. In order to meet the completion target by 2009, State Government will have to take several policy and institutional measures, including operating procedures, staffing, and arrangements for construction materials and their timely availability. In this regard, the role of Central Agencies to expedite the construction works has remained deficient and the State Government is making all efforts to overcome the past deficiencies.

80. Considering Bihar's limited construction capacity and funding constraints, all options are being explored to establish Public-Private Partnership Mode of construction works. Details are being worked out by a high level Committee of national level experts set up by the State Government.

81. To meet Bihar's growing requirement, heavy focus has to be placed on strengthening the overall construction industry – with involvement of private sector operators. It is also being proposed to establish two new institutions; (i) Road Board, and (ii) State Highways Authority / Road Infrastructure Corporation – with an autonomous status. It is also proposed to set up a separate Road Development Fund for meeting Bihar's growing fund requirements. Another focused area for Bihar has to be 4-laning of all National Highways for accelerating the development process in major hinterlands of the State, and changed construction approach (i.e. RCC mode) for at least district roads of Bihar. This would lead to saving huge repair / rehabilitation costs every year.

82. Bihar, considering past experience on quality of road construction and its related aspects of operation and maintenance, needs systematic evaluation and monitoring and social audit of all construction expenditures and the targeted beneficiaries. Bihar definitely needs modern roads throughout the State.

**Names and Length of Different National Highways in Bihar**

NH No.	Name of the Road	Chainages	Length (in kms)	Remarks
28	Gopalganj-Motihari-Muzaffarpur	360.57-424 425.00-487 488.00-676	275.8	UP Border Gopalganj-Pipra Kothi-Muzaffarpur- Barauni
28A	Motihari	0.00-67	67.0	Pipra kothi-Razuai Border
30	Kochas-Patna West – Patna East	0.0-117 118.00-166 178.00-230.20	217.0	Mohania Ara-Patna Bakhtiyarpur
30A	Bihar Sharif	0.00-69.00	69.0	Fatua-Daniawan-Jaitpur(Chandi) Harnaut
31	Bihar Sharif Patna East Khagria Purinia	48.00-154.00 154.00-218.00 218.00-331.00 332.00-410.00	363.0	Barh-Bakhtiyarpur-Barauni-Khagria-Purnia-Kishanganj
57	Muzaffarpur-Darbhangha Araria	0.0 -10,00-11.00-110,00-111.00-256.00	256.0	Muzaffarpur-Darbhangha – Farbisganj-Purnia
77	Muzaffarpur-Sitamarhi	0.0 -114.00-115.00-142.00	142.0	Hazipur - Muzaffarpur-Sitamarhi - Sonbarsa
80	Lakhisarai-Bhagalpur	0.0-93.00 - 94.00-190.00	190.0	Mokama – Bhagalpur – Rajmahat - Farakka
81	Purnia	0.00- 51.00	51.0	Korha- Khatihar - Maldha – Bargidha – Sarmora
82	Bihar Sarif II	0.00 – 130	130.0	Rajgir - Biharsarif - Mokama
83	Gaya	0.00 – 130.00	130.0	Patna – Punpun – Gaya – Dhobi
84	Patna - West	0.00 – 75.00	75.0	Aara- Bhojpur - Buxar
85	Gopalganj	0.00-98.00	98.0	Chapara-Siwan-Gopalganj
101	Chapara	0.00-60.00	60.0	Chapara-Baniapur-Marajganj
102	Chapara	0.00-80.00	80.0	Chapara-Rawa-Muzaffarpur

**Prominent Road Projects Carried Out in Collaboration with State Agencies on PPP basis (Ref Para 51)**

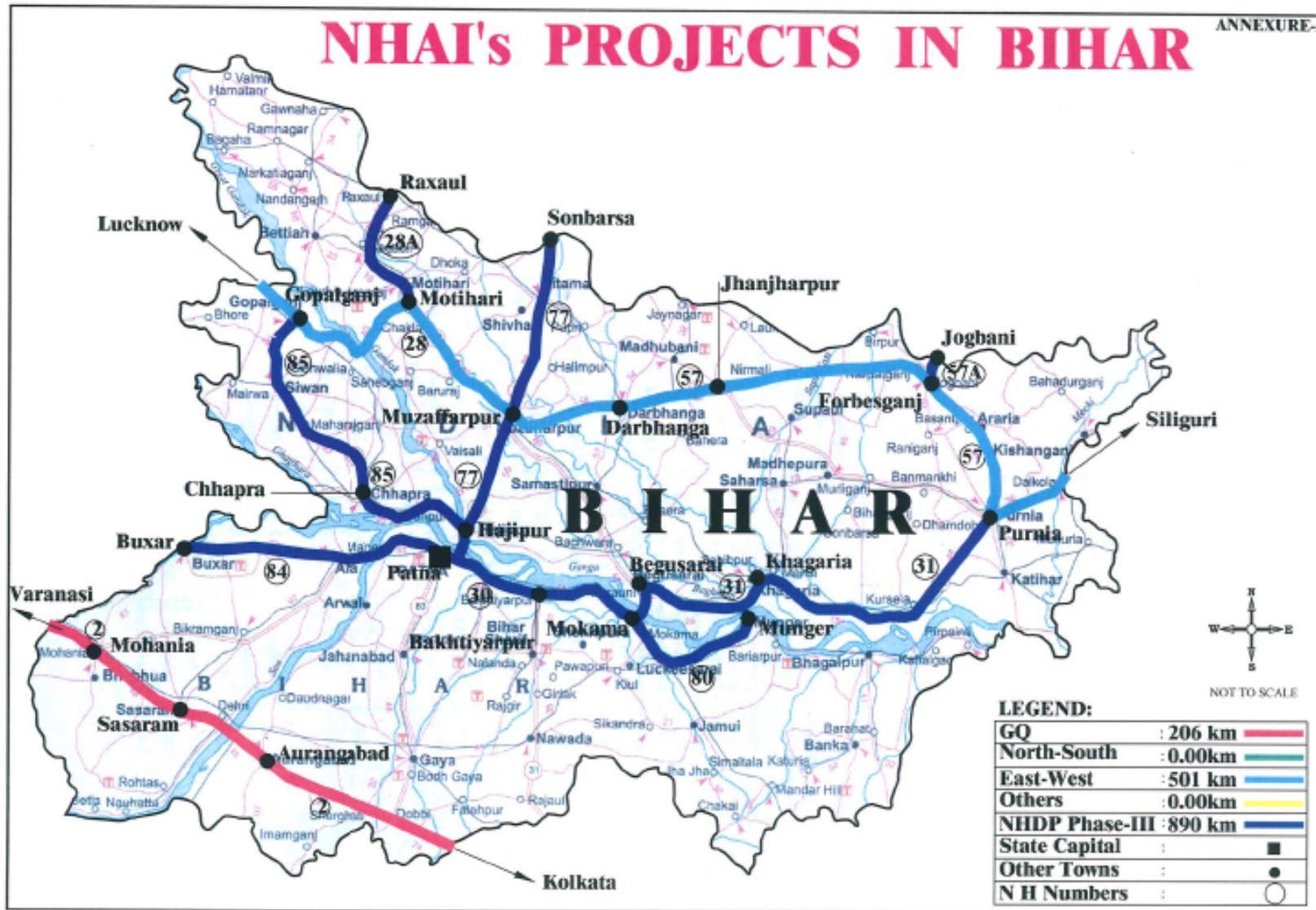
Sl.No.	Name of Project	Status	Details of the Project
1.	Ahmedabad Ring Road Infrastructure Ltd. (Gujarat)	Under Implementation	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• Sardar Patel Ring Road Surrounding the Municipal Limits of Ahmedabad (76 Kms)</li> <li>• Total cost of Rs.5,149.60 million; financed by 14% Equity from Sponsors, 7% State Grant and 79% Debt</li> <li>• 20 years Concession Agreement with Ahmedabad Urban Development Authority</li> <li>• State/NHAI Support: Make available existing Right of Way. Grant of Rs.360.0 million and Support in obtaining clearances/permissions/permits</li> </ul>
2.	Prakash Asphaltngs and Tool Highways (India) Ltd. (Madhya Pradesh)	Implemented	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• 27-km long State Highway (SH-27) near Indore in Madhya Pradesh</li> <li>• Total cost of Rs.174.50 million financed by 33% Equity from Sponsors and 67% Debt</li> <li>• 9 years Concession Agreement with Madhya Pradesh State Industrial Development Corporation</li> <li>• Project completed 7 months ahead of schedule</li> <li>• State Support: No financial support</li> </ul>
3.	ATR Infrastructure Private Ltd. (Maharashtra)	Implemented	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• 30 kilometre (km) stretch between Pune and Naqsik in Maharashtra</li> <li>• Total cost of Rs.1,292.00 million financed by 40% Equity from Sponsors and 60% Debt</li> <li>• 18 years Concession Agreement with Ministry of Road Transport and Highways</li> <li>• State Support: Enable access vacant, assistance in obtaining all infrastructure facilities and utilities, including water, electricity and telecommunication facilities at reasonable rates. No financial</li> </ul>

			support
4.	Bangalore Mysore Infrastructure Corridor Project (Karnataka)	Under Implementation	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• Bangalore Mysore Highway, Bangalore-Beddi expressway and Bangalore Peripheral Road, Real Estate development around highway and 400 MW Power Plants</li> <li>• Total cost of Rs.10,289.2 million financed by 23% Equity from Sponsors, 21% Equity from Financial Institutions, 4% Debt and 6% advance sale</li> <li>• 30 Years of Concession Agreement with Government of Karnataka</li> <li>• State Support: Assistance in obtaining all approvals and legislative amendments, land acquisition and use its best efforts to prevent enforcement of any law, which would adversely the project. No financial support</li> </ul>
5.	Aurangabad Jhalna Toll Road (Maharashtra)	Proceeding for Financial Closure	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• A consortium of SEL (50%) and PBA Infrastructure Ltd. (PBA) (50%) has been declared as successful bidder for 65.7 km long Aurangabad to Jalna road project in the stae of Maharashtra by Maharashtra State Road Development Corporation (MSRDC) on BOT basis</li> <li>• The cost of project is estimated at Rs.2,850.0 million. Concession period of the project is 23 years and 6 months including construction period of 30 months</li> <li>• State Support: Assistance in obtaining all approvals and legislative amendments, land acquisition and use its best efforts to prevent enforcement of any law, which would adversely the project. No financial support</li> </ul>
6.	Ahmedabad Mehsana Toll Road (Gujarat)	Completed	<ul style="list-style-type: none"> <li>• Nature of Project: Toll</li> <li>• Widening &amp; Strengthening of Existing 51.6 km long road from two lanes to four lanes divided carriageway and construction continuous Service Roads on either side</li> <li>• Ahmedabad Mehsana Toll Road</li> </ul>

			<p>Company Limited (AMTRL) was promoted by Government of Gujarat (GoG) and Infrastructure Leasing &amp; Financial Services (IL&amp;FS), specifically for the purpose of developing and implementing Ahmedabad Mehsana Road Project under Built, Own, Operate and Transfer (BOOT) basis. Annual and Periodic Maintenance (including renewal and overlay) for next 30 years also to be carried out by AMTRL</p> <ul style="list-style-type: none"> <li>• The construction of Ahmedabad Mehsana Toll Road commenced on 1<sup>st</sup> May 2000</li> <li>• The project was commissioned on February 20, 2003 within budgeted cost of Rs.3000.0 million and 8 months ahead of schedule</li> <li>• State Support: Assistance in obtaining all approvals and legislative amendments, land acquisition and use its best efforts to prevent enforcement of any law, which would adversely the project. No financial support</li> </ul>
7.	East Coast Road Project (Tamil Nadu)	Completed	<ul style="list-style-type: none"> <li>• Nature of project: Toll</li> <li>• As its first venture, TNRDC has taken up the improvement and maintenance of the East Coast Road connecting Chennai and Pondicherry via Mahabalipuram, at a cost of Rs.60 crores. It is the largest single (113 Km) toll road in the country today. The project has been substantially completed ahead of schedule (on December 6, 2001) and within budgeted cost</li> </ul>

# NHAI's PROJECTS IN BIHAR

ANNEXURE-A



## 2-Laning of State Highways

EXIT

