सत्यमेव जयते

Report of the Comptroller and Auditor General of India

Performance Audit on Construction and Maintenance of Roads by State Highways Department for the year ended March 2021

SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Tamil Nadu

Report No. 11 of the year 2022

Report of the
Comptroller and Auditor General of India

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PREFACE

This Report of the Comptroller and Auditor General of India for the year ended 31 March 2021 has been prepared for submission to the Governor of Tamil Nadu under Article 151(2) of the Constitution of India for being placed in the State Legislature.

This Report covering the period 2016-21 contains the results of Performance Audit on 'Construction and Maintenance of Roads by State Highways Department'.

The audit was conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

EXECUTIVE SUMMARY

Executive Summary

Why did we take up the audit?

Road network plays a vital role in the transportation of agricultural products, growth of industries and supports socio economic growth. Highways Department of Government of Tamil Nadu is the custodian of 65,422 km length of roads in the State. The Department develops infrastructure facilities to provide the end user with a transportation system and is among the top five Departments in terms of expenditure.

How did we conduct the audit?

The Performance Audit was conducted from October 2021 to March 2022 covering the period 2016-2021 to assess the comprehensiveness of planning for project formulations; adequacy and timely availability of funds for the sanctioned projects and their economical utilisation; effectiveness of e-procurement system of award of contracts and to ensure the achievement of intended objectives of the Department. Besides, scrutiny of records in the selected Divisions, e-procurement data was analysed and joint inspection of roads was undertaken with the departmental officials by gathering photographic evidence.

Main audit conclusions

State Highways Authority for upgradation of State Highway to global standards through leveraging the Public Sector outlays with Private Sector financing was yet to be constituted. The upgradation of Major District and Other District Roads as envisaged in strategic plan document to facilitate easy movement of traffic remained incomplete. There was no time-bound action plan for permanent rectification of identified black spots to reduce accidents. Road stretches were selected for widening and strengthening without adequate justification and renewal works were not sanctioned. Department did not have details of the road boundaries to plan for widening of roads to cater to the increasing traffic.

Government did not sanction any funds in the Budget for execution of spill over woks during the five year period and the field offices diverted the funds sanctioned for new works to execute spill-over works in violation of Budget Manual. The Department did not fully utilise the allocated funds and ₹ 3,598.39 crore was surrendered during 2016-20. The percentage of fund allocation for roads under Scheduled Castes Sub-Plan declined during 2016-21 and due weightage was not given to districts with considerable SC population.

Government implemented e-procurement to finalise the tenders in a fair manner without any favour besides ensuring competitive bidding. Department did not enable the features for evaluation and finalisation of tenders, payment of online EMD in e-procurement portal. The data analysis revealed that contractors uploaded EMD documents online but failed to furnish physical documents due to which those bids were rejected, and tenders were finalised without competitive bidding. Contractors uploaded expired and same EMD document for different

works in the system without being identified. Some contractors colluded with each other and submitted bids from the same IP address so that one among them was awarded the work which denied fair and competitive bidding. The bids were also submitted by bidders using departmental computer systems.

As per Article 103.16 of Tamil Nadu Highways Manual Vol-I, the bidder should be disqualified, if more than one tender for the same work, was received from an individual, firm or company, in which any one of them have interest, in any capacity as individual, firm or company. The data relating to the award of e-tenders and the registration status of contractors with the Highways Department was cross verified with the master data of companies available in the website of Ministry of Corporate Affairs, GOI to ascertain the details of Directors/Partners. Such cross verification revealed that the contractors with business interest participated in 20 tenders in which no other bids were received from others. The value of such 16 contracts were worth ₹ 15.29 crore. Similarly, cartel formation took place among the family members and contract was awarded to the interested parties. The value of three such contract was worth ₹ 16.32 crore.

It was also seen that there were instances of violation of segregation of duties. An analysis of the data pertaining to the segregation of duties of the departmental officials in the software revealed that officials in cadre of Typist, Junior Engineers were assigned the role as Procurement Officer to publish, open and evaluate tenders in the portal. Officials in the cadre of Junior Engineer to SE were assigned all the five roles from Procurement Admin to evaluation of procurement besides generation of reports.

There was no consolidated database of registered contractors and their status of registration. There were cases of delay in issue of work orders and delay in execution of agreement leading to undue benefit to the contractor. Instances of adoption of incorrect test results leading to incorrect preparation of estimates and avoidable expenditure were noticed. Majority of the contractors failed to take insurance cover for the completed works as envisaged in Tender Rules leading to undue benefit to them. Department did not ensure maintenance of roads in good condition by the contractor during maintenance period. The target of reducing the number of deaths and injuries from road accidents as envisaged in the Sustainable Development Goals of United Nations was not achieved. During execution of road works, furnace oil was used in the Hot Mix Plants instead of diesel in violation of the statutory requirements of TNPCB which caused atmospheric pollution.

The Department did not conduct periodical inspections of vacant lands to prevent encroachments and eviction of identified encroachments was minimal. Joint inspection in two Divisions revealed reduced road thickness as compared to agreement involving expenditure of ₹ 3.99 crore. Joint inspection revealed that the roads had potholes, absence of berms, reduced carriage way width, drains without outlet indicating inadequate maintenance.

There were gaps in monitoring and internal control *viz.*, delays in finalisation of completion reports and forwarding of Budget proposals to the Finance

Department without the recommendations of Head of the Department and Head of the Administrative Department. Department used the Manual revised 35 years back and updation of the Manual was pending completion. The field officials did not update the road chart data to plan for improvements of road stretches on priority.

What do we recommend?

We recommend the following to the Government of Tamil Nadu:

i. Ensure early formation of the Tamil Nadu State Highways Authority to source the Private Sector financing and complete upgradation of all the roads as envisaged in the strategic plan document to facilitate easy movement of traffic.

ii. Ensure complete rectification of the identified black spots on priority to provide safe commuting by the general public. Create database of the road boundaries in the State in a time bound manner to plan and complete widening of roads in needy places within the Highway lands.

iii. Full utilisation of the allotted funds needs to be ensured to complete the sanctioned works and allot funds in the Budget for executing spill-over works to avoid diversion of funds by the field offices besides fixing responsibility on the officials responsible for diversion of funds.

iv. Consider fixing responsibility on the officials for non-remittance of testing charges to Government.

v. Ensure sufficient allocation of funds under SCSP component and fund allocation to the districts especially in districts like Coimbatore, Perambalur and Sivagangai where the percentage of SC population is high.

vi. Conduct an independent enquiry to identify gaps in the e-procurement system which facilitates misuse by the contractors and departmental officials in the tendering process. Subsequently, the available system features may be enabled or rectified so as to flag the instances of collusion and cartel formation among the contractors.

vii. Conduct an enquiry and initiate penal action against contractors who obtained contracts by forming cartels among them.

viii. Obtain an undertaking from the bidders that no related parties are participants in the same tender. It is also recommended that the condition of cancellation of tenders may be included in the tender document for violation of the undertaking.

ix. Conduct an enquiry and initiate disciplinary action on the departmental officials for allowing the use of departmental system for filing the bids.

x. Ensure that the work orders are issued and agreements are executed within the time period prescribed in the Government orders to avoid time and

cost overrun. Action may be initiated against the officials for the delayed finalisation of work orders and agreements.

xi. Ensure that instructions on taking risk insurance policy as stipulated in the agreement conditions is strictly followed by field officials to avoid additional expenditure to State exchequer.

xii. Ensure completion of works within the financial year of sanction and impose Liquidated Damages milestone-wise as per the Manual provisions to avoid delayed execution of work.

xiii. Initiate action against the officials for adoption of incorrect test results and fix responsibility on the officials responsible for not adhering to the Rule provisions for debarment of contractors.

xiv. Take steps to ensure that roads are available in good condition at the time of takeover from PBMC contractors after completion of maintenance period. Suitable action may be taken by fixing responsibility on the officials responsible for incurring additional expenditure to Government.

xv. Strengthen the road safety programme to reduce the fatalities and injuries due to road accidents to achieve the Sustainable Development Goal target.

xvi. Ensure that the guidelines of TNPCB on usage of diesel in Hot Mix Plants to reduce pollution is enforced strictly.

xvii. Conduct inspections to identify encroachments in the Highways lands and evict the identified encroachments early.

xviii. Ensure that the works are completed in accordance with the specification of the agreement including thickness of the road and fix the responsibility on the officials responsible for non-compliance.

xix. Maintain roads without hindrance of open well, potholes and inadequate berms on priority to provide risk free travel by general public.

xx. Monitor adherence of instructions by the Divisional Officers in finalisation of completion reports of works for speedy finalisation of Revised Administrative Sanction.

xxi. Ensure that budget proposals are forwarded through the DG who is the Administrative head of the Department so as to enable the DG to exercise effective budgetary control.

xxii. Ensure completion of the Departmental manual updation early for dissemination of latest changes to the field officials

xxiii. Ensure updation of road chart data for effective internal control and prioritisation of road maintenance works.

CHAPTER I

INTRODUCTION

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INTRODUCTION

1.1 Introduction

Road network plays a vital role of transport which contributes towards the holistic development of nation. The road transport system contributes to the better transportation of agricultural products, growth of industries and supports socio economic growth. Highways Department of Government of Tamil Nadu (GoTN) is the custodian of the road assets in the State. The Department develops infrastructure facilities to provide the end user with a transportation system that caters to their needs.

The total length of surfaced roads in the State as of March 2021 is 2.70 lakh km which are maintained by Highways Department, Local Bodies and other Departments. Highways Department (HD) maintains 65,422 km out of 2.70 lakh km (24 *per cent*) length of roads.

Category of roads maintained by the Department

- National Highways (NH) connect State capitals, major ports, large industrial areas and tourist centres. Construction and maintenance of these roads are carried out by NH wing of the State Government with Government of India (GOI) funds.
- State Highways (SH) roads link district headquarters, important cities and towns within the State and connects NH roads. Construction and maintenance of these roads are carried out by the wings of HD with State funds.
- Major District Roads (MDR) connect production and marketing centres with SH or NH and connects towns and villages with district headquarters. Widening / strengthening and maintenance of these roads are carried out by the wings of HD with State funds.
- Other District Roads (ODR) connect rural areas of production and marketing centres, education and health centres with taluk headquarters. Widening / strengthening and maintenance of these roads are carried out by the wings of HD with State funds.

The position of length of roads under different categories under the control of HD, during the five year period 2016-21 is given in **Table 1.1**:

Table 1.1 - Year-wise position of length of roads

(in km)

S. No	Category of roads	2016-17	2017-18	2018-19	2019-20	2020-21
1	National Highways*	1,985	2,039	1,900	1,900	1,472
2	State Highways	12,095	11,830	11,169	11,169	11,275
3	Major District Roads	11,628	11,638	11,612	11,612	11,623
4	Other District Roads	33,751	34,858	36,624	36,624	41,052
	Total	**59,459**	**60,365**	**61,305**	**61,305**	**65,422**

(Source: Policy Notes of Highways Department) *Excluding NH roads maintained by National Highway Authority of India (NHAI)).

Information Technology (IT) Initiatives in the Department

The Information and Communication Technology Strategy for the Department was formulated in January 2008 with a vision to provide a safe, efficient and environment friendly road network that contributes to the sustainable economic development, social well-being of the State. The implementation of integrated IT systems for the HD was planned to create advanced technical know-how for better and most cost effective road maintenance and management. For effectively managing the maintenance of road network and related infrastructure in Tamil Nadu e-pathai[1] which comprised of Road Maintenance and Management System (RMMS) and Geographical Information System was established by Highways Department. RMMS is a system which captures the data *viz.*, Road chart, road condition, the results of Benkelman Beam Deflection (BBD) test, California Bearing Ratio (CBR) test, traffic census, Axle Load Survey data etc., for managing a road system effectively at minimum cost and maximum efficiency.

With an objective to enhance the efficiency of the project management processes and to speed up the implementation of projects, e-tendering system for award of contracts was adopted (February 2016) and implemented from August 2019.

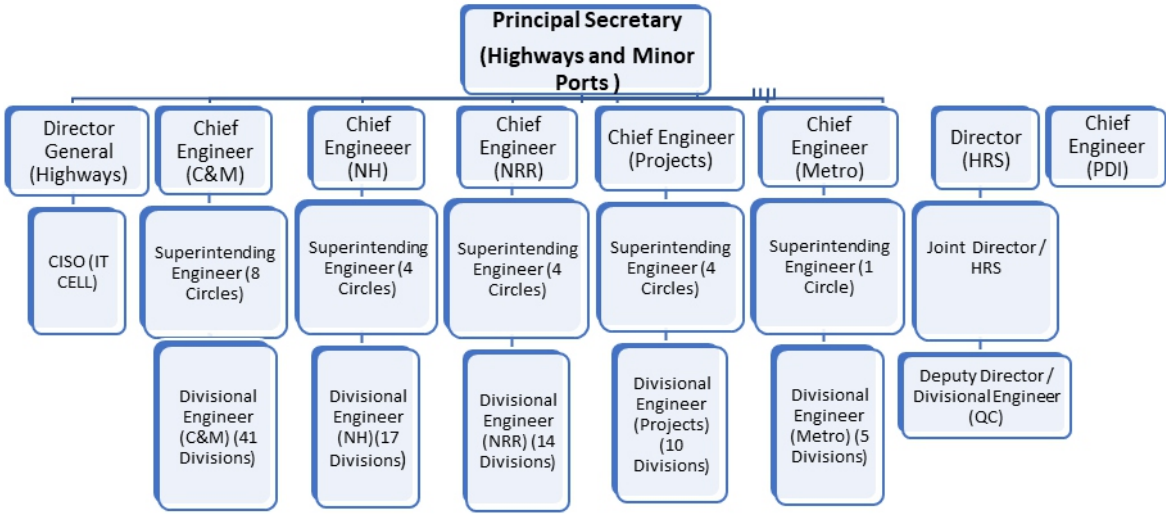
1.2 Organisational structure

Principal Secretary to Government, Highways and Minor Ports Department is the administrative head at Government level. Director General (Highways) (DG) is responsible for administration, planning, quality control and co-ordinates the work among all wings of HD besides functioning as the Chairperson of the technical committees like the Commissionerate of Tenders, Board of Engineers, etc. There are five wings[2] for execution of road projects besides Quality Assurance and Research Wing each headed by Chief Engineer/Director. Under each Chief Engineer (CE), there are Superintending Engineers (SE) heading the Circles and Divisional Engineers (DE) managing the Divisions. The organisational structure of the Department is depicted in **Chart 1.1**.

[1] Electronic project, administration, traffic, Highway assets and Information Management system.

[2] (i) Construction and Maintenance (ii) National Highways (iii) National Bank for Agriculture and Rural Development (NABARD) and Rural Roads, (iv) Projects and (v) Metro.

Chart 1.1: Organisational structure of Highways Department



(Source: Details furnished by Highways Department)

- CE, Construction and Maintenace (C&M) is the custodian of the Roads[3] under the jurisdiction of State Highways except National Highways. The Department carried out all the construction and maintenance of State road works utilising the State funds under the scheme of Comprehensive Road Infrastructure Development Programme (CRIDP).
- CE (NH) is responsible for the maintenance of National Highways roads entrusted to State Highways Department.

1.3 Audit objectives

Performance Audit was conducted to assess whether:

- planning for project formulations was comprehensive and effectively prioritised,
- financial management ensured adequate and timely availability of funds for the sanctioned projects and their economical utilisation,
- the IT initiatives relating to the finalisation of tenders ensured fair, transparent and competitive bidding,
- programme management of construction and maintenance of roads were executed economically, efficiently and the intended objectives were achieved and
- internal control mechanism was adequate and effective.

[3] The externally aided projects and other specialised projects are executed through wings *viz.*, (i) Tamil Nadu Road Sector Project (TNRSP), (ii) Chennai – Kanyakumari Industrial Corridor Project (CKICP), (iii) Tamil Nadu Road Development Company (TNRDC) and (iv) Tamil Nadu Road Infrastructure Development Corporation (TNRIDC) which are headed by Project Directors.

1.4 Audit criteria

Audit criteria for the Performance Audit were sourced from:

- Annual Policy Note of Highways Department;
- Strategic Plan for Infrastructure Development in Tamil Nadu and XII Five Year Plan (2012-2017);
- Tamil Nadu Highways Act, 2001, The Tamil Nadu Transparency in Tenders Act, 1998 and Rules, 2000;
- Tamil Nadu e-security policy 2010 and Cyber Security Policy 2020;
- MoRTH (Ministry of Road Transport and Highways) / Indian Road Congress (IRC) specifications;
- Tamil Nadu Financial Code and Budget Manual, Tamil Nadu Highways Departmental Codes/ Manuals and Departmental Schedule of Rates and Circulars issued by the Government / Chief Engineers from time to time.

1.5 Scope of Audit and methodology

The Performance Audit was conducted from October 2021 to March 2022 covering the period from 2016-2017 to 2020-2021.

The sample selection of road works for the Performance Audit in the five wings of the Department are detailed in **Table 1.2.**

Table 1.2: Sample selection

Sl. No.	Wing	Sample selection
1	NABARD and Rural Roads (NRR)	Planning aspects of upgradation of rural roads to ODR standard at Head Office.
2	Construction and Maintenance (C&M)	Eight out of 41 divisions by selecting one division in each of the eight[4] Circles in the State based on total length of road and total expenditure incurred during 2016-21. Selection of atleast 50 works[5] by covering minimum 20 *per cent* of the total expenditure under CRIDP scheme. Selection of 10 *per cent*[6] of the maintenance works subject to maximum of 50 works. In addition, Performance Based Maintenance Contract (PBMC) works executed in Pollachi Division was also selected.
3	National Highways (NH).	Two[7] out of 17 divisions by selecting two out of four Circles which covered 10 *per cent* of the total expenditure incurred by the two Circles.
4	Projects	Test checked one out of two works, which was executed by Salem Division.
5	Metro	Out of three works, one work executed by CMDP-I Division was selected.
6	Highways Research Station (HRS)	Effectiveness of the Quality control process of the selected road works in the eight sampled C&M divisions was checked.

[4] Chennai (Tiruvallur Division), Coimbatore (Coimbatore Division), Madurai (Sivagangai Division), Salem (Salem Division), Tirunelveli (Thoothukudi Division), Tiruppur (Karur Division), Trichy (Thanjavur Division) and Villupuram (Perambalur Division).

[5] Improvements to Riding Quality – 15 *per cent*, Special Component Plan – five *per cent* and others 80 *per cent* in the ratio of 40, 30 and 30 to SH, MDR and ODR respectively.

[6] In the ratio of 40, 30 and 30 to SH, MDR and ODR respectively.

[7] Chennai (Villupuram Division) and Salem (Coimbatore Division).

In addition, records at the Government Secretariat, Highways Department, Offices of the Director General, CEs, field offices of the selected Circles/Divisions and the Regional Quality Control Laboratories were scrutinised. The audit observations raised during local audits of the Department were also included in this report wherever found appropriate. Joint inspection of roads in the selected divisions was undertaken with the departmental officials to assess the pavement conditions of the roads and structures, encroachments, availability of documented right of way by gathering photographic evidence.

Data dump pertaining to RMMS and login credentials to view the IT applications *viz.*, e-pathai were obtained (August 2021) and analysed using CAATs[8] for the period from April 2016 to March 2021. The following data base were analysed:

- The Postgresql[9] data dump pertaining to the e-tenders of the six[10]wings of HD which is available in the e-procurement portal for the period from August 2019 to August 2021.
- Data pertaining to NH Wing is maintained by Central Procurement Portal and data for the period from April 2016 to August 2021.
- The MIS reports pertaining to e-tenders of two wings[11] of HD.

The methodology adopted included analysis of the data dump using Postgresql queries and cross verification with the MIS Reports using Login Credentials in the e-procurement portal with reference to the Contractors User Manual and Act/Rule provisions.

Audit scope, coverage, criteria and methodology were discussed in the Entry Conference held on 04 October 2021 with the Principal Secretary to Government. The Exit Conference was held on 10 May 2022 with the Principal Secretary to Government, Highways and Minor Ports Department wherein the observations were discussed. The views expressed at the meeting and the replies furnished by the Government (August 2022) were considered and duly incorporated in the relevant paragraphs of the Report.

1.6 Acknowledgement

We acknowledge the co-operation extended by the Highways Department in providing the records and information for smooth conduct of Performance Audit.

8 Computer Assisted Auditing Techniques *viz.*, Microsoft excel.
9 Open source object-relational-data base system.
10 C&M, NRR, Projects, CKICP, Metro and TNRSP.
11 C&M and TNRSP.

CHAPTER II

PLANNING

CHAPTER II
PLANNING

Government planned formation of Tamil Nadu State Highways Authority for upgradation of State Highway to global standards through leveraging the Public Sector outlays with Private Sector financing. However, there was delay in constitution of the Authority. The upgradation of Major District and Other District Roads as envisaged in strategic plan document to facilitate easy movement of traffic remained incomplete. Time-bound action plan for permanent rectification of identified black spots to reduce accidents was not available. Selection of road stretches for widening and strengthening was made without adequate justification and there was huge pendency in sanction of renewal works which indicated inadequate planning in prioritisation and selection of road stretches. Department did not have details of the road boundaries to plan for widening of roads to cater to the increasing traffic.

2.1 Non-establishment of Tamil Nadu State Highways Authority

GoTN, ordered (November 2013) establishment of Tamil Nadu State Highways Authority to develop State Highways on par with National Highways by focusing on their formation, quality maintenance and management, as per global standards. By forming the authority, Government planned to accelerate the development and maintenance of the State Highways through leveraging Public Sector outlays with Private Sector financing over a period of five years. A draft Act prepared by the Department in December 2014 was returned by Government to analyse the system adopted in other States and the financial implications. Department after taking inputs from other States and other Departments of Government resubmitted the Draft Act in January 2017. Despite a lapse (March 2022) of nine years from sanction, the authority was yet to be constituted. Consequently, the envisaged objective of upgradation of State Highway to the level of global standards by utilising the Public Sector outlays with Private Sector financing was not even commenced.

Government admitted (August 2022) that the Tamil Nadu State Highways Authority was pending formulation due to delay in enactment of Tamil Nadu State Highways Authority Act.

Recommendation: Government may ensure early formation of the Tamil Nadu State Highways Authority to source the Private Sector financing.

2.2 Delay in upgradation of Major District Roads and Other District Roads

Strategic Plan for Infrastructure Development in Tamil Nadu (February 2014) envisaged the road map for infrastructure development by upgrading the various types of roads by 2020, to provide an impetus to industrial and agriculture goal and connectivity to towns and cities.

- The document targeted for widening all Single Lane (SL) and Intermediate Lane (IL) stetches of MDR roads into Double Lane (DL) roads for a length of 8,080 km to ensure smooth traffic and safety.

However, the Department completed only to an extent of 1,636 km (20 *per cent*) as of March 2021.

- As against the target of widening of 31,000 km of ODR from SL to IL to facilitate easy movement of traffic and prevent accidents, the achievement was only 4,138 km (13 *per cent*) as of March 2021.

The distribution of lane under MDR and ODR as of March 2021 is detailed in **Table 2.1.**

Table 2.1: Distribution of lane under MDR and ODR

(in km)

Sl. No.	Category	SL	IL	DL	ML	Total
1	MDR	315	6,241	4,669	398	11,623
2	ODR	33,069	6,567	1,328	88	41,052
Total		**33,384**	**12,808**	**5,997**	**486**	**52,675**

(Source: Details furnished by the Department)

- It may be seen that 33,069 out of 41,052 km of ODRs (81 *per cent*) continued to be single lane as of March 2021.

Thus, non-completion of planned stretch of single and intermediate lane MDRs to double lane and non-widening of ODRs resulted in non-achievement of the objective of facilitating easy movement of traffic and prevention of accidents.

Government stated (August 2022) that widening of roads were being taken up in phased manner considering the traffic intensity, necessity and availability of funds. It also assured to complete upgradation of these roads after the completion of existing schemes. However, the fact remains, that the objective of providing an impetus to industrial and agriculture goal, connectivity to towns and cities was not achieved as envisaged in the Strategic Plan.

Recommendation: Government may complete upgradation all the roads as envisaged in the strategic plan document to facilitate easy movement of traffic.

2.3 Shortfall in upgradation of Panchayat Roads

Government announced (2014-15) that important bus plying Local Body roads would be handed over to the HD for upgradation and reclassified as Other District Roads for maintenance. Government issued (August 2014) orders permitting the Rural Development and Panchayat Raj department to hand over the identified 7,964 km length of roads to HD. However, Audit noticed that the HD did not seek budget provision for upgradation of these roads during the financial years 2015-16 and 2016-17. The CE (NRR) identified 7,833 km of roads which were in most deteriorated condition and informed to Government (August 2017) for upgradation of these roads within three years at a cost of ₹ 3,348 crore from 2017-18.

The status of upgradation of Panchayat roads by HD during 2017-18 to 2019-20 are detailed in **Table 2.2**.

Table 2.2: Status of upgradation of Panchayat roads

(in km)

Sl. No.	Year	Road planned	Road sanctioned	Shortfall in Road Sanction (Percentage)
1	2017-18	2,430	1,419	1,011 (42)
2	2018-19	2,430	1,539	891 (37)
3	2019-20	2,973	1,904	1,069 (36)
Total		**7,833**	**4,862**	**2,971(38)**

(Source: Details furnished by the Department)

The shortfall in financial sanction by the GoTN for upgradation of Panchayat Road works during 2017-18 to 2019-20 ranged between 36 and 42 *per cent* which resulted in completion of 4,862 km out of 7,833 km stretch of Panchayat roads to ODR standards in March 2020 for maintenance by HD.

Thus, the department took three years even for submitting the proposal to Government which contributed to postponing the upgradation of Panchayat roads within the time frame.

Government stated (August 2022) that to avoid such shortfall in sanction, a Committee had been formed in January 2022 for upgradation of Panchayat roads. Government assured to complete the works at the earliest. However, the fact remains, that the identified Panchayat Roads which were in most deteriorated condition in 2017 itself were not upgraded even after completion of five years.

2.4 Shortfall in prioritisation of roads for renewal

A planned road network ensures regulated, uninterrupted and safe traffic flow for the efficient movement of people and goods. As the existing road surface is subjected to wear and tear due to continuous flow of vehicles, periodical maintenance of roads is essential for the uninterrupted and safe traffic flow in all seasons. The deterioration of the road is slowed down by proper and regular maintenance.

Highways Department maintains the road network in the State through periodical strengthening, widening and improvement works through various schemes *viz.*, Comprehensive Road Infrastructure Development Programme (CRIDP) including Improvements to Riding Quality of Roads Programme (IRQP), Central Road Fund (CRF), etc. CE (C&M) instructed (May 2016) that selection of roads for widening and strengthening works under CRIDP should be based on the condition of the road by prioritising roads with very poor/ poor condition. Despite the same, the condition of the road proposed for sanction under CRIDP was not documented. CE also instructed (April 2018) that at least 11,000 km of roads should be taken up for maintenance in each year as per renewal cycle[12].

The details of length of road available, renewal done in last five years, renewal due after the expiry of life cycle are shown in **Table 2.3**.

[12] The wearing surface of the roads is designed for a period of five years and thereafter the road stretch is due for renewal of wearing surface.

Table 2.3: Details of length of roads and renewal undertaken

(Length in km)

Year	Total length of road available	Renewal done in last five years	Renewal due after the expiry of life cycle	Renewal works sanctioned	Shortfall and percentage
2016-17	57,466	Details not available in the proposal		4,894	-
2017-18	57,474	32,810	24,664	6,182	18,482 (75)
2018-19	57,474	32,928	24,546	7,847	16,699 (68)
2019-20	60,100	50,860	9,240	6,854	2,386 (26)
2020-21	59,405	51,116	8,289	6,388	1,901 (23)
			Total	**32,165**	**39,468**

(Source: Details furnished by the Department)

It could be seen that the shortfall in prioritisation of roads due for renewal every year ranged between 23 and 75 *per cent* during 2017-18 to 2020-21. In this connection, it is pertinent to note that GoTN proposed a special drive for proper up keeping of roads under IRQP during 2018-19 by providing only wearing course instead of complete renewal work. Department completed 8,794 km of roads under IR

Further, the road stretches of 57,466 km as on 1 April 2016 has to be renewed during the five year period of 2016-17 to 2020-21 based on their renewal cycle. However, Department sanctioned renewal works for a length of 32,165 km (56 *per cent*) during 2016-21, which led to non-renewal of 25,301 km even after the due for renewal.

Audit noted that Department did not develop comprehensive plan to complete the renewal works of road stretches whose life cycle had expired to ensure smooth uninterrupted and safe traffic flow for the efficient movement of people and goods.

Thus, road stretches were selected for widening and strengthening without adequate documented justification regarding the poor condition of the road. Thus, the rationale for selection of roads for renewal was not kept transparent in the files. Considering the huge stretch of roads due for renewal, the adequacy of planning process for prioritisation and selection of road stretches which were in very poor condition could not be ensured by audit.

Government replied (August 2022) that the condition of road had been obtained from the field and most of the roads except ODRs were taken up for renewal once in five year cycle to maintain them in good condition. It stated that all roads could not be improved once in five years due to fund constraints. The reply is not tenable as the Department did not utilise the allotted funds under Budget Estimates as the savings increased from five *per cent* in 2016-17 to 22 *per cent* during 2019-20 as detailed in **Paragraph 3.1**. Further, the Department failed to seek the extra budget from the Government to complete the renewal cycle for uninterrupted and safe traffic flow for the efficient movement of people and goods.

2.5 Absence of time bound plan on rectification of black spots

The Annual Policy Document of Highways Department envisages that the identification, analysis and treatment of road accident black spots are regarded as one of the most effective approaches to mitigate road accidents. It is well established that considerable safety benefits may accrue from the application

of appropriate road engineering or traffic management measures at hazardous road locations.

The State of Tamil Nadu recorded the highest number of road accidents in the country. The State topped the All India Table for the most number of accidents and fatalities from 2016 to 2019 except for the year 2017. The Ministry of Road Transport and Highways (MoRTH), GOI identified black spots[13] periodically to reduce the road accidents and improve safety measures. The execution of the remedial measures including acquisition of land for removal of black spots should be taken up on priority and completed in minimum possible time.

The MoRTH identified 491 and 199 black spots during 2015-18 in the stretches of State Roads and National Highways roads respectively. Of the same, the rectification works were completed only for 184 and 79 spots till March 2022. The balance black spots to be rectified was 307 (63 *per cent*) and 120 (60 *per cent*) respectively even after three years of their identification. Department did not initiate the process of identification of black spots during 2019-21.

Thus, absence of time-bound plan to restore all the identified black spots to reduce the road accidents and stoppage of identification of black spots from 2019 onwards without any recorded reasons, resulted in inadequate safety to the road users in the State.

Government admitted (August 2022) that 297 works were pending rectification in C&M Wing and 98 permanent rectification works were pending in NH wing. It was also stated that MoRTH had not communicated any identified black spots subsequent to 2018. The reply is not tenable since HD also failed to identify black spots between 2019 to 2021 to mitigate road accidents as envisaged in the Annual Policy Document.

Recommendation: Government may complete rectification of the identified black spots on priority to provide safe commuting by the general public.

2.6 Absence of adequate documentation on Highways assets

Section 8 of the Tamil Nadu Highways Act, 2001 (Act), empowered the Divisional Engineer to fix Highway boundaries, boundary line or control line for the purpose of proposed construction.

Para 6.1 of IRC: 73-1980 stipulated the desirable road land width (also termed as Right of Way (ROW)) for various classes of roads to accommodate the roadway (carriage way and shoulders), side drains, etc. Section 14 of the Act envisages that the boundaries of the Highway can be demarcated by planting stones or other suitable marks all along the Highway in such a manner that the imaginary line adjoining such stones or marks shows the road boundary correctly. The desirable road land width for various classes of roads are detailed in **Table 2.4**.

[13] Road accident black spot is a stretch of Highway of about 500 m in which either five road accidents (involving fatalities/grievous injuries) or 10 fatalities occurred in three calendar years put together.

Table 2.4: Details of road land width for various classes

(In metre)

Sl No	Description	Plain and rolling		Mountainous and steep	
		Open area	Built-up area	Open area	Built-up area
1	State Highways	45	30	24	20
2	Major District Roads	25	20	18	15
3	Other District Roads	15	15	15	12
4	Village Roads	12	10	9	9

(Source: Details as available in IRC 73-1980)

Audit noticed during Joint Inspection (December 2021 and January 2022) and scrutiny of records that the test checked eight Divisional Offices did not have any documentation regarding the details of Highway boundaries and Right of Way stretch of the existing roads under their jurisdiction. Joint inspection of 117 road stretches[14] in these eight selected Divisions revealed that boundary stones were available in only two out of 117 stretches. Thus, Department did not have the details of the road boundaries to plan for widening of roads to cater to the increasing traffic.

In this regard, Audit noticed that GoTN accorded (October 2017) administrative sanction for ₹ 7.00 crore towards surveying, preparing Field Measurement Book (FMB) sketch, demarcation, providing boundary stones and digitising the Right of Way of roads in 13[15] divisions under CRIDP. Of the 13 Divisions, five[16] Divisions were test checked in audit and it was noticed that the work was completed in Tiruvallur Division but the work was not completed in four divisions even after a lapse of more than four years from sanction. The Divisions took 21 to 34 months for preparation of estimate and to accord technical sanctions for these works. Field officials stated that these works required special study for preparation of estimate.

Thus, non-conduct of special study about the prevailing technologies led to delayed finalisation of technical sanction which led to non-utilisation of the sanctioned amount. This indicated lack of adequate planning for undertaking works related to demarcation of Highway boundaries.

Government accepted (August 2022) that the Right of Way details were not available with the Department due to theft or relocation of boundary stones. It was also stated that the pilot project of preparing digital maps of Right of Way of 13 divisions would be approved early and uploaded in the website.

Recommendation: Government may create database of the road boundaries in the State in a time bound manner to plan and complete widening of roads in needy places within the Highway lands.

14 36 stretches in SH; 39 stretches in MDR and 42 in ODR.

15 Chennai City Roads, Coimbatore, Dindigul, Erode, Madurai, Salem, Thanjavur, Tirunelveli, Tiruppur, Tiruvallur, Trichy, Thoothukudi and Vellore.

16 Coimbatore, Salem, Thanjavur, Tiruvallur and Thoothukudi.

CHAPTER III

FINANCIAL MANAGEMENT

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FINANCIAL MANAGEMENT

Government did not sanction any funds in the Budget for execution of spill-over woks during the five year period and the field offices diverted the funds sanctioned for new works to execute spill-over works in violation of Budget Manual. The Department did not fully utilise the allocated funds for construction and maintenance of roads as ₹ 3,598.39 crore (13.89 per cent of the Budget Estimates) was surrendered during 2016-17 to 2019-20 which indicated imprudent financial management by Highways Department. The percentage of fund allocation under Scheduled Castes Sub-Plan to the outlay for roads declined from 7.12 to 1.87 per cent during 2016-21 and due weightage was not given to districts having more than 40 per cent of SC population while allocating funds.

3.1 Allotment of funds

The activities relating to the construction and maintenance of roads are undertaken utilising the funds provided by GoTN, GOI[17] and NABARD loan assistance, which are released to the field officials through State Budget. The details of allotment of funds under capital outlay through Budget Estimate (BE), Revised Estimate (RE), Final Modified Appropriation (FMA) and actual expenditure with resultant savings / excess for the period from 2016-17 to 2020-21 are given in **Table 3.1**.

Table 3.1: Allotment and expenditure under capital outlay

(₹ in crore)

Year	BE	RE	FMA	Expenditure	Savings (-) /excess (+) with respect to BE	Percentage of saving (-)/ excess(+)
2016-17	4,130.79	4,264.54	3,985.89	3,920.04	-210.75	-5.10
2017-18	5,075.56	5,057.24	4,873.48	4,640.33	-435.23	-8.58
2018-19	6,892.88	6,542.46	6,147.08	6,098.97	-793.91	-11.52
2019-20	9,803.81	8,052.92	7,692.34	7,645.31	-2,158.50	-22.02
Sub total	**25,903.04**	**23,917.16**	**22,698.79**	**22,304.65**	**-3,598.39**	**-13.89**
2020-21	10,164.31	10,991.09	10,883.24	10,745.08	+580.77*	+5.71
Total	**36,067.35**	**34,908.25**	**33,582.03**	**33,049.73**	**-3,017.62**	**-8.37**

(Source: Details furnished by the Department)

*** Excess expenditure of ₹ 1,596 crore due to execution of spill-over road works under Central Road Fund.**

It may be seen from the above that

- As discussed in **Paragraph 3.2,** the HD sent the proposals for ₹ 45,342 crore for State road works. However, Government allotted only ₹ 36,067 crore. Despite the same the Department did not fully utilise the funds sanctioned for construction and maintenance of

[17] The expenditure relating to maintenance works of NH roads which were maintained by State Government was not included due to operation of combined head of account for roads and bridges.

roads. Therefore, the savings to the Budget Estimates increased from five *per cent* in 2016-17 to 22 *per cent* during 2019-20.

- Due to non-utilisation of the allocated funds, Department surrendered ₹ 3,598.39 crore which is 13.89 *per cent* of the total Budget Estimates, during 2016-17 to 2019-20. Audit noted that on the one hand the Department could not take up regular strengthening of roads as per the renewal cycle due to want of funds as discussed in **Paragraph 2.4** but on the other hand the field offices diverted the sanctioned appropriation pertaining to new works for execution of spill-over works due to paucity of funds as discussed in **Paragraph 3.2**. Despite the paucity of funds, project also suffered due to non-utilisation of allocated funds which shows imprudent financial management.
- Audit also noticed that there was persistent savings for five years in respect of eight items of work[18] and the percentage of savings ranged between 20 and 100 *per cent*.

Government stated (August 2022) that the savings in expenditure was due to delay in finalisation of tenders, acquisition of lands, shifting of utilities and imposition of model code of conduct. It assured that stringent action is being taken to avoid surrender of funds in future. The reply is not tenable, since the Department utilised the subsequent year's sanction for these incomplete works.

Recommendation: Government may ensure full utilisation of the allotted funds to complete the sanctioned works.

3.2 Non-adherence of the Budget Manual provisions

GoTN introduced (2004-05) Comprehensive Road Infrastructure Development Programme (CRIDP) to cater the infrastructure needs and for widening, improving and strengthening of the existing roads.

Tamil Nadu Budget Manual (Para 178) specified that expenditure incurred without allotment of funds as a Budgetary irregularity.

A proposal for requirement of funds for construction and improvements of new road works and for completion of spill-over works under CRIDP scheme is forwarded every year by CE (C&M) to GoTN. Based on the availability of the funds, GoTN intimates the Bank of Sanction[19] (BOS) with instructions to revise the proposals for the BOS. Based on the BOS, CE (C&M) prepared workwise modified proposals and GoTN accorded Administrative Sanction (AS) for the execution of works. The details of the initial and revised proposals and sanction of works based on modified proposals for 2016-17 to 2020-21 are given in **Table 3.2**.

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[18] City Traffic Improvement works (it ranges from five *per cent* to 81 *per cent*), Investigation/Estimation of project work (it ranges from eight *per cent* to 39 *per cent*), Special project for attending Road Safety (it ranges from five *per cent* to 52 *per cent*) and Acquisition of lands for Bye Passes (it ranges from 29 *per cent* to 100 *per cent*)

[19] Lump sum allocation of funds by the Government for a scheme.

Table 3.2: Proposals and sanction for road works under CRIDP

(₹ in crore)

Year of proposal	Value of spill-over work at the beginning of the year	Initial proposals for new works	Total funds required	Revised proposals		Total BOS	AS for new works based on modified proposals
				Spill-over works	New works		
2016-17	4,538	4,770	9,308	2,950	1,193	2,500	2,500
2017-18	4,249	3,500	7,749	3,400	700	3,000	3,000
2018-19	4,149	4,138	8,287	3,500	600	4,050	4,050
2019-20	4,463	4,900	9,363	3,042	1,000	4,521	4,521
2020-21	4,935	5,700	10,635	3,288	1,272	5,300	5,300
Total		**23,008**	**45,342**	**16,180**	**4,765**	**19,371**	**19,371**

(Source: Proposals and sanctions for CRIDP works)

It is seen from the above that:

- The proposal of the Department for execution of new works to the tune of ₹ 23,008 crore (which was modified to ₹ 19,371 crore), was reduced to ₹ 4,765 crore (21 *per cent*) considering the availability of funds.
- No funds were sanctioned for execution of spill-over woks during the five year period of 2016-17 to 2020-21.
- It was seen in test checked eight Divisions that an expenditure of ₹ 3,694.24 crore was incurred during 2016-21, without sanction for completing the spill-over works, in deviation to the provisions of the Budget Manual.

Thus, non-sanctioning of funds for completion of the spill-over works of earlier years resulted in diversion and utilisation of the sanction earmarked for execution of new works. This also led to continuance of spill-over works every year as discussed in **Paragraph 5.3.**

Government stated (August 2022) that delay in release of AS, finalisation of tenders and shifting of utilities resulted in accumulation of works to subsequent years and the tentative allotment of Bank of Sanction covered only 40 to 50 *per cent* of total value of work. The reply is not tenable as Government failed to issue necessary allotment of funds for spill-over works and funds sanctioned for new works were utilised for spill-over works.

Recommendation: Government may allot funds in the Budget for executing spill-over works to avoid diversion of funds by the field offices and consider fixing responsibility on the officials responsible for diversion of funds.

3.3 Departmental receipts not treated as revenue to the Government

Para 373 of the Tamil Nadu Highways Manual (Volume IV) stipulates that cash realised by the officers of the Department should be paid, as soon as possible, into the nearest treasury as miscellaneous receipts of the Department. Rule 7(1) of the Tamil Nadu Treasury Code also stipulates that money received by the Government servant in their official capacity should be paid in full into the Bank and not utilised for meeting departmental expenditure.

Highways Department conducts tests on the soil condition before the commencement of the work, job-mix formula adopted by the contractors during the execution of work through Highways Research Station (HRS) wing and the charges for such tests are recovered from the contractors.

Government of Tamil Nadu (GoTN) accorded AS for works under CRIDP, Non-plan works. It was seen from the Technical Sanction of the works that one *per cent* of the estimated value was charged as Quality Control (QC) charges.

C&M wing of HD executed 16,025 works and incurred ₹ 55.37 crore from QC charges during 2016-17 to 2020-21 for conducting various tests. Audit noticed that these QC charges were paid by the Divisional Offices to the QC Laboratories both of which were under the control of the HD. These Laboratories did not remit the QC charges to Government account as receipts to Government but retained under Civil Deposits resulting in blocking of funds to Government.

Audit noticed that HRS collected ₹ 89.96 crore towards testing charges from the Department and the contractors during the period from 2017-18 to 2020-21 and the same was credited to deposit head instead of remitting it under revenue head of the Government account. Audit also noticed that an amount of ₹ 43.36 crore was withdrawn by HRS during 2017-18 and an amount of ₹ 42.94 crore was credited back during 2018-19. Department stated that the fund was utilised for meeting expenses related to purchase of machinery, payment of labour charges etc., but no details were furnished for re-credit. Utilisation of departmental receipts without proper sanction violated the Manual provisions.

Government accepted and stated (August 2022) that the testing charges were utilised to replace the old machinery. It was also stated that a Governing Committee had been formed in March 2022 to authorise utilisation of a part of the revenue generated for research and developmental activities of the institution. The fact, however, remains that Department utilised the revenue generated for Departmental expenditure in violation of Manual provisions.

Recommendation: Government may consider fixing responsibility on the officials for non-remittance of testing charges to Government.

3.4 Scheduled Castes Sub Plan

Scheduled Castes Sub Plan (SCSP), is being implemented since 1980-81, with the objective of reduction of poverty and unemployment, creation of productive assets and providing physical and financial security to the Scheduled Caste (SC) population. The Adi Dravidar and Tribal Welfare department has been designated as the Nodal Department. The Nodal Officers appointed by the sectoral departments including HD, are to coordinate with the Nodal Department, for effective implementation of the scheme.

3.4.1 Declining trend in allocation for SCSP

As per the Planning Commission Guidelines, 2005, the funds were to be earmarked for SCSP from the total State Plan outlay proportionate to the SC

population of the State as per 2011 census (20.01 *per cent*). Accordingly, GoTN assigned a separate budget sub head for SCSP. Details of Annual Plan Outlay, fund flow to SCSP *vis-a-vis* budget provision during the years 2016-17 to 2020-21 in HD is given in T**able 3.3.**

Table 3.3: Outlay for SCSP

(₹ in crore)

Year	State Total Annual Plan Outlay	State Total Annual Plan Outlay for SCSP	Percentage of SCSP outlay to total plan outlay	Outlay for HD	Outlay for SCSP	Percentage of SCSP fund flow to outlay for HD
2016-17	60,610.00	12,462.00	20.56	8,491.31	315.00	3.71
2017-18	54,564.19	11,627.43	21.31	10,414.03	212.62	2.04
2018-19	55,498.16	11,669.30	21.03	11,181.80	261.96	2.34
2019-20	56,849.96	12,103.72	21.29	13,820.88	200.00	1.45
2020-21	64,255.97	13,680.14	21.29	15,864.33	217.42	1.37
Total	**2,91,778.28**	**61,542.59**			**1,207.00**	

(Source: Policy notes of Adi Dravidar and Tribal Welfare Department and budget figures of HD)

It may be seen from the above that though percentage of State total SCSP outlay to the State total annual plan outlay had increased from 20.56 to 21.29 *per cent* during the five year period, but, there was no corresponding increase to SCSP allocation in HD. In fact, the percentage of SCSP fund allocation to outlay for roads declined from 3.71 to 1.37 *per cent* during the period from 2016-17 to 2020-21.

3.4.2 Allotment of funds to Districts

Audit noticed from the scrutiny of records in the eight out of 38 test checked districts that the allocation of funds among the districts of the State was not in proportion to the SC population of the districts as detailed in **Table 3.4.**

Table 3.4: Allotment of funds under SCSP to the selected Districts

(₹ in crore)

District	No. of villages with more than 40 *per cent* SC population in the district as per census 2011	Percentage of SC population to total population of district as per census 2011	Amount sanctioned					
			2016-17	2017-18	2018-19	2019-20	2020-21	Total
Coimbatore	29	15.97	0	3.83	5.75	6.47	8.82	24.87
Karur	16	20.48	3.20	1.20	3.62	6.74	0.00	14.76
Perambalur	47	31.29	5.04	6.16	5.98	7.55	6.27	31.00
Salem	169	19.65	6.16	7.91	6.00	0.65	0.38	21.10
Sivagangai	51	16.68	4.49	6.94	7.81	8.00	11.36	38.60
Thanjavur	169	18.47	9.64	8.73	6.50	9.21	5.55	39.63
Tiruvallur	283	22.42	0	0	7.00	0.00	0.00	7.00
Thoothukudi	114	19.58	11.31	9.19	7.20	6.71	5.25	39.66
Total	**878**		**39.84**	**43.96**	**49.86**	**45.32**	**37.63**	**216.61**

(Source: censusindia.gov.in)

From the table, it could be seen that

- In Coimbatore district, the number of villages with more than 40 *per cent* SC population was 29 and the percentage of SC population was 16 *per cent* as compared to 283 such villages and 22 *per cent* of SC population in Tiruvallur District. The sanction under SCSP was much higher in Coimbatore district (₹ 24.87 crore) as compared to Tiruvallur district (₹ 7.00 core) during 2016-21.
- Similarly, Perambalur district with 47 villages was sanctioned more funds (₹ 31.00 crore) as compared to Salem district with 169 villages (₹ 21.00 crore).
- Similarly, Sivagangai district with 16.68 *per cent* of population was sanctioned ₹ 11.36 crore as compared to Perambalur district with 31.29 *per cent* of population was sanctioned ₹ 6.27 crore during 2020-21.

The above indicated that due weightage was not given to districts having more than 40 *per cent* of SC population while allocating funds.

Government stated (August 2022) that the expenditure on improvement to roads was made to benefit both SC/ST population and general population and the concept of funds proportionate to SC beneficiaries could not be considered. The reply is not acceptable as the allotment of funds under SCSP component need to be spent to the benefit of SC beneficiaries.

Recommendation: Government may ensure sufficient allocation of funds under SCSP component and sufficient fund allocation especially in districts like Coimbatore, Perambalur and Sivagangai where the percentage of SC population is high.

3.5 Additional burden to State exchequer

GOI instructed (December 2010) that NH stretches for which maintenance works were yet to be awarded by the NHAI, shall be maintained by the State agencies after obtaining the necessary estimates sanctioned from GOI. GoTN sanctioned (April 2013) temporary restoration of four[20] stretches of NH and the works were executed incurring an expenditure of ₹ 16.50 crore.

After incurring the expenditure, GoTN requested (June 2013) GOI to reimburse ₹ 16.50 crore stating that the road stretch was in very poor condition. GOI, replied (July 2013) that works executed without prior approval of the Ministry were not entitled for reimbursement of the expenditure.

Thus, execution of the works in NH without prior approval of GOI led to additional burden of ₹ 16.50 crore to State exchequer.

Government replied (August 2022) that the works were undertaken as the stretches were not maintained for more than eight years. It was stated that efforts were made at the highest level of Government for reimbursement of the amount from GOI.

[20] NH 45C, NH 47, NH 226 and NH 227.

CHAPTER IV

IT INITIATIVIVES BY HIGHWAYS DEPARTMENT

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IT INITIATIVES BY HIGHWAYS DEPARTMENT

Government implemented e-procurement to finalise the tenders in a fair manner without any favour besides ensuring competitive bidding. Department did not enable the features for evaluation and finalisation of tenders, payment of online EMD in e-procurement portal. The data analysis revealed that contractors uploaded EMD documents online but failed to furnish physical documents due to which those bids were rejected, and tenders were finalised without competitive bidding. Contractors uploaded expired and same EMD document for different works in the system without being identified. Some contractors colluded with each other and submitted bids from the same IP address so that one among them was awarded the work which denied fair and competitive bidding. The bids were also submitted by bidders using departmental computer systems. As per Manual provisions, the bidder should be disqualified for submitting multiple bids by individual, firm or company, in which any one of them have interest. The cross verification of data revealed that the contractors with business interest participated in 16 contracts worth ₹ 15.29 crore in which no other bidder participated. Similarly, cartel formation took place among the family members and contract was awarded to the interested parties for ₹ 16.32 crore. It was also seen that there were instances of violation of segregation of duties.

4 e-procurement system in Tamil Nadu

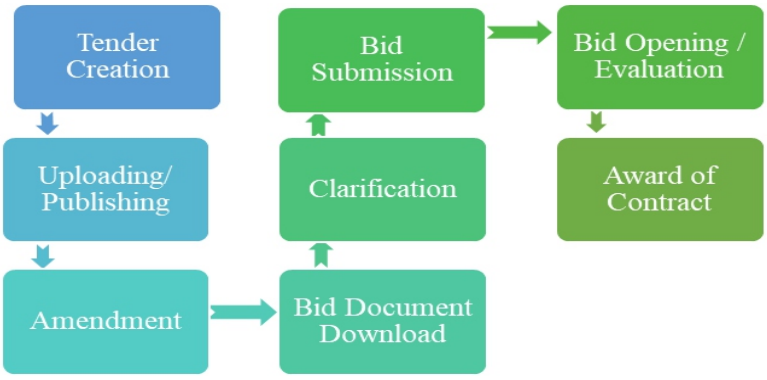
GoTN with an objective to enhance the efficiency of the project management processes and to speed up the implementation of projects, implemented e-tendering of works in HD in July 2007 which would also facilitate the contractors to download the tender documents free of cost. NH Wing of HD started awarding contracts through e-tenders from January 2012 onwards. The e-tendering through e-procurement portal was commenced with effect from August 2019 in respect of other wings of HD.

4.1 Registration of contractors in the e-portal

e-Procurement requires the bidders to enrol on the e-procurement Portal, using a valid Digital Signature Certificate and valid email address. The bidders will be required to submit their bids online on the e-Procurement module.

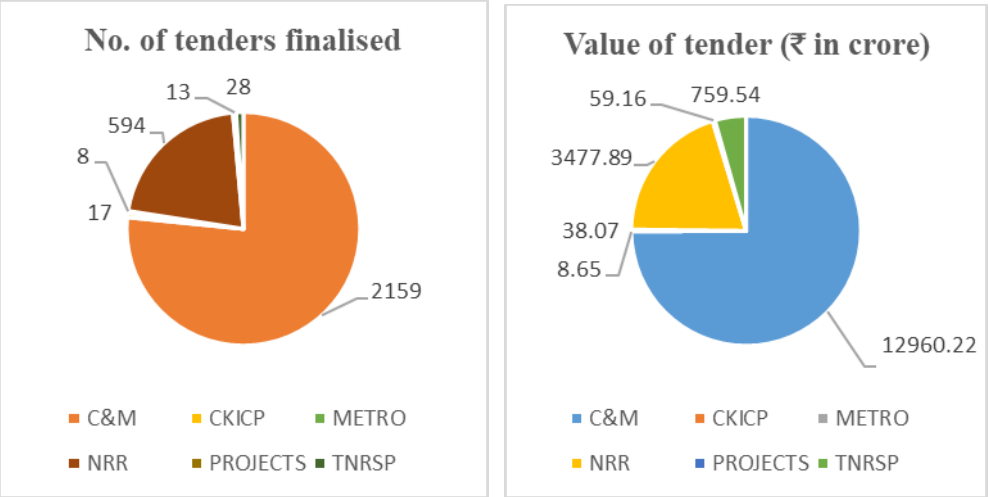
The workflow in e-procurement portal is depicted in **Chart 4.1**.

Chart 4.1 - Workflow in e-procurement portal



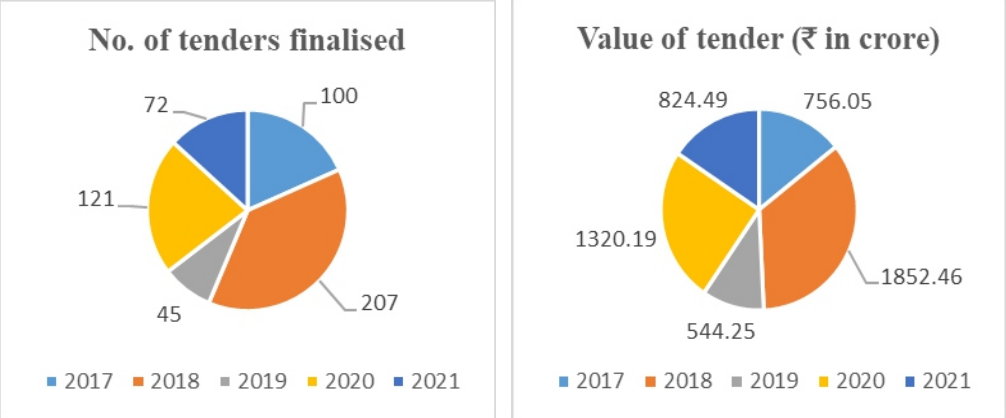
During the period from August 2019 to August 2021, HD invited tenders for 2,819 works through e-procurement system in six[21] wings involving tender value of ₹ 17,303.53 crore. During this period, 8,771 bids were received from 862 contractors. The wing-wise number of tenders floated and finalised along with the value for which the tenders were awarded are indicated in the **Chart 4.2.**

Chart 4.2: Number of tenders finalised and their value



During the period from April 2017 to August 2021, NH Wing had invited 545 tenders involving tender value of ₹ 5,297.45 crore. During this period, 1,740 bids were received from 408 contractors. The number of tenders floated and finalised by NH Wing during this period, along with the value for which the tenders were awarded are indicated in the **Chart 4.3.**

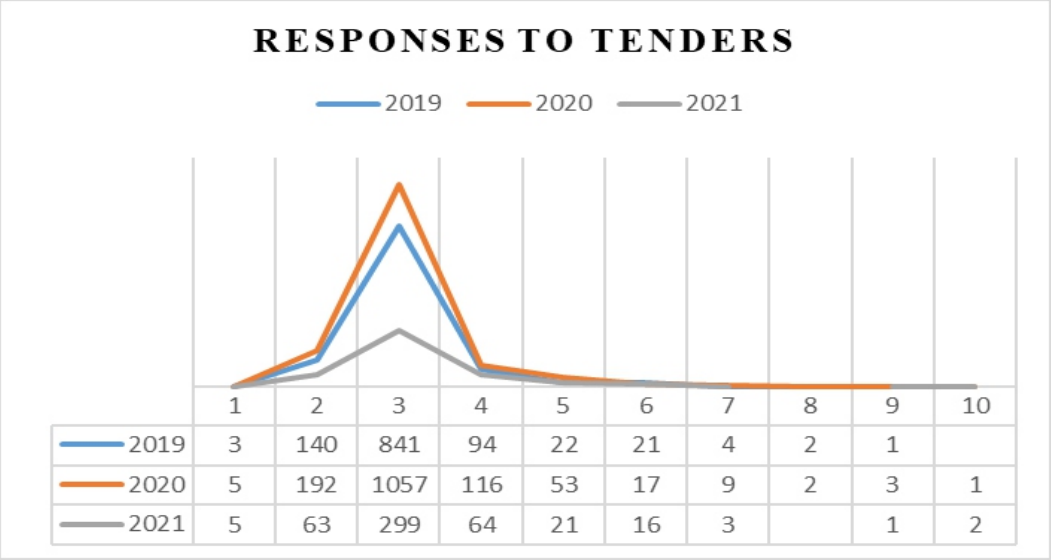
Chart 4.3: Number of tenders finalised by NH Wing and their value



It was observed from the data furnished to audit that the maximum number of responses to the majority of the tenders invited by the Department during the three-year period of 2019-2021 was three bids. The position of number of bids received against each tender in seven wings is detailed in **Chart 4.4.**

[21] C&M, CKICP, Metro, NABARD and Rural Roads, Projects and TNRSP.

Chart 4.4: Responses to the tenders



	1	2	3	4	5	6	7	8	9	10
2019	3	140	841	94	22	21	4	2	1	
2020	5	192	1057	116	53	17	9	2	3	1
2021	5	63	299	64	21	16	3		1	2

Eventhough, Government claimed (August 2022) that wide publicity was given in Newspaper for bidders participation, the fact, however, remained that the maximum responses to the tender calls were two or three bids in more than 80 *per cent* of tenders as shown above.

4.2 Roles and Privileges in IT system

4.2.1 Existence of more than one Nodal officer in a Circle

Director General assigned (September 2017) the functions of Nodal Officer for e-tendering by the wings of HD to the Deputy Chief Engineers (DCE) in the cadre of SE. The functions of Nodal Officers shall be

- Carrying out tendering process without any time lag which is critical
- Assigning roles to each user, end user creation and user management for all the offices under their control
- Effective user management of each wing and
- Timely response to the tendering process in each Circle/Division.

It was observed from the data[22] that more than one Nodal Officer has been assigned in four circles *viz*., Chennai, Coimbatore, Madurai and Tirunelveli Circles out of eight circles of C&M Wing. It was seen that instead of DCE, the officials in the cadre of Head Draughting Officer to DEs who were in lower cadre to the DCE were assigned as Nodal Officers.

It was also observed that two officials in the cadre of SE were shown as users in the same Circle since the officials who had been transferred to other offices or who had retired continued to be users in the Circle.

Government accepted (August 2022) and stated that the Nodal Officer role has been assigned to the Deputy Superintending Engineer of respective circle.

[22] Table – Geproles.

4.2.2 Assigning multiple roles and privileges

The Nodal Officer of each user organisation will authorise users within the organisation to use the e-Procurement module. The various roles defined for e-Procurement module are:

- Procurement Officer - Admin (Tender Creator) - Responsible for filling up and uploading the details of a tender enquiry / corrigenda.
- Procurement Officer - Publisher - Publishing the tender enquiry / corrigenda.
- Procurement Officer - Opener - Authorised to decrypt and download the bids received from the bidders in response to a tender document.
- Procurement Officer - Evaluator - Authorised to upload the results of the various stages of bid evaluation/award of contract.

The roles and privileges pertaining to the e-tenders of HD was called (March 2022) for and no specific reply was furnished (March 2022) by the Department.

An analysis of the data pertaining to the segregation of duties of the departmental officials in the software revealed that officials in cadre of Typist, Junior Engineers were assigned the role as Procurement Officer (PO) to publish, open and evaluate tenders in the portal.

Officials in the cadre of Junior Engineer to SE were assigned all the five roles from Procurement Admin to evaluation of procurement and besides generation of reports. Audit also noted that the Divisional Accountant who was entrusted with the duty as internal checker had also been assigned all the five functions. Assigning of multiple privileges to various officials could influence the misuse of system by individuals and violates the principle of segregation of duties.

Government accepted (August 2022) and stated that the roles and privileges have been regulated. The fact however remains that the documentation of segregation of roles and privileges were yet to be furnished to audit to ascertain the systemic failure.

4.3 Non utilisation of modules / features available in the e-procurement system

4.3.1 Technical Evaluation, Bid capacity and Short Notice Tenders

Audit observed that e-procurement portal contained various features for evaluation and finalisation of tenders without manual interference. It was however noticed that the following features were yet to be enabled for processing e-tenders by the HD as detailed in the **Table 4.1.**

Table 4.1: Features to be enabled

Description	Present position	Shortcomings
Technical Evaluation General and Item-wise Technical evaluation including previous turnover of works executed.	The technical evaluation of bids was carried out manually by the technical bid evaluation committee.	Manual technical evaluation specifications and analysis were not uploaded in the portal. Only the results were uploaded.
Short Notice Tenders For inviting tenders within the prescribed period of 30/15 days the approval of authority higher than tender inviting authority has to be obtained	It was observed that 3,205 tenders were invited with short tender notice period.	There exists no provision to record the reason for short tender notice and to capture the approval of the authority higher than tender inviting authority.

Non-utilisation of available modules defeated the objective of enhancing the efficiency of the project management processes and to speed up the implementation of projects in HD.

Government accepted (August 2022) and stated that the issue would be resolved when the new e-procurement portal has been rolled out.

4.3.2 Payment of EMD online

Rule 14 of Tamil Nadu Transparency in Tenders Rules, 2000 stipulated that all tenderers without exception to pay an Earnest Money Deposit (EMD) not exceeding one *per cent* of the value of the procurement by means of electronic mode of payment, demand draft, bankers cheque, specified small savings instruments and irrevocable bank guarantee, if the procuring authority deems fit.

Tender notices invited by Tamil Nadu HD through e-procurement portal stipulates submission of their bids online by uploading the supporting documents for EMD payment in the form of demand draft / term deposits in favour of concerned DE and the original supporting documents to be handed over to the Tender inviting authority before opening the bid. If original EMD is not received in time, the bid is rejected.

Though the system has provision to pay EMD amount online, in HD, the feature has not been enabled despite lapse of three years from the implementation of e-tendering (August 2019).

Government stated (August 2022) that creation of an exclusive e-procurement portal for the Government of Tamil Nadu to enhance transparency in the tenders had been approved in October 2021 and demo of the portal conducted in July 2022. It was also stated that the issue of online payment of EMD would be addressed during the roll out of the new portal.

The shortcomings due to non-obtaining the online EMD are detailed in the subsequent paragraphs:

4.3.2.1 Rejection of tenders due to non-submission of EMD documents

Analysis of the data relating to the submission of bids with EMD revealed the following:

- Contractors submitted a copy of the Demand Draft/ small saving instrument/ Deposit Receipt, etc. towards the EMD payable at the time of bidding for the work. However, contractors failed to submit original supporting document before the opening of the bids and the bids submitted by them were rejected.
- Out of 10,511 bids, 534 bids for which EMD documents were uploaded, the original document was not produced to the Tender Inviting Authority before the opening of bids.
- Audit noticed that 65 bidders had defaulted in submission of EMD for more than 30 *per cent* of their tender participation.

Thus, the failure of the Department in enabling the submission of EMD through online led to the rejection of tenders which could be avoided and the possibility of getting more competitive price was also not ruled out.

Government accepted (August 2022) and stated that the issue would be resolved when the new e-procurement portal has been rolled out.

4.3.2.2 Uploading of same EMD for more than one work

Audit noted that same supporting document towards EMD was uploaded by the contractor for more than one work during the validity of the tender and hence he could not produce the original supporting document for all the works for which the bids were submitted as detailed in **Table 4.2.**

Table 4.2: Uploading of same EMD Document

Name of the contractor	EMD supporting document details	Work Id 1/ date of opening of tender	Work Id 2/ date of opening of tender
Dharani Hi Tech Projects Private Limited	No. 138665 14-10-2019 for ₹ 3,42,000	2019_HWAY_ 137519_6 18-10-2019	2019_HWAY_ 137519_3 16-10-2019
Sai Hridham Infra Private Limited	No. 757933 11-10-2019 for ₹ 60,000	2019_HWAY_ 139509_2 18-10-2019	2019_HWAY_ 139473_2 18-10-2019
M Murugesan	No. 34064 14-10-2019 for ₹ 60,000	2019_HWAY_ 139509_4 21-10-2019	2019_HWAY_ 139509_5 18-10-2019

(Source: Details extracted from the e-procurement portal)

Audit also noted that same supporting document towards EMD was uploaded by different contractor for the same work during the validity of the tender and hence one of the contractors could not produce the original supporting document to the work for which the bid was submitted as detailed in **Table 4.3.**

Table 4.3: Uploading of same EMD document by different contractor

Work id / date of opening of tender	EMD supporting document details	Name of the contractor1	Name of the contractor2
2020_HWAY_ 162448_1 05-06-2020	No. 314814 date 05-05-2020 for ₹ 52,000	T Kanagaraj	T Tamilraj
2020_HWAY_165664_2 09-07-2020	No. 115181 date 29-6-2020 for ₹ 4,63,000	Periakaruppan A Balu	Ramuthervar Tamilselvan

(Source: Details extracted from the e-procurement portal)

Audit further noted that same supporting document towards EMD was uploaded by different contractor for different works during the validity of the tender and hence one of the contractors could not produce the original supporting document to the work for which the bid was submitted as detailed in **Table 4.4.**

Table 4.4: Uploading of same EMD Document by different contractor for different works

Sl No.	EMD supporting document details	Work id 1/ date of opening of tender	Name of the contractor1	Work id 2/ date of opening of tender	Name of the contractor2
1	No. 96521 date 03-07-2020 for ₹ 52,000	2020_HWAY_168869_1 16-07-2020	IRC Constructions	2020_HWAY_168871_1 16-07-2020	Sathiyaraj
2	No. 80666 date 4-7-20 for ₹ 3,60,000	2020_HWAY_166493_1 10-07-2020	Natarajan R	2020_HWAY_166488_1 10-07-2020	Mani P

(Source: Details extracted from the e-procurement portal)

An instance of the same supporting documents towards EMD filed by two different contractors in Sl. No. 2 of **Table 4.4** is exhibited below:



Work Ref id-2020-HWAY_166488
Contractor – P Mani



Work Ref id-2020-HWAY_166493
Contractor – R. Natarajan

(Source: Details extracted from the e-procurement portal)

As the System allowed to upload same document for more than one bid, Department need to consider assigning Unique ID for uploading EMD documents to identify and to prevent the uploading of same EMD twice.

4.4 Expired EMD

In the 174th Meeting of the Board of Engineers held on 14th August 2019, the modifications to the existing Tender Conditions in the Standard Price Bid Document in accordance to e-Tendering in HD has been issued. As per the modified Tender conditions, the EMD should be kept valid for a reasonable tenure till the decision of the tender is finalised.

On analysis of the data revealed that

- out of 10,151 EMD supporting instruments uploaded in the portal, the validity of 46 **(Annexure 1)** supporting instruments were expired before the date of opening of financial bids. The system did not

validate the EMD instruments at the time of uploading resulting in expiry of EMD before the tender valid period.

Thus, the Department should consider a provision in the system for prompting a red flag to show that the expiry of EMD should not occur before the tender validity period.

Government replied (August 2022) that the supporting documents *viz*., term deposit receipts submitted by the bidders for EMD are eligible for auto renewal and can be renewed on subsequent dates also. It was also stated that the re-validation was obtained manually whenever required. The reply is not tenable as the system did not validate the EMD instruments during the tender scrutiny.

4.5 Lack of transparency in the e-Procurement system

The primary objectives of e-procurement system are to offer equal opportunity to all contractors to encourage maximum competition and eliminate unfair practices and favouritism. Audit noted absence of adequate competition and adoption of unfair practices in e-procurement process as discussed in subsequent paragraphs:

4.5.1 Submission of bids with the aid of departmental officials

The database captured the IP address of the system from which bids were submitted by the contractors and the IP address of the department users. The comparison of IP address from which the bids were submitted with the department users' IP address revealed that the contractors utilised the computer systems of HD officials to submit their bids for contract.

During the period from August 2019 to August 2021, in response to 214 tender notices, 289 bids were filed utilising 57 computer systems of the department officials by 87 contractors. Out of 289, 71 bids were awarded in favour of L1 contactors.

Submission of bids through the Departmental computers indicated breach of tender ethics by the bidders thereby conduct of competitive bidding in a transparent manner by the Department was defeated.

During the Exit Conference (May 2022), Principal Secretary assured to look into the matter.

Government accepted (August 2022) and stated that suitable instructions were issued to all the Tender Inviting Authorities to examine such lapses and take stringent action so that no such activities recur.

4.5.2 Participation of multiple bidders in a particular work from same IP address

As per Article 103.16 of Tamil Nadu Highways Manual Volume-I, the bidder should be disqualified, if more than one tender was submitted for the same work, by an individual, firm or company, in which any one of them have interest, in any capacity. Further, it envisages that in case of evidence of collusion among the bidders, participants in such collusion will receive no recognition as bidders for any future work of the Department.

Audit analysed the data relating to the IP address of the systems used for submission of bids by contractors relating to the period from August 2019 to August 2021 and observed that in 907 tenders, 2,091 bids were submitted by 528 contractors using the same computer systems (475 systems).

It was observed that two to four bids were submitted for each tender from the same IP address *viz.*, two bids in 701 cases; three bids in 227 cases and four bids in two cases.

Out of the above, 490 bids were awarded contract to L1. In 276 tenders it was found that all the contractors who had participated in the bid had submitted the tenders from the same IP address.

Thus, it is evident that few contractors could have colluded with each other and submitted bids at various rates from the same IP address for the tenders in such a manner that one among them was awarded the work. Few such instances are illustrated below:

- In respect of tenders for Widening of Roads (Package 56/CRIDP/ Dharapuram Division) it was seen that three contractors submitted their bids from the same computer system with unique IP address and one among them was awarded the work being the lowest tenderer as detailed in **Table 4.5 below:**

Table 4.5: Submission of bids from same IP address – Dharapuram Division

Work ID	Name of the contractor	Bid submitted date	IP address	Value quoted (₹)	Awarded to
2019_HWAY_ 137571_1	Kanganam Construction	10-10-19	220.158.140.33	7,07,77,974	
	Senbagam Construction	11-10-19	220.158.140.33	6,70,09,703	L1
	Sabari Construction	12-10-19	220.158.140.33	7,14,33,326	

(Source: Details extracted from the e-procurement portal)

- Similarly, only these three contractors had participated in 13 more tenders in Tiruppur Circle of C&M Wing, quoting their rates for bids utilising the same IP address. It was noticed that in all the above 14 tenders, one tenderer *viz*., Sabari Construction quoted the highest rate and was not awarded any work. Most of these works were awarded to Senbagam Construction (12 works) and the balance two works to Kanganam Construction. The total value of contract for these 14 works was ₹ 32.52 crore (**Annexure 2)**

- Tender was invited for improvements of roads in Tiruchengodu (H) C&M Sub-Division (Package 52). Three bidders participated in the contract and it was noted that the two bidders other than the lowest bidder quoted the same value of contract and the bidder who quoted lower rate was awarded the work as detailed in **Table 4.6 below.**

Table 4.6: Two bidders quoted same value – Salem Circle

Work ID	Name of the contractor	Bid submitted date and time	Value quoted (₹)	Bidder Rank
2019_HWAY_136763_1	V R V Construction	04-10-2019 17:17:21	5,33,08,036	L1
	T. Kolandaivelu and Co	04-10-2019 10:03:19	5,69,30,913	L2
	P Sivaperumal	04-10-2019 18:28:25	5,69,30,913	L2

(Source: Details extracted from the e-procurement portal)

Only these three contractors had participated in all the five tenders[23] and the works were awarded to the L1. The L1 contractor for these four works was M/s. V R V Construction and M/s. T. Koladaivelu and Co. In two tenders, the details of award of contract were not available in the portal.

- In Coimbatore Circle of C&M Wing, in response to tender for permanent restoration to flood damaged protective wall of Udhagai Sholur road, three contractors *viz*. K.S. Selvam, Trust Constructions and Sri Banu Constructions uploaded bid document from the same IP address (49.205.151.240). Audit noted that one of the partners of M/s Trust Constructions, Smt. K.S. Anandhi is wife of Shri K.S. Selvam. During the period from August 2019 to August 2021, three more such bids were uploaded by the same three contractors and two tenders were awarded to Shri K.S. Selvam and one to Trust Constructions.

Audit noted that such instances were not identifiable in the manual system of submission of bids by the bidders. Despite introduction of e-procurement system with the primary objective of awarding of tenders in a fair manner without any favour and ensuring competitive bidding, Department was not in a position to validate the submission of bids by bidders in a fair manner.

Government replied (August 2022) that the Department had no control on such submissions by the bidders. The reply is not tenable as the contractors indulging in unfair means can be penalised as per Article 103.16 of the Manual.

4.6 Cartel Formation

As per Article 103.16 of Tamil Nadu Highways Manual Vol-I, the bidder should be disqualified, if more than one tender for the same work, was received from an individual, firm or company, in which any one of them have interest, in any capacity as individual firm or company.

The data relating to the award of e-tenders and the registration status of contractors with the Highways Department was cross verified with the master data of companies available in the website of Ministry of Corporate Affairs, GOI to ascertain the details of Directors/Partners. Such cross verification revealed the following:

[23] 2019_HWAY_135952_1, 2019_HWAY_136763_1, 2020_HWAY_165554_1, 2020_HWAY_165603_1, 2020_HWAY_165604_1.

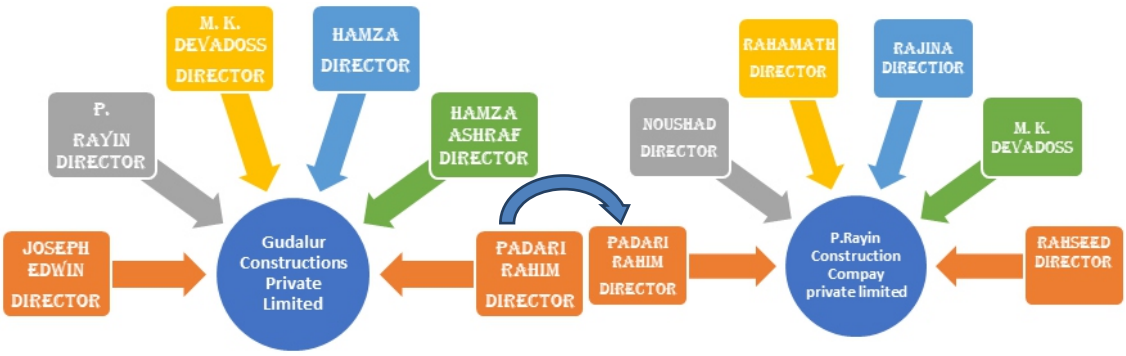
4.6.1 Cartel formation between P. Rayin construction company and its Directors

P.Rayin Construction Company Pvt. Limited was a construction company located at Gudalur and registered as a contractor under HD. There were five Directors for the company *viz*., (i) Noushad S/o Hamza, (ii) Rahamath, (iii) Rajina, (iv) P Rasheed (v) Marappalam Krishnan Devadoss and P.Rahim, S/o.P.Rayin is the Managing Director of the company.

It was seen that some of the Directors and the Managing Director of P. Rayin Construction Company Pvt. Limited were also registered themselves as contractors with the HD as proprietorship firm *viz*., (i) Noushad S/o Hamza, (ii) P Rasheed, (iii) Marappalam Krishnan Devadoss and (iv) P. Rahim. Audit also noted that P. Rayin is father of P.Rahim (Managing Director).

Audit noted that the contractors with business interest among themselves viz., P. Rayin and P. Rayin Constructions Pvt Ltd participated in five tenders in which no other bids were received from other contractors. Two works valuing ₹ 3.91 crore and three works valuing ₹ 11 crore were awarded to them.

P.Rayin and P. Rayin Constructions Company Pvt. Ltd had business interest with Gudalur Constructions Pvt Ltd, with five Directors *viz*., (i) Shri P.Rayin, (ii) Shri Joseph Edwin (iii) Shri Hamza, (iv) Shri Hamza Ashraf (v) Shri Marappalam Krishnan Devadoss. Shri Rahim is the Additional Director. It was observed that all five directors and the Additional Director had also registered themselves as contractors with the HD. Shri P. Saleem is son of Shri Hamza and has registered as a contractor with the HD as proprietorship firm.



These contractors participated in 20 tenders in which no other bids were received from other contractors and 16 works valuing ₹ 15.29 crore were awarded to one among them as detailed in **Annexure 3.**

Government accepted and stated (August 2022) that suitable instructions were issued to all the Registering Authorities to examine such lapses and take stringent action so that no such activities recur. Government may consider fixing the responsibility on the concerned officials.

4.6.2 Cartel formation among the family members

4.6.2.1 Shri J.F Javid Hussain and M/s Lucky Associates

The work of Package 78-Strengthening roads in Thirumangalam (H) C&M Sub-Division, three contractors Shri Javid Hussain, Lucky Associates and

Suganya Constructions had participated. Lucky Associates quoted the least and was awarded the contract. Shri Javid Hussain and Partner of Lucky Associates and Jameem Banu are related as husband and wife. Further Shri J Hussain Farid and Shri Javid Hussian, partner of Lucky Associates are brothers. In a similar way the three had participated in five other contracts and Lucky Associates was awarded in three tenders valuing ₹ 16.32 crore and one tender valuing ₹ 5.47 crore was awarded to Shri Javid Hussain. Suganya Construction was not awarded any tender.

Similarly, Shri N. Seyyadurai is the Managing partner of Seyyadurai Constructions. The other partners are the four daughters-in-law of Shri N. Seyyadurai. The Managing Partner of S.P.K and Co is Shri S. Balasubramani, S/o N. Seyyadurai. The other partners are wife of N.Seyyadurai and his three other sons. These two firms adopted the same modus operandi and were awarded works as detailed in **Annexure 4.**

Government accepted and stated (August 2022) that suitable instructions were issued to all the Registering Authorities to examine such lapses and take stringent action so that no such activities recur.

4.6.2.2 Cartel formation among contractors.

Audit noted that few contractors formed cartel among themselves and only these contractors participated in the tenders and one of them was awarded as lowest tenderer:

- Ezilmaran, S, Gunasekaran, ST. Selvam and Hariway Lines private limited together participated in 63 works and all the contracts were awarded to these contractors (**Annexure 5).** Of the 63 works, 45 works valuing ₹ 175.57 crore was awarded to these contractors and the awarded value for the remaining 18 works were not uploaded in the system and the same was not verified.
- Ezilmaran, S, Gunasekaran, ST. Selvam and Rishi Enterprises together participated in 18 works and works valuing ₹ 50.10 crore were awarded to these contractors as shown in **Annexure 5**.
- Similarly, three contractors *viz*., M/s Sri Priya Constructions, S. Parthibarajan, Udhayagiri and Co together participated in 30 works in Coimbatore Division (**Annexure 6)** and three other contractors *viz*., DS Akbal, Kevearr and Co, Ravishankar also adopted the same modus operandi and participated in 18 works in Salem Division and were awarded works as detailed in **Annexure 7.**

Thus, submission of bids in groups, registration of bidders in the e-portal as partnership and proprietorship firms but submitting bids individually for the same tender indicated formation of cartels to clinch the contracts without competitive bidding, defeated the objective of introduction of e-tendering system.

Government accepted and stated (August 2022) that suitable instructions were issued to all the Registering Authorities to examine such lapses and take stringent action so that no such activities recur.

4.7 Tender award data

4.7.1 Updation of award of contract

The life cycle of a tender commences with its publishing of Notice Inviting Tender and the process is complete with completion of award of contract. Illustrative cases of non-updation of award of contract details in the e-procurement portal is detailed in **Table 4.7.**

Table 4.7: The details of non-updation of award of contract

Sl. No.	Period	Wing of Highways Department	No. of tenders published	No. of contracts awarded	Award of contracts not uploaded / updated
1	April 2016 to August 2021	Eight divisions of NH wing	545	33	512
2	-	C&M Wing (Coimbatore)	422	305	117
3	2019-2021	C&M Wing (Tirunelveli)	149	-	Date not captured
4	2019-2021	C&M Wing (Madurai)	231	151	Date of award entered on single day
5	-	NRR wing	105	105	Not uploaded

(Source: Details extracted from the e-procurement portal)

Government accepted and stated (August 2022) that the award of the contracts had been uploaded in the portal. It was also assured that necessary action has been initiated to upload the tender status immediately on their occurrence.

4.8 Follow up audit of Road Management System

With the aim to manage the road network in Tamil Nadu more judiciously and efficiently using computerised system, the HD implemented Road Management System. The Information Technology Audit on the effectiveness of IT systems and the utilisation of data collected using advanced equipment in Road Management System was conducted and the outcome included in the CAG Audit Report for the year ended March 2014. The road condition data was collected by the Department and maintained in Road Maintenance Management System (RMMS). Despite the same, data analysis of selected eight divisions revealed variation in road lengths, duplicates and incomplete data and absence of validation and quality checks as discussed in the subsequent paragraphs:

4.8.1 Road Maintenance Management System

Comparison of list of roads maintained in the selected divisions with that of RMMS Road network data for the period ended March 2021 generated through e-pathai during February 2022 revealed that 900 km of lane-wise road data was not captured.

Analysis of pavement composition data revealed that Department executed 14,839 road works during 2016-17 to 2020-21 under plan scheme of CRIDP. However, work history data relating to 7,573 (51 *per cent*) was captured in the module. Audit noted that there were 143 duplicate records and 1,525 records

did not contain the name of the scheme. Audit also noticed that in two[24] out of eight selected divisions no work history data was updated in the module for all the five years. In respect of non-plan works three[25] out of eight selection divisions did not capture any work history data.

Analysis of Benkelman Beam Deflection[26] (BBD) test data in RMMS for the period from 2016-17 to 2020-21 revealed that out of 16,631 records 2,106 records were duplicate having same BBD value either in the same survey date or different survey date. BBD test results were not uploaded in the selected four Divisions *viz*., Coimbatore, Perambalur, Sivagangai and Tiruvallur during 2020-21. Audit noted from the records of the Highways Research Station wing that 137 BBD tests were conducted during the same period. Execution of three road works without considering the BBD test result had been commented in **Paragraph 5.5.** of this Report.

Similarly, there were 37 duplicate records in California Bearing Ratio (CBR)[27] data in RMMS, out of 38,170 records for the period from 2016-17 to 2020-21. In selected seven Divisions (except Tiruvallur – PBMC works) CBR tests were conducted for 1,983 works. However, CBR data for 845 works (43 *per cent*) were uploaded in RMMS and the balance 1,138 works were not uploaded in four Divisions *viz*., Coimbatore, Karur, Perambalur, and Tuticorin during 2020-21, despite conducting tests for 311 works. In the absence of the uploading of test results, the correctness of the thickness of road adopted by the field officials could not be ensured in audit.

Government accepted and assured (June 2022) that all efforts are being made to update the complete data in the system.

4.8.2 Non mapping of business rules in e-Pathai

All the relevant business rules and procedures are required to be identified and suitably incorporated in the application to avoid manual intervention.

Despite being commented in the earlier Audit Report about the absence of provision for calculation of pavement design and calculation of lead charges were yet to be made in the system. Instances of execution of works with unsafe pavement design was commented in **Paragraph 5.6** of this Report.

Government replied (August 2022) that the hardware was supplied nearly 13 years back and they outlived their designated design life which created slackness in updating RMMS and P&FMS. As these software were outdated, the revamping of applications by adopting latest technologies as Work Management System to cover works of all wings of Highways Department and procurement of hardware is taken up by Institutional Capacity Enhancement and Road Safety Cell.

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24 Thanjavur and Tiruvallur.

25 Coimbatore, Thanjavur and Tiruvallur.

26 Benkelman beam method is used for evaluation of structural capacity of existing flexible pavements and for estimation and design of flexible overlays for strengthening of any weak pavements.

27 California Bearing Ratio is the evaluation of sub-grade strength of soil during the finalisation of the design of flexible pavements.

Recommendations:

- Government should conduct an independent enquiry to identify gaps in the e-procurement system which facilitates misuse by the contractors and departmental officials in the tendering process. Subsequently, the available system features may be enabled or rectified so as to flag the instances of collusion and cartel formation among the contractors.
- The Government should conduct an enquiry and initiate penal action against contractors who obtained contracts by forming cartels among them.
- Government may obtain an undertaking from the bidders that no relatives or partners or co-directors are participants in the same tender. It is also recommended that the condition of cancellation of tenders may be included in the tender document for violation of the undertaking.
- The Government should conduct an enquiry and initiate disciplinary action on the departmental officials for allowing the use of departmental system for filing the bids.

CHAPTER V

PROGRAMME MANAGEMENT

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PROGRAMME MANAGEMENT

Highways Department did not maintain consolidated list of registered contractors and their status of registration. There were cases of delay in issue of work orders and delay in execution of agreement leading to undue benefit to the contractor. Instances of adoption of incorrect test results led to incorrect preparation of estimates and avoidable expenditure of ₹ 1.92 crore were observed. Majority of the contractors failed to take risk insurance policy for the completed works as instructed by Government resulting in undue benefit to the contractors to the tune of ₹ 5.79 crore. Department failed to ensure the good condition of the road while taking-over from the PBMC contractor resulting in additional expenditure of ₹ 20.72 crore. The target of reducing the number of deaths and injuries from road accidents as envisaged in the Sustainable Development Goals of United Nations was not achieved. During execution of road works, furnace oil was used in the Hot Mix Plants instead of diesel in violation of the statutory requirements of Tamil Nadu Pollution Control Board which caused atmospheric pollution.

5 Construction of roads

The State Highways Department undertakes (i) construction works *viz.* formation of new roads, reconstruction of existing roads and widening of the roads and (ii) maintenance works which included improvement works and periodical renewal. The construction works included laying of base course *viz.*, sub-grade and sub-base and surface course with a binder. The maintenance works involved laying of surface course based on the renewal cycle and condition of the road.

5.1 Components of a pavement of a road

The various components involved in construction of the pavement of the road is depicted in **Chart 5.1**

Chart 5.1: Components of a pavement of a road

Surface Course (Bituminous Concrete) (30-50mm)
Binder Course (Bituminous Macadam/Dense BM) (50-170mm)
Base Course (Wet Mix Macadam) (225-250mm)
Subbase Course (Granular Sub Base) (100-380mm)
Compacted Subgrade (500mm)
Natural Subgrade

Subgrade: This is the first sub-component immediately above the natural soil and can be normally laid upto 500 mm. The strength of the soil was ascertained based on the value of California Bearing Ratio (CBR) and suitable soil would be used in laying the sub-grade.

Sub-base and base course: Sub-base course is laid using granular material above the sub-grade. Base course involved laying of wet mix macadam. These courses are formed adopting a life cycle of 15/20 years in respect of State Highways (SH) and 10/15 years for Major District Roads (MDR) and Other District Roads (ODR).

Surface course: This course is formed with the combination of Bituminous Macadam / Dense Bituminous Macadam and Bituminous Concrete. The surface course is usually formed adopting a life cycle of five years.

Scrutiny of records relating to the construction works *viz*., formation of base course and maintenance works on the surface course of roads for the period from 2016-17 to 2020-21 revealed observations which are discussed in subsequent paragraphs:

5.2 Contract Management

5.2.1 Non-maintenance of list of contractors at State level as per Government instructions

Registration of the contractors with the HD is a pre-requisite for submission of bids to the tenders invited by the Department for execution of road works. The contractors registered themselves with the field officers of HD *viz.*, Executive Engineer, Superintending Engineer based on the monetary limits.

The number of contractors registered with the wings of the department was 654 and 191 with the wings of NABARD & Rural Roads and C&M respectively. Similarly, 177 contractors registered with the NH wing of the Department.

High Level Committee for Administrative Reforms and Prevention of corruption recommended that registration done by the Superintending Engineer shall be reported to the CE who shall prepare a State list of all the registered contractors for circulation and the same was accepted by GoTN.

Audit noticed that the Department did not maintain the consolidated list of registered contractors and their status of registration at Head of Office for circulation among the various wings of the Department. It indicated non-adherence to Government instruction based on committee for Administrative Reforms and Prevention of corruption by the Department.

Government agreed and stated (August 2022) that each wing would consolidate the details of registration of contractors as on 1st April of every year and the overall consolidation of registered contractors would be made in DG Office.

5.2.2 Invitation of tenders and award of contracts at Circle level

Section 10 of Tamil Nadu Transparency in Tenders (TNTT) Act, 1998 and Rule 25 of Rules, 2000 there-under prescribe for evaluation of bids strictly in accordance with the criteria laid down in the terms and conditions of tender. Further, public procurements have to be transparent and competitive to ensure that most economy, efficient and competitive bidders are selected for award of contract.

The tender data was received from the eight C&M Circles for the period from 2016-17 to 2020-21 and analysis of the same revealed the following:

5.2.2.1 Delayed issue of work orders and delay in execution of agreement

Rule 30 (3) of TNTT Rules, 2000 stipulates that as soon as the tenderer qualified to perform the contract is identified, the Tender Accepting Authority should communicate the order of acceptance to the successful tenderer. Government reiterated (September 1998) the instructions (May 1982) for adhering the time limit for finalisation of tenders within 52 days from the date of opening of the bids. The Government directed (September 1998) that after issuing of work orders, agreement with the contractor should be executed within 15 days.

Test check of records furnished by Department for 2,775 tenders relating to finalisation of contracts in eight Circles revealed that there was delay in issue of work orders after the finalisation of the tenders, as detailed in **Table 5.1.**

Table 5.1: Delay in issue of work orders

Description	Chennai	Coimbatore	Madurai	Salem	Tirunelveli	Tiruppur	Trichy	Villupuram	Total
Work orders issued within timelines (52 days)	281	170	186	342	179	215	323	120	1,816
Work orders issued with delay (after 52 days)	230	27	54	150	65	58	197	178	959
Total	**511**	**197**	**240**	**492**	**244**	**273**	**520**	**298**	**2,775**
Percentage of work orders issued with delay	45	14	23	30	27	21	38	60	35

(Source: Details furnished by the circles)

It may be seen that:

- there was delay in issuing work orders by 35 *per cent* of the finalised tenders. Audit found that against the time-line prescribed by GoTN for finalising the tender, the extent of delay ranged from 01 to 30 days in 652 cases; 31 to 100 days in 293 cases and more than 100 days in 14 cases.
- Audit also noticed that in 1,286 out of 2,775 finalised tenders (46 *per cent*), agreement was executed after 20 days (additional five days given for receipt of work order by contractor) with delay ranging between 01 and 254 days. There was delay of 01 to 30 days in 917 cases; 31 to 100 days in 331 cases and more than 100 days in 38 cases.

Thus, delay in issue of work orders and delay in execution of agreement for the finalised tenders were violative of Government directions of September 1998 and provided undue benefit to the contractor as the period of contract commenced only after the date of agreement.

Government agreed and stated (June 2022) that the reason for delay in issue of work orders was primarily due to large number of vacancies. It was assured that the time limit of 52 days would be strictly followed. The reply was not tenable since, the delay in award work led to undue benefit to the contractor.

Recommendation: Government may ensure that the work orders are issued and agreements are executed within the time period prescribed in the Government orders to avoid the time and cost overrun. Government may initiate action against the officials for the delayed finalisation of work orders and agreements.

5.2.3 Inadequate documentation of the contract

5.2.3.1 Extension of period of bid submission

Rule 20 of TNTT Rules, 2000 prescribes that minimum period for submission of tenders. The Rule 18 stipulates that the Tender Inviting Authority may extend the last date and time for receiving tenders on reasonable grounds with recorded reasons. Audit, however, noticed from the test check of contract files in two out of eight Circles that the last date of receipt of tenders was extended without recorded reasons as detailed below:

- In Villupuram Circle, Audit noted that 73 out of 301 tenders (25 *per cent*) finalised during the period from 2016-17 to 2020-2021 were extended without recorded reasons and the period of extension ranged between one and 15 days.
- Similarly, in Chennai Circle, 61 out of 191 tenders (32 *per cent*) finalised during 2020-21 were extended without recorded reasons and the extended period ranged between seven and eight days.

Government stated (August 2022) that the contracts were extended due to administrative reasons, such as, imposition of model code of conduct, declaration of holidays, etc. The reply is not tenable as the reasons for the extension were not recorded in the departmental records.

5.2.3.2 Absence of data on Plant and Machinery and experienced personnel

As per Special tender conditions for Plants and Machineries, the Central Mixing Plant (CMP) of appropriate capacity conforming to the IRC 90 guidelines should be erected, calibrated and trial run should be made before the date indicated by the SE in the letter of acceptance.

It was, however, noticed that the SEs did not include the clause in the letter of acceptance and hence Department was not in a position to watch erection of CMP at the site for utilisation during the execution of the work.

The bidders should furnish certificate of proposed employment of qualified technical team with adequate experience. It was however noticed that the tenderers did not enclose the supporting documents *viz*., experience certificate in proof of compliance. On this being pointed out, Department stated (April 2022) that the experience certificate of technical persons would be obtained and kept in the contract files.

Inadequate documentation for possession of plant and machinery and experienced personnel would enhance the possibility of accepting the bidders without required plant and machinery and inexperienced personnel on road construction works.

Government accepted and stated (August 2022) that necessary instructions have been issued in July 2022 to document the inspection details as mandated in the conditions of contract.

5.2.3.3 Procurement of bitumen

Commercial tender conditions stipulate that bitumen should be procured only from Government companies such as IOCL. BPCL and HPCL. The Director General (Highways) (March 2011) submitted a proposal for placement of consignment of bitumen directly to the sub-Divisional office by the Oil Companies after receiving the payment from the contractors to arrest use of adulterated bitumen. GoTN directed (April 2011) CE (C&M) to place the above proposals before the Board of Engineers and to submit a report. It was, however, noticed that the proposal was not placed before the Board of Engineers by the department till March 2022. Thus, Department did not have any mechanism to watch compliance to the tender conditions in respect works executed during 2016-17 to 2020-21. This also indicated absence of monitoring by the Divisions on quality of the bitumen used for execution of works.

Department assured (March 2022) to place the proposal before the Board of Engineers in the ensuing meeting.

5.2.4 Absence of risk insurance policy resulted in unintended benefit to the contractors

Rule 14 (7) of the TNTT Rules, 2000 stipulates that the financial bid should be inclusive of all costs including insurance. The General Conditions of contract for road works also prescribed that the contractor should insure road asset in the joint name of the Government and the contractor against all loss or damage from whatever cause covering the period of contract and defect liability period.

GoTN sanctioned 4,900 works for widening, strengthening and improvement of roads under CRIDP scheme at a cost of ₹ 3,956.95 crore in the eight test checked divisions during 2016-17 to 2020-21. Audit noticed that only two contractors[31] took insurances at the premium of 0.11 *per cent* and 0.13 *per cent* of the contract value. In the remaining 4,898 works, Department failed to enforce the TNTT Rules and tender condition which led to undue benefit to the contractors to the tune of ₹ 5.79 crore (calculated at the minimum tender premium of 0.11 *per cent)*.

Government replied (August 2022) that necessary instructions were issued to all the Divisional Engineers in May 2022 to insist the contractors continuously to take risk insurance policy as stipulated in the agreement conditions.

Recommendation: Government may ensure that instructions on taking risk insurance policy as stipulated in the agreement conditions is strictly followed by field officials to avoid additional expenditure to State exchequer.

[28] One in Coimbatore Division at the premium of 0.11 *per cent* of the contract value and in Tiruvallur Division at the premium of 0.13 *per cent* of the contract value.

5.2.5 Non-assessment of pavement condition

IRC: 82-2015 mandates conduct of pavement condition surveys by visual assessment of the surface and to record the percentage of cracks, patchwork, potholes, depression, etc., in standard format with the location. IRC ibid also stipulates that surveys are to be carried out at least twice a year, before and after monsoon, for preventive and long term maintenance strategies.

As per the conditions of contract for execution of road works, the contractor shall be responsible to make good and to rectify at his own cost any defect noticed during the Defect Liability Period (DLP).

GoTN sanctioned 4,900 works for widening, strengthening and improvement of roads under CRIDP scheme at a cost of ₹ 3,956.95 crore in eight test checked Divisions during 2016-17 to 2020-21. Of the same, the Department completed 4,011 works during the same period with an expenditure of ₹ 3,479.71 crore. Audit noted that despite the importance of pavement condition survey for preventive and long term maintenance activities, these surveys were not conducted by the field officials of the Department in all eight test checked divisions. Department did not also maintain any document to record the deficiencies in the road condition.

The said survey by the field officials of HD would provide an opportunity to rectify the defects in the road condition during the DLP of the contract at the cost of the contractor. Audit noticed in 103 stretches in Thanjavur Division and 29 stretches in Perambalur Division which were in DLP, the percentage of the poor condition of the road was 73.39 *per cent* and 38.50 *per cent* respectively.

Thus, non-assessment of the road condition through periodical survey as mandated in IRC specifications, resulted in ineffective formulation of preventive and long-term maintenance strategies of road network in the State. Moreover, Department also lost the opportunity to rectify these defects free of cost during DLP and this also led to unintended benefit to the contractor.

On being pointed out, the Department admitted (March 2022) the non-conducting of surveys and stated that there was no provision in the agreement condition for the above. During the Exit conference (May 2022), Principal Secretary to Government directed the department officials to comply with the IRC recommendations.

Government stated (August 2022) that condition of road was assessed before releasing the withheld amount and also stated that necessary instructions have been issued in this regard. The reply is not convincing because the IRC provisions mandates assessment of pavement condition through surveys atleast twice a year and not at the time of release of withheld amount.

5.2.6 Approval and cancellation of tenders without orders of competent authority

GoTN sanctioned ₹ 16 crore for the purchase of Mechanical Broomers and Skid Steer Loaders and released ₹ 7.86 crore for 2020-21. The DE (City Roads) prepared the estimates using the GEM portal rates and works orders were also issued through GEM portal. The DE (City Roads) issued (November 2020 and January 2021) purchase orders for 10 Mechanical

Broomer and skid steer loader to a bidder for the value of ₹ 5.65 crore and procured the machinery. Audit noted that DEs are entitled to accept bid for a value of ₹ 0.15 crore. However, in the instant case, DE completed procurement without obtaining orders from higher authorities as login credentials were provided only for DEs and ADEs for procurement through GEM portal.

Thus, absence of login credentials to the competent authority led to approval of tenders by the sub-ordinate authorities in excess of their approved limits.

Government accepted and stated (August 2022) that circular instructions were issued in July 2022 to all the Superintending Engineers and Divisional Engineers to take necessary action in this regard.

Similarly, Section 10 and 12 of the TNTT Act, 1998, empowers the Tender Accepting Authority to reject the tender if the Tender Accepting Authority decides that the price quoted by such tenderer is higher by the percentage as may be prescribed over the schedule of rates or prevailing market price. Government delegated (October 2012) the powers for accepting the tenders for the officials of the HD based on monetary value.

Audit noticed that Superintending Engineers C&M, Coimbatore, however, cancelled seven tenders[32] citing higher tender premium / single response for which delegation of powers was available only with Commissionerate of Tenders. The cancellation of tender by Superintending Engineers, who was not competent, was also not monitored by the higher authorities.

Government accepted and stated (August 2022) that necessary instructions have been issued to all Superintending Engineers in July 2022 to follow the mandated procedure.

5.3 Delayed completion of works

Schedule of rates (SOR) provides the rates of materials used in the works and the rates of various categories of labour. SOR is revised annually by the competent authority after considering the current market rates. These rates and labour charges are adopted by the officials of the Department for preparation of estimates and technical sanction.

GoTN constituted (January 1999 and January 2011) Standard Schedule of Rates (SOR) Committee to prepare a Standard SOR for HD in tune with the actual requirements. Public Works Department revised their SOR every year with the approval of PWD SOR Committee in which DG (Highways) was also a member. While HD adopted most of the items from PWD SOR, HD fixed separate rates for items *viz*., labour and metals with the approval SOR committee of HD on the same day or the next day as shown in the **Table 5.2.**

[29] i) 2018-19 - Package 60 - ₹ 1.87 crore; ii) 2019-20 - Package 09 - ₹ 7.03 crore; iii) 2019-20 – Package 17 - ₹ 5.48 crore; iv) 2019-20 - Package 66 - ₹ 5.21 crore; v) 2020-21 - Package 25 - ₹ 5.34 crore; vi) 2020-21 - Package 26 - ₹ 5.27 crore; vii) Package 27 - ₹ 5.27 crore.

Table 5.2: Approval of SORs

Year	Date of approval of PWD SOR by Committee	Date of approval of HD SOR
2016-17	16.08.2016	17.08.2016
2017-18	01.06.2017	01.06.2017
	20.10.2017	21.10.2017
2018-19	22.05.2018	23.05.2018
2019-20	14.06.2019	14.06.2019
2020-21	20.04.2020	20.04.2020

(Source: Details furnished by the Department)

As may be seen from the above, the SOR for the financial year 2016-17 to 2018-19 were finalised after June of the subsequent year. Audit noted that the rates adopted in HD SOR for Labour and ISS Metals were higher than those adopted in PWD SOR. The increase in rates in respect of Labour varied between 11.65 and 14.62 *per cent* whereas it varied between one and 14.5 *per cent* in respect of ISS Metals for the years 2016-17 to 2020-21.

HD adopts percentage tender system for execution of road works. The rates quoted by the contractors were based on estimated rates. Hence increase in HD SOR leads to unintended benefit to contractors.

During Exit conference (May 2022) Director General of Highways replied that the matter would be examined.

Department prepared estimates for the sanctioned work relating to the financial year after the finalisation of the SOR. This in turn delayed the awarding and execution of work within the financial year of sanction leading to spill-over work in the next financial year.

The details of new works sanctioned and completed during the years 2016-21 and spill-over works carried forward to subsequent financial years are shown in **Table 5.3:**

Table 5.3: Details of works sanctioned, completed and spill-over works

Year	Works sanctioned	Works completed	Percentage of completion	Spill-over works	Percentage of spill-over works
2016-17	2,240	303	14	1,937	86
2017-18	2,662	429	16	2,233	84
2018-19	4,421	1,301	29	3,120	71
2019-20	4,682	1,154	25	3,528	75
2020-21	6,069	2,137	35	3,932	65

(Source: Details furnished by the Department)

As may be seen from the above, the actual completion of sanctioned works in the financial year of sanction ranged between 14 and 35 *per cent* which resulted in carry over of incomplete works to subsequent years as spill-over works ranging between 65 and 86 *per cent*.

In this connection, Audit observed that non-completion of works in the year of sanction was mainly due to delayed award of works leading to diversion of funds sanctioned for new works for execution of spill-over works as discussed in **Paragraph No.3.2.**

Audit also noted that in 35 out of 41 Divisional Offices of the Highways Department in the State, the field officials failed to levy milestone-wise Liquidated damages (LD) for the delayed execution of works as per the terms of agreement and the provisions of the Highways Manual.

Department agreed (November 2022) and stated that necessary instructions have been issued to the field officials to levy LD for the shortfall in execution of work as per milestones prescribed without fail.

Recommendation: Government may ensure completion of works within the financial year of sanction and impose Liquidated Damages milestone-wise as per the Manual provisions to avoid delayed execution of work.

5.4 Incorrect adoption of traffic census

As per IRC 9:1972 - Traffic Census on Non-Urban Roads, traffic should be counted at each census point at least twice every year. One count should be taken during the peak season of harvesting and marketing and other during the lean season. Para 2.2 of IRC 108:1996 recommends that the average of the peak and lean season census data can be taken as the average for the year. However, CE (C&M) instructed (April 2017) to conduct traffic census once in three years and such census in both peak and lean seasons.

Audit noted that the field officials of the eight selected Circles of HD did not conduct traffic census of the road stretches under their control, as instructed by CE, *viz*., for both peak and lean seasons except Maduranthakam sub-division. These field offices conducted census during the peak period and determined the pavement thickness accordingly. Due to adoption of average traffic data of both peak and lean season of Maduranthakam sub-division there was considerable reduction in the thickness of the road pavement. A comparison of the ratio of peak and non-peak census of Madhuranthakam sub-division, with the peak census data adopted for 14 road works of two divisions *viz*., Salem and Thoothukudi revealed excess pavement thickness and additional expenditure of ₹ 0.89 crore **(Annexure 8)**.

The additional expenditure on these 14 works worked out to 5.65 *per cent* of the estimated cost of the works which would have been saved by the Department. Comparing to the overall expenditure of ₹ 15,515 crore under CRIDP scheme (except IRQP) for the period from 2016-17 to 2020-21, the savings on account of adoption of correct traffic census would yield a savings of ₹ 776 crore (adopting five *per cent*).

During the Exit Conference (May 2022) Principal Secretary directed the department to analyse the incorrect adoption of traffic census, causing additional financial burden to the State exchequer.

5.5 Adoption of incorrect test results for preparation of estimates

The pavement design for widening of Highways roads are determined based on CBR test results as per IRC 37-2012 and the pavement design for strengthening of Highway roads are determined based on BBD test results as per IRC 81-1997. If BBD tests could not be taken in the stretch due to bad condition of road, Department undertook strengthening of roads by CBR test method also.

Audit noted that the field officials of HD determined pavement design based on incorrect CBR and BBD test results leading to incorrect preparation of estimates for the four roads works in the selected Divisions[33] as illustrated in the subsequent paragraphs:

5.5.1 Incorrect preparation of estimates

Incorrect adoption of test results for test checked three works are detailed below in tabular form:

Sl. No.	Name of the Work	Road Stretch	Technical Sanction date	Name of the test data in which manipulation done	Nature of manipulation
1	Strengthening of Alwarthirunagari-Nazareth-Sathankulam-Valliyoor Road	11/0 – 14/8	January 2017	BBD	The test result for the stretch of 17/0 to 18/4 was incorrectly adopted for determining pavement design for the stretch of 13/0 to 14/8. Audit noted that no BBD test was conducted by HRS for 13/0 to 14/8 stretch.
2	Strengthening of Kadalaiyur – Ettayapuram road	8/0-9/0	November 2017	CBR	The estimate stated that the BT surfaces was worn out and hence, strengthening estimate was prepared using the un authenticated CBR test result. Independent analysis of data of HRS revealed that no CBR test was conducted for the stretch.
3	Strengthening of Duraiyoor Branch Road	Km 0/0 – 0/6	November 2017	BBD	The estimate stated that pavement design was arrived by using the BBD test report of HRS. However, audit ascertained from the records of HRS, that no such BBD test was conducted. This indicated that the estimate was prepared with the false data.

Thus, the field officials either manipulated or used false data of BBD/CBR test results while preparing the estimates and executed the work.

Government accepted and stated (August 2022) that suitable instructions have been issued to the Divisional Engineers to adopt the test results of particular stretch / the authenticated test results of Regional Laboratory in future. It was also assured that prudent measures would be taken to not to repeat such flaws in future.

5.5.2 Strengthening of Poonamallee – Kunrathur – Pallavaram Road

The work of strengthening of Poonamallee – Kunrathur – Pallavaram Road at Km 2/2 – 4/750 (SH 113A) was technically sanctioned (August 2018) for ₹ 4.20 crore (Chengalpattu Division). The estimate was prepared based on IRC 37 instead of IRC 81 without stating any reason.

Audit cross verified the details of BBD tests conducted (2018-19) by the HRS and ascertained that the BBD tests were conducted in these stretches. Despite having the BBD test results, the Department adopted IRC 37 by suppressing the fact of BBD results and laid 70 mm of DBM with 40 mm of BC for the entire stretch.

[30] Thoothukudi and Chengalpattu.

Audit analysed the BBD test with IRC 81 and found that the utilisation of 70 mm DBM was in excess of requirement and there was also excess utilisation of 10 mm of BC which led to avoidable expenditure of ₹ 1.92 crore.

Government replied (August 2022) that the road was badly damaged due to heavy rains and increase in traffic after conducting BBD test. The reply is not acceptable as the BBD tests were conducted by HRS in 2018-19 and the technical sanction based on site conditions was also accorded in August 2018. The Department considered the traffic census taken in May 2017 for preparation of technical sanction and increase in traffic census after BBD test was not justified.

Recommendation: Government may initiate action against the officials for adoption of incorrect test results.

5.6 Execution of unsafe pavement design in road works

Para 3.4 of IRC 37:2012 recommends that the pavement thickness for laying roads is arrived based on California Bearing Ratio (CBR) of the subgrade soil. The measurement of resilient modulus of soil which are the main inputs for the analysis and design of pavements is estimated from CBR value.

Clause 5.1.1.2 of IRC 37:2012 states that, where different types of soils are used for sub-grade, a minimum of six to eight average CBR values may be taken to arrive the design CBR for calculation of pavement thickness. IRC also recommends that for high volume roads *viz*., NH and SH, 90 *per cent* of the average CBR value should be equal to or greater than the designed value. For other category roads, *viz*., MDR and ODR 80 *per cent* of the average CBR value should be equal to or greater than the designed value.

Test check of 64 works (SH-6, MDR and ODR- 58) executed in Thoothukudi Division, revealed the following:

- As against the stipulation of 90 *per cent* of safe road stretch for SH with more than 20 msa[34], Audit noted that six SH works exceeded more than 10 *per cent* unsafe stretch. The unsafe stretch ranged between 16.67 and 83.33 *per cent* of length.
- Similarly, as against the stipulation of 80 *per cent* of safe road stretch for MDR/ODR, Audit noted that the unsafe stretch was in 58 stretches and it ranged between 33.33 and 87.5 *per cent* of road length.

Audit observed that the main reason for execution of works resulting in unsafe road stretch was due to incorrect rounding of the CBR value.

Government replied (August 2022) that intrinsic error in calculation of percentile was obvious in small data set with repetitive values. The reply is not tenable as these errors yield unsafe road stretches in excess of the permissible quantum.

[31] Million Standard Axles calculated on the basis of number of vehicles passing the pavement and is used for designing the pavement.

5.7 Non-usage of select soil led to avoidable expenditure of ₹ 2.38 crore

While forming the new roads or widening the roads, Para 5.1 of the IRC 37-2012 stipulates the top 500 mm of the soil (subgrade), which is foundation for the road, should be well compacted to derive optimal strength of pavement during the service life. It also stipulates that when the roads having traffic of 450 commercial vehicles per day (CVPD) or higher subgrade should have a minimum CBR of eight *per cent*. When the subgrade soil is poor, then it should be strengthened by suitable select soil accordingly. The IRC SP: 72-2007 stated that the CBR value having two to four is classified as poor or very poor and five as fair. Para 4.3 of IRC SP 72-2015 states that the quality of the subgrade for design purposes should be at least fair even when the traffic volumes are low.

Audit noticed that the Department failed to strengthen the poor/very poor soil by suitable select soil in 16 works in two divisions[35] which had traffic more than 450 CVPD and CBR value less than or equal to four *per cent*. In this regard, it is pertinent to note that using the suitable select soil would give more economical design. Despite the same, no additional soil was used to improve the subgrade. Departmental workings based on lesser CBR value increased the pavement thickness of the road stretch leading to avoidable expenditure of ₹ 2.38 crore (adopting the departmental data) which is 5.8 *per cent* of the total estimated value in these 16 works.

Government replied (August 2022) that the soil could not be strengthened due to non-availability of borrow earth with CBR 08 within a radius of 30 km. The reply is not acceptable as this was not considered in the report accompanying the estimates before the technical sanction.

5.8 Commencement of work without ensuring availability of land

GoTN sanctioned (October 2013) ₹ 69.30 crore for formation of Outer Ring Road to ease the congestion in Erode Town. In the technically sanctioned estimate, Department recorded that the required land for the work was available and no provision was made for Land Acquisition. The work was awarded (February 2015) for ₹ 50.65 crore to L1 for completion in 24 months. The contractor requested (July 2017) to foreclose the work stating that 90 *per cent* of works were completed except in 815 m due to non-availability of work front. The contract was foreclosed (September 2017) after incurring the expenditure of ₹ 45.84 crore. After completion of land acquisition, the work was completed in February 2021.

Audit noted from the records that the Department arrived (August 2020) the fuel loss as ₹ 8.54 crore due to travel of an additional distance of 08 km by the general public and cost overrun of ₹ 3.20 crore involved in the court cases. The total loss due to non-completion of work with the first contractor was worked out as ₹ 11.74 crore.

Thus, commencement of work without ensuring availability of land led to delayed completion of project and loss time and money to general public due to travel of additional distance.

[32] Chengalpattu and Perambalur.

Government replied (August 2022) that though 90 *per cent* of work front was available for construction while awarding the work, it was held up due to court cases. The reply is not tenable as the technical sanction recorded that the required land was available and no provision was made for acquisition of land which proved that the Department failed to assess the complete land requirement for the project.

5.9 Execution of road works by a debarred contractor

SE (C&M), Tirunelveli invited e-tenders (May 2020) for three packages[36] under CRIDP 2020-21. Though six bidders participated, only two bidders were eligible for opening of financial bids as others failed to submit EMD documents or not complied with pre-qualification. All the three packages were awarded to the same lowest bidder. Based on a complaint, Department verified that both the eligible bidders submitted EMD document from the same bank account. The tender was cancelled (September 2020) based on suspected collusion between the two bidders.

Department again invited tender with short term notice (September 2020) for early completion of these three packages of the work. Before finalisation of the tender, Department received (November 2020) a petition stating that some items of works were commenced before finalisation of contract. The petitioners also filed (October and November 2020) Writ Petition in Hon'ble Madras High Court, Madurai Bench to forbid the department from processing the tender for these packages of work.

Hon'ble High Court in its judgement (January 2021) had quashed the Tender Notice (September 2020) and observed that the act as deception and deceiving the Government as well as the general public and directed to take appropriate legal action against the erred officials and also directed that contractor shall not be rewarded and adequate action to be taken against them.

However, despite the Hon'ble Court judgement (January 2021), SE (C&M) Tirunelveli Circle communicated to the SE (NRR), Tirunelveli to debar the contractor[37] on 15 February 2021 and the contractor was debarred for 90 days in March 2021 after obtaining few clarifications. Audit noticed that a work was awarded for ₹ 6.99 crore by the SE (NRR), Tirunelveli on 24 February 2021 for completion of the work on 23 October 2021. The contractor commenced the work on 24 February 2021 and completed in September 2021 and department made the payment of ₹ 6.92 crore. Thus, the SE (NRR) unduly favoured the erred contractor by allowing to work from 24 February to 23 October 2021 calling clarifications even after the direction of Hon'ble High Court in January 2021. Further, the contractor executed this work during the period of debarment and no action was initiated on the officials responsible for belated communication of court orders.

Retender for 21 works, after omitting the portion of work executed by the debarred contractor, in three packages was invited for ₹ 13.17 crore in February 2022 and the works were completed. An estimate for ₹ 61 lakh

[33] (i) Package 10 (six bidders); (ii) Package 17 (six bidders); (iii) Package 18 (six bidders).

[34] S. Vellapandi.

prepared to complete the partially completed works by the debarred contractor was pending approval (December 2021).

Audit observed through Joint Inspection (December 2021) that due to partial completion of two minor bridges and the connected road work by the debarred contractor, the road users were forced to use the diversion road for over 12 months.

Thus, Department failed to identify and stop execution of works in the assets of the HD prior to the finalisation of the contract. Delay in communication of the orders of the Hon'ble Court had resulted in undue benefit by way of award of contract for ₹ 6.99 crore to the debarred contractor.

Government accepted (August 2022) and stated that action had been taken against the contractor for executing the work before award of contract, by suspending the registration for 90 days. However, the fact remains that the department failed to identify and stop the execution of works in the assets of HD prior to the finalisation of the contract and no action taken on officials responsible for award of contract despite court orders.

5.10 Undue favour to the contractor to the tune of ₹ 5.86 crore

Para 6.1 of Departmental standardised code for works contractors stipulates that banning the contractor and the revocation thereof shall be made by the administrative department in consultation with the Public Department.

Rules for registration of Contractors (Rule 10) for Government Works, stipulated that the resumption of the contractor to the original category after removal or suspension shall be made afresh and the application shall be considered on its merits. Further, the Rule 13 stipulated that the contractor whose name has been removed from the register once may for valid reasons be reinstated after a period of one year by the authority competent to remove him from the register, with the approval of the next higher authority.

GoTN sanctioned (October 2017) widening and strengthening of roads in Thoothukudi Division (Package 25 of 2017-18) at a cost of ₹ 6.53 crore. Out of three responses (November 2017), the work was awarded to the lowest tenderer[38] (February 2018) for ₹ 5.90 crore. Meanwhile, production of false documents by forging the experience certificate by the bidders was brought to the notice of the department and the tender was cancelled (April 2018) after verification. In deviation to the above provisions, SE (NH) debarred the contractor from participating in tender for a period of four weeks from 08 May 2018 to 04 June 2018.

In the meantime, Department invited retender (April 2018) for the work (Package 25 of 2017-18) by fixing the last date for submission of tender as 08 June 2018 *i.e.,* after the period of debarment was completed. Three bidders, including the contractor who was debarred earlier, participated in the tender. The work was awarded (August 2018) by CE (C&M) to the same contractor (L1) who was debarred earlier, for ₹ 5.89 crore. The works were completed during January 2019 and a payment of ₹ 5.86 crore was made.

[35] N. Ravichandran.

As per invitation for prequalification in the tender notice, the experience of the contractor should also include the minimum quantities of work executed (item-wise) during the last five years. Audit noted variation in the requirement of minimum quantities of work executed between the two calls as detailed in **Table 5.4**.

Table 5.4: Changes in minimum quantities

Item	Minimum quantities of work required to be executed during (cu m)	
	First call	Second call
GSB	948.21	3,825.57
WMM	2,877.36	

(Source: Details collected from the Department)

Audit also noticed that lowest tenderer did not prequalify for retendered contract if the minimum quantities of GSB and WMM were not clubbed together and clubbing of minimum quantities of these items enabled him to get the contract. It is pertinent to point out that though the lowest tenderer himself admitted his ignorance of declaring wrong quantities and requested to offer the contract to him.

Thus, Department officials failed to adhere to the Rule provisions in debarring contractors and subsequent reinstatement, adopted different period of debarment for the three bidders, modified the prequalification requirements which resulted in undue favour to the contractor to the tune of ₹ 5.86 crore.

Government replied (August 2022) that the Engineer may omit or suspend certain items of work and amend the tender documents before opening of tender as per Clause PS 103.01 of Highways Manual Vol.I. It was also stated that to expedite and put in use the road to the public at the earliest, the minimum quantities executed has been modified by combining the items of GSB and WMM. The reply is not tenable as PS 103.01 permits omission or suspension of certain items of work and not to modify the tender conditions on prequalification of the contractor.

Recommendation: Government may fix responsibility on the officials responsible for not adhering to the Rule provisions for debarment of contractors.

5.11 Performance Based Maintenance Contract, Pollachi

GoTN announced Performance Based Maintenance Contract (PBMC) system for maintaining road stretches for a period of five years with the objective to ensure good physical condition of the roads and to provide adequate comfort to the road users. The PBMC work involved taking up Initial Rectification (IR) of the identified road stretch, widening, strengthening and improving the road stretches wherever necessary and periodic maintenance as per renewal cycle.

GoTN sanctioned (January 2013) execution of work under PBMC for 191.40 km in five roads of SH at a cost of ₹ 121.62 crore and 185.988 km of 16 roads of MDR for ₹ 112.31 crore.

Tender for the work was invited in November 2013 in which two tenderers participated. The lower of the two tenderers, M/s. SPK & Co was awarded (February 2014) the work for ₹ 254.80 crore with contract period from 2014-15 to 2018-19. The stretch was handed over (February 2019) after the completion of the contract period and the contractor was paid ₹ 254.62 crore including ₹ 15.07 crore towards price variation. The audit observations relating to the execution of works under PBMC contract are detailed in the subsequent paragraphs.

5.11.1 Non-achievement of intended objectives of PBMC

As per the contract agreement, the contractor may request to issue taking-over certificate, when the works were substantially completed. Before, issue of taking-over certificate, the Department should notify the contractor of any defects in the works with instructions to rectify the same. The contractor should also ensure that the service levels of Roughness Bump Integrator / Roughometer of the road stretches were below 3,500 mm/km and the potholes/ patches should not exceed 04 to 05 per km.

As per clause A13.3, the contractor shall be responsible to undertake detailed road condition survey to enable the department to review the annual periodic maintenance requirements. For this purpose, the contractor should submit a report which consists of the condition survey and Roughness Index. The information provided to the Department would be used for the purpose of monitoring and reporting road asset condition.

Audit, however, noted that the data relating to road condition was not available in the Road Maintenance Management System software of the Department.

On completion of the contract, the road stretches were taken over (February 2019) by the field officials of the Department without any documented defects in the road stretches. Audit however noticed that Department carried out strengthening works in 10 stretches during 2019-20 and 47 stretches during 2020-21 which were handed over by the PBMC contractor in February 2019.

Audit analysed the technical sanction of these 57 works and observed the following:

- Department strengthened 10 stretches of roads immediately after taking over (February 2019) during 2019-20 by conducting BBD tests on these stretches in August 2019 and incurred an expenditure of ₹ 14.27 crore.
- It was recorded in the technical sanction (May 2020) for 10 out of 47 works, which were executed during 2020-21, that the bituminous surface was worn out and hence BBD test could not be conducted. Audit noted that these 10 road works were strengthened from base level by providing 250 mm of WMM, 95 mm of DBM and 30 mm of BC with an expenditure of ₹ 16.02 crore.
- As these stretches were not maintained in good condition during handing over, they were required to be strengthened during 2019-20 and 2020-21 incurring additional expenditure.

Thus, the field officials of the Department failed to ensure the good condition of the road stretches at the time of taking-over from the PBMC contractor which resulted in incurring an additional expenditure of ₹ 20.72 crore.

Government replied (August 2022) that the Roughness Index data was not uploaded in the software but handed over to the field office. It was also stated that the works were taken up during 2019-20 and 2020-21 after the completion of defect liability period of five years. The reply is not tenable as the contractor received lump sum payment during the five years to undertake ordinary repairs and maintain the road in good condition. Despite the same, the road was improved from base level within a year of taking over from the contractor.

Recommendation: Government may take steps to ensure that roads are available in good condition at the time of takeover from PBMC contractors after completion of maintenance period. Suitable action may be taken by fixing responsibility on the officials responsible for incurring additional expenditure to Government.

5.11.2 Delayed recovery of price variation from the contractor

As per Clause 48 of the contract, the contract price shall be adjusted for increase or decrease in rates of general materials, cement, steel, etc. and differential amount towards price variations is paid or recovered from the contractor.

It was noticed that an amount of ₹ 9.02 crore was recovered (March / November 2017) from the contractor towards price variation with delay ranging from seven to 27 months. Delay in recovery led to loss of interest of ₹ 1.35 crore arrived based on interest rate of Government borrowings.

Government accepted and stated (August 2022) that the recovery was not made due to non-payment of bills to the contractor for want of fund allotment. The reply is not tenable as the department settled the bills to the contractor prior to March 2017 but failed to recover price variation.

5.11.3 Irregular utilisation - contingent expenditure

Para 122 of the Tamil Nadu Highways Manual envisages that the provision of contingencies is intended to cover the cost of other incidental charges connected with the work and is not intended to cover the cost of unforeseen works. It further envisaged that the provision for the contingencies may not be diverted for any new work.

It was, however, noticed that Department incurred an expenditure of ₹ 4.74 crore under contingent expenditure by deviating the above Manual provision, as detailed below:

- Though provision for road furniture was given under ordinary maintenance under Clause C-1 of the PBMC agreement, a sum of ₹ 1.55 crore was paid towards road furniture from the contingent expenditure.
- As per clause 29 of General Condition of the agreement, the execution of emergency works shall be undertaken by the contractor based on

damages occurred as a result of natural phenomena. For this purpose, a sum of ₹ 1.65 crore was allotted under emergency works. However, SE, C&M, Coimbatore approved (October 2015) construction of Gabion Walls at km 62/8 of Pollachi – Valparai Road (chainages 62/600 – 62/704) for ₹ 39.65 lakh under contingencies.

Government replied (August 2022) that at the time of preparation of the PBMC estimates the necessity of providing Gabion Walls did not arise. Hence to prevent erosion on the hill side and urgency of work contingent provision was used to construct Gabion wall. The reply is not tenable as the contingent expenditure should not be used for execution of unforeseen works.

- Divisional Engineer (C&M), Pollachi accorded (December 2015) approval of ₹ 45.93 lakh for construction of Quality Control Laboratory in Pollachi (C&M) Sub-Division out of the provision of ₹ 1.22 crore provided for quality control charges of the PBMC. The work was completed (August 2016) for ₹ 45.78 lakh. Thus, capital assets were created from the contingent quality control charges without the approval of Government.
- Similarly, quality control laboratories in five[39] locations at a total estimated cost of ₹ 3.96 crore were constructed under the PBMC in Virudhunagar (C&M) Division also utilising contingent quality control charges.

Government replied (August 2022) that to avoid the delay in proof check of the tests done by the contractor and to carry out timely test the Quality control laboratory was constructed. The reply is not tenable as the creation of capital assets utilising contingent charges without the approval of Government is not in accordance with the provisions of Highways Manual.

5.12 Review on Improvement to Riding Quality Programme

Department undertook periodic maintenance works of road stretches under CRIDP adopting IRC / MoRTH specifications. Department identified that there was backlog in undertaking periodical maintenance of roads every year in respect of stretches which had completed five years after their renewal cycle. Based on the request of the Department, Government sanctioned ₹ 2,790.16[40] crore for improving the riding quality of 10,643 km length of roads during 2018-19 to 2020-21. Based on the sanction, CE (C&M), instructed to select the stretches for the works under IRQP as follows:

- The identified road stretches should have completed the renewal cycle as per Road Chart;
- the road stretches which warrants only wearing course *viz*., BC/CGPC should be identified so that the necessity of conducting BBD tests did not arise;
- The damages caused to the base course or the binder course should be lesser than 25 *per cent* area of the road.

[36] Rajapalayam, Sattur, Srivilliputhur, Thiruchuli and Virudhunagar.

[37] 2018-19 – 3,825.58 km at ₹ 850 crore; 2019-20 – 3,597.20 km at ₹ 1,039.79 crore and 2020-21 – 3,220.60 km at ₹ 900.37 crore.

Audit noted that the criteria for selection of road stretches for conducting periodic renewal under IRQP was not in consonance with IRC: 82-2015 which emphasised that condition surveys need to be carried out twice every year, before and the after the monsoon season to ensure preventive and periodical maintenance of the roads. Based on the condition survey data, the rehabilitation needs of the road stretches should be determined.

As per IRC: SP-16 2004 if the value of Roughness Index of bitumen road surface is more than 3,000 mm/km the road shall be categorised as poor surface. In the absence of adherence of any IRC specification and condition survey data for selection of roads, Audit obtained the Roughness Index data conducted during 2014, 2015 and 2017 in the selected divisions and ascertained that the IRQP works were executed in 43.25 *per cent* of the poor stretches during 2018-19 to 2020-21 as detailed in **Table 5.5** below:

Table 5.5: Execution of IRQP works in poor condition stretches

Division	Survey Year	No. of roads	Work done in (in Km)			Percentage of Poor IRI
			Good	Poor	Total	
Coimbatore	2014 and 2015	26	85.778	61.047	146.825	41.58
Karur	2014 and 2015	24	140.900	28.222	169.122	16.69
Perambalur	2014, 2015 and 2019	33	74.231	79.281	153.510	51.65
Salem	2014 and 2015	25	90.858	79.778	170.636	46.75
Sivagangai	2014 and 2015	105	175.495	151.709	327.204	46.37
Thanjavur	2014 and 2015	3	34.860	18.435	53.295	34.59
Thiruvallur	2014 and 2017	63	73.399	79.703	153.102	52.06
Thoothukudi	2014	46	47.061	52.565	99.626	52.76
	Total	**325**	**722.582**	**550.740**	**1,273.320**	**43.25**

(Source: Details furnished by the department)

Audit findings relating to the deficiencies in execution of work under IRQP in the selected Divisions are detailed in the subsequent paragraphs:

5.12.1 Perambalur Division

IRC-82-2015 recommends that a thin overlay may not be considered as a preventive maintenance when it is applied to a distressed pavement in poor condition.

Perambalur Division executed 72 works under IRQP in MDR/ODRs to a length of 148 km during 2018-19 to 2020-21. The HRS conducted the road condition survey for ODRs in Perambalur Division in 2019. The test results of the condition survey in ODR road stretches of the Division conducted during 2019 revealed the following:

- The condition of 68 ODRs (length of 295.55 km) with road length of 137.250 km had IRI values more than 3,000 mm/km which indicated the condition of the road as poor.
- Division executed IRQP works with road condition survey in 42.339 km out of 73.647 km (57 *per cent*) in which the stretch had poor bitumen surface. In deviation to recommendations of IRC 82-2015,

IRQP works were carried to a length of 35.900 km of roads with poor bitumen surface with an expenditure of ₹ 12.28 crore.

- The Divisional officials executed eight works before conducting the road condition survey for a length of 13.68 km incurring an expenditure of ₹ 2.62 crore. Audit however, noted that 6.370 km (47 *per cent*) of the stretch was in poor condition. Thus, evenafter incurring an expenditure of ₹ 2.62 crore for laying wearing course, the road stretch continued to be with poor bitumen surface resulting in infructuous expenditure to the Government. It is pertinent to note, that these stretches were within the Defect Liability Period and no action was initiated against the contractor for rectification of the road condition or to recover the expenses from him.
- Audit also noticed that a length of 4.685 out of 12.856 km of six road stretches was in poor condition as noticed from the condition survey conducted in 2014 and 2019. Despite the same, these stretches were not selected for periodical maintenance during 2020-21.

Government stated (August 2022) that the stretches were not selected due to paucity of funds and no specific reply has been furnished for other observations.

5.12.2 Tiruvallur Division

Tiruvallur Division executed 98 works under IRQP in MDR/ODRs to a length of 222 km during 2018-19 to 2020-21. The test results of the condition survey in MDR and ODR road stretches of the Division conducted during 2017 revealed the following:

Division executed 153.11 km (70 works) under IRQP during 2018-19 to 2020-21 and of which 79.715 km stretches were categorised as poor bitumen surface. Illustrative cases of six works involving a length of 16.2 km executed on poor bitumen surface are detailed in **Table 5.6**.

Table 5.6: Works executed on poor bitumen surface

Sl. No.	Year	Name of the Work	Total length (km)	Length in which IRI was poor (km)	Range of IRI values (mm/km)
1	2018-19	IRQP at km 0/2-5/0 of Elavur-Sunnambukulam Road	4.80	4.60	3,085 to 9,495
2		IRQP at km 0/0-3/8 of 42/0 of Tirupathi-Renigunta-Tiruttani-Chennai to Thirupachur-Attupakkam (via) and Kaivandur harijan colony road	3.80	3.80	3,345 to 9,684
3	2019-20	IRQP at km 0/0-1/8 of Atthimanjeri Pottathurpet road to Kakkalur road	1.80	1.60	3,068 to 5,919
4		IRQP at km 7/0-9/2 of Ramapuram-Pakkam road	2.20	1.30	3,261 to 4,985
5	2020-21	IRQP at km 0/0-3/4 of Adhigathur road	3.40	2.70	3,337 to 9,269
6		IRQP at km 4/2-7/3 of G.N.T. Road-New Erumaivettipalayam road	3.10	2.10	3,126 to 24,342

(Source: Details collected from the Department)

Government stated (August 2022) that the road stretches were selected after conducting visual surveys by the site engineers and those roads were found to be structurally strong. The reply is not tenable as the road condition survey conducted by the HRS revealed poor road surface condition.

5.12.3 Non-adherence of CEs instruction

Chief Engineer instructed to select the road stretches which had less than 25 *per cent* area of the road stretch with damages to the base course or the binder course for execution of works under IRQP. However, Audit noted that roads in excess of 25 *per cent* damages were also selected and works executed in three selected Divisions as detailed in **Table 5.7.**

Table 5.7: Execution of IRQP works on roads with damages

Name of the Division	Percentage of damage	No. of road works	Contract value (₹ in lakh)
Tiruvallur	32	1	38.89
Thoothukudi	25 to 45	9	338.45
Perambalur	25 to 32	11	489.99

(Source: Details furnished by the Department)

Government stated (August 2022) that the damages to the base and binder course was less than 25 *per cent* after deducting the road edges. The reply is not tenable as Audit computed the area of BM works undertaken through IRQP as the area of damages to the binder course which exceeded 25 *per cent*. Further, the edges of the road is part and parcel of the pavement and hence included in the road area.

5.12.4 Unfruitful expenditure due to incorrect selection of roads

Government of Tamil Nadu accorded Administrative Sanction for improvement of Thalaivasal – Veeraganur Road (Km 7/0 – 7/8 and 8/0 – 10/0) for ₹ 1.33 crore under IRQP. SE (C&M), Salem accorded technical sanction for this work in which it was stated that the existing bituminous surface was in worn out condition. The improvement work of the road stretch was completed by providing a wearing course of 30 mm BC with patch works incurring ₹ 1.11 crore (March 2021). The Salem Divisional office had also executed two more works[41] under IRQP during 2020-21 in similar pattern with an expenditure of ₹ 0.57 crore (March 2021).

CE (C&M) in the Guidelines for taking up works under IRQP (April 2018), instructed to select the road stretches which had less than 25 *per cent* area of the road stretch with damages to the binder course for execution of works under IRQP. In the instant case, it was recorded in the technical sanction that the bituminous surface (binder course) was completely worn out. Despite the same, improvement works were executed on the three stretches incurring an expenditure of ₹ 1.68 crore.

Non-adherence to the instructions of the CE resulted in providing only wearing course to the road stretch which did not have sufficient binder course

[38] (1) IRQP at km 10/0 – 10/4 and 11/0 – 12/0 of Thidavorr – Thammampatty Road; (2) IRQP at km 15/4 – 17/0 of Thidavorr – Thammampatty Road.

leading to sub-standard work as it could damage the road surface earlier than the prescribed period of periodical renewal. Thus, the expenditure of ₹ 1.68 crore incurred on these three road stretches was unfruitful.

Government stated (August 2022) that the field officials erroneously stated in the estimates that the bituminous surface was in worn out condition. The reply is not tenable as two estimates were sanctioned by SE and one by DE and no documentary evidence for erroneous representation was furnished.

5.13 Road Safety

Road safety is important criteria in the design of Highway roads and the minor interventions taken in this aspect support the accident mitigation measures. Growth of high speed vehicles demands improved road infrastructure.

The State of Tamil Nadu recorded the highest number of road accidents in the country. The State topped the All India Table from 2016 to 2019 except for the year 2018 for the reason of most number of accidents and fatalities. Total number of accidents and share of State in the All India is given in **Table 5.8.**

Table 5.8: Number of accidents during 2016 to 2019 in Tamil Nadu

State	Total No. of accidents during the years								Share of State in Total No. of Road Accidents			
	2016		2017		2018		2019		2016	2017	2018	2019
	No.	Rank	No.	Rank	No.	Rank	No.	Rank				
Tamil Nadu	71,431	1	65,462	2	63,920	1	57,228	1	14.9	14.1	13.7	12.7
All India	4,80,652		4,64,910		4,67,044		4,49,002		100	100	100	100

(Source: MoRTH and Highways, New Delhi - Report on Road Accident in India - 2019)

5.13.1 Achievement of SDGs

United Nations formulated Sustainable Development Goals (SDG), envisaged reducing by 50 *per cent* the number of deaths and injuries from road accidents by 2020, with a base year of 2015-16. GoTN also adopted this as policy outline under Road Safety Programme.

The data regarding the trend in death and injuries in Tamil Nadu from road traffic accidents since the implementation of the SDG to 2019-20 is given in **Table 5.9.**

Table 5.9: Trend of fatal and non-fatal cases due to accidents

Year	Fatal		Non-fatal		Total accidents
	No. of accidents	No. of persons killed	No. of accidents	No. of persons injured	
2015-16	14,524	15,642	54,535	79,746	67,250
2016-17	16,092	17,218	55,339	82,163	71,431
2017-18	15,061	16,157	50,501	74,571	65,562
2018-19	11,375	12,216	52,545	74,537	63,920
2019-20	9,813	10,525	47,415	67,137	57,228

(Source: Details furnished by the Department)

It is seen from the above that:

- The fatal rate was reduced by 32 *per cent* of the base year of 2015-16 instead of 50 *per cent* as envisaged in the SDG.
- The reduction in number of fatal accident case was reduced by 33 *per cent* and the number of non-fatal accident was reduced by 13 *per cent* only.
- Similarly, the number of persons injured was also reduced only by 16 *per cent*.

Government stated (June 2022) that various institutional measures are being undertaken to achieve the targets and the fatality had considerably reduced in December 2020. The fact however remained that the fatality due to accidents increased to 28,156 cases for the year 2021.

Recommendation: Government may strengthen the road safety programme to reduce the fatalities and injuries due to road accidents to achieve the Sustainable Development Goal target.

5.13.2 Unfruitful expenditure on metal crash barrier work at Perambalur Division

GoTN sanctioned ₹ 20 lakh for providing metal crash barrier km 3/2 (155 m) as these stretches were in high embankment of Elambalur Tank without sufficient width and the possibility for occurring accidents was high. The contractor executed the entire length as provided in the estimate of 294 Rm and Perambalur Division paid ₹ 17.24 lakh (February 2020) to the contractor. However, during the joint inspection it was noticed that the laid metal barrier fell into the water body resulting in unfruitful expenditure. Audit also noticed that GoTN sanctioned construction of retaining wall in the same place during 2020-21 for ₹ 41.91 lakh. However, the work was not commenced till January 2022.

Exhibit 1: Metal crash barrier fell into the water body (02 February 2022)





Government accepted and assured (August 2022) that the work would be completed early.

Environmental hazard

5.14 Non-compliance with the statutory requirements to avoid atmospheric pollution

Tamil Nadu Pollution Control Board (TNPCB) prescribed (July 2016) emission and air quality standards to the Hot Mix Plants used by the contractors in execution of road works. It was instructed that hot mix plants should only use diesel/LDO as fuel.

Based on the policy decision of Board of Engineers (BOE), (August 2019), CE, (C&M) Wing instructed that diesel instead of furnace oil need to be used in CMP for heating the aggregates and bitumen to avoid atmospheric pollution. It was, however, noticed that all the eight test checked divisions continued to adopt Furnace oil, as fuel for heating the aggregates and bitumen in the sanctioned work pertaining to 2018-19 to 2020-21.

Thus, the action of the field officials in continued adoption of furnace oil in the estimates causing atmospheric pollution is in violation of the statutory requirements and non-compliance with the directions of the BOE.

Government accepted and stated (June 2022) that action is being taken to use diesel oil instead of furnace oil.

Recommendation: Government may ensure that the guidelines of TNPCB on usage of diesel in Hot Mix Plants to reduce pollution is enforced strictly.

CHAPTER VI

MAINTENANCE OF ROADS

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MAINTENANCE OF ROADS

The Department failed to conduct periodical inspections of vacant lands to prevent encroachments and did not take adequate steps for early eviction of identified encroachments. Joint inspection in two Divisions revealed execution of works with lesser thickness and variation in bituminous layer involving expenditure of ₹ 3.99 crore. Joint Inspection also revealed reduced carriage way width, absence of berms, drains without outlet and potholes in the roads.

6 Maintenance of roads

Audit conducted joint inspection of 117 road stretches[30] in the eight selected Divisions between December 2021 and January 2022 with the Departmental officials to assess the pavement conditions of the roads and structures, encroachments, etc. The observations noted in the Joint Inspection are discussed in subsequent paragraphs:

6.1 Ineffective monitoring of prevention and eviction of encroachments

As per Section 26 of the Tamil Nadu Highways Act, 2001, the Highways Authority may conduct periodical inspections of the Highways boundaries to ensure the prevention of unauthorised encroachment and for removal of such encroachments. As per Para 41 of Tamil Nadu Highways Manual Volume IV (1987), D.E should insist for periodical inspections of all vacant lands and road margins in his charge being made by his sub-ordinates to prevent encroachments.

The cases of encroachments in the six out of eight test checked Divisions are detailed below:

- In Coimbatore (C&M) Division, there were 225 cases of encroachments in May 2016. Field officials of the Department did not identify subsequent encroachments during the five year period. Department could evict only three encroachments and the encroachments pending eviction was 222 cases as of August 2021.
- A mention was made in CAG's Audit Report (General and Social Sector) for the year ended March 2017 regarding the encroachments of HD lands by 93 religious structures in Tiruvallur (C&M) Division. Audit noted that only 11 out of 93 religious structures were evicted and the balance 82 encroachments were pending eviction (December 2021). DE (H) stated (December 2021) that effective steps are being taken to evict the encroachments.
- Audit also noted that there were 27 cases of encroachments (67,676 sqm) of Highways lands in Tiruvallur (C&M) Division as on December 2021.

[39] 36 stretches in SH; 39 stretches in MDR and 42 in ODR.

- In Thoothukudi Division, Audit noted encroachments by 36 religious structures which were pending eviction as of March 2022.

Joint Inspection revealed encroachments on Highways property in five Divisions as detailed in **Table 6.1**.

Table 6.1: Details of Encroachment

Sl. No.	Name of the Division	No. of Roads	Type of Encroachment
1	Salem	2	Private firm, Temporary Structure
2	Karur	3	Temporary fencing, Police booth, Petrol bunk, ATM and EB Transformer
3	Thanjavur	1	Cultivation of paddy Crop
4	Coimbatore	3	Temple, Private Company
5	Tiruvallur	9	Temples
Total		**18**	

(Source: Details furnished by the Department)

Exhibit 1: Tiruvallur – Thirumazhisai – Uttukottai Road (11 January 2022)



Exhibit 2: Thanjavur Division -Vallam Orathanadu road @ Km 4/650 (11 January 2022)





Exhibit 3: A Private Firm in Dindigul – Bangaluru Road to Keeranatham Road (11 April 2022)	Exhibit 4: NGM Road – No.4 Veerapandi Road (11 April 2022)





Exhibit 5: Encroachment in Varanasi – Kanyakumari Road - 21 January 2022



Thus, the field officials of Highways Department failed to conduct periodical inspections of vacant lands to prevent encroachments and after identification of the encroachments departmental officials did not take adequate steps for their early eviction.

Government assured (August 2022) that all possible steps are being taken for the prevention and eviction of encroachments.

Recommendation: Government may conduct inspections to identify encroachments in the Highways lands and evict the identified encroachments early.

6.2 Discrepancies in the thickness of the BT layers

With a view to determine the thickness of the existing Bituminous pavement, a core specimen with diameter of at least 10 cm and the length of the specimen with twice its diameter was drilled with core drilling machine using diamond bits. The core specimen should be taken perpendicular to horizontal surface.

During Joint Inspection with the departmental officials, core cutting of the bituminous pavement at the selected locations was undertaken utilising the core cutting equipment of the department to compare the actual Bituminous layer available with that of the documents related to the work executed under CRIDP during 2020-21. The actual readings based on core cutting equipment revealed discrepancies in the thickness of the bituminous layer as compared to

the actuals during the execution of work. The major discrepancies in thickness of the bituminous layer observed during the joint inspection are detailed in subsequent paragraphs:

Illustrative cases of discrepancies with more than 50 mm in thickness in the selected Divisions are as follows.

Thoothukudi Division

Audit selected nine roads which were executed by the Department during 2020-21 for analysis of thickness through core cutting. Of the same, three roads (four works) were rebuilt adopting IRC 37-2018 by providing WMM, BM and BC layers. Audit observed during joint inspection that these four works were executed for a thickness ranging between 80 mm and 110 mm and in that the variation in bituminous layer was between 34 mm and 56 mm involving expenditure of ₹ 0.60 crore as detailed in **Table 6.2.**

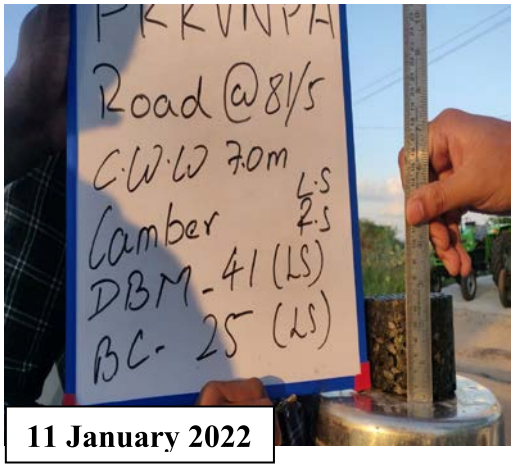
Table 6.2: Variation in bituminous layer observed during joint inspection

Name of the work	The reach in which the core cutting was done	The quantity as proposed in estimate /agreement (in mm)		Actual as per joint inspection (in mm)		Difference (in mm)		Money value for the works which were considered not done. (₹ in lakh)
		DBM /BM	BC	DBM / BM	BC	DBM / BM	BC	
Improvements of Thoothukudi - Tiruchendur - Kanyakumari Road at km 39/910 - 41/640	L/S 40/740	70	40	36	18	34	22	20.92
Improvements of Sathankulam - Kalunguvilai Road at km 8/0-9/4	LS 08/400	50	30	31	15	19	15	5.30
Improvements of Palayamkottai - Kurukkusalai Nagalapuram - Pandalkudi - Aruppukkottai Road at km 90/6 - 91/2 and km 94/0 - 94/8	LS 94/400	70	40	41	24	29	16	14.10
Improvements of Palayamkottai - Kurukkusalai Nagalapuram - Pandalkudi - Aruppukkottai Road at km 80/290 - 82/4	LS 81/500	70	40	41	25	29	15	19.28

(Source: Details collected from the Department and joint inspection)

It is pertinent to note that these four works were executed by the same contractor *viz*., M/s Sindu Murga Construction Pvt Ltd.





11 January 2022

Government accepted and stated (June 2022) that necessary explanation has been called for from the field officials for executing lesser thickness than the estimates.

Salem Division

Audit selected eight roads which were executed by the Department during 2020-21 for analysis of thickness through core cutting. Department executed three out of eight road works by recording the thickness of the available bituminous layer and new bituminous layer was provided during 2020-21. The details of the existing bituminous layer and the additional bituminous layer provided along with the actuals noticed during joint inspection are given in **Table 6.3.**

Table 6.3: Details of discrepancy in the bituminous layer in Salem division

Sl. No	Name of the Road	The reach where core cutting done	Existing BT Layer (in mm)	Works executed		As per Joint Inspection		Difference in DBM (in mm)	Expenditure incurred on DBM executed
				DBM	BC	DBM	BC		
1	Gajalnaickenpatty Panamarathupatty Seshanchavadi (Stretches: 5/0 - 7/0; 7/0 - 8/8; 8/8 - 9/6; 31/4 - 33/0; 34/0 - 36/0; 36/0 - 38/ 090	6.200	80	50	40	52	42	78	46,43,583.87
2		7.530	80	50	40	46	39	84	41,15,767.89
3		9.200	80	50	40	53	35	77	14,50,387.24
4		32.890	0	85	40	50	40	35	11,34,806.00
5		35.060	80	50	40	59	45	71	34,60,981.66
6		36.365	80	50	40	70	45	60	35,99,969.62
7	Jagir Ammapalayam - Tharamangalam at km 10/6 - 11/0	10.800	80	50	40	62	38	68	19,42,652.52
8	Salem Junction - Yercaud (Stretches: 0/0 - 0/8; 0/8- 1/8; 5/0 - 5/6	0.604	90	50	40	50	40	90	45,10,897.78
9		1.310	90	50	40	50	40	90	53,87,383.95
10		5.300	90	50	40	55	35	85	36,76,812.02
							TOTAL		3,39,23,242.55

(Source: Details collected from the Department and joint inspection)

As may be seen from the above, the core cutting during joint inspection revealed that there was no significant deviation in respect of Bituminous concrete layer provided in these three roads.

However, the thickness of the DBM layer after including the already available bituminous surface indicated that the difference in thickness was almost equal to the DBM layer provided on these roads in the works executed during 2020-21. The difference in the bituminous layer as observed from core cutting of roads in joint inspection ranged between 35 mm and 95 mm. Audit noticed that the difference in DBM layer on these stretches was equal to or more than the newly laid DBM layer in 09 out of 10 instances and hence the possibility of non-laying of DBM layer on these stretches during 2020-21 involving an expenditure of ₹ 3.39 crore could not be ruled out.

Government replied (August 2022) that the core cutting during Joint Inspection was done for the executed layers and the bottom layer as per the proposals in the estimates was added to arrive at the thickness. The reply is factually incorrect as the core cutting during Joint Inspection was conducted upto the bottom layer (base level *viz*., WMM level) and the Joint Inspection Report was certified by the Assistant Divisional Engineers of the respective sub-Divisions.

Recommendation: Government may ensure that the works were completed in accordance with the specification of the agreement including thickness of the road and may fix the responsibility on the officials responsible for non-compliance.

6.3 Non-maintenance of camber as per IRC specifications

Camber is the slope provided to the road surface in the transverse direction to drain off the rainwater out of the road surface. Main function of the paver finisher, among others, is to achieve specified camber as per IRC: SP 86:2010. The standards for camber shall be 2.5 *per cent* for bituminous surface vide IRC 73: 2018. As against the standards, Joint Inspection of the selected roads revealed deviations as detailed in **Table 6.4**.

Table 6.4: Discrepancies in the camber

Sl. No.	Name of the Division	Total No. of samples	No. of locations	
			With more than 2.5 *per cent*	With equal lesser than 2.5 *per cent*
1	Coimbatore	-	Camber not in working condition	
2	Salem	148	28	120
3	Thanjavur	29	12	17
4	Karur	141	39	102
5	Sivagangai	150	113	37
6	Tiruvallur	12	2	10
7	Perambalur	44	3	41
8	Thoothukudi	28	8	20
Total		**552**	**205**	**347**

(Source: Details collected during joint inspection)

The above table indicated failure of the department to provide camber as per IRC specifications for the structural safety of the roads, thereby increasing the maintenance costs.

Government accepted and stated (August 2022) that necessary instructions have been issued in July 2022 to all the Divisional Engineers to maintain the camber.

Maintenance of berms

DG(H) in his memo dated 11 March 2011 observed that the importance given to the formation and maintenance of pavement was not given to the maintenance of the berms[40] which had resulted in premature failure of pavement layers due to penetration of rainwater trapped in the depression on shoulders, into the road subgrade thereby weakening it. Hence, DEs concerned were instructed for the proper maintenance of the berms. It was however, noticed that berms could not be measured due to vegetation / bushes and for want of demarcation of boundaries. Hence, maintenance of the berms including formation width as contemplated in the estimates of the test checked chainages of the above selected roads could not be ascertained.

Government accepted and stated (August 2022) that necessary instructions have been issued in July 2022 to all the Divisional Engineers to maintain the berms properly.

6.4 Carriage way width

Carriage way width is the pavement width available for movement of vehicles on the road stretch. Joint Inspection with departmental officials in 37 locations (25 roads) in Thoothukudi Divisions revealed that nine out of 37 locations had lesser carriage way width than the actuals as per departmental records.

Government replied (August 2022) that carriageway width was measured incorrectly during night time due to presence of sand or dust sedimented on the pavement edge surface. It was also stated that the pavement sweeping would be done periodically to maintain the pavement surface edge broken. The reply of the Government substantiates the fact that the edges of the road were not maintained in good condition leading to reduced carriage way width.

[40] A berm is a raised barrier (usually made of compacted soil) separating areas in a vertical way, especially pathway up a long slope.

6.5 Culverts and Drains

6.5.1 Drains without proper outlet

Exhibit 6: Thiruvalikurchi road (04 January 2022)



During the joint inspection of the Thiruvalikurchi road, it was noticed that a drain constructed at km 1/10 ended abruptly on the road with discharge of water on the road surface causing pollution besides the damages to the road.

Government accepted and stated (August 2022) that construction of box culvert would be proposed in forthcoming year.

6.5.2 Perambalur bypass Road

The technical sanction of improvements to Perambalur Bypass Road, highlighted the necessity of retaining wall at Km 5/6 (30m), 7/2 (39.0m) and 7/10 (86m) to ensure free flow of vehicular traffic. However, in the joint inspection it was noticed that no retaining wall was constructed in these stretches.

Government stated (August 2022) that the proposed works were not taken up due to road safety structures. It was assured that protective walls would be constructed in those locations.

6.5.3 Eraiyur-Nannai Road (via) Nallur Perumathur

Perambalur Division proposed construction of protection wall at Km 0/2 (17.0 m) while widening the single lane to double lane during 2018-19 as the open well near the road berm posed dangerous to the road users. However, in joint inspection, it was noticed that the protection wall was not constructed and also a constructed house was available in front of the well. Department did not possess documentation regarding Right of Way of Highway lands. Road users continued to negotiate with the open well and the constructed house and thus people were exposed to risk and inconvenience.

Exhibit 7: Construction of a house (06 January 2022)



On this being pointed out, Government did not furnish specific reply (August 2022).

6.6 Other issues

6.6.1 Sendurai-Anganur-Agaramseegore-Thirumandurai Road

- Sendurai-Anganur-Agaramseegore-Thirumandurai Road was widened during 2019-20 and the work was completed in May 2020. However, during the joint inspection (January 2022) it was noticed that there were potholes in the road due to leakage of water pipes underneath at 28/10 km. A rain water harvesting structure was also built on the berms of the road at the same location as shown below:

Exhibit 8: Potholes **Exhibit 9: Rain water harvesting in berms (05 January 2022)**





The stretch of Km 23/0 – 24/0 was widened during 2020-21 including reconstruction of culvert and the work was completed in February 2021. The agreement provided for utilisation of 1,011 cum of carted earth at berms for the entire length. The department paid ₹ 0.72 lakh towards providing berms. During the joint inspection (January 2022), it was noticed that these stretches did not have berms. Further, at the place of construction of culvert, the berms were 36 cm lower than the top of the road posing great danger to the road users.

Exhibit 10: Culvert below berms **Exhibit 11: Road without berms (05 January 2022)**





Government agreed and stated (August 2022) that the potholes were temporarily rectified with carted earth. Permanent rectification of potholes and berms were yet to be completed.

Recommendation: Government may maintain roads without hindrance of open well, potholes and inadequate berms on priority to provide risk free travel by general public.

6.6.2 Vengal Seethancheri Kannigaiper Road (MDR)

The PBMC work in Tiruvallur district was awarded to contractor in February 2016 and as per the agreement the Initial Rectification work should have been completed in August 2017. The work of Improvements in 1/850 - 5/0 and Km 10/0 - 12/6 of Vengal - Seethancheri - Kannigaiper Road (M-740) was proposed to be completed in December 2018 after one year from the scheduled date. During the Joint inspection of these stretches, audit noticed that the stretches at km 0/0 - 1/850, 5/0 – 5/225 and 7/4 to 9/0 were not taken up for improvement for want of permission from the Forest Department since these areas falls under Mylapore Reserve Forest Red Hills range. Hence, the work on these stretches could not be executed till date (February 2022). No efforts were made by the Department to obtain permission by paying Compensation to Forest Department and the general public continued to use the stretch with potholes and patches.

Government stated (August 2022) that necessary proposals for obtaining permission from the Forest Department would be submitted and the work would be taken up during 2022-23.

6.6.3 Puduvoyal Periyapalayam Road (MDR) of Tiruvallur Division

During the joint inspection (January 2022) in Puduvoyal Periyapalayam Road (MDR) of Tiruvallur Division, audit noticed lot of potholes, patches, cracks and pavement distress. The PBMC contractor completed improvements works in these roads by providing BM (55 to 90 mm) and BC (40 mm) in the entire stretch of 0/0 to 12/0 km in August 2019. Though defect liability period was operative upto August 2022, no efforts were made by the Department to rectify the defects through the contractor.

Audit also noticed that the entire stretch was taken for improvement during 2021-22 for the reach of 0/0 to 8/0 km for ₹ 3.63 crore and the balance stretch of 8/0 to 12/0 at an estimated cost of ₹ 1.95 crore during 2021-22. This led to undue benefit to the contractor.

Government stated (August 2022) that the work was completed on 10 May 2017 and the defect liability period was upto May 2020. The reply is factually incorrect as the Completion Report of work indicated the scheduled date of completion of work as per agreement as August 2017 and the actual completion of work as August 2019, thereby the defect liability period was operative till August 2022.

6.6.4 Periodical renewals of Aalodu-Manopuram-Somancherry-Thathamanji Road

The work of Special Repairs and Periodical renewals of Aalodu-Manopuram-Somancherry-Thathamanji Road at km 8/0 – 13/4 was taken up during 2018-19 and completed in February 2019 with the expenditure of ₹ 70.86 lakh. During the joint inspection it was noticed that lot of potholes in these reaches were present despite the operation of Defect Liability period. Thus, the Department failed to maintain the riding surface in motorable condition invoking the DLP by the contractor.

CHAPTER VII

MONITORING AND INTERNAL CONTROL

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MONITORING AND INTERNAL CONTROL

There were delays in finalisation of completion reports which led to delayed finalisation of Revised Administrative Sanction for the works. The Budget proposals were forwarded to the Finance Department without the recommendations of Head of the Department (DG) and Head of the Administrative Department. The updation of the Departmental Manual and finalisation of the Standard Bid Document were not finalised despite incurring an expenditure of ₹ 1.67 crore which led to utilisation of the Manual which was revised 35 years back. Inadequate updation of road chart data base by the field officials indicated absence of internal control to assist the DG and Administrative head of the Secretariat Department to plan for improvements of the road stretches which were required on priority.

7.1 Completion Reports of works

Paras 203 to 207 of the Manual (Volume IV) envisages that a consolidated completion statement of works should be prepared monthly of all completed works and a detailed Completion Report (CR) should also be recorded by sub-heads, except in cases where the actual expenditure is in excess of sanctioned estimates and necessary sanction of competent authority obtained.

GoTN sanctioned 10,282 works during 2016-17 to 2018-19, of which 10,094 (98 *per cent*) works were completed (February 2022) and 188 works were not completed even after three to five years from sanction. Audit noted that the field officials of HD finalised CRs for 3,627 out of 10,094 works (36 *per cent*) and forwarded them to CE (C&M) for verification. Of the same, the verification of 2,921 CRs were completed and the balance 706 CRs was pending finalisation.

In respect of works executed during 2019-20 and 2020-21, Completion Report was kept pending for the reason that these works involved upkeeping of the road stretches for five years. Non-preparation of Completion Report for the reason of upkeeping of the road stretches was not in consonance with the Manual provisions.

Due to non-finalisation of completion reports, there was delay in issue of Revised Administrative Sanction for the works in which the actual expenditure exceeded the sanctioned estimates, resulting in absence of control over the execution of works within the sanctioned estimates.

Government accepted and stated (August 2022) that suitable instructions were issued to the Divisional Officers to complete the work early.

Recommendation: Government may monitor adherence of instructions by the Divisional Officers in finalisation of completion reports of works for speedy finalisation of Revised Administrative Sanction.

7.2 Non-adherence of Budget Manual Provision

Budget Manual (Para 8, 80, 160(a)) envisages that Budget is prepared on the basis of the material furnished by the departmental officers of the administrative departments of the Secretariat. The Heads of Departments and other estimating officers prepare the estimates for concerned heads of account and forward them to the Finance Department and to the appropriate departments of the Secretariat by the prescribed dates. The administrative departments of Secretariat scrutinise the estimates and make available their comments on these to the Finance Department which then examines the estimates.

HD created (2017-18) the post of Director General (DG) to augment the efficiency of this department and for co-ordination with all wings including budgetary control.

However, it was noticed that the budget proposals were forwarded only to the Finance Department by the heads of the wings of HD without being forwarded through the Head of the Department *i.e.* the DG. Audit also noticed that the budget proposals were not forwarded to the administrative department of the Secretariat for their comments in deviation to the provisions of the Budget Manual. This indicated inadequate monitoring and budgetary control by the DG and Administrative head of the Secretariat Department for judicial utilisation of the budgetary resources for construction and maintenance of roads.

Government accepted and stated (August 2022) the present system was continued as the execution wings prepared budget based on Administrative Sanction. The fact, however, remains that the present system violated the provisions of Budget Manual and by-passes the control mechanism which a DG is required to exercise.

Recommendation: Government may ensure that the budget proposals are forwarded through the DG who is the Administrative head of the Department so as to enable the DG to exercise effective budgetary control.

7.3 Non-updation of Tamil Nadu Highways Departmental Manuals

Tamil Nadu Highways Departmental manual (four volumes) was published in 1957 and subsequently revised in 1987. Considering huge changes, executive instructions and Government orders relating to various activities of the Department and keeping in view the requirements at field, technological development etc., GoTN accorded financial sanction (May 2015) for updation of Manual and finalisation of Standard Bid Document under Institutional Capacity Enhancement. The work was entrusted after a delay of three years (June 2018) to a consultant for ₹ 2.27 crore for completion in two years (one year for preparation by the consultant and one year for approval after vetting by the officials of Highways Department and response of the Government).

Audit noted that the consultant submitted all the four volumes of the draft Manual and Standard Bid Document before June 2019 to the Department. As the clearance of the Review Committee on the draft report was pending, the same was not submitted to Government even after the lapse of two years (October 2021) from the receipt of draft report from the consultant.

Thus, updation of the Departmental Manual and finalisation of the Standard Bid Document were not revised and put to use, despite incurring an expenditure of ₹ 1.67 crore (62.5 *per cent* of the contract price) till October 2021. This led to utilisation of the age old Departmental Manual which was revised 35 years back.

Government assured (August 2022) that the draft Highways Manual would be approved early.

Recommendation: Government may ensure completion of the Departmental manual updation early for dissemination of latest changes to the field officials.

7.4 Non-implementation of the research outcomes

Highways Department established Highways Research Station (HRS) in 1957 for adopting new technologies to suit the climate, geography and traffic conditions of the State. The objectives and functions of HRS include continuous research in fields of Highway Engineering to utilise the resources optimally. In this regard, individual research schemes were taken up periodically based on sanction of GoTN.

GoTN sanctioned seven research projects between 2017 and 2020 at a cost of ₹ 5.45 crore. Audit noted that three projects[32] were completed (₹ 2.72 crore) and four projects[33] sanctioned during 2017-18 to 2020-2021 (₹ 2.73 crore) were in progress.

Despite request from the Director, HRS (August 2019) for identification of suitable stretches for conducting field study on new materials/technology, no initiative was taken. This led to non-achievement of the objective of adoption of new technology in the Department despite incurring expenditure of ₹ 4.97 crore out of sanction of ₹ 5.44 crore.

Government did not furnish specific reply regarding non-conducting of field study on the completed research projects.

7.5 Quality control tests not conducted for road cut restoration works

CE (H), C&M reiterated (March 2016) to adhere to the Government instructions (December 2010) for quality control tests including road cut restoration works before disbursement of payments to the contractors.

The test checked Coimbatore (C&M) Division did not comply with the above instructions in respect of 2,297 works sanctioned for 1,269 km at an estimated cost of ₹ 175.05 crore during 2016-17 to 2020-21.

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41 (i) Performance of bituminous pavement laid over stabilised sub-base (sanction - October 2015 - ₹ 2.63 crore), (ii) Improving the CBR value of subgrade soil by adding quarry dust (sanction - August 2017 - ₹ five lakh) and (iii) Effect of nano clay in bituminous mixes (sanction - July 2018 - ₹ four lakh).

42 (i) Technology on long lasting pavement including construction for circular test model study (sanction - December 2020 - ₹ 1.99 crore); (ii) Performance of Jute fibre reinforced cold bituminous material (sanction - January 2020 - ₹ 12 lakh); (iii) Bridge construction for structural health monitoring system (sanction - December 2020 – ₹ 56.40 lakh); (iv) Effectiveness of curing compounds on concrete pavements (sanction - December 2020 - ₹ 4.96 lakh).

Government accepted and stated (August 2022) that necessary instructions had been issued to Divisional Engineers in July 2022 to carry out quality control tests for restoration works.

7.6 Data not uploaded in the Road Charts

Road Chart is to be maintained in the sub-division level office for verification by the DE and SE during selection of works for execution of work. Road chart would provide the data about the history of improvements, strengthening, widening, rebuilding, special repairs etc., undertaken on the various sections of the road stretch. This would help in the selection of stretches requiring renewal or special attention and framing the repairs programme for the current year.

Department maintained the road chart in an exclusive module in the system and the field officials of the Department downloaded the road chart for the respective road stretch and utilised the same for preparation of estimates and technical sanction. Audit obtained (December 2021) the data relating to the road chart for the period from 2016-17 to 2020-21 from the Department and the analysis of the data revealed the following:

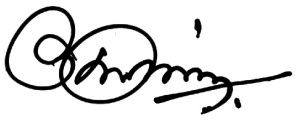
Though the road chart database of the Department depicted that majority of the road length was not renewed, Audit observed the following:

- The road chart did not contain the details of works undertaken under the schemes *viz*., CRF, PBMC, TNRSP, etc.
- The works were uploaded in the road chart based on the year of sanction instead of year of their completion of work to enable the department to decide about the date of their renewal.
- Work history data pertaining to the works carried out during 2015-16 to 2020-2021 were not uploaded in 18 roads and uploaded data is not correct in three roads for generation of Road Charts as detailed in **Annexure 9.**

Inadequate updation of road chart data base by the field officials indicated absence of internal control to assist the DG and Administrative head of the Secretariat Department to plan for improvements of the road stretches which were required on priority.

Government accepted and stated (August 2022) that necessary instructions have been issued to Divisional Engineers in March 2022 to upload the Road Charts.

Recommendation: Government may ensure updation of road chart data for effective internal control and prioritisation of road maintenance works.



Chennai
The 27 January 2023

(K.P. ANAND)
Principal Accountant General (Audit-II)
Tamil Nadu and Puducherry

Countersigned



New Delhi
The 30 January 2023

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India

ANNEXURES

Annexure 1 (Referred to Paragraph 4.4)

Details of expired EMD on opening of financial bids

Sl. No.	Work Reference No.	Instrument number	Instrument issue date	Instrument expiry date	Paid Amount	Financial bid opening date
1	2019_HWAY_138100_1	194797	25-Oct-18	25-Oct-19	2,10,000	11-Nov-19
2	2019_HWAY_142685_1	165052	30-Nov-19	30-Dec-19	2,73,000	18-Feb-20
3	2019_HWAY_142729_1	800802	30-Nov-19	29-Feb-20	2,64,000	9-Mar-20
4	2020_HWAY_155739_1	929496	7-Feb-20	7-May-20	2,34,000	23-May-20
5	2020_HWAY_155739_1	773765	8-Feb-20	8-May-20	2,34,000	23-May-20
6	2020_HWAY_157461_1	492413	14-Feb-20	13-May-20	35,000	6-Jun-20
7	2020_HWAY_157461_1	592593	17-Feb-20	16-May-20	35,000	6-Jun-20
8	2020_HWAY_157461_1	117577833	18-Feb-20	18-May-20	35,000	6-Jun-20
9	2020_HWAY_157461_1	6699	18-Feb-20	18-May-20	35,000	6-Jun-20
10	2020_HWAY_157991_1	227860	6-Mar-20	5-Jun-20	3,24,500	8-Jul-20
11	2020_HWAY_157994_1	227856	6-Mar-20	5-Jun-20	2,62,000	8-Jul-20
12	2020_HWAY_157987_1	227859	6-Mar-20	5-Jun-20	2,98,000	8-Jul-20
13	2020_HWAY_157986_1	227858	6-Mar-20	5-Jun-20	2,82,500	8-Jul-20
14	2020_HWAY_157984_1	227857	6-Mar-20	5-Jun-20	2,62,500	8-Jul-20
15	2020_HWAY_157555_1	96229	10-Mar-20	10-Jun-20	2,64,000	8-Jul-20
16	2020_HWAY_157556_1	787710	11-Mar-20	10-Jun-20	2,75,000	8-Jul-20
17	2020_HWAY_168353_2	807591	2-Mar-20	30-Aug-20	10,000	28-Oct-20
18	2020_HWAY_168353_2	807592	2-Mar-20	30-Aug-20	10,000	28-Oct-20
19	2020_HWAY_175733_2	779153	3-Jun-20	2-Sep-20	1,12,000	17-Sep-20
20	2020_HWAY_175733_1	779150	30-May-20	29-Aug-20	1,14,000	17-Sep-20
21	2020_HWAY_168353_2	1675	9-Jul-20	7-Oct-20	3,25,000	28-Oct-20
22	2020_HWAY_178290_1	237679	19-Sep-20	16-Nov-20	33,400	7-Dec-20
23	2020_CKICP_176054_1	323258	6-Oct-20	6-Jan-21	2,65,00,000	19-Feb-21
24	2021_HWAY_191161_1	10513	3-Feb-21	3-May-21	2,93,000	11-Jun-21
25	2021_HWAY_191193_1	687884	3-Feb-21	3-May-21	3,68,000	11-Jun-21
26	2021_HWAY_191187_1	648640	4-Feb-21	3-May-21	3,02,000	11-Jun-21
27	2021_HWAY_191187_1	482921	9-Feb-21	8-May-21	3,02,000	11-Jun-21
28	2021_HWAY_191161_1	517959	8-Feb-21	10-May-21	2,93,000	11-Jun-21
29	2021_HWAY_191193_1	517957	8-Feb-21	10-May-21	3,68,000	11-Jun-21
30	2021_HWAY_191187_1	517958	8-Feb-21	10-May-21	3,02,000	11-Jun-21
31	2021_HWAY_191161_1	339916	10-Feb-21	10-May-21	2,93,000	11-Jun-21
32	2021_HWAY_191193_1	339919	10-Feb-21	10-May-21	3,68,000	11-Jun-21
33	2021_HWAY_191187_1	339920	10-Feb-21	10-May-21	3,02,000	11-Jun-21
34	2021_HWAY_191193_1	122303	8-Feb-21	10-May-21	3,68,000	11-Jun-21
35	2021_HWAY_191187_1	122302	8-Feb-21	11-May-21	3,02,000	11-Jun-21
36	2021_HWAY_191187_1	366916	10-Feb-21	10-May-21	3,02,000	11-Jun-21
37	2021_HWAY_191161_1	482941	11-Feb-21	11-May-21	2,93,000	11-Jun-21
38	2021_HWAY_191193_1	366920	11-Feb-21	11-May-21	3,68,000	11-Jun-21
39	2021_HWAY_191187_1	421348	11-Feb-21	11-May-21	3,02,000	11-Jun-21
40	2021_HWAY_191187_1	366921	11-Feb-21	11-May-21	3,02,000	11-Jun-21

41	2020_HWAY_178133_4	348105	20-Feb-21	19-May-21	2,74,000	2-Jul-21
42	2021_HWAY_190830_2	249170	8-Mar-21	8-Jun-21	2,65,000	21-Jun-21
43	2021_HWAY_190830_2	871337	9-Mar-21	9-Jun-21	2,65,000	21-Jun-21
44	2021_HWAY_199223_1	361749	12-Mar-21	12-Jun-21	1,30,000	6-Jul-21
45	2021_HWAY_199223_1	401463	30-Mar-21	30-Jun-21	1,30,000	6-Jul-21
46	2021_HWAY_199223_1	164843	31-Mar-21	30-Jun-21	1,30,000	6-Jul-21

Annexure 2 (Referred to Paragraph 4.5.2)

Submission of bids from same IP Address

Sl.No	Work item ref No.	Display Name	IP address	Bid place date	Tender title	L1 awarded amount	Circle Name
1	2019_HWAY_137571_1	Senbagam construction	220.158.140.33	11/10/2019	TN 08 19 20 HDO Dt 05 09 19 Pkg 56 Dharapuram Division	6,55,02,392	Tiruppur
		Sabari construction	220.158.140.33	12/10/2019			Tiruppur
		Kanganam construction	220.158.140.33	10/10/2019			Tiruppur
2	2019_HWAY_137572_1	Kanganam construction	220.158.140.33	10/10/2019	TN 08 19 20 HDO Dt 05 09 19 Pkg 57 Dharapuram Division	6,46,35,000	Tiruppur
		Sabari construction	220.158.140.33	12/10/2019			Tiruppur
		Senbagam construction	220.158.140.33	10/10/2019			Tiruppur
3	2019_HWAY_137573_1	Kanganam construction	220.158.140.33	12/10/2019	TN 08 19 20 HDO Dt 05 09 19 Pkg 58 Dharapuram Division		Tiruppur
		Senbagam construction	220.158.140.33	12/10/2019		6,03,56,790	Tiruppur
		Sabari construction	220.158.140.33	12/10/2019			Tiruppur
4	2019_HWAY_138679_1	Senbagam construction	220.158.140.33	11/10/2019	TN No 14 2019 20 HDO Dated 13 09 2019 Package 82 Dharapuram H Division	1,98,41,865	Tiruppur
		Sabari construction	220.158.140.33	12/10/2019			Tiruppur
		Kanganam construction	220.158.140.33	10/10/2019			Tiruppur
5	2019_HWAY_149714_1	Senbagam construction	220.158.140.33	13/12/2019	Permanent restoration 2	25,99,149	Coimbatore
		Sabari construction	220.158.140.33	14/12/2019			Coimbatore
		Kanganam construction	220.158.140.33	14/12/2019			Coimbatore

	2019_HWAY_149728_1	Sabari construction	220.158.140.33	14/12/2019	Permanent restoration 15		Coimbatore
6		Senbagam construction	220.158.140.33	13/12/2019		35,38,151	Coimbatore
		Kanganam construction	220.158.140.33	14/12/2019			Coimbatore
7	2019_HWAY_149730_1	Senbagam construction	220.158.140.33	14/12/2019	Permanent restoration 16	31,13,164	Coimbatore
		Kanganam construction	220.158.140.33	14/12/2019			Coimbatore
		Sabari construction	220.158.140.33	14/12/2019			Coimbatore
8	2020_HWAY_152544_1	Senbagam construction	220.158.140.33	28/01/2020	Permanent Flood Restoration Work 11	1,33,50,529	Coimbatore
		Kanganam construction	220.158.140.33	29/01/2020			Coimbatore
		Sabari construction	220.158.140.33	29/01/2020			Coimbatore
9	2020_HWAY_152588_1	Kanganam construction	220.158.140.33	29/01/2020	Permanent Flood Restoration Work		Coimbatore
		Senbagam construction	220.158.140.33	28/01/2020		1,52,99,521	Coimbatore
		Sabari construction	220.158.140.33	29/01/2020			Coimbatore
10	2020_HWAY_165595_1	Senbagam construction	223.182.205.169	01/07/2020	TN 02 20 21 HDO Dt 26.05.2020 Pkg 30 Dharapuram Division		Tiruppur
		Sabari construction	106.76.61.236	02/07/2020			Tiruppur
		Kanganam construction	103.242.238.29	01/07/2020		6,37,77,252	Tiruppur
	2021_HWAY_190696_1	Senbagam construction	220.158.140.33	20/01/2021	Permanent Flood Restoration 2020-21	39,03,207	Coimbatore
11		Kanganam construction	220.158.140.33	22/01/2021			Coimbatore
		Sabari construction	103.219.207.246	22/01/2021			Coimbatore

	2021_HWAY_190702_1	Sabari construction	103.219.207.246	22/01/2021	Permanent Flood Restoration 2020-21		Coimbatore
12		Senbagam construction	220.158.140.33	20/01/2021		35,07,178	Coimbatore
		Kanganam construction	220.158.140.33	22/01/2021			Coimbatore
13	2021_HWAY_190703_1	Senbagam construction	220.158.140.33	20/01/2021	Permanent Flood Restoration 2020-21	31,19,108	Coimbatore
		Sabari construction	103.219.207.246	22/01/2021			Coimbatore
		Kanganam construction	220.158.140.33	22/01/2021			Coimbatore
14	2021_HWAY_190704_1	Sabari construction	103.219.207.246	22/01/2021	Permanent Flood Restoration 2020-21		Coimbatore
		Kanganam construction	220.158.140.33	22/01/2021			Coimbatore
		Senbagam construction	220.158.140.33	20/01/2021		26,31,556	Coimbatore
					Total	**32,51,74,862**	

Annexure 3 (Referred to 4.6.1)

Award of contract to the contractors with business interest

Name of the contractor S/ Shri	No of tenders	No. of works awarded	Awarded value (₹)
Hamza Ashraf	5	1	1,47,34,365
P Rayin		4	3,24,19,118
Hamza	2	2	2,51,19,076
Joseph Edwin		0	
Hamza Ashraf	1	0	
P. Rayin Constructions Company Pvt. Ltd.		1	58,39,850
P Rayin	2	1	75,69,953
P Saleem		1	78,91,399
Joseph Edwin	2	2	1,50,95,302
P Saleem		0	
Hamza Ashraf	2	1	92,19,822
Joseph Edwin		1	68,74,206
P Saleem	2	1	1,43,12,101
P. Rayin Constructions Company Pvt. Ltd.		1	1,38,32,078
Hamza	4	Not available	Not available
Hamza Ashraf			
P Saleem			
Total	**20**	**16**	**15,29,07,270**

Annexure 4 (Referred to 4.6.2.1)

Award of contract to the contractors with family members

Work ID	Contractor name	Value put to tender	Contract value
2020_HWAY_156724_1	S.P.K. and Co.,	66,78,464	Not Uploaded
	Seyyadurai Constructions		
2020_HWAY_156731_1	S.P.K. and Co.,	58,39,790	Not Uploaded
	Seyyadurai Constructions		
2020_HWAY_156741_1	S.P.K. and Co.,	57,96,042	Not Uploaded
	Seyyadurai Constructions		
	Grand Total	**1,83,14,296**	

Annexure 5 (Referred to 4.6.2.2)

Award of contract to the contractors who formed cartel among themselves

Contractor1	Contractor2	Contractor3	No of tenders participated together	Value of tender awarded (₹)	Award of contract details	Award of contract details not uploaded
Ezhilmaran	Hariway Lines Private Limited	S.T. Selvam	23	96,85,39,564	Hariway Lines Private Limited – 19	4
Ezhilmaran	Hariway lines Private Limited	S.Gunasekaran	13	42,32,05,376	All awarded to Hariway Lines Private Limited	-
Ezhilmaran	S.Gunasekaran	S.T. Selvam	9	18,70,18,203	Ezhilmaran - 6 S.Gunasekaran - 1 S.T. Selvam - 1	1
Hariway Lines Private Limited	S.Gunasekaran	S.T. Selvam	8	17,11,39,229	Hariway Lines Private Limited - 4	4
All the four contractors participated in			10	58,17,218	Hariway Lines Private Limited -1	9
Total			**63**	**1,75,57,19,590**		**18**

Name of the contractor 1	Name of the contractor 2	Name of the contractor 3	tenders awarded	No of tenders awarded	Value (₹)	Award of contract details not uploaded
Rishi Enterprises	Ezhilmaran	S.Gunasekaran	5	2- Rishi Enterprises 5 – NA	2,74,07,805	5
Rishi Enterprises	S.T. Selvam	Ezhilmaran	7	6 Rishi Enterprises 1 Ezhilmaran	18,68,34,019 4,82,00,654	-
Rishi Enterprises	S.T. Selvam	S.Gunasekaran	6	5 Rishi Enterprises 1- S.T Selvam	21,85,57,430 2,00,37,142	-
		Total	**18**		**50,10,37,050**	**5**

Annexure 6 (Referred to 4.6.2.2)

Formation of cartel among the contractors - M/s Sri Priya Constructions, S. Parthibarajan, Udhayagiri and Co

SL no	WORK REF NO	Display name	IP address	Bid place dare	Rid Rank	Work title	Circle name	Awarded value
1	2019_HWAY_149718_1	Udhayagiri and co	117.201.129.252	14/12/2019	L2	Permanent Restoration 11	Coimbatore	
		M/s Sri Priya Constructions	59.92.27.68	12/15/2019	L3		Coimbatore	
		S Parthibarajan	59.92.27.68	12/15/2019	L1		Coimbatore	39,15,501
2	2019_HWAY_149722_1	M/s Sri Priya Constructions	59.92.27.68	12/15/2019	L3	Permanent Restoration 12	Coimbatore	
		Udhayagiri and co	117.247.198.226	12/14/2019	L2		Coimbatore	
		S Parthibarajan	157.46.99.59	12/15/2019	L1		Coimbatore	36,60,171
3	2019_HWAY_149725_1	Udhayagiri and co	117.247.198.226	12/14/2019	L3	Permanent Restoration14	Coimbatore	
		M/s Sri Priya Constructions	59.92.27.68	12/15/2019	L2		Coimbatore	
		S Parthibarajan	157.46.99.59	12/15/2019	L1		Coimbatore	29,48,888
4	2019_HWAY_149729_1	S Parthibarajan	59.92.27.68	12/15/2019	L1	Permanent Restoration 7	Coimbatore	26,57,907
		M/s Sri Priya Constructions	59.92.27.68	12/15/2019	L2		Coimbatore	
		Udhayagiri and co	117.201.129.252	12/14/2019	L3		Coimbatore	
5	2019_HWAY_149737_1	Udhayagiri and co	117.247.198.226	12/14/2019	L2	Permanent Restoration 21	Coimbatore	
		M/s Sri Priya Constructions	59.92.27.68	12/15/2019	L3		Coimbatore	
		S Parthibarajan	157.46.99.59	12/15/2019	L1		Coimbatore	30,98,127
6	2020_HWAY_152458_1	S Parthibarajan	59.92.179.90	2/1/2020	L3	Permanent Flood Restoration Work 3	Coimbatore	
		Udhayagiri and co	157.50.19.48	2/1/2020	L2		Coimbatore	
		M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1		Coimbatore	66,30,354
7	2020_HWAY_152491_1	M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1	Permanent Flood Restoration Work 4	Coimbatore	89,19,799
		Udhayagiri and co	157.50.19.48	2/1/2020	L3		Coimbatore	
		S Parthibarajan	59.92.179.90	2/1/2020	L2		Coimbatore	

8	2020_HWAY_152497_1	Udhayagiri and co	157.50.19.48	2/1/2020	L2	Permanent Flood Restoration Work 6	Coimbatore	
		M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1		Coimbatore	80,03,445
		S Parthibarajan	59.92.179.90	2/1/2020	L3		Coimbatore	
9	2020_HWAY_152579_1	M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1	Permanent Flood Restoration Work	Coimbatore	1,33,62,647
		S Parthibarajan	59.92.179.90	2/1/2020	L3		Coimbatore	
		Udhayagiri and co	157.50.19.48	2/1/2020	L2		Coimbatore	
10	2020_HWAY_152604_1	Udhayagiri and co	157.50.19.48	2/1/2020	L2	Permanent Flood Restoration Work	Coimbatore	
		S Parthibarajan	59.92.179.90	2/1/2020	L2		Coimbatore	
		M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1		Coimbatore	1,04,47,036
11	2020_HWAY_152608_1	M/s Sri Priya Constructions	42.106.85.252	2/1/2020	L1	Permanent Flood Restoration Work	Coimbatore	1,04,41,061
		Udhayagiri and co	157.50.19.48	2/1/2020	L2		Coimbatore	
		S Parthibarajan	59.92.179.90	2/1/2020	L2		Coimbatore	
12	2021_HWAY_190497_1	M/s Sri Priya Constructions	117.216.109.144	1/25/2021	L2	Permanent Flood Restoration Works 2020-2021	Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L3		Coimbatore	
		Udhayagiri and co	92.223.85.193	1/24/2021	L1		Coimbatore	1,86,60,554
13	2021_HWAY_190501_1	M/s Sri Priya Constructions	117.216.109.144	1/25/2021		Permanent Flood Restoration Works 2020-2021	Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
		Udhayagiri and co	92.223.85.193	1/24/2021	L1		Coimbatore	78,39,892
14	2021_HWAY_190589_1	M/s Sri Priya Constructions	117.216.109.144	1/25/2021	L3	Permanent Flood Restoration 2020-21	Coimbatore	
		Udhayagiri and co	92.223.85.143	1/24/2021	L1		Coimbatore	29,21,779
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
15	2021_HWAY_190594_1	M/s Sri Priya Constructions	117.216.109.144	1/25/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	37,08,365
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
16	2021_HWAY_190613_1	S Parthibarajan	157.51.179.187	1/24/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		M/s Sri Priya Constructions	117.216.109.144	1/25/2021	L1		Coimbatore	34,03,333
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	

17	2021_HWAY_190622_1	Udhayagiri and co	92.223.85.143	1/24/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	39,05,499
		S Parthibarajan	157.51.179.187	1/24/2021	L3		Coimbatore	
		M/s Sri Priya Constructions	117.216.109.144	1/25/2021	L2		Coimbatore	
18	2021_HWAY_190639_1	M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	38,05,910
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
19	2021_HWAY_190676_1	S Parthibarajan	157.51.179.187	1/24/2021	L3	Permanent Flood Restoration 2020-21	Coimbatore	
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L2		Coimbatore	
		Udhayagiri and co	92.223.85.143	1/24/2021	L1		Coimbatore	39,06,113
20	2021_HWAY_190679_1	S Parthibarajan	157.51.179.187	1/24/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		Udhayagiri and co	92.223.85.143	1/24/2021	L1		Coimbatore	31,23,014
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L3		Coimbatore	
21	2021_HWAY_190681_1	S Parthibarajan	157.51.179.187	1/24/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L1		Coimbatore	31,21,542
22	2021_HWAY_190682_1	S Parthibarajan	157.51.179.187	1/24/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L1		Coimbatore	32,21,382
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
23	2021_HWAY_190685_1	M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L3	Permanent Flood Restoration 2020-21	Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L1		Coimbatore	27,31,700
24	2021_HWAY_190688_1	S Parthibarajan	157.51.179.187	1/24/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	27,29,848
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L2		Coimbatore	
25	2021_HWAY_190690_1	Udhayagiri and co	117.216.98.152	1/24/2021	L3	Permanent Flood Restoration 2020-21	Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L1		Coimbatore	39,08,792
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L2		Coimbatore	

26	2021_HWAY_190692_1	S Parthibarajan	157.51.179.187	1/24/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		M/s Sri Priya Constructions	82.102.25.70	1/25/2021	L3		Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L1		Coimbatore	29,21,895
27	2021_HWAY_190694_1	S Parthibarajan	157.51.179.187	1/24/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	29,16,907
		M/s Sri Priya Constructions	92.223.85.143	1/25/2021	L2		Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
28	2021_HWAY_190697_1	M/s Sri Priya Constructions	92.223.85.143	1/25/2021	L3	Permanent Flood Restoration 2020-21	Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L1		Coimbatore	43,88,298
		S Parthibarajan	157.51.179.187	1/24/2021	L2		Coimbatore	
29	2021_HWAY_190705_1	M/s Sri Priya Constructions	42.106.80.214	1/25/2021	L2	Permanent Flood Restoration 2020-21	Coimbatore	
		S Parthibarajan	157.51.179.187	1/24/2021	L1		Coimbatore	34,18,904
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	
30	2021_HWAY_190706_1	S Parthibarajan	157.51.179.187	1/24/2021	L1	Permanent Flood Restoration 2020-21	Coimbatore	39,06,096
		M/s Sri Priya Constructions	42.106.80.214	1/25/2021	L2		Coimbatore	
		Udhayagiri and co	117.216.98.152	1/24/2021	L3		Coimbatore	

Name	No of tenders	No of contracts awarded	Awarded value (₹)
M/s Sri Priya Constructions	30	11	7,50,64,874/-
S Pathibarajan	30	10	3,31,61,141/-
Udhayagiri and Co	30	9	5,03,98,744/-
Grand Total		**30**	**15,86,24,759/-**

Annexure 7 (Referred to 4.6.2.2)

Formation of cartel among the contractors: D S Akbal, Kevearr and Co, Ravishankar Contractor

Sl. No.	Work item ref No	Display name	Ip address	Bid place date	Bid rank	Tender title	Division name	Awarded value
1	2019_HWAY_137813_1	Kevearr and Co	117.215.213.201	14-10-2019	L2	Dharmapuri Package 55	Salem	
		Ravishankar Contractor	117.246.246.95	14-10-2019	L3		Salem	
		D S Akbal	106.211.200.108	14-10-2019	L1		Salem	6,51,08,262
2	2019_HWAY_138060_1	D S Akbal	106.211.200.108	14-10-2019	L3	Dharmapuri Package 58	Salem	
		Ravishankar Contractor	117.246.246.95	14-10-2019	L2		Salem	
		Kevearr and Co	59.93.20.144	13-10-2019	L1		Salem	6,05,47,924
3	2019_HWAY_138062_1	Ravishankar Contractor	117.246.246.95	14-10-2019	L2	Dharmapuri Package 59	Salem	
		D S Akbal	106.211.200.108	14-10-2019	L3		Salem	
		Kevearr and Co	59.93.20.144	13-10-2019	L1		Salem	5,73,10,390
4	2019_HWAY_142057_1	D S Akbal	106.217.11.233	14-11-2019	L2	Dharmapuri Package 17	Salem	
		Kevearr and Co	157.46.126.66	14-11-2019	L3		Salem	
		Ravishankar Contractor	117.215.214.197	15-11-2019	L1		Salem	5,04,87,606
5	2019_HWAY_142061_1	Ravishankar Contractor	117.215.214.197	15-11-2019	L2	Dharmapuri Package 18	Salem	
		D S Akbal	106.217.11.233	14-11-2019	L3		Salem	
		Kevearr and Co	157.46.126.66	14-11-2019	L1		Salem	7,17,49,825
6	2020_HWAY_157240_1	Kevearr and Co	59.92.123.57	07-03-2020	L1	Package No.60	Salem	5,12,43,798
		Ravishankar Contractor	59.92.123.57	07-03-2020	L2		Salem	
		D S Akbal	59.92.123.57	07-03-2020	L3		Salem	

	2020_HWAY_157242_1	Kevearr and Co	59.92.123.143	24-02-2020	L1	Tender Notice No.16	Salem	92,49,139
7		Ravishankar Contractor	59.92.123.143	24-02-2020	L2		Salem	
		D S Akbal	59.92.123.143	24-02-2020	L3		Salem	
8	2020_HWAY_157243_1	Ravishankar Contractor	59.93.21.221	09-03-2020	L1	Package No.61	Salem	5,28,83,949
		Kevearr and Co	59.93.21.221	09-03-2020	L2		Salem	
		D S Akbal	59.93.21.221	09-03-2020	L3		Salem	
9	2020_HWAY_167207_1	Ravishankar Contractor	106.197.35.187	15-07-2020	L1	Dharmapuri Package 72	Salem	5,33,08,154
		Kevearr and Co	157.50.13.128	15-07-2020	L2		Salem	
		D S Akbal	117.251.33.142	15-07-2020	L3		Salem	
10	2020_HWAY_167223_1	D S Akbal	117.251.33.142	15-07-2020	L3	Dharmapuri Package 75	Salem	
		Kevearr and Co	157.50.13.128	15-07-2020	L2		Salem	
		Ravishankar Contractor	106.197.35.187	15-07-2020	L1		Salem	6,29,77,800
11	2020_HWAY_167229_1	Ravishankar Contractor	106.197.35.187	15-07-2020	L1	Dharmapuri Package 76	Salem	5,76,64,614
		D S Akbal	117.251.33.142	15-07-2020	L3		Salem	
		Kevearr and Co	157.50.13.128	15-07-2020	L2		Salem	
12	2020_HWAY_167324_1	D S Akbal	117.251.33.142	15-07-2020	L2	Dharmapuri Package 74	Salem	
		Ravishankar Contractor	106.197.35.187	15-07-2020	NULL		Salem	
		Kevearr and Co	157.50.13.128	15-07-2020	L1		Salem	6,06,56,203
13	2020_HWAY_167364_1	Kevearr and Co	157.50.13.128	15-07-2020	L2	Dharmapuri Package 69	Salem	
		Ravishankar Contractor	106.197.35.187	15-07-2020	L3		Salem	
		D S Akbal	117.251.33.142	15-07-2020	L1		Salem	6,17,29,558
14	2020_HWAY_167365_1	D S Akbal	117.251.33.142	15-07-2020	L2	Dharmapuri Package 77	Salem	
		Ravishankar Contractor	106.197.35.187	15-07-2020	NULL		Salem	
		Kevearr and Co	157.50.13.128	15-07-2020	L1		Salem	6,47,26,231

	2020_HWAY_168231_1	Ravishankar Contractor	59.93.21.88	13-07-2020	L1	Dharmapuri Package 13	Salem	5,44,84,960
15		Kevearr and Co	223.182.242.104	13-07-2020	L2		Salem	
		D S Akbal	157.50.146.16	13-07-2020	L3		Salem	
16	2020_HWAY_168233_1	Kevearr and Co	223.182.242.104	13-07-2020	L1	Dharmapuri Package 14	Salem	5,01,13,685
		D S Akbal	157.50.146.16	13-07-2020	L3		Salem	
		Ravishankar Contractor	59.93.21.88	14-07-2020	L2		Salem	
17	2020_HWAY_168237_1	Ravishankar Contractor	59.93.21.88	13-07-2020	L1	Dharmapuri Package 15	Salem	5,01,77,621
		D S Akbal	157.50.146.16	13-07-2020	L3		Salem	
		Kevearr and Co	223.182.242.104	13-07-2020	L2		Salem	
18	2021_HWAY_190823_1	Ravishankar Contractor	117.213.126.68	06-02-2021	L1	Dharmapuri Package 26	Salem	7,10,45,602
		Kevearr and Co	117.213.126.68	07-02-2021	L2		Salem	
		D S Akbal	117.213.126.68	06-02-2021	L3		Salem	

Name of the Contractor	No of tenders	No of Contracts awarded	Total Contract value (₹)
D S Akbal	18	2	12,68,37,820
Kevearr and Co	18	8	42,55,97,195
Ravishankar Contractor	18	8	45,30,30,306
Grand Total		**18**	**1,00,54,65,321**

Annexure 8 (Refer to Paragraph 5.4)

Incorrect adoption of traffic census – additional expenditure

Sl. No.	Name of the Division	Name of the work	Traffic as per Census (Peak Season) (CVPD)	Traffic (Normal Season) - Taken as 75% of Peak Season (CVPD)	Traffic (Average of Peak and Normal) (CVPD)	Initial Traffic in the year of completion of Construction	Pavement layers	Layer Thickness Needed based on IITPAVE results (Considering Average Traffic) (in mm)	Layer Thickness actually provided as per Estimate (Based on Peak Traffic) (in mm)	Extra Provision (in mm)	Excess Expenditure (₹)	Total Estimated Expenditure (₹)	Percentage of Excess Expenditure as a percentage of Estimated value
1	Salem	IRQP at Km 8/0-11/0 of Shevapet Elampillai Road (MD 421)	2170	1628	1899	2094	BC	30	40	10	16,62,081.10		
							BM						
							WMM						
							GSB					1,10,16,790.00	15.09
							Extra Expenditure				16,62,081.10		
2	Thoothukudi	Widening from IL to DL and Strengthening of Kadambur-Eppodumvendran Road at km 18/0 - 19/4 (MD131)	1429	1072	1251	1314	BC	30	30	0	0.00		
							DBM	50	60	10	7,26,499.48		
							WMM	250	250	0	0.00		
							GSB III	165	150	-15	-47,576.34		
							GSB V	165	150	-15	-44,905.68	1,24,57,443.00	5.09
							Extra Expenditure				6,34,017.47		
3	Thoothukudi	Widening from IL to DL and Strengthening of Kadambur-Eppodumvendran Road at km 19/4 - 20/4 (MD131)	1429	1072	1251	1314	BC	30	30	0	0.00		
							DBM	50	60	10	5,18,928.20		
							WMM	250	250	0	0.00		
							GSB III	165	150	-15	-34,488.77		
							GSB V	165	150	-15	-32,552.77	99,72,558.00	4.53
							Extra Expenditure				4,51,886.67		
4	Thoothukudi	Widening from Intermediate lane to Two lane and Strengthening of Kadambur-Eppodumvendran Road at km 13/960 - 15/4 including construction of Retaining wall at Km 14/4 (MD131)	1429	1072	1251	1314	BC	30	30	0	0.00		
							DBM	50	60	10	7,47,256.61		
							WMM	250	250	0	0.00		
							GSB III	165	150	-15	-48,373.53		
							GSB V	165	150	-15	-45,658.12	1,33,10,225.00	4.91
							Extra Expenditure				6,53,224.95		
5	Thoothukudi	Widening from Intermediate lane to Two lane and Strengthening of Kadambur-Eppodumvendran Road at km 15/4 - 16/6 (MD131)	1429	1072	1251	1314	BC	30	30	0	0.00		
							DBM	50	60	10	6,22,713.84		
							WMM	250	250	0	0.00		
							GSB III	165	150	-15	-41,032.55		
							GSB V	165	150	-15	-38,729.22	94,14,337.13	5.77
							Extra Expenditure				5,42,952.07		

6	Thoothukudi	Widening from Intermediate lane to Two lane and Strengthening of Kadambur-Eppodumvendran Road at km 16/6 - 18/ (MD131)	1429	1072	1251	1314	BC	30	30	0	0.00		
							DBM	50	60	10	7,26,499.48		
							WMM	250	250	0	0.00		
							GSB III	165	150	-15	-46,694.50		
							GSB V	165	150	-15	-44,073.34	1,25,15,226.00	5.08
							Extra Expenditure				6,35,731.65		
7	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 14/0-15/6	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	5,04,840.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	70,331.52	1,19,22,667.00	4.82
							Extra Expenditure				5,75,171.52		
8	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 16/0-17/6	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	5,04,840.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	70,753.92	1,19,28,580.00	4.83
							Extra Expenditure				5,75,593.92		
9	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 17/6-19/0	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	4,41,735.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	62,094.48	1,04,40,041.00	4.83
							Extra Expenditure				5,03,829.48		
10	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 19/0-20/6	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	5,04,840.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	70,965.12	1,15,23,322.00	5.00
							Extra Expenditure				575805.12		
11	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 20/6-22/0	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	4,41,735.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	62,094.48	1,04,66,225.00	4.81
							Extra Expenditure				5,03,829.48		
12	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kayathar – Kalugumalai Road at Km 22/0-22/8	1100	825	963	1062	BC	30	30	0	0.00		
							BM	50	50	0	2,52,420.00		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	37,609.44	59,65,827.00	4.86
							Extra Expenditure				2,90,029.44		

13	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kadambur - Eppodumvendran Road at Km 1/6-3/4 (MD131)	1090	818	954	1052	BC	30	30	0	0.00		
							BM	50	50	0	5,66,520.63		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	83,460.80	1,33,24,444.00	4.88
							Extra Expenditure				6,49,981.43		
14	Thoothukudi	Widening from Intermediate lane to Two lane and Improvements of Kadambur - Eppodumvendran Road at Km 3/4-5/2 (MD131)	1090	818	954	1052	BC	30	30	0	0.00		
							BM	50	50	0	56,6746.01		
							WMM	250	250	0	0.00		
							GSB III	100	100	0	0.00		
							GSB V	160	180	20	83,967.71	1,33,88,886.00	4.86
							Extra Expenditure				6,50,713.71		
							Total Extra Expenditure				**89,04,848.01**	**15,76,46,571.13**	**5.65**

Annexure 9 (Referred to Paragraph 7.6)
Data not uploaded in the Road Charts

Sl. No.	Name of the Division	Data not uploaded for (No. of roads)	Period of works executed
1	Coimbatore	5	2016-17 to 2019-20
2	Salem	4	2015-16 to 2020-21
3	Thanjavur	Nil	Nil
4	Karur	1	2017-18
5	Sivagangai	Audit could not ensure the correctness of road chart of the selected roads due to absence of data in the Division.	
6	Thiruvallur	Division furnished Road charts downloaded from tnhighways.net for all selected 16 Roads. Out of 13 roads where works were carried out, Road charts were not updated detailing the works carried out during the last five years in eight and updated in five.	
7	Perambalur	Division furnished Road charts downloaded from tnhighways.net for all selected 14 Roads. Road Chart of "Mathur- Thittakudi Road km 0/0-26/0'', showed that work undertaken by TNRSP for the year 2019-20 had not been updated. It was ascertained that the above road was proposed in DPR but not taken up by TNRSP, hence road chart needs to be updated.	
8	Thoothukudi	Division furnished Road charts downloaded from tnhighways.net for all selected 16 Roads. There was no specific mention about the upkeeping period of 60 months in the road chart wherever required. Discrepancies noticed in the road chart of five roads.	

Glossary of abbreviations	
Abbreviation	**Full form**
AS	Administrative Sanction
BBD	Benkelman Beam Deflection
BC	Bituminous Concrete
BE	Budget Estimate
BM	Bituminous Macadam
BOE	Board of Engineers
BOS	Bank of Sanction
C&M	Construction and Maintenance
CAAT	Computer Assisted Audit Techniques
CAG	Comptroller and Auditor General of India
CBR	California Bearing Ratio
CE	Chief Engineer
CGPC	Close Graded Premix Carpet
CKICP	Chennai Kanyakumari Industrial Corridor Project
CMP	Central Mixing Plant
CR	Completion Report
CRF	Central Road Fund
CRIDP	Comprehensive Road Infrastructure Development Programme
CVPD	Commercial vehicles per day
DBM	Dense Bituminous Macadam
DCE	Deputy Chief Engineer
DE	Divisional Engineer
DG	Director General
DL	Double Lane
DLP	Defect Liability Period
EMD	Earnest Money Deposit
FMA	Final Modified Appropriation
GoTN	Government of Tamil Nadu
GSB	Granular Sub Base
HD	Highways Department
HRS	Highways Research Station
IL	Intermediate Lane
IRC	Indian Road Congress
IRI	International Roughness Index
IRQP	Improvements to Riding Quality of Roads Programme

IT	Information Technology
MDR	Major District Roads
MoRTH	Ministry of Road Transport and Highways
NH	National Highways
NHAI	National Highway Authority of India
NIC	National Informatics Centre
NRR	National Bank for Agriculture and Rural Development (NABARD) and Rural Roads
ODR	Other District Roads
PBMC	Performance Based Maintenance Contract
PO	Procurement Officer
PWD	Public Works Department
QC	Quality Control
RE	Revised Estimate
RMMS	Road Maintenance and Management System
SC	Scheduled Castes
SCSP	Scheduled Castes Sub Plan
SDG	Sustainable Development Goals
SE	Superintending Engineer
SH	State Highways
SL	Single Lane
SOR	Schedule of Rates
TNPCB	Tamil Nadu Pollution Control Board
TNRSP	Tamil Nadu Road Sector Project
TNTT Act	Tamil Nadu Transparency in Tenders Act
TNTT Rules	Tamil Nadu Transparency in Tenders Rules
WMM	Wet Mix Macadam

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