

**Report of the
Comptroller and Auditor General of India
on
Implementation of Phase-I of
Bharatmala Pariyojana**



SUPREME AUDIT INSTITUTION OF INDIA
लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

Union Government
Ministry of Road Transport and Highways
No.19 of 2023
(Performance Audit)

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Comptroller and Auditor General of India
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Index

Chapter	Particulars	Page No.
	Preface	i
	Executive Summary	iii
1	Introduction	1
2	Mandate, Audit Scope, and Methodology	7
3	Conceptualisation and Planning of Bharatmala Pariyojana	11
4	Fund Management	57
5	Award of Projects	77
6	Execution of Projects	115
7	Monitoring and Information Technology	157
	Annexures	167

Preface

The Performance Audit Report on ‘Implementation of Phase-I of Bharatmala Pariyojana’ has been prepared for submission to the President of India under Article 151 of the Constitution of India for being laid before the Parliament. The Audit has been carried out in line with the Regulations on Audit and Accounts, 2007 (revised in August 2020) and Performance Audit Guidelines, 2014 of the Comptroller and Auditor General of India.

The Audit covered the period from 2017-18 to 2020-21. This report examines planning, financial management, implementation, and monitoring of 66 sampled projects being implemented under Phase-I of Bharatmala Pariyojana.

Audit wishes to acknowledge the assistance and co-operation extended by the officers and staff of Ministry of Road Transport and Highways, National Highways Authority of India and National Highways & Infrastructure Development Corporation Limited for the Performance Audit.

EXECUTIVE SUMMARY

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Phase-I of Bharatmala Pariyojana

In October 2017, Cabinet Committee on Economic Affairs (CCEA) approved a new umbrella program called Bharatmala Pariyojana for the development of 74,942 km of national highways length. The primary focus of the program was on optimising efficiency of the movement of freight and people across the country. Out of above length, national highways length of 34,800 km, including the Residual National Highways Development Program (NHDP) length of 10,000 km, was approved under Phase-I of Bharatmala Pariyojana (BPP-I), for development up to September 2022, at an investment outlay of ₹ 5,35,000 crore.

There are seven components under the Pariyojana viz., Economic Corridors, Inter-Corridor & Feeder Roads, National Corridors/National Corridors Efficiency Improvements Program, Border & International Connectivity Roads, Coastal & Port Connectivity Roads, Green-field Expressways and Residual NHDP projects. The Pariyojana is implemented by Ministry of Road Transport & Highways (MoRTH) through its implementing agencies viz., National Highways Authority of India (NHAI), National Highways & Infrastructure Development Corporation Limited (NHIDCL), Road Wing of MoRTH and State Public Works Departments.

Brief about audit of Phase-I of Bharatmala Pariyojana

The Performance Audit of BPP-I was carried out to assess the achievement of defined objectives of the program and the execution of national highways development under the Pariyojana. The audit objectives included review of project identification/prioritisation, financial management, award of projects, project execution & contract management and adequacy of monitoring system for achieving the objectives of the Pariyojana.

The scope of audit included review of planning, financial management, implementation and monitoring of 66 BPP-I projects which included 58 projects of NHAI, five projects of NHIDCL and three projects being executed by the Road Wing of MoRTH.

Up to 31 March 2023, national highways length of 26,316 km has been awarded under BPP-I, which was 75.62 per cent of the CCEA approved length for BPP-I. The sanctioned cost of 26,316 km of project length was ₹ 8,46,588 crore (₹ 32.17 crore/km) as against CCEA approved length of 34,800 km at cost of ₹ 5,35,000 crore (₹ 15.37 crore/km). Out of this, 13,499 km of national highways length has been

completed till 31 March 2023 i.e. 38.79 *per cent* of CCEA approved length, which included the construction undertaken during the challenging CoVID pandemic period. To boost the economy during and post CoVID pandemic, MoRTH has granted various reliefs under Atmanirbhar Bharat Scheme viz., direct payments to sub-contractors, monthly payments by revising payment schedules, grant of extension of time-based on-site condition and release of retention money etc. The pace of awarding of national highways length under Bharatmala Pariyojana, went up from 6.50 km/day in 2018-19 to 15.17 km/day in 2021-22. While per day project length constructed, under Bharatmala pariyojana, improved from 1.04 km in 2018-19 to 12.37 km in 2022-23.

Significant Audit findings and Recommendations

Audit observed many challenges and weaknesses in implementation of BPP-I. Audit has made 41 recommendations which will aid the Ministry and NHAI/NHIDCL in better planning and implementation of Bharatmala Pariyojana in future. The significant audit findings and recommendations are given as below:

Conceptualisation and Planning of Bharatmala Pariyojana

At the time of taking approval, one of the stated objectives of the Pariyojana was to improve the Logistics Performance Index (LPI) of India. However, MoRTH did not set any targets/milestones/action plan to improve the Index. CCEA had also directed for laying down outcome parameters in the form of reduction in travel time, fuel efficiency, accident reduction, comfort in riding and user satisfaction for every selected corridor and monitoring thereof. However, MoRTH did not set any target for outcome parameters like accident reduction, comfort in riding and user satisfaction etc. Further, no mechanism was set to monitor achievement of any of the outcome parameters. ***It is recommended that MoRTH should consider setting of targets for improvement of Logistics Performance Index of India and should monitor the same periodically. Outcome parameters for the corridors/projects selected under BPP-I and a monitoring mechanism for the same should also be established.***

(Para 3.1 and 3.2)

Languishing projects of NHDP were taken up in BPP-I without resolving the existing impediments/ bottlenecks viz., availability of right of way or pending disputes regarding forest land including wildlife sanctuaries, resulting which these projects again got stuck in BPP-I. ***It is recommended that NHDP length yet to be awarded under BPP-I should be carefully planned for development, after clearing the existing bottlenecks.***

(Para 3.3)

For identification of national highways length, under BPP-I, based on principles of optimal traffic and freight movement etc., MoRTH carried out an optimisation exercise for NHAI. However, no such optimisation exercised was carried out for NHIDCL and Road wing of MoRTH. While optimising NHAI projects, the targets for development of national highways length under BPP-I increased substantially by around 160 *per cent* to 64,675 km (excluding Residual NHDP length). The target length for Residual NHDP component was increased to 12,324 km post optimisation against 10,000 km approved by CCEA, while the lengths actually planned (4,607 km) to be constructed under BPP-I, under this component, were much lower than what was approved by CCEA and optimised later on.

Post optimisation exercise, new national highways length, beyond the lengths approved by CCEA, were included in lengths to be developed by NHAI under BPP-I. Further, already awarded/constructed length formed a major part of the CCEA approved length and the length optimised. In NHIDCL, national highways length approved/awarded for other schemes were being merged in targeted/constructed lengths of BPP-I i.e., out of total 97 projects (2,244 km) awarded by NHIDCL, under BPP-I, upto 31 March 2023 a total of 78 projects (1,752 km) were approved in schemes other than BPP-I. The claim of MoRTH that such lengths were arrived at after origin-destination study, freight flow projections and verification of identified infrastructure gaps through geo-mapping was, therefore, not verifiable in audit. ***In order to ensure efficient management of resources and optimal project outcome, it is recommended that MoRTH may carry out an in-depth analysis based on accurate ground level data before proposing a scheme of this magnitude in future.***

(Para 3.4.1, 3.4.2 and 3.4.3)

Prioritisation of projects, after identification of length as per optimisation, was not done for NHIDCL and Road wing of MoRTH. No rational, systematic and codified methodology was adopted in prioritisation of projects for NHAI. Further, timelines were not decided for awarding and constructing the projects falling under different priorities. There were instances where projects were developed based on deficient cost-benefit study or without getting detailed project reports prepared. ***It is recommended that MoRTH should prioritise projects based on defined criteria so as to optimally utilise the scarce financial resources. A comprehensive cost-benefit analysis based on optimal lanes composition, capital cost recovery, mode of construction, competing infrastructural developments and analysis of counter claims of existing concessionaires needs to be incorporated in the detailed project report.***

(Para 3.5)

Development of 35 Multi Modal Logistics Parks (MMLPs) was made part of BPP-I to facilitate efficient and seamless freight movement in the country. However, no MMLP has been developed up to March 2023. ***It is recommended that MoRTH should prioritise approval for those MMLP projects where basic groundwork, feasibility assessment and consultation with stakeholders have been completed and the necessary policy frameworks/model concession agreements have been developed.***

(Para 3.6)

Fund Management

Upto 31 March 2023, when only 75.62 *per cent* of CCEA approved length has been awarded, 158.24 *per cent* of CCEA approved financial outlay has already been sanctioned. Significant changes made in the scope of projects and cost estimates as well as richer project specifications adopted have pushed up the sanctioned cost of projects awarded under BPP-I. This has resulted in sanctioned civil cost being ₹ 23.89 crore per km as against the CCEA approved cost of ₹ 13.98 crore per km and sanctioned pre-construction cost being ₹ 8.28 crore per km as against the CCEA approved cost of ₹ 1.39 crore per km.

There was variation from the approved modal mix of NHAI, as out of total national highways length of 23,268 km awarded, a meagre national highways length of 1.75 *per cent* was being developed under BOT (Toll) mode (as against 10 *per cent* approved for this mode of construction) whereas 48.35 *per cent* and 49.90 *per cent* of national highways length were being constructed under EPC and HAM mode respectively (as against 30 *per cent* and 60 *per cent* approved respectively for these mode of construction). Besides increase in requirement of BPP-I funds, the funds approved for other schemes (i.e., ₹ 1,57,324 crore) were being utilised to report BPP-I achievement, as observed in NHIDCL whereby 78 such projects (1,752 km) approved in other schemes, were being reported as achievements of BPP-I as on 31 March 2023.

NHAI alone projected, in May 2019, financial outlay of ₹ 10,55,268 crore for meeting its BPP-I targets against CCEA approved financial outlay of ₹ 5,35,000 crore for BPP-I as a whole. The total borrowings realised by NHAI for BPP-I, upto 2021-22, was ₹ 3,00,349 crore as against the borrowing approved by CCEA of ₹ 2,09,279 crore as source of funding for BPP-I as a whole. The excess borrowing of ₹ 91,070 crore was being utilised for meeting the higher fund requirements due to time and cost overrun in development of BPP-I projects.

Thus, there was disconnect among the financial outlay approved by CCEA, financial plans for BPP-I approved by MoRTH & its implementing agencies and realisation of the plans thereof.

Considering material changes in the physical and financial targets approved by CCEA, affecting the resource requirements for BPP-I in future, it is recommended that MoRTH should consider approaching CCEA again after detailed analysis and discussion with relevant stakeholders including its implementing agencies viz., NHAI and NHIDCL. Furthermore, in accordance with sound financial management principles and to establish responsibility centres, there should be a mapping of the scheme wise funds released to ensure that funds meant for one scheme are not diverted for other schemes. MoRTH should also ensure choosing most optimal mode of construction as it affects the funding requirement from Government & borrowings and also has implications on the viability of the project.

(Para 4.1, 4.2 and 4.4)

There was no system for project-based accounting to identify profit centres to gauge the long-term viability of a project resulting which it could not be worked out whether a stretch could be put to reduced tolling of 40 *per cent* after recovery of capital expenditure. It also resulted in non-mapping of sources of revenue such as diesel/petrol cess, toll plough back from the Ministry, borrowings, other government support etc., for project to work out cost of capital to make effective investment decisions. ***It is recommended that MoRTH should consider establishing a comprehensive project accounting framework for itself and its implementing agencies so as to identify the profit centres and to prudently plan the sources of financing and their usage for different projects.***

(Para 4.3)

Award of Projects

There were deficiencies in the appraisal and approval mechanism proposed to CCEA as many of the high cost EPC projects viz., Delhi-Vadodara Expressway and Dwarka Expressway etc., could not be assessed by either CCEA or MoRTH to have the advantage of the scrutiny at that level. Further, even the appraisal and approval mechanism decided by CCEA was also not strictly followed. ***It is recommended that project appraisal and approval mechanism, including delegation of powers, need to be comprehensively reviewed for ensuring proper scrutiny, selection and approval of all modes of project construction at competent levels.***

(Para 5.1)

Detailed project reports prepared by consultants were not appraised with due diligence by the Competent Authority before approval of projects. Instances of adoption of different specifications by contractors/concessionaires at the time of execution of projects than what were prescribed by detailed project report consultants, highlighted the fact that specifications of detailed project reports were not found suitable as per site conditions. Further, detailed guidance document for detailed project report consultant was not prepared by NHAI in non-compliance to MoRTH directions. ***It is recommended that MoRTH may consider establishing a Detailed Project Report Cell in the implementing agencies to create institutionalised in-house expertise for reviewing the detailed project reports and road designs against the extant standards/guidelines. As per directions of MoRTH, NHAI may also prepare a detailed guidance note for preparation of detailed project reports for the remaining projects.***

(Para 5.3)

Instances of irregularities in award of projects by implementing agencies were observed in clear violation of the prescribed processes of tendering, viz., successful bidder not fulfilling tender condition or bidder selected on the basis of falsified documents, award of works without there being approved detailed project reports or based on faulty detailed project report. ***It is recommended that anomalies in tendering and selection process of contractors/concessionaires should be investigated to fix responsibility on erring officials, who failed to ensure due adherence to prescribed rules and guidelines.***

(Para 5.4)

Execution of Projects

Acknowledging the fact that projects were stuck due to land not being handed over to contractors/concessionaires, MoRTH apprised CCEA that projects would be awarded under BPP-I only after ensuring availability of requisite land. However, Audit observed that implementing agencies were still awarding projects without ensuring availability of requisite land resulting in delayed commencement of projects construction and their completion. ***It is recommended that MoRTH should strengthen and streamline the system of project execution including land acquisition framework across different modes of construction.***

(Para 6.1.1)

Many of the BPP-I projects were being implemented without environmental clearance in contravention of prescribed procedure. Further, non-obtaining of the forest clearance prior to approval of projects affected the project development as it resulted in project

either being de-scoped or it being stalled due to want of requisite clearance. ***It is recommended that the model EPC/concession agreement may be reviewed and synchronised in line with MoRTH Standard Operating Procedure and Ministry of Environment, Forest and Climate Change guidelines regarding obtaining of environmental and forest clearance prior to approval of project.***

(Para 6.4.1)

In monitoring of road projects, Audit observed instances of non-appointment/ delayed appointment of third-party consultants. Safety consultants too were not ensured at all stages of construction. Due to wrong computation of price-adjustment formula in case of EPC/HAM projects, contractors/concessionaires were paid excess price adjustments to the tune of ₹ 99.16 crore. There was diversion of funds to the tune of ₹ 3,598.52 crore from escrow accounts for HAM/BOT projects. ***It is recommended that MoRTH should ensure that the independent professionals are timely appointed for Bharatmala projects so as to have better supervision of project execution and safety aspects. MoRTH should review the interpretation of price adjustment formula in HAM projects so as to avoid undue benefit to concessionaire. Further, MoRTH should also fix responsibility for diversion of funds from escrow account besides strengthening the control and monitoring mechanism in Public Private Partnership projects over payment being released to concessionaires.***

(Para 6.6, 6.7.1 and 6.7.2)

Monitoring and Information Technology

In spite of CCEA directions, no system of half yearly review of Bharatmala Pariyojana by Public Investment Board and CCEA was established by MoRTH. Also, no independent audit of physical and technical parameters of BPP-I and its projects, as directed by CCEA, was undertaken by MoRTH. ***It is recommended that MoRTH should comply with the framework stipulated by CCEA for effective monitoring and audit of physical and technical parameters of BPP-I. Responsibility needs to be fixed for non-compliance of CCEA directions till date.***

(Para 7.1)

CHAPTER 1

INTRODUCTION



Chapter 1

Introduction

1.1 About Ministry of Road Transport and Highways

Ministry of Road Transport and Highways (MoRTH) is responsible for formulating and administering, in consultation with other stakeholders, policies for road transport, national highways and transport research with a view to increase mobility and efficiency of road transport system in the country.

1.2 About Bharatmala Pariyojana

To increase Logistics Performance Index¹ of India and due to National Highways Development Program² (NHDP) reaching a level of maturity, in September 2017, MoRTH proposed a new umbrella program viz., Bharatmala Pariyojana with primary focus on optimising the efficiency of movement across the country. Bharatmala Pariyojana focused through optimal resource allocation on:

- Holistic national highways development/improvement by enhanced effectiveness of already built infrastructure in earlier highways development schemes;
- Multi-modal integration;
- Bridging infrastructure gaps through geo-mapping for seamless movement of freight & traffic; and
- Integrating National and Economic Corridors with ongoing NHDP projects.

Besides verification of identified infrastructure gaps through geo-mapping, the project stretches under various components of the proposed program were identified based on detailed origin-destination study³ and freight flow projections. Lessons learnt during implementation of NHDP were proposed to be operationalised for effective and robust implementation of Bharatmala Pariyojana, by way of:

- Ensuring enhanced quality of detailed project reports (DPRs);
- Streamlining land acquisition;
- Adopting proactive policy measures;

¹ *It is an interactive benchmark tool developed by World Bank to help countries identify challenges and opportunities faced by them in their trade logistics. It also suggests ways to overcome the challenges. It is based on ground surveys, whereby feedback is taken from operators (global freight forwarders and express carriers) worldwide.*

² *Flagship national highways building program of MoRTH under which development of national highways length of 55,792 km across seven phases was planned up to December 2015.*

³ *It serves as a foundation for transportation planning and is essential for understanding traffic patterns. It looks at where vehicles are coming from, where they are going, why people are travelling, when the trips occur and what type of vehicles are travelling. This helps in determination of optimal alignment so as to give seamless movement for traffic moving from origin to destination.*

- Adopting innovative implementation models; and
- Adopting useful technology interventions.

1.3 Phase-I of Bharatmala Pariyojana

The proposed (September 2017) Bharatmala Pariyojana included development of national highways length of 74,942 km out of which 34,800 km⁴ were to be developed under Phase-I of Bharatmala Pariyojana (BPP-I) up to September 2022, at an estimated cost of ₹ 5,35,000 crore. In addition to the requirement of ₹ 5,35,000 crore for BPP-I, which also included unfinished components of NHDP, additional funds of ₹ 1,57,324 crore were committed for five years in respect of other ongoing national highways development schemes not included in Bharatmala Pariyojana like National Highways (Original)⁵, Special Accelerated Road Development Program for North-Eastern Region⁶, Externally Aided Projects⁷ and Left Wing Extremism (LWE) affected areas projects⁸.

The proposal was approved (24 October 2017) by the Cabinet Committee on Economic Affairs (CCEA)⁹ after concurring with recommendations (16 June 2017) of the Public Investment Board¹⁰ which *inter alia* included recommendations on program outlay & scope of work, appraisal and approval of projects, criteria for selection of corridors and monitoring & Audit mechanism etc., the details of which are given in **Annexure 1**.

BPP-I was to be executed by the implementing agencies of MoRTH viz., National Highways Authority of India (NHAI)¹¹, National Highways and Infrastructure Development Corporation Limited (NHIDCL)¹², Road Wing of MoRTH¹³ and State Public Works Departments¹⁴.

⁴ Including Residual NHDP length of 10,000 km.

⁵ It included various schemes viz., special program for development of national highways to two lane standard, National Highway Interconnectivity Improvement Programme (NHIIP) under World Bank loan assistance, private sector investment for development of non-NHDP national highway projects and maintenance projects etc.

⁶ It included development of national highways and state roads in the north-eastern part of the country.

⁷ National highways development undertaken with the loan assistance of World Bank, Japan International Cooperation Agency and Asian Development Bank.

⁸ It included special projects for development of national highways and state roads in the left-wing extremism affected areas.

⁹ It is a cabinet committee headed by Prime Minister of India with other members being Home Minister, Finance Minister, External Affairs Minister and other Cabinet Ministers in Government of India.

¹⁰ Public Finance (Central) Division of Department of Expenditure acts as the Secretariat of the Public Investment Board headed by Secretary (Expenditure) for appraisal of all the projects of Central Public Sector Undertakings with more than a budgetary outlay of ₹500 crore.

¹¹ It was set up through an Act of Parliament, namely, National Highways Authority of India Act, 1988 for development, maintenance and management of national highways entrusted to it and for matters related or incidental thereto.

¹² It designs, builds, operates, maintains, and upgrades national highways and strategic roads including interconnecting roads in parts of the country which share international boundaries with neighbouring countries.

¹³ It is looking after the work of development & maintenance of national highways and other centrally sponsored road works, planning, monitoring, standards & research and administration of Central Road Fund.

¹⁴ These are mandated to plan, design, construct and maintain State Government assets including roads, bridges and flyovers, etc. MoRTH allocates funds to them to get executed national highway projects etc., from them.

1.4 Components of Phase-I of Bharatmala Pariyojana

As per CCEA approval, BPP-I was to be implemented under seven well-defined components detailed below:

Table 1.1: Components of Phase-I of Bharatmala Pariyojana (BPP-I)

S.No.	Component of Bharatmala Pariyojana	Purpose	Total length of Bharatmala Pariyojana (in km)	Length to be developed under BPP-I (in km)	CCEA approved estimates for BPP-I (₹ in crore)
1	Economic Corridors (EC)	Development of new corridors, in addition to existing Golden Quadrilateral and North South-East West corridors to connect economically important production and consumption centres	26,160	9,000	1,20,000
2	Inter-Corridor & Feeder Roads (ICR & FR)	Interconnection between different economic corridors	15,400	6,000	80,000
3	National Corridors/National Corridors Efficiency Improvements Program (NC/NEIP)	Improvement in efficiency of existing corridors viz., Golden Quadrilateral and North South-East West corridors by removing congestion points through development of flyovers, ring roads and bypasses etc.	13,049	5,000	1,00,000
4	Border & International Connectivity Roads (BR & IR)	Connecting of border areas and international trade points with neighboring countries.	5,198	2,000	25,000
5	Coastal & Port Connectivity Roads (CR & PR)	Connecting of coastal areas to enable port led economic development and coastal tourism	3,298	2,000	20,000
6	Green-field Expressways ¹⁵	Decongesting high density stretches	1,837	800	40,000
Sub-Total			64,942	24,800	3,85,000
7	Residual NHDP	Synchronisation of pending NHDP length with development of BPP-I	10,000	10,000	1,50,000
Grand Total			74,942	34,800	5,35,000

(Source: CCEA Note dated 24 October 2017)

¹⁵ An expressway is a divided arterial highway for motor traffic, with divided carriageways for high speed travel, with full control of access and provided with grade separations at locations of intersections whereas a highway is a general term denoting a public way for purpose of vehicular travel including the entire area within the right of way.

1.5 Mode of implementation of Phase-I of Bharatmala Pariyojana

The various modes of implementation of the national highway projects, with emphasis on proper balancing of risk and financing between the Government and private sector, were as under:

Engineering, Procurement and Construction Mode (EPC): Project is funded through public money and user fee is collected by Central Government through implementing agency and the same is transferred to Consolidated Fund of India (CFI).

Hybrid Annuity Mode (HAM): Civil cost of project is funded in the ratio of 40:60 through public money and private money, user fee is collected by Central Government and the same is transferred to CFI. The concessionaire receives, after commercial operation date, pre-determined semi-annual annuities over the concession period.

Build Operate Transfer (Toll) Mode: Project is funded by private money and user fee is collected & retained by concessionaire over the concession period.

Build Operate Transfer (Annuity) Mode: Project is funded by private money, user fee is collected by Central Government through implementing agency and the same is transferred to CFI while the concessionaire receives, after commercial operation date, pre-determined semi-annual annuities over the concession period.

Item Rate Mode: Payment is made to the contractor based on execution of items as per bills of quantities while user fee is collected by Central Government through implementing agency and the same is transferred to CFI.

1.6 Progress achieved in Phase-I of Bharatmala Pariyojana

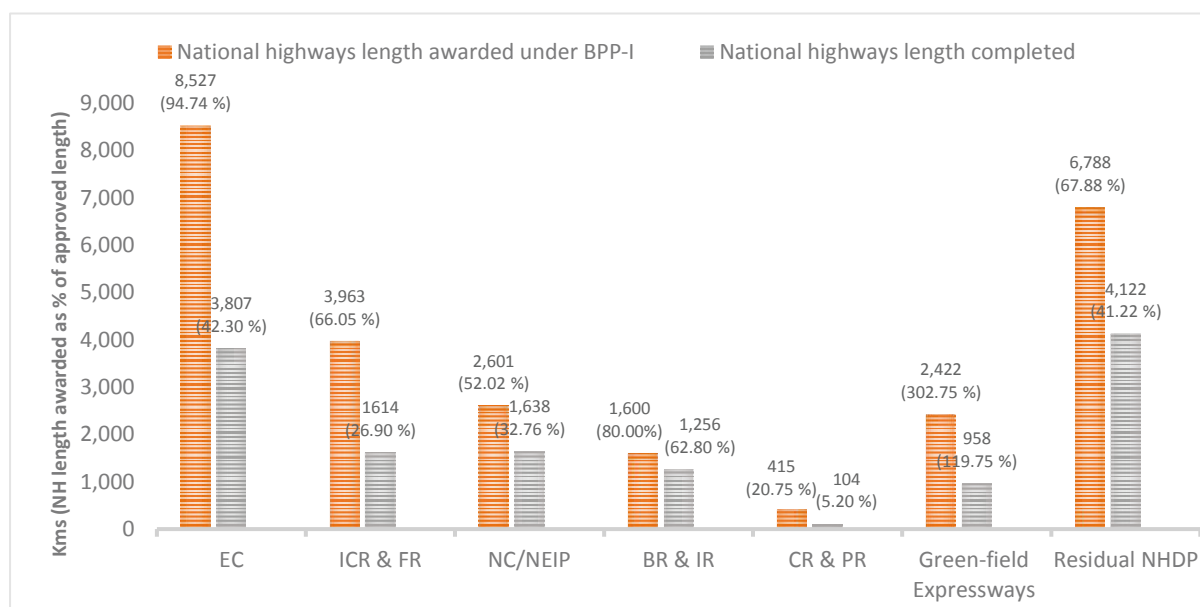
The status of award of national highway projects¹⁶ and their completion, as on 31 March 2023, was as follows:

¹⁶ Packages in which corridors or stretches have been divided for invitation of civil construction tenders.

Table 1.2: Progress achieved in Phase-I of Bharatmala Pariyojana as on 31 March 2023

S.No.	Components of BPP-I	CCEA approved length (in km)	CCEA approved estimates (₹ in crore)	National highways length awarded ¹⁷ under BPP-I		Total Sanctioned cost of BPP-I projects (₹ in crore)	Per cent of total sanctioned cost of BPP-I projects to CCEA approved estimates	National highways length completed ¹⁸	
				(in km)	(in per cent)			(in km)	(in per cent)
a	b	c	d	e	f=e/c*100	g	h=g/d*100	i	j=i/c*100
1	Economic Corridors	9,000	1,20,000	8,527	94.74	2,85,608	238.01	3,807	42.30
2	Inter-Corridor & Feeder Roads	6,000	80,000	3,963	66.05	1,04,037	130.05	1,614	26.90
3	National Corridors/National Corridors Efficiency Improvements Program	5,000	1,00,000	2,601	52.02	1,05,010	105.01	1,638	32.76
4	Border & International Connectivity Roads	2,000	25,000	1,600	80.00	14,002	56.01	1,256	62.80
5	Coastal & Port Connectivity Roads	2,000	20,000	415	20.75	7,578	37.89	104	5.20
6	Green-field Expressways	800	40,000	2,422	302.75	1,58,103	395.26	958	119.75
	Sub-total	24,800	3,85,000	19,528	78.74	6,74,338	175.15	9,377	37.81
7	Residual NHDP	10,000	1,50,000	6,788	67.88	1,72,250	114.83	4,122	41.22
	Grand Total	34,800	5,35,000	26,316	75.62	8,46,588	158.24	13,499	38.79

(Source: CCEA Note dated 24 October 2017 and data provided by MoRTH/Managements)

Chart 1.1: Progress achieved (in km) in Phase-I of Bharatmala Pariyojana as on 31 March 2023¹⁷ As per data furnished by MoRTH/Management.¹⁸ Cumulation of kilometer of national highways road length completed, across the country, irrespective of the project being completed or under construction.

As evident from the table and chart above, a total of 26,316 km of national highways length has been awarded under BPP-I till 31 March 2023, which was 75.62 *per cent* of the CCEA approved length for BPP-I. The sanctioned cost of 26,316 km of project length was ₹ 8,46,588 crore (₹ 32.17 crore/km) as against CCEA approved length of 34,800 km at cost of ₹ 5,35,000 crore (₹ 15.37 crore/km). Out of this, 13,499 km of national highways length has been completed till 31 March 2023 which was 38.79 *per cent* of the CCEA approved length for BPP-I, which included the the challenging CoVID pandemic period.

To boost the economy during and post CoVID pandemic, MoRTH has also granted various reliefs under Atmanirbhar Bharat Scheme viz., direct payments to sub-contractors, monthly payments by revising payment schedules, grant of extension of time-based on-site condition and release of retention money etc. The pace of awarding of national highways length, under Bharatmala Pariyojana, went up from 6.50 km/day in 2018-19 to 15.17 km/day in 2021-22. While per day project length constructed, under Bharatmala pariyojana, improved from 1.04 km in 2018-19 to 12.37 km in 2022-23.

CHAPTER 2

MANDATE, AUDIT SCOPE AND METHODOLOGY



Chapter 2

Mandate, Audit Scope and Methodology

The Performance Audit Report has been prepared under the provisions of Sections 13 and 19 of the Comptroller and Auditor General's (Duties, Powers, and Conditions of Service) Act, 1971 for submission to the Government. The Audit has been carried out in line with the Regulations on Audit and Accounts, 2007 (revised in August 2020) and Performance Audit Guidelines, 2014 of the Comptroller and Auditor General of India

2.1 Scope of Audit and coverage

The scope of Audit consists of review of planning, financial management, implementation and monitoring of projects under BPP-I covering the period from 2017-18 to 2020-21. Out of awarded 291 BPP-I projects a sample of 66 projects¹⁹ (**Annexure 2**) was selected for review by Audit based on stratified statistical sampling methodology²⁰. Characteristics of sample projects were as follows:

Table 2.1: Characteristics of sample projects

S.No	Implementing agency	Number of projects awarded	Length of the projects (in km)	Total sanctioned cost of projects (₹ in crore)	Sample projects selected	Length of the sample projects (in km)	Total sanctioned cost of sample projects (₹ in crore)	Per cent Coverage of total sanctioned cost	Mode of construction of sample projects	Components of sample projects
a	b	c	d	e	f	g	h	i=h/e*100	j	k
1	NHAI	260	10,197	2,48,439	58	3,280	91,291	36.75	EPC-33 HAM-21 BOT(Toll)-2 Item Rate-2	EC-17 ICR & FR-3 NC/NEIP-14 BR & IR-2 CR & PR-1 Green-field Expressways-8 Residual NHDP-13
2	NHIDCL	22	378	5,697	5	102	1,572	27.59	EPC-5 ²¹	EC-5
3	Road wing of MoRTH	9	509	3,939	3	164	2,464	62.55	EPC-3 ²²	Residual NHDP-3
TOTAL		291	11,084	2,58,075	66	3,546	95,327	36.94	EPC-41 HAM-21 BOT(Toll)-2 Item Rate-2	EC-22 ICR & FR-3 NC/NEIP-14 BR & IR-2 CR & PR-1 Green-field Expressways-8 Residual NHDP-16

(Source: Data furnished by MoRTH/Management)

¹⁹ Packages in which corridors or stretches have been divided for invitation of civil construction tenders.

²⁰ Stratified sampling is a method of sampling that involves the division of a population into smaller sub-groups known as strata whereby strata are formed based on shared attributes or characteristics of the population. For BPP-I projects, sample has been selected based on smaller sub-groups formed on the basis of capital cost of the projects, components in which awarded and mode of construction.

²¹ All projects of NHIDCL were being constructed under EPC mode.

²² Eight projects of Road wing of MoRTH were being constructed under EPC mode while one was being constructed under item rate.

2.2 Audit objectives

The Audit objectives were to assess whether:

- The objectives of Bharatmala Pariyojana were clearly defined and the project identification/prioritisation was done in line with the stated objectives in a transparent and effective manner on the basis of approved criteria;
- Financial management was sound whereby efficient utilisation of funds allocated for Bharatmala Pariyojana was done;
- Projects were awarded in time with economy and in accordance with the framework prescribed;
- Project execution and contract management was done with prudence in a timely, efficient and transparent manner; and
- Adequate and effective monitoring mechanism and information technology enabled management system were in place to ensure timely completion of projects for achieving stated objectives of Bharatmala Pariyojana.

2.3 Audit criteria

The Audit derived its criteria from the following:

- Logistics Efficiency Enhancement Program study, CCEA approval, guidelines and Standard Operating Procedure issued by MoRTH, Central Vigilance Commission guidelines and Ministry of Finance guidelines;
- Agenda and minutes of projects appraising authorities including Project Appraisal & Technical Scrutiny Committees;
- Agenda and minutes of meetings of project approving Authorities;
- Agenda and minutes of meetings of Boards of NHAI and NHIDCL;
- Internal audit reports pertaining to MoRTH, NHAI and NHIDCL;
- Terms and conditions of model concession / EPC agreements, detailed project reports and other related agreements such as State support agreements and financing agreements etc.; and
- Project correspondences and management control systems established for monitoring the implementation, operation and maintenance of the projects.

2.4 Audit methodology

Audit methodology mainly included review, examination & verification of the physical and virtual records. Audit enquiries and Audit requisitions were also issued to the MoRTH/Management for seeking records, information and clarification. Other methods adopted include interaction with MoRTH, NHAI and NHIDCL officials, physical inspection of project sites, and photographic evidence collection.

2.5 Audit process

An Entry Conference with MoRTH, NHAI and NHIDCL was held on 27 October 2020 wherein the scope & coverage of audit, audit objectives and criteria etc., were explained. After the review of 66 projects the Draft Performance Audit Report was issued to MoRTH on 03 January 2022 for confirmation of facts and figures contained therein and to seek its reply. Draft Audit Report was followed by issuance of two supplementary Audit observations to MoRTH on 22 February 2022 and 17 May 2022. MoRTH furnished its replies on 26 April 2022, 28 April 2022 and 02 May 2022. An Exit Conference was held on 19 May 2022 wherein major Audit findings and recommendations were discussed with MoRTH and NHAI Management. MoRTH/Management views shared through their replies and responses in the Exit Conference have been duly considered while finalising the Performance Audit Report.

2.6 Scope limitation

MoRTH/NHAI did not provide any records relating to project conceptualisation, appraisal, approval, tendering and award in respect of two projects selected for review viz., Hapur Bypass-Moradabad and Belakeri Port-Kumta-Sirsi Road. In respect of other projects/Audit issues, instances where a specific information was not provided by NHAI, NHIDCL and MoRTH, the same have been highlighted under the respective Audit observations.

2.7 Structure of the report

The Performance Audit Report has been structured as follows:

Chapter 1 of the Report gives the background information of the Bharatmala Pariyojana and its Phase-I including the progress achieved till 31 March 2023.

Chapter 2 details the **Audit Approach** including scope of Audit & coverage, Audit objectives, Audit criteria, Audit methodology, Audit process and scope limitations. Audit findings have been broadly categorised into five chapters aligning with five Audit objectives.

Chapter 3 on **Conceptualisation and Planning of Bharatmala Pariyojana** brings out deficiencies in conceptualisation. The Audit observations have been broadly categorised as benchmarking of improvement in Logistics Performance Index so as to check whether any target/milestone/action plan for improvement in Logistics Performance Index was determined or not, fixation of outcome parameters for mapping of benefits of Bharatmala Pariyojana, merger of incomplete NHDP stretches into Bharatmala Pariyojana for analysing the resolution of NHDP bottlenecks before taking up the projects afresh, project optimisation and prioritisation so as to review the justifiability for identification & selection of alignments to be developed under BPP-I.

Chapter 4 on **Fund Management** brings out deficiencies in utilisation of funds allocated for Bharatmala Pariyojana. The Audit observations have been broadly categorised as compliance to approved funding pattern of CCEA, achievement of modal mix as determined by implementing agencies in furtherance to financial management under BPP-I, maintenance of project-based expenditure & revenue in compliance to MoRTH directions and cost variations from the CCEA approved financial outlay for BPP-I.

Chapter 5 on Award of Projects brings out shortcomings in awarding of the projects. The Audit observations broadly cover inept delegation of powers for project appraisal and approval, national highways lane developments vis-à-vis traffic projections & future requirements, preparation of detailed project reports in tandem with project requirements and prudence & transparency in tendering & selection of contractor/concessionaires.

Chapter 6 on Execution of Projects brings out deficiencies in project execution and contract management regarding their timeliness, efficiency and transparency. The Audit observations have been included with respect to land management, timely project execution, fixation of appointed date after fulfilment of condition precedent as per model contract/concession agreements, environmental conservation vis-à-vis statutory requirements, effectiveness & independence in third party monitoring of the projects, compliance to financial covenants as elaborated in the model contract/concession agreements, etc.

Under **Chapter 7 on Monitoring and Information Technology**, the Audit observations on monitoring of Bharatmala Pariyojana in compliance to CCEA directions and usage of information technology in furtherance to achievement of BPP-I objectives have been included.

2.8 Acknowledgement

The cooperation extended by MoRTH, NHAI and NHIDCL during the conduct of this Audit is appreciated and acknowledged.

CHAPTER 3

CONCEPTUALISATION AND PLANNING OF BHARATMALA PARIYOJANA



Chapter 3

Conceptualisation and Planning of Bharatmala Pariyojana

CCEA approved the implementation of BPP-I with the objective of optimising the efficiency of the movement of goods and people across the country and improving Logistics Performance Index of India by:

- Bridging critical infrastructure gaps and addressing asymmetry in existing corridors;
- Optimal resource allocation for holistic highways development/improvement initiative; and
- Following corridor approach over existing package-based approach.

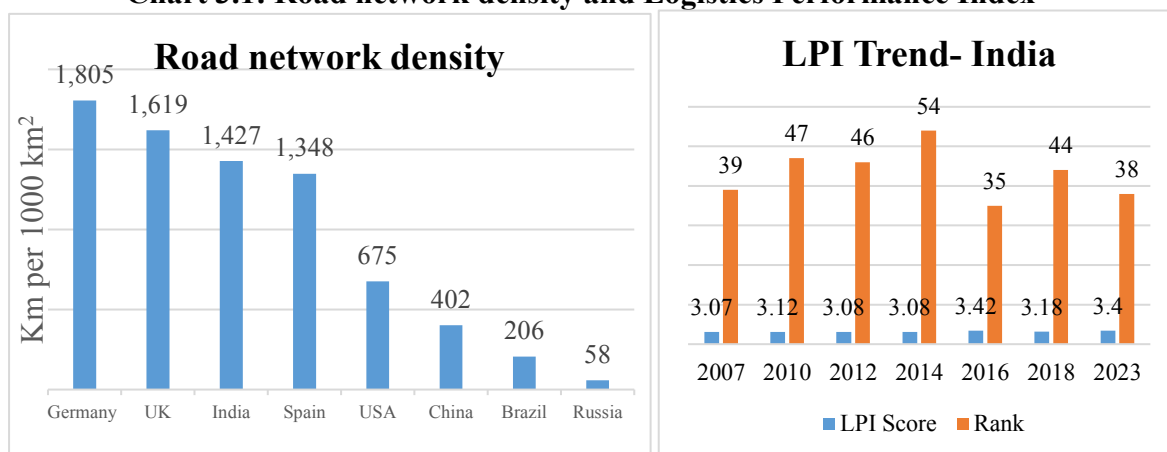
The Logistics Performance Index (LPI) is an interactive benchmark tool developed by World Bank to help countries identify challenges and opportunities faced by them in their trade logistics. It also suggests ways to overcome the challenges. It is based on ground surveys, whereby feedback is taken from operators (global freight forwarders and express carriers) worldwide.

Observations of Audit on the conceptualisation and planning of Bharatmala Pariyojana are given in the following paras.

3.1 Benchmarking of improvement in Logistics Performance Index

In terms of road network density²³, India had 1,427 km of roads per 1,000 km² of area, which was significantly higher than nations like USA and China which had road network density of 675 km and 402 km per 1,000 km² of area respectively²⁴. The position of Logistics Performance Index (LPI) of India during the period 2007 to 2023 is as under:

Chart 3.1: Road network density and Logistics Performance Index



(Source: As per MoRTH records)

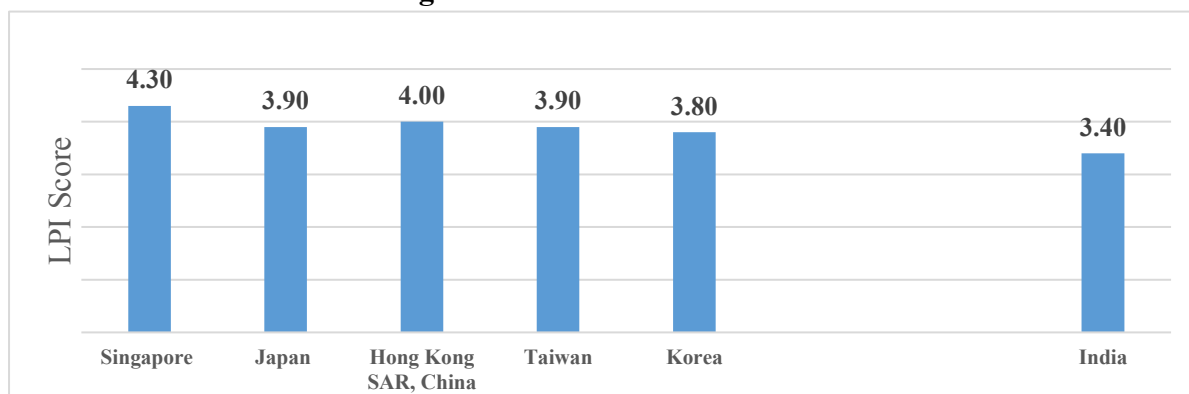
(Source: As per World Bank LPI reports)

²³ It is the ratio of a country's total road network length, which inter-alia includes all national highways, state highways, urban and rural roads, to country's total land.

²⁴ As per Logistics Efficiency Enhancement Program Study of December 2016.

India's LPI score vis-à-vis top five Asian countries in 2023 was as shown below:

Chart 3.2: Logistics Performance Index of Asian countries



(Source: As per World Bank LPI reports)

Infrastructure quality was one of the six²⁵ parameters for measuring LPI and one of the components of this infrastructure quality parameter was road networks including national highways. India's score, during the period from 2007 to 2023, in overall index has improved from 3.07 to 3.40 and ranking has marginally improved from 39 to 38. However, though India's score in infrastructure quality parameter has improved from 2.90 to 3.20, its ranking has slipped from 42 in 2007 to 47 in 2023.

In regard to above and considering implementation of Bharatmala Pariyojana, Audit observed that though impacting LPI positively was one of the objectives for seeking approval of BPP-I and in spite of the fact that the national highways contributed to carrying 40 *per cent* of the total road traffic of India, MoRTH did not set any target/milestone/action plan, in furtherance to Bharatmala Pariyojana including BPP-I, to improve LPI by developing quality infrastructure in the form of national highways network.

However, the LPI ranking of India which stood at 44 with LPI score of 3.18 in 2018 (at the initial stage of implementation of Bharatmala Pariyojana) improved to 38 with a score of 3.40 in 2023. During the same period ranking of India in infrastructure quality parameter has also improved from 52 to 47 with increase in score from 2.91 to 3.20.

MoRTH did not furnish reply to the Audit observation.

Recommendation No. 1: MoRTH should consider setting of targets for improvement of LPI vis-à-vis the infrastructure being developed under Bharatmala Pariyojana and should monitor the same periodically.

3.2 Fixation of outcome parameters

While approving Bharatmala Pariyojana and its Phase-I, CCEA directed for laying down of outcome parameters like reduction in time of travel, fuel efficiency, accident reduction, comfort in riding and user satisfaction for every selected corridor and monitoring thereof.

²⁵ It included three input parameters viz., custom policy, infrastructure quality & logistics competence and three output parameters viz., cost, timeliness and tracking & traceability.

Audit, however, observed that MoRTH did not set any target for achievement of measurable outcome parameters such as accident reduction, comfort in riding and user satisfaction etc., at the time of selection of corridors/projects though in certain corridors, the two other outcome parameters viz., reduction in time of travel and fuel efficiency were laid at the time of selection of corridors/projects. However, no mechanism was established to monitor achievement of any such outcome parameters. Resultantly, the benefits of development of BPP-I projects and scheme as against these outcome parameters, could not be verified.

MoRTH did not furnish any reply to the Audit observation.

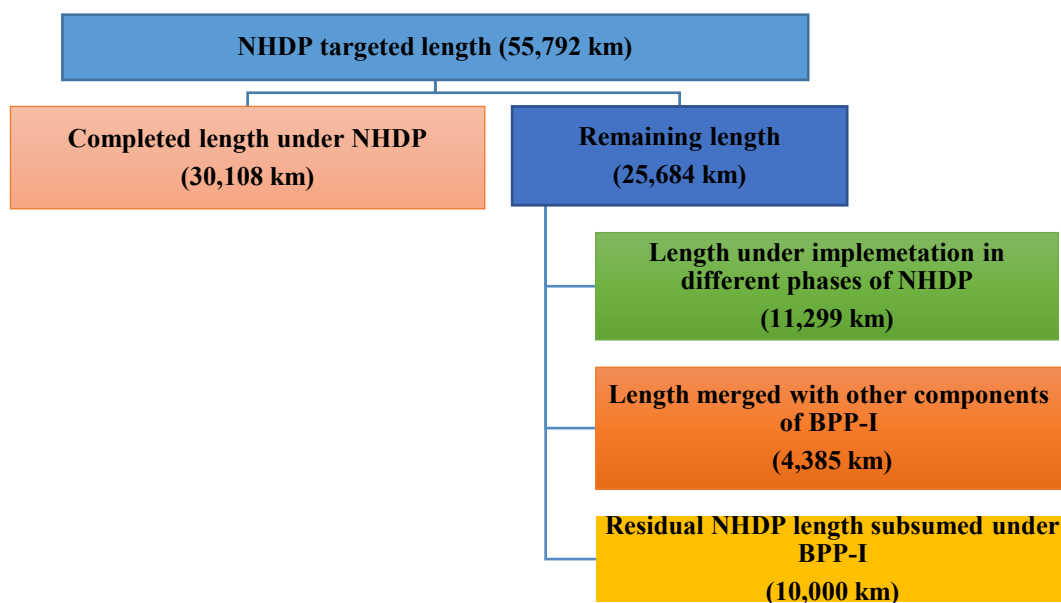
In the Exit Conference (May 2022), MoRTH accepted the fact that there were no means to plan accident reduction while building corridors under BPP-I which reflected non-compliance to CCEA directions.

Recommendation No. 2: MoRTH should consider setting of outcome parameters for the corridors/projects selected under BPP-I and establish a monitoring mechanism for the same as directed by CCEA.

3.3 Merger of incomplete stretches into Bharatmala Pariyojana

NHDP was launched (2000) in a phased manner for development of national highways length of 55,792 km with scheduled completion upto December 2015. MoRTH apprised CCEA (September 2017) that development of national highways length of 30,108 km has been completed while remaining national highways length of 25,684 km was still to be developed, which included length of 11,299 km under implementation in different phases of NHDP and balance length of 14,385 km planned to be developed under BPP-I. Out of this length of 14,385 km, a length of 4,385 km was to be developed under different components of BPP-I and balance length of 10,000 km was subsumed in BPP-I as Residual NHDP projects.

Flow Chart 3.1: Progress of National Highways Development Program



(Source: CCEA Note dated 24 October 2017)

MoRTH, while proposing Bharatmala Pariyojana for CCEA approval stated that considering the lessons learnt from the past schemes including NHDP, it was made mandatory to award projects under Public Private Partnership mode/EPC mode after ensuring availability of 80/90 per cent right of way.

Audit sample of 66 projects (cumulative length of 3,546.19 km), included 36 erstwhile NHDP projects (cumulative length of 2,027.81 km) being developed under BPP-I. These 36 projects included 16 projects²⁶ (cumulative length of 1,080.01 km) which were covered under Residual NHDP component of BPP-I while 20 projects²⁷ (cumulative length of 947.80 km) were covered under other components of BPP-I.

In regard to the above, Audit observed significant delays in case of nine such projects, which were languishing projects of NHDP and merged in BPP-I, (length of 626.20 km and total sanctioned cost of ₹ 11,932.56 crore²⁸). Three of these projects are detailed below and balance six projects are detailed in **Annexure 3**.

Table 3.1: Details of languishing projects of NHDP merged in BPP-I

S.No.	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I
1	Bihar/Jharkhand Border (Chordaha)-Gorhar	Approved for development in 2012 as part of Aurangabad-Barwaadda stretch, However, due to non-procurement of requisite right of way, non-obtaining of environmental clearance by NHAI and non-achievement of financial close by concessionaire the project was foreclosed in November 2013.	It was awarded under BPP-I on 31 January 2018 for six-laning, but due to non-transfer of requisite right of way by NHAI, the appointed date could be fixed on 03 June 2019 i.e., after around one and a half years from award of the project. Even after the appointed date ²⁹ , complete right of way could not be handed over to the contractor, hence 11.625 km of length falling in forest area was de-scoped on 04 January 2021 while 2.5 km of project length was still (March 2022) under arbitration as a result of which: - Negative change of scope for value of ₹ 48.51 crore was approved. - On the patches de-scoped, traffic plied on existing four lanes configuration only.

²⁶ (1) Balance work of Tindivanam Krishnagiri, (2) Balance work of Barasat-Krishnagar, (3) Bareilly-Goharganj, (4) Barhi-Koderma, (5) Duburi-Chandikhole (Pkg.- III), (6) Ghoskpur-Salsalabari (Pkg.-IIA), (7) Goharganj-Bhopal, (8) Jabalpur-Hiran river (Pkg.-I), (9) Kallagam-Meensurutti, (10) Koida-Rajamunda (Pkg.-II), (11) Maheshkhunt-Saharsa-Purnea (Pkg.-I), (12) Majhauli-Charout, (13) Purulia (JHR Border)-Balrampur-Chandil, (14) Solapur-Bijapur, (15) Tumkur-Shivamogga (Pkg.-I) and (16) Tumkur-Shivamogga (Pkg.-II).

²⁷ (1) Aurangabad-Karodi, (2) Balance Work of Bareilly-Sitapur, (3) Dagamagpur-Lalganj (Pkg.-II), (4) Kozhikhode Bypass, (5) Lalganj-Hanumanah (Pkg.-III), (6) Varanasi-Dagamagpur (Pkg.-I), (7) Anandapuram-Pendurthi-Anakapalli, (8) Bihar/Jharkhand Border (Chordaha)-Gorhar, (9) Chakeri-Allahabad, (10) Gorhar-Khairatunda (Pkg.-I), (11) Gundugolanu-Devarapalli -Kovvuru, (12) Lucknow Ring Road (Pkg.-I), (13) Lucknow Ring Road (Pkg.-II), (14) Lucknow Ring Road (Pkg.-III B), (15) Varanasi Ring Road (Pkg.-I), (16) Varanasi Ring Road (Pkg.-II), (17) Delhi-Meerut Expressway (Pkg.-IV), (18) Vadodara-Mumbai Expressway (Phase IA-Pkg.-I), (19) Vadodara-Mumbai Expressway (Phase IA-Pkg.-II) and (20) Vadodara-Mumbai Expressway (Phase IA-Pkg.-V)

²⁸ As against cumulative total sanctioned cost of ₹95,326.87 crore for 66 sample projects.

²⁹ It is the project construction start date.

S.No.	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I
			Project could achieve only 61.60 <i>per cent</i> physical progress upto March 2023, whereas its scheduled completion date was 28 November 2021 even after 11 years of approval for development of this project.
2	Barhi-Koderma on Barhi-Koderma-Rajauli Stretch	This project was planned as part of Barhi-Rajauli stretch under NHDP but could not be taken up in NHDP due to right of way issues because of pending forest clearances.	Barhi-Koderma was awarded (31 January 2018), under BPP-I, after splitting Barhi-Rajauli stretch into two projects viz., Barhi- Koderma and Koderma-Rajauli for ease of getting forest clearance separately for them, in BPP-I. Since, forest clearance was pending, MoRTH suggested (2 May 2018) NHAI for change of alignment of Barhi- Koderma project due to it passing through Talcher Sanctuary, however, NHAI intimated that change of alignment was not possible due to site condition. Stage-I forest clearance was received only on 27 September 2018, which was a contributory factor besides other right of way issues in fixation of appointed date as 18 November 2019 i.e., around 22 months from award of the project. Due to execution delays, the project could achieve physical progress of 75.88 <i>per cent</i> upto March 2023. While Koderma-Rajauli section could not be awarded till 31 March 2023 due to forest clearance issues resulting in skewed development of Barhi-Rajauli stretch.
3	Purulia (JHR Border)-Balrampur-Chandil	This project was planned for development during 2014 under NHDP. However, the specific project proposal was not approved by CCEA (2014) in view of there being non-availability of requisite right of way.	This project was split into two parts under BPP-I i.e., (i) Purulia-Balrampur-Chandil and (ii) Purulia bypass due to pending right of way issues. (i) Purulia-Balrampur-Chandil project was awarded on 31 March 2018. However, due to non-availability of requisite right of way its appointed date could be fixed as 12 December 2019 with scheduled completion date of 08 June 2022. But right of way issues still persisted thereby the project could achieve physical progress of 70 <i>per cent</i> only upto March 2023. (ii) Purulia bypass was awarded on 18 August 2021 and had 40.50 <i>per cent</i> physical progress upto March 2023 due to delayed fixation of appointed date i.e., 05 February 2022 leading to skewed development, even after more than nine years of plan for its development.

(Source: Records provided by MoRTH/NHAI)

Thus, NHAI/MoRTH planned these projects under BPP-I without resolving the impediments and bottlenecks viz., availability of right of way and pending disputes regarding forest land including wildlife sanctuaries which were the reasons for non-taking up/non-completion of these projects under NHDP. This resulted in their skewed development.

MoRTH, in its reply (April 2022), admitted the existence of bottlenecks as pointed out by Audit. Delay in completion of Bihar/Jharkhand Border (Chordaha) – Gorhar was attributed to non-availability of right of way, delay in disbursement of compensation and resultant delay in fixation of appointed date. MoRTH did not furnish reply for Barhi-Koderma project and Purulia (JHR Border)-Balrampur-Chandil project.

Hence, developing of projects under BPP-I, without removal of bottlenecks of NHDP projects vitiated the objective of ensuring seamless connectivity in these stretches besides resulting in unproductive blockage of funds which could have instead been utilised in development of other stretches.

Recommendation No. 3: NHDP length yet to be awarded under BPP-I should be carefully planned after clearing the existing bottlenecks viz, availability of right of way and pending disputes regarding forest land and wildlife sanctuaries etc.

3.4 Project optimisation under Bharatmala Pariyojana

For implementation of BPP-I, MoRTH carried out an exercise of optimisation, in discussion with the stakeholders i.e., NHAI, NHIDCL, State Governments, etc., to identify national highways length of 24,800 km to be developed under BPP-I out of 64,942 km planned to be developed under Bharatmala Pariyojana as a whole based on principles of optimal traffic and freight movement.

Regarding optimisation of length for BPP-I, Audit observed the following:

3.4.1 Optimisation of projects to be implemented by NHAI

3.4.1.1 Targets for Phase-I of Bharatmala Pariyojana

Optimisation exercise was carried out by MoRTH only for NHAI while for NHIDCL and Road wing of MoRTH, for no reasons on record, no optimisation exercise was carried out. MoRTH's optimisation exercise for NHAI was concluded on 30 November 2018 as detailed below:

Table 3.2: Optimisation of Phase-I of Bharatmala Pariyojana³⁰

(figures in km)

S.No.	Component	CCEA approved length to be developed by under Bharatmala Pariyojana		Post optimisation length for BPP-I	Excess length to be developed in BPP-I (post optimisation)	Excess length to be developed in BPP-I post optimisation (in per cent)	Variation in post optimisation length for BPP-I as against lengths approved by CCEA for Bharatmala Pariyojana (per cent)	Post-optimisation BPP-I length allocated to NHAI	Already completed/ awarded length by NHAI before optimisation	Length to be awarded by NHAI post optimisation
		Total	Under BPP-I							
a	b	c	d	e	f=e-d	g=f/d*100	h=(e-c)/c	i	j	k=i-j
1	Economic Corridors	26,160	9,000	25,139	16,139	179.32	(3.90)	22,023	11,692	10,331
2	Inter-Corridor & Feeder Roads	15,400	6,000	11,919	5,919	98.65	(22.60)	11,617	3,607	8,010

³⁰ Detail of optimisation of Residual NHDP length of 10,000 km not included here and has been discussed separately.

S.No.	Component	CCEA approved length to be developed by under Bharatmala Pariyojana		Post optimisation length for BPP-I	Excess length to be developed in BPP-I (post optimisation)	Excess length to be developed in BPP-I post optimisation (in per cent)	Variation in post optimisation length for BPP-I as against lengths approved by CCEA for Bharatmala Pariyojana (per cent)	Post-optimisation BPP-I length allocated to NHAI	Already completed/awarded length by NHAI before optimisation	Length to be awarded by NHAI post optimisation
		Total	Under BPP-I							
a	b	c	d	e	f=e-d	g=f/d*100	h=(e-c)/c	i	j	k=i-j
3	National Corridors/ National Corridors Efficiency Improvements Program	13,049	5,000	16,424	11,424	228.48	25.86	16,424	12,637	3,787
4	Peripheral Connectivity Roads ³¹	8,496	4,000	8,638	4,638	115.95	1.67	6,007	1,772	4,235
5	Green-field Expressways	1,837	800	2,555	1,755	219.38	39.09	2,555	485	2,070
Total		64,942	24,800	64,675	39,875	160.79	(0.41)	58,626	30,193	28,433

(Source: CCEA Note dated 24 October 2017 and minutes of optimisation exercised concluded in November 2018)

From the table above, the following were observed:

- Post optimisation, MoRTH set the target for development of national highways length of 64,675 km³² under BPP-I as against the targeted national highways length of 24,800 km approved by CCEA thereby increasing the target length of BPP-I by 160.79 per cent;
- Post optimisation, component-wise increase in targeted length ranged from 98.65 per cent (Inter Corridors and Feeder Roads) to 228.48 per cent (National Corridors/National Corridors Efficiency Improvements Program);
- Post optimisation, the length of Bharatmala Pariyojana components under BPP-I differed in the range of (-) 23 per cent (Inter-Corridor & Feeder Roads) to 39 per cent (Green-field Expressways) as compared to CCEA approved length for such components for Bharatmala Pariyojana as a whole; and
- Post optimisation, national highways length targeted to be developed by NHAI alone³³ under BPP-I was 58,626 km i.e., 236.39 per cent³⁴ of the total targeted national highways length of BPP-I out of which national highways length of 30,193 km were already completed/awarded before optimisation in November 2018.

Thus, the targeted lengths of BPP-I as a whole as well as the targeted lengths for each component of BPP-I were substantially changed during optimisation in spite of the claims of

³¹ Border & International Connectivity Roads and Coastal & Port Connectivity Roads.

³² Excluding Residual NHDP length of 10,000 km under BPP-I.

³³ Excluding Residual NHDP length of 10,000 km under BPP-I.

³⁴ 58,626 km against 24,800 km.

CCEA approved components and lengths being proposed after due diligence based on origin-destination studies, freight flow projections and identification of infrastructure gaps.

MoRTH did not furnish reply to the Audit observation.

In the Exit Conference (May 2022), MoRTH accepted that no optimisation exercise was carried out for BPP-I projects to be developed by NHIDCL and Road wing of MoRTH. It further stated that national highways length of only 34,800 km would be awarded under BPP-I, list of which would be shared with Audit. However, the same was still awaited.

3.4.1.2 Fixation of construction targets and award of projects pending optimisation

MoRTH proposal to CCEA provided two years timeline, from date of approval of the Pariyojana by CCEA, for award of projects and three years thereafter for completion of the projects. It did not provide timelines for optimisation and prioritisation exercise to be carried out by MoRTH so as to select corridors/alignments to be developed under BPP-I. Optimisation exercise for NHAI, could be concluded by MoRTH upto 30 November 2018 i.e., after more than one year of approval of BPP-I by CCEA. By that time, NHAI had already awarded a length of 5,594 km under BPP-I without justifying their optimisation.

MoRTH did not furnish reply to the Audit observation.

3.4.1.3 Criteria for substitution

CCEA, while approving BPP-I, authorised MoRTH to substitute/replace up to 15 *per cent* length of 24,800 km³⁵ for BPP-I by other suitable projects, if development of certain identified stretches could not be taken up on account of issues pertaining to alignment finalisation, land availability and other unforeseen factors.

Audit observed that the criteria for substitution, as approved by CCEA, did not clarify as to whether for substitution, national highways length not forming part of CCEA approved length of 64,942 km could be utilised and whether inter-component substitution was allowed.

In view of above in regard to substitution of project in BPP-I, it was observed that:

- In order to do need-gap analysis, MoRTH carried out a new study viz., National Road Transport Strategy (NRTS) before completion of BPP-I optimisation exercise and concluded that certain national highways length identified through NRTS would also be included during BPP-I to meet the targets of national highways development by NHAI despite the fact that the pool of 64,942 km of national highways length was available for NHAI to choose its target national highways length.
- On test check basis³⁶, it was observed that fresh alignments as detailed below were substituted/inducted in the BPP-I at the time of optimisation which did not figure in the national highways length of 64,942 km approved for Bharatmala Pariyojana by CCEA

³⁵ 24,800 km length for BPP-I excluding 10,000 km which was part of Residual NHDP.

³⁶ Due to dearth of requisite data and non-award of complete length of BPP-I upto 31 March 2022, Audit was not able to map and analyse the complete substitution across all the BPP-I projects.

Table 3.3: Fresh alignments not approved in Bharatmala Pariyojana

S.No.	Name of the project	Length (in km)	Component of Bharatmala
1	Delhi-Vadodara Expressway	828	Green-field Expressways
2	Alandi-Mohol	260	Economic Corridors
3	Pehowa-Kotputli	282	National Corridors/National Corridors Efficiency Improvement Program
Total		1,370	

(Source: CCEA note dated 24 October 2017 and minutes of optimisation exercised concluded in November 2018)

- Delhi-Vadodara Expressway i.e., a Green-field Expressway was planned as a substitution to five corridors/stretches³⁷ approved by CCEA under four different components of BPP-I viz., Green-field Expressways, National Corridors/National Corridors Efficiency Improvements Program, Economic Corridors and Inter-Corridor Roads thereby leading to inter component substitution as detailed in para 3.5.2.3.
- CCEA approved Green-field Expressways length of 1,837 km to be developed under Bharatmala Pariyojana, which included 800 km for BPP-I. However, it was noticed that MoRTH optimised length of 2,555 km of Green-field Expressways under BPP-I, out of which 2,422 km length has already been awarded till March 2023. Audit also observed that in addition, MoRTH has identified length of 3,525 km for Phase-II of Bharatmala Pariyojana.

Thus, the substitution criteria lacked clarity. Inclusion of additional length beyond the approved length of Bharatmala Pariyojana as a whole indicated that either the proposal put to CCEA was deficient or these lengths were being planned in disregard of the approved length arriving after origin-destination study, freight flow projections and identification of infrastructure gaps through geo-mapping.

MoRTH did not furnish reply to the Audit observation.

3.4.1.4 Estimation of target length for Phase-I of Bharatmala Pariyojana

Post optimisation, the national highways length to be developed by NHAI under BPP-I was 70,950 km³⁸. Audit observed that it included national highways length of 34,972 km (49.29 *per cent*) which was already developed/awarded under various national highway schemes before approval of BPP-I in October 2017 with no proposals to develop them further. However, these were considered under BPP-I resulting in exaggeration (49.29 *per cent*) of the pool of national highways length by NHAI under BPP-I. For instance, post optimisation list of Green-field Expressways to be developed by NHAI included two expressways viz., Ahmedabad-Vadodara Expressway and Eastern-Peripheral Expressway, with a total length of 279 km, which were already completed under NHDP and there were no plans to develop them further.

MoRTH did not furnish reply to the audit observation.

³⁷ As detailed in table 3.9

³⁸ 58,626 km (other components of BPP-I) + 12,324 km (Residual NHDP).

3.4.1.5 Estimation of residual NHDP target/achievement lengths

- Residual NHDP length targeted to be developed, after optimisation exercise carried out for NHAI, was 12,324 km³⁹ against 10,000 km length approved by CCEA for BPP-I as a whole i.e., 23 *per cent* more than the approved length. It showcased the deficiencies in the proposal put for CCEA approval since these national highways length were incomplete lengths under NHDP which should have remained intact. CCEA also did not foresee any variation in the length of residual NHDP projects as it did not prescribe any substitution as was the case of other national highways length of 24,800 km;
- As against the target residual NHDP length of 12,324 km, the actual length to be developed /being developed under Residual NHDP component by NHAI⁴⁰ for BPP-I was merely 3,728 km. Also, upto 31 March 2023, MoRTH has awarded⁴¹ a length of 879 km for 17 residual NHDP projects. This indicated the fact that the length of 10,000 km proposed to CCEA and the optimised length of 12,324 km were overestimated and so were the funds of ₹ 1,50,000 crore required for same; and
- CCEA, while approving ₹ 5,35,000 crore funding for BPP-I, also approved ₹ 1,57,324 crore funds for other ongoing national highways schemes like National Highways (Original), Special Accelerated Road Development Program for North-Eastern Region, Externally Aided Projects and Left-Wing Extremism affected area projects. However, proposal put for CCEA approval did not include any funding requirement for ongoing NHDP projects (with length of 11,299 km). The CCEA proposal also did not contain any list of ongoing NHDP projects and Residual NHDP projects. This could lead to the possibility of unauthorised utilisation of Bharatmala Pariyojana Funds for the ongoing NHDP projects because as against 12,324 km of national highways length optimised under BPP-I, under Residual NHDP component, for NHAI a meagre length of 3,728 km only was being/planned to be developed by NHAI. Audit apprehension could be strengthened from the fact that two sample projects viz., Lucknow Ring Road (Pkg-IIIB) and Bareilly-Goharganj, with a total length of 74.46 km were awarded under NHDP i.e., prior to approval of BPP-I by CCEA, but the same were being funded under BPP-I. This also indicated overstatement of achievement of BPP-I targets.

MoRTH did not furnish reply to the Audit observation.

3.4.2 Achievement of NHIDCL under Phase-I of Bharatmala Pariyojana

In view of non-optimisation of NHIDCL projects by MoRTH, the projects actually being constructed under BPP-I by NHIDCL were test checked to review the process adopted for their selection under BPP-I. NHIDCL furnished a list of 97 projects having length of 2,244 km and

³⁹ Besides residual NHDP projects to be developed by Road wing of MoRTH and for which no optimisation was carried out.

⁴⁰ NHAI was responsible for development of majority of national highway projects under Residual NHDP component whereas a few Residual NHDP component projects were to be developed by MoRTH.

⁴¹ As per data furnished by management.

total sanctioned cost of ₹ 54,833 crore which it stated to be awarded under BPP-I till 31 March 2023.

Audit observed that of these 97 projects, in case of 78 projects with a total length of 1,752 km and total sanctioned cost of ₹ 40,384 crore, administrative approvals and financial sanctions were given under other schemes viz., Special Accelerated Road Development Program, National Highways (Original) scheme and Externally Aided Projects. However, still these projects were included under BPP-I despite the fact that as per CCEA approval, these other schemes could not be merged with BPP-I. It resulted in overstatement of achievements of BPP-I by 1,752 km on account of merger of length approved under other schemes with BPP-I.

MoRTH did not furnish reply to the Audit observation.

3.4.3 Inconsistencies in CCEA Note and optimisation exercise

Differences were observed between the Cabinet Note and optimisation exercise in regard to length of alignments and traffic projections. Instances of project lengths which were already completed but still being included in the CCEA note and optimised length were observed. The details, on test check basis, were as follows: -

- Factual inaccuracy in traffic projections and length of roads in the following Economic Corridors were observed:

Table 3.4: Difference in traffic projections and length

S.No.	Name of the Economic Corridor	Traffic as per CCEA note (in passenger car units)	Traffic considered during optimisation (in passenger car units)	Length as per CCEA (in km)	Length considered during optimisation (in km)
1	Chennai-Madurai	43,617	51,842	464	455
2	Bengaluru-Nellore	20,787	34,085	286	291
3	Delhi-Kanpur	17,818	25,079	424	406

(Source: CCEA note dated 24 October 2017 and minutes of optimisation exercised concluded in November 2018)

- On test check, it was also observed that in CCEA note, the lengths proposed under various components included national highways length which were already completed/awarded before CCEA approval as detailed below:
 - As per CCEA note, a length of 96 km was planned to be developed under Delhi- Meerut Expressway when, in fact, out of this length, three packages (50.37 km) of this expressway were already awarded during 2016 and 2017 i.e., before CCEA approval. Furthermore, the combined length of all the four packages was actually 82.14 km as against 96 km depicted in CCEA note. During optimisation also, the length of Delhi-Meerut Expressway was considered as 82 km instead of 31.77 km⁴²;
 - As per CCEA note, Delhi-Lucknow Economic Corridor, with a total length of 494 km, was to be constructed under BPP-I. However, this road length included 394 km of length

⁴² 82.14 km (-) 50.37 km.

which was already completed/awarded before approval of BPP-I. During optimisation, the length of Delhi-Lucknow Economic Corridor was considered as 490 km i.e., after including already completed/awarded national highways length;

- Panipat-Rohtak-Rewari (Bawal) stretch with a length of 134 km was developed as four lanes under NHDP and was being already tolled but still was considered under CCEA proposal for Inter-Corridor component. During optimisation, the Panipat-Rohtak-Rewari (Bawal) stretch of 165 km was considered in the list of optimised projects when such stretch was already developed and was being tolled;
- Four lane Economic Corridor from Kandla-Sagar (1,038 km) was proposed for CCEA approval without considering the fact that a total length of 461.43 km of this Economic Corridor was already developed up to four lanes/six lanes, prior to approval of Bharatmala Pariyojana. Also, the optimised length of 796 km of this corridor included national highways length of 621 km which was already completed/awarded before BPP-I; and
- Sagar-Varanasi Economic Corridor (524 km) was proposed to be constructed without considering the fact that the existing stretch of Sagar-Damoh-Katni (two lanes/intermediate lane) was State road being operated under BOT (Toll) and already alternate routes in the form of four lane Bhopal-Jabalpur and Jabalpur-Katni were under development before BPP-I. As a result, there was change in alignment (during optimisation stage) from Bhopal-Sagar-Damoh-Katni to Bhopal-Jabalpur-Katni. This indicated deficiency in origin-destination study undertaken as the origin-destination points for Kandla-Sagar and Sagar-Varanasi i.e., Sagar was skipped from development under BPP-I.

MoRTH did not furnish reply to the Audit observation.

Thus, Audit observed that:

- No optimisation was carried out for national highway projects to be undertaken by NHIDCL and Road wing of MoRTH;
- While optimising NHAI projects, the targets for development of national highways length under BPP-I increased substantially (by 160.79 *per cent*) as against CCEA approved targets for BPP-I;
- Within a period of one year of CCEA approval fresh stretches/corridors were optimised beyond the stretches/corridors approved by CCEA;
- There was inclusion of already awarded/constructed national highways length in the lengths proposed to CCEA and optimised later; and
- Post optimisation, the target length of Residual NHDP for BPP-I was increased (from 10,000 km to 12,324 km) as against the CCEA approval. Further, the actual length being developed/planned to be developed under Residual NHDP component was much lower (3,728 km as against 12,324 km for NHAI besides 879 km being developed by MoRTH) than that approved by CCEA/optimised.

Recommendation No. 4: MoRTH may carry out an in-depth analysis, based on accurate ground level data, while proposing a scheme of this magnitude in future so as to ensure efficient management of resources and optimal project outcomes.

Recommendation No. 5: MoRTH may remove the national highways length completed/awarded before approval of the BPP-I by CCEA as also the lengths approved/awarded under schemes other than Bharatmala Pariyojana from its list of targeted/achieved lengths of BPP-I, so that a true and fair view of the targets/achievements is reflected under BPP-I.

3.5 Project prioritisation

3.5.1 CCEA approved the following *inter-se* prioritisation criteria for projects to be developed under BPP-I:

Table 3.5: Inter se-priority criteria

S.No.	Component	Criteria
1	Economic Corridors	- Higher freight flow; - Overall higher traffic; - Ease of land acquisition & pre-construction activities and detailed project report preparation; and - Capacity augmentation from four to six lanes to be taken up in Phase-II.
2	Inter-Corridor & Feeder Roads	- Stretches with less than four lane infrastructure leading to infrastructure asymmetry on the corridor; - Higher traffic in terms of passenger car units; and - Stretches with ease of land acquisition & pre-construction activities and detailed project report preparation.
3	National Corridors/National Corridors Efficiency Improvements Program	- Congestion records; - Road safety consideration; - Higher traffic would be prioritised; - Focus on ring roads, mobilisation/acquisition of land; and - Connectivity to Logistics Parks.
4	Border & International Connectivity Roads	- Synergy with development of intergraded check post; - Government priority; IMT/BIN/BIMSTEC MVAs; and - Stretches with ease of land acquisition & pre-construction activities and detailed project report preparation.
5	Coastal & Port Connectivity Roads	- Development status of ports; - Equity participation by stakeholders; - Synchronisation with other port development under Sagarmala; and - Stretches with ease of land acquisition & pre-construction activities and detailed project report preparation.
6	Green-field Expressways	- Constraint in capacity augmentation of important national highways where passenger car units were more than 50,000; - Higher traffic; - Synchronisation with rapidly growing industrial activities; and - Stretches with ease of land acquisition & pre-construction activities and detailed project preparation.

(Source: CCEA note dated 24 October 2017)

Audit, while reviewing the prioritisation of the national highway projects under BPP-I, observed the following:

- No prioritisation exercise was carried out by MoRTH for projects of NHIDCL and Road wing of MoRTH;
- MoRTH prioritised (November 2018) a length of 26,150 km⁴³ (including residual NHDP projects) to be developed by NHAI as per details below:

Table 3.6: BPP-I project prioritisation for NHAI

S.No.	Component of Bharatmala Pariyojana	High priority length (in km)	Medium priority length (in km)	Low priority length (in km)	Total
1	Economic Corridor	5,872	1,792	2,667	10,331
2	Inter-Corridor & Feeder Roads	3,591	1,351	3,068	8,010
3	National Corridors/National Corridors Efficiency Improvements Program	3,091	380	317	3,788
4	Green-field Expressways	2,070	0	0	2,070
5	Residual NHDP	976	441	534	1,951
Total		15,600	3,964	6,586	26,150

(Source: Minutes of optimisation exercised concluded in November 2018)

While analysing the prioritisation of NHAI, it was observed that:

- Nothing was available on record to indicate usage of any appropriate method such as ABC analysis, ranking system, or any other statistical tool for quantifying inter-se priority criteria, in tandem with criteria as approved by CCEA, so as to prioritise NHAI projects in an objective manner;
- No timelines were prescribed either for award or for completion of projects falling in any particular priority, rendering the priorities meaningless; and
- While reviewing, on test check basis, the high priority length of 5,872 km of Economic Corridors spread across 25 corridors, instances of non-development of six Economic Corridors having high priority length of 1,694 km were observed. Similarly, in case of high priority length of 3,091 km for 26 National Corridors/National Corridors Efficiency Improvements Program Stretches, instances of non-development of five National Corridors/National Corridors Efficiency Improvements Program Stretches having high priority length of 1,262 km were observed as detailed below:

⁴³ *Total length optimised for NHAI* : 70,950 km
(less) length already awarded/developed before approval of BPP-I : 34,972 km
(less) length awarded after approval of BPP-I but before completion of NHAI optimisation in November 2018 : 5,594 km
(less) optimised length of Border & International Connectivity Roads and Coastal & Port Connectivity Roads not prioritised due to dearth of traffic data for them : 4,235 km
Total : 26,149 km
Difference of 1 km requisitioned from management which was stated to be rounding off difference.

Table 3.7: Details of 11 Economic Corridors and National Corridors/National Corridors Efficiency Improvements Program stretches

S.No	Name of the Corridor/stretch	Component of BPP-I	Length identified as high priority (in km)	Length yet to be awarded ⁴⁴ upto March 2023 (in km)	Length where construction yet to be commenced upto March 2023 (in km)	Total length pending to be awarded upto March 2023 (in per cent)	Total length pending start of work upto March 2023 (in per cent)
a	b	c	d	e	f	g=e/d*100	h=f/d*100
1	Kandla-Bhopal	EC ⁴⁵	175	152	152	86.86	86.86
2	Solapur-Kurnool-Chennai	EC	479	10	196	2.09	40.92
3	Surat-Nashik-Solapur	EC	564	408	443	72.34	78.55
4	Bhopal-Kanpur	EC	122	-	49	-	40.16
5	Chennai-Madurai	EC	93	80	80	86.02	86.02
6	Indore-Nagpur	EC	261	3	66	1.15	25.29
7	Pune-Bengaluru	NC/NEIP ⁴⁶	343	15	49	4.37	14.29
8	Bengaluru-Chennai	NC/NEIP	386	158	193	40.93	50.00
9	Samkhiali-Palanpur (EW)	NC/NEIP	96	92	92	95.83	95.83
10	Chennai-Salem	NC/NEIP	277	277	277	100	100
11	Sikandra-Kanpur-Fatehpur	NC/NEIP	160	160	160	100	100
Total			2,956	1,355	1,757	45.84	59.44

(Source: Records provided by MoRTH/Management)

It can be seen from the above table that in case of 11 BPP-I corridors/stretchers as against their cumulative length of 2,956 km planned on high priority, length of 1,355 km was yet to be awarded upto March 2023 i.e., 45.84 per cent of high priority length of these corridors/stretchers. Further, work could not start, up to March 2023, on 1,757 km of national highways length i.e., 59.44 per cent of high priority length of these corridors/stretchers.

- In view of no policy being in place regarding the timelines and weightage for completion of corridors/stretchers falling in High/Medium/Low priority, Audit could not verify the prudence of decision to construct medium and low priority projects (as test checked and illustrated below) pending award/ commencement of work on 11 high priority projects, up to March 2023:
 - Economic Corridor from Raipur-Bilaspur-Dhanbad had medium priority length of 477 km out of which a length of 294 km has already been awarded upto March 2023;

⁴⁴ Presuming all lengths awarded are high priority lengths.

⁴⁵ Economic Corridors

⁴⁶ National Corridors/National Corridors Efficiency Improvements Program

- Economic Corridor from Surat-Amreli had medium priority length of 116 km out of which length of 44 km has already been awarded upto March 2023; and
- Considering Amritsar-Bhatinda-Jamnagar Economic Corridor (1,106 km) and Delhi-Vadodara Expressway (828 km) as competing road to Ludhiana-Ajmer Economic Corridor (478 km), the Economic Corridor from Ludhiana-Ajmer was given low priority as against High priority given to the two other corridors. However, as in March 2023, while the Amritsar-Jamnagar Economic Corridor and Delhi-Vadodara Expressway were fully awarded, a length of 101 km of Ludhiana-Ajmer Economic Corridor was also awarded.
- From Border & International Connectivity Roads and Coastal & Port Connectivity Roads components of BPP-I, MoRTH did not prioritise any project for NHAI, out of the total national highways length of 4,235 km to be awarded by NHAI post optimisation. The ground given for non-prioritisation under these components was non-availability of traffic data which was extraneous to the priority criteria approved by CCEA (Table 3.5). The above decision of MoRTH could impact the port led development and freight movement; and
- National highway projects with a length of 5,594 km were awarded, under BPP-I by NHAI, before prioritisation.

MoRTH did not furnish reply to the Audit observation.

3.5.2 Project-wise observations on prioritisation

The project-wise observations on prioritisation were as follows:

3.5.2.1 Alandi-Mohol (Pune-Solapur-Vijaywada Economic Corridor)

MoRTH prioritised (November 2018) to construct Alandi-Mohol Economic Corridor by dividing it in five projects⁴⁷. This section of NH-65 was prioritised as substitute to four lane Pune-Solapur section, on Pune-Solapur-Vijaywada Economic Corridor, on the ground that the latter had achieved optimal annual average daily traffic of 50,000 passenger car units and the

Picture 3.1: Alandi-Mohol



⁴⁷ Packages in which corridors or stretches have been divided for invitation of civil construction tenders.

stretch was under BOT (Toll). NHAI approved (February 2019 to November 2021) the construction of these five projects⁴⁸ with civil cost of ₹ 4,913.76 crore. The scheduled completion dates of these projects were falling between January 2022 to May 2024. These projects had achieved physical progress ranging between 21.02 per cent to 98 per cent as on 31 March 2023.

Audit observed that Alandi-Mohol section was earlier planned to be developed under National Highways (Original) scheme and it was not part of highways length of 74,942 km approved for Bharatmala Pariyojana. Further, the annual average daily traffic on the Pune-Solapur stretch was around 29,000 passenger car units, during the period from November 2017 to February 2020, which indicated that the Pune-Solapur section being operated under BOT (Toll) was under-utilised⁴⁹ and construction of any competing road in its vicinity would give rise to concessionaire's claim for losses or extension of concession period. This also indicated that at the time of prioritisation, no authentic data regarding traffic was available with MoRTH. Besides above, development of Alandi-Mohol section would result in under-utilisation of both the competing stretches as Alandi-Mohol section was to be developed as four lane highway taking the combined lane configuration to eight lanes. Against this, the traffic of 29,000 passenger car units in 2020, would rise to 60,000 passenger car units in the year 2035 only.

MoRTH reply (April 2022) was not specific to core Audit observation but was restricted to acceptance of the fact that Alandi-Mohol section was originally not part of Bharatmala Pariyojana alignments proposed to CCEA.

3.5.2.2 Dwarka Expressway

MoRTH prioritised (November 2018) the construction of Dwarka Expressway by dividing it into four projects. NHAI approved (January-March 2018) the construction of these four projects⁵⁰ with civil cost of ₹ 7,287.29 crore. The scheduled completion dates of these projects were falling between November 2020 to September 2022. These projects had achieved physical progress ranging between 60.50 per cent to 99.25 per cent as on 31 March 2023.

Dwarka Expressway was prioritised to de-congest NH-48 between Delhi to Gurugram by developing it into 14 lane⁵¹ national highway running parallel to NH-48 at per km cost of ₹ 250.77 crore as against CCEA approved per km cost of ₹ 18.20 crore. As per the project's feasibility study, the average daily traffic of 3,11,041 moving on NH-48 between Delhi to Gurugram consisted of 2,88,391 passenger vehicles (i.e., 92.72 per cent). Of these 2,32,959

⁴⁸ *Out of these five projects, one project has been selected for detailed review as sample project. However, this Audit observation pertains to complete Alandi-Mohol Economic Corridor.*

⁴⁹ *As per extant Indian Road Congress guidelines i.e., IRC 84 of 2014 the design service volume of a four lane national highway at Level of Service B was annual average daily traffic of 40,000 passenger car units and at Level of Service C was annual average daily traffic of 60,000 passenger car units. Six laning of a four-lane national highway was to be done when annual average daily traffic reached to 60,000 passenger car units.*

⁵⁰ *Out of these four projects, three projects have been selected for detailed review as sample projects. However, this Audit observation pertains to complete Dwarka Expressway.*

⁵¹ *Eight lanes elevated & six lane road at grade.*

passenger vehicles⁵² (i.e., 80.78 *per cent*) were inter-city traffic only i.e., the traffic not crossing the Kherki Daula Toll on NH-48 (Delhi-Gurugram traffic only which did not cross Gurugram boundary).

While reviewing the prioritisation of Dwarka Expressway under BPP-I, Audit observed the following:

- **Construction of elevated eight lanes for Dwarka Expressway**

(a) This project was initially planned by Haryana Government under its Gurugram Manesar Urban Construction Plan 2031 and for that purpose, it acquired right of way of 150 meter so as to construct main carriage way of 25 meter with seven meter wide median and also to provide dedicated utility corridor for trunk services. However, with no further progress being made by the Haryana Government, this project was later approved in BPP-I by CCEA. For this purpose, 90 meter right of way was handed over, by the Haryana Government, to NHAI free of cost. Audit observed that around up to 70-75 meter of right of way⁵³ was required to build 14 lane national highway at grade. However, for no reasons on record, the project highway in the Haryana region, where its length was 19 km, was planned with eight lane elevated main carriage way and six lane at grade road when NHAI already had 90 meter right of way and the same was sufficient for building 14 lane at grade national highway. Due to such massive structures, this project, constructed on EPC mode, for a length of 29.06 km⁵⁴ had sanctioned civil construction cost of ₹ 7,287.29 crore i.e., ₹ 250.77 crore/km as against per km civil construction cost of ₹ 18.20 crore approved by CCEA for National Corridors/National Corridors Efficiency Improvements Program under which this project was being constructed.

MoRTH replied (April 2022) that Dwarka Expressway was decided to be developed as an eight lane elevated corridor with minimal entry exit arrangements to allow smooth movements of inter-state traffic. As for six lane at grade road, this was effectively the six lane existing carriageway available to the local commuters prior to upgradation of road. Further, necessary underpasses dovetailed with requirement of local authorities were also incorporated to avoid future interventions. It further stated that this development plan required 90 meter right of way to ensure technical standards and meet criteria of road safety. Accordingly, based on discussions, the required right of way was provided by the Haryana Government free of cost to NHAI.

Reply of MoRTH may be viewed against the fact that construction of underpasses/flyovers at the intersection point of at grade highway could have been considered as a feasible option than constructing the whole of the eight lane main carriageway as elevated. In fact, in

⁵² 2,88,391 passenger vehicles, moving between Delhi & Gurugram, (minus) 55,432 passenger vehicles, moving at Kherki Daula toll plaza located at Gurugram border

⁵³ 14 lane of 3.75 meter each, 4.5 meter wide median on main carriageway plus two medians of 2.5 meter each for dividing main carriageway from service road plus 8 meter for two drains & two utility ducts (each with a width of 2 meter) on each side as per general typical cross-sections being approved for national highway projects and also as per the cross-section of at grade portion of Dwarka Expressway (Pkg.-IV).

⁵⁴ Included length of project highway in Haryana as well as Delhi region.

Dwarka Expressway itself, at one location⁵⁵ where the main carriageway was at grade, suitable underpass was being constructed to avoid traffic congestion. This could have mitigated the huge cost of building the whole stretch in Haryana region as elevated portion. Further, MoRTH did not counter the Audit observation that 14 lane national highway could have been built at grade in available 90 meter right of way.

- (b) As per feasibility report, average daily traffic of 55,432 passenger vehicles⁵⁶, besides freight vehicles, (2018) was travelling beyond Gurugram for larger distances and this traffic was to be shared between National Highway 48 and the eight lane elevated main carriage way of Dwarka Expressway. There was no justification on record for planning/construction of eight lanes (elevated lanes) for average daily traffic of 55,432 passenger vehicles, besides freight vehicles, whereas only six lanes (at grade lanes) were planned/constructed for average annual daily traffic of 2,32,959 passenger vehicles, besides freight vehicles.

MoRTH did not furnish reply to the Audit observation.

• **Toll on Dwarka Expressway**

Dwarka Expressway would bypass the NH-48 near Shiv Murti and connect National Highway 48 just before Kherki Daula Toll Plaza. As per plan, a toll plaza was planned at Delhi/Gurugram Border (Chainage 9.045 km) on Dwarka Expressway. In this regard, Audit observed that:

- (a) Due to per km civil cost for Dwarka Expressway coming to ₹250.77 crore and it being structure intensive project, management derived toll rate of ₹290 per car single trip, as per applicable rules, for recovering such huge capital expenditure over its design life as against ₹ 60 being charged from a car on the existing toll plaza at Kherki Daula on NH-48. However, considering the rate to be very high, MoRTH (June 2017) approved for tolling of Delhi-Gurugram section of NH-48, after buying back the concession⁵⁷ from existing concessionaire of NH-48, and Dwarka Expressway (NH-248BB) as a combined loop through Intelligent Transit System for section actually used by the commuter at the toll rates of existing NH-48. In this regard, Audit further observed that charging lower rate of toll, as decided by MoRTH, would not be in consonance with National Highway Fee Rules which prescribed higher toll rates for super structures like major and minor bridges as compared to linear road length because of the latter being less capital intensive. Also, charging of toll at low rates would be detrimental to recovery of the huge capital cost of Dwarka Expressway⁵⁸. On the other hand, charging of high toll rates, in order to cover high cost of this project, would again be detrimental to recovery of huge capital cost of the

⁵⁵ Basai road over bridge to Pataudi Road

⁵⁶ Moving at Kherki Daula toll plaza located at Gurugram border

⁵⁷ The road stretch from Dhaula Kuan (Delhi) to Kherki Daula is being tolled under BOT (Toll) mode at Kherki Daula toll. In order to commence toll on NH-48 between Delhi to Kherki Daula and Dwarka Expressway as combined loop, NHAI need to buy back the existing stretch being tolled under BOT. NHAI in its proposal to construct Dwarka Expressway, considered ₹500 crore as the buyback cost to be paid to concessionaire for terminating its concession.

⁵⁸ It was being constructed on EPC mode i.e., from Government financial support and market borrowings.

Dwarka Expressway due to diversion of traffic to non-tollable roads lying in its vicinity or to RRTS SNB⁵⁹ (discussed later in details);

- (b) Due to shifting of toll plaza from the existing Delhi-Haryana border on NH-48 to Kherki Daula, the commuters using NH-48 upto Kherki Daula were not paying toll. However, all the commuters using either the NH-48 or Dwarka Expressway would be tolled through Intelligent Transit system. It was done to make the Dwarka Expressway viable by avoiding traffic diversion to untolled portion of NH-48 starting from Delhi-Haryana border to Kherki Daula Border. Result of it was that hitherto, untolled commuters using NH-48 would also be tolled without there being any additional capital expenditure/facility development done along the existing NH-48 by NHAI;
- (c) To make the tolling of NH-48 up to Kherki Daula Border and Dwarka Expressway viable by considering as combined loop, NHAI has decided to buy-back, before completion of Dwarka Expressway, the concession of Kherki Daula Toll plaza at an estimated cost of ₹ 500 crore, thereby, further increasing the ₹ 250.77 crore per km cost of this project to that extent; and
- (d) The Upper Dwarka Expressway (75 meter) already existed and was running parallel along the Package III of Dwarka Expressway in near vicinity. Upper Dwarka Expressway which was also well connected to Delhi was not being tolled by the Haryana Government.

MoRTH replied (April 2022) that Upper Dwarka Expressway did not have any proper connectivity to Delhi and it was parallel/competing road to the at grade roads of Dwarka Expressways which were not to be tolled as per existing fee rules.

Reply of MoRTH may be viewed against the fact that the local traffic moving between Delhi and Kherki Daula (Haryana) would have the option to use either NH-48 or Dwarka Expressway or the existing State Road of Upper Dwarka Expressway which was well connected with Delhi and Gurugram. The planned toll location for Dwarka Expressway was at Delhi/Gurugram Border (Chainage 9.045 km) which was intersecting both the elevated portion and at grade portion of Dwarka Expressway. Hence, all traffic passing from Delhi-Gurugram border would be bound to pay toll. In view of NH-48 and Dwarka Expressway being toll road and Upper Dwarka Expressway, the non-toll road, running parallel to Dwarka Expressway in Haryana region, it could incentivise traffic to shift from the national highway to Upper Dwarka Expressway resulting in toll loss. Further, the users moving between Delhi to Gurugram but before Kherki Daula toll were until now not required to pay toll. However, under the new system, they would also be tolled.

- **Consideration of competing infrastructure**

Indian Road Congress Manual on Economic Evaluation of Highway Projects in India (30 of 2009) provided for economic analysis of requirement of any project from a national point of view rather than restricting it to one's own wing and to determine whether the benefits of a particular infrastructure were reaped by the general public. The National Urban Transport Policy 2014, of Government of India, also emphasised the need of comprehensive mobility

⁵⁹ *Rapid Rail Transit System Shahjahanpur-Neemrana-Behror*

plan for urban transportation by considering various services and modes of urban transportation, roads and related infrastructure and other related matters such as planning, coordination and licensing.

Picture 3.2: Existing Infrastructure from Delhi to Gurugram



Dwarka Expressway was prioritised with 14 lane configuration, besides existing eight lanes of NH-48 taking the total available national highway lane configuration to 22. In disregard of IRC 30 of 2009, the lane configurations of Dwarka Expressway were planned ignoring the parallel infrastructure being created in RRTS SNB from Delhi to Alwar⁶⁰ in respect of which, Audit observed the following:

- Alignment of RRTS was along the alignment of existing NH-48 and its proposed stations including stations at Aero City and Kherki Dhaula i.e., near the starting point and end point of Dwarka Expressway;
- This major development was existing at the time of feasibility study of expressway but the same was not considered by the management while deciding its lane configurations;
- No composite analysis of Dwarka Expressway after considering the impact of RRTS SNB was prepared in spite of both these projects being green-field projects without their own existing traffic and with major possibility of them diverting the traffic from same source i.e., local traffic plying on NH-48. Thus, viability of both projects was interdependent; and

⁶⁰ Ministry of Urban Development and National Capital Region Planning Board signed memorandum of understanding with State Governments in the year 2011 for implementation of commuter transit projects in national capital region. Accordingly, feasibility report of RRTS SNB from Delhi to Alwar via Rewari was conducted and the economic benefits in terms of reduced CAPEX on road infrastructure, reduction in pollution, diversion of traffic etc., have been projected.

- The feasibility study of RRTS SNB itself was claiming that with construction of RRTS SNB, there would be diversion of traffic leading to reduction of capex on road infrastructure.

MoRTH replied (April 2022) that the national highway and RRTS SNB were different modes of transport which catered to different end users and were complementary and non-competitive as national highway catered to heavy loaded long-distance traffic (including logistics) plying while RRTS SNB was a mass rapid transit system for fast movement of people/ passengers without any provisions for transportation of logistics. It further stated that the alignment of RRTS SNB along existing NH-48 was formalised only in 2019, after finalisation of alignment and completion of feasibility study of Dwarka Expressway in 2017.

Reply of MoRTH may be viewed against the fact that as per the project's own feasibility study, the traffic (average daily traffic of 3,11,041) moving on NH-48 between Delhi to Gurugram consisted of 2,88,391 passenger vehicles which catered to people/passenger traffic and of this 2,32,959 passenger vehicles were intercity traffic only. Thus, RRTS SNB could be a substitute/competing mode of transportation for traffic plying intercity. Further, after signing of Memorandum of Understanding (29 June 2011) between Ministry of Urban Development, National Capital Region Planning Board and State Government of Delhi, Haryana, Rajasthan and Uttar Pradesh, the plan for development of RRTS was in public domain and should have been considered.

- **Pavement designs of at grade road**

- (a) As per Dwarka Expressway's feasibility report, average daily traffic of 2,25,833 vehicles (2018) was intercity traffic moving between Delhi-Gurugram⁶¹ and the same was expected to be shared between NH-48 and at grade six lane road of Dwarka Expressway.

Picture 3.3: Heavy construction material on Dwarka Expressway



However, six lane at grade road of Dwarka Expressway was planned for lower Million Standard Axles⁶² of 20 resulting in sub-optimal pavement thickness with such high average

⁶¹ This traffic would move between Delhi-Gurugram limits only.

⁶² It is numerical measurement, defined in millions, as to number of standard axles i.e., predetermined unit of load of vehicle, which would ply on the road during its design life. It is used for deciding the strength of the pavement.

daily traffic expected on this road. In fact, the Million Standard Axles considered for at grade road⁶³ of Dwarka Expressway was equivalent to Million Standard Axles of Munabao-Tanot where meagre traffic of 1,572 existed in 2017 while the other Delhi-NCR project viz., Delhi-Meerut Expressway was planned for 60 Million Standard Axles. Management also failed to consider the fact of road project being developed in Delhi-NCR falling between Gurugram and Delhi where heavy construction lorries with material and machinery were/would be moving on 20 Million Standard Axles road, due to heavy infrastructure development planned/going on at Dwarka Expressway and its vicinity.

- (b) Feasibility report considered the pavement design of six lane at grade road based on California Bearing Ratio⁶⁴ value of eight *per cent*. However, the contractor, taking higher⁶⁵ California Bearing Ratio value, designed the pavement with such layers that it made savings of 10 mm in bitumen concrete, 35 mm in dense bitumen macadam and 50 mm to 135 mm in wet macadam mix, due to which, it was able to construct the project economically. Had management considered higher California Bearing Ratio based on site conditions then the project civil cost estimates would have been more competitive.

MoRTH did not furnish reply to the Audit observation.

- **No detailed project report**

The individual projects of Dwarka Expressway were appraised (December 2017/February 2018) by Project Appraisal & Technical Scrutiny Committee and approved (January/March 2018) by NHAI Board without any detailed project report for the project being prepared (not prepared till date) and even the final feasibility report of the project was submitted (September 2018) after approval of the project by NHAI.

Audit observed that the four projects of Dwarka Expressway were appraised and approved by Competent Authority based on a brief presentation by concerned technical division of NHAI. Thus, Dwarka Expressway was appraised and approved without any detailed project report. Effects of non-preparation of detailed project report were manifested in following ways:

- In spite of sufficient right of way being available with NHAI for constructing all 14 lanes of Dwarka Expressway at grade, for no reasons on record, it was being constructed with eight lane elevated road and six lane at grade road resulting in a very high per km civil cost of ₹ 250.77 crore for this project;
- The planned toll rates and tolling mechanism of Dwarka Expressway might hinder the recovery of capital cost of the project and might also result in undue financial burden on commuters moving between Delhi-Gurugram (upto Kherki Daula toll plaza);
- Lane configurations of Dwarka-Expressway were determined without analysing the development of competing infrastructure in the form of development of RRTS SNB;
- In spite of heavy Delhi-Gurugram traffic, which was expected to use the six lane at grade portion of this project falling in Haryana region, this at grade portion was being constructed

⁶³ *Non-elevated road which is not separated from ground.*

⁶⁴ *It is measure of the strength of the soil sub-grade.*

⁶⁵ *Eight per cent to 15 per cent*

with sub-optimal specifications of 20 Million Standard Axles traffic; and

- California Bearing Ratio value of soil estimated, in feasibility study of Dwarka Expressway, was on lower side as compared to California Bearing Ratio value considered by contractor resulting in savings to the contractor in the cost of construction.

MoRTH replied (April 2022) that the project of Dwarka Expressway was given to M/s AECOM (lead partner in association with other members) as a variation to consultancy services for preparation of feasibility report of green-field Delhi-Jaipur Expressway. There was no provision for detailed project report in the existing consultancy services. However, it may be noted that with the advent of model EPC Agreement, the detailed design of the project has been included in the scope of the EPC contractor. Accordingly, the feasibility report containing good for tender drawings⁶⁶ were sufficient for invitation of bids and appraisal of the project.

Reply of MoRTH regarding feasibility report containing good for tender drawing being equivalent to detailed project report was in contravention to its own Standard Operating Procedure (December 2017) for BPP-I which stated that detailed project reports presented the outline/layout for any project and hence should be prepared judiciously keeping in mind the latest technologies available and good quality detailed project reports were key for timely and economical construction of quality projects. In fact, considering the importance of good detailed project reports, MoRTH, through Standard Operating Procedure, assigned additional duty to NHAI to develop a detailed guidance document for detailed project report consultant to ensure quality design and quality detailed project report preparation including topics on the use of technology in detailed project report, standard designs for structures, guidelines for access control etc. However, no such detailed guidance document was prepared by NHAI.

3.5.2.3 Delhi-Mumbai Expressway

MoRTH, while optimising (November 2018) national highways length to be developed under BPP-I, decided to develop stretch from Delhi to Mumbai comprising Delhi-Vadodara Expressway and Vadodara-Mumbai Expressway as eight lane Green-field Expressway expandable to 12 lanes configurations in future. Delhi-Vadodara Expressway was being developed under EPC mode of construction while the Vadodara-Mumbai Expressway was being developed under HAM mode of construction. Alternate routes/mode of transportation available for traffic especially freight traffic moving from Northern India to Western India (towards ports of Mumbai-Jawaharlal Nehru Port Trust and Kandla) is pictorially depicted below. The alternatives include four existing road alignments (Route 1, Route 2, Route 3⁶⁷ and

⁶⁶ *The broad drawings forming part of tender documents.*

⁶⁷ *The three routes were carved from existing national highways and state highways for the purpose of proposing cost-benefit analysis of Delhi-Vadodara Expressway to NHAI Board, as detailed below:*

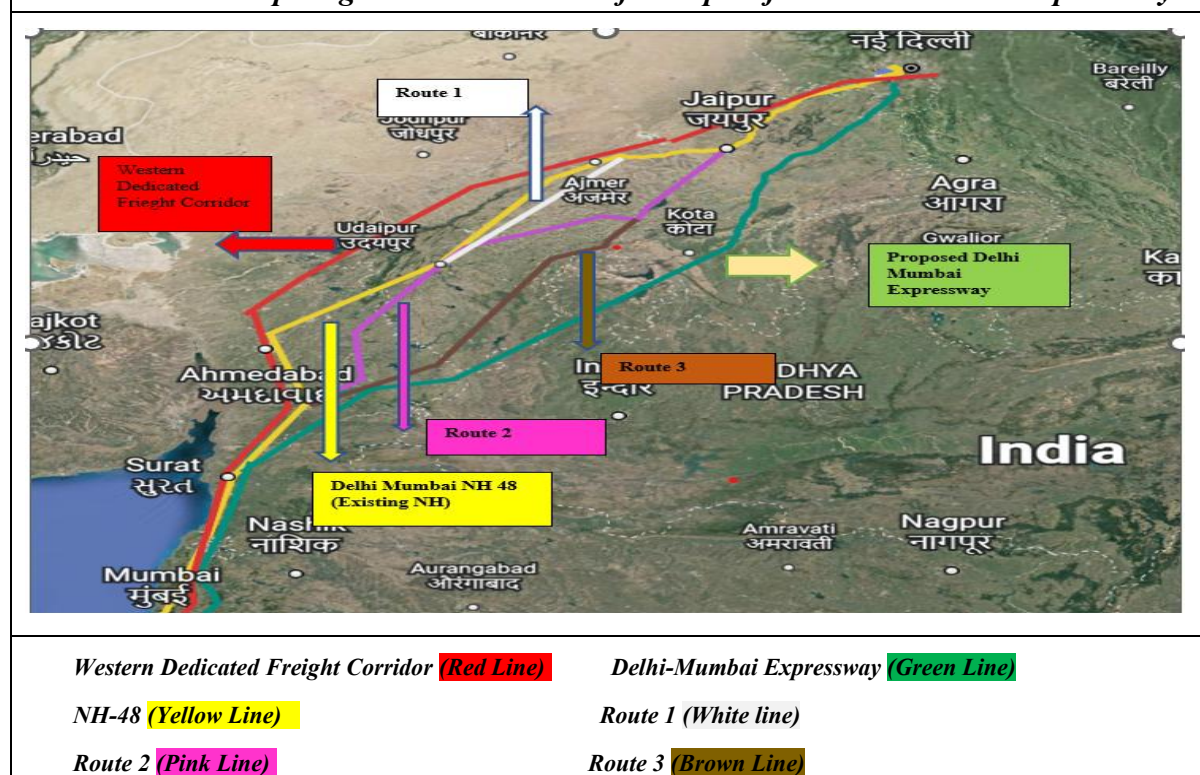
Route 1: Delhi-Jaipur-Kishangarh-Udaipur-Shamlaji-Modassa-Godhra-Halol-Vadodara.

Route 2: Delhi-Jaipur-Deoli-Jahazpur-Shahpura-Mandal-Bhilwara-Rajasmand-Udaipur-Shamlaji-Modassa-Godhra-Halol-Vadodara.

Route 3: Delhi-Jaipur-Deoli-Baroo Khera- Ladpura-Chittorgarh-Limdi-Limkheda-Godhra-Halol-Vadodara.

NH-48), one new road alignment viz., Delhi-Mumbai-Expressway (DME) and one green-field Rail Alignment⁶⁸ viz., Western Dedicated Freight Corridor (WDFC).

Picture 3.4: Competing routes and modes of transport for Delhi-Mumbai Expressway



Delhi-Vadodara Expressway

Delhi-Vadodara Expressway was prioritised (November 2018) by MoRTH as high priority Expressway. NHAI Board⁶⁹ approved (December 2018) to construct Delhi-Vadodara Expressway with civil cost of ₹ 32,839 crore and pre-construction cost of ₹ 11,209.21 crore by dividing the corridor under 31 projects⁷⁰. The scheduled completion dates of these projects were falling between September 2021 to February 2024. These projects had achieved physical progress ranging between 13.70 per cent to 100 per cent⁷¹ as on 31 March 2023.

Regarding prioritisation of the lane configuration of Delhi-Vadodara Expressway, Audit observed the following:

⁶⁸ Besides existing rail network.

⁶⁹ NHAI Board was Chaired by Chairman, NHAI and its other members were CEO- NITI Aayog, Secretary- MoRTH, DG(RD)&SS-MoRTH, Member (Administration)-NHAI, Member (Finance)-NHAI, Member (Technical)-NHAI and two Member (Projects)-NHAI.

⁷⁰ Out of these 31 projects, four projects have been selected for detailed review as sample projects. However, this Audit observation pertains to complete Delhi-Vadodara Expressway.

⁷¹ Out of 31 projects, four projects had physical progress upto 50 per cent, seven projects had physical progress ranging between 50 per cent to 90 per cent while remaining 20 projects had physical progress above 90 per cent, as on 31 March 2023.

(i) Cost-benefit analysis

NHAI Board approved Delhi-Vadodara Expressway based on a cost-benefit analysis whereby development of the eight-lane Green-field Expressway was compared against the development of three existing routes i.e., Route 1, 2 and 3 (having existing lane configurations of two lanes to six lanes) into six lanes configuration for two of these routes and six lane access controlled⁷² configuration for one route. This cost-benefit analysis was deficient in the following ways:

(a) Lane analysis

Annual average daily traffic of 40,000 passenger car units was projected to ply on Delhi-Vadodara Expressway from its commercial operation date (February 2024) and traffic was to increase further with annual traffic growth of five *per cent*⁷³. The estimated civil cost for construction of Delhi-Vadodara Expressway with different lane configuration was as follows:

Table 3.8: Cost comparisons for different lane configurations of Delhi-Vadodara Expressway

Lane options	Design service volumes as per IRC 99 of 2013 (at six <i>per cent</i> peak hour traffic) (Annual average daily traffic in passenger car units)	Tentative year of requirement after reaching the design service volume of previous lanes configuration ⁷⁴	Years after which corresponding lanes would be required (from Commercial Operation Date) after reaching the design service volume of previous lanes configuration	Estimated civil cost of construction ⁷⁵ (₹ in crore)
Four	86,000	-	-	16,419.50
Six	1,30,000	2040	15	24,629.25
Eight	173,000	2049	24	32,839.00

(Source: IRC 99 of 2013 Manual and data furnished by NHAI)

Considering this and the fact that as per extant Indian Road Congress guidelines, for an eight lane expressway, annual average daily traffic of 1,30,000 passenger car units (at six *per cent* peak hour traffic) was required, the eight lane infrastructure constructed would remain underutilised for 24 years from its commercial operation date. Similarly, considering the fact that as per extant Indian Road Congress guidelines, for a six lane expressway, annual average daily traffic of 86,000 passenger car units (at six *per cent* peak hour traffic) was required, even a six lane infrastructure created would have remained underutilised for 15 years from its commercial operation date. This idling of national highway infrastructure and associated costs was not considered in cost-benefit analysis. Decision of MoRTH (November 2018) and NHAI Board (December 2018) to construct eight lane expressway expendable to 12 lanes without the

⁷² With limited exit/entry points

⁷³ Considered in this analysis and being taken in all detailed project reports across NHAI unless conditions specifically warrant otherwise.

⁷⁴ Considering traffic of 40,000 passenger car units at the time of commercial operation date of February 2024 with annual growth rate of 5 *per cent*.

⁷⁵ Computed on prorata basis by taking estimated civil cost for eight lane Delhi-Vadodara Expressway as ₹32,839 crore.

detailed project reports of Delhi-Vadodara Expressway finalised till that date⁷⁶ would have been a contributory factor for the detailed project report consultants not analysing the feasibility of constructing Delhi-Vadodara Expressway with lesser lane configurations.

Furthermore, no analysis was done by NHAI regarding likely expenditure in respect of maintenance and operation cost of a four lane, six lane and eight lane Green-field Expressway respectively.

MoRTH/NHAI could have considered the option of limiting the configuration of lanes at present to what was feasible as per IRC specification and acquiring only the land in line with the configuration for construction of higher lanes so that extra lanes can be constructed in future as and when optimal traffic was expected to ply on them.

MoRTH replied (April 2022) that traffic on the project highway was anticipated to be more than 40,000 passenger car units on commercial operation date of the project highway and to cater to 40,000 passenger car units, eight lane access control highway with further expansion to 12 lanes configuration, as per the future traffic requirement in terms with decision taken by MoRTH in its meeting⁷⁷ dated 12 March 2018 has been considered.

Reply of the MoRTH may be viewed against the fact that the required cost-benefit analysis to compare deliverables and cost in respect of four lanes, six lanes and eight lanes configurations respectively was not done by NHAI and considering the traffic of 40,000 passenger car units on commercial operation date, the eight lane infrastructure and six lane infrastructure of this project would remain underutilised upto 2048 and 2039 respectively. Further, construction of eight lane Green-field Expressway on the basis of decision of MoRTH taken on 12 March 2018 needs to be viewed in the following context:

- The Level of Service⁷⁸ expected by Indian Road Congress guidelines was equivalent to the Level of Service expected by MoRTH's decision of 12 March 2018 thereby giving same Level of Service to the users;
- Construction of national highways with richer specifications (as envisaged in decision of MoRTH dated 12 March 2018) is one of the significant contributing factors in expansion of financial outlay of BPP-I by more than two times of the CCEA approved financial outlay of ₹ 5,35,000 crore which was against the directions of CCEA to restrict the financial outlay within the approved limits;
- Construction of national highways with higher lanes configuration would result in higher maintenance and operation cost;

⁷⁶ *Final detailed project reports were approved after December 2018*

⁷⁷ *MoRTH, in its meeting dated 12 March 2018, redefined the lane requirements based on traffic for Economic Corridors and Inter-Corridor & Feeder Roads being developed under BPP-I.*

⁷⁸ *Qualitative measures viz., speed, travel time, freedom to manoeuvre, traffic interruption, comfort, convenience & safety, describing operational conditions with a traffic stream and their perception by drivers/passengers. There are six Level of Services described by Indian Road Congress viz., A: free flow of traffic, B: stable flow of traffic having average speed of 70 per cent of what is in Level of Service A, C: stable flow of traffic having average speed of 50 per cent of what is in Level of Service A, D: stable flow of traffic having average speed of 40 per cent of what is in Level of Service A, E: usually unstable flow of traffic having average speed of 33 per cent of what is in Level of Service A and F: zone of forced or breakdown flow with average speed between 25 per cent to 33 per cent of what is in Level of Service A.*

- The decision (March 2018) of MoRTH was taken in an internal meeting of MoRTH and NHAI without any technical and financial analysis, bypassing the well-defined existing Indian Road Congress guidelines which were deliberated upon by various expert committees, over a period of time, and approved by Indian Road Congress Council which comprised experts from various fields viz., MoRTH, NHAI, State Public Works Departments, Central Public Works Department, Central Road Research Institute, Border Road Organisation, private experts etc.; and
- The decision (March 2018) of MoRTH was anyways not made applicable to Green-field Expressways.

(b) Counter claims of concessionaires on existing/competing routes

The cost-benefit analysis did not consider the cost of claims on account of loss of toll revenue/increase in concession period/buyback of concession due to diversion of traffic on Green-field Expressway from existing NH-48 as a major portion of it was under BOT concession viz., Jaipur-Tonk-Deoli, Kishangarh-Ajmer-Beawer, Ahmedabad-Vadodara, where concession periods were to lapse between 2027-37. Even before this green-field corridor, the concessionaire of Ahmedabad-Vadodara project was claiming loss of toll revenue and to compensate this shortfall in toll revenue, NHAI granted (6 June 2014) deferment of premium amounting ₹1,739.37 crore for 11 years and the construction of this new alignment would further strengthen its claim.

MoRTH replied (April 2022) that concession periods of existing concessionaires of Delhi-Mumbai routes were nearing completion by 2022-24 and would match with the completion schedule of the Delhi-Mumbai Expressway, hence it would not affect the tolling revenue of competing stretches.

Reply of MoRTH may be viewed considering the fact that during test check of concession period of a few projects on Delhi-Mumbai corridor such as Kishangarh-Ajmer Beawer, Jaipur-Tonk-Deoli, Ahmedabad-Vadodara, it was observed that their concession period would end in the year 2027, 2035 and 2037 respectively. Further, the concessionaire, under article 29.1.2 of the BOT (Toll) concession agreement, was eligible for extension of concession period in case of reduction in target traffic irrespective of whether it was due to diversion of traffic to competing road or not. Besides this, NHAI has already been granting various benefits in the form of deferment of premium due to shortfall in subsistence revenue viz., in case of Ahmedabad-Vadodara.

(c) Assumption for leviable toll rate in cost-benefit analysis

An appropriate toll rate was a key parameter in the viability analysis. However, the same was not correctly ascertained for comparative analysis in case of Delhi-Vadodara Expressway. For instance, in case of Yamuna Expressway and Mumbai-Pune Expressway which were already operational, the toll rate was ₹2.50 and ₹2.85 per passenger car unit per km respectively. Similarly, in case of under-construction Vadodara-Mumbai Expressway, which was subsequent continuous stretch of Delhi-Vadodara Expressway, NHAI assumed toll rate of

₹ 2.18 per passenger car unit per km (1.8 times the toll rate applicable on NH⁷⁹-48) as against the toll rates assumed for Delhi–Vadodara Expressway viz., ₹1.20 per passenger car unit per km which was almost at par with toll rates for Route 1 which was not an expressway. As capital cost was to be recovered by way of levying user fee on the expressway, charging of lower rate of user fee would result in non-recovery of capital cost resulting into burden on exchequer/ public due to it being funded through scarce budgetary support/borrowed funds. On the other hand, any unreasonable increase in user fee would discourage diversion of traffic to this green-field alignment, thereby making the project unviable.

MoRTH replied (April 2022) that benefit envisaged after conducting cost-benefit analysis for developing Green-field Expressway over augmentation of existing highway, were reduction in length from existing 979 km to 889 km, incurrence of net present value savings of over ₹ 30,000 crore over 20 years and brown-field expansion requiring significantly higher cost and time overrun due to displacement of larger human settlements. Two folded saving would accrue viz., saving in time due to increase of design speed from 100 km/hour to 120 km/hour and saving in annual fuel by ₹1,500 crore.

MoRTH reply is silent on underestimation in the cost-benefit analysis of the probable toll rates to be charged on Delhi-Vadodara Expressway. The reasonable toll rates assumption was necessary for recovering the huge capital expenditure done on this project and also to divert the optimal traffic to this Green-field Expressway. The computations of net present value savings of Green-field Expressway over brown-field expansion were mainly based on the difference of road length between the two options but without considering the actual traffic expected on these two options thereby making the claims of savings in net present value unverifiable.

(d) Environmental factors in Delhi-Vadodara Expressway

Cost-benefit analysis highlighted the risk in choosing the alternate proposition of developing three brown-field stretches by stating that it required felling of around 8,700 trees. However, no such analysis regarding trees to be felled for green-field Delhi-Vadodara Expressway was incorporated in cost-benefit analysis. Audit, while reviewing Delhi-Vadodara Expressway, observed that in case of 20 out of 31 projects, spread across three States viz., Haryana, Rajasthan and Madhya Pradesh, a total of 74,778 trees were felled or identified to be felled.

No analysis was carried out on environmental impact for fresh acquisition of total right of way of 9,441.02 hectares for Green-field Expressway which included acquisition of 556.76 hectares of forest land. In case of 20 packages alone, as test checked by Audit, acquisition of fertile agricultural land measuring 3,875.48 hectares was proposed/done.

MoRTH replied (April 2022) that alignment of Delhi-Vadodara Expressway was chosen with due approval of the statutory authorities of State & Centre keeping in mind bare minimum diversion of forest land, felling of trees, safeguards for wildlife movement and conservation of water bodies & social issues etc. Applicable statutory clearances were obtained as per

⁷⁹ Average toll rate per km being currently charged on it was ₹1.21, hence, its 1.80 times come to be ₹2.18.

respective Acts, Rules, guidelines and provisions. Development of this corridor would enhance the quality of wildlife habitat and forest cover.

MoRTH's reply needs to be seen in the context that while submitting the cost-benefit analysis for selection of Green-field Expressway over the existing three brown-field stretches, no analysis of trees which were to be cut in Delhi-Vadodara Expressway and fertile land to be acquired for the same was included and presented before the approving Authority to enable it to make an informed choice holistically, considering the environmental factors.

(ii) Consideration of competing infrastructure

(a) Western Dedicated Freight Corridor (WDFC)⁸⁰

It was being developed, with estimated cost of ₹ 38,722 crore and was expected to be commissioned by March 2024. It was planned for de-congesting the existing highways network⁸¹ and to promote shifting of freight traffic⁸², bound between Ports at Mumbai and Gujarat to inland container depots located in Northern India, to rail transport. However, before prioritising/planning of Delhi-Vadodara Expressway, no pre-analysis was done regarding the impact of development of WDFC on Delhi-Vadodara Expressway including diversion of freight traffic to WDFC.

MoRTH replied (April 2022) that while WDFC might play a critical role in shifting of freight traffic to rail, the development of logistics infrastructure required augmentation of highways connectivity which, through green-field alignment would not only result in optimal alignment resulting in superior speed but would also accrue development to the nation through increased societal economic and environmental development.

Reply of MoRTH may be viewed against the fact that cost-benefit analysis did not consider WDFC regarding diversion of freight traffic from existing national highways network and its impact on projected traffic on Delhi-Vadodara Expressway. Construction of WDFC and resultant freight traffic diversion to it, could have been a relevant input while planning the lane configuration of Green-field Expressway. Cost-benefit analysis also did not consider, the probable freight charges and operation cost of WDFC before arriving at the chargeable toll rates for Delhi-Vadodara Expressway in its cost-benefit analysis.

(b) Development of two new national highways

MoRTH, while prioritising national highway projects for NHAI, gave low priority to Ludhiana-Ajmer Economic Corridor on the ground that it was a competing road to another Economic

⁸⁰ *Government launched (2005) the program for construction of dedicated railway freight corridors along Golden Quadrilateral. Accordingly, a government company (SPV) was formed (2006) namely Dedicated Freight Corridor Corporation of India Limited (DFCCIL).*

⁸¹ *WDFC had rail alignment parallel to existing NH-48 and its major alignment passes through Delhi, Jaipur, Ahmedabad, Vadodara, Surat and JNPT (Mumbai). Delhi- Vadodara Expressway was also planned to de-congest NH-48.*

⁸² *As an outcome of WDFC, the rail share of container traffic on this corridor was expected to increase from 0.69 million TEUs (Twenty-Foot Equivalent Unit) in 2005-06 to 6.2 million TEUs (i.e., increase of 798.55 per cent) in 2021-22 and freight of other commodities was projected to increase from 23 million tonnes in 2005-06 to 40 million tonnes (i.e., increase of 73.91 per cent) in 2021-22.*

Corridor viz., Amritsar-Bhatinda-Jamnagar⁸³ planned to be developed on high priority under BPP-I. Ludhiana-Ajmer Economic Corridor was also a competing road to Delhi-Vadodara Expressway. Audit observed that up to 31 March 2023, all the 31 projects of Delhi-Vadodara Expressway have been awarded at a cost of ₹ 28,539 crore and at the same time 34 projects of Amritsar-Jamnagar Economic Corridor (1,079 km) have also been awarded with cost of ₹ 18,348 crore. Furthermore, the competing Ludhiana-Ajmer Economic Corridor has been awarded for length of 101 km at a cost of ₹ 2,242 crore up to 31 March 2023. In the absence, of any timelines and mechanism being decided by MoRTH in regard to award and construction of national highways length falling under different priorities and especially the competing roads, Audit could not validate whether the construction of three national highways were optimally planned.

MoRTH did not furnish reply to the Audit observation.

(iii) CCEA approval

Delhi-Vadodara Expressway was not included in the national highways length of 74,942 km approved (October 2017) by CCEA for Bharatmala Pariyojana. During optimisation/prioritisation exercise, MoRTH selected Delhi-Vadodara Expressway as a substitute to following alignments approved by CCEA.

Table 3.9: Alignments substituted by Delhi-Vadodara Expressway

S.No.	Pre-optimisation			Post-optimisation		
	Component	Corridor	Length (km)	Component	Corridor	Length (km)
1	Green-field Expressways	Delhi-Jaipur	240	Green-field Expressways	Delhi-Vadodara	845
2	National Corridors/National Corridors Efficiency Improvements Program	Jaipur-Kishangarh	100			
3	Economic Corridors	Jaipur-Kota	270			
4	Inter-Corridor Roads	Limkheda-Amarholi-Ratlam	160			
5	Inter-Corridor Roads	Vadodara-Halol-Godhra	80			
	Total		850			

(Source: Minutes of optimisation concluded in November 2018)

Audit observed that the above five origin-destination pairs approved by CCEA were identified after ground surveys and analysis of infrastructure gaps based on geo-mapping. As per site requirements, these were planned under four different components of BPP-I. These five alignments were not substituted due to any difficulty in alignment finalisation, land availability or any other unforeseen factor as allowed by CCEA for substitution/replacement. The five alignments as approved by CCEA were substituted on grounds for construction of Delhi-Vadodara Expressway which was not even falling under the list of 74,942 km length approved by CCEA for Bharatmala Pariyojana. However, the provisions of substitution as proposed to

⁸³ As per optimisation report of MoRTH, the Ministry has admitted that Ludhiana-Ajmer corridor is a competing corridor for Amritsar-Bhatinda-Jamnagar EC.

CCEA did not clarify as to whether inter-component substitution was allowed or not and as to whether for substitution, fresh national highways length not forming part of 74,942 km approved by CCEA could be utilised.

MoRTH did not furnish reply to the audit observation.

Vadodara-Mumbai Expressway

Vadodara-Mumbai Expressway, approved (October 2017) by CCEA, was prioritised by MoRTH in November 2018. MoRTH approved (February 2018 to September 2021) to construct eight lane green-field Vadodara-Mumbai Expressway with an awarded cost of ₹ 27,506.76 crore and pre-construction cost of ₹ 17,459.70 crore by dividing the corridor under 17 projects⁸⁴. The scheduled completion dates of these projects were falling between January 2021 to March 2024⁸⁵. These projects had achieved physical progress ranging between 2.50 per cent to 99.96 per cent⁸⁶ as on 31 March 2023.

Annual average daily traffic of 40,000 passenger car units was projected to ply on Vadodara-Mumbai Expressway from its commercial operation date and that traffic was to increase further with annual traffic growth of five per cent⁸⁷. The estimated awarded cost for construction Vadodara-Mumbai Expressway with different lane configuration was as follows:

Table 3.10: Cost comparisons for different lane configurations of Vadodara-Mumbai Expressway

Lane options	Design service volumes as per IRC 99 of 2013 (at six per cent peak hour traffic) (Annual average daily traffic in passenger car units)	Tentative year of requirement after reaching the design service volume of previous lanes configuration ⁸⁸	Years after which corresponding lanes would be required (from COD) after reaching the design service volume of previous lanes configuration	Awarded cost of construction ⁸⁹ (₹ in crore)
Four	86,000	-	-	13,753.38
Six	1,30,000	2040	15	20,630.07
Eight	173,000	2049	24	27,506.76

(Source: IRC 99 of 2013 Manual and data from NHAI)

Considering it and the fact that as per extant Indian Road Congress guidelines, for an eight-lane expressway annual average daily traffic of 1,30,000 passenger car units (at six per cent

⁸⁴ Out of these 17 projects, three projects have been selected for detailed review as sample projects. However, this Audit observation pertains to complete Vadodara-Mumbai Expressway.

⁸⁵ This data is for 15 projects only as for remaining two projects the appointed date was not fixed upto 31 March 2023.

⁸⁶ Out of 15 projects for which appointed date was fixed before 31 March 2023, 11 projects had physical progress upto 50 per cent while remaining four projects had physical progress of more than 90 per cent upto 31 March 2023.

⁸⁷ Being taken in all detailed project reports across NHAI unless conditions specifically warrant otherwise.

⁸⁸ Considering traffic of 40,000 passenger car units at the time of commercial operation date of February 2024 with annual growth rate of 5 per cent)

⁸⁹ Computed on prorata basis by taking awarded cost for eight lane Vadodara-Mumbai Expressway as ₹27,506.76 crore.

peak hour traffic) was required, so eight lane infrastructure created would remain underutilised for 24 years from its commercial operation date. Similarly, considering the fact that as per extant Indian Road Congress guidelines, for a six lane expressway, annual average daily traffic of 86,000 passenger car units (at six *per cent* peak hour traffic) was required. Thus, even a six lane infrastructure constructed would have remained underutilised for 15 years from its commercial operation date. The idling of national highway infrastructure and associated costs incurred was not analysed by NHAI.

Furthermore, no analysis was done by NHAI regarding likely expenditure in respect of maintenance and operation cost of a four lane, six lane and eight lane Green-field Expressway respectively.

MoRTH/NHAI could have considered the option of limiting the configuration of lanes at present to what is feasible as per IRC specification and acquiring only the land in line with the configuration for construction of higher lanes so that extra lanes can be constructed in future as and when optimal traffic was expected to ply on them.

Vadodara-Mumbai Expressway lane configuration was prioritised by ignoring guidelines of IRC 30 of 2009, as construction of competing infrastructure of WDFC could result in diversion of freight traffic to WDFC, which could result in further deferring the requirement of eight lanes/six lanes for Vadodara-Mumbai Expressway as per IRC specifications.

MoRTH replied (April 2022) that traffic on the project highway was anticipated to be more than 40,000 passenger car units on commercial operation date of the project highway and to cater to 40,000 passenger car units, eight lane access control highway with further expansion to 12 lanes configuration, as per the future traffic requirement in terms with decision taken by MoRTH in its meeting⁹⁰ dated 12 March 2018 has been considered.

Reply of the MoRTH may be viewed against the fact that the required cost-benefit analysis to compare deliverables and cost in respect of four lanes, six lanes and eight lanes configurations respectively was not done by NHAI and considering the traffic of 40,000 passenger car units on commercial operation date eight lane infrastructure and six lane infrastructure of this project would remain underutilised upto 2048 and 2039 respectively. Further, construction of eight lane Green-field Expressway on the basis of decision of MoRTH taken on 12 March 2018 needs to be viewed in the following context:

- The Level of Service expected by Indian Road Congress guidelines was equivalent to the Level of Service expected by MoRTH's decision of 12 March 2018 thereby giving same Level of Service to the users;
- Construction of national highways with richer specifications (as envisaged in decision of MoRTH dated 12 March 2018) is one of the significant contributing factors in expansion of financial outlay of BPP-I by more than two times of its CCEA approved financial outlay of ₹ 5,35,000 crore which was against the directions of CCEA to restrict the financial outlay within the approved limits;

⁹⁰ *MoRTH in its meeting dated 12 March 2018, redefined the lane requirements based on traffic for Economic Corridors and Inter-Corridor & Feeder Roads being developed under BPP-I.*

- Construction of national highways with higher lanes configuration would result in higher maintenance and operation cost, for which no analysis was done;
- The decision (March 2018) of MoRTH was taken in an internal meeting of MoRTH and NHAI without any technical and financial analysis, bypassing the well-defined existing Indian Road Congress guidelines which were deliberated upon by various expert committees, over a period of time, and approved by India Road Congress Council which comprised experts from various fields viz., MoRTH, NHAI, State Public Works Departments, Central Public Works Department, Central Road Research Institute, Border Road Organisation, private experts etc.; and
- The Decision (March 2018) of MoRTH was anyways not made applicable to Green-field Expressways.

3.5.2.4 Projects awarded before prioritisation by NHAI

NHAI awarded national highways length of 5,594 km before prioritisation process could be completed by MoRTH in November 2018. One of the Audit sample projects, forming part of above length of 5,594 km, was planned with excess lanes configuration as discussed below:

Anandapuram-Pendurthi-Anakapalli

This project was approved by MoRTH on 19 January 2018 with civil cost of ₹1,959 crore. The scheduled completion date of this projects was 01 July 2021, while this project has achieved provisional completion on 08 November 2021.

This project, with existing two lanes configuration, was initially awarded (2012) by NHAI under NHDP for six laning of this stretch on BOT (Toll) mode. However, the project was terminated (2013) due to non-achievement of financial close by the concessionaire. NHAI again awarded (February 2018) for six laning of this project on HAM mode, under BPP-I, as BOT (Toll) was not found viable.

The existing average daily traffic on the stretch ranged from 22,877 to 26,771 passenger car units, during the year 2017 and the traffic was to increase further with annual traffic growth of five per cent⁹¹.

Audit observed that since there was low traffic for six lanes, therefore, the project was not planned on BOT (Toll) mode and as per traffic projections for the stretch, the six lane infrastructure created would remain underutilised upto 2032 as per extant Indian Road Congress guidelines i.e., IRC 84 of 2014. Further, the estimated civil cost for construction of Anandapuram-Pendurthi-Anakapalli with four lanes configuration would have been ₹ 1,306 crore⁹² as compared to the estimated civil cost of ₹ 1,959 crore for its six lanes. In spite of the probable under-utilisation of six lane infrastructure being created and the difference in associated costs (initial construction cost and later operational cost & maintenance cost) between four lanes and six lanes configuration of Anandapuram-Pendurthi-Anakapalli, no

⁹¹ *Being taken in all detailed project reports across NHAI unless conditions specifically warrant otherwise.*

⁹² *Estimated civil cost of six lane projects is ₹ 1,959 crore. Audit computed estimated civil cost of four lanes on prorata basis.*

cost-benefit analysis for upgrading this stretch from existing two lanes to four lanes was carried out.

MoRTH/NHAI could have considered the option of limiting the configuration of lanes at present to what is feasible as per IRC specification and acquiring only the land in line with the configuration for construction of higher lanes so that extra lanes can be constructed in future as and when optimal traffic was expected to ply on them.

MoRTH replied (April 2022) that capacity augmentation was undertaken as significant length of project was falling in heavily built up area and existing two lanes capacity was not able to cater to the anticipated traffic in the coming years. Moreover, lane configuration to six lanes for stretches with traffic more than 20,000 passenger car units was also proposed (20 September 2019) by Executive Committee of NHAI.

Reply of MoRTH's may be viewed against the fact that traffic projections had already considered effect of heavily built-up areas in the project. Further, the reference to decision of NHAI Executive Committee dated 20 September 2019 was not relevant in this case as the project was already approved by MoRTH in January 2018 based on detailed project report prepared in 2016 and letter of award for this project was also issued in February 2018.

3.5.2.5 Phase-I Bharatmala Pariyojana Projects of NHIDCL

Manu-Simlung

MoRTH approved (March 2020 to February 2022) to construct existing single lane of Manu-Simlung, part of North-East Economic Corridor, in the State of Tripura, into two lane with paved shoulder. This stretch was approved to be constructed with civil cost of ₹ 1,256.74 crore by dividing it in four projects⁹³. The scheduled completion dates of these projects were falling between January 2022 to December 2025. These projects had achieved physical progress ranging between 1.24 per cent to 90.59 per cent as on 31 March 2023.

Audit observed that this stretch had annual average daily traffic of 3,324 passenger car units in 2016 and as per traffic projections and future growth rate presumptions, the two lane infrastructure so created would remain underutilised upto 2034 based on MoRTH guidelines⁹⁴ of 23 March 2018. Further, the awarded cost for construction of Manu-Simlung stretch with intermediate lane configuration would have been ₹ 435.21 crore⁹⁵ as compared to the awarded cost of ₹ 870.41 crore for its two lanes. In spite of the probable underutilisation of two lane infrastructure being created and the difference in associated costs (initial construction cost and

⁹³ Out of these four projects, one project has been selected for detailed review as sample project. However, this Audit observation pertains to complete Manu-Simlung stretch.

⁹⁴ MoRTH guidelines (23 March 2018), on national highways lane configurations in hilly and mountainous terrain, directed for development of 5.5 meter wide intermediate lane highway, if the annual average daily traffic ranged between 3,000 passenger car units to 8,000 passenger car units and to construct 7 meter wide two lane highway, if traffic volume was more than 10,000 passenger car units per day or the existing traffic volumes were likely to witness a fast growth to reach this level within a period of three to five years. The carriage way widths should be of two lane national highways configurations with paved shoulders only in cases where traffic was likely to increase at about more than 10 per cent annum.

⁹⁵ Awarded cost of 11 meter wide two lanes is ₹ 870.41 crore. Audit considered cost of 5.5 meter wide intermediate lane on prorata basis.

later operational cost & maintenance cost) between intermediate lane and two lanes configuration of Manu-Simlung, no cost-benefit analysis for upgrading this stretch from existing single lane to intermediate lane was carried out.

MoRTH, in its reply (May 2022), stated that Manu-Simlung section has been developed to two-lane keeping in view the ongoing development of Simlung- Aizwal section and would provide connection to Kaladan Multi Modal Transit Transport Project.

Reply of MoRTH may be viewed against the fact that the traffic projections of the project were based on socio-economic development of the area and other future developments but still the traffic on this stretch was not reaching the requisite threshold. There were no projections of annual traffic growth rate of 10 *per cent* per annum due to various developmental activities including development of Kaladan Multi Modal Transit Transport Project, which could justify construction of 11 meter wide road.

Churachandpur-Tuivai

MoRTH approved (April 2020 - March 2021) to construct existing single lane of Churachandpur-Tuivai stretch (144.55 km), in the State of Manipur, falling under North-East Economic Corridor into two lane with hard shoulder. This stretch was approved to be developed under seven projects⁹⁶ with estimated civil cost of ₹1,802.87 crore. The scheduled completion dates of these projects were falling between June 2022 to February 2023. These projects had achieved physical progress ranging between 49.35 *per cent* to 91.07 *per cent* as on 31 March 2023.

Audit observed that this stretch had annual average daily traffic ranging between 109 passenger car units to 678 passenger car units in 2019 and as per traffic projections and future traffic growth presumptions the two lane infrastructure so created would remain underutilised even beyond 2042 based on MoRTH guidelines of 23 March 2018. Further, the awarded cost for construction of Churachandpur-Tuivai stretch with intermediate lane configuration would have been ₹ 600.04 crore⁹⁷ as compared to the awarded cost of ₹1,200.07 crore for its two lanes. In spite of the probable underutilisation of two lane infrastructure being created and the significant difference in associated costs (initial construction cost and later operational cost & maintenance cost) between intermediate lane and two lanes configurations of Churachandpur-Tuivai no cost-benefit analysis for upgrading this stretch from existing single lane to intermediate lane was carried out.

MoRTH, in its reply (May 2022), stated that Churachandpur Tuivai Stretch has been developed to two lanes to provide connection to Kaladan Multi Modal Transit Transport Project.

Reply of MoRTH may be viewed against the fact that traffic projections of the project were based on socio-economic and other development of the area but still the traffic on this stretch was not reaching the requisite threshold. There were no projections of annual traffic growth

⁹⁶ *Out of these seven projects, two projects have been selected for detailed review as sample projects. However, this Audit observation pertains to complete Churachandpur-Tuivai Stretch.*

⁹⁷ *Awarded cost of 11 meter wide two lanes is ₹1,200.07crore. Audit considered cost of 5.5 meter wide intermediate lane on prorata basis.*

rate of 10 *per cent* per annum due to various developmental activities including development of Kaladan Multi Modal Transit Transport Project, which could justify construction of 11 meter wide road.

Hence, the prioritisation exercise was not done for NHIDCL and Road wing of MoRTH. No rational, systematic and codified methodology/techniques/guidelines were used in prioritisation of projects for NHAI. No timelines could be decided for awarding and constructing the projects falling under different priorities. Projects and their lane specifications in many instances were prioritised without adequate cost-benefit analysis.

Recommendation No.6: Any inter-component substitution or fetching of national highways length beyond 74,942 km (including 10,000 km for Residual NHDP length) national highways length approved by CCEA for substitution need to be put up for CCEA approval along with further detailing of substitution clause whereby criteria of inclusions and exclusions are clearly defined.

Recommendation No.7: As envisaged in MoRTH Standard Operating Procedure, quality detailed project reports should be prepared based on the latest technologies available, standard designs for structures and access control guidelines.

Recommendation No.8: All projects in future need to be appraised and approved based on detailed project reports. Also, there needs to be incorporated in the detailed project report, a comprehensive cost-benefit analysis based on optimal lanes composition, capital cost recovery, mode of construction, competing infrastructural developments, analysis of counter claims of existing concessionaires and detailed environmental impact.

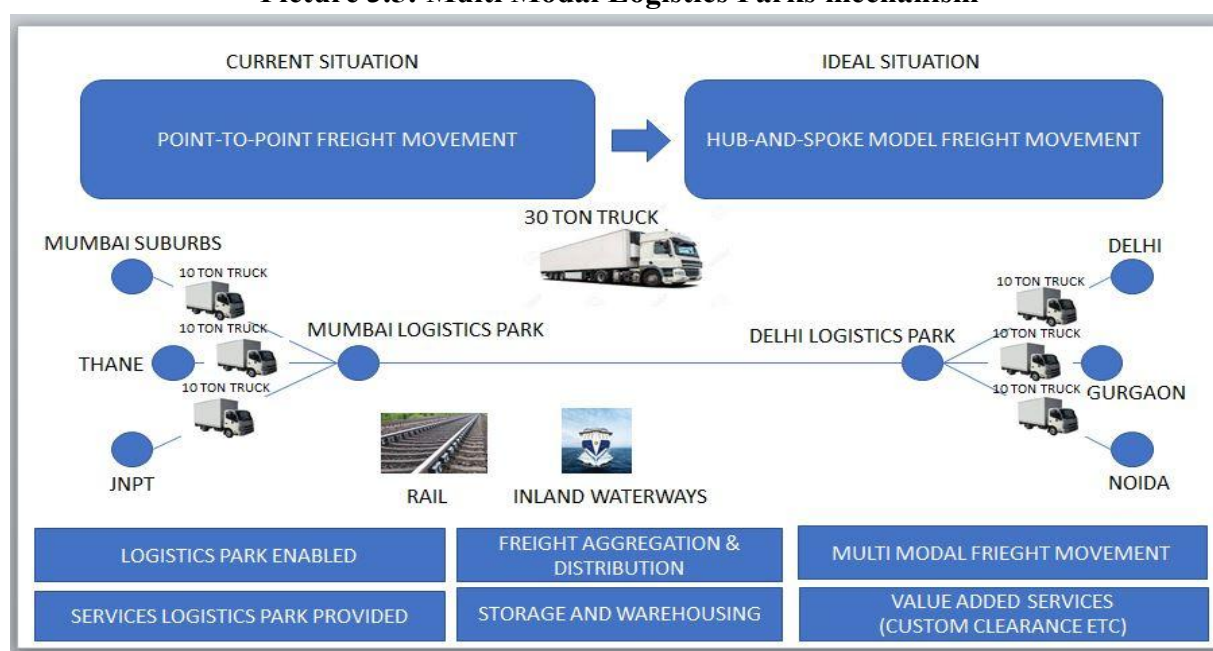
Recommendation No.9: As envisaged in MoRTH Standard Operating Procedure a detailed guidance document for preparation of detailed project report needs to be prepared by NHAI.

Recommendation No.10: MoRTH should prioritise projects based on defined criteria approved by CCEA so as to optimally utilise the scarce financial resources.

3.6 Planning for Phase-I of Bharatmala Pariyojana

MoRTH's origin-destination study, component-wise national highways construction in synergy with development of logistics parks (Picture 3.5) and connecting more districts with national highways network were important constituent of MoRTH's proposal of Bharatmala Pariyojana to CCEA.

Picture 3.5: Multi Modal Logistics Parks mechanism



(Source: Study conducted by MoRTH)

In this regard, Audit observed the following:

3.6.1 Development of Logistics Parks

To facilitate efficient and seamless freight movement in the country, 35 multi-modal logistics parks (MMLPs) were proposed (October 2016) by MoRTH at different locations with the directions that these MMLPs were to be developed through joint ventures between NHAI and Industrial Development Authority/ Corporation of the concerned State Government. Earmarking and procurement of land was to be done by State Government while NHAI was to provide the trunk infrastructure in an MMLP as an access to the national highways network. MoRTH reiterated (February 2017) its decision by issuance of direction for the development of MMLPs by NHAI. MoRTH further allowed (March 2017) NHAI to set up special purpose vehicle in case the land was available with private developers.

NHAI, in response (April 2017), requested MoRTH that before it could take up the development of MMLPs, a comprehensive policy framework with defined roles and responsibilities of various stakeholders and Departments of Central and State Governments needed to be pronounced with emphasis, *inter alia*, on the following issues:

- MMLPs were to deal with multi-modal connectivity namely railways, inland waterways, air and coastal linkage. Hence, proposed structure of special purpose vehicles for MMLPs involving NHAI, respective State Governments, Ministry of Railways, Ministry of Shipping and Ministry of Civil Aviation was to be evolved and approved by MoRTH;
- MMLPs were to handle large volume of export/ import cargo for which custom bonding facilities similar to facilities at inland ports were to be provided. For clearance of food items, quarantine facilities from Ministry of Agriculture/ Ministry of Health were required at MMLPs for which the roles and responsibilities of various Ministries were to be defined;

- Guidelines were to be evolved and approved for formulation of special purpose vehicle with private developers; and
- Model concession agreement for development of MMLPs on Public Private Partnership mode was to be framed.

Eventually development of 35 MMLPs was made part of BPP-I. As per CCEA approval, development of MMLPs at strategic locations (including connectivity of logistic parks) was made part of National Corridors/National Corridors Efficiency Improvement component of BPP-I so as to enhance logistics efficiency.

The SOP, issued by MoRTH, on BPP-I further elaborated the role of NHAI in development of MMLPs by stating that NHAI would be responsible for development of MMLPs, for improving efficiency of corridors, in line with the policy issued by Ministry of Commerce and Industry. NHAI was also made responsible for approving concession agreement for MMLPs.

The status of development of 35 MMLPs, as on 31 March 2023, was as follows:

Table 3.11: Status of development of MMLPs as on 31 March 2023

S.No.	MMLP	Status
1	Vijayawada, Valsad, Bhopal, Sundargarh, Hisar, Kota, Ahmedabad, Jagatsinghpur	Idea of MMLP at these eight locations were based on pre-feasibility studies. MMLP at Anantapur proposed in place of Vijayawada.
2	15 MMLPs ⁹⁸	Pre-feasibility study completed.
3	Vishakhapatnam	Work for feasibility study awarded in December 2022.
4	Surat and Sangrur	Feasibility studies suggested that MMLP at Surat and Sangrur were not viable due to inadequate demand for MMLP in the region.
5	Indore	Work awarded to contractor and SPV formation was in progress.
6	Four MMLPs ⁹⁹	Target for completion of Phase-I of these MMLPs is June 2025.
7	Bangalore	Target for completion of Phase-I of MMLP is January 2025.
8	Nagpur and Chennai	Target for completion of Phase-I of these MMLPs is October 2024.
9	One Park at Jogighopa being developed by NHIDCL ¹⁰⁰	• MoRTH directed (14 November 2019) NHIDCL to take up the work of creation of basic infrastructure for the MMLP like port, rail and road connectivity, provision of water and electricity facility and administrative building on EPC mode at ₹693.97 crore. This was in non-compliance of decision taken (02 July 2019 and 02 September 2019) by Special Secretary (Logistics), Ministry of Commerce &

⁹⁸ North Punjab, Bhatinda, Solan, Rajkot, Raipur, Jammu, Kandla, Cochin, Delhi-NCR, Jaipur, Kolkata, Ambala, Nashik, Patna and Panaji.

⁹⁹ Mumbai, Hyderabad, Coimbatore and Pune.

¹⁰⁰ MMLP at Guwahati in Assam was to be developed by NHAI but later (November 2019) the responsibility to develop the same was transferred to NHIDCL.

S.No.	MMLP	Status																				
		Industry that the development, operation and maintenance of MMLP was to be carried out by a special purpose vehicle on Public Private Partnership mode and the Government's function was to be restricted to development of access road to highways and rail access upto terminal. NHIDCL, in response to MoRTH letter dated 14 November 2019, entered into the following EPC agreements: <table><tr><th>S.No.</th><th>Name of the work</th><th>Date of award</th><th>Award value (₹ in crore)</th></tr><tr><td>1</td><td>External trunk connectivity and internal infrastructure works at MMLP (road and utility) (Pkg.- I)</td><td>04-06-2020</td><td>165.94</td></tr><tr><td>2</td><td>Internal infrastructure works at MMLP (building and infrastructure works) (Pkg.- II)</td><td>05-08-2020</td><td>80.08</td></tr><tr><td>3</td><td>Earthwork including supply of P. way fittings and track ballast in connection with construction of railway siding (Pkg.-III)</td><td>09-12-2020</td><td>21.85</td></tr><tr><td>4</td><td>Construction of Inland Waterways Terminal</td><td>06-10-2021</td><td>63.90</td></tr></table>	S.No.	Name of the work	Date of award	Award value (₹ in crore)	1	External trunk connectivity and internal infrastructure works at MMLP (road and utility) (Pkg.- I)	04-06-2020	165.94	2	Internal infrastructure works at MMLP (building and infrastructure works) (Pkg.- II)	05-08-2020	80.08	3	Earthwork including supply of P. way fittings and track ballast in connection with construction of railway siding (Pkg.-III)	09-12-2020	21.85	4	Construction of Inland Waterways Terminal	06-10-2021	63.90
S.No.	Name of the work	Date of award	Award value (₹ in crore)																			
1	External trunk connectivity and internal infrastructure works at MMLP (road and utility) (Pkg.- I)	04-06-2020	165.94																			
2	Internal infrastructure works at MMLP (building and infrastructure works) (Pkg.- II)	05-08-2020	80.08																			
3	Earthwork including supply of P. way fittings and track ballast in connection with construction of railway siding (Pkg.-III)	09-12-2020	21.85																			
4	Construction of Inland Waterways Terminal	06-10-2021	63.90																			

(Source: As per data furnished by NHAI and NHIDCL)

It may be seen from above that as on 31 March 2023, based on pre-feasibility studies and feasibility studies, idea of three MMLPs and two MMLPs respectively have been dropped whereas in 15 MMLPs only pre-feasibility study has been completed. Work for feasibility study in respect of Visakhapatnam MMLPs has been awarded whereas for Indore MMLP contractor has been appointed and SPV formulation work was in progress. Responsibility of development of MMLP at Guwahati was transferred from NHAI to NHIDCL. The sub optimal state of development of 35 MMLPs could be attributed to following reasons:

- Model concession agreement for development of MMLPs on Public Private Partnership mode was approved by MoRTH as late as in October 2021 only;
- The National Logistic Policy, 2022 could be made effective with delay in September 2022 by Ministry of Commerce and Industry.
- MoRTH while proposing 35 MMLPs under BPP-I merged it with National Corridors/National Corridors Efficiency Improvements Program component of BPP-I. Thus, no separate details of funds to be allocated for development of 35 MMLPs under BPP-I were available despite it having significant impact on freight flow projections & origin-destination nodes and earmarked funds requirement; and
- For three years from the date of approval of BPP-I, no concrete decision could be taken regarding composition of special purpose vehicles for development of MMLPs. Initially,

MoRTH was directing NHAI/NHIDCL to enter Joint Venture¹⁰¹ and form State-wise/MMLP-wise/Private Developer-wise special purpose vehicles. However, on 24 September 2020, MoRTH conveyed its decision to designate Cochin Port Road Company Limited (CPRCL)¹⁰² as an umbrella special purpose vehicle for development of all the 35 MMLPs approved by CCEA and other port connectivity projects being implemented by NHAI. For this purpose, ₹ 100 crore initial grant was given to CPRCL. All other port projects companies of NHAI were to be made subsidiaries of this company. In spite of designating CPRCL as umbrella special purpose vehicle for development of MMLPs, NHAI was instructed to continue with detailed project report preparations and awarding of projects for identified MMLPs and port projects. Thus, there was lack of clearly marked roles and responsibilities between NHAI and CPRCL. Similarly, NHIDCL was continuing work on MMLP at Jogighopa inspite of it incorporating one special vehicle purpose¹⁰³ for the same on 26 February 2021.

MoRTH, while accepting (April 2022) the fact of non- development of even a single MMLP by March 2022, attributed the reasons to procedural delays in finalisation of model concession agreement, creation of special purpose vehicle, entering the agreement with Railways for partnership, signing of MoUs with State Government, conduct of pre-feasibility studies etc.

Recommendation No.11: MoRTH should prioritise approval for those MMLP projects where basic groundwork, feasibility assessment and consultation with stakeholders have been completed and the necessary policy frameworks/model concession agreements have been developed to avoid any disruption/hindrance at later stage.

3.6.2 Coastal and Port Connectivity Roads

Cabinet approved (19 February 2015) development of port connectivity road projects under Sagarmala Pariyojana. As per Cabinet approval for Sagarmala Pariyojana, its projects were to be developed in synergy and integration with planned Industrial Corridors, Dedicated Freight Corridors, National Highways Development Program¹⁰⁴, Industrial Clusters and Special Economic Zones to avoid duplication of efforts by stakeholders including NHAI so that only gap filling projects could be taken up. The National Perspective Plan for Sagarmala Pariyojana envisaged port led direct development¹⁰⁵ and port led indirect development wherein road infrastructure was one of the components of port led indirect development. However, in second Sagarmala Coordination and Steering Committee (SCSC) meeting it was decided (4 April 2016) that all identified port connectivity road projects would be examined jointly by MoRTH and Ministry of Shipping under the Bharatmala Scheme only (**Flow Chart 3.2**).

¹⁰¹ With representatives of MoRTH, NHAI, Ministry of Railways, Shipping/Port, District Magistrate/Head of Local Area Development/Head of Industries and State Revenue/Finance Secretary on Board of joint venture.

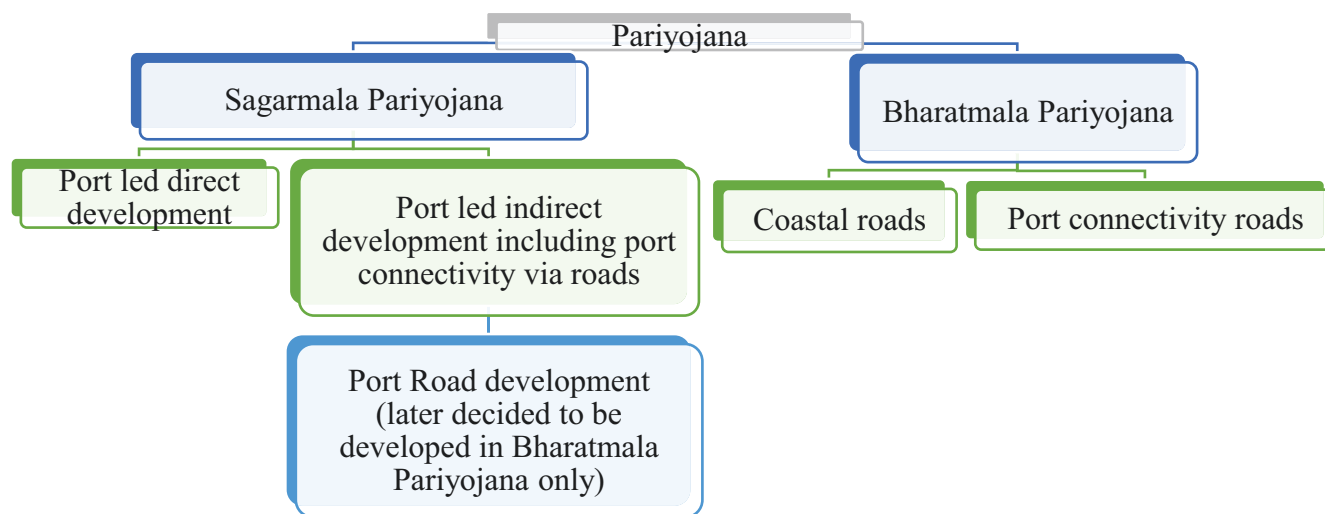
¹⁰² An existing subsidiary of NHAI whereby 100 per cent ownership vested with NHAI. Its new registered name is National Highways Logistics Management Ltd. (NHLML).

¹⁰³ Jogighopa Logistics Park Limited.

¹⁰⁴ Now re-oriented into umbrella program of Bharatmala Pariyojana.

¹⁰⁵ Included development of ship building & repair, fisheries, refineries, cement based industries, petrol, oil & lubricants and chemical based industries etc.

Flow Chart 3.2: Linkage between Sagarmala Pariyojana and Bharatmala Pariyojana



(Source: Cabinet Note dated 19 February 2015 for Sagarmala Pariyojana and CCEA note dated 24 October 2017 for Bharatmala Pariyojana)

In this regard, Audit observed the following while reviewing the port connectivity of road projects:

- CCEA approved (October 2017) development of seven coastal roads with a total length of 2,011 km and 58 port connectivity roads with a length of 1,287 km under Bharatmala Pariyojana. However, MoRTH while issuing (December 2017) Standard Operating Procedure on BPP-I, identified a list of seven coastal roads with a length of 2,011 km and 59 port connectivity roads with a length of 1,294 km under Bharatmala Pariyojana;
- MoRTH did not prioritise (November 2018) Coastal and Port Connectivity Roads citing extraneous reason of non-availability of traffic data while CCEA approved criteria for prioritisation of these components were as follows:
 - Development status of ports;
 - Equity participation by stakeholders;
 - Synergy with other port development under Sagarmala; and
 - Stretch with ease of land acquisition & pre-construction activities and detailed project report preparation.
- Ministry of Shipping prioritised (09 September 2020) a list of 68 port connectivity roads, with a length of 2,052 km. From this list, only 32 projects (length of 952 km) were in common with list of Coastal and Port Connectivity Roads components proposed to CCEA under Bharatmala Pariyojana. However, MoRTH, after three years of approval of Bharatmala Pariyojana (16 September 2020), adopted Ministry of Shipping prioritised list of 68 Coastal and Port Connectivity Roads and discarded its own list proposed to CCEA for approval under Bharatmala Pariyojana;

- Upto March 2023 a length of merely 415 km for 17 projects¹⁰⁶ was awarded. Out of this, only one project having length of one km viz., construction of grade separator (from H-7 area to Port Connectivity Road by passing Convent Junction - Vizag Port) could be completed up to March 2023; and
- Audit sample of 66 projects had one port road project viz., Belakeri Port -Kumta - Sirsi Road being developed by NHAI. Management failed to provide records up to the stage of appointed date of this project. However, while reviewing execution of this project, Audit observed that in spite of this project being awarded in March 2018, it could achieve physical progress of only 37.16 per cent till March 2023 due to non-handing over of requisite right of way to the contractor by NHAI.

MoRTH did not furnish reply to the Audit observation.

3.6.3 Validity of traffic survey process (census)

As per IRC 9 of 1972 guidelines, the periodic traffic census is valuable source of basic data for highways planning. Judicious location of traffic count stations is crucial to success of a census program, for which, the following needs to be done:

- Every road should be divided into convenient sections, each carrying approximately similar traffic between points of substantial traffic change;
- The traffic should be counted at each point at least twice every year. One count should be taken during the peak season of harvesting & marketing and other during the lean season; and
- Each time the count should be made for a full week spread over seven consecutive days and 24 hours of each day.

CCEA approved 44 Economic Corridors to be developed under Bharatmala Pariyojana. These corridors were included for development based on average traffic arrived at after carrying out traffic surveys (**Annexure 4**).

Audit observations regarding survey points of Economic Corridors were as follows:

- Number of traffic Survey points considered on each corridor were varying wherein for long corridors the survey points were less as compared to the short corridors as detailed below:

¹⁰⁶ *Trapaj – Manar, Yekkambi-Haveri, Belakeri Port - Kumta - Sirsi road, Road connectivity from Kasarkad side of Honnavar Port, Anchorage Old Port Kakinada to Achampeta Junction, Six Laning of dedicated Port road to Krishnapatnam Port (Pkg.-I), Construction of grade separator from H-7 area to Port connectivity Road by passing Convent Junction - Vizag Port, Port connectivity road (four lane) from East Break Water to Convent Junction, Dwarka-Khambhaliya, Construction of Airstrip near Datrana Village, Four laning of Kakinada Anchorage Port Uppada beach road connection upto NH-16, Four laning of green-field road to Krishnapatnam Port from Naidupeta, Upgrading of existing R&B road from Chilakaru crosses (NH-16) to Power Plants, Visakhapatnam Port Road from Km. 0.000 to Km. 12.700(Sheelanagar to Convent Junction), Development of green-field road connecting north and south industrial cluster of Khandaleru Creek near Krishnapatnam Port, Four laning of road connecting Kakinada port to Nh-16 at Rajanogaram in Godavari District and Construction of bypass road from NH-16 to Gopalpur port..*

Table 3.12: Survey points for long corridors vs short corridors

S.No	Name of the corridor	Length (in km)	Average Traffic (in passenger car units)	Number of traffic survey points
Long corridors				
1	North-East Corridor (Bogaigaon-Imphal)	3,246	11,618	22
2	Amritsar-Jamnagar	1,316	13,597	19
3	Kandla-Sagar	1,038	19,277	17
Small corridors				
4	Surat-Nagpur	593	19,801	30
5	Agra-Mumbai	964	24,329	25
6	Pune-Vijaywada	906	26,218	25

(Source: CCEA Note dated 24 October 2017)

- Similarly, Bilaspur-New Delhi and Godhra- Khargone with national highways length of 302 km and 337 km respectively had only one survey point each while Bangalore-Nellore and Sirsa-Delhi with national highways length of 286 km and 278 km had seven survey points each; and
- On test check basis, it was observed that in case of Economic Corridor of Bangalore-Mallapuram, survey points considered in Logistics Efficiency Enhancement Program study were seven and the average projected traffic in passenger car units was 27,720, but in CCEA approval, the survey points were reduced from seven to two and the average traffic in passenger car units was reduced to 16,978.

Considering the above, Audit sought, from MoRTH, the details of survey points chosen for 44 Economic Corridors proposed to CCEA. However, the same were not furnished. As a result, the validity of the survey process could not be assessed in Audit.

MoRTH did not furnish reply to the Audit observation.

3.6.4 No-database for districts connected

As per CCEA note, after completion of Bharatmala Pariyojana, 250 new districts were to be connected with national highways. However, MoRTH did not share the details of yearly targets set for connecting new districts with national highways under BPP-I and the achievement thereof.

MoRTH did not furnish reply to the Audit observation.

3.7 Summing up

A total of 26,316 km of national highways length has been awarded under BPP-I till 31 March 2023, which was 75.62 per cent of the CCEA approved length of 34,800 km. Out of this, 13,499 km of national highways length has been completed till 31 March 2023 which included the construction undertaken during the challenging CoVID pandemic period.

Audit observed some weaknesses in planning of the Pariyojana which need to be set right in future. In many cases, languishing NHDP projects were awarded under BPP-I without resolving the existing impediments/bottlenecks viz., availability of right of way and pending forest clearances. NHDP length yet to be awarded under BPP-I should be carefully planned after clearing the existing bottlenecks viz., availability of right of way and pending disputes regarding forest land and wildlife sanctuaries etc.

No systematic and standard methodology was adopted in prioritisation of projects for NHAI and prioritisation of projects was not carried out in case of NHIDCL and MoRTH. No timelines were prescribed either for award or for completion of projects falling in any particular priority. MoRTH should prioritise projects based on defined criteria approved by CCEA so as to optimally utilise the scarce financial resources. There were instances where projects were developed based on deficient cost-benefit study or without getting detailed project reports prepared. A comprehensive cost-benefit analysis based on optimal lanes composition, capital cost recovery, mode of construction, competing infrastructural developments and analysis of counter claims of existing concessionaires needs to be incorporated in the detailed project report.

None of the 35 Multi Modal Logistics Parks (MMLP) planned by MoRTH could be developed and only one km length could be developed up to 31 March 2023 out of CCEA approved length of 2,000 km of Coastal & Port Connectivity Roads, in spite of them being important constituent of origin-destination nodes. MoRTH should prioritise approval for those MMLP projects where basic groundwork, feasibility assessment and consultation with stakeholders have been completed and the necessary policy frameworks/model concession agreements have been developed.

CHAPTER 4

FUND MANAGEMENT



Chapter 4

Fund Management

CCEA, while approving (24 October 2017) BPP-I, concurred for total outlay of ₹ 5,35,000 crore on development of national highways length of 34,800 km (including Residual NHDP length of 10,000 km) up to September 2022. The approved sources of funding for BPP-I were as follows:

Table 4.1: Source of Funds for Phase-I of Bharatmala Pariyojana

S.No.	Sources of funds	2017-18	2018-19	2019-20	2020-21	2021-22	Total (₹ in crore)
1	Central Road Fund ¹⁰⁷	22,407	21,093	21,901	34,075	40,197	1,39,673
2	Toll Operate Transfer ¹⁰⁸	1,000	3,000	5,000	10,000	15,000	34,000
3	Permanent Bridge Fee Fund ¹⁰⁹	8,462	8,885	9,200	9,500	10,000	46,047
4	Market Borrowing	59,279	35,000	35,000	40,000	40,000	2,09,279
5	Private Investment	15,000	17,000	20,000	25,000	29,000	1,06,000
Total		1,06,148	84,978	91,101	1,18,575	1,34,197	5,34,999*

* for difference of ₹one crore, no clarification has been given to Audit.

(Source: CCEA Note dated 24 October 2017)

Audit reviewed the fund management for BPP-I by MoRTH and its implementing agencies to assess whether there was efficient and economical utilisation of financial resources allocated for BPP-I in consonance with the broad objectives approved by CCEA. Audit findings on the same are as follows:

4.1 Compliance to approved funding pattern

4.1.1 NHAI's fund management

(i) Planning for national highways length

CCEA approved (24 October 2017) national highways length of 34,800 km to be developed by NHAI, NHIDCL, MoRTH and State PWDs cumulatively under BPP-I. This national highways length included 20,415 km of national highways length to be awarded afresh under BPP-I, 4,385 km NHDP length to be awarded under various components of BPP-I and balance national

¹⁰⁷ Central Road Fund- Cess collected on petrol and diesel. Its name has now been changed to Central Road & Infrastructure Fund.

¹⁰⁸ Toll Operate Transfer- Right of collection and appropriation of fees for selected operational national highway projects constructed through public funding is assigned for a pre-determined concession period to concessionaires (developers/investors) against upfront payment of a lump-sum amount to NHAI.

¹⁰⁹ Permanent Bridge Fee Fund- User fees for using national highways being routed to Consolidated Fund of India.

highways length of 10,000 km to be subsumed under BPP-I as Residual NHDP projects. However, NHAI Board, *suo moto*, approved (16 November 2017), i.e., within a period of one month of the CCEA approval, development of national highways length of 34,877 km by it alone under BPP-I comprising of national highways length of 19,800 km to be awarded afresh, 3,695 km of NHDP projects to be awarded under various components of BPP-I and 11,382 km for Residual NHDP length to be subsumed under residual NHDP projects.

MoRTH did not furnish reply to the audit observation.

(ii) Planning of funds requirement

To construct the above length of 34,877 km, NHAI Board approved (16 November 2017) funding requirement of ₹ 7,15,523 crore¹¹⁰ to be spent up to 2022-23 under BPP-I stating that proposal to CCEA did not include debt servicing cost and operation & maintenance cost. The funding requirement of BPP-I was enhanced (10 January 2019) from ₹ 7,15,523 crore to ₹ 10,40,526 crore and then (29 May 2019) to ₹ 10,55,268 crore by NHAI on the grounds that proposal made to CCEA differed from ground situations and with CCEA approved outlay national highways length of 25,784 km could only be constructed and the physical targets of BPP-I could not be achieved before 2024-25. While enhancing the funding requirement, NHAI justified the same by stating that land acquisition cost was 2.4 times to three times (both in extent and cost), and civil construction cost was 1.2 times of what was proposed to CCEA besides increased finance cost on costly projects and short receipts from Government of India than approved (16 November 2017) by NHAI Board as detailed in Table 4.2 below.

Audit further observed that the NHAI's cost estimates of ₹ 10,55,268 crore were exclusive of private investment in NHAI projects in the form of concessionaire's share in BOT(Toll) and HAM mode of projects amounting to ₹ 2,05,579 crore upto 31 March 2023.

MoRTH, in its reply (April 2022), detailed its achievements such as likely award of entire length of 34,800 km in the next two financial years i.e., by FY 2023-24, completion of Delhi-Mumbai Expressway in record time of five years from conceptualisation, multiple steps taken by the Ministry to expedite project award and construction such as revision in scope of detailed project report consultants, frequent reviews with the State Governments, launch of Bhoomi Rashi Portal to digitise the land acquisition notification process etc.

Reply of the MoRTH was not relevant to audit observation pertaining to substantial increase in estimated cost of BPP-I.

Year-wise (2017-2023) comparatives of BPP-I financial Plan as approved by NHAI (118th Board meeting dated 16 November 2017) and its realisation thereof were as detailed below:

¹¹⁰ Project expenditure of ₹5,07,617 crore, ₹1,74,254 crore on debt servicing and ₹33,652 crore on operation and maintenance cost (reasons for difference of Rupee one crore in the details of the planned expenditure not furnished by management).

Table 4.2: Comparatives of Phase-I of Bharatmala Pariyojana financial plan as approved by NHAI and its realisation thereof

Source of Funds		Government Financial Support ¹¹¹	Market Borrowings	Total (₹ in crore)
Year				
2017-18	NHAI Board approval	27,645	59,279	86,924
	Actual receipts	20,892	50,532	71,424
	Surpluses/(Shortfalls)	(6,753)	(8,747)	(15,500)
2018-19	NHAI Board approval	35,074	78,579	1,13,653
	Actual receipts	30,821	61,217	92,038
	Surpluses/(Shortfalls)	(4,253)	(17,362)	(21,615)
2019-20	NHAI Board approval	38,891	54,810	93,701
	Actual receipts	26,691	74,987	1,01,678
	Surpluses/(Shortfalls)	(12,200)	20,177	7,977
2020-21	NHAI Board approval	44,997	56,502	1,01,499
	Actual receipts	42,612	65,080	1,07,692
	Surpluses/(Shortfalls)	(2,385)	8,578	6,193
2021-22	NHAI Board approval	56,292	89,500	1,45,792
	Actual receipts	53,880	48,533	1,02,413
	Surpluses (Shortfalls)	(2,412)	(40,967)	(43,379)
2022-23	NHAI Board approval	86,602	96,944	1,83,546
	Actual receipts	Not Available		

(Source: NHAI Board meeting of 16 November 2017 and information furnished by NHAI/Annual Accounts of NHAI)

From the above table, Audit observed the following points:

- NHAI Board approved BPP-I financing plan higher than that was approved by CCEA (Table 4.1) for Government financial support (₹ 2,89,501 crore approved against CCEA approval of ₹ 2,19,720 crore) and market borrowings (₹ 4,35,614 crore approved against CCEA approval of 2,09,279 crore);
- For funding requirement of ₹ 7,15,523 crore, for no reasons on record, NHAI Board approved financing plan of ₹ 7,25,115 crore for the period from 2017-18 to 2022-23;
- NHAI could not receive the Government financial support as planned by it for all the years during 2017-18 to 2021-22 as there was shortfall in the range of ₹ 2,385 crore to ₹ 12,200 crore;

¹¹¹ Central Road Fund + Toll Operate Transfer receipts +Permanent Bridge Fee Fund

- NHAI also could not raise the borrowings planned by it during the year 2017-18, 2018-19 and 2021-22 as it was short in the range of ₹ 8,747 crore to ₹ 40,967 crore. However, still the total borrowings realised by NHAI upto 2021-22¹¹² i.e., ₹3,00,349 crore was more by ₹ 91,070 crore than the borrowings approved by CCEA i.e., ₹ 2,09,279 crore as source of funding for BPP-I as a whole; and
- Borrowings of ₹ 91,070 crore were being utilised for meeting the higher fund requirements due to time and cost overrun in development of BPP-I projects as discussed in detail in this report.

Thus, the fund requirements for construction of BPP-I length, as proposed to CCEA, were not agreed (16 November 2017) by NHAI and requirement of more funds for meeting its targets was envisaged. Resultantly, enhanced financial requirements to meet NHAI targets were assessed (29 May 2019) by NHAI as ₹10,55,268 crore. The fact remains that after awarding of only 75.62 *per cent* of CCEA approved length, 158.24 *per cent* of CCEA approved financial outlay has already been sanctioned. Sources of funds required over and above the approved financial outlay of ₹ 5,35,000 crore and for the remaining national highway length have not yet been approved by CCEA.

MoRTH, in its reply (April 2022), admitted the fact of less receipts of Government financial support and increased market borrowings.

(iii) Bharatmala Pariyojana specific fund management

MoRTH, vide its Standard Operating Procedure (21 December 2017) for implementation of BPP-I, directed that given the scale of investment and consequent asset base creation, prudence in accounting and financial planning/management was essential to meet fund requirements of current and future projects. However, NHAI was not maintaining any records in respect of BPP-I specific funds being received/ raised during the Pariyojana period of 2017-18 to September 2022.

MoRTH replied (April 2022) that as per National Highways Authority of India Act, 1988, funds received from Government of India, borrowings made by Authority and any other sums received by Authority were required to be credited to a fund called “National Highways Authority of India Fund”.

MoRTH’s reply did not address the audit observation regarding proper accounting of funds raised and received by NHAI for different schemes/purposes including BPP-I in spite of MoRTH’s Standard Operating Procedure providing for the same.

4.1.2 NHIDCL’s fund management

- NHIDCL Board, unlike NHAI, did not plan/approve any targets for year-wise funds to be incurred/raised for BPP-I projects; and

¹¹² *When one year was still left in NHAI’s financial plan for BPP-I.*

- During the period 2017-18 to 2022-23, NHIDCL's national highways length under BPP-I was intimated as 2,244 km in 97 projects¹¹³ under BPP-I with total sanctioned project cost of ₹ 54,834 crore. NHIDCL received BPP-I specific grants of ₹1,120.19 crore for road construction works during this period. For other national highway's schemes viz., Special Accelerated Road Development Program, National Highways (Original) and Externally Aided Projects, it received funds of ₹ 42,431.67 crore for road construction works.

In regard to above, Audit observed that:

- NHIDCL does not have source of financing BPP-I projects other than Government grants;
- Out of these 97 projects, 78 projects were those projects which were approved under schemes other than BPP-I viz., Special Accelerated Road Development Program, National Highways (Original) and Externally Aided Projects (discussed in para 3.4.2); and
- Out of 97 projects, 56 projects with a total sanctioned cost of ₹ 26,514 crore have already achieved physical progress in the range of 10 *per cent* to 100 *per cent* up to 31 March 2023.

The above facts indicated that the projects were approved under other schemes while achievements of project lengths were being reported under BPP-I with utilisation of funds meant for other schemes in spite of the fact that CCEA categorically approved dedicated funds of ₹ 1,57,324 crore for such other schemes apart from approving ₹ 5,35,000 crore for BPP-I. However, MoRTH still submitted to Committee of Estimates¹¹⁴ (2020-21) that the funds allocated under National Highways (Original) were not being utilised for Bharatmala Pariyojana or other MoRTH schemes.

MoRTH stated (May 2022) that no separate funds were allocated for NHIDCL projects under BPP-I. Thus, funds earmarked for other schemes viz., Special Accelerated Road Development Program and National Highways (Original) etc, were being utilised.

However, the fact remains that the fund earmarked only for other schemes were not to be utilised for BPP-I and the MoRTH separately sanctioned ₹ 1,120.19 crore for BPP-I to NHIDCL during 2017-18 to 2022-23.

4.1.3 MoRTH's fund management

- MoRTH did not prepare details regarding year-wise funds required for completion of BPP-I targets and their sources of financing in respect of its implementing agencies;
- Road wing of MoRTH, like NHIDCL, did not plan/approve any targets for year-wise funds to be incurred/raised for BPP-I projects; and
- 17 projects with a total length of 879 km, comprised the BPP-I lengths being developed up to 31 March 2023 by Road wing of MoRTH. These projects have total sanctioned cost of

¹¹³ As per management information.

¹¹⁴ It is a committee of selected Members of Parliament, constituted by Parliament of India, for the purpose of scrutinizing/monitoring the functioning of Government Ministries and Departments

₹ 9,973 crore. All these projects were being constructed under EPC mode or as item rate contract, thereby, being funded through Government financial support. Out of these 17 projects, four projects¹¹⁵ with a length of 244 km and total sanctioned cost of ₹ 1,353 crore were those projects which were awarded prior to approval of BPP-I and still being funded under BPP-I besides exaggerating the achievements of BPP-I.

MoRTH did not furnish reply to the Audit observation.

4.1.4 Targets for year-wise lengths to be constructed under different components of Bharatmala Pariyojana

Components of Bharatmala Pariyojana were varied and were identified to cater different types and volume of traffic so as to serve overall objective of improvement and streamlining of the network connectivity within the country. Each component has a purpose e.g., Border Roads were to be developed after considering requirement of border areas while Feeder Roads were to be developed to connect two Economic Corridors. Similarly, Economic Corridors were planned for connecting important economic centres in country while Coastal & Port Connectivity Roads were planned for transporting freight, to and from the inland areas. Thus, the type and volume of traffic on different components of Bharatmala Pariyojana could not be same. However, development of different components was interdependent upon each other as traffic could move between various Economic Corridors via Inter-Corridor & Feeder Roads and then could move to ports or international borders through Port & International Connectivity Roads. Hence, development of an Economic Corridors in isolation would not fulfil intended purpose unless connecting Inter-Corridor & Feeder Roads, Border & International Connectivity Roads, Coastal & Port Connectivity Roads were developed simultaneously along with Multi Modal Logistics Parks.

Further, due to its inherent specifications, each component has its own revenue generation capacity viz., the revenue expected from Border Roads and Inter-Corridor & Feeder Roads would differ from that of an Economic Corridors or Expressways. Thus, based on financial viability of project, belonging to a particular component, its mode of construction could be determined. Thus, BOT (Toll) mode would be more feasible for Economic Corridors or Expressways rather than Border Roads. Considering prudent project accounting, economic sustainability of a project would also help in determination of whether the project needs to be financed through market borrowings or through Government financial support even if it was being planned under EPC/HAM mode because it would not be prudent to finance a Border Road through loan money as it would not have sufficient traffic to fund its own debt-servicing cost. However, Economic Corridors or Expressways could be viable option for financing through loan.

The mode of construction of a project, source of its funding and its priority during BPP-I period was to be determined based on above analysis. Thereafter, targets for year-wise national highways length to be developed under different components of BPP-I along with year-wise funds requirement from the pertinent sources were to be determined and respective profit

¹¹⁵ *Bareli-Goharganj, Sindoor river- Bareli, Nakrekal-Thanamcherla and Vijayawada-Jagdulpur- Rudrampu.*

centres were to be identified. However, MoRTH and its implementing agencies did not determine any such implementing agency-wise targets for development of national highways length each year under different components of Bharatmala Pariyojana from specified sources of funds and corresponding profit centres.

MoRTH, in its reply (April 2022), stated that project specific status of implementation referred in the Audit Report have been replied separately. Regarding NHIDCL, it further stated (May 2022) that it has prioritised the projects based on detailed project report finalisation and the status of land availability. It has put up all the projects' details and project summary including Bharatmala projects in the Board meetings as part of the overall year-wise targets.

MoRTH reply was not specific to Audit observation that no exercise was carried out by MoRTH, NHAI and NHIDCL, at the time of BPP-I inception, with regard to taking up and completion of year-wise national highways length under different components of BPP-I along with funds requirement for the same from identified specific sources.

Thus, there was disconnect among the financial outlay approved by CCEA, financial plans for BPP-I approved by respective implementing agencies and realisation of the plans thereof. MoRTH did not plan year-wise funding and financing pattern for road lengths to be developed by its implementing agencies under different components of BPP-I.

Recommendation No. 12: Considering material changes in the physical and financial targets approved earlier by CCEA and the resource requirements for BPP-I in future, MoRTH should consider approaching CCEA again to apprise the progress made so far and funds required by the Ministry in future. MoRTH should draw up the note for CCEA's information and approval after detailed analysis and discussion with concerned stakeholders including its implementing agencies NHAI and NHIDCL.

Recommendation No. 13: In accordance with sound financial management principles and to establish responsibility centres, there should be a mapping of the scheme wise funds released to ensure that funds meant for one scheme are not diverted for other schemes.

4.2 Achievement of modal mix

MoRTH, vide its Standard Operating Procedure (21 December 2017), directed that each implementing agency including NHAI needed to decide a modal mix¹¹⁶ of projects under BPP-I in line with the financial outlay approved by CCEA. On review of modal mix adopted by different implementing agencies Audit observed the following:

4.2.1 Modal mix for NHAI

NHAI Board, in its 118th meeting, contemplated the following three modal mix for the implementation of BPP-I projects:

¹¹⁶ *Optimal proportion of different mode of construction viz., EPC, HAM, BOT (Toll), BOT (Annuity) and Item Rate so as to construct targeted national highways length of BPP-I within the financial outlay of ₹5,35,000 crore approved by CCEA.*

Table 4.3: Modal mix plans for NHAI

S.No.	Particulars	Percentage of BPP-I length to be constructed under HAM	Percentage of BPP-I length to be constructed under EPC	Percentage of BPP-I length to be constructed under BoT (Toll)
1	Base Scenario	60	30	10
2	Scenario 1	50	40	10
3	Scenario 2	50	30	20

(Source: 118th Board meeting of NHAI dated 16 November 2017)

After considering the fact that reduction in private investment would increase the total expenditure of NHAI along with increase in debt-servicing cost, NHAI Board approved the Base Scenario for BPP-I projects i.e., 60 per cent, 30 per cent and 10 per cent for HAM, EPC and BoT (Toll) respectively. NHAI awarded¹¹⁷ 665 projects with a total length of 23,268 km under BPP-I till 31 March 2023, the details of which were as follows:

Table 4.4: Details of projects awarded by NHAI under Phase-I of Bharatmala Pariyojana

S.N o.	Mode of construction	Project length (km)	Civil cost (₹ in crore)	Pre - construction cost (₹ in crore)	Capital cost (₹ in crore)	Base Scenario modal mix approved by NHAI Board	Percentage of length to total length	Percentage of civil cost to total civil cost	Percentage of capital cost to total capital cost
a	b	c	d	e	f(d+e)	g	h	i	j
1	EPC	11,250	2,46,540	78,293	3,24,833	30	48.35	42.29	41.19
2	BOT(Toll)	408	9,386	1,725	11,111	10	1.75	1.61	1.41
3	HAM	11,610	3,26,988	1,25,708	4,52,696	60	49.90	56.10	57.40
Total		23,268	5,82,914	2,05,726	7,88,640	100	100	100	100

(Source: As per information provided by NHAI)

Audit observed that there was variation from the approved modal mix, while approving and awarding the projects under various modes of construction, as out of total national highways length of 23,268 km awarded, a meagre national highways length of 1.75 per cent was being developed under BOT (Toll) mode (as against 10 per cent approved for this mode of construction) whereas 48.35 per cent and 49.90 per cent of national highways length were being constructed under EPC and HAM mode respectively (as against 30 per cent and 60 per cent approved respectively for these mode of construction). The financial implication of above was already anticipated by NHAI Board in its 118th meeting wherein it apprehended that any

¹¹⁷ As per data furnished by management.

decrease in private investment in BPP-I projects would lead to increase in financial burden over the NHAI and the same has been commented under para 4.1.1.

MoRTH replied (April 2022) that the projects of NHAI were taken up after due diligence and with the approval of the Board of NHAI.

The reply of MoRTH may be viewed in light of the fact that the baseline scenario of modal mix was approved by NHAI Board which was not followed.

4.2.2 Modal mix for NHIDCL & MoRTH

NHIDCL and Road wing of MoRTH did not decide any modal mix for projects being implemented by them.

MoRTH did not furnish reply to the Audit observation.

4.2.3 Prudence in selection of mode of construction

Some of the instances where mode of construction was not chosen carefully are mentioned below:

4.2.3.1 Dwarka Expressway

MoRTH decided (11 September 2017) to execute Dwarka Expressway under EPC mode over HAM considering the importance/ urgency to complete it and to avoid delay in its completion. It justified the decision of mode of construction based on generalised perception that additional six months' time was required for declaration of financial close in HAM mode and also during that period, the market scenario was such that concessionaires were finding it difficult to achieve the financial close in awarded HAM projects. However, while deciding on the mode of construction of Dwarka Expressway, MoRTH/ NHAI failed to analyse the availability of right of way for the project and also failed to stabilise the Request for Proposal terms and conditions. As a result, though notice inviting tender for Dwarka Expressway Package I, III and IV¹¹⁸ were called on 31 January 2018, 18 September 2017 and 29 November 2017 respectively, the appointed date of these high priority projects could be fixed as 24 September 2020, 29 November 2018 and 05 December 2018 respectively i.e., after a period of 967 days, 437 days and 371 days respectively from the notice inviting tender date whereas ideally the appointed date should have been fixed after a period of 120 days from floating of notice inviting tender. This defeated the very purpose of choosing EPC mode over HAM which involved the sanctioned civil cost of ₹7,287.29 crore for a project length of merely 29.06 km.

Had MoRTH/ NHAI chosen HAM mode over EPC, only 40 *per cent* of bid project cost would have been borne by NHAI during construction period and rest 60 *per cent* of bid project cost would have been paid in the form of semi-annual annuities spread over 15 years during the operation period. Further, MoRTH's claim (September 2017) of concessionaire finding it difficult to achieve financial close in HAM projects was in contrast to the NHAI Board's decision (November 2017) whereby approved modal mix of BPP-I comprised 60 *per cent* length to be constructed under HAM mode.

¹¹⁸ *Dwarka Expressway Package II not commented because it was not in Audit sample.*

MoRTH replied (April 2022) that delay in availability of work front to contractor was an unforeseen circumstance which included in case of Package I delay in processing of tree removal applications by Delhi Government and in case of Package III and IV due to litigation on land resulting in delayed fixation of appointed date. However, the decision to sanction Dwarka Expressway on EPC Mode was a prudent decision taken in good faith in September 2017 considering the normal timelines for completion of pre-construction activities.

Reply of MoRTH may be viewed against the fact that availability of encumbrance free land should have been ensured before opting for EPC mode as the availability of 90 *per cent* right of way was to be ensured before award¹¹⁹ and since, EPC mode of construction involving higher upfront expenditure by NHAI was chosen over HAM so as to develop this high priority project timely, the availability of encumbrance free land was must. Also, non-availability of encumbrance free land due to litigations and pending permission for tree cutting was normal phenomenon in highways construction and could not be construed as unforeseen circumstances if projects were appraised diligently.

4.2.3.2 Balance works of Barasat-Krishnagar

EPC mode of construction was considered (December 2018) by NHAI over the HAM mode of construction for this balance work having sanctioned civil cost of ₹1,209.58 crore on the pretext that HAM mode would not be attractive for the bidders and that the project implementation would get delayed in case HAM mode was chosen. However, the Management failed to ensure availability of requisite right of way for the project and also delayed taking a decision regarding its implementing agency due to which appointed date of the project could be fixed as 31 August 2020 i.e., around 20 months after the decision of December 2018, thereby, defeating the purpose of selection of EPC mode over HAM mode.

MoRTH did not furnish reply for the Audit observation.

4.2.3.3 Gwalior -Shivpuri (Mohana Town Portion) and Development of existing roads in Ule, Suratgaon, Malumbra, Tuljapur, Shingoli, Yedeshi, Naldurg & Omerga

Gwalior-Shivpuri (Mohana Town Portion) was a bypassed portion of old NHDP projects, which was to be developed under one-time improvement mechanism approved in 2015-16 and Development of existing roads in Ule, Suratgaon, Malumbra, Tuljapur, Shingoli & Yedeshi (NH-211) and Naldurg & Omerga (NH-65) were maintenance works, for which separate funding was available, but still these projects were awarded under BPP-I, for a total project cost of ₹ 46.84 crore in spite of no provisioning for these type of projects under BPP-I as per CCEA approval. Thus, funds meant for Bharatmala Pariyojana were being utilised for those types of works/projects which were not under the ambit of Bharatmala and for which distinct schemes and funds were mandated.

¹¹⁹ *In case of HAM mode only 80 per cent right of way was to be ensured before award of project, hence, right of way condition was less stringent for HAM project which made it more attractive.*

MoRTH, in its reply (April 2022), admitted that these projects could not be completed under NHDP and the same were merged with BPP-I in spite of there being no provision for same in CCEA approval.

Recommendation No.14: MoRTH should ensure choosing most optimal mode of construction for BPP-I projects considering the market scenarios and BPP-I financial constraints as it affects the funding requirement from Government & borrowings and also has implications on the viability of the project.

4.3 Maintenance of project-based expenditure and revenue

In furtherance to CCEA approval and considering the scale of investment, MoRTH issued following directions through Standard Operating Procedure (December 2017) for prudence in accounting and financial planning/ management of BPP-I:

- A system of project-based accounting was to be put in place to ensure that all the costs incurred at all times during the life cycle of the project were accurately captured. These costs included, *inter alia*, civil construction cost, land acquisition cost, utility shifting cost, operation & maintenance cost and debt cost & other interest expenses whereas the sources of revenue, *inter alia*, included toll fee collection, premium or negative grant and damages or penalty collected from the contractors/concessionaires;
- The field offices were required to ensure that all the costs incurred and revenue received from any project were to be maintained as part of project-based accounting system so as to assess the financial status of any such project stretch. Profit centres were to be defined and monitored at a project/ stretch level, sub-corridor level, corridor level and network level; and
- A detailed 20 years' financial model was to be maintained by NHAI based on project level accounting. The model was to compute & project the funds generated and the fund requirement for 20 years for a project.

Audit, while reviewing the records pertaining to project accounting for BPP-I in NHAI and NHIDCL, observed the following:

4.3.1 NHAI's project accounting

- NHAI Board, in its 118th meeting (16 November 2017), decided in furtherance to MoRTH's Standard Operating Procedure that all field offices were required to maintain current and future (expected) costs incurred and revenues received from any project on a monthly basis, as part of project-based accounting so as to assess the financials of any such project stretch. However, the decision of NHAI Board and MoRTH's Standard Operating Procedure could not be implemented till 31 March 2023 as only the actual cost incurred was being captured project-wise in NHAI's accounting system. However, the project-wise revenue being generated viz., project-wise toll revenue, negative grants, premium, interest accruals and other default payments by contractors/concessionaires was not being mapped to individual projects in the prevalent accounting system of NHAI;

- There was no system to map the sources of financing of an individual project i.e., it could not be known in prevalent accounting system that whether a particular project was financed through loan or through Government financial support or both and in what proportion were different components of Government financial support viz., Central Road Fund, Toll Operate Transfer (upfront user fee) receipts or Permanent Bridge Fee Fund were used to finance a particular project;
- Due to non-maintenance of project-wise distinction of sources and application of borrowed funds, debt-serving cost and maturity period of these borrowed funds could also not be mapped for an individual project. For instance, as per NHAI financial statements for the year 2021-22, total borrowings of ₹ 3,48,907.24 crore were outstanding, which were financed from different sources viz., Capital Gains Bonds, Tax-Free Bonds, Taxable Bonds, Terms loans from various commercial banks and Small Saving Funds with varied maturity periods ranging from five years to 30 years and equally varied rate of interest ranging from five *per cent* to 8.75 *per cent*. However, NHAI accounting system could not map project-wise usage of these borrowed funds; and
- No record pertaining to 20 years' financial model of BPP-I projects, as directed by MoRTH, was /could be maintained by NHAI.

MoRTH admitted (April 2022) that the mechanism to capture project wise financials was still being evolved and same would be implemented after due approval. It also admitted the fact that in NHAI fund allocation were not scheme/project specific like Government Public Sector Undertakings/Companies.

4.3.2 NHIDCL's project accounting

- NHIDCL management failed to conceptualise any mechanism to capture current and future (expected) costs incurred and revenues to record project costs and project revenues over its life cycle; and
- Only the project-wise actual cost incurred was being captured in NHIDCL accounting system. However, the project-wise revenue being generated, if any, in the form of interest accruals and default payments/ liquidated damages by contractors etc., were not being mapped to specific projects.

MoRTH replied (May 2022) that NHIDCL was executing projects mainly on EPC mode where funds were allocated from MoRTH and thus, it did not have any profit centres as of now.

Reply of MoRTH may be viewed against the fact that MoRTH emphasised on identification of profit centres irrespective of the mode of construction and such identification could be done when proper project accounting including mapping of project revenues in the form of interest accruals and default payments/liquidated damages by contractors was matched with specific projects.

4.3.3 Recovery of capital cost in public funded projects

MoRTH circulars (24 January 2013, 25 April 2013 and 07 June 2013) stated that in case of public funded projects like EPC project, user fee was to be reduced to 40 *per cent* after recovery

of capital cost of the projects. In case the project was augmented before recovery of complete capital cost, then new capital cost was to be arrived at by adding the cost of augmentation, to the unrecovered original capital cost of the project. However, in view of non-mapping of sources of financing, revenue generation and operating costs to each individual project by any of the implementing agencies of MoRTH and especially by NHAI, accompanied with no system of preparing any project-wise Balance Sheet for public-funded projects as directed in above mentioned circulars, no authentic project accounting could be done for these projects. Resultantly, the validity of user fee being charged for public funded projects *vis-à-vis* the recovery of their capital cost could not be assessed at any time.

MoRTH assured (April 2022) that project wise accounting would be further streamlined.

4.3.4 Capturing of complete project cost

Wherever any land cost or other project costs were being borne by State Government or any other State/ Central agencies, there was no mechanism to capture these costs to reflect the cost of the project in totality *vis-a-vis* ₹ 5,35,000 crore approved by CCEA.

MoRTH assured (April 2022) that it would be taken into consideration at the time of re-implementation of project wise accounting after the resolution of pending issues. It further informed (May 2022) that in case of NHIDCL, none of the States has come forward to bear the cost of land or other project cost except of MMLP at Jogighopa where land was provided by Assam Government and the cost has been considered as the share of the State Government to the Special Purpose Vehicle.

Thus, there existed no financial/accounting system in NHAI/ NHIDCL/ MoRTH to capture and map the actual costs and revenues to a specific project so as to authentically identify project/ stretch level, sub-corridor level, corridor level or network level profit centres, as envisaged in MoRTH's Standard Operating Procedure.

Recommendation No.15: MoRTH should consider establishing an elaborate and comprehensive project accounting framework for itself and its implementing agencies so as to identify the profit centres and to prudently plan the sources of financing and their usage for different projects.

4.4 Cost variations

4.4.1 Variations in CCEA approved civil cost

CCEA while approving financial outlay of ₹ 5,35,000 crore for roads length of 34,800 km for BPP-I, bifurcated the total outlay into civil cost and pre-construction cost. It approved civil cost of ₹ 4,86,500 crore for BPP-I. The comparison of CCEA approved civil cost for BPP-I and the actual civil cost sanctioned for projects awarded¹²⁰ upto 31 March 2023 was as follows:

¹²⁰ As per data furnished by management.

**Table 4.5: Variation in per km civil cost approved and sanctioned under Phase-I of
Bharatmala Pariyojana**

S.No.	Component of BPP-I	CCEA approved civil cost			Sanctioned civil cost (as on 31 March 2023)			Length awarded as against approved	Civil cost sanctioned against the approved	Per km cost sanctioned against the approved
		Length (in km)	Cost (₹ in crore)	Per km cost (₹ in crore)	Length awarded (in km)	Cost (₹ in crore)	Per km cost (₹ in crore)			
	a	b	c	d=c/b	e	f	g=f/e	h=e/b*100	i=f/c*100	j=g/d*100
1	Economic Corridors	9,000	1,17,000	13.00	8,527	2,05,551	24.11	94.74	175.68	185.46
2	Inter-Corridor & Feeder Roads	6,000	70,500	11.75	3,963	78,076	19.70	66.05	110.75	167.66
3	National Corridors/ National Corridors Efficiency Improvements Program	5,000	91,000	18.20	2,601	81,722	31.42	52.02	89.80	172.64
4	Border & International Connectivity Roads	2,000	20,000	10.00	1,600	11,270	7.04	80.00	56.35	70.40
5	Coastal & Port Roads	2,000	17,000	8.50	415	6,281	15.13	20.75	36.95	178.00
6	Green-field Expressways	800	31,000	38.75	2,422	1,13,190	46.73	302.75	365.13	120.59
7	Residual NHDP	10,000	1,40,000	14.00	6,788	1,32,578	19.53	67.88	94.70	139.50
Total		34,800	4,86,500	13.98	26,316	6,28,668	23.89	75.62	129.22	170.89

(Source: CCEA Note dated 24 October 2017 and data furnished by MoRTH/Management)

In respect of approved civil cost of BPP-I projects, Audit observed the following:

- Up to, 31 March 2023, an amount of ₹ 6,28,668 crore has been sanctioned as civil cost for BPP-I projects with a total length of 26,316 km as against civil cost of ₹ 4,86,500 crore approved by CCEA for BPP-I length of 34,800 km. Thus, against 75.62 per cent of BPP-I national highways length awarded, 129.22 per cent of the total CCEA approved civil cost has already been sanctioned;
- As against average CCEA approved civil cost of ₹ 13.98 crore per km, the actual sanctioned civil cost was ₹ 23.89 crore per km i.e., 170.89 per cent of the average approved civil cost;
- In six components, the sanctioned civil cost per km was more than CCEA approved civil cost per km. Thus, Economic Corridors, Coastal & Post Connectivity Roads, National Corridors/National Corridors Efficiency Improvements Program, Inter-Corridor & Feeder Roads, Residual NHDP and Green-field Expressways have sanctioned civil cost per km of

185.46 per cent, 178.00 per cent, 172.64 per cent, 167.66 per cent, 139.50 per cent and 120.59 per cent of CCEA approved cost respectively. However, in Border & International Connectivity Roads component, the sanctioned civil cost per km was 70.40 per cent of the approved per km civil cost;

- Green-field Expressways have been awarded with maximum sanctioned per km civil cost of ₹ 46.73 crore for 302.75 per cent of the CCEA approved length. As a result ₹ 1,13,190 crore has been sanctioned as civil cost for the Green-field Expressways against ₹ 31,000 crore approved by CCEA for this component. Similarly, for Economic Corridors with maximum sanctioned length of 9,000 km, after Residuary NHDP component, for BPP-I approved by CCEA, the sanctioned per km civil cost was coming to ₹ 24.11 crore as against ₹ 13 crore per km civil cost approved by CCEA resulting in highest variation in this component.
- During BPP-I project's appraisal and approval stage, the increased estimates of civil costs were being justified by MoRTH/Management by stating that CCEA approved civil cost did not include cost of structures¹²¹ viz., bridges, flyovers, intersections, underpasses and tunnels etc. This indicated that the fact of non-inclusion of structures cost was not apprised to CCEA while getting the Bharatmala Pariyojana approved; and
- Construction cost of flexible pavement is cheaper than rigid pavement by 30 per cent, however, rigid pavement proves to be economical during its life cycle of 30 years in comparison to life cycle of 15 years for flexible pavement. While reviewing the BPP-I projects on test check basis it was observed that:
 - In case of five sample projects¹²², rigid pavement was considered over flexible pavement, with no technical justification, based on mere fact that rigid pavement was economical, over its life cycle than flexible pavement but without considering the fact that construction cost of flexible pavement was less and ₹ 5,35,000 crore estimates approved by CCEA were based on cost of construction only; and
 - On test check basis, it was observed that management has also taken views contrary to above while deciding pavement designs of the BPP-I stretches, as in case of Khajuwala-Poogal-Bap, where flexible pavement was proposed considering it economical due to less initial capital expenditure whereas in case of Varanasi-Dagmagpur (Pkg.-I), the project was proposed to be taken up on rigid pavement as it was stated to be economical than flexible pavement over the life cycle.

MoRTH, in its reply (April 2022), stated the following:

- The initial cost assessment approved by CCEA for Phase-I was based on norms established in the 2009 report of Shri BK Chaturvedi Committee and escalated to 2016 in the absence of actual detailed project reports at the time of program conceptualisation and the same were

¹²¹ *Despite the general observation that cost of such structures constituted major portion of the civil cost of the project.*

¹²² *Dagmagpur-Lalganj (Pkg.-II), Lalganj-Hanumanah (Pkg.-III), Varanasi-Dagmagpur (Pkg.-I), Anandapuram-Pendurthi-Anakapalli and Duburi-Chandikhole (Pkg.-III)*

not aligned to meet the evolved needs of high-quality highways network required to cater to growing traffic in recent years;

- The variation was due to actual site conditions as per detailed project reports, soil conditions, distance of material sources, construction constraints, market forces etc. Further, annual inflation was not factored in the estimation of capital cost during conceptualisation;
- There was increase of ₹ 1,00,000 crore in BPP-I estimates due to development of higher lanes configuration i.e., 56 *per cent* of 2,409 km of Expressways was planned in eight lanes configuration against original estimate of 800 km of six lane Expressways and 47 *per cent* of 10,383 km of Economic Corridors was planned to be developed in six lanes/ eight lanes configuration and the rest in four lanes configuration, compared to original estimate of 60 *per cent* (of approved 9,000 km) in four lanes and 40 *per cent* in two lane plus paved shoulders configuration;
- There was increase of ₹ 70,000 crore due to development of Economic Corridors (35 *per cent* of 10,383 km) and National Corridors/National Corridors Efficiency Improvements Program (23 *per cent* of 3,258 km) national highways under access-controlled mechanism than non-access controlled originally planned;
- There was increase of ₹ 15,000 crore with improved design specification/ standards of roads;
- There was increase of ₹ 18,000 crore with introduction of superior perpetual pavement and additional layers like Stone Matrix Asphalt to optimise the total lifecycle costs of the highways; and
- There was increase of ₹ 80,000 crore due to escalation in price of raw materials like cement, steel, bitumen.

It is evident from the reply of MoRTH that:

- There were significant changes made by MoRTH and its implementing agencies in the scope of projects and cost estimates for BPP-I as against what was approved by CCEA; and
- Cost estimates submitted to CCEA were not complete;

4.4.2 Variation in CCEA approved pre-construction cost

CCEA while approving financial outlay of ₹ 5,35,000 crore for roads length of 34,800 km for BPP-I, approved pre-construction cost of ₹ 48,500 crore for BPP-I. Pre-construction cost included project's land acquisition cost, resettlement & rehabilitation cost, utility shifting cost like water pipelines, electrical wires, gas pipelines etc., and payment made to forest department for afforestation etc. The comparison of CCEA approved pre-construction cost for BPP-I and the actual pre-construction cost sanctioned for projects awarded¹²³ up to 31 March 2023 was as follows:

¹²³ As per data furnished by management.

Table 4.6: Variation in per km pre-construction cost approved and sanctioned under Phase-I of Bharatmala Pariyojana

S.No.	Component of BPP-I	CCEA approved pre- construction cost			Sanctioned pre-construction cost (as on 31 March 2023)			Length awarded as against approval	Sanctioned cost as against approved cost	Per km cost sanctioned against the approved
		Length (in km)	Cost (₹ in crore)	Per km cost (₹ in crore)	Length awarded (in km)	Cost (₹ in crore)	Per km cost (₹ in crore)	(in per cent)		
		a	b	c=b/a	d	e	f=e/d	g=d/a*100	h=e/b*100	i=f/c*100
1	Economic Corridors	9,000	3,000	0.33	8,527	80,057	9.39	94.74	2,668.57	2,845.45
2	Inter- Corridor & Feeder Roads	6,000	9,500	1.58	3,963	25,961	6.55	66.05	273.27	414.56
3	National Corridors/National Corridors Efficiency Improvements Program	5,000	9,000	1.80	2,601	23,288	8.95	52.02	258.76	497.22
4	Border & International Connectivity Roads	2,000	5,000	2.50	1,600	2,732	1.71	80.00	54.64	68.40
5	Coastal & Port Connectivity Roads	2,000	3,000	1.50	415	1,297	3.12	20.75	43.23	208
6	Green-field Expressways	800	9,000	11.25	2,422	44,913	18.54	302.75	499.03	164.80
7	Residual NHDP	10,000	10,000	1.00	6,788	39,672	5.84	67.88	396.72	584.00
Total		34,800	48,500	1.39	26,316	2,17,920	8.28	75.62	449.32	595.68

(Source: CCEA Note dated 24 October 2017 and data furnished by MoRTH/Management)

In respect of pre-construction cost of BPP-I projects, Audit observed the following:

- Up to 31 March 2023, an amount of ₹ 2,17,920 crore has been sanctioned as pre-construction cost for BPP-I projects having length of 26,316 km as against pre-construction cost of ₹ 48,500 crore approved by CCEA for 34,800 km. Thus, against 75.62 per cent of BPP-I national highways length awarded, 449.32 per cent of CCEA approved pre-construction cost has already been sanctioned;
- As against average CCEA approved pre-construction cost of ₹ 1.39 crore per km, the actual sanctioned pre-construction civil cost was coming to be ₹ 8.28 crore per km i.e., 595.68 per cent of the approved cost;
- In six components, the sanctioned pre-construction cost per km was in excess of CCEA approved per km pre-construction cost whereby projects under Economic Corridors, Residual NHDP, National Corridors/National Corridors Efficiency Improvements Program,

Inter-Corridor & Feeder Roads, Coastal & Port Connectivity Roads and Green-field Expressways had sanctioned per km pre-construction cost as 2,845.45 *per cent*, 584 *per cent*, 497.22 *per cent*, 414.56 *per cent*, 208 *per cent* and 164.80 *per cent* of CCEA approved cost respectively. However, in Border & International Connectivity Roads components, the sanctioned per km pre-construction cost was 68.40 *per cent* of the approved per km pre-construction cost; and

- Green-field Expressways, with maximum sanctioned per km pre-construction cost of ₹18.54 crore per km, have been awarded 302.75 *per cent* more than the CCEA approved length. As a result, ₹ 44,913 crore has already been sanctioned as pre-construction cost under this component as against ₹ 9,000 crore pre-construction cost approved of this component. Similarly, for Economic Corridors component, with maximum sanctioned length for BPP-I by CCEA, after Residual NHDP component, the sanctioned per km pre-construction cost was ₹ 9.39 crore as against ₹ 0.33 crore sanctioned by CCEA resulting in highest variation in this component.

Thus, huge differences were noticed in CCEA approved pre-construction cost and MoRTH/NHAI/NHIDCL sanctioned pre-construction cost.

MoRTH, in its reply (April 2022), stated that there was increase in total cost of the projects under BPP-I from CCEA approved ₹ 5,35,000 crore to the revised estimate of ₹ 10,30,302 crore due to increase in civil cost and cost of land acquisition etc. In respect of land acquisition estimates, it replied that normative estimates were used in estimation of quantum and cost of land acquisition during the conceptualisation stages of Bharatmala Pariyojana, however following was the reason for variation in land cost:

- Cost of land acquisition for Bharatmala Pariyojana was estimated considering philosophy of brown-field expansion, the most prevalent model of national highways development prior to 2017;
- Only 800 km of Expressways out of total length of 24,800 km was envisaged as green-field development; and
- Increase of ₹ 2,15,000 crore was due to 6.4 times increase in quantum of land acquisition with shift towards green-field alignments, higher lanes km and wider right of way norms. Such revisions have been critical to ensure high quality corridors and to enable integrated infrastructure development.

MoRTH's reply was indicative of the fact that:

- Significant changes were made by MoRTH and its implementing agencies in the scope of projects and cost estimates for BPP-I as against that was approved by CCEA; and
- Cost estimates submitted to CCEA were not complete.

In the Exit Conference (May 2022), MoRTH stated that after approval of Public Investment Board regarding the time overrun and cost overrun in BPP-I, a detailed cabinet note on progress of BPP-I including optimisation, substitution of stretches, time overrun and cost overrun, etc., would be submitted for CCEA approval.

Thus, although detailed working papers for arriving out the CCEA approved per km civil cost and per km pre-construction cost for different components of BPP-I were not provided to Audit, from Table 4.5 and Table 4.6 above and MoRTH's reply, it could be inferred that BPP-I estimates submitted for CCEA approval, including the BPP-I length and its fund requirements, were not accurate and the same was apprehended (November 2017) by NHAI itself in its 118th Board meeting.

4.5 Summing up

The financial outlay of ₹ 5,35,000 crore approved by CCEA fell short of funds needed for achieving BPP-I targets, as after awarding only 75.62 *per cent* of CCEA approved length, 158.24 *per cent* of CCEA approved financial outlay has already been sanctioned. Thus, there was disconnect among the financial outlay approved by CCEA, financial plans for BPP-I approved by respective implementing agencies and realisation of the plans thereof.

There was variation from the approved modal mix of NHAI, as out of total national highways length of 23,268 km awarded by NHAI, a meagre national highways length of 1.75 *per cent* was being developed under BOT (Toll) mode (as against 10 *per cent* approved for this mode of construction) whereas 48.35 *per cent* and 49.90 *per cent* of national highways length were being constructed under EPC and HAM mode respectively (as against 30 *per cent* and 60 *per cent* approved respectively for these mode of construction). MoRTH should ensure choosing most optimal mode of construction for BPP-I projects considering the market scenarios and BPP-I financial constraints.

The project accounting was weak in the absence of any system to identify profit centres, to assess correct user fee in case of public funded projects and to map the source of revenue to the project cost. MoRTH should consider establishing an elaborate and comprehensive project accounting framework for itself and its implementing agencies so as to identify the profit centres and to prudently plan the sources of financing and their usage for different projects.

Significant changes made in the scope of projects and cost estimates as well as richer project specifications adopted have pushed up the sanctioned cost of projects awarded under BPP-I. For 75.62 *per cent* of project length awarded up to 31 March 2023, 129.22 *per cent* of approved civil cost and 449.32 *per cent* of approved pre-construction cost have been sanctioned. This has resulted in sanctioned civil cost being ₹ 23.89 crore per km as against the CCEA approved cost of ₹ 13.98 crore per km and sanctioned pre-construction cost being ₹ 8.28 crore per km as against the CCEA approved cost of ₹ 1.39 crore per km. Considering material changes in the physical and financial targets approved by CCEA affecting the fund requirements for BPP-I in future, MoRTH should consider approaching CCEA for apprising the progress made so far and for seeking the funds required by Ministry in future.

CHAPTER 5

AWARD OF PROJECTS



Chapter 5

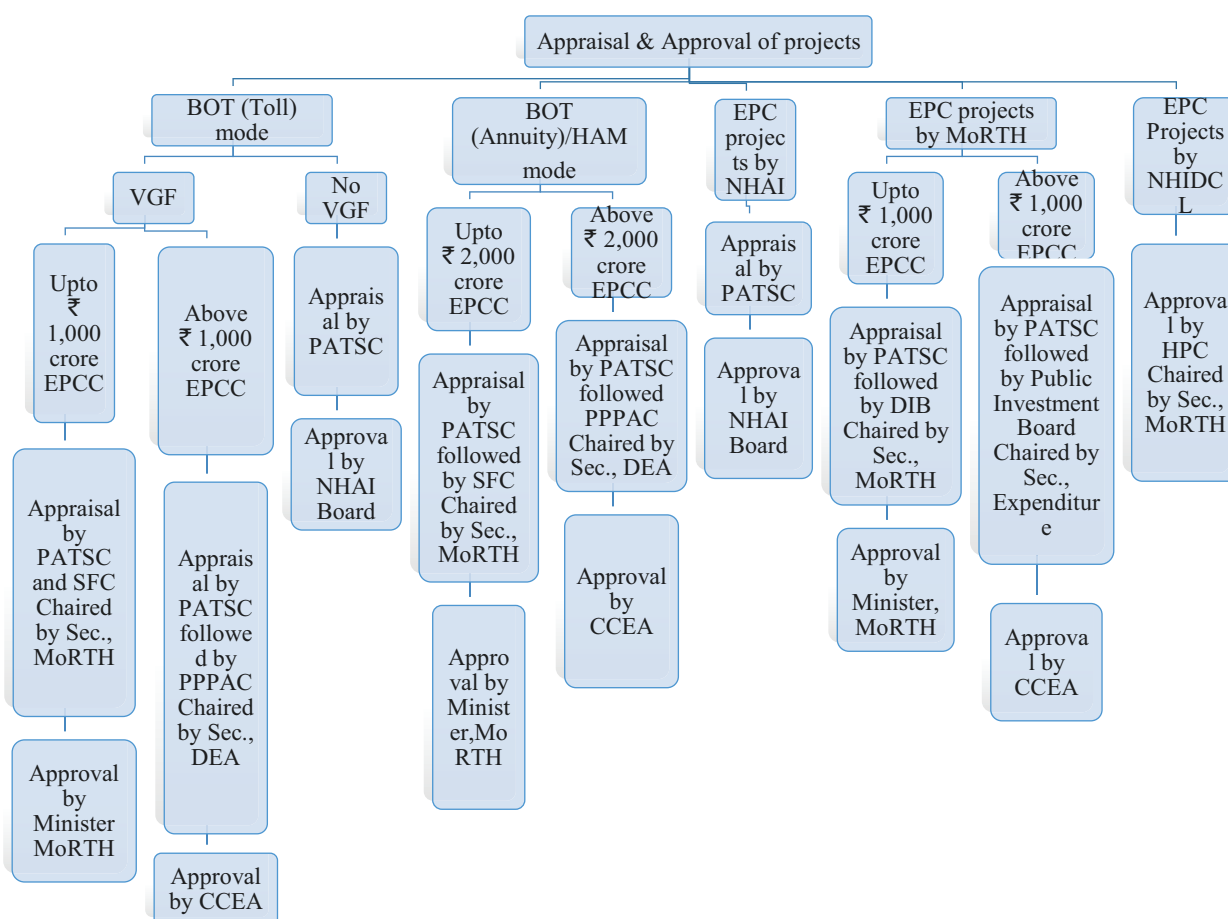
Award of Projects

CCEA, while approving BPP-I, provided broad guidelines for implementation of Bharatmala Pariyojana including mechanism for appraisal and approval of projects and guidelines for scrutiny of individual projects. Audit observations, based on the review of the implementation of BPP-I, in context of sample 66 projects, *vis-à-vis* applicable guidelines and commercial prudence have been brought out in the following paras of this chapter.

5.1 Delegation of powers for project appraisal and approval

Delegation of powers for project appraisal and approval as determined by CCEA were as follows:

Flow Chart¹²⁴ 5.1: Delegation of powers for project appraisal and approval under Phase-I of Bharatmala Pariyojana



(Source: CCEA Note dated 24 October 2017)

¹²⁴ Project Appraisal & Technical Scrutiny Committee (PATSC), Standing Finance Committee (SFC), Public Private Partnership Appraisal Committee (PPPAC), Delegated Investment Board (DIB), High Powered Committee (HPC) and Estimated Project Civil Cost (EPCC).

CCEA directed that all projects to be implemented under BPP-I by NHAI or MoRTH were to be technically, financially, and economically appraised duly by an empowered and well-equipped Project Appraisal & Technical Scrutiny Committee (PATSC). PATSC to be set up in NHAI/MoRTH was to be a dedicated unit comprising experts from NITI Aayog, Project and Finance Division. MoRTH directed (07 December 2017 and 21 December 2017) NHIDCL to form an in-house PATSC under the Chairmanship of Managing Director of NHIDCL with an expert from NITI Aayog and Project & Finance Division of NHIDCL being its members.

In regard to the above, Audit observed the following:

5.1.1 Separation of appraising, approving and executing Authority

As evident from the flow chart above, in Built Operate & Transfer (Toll) projects with no viability gap funding (VGF), all EPC projects implemented by NHAI and EPC projects implemented by MoRTH with an estimated project civil cost up to ₹1,000 crore, the implementing agency (NHAI and MoRTH) responsible for executing the project was also appraising and approving the project. This mechanism lacked separation of powers among execution, appraisal and approval of a project.

MoRTH did not furnish reply to the Audit observation.

5.1.2 Delegation of powers

In BoT (Toll) projects requiring VGF from NHAI, wherein financial risk of NHAI was restricted to the extent of 40 *per cent* of the total project cost as VGF could not exceed this limit¹²⁵, such projects with estimated project civil cost up to ₹1,000 crore were to be approved by Minister (MoRTH) and projects with estimated project civil cost beyond ₹1,000 crore were to be approved by CCEA. However, in case of BoT (Annuity) Projects¹²⁶ and HAM projects,¹²⁷ wherein financial risk pertaining to recovery of initial capital cost and operation & maintenance cost was that of NHAI, the ceiling of estimated project civil cost requiring approval by Minister of MoRTH and CCEA was raised up to ₹ 2,000 crore and beyond ₹ 2,000 crore respectively. Furthermore, EPC projects¹²⁸ to be executed by NHAI, wherein financial risk pertaining to recovery of initial capital cost and operation & maintenance cost was entirely that of NHAI, were to be approved by NHAI Board¹²⁹ irrespective of their estimated project civil cost. Audit observed that there was negative correlation between the commercial risk of the Government

¹²⁵ *NHAI financing of the project was to be restricted to this amount only as balance amount was to be funded by concessionaire and the risk involved in its recovery along with recovery of operating and maintenance cost was to be borne by concessionaire only in view of tolling rights being with concessionaire.*

¹²⁶ *Financial risk involved in non-recovery of initial capital cost and recovery of operating & maintenance cost due to inadequate toll collection was totally of NHAI as concessionaire was eligible for pre-determined semi-annuities.*

¹²⁷ *Financial risk involved in non-recovery of initial capital cost and recovery of operating & maintenance cost due to inadequate toll collection was totally of NHAI as concessionaire was eligible for pre-determined semi-annuities.*

¹²⁸ *Financial risk involved in non-recovery of initial capital cost and recovery of operating & maintenance cost due to inadequate toll collection was totally of NHAI.*

¹²⁹ *NHAI Board comprised of seven full time members (Chairman-NHAI and six Members-NHAI) and Four part time Members (Secretary, Department of Expenditure, CEO-NITI Aayog, Secretary-MoRTH and Director General (RD) & SS-MoRTH).*

in a project and the level of authority approving such projects. It was further observed that no appraisal and approval mechanism for item rate contracts was proposed for CCEA approval despite the fact that balance works/languishing projects awarded on item rate basis had high risk/complexities and audit observations on same have been given in para 5.3.

MoRTH did not furnish reply to the Audit observation.

5.1.3 Delegations of powers within NHAI for project appraisal and approval

NHAI Board, in its 118th meeting (16 November 2017), delegated powers within NHAI for project appraisal and approval of EPC projects as detailed below:

Table 5.1: Delegation of powers for appraisal and approval within NHAI

Estimated Project Civil Cost	Appraisal by	Approval by
Up to ₹ 500 crore	Internal Appraisal Committee Chaired by Member, NHAI	Chairman, NHAI
More than ₹ 500 crore to ₹ 1,000 crore	Project Appraisal & Technical Scrutiny Committee Chaired by Member, NHAI	Executive Committee Chaired by Chairman, NHAI with full time Members of NHAI being its members
More than ₹ 1,000 crore	Project Appraisal & Technical Scrutiny Committee Chaired by Member, NHAI	NHAI Board

(Source: Delegation of powers decided by NHAI Board)

Audit observed that the delegation of powers, as above, implied non-separation of roles of execution, appraisal and approval of projects and denied the opportunity of scrutiny of projects independently. As per NHAI Act, 1988, at least two non-government professionals having knowledge or experience in financial management, transportation planning or any other relevant discipline were to be appointed as part-time members of NHAI Board. This requirement was also insisted by NITI Aayog while commenting (23 November 2016) on the draft CCEA Note on Bharatmala Pariyojana during inter-ministerial consultation. However, non-government professionals were not appointed on NHAI Board.

Audit observed that the authority exercised by NHAI in appraisal and approval of EPC projects being implemented by it was disproportionately higher as compared to the authority of NHIDCL and MoRTH in this regard. EPC projects being implemented by NHIDCL¹³⁰ were to be approved by High Powered Committee Chaired by Secretary MoRTH and EPC projects being implemented by MoRTH, were to be approved by CCEA if estimated project civil cost was beyond ₹ 1,000 crore.

Implication of such delegation to NHAI whereby the EPC projects to be implemented by NHAI were to be entirely appraised and approved within NHAI only with no financial capping defined, were evident in test check done by Audit. It was observed in test check that in 31 EPC projects¹³¹ of Delhi-Vadodara Expressway with cumulative sanctioned civil cost of around ₹ 32,839 crore (21 of these projects individually had sanctioned civil cost of more than

¹³⁰ It was executing only EPC projects.

¹³¹ Packages in which corridors or stretches have been divided for invitation of civil construction tenders.

₹1,000 crore) and four EPC projects¹³² of Dwarka-Expressway having cumulative sanctioned civil cost of around ₹7,287.29 crore (all projects individually with sanctioned civil cost of more than ₹1,000 crore) were approved by NHAI Board only. In comparison, in case of NHIDCL, five sample EPC projects with sanctioned civil cost ranging between ₹ 207.08 crore to ₹ 319.93 crore were approved by MoRTH.

MoRTH did not furnish reply to the Audit observation.

5.1.4 Powers of NHAI to decide mode of construction

NHAI, which was developing 70,950 km of national highways length out of 76,999 km of national highways length determined for BPP-I, was also delegated the power to decide the mode of construction of the projects being implemented by it.

Audit observed that the decisions on mode of construction were being taken by NHAI without any valid justification on record and the same has been discussed in detail in para 4.2 of the Report.

Audit further observed that before delegating the powers to decide the mode of construction of 'projects', the appraisal and approval mechanism proposed to CCEA did not define the term 'project' and 'package'. Thus, for taking decision on mode of construction, whether the packages in which a single project was divided for construction purposes would constitute separate projects or all packages combined would constitute a single project was not clearly defined. Resultantly, though decision on mode of construction was being taken by considering project (accumulation of different packages) as a whole, for project appraisal and approval purposes, individual package was being considered as a separate project.

For illustration, in case of Vadodara-Mumbai Expressway Phase IA having five packages and a composite sanctioned civil cost of ₹ 6,271.52 crore, the detailed project report and the mode of construction was decided by considering Phase IA as a single project. However, while doing appraisal and approval of these five packages being constructed under HAM mode (whereby the sanctioned civil cost of these packages individually was ranging between ₹ 935.52 crore to ₹1,637.01 crore) the packages themselves were considered as a separate project which were appraised by NHAI/MoRTH and approved by MoRTH. Had the Phase IA been considered as a single project for appraisal and approval purposes, as per delegation of powers for a HAM project, with estimated project civil cost of more than ₹ 2,000 crore, CCEA approval for the same was required.

Delhi-Vadodara Expressway with civil cost of around ₹ 32,839 crore and which was not included in the CCEA approved list of BPP-I projects was approved at the level of NHAI Board. Similarly, NHAI Board approved Dwarka Expressway with civil cost of ₹7,287.29 crore with per km civil cost of ₹ 250.77 crore as against per km civil cost of ₹18.20 crore approved by CCEA, these two projects, despite being of high significance, were neither assessed by MoRTH nor by CCEA.

¹³² Packages in which corridors or stretches have been divided for invitation of civil construction tenders.

MoRTH did not furnish reply to the Audit observation.

5.1.5 Implementation of CCEA prescribed mechanism

The appraisal and approval mechanism prescribed by CCEA for BPP-I was not being followed by implementing agencies fully as observed from the following:

5.1.5.1 Appraisal and approval of NHAI projects

Out of 50 sample projects¹³³ of NHAI, in case of eight projects¹³⁴ appraisal by Project Appraisal & Technical Scrutiny Committee was not done due to either these being appraised under old NHDP programme or they being balance works/ one time improvement works. For 35 projects out of 50 projects, the notice inviting tender were floated without there being any technical and financial appraisal of projects by Project Appraisal & Technical Scrutiny Committee as the same was done afterwards. Out of these 35 sample projects, in case of two projects viz., Shamli-Muzaffarnagar (Pkg.-II) and Delhi-Vadodara Expressway (Pkg.-18)¹³⁵, Project Appraisal & Technical Scrutiny Committee did not include any expert from NITI Aayog.

Audit further observed that out of 50 sample projects of NHAI, 46 projects were approved by Competent Authority after a period ranging from seven days to 404 days of floating of notice inviting tender for these projects (**Annexure 5**).

MoRTH replied (April 2022) that non-presence of member from NITI Aayog in the Project Appraisal & Technical Scrutiny Committee was due to unavoidable circumstances, however, appraisal of these projects by Project Appraisal & Technical Scrutiny Committee was done with due diligence and without any deficiencies. On non-conduct of appraisal by Project Appraisal & Technical Scrutiny Committee for eight projects, MoRTH stated that three projects¹³⁶ were initially planned to be developed under NHDP hence appraisal mechanism for NHDP Projects was only followed/completed, whereas no reply has been furnished for remaining five projects.

Reply of MoRTH may be viewed against the fact that in the event of absence of NITI Aayog member, the meetings could have been accordingly rescheduled or the independent appraisal of NITI Aayog member could have been obtained separately. Further, non-conduct of Project Appraisal & Technical Scrutiny Committee in respect of projects initially planned in NHDP was in violation of the CCEA directions and considering that these projects were lagging, it

¹³³ Does not include eight sample projects of NHAI because for two sample projects i.e., Hapur Bypass - Moradabad and Belakeri Port-Kumta-Sirsi Road for which relevant records not made available to Audit, for one sample project i.e., Development of existing roads in Ule, Suratgaon, Malumbra, Tuljapur, Shingoli, Yedeshi, Naldurg & Omerga, being maintenance project, no appraisal/approval was done and another five sample projects i.e., Chakeri-Allahabad, Lucknow Ring Road (Pkg.-IIIB), Barhi-Koderma, Maheshkhunt-Saharsa-Purnea, and Solapur-Bijapur were approved in other schemes, before BPP-I approval date and, hence, no appraisal carried out as per BPP-I.

¹³⁴ Balance work of Bareilly-Sitapur, Bangalore-Nidagatta (Pkg.-I), Gwalior-Shivpuri (Mohana Town Portion), Kozhikode Bypass, Nidagatta-Mysore (Pkg.-II), Anandapuram-Pendurthi-Anakapalli, Gorhar-Khairatunda(Pkg.-I) and Varanasi Ring Road (Pkg.-I).

¹³⁵ Audit on test check basis observed that NITI Aayog expert was also not present in another eight projects of Delhi-Vadodara Expressway viz., Package 17 and 19-25, however the same are not under Audit sample.

¹³⁶ Kozhikode Bypass (HAM), Anandapuram-Pendurthi-Anakapalli (HAM) and Gorhar-Khairatunda(Pkg.-I) (HAM)

was imperative that a fresh analysis and appraisal of the status could have been ensured to complete these projects in a timely manner.

5.1.5.2 Appraisal and approval of NHIDCL projects

For all the five sample projects¹³⁷ of NHIDCL, the Project Appraisal & Technical Scrutiny Committee did not include expert from NITI Aayog and Finance Division in violation to directions of MoRTH. Further, these projects were approved after a period ranging from 53 days to 174 days from floating of their notice inviting tenders (**Annexure 5**).

MoRTH did not furnish reply to the Audit observation.

5.1.5.3 Appraisal and approval of MoRTH projects

All the three sample projects¹³⁸ of MoRTH were approved before the approval date of BPP-I, hence, they did not pass through the appraisal and approval mechanism prescribed for the same by CCEA.

MoRTH did not furnish reply to the Audit observation.

Thus, the deficiencies in appraisal and approval mechanism proposed to CCEA, accompanied with its inadequate implementation, resulted in BPP-I projects not getting scrutinised at desired levels. It also resulted in deficiencies in appraisal of projects being approved under BPP-I as discussed in Chapter 3 and later in this chapter.

Recommendation No. 16: Project appraisal and approval mechanism, including delegation of powers, need to be comprehensively reviewed by the Government for ensuring proper scrutiny, selection and approval of all modes of project construction at competent levels.

Recommendation No. 17: Processes for project appraisal and approval prescribed by CCEA should be scrupulously followed by project implementing agencies and deviations in compliance should be reported to the Competent Authority for suitable investigation and regularisation.

5.2 National Highways Lane Configuration

5.2.1 Lane specifications for BPP-I

Indian Road Congress was established in the year 1934 with the objective of road development in India. It has been developing different manuals for road sectors in India which were evolved after extensive consultations with representatives of Central and State Governments, road experts and other stakeholders.

¹³⁷ Churachandpur-Tuivai (Pkg- IB and 2B), Kohima-Jessami (Pkg- II and III), and Manu-Lalchara (Manu - Simlung Pkg.- I).

¹³⁸ Bareilly-Goharganj, Goharganj-Bhopal and Jabalpur-Hiren River (Pkg.-I)

Various concepts pertaining to road such as Space Mean Speed¹³⁹, Level of Service¹⁴⁰, Design Service Volume¹⁴¹, and Peak Hour Factor¹⁴² which were determinants in deciding the highways lane configurations have been defined by Indian Road Congress.

As per Indian Road Congress manual on specifications and standards, different design service volumes/thresholds for upgradation of national highways and expressways were prescribed as per details given below:

Table 5.2: Design service volume for two lanes and four lanes national highways

Nature of Terrain	Design Service Volume in passenger car units per day (two lane with paved shoulder)	Design Service Volume in passenger car units per day (four lanes)	
		Level of Service: B	Level of Service: C
Plain	18,000	40,000	60,000
Rolling	13,000	40,000	60,000
Mountainous and steep	9,000	20,000	30,000

(Source: Indian Road Congress Manual)

The manual further prescribed that the project highways should be widened to six lanes when total traffic including the traffic on service roads, if any, reached the design service volume corresponding to Level of Service C for a four lanes highway.

Table 5.3: Design service volume for Expressways

Peak hour flow ¹⁴³ (in per cent)	Design Service Volume in passenger car units per day for Level of Service B		
	Four lanes	Six lanes	Eight lanes
Six	86,000	1,30,000	1,73,000
Eight	65,000	98,000	1,30,000

(Source: Indian Road Congress Manual)

Parallel to Indian Road Congress manuals, MoRTH, vide its executive orders, has been issuing various guidelines for national highways including that pertaining to design service volumes. Some of the executive orders pertaining to lane specifications of national highways and Audit observations on the same were as follows:

- MoRTH decided (05 October 2012) to take up development of any new project of national highway widening/ bypasses/ realignment thereafter, only with least width of two lane with

¹³⁹ It is a measure of speed i.e., the rate of motion of individual vehicle or of a traffic stream in terms of time over a certain length (space) of road.

¹⁴⁰ Qualitative measures viz., speed, travel time, freedom to manoeuvre, traffic interruption, comfort, convenience & safety, describing operational conditions with a traffic stream and their perception by drivers/passengers. There are six Level of Services described by Indian Road Congress viz., A: free flow of traffic, B: stable flow of traffic having average speed of 70 per cent of what is in Level of Service A, C: stable flow of traffic having average speed of 50 per cent of what is in Level of Service A, D: stable flow of traffic having average speed of 40 per cent of what is in Level of Service A, E: usually unstable flow of traffic having average speed of 33 per cent of what is in Level of Service A and F: zone of forced or breakdown flow with average speed between 25 per cent to 33 per cent of what is in Level of Service A.

¹⁴¹ Maximum hourly volume at which vehicles can reasonably be expected to transverse a point or uniform section of a lane during a given time period while maintaining a designated Level of Service.

¹⁴² Traffic volume during peak hour expressed as a percentage of the annual average daily traffic.

¹⁴³ Traffic volume during peak hour expressed as a percentage of the annual average daily traffic.

paved shoulder irrespective of the traffic on the same. This decision of MoRTH was justified on the basis that it would avoid fatalities arising out of movement of mixed traffic i.e., fast as well as slow traffic on national highways.

However, MoRTH overruled (23 March 2018) its order dated 05 October 2012 by deciding to construct, in hilly and mountainous terrains, 5.5 meter wide intermediate lane configuration with two lane structures in case per day traffic on the stretch was ranging between 3,000 passenger car units to 8,000 passenger car units. In case of traffic volume of more than 10,000 passenger car units per day or where the existing traffic volumes were likely to witness fast growth so as to reach that level within three to five years, seven meter wide two lane carriage way was to be considered and the two lane with paved shoulder was to be considered in hilly areas only in case where traffic was likely to increase at about more than 10 *per cent* per annum. MoRTH justified this stating that due to construction of two lane with paved shoulders in mountainous regions, there was destabilisation of hill slopes, progressive damaging effects on road alignments & structures in higher contours on hills, large scale felling of precious trees and associated environmental damages.

Audit observed that the justifications arrived at by MoRTH before passing its order of 23 March 2018 in regard to mountainous regions was not considered before passing its order of 05 October 2012 whereby it directed for development of all national highways to two lane specifications as during the intervening period the loss to the environment has already been done. Furthermore, even after passing of order of 23 March 2018, MoRTH, in non-compliance to the order, was approving two laning of national highways in mountainous regions without commensurate traffic as highlighted in para 3.5.2.5 of this report

- MoRTH decided (29 June 2015) that the trigger for planning in advance before reaching the design service volume of earlier level for upgradation to four lanes was to be per day 15,000 passenger car units in plains, 11,000 passenger car units in rolling areas and 8,000 passenger car units in mountainous/steep regions. However, MoRTH overruled (26 May 2016) its order dated 29 June 2015 by revising the trigger benchmarks for upgradation to four lanes with the reduced limits per day to 10,000 passenger car units in plains, 8,500 passenger car units in rolling areas and 6,000 passenger car units in mountainous/steep regions. MoRTH, while overruling (26 May 2016) its decision on traffic trigger taken around one year ago, justified it on the ground that the trigger benchmarks were being lowered considering changes in socio-economic conditions in the country, safe and comfortable mobility of road users and de-congestion of traffic which indicated that these factors were not considered while passing earlier order of 29 June 2015.
- MoRTH, in its meeting (12 March 2018), decided that for construction of BPP-I projects following lane specifications were to be used, considering the present traffic:

Table 5.4: Lane specifications to be developed in Phase-I of Bharatmala Pariyojana as decided by MoRTH

Component of BPP-I	Per day present traffic including induced traffic	Lane specification to be developed
Economic Corridors	Up to 20,000 passenger car units	Four lane highway with four lane structures ¹⁴⁴
	20,000 to 30,000 passenger car units	Six lane highway with eight lane structures
	30,000 to 40,000 passenger car units	Eight lane highway with eight lane structures
	40,000 passenger car units onward	Eight lane highway with eight lane structures <i>plus</i> service roads in urban area.
	40,000 passenger car units onwards	Option of green-field alignment or eight lane with eight lane structures. Six lane with six lane structure, in cases where portion of the corridor has been six laned or six lane structures have already been developed on four lane highway.
Inter-Corridor & Feeder Roads	NA	Four lane standard with partial access control. In case traffic was expected to very high, the same guidelines as mentioned for Economic Corridors.

(Source: MoRTH meeting dated 12 March 2018)

Audit observed that MoRTH, based on its orders of 12 March 2018, decided to develop richer lane specifications for Economic Corridors and Inter-Corridor & Feeder Roads for BPP-I and the implications for the same are explained below:

- This decision was meant specifically for BPP-I and it was silent regarding other MoRTH schemes for national highways development running parallel to BPP-I like National Highways (Original);
- It was specifically meant for Economic Corridors and Inter-Corridor Routes & Feeder Roads when, in fact, all Indian Road Congress guidelines or earlier orders of MoRTH pertaining to lane development were applicable to all national highways irrespective of their purposes. NHAI unilaterally, based on its Executive Committee decision (20 September 2019) and without the approval of MoRTH, amended (detailed below) the decision of 12 March 2018, by diluting traffic requirements, for lane developments in other components of BPP-I also:

¹⁴⁴ For present traffic upto 20,000 passenger car units, Economic Corridors with four lane main carriage way and four lane super-structures like bridge, flyover and underpasses etc., needed to be constructed.

Table 5.5: Lane specifications to be developed in Phase-I of Bharatmala Pariyojana as decided by NHAI

Component of BPP-I	Per day present traffic including induced traffic	Lane specification to be developed
Roads other than Economic Corridors/ National Corridors	Less than or equal to 15,000 passenger car units	For viable projects ¹⁴⁵ four lane highway with four lane structures
	15,000 to 20,000 passenger car units	Four lane highway with four lane structures
Economic Corridors/ National Corridors	Up to 20,000 passenger car units	Four lane highway with six lane structures
All category roads	More than 20,000 passenger car units	Six lane with six lane structures

(Source: Decision of NHAI dated 20 September 2019)

- Planning of projects with richer specifications was leading to unviability of the projects under BOT(Toll) mode of construction thereby vitiating the approved modal mix of NHAI as discussed in detail in para 4.2 of this report whereby it is mentioned that as against target of 10 *per cent*, NHAI could award merely 1.75 *per cent* of its project length under BOT (Toll). Also, specific instance of Anandapuram-Pendurthi-Anakapalli was highlighted in para 3.5.2.4 whereby the project could not be taken up under BOT (Toll) due to low traffic on this six lane stretch; and
- CCEA, while approving BPP-I, had decided that six laning of Economic Corridors was to be planned in Phase-II of Bharatmala Pariyojana. However, the decision of MoRTH to upgrade lane configuration of Economic Corridors to six lanes and more, under BPP-I, was not in conformity with the same.

MoRTH did not furnish reply to the Audit observation.

5.2.2 Upgradation of stretches with richer specifications

During review of 66 sample projects along with their corridors, Audit observed that certain projects/corridors were being prioritised/developed¹⁴⁶ by taking richer specifications considering the present and future traffic projections which could result in underutilisation of developed infrastructure as discussed in Chapter 3. Decision to adopt richer lane specifications of projects/corridors was also taken post optimisation, as observed in case of National Corridors Efficiency Improvements Program Corridor of Ambala to Kotputli (Paniyala Mor).

MoRTH, prioritised (November 2018) this four lane green-field/brown-field corridor from Ambala to Kotputli (282 km) as high priority so as to provide alternate connectivity for traffic coming from Himachal Pradesh, Chandigarh and Ambala and going to Vadodara, Mumbai and Kandla/ Mundra and for better utilisation of logistics hub to be developed at Nangal Choudhary (Kotputli). MoRTH also aimed for decongesting the existing Ambala-Delhi section of NH-44 and Delhi-Kotputli section of NH-48. This corridor was not proposed under Bharatmala Pariyojana, however, the same was included in BPP-I during optimisation process.

¹⁴⁵ Projects with internal rate of return of 6.8 and above.

¹⁴⁶ Awarded before prioritisation.

Detailed project report consultant identified projected traffic (diverted and induced) of 14,956 passenger car units (year 2018) and projected future traffic on the stretch by taking cumulative increase of 31 *per cent* to 51 *per cent* for every five years upto the year 2053. Detailed project report consultant recommended for construction of a six lane national highway on the stretch and the same was accepted (December 2018-February 2019) by MoRTH/NHAI by dividing this corridor into nine projects¹⁴⁷ with civil cost of ₹ 5,787.28 crore. The scheduled completion dates of these projects were falling between December 2021 to May 2022. These projects had achieved completion upto May 2022.

Audit observed that detailed project report consultant's assumption of increasing the traffic by 31 *per cent* to 51 *per cent* over a span of five years (i.e., average six *per cent* to 10 *per cent* yearly) was in contravention to its own assumption of taking five *per cent* annual growth in traffic while determining its financial viability which was also the standard percentage of growth in traffic considered for determining the viability of a project by MoRTH. Considering five *per cent* standard increase, the highway would reach the level of 60,000 passenger car units in the year 2046 only and even after considering the unjustified cumulative growth rate considered by detailed project report consultant, the project stretch would breach the threshold of 60,000 passenger car units not before 2035 and till that time the created infrastructure would remain underutilised. Further the estimated civil cost for construction of Ambala-Kotputli stretch with four lanes configuration would have been ₹ 3,858.19 crore¹⁴⁸ as compared to the estimated civil cost of ₹ 5,787.28 crore for the six lanes. In spite of the probable underutilisation of six lane infrastructure being created and the difference in associated costs (initial construction cost and later operational cost & maintenance cost) between four lanes and six lane configurations of Ambala-Kotputli, no cost-benefit analysis for upgrading this stretch was carried out. Instead, MoRTH/ NHAI, in contravention of their own decision taken during optimisation/ prioritisation to construct a four lane corridor, requirements of traffic and extant Indian Road Congress guidelines, decided to construct whole corridor as a six lane national highway.

MoRTH/NHAI could have considered the option of limiting the configuration of lanes at present to what is feasible as per IRC specification and acquiring only the land in line with the configuration for construction of higher lanes so that extra lanes can be constructed in future as and when optimal traffic was expected to ply on them.

MoRTH justified (April 2022) the lane configurations by stating that there was normal traffic of around 17,000 passenger car units in Narnaul-Paniyala Mor section, apart from this, it would/ also caters to traffic from Jammu & Kashmir, Punjab, Himachal Pradesh, Uttarakhand etc., and IMT Manesar/Rewari Industrial area. It would also act as feeder route (Narnaul - Paniyala Mor) to cater to the developmental traffic due to development of Western Dedicated

¹⁴⁷ *Out of these nine projects, one project was selected for detailed review as sample project. However, this Audit observation pertains to complete corridor from Ambala-Kotputli.*

¹⁴⁸ *Estimated civil cost for construction of six lanes is ₹5,787.28 crore. Estimated civil cost for construction of four lanes is taken on prorata basis.*

Freight Corridor & functional logistics hubs at Khatuwas and Adani at Gurugram and proposed Multi Modal Logistics Park at Nangal Chaudhary.

Reply of MoRTH may be viewed against the fact that reply was limited to only Narnaul-Paniyala Mor section only which had a length of merely 31.240 km and not for entire stretch of Ambala-Kotputli. Even for this section, the projections of increase in traffic due to development of logistics hubs and MMLP were already considered by the detailed project report consultant of the project.

5.3 Detailed project reports

5.3.1 Accountabilities of detailed project report consultants

MoRTH, in furtherance to CCEA approval of Bharatmala Pariyojana, vide its Standard Operating Procedure (21 December 2017), directed that detailed project report should be prepared in two parts viz., first part relating to determination of alignment, land acquisition details and other pre-construction activities (utility shifting, forest and environmental clearances etc.,) and second part relating to designs and cost estimates etc., so as to ensure that the work on the pre-construction activities could be taken upfront without waiting for the second part. MoRTH's Standard Operating Procedure further elaborated the two parts of detailed project reports preparation as per details below:

Table 5.6: Stage in detailed project report preparation

S.No.	Stage	Key activities	Reports/deliverables to be submitted
Part-I			
1	Inception	Project planning and mobilisation	Inception report and quality assurance plan
2	Feasibility	Alignment finalisation, preliminary surveys	Alignment option report and feasibility report
3	Land acquisition and clearances	Land acquisition, utility identification, creation of draft notifications and proposals	Strip plan ¹⁴⁹ , land acquisition report (3(a) ¹⁵⁰ , 3A ¹⁵¹), clearances and utility shifting proposals
4	Land acquisition and clearances II	Land acquisition processes, obtaining final utilities estimates and required clearances	Joint measurement survey ¹⁵² and 3D ¹⁵³ report, final project clearances and utility report

¹⁴⁹ Representation of location, length and quality etc., of a project in graphical manner so as to give reader the important details of the project at one glance.

¹⁵⁰ As per section 3(a) of the National Highways Act, 1956 (the Act), Competent Authority meant any person or authority authorised by the Central Government, by notification in the Official Gazette, to perform the functions of the Competent Authority for such area as may be specified in the notification.

¹⁵¹ As per section 3A of the Act, if the Central Government was satisfied that for a public purpose any land was required for the building, maintenance, management or operation of a national highway or part thereof, it might, by notification in the Official Gazette, declare its intention to acquire such land.

¹⁵² Joint measurement survey carried out by respective Competent Authority for Land Acquisition and the MoRTH's implementing agency.

¹⁵³ As per section 3D of the Act, on submission of report by the Competent Authority, Central Government might, by notification in the Official Gazette, declare that notified land would be acquired for the purposes mentioned in section 3A of the Act. On the publication of the declaration under section 3D the land would vest absolutely in the Central Government free from all encumbrances.

S.No.	Stage	Key activities	Reports/deliverables to be submitted
Part-II			
5	Land acquisition III- Award determination	Land acquisition award determination	3G ¹⁵⁴ report
6	Detailed project report	Detailed design of highway, preparation of detailed project report with drawings	Draft detailed project report, final detailed project report, documents, and drawings
7	Technical schedules	Preparation of bid documents and technical schedules	Civil works contract agreement and schedules
8	Land acquisition IV- Possession	Obtaining possession of land	Land possession report

(Source: MoRTH Standard Operating Procedure dated 21 December 2017)

Term of reference for detailed project reports consultants¹⁵⁵ *inter alia* included the following:

- Conduct of surveys including traffic surveys, origin-destination and commodity movement surveys and topographical surveys;
- Detailed designing of road, its pavement, bridges and structures;
- Environment impact assessment;
- Land acquisition which *inter alia* included
 - Coordination with Project Implementing Unit and District Collector/State Government in obtaining appointment order for Competent Authority for Land Acquisition ;
 - Assistance to Competent Authority for Land Acquisition staff in preparation of 3A and 3D, preamble and forwarding letter to be forwarded to Project Implementation Unit;
 - Assistance to Project Implementation Unit in co-ordinating with newspaper agencies for publication of 3A and 3D notification and providing copies of newspaper publication of 3A and 3D to Competent Authority for Land Acquisition and Project Implementation Unit;
 - Ensuring presence of not only adequate manpower like surveyors, revenue inspectors, auto CAD draftsmen, liaison officers, assistants, peon, computer operators to support Competent Authority for land Acquisition, Project implementation Unit and Regional Office in the land acquisition processes but also provide adequate resources like computers, software licenses, scanners printers etc., so that prescribe timelines were met;
 - Co-ordination with Competent Authority for Land Acquisition & State Government and obtain all permissions necessary to conduct joint management survey and centre line marking; and

¹⁵⁴ As per section 3G of the Act, where any land is acquired under the Act, there should be paid an amount which should be determined by an order of the Competent Authority.

¹⁵⁵ Model Request for Proposal documents for engagement of detailed project report consultant (15 February 2019).

- Co-ordination in serving of notice to all beneficiaries for collection of award and to vacate the land within 60 days under section 3E of the Act;
- Estimation of quantities and project costs;
- Economic and financial analysis of the project;
- Obtaining all necessary clearances of the project including the environmental, forest and wildlife clearances from Ministry of Environment, Forest and Climate Change (MoEFCC) railways clearances for rail over bridge and road under bridge, clearances from irrigation department and other competent authorities before the project was approved;
- Preparation of bid documents and technical schedules for the projects based on model concession/contract agreements for Public Private Partnership/EPC projects and relevant Indian Road Congress guidelines; and
- Assistance in collecting and providing all required supporting documents for initiating bids.

With respect to above, Audit observed the following:

5.3.1.1 Sequencing of key activities to be performed by detailed project report consultant

MoRTH, vide its Standard Operating Procedure, made 3A (intention to acquire land) and 3D (vesting of land with Government) preparation by detailed project report consultant as a task which was preceding to and independent of detailed project report consultant preparing draft detailed project report, final detailed project report and drawings thereof and their approval by the Competent Authority. Model Request for Proposal further strengthened the stand of MoRTH by stating that three stages in the table 5.6 i.e., land acquisition & clearance stage, land acquisition & clearance-II stage and technical schedule stage, (Sr. No. 3, 4 and 7 respectively), could run in parallel with two stages i.e., feasibility stage and detailed project report stage (Sr. No. 2 and 6 respectively).

Splitting of detailed project report consultant's duties has following ramifications:

- In case of 46 NHAI sample projects, the approval of the projects was given after a period of seven days to 404 days from the floating of notice inviting tender. In fact, out of above mentioned 46 sample projects, in case of 35 sample projects, even the appraisal of the projects was carried out after floating of notice inviting tender for these projects (as discussed in detail in para 5.1). The same could happen as detailed project report consultant was authorised to prepare bid documents and technical schedules (its key activity No.7) independent of preparation of draft and final detailed project report by it (its key activity No.6); and
- In case of five NHAI sample projects, test checked, where notice inviting tender was floated before approval of the project by Competent Authority, even the 3D notification¹⁵⁶ for these

¹⁵⁶ *As per section 3D of the Act, on submission of report by the Competent Authority, Central Government might, by notification in the Official Gazette, declare that notified land would be acquired for the purposes mentioned in section 3A of the Act. On the publication of the declaration under section 3D the land would vest absolutely in the Central Government free from all encumbrances.*

projects were issued, before the approval of the project by Competent Authority as detailed below:

Table 5.7: Sample projects where 3D was done before approval of the projects

S.No.	Name of the project	Date of 3D notification under the Act	Date of approval of the project by Competent Authority
1	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	06-07-2018	06-12-2018
2	Delhi-Vadodara Expressway (Pkg.-1)	10-09-2018	20-12-2018
3	Delhi-Vadodara Expressway (Pkg.-2)	10-09-2018	20-12-2018
4	Delhi-Vadodara Expressway (Pkg.-9)	04-01-2019	25-11-2019
5	Delhi-Vadodara Expressway (Pkg.-18)	12-11-2018	13-02-2019

(Source: Data provided by NHAI)

The above undermined project approval sanctity and left no scope for refusal/revision of the project and its specification. Any plausible change in alignment of project was deterred by the fact that technical schedules and draft bid documents including draft agreements were already there in public domain due to early unauthorised floating of notice inviting tender and also due to no possibility of reversal of land acquired if there was change/modification in alignment or project detailed project report. Further, due to above sequencing of detailed project report consultant's duties, Audit, in sampled projects, observed (para 5.3.2) that notice inviting tender of the projects with deficient detailed project reports were floated without providing the opportunity to Competent Authority to even appraise such detailed project reports.

Similarly, in NHIDCL for the project Manu-Lalchara (Manu-Simlung Pkg.- I), 3D notification for the project was issued on 05 February 2019 while the project was approved on 13 March 2020.

MoRTH did not furnish reply to the Audit observation.

5.3.1.2 Detailed project report consultant's sphere of duties and power

As evident from the MoRTH's Standard Operating Procedure and detailed project report consultant's terms of reference, the detailed project report consultant was assigned many such jobs/duties which were not required to be performed by it but were of executive nature. Some of such overreach in duties were:

- Acting as a catalyst in appointment of Competent Authority for Land Acquisition;
- Acting as manpower and machinery supplier to Competent Authority for Land Acquisition, Project Implementation Unit and Regional Offices of NHAI;
- Liaison with newspaper agencies for getting printed the notifications;
- Getting all necessary clearances for the project including environmental and forest clearances;
- Co-ordinating in getting the land parcel vacated from the landowners; and

- Preparing the bid documents for the project and initiating the bidding processes.

The expansion in detailed project report consultant's sphere of responsibility could be one of the contributing reasons of detailed project report consultants not focussing on their core activity of detailed project report preparation leading to flaws in detailed project report preparation as discussed, later in detail, in this Chapter.

It appears that the chronology of detailed project report consultant's duties and scope of such duties were not aptly determined resulting in floating of notice inviting tender and land acquisition prior to project approval as discussed above and flawed preparation of detailed project reports and floating of notice inviting tender without Competent Authority even appraising them as discussed, later in this chapter.

MoRTH did not furnish reply to the Audit observation.

5.3.2 Shortcomings in detailed project reports

Detailed project reports presented the outline/layout for any project and hence should be prepared judiciously keeping in view the latest technologies available. Good quality detailed project reports were key for timely and economical construction of quality projects. Considering the importance of good detailed project reports, MoRTH, through Standard Operating Procedure, assigned additional duty to NHAI to develop a detailed guidance document for detailed project report consultants, to ensure quality design including topics on the use of technology, standard designs for structures, guidelines for access control etc. MoRTH apprised CCEA while proposing BPP-I, that for preparation of quality detailed project reports, use of remote sensing technologies like Light Detection and Ranging (LIDAR)¹⁵⁷ has been made mandatory.

Indian Road Congress has issued guidelines for designing pavements of national highways. Generally, two type of pavement designs are adopted viz., flexible pavement {IRC 37:2012 (updated upto 2018)} and rigid pavement (IRC 58:2015). Different layers prescribed for these two pavement design were as follows:

Flexible pavement – It involved layers of bitumen concrete (BC), dense bitumen macadam (DBM), wet macadam mix (WMM), granular sub- base (GSB) and sub-grade i.e., earth work.

Rigid pavement - It involved layers of pavement quality concrete (PQC), Polythene Sheet of 125 micron, dry lean concrete (DLC), GSB and sub-grade.

The thickness of these layers is dependent on the value of California Bearing Ratio¹⁵⁸ of soil and Vehicle Damage Factor (VDF)¹⁵⁹ for Million Standard Axles¹⁶⁰ during road design life.

¹⁵⁷ It is a remote sensing method used for measuring the exact distance of an object on the earth surface.

¹⁵⁸ It is measure of the strength of the soil sub-grade.

¹⁵⁹ It is the multiplier for converting the number of commercial vehicles of different axle loads to the number of standard axle road repetition.

¹⁶⁰ It is numerical measurement, defined in millions, as to number of standard axles i.e., predetermined unit of load of vehicle, which would ply on the road during its design life. It is used for deciding the strength of the pavement.

During review of 66 sample projects, Audit observed the following:

5.3.2.1 Munabao-Tanot

Detailed project report consultant projected annual average daily traffic ranging from 294 passenger car units to 1,571 passenger car units in the year 2017. It proposed for construction of three toll plazas on the stretch. The notice inviting tender for the project was floated seven days before project appraisal and 53 days before approval of the project by Competent Authority. The project was approved on 24 March 2018, however, NHAI, during execution stage, realising that construction of Toll plazas being financially unviable due to meagre traffic, de-scoped (27 November 2019) the toll plazas.

Approved detailed project report included the provisions of three light vehicular underpasses at various locations and one flyover at Tanot Mata Temple. However, the same were de-scoped (30 December 2019) from the project during execution stage, citing meagre traffic on the road and due to flyover being hindrance to the aesthetic view of temple. Value of these de-scoped works was ₹ 20.20 crore.

MoRTH did not furnish reply to the Audit observation.

5.3.2.2 Khajuwala-Poogal-Bap

In the detailed project report of Khajuwala-Poogal-Bap, flexible pavement design of DBM layer of 85 mm thickness was proposed considering California Bearing Ratio of soil as eight *per cent*. The notice inviting tender for the project was floated six days before project appraisal and 64 days before approval of the project by Competent Authority. The project was approved on 24 March 2018. However, concessionaire considering California Bearing Ratio of 20 *per cent*¹⁶¹ and without violating the Indian Road Congress guidelines constructed the road with 60 mm thick DBM layer which showed over-estimation of project civil cost by around ₹ 42 crore. in the detailed project report. Variation in California Bearing Ratio, from eight *per cent* to 20 *per cent*, indicated erroneous consideration of the same by detailed project report consultant.

Detailed project report consultant projected average annual daily traffic ranging from 1,223 passenger car units to 2,493 passenger car units in the year 2016 and proposed for construction of three toll plazas on the stretch. However, NHAI during execution, realising meagre traffic on the stretch, de-scoped (23 July 2020) construction of these three toll plazas considering them unviable. Value of all de-scoped works was ₹ 29.59 crore for this project.

Detailed project report approved by NHAI provided for construction of a minor bridge over Indira Gandhi Nahar Pariyojana (IGNP) with a span arrangement of 40 meter without taking no objection certificate from IGNP office which objected to the span of 40 meter as it would hinder the movement of IGNP vehicles. Therefore, IGNP allowed construction of minor bridge with a span of 55 meter and revised the drawings accordingly which led to delay in completion of the project.

¹⁶¹ When the actual California Bearing Ratio of the project was between 19 to 29.

NHAI approved the detailed project report with end chainage of the project to be at Km.182.725 due to which it failed to link the project highway with NH-11 thereby leaving a gap of 433 meter in the project highway and NH-11. This hampered the seamless connectivity and, hence, the same was rectified at the time of execution of the project.

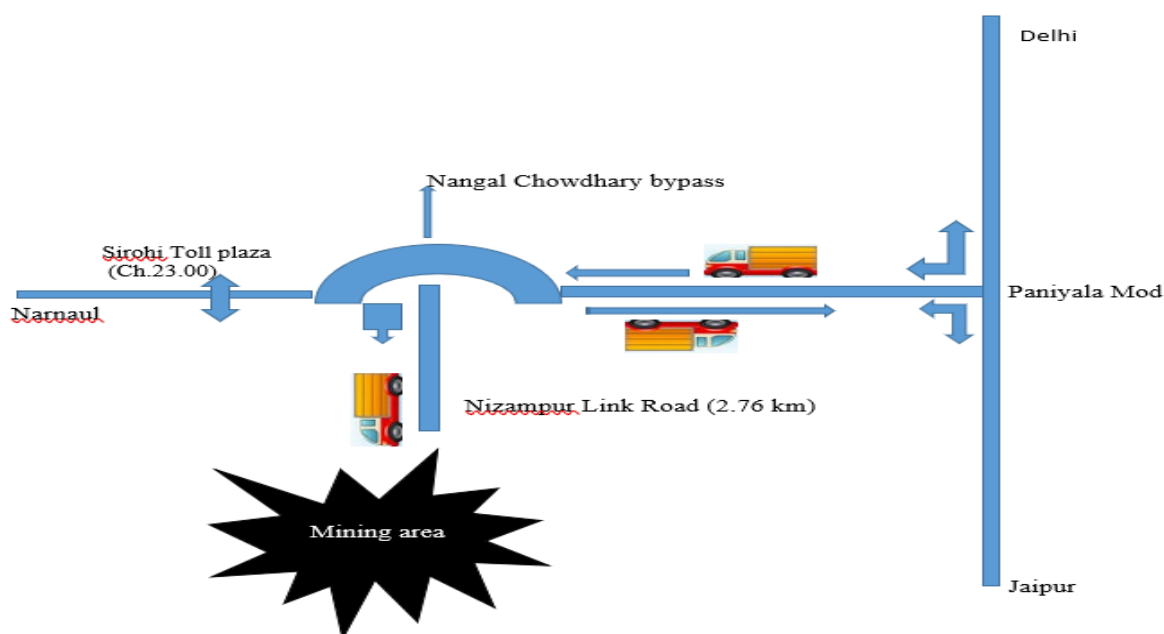
MoRTH replied (April 2022) that the assessment of California Bearing Ratio by the detailed project report consultant was for estimation purpose only and the work was awarded to the lowest bidder and pavement design was as per concession agreement. Further, the toll Plazas have been delinked from the scope of the work and toll collection may be done with temporary booth to assess the viability. Three vehicular underpasses have been proposed due to fast development in the area. Also, IGNP officials initially (05 October 2017) instructed to provide a 40 m long structure without any intermediate support, however, during execution, IGNP proposed (25 June 2018) that viaduct should be provided on both banks. It further stated that reasons for the gap between end point of the stretch and NH 11 was that a bypass/ring road was proposed (24/25 October 2017) which could not be finalised.

Reply of MoRTH may be viewed against the fact that there were wide variations in the California Bearing Ratio values of detailed project report consultant *vis-a-vis* values derived by concessionaire. California Bearing Ratio values are worked out based on samples taken from site. Hence, they need to be arrived at precisely or with minimum variation. Further, MoRTH reply does not address the reasons for approving of three toll plazas and vehicular under passes despite minimal traffic. Detailed project report was finalised without getting no objection certificate from IGNP office. MoRTH' reply in respect of breakage of end point confirms the Audit observation and the fact remained that rectification in this regard had to be undertaken at later stage during execution.

5.3.2.3 Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)

This section, with length of 31.240 km, was part of trans Haryana corridor being developed from Ambala (Pehowa) to Kotputli (Paniyala Mor). The notice inviting tender for the project was floated 26 days before project appraisal and 307 days before approval of the project by Competent Authority. The detailed project report consultant proposed toll plaza at Chainage 23.000 Km of the Paniyala Mor to Narnaul Bypass crossing section. There is Dholera Mining area in the vicinity of the project for which NHAI had provided four lane link road of 2.76 km bound to Nizampur (Dholera Area).

Picture 5.1: Traffic movement on Paniyala Mor- Narnaul section



Audit observed that in spite of major portion of Ambala-Kotputli (Paniyala Mor) corridor being tolled under closed tolling¹⁶² i.e., 240.90 km out of 272 km., the remaining stretch of this corridor i.e., Paniyala Mor-Narnaul Bypass Crossing (31.240) km was being tolled under open tolling¹⁶³. The location of toll plaza was at Chainage 23.000 km on the Narnaul side of the project between Narnaul and Intersection of Nangal Chaudhary Bypass. Due to this, traffic moving from Narnaul Bypass to Paniyala Mor and not using Nizampur link will have to pay toll for 2.76 km of Nizampur link (Nizampur link was being treated as bypass so toll rates for this 2.76 km were one and a half times of toll rates for normal road length) without even using it. Similarly, the traffic moving from Narnaul Bypass to Dholera Mining area was bound to pay toll for 17 km patch from Nangal Choudhary bypass to Paniyala Mor without even using it. However, on the other hand heavy dumpers¹⁶⁴ moving between Dholera mining area (Nizampur) and Paniyala Mor, using the tollable stretch of 17 km, were moving without paying any toll at the expenses of other commuters, as discussed above, who were paying excess toll.

No traffic survey was conducted by NHAI to determine annual potential collection afresh on the stretch and the bid for toll collection agency for this stretch was awarded (20 January 2021) based on detailed project report projections only.

MoRTH replied (April 2022) that the location of toll plaza had been finalised for each road section considering technical feasibility of establishing a plaza and with a view to optimise the user fee collection. Further, due to open tolling system, there might be vehicles which were

¹⁶² System of tolling whereby toll is collected from the commuter at the exit point on the national highway based on distance travelled from its entry point on the national highway.

¹⁶³ System of tolling whereby toll is collected from the commuter at a fixed rate irrespective of the actual distance travelled.

¹⁶⁴ As observed during physical inspection of the site.

using part of project without crossing plaza and similarly there would be vehicle which are using part project but crossing plaza and thus paying full user fee.

MoRTH reply confirmed that there was bound to be revenue leakage as well as extra burden on users for toll payment, however, the fact remained that no measures were undertaken to prevent the same.

5.3.2.4 Majhauli- Charout

The notice inviting tender for the project was floated 70 days before project appraisal and 83 days before the approval of the project by Competent Authority. NHAI awarded the project (March 2018) considering the length of a bridge on Baghmata River as 0.240 km, based on detailed project report consultant's estimates. Audit observed that while approving and awarding the project, NHAI overlooked the wrong estimation by detailed project report consultant of the length of the bridge on Bhagmati River as NHAI itself applied (11 June 2020) for no objection certificate to Water Resource Department of Patna considering the width of river as 2.340 km. Pending receipt of no objection certificate, NHAI de-scoped (27 December 2021) the work of construction of bridge to develop it separately. Such de-scoping of the project approved in January 2018 and taking up of the de-scoped work afresh as standalone project would result in hampering the seamless connectivity on the stretch as discussed in detail in Chapter 3.

MoRTH admitted (April 2022) the fault of the detailed project report consultant and the facts of descope (27 December 2021) the stretch of Baghmata & Lakhandei river and inviting bid afresh for the same as standalone project. It was also stated that necessary clarification/justification has been sought from the detailed project report consultant in this regard.

5.3.2.5 Koida –Rajamunda (Pkg.-II)

The notice inviting tender for the project was floated 56 days before project appraisal and 84 days before the approval of the project by Competent Authority. Agreement for four laning of Koida- Rajamunda stretch was entered into by NHAI on 20 February 2018 and the appointed date for the project was fixed as 08 May 2018. As per the agreement, construction of two bow string road over bridges (RoB) with six lanes were to be constructed at Roxy and Bimlagarh. Before detailed project report preparation of this project and at the time of entering into agreement, general arrangement drawings (GAD), for two lane non-standard girders (approved in January 2011) was available for Roxy ROB and for four lane, standard Research Design & Standard Organisation (RDSO) bow string girders (approved in May 2017) was available for Bimlagarh ROB. Further, MoRTH, vide its Standard Operating Procedure has directed that for BPP-I, only RDSO approved designs were to be considered.

Audit observed that NHAI erroneously approved detailed project report with two ROB at Roxy and Bimlagarh with six lane bow string girders. However, no RDSO approved general arrangement drawings for six lane bow string girders were available till 2021. Eventually, NHAI had to de-scope (12 November 2021) one ROB at Roxy location with negative change of scope of ₹ 79.45 crore and other ROB at Bimlagarh was de-scoped from six lane to four lane

bow string girders with negative change of scope of ₹ 10.89 crore. Faulty detailed project report approval by NHAI, not only resulted in delayed progress of work on this stretch but it also resulted in skewed development of the project as ROB at Bimlagarh was restricted to four lanes instead of six lanes while at Roxy, NHAI had to settle only for level crossing, thereby adversely impacting seamless connectivity in this stretch. As against its scheduled completion date of 06 May 2020, as up to March 2022, physical progress was 82.93 *per cent* only.

MoRTH admitted (April 2022) the fact of non-approval of six lane bow string girders drawings for ROB at Roxy and Bimlagarh and resultant de-scoping of the project works.

5.3.2.6 Tumkur -Shivamogga (Pkg.- I and II)

The notice inviting tender for the project was floated 43 to 48 days before project appraisal of Package I and II and 116 to 119 days prior to the approval of the Package I and II by Competent Authority. Concessionaire designed the project highway by lowering the thickness of BC, DBM and WMM requirement as per Indian Road Congress guidelines by adopting California Bearing Ratio¹⁶⁵ of soil as 10 *per cent* whereas detailed project report considered it as eight *per cent*. Due to this, the concessionaire constructed the pavement design of the project stretch with reduced thickness, thereby, saving in the cost of construction of road. Had this being considered by NHAI while approving the detailed project report the project estimates put for tendering would have been more optimal.

MoRTH justified (April 2022) the change in pavement thickness by stating that in case of Hybrid Annuity Mode, design is the responsibility of concessionaire.

Reply of MoRTH may be viewed against the fact that the detailed project report consultant did not consider the correct California Bearing Ratio of the project thereby proposing higher pavement specification than required and this fact was overlooked by NHAI while approving the project. It is relevant to mention that more reasonable bids could have been received, had NHAI prepared lower cost estimates by adopting correct California Bearing Ratio.

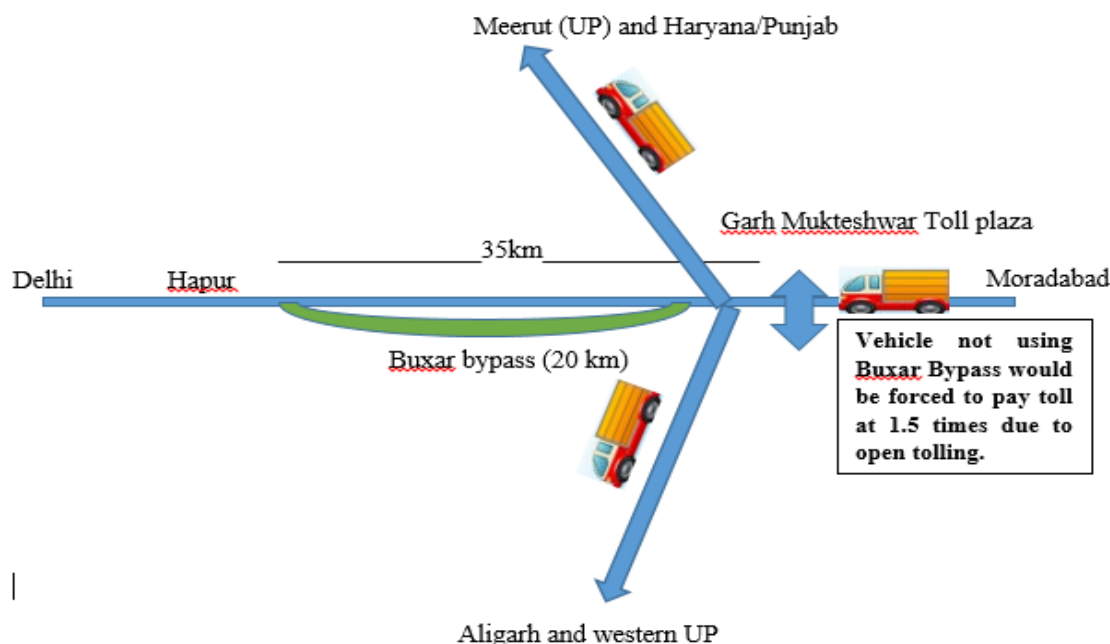
5.3.2.7 Hapur Bypass-Moradabad

On Hapur Bypass-Moradabad stretch, due to faulty toll plaza location (Toll Plaza at Garhmukteshwar) accompanied with open tolling the traffic coming from Moradabad and going to Meerut (Uttar Pradesh) and Haryana/Punjab on one side and Aligarh/Western Uttar Pradesh on other side was paying toll also for national highway length of around 35 km falling between Hapur and Garh Mukteshwar without even using it. Besides above, the Buxar Bypass with a length of around 20 km for which toll at the rate of one and a half times of normal rates is to be charged and would replace, after its completion, the existing length between Hapur and

¹⁶⁵ It is the strength of subgrade of a road or any other paved area and the material used in its construction.

Garh Mukteshwar would increase commuter's infructuous toll payments for non-usage of this patch.

Picture 5.2: Traffic movement on Hapur Bypass-Moradabad project



No project appraisal and approval records were furnished to Audit.

MoRTH replied (April 2022) that at this toll plaza, the users have to be captured in open tolling system as per the MoRTH's notification.

Reply of MoRTH may be viewed against the fact that the location of toll plaza was such that it was located just before the start of the bypass implying that users would be charged higher toll rates even if users did not use the bypass.

5.3.2.8 Balance work of Bareilly-Sitapur

Four laning of Bareilly Sitapur stretch was initially awarded under NHDP-III on BOT (Toll) basis in June 2010 with scheduled completion date of 26 August 2013, which was extended up to 31 December 2016. However, due to shortage of funds with concessionaire, the project could not be completed and was thus terminated (May 2019) by NHAI. At the time of termination, the project had achieved physical progress of 76.05 *per cent*. The balance work of the project was again awarded (15 October 2019) under BPP-I on item rate basis at a cost of ₹ 697.42 crore against the estimated civil cost was ₹ 767.89 crore. The project was not appraised by Project Appraisal & Technical Scrutiny Committee and the notice inviting tender for the project was floated 216 days prior to the approval of the project by Competent Authority.

Audit observed that the estimated civil cost (₹ 767.89 crore) was not correctly worked out and also the contractor's scope in re-awarded project was not clearly defined by the consultant and NHAI. During the execution stage, authority engineer of the re-awarded project proposed (August 2020) for changing the value of balance work to ₹ 1,378.81 crore based on site

conditions and then again revised the proposal to ₹ 812.52 crore which was yet to be approved (April 2022).

MoRTH admitted (April 2022) the variations in estimates by stating that it was due to inadequate estimation by the independent engineer of the terminated BOT Project (independent engineer worked as consultant for determining/ estimation of the balance work). It further stated that show cause notice has already been served to the consultant and action was being taken.

Reply of MoRTH may be viewed in light of the fact that NHAI itself failed to verify the cost estimates submitted by independent engineer, highlighting weak mechanism of appraisal and approval of project.

5.3.2.9 Chakeri-Allahabad

NHAI failed to get updated detailed project report, prepared in September 2011, while getting the project approved from CCEA on 28 June 2017 resulting in the following deficiencies:

- In spite of this stretch (145.06 km) being a part of Golden Quadrilateral and being upgraded to six lanes from existing four lanes, it was proposed in the detailed project report to retain existing configuration of four lanes for three structures¹⁶⁶ with a total length of 3.90 km because of the same being surrounded by built up areas. This would result in skewed development/ congestion and hinder seamless movement of traffic;
- Requisite number of structures viz., pedestrian under pass and reinforced earth walls were missing in the detailed project report resulting in subsequent change of scope for an amount of ₹ 68.65 crore which was pending approval (October 2021) with Competent Authority; and
- A length of additional 417 meter was required to complete the approach (Allahabad end) of proposed vehicular under pass, due to wrong estimation of road length by detailed project report consultant, for which besides additional land acquisition, a change of scope for an amount of ₹ 6.59 crore for civil works was also pending approval (April 2022) with Competent Authority.

MoRTH did not furnish any reply to the Audit observation.

The reasons for such deficient project specifications being approved by MoRTH/NHAI were as follow:

- Deficient review of the existing site conditions by detailed project report consultant and MoRTH/NHAI before approving the project;
- Non-preparation of detailed guidance note for detailed project report consultants by NHAI as directed by MoRTH vide its Standard Operating Procedure; and

¹⁶⁶ Flyovers at Maharipur town, Sarsaul town and Chaudagra town

- Non-verification¹⁶⁷ of usage of LIDAR technique in detailed project reports preparation as envisaged in CCEA approval and MoRTH Standard Operating Procedure.

Besides above observations on deficient detailed project reports, as contained in para 5.3.2 above, in 22 sample projects, change of scope amounting to ₹ 725.16 crore has been recommended out of which an amount of ₹ 423.81 crore was approved by NHAI in 19 projects (**Annexure 6**) till October 2021. Improper review of the existing site condition by detailed project report consultant /NHAI before awarding the projects, necessitated additional structural provisions such as bridges/culverts/vehicular underpasses/pedestrian underpasses etc., in these cases.

In the Exit Conference (May 2022) MoRTH assured that the policy guidelines for penal action on defaulting consultants have been issued by the Ministry and deterrent action on defaulting consultants were being taken on regular basis. The Ministry also assured of sharing supplementary information regarding usage of technologies in national highways construction. However, any such information from MoRTH was still awaited by Audit.

Thus, the deficiencies mentioned above indicated that detailed project reports for the projects being constructed under BPP-I were not appraised with due diligence by the Competent Authority before approval. Non-preparation of detailed guidance note for detailed project report by NHAI and non-verifiability of usage of light detection and ranging (LIDAR) technique could have been the factors contributing to detailed project reports being deficient. Further, nothing was available on record to indicate that penal action was taken/initiated against any of the erring detailed project report consultants of these projects.

Recommendation No. 18: MoRTH may consider establishing a Detailed Project Report Cell in the implementing agencies to create institutionalised in-house expertise for reviewing the detailed project reports and road designs against the extant standards/guidelines.

Recommendation No. 19: LIDAR technique, as envisaged in CCEA note, should be used in preparation of detailed project reports in Bharatmala Pariyojana Phase-I projects.

Recommendation No. 20: Responsibility may be fixed, after detailed investigation, for preparing and approving faulty detailed project reports with sub-optimal parameters/specifications.

5.4 Tendering and selection of contractors/concessionaires

5.4.1 The single stage two envelope bidding process was adopted by MoRTH/NHAI/NHIDCL for selection of contractors/concessionaires. Technical eligibility and qualification of the bidders was to be first assessed, based on details submitted in technical bids, followed by opening of financial bids of the technically qualified bidders, so as to declare L-1/H-1 bidder.

Following financial evaluation criteria was prescribed in case of different mode of construction:

¹⁶⁷ No LIDAR reports furnished to Audit despite several written and verbal requests.

Engineering, Procurement & Construction: Lowest project cost quoted by bidder.

Hybrid Annuity Mode: Lowest bid price viz., lowest of NPV of bid project cost plus NPV of operation & maintenance cost quoted by bidder.

Build, Operate & Transfer (Toll): H-I bidder, in case it was quoting for Premium i.e., negative viability gap funding (VGF) and L-I bidder, in case it was quoting for viability gap funding.

During review of 66 sample projects, following was observed:

5.4.1.1 Dwarka-Expressway (Pkg.-I)

The project was awarded (17 December 2018) for a value of ₹ 1,349 crore to the bidder¹⁶⁸ who failed to fulfil the Request for Proposal condition of having completed construction of at least one deep/ shallow tunnel consisting of single or twin tubes (including tunnel for roads/railways/metro rail/irrigation/hydroelectric projects etc.) with minimum length of 900 meter and minimum cross-sectional area of 126 square meter¹⁶⁹. The successful bidder had experience of completing construction of cross-sectional area of 105 square meter only. However, NHAI accepted the contention of the contractor regarding ambiguity in the clause of Request for Proposal that nowhere it was defined as to whether the minimum cross-sectional area 126 square meter of a tunnel pertained to finished/clear cross-section or otherwise. Work was awarded to same contractor citing that it had experience of having constructed minimum cross-sectional area of 126 square meter though it was not clear/finished.

Audit observed that there was no ambiguity in the clause as it clearly stipulated cross-sectional area in respect of completed project which itself meant clear/finished. Further, no such clarification was sought in the pre-bid meeting by any participant, thereby, proving the fact that all the six bidders including the L-1 bidder and the management did not consider Request for Proposal term as ambiguous. Clarity of the Request for Proposal provision was further corroborated by the fact that model Request for Proposal published even after award of this project continued with the same terminology for the tunnel work and no changes were made in it.

MoRTH replied (April 2022) that as per Request for Proposal, one project of 126 sqm cross-section area was required. Earlier, Evaluation Committee took a view that ‘clear cross-section’ area was to be considered and the bidder was disqualified. The bidder, in its representation, highlighted that “clear cross-section” was not written in Request for Proposal and they have completed gross cross-sectional area and, therefore, they were eligible and with the approval of Competent Authority, the bidder was considered qualified.

¹⁶⁸ The bidder was declared unqualified by the committee evaluating the technical bids but later qualified as bidder's representation was accepted by NHAI and it emerged as the L-I bidder too.

¹⁶⁹ Financial bids of four bidders other than the contractor were opened. These four bidders had experience of tunnel work with cross-sectional area in the range of 136 sqm. to 153.86 sqm. as against the requirement of tunnel cross-sectional area of 126 sqm.

Reply of MoRTH may be viewed against the fact that there was no ambiguity in the clause since it clearly stipulated cross-sectional area in respect of completed project which itself meant clear/finished.

5.4.1.2 Delhi-Vadodara (Pkg.-17 to 25)

In respect of nine projects¹⁷⁰, NHAI failed to review the fact that detailed project report consultant determined incorrect civil cost estimates based on old schedules of rates although updated schedules of rates were available (August 2018) before the floating of notice inviting tender for these projects (03 October 2018). In case of these projects, the L-I bidders quoted 0.98 *per cent* to 16.45 *per cent* over and above the estimated civil cost. Due to above fault in project estimates, NHAI computed notional projects estimates, based on latest schedules of rates, and compared the same with bidders quote as per which the L-I bidders were in the range of (-) 3.88 *per cent* to 5.55 *per cent* of the notionally estimated civil cost. This resulted in undermining fair Request for Proposal conditions based on which bids could have been invited and analysed.

MoRTH replied (April 2022) that after the receipt of bids for these projects, detailed project report consultant reported the amendment to schedules of rates for change in rates. In order to assess reasonableness of bids received, the bid quoted by the L-1 bidders based on market rate were compared with the latest applicable schedules of rates. Accordingly, bids were processed and L-1 were declared.

MoRTH's reply confirms the Audit observation that the bids were invited based on incorrect estimates. Further, while appraising these projects member from NITI Aayog was also not present in the Project Appraisal & Technical Scrutiny Committee. Thus, the fact remained that NHAI failed to review correctly the cost estimates proposed in detailed project report and went ahead for bidding with incorrect cost estimates.

5.4.1.3 Hapur Bypass– Moradabad

NHAI, while inviting bids for six laning of Hapur Bypass-Moradabad on BOT (Toll) basis, anticipated annual premium of ₹ 97.77 crore with concession period of 22 years. However, against this estimated premium of ₹ 97.77 crore, NHAI accepted (24 March 2018), without any justification on the record, the H-1 bid at annual premium of only ₹ 31.50 crore (approximately 68 *per cent* lower than the premium estimated by NHAI) on the basis of justification that assumptions of traffic forecast made by detailed project report consultant and wholesale price index taken by detailed project report consultant, while making estimation of premium of ₹ 97.77 crore were on higher side. Change of NHAI's perception occurred within a week of bid due date of the project. NHAI accepted the error in estimation without any justified reasons on record and without going for re-tendering. Since the project appraisal and approval files and tendering & award files were not furnished to Audit, no further examination could be done.

MoRTH replied (April 2022) that premium of ₹ 97.77 crore was calculated by financial consultant based on the data provided by technical consultant and other assumptions issued by

¹⁷⁰ Audit observation is on nine projects though only one project viz., Package 18 was part of sample 66 projects.

the MoRTH and NHAI. Further, from the six qualified bidders, at request for qualification stage, two competitive bids were received and out of the two bidders, one selected bidder has quoted premium and the other bidder has quoted grant i.e., viability gap funding.

Reply of MoRTH may be viewed against the fact that it was only after opening of financial bids that there was change in management's perception on the detailed project report consultant's assumption in relation to traffic growth and wholesale price index.

NHAI failed to provide any record/file pertaining to award of this project in spite of pursuance by Audit thereby denying a fair opportunity for reviewing the validity of the tendering process and award thereof. Further, due to non-maintenance of complete data in regard to traffic and toll collection at the two toll plazas¹⁷¹ of this stretch, Audit could not validate the management's claim of higher projections of traffic by detailed project report consultant.

In view of above, an investigation is warranted in the matter to examine the observation and fix the responsibility on erring consultant/NHAI officials.

5.4.1.4 Gwalior-Shivpuri (Mohana town portion)

Estimates for Gwalior-Shivpuri (Mohana Town portion) with a length of 4 km were prepared (April 2017) by Madhya Pradesh Public Works Department (MP PWD). The contract was awarded (February 2018) for the same by NHAI under EPC mode for a value of ₹ 18.39 crore. While executing the project, contractor submitted that only 3.10 km was road length and the balance length was bridge portion on Parvati river which was not in the scope of its work. Hence, it submitted for de-scoping the length of 0.900 km of the bridge from its contract. This fact of 0.900 km of bridge work being part of road length of 4 km was neither noticed by Madhya Pradesh PWD, while preparing detailed project report, and by NHAI, while floating the tender and entering into agreement, nor by the contractor, while bidding for the project. This also indicated that NHAI did not carry out any check of facts and figures of the proposed detailed project report before approving the project. Hence, there was no *consensus ad idem* between the parties to the contract thereby making the EPC agreement null and void.

MoRTH admitted (April 2022) that as per the agreement, construction of four lane road of four km was provisioned but later it was found that the existing Parvati bridge on two lane of Mohana city portion was located at a distance of 3.100 km from the start point of project stretch. Re-construction of Parvati bridge was not provisioned in contract. MoRTH further justified that the estimate of the work was prepared by Madhya Pradesh PWD and NHAI just sanctioned the estimate as per the estimate submitted by Madhya Pradesh PWD. As the work not required at site was de-scoped and payment was made to the contractor only for the work done by him, there was no financial loss to NHAI as such.

Reply of MoRTH may be viewed against the fact that confirmation of length of project and investigation of site was a pre-requisite for review of detailed project report and approval of the project by NHAI.

¹⁷¹ Located at Joya and Brijghat.

5.4.1.5 Lucknow Ring Road (Pkg.- I¹⁷²)

The bids for this four lane national highway, under EPC mode of construction, were floated on 07 March 2019 with estimated project civil cost of ₹ 904.31 crore with its extended bid due date being 12 June 2019. L-1 for the project submitted its bid at ₹ 1,062 crore, which was 17.44 *per cent* higher than the estimated cost.

While scrutinising the reason for higher bid cost submitted by L-1 bidder, NHAI computed notional revised estimated cost of ₹ 1,041 crore based on schedules of rates of 2019 because the bids floated on 07 March 2019 were not based on correct cost estimates as schedules of rates of 2016-17 were considered for the same. Due to this notional revision in estimated cost, the bid of L-1 was now 2.02 *per cent* higher than the notionally revised estimates. Such lower and faulty project estimation initially and later revision of the same after opening of financial bids resulted in undermining fair Request for Proposal conditions based on which bids could have been invited and analysed.

MoRTH did not furnish reply to the Audit observation.

5.4.1.6 Lucknow Ring Road (Pkg.-IIIB)

Based on technical bid submitted, the threshold technical capacity¹⁷³ of successful bidder was worked out to ₹ 1,393.72 crore. However, after the award (03 January 2017) of the project and entering into agreement (23 January 2017) with the successful bidder, NHAI, based on inputs received (June 2017) regarding falsified technical bid documents submitted by L-1, instead of disqualifying it recomputed the threshold technical capacity of the L-1, as ₹1,030.53 crore which was less than the required threshold technical capacity of ₹ 1,126 crore by ₹ 95.47 crore. However, NHAI still proceeded the engagement with the L-1 bidder and declared the appointed date of the project as 01 August 2017.

MoRTH replied (April 2022) that the final assessed technical capacity of the successful bidder was ₹ 1,151.08 crore which was more than the threshold technical capacity of ₹ 1,126 crore.

Reply of MoRTH may be viewed against the fact that threshold technical capacity recomputed by NHAI itself was ₹ 1,030.53 crore and not ₹1,151.08 crore. Thus, the assessed technical capacity of the bidder was revised later after opening of bids to accommodate the L-1 bidder.

5.4.1.7 Churachandpur-Tuivai (Pkg.-2B)

Technical bids for the projects were opened on 11 February 2020 while the project was approved by Competent Authority on 18 June 2020. The assessed bid capacity of the bidder was ₹ 101.48 crore as against the required bid capacity of ₹ 240.01 crore. However, still the project was awarded to the bidder due to failure on part of Management to confirm the facts

¹⁷² *This green-field stretch with a length of 31.75 km was being developed on NH 56. Total sanctioned cost of the project was ₹1,916.38 crore and the appointed date of the project was 07 February 2020.*

¹⁷³ *The total capacity of work, explained in financial terms, as undertaken by bidder during a particular span of period prior to bid date.*

and figures submitted by the bidder, as it was relying on the submissions of bidder only who submitted its assessed bid capacity as ₹ 526.03 crore.

MoRTH replied (May 2022) that the work was awarded to the lowest among three technically responsive bidders.

Reply of MoRTH may be viewed against the fact that the bidding capacity of ₹ 526.03 crore of bidder was wrongly calculated by the bidder and same was relied upon by NHIDCL. The bidder submitted three works of which the value of work done for one work was zero and in other two works, the share of it was 70 *per cent* and 99 *per cent* respectively. Keeping in view the value of work done, share of bidder in ongoing works and the existing commitments submitted by the bidder, assessed bid capacity of the bidder came to ₹ 101.48 crore which was less than the required bid capacity of ₹ 240.01 crore. Despite this, the work was awarded to said contractor in clear violation of prescribed procedure of bidding.

5.4.1.8 Chittor-Mallavaram

Notice inviting tender for the project was floated on 25 January 2018 and appointed date was fixed as 08 January 2019, whereas, detailed project report of the project was finalised on 18 May 2019 i.e., four months after fixation of appointed date. Even the final feasibility report for the project was submitted on 12 March 2018 i.e., more than one and half month of floating its notice inviting tender. Due to non-finalisation of detailed project report before the project approval, awarding and fixing the appointed date, the project's specifications and contractor's scope of work could not be correctly defined resulting in change of scope for value of ₹ 49.10 crore was approved (27 April 2020) on account of requirement of site viz., construction of light vehicular underpass/vehicular underpass besides change in specification of a minor bridge including its span arrangement due to non-consideration of existing natural stream.

MoRTH did not furnish reply to the Audit observation.

5.4.1.9 Suryapet-Khammam

The lead member of the bidding consortium had share of 74 *per cent* in the consortium. The lead member did not fulfil the condition of Request for Proposal regarding experience of five years in construction works in highway sector as the lead member never performed such construction works directly or indirectly as per the list of works submitted by the bidder. However, in support of its experience, it submitted, along with the bid documents, the experience certificate of some other company. That experience certificates too were in field of power sector and not in highway construction sector. Moreover, certificate of chartered accountant regarding net worth, required to be ₹ 304.33 crore, was also not in the name of lead member but in the name of third party. However, NHAI, for no reasons on record, declared (20 February 2019) the bidder technically qualified, who, later, also emerged as the L-1 bidder to whom work was awarded on 08 March 2019 at bid project cost of ₹ 1,566.30 crore.

MoRTH replied (April 2022) that NHAI has robust bid evaluation mechanism. The bids are evaluated by the bid evaluation committee and approved by the Competent Authority. However, the specific Audit observation in this case, was being looked into and position would be intimated to Audit in due course of time.

MoRTH, in the Exit Conference, stated that clarification, in regard to highlighted issues, would be provided to Audit after review.

Thus, many instances of irregularities in award of projects by implementing agencies were observed in violation of the prescribed processes of tendering viz.:

- Selection of ineligible bidders who did not fulfil tender conditions;
- Selection of ineligible bidders based on falsified documents; and
- Floating of notice inviting tender without preparation of detailed project report or based on inaccurate detailed project reports including consideration of old schedules of rates while framing estimates.

Recommendation No. 21: Anomalies in tendering and selection process of contractors/concessionaires should be investigated to fix responsibility on erring officials who failed to ensure due adherence to prescribed rules and guidelines.

Recommendation No.22: In order to bring more transparency in bidding process, efforts should be made to ensure online evaluation of bids by ensuring exhaustive use of e-tendering portal. A mechanism should be developed to embed most of the steps involved in evaluation of bids in the e-tendering application so as to have a secured and non-repudiable digital trail of transactions.

5.4.2 Authority to enter into agreement

As per section 16.1 of the National Highways Authority of India Act, 1988, subject to the rules made by the Central Government in that behalf, function of NHAI was to develop, maintain and manage the national highways and any other highways vested in, or entrusted to it by the Government.

However, Audit, while reviewing 66 sample projects, observed that without the highways being entrusted to NHAI by government, in many instances, it was floating notice inviting tender, awarding projects, entering into agreement and fixing appointed date for such highways as detailed below:

Table 5.8: Projects where agreements were entered without authority

S. No.	Name of the project	Date of entrustment by MoRTH	Date of floating of notice inviting tender	Date of award of the project	Agreement date of the project
1	Chittor-Mallavaram	02-08-2018	25-01-2018	26-03-2018	09-05-2018
2	Mangloor-Telangana Maharashtra Border	17-05-2018	01-01-2018	26-03-2018	09-05-2018
3	Ramasanpalle Manglore (Sangareddy-Nanded Pkg.- II)	17-05-2018	19-01-2018	26-03-2018	09-05-2018
4	Suryapet-Khammam	26-05-2020	20-09-2018	08-03-2019	14-06-2019

S. No.	Name of the project	Date of entrustment by MoRTH	Date of floating of notice inviting tender	Date of award of the project	Agreement date of the project
5	Chettikulam-Natham	14-05-2020	06-02-2018	30-03-2018	06-04-2018 ¹⁷⁴
6	Khajuwala-Poogal-Bap	31-10-2019 ¹⁷⁵	19-01-2018	27-03-2018	28-09-2018 ¹⁷⁶

(Source: Record of NHAI)

MoRTH accepted (April 2022) the facts of Khajuwala-Poogal-Bap case while for other projects it did not furnish any reply.

Besides being a procedural violation, the above also carried the risks and legal complications, such as eventual non-entrustment of project stretch or entrustment with modified alignment, duplication/omission of repair and maintenance efforts/commitments by multiple agencies i.e., on one hand by NHAI and on the other hand by State PWDs and Border Road Organisation etc., who are responsible for development and maintenance of such stretches before entrustment to NHAI.

5.5 Goods & Services Tax impact on project estimation and payments thereof

Goods & Services Tax (GST) was introduced in India vide Government of India gazette notification dated 12 April 2017. The major objective of introduction of GST was to remove the cascading effect of various indirect taxes prevalent at that time viz., Service Tax, Value Added Tax, Excise Duty, Central Sales Tax etc.

As per clause 2 (119) of the Central Goods & Services Act, 2017 (CGST, Act 2017), the works contract has been defined as a contract for building, construction, fabrication, completion, erection, installation, fitting out, improvement, modification, repair, maintenance, renovation, alteration or commissioning of any immovable property wherein transfer of property in goods (whether as goods or in some other form) was involved in the execution of such contract. The rate of GST on works contract for development of highways has been fixed at 12 *per cent* i.e., six *per cent* Central GST and six *per cent* State GST. As per para 6 (a) of Schedule II to the CGST Act, 2017, the works contracts are treated as contract for supply of services. As per CGST Act, 2017, the GST paid at the time of procurement of goods and services for manufacturing any product or rendering any services (i.e., inputs used for manufacture or service) is allowed as deduction from the GST payable by it on the end product or end services (output) which is termed as Input Tax Credit.

Audit, while reviewing the national highways project's cost estimates put to tender, observed the following:

¹⁷⁴ Appointed date of the project was fixed as 05 November 2018 i.e., around one and half year prior to entrustment of road stretch to NHAI.

¹⁷⁵ Complete stretch entrusted upto this date.

¹⁷⁶ Infact appointed date of the project was fixed as 22 May 2019 i.e., around five months prior to entrustment of the road stretch to NHAI.

- On test check basis it was observed that in case of EPC and HAM projects being implemented in NHAI, project estimates were being prepared after considering the GST on inputs used by contractor/concessionaire for construction of project viz., 18 *per cent* for bitumen & steel, 28 *per cent* for cement and five *per cent* on stone/query spalls etc., without considering the Input Tax Credit which could be availed by contractor/concessionaire later on while settling its GST liabilities;
- In EPC projects test checked, it was observed that besides GST on inputs, GST at 12 *per cent* was considered on the completion of the project i.e., output stage. The cascading impact of taking GST twice in EPC projects was overestimation of project estimates. First impact was in the form of inclusion of GST on input in gross estimates and, second one in computation of 12 *per cent* GST on output being computed on such gross estimates when these gross estimates already included GST on inputs also. Thirdly, contractor's profit margin ranging upto 10 *per cent* was being computed on gross estimates. Similarly, in case of HAM projects, concessionaire's profit margin ranging from 10 *per cent* to 25 *per cent* was being computed on gross estimates resulting in overestimation of the project costs to that extent. An illustration on double impact of GST on EPC projects is illustrated below:

Table 5.9: Example pertaining to overbooking of GST

Particulars		Practice being adopted (Amount in ₹ crore)	Correct way (Amount in ₹ crore)
Cost of input	a	80.00	80.00
GST on input	b	10.00	NIL ¹⁷⁷
Estimated project cost (including GST on input)	c=a+b	90.00	80.00
Profit margin of contractor (computed as <i>per cent</i> of c)	d	10.00	8.89
Estimated project cost (excluding GST on output)	e=c+d	100.00	88.89
GST @ 12 <i>per cent</i>	f=12 <i>per cent</i> of e	12.00	10.67
Estimated project cost put to tender	g=e+f	112.00	99.56

- The higher estimation of the project cost would have also resulted in denying fair opportunity to all those bidders who could not participate in the bid due to their technical eligibility falling short of higher technical threshold capacity fixed because of higher project estimation;
- Though as per CGST Act 2017, road projects constructed against consideration of annuity were exempted from GST since 13 October 2017, the Ministry of Finance, based on GST Council decision (28 May 2021) clarified (17 June 2021) that HAM projects were not exempted from GST. In furtherance to Ministry of Finance clarification (17 June 2021), MoRTH, vide its office order dated 27 August 2021, issued direction that GST on annuity

¹⁷⁷ In view of contractor/concessionaire claiming Input Tax Credit of the same at the time of payment of GST on output.

payments to the concessionaire of the HAM projects, whose bid due date was on or after 14 October 2017 but on or before 16 June 2021, was to be made under change of law. These directions were issued ignoring the fact that bid project cost for HAM projects was always inclusive of GST;

- MoRTH further clarified (27 August 2021) that for HAM projects, whose bid date was on or after 14 October 2017 but on or before 16 June 2021, no GST was payable by implementing agencies on 40 *per cent* construction support extended to HAM concessionaire. These directions were also issued in ignorance of the fact that GST @ 12 *per cent* on each milestone payment was already being paid to HAM concessionaire of those projects whose bid date was on or after 14 October 2017 but on or before 16 June 2021;
- On test check basis, Audit observed that in case of three HAM projects viz., Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I), Munabao-Tanot and Khajuwala- Poogal-Bap whereby on 40 *per cent* construction support, for an amount of ₹ 1,388.12 crore for these HAM projects, GST had already been paid to the contractors before the office order dated 27 August 2021 and these milestone payments included an amount of ₹ 148.73 crore as GST paid to the concessionaires. Similarly, in case of another HAM project i.e., Chittor-Mallavaram, NHAI has already made the first milestone payment including GST of ₹ 14.88 crore before issuance of order dated 27 August 2021. Audit further observed that as MoRTH was ignorant of the fact that milestones payment with GST were being already released to the HAM concessionaire, it did not have any mechanism to adjust/recover this GST of ₹163.61 crore, on milestone payments, already released to HAM concessionaire; and
- Audit further observed that the concessionaires of three HAM projects viz., Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I), Munabao- Tanot and Khajuwala- Poogal-Bap were also paid price-adjustment of ₹10.41 crore on GST on output (12 *per cent*) amount of ₹ 148.73 crore which they were not otherwise entitled to. Amount of ₹ 148.73 crore was the amount of GST on construction support extended by NHAI, however, concessionaire was not entitled for the same as per MoRTH's clarification of 27 August 2021. Therefore, the concessionaire was also not entitled for any price adjustment on this GST amount. No mechanism was prescribed in the office order of MoRTH dated 27 August 2011 to adjust/recover this price adjustment excess paid to the concessionaire.

MoRTH replied (April 2022) that detailed project consultant of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I) project has prepared the cost estimate considering various item wise total cost including GST applicable on bitumen, cement, steel etc. It further stated that in the above said project, payments have been made to the concessionaire as per provision of concession agreement and no GST payment has been made to them against milestone payment.

MoRTH furnished only partial reply to Audit observation. In its reply, MoRTH admitted the fact of GST on inputs being included in project estimates of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I) project without considering the Input Tax Credit. Regarding payments to concessionaires, the facts remained that bid project cost was all inclusive and tax deducted

at source @ two *per cent* for GST on services was being deducted from the gross amount of work done.

MoRTH, in the Exit Conference, stated that it was in the process of drafting a note for seeking clarification from GST authorities and on receipt of the same, GST recoveries, as suggested by Audit, would be initiated.

Recommendation No. 23: Input Tax Credit may be considered to be adjusted for arriving out project estimates after seeking necessary clarifications from GST authorities for streamlining the implementation of GST provisions in highway construction sector.

5.6 Lower bid quotes

While reviewing the pattern of Lowest Bidder (L-1) bids *vis-a-vis* the tendered cost across 66 sample projects, Audit observed the following:

5.6.1 Engineering, Procurement and Construction Projects/Item Rate Projects

In case of 14 EPC/Item Rate projects¹⁷⁸ out of sample 42 EPC/Item Rate projects¹⁷⁹, the amount quoted by L-1 bidders were 10.95 *per cent* to 24.77 *per cent* lower than the estimated civil cost of the projects put to tender as detailed below:

Table 5.10: Details of lower bids quoted for EPC/Item Rate projects

Name of the project	Date of award	Cost put to tender (₹ in crore)	Bid quoted by L-1 (₹ in crore)	Bids quoted below (in <i>per cent</i>)
Aurangabad-Karodi	31-01-2018	607.17	512.99	15.51
Dagmagpur-Lalganj (Pkg.-II)	13-03-2018	963.11	770.04	20.05
Kohima-Jessami (Pkg.-II)	18-03-2020	248.83	202	18.82
Kohima-Jessami (Pkg.-III)	23-03-2020	243.04	206.27	15.13
Lalganj-Hanumanah (Pkg.-III)	22-03-2018	870.87	677.07	22.25
Mohol-Wakhri (Pkg.-I)	18-09-2019	821.89	731.89	10.95
Varanasi-Dagmagpur (Pkg.-I)	27-02-2018	871.98	670.50	23.11
Chettikulam-Natham	30-03-2018	431.93	345.54	20.00
Bihar/Jharkhand Border (Chordaha) – Gorhar	31-01-2018	1,155.16	999.00	13.52
Dwarka Expressway (Pkg.- III)	09-10-2018	1,772.11	1,333.00	24.78

¹⁷⁸ Only those projects considered where bids quoted were more than 10 *per cent* below the cost put to tender.

¹⁷⁹ EPC project of Development of existing road in Ule, Suuratgaon, Malumbra, Tuljapur, Shingoli, Yedeshi, Naldurg and Omerga not included because of it being a maintenance project.

Name of the project	Date of award	Cost put to tender (₹ in crore)	Bid quoted by L-1 (₹ in crore)	Bids quoted below (in per cent)
Lucknow Ring Road (Pkg - IIIB)	03-01-2017	450.68	388.31	13.84
Delhi-Meerut Expressway (Pkg.- IV)	29-12-2017	1,225.33	1,087.00	11.29
Balance work of Tindivanam-Krishnagiri	29-05-2019	519.38	434.82	16.28
Koida-Rajamunda	31.01.2018	953.09	843.43	11.51

(Source: As per records of NHAI/NHIDCL)

5.6.2 Hybrid Annuity Mode Projects

Hybrid Annuity Mode (HAM) projects had two bid parameters viz., net present value of bid project cost for construction period and net present value of operation and maintenance cost during the entire operation period for determining the lowest bid price. Audit reviewed the bidding pattern in 21 sample HAM projects (**Annexure 7**) and observed as under:

- In 19 out of 21 HAM Projects, L-1 quoted operation and maintenance cost lower in the range from 3.72 per cent to 88.85 per cent in comparison to estimated operation and maintenance cost. Further, even in case of other bidders of respective projects, Audit observed that operation and maintenance cost quoted by 66 unsuccessful bidders (out of 79 unsuccessful bidders across 19 projects) was lower in the range of 0.84 per cent to 94.18 per cent to the estimated operation and maintenance cost;
- Due to L-1 bidders quoting less operation and maintenance cost as compared to estimated operation and maintenance cost, there was cushion for the L-1 bidders to quote bid price less than the assessed bid price even though their bid project cost was on higher side as compared to bid project estimates. As can be seen from **Annexure 7** that in case of 11 projects, out of 19 projects, even after quoting bid projects cost higher in the range of 0.53 per cent to 24.56 per cent of bid project estimates, the L-1 bidders could get the projects by quoting low operation and maintenance cost in the range of 3.72 per cent to 79.31 per cent;
- In case of eight projects, not only L-1's operation and maintenance cost were lower as against the estimated operation and maintenance cost but also, the bid project cost was lower than the bid project estimates, the cumulative impact of which was that their bid prices were lower than the assessed bid price in the range of 10.36 per cent to 25.38 per cent; and
- Cumulative effect of the above was that in case of 15 projects, out of 21 HAM projects, bid price was lower than assessed bid price in the range of 0.44 per cent to 25.38 per cent.

In spite of bidders for EPC/Item Rate and HAM projects invariably quoting lower bids than the estimated cost put to tender in 35 *per cent* and 71.43 *per cent* cases respectively, nothing was found on record to indicate whether any independent review was carried out by implementing agencies to examine the reasons for the same and for contemplating corrective action accordingly.

MoRTH replied (April 2022) that in the cases of low bids being quoted, additional performance security was being taken.

The reply of MoRTH is rather factual in nature and failed to address the Audit observation in regard to any independent review carried out by implementing agencies to analyse the reasons behind such low bidding for taking necessary corrective actions.

Recommendation No. 24: Reasons for low bid quotes need to be identified and corrective action needs to be taken after analysing the reasons.

5.7 Failure of grand challenge mechanism

As per CCEA approval of Bharatmala Pariyojana, 10 *per cent* funds were to be kept earmarked on reducing balance basis vis-à-vis annual fund allocation for the Bharatmala Pariyojana to take up projects under the grand challenge mechanism. It was a mechanism approved for taking up such road construction projects on priority and fast track basis where sufficient land was made available timely by the State Governments as per the norms of MoRTH. Under this mechanism a maximum of two stretches of roads not exceeding 100 km were to be allowed from any one State in a particular financial year.

Salient features of this mechanism were as follows:

- If a State acquired 50 *per cent* of the land by the time the detailed project report was ready, then such detailed project report would be put on fast track mode;
- From amongst such detailed project reports/projects, those projects would be taken up for bidding where additional 30 *per cent* of the land was acquired by the time of bidding of the projects;
- From such successful bids, those projects would be awarded where 90 *per cent* land has already been acquired at the time of award of the project; and
- In case of competing projects having above credentials, the projects which were connecting to ports and/or industrial or commercial hubs, other economically and strategically important locations would be given priority etc.

Audit observed that this mechanism was approved to encourage State Governments for speedy land acquisition so as to help them in implementing the decision of MoRTH¹⁸⁰ in regard to awarding of projects under BPP-I only when 80 *per cent* land was available in case of Public Private Partnership projects and 90 *per cent* land was available in case of EPC projects.

¹⁸⁰ Fact apprised to CCEA also and directions were issued via MoRTH Standard Operating Procedure on BPP-I.

However, not even a single project has been awarded, as per records furnished to Audit, under this mechanism upto 31 March 2022.

In response to Audit requisitions seeking files and records pertaining to grand challenge mechanism, MoRTH and NHIDCL stated that records were not available while NHAI submitted that records pertaining to grand challenge mechanism must be available with MoRTH. Such replies were symptomatic of their apathy towards grand challenge mechanism despite them being responsible for co-ordinating with State Governments for land acquisition.

MoRTH replied (April 2022) that outer ring road of Thiruvananthapuram city was being executed under grand challenge mechanism and further stated that while not directly being implemented under grand challenge mechanism, constant efforts were being invested in accelerating acquisition of land with the support of State Governments as Atal progress way, Bhubaneswar-Cuttack capital ring road, Karnal & Ambala ring roads and Bangalore satellite town ring road. In addition, contribution from State Governments, for land acquisition, was being sought in cases where estimated cost of land acquisition in the project was significantly high.

Reply of MoRTH indicated that only one project was being executed under Grand Challenge Mechanism which also could not be verified in the absence of any document provided to Audit. Thus, MoRTH could not successfully implement the Grand Challenge Mechanism for construction of road projects on fast track basis.

5.8 Delay in Award of Projects after Inviting Tenders

Audit observed that in case of 20 projects (**Annexure 8**) there was inordinate delay in award of projects to contractors/concessionaires upto 463 days¹⁸¹ due to pending approval of the project by the Competent Authority (eight projects), delay in tendering process due to either not freezing Request for Proposal terms or determination of project estimates based on old schedule of rates (eight projects) and due to non-availability of desired right of way (three projects) while in case of one project viz., Shamli- Muzzafarnagar (Pkg.-II) no reasons were available on record for such delay in award of the project. The reasons for delay in award of most of these projects were controllable by implementing agencies through better planning and co-ordinated efforts and avoidance of such delay would have led to early commencement of work on these projects and consequent early completion of the same thereby giving optimal benefits of seamless connectivity to the commuters as envisaged in CCEA approval.

MoRTH did not furnish reply to the Audit observation.

5.9 Summing up

There were deficiencies in the appraisal and approval mechanism proposed to CCEA as many of the high cost EPC projects viz., Delhi-Vadodara Expressway and Dwarka Expressway etc., could not be assessed by either CCEA or MoRTH to have the advantage of the scrutiny at that level. Further, even the appraisal and approval mechanism decided by CCEA was also not

¹⁸¹ *This delay is exclusive of 165 days considered as schedule period of tendering (i.e., 45 days for bid due date and 120 days further considering bid security validity period as per model Request for Proposal).*

strictly followed. Project appraisal and approval mechanism, including delegation of powers, need to be comprehensively reviewed for ensuring proper scrutiny, selection and approval of all modes of project construction at competent levels and the processes for project appraisal and approval prescribed by CCEA should be scrupulously followed by project implementing agencies.

Detailed project reports prepared by consultants were not appraised with due diligence by the Competent Authority before approval of projects. Instances of adoption of different specifications by contractors/concessionaires at the time of execution of projects than what were prescribed by detailed project report consultants, highlighted the fact that specifications of detailed project reports were not found suitable as per site conditions. MoRTH may consider establishing a Detailed Project Report Cell in the implementing agencies to create institutionalised in-house expertise for reviewing the detailed project reports and road designs.

Many instances of irregularities in award of projects by implementing agencies were observed in violation to the prescribed processes of tendering viz., selection of ineligible bidders, award of works without approved detailed project reports or based on faulty detailed project reports. Anomalies in tendering and selection process of contractors/concessionaires should be investigated to fix responsibility on erring officials who failed to ensure due adherence to prescribed rules and guidelines.

CHAPTER 6

EXECUTION OF PROJECTS



Chapter 6

Execution of Projects

While approving BPP-I, CCEA directed that award of the projects need to be completed within two years of sanction of the Bharatmala Pariyojana while all project construction should be completed within five years of sanction of the Bharatmala Pariyojana. It further directed to minimise scope for time overrun and cost overrun in these projects. Audit observations on execution of 66 projects reviewed are as follows: -

6.1 Land Management

While proposing the Bharatmala Pariyojana, MoRTH apprised (September 2017) CCEA that based on lessons learnt from NHDP, it has been made mandatory to award projects only after ensuring availability of 90 *per cent* right of way in EPC projects and 80 *per cent* right of way in case of Public Private Partnership projects. MoRTH, vide its Standard Operating Procedure (December 2017), reiterated the above stand apprised to CCEA.

Audit, while reviewing the land management under BPP-I by NHAI/NHIDCL and Road Wing of MoRTH, observed the following:

6.1.1 Condition pertaining to availability of 90/80 *per cent* right of way

(i) Distinction between EPC and Public Private Partnership projects

There was no basis available on record for prescribing two different benchmarks for award of projects viz., availability of 90/80 *per cent* right of way for EPC/Public Private Partnership projects when non-availability of requisite right of way would equally impact the progress of EPC/ Public Private Partnership projects.

MoRTH replied (April 2022) that two different benchmarks viz., 90 *per cent* and 80 *per cent* availability of land in EPC and Public Private Partnership projects respectively were as per model Request for Proposals. It further stated that in case of Public Private Partnership projects implementing agencies have excess 150 days in fixation of appointed date and fulfilling of condition precedent¹⁸² including transfer of right of way.

Reply of MoRTH is not germane to the point made as it did not furnish any rationale for the availability of 90/80 *per cent* right of way, for different modes of constructions. Model Request for Proposal refers to model agreements only whereby availability of 90/80 *per cent* right of way have been stipulated for fixation of appointed date and not award date. It thereby instead of explaining any rationale for fixing different threshold of right of way availability, before

¹⁸² *The concessionaire of HAM agreement might, upon providing the performance security to the implementing agency, at any time after 30 days from the date of the agreement or any time earlier acceptable to implementing agency, require the implementing agency to fulfil its conditions precedent within a period of 120 days. The conditions precedent to be fulfilled by implanting agency include procuring to the concessionaire the right of way to the site as per contract provisions, procurement of all applicable permits relating to environment protection & conservation, procurement of forest clearance in respect of land forming part of right of way and procuring approval of general agreement drawings for road over bridges/under bridges at the level crossings.*

award of project, for different modes of construction further diluted the directions of CCEA in regard to availability of right of way before award date as appointed date was an event that comes much after award date.

Further, MoRTH contention that excess 150 days were available in case of public private partnership projects in fulfilment of conditions precedent as compared to EPC projects also applies to appointed date and not the award date. Also, in the model Request for Proposal, in spite of land availability being sensitive State issue, ensuring land availability has been made a condition precedent to fixation of appointed date rather than ensuring its availability before award of project thereby increasing project risk, the extent of which was more in Public Private Partnership projects. This aspect was further aggravated by the fact that in case of Public Private Partnership project concessionaire was absolved from its scope of work commensurate to right of way not made available to it within 180 days of appointed date.

(ii) EPC/concession agreement clauses pertaining to right of way

As per EPC agreements and concession agreements (HAM/BOT) the requirement of minimum requisite right of way i.e., 90/80 *per cent* has been deferred up to fixation of appointed date. In case of EPC projects, the time limit for fixation of appointed date was open-ended, while in case of Public Private Partnership projects, the appointed date could take place up to eight months from the date of agreement and this time limit could be further extended by implementing agencies by paying the prescribed contractual damages. In practice, either damages were not being levied or mutually waived off as seen in the case of four sample projects¹⁸³ test checked, viz., Chittor-Mallavaram, Khajuwala-Poogal-Bap, Munabao-Tanot, Vadodara-Mumbai Expressway (Phase IA-Pkg.-V), wherein both NHAI and concessionaires were at fault in fulfilling their condition precedents but still no commensurate penalty as per each parties default in fulfilling its condition precedent was levied as the same was waived off mutually. Concessionaires were forgoing their claims for damage on NHAI due to it not providing requisite right of way and NHAI, on the other hand, was forgoing its claims for concessionaires not fulfilling their obligations under the agreement. Further, even after fixation of appointed date and in spite of deficient performance of the contractors/concessionaires instances were observed¹⁸⁴ whereby no damages could be levied on the contractors/concessionaires due to implementing agency not providing requisite right of way even after appointed date. If the damages were to be levied on the contractors/concessionaires for slow progress/performance and non-adherence to contractual provisions, then it would invariably raise counter claims on the implementing agency by using the handle of non-handing

¹⁸³ *Out of 19 projects highlighted in (vii) bullet of this para whereby the fixation of appointed date was delayed in the range of 10 days to 697 days, due to composite impact of non-handing over of requisite right of way and the contractor/concessionaire not fulfilling its part of obligation in form of submission of performance bank guarantee, formation of special purpose vehicle or achievement of other conditions precedent.*

¹⁸⁴ *On test check basis it was observed that in case of Kohima-Jessami (Pkg.-II and III) though contractors were at fault for slow progress on the project but still no penalty, as per contractual provisions could be levied, on them by NHIDCL as it itself did not provide the requisite minimum land even after fixation of appointed date to the contractor. Infact, the contractors of Package II and III ended up in getting extension of time of 195 days and 238 days respectively without levy of any liquidated damages on them due to NHIDCL not providing them requisite minimum land even after appointed date of these projects.*

over of requisite right of way and resultant idling of man and machinery, leading to eventual litigation.

Hence, the pre-condition of right of way, which was to be ensured before the award of the project, was diluted in the agreements by stipulating that right of way be provided up to appointed date and that too could be further compromised by mutual waiver or by levying damages. It ultimately impacted project progress as discussed later in this Chapter.

MoRTH did not furnish reply to the Audit observation.

(iii) Benchmarking of contiguity of right of way

Except in case of EPC agreements¹⁸⁵, it was not defined anywhere i.e., in all Public Private Partnership projects as to how much minimum continuous right of way and not fragmented patches of small lengths-which could effectively lead to unworkable right of way from contractor's logistics and commercial prudence point of view should constitute 80 *per cent* benchmark as handing over of fragmented right of way would hinder the progress of road construction.

MoRTH did not furnish reply to the Audit observation.

(iv) Mechanism to get the work completed where right of way not provided

There were no established provisions or mechanism to get the project completed in case the balance right of way of 10/20 *per cent* was not made available to the contractor or concessionaire during the construction period. In fact, in case of HAM projects and BOT (Toll) projects, if the implementing agency was unable to provide complete right of way within 180 days from the fixation of appointed date, the remaining site of the project highway has to be removed from the scope of the work as a result of which a project would be declared complete, based on the reduced scope, although it remained incomplete as per original scope of work.

In case of four sample HAM projects viz., Chittor-Mallavaram, Paniyala Mor- Narnaul Bypass - Pacheri Kalan (Pkg.-I), Khajuwala-Poogal-Bap and Munabao-Tanot, Audit observed that neither the availability of right of way could be ensured for a period ranging from 478 days to 853 days from fixation of appointed date of these projects nor the proportionate work was de-scoped. This resulted in issuance of only provisional completion certificates to the concessionaires of these projects after the abovesaid period and completion certificates for these projects were issued with delay after acquiring requisite right of way later on.

MoRTH replied (April 2022) that in case of Paniyala Mor- Narnaul Bypass - Pacheri Kalan (Pkg.-I), the project has been completed in all aspects and completion certificate already issued. In respect of Chittor-Mallavaram, Khajuwala-Poogal-Baap and Munabao-Tanot projects, no reply was furnished by MoRTH.

¹⁸⁵ *As per Article 3 of the EPC agreement, the implementing agency should, upon submission of the performance security by the contractor, provide to it not less than 90 per cent of the required right of way of the construction zone of total length of the project highway within a period of thirty days from the date of the agreement and which should be in contiguous stretches of length not less than five kilometer.*

Reply of MoRTH may be viewed in light of the fact that for Paniyala Mor- Narnaul Bypass - Pacheri Kalan (Pkg.-I) project, it did not justify that due to non-handing over of requisite right of way, the completion certificate had to be deferred as the provisional completion certificate for the project was issued on 09 January 2021 whereas the completion certificate was issued only on 31 December 2021.

(v) Availability of right of way for corridor/stretch level as a whole

Land availability was being viewed with reference to specific project (at micro level) and not for the corridor or stretch as a whole (at macro level) as no mechanism was prescribed/developed by MoRTH to deal with the instances where despite availability of requisite right of way for the project, BPP-I objective of origin-destination connectivity along with seamless movement of freight and people on the stretch/corridor, remained deferred due to non-availability of intermediary/adjoining right of way or intermediary/adjoining connectivity. In this regard, Audit observed that:

- In respect of upgradation of existing single lane to two lane with paved shoulder, in Munabao-Tanot project, design chainage was kept from Km 0.000 to Km 46.000 and Km 82.600 to Km 310.467. Chainage from Km 46.000 to Km 82.600 (length of around 36.600 km) was kept out of the scope of the project, as the same was falling in a declared Desert National Park for which wildlife clearance was pending. Thus, despite the project achieving its completion on 21 August 2020, the objective of seamless connectivity was deferred due to intermediary length of around 36.600 km still being single lane pending its requisite clearance till date; and
- Aurangabad-Dhule (Economic Corridor), to be upgraded to four lanes with a length of around 161.60 km was split into four packages viz., Aurangabad to Karodi (length of around 30.440 km)¹⁸⁶, Karodi-Telwadi (length of around 54.360 km), Telwadi-Bodare Autram Ghat section (around length 14 km) and Bodare-Dhule (around length 62.80 km). Four laning work on first two packages has achieved completion in February 2022 and July 2022 respectively but Bodare-Dhule section has achieved physical progress of 41.54 *per cent* upto 31 March 2023 while the work on Telwadi-Bodare Autram Ghat could not be awarded till 31 March 2023 due to project alignment related issues.

Hence, insufficient progress on length of 76.80 km¹⁸⁷ would lead to non-optimal utilisation of the complete corridor length of around 161.60 km.

Other sample projects where complete corridor/stretch could not be developed due to pending acquisition of right of way in different packages of corridor/stretch has been discussed in detail in paras 3.3 of the report.

MoRTH did not furnish reply to the Audit observation.

¹⁸⁶ *Only this project is selected for detailed review.*

¹⁸⁷ *Telwadi-Bodare Autram Ghat section with a length of 14 km and Bodare-Dhule section having length of 62.80 km.*

(vi) Standardisation of terms for right of way

Definition of term ‘right of way’ and ‘availability of right of way’ has not been standardised till date. They varied for different mode of constructions as detailed below:

EPC agreement- Right of way meant the constructive possession of the site free from encroachments and encumbrances, together with all way leaves, easements unrestricted access and other rights of way, howsoever described, necessary for construction and maintenance of the project highway in accordance with the EPC agreement.

HAM agreement- Right of way meant the constructive possession of the site, together with all way leaves, easements, unrestricted access and other rights of way, howsoever described, necessary for construction, operation and maintenance of the project highway in accordance with the concession agreement.

BOT (Toll) agreement- Right of way meant the constructive possession of the site, together with all way leaves, easements, unrestricted access and other rights of way to be read in conjunction with ‘construction zone’, howsoever described, necessary for construction, operation and maintenance of the project highway in accordance with the concession agreement.

Definition of ‘*availability of right of way*’ under the different mode of agreements was as follows: -

EPC agreement- It provided that prior to appointed date, implementing agencies should have procured issuance of the statutory notification under applicable laws for vesting of all the land in the Authority and have taken possession of area for construction zone for at least 90 *per cent* of the total length of the project highway.

HAM agreement- It provided that prior to appointed date, concessionaire should be provided right of way in such a way that it was not prevented from undertaking construction of the project to the extent of at least 80 *per cent* of the length. However, 20 *per cent* should not include any land which might prevent the construction of any critical element of the project without which the completion certificate or provisional certificate could not be granted. HAM agreements further stated that prior to appointed date, implementing agency should have procured issuance of the statutory notification under applicable laws for vesting of all land comprising the project in the Government and have taken possession of at least 80 *per cent* of length. However, it further stated that stray plots of land which the parties mutually agreed to exclude from such vesting prior to appointed date could be exempted from being handed over at the time of appointed date.

BOT (Toll) Agreement- It provided that concessionaire should be provided before appointed date, right of way for 90 *per cent* of the construction zone so that on completion of work in the granted right of way, access should be sufficient to construct and achieve commercial operation date of the project.

The impact of such varying definitions of ‘right of way’ and its ‘availability’ across different modes of construction showcased that in spite of national highways construction being carried out for such long periods, the definitions were still evolving. It was a contributing factor in

delays in handing over of requisite right of way, as discussed in detail for 66 sample projects below at S.No.(vii), resulting in delayed progress of the projects.

MoRTH did not furnish reply to the Audit observations.

(vii) Compliance to CCEA directions

- Out of sample 66 projects, in case of 39 projects, due to non-handing of requisite right of way alone, fixation of appointed date i.e., inception of project construction, was delayed in the range of seven days to 947 days. In case of another 19 projects, fixation of appointed date was delayed for a period ranging from 10 days to 697 days, due to composite impact of non-handing over of requisite right of way and the contractors/concessionaires not fulfilling their part of obligations in form of submission of performance bank guarantees, formation of special purpose vehicles or achievement of other conditions precedent. While in case of other four projects appointed date was delayed in the range of 22 days to 898 days due to contractor/concessionaire not fulfilling their condition precedent (**Annexure 9**). For balance four projects, the appointed date was fixed in time, however, out of these four projects in case of one project i.e., Churachandpur-Tuivai (Pkg.- 2B), the appointed date was fixed before schedule date but without handing over the minimum requisite land; and
- Out of 58 projects, where fixation of appointed date was delayed solely due to non-handing of right of way or it being one of the reasons, in case of 15 projects the requisite right of way was not made available to the contractors/concessionaires even on the delayed appointed date, leave apart the CCEA directions of having minimum requisite land at the time of award. Out of these 15 projects, in case of seven projects contractors/concessionaires had already sought/ granted extension of time in scheduled completion for 100 days to 402 days (up to October 2021) due to non-handing of requisite right of way at the time of appointed date.

MoRTH admitted (April 2022) delays in handing over of requisite right of way at the time of appointed date in respect of various projects and further stated that NHAI was making all efforts in close co-ordination with State Governments for expeditious availability of right of way for the projects. It was assured that directions regarding availability of land would be issued and appointed date would be declared only after availability of requisite right of way.

The fact remained that due to delays in handing of right of way, progress of BPP-I projects was getting delayed hurting the seamless connectivity.

Thus, MoRTH, failed to ensure the requisite availability of right of way before award of a project and also failed to standardise the terms related to right of way and its availability. It resulted in delayed land acquisition for national highway projects and consequent delayed fixation of appointed date thereby hampering overall progress of BPP-I. In non-compliance to CCEA directions, appointed date was being fixed in BPP-I projects without handing over the requisite right of way contributing to skewed development of projects/corridors as discussed later in this Chapter.

Recommendation No. 25: MoRTH should make efforts for strengthening and streamlining the system of project execution including land acquisition framework and standardisation of terms like right of way & its availability across different modes of construction.

Recommendation No. 26: MoRTH should ensure more holistic right of way planning and acquisition rather than project based in order to ensure seamless movement across the complete length of corridor.

6.1.2 Acquisition of land in excess of the requirement

While reviewing 66 projects, Audit observed that in the following cases, implementing agencies acquired excess land either due to oversight or deficient scrutiny of faulty detailed project reports:

6.1.2.1 Dwarka Expressway (Pkg.-I)

NHAI acquired excess land of 2.29 hectares (5.65 acres) from Airports Authority of India (AAI), at 50 *per cent* of the market value, as against the condition of AAI transferring necessary land meant for project construction to NHAI. This parcel of land being adjacent to the other land acquired, was of no use to AAI. In fact, NHAI also did not have any plan to use such land for the project or otherwise at the time of acquiring it, but still NHAI acquired it and for this land parcel AAI has raised claim of ₹ 105.61 crore.

MoRTH admitted (April 2022) acquisition of excess AAI land because the same was not usable for AAI. It further admitted the fact of possibilities being explored to make use of said land for development of tunnel command centre/amenities etc., for Dwarka Expressway.

Thus, land for which AAI was claiming ₹ 105.61 crore was acquired by NHAI without planning its usage at the time of project appraisal and approval and now possible ways to justify such acquisition were being explored.

6.1.2.2 Munabao-Tanot

NHAI did not scrutinise properly the faulty detailed project report of the project resulting in acquiring of excess land of around 38 hectares which was of no use in the project.

MoRTH admitted (April 2022), excess acquisition of 38 hectares of land which was not falling in project alignment.

6.1.2.3 Varanasi-Dagmagpur (Pkg.-I)

NHAI did not scrutinise the deficient detailed project report properly due to which it acquired excess land of around 13.71 hectares which was of no use in the project.

MoRTH admitted (April 2022) excess acquisition of land due to faulty land acquisition plan.

6.1.2.4 Delhi-Meerut Expressway (Pkg.-IV)

NHAI did not scrutinise properly the faulty detailed project report due to which it acquired 9.34 hectares of land beyond the right of way. Payment of ₹12.80 crore had already been made for 3.73 hectares out of 9.34 hectares land.

MoRTH admitted (April 2022) excess acquisition of land and also stated that show cause notice with suspension notice were issued to detailed project report consultant besides debarring it for two years.

6.1.2.5 Jabalpur-Hiren river (Pkg.-I)

Due to faulty detailed project report, land was acquired on right hand side for approaches to Hiren Bridge (facing from Jabalpur to Hiren River) when in fact the land was to be acquired on left hand side approaches of Hiren Bridge which resulted in construction of retaining wall on left hand side of Hiren Bridge at a cost of ₹10.38 crore under change of scope.

MoRTH did not furnish reply to the Audit observation.

Thus, acquisition of excess land, primarily because of deficient scrutiny of detailed project reports, resulted in not only burdening on BPP-I funds¹⁸⁸ but also requiring efforts for maintenance and protection of such land parcels from encroachment.

With regard to acquisition of surplus land, MoRTH, during Exit Conference (May 2022) mentioned that no substantial surplus land has been occupied and that due to inaccuracy in revenue records of land, variation of one to two *per cent* in land acquisition generally occur.

The fact remained that there were avoidable lapses on part of implementing agencies while acquiring land as they failed to scrutinise land schedules and land acquisition plans and also failed to match the same with actual alignment of the project resulting in acquisition of 1,635.14 hectares of surplus land for NHAI projects¹⁸⁹, upto 31 March 2021, resulting in extra burden on the exchequer.

6.1.3 Irregular charging of agency charges

NHIDCL was adding to the cost of land, one *per cent* as agency charges on the land compensation determined by Competent Authority for Land Acquisition without any approval from the Competent Authority. During test check of five sample projects, it was observed that in case of two projects viz., Kohima-Jessami (Pkg. II and III), an amount of ₹1.12 crore has been charged as agency charges, however, records relating to remaining three projects have not been produced to Audit. Audit also sought information/detail for one *per cent* agency charges booked in all BPP-I projects being handled by NHIDCL. However, the same was not provided to Audit.

In the Exit Conference (May 2022), MoRTH assured to look into the matter and intimate Audit in due course.

6.2 Fixation of Appointed Date

Appointed date is the date from which project construction is commenced. While reviewing 66 projects, Audit observed the following in respect of fixation of project appointed dates:

¹⁸⁸ *Land once acquired under NH Act, 1956 could not be handed back to the person from whom it was acquired and commensurate compensation has to be released for the same irrespective of justifiability of such acquisition.*

¹⁸⁹ *Including BPP-I projects.*

6.2.1 Chakeri-Allahabad

The concessionaire commenced work at site w.e.f., 14 December 2018 whereas appointed date of the project was fixed as 12 January 2019 and that too retrospectively fixed through a supplementary agreement dated 19 June 2019 thereby unduly reversing the established sequence of events resulting in concessionaire getting more construction time.

MoRTH did not furnish reply to the Audit observation.

6.2.2 Anandapuram-Pendurthi-Anakapalli

Concessionaire started the project execution w.e.f., from 23 October 2018 while the appointed date was fixed as 04 January 2019.

MoRTH did not furnish reply to the Audit observation.

6.2.3 Kohima-Jessami (Pkg.-II and III)

In these EPC agreements, appointed date has been defined as the date declared by NHIDCL as the project commencement date with the consent of the contractor. Further, before fixation of appointed date of the projects, NHIDCL should have acquired issuance of the statutory notification under applicable laws for vesting all the land comprising the project and should have taken possession of the construction zone for at least 90 *per cent* of the total length of the project highway.

For Packages II and III of Kohima-Jessami, appointed date was declared unilaterally by NHIDCL as 01 July 2020, for both the packages, by transferring merely 28.33 *per cent* and 35.45 *per cent* of right of way respectively. The fixation of appointed date was in fact objected by the contractor of Package-II. The result of such wrong fixation of appointed date was that contractor of both the packages sought extension of time for 195 to 238 days respectively. This also resulted in skewed development of this stretch.

MoRTH replied (May 2022) that appointed date has been declared only after signing of joint memorandum by NHIDCL and the contractors.

MoRTH reply was not relevant to the context as it failed to address the Audit observation that appointed date was fixed in these two projects by merely handing over 28.33 *per cent* and 35.45 *per cent* of right of way and that too by unilaterally declaring the appointed date.

6.2.4 Manu-Lalchara (Manu-Simlung Pkg.-I)

Appointed date of the project was declared as 15 July 2020, after handing over of only 42 *per cent* right of way to the contractor, without signing any memorandum of inventory unilaterally by NHIDCL. This also resulted in skewed development of this stretch.

MoRTH did not furnish reply to the Audit observation.

6.2.5 Churachandpur-Tuivai (Pkg.-IB and 2B)

The appointed date was fixed as 01 July 2020 and 05 August 2020 respectively for Package-IB and 2B after handing of merely 31.78 *per cent* and 34.59 *per cent*. Right of way respectively to the contractor.

MoRTH replied (May 2022) that appointed date has been declared after signing of joint memorandum between NHIDCL and the contractors.

Reply of the MoRTH may be viewed in light of the fact that it did not address the Audit observation regarding fixing of appointed date without ensuring minimum requisite right of way.

6.2.6 Delhi-Meerut Expressway (Pkg.-IV)

Agreement for this project was signed on 11 January 2018 and appointed date fixed on 27 February 2018, however, there was no right of way available with NHAI which could be handed over to the contractor. The requisite right of way was handed over to the contractor up to 10 December 2019 only i.e., after around 21 months from the appointed date which ultimately delayed the project by 19 months as the provisional completion certificate was issued with effective date of 31 March 2021 as against the original schedule completion date of 20 August 2019.

MoRTH replied (April 2022) that land was acquired by the NHAI before appointed date i.e., 27 February 2018 vide 3A and 3D notifications. More than 90 *per cent* land was made available to the contractor before appointed date though some parcels of land were hindered intermittently by the local villagers which could not be considered as an encumbrance as per the provisions of the agreement.

Reply of MoRTH was factually incorrect as the document available with Audit indicated that no land was handed over to contractor on appointed date and the requisite land was made available to the contractor only after a period of 21 months from appointed date.

6.2.7 Delhi-Vadodara Expressway (Pkg.-9)

At the time of fixation of appointed date (18 December 2020), project length of only 38.37 km, out of total length of 45.64 km, was transferred to the contractor and the balance land could not be transferred which also included project length of 5.5 km falling in the Ranthambore National Park for which forest clearance was not available. Stage-I forest clearance for the stretch of 5.5 km was obtained on 05 March 2021 which contributed to delay in execution of the project as even after around two years from award of the project (up to February 2022), physical progress of only 45.21 *per cent* was achieved due to work starting in this stretch of 5.5 km only after Stage-I forest clearance was obtained.

MoRTH replied (April 2022) that on appointed date (18 December 2020), 84.07 *per cent* unhindered length was available. Length of 5.5 km was falling under the eco sensitive zone of Ranthambore Tiger Corridor, for which the proposal was submitted to National Board for Wildlife on 31 July 2020, however, clearance was not obtained till appointed date. To avoid further delay in start of project, appointed date was declared with mutual consent with both parties.

Reply of MoRTH may be seen in the context that appointed date was fixed as 18 December 2020 without handing over the minimum requisite right of way when, in fact, balance land included land for 5.5 km project length falling under eco sensitive zone of Ranthambore Tiger Corridor.

Thus, appointed date in many projects was being fixed in non-compliance to contractual provisions whereby contractors/concessionaires in some of these projects were getting undue extra time for completion of the projects period.

Recommendation No. 27: Appointed date of the projects need to be fixed strictly as per contractual provisions and responsibility may be fixed for any non-compliance.

6.3 Other obligations of implementing agencies and contractors/concessionaires

6.3.1 Obligations of the implementing agencies

In case of HAM agreements, apart from grant of right of way, there were other condition precedent to be fulfilled by an implementing agency before declaration of appointed date viz., approval of general arrangement drawings for road/rail over bridge from Railways and environmental clearances and forest clearances. Similarly, in case of EPC projects, as part of its obligations under the agreement, implementing agency has to get general arrangement drawings approved from railways within 60 days of appointed date besides transferring requisite land and getting environmental clearance before fixation of appointed date. Audit observed the following during test check:

6.3.1.1 Khajuwala-Poogal-Bap

While declaring 22 May 2019 as the appointed date of the project, it was held that all conditions precedent were fulfilled, and no forest clearance was required in respect of land forming part of project right of way. However, 11.8259 hectares of land of the project was forest land and required forest clearances from the Ministry of Environment, Forest and Climate Change (MoEFCC). These facts indicated faults in detailed project report which were overlooked by NHAI while reviewing the detailed project report. The Stage-I forest clearance of the project was received on 16 October 2020 i.e., around one and a half years from declaration of appointed date while working permission was received on 03 March 2021 only, which was one and half months from the issuance (20 January 2021) of provisional completion certificate of the project. Completion certificate was issued (December 2021) with back date of 30 October 2021 without getting the Stage-II forest clearance, which was still pending (March 2022).

MoRTH admitted (April 2022) that due to non-updation of revenue records in western Rajasthan, initially the forest land could not be identified. Diversion case was taken up after identification of land by forest department.

6.3.1.2 Purulia (JHR Border)-Balrampur-Chandil

Railways approved (January/February 2019) the general arrangement drawings for road over bridge in the project with modification to drawings proposed by NHAI because as per original drawings pillars of road over bridge were coming on railway land. However, the same was objected by NHAI due to railways approval for increase in width of span of road over bridge increasing its project cost. Pending any settlement regarding these drawings, appointed date of the project was fixed as 12 December 2019. NHAI's submissions were finally accepted by Railways on 04 February 2022 i.e., around after a lapse of two years from its appointed date. Thus, due to NHAI not preparing the drawings as per railway requirements, it could be got

approved after around two years from its appointed date as against schedule period of 60 days prescribed in the contract agreement. This contributed to delayed commencement of project works for road over bridge resulting in delayed progress in the project as detailed in Chapter 3 of the Report.

MoRTH replied (April 2022) that approval of general arrangement drawings was made well within the time, however, due to increase in span length in the approval in contrast to the span length proposed by NHAI, the estimated construction cost got increased resulting in change of scope of more than ₹ 100 crore. Hence, NHAI decided to resolve with Railways by keeping the piers within railway boundary with request to revise the drawings suitably by consistently pursuing with Railways towards economical design for best utilisation of Government money. The same was accepted by Railways on 04 February 2022.

MoRTH in its reply admitted that it could not get the drawings approved within 60 days of the fixation of appointed date, which adversely affected the progress of the work on that stretch.

6.3.2 Obligations of the concessionaires

Before declaration of appointed date of HAM projects/BOT (Toll) projects, concessionaires have to fulfil certain conditions precedent¹⁹⁰ including submission of performance bank guarantee, execution of escrow agreement, substitution agreement and financing agreement leading to financial close. In this regard, Audit observed the following:

6.3.2.1 HAM projects

(i) Anandapuram-Pendurthi-Anakapalli: There was delay of 116 days by concessionaire in achieving the financial close of the project for which penalty (January 2019) of ₹ 5.78 crore was not recovered (April 2022) from the concessionaire.

(ii) Vadodara-Mumbai Expressways (Phase IA-Pkg.-V): There was delay of 390 days in fixation of appointed date for the project due to delay in achievement of financial close by concessionaire and handing of requisite right of way by the NHAI but no penalty (recoverable since 25 April 2019) was levied (April 2022) by the NHAI for the same.

(iii) Kozhikhode Bypass: The concessionaire achieved (22 February 2021) financial close with a delay of 898 days for which penalty of ₹ 27.97 crore was imposed but the same was still recoverable (April 2022) from the concessionaire. It was further observed that the concession agreement was revived (11 January 2021) after accepting performance bank guarantee from concessionaire which was issued in the name of a third party.

(iv) Gorhar-Khairatunda (Pkg.-I): A penalty of ₹ 7.11 crore was recoverable for delay in achievement of financial close by 287 days (08 July 2019) but the same was yet to be recovered (April 2022).

¹⁹⁰ As per concession agreement the concessionaire's condition precedent are fulfilled when, within prescribed time frame, it inter alia: (a) Delivers the performance security (b) Executes and procure execution of escrow account (c) executes and procure execution of substitution account (d) Executes financing agreement and delivers its copy to implementing agency (e) Obtains all applicable permits as prescribed in the concession agreement etc.

Besides non-levy of commensurate penalty on concessionaire for delayed achievement of financial close, such delay also resulted in late fixation of appointed date with resultant delay in progress of the project.

MoRTH assured (April 2022) that Audit observation would be reviewed to ascertain the detailed justification for imposition or non-imposition of damages as per concession agreement and the factual position would be intimated in due course of time.

6.3.2.2 Hapur Bypass-Moradabad

NHAI worked out damages to the tune of ₹ 39.45 crore for concessionaire's delay in submission of performance bank guarantee by 120 days and delay in achievement of financial close by 99 days. However, the same was not levied on concessionaire due to mutually waiving off the same as NHAI also failed to provide requisite right of way on the appointed date.

MoRTH replied (April 2022) that NHAI was at fault of not handing over of right of way and only 70 *per cent* could be provided till appointed date. Therefore, no damages were levied upon concessionaire by mutually waiving off the same.

Reply of MoRTH may be viewed against the fact that fulfilment of condition precedent by NHAI and concessionaire were independent of each other and as per extent of relative fault of both parties, damages should have been computed and levied/paid in compliance to concession agreement rather than squaring them off.

Recommendation No. 28: Compliance to pre-conditions for fixation of appointed date needs to be strictly adhered and any non-compliance by either party to the contract needs to be accounted for as per contractual provisions.

6.4 Environmental conservation and Phase-I of Bharatmala Pariyojana

6.4.1 Environmental clearance and diversion of forest areas for Phase-I of Bharatmala Pariyojana

The legal framework for protection of environment and wildlife consisted of Environment Impact Assessment Notification of 2006, Forest Conservation Act 1980, Coastal Regulation Zone Notification 2011 and Wildlife Protection Act 1972.

Environment Impact Assessment notification of 2006 required national highway projects¹⁹¹ to obtain prior environmental clearances from Ministry of Environment, Forest and Climate Change (MoEFCC) who would give environmental clearance based on the recommendation of Expert Appraisal Committee constituted by Central Government. Hence, exercising powers under Environment (Protection) Act 1986 and Environment (Protection) Rules, 1986, MoEFCC issued (14 September 2006 as amended from time to time) guidelines regarding obtaining of environmental clearance prior to undertaking highways construction as per which environmental clearance was mandatory for following:

¹⁹¹ *Termed as Category A projects mentioned in Schedule I of the notification.*

- (i) Construction of new national highway, or
- (ii) Expansion of national highway greater than 100 km involving additional right of way or land acquisition greater than 40 m on existing alignments and 60 m on re-alignment/bypasses.

As per Forest Conservation Act, 1980, for every project requiring diversion of designated forest land for non-forestry purposes, forest clearance was to be obtained from MoEFCC. The Forest Conservation Rules, 2003 provided the procedure to obtain forest clearance as per which it was to be granted by MoEFCC under two stages viz., Stage-I (in-principle approval granted pending final approval subject to certain conditions) and Stage-II (final approval). For highway projects passing through protected areas, viz., national parks and wildlife sanctuaries, further consultation with National Board for Wildlife/State Board for Wildlife was required under Wildlife Protection Act 1972 before any approval.

MoRTH, vide its Standard Operating Procedure (December 2017), made it mandatory for detailed project report consultant to get the environmental clearance and forest clearance for any project before the project was approved by the Competent Authority.

Audit while reviewing 66 sample projects, observed the following regarding environmental clearance and forest clearance for the sample projects:

- The provisions of EPC/HAM/BOT (Toll) agreements regarding the time by which environmental clearance and forest clearance were to be obtained for the projects was at variance with the BPP-I Standard Operating Procedure, issued by MoRTH as the requirement of environmental clearance and forest clearance was diluted in these agreements. As per EPC agreement, the environmental clearance was to be obtained prior to issuance of letter of award and regarding forest clearance, the forest land being part of right of way, timeline for forest clearance could be stretched atleast up to appointed date. In case of HAM projects, the environmental clearance and forest clearance were conditions precedent to be fulfilled by implementing agency before fixation of appointed date, whereas BOT (Toll) agreements were silent regarding timing for obtaining forest clearance, however, environmental clearance has been made a condition precedent;
- MoRTH failed to adhere to environmental clearance guidelines of MoEFCC and failed to develop uniform directions/practices to be followed for obtaining environmental clearance for national highway projects as observed in following instance:
 - Though BPP-I was planned on the basis of corridor approach, as the package/project based approach of NHDP was found to be deficient by MoRTH, while deciding on requirement of obtaining environmental clearance, MoRTH and its implementing agencies considered smaller package lengths instead of whole corridor. Impact on environment due to planning of such long corridors should have been analysed in totality rather than analysing by considering requirements of environmental clearance for individual packages. In case of 23 projects, out of 66 sample projects, Audit observed that the requirement of environmental clearance was skipped by adopting package based approach, as against corridor based approach, including that for eco-sensitive North-East

region, while determining requirement of environmental clearance as detailed in **Annexure 10**;

- In case of green-field Delhi-Mumbai Expressway, instead of taking environmental clearance for Delhi-Vadodara Expressway and Vadodara-Mumbai Expressway as a whole, environmental clearance was obtained separately for each State¹⁹² forming part of project length in case of Delhi-Vadodara Expressway, while in case of contiguous stretch of Vadodara-Mumbai Expressway environmental clearance was obtained phase-wise wherein highway length was passing through three States/Union territory¹⁹³ in Phase-I alone;
- For Dwarka Expressway, in spite of it being a new national highway, no environmental clearance was obtained; and
- Solapur-Bijapur project, with a length of approximately 109 km, was awarded on BOT mode in the year 2012 but was terminated due to non-fulfilment of condition precedent of environmental clearance. The project was taken up afresh in the year 2017 under BOT (Toll) mode in BPP-I in spite of no environmental clearance obtained for this project, Standing Cost Committee, Chaired by Addl. Secretary and Financial Adviser of MoRTH, was apprised (13 December 2016) by NHAI that environmental clearance has already been obtained for the project. However, in response to Public Private Partnership Appraisal Committee (PPPAC) query on environmental clearance, MoRTH replied (16 January 2017) that environmental clearance was not required on the ground that the entire stretch was falling in two States viz., Maharashtra and Karnataka and the project had length lesser than 100 km in each State. PPPAC directed MoRTH to take up the matter with MoEFCC before approval of the project. However, nothing on record was found regarding NHAI obtaining such clarification from MoEFCC before approval of the project.

MoRTH replied (April 2022) that Solapur-Bijapur was a widening project from two lanes to four lanes with additional land acquisition being less than 40m on existing right of way and less than 60 m in the realignment/bypasses. Hence, MoEFCC guidelines were not applicable on this project. For other issues in the observation no reply was furnished by MoRTH.

Reply of MoRTH may be viewed against the fact that as per MoEFCC guidelines, environmental clearance was mandatory for expansion of national highways with a length of more than 100 km irrespective of the land acquisition done for expansion.

¹⁹² *Haryana, Rajasthan, Madhya Pradesh and Gujarat.*

¹⁹³ *Gujarat, Maharashtra and Dadra & Nagar Haveli.*

- While reviewing 45 sample projects¹⁹⁴ in which forest clearance (Stage-I and Stage-II) was required prior to approval of projects, Audit observed (February 2022) the following:
 - Stage-I forest clearance could be obtained only for six projects prior to approval of projects by Competent Authority while for rest of the 39 projects, the details of Stage-I forest clearance were as follows:

Table 6.1: Stage-I forest clearance

Stage of project execution after which Stage-I approval was given	No of projects	Range of days taken after particular stage of execution as stated in column a
a	b	c
Approval of the project ¹⁹⁵	4	5 to 393
Issuance of letter of award ¹⁹⁶	20	1 to 607
Appointed date ¹⁹⁷	13	3 to 731
Pending till February 2022 (inspite of project approval date ranging between January 2018 to February 2019) ¹⁹⁸	2	
Total	39	

(Source: Data provided by MoRTH/Management)

- Similarly, the Stage-II forest clearance was obtained only in one project i.e., Balance work of Bareilly- Sitapur prior to approval of the project by Competent Authority while for balance 44 projects, the details of Stage-II forest clearance were as follows:

Table 6.2: Stage-II Forest Clearance

Stage of project execution after which Stage-II approval was given	No of projects	Range of days taken after particular stage of execution as stated in Column a
a	b	C
Approval of the project	-	-
Issuance of letter of Award ¹⁹⁹	4	240 to 284

¹⁹⁴ Out of 66 sample projects, in case of 18 projects, as per management information, forest clearance was not required. While for other three projects viz., (i) Development of existing roads in Ule, Suratgaon, Malumbra, Tuljapur, Shingoli, Yedeshi, Naldurg & Omerga, (ii) Hapur Bypass - Moradabad and (iii) Belakeri Port-Kumta-Sirsi Road, requisite details were not made available to Audit, hence not commented upon in this para.

¹⁹⁵ Chakeri-Allahbad, Vadodara-Mumbai Expressway Phase-IA (Pkg. -II and V), and Goharganj-Bhopal.

¹⁹⁶ Bangalore-Nidagatta (Pkg.-I), Bellary-Byrapura, Varanasi-Hanumanah (Pkg.-II and III), Mangalore-Telangana/Maharashtra Border, Nidagatta-Mysore (Pkg.-II), Ramasanpalle to Mangloor (Sangareddy-Nanded Pkg.-II), Shamli-Muzzafarnagar (Pkg.-II), Dwarka Expressway (Pkg.-I), Paniyla Mor-Narnaul Bypass - Pachari Kalan (Pkg.-I), Delhi-Vadodara Expressway (Pkg.-I and 2), Vadodara-Mumbai Expressway Phase-IA (Pkg.-I), Bareilly-Goharganj, Barhi-Koderma, Duburi-Chandikhole (Pkg.-III), Maheshkhunt-Saharsa-Purnea (Pkg.-I), Purulia(JHR Border)-Balrampur-Chandil and Tumkur-Shivamogga (Pkg.-I and II).

¹⁹⁷ Aurangabad-Karodi, Churachandpur-Tuivai (Pkg.-IB and 2B), Medshi-Washim, Mohol-Wakhri (Pkg.-I), Suryapet-Khammam, Lucknow Ring Road (Pkg.-I, II and IIIB), Khajuwala-Poogal-Bap, Delhi-Meerut Expressway (Pkg.-IV), and Delhi-Vadodara Expressway (Pkg. -9 and 18).

¹⁹⁸ Chettikulam-Natham and Balance work of Tindivanam-Krishnagiri.

¹⁹⁹ Bihar/Jharkhand Border (Chordaha)-Gorhar, Dwarka Expressway (Pkg.-I), Gorhar-Khairatunda (Pkg.-I) and Maheshkhunt-Saharsa-Purnea (Pkg.-I).

Stage of project execution after which Stage-II approval was given	No of projects	Range of days taken after particular stage of execution as stated in Column a
Appointed date ²⁰⁰	27	5 to 1,448
Pending till February 2022 (inspite of project approval date ranging between July 2017 to June 2020) ²⁰¹	13	
Total	44	

(Source: data provided by MoRTH/Management)

- In 13 sample projects, out of the above 45 projects, for which provisional completion certificate (PCC) was issued upto February 2022, no Stage-II forest clearance has been obtained in case of three such projects (detailed below) till February 2022 while in case of another two projects (detailed below) Stage-II forest clearance was obtained after a period of approximately eight months to two years of issuance of PCC of such projects:

Table 6.3: Stage-II forest clearance pending at the time of issuance of PCC

Name of the project	Date of issue of PCC	Status of Stage-II FC (up to February 2022)
Aurangabad- Karodi	21-12-2021	Pending
Lucknow Ring Road (Pkg.-III B)	09-05-2019	19-07-2021
Paniyala Mor- Narnaul Bypass- Pacheri Kalan (Pkg.-I)	09-01-2021	14-09-2021
Khajuwala-Poogal-Bap	20-01-2021	Pending
Solapur-Bijapur	24-12-2021	Pending

(Source: As per data provided by NHAI)

In eight sample projects²⁰², due to non-obtaining of forest clearance before approval/award of the project, either the overall project execution/completion was delayed or the alignment passing from such forest area was being de-scoped resulting in non-achievement of origin-destination connectivity and seamless movement as envisaged for BPP-I.

Thus, BPP-I projects in many instances were being implemented in contravention to MoEFCC guidelines and MoRTH Standard Operating Procedure directing pre-obtaining of

²⁰⁰ Bangalore-Nidagatta (Pkg.-I), Varanasi-Hanumanah (Pkg.-II and III), Mangalore-Telangana/Maharashtra Border, Manu-Lalchara (Manu-Simlung Pkg.-I), Nidagatta-Mysore (Pkg.-II), Ramasapalle to Mangloor (Sangareddy-Nanded Pkg.-II), Shamli-Muzzafarnagar (Pkg.-II), Chakeri-Allahbad, Lucknow Ring Road (Pkg.-I, II and IIIB), Paniyala Mor- Narnaul Bypass- Pacheri Kalan (Pkg.-I), Delhi-Meerut Expressway (Pkg.-IV), Delhi-Vadodara Expressway (Pkg.-I, 2 and 18), Vadodara-Mumbai Expressway Phase-IA (Pkg.-I, II and V), Bareilly-Goharganj, Barhi-Koderma, Duburi-Chandikhole (Pkg.-III), Goharganj-Bhopal, Koida-Rajamunda (Pkg.-II) and Tumkur-Shivamogga (Pkg.-I and II).

²⁰¹ Aurangabad-Karodi, Bellary-Byrapura, Churachandpur-Tuivai (Pkg.-IB and 2B), Medshi-Washim, Mohol-Wakhri (Pkg.-I), Chettikulam-Natham, Suryapet- Khammam, Khajuwala-Poogal-Bap, Delhi-Vadodara Expressway (Pkg.-9), Balance work of Tindivanam-Krishnagiri, Purulia (JHR Border)-Balrampur-Chandil and Solapur-Bijapur.

²⁰² Chettikulam-Natham, Bihar/Jharkhand Border (Chordaha)-Gorhar, Dwarka Expressway (Pkg. -I), Belakeri Port-Kumta-Sirsi Road, Khajuwala-Poogal-Bap, Delhi-Vadodara Expressway (Pkg.-9), Balance work of Tindivanam-Krishnagiri, and Barhi-Koderma

environmental clearance and forest clearance before the project approval. Further, due to not obtaining the forest clearance prior to approval of the project, either the affected project stretches were being de-scoped with no alternate arrangement or project progress was getting stalled thereby hampering the progress of Bharatmala Pariyojana Projects.

MoRTH did not furnish reply to the Audit observations.

Recommendation No. 29: The model EPC/concession agreements need to be reviewed and synchronised in line with MoRTH Standard Operating Procedure and MoEFCC guidelines.

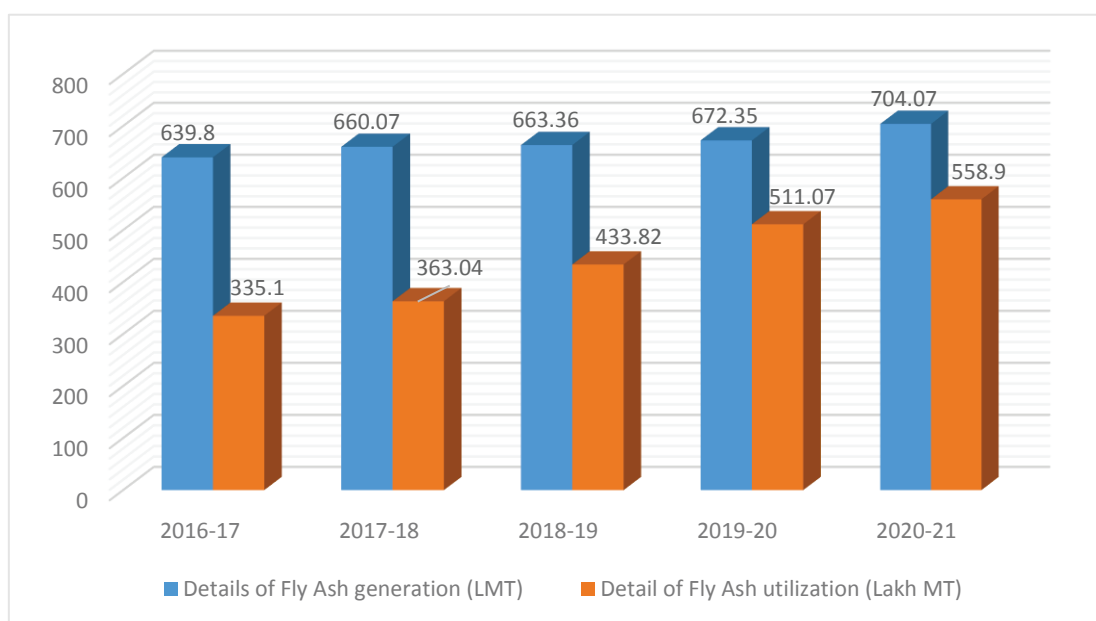
Recommendation No. 30: Environment impact assessment and environmental clearance need to be obtained for entire corridor rather than for small packages of long corridors and guidelines regarding obtaining environmental clearance, for national highway projects, in line with the MoEFCC guidelines may be codified.

6.4.2 Usage of fly-ash in Phase-I of Bharatmala Pariyojana projects

Besides prior environmental clearances, MoEFCC also notified guidelines (25 January 2016) in regard to mandatory usage of fly-ash in national highways construction from any thermal power plant within radius of 300 km of the road project. MoRTH, vide notification dated 27 August 2018, issued directions to NHA and other implementing agencies for compliance of the same.

The status of fly-ash generation from National Thermal Power Corporation Limited plants all over India and its usage during the period 2016-17 to 2020-21 was as follows:

Chart 6.1: Details of fly ash generated and utilised by NTPC



(Source: NTPC website)

It may be seen from the bar chart that in spite of availability of surplus fly-ash during 2017-18 to 2020-21 in the range of 145.17 LMT to 297.03 LMT, no memorandum of understanding (MoU) was signed between MoRTH/NHA and Ministry of Coal/NTPC for release of dedicated quota of fly-ash to the implementing agencies of MoRTH to effectively utilise fly-

ash and mitigate environmental damage. Rather than centrally arranging fly-ash at NHAI Headquarters level, it has been made the duty of individual Project Implementation Units to arrange fly-ash for their projects and in case of NHIDCL there was not even an assignment of such responsibility to anyone.

Resultantly, the following was observed during Audit in case of BPP-I projects:

- In seven sample projects²⁰³, neither any provision for utilisation of fly-ash was made in the detailed project reports nor has any quantity been executed by the contractor in spite of thermal power plants being available within radius of 50-300 km of the project site;
- In another seven sample projects²⁰⁴, in spite of thermal power plants being available within radius of 50-300 km of the project site, no provision for utilisation of fly ash was made in the detailed project reports. However, contractors/concessionaires of these seven projects utilised a quantity of 50.74 lakh cubic meter in construction work; and
- In Delhi Vadodara Expressway²⁰⁵, on test check, it was observed that as against the usage of 254.45 lakh cubic meter of fly-ash proposed in detailed project report of 13 packages, and despite availability of Thermal Power Plants in the vicinity of these projects, only a negligible quantity of 0.28 lakh cubic meter of fly ash was used in these projects.

Thus, the usage of fly-ash, in spite of it being environment friendly was not being adequately addressed by signing of MoU with National Thermal Power Corporation Limited at highest level, diligent review of detailed project reports and efficient contract management leading to non-usage of fly ash. Fly ash in such cases was substituted by fertile soil from burrow pits or fields which could have been avoided with proper planning.

MoRTH, in its reply (April 2022), stated that the utilisation was being considered by the respective field units as per MoEFCC notifications in this regard and issuance of further guidelines would be considered by NHAI for optimum utilisation of fly ash in the NHAI Projects as might be feasible.

However, the fact remained that due utilisation of fly ash was not achieved in BPP-I projects.

Recommendation No. 31: MoRTH may consider entering into memorandum of understanding with NTPC to ensure timely release of the quota of fly ash centrally which then could be allocated by MoRTH / NHAI to different projects.

Recommendation No. 32: To ensure implementation of MoEFCC guidelines on usage of fly ash, both the requirements of fly ash for the road projects and its availability in the nearby thermal plants should be assessed in the detailed project reports and its usage made mandatory while approving the project.

²⁰³ Balance work of Bareilly-Sitapur, Gwalior -Shivpuri (Mohana Town Portion), Shamli-Muzzafarnagar (Pkg.-II), Dwarka Expressway (Pkg.-I, III and IV), and Purulia (JHR Border) - Balrampur -Chandil.

²⁰⁴ Dagmagpur-Lalganj (Pkg.-II), Lalganj-Hanumanah (Pkg.-III), Varanasi-Dagmagpur (Pkg.-I), Chakeri-Allahabad and Lucknow Ring Road (Pkg.-I, II and IIIB)

²⁰⁵ Though there were only 4 projects viz., 1, 2, 9 and 18 under sample, as per availability of records, the other packages of Delhi-Vadodara Expressway have also been commented upon.

6.5 Extra payment of supervision charges on utility shifting

The contractor/concessionaire should, in accordance with the applicable laws and with the assistance of NHAI, cause/undertake shifting of any utility (including electric lines, water pipes and telephone cables) to an appropriate location or alignment, if such utility or obstruction adversely affected the execution of works or maintenance of project highways in accordance with the EPC/concession agreement.

While seeking approval of CCEA for Bharatmala Pariyojana, it was apprised by MoRTH that State entities were charging as high as 15 *per cent* of the estimates on utility shifting towards supervision charges whereas the actual work of shifting of utilities was got done by the project implementing agencies. Considering this, CCEA issued directions (24 October 2017) in reiteration of Public Investment Board recommendations that MoRTH and its implementing agencies should request the State Governments for capping supervision charges on utility shifting up to two and a half *per cent* of the approved estimates. The above arrangements were meant to keep cost rationale for projects individually and BPP-I collectively within the financial outlay of ₹ 5,35,000 crore approved by CCEA.

During the review of records pertaining to supervision charges, Audit observed the following:

- MoRTH, vide Standard Operating Procedure (03 November 2017), issued directions to implementing agencies for requesting the State Governments for charging supervision charges on utility shifting up to two and a half *per cent* of the approved estimates for utility shifting. However, the above Standard Operating Procedure was superseded by another Standard Operating Procedure issued by MoRTH on 21 December 2017. In the new Standard Operating Procedure, the direction for requesting State Governments to cap supervision charges was deleted for no reasons on record;
- Many Central agencies viz., Indian Railways, Power Grid Corporation of India and Damodar Valley Corporation etc., were charging utility shifting supervision charges up to 15 *per cent* but this fact was not appraised to Public Investment Board and CCEA. Thus, these agencies still continued with charging of higher supervision charges; and
- NHAI and NHIDCL did not vigorously pursue with the State Governments for capping the charges even though higher supervision charges for utility shifting was continued to be charged by them as observed by Audit in 66 projects reviewed. In case of 32 projects (**Annexure 11**), spread across nine states, supervision charges on utility shifting were being paid in the range of 3.68 *per cent* to 15 *per cent* of the approved estimates, as against two and a half *per cent* requested, constituting an extra expenditure amounting to ₹ 37.45 crore from BPP-I fund.

Thus, MoRTH and its implementing agencies could not ensure compliance of CCEA directives leading to extra burden of ₹ 37.45 crore on BPP-I funds on account of supervision charges on utility shifting.

MoRTH replied (April 2022) that supervision charges were being paid as per the rates fixed by the concerned State Government. However, matter would be taken up with concerned State Governments for restricting the supervision charges up to two and a half *per cent* only.

6.6 Third party monitoring of the projects

6.6.1 Appointment of authority's engineers/independent engineers

Authority's engineers (AE) and independent engineers (IE) are appointed by implementing agencies to monitor the execution of EPC and HAM/BOT projects respectively for effective monitoring of the execution and maintenance of projects. The authority's engineers and independent engineers are required to perform *inter alia* the following functions:

- Review of the drawings furnished by the contractor/concessionaire;
- Review of detailed design, construction methodology, quality assurance procedures and construction time schedule submitted by the contractor/concessionaire;
- Inspection of the construction works and project highway and submission of monthly report;
- Test checking the quantity and quality of construction through lab testing;
- Conducting test on completion of the project and issuance of provisional completion certificate or completion certificate; and
- Inspection of maintenance of the project and submission of monthly report.

The authority's engineers/independent engineers were to be appointed within the following time frames:

EPC Projects (AE): In old EPC agreements, within 30 days from date of EPC agreement or appointed date whichever was later. However, in new EPC agreements, within 10 days of agreement or appointed date whichever was earlier.

HAM Projects (IE): Within 60 days of entering into concession agreement.

BOT Projects (IE): Within 90 days from the date of entering into concession agreement.

Audit, while reviewing the appointment of authority's engineers/independent engineers, observed that despite important tasks required to be performed by the authority's engineers/independent engineers as mentioned above, in 51 out of 65 projects²⁰⁶ i.e., 78.46 *per cent* of the projects reviewed for their execution, it was observed that there was delay in appointment of authority's engineers/independent engineers ranging from six days to 642 days (**Annexure 12**).

Furthermore, out of the above mentioned 51 projects, in case of 33 projects appointment of authority's engineers/independent engineers were made after period ranging from five days to 331 days of the fixation of appointed date i.e., commencement of construction.

Thus, in spite of authority's engineer/ independent engineers assigned with important tasks in project execution and monitoring, they were invariably being appointed with delays with no valid reasons on record. As a result, Project Directors/Heads of the Project Implementation Units were acting as authority's engineer/ independent engineers of the projects till their regular appointment. This could lead to compromise in execution as various specialised works such as review of drawings including that of major bridges, road over bridges, expansion of existing

²⁰⁶ Out of sample of 66 one project was maintenance project, hence, not considered.

bridges, ascertaining quality by conducting & monitoring tests including of borrow soil for embankment filling, site survey and review of permissions obtained by contractors/concessionaires etc., were to be undertaken. For such specialised tasks, domain professionals such as bridge engineers, highway engineers, senior quality material experts and senior pavement specialists etc., were required which were not available in-house. Further, the compromise in the quality of supervision during tenure of Project Director as authority's engineer/independent engineers could be corroborated from the fact that invariably no instances of Project Director preparing monthly progress report for the project were noticed by Audit.

MoRTH, while admitting (April 2022) delay in appointment of authority's engineer/independent engineers, attributed its reasons for not getting adequate response to Request for Qualification/Request for Price and due to non-producing of documents of nominated individuals for various positions by the selected bidder etc.

The reasons given in reply for delay in appointment of authority's engineers/independent engineers were controllable with better coordination and pre-planning. They are integral part of project execution and monitoring. Therefore, implementing agencies should lay emphasis on appointment of authority's engineer/independent engineers on awarding of projects so as to put in place the process for quality construction from the beginning itself.

6.6.2 Monitoring of projects by authority's engineer/independent engineer

- In case of Maheshkhunt-Saharsa-Purnea and Kallagam-Meensurutti, authority's engineer/independent engineer could be deployed after 107 days and 183 days of their appointments respectively;
- In case of Balance work of Bareilly-Sitapur, Shamli-Mujaffarnagar (Pkg.-II), Lucknow Ring Road (Pkg.-III-B), Delhi-Meerut Expressway (Pkg.-IV) and Kallagam-Meensurutti, the post of team leader was vacant for a period of around three months, three and a half months, seven months, seven months and fifteen months respectively. Similarly, in case of Chettikulam-Natham, senior pavement specialist was deployed after completion of 58.69 *per cent* of bitumen concrete and dense bitumen macadam works of Project Highway; and
- In case of 13 projects²⁰⁷ i.e., 20 *per cent* of the projects reviewed, instances were observed where key personnel from team of authority's engineers/ independent engineers, including resident cum highway engineers, senior quality material experts, senior pavement specialists and bridge engineers were either not being deployed on project or being deployed with considerable delays.

MoRTH did not furnish reply to the Audit observation.

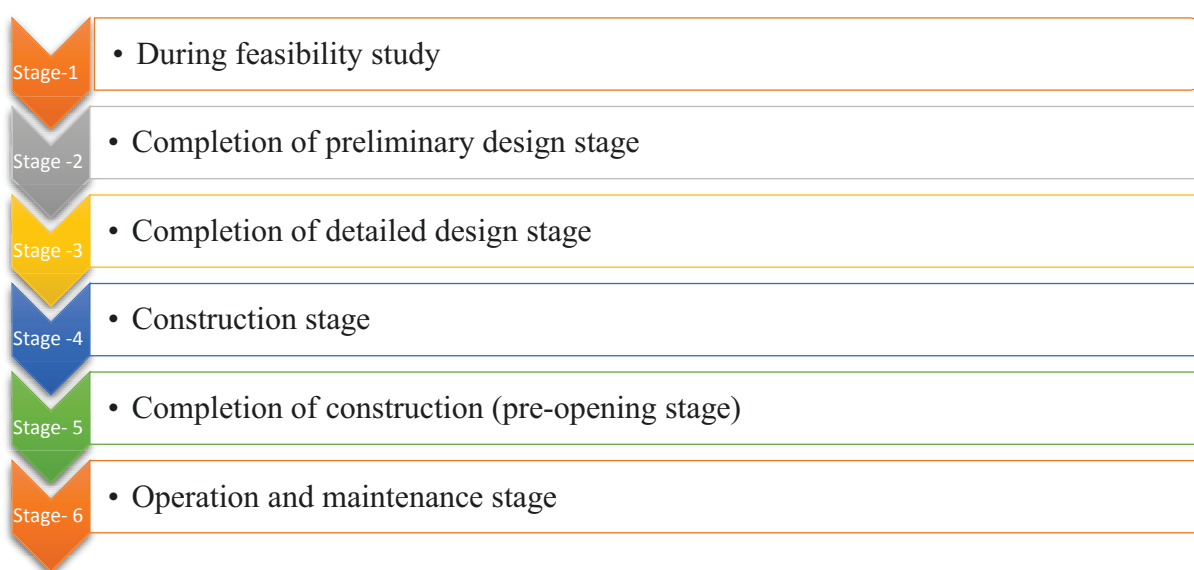
²⁰⁷ *Balance work of Bareilly-Sitapur, Dagamagpur-Lalganj (Pkg.-II), Hapur Bypass-Moradabad, Lalganj-Hanumanah (Pkg.-III), Varanasi-Dagamagpur (Pkg.-I), Chettikulam-Natham, Shamli-Mujaffarnagar (Pkg.-II), Bihar/Jharkhand Border (Chordaha)-Gorhar, Gorhar-Khairatunda(Pkg.-I), Lucknow Ring Road (Pkg.-IIIB), Delhi-Meerut Expressway (Pkg.-IV), Kallagam-Meensurutti and Purulia (JHR Border) - Balrampur-Chandil*

Thus, besides delay in appointment of authority's engineers/independent engineers, there were instances of positions of various key personnel of authority's engineers/independent engineers including their team leader lying vacant for long. This showed the shortfall in supervision and monitoring of the projects on the part of independent professionals as well as by implementing agencies for not reviewing the work of authority's engineer/independent engineers.

6.6.3 Safety Consultant

Road Safety Audit Manual (IRC 88 of 2010) issued by Indian Road Congress, stipulated for conduct of safety audits in six stages for new roads as presented below:

Chart: 6.2: Stages at which safety audit was to be conducted



Audit called for records pertaining to safety audit carried out during pre-construction stages (upto detailed design stage) but MoRTH/Management failed to provide it in spite of repetitive reminders.

As per EPC/concession agreements, the safety consultant reviews all the design details which have a bearing on the safety of the users, pedestrians and animals involved in or associated with accidents. Recommendations of the safety consultant are to be incorporated in the designs of the project. In case of Public Private Partnership projects, the scope of safety consultant further extended to construction period and the operation period.

In respect of post appointed date (i.e., construction stage onwards) supervision by safety consultants, while reviewing 65 sample projects²⁰⁸, Audit observed the following:

- In case of 19 projects i.e., around 30 *per cent* of projects reviewed (**Annexure 13**), the safety consultant was not appointed;
- In other 16 projects i.e., around 25 *per cent* of projects reviewed, the safety consultant was engaged after more than 100 days, ranging between 101 days to 761 days of the fixation of

²⁰⁸ One sample project pertained to maintenance work hence, not considered.

appointed date when projects were already in the construction stage and the design stage was already over; and

- In addition to above, as per agreement with authority's engineers/independent engineers, they were also required to engage their own road safety experts. The safety experts were to be engaged for advising on project alignment, geometric designs of the project and designs of the road junction so as to minimise accidents keeping in mind the traffic data, probable black spots, expected road users and type of traffic likely to use the road, provision of pedestrians, cyclists and intermediate transport. In case of seven sample projects²⁰⁹, during the construction period, the safety expert of the authority's engineers/ independent engineers were deployed for less man-months which was ranging between Nil to 2.13 man-months as against the requirement of higher man-months ranging between *eight* to 14 man-months especially when all these projects were either completed or nearing completion.

The above indicated weaknesses in the implementing agencies on road safety aspects of national highways.

MoRTH admitted (April 2022) non/delayed appointment of safety consultants.

Recommendation No. 33: MoRTH should ensure that the independent professionals are timely appointed for the Bharatmala projects so as to have better supervision of project execution and safety aspects.

6.7 Financial covenants

Audit, during review of 66 projects, examined payments being released to contractors/concessionaires against bills/milestones, receipts and payments into escrow account, recovery of liquidated damages from contractors/concessionaires and other financial issues pertaining to the projects. Audit observations on the same were as follows:

6.7.1 Payment of price escalation

During the construction period, price adjustments for changes in price indices as per formula given in EPC/HAM agreement have to be considered over and above the value of work done by contractor/concessionaire.

In case of HAM projects, 40 *per cent*²¹⁰ of the bid project cost (BPC) is to be paid to the concessionaire during construction period while remaining 60 *per cent*²¹¹ is to be paid during operation period. The concession agreements provided for payments of bid project cost after adjusting for variation in price indices²¹² every month between the reference index date

²⁰⁹ *Dagamagpur-Lalganj (Pkg.- II), Hapur Bypass-Moradabad, Lalganj- Hanumanah (Pkg. - III), Chettikulam-Natham, Paniyala Mor-Narnaul Bypass -Pacheri Kalan (Pkg.- I), Khajuwala-Poogal-Bap and Munabao-Tanot.*

²¹⁰ *Five equal instalments of eight per cent each on achievement of 10 per cent, 30 per cent, 50 per cent, 75 per cent and 90 per cent of physical progress. These are called milestone payments.*

²¹¹ *Semi annuity to be paid during operation period.*

²¹² *Price index should comprise of 70 per cent of WPI and 30 per cent of CPI (IW).*

preceding the bid date²¹³ and the reference index date preceding the date of invoice which was to be termed as Price Index Multiple.

Similarly, in case of EPC projects, the stage payments were to be made to contractors on achievement of different stages of the project as described in Schedule H of the EPC agreement. The payments for each stage were to be adjusted for increase or decrease in index cost of various inputs viz., labour, cement, steel, bitumen, fuel & lubricants, other materials and plant & machinery for the month which was three months prior to the date of invoice against the base date index.

NHAI Headquarters, considering different methodologies being followed by field offices for computing price adjustments in HAM projects, issued clarification (02 December 2020) for the price index as per which the following formula was applicable for computation of price adjustment:

WPI1: Wholesale Price Index for reference index preceding the bid date.

CPI1: Consumer Price Index (Industrial Worker) for reference index preceding the bid date

WPI2: Wholesale Price Index for reference index preceding the invoice date

CPI2: Consumer Price Index (Industrial Worker) for reference index preceding the invoice Date.

Milestone payment= 8 per cent of 40 per cent of BPC * $\frac{(WPI2*0.70+CPI2*0.30)}{(WPI1*0.70+CPI1*0.30)}$

- Audit observed that the above clarification given (02 December 2020) by the management for price adjustment formula for HAM projects was not flowing from the terms of the concession agreement. As per Audit interpretation of agreement terms, the value of work done should be first divided into ratio of 70:30 and then the price index multiple of wholesale price index should be multiplied with 70 per cent work done and the price index multiple of consumer price index should be multiplied with 30 per cent work done. Hence the formula for milestone payment should be = (8 per cent of 40 per cent of BPC *0.70*WPI2/WPI1) + (8 per cent of 40 per cent of BPC *0.30*CPI (IW)2/CPI(IW)1). Thus, instead of applying wholesale price index multiple to 70 per cent work done and consumer price index multiple to 30 per cent work done, the management developed a hybrid price index multiple with 70 per cent impact of wholesale price index and 30 per cent of consumer price index and this multiple was then applied to whole work done. The new formula was also against the interest of exchequer as in case of all six sample HAM projects²¹⁴ test checked, excess price adjustments to the tune of ₹ 54.29 crore was paid to concessionaires;

²¹³ The last date on which the bid could be submitted in accordance with the provisions of Request of Proposal.

²¹⁴ ₹10.75 crore in Mangloor - Telangana Maharashtra Border, ₹7.30 crore in Anandapuram-Pendurthi-Anakapalli, ₹14.48 crore in Chakeri-Allahabad, ₹6.63 crore in Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I), ₹6.48 crore in Khajuwala-Poogal- Bap and ₹8.65 crore in Munabao-Tanot.

- Audit, while reviewing three HAM projects,²¹⁵ noticed that though NHAI was making monthly payments to concessionaire in line with the Atmanirbhar Bharat Scheme²¹⁶, the escalation was being worked out by taking indices at the time of final settlement of milestone payments rather than taking indices of the month for which payment was being made resulting in excess payment of price adjustments to the concessionaires. Audit further observed that in case of HAM projects of Chittor-Mallavaram, Anandapuram-Pendurthi-Anakapalli and Munabao-Tanot, the milestone payments were made to the concessionaires based on Consumer Price Index (Industrial worker) published on all India basis rather than the indices published for Guntur, Vishakhapatnam and Alwar/Ajmer respectively. The cumulative impact of above was that it resulted in excess payment of price adjustments to the concessionaires of these five projects for an amount of ₹ 42.74 crore²¹⁷; and
- In case of Package II and III of Kohima-Jessami section, there was unjustified change in price adjustment formula of these EPC agreements after more than one year of entering into EPC agreements whereby contractor was benefitted by getting extra payment of price adjustments to the tune of ₹ 2.13 crore²¹⁸ upto 31 August 2021.

Thus, due to wrong computation of price-adjustment payments in case of HAM/EPC projects concessionaire/contractors were paid excess price adjustments to the tune of ₹ 99.16 crore.

MoRTH replied (April 2022) that in case of Anandapuram-Pendurthi-Anakapalli, the excess amount of ₹ 17.71 crore was already recovered from concessionaire. Similarly, in case of Munabao-Tanot ₹1.81 crore was recovered at the instance of Audit. However, in case of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I) project, it stated that payments were released to concessionaires as per Atmanirbhar Bharat scheme.

MoRTH reply in case of Anadapuram-Pendurthi-Anakapalli and Munabao-Tanot were not verifiable in view of no supporting documents attached with the reply. While in case of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I), reply was not tenable because if monthly payments were made under Atmanirbhar Bharat, the price escalation should also have been computed based on monthly escalation only instead of taking indices at the time of final settlement of milestone payments. MoRTH did not furnish reply in case of other projects.

Recommendation No. 34: MoRTH should review the interpretation of price adjustment formula in HAM projects so as to avoid undue benefit to concessionaires.

6.7.2 Escrow Account

In Public Private Partnership mode of projects, the concessionaire was required to open an escrow account for routing the inflows and outflows of funds for that project through escrow

²¹⁵ Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I), Khajuwala- Poogal- Bap and Munabao-Tanot.

²¹⁶ MoRTH, considering CoVID situation, granted various relaxations under Atmanirbhar Bharat Scheme one of which was release of monthly payments to the contractors/concessionaires instead of stage payments so as to ease out the liquidity crunch being faced by them.

²¹⁷ ₹16.22 crore in Chittor-Mallavaram, ₹16.19 crore in Anadapuram-Pendurthi-Anakapalli, ₹3.17 crore in Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I), ₹ 6.03 crore in Khajuwala-Poogal- Bap, ₹1.13 crore in Munabao-Tanot.

²¹⁸ Package II (₹1.43 crore) and Package III (₹0.70 crore).

account. As per the concession agreement, the escrow account was to be made operational prior to the appointed date and also the concessionaire was required to deposit and cause to deposit in respect of the project, the following into the escrow account:

- All funds constituting the financial package;
- All revenue from or in respect of project, including proceeds of any rentals, deposits, capital receipts or insurance claims etc; and
- All payments by the authority, after deductions of the outstanding payments.

The deposits in the escrow account were to be appropriated in the following order:

- All taxes due and payable by concessionaire for and in respect of project;
- All payments relating to construction of the project subject to and in accordance with any condition set forth in the financing agreement;
- Operation and maintenance expenses subject to any ceiling, if any, set forth in the financing agreements;
- Operation and maintenance expenses and other costs & expenses incurred by the authority in accordance with the provisions of this agreement and certified by authority as due/payable;
- Any amount due and payable to the authority;
- Monthly proportionate provision of debt servicing;
- All payments and damages certified by the authority as due and payable to it by the concessionaire; and
- Monthly proportionate provision of debt servicing in respect of subordinate debt.

During review of escrow account statements of Public Private Partnership projects, following deficiencies/ discrepancies were observed:

(i) Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I)

Although as per concession agreement and escrow agreement, the amount was to be released from escrow account against payments due only, it was observed that an amount of ₹ 46 crore brought in by concessionaire during 04 November 2019 to 06 November 2019, was released to the EPC contractor²¹⁹ on the same day on which they were credited to the escrow account when, in fact, no bills were due for payment to the EPC contractor on these days.

MoRTH replied (April 2022) that amount was paid as mobilisation advance to the EPC contractor and was later recovered from EPC contractor.

Reply of MoRTH may be viewed against the fact that as per the concession agreement and the escrow agreement, the payments from Escrow Account could be released only on due basis. Hence, any advance being released to EPC contractor from Escrow Account was in violation of the contractual clauses.

²¹⁹ It also happened to be the L-1 bidder for the HAM project Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I).

(ii) Munabao-Tanot

This project has already achieved its completion on 21 August 2020. Audit observed the following:

- As against equity infusion of ₹ 168.20 crore to be done by L-1 in the special purpose vehicle formed to perform as concessionaire, only an amount of ₹ 135.86 crore was found to be infused and routed through escrow account;
- As against debt of ₹ 540.02 crore to be brought in by concessionaire as per approved financial package, no debt money was found to be brought in escrow account; and
- Amount deposited in the escrow account in the form of equity infusion of ₹ 135.86 crore and NHAI contribution of 40 *per cent* of bid project cost was found to be released to the EPC contractor on the same day on which such amount was deposited in the escrow account. However, the management could not furnish to Audit, the bills of the EPC contractor so as to ascertain that whether the payments were released to the EPC contractor²²⁰ against the amount due only.

MoRTH admitted (April 2022) the infusion of ₹ 135.86 crore as equity by concessionaire and further stated that ₹ 50 crore only was availed from lenders and remaining amount was arranged from sponsors.

Reply of MoRTH may be viewed against the fact that as per records available with Audit, no loan amount was availed for this project by the concessionaire.

(iii) Khajuwala-Poogal-Bap

In this project, escrow account was made operational w.e.f. 01 August 2019 i.e., around two months after the appointed date of 22 May 2019 and till that period, the funds were routed through another current account in violation to the requirements of the concession agreement.

Although as per concession agreement and escrow agreement, amount to be released from escrow account was to be against payments due only, it was observed that amount totalling ₹ 52 crore brought in by concessionaire during 01 August 2019 to 31 August 2019 were released to the EPC contractor²²¹ immediately when, in fact, no bills were due for payment to the EPC contractor during these days.

MoRTH admitted (April 2022) that due to technical issue, funds upto August 2019 were routed through another current account. However, MoRTH did not give reply regarding release of money from Escrow account to EPC contractor without the same falling due.

(iv) Gorhar- Khairatunda (Pkg.-I)

NHAI, in violation to HAM agreement, made a payment (27 June 2019) of ₹ 2.21 crore to the concessionaire into another bank account instead of escrow account.

²²⁰ It also happened to be the L-1 bidder for the HAM project of Munabao-Tanot

²²¹ It also happened to be the L-1 bidder for the HAM project of Khajuwala-Poogal-Bap.

MoRTH replied (April 2022) that the payments made to concessionaire pertained to utility shifting work which were made prior to the appointed date as the concessionaire has not submitted the escrow account to NHAI.

It was evident from the reply that concessionaire was irregularly doing pre-construction activity before fixation of appointed date and the payments were released to concessionaire without routing it through escrow account.

(v) Vadodara-Mumbai Expressway

In case of Packages I and V, cases of diversion of ₹ 139.31 crore to other accounts and parties not related to projects were noticed.

MoRTH assured (April 2022) of getting reviewed the diversion of funds as commented by Audit.

(vi) Kallagam-Meensurutti and Kozhikhode Bypass projects

In these two HAM projects, it was observed that there was no monitoring of escrow accounts by NHAI as escrow bank statements were not being furnished to it by the concessionaires/lending bankers showing weak internal controls over escrow account transactions.

MoRTH did not furnish reply to the Audit observation.

(vii) Hapur Bypass-Moradabad

Even though neither concession agreement nor escrow agreement expressly allowed investment from escrow accounts in mutual funds, diversion of funds by concessionaire in mutual funds to the tune of around ₹ 3,359 crore was effected. In view of narrations of entries in the escrow account either missing or being incomplete, Audit could not review transfer of funds effected through those entries. The above issue was further aggravated by the fact that as per the clause 33.2.4 of the concession agreement, NHAI had an option to appoint at its cost, during construction period, concurrent auditors to undertake concurrent audit of the concessionaire's accounts, however, no such concurrent audit was conducted by NHAI. Thus, NHAI failed to monitor the transactions from escrow bank account in this BOT (Toll) project.

MoRTH admitted (April 2022) the diversion of funds to mutual funds and further stated that clarifications have been sought from concessionaire in this regard.

Thus, poor monitoring by NHAI resulted in diversion of funds to the tune of ₹ 3,598.52 crore by concessionaires and short infusion of concessionaire's share of equity by ₹ 32.34 crore.

Recommendation No. 35: MoRTH should ensure fixing of responsibility for diversion of funds from escrow account. It may also strengthen the control and monitoring mechanism in Public Private Partnership projects over payments being released to concessionaires.

6.7.3 Maintenance clause

As per clause 12.4 of the HAM agreements, during the construction period, the concessionaire was required to maintain, at its cost, the existing project highway to ensure that the road was

in pothole free condition. For that purpose, the concessionaire was required to undertake necessary repair and maintenance works.

Audit observed that the above terms of the concession agreement reduced the concessionaire's responsibility for maintenance of the existing road during construction period. Clause 12.4 of the concession agreement was in contrast to matching clauses applicable in any EPC/BOT (Toll) projects which stipulated that during construction period the contractor/concessionaire was required to maintain the existing project highway in such a way that it was not only traffic worthy but also safe for users and that its condition was not materially different from what it was before entering into agreement. In fact, responsibility of concessionaire to maintain road during construction period (i.e., after appointed date) under clause 12.4 of the HAM agreement was a diluted version of clause 6.2 of the same HAM agreement whereby during development period (i.e., period between the agreement date and appointed date), the concessionaire was required to maintain the existing project highway in such a manner that the road was in pothole free condition and quality of service and safety were maintained on the existing project highway.

Inadequacy of the clause 12.4 of the concession agreement was highlighted in case of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I) project whereby the existing stretch from Km. 15.960 to Km. 19.660 (length of 3.700 km) falling in Nangal Chaudhary town was to be bypassed after construction of the project highway and the same was to be handed over to State Public Works Department thereafter. NHAI while reviewing the condition of the stretch before handing over to Public Works Department has admitted that even after filling of potholes by the concessionaire, as per its obligation under the concession agreement, this stretch of 3.700 km was not traffic worthy and, therefore, one-time maintenance was required for which an estimate of ₹ 1.93 crore was approved by Competent Authority. This cost was borne by NHAI.

MoRTH replied (April 2022) that in case of Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg. -I), the maintenance work has been carried out as per the provision of concession agreement.

MoRTH's reply was not germane to the core audit issue regarding inconsistent maintenance clause in HAM projects.

Recommendation No. 36: Maintenance clause of HAM projects should be streamlined and harmonised with EPC/BOT agreements to maintain roads in traffic worthy and safe conditions during construction period.

6.7.4 Levy of penalty on defaulting contractors

In case of EPC projects, if the contractor is unable to achieve the project milestones or is not able to complete the project as per schedule mentioned in the agreements, such contractor is liable to pay damages at rates prescribed in the agreement, if such non-achievement is not attributable to any *force majeure* event or any failure on part of the implementing agency to fulfil its obligation under the agreement. Regarding this, Audit observed the following:

6.7.4.1 Dwarka Expressway (Pkg.-III and IV)

The appointed dates of the Package-III and IV were 29 November 2018 and 05 December 2018 respectively. The contractors of both the packages were granted extension of 91 days and 160

days respectively in scheduled completion dates due to *force majeure* events viz., ban on construction activities by National Green Tribunal and complete/partial lockdown during CoVID pandemic as per details in the table below:

Table 6.4: Progress report of Dwarka Expressway (Pkg.-III and IV)

Name of the package	Project Milestone	Original scheduled date for project milestones	Financial Milestone to be achieved (in per cent)	Financial progress as on original scheduled date (in per cent)	Actual date of achievement of milestone ²²²
Package III	I	27-05-2019	10	Nil	31-12-2019
	II	28-11-2019	30	8.88	27-10-2020
	III	07-08-2020	60	25.96	Yet to be achieved as in August 2021
	Scheduled completion date	27-11-2020	100	32.36	Yet to be achieved as in August 2021
Package IV	I	02-06-2019	10	0.32	24-12-2019
	II	04-12-2019	30	8.74	30-10-2020
	III	01-06-2020	60	13.56	31-05-2021
	Scheduled completion date	03-12-2020	100	30.45	Yet to be achieved

(Source: Data provided by NHAI)

During review of records, Audit observed that the first *force majeure* event was the National Green Tribunal ban on construction activities to mitigate smog pollution, during 26 October 2019 to 14 February 2020 i.e., after the scheduled date of achievement of milestone I of Package III and IV. Further, only 34 days and 40 days were left in achievement of milestone II of Package III and IV respectively when first *force majeure* event was effected on 26 October 2019. The contractors of the two projects could not achieve their Milestone-I even up to the scheduled date of Milestone-II of these projects in spite of the fact that the requisite land and entire mobilisation advance of ₹ 133.30 crore and ₹ 104.70 crore respectively had been given to the contractors, at the time of fixation of appointed date. The contractor's default in timely submission of drawings, late mobilisation of resources and delay in start of work right from the appointed date was well known to the NHAI, therefore, NHAI itself computed (18 September 2019) damages amounting to ₹ 65.98 crore and ₹ 47.12 crore to be levied on contractors of Package III and IV respectively for delayed progress of work. However, the decision to recover damages was kept in abeyance with no justified reasons. Moreover, contractors for Package III and IV were given another undue benefit in the form of blanket extension of their scheduled completion dates to 05 August 2021 and 12 August 2021 respectively.

6.7.4.2 Varanasi Ring Road (Pkg.-II)

There was nil physical progress on the date of first milestone (14 August 2019) because of financial crisis, non-mobilisation of manpower and machinery by contractor despite the fact that NHAI has handed over the desired right of way to the contractor. The first milestone was

²²² August 2021 status,

achieved on 30 November 2020 as against the scheduled date of 14 August 2019 i.e., with a delay of 474 days. NHAI, without considering the fault of contractor, knowing the fact that lockdown was first imposed in late March 2020 and till that time project was already delayed by seven months, considered it eligible for CoVID relaxation and granted six months extension of time without recovering damages amounting to ₹ 94.90 crore from contractor, despite the fact that authority's engineer also recommended for recovery of damages from contractor for slow progress on the project attributing it to poor planning and inadequate resource mobilisation.

Thus, the commensurate liquidated damages as per EPC agreement terms amounting to ₹ 208 crore were not levied leading to undue favour to the contractors.

MoRTH replied (April 2022) that extension of time was granted to contractors without levying liquidated damages based on policy guidelines in case of Dwarka Expressway (Pkg- III and IV) and due to access to the site denied to the contractor because of resistance/agitation by landowners in respect of Varanasi Ring Road (Pkg.-II).

MoRTH's reply may be viewed against the fact that in all three projects, contractors were liable to pay damages as per the agreement, however, still they were granted extension of time without liquidated damages. Further, Authority's Engineers of the projects themselves attributed the delay solely on the part of the contractors in the achievement of milestone and thereby recommended commensurate penalty for the same.

6.7.5 Other financial matters

6.7.5.1 Construction of Southern Access Road in Dwarka Expressway

NHAI decided to construct dedicated Southern Access Road connectivity to Terminal-3 IGI airport as part of Dwarka Expressway on specific request of AAI. As per the decision taken (March 2018) between the then Secretary (MoRTH) and the Secretary (Civil Aviation), cost of Terminal-3 connectivity within airport boundary amounting to ₹ 300 crore was to be shared 50:50 between NHAI and AAI/Ministry of Civil Aviation. Accordingly, the EPC agreement with the contractor of Package-I of Dwarka Expressway included the construction of Southern Access Road also.

Audit observed that in spite of Southern Access Road being constructed by NHAI at the insistence of AAI, two Ministries agreeing way back in March 2018 to share 50:50 the cost of it within airport boundary and the detailed project report for Dwarka Expressway (Pkg.-I) and its EPC agreement being prepared by including provision of Southern Access Road, till April 2022, no money has been received by NHAI as no understanding reached between the two Ministries & Delhi International Airport Limited²²³ in regard to payment of ₹ 150 crore to NHAI even though appointed date for Dwarka Expressway (Pkg.-I) was 24 September 2020.

MoRTH admitted (April 2022) the fact of pendency of a memorandum of understanding between the two Ministries in this regard.

²²³ *It is responsible for operation, management and development of Indira Gandhi International Airport.*

6.7.5.2 Working capital advance by NHAI to the concessionaire

MoRTH issued guidelines (09 November 2019) for grant of working capital advance in case of stalled projects for which interest at bank rate plus three *per cent* was to be charged till adjustment of milestone payment. Audit observed that NHAI granted working capital advance of ₹ 90.30 crore to the concessionaire of Vadodara-Mumbai Expressway (Phase IA-Pkg.-I) HAM project, though there was no delay in progress of work as it was achieving all its milestones in time.

MoRTH replied (April 2022) that working capital advance was granted to concessionaire as per MoRTH guidelines (09 November 2019).

Reply of MoRTH is not tenable as Vadodara-Mumbai Expressway (Phase IA-Pkg.- I) was not a languishing project but was achieving its milestones satisfactorily, hence, the concessionaire was not eligible for such working capital advance.

6.8 Change of scope

As per EPC agreement, implementing agency might require the contractor to make modifications/alterations to the works i.e., change of scope as per provisions of the EPC agreement either by giving an instruction or by requesting the contractor to submit a proposal for change of scope involving additional cost or reduction in cost. Similarly, the contractor might also propose, *suo moto*, any change of scope if it was in the interest of the project and the proposal was as per prescribed procedures in the EPC agreement. In this regard, Audit observed that:

6.8.1 Dwarka Expressway (Pkg.- I)

NHAI granted (11 June 2020) work of tree transplantation for this project under change of scope (a phenomenon which, as per EPC agreement, could occur only when project construction has started i.e., appointed date of the project has been fixed) when, in fact, the appointed date of Package-I was fixed as 24 September 2020.

MoRTH replied (April 2022) that change of scope order was issued to the contractor for tree transplantation and it was allowed to undertake the work prior to appointed date with approval of Competent Authority.

Reply of MoRTH's may be viewed against the fact that there was no provision in the EPC agreement by which change of scope could be executed (tree transplantation) prior to appointed date of the project.

6.8.2 Dwarka Expressway (Pkg.- IV)

Audit observed that NHAI, on the request made (February 2020) by Gurugram Metropolitan Development Authority (GMDA), agreed for construction of master storm water drain along Package IV of Dwarka Expressway on the condition that GMDA would provide land free of cost for the same and also would share 50 *per cent* of its construction cost. The construction of storm water drain was considered as change of scope for Package IV and its order was issued (3 May 2021) to the EPC contractor at a cost of ₹ 93.18 crore. In this regard, Audit observed the following:

- The work of storm water drain was not related to the construction of Package IV and hence could not have been treated as change of scope for Package IV. Construction of storm water drain was not included in the 730 days work program submitted by EPC contractor for Package-IV. The contractor was already, consistently, defaulting in its obligations for Package-IV yet it was awarded another diversified work of construction of storm water drain for value of ₹ 93.18 crore. The work was of a separate kind and giving it to the EPC contractor as change of scope tantamount to award of work to the contractor on nomination basis resulting in violation of relevant guidelines. It could also not be established whether the work was carried out at an economical price, as competitive bids were not invited for the same; and
- NHAI was not responsible for construction of storm water drain as the same was the responsibility of GMDA. Hence, sharing of 50 *per cent* cost of ₹ 93.18 crore i.e., ₹ 46.60 crore resulted in stressing of BPP-I funding;

MoRTH replied (April 2022) that work of storm water drain was given as change of scope under the provisions of contract. It further stated that had this work been made part of original contract, then its full cost would have been borne by NHAI.

Reply of MoRTH is not tenable as construction of storm water drain was the responsibility of GMDA and not of NHAI. Hence, it need not have been issued as change of scope under the contract and also could not have been part of original contract. Thus, the fund meant for road construction under BPP-I were irregularly used for constructing storm water drains in municipal areas.

6.9 Project construction with technical shortcomings

6.9.1 Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)

HAM project of four/six lane Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I), with a length of 45.300 km, was to be developed on flexible pavement. Detailed project report consultant, after considering California Bearing Ratio²²⁴ value of eight *per cent* of the soil, designed the road pavement considering 90, 60 and 10 Million Standard Axles of traffic load from Paniyala Mor-Narnaul Bypass crossing, Narnaul Bypass crossing-Pacheri Kalan and service roads respectively which were in variance with Indian Road Congress standards as detailed below:

²²⁴ It is measure of the strength of the soil sub-grade.

Table 6.5: Pavement design as per detailed project report and Indian Road Congress

Flexible Pavement	Pavement design specifications as given in detailed project report		Pavement design as per Indian Road Congress for different Million Standard Axles	
	Narnaul Bypass crossing-Paniyala Mor	Narnaul Bypass crossing-Pacheri Kalan	Narnaul Bypass crossing-Paniyala Mor	Narnaul Bypass crossing -Pacheri Kalan
Million Standard Axles	90	60	100 ²²⁵	50
Bitumen Concrete	50	50	50	40
Dense Bitumen Macadam DBM	120	100	115	100

(Source: As per the agreement with the concessionaire and Indian Road Congress guidelines)

In this regard Audit observed that:

- Detailed project report consultant planned thickness of different layers of flexible pavements which were more than those prescribed by Indian Road Congress even for higher Million Standard Axles as evident from Table above;
- Instead of constructing road with flexible pavement, the concessionaire designed the road on mixed pavement design whereby a mix of flexible pavement²²⁶ and rigid pavement²²⁷ was considered for intermediate alternate sections of the road as detailed in **Annexure 14**. Mixed pavement was adopted by concessionaire based on MoRTH circular (26 December 2018) which provided that concessionaire could adopt rigid pavement, in case estimates were prepared based on flexible pavement without there being any cost implication to implementing agency. However, Audit observed that as per circular stated above, it was clearly mentioned that such changes could be affected only in cases where such specifications were not given in the agreement. However, in the instant case, it was specified in the Schedule B to the agreement that the pavement design was to be flexible;
- Before allowance of such mixed pavement design, NHAI did not carry out any cost-benefit analysis for savings of concessionaire on the one hand, as the maintenance cost (₹ 3 crore/annum quoted by concessionaire) of rigid pavement was around half of maintenance cost in flexible pavement while on the other hand concessionaire had to bear extra financial burden due to rigid pavement having more initial cost of construction as compared to flexible pavement. Furthermore, no technical analysis was carried out by NHAI in regard to quality of ride offered to commuters by such mixed pavement design as such mixed pavement design suffered from inherent maintenance issues especially on the edges/joints of types of pavements. Concessionaires' adoption of mixed pavement design vitiated the process of tendering as the bids were invited for flexible pavement and not for mixed pavement design; and

²²⁵ Indian Road Congress provided for pavement design of 50 and 100 Million Standard Axles only and not for 90 or 60 Million Standard Axles as planned by detailed project report consultant.

²²⁶ Flexible pavements are made from asphalt.

²²⁷ Rigid pavements are constructed of portland cement concrete slabs.

- While building the service roads, concessionaire changed its pavement design from dense bitumen macadam, approved by NHAI, to cement treated sub-base but no justified reasons and cost-benefit analysis for same were found on record.

MoRTH replied (April 2022) that the flexible/rigid pavement design was adopted in view of MoRTH guidelines (26 December 2018). Further, in regard to saving of operation and maintenance cost though it accepted that the cost on rigid pavement is half of flexible but no such adjustment could be initiated in the absence of any provision under HAM projects.

The reply is not tenable as it was specified in the Schedule B of the agreement that flexible pavement was to be developed thus the MoRTH circular/guidelines of 26 December 2018 was not applicable in the instant case and it also did not allow construction of road with mixed pavement. Further, it did not furnish any reply regarding Detailed project report consultant of Paniyala Mor considering higher thickness of pavement then warranted by Indian Road Congress.

6.9.2 Goharganj-Bhopal

This project with length of 48.71 km was to be developed under rigid pavement. However, contractor developed mixed pavement road by developing 7.727 km, out of 48.71 km under flexible pavement at reinforce earth wall approaches, vehicular underpass and passenger underpass. Contractor was allowed to construct main carriage way of length of 7.727 km with flexible pavement instead of rigid pavement although construction cost of flexible pavement was 30 *per cent* cheaper than the rigid pavement. Further, construction of such mixed road with both type of pavements would cause maintenance issues.

MoRTH did not furnish reply to the audit observation.

6.9.3 Munabao Tanot

In this project, NHAI failed to review the detailed project report as it was prepared considering wrong thicknesses of different layers as per the California Bearing Ratio of the project and respective Indian Road Congress norms. Detailed project report's flexible pavement design of 40 mm thickness for bitumen concrete layer and 65 mm thickness for dense bitumen macadam layer was got approved for 20 Million Standard Axles traffic over the design life of the road considering California Bearing Ratio of soil as 15 *per cent* against 40 mm thickness for bitumen concrete layer and 60 mm thickness for dense bitumen macadam layer recommended by Indian Road Congress guidelines. Further, concessionaire was allowed, in violation to Indian Road Congress guidelines and detailed project report proposal, to construct road with bitumen concrete layer of 30 mm thickness and dense bitumen macadam layer of 50 mm thickness in spite of it also considering 20 Million Standard Axles traffic and California Bearing Ratio value of 15 *per cent*. This resulted in concessionaire constructing road with lesser strength and saving around ₹ 60.47 crore.

MoRTH did not furnish reply to the audit observation.

6.9.4 Dwarka Expressway (Pkg.- III)

- Two packages of Dwarka Expressway are falling in Haryana (Pkg.-III & IV) where it is being developed in form of eight lane elevated structure and six lane at grade road. Due to non-availability of proper drainage system in vicinity of Package III, to drain out waste from nearby residential/commercial centres, this Package was facing the issue of submerging of its at grade section under water during rainy season or on any other occasions when there was excess flow of water from two sewage treatment plants in the vicinity of this Package which could hinder the smooth flow of traffic. NHAI overlooked the fact that consultant who prepared the feasibility report for Package III of Dwarka Expressway failed to consult the stakeholder, i.e., Gurugram Metropolitan Development Authority, regarding its plans for improvement of drainage in this section before proposing for road at grade.

The problem of storm water/excess water flow on at grade road was also being faced in Package-IV of Dwarka Expressway which was overlooked by detailed project report consultant while proposing at grade road in Package-IV also. This has resulted into NHAI granting undue change of scope for construction of storm water drain parallel to Package IV and bearing cost of ₹ 46.60 crore for the same as discussed in para 6.8.2. MoRTH replied (April 2022) that the drainage of sectors of Dwarka Expressway has been incorporated by the concerned State Government in their Master Plan and the issue of non-implementation of drainage plan by State Government has been highlighted by NHAI in various forums for expeditious implementation by Haryana Government to avoid inundation.

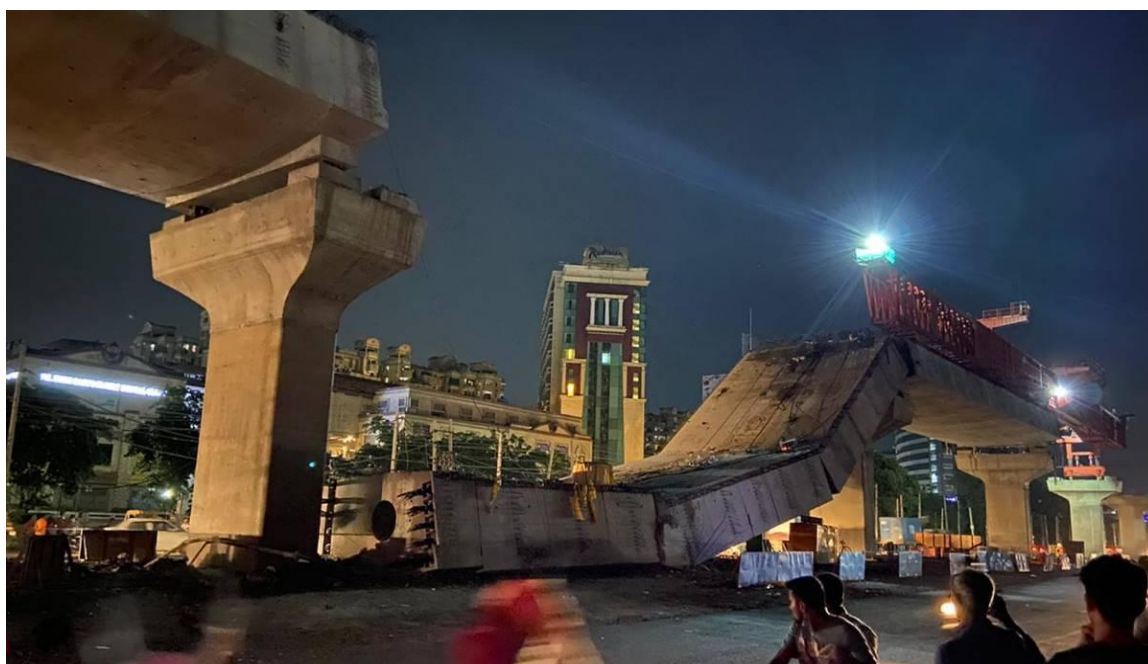
Reply of MoRTH may be viewed in light of the fact that at grade road of Dwarka expressway was being constructed without construction of storm water drain by GMDA, which would lead to non-optimal utilisation of road stretch in near future as construction work of no such drain has started yet. In fact, same storm water/excess water flow situation was being faced by Package-IV due to non-construction of storm water drain by GMDA and ultimately NHAI had to bear cost of ₹ 46.60 crore for construction of storm water drain parallel to Package-IV in spite of it not being responsible for the same.

- It was further observed that on 28 March 2021, an accident took place whereby elevated portion between pier No.108-109 collapsed due to crushing at two joints ES2B-ES3B and RS3-RS4 which resulted into collapse of span between pier No. 107-108 also. During review of records the following were noticed:
 - Contractor, in its preliminary investigation report admitted that reasons for collapse were poor workmanship during placing & compaction of concrete and inadequate application of glue while the authority's engineer in its incident report (8 April 2021) opined that accident was due to congestion of reinforcement near blister and duct location which was likely to have resulted into inconsistency in flow of concrete because of which localised loose spots/honeycombing happened;
 - In response to clarification sought by inquiry committee set up by NHAI to investigate the accident, authority's engineer stated (05 July 2021) that the segments casted for other piers were launched at this site to avoid idling of launcher and to attain monthly targets

and also there was delay in communication of some earlier signs of damage noticed by contractor's staff on 25 March 2021 to the contractor's proof consultant; and

- NHA committee, in its interim report²²⁸ dated 27 July 2021, observed that the accident was due to crushing of concrete of substandard quality for both the spans, lack of quality control measures, lack of coordination between contractor, authority's engineer and proof consultant, early stressing of segments, departure from approved drawings in erecting, launching and stressing and suspected epoxy gluing operation.

Picture: 6.1: Accident at site of Dwarka Expressway (Pkg-III)



Thus, the reasons noticed by committee in its interim report and the preliminary submissions made by contractor and the authority's engineer showed the bad workmanship by contractor along with substandard quality of some segment being used by it in the elevated portion of the project. It also indicated deficiencies in the supervision of the project and its reporting thereupon as these reasons came into light only after the accident took place. Further, a cracking was again observed in span between pier No. 174-175 in the month of July 2021, reasons for which were still to be probed.

MoRTH replied (April 2022) that remedial measures suggested by the Expert Committee are being implemented at site and show cause notice has already been issued to contractor.

MoRTH's reply was not tenable as any concrete action against the contractor/Authority's Engineer/NHAI was still awaited and the project was getting delayed.

6.9.5 Dwarka Expressway (Pkg.- I)

- There was unauthorised installation of batching plant by contractor of Package I of Dwarka Expressway for which no objection certificate was not obtained from Airport

²²⁸ Final report pending till 31 July 2021.

Authority of India and it was opposing the erection of such batching plant near airport boundary; and

- The scope of work of Package-I of Dwarka Expressway included construction of four tunnels with width ranging from seven to 43 meter and a cumulative length of 8.268 km. During site visit it was noticed that contractor was making unauthorised usage of the earth excavated from tunnel without such usage being taken into account. While computing the project estimates by detailed project report consultant, no such provision was made in contract agreement to allow contractor to use the material or to allow the NHAI to claim credit for the used material. Also considering the fact that right of way was provided to the contractor for executing the work and as per National Highways Act 1956, all land for national highways purposes and anything attached to it were the property of Government, therefore such excavated material was also property of the Government. However, NHAI neither stopped contractor from using earth nor did it claim any credit for the same. Hence, the soil/earth excavation was used by contractor hurting the financial interest of NHAI/Exchequer with no remedial action initiated by NHAI.

MoRTH replied (April 2022) that unauthorised setting of batching plant was responsibility of the contractor and not under purview of NHAI. It further stated that there was no provisions in contract agreement for taking credit of earthwork excavated from tunnel work and the same has been done as per Contract Agreement.

MoRTH's reply may be viewed in the light of the fact that NHAI needs to take responsibility for allowing setting of batching plant in the airport zone as it might impact the progress of the project. Further, MoRTH admitted that it could not recover the value of excavated earth work from contractor in absence of any clause. However, it failed to explain how this was allowed to happen and why no responsibility was fixed.

6.10 Commercial operations on national highways

User fee on national highways is being collected as per National Highways Fee (Determination of Rates and Collection) Rule, 2008. Implementing agencies levy and collect user fee on national highways vested with them by the Government. In case of public funded and HAM mode projects, the user fee collection is being done through toll collection agencies and the same is remitted to the Consolidated Fund of India, while in case of BOT(Toll) projects, concessionaire was collecting user fee during the concession period.

Audit, while reviewing 66 projects, observed the following discrepancies regarding tolling of projects:

6.10.1 Hapur Bypass-Moradabad

As per guidelines of Government (15 May 2020), the violators of FASTag lanes guidelines would be charged twice the applicable fees which needs to be remitted to the Government. However, the penalty so recovered by concessionaire has not been re-imbursed to NHAI till date.

MoRTH admitted (April 2022) non-recovery of excess fee charged for violating FASTag guidelines from the concessionaire.

6.10.2 Goharganj-Bhopal

Provisional completion certificate for the project was issued on 25 May 2021. Fee notification for levying of user fee was published on 17 August 2021 and the toll collection agency was engaged on 22 June 2021. In spite of all necessities complied for commencement of tolling, NHAI failed to commence tolling in a timely manner resulting into loss to exchequer to the tune of ₹ 4.71 crore till August 2021.

MoRTH did not furnish specific reply to Audit observation.

6.10.3 Delhi-Meerut Expressway (Pkg.-IV)

Though provisional completion certificate of the stretch was issued on 31 March 2021 but the decision of MoRTH was still pending (March 2022) regarding start of levying of toll on the stretch by implementing Automatic Number Plate Recognition cum Fastag based Multi-Lane Free Flow Tolling System (MLFF). Due to this non-tolling on the stretch, NHAI failed to realise toll fee to the tune of ₹ 216.94 crore²²⁹ till March 2022.

MoRTH admitted (April 2022) that user fee collection could start w.e.f. 01 April 2022 thereby delaying the collection of user fee up to that time.

6.11 Summing up

MoRTH did not ensure the requisite availability of right of way before award of a project and, in non-compliance to CCEA directions, fixed the appointed date without handing over the requisite right of way, contributing to delay in progress of BPP-I projects. Appointed date was being fixed by MoRTH and its implementing agencies without pre-conditions for fixation of appointed date being fulfilled leading to delayed progress in projects and contractors/concessionaires getting undue extra time for completion of the projects. MoRTH should make efforts for strengthening and streamlining the system of project execution including land acquisition framework.

BPP-I projects in many cases were being implemented in contravention to MoEFCC guidelines and MoRTH Standard Operating Procedure regarding environmental and forest clearance. The model EPC/concession agreements need to be reviewed and synchronised in line with MoRTH Standard Operating Procedure and MoEFCC guidelines.

Third party monitoring of project executions and its safety aspects was not as per extant provisions of EPC/concession agreement which could lead to compromising the quality of national highways construction. MoRTH should ensure that the independent professionals are timely appointed for the Bharatmala projects so as to have better supervision of project execution and safety aspects.

²²⁹ *Total Projected traffic in detailed project report * prescribed rates * 305 days (car, jeep, van or light motor vehicle -19440 @ ₹155, light commercial vehicle -2895@ ₹245, bus or truck - 4534@ ₹ 520, three axle commercial vehicle -1134 @ ₹ 565, heavy construction machinery (HCM) or earth moving equipment (EME) or multi axle vehicle (MAV) -465 @ ₹815, oversized vehicle (seven or more axle)- 13 @ ₹ 990)= ₹71,12,710*305 days = ₹216.94 crore*

Due to wrong computation of price-adjustment formula in case of EPC/HAM projects, contractors/concessionaires were paid excess price adjustments to the tune of ₹ 99.16 crore. MoRTH should review the interpretation of price adjustment formula in HAM projects so as to avoid undue benefit to concessionaire. Poor monitoring of escrow accounts by NHAI resulted in diversion of funds to the tune of ₹ 3,598.52 crore from escrow accounts by concessionaires. MoRTH should ensure fixing of responsibility for diversion of funds from escrow account.

CHAPTER 7

MONITORING AND INFORMATION TECHNOLOGY



Chapter 7

Monitoring and Information Technology

Monitoring is the systematic process of collecting, analysing and using information to track a programme's progress toward reaching its objectives and to guide management decisions. Information technology supplements monitoring, and it affects governance by improving responsiveness, increasing efficiency and enhancing governance practices. The three core elements of good governance i.e., transparency, accountability and fairness could be achieved by deploying suitable information technology tool in the system.

7.1 Monitoring of Bharatmala Pariyojana

Objectives of BPP-I were to optimise the efficiency of the movement of goods and people across the country and improvement of Logistics Performance Index of India through:

- Bridging of critical infrastructure gaps and addressing of asymmetry in existing corridors;
- Optimal resource allocation for holistic highways development/improvement initiatives; and
- Following of corridor approach over existing package-based approach.

To achieve the above objectives, a total of 34,800 km of national highways length was to be constructed under BPP-I, during 2017-18 to September 2022, at a cost of ₹5,35,000 crore. These funds were to be raised and spent in accordance with the financial plan approved by CCEA.

Considering the above yardstick for successful implementation of Bharatmala Pariyojana, besides the management tools of internal control, internal audit and hiring of consultants like authority's engineers, independent engineers and safety consultants etc., for monitoring of projects, CCEA directed following further measures for monitoring of Bharatmala Pariyojana from the highest level:

- Monitoring of BPP-I by Public Investment Board and CCEA;
- Audit of physical and technical parameters for all BPP-I projects; and
- Outcome parameters like reduction in time of travel, fuel efficiency, accident reduction, ride comfort and user satisfaction to be laid down and monitored periodically for every corridor (Non-compliance of this CCEA directive has been discussed in detail in para 3.2).

As regard to above, the following was observed:

7.1.1 Monitoring of Bharatmala Pariyojana by Public Investment Board and CCEA

CCEA directed that MoRTH, in consultation with NHAI and NHIDCL, needed to bring out a consolidated progress report of all the sub-projects of BPP-I for review of Public Investment Board in December/June every year with a view to avoid cost and time overruns. The progress report was to include details of the variations in the parameters of the sub-projects which increased the overall cost of the sub-projects or their financing patterns. Along with project

progress, Public Investment Board was also required to review the aspects of raising of funds, revenue generation and debt servicing. Further, the above said progress report, along with Public Investment Board review report, was to be placed before CCEA and its guidance was to be obtained.

However, from records reviewed, no institutionalised system of half yearly review of Bharatmala Pariyojana by Public Investment Board, followed by review of CCEA of the consolidated progress report and Public Investment Board review report on same, was observed by Audit which denied the opportunity of periodical monitoring of the progress of the projects so as to resort to mid-course corrections as and when needed. The implication of such non-compliance of CCEA directions was manifested in the form of time and cost overrun of BPP-I projects as well as departure from CCEA approved budget and funding/spending patterns for the Pariyojana.

MoRTH did not furnish relevant reply to the Audit observation.

7.1.2 Audit of physical and technical parameters

CCEA directed MoRTH to ensure audit of physical and technical parameters of all BPP-I projects by appropriate independent agencies. This fact was also reiterated by MoRTH vide its Standard Operating Procedure issued in December 2017. Audit, while reviewing the monitoring aspect of BPP-I, observed the following:

- In MoRTH, NHAI and NHIDCL, appointment of an independent agency for carrying out the audit of physical and technical parameters of BPP-I was not done. Furthermore, in spite of repeated requisitions and reminders, no specific records pertaining to such appointments were furnished to Audit;
- Internal audit in NHAI and NHIDCL was being carried out by the chartered accountant firms, wherein the scope of audit was restricted to review of contract management and accounting and financing aspects only. It did not include audit of technical and physical parameters of BPP-I projects as directed by CCEA, which could have *inter alia* included review of scheme as a whole, its corridor/project selection, BPP-I optimisation/prioritisation, detailed project report preparation, project approval, tendering, award, entering into agreement and fixation of appointed date;
- MoRTH's internal audit wing was working directly under Pr. Chief Controller of Accounts with overall responsibility resting with the Financial Advisor and the Secretary. However, the sanctity of internal audit in MoRTH vis-à-vis BPP-I could not be vouched safe by Audit due to non-submission of internal audit reports for the year 2017-18 to 2021-22, for no justified reasons on record, despite repeated requisitions and reminders;
- As per Ministry of Finance, Manual (September 2014) regarding internal audit of Central Civil Ministries/Departments there should be constituted an audit committee, in each of the Ministry/Department, for providing effective oversight mechanism for functioning of internal audit wing. This audit committee should be headed by Secretary of the Ministry/Department and should include Financial Advisor, Chief Controller of

Accounts/Controller of Accounts and Program Division Head as members. The terms of reference of audit committee *inter alia* included the following:

- Ensure development of an effective system of risk management within Ministry/Department to ensure achievement of Ministry/Department objectives;
- Supervise the overall functioning of internal audit wing and establish its priorities;
- Provide strategic directions and facilitate availability of resources for internal audit wing;
- Approve internal audit charter and establish the role, responsibility and function of internal audit wing;
- Evaluate performance of internal audit wing; and
- Ensure internal audit observations and suggestions were implemented.

Audit observed that inspite of such functions to be performed by audit committee, no meetings of audit committee were held in MoRTH during 2017-18 to 2021-22.

- No action taken reports on the internal audit of NHAI/NHIDCL/MoRTH were furnished to Audit for the period 2017-18 to 2021-22.

Therefore, the technical and physical parameters of BPP-I appeared to have been neither reviewed by any independent agency nor the same was provisioned in the internal audit.

MoRTH did not furnish reply to the Audit observation.

Thus, MoRTH failed to conduct any independent audit of physical and technical parameters of BPP-I and its projects, as envisaged and directed by CCEA.

Recommendation No. 37: MoRTH should ensure compliance with the framework stipulated by CCEA for effective monitoring and audit of physical and technical parameters of BPP-I. Responsibility needs to be fixed for non-compliance of CCEA directions till date.

7.2 Information Technology

MoRTH, vide its Standard Operating Procedure, considering the magnitude of Bharatmala Pariyojana, directed for ensuring usage of five online systems viz., (i) Project Monitoring Information System (PMIS), (ii) Bhoomi Rashi, (iii) Bidder Information Management System (BIMS), (iv) Performance Management System ‘Lakshya’ and (v) Comprehensive Enterprise Resource Planning system for monitoring and process automation of various activities involved in preparation and execution of projects under Bharatmala Pariyojana.

Audit, while reviewing the effectiveness and preparedness of above mentioned information technology tools for monitoring the Bharatmala Pariyojana, observed the following:

7.2.1 Project Monitoring Information System

Project Monitoring Information System (PMIS)²³⁰ was developed (November 2016) for MoRTH, NHAI and NHIDCL so as to monitor and track the progress of all the projects. The application was further enhanced/upgraded in October 2018 under the umbrella programme eDisha²³¹. Audit, while reviewing the effectiveness of PMIS in BPP-I, observed the following:

- With effect from April 2020, NHAI switched over to a new application viz., Data Lake for the purpose of facilitating project management and its monitoring, which included project relating communications, approvals and submission of bills. MoRTH and NHIDCL continued with the PMIS only;
- Due to usage of two different applications by these three organisations, there was no data integration on a single IT platform, and thus, there was no centralised monitoring and analysis of data for better project management;
- Audit, while reviewing the data pertaining to MoRTH and NHIDCL, as appearing in the PMIS, observed that information related to projects being implemented, their length and project cost was not verifiable from the records of the MoRTH/ NHIDCL because of mismatch in the data available on PMIS and data being maintained by the MoRTH/ NHIDCL. as detailed below:

Table 7.1: Comparison of information available on PMIS with data furnished by MoRTH/management as on 31 March 2021

S.No.	Implementing agency	Details	Number of projects	Length (in km)	Project Cost (₹ in crore)
1.	Road Wing of MoRTH	As per PMIS (as on 20 May 2021)	5	46.89	250.13
		As per information furnished by MoRTH	9	509.00	3,939.00
2.	NHIDCL	As per PMIS (as on 17 May 2021)	12	183.78	2,560.61
		As per information furnished by management	63	1,371.00	30,812.00

(Source: As per data provided by MoRTH/NHIDCL and data available on PMIS)

- PMIS was also to be utilised for uploading of relevant documents in electronic form for each project. However, Audit noticed that uploading of all relevant documents for all projects was not ensured;
- Audit further noticed that information on PMIS was not being updated regularly as test checked in sample projects. In case of one project²³², the appointed date was being displayed as not fixed whereas the project had achieved a progress of 37.70 per cent up to

²³⁰ It provided a role-based access to various management information reports and dashboards wherein information in respect of progress of projects was being updated by all Regional Officers and Chief General Managers of implementing agencies.

²³¹ As per enhancements envisaged, the application was required to enable tracking of progress of multiple projects, display summary view, records and update stages of progress, display key metrics with clear indication of progress over pre-defined interval, generate management dashboard, maintain related links and records.

²³² Churachandpur-Tuivai (Pkg.-1B).

December 2021. In case of another project²³³, Audit observed that the project was appearing under two stages simultaneously viz., implementation stage as well as under operation and maintenance stage despite issuance of provisional completion certificate²³⁴ for the same and information of one project²³⁵ was not available despite the project nearing completion;

MoRTH admitted (April 2022) non-integration of the two platforms i.e., PMIS and Data Lake. However, it did not furnish reply to other observations.

Thus, the PMIS application could not serve as a single source of information and was not fully reliable for effective monitoring.

- During test check of Data Lake application, it was observed that it was also not being updated regularly as on its change of scope and extension of time dashboard, details were missing in eight projects²³⁶. Similar non-updation was also found in case of authority's engineer/ independent engineer dashboard wherein instances of reports of tests conducted by authority's engineer/ independent engineer were not being updated; and

MoRTH assured (April 2022) that concerned Project Implementation Units were being requested to adhere to the prescribed guidelines for updating of the project data in Data Lake.

- It was also observed that on Data Lake application, online bill submission by contractor/concessionaire/ consultant was restricted to uploading of hard copy of bills generated offline but no bill processing could be effected in online mode and the same was being processed offline only.

MoRTH admitted (April 2022) that there was no feature of online computation and processing of bills in the Data Lake.

Recommendation No. 38: Project Monitoring Information System should be integrated with Data Lake and enhanced with requisite functionalities in order to present a holistic position of status of projects of all implementing agencies on a single platform to enable adequate monitoring and input/data validation.

7.2.2 Bhoomi Rashi Portal

Bhoomi Rashi is a web-based application/portal developed (May 2017) by National Information Centre to digitise the procedures of acquisition of land for the national highway projects including processing of all land acquisition related gazette notifications and payment to end beneficiaries. The main objective of the portal was to move towards digitisation and transparency by adopting a user friendly, error-free and transparent system through e-transfer

²³³ Goharganj-Bhopal.

²³⁴ May 2021.

²³⁵ Jabalpur-Hiren River (Pkg.-I).

²³⁶ Change of scope was missing in four projects i.e., Chakeri-Allahabad, Delhi-Vadodara Expressway (Pkg.-I), Delhi Vadodara Expressway (Pkg.-2) and Balance work of Tindivanam-Krishnagiri and details of extension of time was missing in four projects i.e., Chakeri-Allahabad, Varanasi Ring Road (Pkg.-II), Delhi-Vadodara Expressway (Pkg.-I) and Delhi-Vadodara Expressway (Pkg.-2).

of benefits directly to the accounts of the beneficiaries so as to help in avoidance of parking of huge Government funds with Competent Authority for Land Acquisition on account of undisbursed land compensations. The portal went live on 01 April 2018 and the stage of online payment was integrated through Public Fund Management System on 15 October 2018.

In this regard, Audit observed the following:

- In case of NHAI and NHIDCL, the compensation was still being made in offline mode without using Bhoomi Rashi Portal, whereas in MoRTH such compensation have been made online since 15 October 2018. As on 31 March 2022 an amount of ₹ 24,104.60 crore was lying undisbursed in the Competent Authority of Land Acquisition accounts in respect of NHAI and ₹ 2,033.26 crore in respect of NHIDCL;
- Bhoomi Rashi portal provided an option to view details of surplus land. Audit noticed that the said window showed 'Nil' surplus land, despite NHAI alone having acquired surplus land of 1,635.14 hectares as on 31 March 2021. The portal also did not disclose any information relating to mutation of land, despite mutation of 61,410 hectares of land out of total acquired land of 1,34,044 hectares still pending (31 March 2022) to be done in favour of Government of India; and
- In case of three projects/stretch²³⁷, being developed by NHAI, the portal showed the details of land acquired as 'Nil' although the progress on these projects was ongoing. Further, application was allowing uploading of a single project name multiple times²³⁸. Thus, the system lacked control in terms of prevention of duplication of names and entries.

MoRTH accepted (April 2022) the delay in implementation of disbursement of compensation to beneficiaries through Bhoomi Rashi portal in NHAI/NHIDCL as well as non-reflection of details related to surplus land on the portal.

MoRTH further replied (April 2022) that the details of all the land acquisition notifications processed after 01 April 2018 are available on the portal and in order to ensure the details of previous notifications, the MoRTH has been regularly insisting and following up with the field units. MoRTH also replied that if a project passes through multiple Project Directors/ Regional Officer's jurisdiction area then there would be multiple entries of a single project.

The reply of MoRTH may be viewed against the fact that legacy data, at least in case of ongoing projects should have been uploaded in timely manner so that relevant information was made available for users. Further, instead of allowing different entries, system should have option to allot a single ID or name to a single project despite it passing through several jurisdictions to prevent duplicate entries.

²³⁷ *Nidagatta – Mysore (Pkg.-II), Munabao-Tanot and Vadodara- Mumbai Expressway*

²³⁸ *Khajuwala-Poogal -Bap.*

Recommendation No. 39: MoRTH should ensure early integration of Public Fund Management System with NHAI and NHIDCL for seamless financial transactions so that timely payment to beneficiaries could be ensured.

Recommendation No. 40: Bhoomi Rashi application should be made mandatory for usage with adequate availability of checks and controls so that important details such as, complete stages of notifications, surplus land and mutation details etc., are correctly filled up by users.

7.2.3 Bidder Information Management System

Bidder Information Management System (BIMS) was developed (November/ December 2017) for MoRTH, NHAI and NHIDCL for maintenance of technical information of civil works of contractors/concessionaires, creation of database comprising bidder-wise information for expediting the process of pre-qualification and for online technical evaluation of civil works bids. The system was implemented on 01 April 2018. Its usage was suspended in November 2018 due to technical problem. It could again be operationalised in October 2019 only i.e., after approximately one year.

Audit observed that BIMS was to work as database comprising bidder-wise information covering the basic details, civil work experience, financial capacity etc., to expedite the process of pre-qualification of bidders, however, said functionalities could not be reviewed in absence of details and access for the same inspite of Audit seeking the login-id and access to BIMS in June 2021.

MoRTH did not furnish reply to the Audit observation.

7.2.4 Lakshya

NHAI launched (12 July 2016) the online performance management tool named “Lakshya” for the purpose of monitoring, the performance of all technical staff²³⁹ w.e.f. 2017-2018, in terms of achievement of award and construction targets against measurable parameters such as length in kilometer awarded and constructed.

Audit observed that though necessary trainings were imparted upto December 2017, but for no reasons on record and inspite of MoRTH, vide its Standard Operating Procedure, directing usage of Lakshya as a tool for monitoring the achievement of BPP-I targets, the application was never used by NHAI.

MoRTH did not furnish reply to the Audit observation.

7.2.5 Comprehensive ERP System (eDISHA)

MoRTH, vide its Standard Operating Procedure, directed that a comprehensive ERP system i.e., eDISHA was to be set up across MoRTH, NHAI and NHIDCL to integrate all individual

²³⁹ Chief General Manager (Technical) and General Manager (Technical) associated with States, all Regional Officers and Projects Directors.

isolated legacy systems/tools²⁴⁰, to create a consolidated database of information, to digitise documents & records and to enable electronic workflows. For the purpose, a consultancy contract was entered by MoRTH on 09 November 2017 for designing, development, implementation and enablement of integrated technology solutions at MoRTH, NHAI and NHIDCL for ₹ 168.89 crore which included 24 months of solution design and implementation phase followed by 60 months of operations and maintenance period. The proposed application was meant to subsume many legacy systems and establish an integrated solution. In this regard, an Integrated Steering Committee was formed to provide highest level decision making platform to align topics, finalise formal sign off and discuss open points. The committee was to meet once every week during the first two months from the date of start of the project and thereafter once every two weeks.

Audit observed that the contract had prescribed well-defined milestones for completion of the design and implementation phase. The design phase included submission of technical resource mobilisation plan, detailed project plan, mobilisation of team, procurement of system software licenses, and preparation of business blueprint. The implementation phase consisted of three distinct sub-phases viz., Wave 1 to focus on applications in two areas i.e., project monitoring and operation management, Wave 2 to focus on applications in four areas i.e., legal, finance, human resource including payroll & enterprise portal and procurement & supplier management and Wave 3 to observe continuation of work on application related to above application releases. The entire implementation program was spanned over a period of seven years (2017-2024) comprising of 24 months of solution design and implementation phase, followed by 60 months of operations and maintenance period. However, it was observed that there was delay ranging between seven months to 33 months in achievement of prescribed implementation phases out of which the preparation of business blueprint stage was delayed by more than seven months, and Wave 1 was delayed by more than one year, whereas other two sub-phases i.e., Wave 2 and Wave 3 were not yet completed. Despite substantial delays, the project implementation was not adequately monitored as frequency of review meetings of dedicated committee viz., Integrated Steering Committee, varied with gaps ranging from one month to nine months.

MoRTH accepted (April 2022) that the comprehensive enterprise resource planning system was yet to be implemented.

Recommendation No. 41: MoRTH should ensure timely completion of all pending phases of eDISHA so that centralised data and information is available in a single platform for all the three implementing agencies.

²⁴⁰ ***MoRTH, NHAI and NHIDCL had 59 isolated legacy applications relating to construction management, monitoring, finance & payroll, human resources, workflow & collaboration, document, information technology asset/ content/ digital management, operations management, vehicle traffic and road safety etc., which were developed over time.***

7.3 Summing up

In spite of CCEA directions, neither any independent audit of physical and technical parameters of BPP-I and its projects was carried out nor was any system for half yearly review of Bharatmala Pariyojana, by Public Investment Board and CCEA, established by MoRTH. MoRTH should ensure compliance with the framework stipulated by CCEA for effective monitoring and audit of physical and technical parameters of BPP-I.



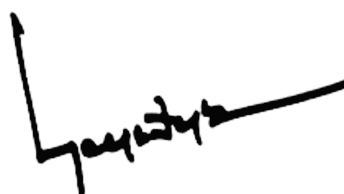
(R G Viswanathan)

**Deputy Comptroller and Auditor General
and Chairman, Audit Board**

New Delhi

Dated: 24 July 2023

Countersigned



(Girish Chandra Murmu)

Comptroller and Auditor General of India

New Delhi

Dated: 24 July 2023

ANNEXURES



Annexure 1 (Reference in para 1.3)

Recommendations of Public Investment Board

The Public Investment Board made the following recommendations:

1. Program outlay and scope of work

- i. The program outlay on Phase-I of the Bharatmala programme would be ₹ 3,85,000 crore and the physical scope should not be lower than 24,800 km. In addition, 10,000 km of balance road works under NHDP at a cost of ₹ 1,50,000 crore and 48,877 km of roads under other existing schemes at a cost of ₹ 1,57,324 crore would also be completed. The overall outlay for Bharatmala and all existing schemes put together would be ₹ 6,92,324 crore over a period of five years.
- ii. Gross budgetary support for the Bharatmala program and existing schemes from 2017-18 to 2021-22 would be restricted to ₹ 2,37,024 crore from Central Road Fund, ₹ 59,973 crore as Budgetary support, ₹ 34,000 crore from expected monetisation through Toll, Operate and Transfer route and ₹ 46,048 crore collected as toll i.e., Permanent Bridge Fee Fund by NHAI.

2. Appraisal and approval of projects under the Bharatmala program

- i. Projects under Bharatmata Phase-I would be implemented through NHAI, NHIDCL, MoRTH and State PWDs.
- ii. All Public Private Partnership BOT (Toll) projects, irrespective of the size and cost, where no grant {or viability gap funding (VGF)} was given to the concessionaire and the construction & maintenance was financed by toll revenues would be appraised and approved by the Board of NHAI.
- iii. All Public Private Partnership BOT (Annuity) or BOT (HAM) projects costing upto ₹ 2,000 crore {total project cost (TPC) excluding land cost} would be appraised by the Standing Finance Committee (SFC) Chaired by Secretary, MoRTH and approved by Minister (MoRTH).
- iv. All Public Private Partnership BOT (Annuity) or BOT (HAM) projects costing more than ₹ 2,000 crore (TPC excluding land cost) would be appraised by the SFC Chaired by Secretary, Department of Economic Affairs (DEA) and approved by CCEA.
- v. All Public Private Partnership projects, which need VGF grants from Government, should be appraised and approved as per extant guidelines of DEA applicable for VGF support.
- vi. All EPC projects implemented by NHAI under this program should be approved by NHAI Board after proper appraisal, within the budgeted financial resources approved under the program.
- vii. Further, NHAI Board should also be authorised to suitably delegate its powers on appraisal and approval of projects within NHAI.

- viii. For EPC projects to be implemented by MoRTH through State PWDs or other agencies, the extant mechanism would be followed i.e., all projects with civil cost (TPC excluding land cost) upto ₹1,000 crores would be appraised by the Delegated Investment Board, Chaired by Secretary, MoRTH and approved by the Minister, MoRTH while projects with civil cost beyond ₹1,000 crores, (TPC excluding land cost) should be appraised by the Public Investment Board Chaired by Finance Secretary & Secretary, Expenditure and approved by CCEA.
- ix. For projects, to be implemented by NHIDCL, in the north-east appraisal and approval mechanism would be the same as applicable for projects under ongoing SARDP-NE programs i.e., through the High Powered Committee under the Chairmanship of Secretary, MoRTH.
- x. All decisions of change of mode of execution would be taken by the Board of NHAI or MoRTH, for their respective roads, subject to availability of funds and other required conditions.
- xi. Individual projects under the programme that involved revised cost estimates should be considered and approved by the concerned Authority which had accorded approval to the projects as per the above guidelines, subject to the cumulative financial commitments of all such projects being within the allocation approved for this programme.
- xii. All projects implemented under the program, either by NHAI or MoRTH, should be technically, financially and economically appraised duly by an empowered and well equipped Project Appraisal & Technical Scrutiny Committee to be setup in NHAI and MoRTH. The Project Appraisal & Technical Scrutiny Committee for appraising projects under Bharatmala Pariyojana would comprise experts from NITI Aayog, Project & Finance Division and would be a dedicated unit which would place it's recommendations on appraisal of projects to NHAI Board or Secretary, MoRTH, as the case might be, for approval. The detailed composition of the same should be mentioned in the note for approval by Cabinet.
- xiii. State Governments would be requested not to levy any such administrative cost for land acquisition or charge the actual expenditure incurred in the process or, in the alternative, an amount not exceeding 2.5 *per cent* of the compensation amount. Similarly, State Governments would be requested that supervision charges for utility shifting should also be capped at 2.5 *per cent* of the approved estimates, etc.

3. Grand challenge mechanism

It was decided that projects under Bharatmala were to be considered under 'Grand Challenge Mechanism' if the concerned State Government provided 25 *per cent* of the land acquisition cost for ring road or bypass projects, such projects would be taken up for construction by NHAI on first priority basis.

4. Expansion of NHAI Board

CEO, NITI Aayog was to be included in the NHAI Board.

5. Criteria for selection of corridors

Selection criteria for the projects to be taken up in Phase-I of Bharatmala Pariyojana has been given in Annexure III to Public Investment Board note.

6. Encouraging of Public Private Partnership in implementation of projects

It has been proposed to source ₹60,000 crores of private investment in Phase-I of the program through Public Private Partnership. All endeavours should be made by MoRTH/NHAI to ensure that projects under the programme are taken up through Public Private Partnership model to the extent proposed. The Toll Operate Transfer model should be used to monetise all roads with potential constructed through EPC route.

7. Project duration and management

- i. All efforts should be made to ensure that award of all projects under Phase-I of Bharatmala Pariyojana was completed in next two years.
- ii. The project should be completed in a period of five years from the date of sanction. Planning and implementation should be meticulously done so as to minimise scope for cost and time overruns.

8. Monitoring and Audit Mechanism

- i. Public Investment Board would review the progress of the program once in six months with a view to avoid cost and time overruns. MoRTH in consultation with NHAI and NHIDCL should bring out a consolidated progress report for all sub-projects contained in the approved Phase-I of Bharatmala Pariyojana to the Public Investment Board (every December and June). The progress report should include details of the variation in the parameters of the sub-projects, which increased the overall cost of the sub-projects or their financing patterns. Along with project progress, Public Investment Board would also review raising of funds, revenue generation and debt servicing aspects.
- ii. The progress report along with the review report of the Public Investment Board should be placed before the CCEA and its guidance should be obtained.
- iii. Outcome parameters like reduction in time of travel, fuel efficiency, accident reduction, riding comfort and user satisfaction might be laid down and monitored periodically for every corridor.
- iv. Audit of physical and technical parameters would be ensured for all such projects by MoRTH by appropriate independent agencies.

Annexure 2 (Reference in para 2.1)

Detail of sample projects

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
1.	Aurangabad – Karodi	Maharashtra	211 (52)	EC	EPC	30.21	Four/Six	2,057.74	31-01-2018	27-02-2018	12-02-2019	910	09-08-2021
2.	Balance work of Bareilly-Sitapur	Uttar Pradesh	24	EC	Item Rate	151.20	Four	767.90	15-10-2019	21-11-2019	17-12-2019	450	10-03-2021
3.	Bangalore-Nidagatta (Pkg.-I)	Karnataka	275	EC	HAM	56.20	Six	3,501.01	28-02-2018	20-04-2018	14-05-2019	910	08-11-2021
4.	Bellary-Byrapura	Karnataka	150A	EC	HAM	54.95	Four	1,281.47	01-06-2018	16-07-2018	24-10-2019	730	22-10-2021
5.	Chittor-Mallavaram	Andhra Pradesh	140	EC	HAM	61.13	Six	1,804.03	26-03-2018	09-05-2018	08-01-2019	910	05-07-2021
6. ^s	Churachandpur-Tuivai (Pkg.-IB)	Manipur	102B	EC	EPC	19.09	Two	241.52	31-03-2020	02-06-2020	01-07-2020	730	30-06-2022

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
7. ^s	Churachand pur-Tuivai (Pkg.-2B)	Manipur	102B	EC	EPC	21.88	Two	365.53	30-06-2020	19-07-2020	05-08-2020	730	04-08-2022
8.	Dagamagpur -Lalganj (Pkg.-II)	Uttar Pradesh	7	EC	EPC	47.70	Four	1,725.28	13-03-2018	28-11-2018	13-12-2018	910	09-06- 2021
9.	Developmen t of existing roads in Ule, Suuratgaon, Malumbra, Tuljapur, Shingoli, Yedeshi, Naldurg & Omerga	Maharashtra	—	EC	EPC	22.51	Maintana nce work	36.38	13-08-2018	Not available			
10.	Gwalior - Shivpuri (Mohana Town Portion)	Madhya Pradesh	3	EC	EPC	4.00	Four	25.84	27-02-2018	19-03- 2018	24-05-2018	365	23-05- 2019

Report No.19 of 2023

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
11.#	Hapur Bypass - Moradabad	Uttar Pradesh	24 (9)	EC	BOT (Toll)	99.87	Six	3,081.68	28-03-2018	29-05-2018	28-05-2019	910	22-11-2021
12.⁹	Kohima-Jessami (Pkg.- II)	Nagaland	150 (29)	EC	EPC	21.90	Two	355.79	18-03-2020	01-06-2020	01-07-2020	730	30-06-2022
13.⁹	Kohima-Jessami (Pkg.- III)	Nagaland	150 (29)	EC	EPC	22.70	Two	361.53	23-03-2020	29-05-2020	01-07-2020	730	30-06-2022
14.	Kozhikhode Bypass	Kerala	17 (66)	EC	HAM	28.40	Six	1,424.77	26-02-2018	18-04-2018	22-02-2021	730	21-02-2023
15.	Lalganj-Hanumanah (Pkg.-III)	Uttar Pradesh	7	EC	EPC	43.40	Four	1,525.80	22-03-2018	27-12-2018	01-02-2019	910	29-07-2021
16.	Mangloor-Telangana Maharashtra Border	Telangana	161	EC	HAM	48.96	Four	1,082.65	26-03-2018	09-05-2018	12-04-2019	730	10-04-2021
17.⁹	Manu-Lalchara (Manu-	Tripura	44A	EC	EPC	16.29	Two	247.76	30-03-2020	27-05-2020	15-07-2020	548	13-01-2022

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
	Simlung Pkg.- I)												
18.	Medshi-Washim	Maharashtra	161	EC	EPC	44.50	Four	1,061.29	27-03-2018	08-03- 2019	25-10-2019	730	23-10-2021
19.	Mohol-Wakhri (Pkg.-I)	Maharashtra	965	EC	EPC	44.70	Four	1,438.35	18-09-2019	05-11- 2019	31-01-2020	730	29-01- 2022
20.	Nidagatta-Mysore (Pkg.-II)	Karnataka	275	EC	HAM	61.10	Six	2,919.81	28-02-2018	20-04- 2018	10-12-2019	910	06-06-2022
21.	Ramsanpalle-Mangloor (Sangareddy-Nanded Pkg.-II)	Telangana	161	EC	HAM	46.81	Four	1,220.83	26-03-2018	09-05-2018	02-05-2019	730	30-04-2021
22.	Varanasi-Dagamagpur (Pkg.-I)	Uttar Pradesh	7	EC	EPC	34.00	Four	1,549.75	27-02-2018	27-05- 2019	09-08-2019	910	03-02- 2022

Report No.19 of 2023

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
23.	Chettikulam-Natham	Tamil Nadu	785	ICR & FR	EPC	29.39	Four	837.61	30-03-2018	06-04-2018	05-11-2018	730	03-11-2020
24.	Shamli-Muzzafarnagar (Pkg.-II)	Uttar Pradesh	44/74	ICR & FR	EPC	42.87	Four	1,621.00	15-10-2019	23-06-2020	23-10-2020	730	22-10-2022
25.	Suryapet-Khammam	Telangana	65	ICR & FR	HAM	58.63	Four	1,682.79	08-03-2019	14-06-2019	27-12-2019	910	23-06-2022
26.	Anandapura m-Pendurthi-Anakapalli	Andhra Pradesh	5 (16)	NC/NEIP	HAM	50.78	Six	2,527.00	28-02-2018	13-04-2018	04-01-2019	910	01-07-2021
27.	Bihar/Jharkhand and Border (Chordaha) – Gorhar	Jharkhand	2	NC/NEIP	EPC	71.29	Six	1,782.76	31-01-2018	15-02-2018	03-06-2019	910	28-11-2021
28.	Chakeri-Allahabad	Uttar Pradesh	2	NC/NEIP	HAM	145.07	Six	3,691.09	13-11-2017	25-04-2018	12-01-2019	910	09-07-2021

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
29.	Dwarka Expressway (Pkg.-I)	Delhi	248 BB	NC/NEIP	EPC	6.10	Eight	2,507.06	17-12-2018	31-12-2018	24-09-2020	730	23-09- 2022
30.	Dwarka Expressway (Pkg.-III)	Haryana	248BB	NC/NEIP	EPC	10.20	Eight	2,228.26	09-10-2018	23-10-2018	29-11-2018	730	27-11- 2020
31.	Dwarka Expressway (Pkg.-IV)	Haryana	248BB	NC/NEIP	EPC	8.80	Eight	1,859.30	05-03-2018	23-10- 2018	05-12-2018	730	03-12- 2020
32.	Gorhar-Khairatunda (Pkg.-I)	Jharkhand	2	NC/NEIP	HAM	40.19	Six	1,494.23	05-03-2018	27-04-2018	19-07-2019	730	17-07- 2021
33.	Gundugolan u-Devarapalli - Kovvuru	Andhra Pradesh	16 (5)	NC/NEIP	HAM	69.88	Four	2,087.37	13-03-2018	26-04- 2018	22-10-2018	910	18-04- 2021
34.	Lucknow Ring Road (Pkg.-I)	Uttar Pradesh	56	NC/NEIP	EPC	31.75	Four	1,916.38	15-10-2019	18-11- 2019	07-02-2020	1,095	05-02- 2023

Report No.19 of 2023

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
35.	Lucknow Ring Road (Pkg.-II)	Uttar Pradesh	24	NC/NEIP	EPC	32.89	Four	1,940.17	23-03-2018	05-09-2018	09-12-2018	1,092	04-12-2021
36.	Lucknow Ring Road (Pkg.-III B)	Uttar Pradesh	28	NC/NEIP	EPC	14.71	Four	708.94	03-01-2017	23-01-2017	01-08-2017	730	31-07-2019
37.	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	Haryana	148 (11)	NEIP and ICR	HAM	45.30	Four/Six	1,254.90	15-01-2019	28-02-2019	19-09-2019	910	16-03-2022
38.	Varanasi Ring Road (Pkg.-I)	Uttar Pradesh	56	NC/NEIP	EPC	16.98	Four	1,508.13	30-01-2018	21-08-2018	15-09-2019	910	12-03-2022
39.	Varanasi Ring Road (Pkg.-II)	Uttar Pradesh	2	NC/NEIP	EPC	27.27	Four	2,011.17	13-02-2018	24-08-2018	15-02-2019	1,095	13-02-2022
40 #	Belakeri Port -	Karnataka	SH-69	CR & PR	EPC	58.92	Two	440.16	27-03-2018	05-04-2018	07-12-2020	730	06-12-2022

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
	Kumta-Sirsi Road												
41.	Khajuwala-Poogal - Bap	Rajasthan	911	BR & IR	HAM	212.11	Two	874.25	27-03-2018	28-09- 2018	22-05-2019	730	20-05- 2021
42.	Munabao-Tanot	Rajasthan	25E/70	BR & IR	HAM	273.87	Two	1,188.35	26-03-2018	08-06-2018	01-01-2019	910	28-06- 2021
43.	Delhi-Meerut Expressway (Pkg.-IV)	Uttar Pradesh	24	Green-field Expressways	EPC	31.77	Six	2,189.55	29-12-2017	11-01- 2018	27-02-2018	540	20-08- 2019
44.	Delhi-Vadodara Expressway (Pkg.-1)	Haryana	148N	Green-field Expressways	EPC	18.46	Eight	1,879.12	08-03-2019	11-07- 2019	13-09-2019	730	11-09-2021
45.	Delhi-Vadodara Expressway (Pkg.-2)	Haryana	148N	Green-field Expressways	EPC	28.50	Eight	1,902.43	05-03-2019	11-07-2019	13-09-2019	730	11-09-2021

Report No.19 of 2023

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
46.	Delhi-Vadodara Expressway (Pkg.-9)	Rajasthan	552 and 148N	Green-field Expressways	EPC	45.64	Eight	1,629.29	26-02-2020	22-07- 2020	18-12-2020	730	17-12- 2022
47.	Delhi-Vadodara Expressway (Pkg.-18)	Madhya Pradesh	148N	Green-field Expressways	EPC	33.00	Eight	1,435.65	01-10-2019	13-11- 2019	07-02-2020	730	05-02- 2022
48.	Vadodara-Mumbai Expressway (Phase IA – Pkg.-I)	Gujarat	NE 4	Green-field Expressways	HAM	23.74	Eight	2,702.05	20-03-2018	09-05-2018	18-01-2019	730	16-01- 2021
49.	Vadodara-Mumbai Expressway (Phase IA – Pkg.- II)	Gujarat	NE 4	Green-field Expressways	HAM	32.00	Eight	1,990.60	28-03-2018	25-05- 2018	31-01-2019	730	29-01- 2021
50.	Vadodara-Mumbai Expressway	Gujarat	NE 4	Green-field Expressways	HAM	24.57	Eight	1,324.84	28-03-2018	10-05-2018	01-11-2019	730	30-10-2021

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
	(Phase IA – Pkg.-V)												
51.	Balance work of Tindivanam-Krishnagiri	Tamil Nadu	66	Residual NHDP	Item Rate	182.18	Two	602.57	29-05-2019	29-07-2019	04-11-2019	600	25-06-2021
52.	Balance work of Barasat-Krishnagar	West Bengal	34	Residual NHDP	EPC	66.72	Four	2,253.58	15-10-2019	20-05-2020	31-08-2020	910	26-02-2023
53.®	Bareli-Goharganj	Madhya Pradesh	45 (12)	Residual NHDP	EPC	59.75	Four	877.79	31-03-2016	20-04-2016	10-06-2017	730	09-06-2019
54.	Barhi-Koderma	Jharkhand	31	Residual NHDP	EPC	27.50	Four	662.44	31-01-2018	26-02-2019	18-11-2019	730	16-11-2021
55.	Duburi-Chandikhole (Pkg.-III)	Orissa	200 (53)	Residual NHDP	EPC	39.40	Four	789.23	31-01-2018	03-01-2019	11-02-2020	910	08-08-2022

Report No.19 of 2023

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
56.	Ghoshpukur-Salsalabari (Pkg.-IIA)	West Bengal	31D	Residual NHDP	EPC	41.65	Four	1,995.20	28-03-2018	12-04- 2018	21-01-2019	910	18-07-2021
57.®	Goharganj-Bhopal	Madhya Pradesh	12	Residual NHDP	EPC	48.71	Four	957.54	30-11-2017	07-12- 2017	07-02-2018	730	06-02- 2020
58.®	Jabalpur-Hiran river (Pkg.-I)	Madhya Pradesh	12	Residual NHDP	EPC	55.60	Four	628.45	30-11-2017	19-12-2017	23-01-2018	730	22-01- 2020
59.	Kallagam-Meensurutti	Tamil Nadu	227	Residual NHDP	HAM	59.73	Four	1,016.92	16-03-2018	24-04-2018	23-04-2019	730	21-04-2021
60.	Koida-Rajamunda (Pkg.-II)	Orissa	215 (520)	Residual NHDP	EPC	53.16	Four	1,176.41	31-01-2018	20-02- 2018	08-05-2018	730	06-05- 2020
61.	Maheshkhunt-Saharsa-Purnea (Pkg.-I)	Bihar	107	Residual NHDP	EPC	90.00	Two	857.43	05-01-2018	23-01- 2018	20-12-2019	730	18-12-2021
62.	Majhauri-Charout	Bihar	527C	Residual NHDP	EPC	63.66	Two	638.29	28-03-2018	27-11- 2018	05-11-2019	730	03-11-2021

S. No	Name of project	State	NH No. New (Old)	Component of BPP-I	Mode	Length (in km)	Lanes	Total sanctioned cost (₹ in crore)	Award Date	Agreement Date	Appointed Date	Scheduled period of completion (in days)	Scheduled completion date
63.	Purulia (JHR Border) - Balrampur-Chandil	West Bengal/ Jharkhand	33/32	Residual NHDP	EPC	73.28	Two	1,486.57	31-03-2018	05-03-2019	12-12-2019	910	08-06-2022
64.	Solapur-Bijapur	Maharashtra	13 (52)	Residual NHDP	BOT (Toll)	109.07	Four	1,888.89	16-11-2017	14-12-2017	26-10-2018	910	22-04- 2021
65.	Tumkur-Shivamogga (Pkg.-I)	Karnataka	206	Residual NHDP	HAM	52.89	Four	979.16	07-03-2018	20-04- 2018	15-10-2019	730	13-10- 2021
66.	Tumkur-Shivamogga (Pkg.-II)	Karnataka	206	Residual NHDP	HAM	56.71	Four	1,225.24	07-03-2018	20-04- 2018	15-10-2019	730	13-10- 2021

^s Being implemented by NHIDCL.

[@] Being implemented by Road wing of MoRTH.

[#] Award file not furnished by NHAI.

Annexure 3 (Reference in para 3.3)

Detail of languishing projects of NHDP merged in Phase-I of Bharatmala Pariyojana

S. No	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I	MoRTH reply	Audit Remarks
1	Gorhar-Khairatunda (Pkg.-I)	This project was approved for development in 2012 as part of Aurangabad-Barwaadda stretch, However, due to non-procurement of requisite right of way, non-obtaining of environmental clearance by NHAI and non-achievement of financial close by concessionaire the project was foreclosed in November 2013.	This project was awarded under BPP-I on 05 March 2018 but due to non-transfer of requisite right of way, the appointed date could be fixed on 19 July 2019 i.e., after around one and a half years. Even after appointed date, complete right of way could not be handed over to the contractor, hence, 5.190 Km of length falling in Atka village has been de-scoped (13 April 2021) and in such de-scoped area the traffic would move on existing four lanes only. Further due to the right of way issues the project could achieve 94.33 <i>per cent</i> physical progress upto March 2023 whereas its scheduled completion date was 17 July 2021. The project was part of the stretch Aurangabad-Barwaadda (221 km) which included four stretches viz., (i) Aaurangabad-Chordaha, (ii) Chordaha-Gorhar, (iii) Gorhar-Khairatunda and (iv) Khairatunda-Barwaadda. There was mismatched physical progress of these projects as on March 2023 viz., Chordaha-Gorhar had physical progresss of 61.60 <i>per cent</i>, Gorhar-Khairatunda (Pkg.-I) had physical progress of 94.33 <i>per cent</i>, preceding project of	The delay in completion/slow progress was due to public protests against the land compensation awarded by Competent Authority for Land Acquisition.	MoRTH's reply confirmed the fact that land issues still persisted for these languishing projects since NHDP days, resulting in their skewed development.

S. No	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I	MoRTH reply	Audit Remarks
			Aurangabad-Chordaha could not have any physical progress till March 2023 inspite of agreement being signed on 08 February 2018 and final completion certificate was issued on 21 April 2022 for the succeeding project i.e., Khairatunda- Barwaadda. It resulted in skewed development of whole corridor after around 11 years of approval of development of this stretch (Aurangabad-Barwaadaa) forming part of Delhi-Kolkata Golden Quadrilateral.		
2	Balance work of Tindivanam-Krishnagiri	Its construction work commenced in the year 2012. However, due to right of way issues and slow progress on the work, the same was terminated (May 2019).	The balance work was awarded in the year May 2019 under BPP-I for which the scheduled date of completion was July 2021. However, due to non-obtaining of forest clearance which was pending since NHDP phase, work on the stretches lying in the forest area could not be commenced and it also contributed in the project achieving a meagre physical progress of 77.98 <i>per cent</i> upto March 2023 resulting in skewed development of this Economic Corridor even after around 11 years of commencement of work.	The stretch in the reserve forest zone is proposed to be constructed/ improved within the available right of way of existing road for which no clearance was required.	Reply of the MoRTH need to be viewed against the fact that undertaking work on existing road in the forest area also required forest clearance which was still pending due to which work could not be taken up on the stretches lying in the forest area.
3	Balance work of	Barasat-Krishnagar project (Km 31.000 to	The Project was split into two packages under BPP-I i.e., chainage from Km 31.000 to Km. 48.553 and	No reply furnished.	---

S. No	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I	MoRTH reply	Audit Remarks
	Barasat-Krishnagar	Km 115.000) was awarded under NHDP and terminated in May 2016 due to delay in land acquisition.	chainage from Km 48.553 to Km 115.000. The work on the chainage from Km 31.000 to Km 48.553 could not be commenced till 31 March 2023 due to non-availability of land. While the work on chainage from Km 48.553 to Km 115.000 though awarded under BPP-I on 15 October 2019 with its appointed date and scheduled completion date being 31 August 2020 and 26 February 2023 respectively, however, up to March 2023, this project could achieve physical progress of 75 <i>per cent</i> only resulting in skewed development of this standalone project.		
4	Ghoshpukur-Salsalabari (Pkg.-IIA) i.e., Falakata bypass to Salsalabari	Initially (2013) Falakata bypass-Salsalabari was approved to be developed as part of 154.854 km stretch from Ghospukur-Salsalabari. However, due to unsuccessful bidding attempts Ghospukur-Salsalabari was divided (March 2015) in two parts ²⁴¹ .	The project was awarded under BPP-I on 28 March 2018. However, due to non-availability of requisite right of way its appointed date could be fixed as 21 January 2019 with scheduled completion date of 18 July 2021. However due to right of way issues still persisting the project could achieve physical progress of 25.98 <i>per cent</i> upto March 2023. It was further observed that regarding other two projects on the stretch, as in March 2023, one project i.e., Ghospukur-Dhupguri has achieved provisional completion in July 2021 whereas the other project i.e., Dhupguri-Falakata bypass was not yet awarded due to	MoRTH admitted the fact that availability of land upto 90 <i>per cent</i> could be ensured only in March 2022 as against appointed date of 21 January 2019.	---

²⁴¹ Ghospukur-Dhupguri and Dhupguri-Salsalabari

S. No	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I	MoRTH reply	Audit Remarks
		Due to non-availability of right of way, NHAI again divided (February 2017) Dhupguri-Salsalabari section into two packages viz., Dhupguri- Falakata bypass (named as Pkg.- IIB of the stretch) and Falakata bypass - Salsalabari (named as Pkg. IIA of the stretch).	right of way issues leading to skewed development of the stretch even after around 10 years of its approval for development.		
5	Kallagam-Meensurutti	This project being part of Trichy-Chidambaram stretch (130 km) was taken up for development in the year 2010. However, due to non-responsive bidders accompanied with non-availability of desired right of way this stretch was split into three sections one	Kallagam -Meensurutti was awarded under BPP-I on 16 March 2018. However, due to non-availability of requisite right of way appointed date could be fixed on 23 April 2019 with scheduled completion date of 21 April 2021. On appointed date also the minimum requisite right of way could not be handed over to concessionaire due to which it could achieve provisional completion in May 2022. Above, in conjunction with the fact that in case of other two projects of this stretch viz., Trichy-Kallagam achieved provisional completion in June 2022 and Meensurutti-Chidambaram with 68.80 <i>per cent</i> physical progress	No reply furnished.	---

Report No.19 of 2023

S. No	Name of the project	Reasons for delay/non-completion at the time of NHDP	Progress under BPP-I	MoRTH reply	Audit Remarks
		of which was Kallagam-Meensurutti.	upto March 2023, due to right of way issues there was skewed development of this stretch even after 13 years of plans of its development.		
6	Majhauri-Charout	This project was to be taken up for development in the year 2013, however, due to delay in finalisation of feasibility report and delay in acquisition of desired right of way the work could not be taken up under NHDP.	This project was awarded on 28 March 2018 under BPP-I. Due to non-availability of requisite right of way the appointed date of the project could only be fixed on 05 November 2019 with scheduled completion date of 03 November 2021. However still the requisite right of way could not be obtained thereby resulting in the project achieving physical progress of 67 <i>per cent</i> up to March 2023 i.e., after lapse of 10 years of planning for development of this project.	No reply furnished.	---

Annexure 4 (Reference in para 3.6.3)**Survey points for 44 Economic Corridors**

S.No.	Economic Corridor	Length (km)	Average traffic (in passenger car units)	Number of traffic survey points
1	Mumbai-Kolkata	1,854	19,039	67
2	Mumbai-Kanyakumari	1,619	22,245	49
3	Amritsar -Jamnagar	1,316	13,597	19
4	Kandla- Sagar	1,038	19,277	17
5	Agra-Mumbai	964	24,329	25
6	Pune-Vijayawada	906	26,218	25
7	Raipur-Dhanbad	707	12,023	15
8	Ludhiana-Ajmer	618	19,066	10
9	Surat-Nagpur	593	19,801	30
10	Hyderabad-Panaji	593	6,677	16
11	Jaipur-Indore	574	12,036	11
12	Solapur-Nagpur	563	-	-
13	Sagar-Varanasi	524	9,563	14
14	Kharagpur-Siliguri	516	19,378	8
15	Raipur-Vishakapatnam	506	13,907	4
16	Delhi-Lucknow	494	28,508	13
17	Chennai-Kurnool	482	17,867	11
18	Indore-Nagpur	464	10,235	8
19	Chennai-Madurai	464	43,617	10
20	Mangalore-Raichur	461	7,674	16
21	Tuticorin-Cochin	443	15,948	14

S.No.	Economic Corridor	Length (km)	Average traffic (in passenger car units)	Number of traffic survey points
22	Solapur-Bellary-Gooty	434	18,151	9
23	Hyderabad-Aurangabad	427	-	-
24	Delhi-Kanpur	424	17,818	6
25	Tharad-Phalodi	394	-	-
26	Nagpur-Mandi-Dabawli	387	-	-
27	Sagar-Lucknow	361	12,658	7
28	Sambalpur-Paradeep	360	13,579	7
29	Amreli-Vadodara	341	-	-
30	Godhra-Khargone	337	7,397	1
31	Sambalpur-Ranchi	329	11,675	3
32	Bangalore-Mallapuram	323	16,978	2
33	Raisen-Pathariya	320	11,785	2
34	Bangalore-Mangalore	319	21,870	12
35	Chittaurgarh-Indore	303	-	-
36	Bilaspur-New Delhi	302	27,897	1
37	Solapur-Mahabubnagar	290	14,013	3
38	Bangalore-Nellore	286	20,787	7
39	Ajmer-Udaipur	286	21,265	5
40	Sirsa-Delhi	278	21,133	7
41	Sirohi-Beawar	255	27,500	4
42	Jaipur-Agra	240	25,793	6
43	Pune-Aurangabad	222	-	-
44	North-East-Corridor	3,246	11618	22

Annexure 5 (Reference in paras 5.1.5.1 and 5.1.5.2)

Details of appraisal and approval of projects

S.No.	Name of the Project	Date of project appraisal and technical scrutiny	Date of approval	Date of notice inviting tender	Difference between date of notice inviting tender and date of project appraisal and technical scrutiny (in days)	Difference between date of notice inviting tender and date of approval (in days)
a	b	c	d	e	f = Difference of e and c	g = Difference of e and d
1	Aurangabad-Karodi	27-12-2017	10-01-2018	20-09-2017	98	112
2	Balance work of Bareilly-Sitapur	Not appraised	11-10-2019	09-03-2019	---	216
3	Bangalore - Nidagatta (Pkg.-I)	Not appraised	13-02-2018	16-02-2017	---	362
4	Bellary – Byrapura	02-02-2018	24-03-2018	18-01-2018	15	65
5	Chittor – Mallavaram	28-02-2018	24-03-2018	25-01-2018	34	58
6 ^s	Churachandpur - Tuivai (Pkg.-IB)	05-12-2019	27-04-2020	27-12-2019	-22	122
7 ^s	Churachandpur -Tuivai (Pkg. -2B)	12-12-2019	18-06-2020	27-12-2019	-15	174
8	Dagmagpur-Lalganj (Pkg.- II)	18-01-2018	15-02-2018	12-12-2017	37	65
9	Gwalior-Shivpuri (Mohana Town Portion)	Not appraised	02-11-2017	01-12-2017	---	-29
10 ^s	Kohima-Jessami (Pkg.-II)	28-11-2019	11-03-2020	24-12-2019	-26	78
11 ^s	Kohima-Jessami (Pkg.- III)	28-11-2019	11-03-2020	24-12-2019	-26	78
12	Kozhikhode Bypass	Not appraised	14-12-2017	21-08-2017	---	115
13	Lalganj - Hanumanah (Pkg.- III)	08-02-2018	19-02-2018	19-01-2018	20	31
14	Mangloor -Telangana Maharashtra Border	25-01-2018	24-03-2018	01-01-2018	24	82

Report No.19 of 2023

15^s	Manu-Lalchara (Manu-Simlung Pkg.- I)	19-12-2019	13-03-2020	20-01-2020	-32	53
16	Medshi – Washim	02-02-2018	26-02-2018	19-01-2018	14	38
17	Mohol-Wakhri (Pkg.-I)	15-01-2019	06-02-2019	29-12-2017	382	404
18	Nidagatta – Mysore (Pkg.- II)	Not appraised	27-02-2018	16-02-2017	---	376
19	Ramsanpalle- Mangloor (Sangareddy - Nanded (Pkg.-II)	28-02-2018	24-03-2018	19-01-2018	40	64
20	Varanasi - Dagamagpur (Pkg.-I)	27-12-2017	18-01-2018	08-11-2017	49	71
21	Chettikulam – Natham	28-02-2018	13-03-2018	06-02-2018	22	35
22	Shamli – Muzzafarnagar (Pkg.-II)	04-01-2019	13-02-2019	11-12-2018	24	64
23	Suryapet – Khammam	28-02-2018	24-01-2019	20-09-2018	-204	126
24	Anandapuram-Pendurthi-Anakapalli	Not appraised	19-01-2018	07-12-2017	---	43
25	Bihar/Jharkhand Border (Chordaha) -Gorhar	27-11-2017	26-12-2017	05-09-2017	83	112
26	Dwarka Expressway (Pkg.-I)	28-02-2018	22-03-2018	31-01-2018	28	50
27	Dwarka Expressway (Pkg.-III)	19-12-2017	18-01-2018	18-09-2017	92	122
28	Dwarka Expressway (Pkg.-IV)	19-12-2017	18-01-2018	29-11-2017	20	50
29	Gorhar - Khairatunda (Pkg.- I)	Not appraised	01-03-2018	06-09-2017	---	176
30	Gundugolanu- Devarapalli -Kovvuru	13-12-2017	27-02-2018	06-12-2017	7	83
31	Lucknow Ring Road (Pkg.-I)	27-12-2017	18-01-2018	07-03-2019	-435	-413
32	Lucknow Ring Road (Pkg.-II)	27-12-2017	18-01-2018	24-10-2017	64	86
33	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.- I)	28-02-2018	06-12-2018	02-02-2018	26	307
34	Varanasi Ring Road (Pkg.-I)	Not appraised	29-11-2017	22-11-2017	---	7
35	Varanasi Ring Road (Pkg.-II)	27-11-2017	26-12-2017	23-11-2017	4	33
36	Khajuwala-Poogal-Bap	25-01-2018	24-03-2018	19-01-2018	6	64

37	Munabao-Tanot	08-02-2018	24-03-2018	30-01-2018	9	53
38	Delhi-Meerut Expressway (Pkg.- IV)	21-11-2017	01-12-2017	24-07-2017	120	130
39	Delhi-Vadodara Expressway (Pkg-1)	30-11-2018	20-12-2018	17-09-2018	74	94
40	Delhi-Vadodara Expressway (Pkg-2)	30-11-2018	20-12-2018	23-08-2018	99	119
41	Delhi-Vadodara Expressway (Pkg-9)	05-09-2019	25-11-2019	08-08-2019	28	109
42	Delhi-Vadodara Expressway (Pkg-18)	05-02-2019	13-02-2019	03-10-2018	186	133
43	Vadodara-Mumbai Expressway (Phase IA-Pkg.- I)	19-12-2017	19-02-2018	08-01-2018	-20	42
44	Vadodara-Mumbai Expressway (Phase IA-Pkg.- II)	19-12-2017	19-02-2018	09-01-2018	-21	41
45	Vadodara-Mumbai Expressway (Phase IA-Pkg.- V)	19-12-2017	19-02-2018	10-01-2018	-22	40
46	Balance work of Tindivanam-Krishnagiri	15-01-2019	13-02-2019	25-10-2018	82	111
47	Balance work of Barasat-Krishnagar	08-07-2019	20-12-2018	25-07-2019	-17	-217
48	Duburi-Chandikhole (Pkg.-III)	21-12-2017	10-01-2018	26-10-2017	56	76
49	Ghoshpukur - Salsalabari (Pkg.- IIA)	18-01-2018	15-02-2018	26-09-2017	114	142
50	Kallagam – Meensurutti	10-01-2018	27-02-2018	29-12-2017	12	60
51	Koida-Rajamunda (Pkg.-II)	21-12-2017	18-01-2018	26-10-2017	56	84
52	Majhauuli – Charout	10-01-2018	23-01-2018	01-11-2017	70	83
53	Purulia (JHR Border) - Balrampur - Chandil	08-02-2018	01-01-2018	16-03-2018	-36	-74
54	Tumkur-Shivamogga (Pkg.-I)	21-12-2017	27-02-2018	03-11-2017	48	116
55	Tumkur-Shivamoga (Pkg.-II)	13-12-2017	27-02-2018	31-10-2017	43	119

S: NHIDCL projects

Annexure 6 (Reference in para 5.3.2)

Details of change of scope proposed and approved in sample of 66 projects

(₹ in crore)

S.No	Name of the project	Items overlooked thereby prompting change of scope	Recommended by respective field establishments	Approved by Competent Authority
1	Hapur Bypass-Moradabad	Requirement of additional structures.	80.05	73.13
2	Ramsanpalle-Mangloor (Sangareddy - Nanded (Pkg-II)	Requirement of additional box culvert and other structures	38.74	37.48
3	Shamli-Muzzafarnagar (Pkg.-II)	Due to detailed project report consultant not considering the alignment of under construction railway project viz., Eastern Dedicated Freight Corridor, the alignment of Shamli-Muzaffarnagar (Pkg.-II) came in conflict with alignment of railway project resultant to which change of alignment of this project has to effected because of which project length increased by 227 m. A canal, which needed to be shifted for construction of project, existence of GAIL pipeline and cross drainage structures not considered by detailed project report consultant. Also there was increase in finished road level of road over bridge and increase in span of bridges due to bad detailed project report	33.66	0.00
4	Anandapuram-Pendurthi-Anakapalli	Due to omission of culverts, wrong dimensions and wrong span arrangements change of scope occurred.	18.77	10.54
5	Chakeri-Allahabad.	Change of specification of structure from passenger underpass to light vehicular underpass.	171.66	103.00
6	Gorhar-Khairatunda (Pkg.-I)	Requirement of passenger underpass/widening of slab culvert and construction of minor bridge.	5.71	0.00
7	Lucknow Ring Road (Pkg.-I)	Requirement of service road/vehicular underpass/box culverts/RE wall.	36.05	4.45
8	Lucknow Ring Road (Pkg.-II)			

S.No	Name of the project	Items overlooked thereby prompting change of scope	Recommended by respective field establishments	Approved by Competent Authority
9	Lucknow Ring Road (Pkg.-III B)			
10	Varanasi Ring Road (Pkg.-I)	Requirement of additional structures, box culverts and extension of service road.	29.32	7.86
11	Varanasi Ring Road (Pkg.- II)			
12	Delhi-Meerut Expressway (Pkg.-IV)	Requirement of culverts/passenger underpass/vehicular underpass and construction of additional flyover.	42.19	12.81
13	Delhi-Vadodara Expressway (Pkg.- 1)	Overlooking of existing GAIL pipeline, requirement of vehicular underpass and box culvert.	32.40	28.67
14	Delhi-Vadodara Expressway (Pkg.- 2)			
15	Delhi-Vadodara Expressway (Pkg.- 18)			
16	Vadodara-Mumbai Expressway (Phase IA – Pkg.- V)	Missing ONGC hydrocarbon bearing wells.	77.93	0.00
17	Balance work of Tindivanam-Krishnagiri	Existing IOCL line resulting in requirement of minor bridge, construction of light vehicular underpass and vehicular underpass.	5.12	1.57
18	Balance work of Barasat-Krishnagar	Requirement of additional structures.	0.48	0.48
19	Bareilly-Goharganj	As the earlier alignment, as proposed by detailed project report consultant, was passing through forest area the same was diverted resulting in hard rock cutting, provisioning for viaducts. Requirement of passenger underpass, box culvert and minor bridge etc.	79.68	79.68
20	Goharganj-Bhopal	Requirement of vehicular underpass, light vehicular underpass, culvert, retaining wall and conversion of pavement design of service road from flexible to rigid	31.13	26.38

Report No.19 of 2023

S.No	Name of the project	Items overlooked thereby prompting change of scope	Recommended by respective field establishments	Approved by Competent Authority
21	Jabalpur-Hiran river (Pkg.-I)	Minor bridge, culverts and pedestrian underpass.	21.17	16.66
22	Solapur-Bijapur	Requirement of bridges and extension of service roads.	21.10	21.10
Total			725.16	423.81

Annexure 7 (Reference in para 5.6.2)

Details of bids received for HAM projects

(₹ in crore)

S.No.	Name of the project	NHAI			L-I bidder			Percentage variation above NHAI +/(-)		
		Bid project estimates as on bid Due date	Bid operation and maintenance cost estimates (for one year)	Assessed bid price ²⁴²	Bid project cost	Bid operation and maintenance cost (for one year)	Bid price ²⁴³	Bid project cost	Bid operation and maintenance cost	Bid price
a	b	c	d	e	f	g	h	$i=(f-c)/c*100$	$j=(g-d)/d*100$	$k=(h-e)/e*100$
1	Bangalore - Nidagatta (Pkg.- I)	2,330.13	17.65	2,166.16	2,190.00	3.00	1,941.67	(6.01)	(83)	(10.36)
2	Bellary - Byrapura	1,239.50	14.23	1,238.83	1,313.90	3.00	1,201.71	6.00	(78.92)	(3.00)
3	Chittor - Mallavaram	1,907.94	18.57	1,834.92	1,730.07	2.07	1,531.21	(9.32)	(88.85)	(16.55)
4	Kozhikhode Bypass	1,545.54	12.22	1,493.56	1,710.00	6.30	1,585.92	10.64	(48.44)	6.18
5	Mangloor - Telangana Maharashtra Border	972.20	12.84	986.84	936.00	3.00	863.72	(3.72)	(76.63)	(12.48)
6	Nidagatta - Mysore (Pkg.- II)	2,685.60	18.73	2,464.27	2,283.50	3.00	2,023.42	(14.97)	(83.98)	(17.89)
7	Ramsanpalle - Mangloor	1,155.15	13.54	1,156.61	1,234.00	3.00	1,129.77	6.83	(77.84)	(2.32)

²⁴² Net present value of bid project estimates for construction period and net present value of bid operation and maintenance estimates for entire operation period.

²⁴³ Net present value of bid project cost for construction period and net present value of bid operation and maintenance cost for entire operation period.

Report No.19 of 2023

S.No.	Name of the project	NHAI			L-I bidder			Percentage variation above NHAI +/(-)		
		Bid project estimates as on bid Due date	Bid operation and maintenance cost estimates (for one year)	Assessed bid price ²⁴²	Bid project cost	Bid operation and maintenance cost (for one year)	Bid price ²⁴³	Bid project cost	Bid operation and maintenance cost	Bid price
	(Sangareddy - Nanded (Pkg. II))									
8	Suryapet Khammam –	1,493.49	13.23	1,413.82	1,566.30	14.63	1,489.37	4.875	10.58	5.34
9	Anandapuram-Pendurthi-Anakapalli	2,347.00	17.19	2,206.44	2,013.00	3.00	1,786.63	(14.23)	(82.55)	(19.03)
10	Chakeri –Allahabad	1,735.20	28.17	1,718.50	2,159.00	8.80	1,926.93	24.42	(68.76)	12.13
11	Gorhar - Khairatunda (Pkg.-I)	866.39	14.50	907.13	917.00	3.00	846.22	5.84	(79.31)	(6.71)
12	Gundugolanu – Devrapalli-Kovvuru	1,861.00	14.55	1,757.53	1,827.00	17.00	1,749.81	(1.83)	16.84	(0.44)
13	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	1,097.00	12.96	1,058.54	1,137.00	3.00	1,007.55	3.65	(76.85)	(4.82)
14	Khajuwala-Poogal-Bap	1,043.20	19.15	1,108.86	895.00	3.00	827.43	(14.21)	(84.33)	(25.38)
15	Munabao- Tanot	1,421.13	23.65	1,454.89	1,438.29	5.55	1,307.35	1.21	(76.53)	(10.14)
16	Vadodara-Mumbai Expressway (Phase IA- Pkg.-I)	2,032.33	12.86	1,932.02	2,043.00	2.70	1,848.15	0.52	(79.00)	(4.34)

S.No.	Name of the project	NHAI			L-I bidder			Percentage variation above NHAI +/(-)		
		Bid project estimates as on bid Due date	Bid operation and maintenance cost estimates (for one year)	Assessed bid price ²⁴²	Bid project cost	Bid operation and maintenance cost (for one year)	Bid price ²⁴³	Bid project cost	Bid operation and maintenance cost	Bid price
17	Vadodara-Mumbai Expressway (Phase IA- Pkg.-II)	1,665.06	13.64	1,607.75	1,865.00	8.16	1,739.66	12.01	(40.18)	8.20
18	Vadodara-Mumbai Expressway (Phase IA- Pkg.-V)	1,156.89	11.90	1,142.38	1,404.00	6.30	1,311.26	21.36	(47.06)	14.78
19	Kallagam - Meensurutti	859.80	7.79	996.56	1071.00	7.50	1,025.25	24.56	(3.72)	2.88
20	Tumkur-Shivamogga (Pkg.-I)	1,014.34	12.72	1,023.62	917.00	6.31	877.51	(9.60)	(50.39)	(14.27)
21	Tumkur-Shivamogga (Pkg.-II)	1,303.75	14.37	1,297.04	1,218.50	7.19	1,155.15	(6.54)	(49.96)	(10.94)

Annexure 8 (Reference in para 5.8)

Project wise details of delay between notice inviting tender to the date of issue of letter of award

S.No.	Name of project	Date of notice inviting tender	Date of approval of project	Letter of award date	Days between notice inviting tender and approval (in days)	Days between award and approval (in days)	Days between notice inviting tender and award date (in days)	Excess time taken by implementing agency in award of projects	Reasons for delay in award of projects
1	Balance work of Bareilly-Sitapur	09-03-2019	11-10-2019	15-10-2019	216	4	220	55	Delay in submission of drawing and plan & profile by consultant who made the project estimates.
2	Bangalore-Nidagatta (Pkg-I)	16-02-2017	13-02-2018	28-02-2018	362	15	377	212	Non-finalisation of bids due to pending approval of the project.
3	Churachandpur-Tuivai (Pkg.-2B)	27-12-2019	18-06-2020	30-06-2020	174	12	186	21	Non-finalisation of bids due to pending approval of project.
4	Kozhikhode Bypass	21-08-2017	14-12-2017	26-02-2018	115	74	189	24	Non-finalisation of bids due to pending approval of project Change of bid platform from C1 India portal to CPPP portal.
5	Mohol-Wakhri (Pkg.-I)	29-12-2017	06-02-2019	18-09-2019	404	224	628	463	Due to non-availability of desired right of way.
6	Nidagatta-Mysore (Pkg.- II)	16-02-2017	27-02-2018	28-02-2018	376	1	377	212	Non-finalisation of bids due to pending approval of the project.
7	Shamli-Muzzafarnagar (Pkg.-II)	11-12-2018	13-02-2019	15-10-2019	64	244	308	143	No reasons available on record.
8	Suryapet-Khammam	20-09-2018	24-01-2019	08-03-2019	126	43	169	4	Non-finalisation of bids due to pending approval of the project.
9	Chakeri-Allahabad	01-11-2016	13-07-2017	13-11-2017	254	123	377	212	Non-finalisation of bids due to pending approval of project.
10	Dwarka Expressway (Pkg.-I)	31-01-2018	22-03-2018	17-12-2018	50	270	320	155	Delay in freezing of Request for Proposal terms and conditions.
11	Dwarka Expressway (Pkg.-III)	18-09-2017	18-01-2018	09-10-2018	122	264	386	221	Due to non-availability of desired right of way.

12	Gorhar-Khairatunda (Pkg. I)	06-09-2017	01-03-2018	05-03-2018	176	4	180	15	Non-finalisation of bids due to pending approval of the project.
13	Lucknow Ring Road (Pkg.-I)	07-03-2019	18-01-2018	15-10-2019	-413	635	222	57	Delay in decision to award the project due to bids invited at old schedules of rates. Delay was also due to non-availability of requisite right of way.
14	Delhi-Vadodara Expressway (Pkg.-1)	17-09-2018	20-12-2018	08-03-2019	94	78	172	7	Delay in tendering process.
15	Delhi-Vadodara Expressway (Pkg.-2)	23-08-2018	20-12-2018	05-03-2019	119	75	194	29	Due to non-availability of desired right of way.
16	Delhi-Vadodara Expressway (Pkg.-9)	01-10-2018 ²⁴⁴	25-11-2019	26-02-2020	420	93	513	348	Cancellation and reinviting bids due to inviting original bids without considering wildlife requirements having huge cost implications and thereafter decision was taken to reduce the length of project to keep the cost within limit of ₹1,000 to ₹1,200 crore.
17	Delhi-Vadodara Expressway (Pkg.-18)	03-08-2018	13-02-2019	01-10-2019	194	230	424	259	Delay in decision to award the project due to bids invited at old schedules of rates. Delay was also due to non-availability of requisite right of way.
18	Balance work of Tindivanam-Krishnagiri	25-10-2018	13-02-2019	29-05-2019	111	105	216	51	Due to delay in finalisation of termination of existing concessionaire.
19	Barhi-Koderma	01-08-2017	27-02-2017	31-01-2018	-155	338	183	18	Request from prospective bidders for extension of bid date on the ground for proper site details and other investigation for bidding purpose.
20	Solapur-Bijapur	03-05-2017	25-07-2017	16-11-2017	83	114	197	32	Time lapsed in seeking clearance from Ministry of Home Affairs regarding Malaysian bidder when the same was not required as per applicable guidelines.

²⁴⁴ **Original notice inviting tender was floated on 01 October 2018 and revised notice inviting tender was floated on 08 August 2019**

Annexure 9 (Reference in para 6.1.1)

Status of availability and handing over of right of way to contractors/concessionaires

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
Non-availability of right of way											
1	Auranagabad-Karodi	31-01-2018	14-02-2018	27-02-2018	13	29-03-2018	12-02-2019	320	333	Yes	No
2	Dagmagpur-Lalganj (Pkg.-II)	13-03-2018	27-03-2018	28-11-2018	246	28-12-2018	13-12-2018	-15	231	Yes	No
3	Gwalior Shivpuri (Mohana Town Portion)	27-02-2018	13-03-2018	19-03-2018	6	18-04-2018	24-05-2018	36	42	Yes	No
4	Hapur Bypass-Moradabad	28-03-2018	26-04-2018	29-05-2018	33	25-11-2018	28-05-2019	184	217	No	No
5	Lalganj - Hanumanah (Pkg.-III)	22-03-2018	05-04-2018	27-12-2018	266	26-01-2019	01-02-2019	6	272	Yes	No
6	Medhsi-Washim	27-03-2018	05-04-2018	08-03-2019	337	07-04-2019	25-10-2019	201	538	No	No
7	Mohol-Wakhri (Pkg.-I)	18-09-2019	27-10-2019	05-11-2019	9	05-12-2019	31-01-2020	57	66	Yes	No

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
8	Ramsanpalle - Mangloor (Sangareddy-Nanded Pkg.-II)	26-03-2018	09-05-2018	09-05-2018	0	06-10-2018	02-05-2019	208	208	Yes	No
9	Varanasi - Dagmagpur (Pkg.-I)	27-02-2018	13-03-2018	27-05-2019	440	26-06-2019	09-08-2019	44	484	Yes	No
10	Chettikulam - Natham	30-03-2018	08-04-2018	06-04-2018	-2	06-05-2018	05-11-2018	183	181	Yes	No
11	Shamli – Muzzafarnagar (Pkg.-II)	15-10-2019	23-11-2019	23-06-2020	213	23-07-2020	23-10-2020	92	305	Yes	No
12	Suryapet– Khammam	08-03-2019	21-04-2019	14-06-2019	54	11-11-2019	27-12-2019	46	100	Yes	No
13	Chakeri - Allahabad	13-11-2017	27-12-2017	25-04-2018	119	22-09-2018	12-01-2019	112	231	Yes	No

Report No.19 of 2023

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
14	Dwarka Expressway (Pkg.-I)	17-12-2018	31-12-2018	31-12-2018	0	30-01-2019	24-09-2020	603	603	Yes	No
15	Dwarka Expressway (Pkg.-III)	09-10-2018	23-10-2018	23-10-2018	0	22-11-2018	29-11-2018	7	7	Yes	No
16	Dwarka Expressway (Pkg.-IV)	05-03-2018	19-03-2018	23-10-2018	218	22-11-2018	05-12-2018	13	231	Yes	No
17	Gundugolanu-Devarapalli-Kuvvuru	13-03-2018	26-04-2018	26-04-2018	0	23-09-2018	22-10-2018	29	29	No	No
18	Lucknow Ring Road (Pkg.-II)	23-03- 2018	06-04-2018	05-09-2018	152	05-10-2018	09-12-2018	65	217	Yes	No
19	Lucknow Ring Road (Pkg.-III B)	03-01-2017	17-01-2017	23-01-2017	6	22-02-2017	01-08-2017	160	166	No	No
20	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	15-01-2019	28-02-2019	28-02-2019	0	28-07-2019	19-09-2019	53	53	Yes	No

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
21	Varanasi Ring Road (Pkg-I)	30-01-2018	13-02- 2018	21-08-2018	189	20-09-2018	15-09-2019	360	549	Yes	No
22	Varanasi Ring Road (Pkg-II)	13-02-2018	27-02-2018	24-08-2018	178	23-09-2018	15-02-2019	145	323	Yes	No
23	Belakeri Port-Kumta- Sirsi Road	27-03-2018	05-04-2018	05-04-2018	0	04-05-2018	07-12-2020	947	947	Yes	No
24	Delhi-Meerut Expressway (Pkg.- IV)	29-12-2017	12-01-2018	11-01-2018	-1	10-02-2018	27-02-2018	17	16	No	Yes (180 Days)
25	Delhi-Vadodara Expressway (Pkg.-1)	08-03-2019	16-04-2019	11-07-2019	86	10-08-2019	13-09-2019	34	120	Yes	No
26	Delhi-Vadodara Expressway (Pkg.-2)	05-03-2019	13-04-2019	11-07-2019	89	10-08-2019	13-09-2019	34	123	Yes	No
27	Delhi-Vadodara Expressway (Pkg.-9)	26-02-2020	05-04-2020	22-07-2020	108	21-08-2020	18-12-2020	119	227	Yes	No

Report No.19 of 2023

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
28	Delhi-Vadodara Expressway (Pkg.-18)	01-10-2019	09-11-2019	13-11-2019	4	13-12-2019	07-02-2020	56	60	Yes	No
29	Vadodara-Mumbai Expressway (Phase IA-Pkg.-I)	20-03-2018	03-05-2018	09-05-2018	6	06-10-2018	18-01-2019	104	110	Yes	No
30	Vadodara-Mumbai Expressway (Phase IA-Pkg.- II)	28-03-2018	11-05-2018	25-05-2018	14	22-10-2018	31-01-2019	101	115	Yes	No
31	Balance work of Barasat-Krishnagar	15-10-2019	23-11-2019	20-05-2020	179	19-06-2020	31-08-2020	73	252	Yes	No
32	Bareilly-Goharganj	31-03-2016	14-04-2016	20-04-2016	06	20-05-2016	10-06-2017	386	392	No	Yes (402 Days)
33	Barhi-Koderma.	31-01-2018	09-02-2018	26-02-2019	382	28-03-2019	18-11-2019	235	617	Yes	No
34	Ghospukur-Salsalabari (Pkg.-IIA)	28-03-2018	11-04-2018	12-04-2018	1	12-05-2018	21-01-2019	254	255	Yes	No
35	Goharganj-Bhopal	30-11-2017	14-12-2017	07-12-2017	-7	06-01-2018	07-02-2018	32	25	No	Yes (178 days)

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
36	Koida-Rajamunda (Pkg.-II)	31-01-2018	14-02-2018	20-02-2018	6	22-03-2018	08-05-2018	47	53	Yes	No
37	Maheshkhunt_ Saharsa-Purnea (Pkg.-I)	05-01-2018	19-01-2018	23-01-2018	4	22-02- 2018	20-12-2019	666	670	No	No
38	Majhauri- Charout	28-03- 2018	06-04- 2018	27-11- 2018	235	27-12- 2018	05-11- 2019	313	548	No	No
39	Purulia (JHR Border) - Balrampur - Chandil	31-03-2018	14-04-2018	05-03-2019	325	04-04-2019	12-12-2019	252	577	Yes	No
Non-availability of right of way and contractors/concessionaires fault in achievement of their conditions precedent											
40	Bangalore-Nidagatta (Pkg.- I)	28-02-2018	13-04-2018	20-04-2018	7	17-09-2018	14-05-2019	239	246	No	No
41	Bellary-Byrapura	01-06-2018	15-07-2018	16-07-2018	1	13-12-2018	24-10-2019	315	316	Yes	No

Report No.19 of 2023

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
42	Chittoor-Mallavaram	26-03- 2018	09-05-2018	09-05-2018	0	06-10-2018	08-01-2019	94	94	Yes	No
43	Kohima-Jessami (Pkg.-II)	18-03-2020	26-04-2020	01-06-2020	36	01-07-2020	01-07-2020	0	36	No	Yes (195 Days)
44	Kohima-Jessami (Pkg.-III)	23-03-2020	01-05-2020	29-05-2020	28	28-06-2020	01-07-2020	3	31	No	Yes (238 Days)
45	Mangloor – Telangana Maharashtra Border	26-03-2018	09-05-2018	09-05-2018	0	06-10-2018	12-04-2019	188	188	Yes	No
46	Manu-Lalchara (Manu Simlung-Pkg.- I)	30-03-2020	13-04-2020	27-05-2020	44	26-06-2020	15-07-2020	19	63	No	No
47	Nidagatta-Mysore (Pkg.- II)	28-02-2018	13-04-2018	20-04-2018	7	17-09-2018	10-12-2019	449	456	Yes	No
48	Bihar/Jharkhand Border (Chordaha)-Gorhar	31-01-2018	09-02-2018	15-02-2018	6	17-03-2018	03-06-2019	443	449	Yes	No

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handing of right of way
49	Gorhar-Khairatunda (Pkg.-I)	05-03-2018	18-04-2018	27-04- 2018	9	24-09-2018	19-07-2019	298	307	Yes	No
50	Khajuwala-Poogal-Bap	27-03-2018	10-05-2018	28-09-2018	141	25-02-2019	22-05-2019	86	227	Yes	No
51	Munabao-Tanot	26-03-2018	09-05-2018	08-06-2018	30	05-11-2018	01-01-2019	57	87	Yes	No
52	Vadodara-Mumbai Expressway (Phase IA-Pkg.-V)	28-03-2018	11-05-2018	10-05-2018	-1	07-10-2018	01-11-2019	390	389	Yes	No
53	Duburi-Chandikhole (Pkg.-III)	31-01-2018	14-02-2018	03-01-2019	323	02-02-2019	11-02-2020	374	697	Yes	No
54	Jabalpur-Hiran River (Pkg.-I)	30-11-2017	14-12-2017	19-12-2017	5	18-01-2018	23-01-2018	5	10	No	Yes (236 Days)
55	Kallagam - Meensurutti	16-03-2018	29-04-2018	24-04-2018	-5	21-09-2018	23-04-2019	214	209	No	Yes (100 days)
56	Solapur-Bijapur	16-11-2017	15-12-2017	14-12-2017	-1	12-06-2018	26-10-2018	136	135	Yes	No

Report No.19 of 2023

S.No.	Name of project	Date of letter of award	Schedule date of agreement	Actual date of agreement	Delay in agreement	Period upto which appointed date was to be attained	Actual appointed date	Extra time taken for appointed date	Total extra time taken (delay in agreement and time taken for appointed date)	Whether requisite minimum land handed over on appointed date	Whether extension of time sought/given due to non-handling of right of way
57	Tumkur-Shivamogga (Pkg.-I)	07-03-2018	20-04-2018	20-04-2018	0	17-09-2018	15-10-2019	393	393	Yes	No
58	Tumkur-Shivamogga (Pkg.-II)	07-03-2018	20-04-2018	20-04-2018	0	17-09-2018	15-10-2019	393	393	Yes	No
Contractors/concessionaires fault in achievement of their conditions precedent											
59	Churachandpur-Tuivai (Pkg.-IB)	31-03-2020	10-05-2020	02-06-2020	23	02-07-2020	01-07-2020	-	22	No	No
60	Kozhikhode Bypass	26-02-2018	11-04-2018	18-04-2018	7	15-09-2018	22-02-2021	891	898	Yes	No
61	Anandapuram-Pendurthi-Anakapalli-	28-02-2018	13-04-2018	13-04-2018	0	10-09-2018	04-01-2019	116	116	Yes	No
62	Lucknow Ring Road (Pkg.-1)	15-10-2019	23-11-2019	18-11-2019	-5	18-12-2019	07-02-2020	51	46	Yes	No

Annexure 10 (Reference in para 6.4.1)**Details of status of environmental clearance in the sample projects *vis-a-vis* corridors**

S.No. of corridor	Name of the corridor	Length of the corridor (in km)	S.No. of project	Name of the project	Project length (in km)	Environmental clearance
1	Ambala-Kotputli	282.00	1	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	45.30	Exempted
2	Banglore-Mysore-Mallapuram	205.00	2	Banglore-Nidagatta (Pkg.-I)	56.20	
			3	Nidagatta-Mysore (Pkg.-II)	61.10	
3	Bangalore-Nellore	291.00	4	Chittor - Mallavaram	61.128	
4	Churachandpur-Tuivai	141.029	5	Churachandpur-Tuivai (Pkg.-IB)	19.09	
			6	Churachandpur-Tuivai (Pkg.-2B)	21.88	
5	Dalkhola-Islampur-Salsalabari	271.00	7	Ghoshpukur-Salsalabari (Pkg.-IIA)	41.65	
6	Hingoli-Mekhar	119.00	8	Medhsi- Washim	44.50	
7	Indore- Hyderabad	454.00	9	Mangalore Telangana-Maharastra Border	48.963	
			10	Ramsanpalle – Mangloor (Sangareddy-Nanded Pkg.-II)	46.808	
8	Kohima-Jessami	109.32	11	Kohima-Jessami (Pkg.- II)	21.90	
			12	Kohima-Jessami (Pkg.- III)	22.70	
9	Maheshkhunt-Saharsa-Purnia	178.00	13	Maheshkhunt-Saharsa-Purnea (Pkg.-I)	90.00	

S.No. of corridor	Name of the corridor	Length of the corridor (in km)	S.No. of project	Name of the project	Project length (in km)	Environmental clearance
10	Pune-Hyderabad-Vijaywada	281.00	14	Mohol-Wakhri (Pkg.-I)	44.70	
11	Solapur-Bellary-Gooty	434.00	15	Bellary - Byrapura	54.95	
12	Suryapet-Devarapalli	209.00	16	Suryapet - Khammam	58.626	
13	Talcher-Duburi-Chandikhole	132.00	17	Duburi-Chandikhole (Pkg.-III)	39.40	
14	Trichy-Chidambaram	130.00	18	Kallagam - Meensurutti	59.733	
15	Tumkur-Shivamogga	259.00	19	Tumkur - Shivamogga (Pkg.-I)	52.895	
			20	Tumkur - Shivamogga (Pkg.-II)	56.705	
16	Varanasi-Hanumanah	125.10	21	Varanasi-Dagamagpur (Pkg.-I)	34.00	
			22	Dagamagpur-Lalganj (Pkg.-II)	47.70	
			23	Lalganj-Hanumanah (Pkg.-III)	43.40	

Annexure 11 (Reference in para 6.5)**Details of excess supervision charges paid in respect of utility shifting**

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
1	Aurangabad-Karodi	Maharashtra	CIDCO	Sewer	1.09	4	0.02
			AMC	Sewer	1.16	5	0.03
			CIDCO	Water	0.18	4	0.00
			AMC, MIDC and ZP	Water	2.27	5	0.06
			MSETCL	EHV lines	8.34	15	1.04
			WALMI	-	1.62	5	0.04
2	Balance work of Bareilly -Sitapur	Uttar Pradesh	UPMVVNL	Electricity	0.66	5	0.02
3	Dagmagpur-Lalganj (Pkg.- II)	Uttar Pradesh	UPPCL/PVBNL	Electricity	15.48	5	0.39
			Uttar Pradesh Jal Nigam	Water	9.19	12.50	0.92
4	Hapur Bypass - Moradabad	Uttar Pradesh	UPPVVNL	Electricity	65.13	5	1.63
			Uttar Pradesh Jal Nigam	Water	1.06	10	0.08

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
5	Kohima – Jeassami (Pkg. II)	Nagaland	D & R(DoP)	Electricity	0.74	13	0.08
			T & G(DoP)	Electricity	2.33	13	0.24
			PHED	Water	0.32	13	0.03
			PHED	Water	0.29	13	0.03
6	Kohima –Jeassami (Pkg. III)	Nagaland	D & R(DoP)	Electricity	0.57	13	0.06
			T & G(DoP)	Electricity	2.33	13	0.24
			PHED	Water	0.46	13	0.05
7	Lalganj-Hanumanah (Pkg.- III)	Uttar Pradesh	UPPCL/PVBNL	Electricity	14.12	5	0.35
			Uttar Pradesh Jal Nigam	Water	7.60	12.50	0.76
8	Manu-Lalchara (Manu-Simlung Pkg.-I)	Tripura	TSECL	Electricity	2.07	10	0.15
9	Medshi-Washim	Maharashtra	MJP	Water supply	1.13	5	0.03
10	Mohol-Wakhri (Pkg.-I)	Maharashtra	-	Water	4.14	5	0.10

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
11	Varanasi-Dagamagpur (Pkg.-I)	Uttar Pradesh	UPPCL/PVBNL	Electricity	24.16	5	0.60
			UPPCL/PVBNL	Electricity	4.16	5	0.10
			UPPCL/PVBNL	Electricity	2.63	5	0.07
			Uttar Pradesh Jal Nigam	Water	3.76	12.50	0.38
			Uttar Pradesh Jal Nigam	Sewage	3.30	5	0.08
12	Shamli - Muzaffarnagar (Pkg.- II)	Uttar Pradesh	UPPCL	Electricity	4.53	5	0.11
			UPPCL	Electricity	10.77	5	0.27
			UPPCL	Electricity	2.39	5	0.06
13	Chakeri-Allahabad	Uttar Pradesh	KESCO, DVVNL and PVVNL	Electricity	48.43	5	1.21
14	Dwarka Expressway (Pkg.- I)	Delhi	BPCL	Petroleum	23.82	5	0.60
			DTL	Electricity	49.05	15	6.13
15	Dwarka Expressway (Pkg.- III)	Haryana	HVPNL	Electricity	4.80	4	0.07

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
16	Dwarka Expressway (Pkg.- IV)	Haryana	HVPNL	Electricity	29.74	4	0.45
17, 18 and 19	Lucknow Ring Road (Pkg.- I, II and IIIB)	Uttar Pradesh	UPPCL	Electricity	51.39	5 & 15	6.08
			UPPCL	Electricity	9.39	15	1.17
			UPPCL	Electricity	8.41	15	1.05
20	Varanasi Ring Road (Pkg.-I)	Uttar Pradesh	UPPCL	Electricity	7.90	4.72	0.17
			UPPCL	Electricity	0.88	7.26	0.04
			UPPCL	Electricity	4.70	10.53	0.38
21	Varanasi Ring Road (Pkg.-II)	Uttar Pradesh	UPPCL	Electricity	5.96	4.52	0.01
			UPPCL	Electricity	0.75	4.55	0.02
			UPPCL	Electricity	2.25	3.68	0.03
22	Khajuwala-Poogal-Bap	Rajasthan	PHED	Water	0.50	5	0.01
			JVVNL	Electricity	29.33	5	0.73
23	Munabao-Tanot	Rajasthan	PHED	Water	23.52	5	0.59
			JVVNL	Electricity	23.89	5	0.60
			UPPVVNL	Electricity	4.15	5	0.10

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
24	Delhi -Meerut Expressway (Pkg.-IV)	Uttar Pradesh	UPPTCL	Electricity	8.45	15 & 5	0.46
			UPPVVNL	Electricity	4.96	5	0.12
			PGCIL	Electricity	20.75	15	2.59
			Uttar Pradesh Jal Nigam	Water	1.02	5	0.03
			UPPTCL	Electricity	8.10	5	0.20
25	Delhi-Vadodara Expressway (Pkg. - 1)	Haryana	HVPNL	Electricity	2.59	4	0.04
26	Delhi-Vadodara Expressway (Pkg.- 2)	Haryana	HVPNL	Electricity	4.35	4	0.06
27	Delhi-Vadodara Expressway (Pkg.- 9)	Rajasthan	JVVNL	Electricity	6.68	5	0.17
			RVPNL	Electricity	1.50	5	0.04
			PHED	Water	0.75	5	0.02
28	Vadodara-Mumbai Expressway (Phase IA – Pkg.-I)	Gujarat	GETCL	Electricity	3.11	15	0.39
			MGVCL	Electricity	9.98	15	1.25

S. No.	Name of the project	State	Name of utility department	Name of utility	Utility shifting estimates approved by Competent Authority (₹ in crore)	Supervision charges to be paid on same (in per cent)	Supervision charges paid/to be paid in excess of cap of two and half per cent (₹ in crore)
29	Vadodara-Mumbai Expressway (Phase IA – Pkg.- II)	Gujarat	GETCL	Electricity	8.81	15	1.10
			MGVCL	Electricity	5.45	15	0.68
			TPCL	Electricity	5.46	15	0.68
30	Vadodara-Mumbai Expressway (Phase IA – Pkg.-V)	Gujarat	GETCL	Electricity	7.16	15	0.89
			DGVCL		3.58	15	0.45
31	Purulia (JHR Border) - Balrampur - Chandil	West Bengal	JBVNL	Electricity	3.41	15	0.43
32	Solapur-Bijapur	Maharashtra	MSETCL	EHV lines	2.30	15	0.29
Total					635.25		37.45

Annexure 12 (Reference in para 6.6.1)**Details of appointment of Authority's Engineer/Independent Engineer**

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
1	Aurangabad-Karodi	EPC	27-02-2018	12-02-2019	12-02-2019	25-07-2018	-	-
2	Balance work of Bareilly - Sitapur	Item Rate	21-11-2019	17-12-2019	17-12- 2019	18-02-2020	63	63
3	Bangalore-Nidagatta (Pkg.-I)	HAM	20-04-2018	14-05-2019	18-06-2018	02-01-2019	198	-
4	Bellary-Byrapura	HAM	16-07-2018	24-10-2019	13-09-2018	12-02-2019	152	-
5	Chittoor-Mallavaram	HAM	09-05-2018	08-01-2019	07-07-2018	28-02-2019	236	51
6	Churachandpur- Tuivai (Pkg.- IB)	EPC	02-06-2020	01-07-2020	12-06-2020	25-08-2020	74	55
7	Churachandpur-Tuivai (Pkg.- 2B)	EPC	19-07-2020	05-08-2020	29-07-2020	25-08-2020	27	20
8	Dagmagpur-Lalganj (Pkg.-II)	EPC	28-11-2018	13-12-2018	27-12-2018	10-06-2019	165	179
9	Gwalior-Shivpuri (Mohana Town portion)	EPC	19-03-2018	24-05-2018	24-05- 2018	10-09-2018	109	109
10	Hapur Bypass- Moradabad	BOT(Toll)	29-05-2018	28-05-2019	27-08- 2018	21-11-2019	451	177

Report No.19 of 2023

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
11	Kohima-Jessami (Pkg.-II)	EPC	01-06-2020	01-07-2020	11-06-2020	13-10-2020	124	104
12	Kohima-Jessami (Pkg.-III)	EPC	29-05-2020	01-07-2020	09-06-2020	13-10-2020	126	104
13	Kozhikhode Bypass	HAM	18-04-2018	22-02-2021	17-06- 2018	20-03- 2020	642	-
14	Lalganj-Hanumanah (Pkg.-III)	EPC	27-12-2018	01-02-2019	01-02-2019	10-06-2019	129	129
15	Mangloor-Telangana-Maharashtra Border	HAM	09-05-2018	12-04-2019	07-07-2018	24-10-2018	109	-
16	Manu- Lalchara (Manu-Simlung Pkg.- I)	EPC	27-05-2020	15-07-2020	06-06-2020	07-09-2020	93	54
17	Medsi-Washim	EPC	08-03-2019	25-10-2019	25-10-2019	16-10-2019	-	-
18	Mohol-Wakhri (Pkg.-I)	EPC	05-11-2019	31-01-2020	14-11-2019	16-06-2020	215	137
19	Nidagatta-Mysore (Pkg.- II)	HAM	20-04-2018	10-12-2019	18-06-2018	02-01-2019	198	-
20	Ramasanpalle-Mangloor (Sangareddy-Nanded Pkg.- II)	HAM	09-05-2018	02-05-2019	07-07-2018	28-02-2019	236	-
21	Varanasi-Dagamagpur (Pkg.-I)	EPC	27-05-2019	09-08-2019	09-08-2019	10-06-2019	-	-

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
22	Chettikulam - Natham	EPC	06-04-2018	05-11-2018	05-11- 2018	24-08- 2018	-	-
23	Shamli – Muzaffarnagar (Pkg.-II)	EPC	23-06-2020	23-10-2020	23-10- 2020	20-10-2020	-	-
24	Suryapet–Khammam	HAM	14-06-2019	27-12-2019	12-08-2019	22-11-2019	102	-
25	Anandapuram-Pendurthi-Anakapalli	HAM	13-04-2018	04-01-2019	12-06-2018	08-03-2019	269	63
26	Bihar/Jharkhand Border (Chordaha)-Gorhar	EPC	15-02-2018	03-06-2019	03-06- 2019	11-07- 2019	38	38
27	Chakeri-Allahabad	HAM	25-04-2018	12-01-2019	24-06-2018	21-08-2019	423	221
28	Dwarka Expressway (Pkg.-I)	EPC	31-12-2018	24-09-2020	24-09-2020	24-11-2020	61	61
29	Dwarka Expressway (Pkg.-III)	EPC	23-10-2018	29-11-2018	29-11-2018	05-12-2018	6	6
30	Dwarka Expressway (Pkg.-IV)	EPC	23-10-2018	05-12-2018	05-12-2018	03-12-2018	-	-
31	Gorhar-Khairatunda (Pkg.-I)	HAM	27-04-2018	19-07-2019	25-06- 2018	06-11- 2019	499	110

Report No.19 of 2023

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
32	Gundugolanu-Devarapalli-Kuvvuru	HAM	26-04-2018	22-10-2018	24-06-2018	04-10-2018	102	-
33	Lucknow Ring Road (Pkg.- I)	EPC	18-11-2019	07-02-2020	27-11-2019	04-12-2018	-	-
34	Lucknow Ring Road (Pkg.- II)	EPC	05-09-2018	09-12-2018	04-10- 2018	04-12-2018	61	-
35	Lucknow Ring Road (Pkg.-IIIB)	EPC	23-01-2017	01-08-2017	07-02-2017	10-10-2017	245	70
36	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	HAM	28-02-2019	19-09-2019	28-04-2019	25-06-2019	58	-
37	Varanasi Ring Road (Pkg.- I)	EPC	21-08-2018	15-09-2019	20-09-2018	04-10-2019	379	19
38	Varanasi Ring Road (Pkg.- II)	EPC	24-08-2018	15-02-2019	23-09-2018	04-10-2019	376	231
39	Belakeri Port – Kumta -Sirsi Road	EPC	05-04-2018	07-12-2020	07-12-2020	05-04-2018	-	-
40	Khajuwala- Poogal-Bap	HAM	28-09-2018	22-05-2019	26-11-2018	04-10-2019	312	135
41	Munabao- Tanot	HAM	08-06-2018	01-01-2019	06-08-2018	20-06-2019	318	170
42	Delhi-Meerut Expressway (Pkg.- IV)	EPC	11-01-2018	27-02-2018	27-02-2018	26-03-2018	27	27

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
43	Delhi--Vadodara Expressway (Pkg.-1)	EPC	11-07-2019	13-09-2019	20-07-2019 ²⁴⁵	18-09-2019	60	5
44	Delhi-Vadodara Expressway (Pkg.-2)	EPC	11-07-2019	13-09-2019	20-07-2019	18-09-2019	60	5
45	Delhi-Vadodara Expressway (Pkg.-9)	EPC	22-07-2020	18-12-2020	31-07-2020	05-10-2020	66	-
46	Delhi-Vadodara Expressway (Pkg.-18)	EPC	13-11-2019	07-02-2020	22-11-2019	25-02-2020	95	18
47	Vadodara-Mumbai Expressway (Phase IA-Pkg.-I)	HAM	09-05-2018	18-01-2019	07-07-2018	27-09-2018	82	-
48	Vadodara-Mumbai Expressway (Phase IA-Pkg.-II)	HAM	25-05-2018	31-01-2019	23-07-2018	27-09-2018	66	-
49	Vadodara-Mumbai Expressway (Phase IA -Pkg.-V)	HAM	10-05-2018	01-11-2019	08-07-2018	20-11-2018	135	-

²⁴⁵ Four packages of Delhi- Vadodara and two Packages of Kohima-Jessami were new EPC agreements.

Report No.19 of 2023

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
50	Balance work of Tindivanam-Krishnagiri	Item Rate	29-07-2019	04-11-2019	04-11-2019	17-09-2019	-	-
51	Balance work of Barasat-Krishnagar	EPC	20-05-2020	31-08-2020	30-05-2020	28-09-2020	121	28
52	Bareilly - Goharganj	EPC	20-04-2016	10-06-2017	05-05-2016	22-07-2016	78	-
53	Barhi-Koderma	EPC	26-02-2019	18-11-2019	18-11- 2019	01-07-2020	226	226
54	Duburi-Chandikhole (Pkg.-III)	EPC	03-01-2019	11-02-2020	11-02-2020	11-12-2019	-	-
55	Ghospukur-Salsalabari (Pkg.-IIA)	EPC	12-04-2018	21-01-2019	21-01-2019	18-12-2019	331	331
56	Goharganj - Bhopal	EPC	07-12-2017	07-02-2018	07-02-2018	22-07-2016	-	-
57	Jabalpur - Hiran River (Pkg.-I)	EPC	19-12-2017	23-01-2018	23-01-2018	28-07-2016	-	-
58	Kallagam - Meensurutti	HAM	24-04-2018	23-04-2019	23-06- 2018	04-10- 2018	103	-
59	Koida-Rajamunda (Pkg.-II)	EPC	20-02-2018	08-05-2018	08-05- 2018	22-10-2018	167	167
60	Maheshkhunt-Saharsa-Purnea (Pkg.-I)	EPC	23-01-2018	20-12-2019	20-12- 2019	07-02-2018	-	-

S.No.	Name of the project	Mode of execution	Date of agreement	Appointed date	Last date of appointment of authority's engineer/ independent engineer as per agreement terms	Actual date of appointment of authority's engineer/ independent engineer	Delay (in days)	Days in excess from appointed date
61	Majhauri- Charout	EPC	27-11-2018	05-11-2019	05-11- 2019	11-12- 2018	-	-
62	Purulia (JHR Border)-Balrampur-Chandil	EPC	05-03-2019	12-12-2019	12-12-2019	12-03-2020	91	91
63	Solapur-Bijapur	BOT (Toll)	14-12-2017	26-10-2018	13-03-2018	19-07-2019	493	266
64	Tumkur-Shivamogga (Pkg.-I)	HAM	20-04-2018	15-10-2019	18-06-2018	26-12-2018	191	-
65	Tumkur-Shivamogga (Pkg.-II)	HAM	20-04-2018	15-10-2019	18-06-2018	28-12-2018	193	-

Annexure 13 (Reference in para 6.6.3)**Details of appointment of safety consultant**

S. No.	Name of project	Mode of construction	Appointed date	Date of appointment of safety consultant	Delay in appointment of safety consultant from appointed date
1	Balance work of Bareilly-Sitapur	Item rate	17-12-2019	Not appointed	---
2	Bangalore-Nidagatta(Pkg.-I)	HAM	14-05-2019	Not appointed	---
3	Bellary-Byrapura	HAM	24-10-2019	18-01-2021	452
4	Chittor-Mallavaram	HAM	08-01-2019	27-11-2020	689
5	Hapur Bypass-Moradabad	BOT (Toll)	28-05-2019	Not appointed	---
6	Kohima-Jessami (Pkg.-II)	EPC	01-07-2020	Not appointed ²⁴⁶	---
7	Kohima-Jessami (Pkg.-III)	EPC	01-07-2020	Not appointed ²⁴⁷	---
8	Kozhikhode Bypass	HAM	22-02-2021	23-09-2021	213
9	Mangloor - Telangana	HAM	12-04-2019	Not appointed	---

²⁴⁶ Though contractor claimed of appointing safety consultant, however, as per management, inspite it being an EPC agreement, neither any safety audit report submitted till date nor any certificate submitted by contractor in regard to incorporation of safety consultant's recommendation in design of project while the designs of project has already been finalised and project has achieved 31.03 per cent physical progress. Hence, Audit has considered that effectively no safety consultant has been appointed in the project.

²⁴⁷ Though contractor claimed of appointing safety consultant, however, as per management, inspite it being an EPC agreement, neither any safety audit report submitted till date nor any certificate submitted by contractor in regard to incorporation of safety consultant's recommendation in design of project while the designs of project has already been finalised and project has achieved 13.48 per cent physical progress. Hence, Audit has considered that effectively no safety consultant has been appointed in the project.

S. No.	Name of project	Mode of construction	Appointed date	Date of appointment of safety consultant	Delay in appointment of safety consultant from appointed date
	Maharashtra Border				
10	Manu-Lalchara (Manu-Simlung Pkg.-I)	EPC	15-07-2020	17-12-2020	155
11	Medsi-Washim	EPC	25-10-2019	25-11-2019	31
12	Mohol-Wakhri (Pkg.-I)	EPC	31-01-2020	07-08-2020	189
13	Nidagatta-Mysore (Pkg.-II)	HAM	10-12-2019	Not appointed	---
14	Ramsanpalle-Mangloor (Sangareddy-Nanded Pkg.- II)	HAM	02-05-2019	Not appointed	---
15	Chettikulam - Natham	EPC	05-11-2018	30-11-2018	25
16	Suryapet–Khammam	EPC	27-12-2019	02-09-2020	250
17	Anandapuram-Pendurthi-Anakapalli	HAM	04-01-2019	30-09-2020	635
18	Chakeri-Allahabad	HAM	12-01-2019	11-02-2021	761
19	Gorhar-Khairatunda (Pkg.-I)	EPC	19-07-2019	Not appointed	---
20	Gundugolanu-Devarapalli-Kovvuru	HAM	22-10-2018	03-09-2020	682

Report No.19 of 2023

S. No.	Name of project	Mode of construction	Appointed date	Date of appointment of safety consultant	Delay in appointment of safety consultant from appointed date
21	Lucknow Ring Road (Pkg.- I)	EPC	07-02-2020	18-05-2020	101
22	Lucknow Ring Road (Pkg.- II)	EPC	09-12-2018	07-05-2019	149
23	Paniyala Mor-Narnaul Bypass-Pacheri Kalan (Pkg.-I)	HAM	19-09-2019	12-06-2020	267
24	Varanasi Ring Road (Pkg.- I)	EPC	15-09-2019	12-12-2019	88
25	Varanasi Ring Road (Pkg.- II)	EPC	15-02-2019	05-11-2019	263
26	Belakeri Port-Kumta-Sirsi Road	EPC	07-12-2020	Not appointed	---
27	Munabao-Tanot	HAM	01-01-2019	Not appointed	---
28	Khajuwala-Poogal-Bap	HAM	22-05-2019	Not appointed	---
29	Vadodara-Mumbai Expressway (Phase IA – Pkg.- I)	HAM	18-01-2019	Not appointed	---
30	Vadodara-Mumbai Expressway (Phase IA – Pkg.- II)	HAM	31-01-2019	Not appointed	---
31	Vadodara-Mumbai Expressway (Phase IA – Pkg.- V)	HAM	01-11-2019	Not appointed	---

S. No.	Name of project	Mode of construction	Appointed date	Date of appointment of safety consultant	Delay in appointment of safety consultant from appointed date
32	Balance work of Tindivanam-Krishnagiri	Item Rate	04-11-2019	Not appointed	---
33	Balance work of Barasat-Krishnagar	EPC	31-08-2020	29-09-2020	29
34	Barhi-Koderma.	EPC	18-11-2020	08-01-2021	51
35	Duburi-Chandikhole (Pkg.-III)	EPC	11-02-2020	25-09-2020	227
36	Kallagam - Meensurutti	HAM	23-04-2019	Not appointed	---
37	Koida-Rajamunda (Pkg.-II)	EPC	08-05-2018	08-08-2018	92
38	Majhauli-Charout	EPC	05-11-2019	21-02-2020	108
39	Solapur-Bijapur	BOT (Toll)	26-10-2018	Not appointed	---
40	Tumkur-Shivamogga (Pkg.-I)	HAM	15-10-2019	16-01-2021	459
41	Tumkur-Shivamogga (Pkg.-II)	HAM	15-10-2019	Not Appointed	---

Annexure 14 (Reference in para 6.9.1)**Pavement design adopted for Paniyala Mor-Narnaul Bypass -Pacheri Kalan (Pkg.-I)**

S. No.	Design Chainage	Pavement design	Length LHS (in meter)	Length RHS (in meter)	Remarks
1	0.000 to 1.000	Rigid	1,000	0	NH-148B
2	0.000 to 0.600	Flexible	0	600	
3	0.600 to 1.000	Rigid	0	400	
4	1.000 to 3.400	Rigid	2,400	2,400	
5	3.400 to 3.890	Flexible	490	490	
6	3.890 to 4.600	Rigid	710	710	
7	4.600 to 5.600	Flexible	1,000	1,000	
8	5.600 to 9.700	Rigid	4,100	4,100	
9	9.700 to 11.100	Flexible	1,400	1,400	
10	11.100 to 12.500	Rigid	1,400	1,400	
11	12.500 to 13.500	Flexible	1,000	1,000	
12	13.500 to 15.700	Rigid	2,200	2,200	
13	15.700 to 17.850	Flexible	2,150	2,150	
14	17.850 to 19.700	Rigid	1,850	1,850	
15	19.700 to 20.700	Flexible	1,000	1,000	
16	20.700 to 24.000	Rigid	3,300	3,300	
17	24.000 to 25.000	Flexible	1,000	1,000	
18	25.000 to 28.000	Rigid	3,000	3,000	
19	28.000 to 28.400	Flexible	400	400	
20	28.400 to 31.240	Rigid	2,840	2,840	
21	0.000 to 2.760	Rigid	2,760	2,760	Link Road
22	0.000 to 11.300	Flexible	11,300	11,300	NH-11

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