

## **CHAPTER – II**

### **PERFORMANCE AUDIT**



## CHAPTER II: PERFORMANCE AUDIT

### PUBLIC WORKS DEPARTMENT

#### Performance Audit on 'Improvement of Roads in Maharashtra through Hybrid Annuity Model'

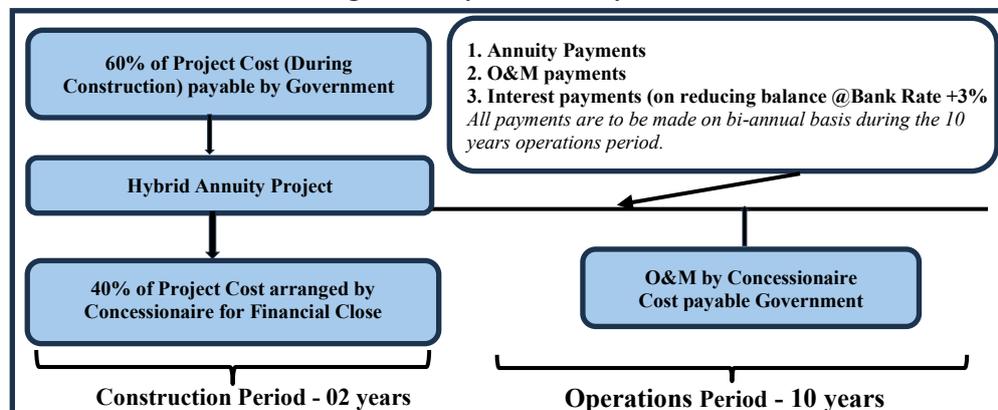
##### 2.1 Introduction

Road networks play a vital role in transport which contributes towards the holistic development of nation. It contributes to the better transportation of agricultural products, growth of industries and supports socio-economic development. In Maharashtra, the Public Works Department (Department) develops road infrastructure to provide the end user with a transportation system that caters to their needs.

The road development works in the State were being executed through Engineering, Procurement, Construction Model in which full payment was to be made to the contractor during the period of construction. However, sometimes, due to lack of funds, it was not possible for the Government to take up new work as well as repairing work. Keeping in view this constraint, Government of Maharashtra (GoM) announced (November 2016) execution of Hybrid Annuity Model (HAM) projects for the development of roads in the State on the lines of HAM projects being implemented by Government of India (GoI).

Under HAM, the GoM has to pay 60 *per cent* of the cost of the project as its equity to the concessionaire during the period of construction, which was linked to achievement of prescribed milestones by the concessionaire. The concessionaire would arrange for the remaining 40 *per cent* amount that would be repaid in 10 years after the completion of the construction work in the form of annuity along with interest @ three *per cent* over and above the bank rate. The entire project cost including Operation and Maintenance (O&M) cost has been linked to the Price Index<sup>1</sup>. The construction work was to be completed within two years and the concessionaire was responsible for the maintenance of the project for 10 years, for which O&M cost was payable as shown in block-diagram below.

Diagram 1: Hybrid Annuity Model

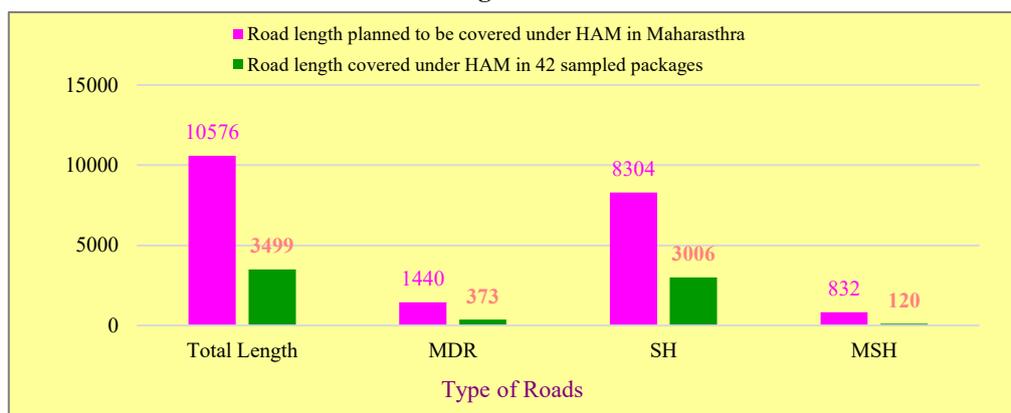


<sup>1</sup> Price Index shall comprise of 70 *per cent* of Wholesale Price Index (WPI) for all commodities as published by the Ministry of Industry, GoI and 30 *per cent* of Consumer Price Index (CPI) for Industrial Workers as published by the Labour Bureau, GoI.

The total length of surface roads<sup>2</sup> in the State as of November 2016 was 3 lakh km out of which 90,608 km were Major State Highways (MSH<sup>3</sup>, 6163 km), State Highways (SH<sup>4</sup>, 33860 km) and Major District Roads (MDR<sup>5</sup>, 50585 km). It was decided (November 2017) to cover the road length of 10,576 km out of 90,608 km road length under HAM with an estimated investment of around ₹ 30,000 crore (average ₹ three crore per km) in which government equity share was to be ₹ 18,000 crore (60 per cent) and private equity share was ₹ 12,000 crore (40 per cent).

Details of the road length planned to be covered under HAM vis-a-vis road length in 42 sampled packages in this performance audit is depicted in **Chart-1** below.

**Chart 1: Road length covered under HAM**



(Source: Departmental Records)

The coverage of 10,576 km of road length was envisaged under HAM. However, as on February 2025 the road length of 9,011.31 km (excluding the road length declared as National Highway) was covered through 140 packages with road length of around 50 km in each package. The total Bid Project Cost (BPC) awarded of these 140 packages was ₹ 28,593.28 crore. Out of these 140 packages, 112 were completed (Road length 7,188.21 km) and 28 were ongoing (Road length 1,823.09 km) as on February 2025 as depicted in **Chart 2** below:

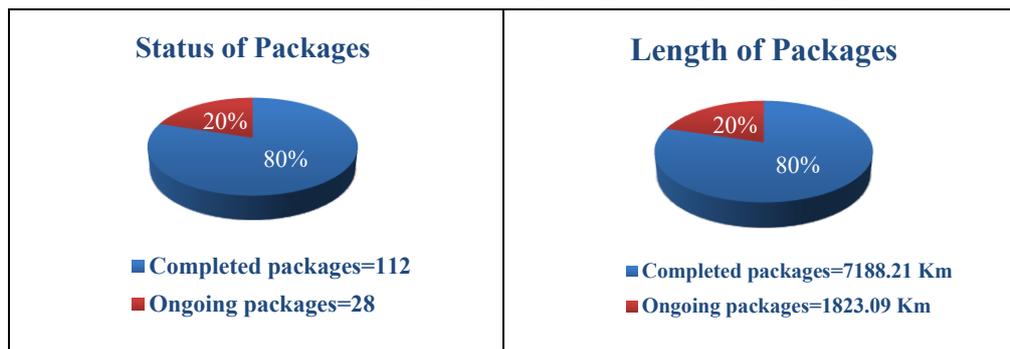
<sup>2</sup> As per Economic Survey of Maharashtra 2017-18.

<sup>3</sup> MSHs are state highways to connects east-west and north-south part of the state and to increase the intra state trade and transport (Length of 6163 km).

<sup>4</sup> SHs link district headquarters, important cities and towns within the State and connect NH roads (Length 33860 km).

<sup>5</sup> MDRs connect taluka place to the district place (Length 50585 km).

Chart 2: Status of completion of packages / length of packages



Details of actual expenditure incurred as on date on these 140 packages is awaited. Of the completed 112 packages, 63 packages were completed with delays ranging from 21 to 979 days. 28 ongoing packages are with delays ranging from 24 to 1353 days.

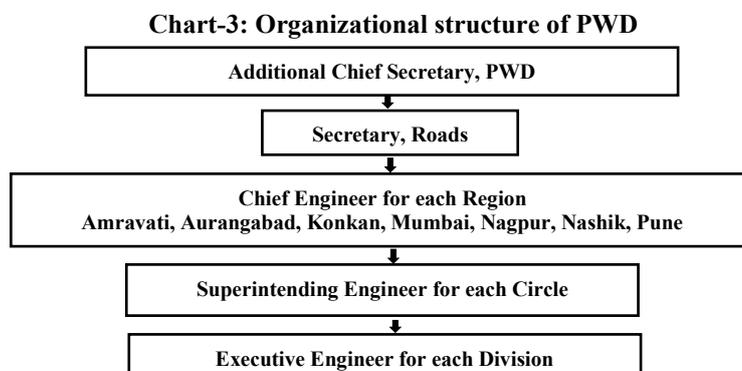
Audit selected 42 packages for detailed scrutiny, listed in *Appendix 2.1.1*. Status of completion and details of awarded cost and expenditure of the selected 42 packages as on February 2025 is given in the **Table 1**.

Table 1: Status of selected packages as on February 2025

Number of packages	Completed	Ongoing
	42	37
Awarded cost (₹ in crore)	₹ 9918.98 crore	₹ 1577.20 crore
Cost incurred (₹ in crore)	₹ 11674.71 crore	₹ 1217.81 crore
Delay in days	Ranging from 27 to 979 days	Ranging from 561 to 1237 days

## 2.2 Organizational Structure

The department at the Apex level is headed by the Additional Chief Secretary (ACS). The Secretary (Roads) looks after road works. There are seven Public Works (PW) regions in the State (Amravati, Aurangabad<sup>6</sup>, Konkan, Nagpur, Nanded, Nashik and Pune), under the technical control of Chief Engineer (CE). The CE is assisted by the Superintending Engineer (SE) in charge of the PW Circle, who is responsible for supervision of execution of works within the PW Circle. The Executive Engineer (EE) working under the SE, is in charge of the PW division and is responsible for execution of road works in the division. The organizational structure is depicted in **Chart-3** below:



Source: Departmental Records

<sup>6</sup> Now changed as Ch. Sambhajinagar

### **2.3 Audit Objectives**

The Audit Objectives of the Performance Audit were to ascertain whether:

1. Terms and conditions of the agreements were designed to safeguard the interest of the Department and selection of individual packages under the model was appropriate.
2. Individual packages were executed as per norms, guidelines and concession agreements.
3. Terms and conditions for payment to the concessionaire outlined in the concession agreement were strictly followed.
4. The mechanism for monitoring and evaluation of the road quality was adequate and effective.

### **2.4 Audit Criteria**

Audit criteria for the Performance Audit were derived from

1. Maharashtra Public Works Manual;
2. Maharashtra Public Works Account Code;
3. Budget book and Budget Manual;
4. Provisions of Indian Road Congress codes applicable for construction of roads and Ministry of Road Transport and Highways specifications.
5. Government resolutions, instructions and orders for execution of roads and bridges under HAM issued by GoM and GoI;
6. Maharashtra Road Development Plan 2001-21
7. Requests for Proposal (RFP) for DPR consultant, Concessionaire and Independent Engineer (IE);
8. Detailed Project Reports (DPRs) of the projects, Terms of Reference for DPR consultant and Independent Engineer (IE) and Schedule of Rates;
9. Concession Agreements (CAs) made with the Concessionaire for different packages.

### **2.5 Audit Scope, Sampling and Methodology**

The Performance Audit was conducted during July 2023 to February 2024 covering the period from 2018-19 to 2022-23.

Out of total 133 packages (as on May 2023), 131 packages were considered for sampling as two packages<sup>7</sup> were at the tendering stage at the time of sampling. The 131 packages were stratified into four strata. Four packages above ₹ 800 crore were selected on 100 *per cent* basis. Out of the remaining 127 projects in three strata, 38 packages were selected by using simple random sampling method. The details of selection of packages is as shown in **Table 2**.

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<sup>7</sup> HAM AU-123 and HAM AU-117

Table 2: Details of selection of packages

Sr. No.	Classification of Strata	Number of packages	Number of packages selected
1	Packages Cost less than ₹100 crore	10	03
2	Packages Cost ₹100 crore to ₹ 200 crore	73	22
3	Packages Cost More than ₹200 crore to ₹800 crore	44	13
4	Packages Cost More than ₹800 crore	04	04
<b>Total</b>		<b>131</b>	<b>42</b>

(Source – Departmental records)

Total 42 packages including 24 completed and 18 ongoing packages (status as on May 2023) were selected which constituted 32 *per cent* of total number of packages as detailed in *Appendix 2.1.1*.

An Entry Conference was held on 23 June 2023 with the ACS, PW Department, GoM wherein the scope & coverage of audit, audit objectives and criteria *etc.*, were explained.

The scrutiny of records, collection of data and information as well as data analysis was carried out at the offices of ACS, PWD and Secretary, Roads at Mantralaya, Mumbai, CEs of PW Regions (PWRs), SEs of Vigilance and Quality Control Circles (VQCC) formed at PWRs and EEs of selected PW divisions. Physical inspection of selected project sites was conducted along with departmental officials.

The reply of the GoM received on 12 December 2024. The exit Conference was held on 03 March 2025 with the ACS, PW Department, GoM. The replies received during the exit conference have been suitably incorporated in the draft.

## 2.6 Acknowledgement

Audit acknowledges the cooperation extended by Public Works Department at various stages of conducting the Performance Audit.

## Audit Findings

## 2.7 Planning

The first objective of this Performance Audit was to assess whether terms and conditions were designed to safeguard the interests of the Department and selection of individual packages under the model was appropriate.

The Department constituted a committee in October 2015 under the Chairmanship of the CE, PWR, Pune to prepare guidelines and standard agreement for implementing the annuity projects. The committee in its report (December 2015) identified 21025 km of road length (264 roads) of MSH and SH in the entire State under Road Improvement and Strengthening Programme (RISP, 2016) based on certain parameters<sup>8</sup> to be taken up in a phased manner. The committee suggested that road works under annuity model should be taken

<sup>8</sup> High traffic density corridor, state highways connecting major industrial centers-important pilgrimages-important tourist places connecting national highways, roads passing through backward areas, road connecting new airport and SEZs, road connecting smart cities, district to district connectivity, district place to taluka head quarter or roads connecting Delhi Mumbai Industrial Corridor/ Dedicated Freight Corridor between Delhi and Mumbai.

up in four phases with levy of toll for heavy vehicles. It was also suggested by the committee that a State Road Development Fund (SRDF) should be created with an initial allotment of ₹ 2,000 crore and proceeds of toll collection may be credited to the fund.

The Department prepared (November 2016) the proposal of improvement of road works through HAM and in the meeting held on 03 November 2016, decided to cover road length of 10,576 km (195 roads) comprising of MSH, SH and MDR, selected by applying five<sup>9</sup> indicators. The proposed cost to cover this road length under HAM was ₹ 30,000 crore (average ₹ three crore *per km*) in which it was planned to have government equity share 40 *per cent* costing ₹ 12,000 crore and private equity share of 60 *per cent*, costing ₹ 18,000 crore. The construction work was to be completed within two years with an annuity period of 15 years.

The proposal was sent to the Finance Department (FD) and Planning Department (PD) for opinions and recommendations. The FD and PD (28 November 2016) suggested that tackling of 10,000 km road length would put huge burden on the State exchequer and recommended to implement the project on pilot basis in phase-wise manner. Further, it was suggested to explore the possibility of raising funds through alternative arrangements, such as selling additional land owned by the department or collection of revenue through tolls. It was also suggested that efforts should be made to reduce the upfront payment of 40 *per cent* during the initial period.

However, the Department announced (29 November 2016) execution of HAM projects of road length 10,576 km in a single phase and decided (December 2016) that the individual package should be of minimum 100 km and cost should be above ₹ 250 crore. Accordingly, 78 packages covering 195 works were considered and tenders were called. However, due to no response, the government to private party share was revised (November 2017) from 40:60 to 60:40, annuity period was reduced from 15 years to 10 years and package length was reduced to 50 km from 100 km. Accordingly, the number of packages were revised from 78 to 140.

Audit scrutinized the records for process of selection of road works, preparation of DPRs for works and tendering documents. The audit findings pertaining to these issues are discussed in succeeding paragraphs.

### **2.7.1 Preparation of Request for Proposal (RFP) for feasibility study and DPRs**

CE, PW Region, Pune was entrusted (December 2016) with the work of inviting a consolidated tender for appointment of consultants for preparation of DPRs. In accordance with the order, uniform terms and conditions of Request for Proposal for appointment of consultants were finalized (December 2016) by CE, PW Region, Pune for the entire State.

Audit observed the following irregularities during the scrutiny of records:

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<sup>9</sup> *Viz.* 1. Taluka to Taluka connectivity; 2. Industrial connectivity; 3. Agro products marketing connectivity; 4. Tourist and religious places connectivity; and 5. Heavy traffic count and covering more population

### 2.7.1.1 Detailed estimates of utility shifting in DPRs

As per para 3.6 of ToR of RFP, the consultant will require to liaison with all concerned Government agencies including Electricity Department, Irrigation Department, Municipalities, Development Authority *etc.*, and secure all clearances. Further, the consultant shall collect details of all important physical features along the alignment. The survey would cover the entire Right of Way of the road on the adequate allowances for possible shifting and will incorporate the estimates for shifting of utilities of all types involved from concerned local authorities in the DPR.

Audit observed that at the time of preparing DPR, the consultant did not prepare detailed plan and estimates for utility shifting and only lumpsum provision was made without component-wise estimate. It was further observed in two (AM-1 and AM-2) out of 24 completed sampled packages that the estimated lumpsum cost of utility shifting provided in the DPR was ₹ 29.19 crore. However, at the time of execution, the actual cost of utility shifting came to ₹ 225.85 crore.

Had the consultant prepared the detailed estimates of utility shifting, as provisioned in RFP, the estimated cost of the packages could have been projected accurately.

Government replied (December 2024) that as technical sanction and preparing draft tender paper is a time bound process, technical sanction for utility shifting was accorded considering utility shifting based on visualization and oral communication with line departments. It further replied (March 2025) that revised administrative approval is granted.

### 2.7.1.2 Incorporation of an incorrect clause resulted in unwarranted payment

As per Para 10.2.14 of the Maharashtra Public Works Accounts Code 1984, full rates as per agreement should be allowed only if the quantity of work done is up to the stipulated specification. Para 12 of schedule-1 of the RFP provides component-wise payment of DPR consultancy charges to the consultants for 11 components in different percentages of contract value for completing the work of DPR, which also includes components for submission of final Land Acquisition Report (10 *per cent*) and submission of Land Acquisition proposal (10 *per cent*).

The RFP provided that “after completion of services, the final contract amount shall be worked out on the basis of inputs and services actually carried out and the payment shall be adjusted accordingly”. However, in contrast, note 7 of Annexure 6 of payment schedule (RFP) stated that, in case, any stage is not applicable for any project, payment for such stage shall become due on completion of its previous stage.

The work orders for DPR consultancy work were awarded during the period April-July 2017. However, in May 2017, the department decided that the road work would be executed on the existing Right of Way<sup>10</sup>, to avoid additional cost and delay in land acquisition process. Hence, the requirement of submission of

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<sup>10</sup> Right of way is the total land width required for the Project Highway, to accommodate the roadway (carriageway and shoulders), side drain, service road, tree plantation, utilities *etc.*

land acquisition report or land acquisition proposal consisting of 20 *per cent* of the consultancy payment was not required to be done by the consultants.

However, inclusion of an incorrect clause (Note 7 of Annexure 6 of payment schedule) in the RFP for payment for the components which were not actually done by the consultants has resulted in unwarranted expenditure. In the State, 78 DPRs had been prepared covering 195 works at a cost of ₹ 217.40 crore. In these 78 DPRs, provision of ₹ 43.40<sup>11</sup> crore was made on the land acquisition activities which were not required at all. In 13 out of 42 sampled packages, the consultants were paid ₹ 5.55 crore<sup>12</sup> for the land acquisition component even when the land acquisition was not required in terms of decision taken in May 2017. Payment details of 29 packages are awaited.

GoM in its earlier reply (December 2024) stated that though the inclusion of land acquisition items in the payment schedule turned out to be erroneous, this has not led to any financial burden on the department. The reply is not acceptable as the payment of 20 *per cent* for land acquisition was provisioned for in all the 78 DPRs though the work of land acquisition was not required. Moreover, the consultants in 13 out of 42 sampled packages, were paid ₹ 5.55 crore for land acquisition component though land acquisition was not required in term of decision taken in May 2017.

Government instructed (March 2025) the department officials to take a note of this in future projects.

### **2.7.2 Selection of road projects under HAM without obtaining forest clearance**

As per para 10.10 of Term of Reference (ToR) of Request for Proposal (RFP) for appointment of consultant for feasibility study of DPRs, forest clearances required for the project should be obtained by the consultants at the time of finalisation of DPR. The final approvals should be submitted to the department so that implementation of the project can straight away proceed without any hindrance.

During scrutiny of records, it was noticed in three out of 42 packages that a major part of the road stretch which was to be widened from single lane (3.5 meter to 3.75 meter) to double lane (7 meter) was passing through the forest area, which required forest clearance for execution of works. However, audit observed that the execution of packages was started without obtaining forest clearance due to which the work was later de-scoped or could not be executed as detailed below:

- The HAM package MU-170<sup>13</sup> connects Murud village to Kolad village (km 0/00 to 48/00) in district Raigad. Out of a road length of 48 km, part road of 9 km having a carriageway of 3.75 meter (single lane) was passing through

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<sup>11</sup> Total 20 *per cent* of ₹ 217.04 crore (10 *per cent* Final Land Acquisition, 10 *per cent* Submission of Land acquisition proposal)

<sup>12</sup> PN 28,32,33,34 - ₹ 206.24 lakh , AU 180- ₹ 12.47 lakh, PN 153- ₹ 16.56 lakh, NSK 62- ₹ 36.08 lakh, NAG-139 & NAG-141- ₹ 74.46 lakh, NAG-136 & 137- ₹ 71.00 lakh, MU-2 & MU-3- ₹ 68.79 lakh, AU-106 - ₹ 69.33 lakh

<sup>13</sup> Improvement to Murud – Roha – Kolad – Pune Road MSH-05 (km 0/000 to km 48/000)” in Murud Taluka to two lane with paved shoulders.

Fansad Wildlife Sanctuary, for which forest clearance was not obtained and the length of 9 km (2/200 to 11/200 km) which was in the forest stretch was de-scoped. Thus, road with two-lane paved shoulder discontinued in the forest stretch and the very objective of connecting Murud with Kolad through two lane paved shoulder road remain unfulfilled.

- In package NAG-132<sup>14</sup>, the improvement work in stretches of 11.230 km and 1.700 km was not executed as no permission of the forest department was obtained. Hence, the work was de-scoped for the said stretch and the existing single lane carriageway of 3.5 meter to 3.75 meter could not be widened.
- In Package AM-94<sup>15</sup> (Part of Package AM-2), out of the entire road length of 52.52 km, 34.49 km stretch of road was passing through forest and 18.03 km through village area. Forest Department did not give permission for widening of road and instead permitted for overlaying on the existing width of single lane in 34.49 km stretch of forest area. As such the objective of HAM of improving the road into two lanes was not met.

GoM, in reply (December 2024) stated that efforts were made for getting permission from the forest department and works were started in anticipation that forest clearance can be obtained. Government further replied (March 2025) that the matter will be taken care of in future.

The fact remains that the permission of the forest department has not been obtained at DPR stage by the consultants as envisaged resulting in incomplete execution of road works to that extent.

### 2.7.3 Unrealistic loading of insurance and patrolling expenses for operation and maintenance

Clause 17 of the Concession Agreement provides that the concessionaire shall ensure that at all times the project conforms to the maintenance requirements set forth in the agreement. Operation and maintenance includes regular and special maintenance, provision for insurance, patrolling and other office expenses.

As per HAM guidelines, the construction period of the project should be two years and thereafter, the O&M period will be 10 years, which is the responsibility of the concessionaire. For estimating the O&M cost, the Department referred to the base rate assumptions made in the NHAI *vide* circular dated 29 April 2011 for four-lane roads.

The provision made for Insurance and Patrolling expense in the O&M cost of the packages was as shown in **Table-3**.

<sup>14</sup> Construction of two-laning with paved shoulders for package HAM-NAG-132, A-1 Jamb-Andhalgaon-Palandur to join SH 358 (SH-361) (From Km 0+00 to Km 67+200), A-2 Jamb-Andhalgaon Mohadi-Palandur to join SH 358 (link road) (SH361) (From Km 0+00 to 67+200)

<sup>15</sup> Widening of two lane with paved shoulder for the improvement to roads for Chikaldhara hill Station in Amravati district. (Paratpara Chikhaldara Ghantag Road) (Length 52.525 km)

**Table 3: Provision made in the estimate for O&M cost**

Item	Unit	Parameter/Quantity
Length of Road	Km	Project-specific
Bid Project Cost	₹	Project-specific
Insurance (0.15 per cent of Bid Project Cost / year)	Per Year	Including GST @12per cent
Patrolling Expenses	Per Year	10,00,000.00

(Source – Estimate of O&M cost provided by department)

Audit observed that insurance charges were included as 0.15 per cent of the Estimated Project Cost (EPC) in the estimates instead of actual premium payable. The concessionaire obtained insurance policies at a cost ranging from ₹ 0.50 lakh to ₹ 9.07 lakh per year against the inclusion of insurance charges ranging from ₹ 10.34 lakh to ₹ 46.13 lakh in the Estimated Project cost. This has resulted in inclusion of excess insurance charges in O&M cost to the tune of ₹ 34.56 crore in respect of 16 out of selected 42 packages as detailed in **Appendix 2.1.2**. In respect of the remaining 26 packages, records were not furnished by the concerned divisions.

Further, Patrolling expenses of ₹ 10 lakh per year were worked out by the department on the basis of rent of the vehicle, driver’s salary, diesel cost and maintenance cost. However, it was not linked with the length of the road to be covered under the package. A lumpsum provision of ₹ 10 lakh per year was provided for each package for patrolling expenses irrespective of the road length covered. In the sampled 42 packages it was observed that the road length covered in the package varied from 18 km (AM-82A) to 89 km (AU-107). As such provision of lumpsum patrolling charges equally in all packages is not justified.

GoM in its reply (December 2024) stated that the insurance cost and patrolling expenditure are considered as per the assumptions stated in the NHAI (April 2011).

However, the suggested assumption in the NHAI circular (April 2011) provided per km rates for patrolling. Audit is of the view that lumpsum provision of patrolling irrespective of the length of roads covered in packages is not justified. Further, cost of insurance should have been paid on actual basis.

Government replied (March 2025) that instructions will be issued to the field offices to verify whether the patrolling were carried out as per Concession Agreement and accepted the facts (March 2025) that insurance cost should be included as per actual.

#### **2.7.4 Changes of clauses of Model Concession Agreement**

The Department had approved the Model Concession Agreement (MCA) for HAM projects and circulated to all the CE. During the scrutiny of selected 42 packages audit observed that there was variation in clause for price variation from the approved RFP in one region and non-provision of clause for reduction in O&M charges for change in scope of work in the approved MCA as detailed below:

- CE, PWR, Konkan issued an addendum to MCA that price index multiple as mentioned in clause 23.2 shall be applicable for all material except

steel, cement and bitumen for which separate price variation shall be paid. This is in deviation from the Model Concession Agreement. This has been discussed in detail in **Paragraph 2.9.2.3**.

Government accepted the facts and replied (March 2025) that instruction would be issued to all CEs so that no modification to MCA be done without approval of government.

➤ As per clause 16.7 of CA, if the Change of Scope (COS) leads to a reduction or increase in the length of the project highway, the O&M payments as provided in clause 23.7 shall be reduced or increased in proportion to the reduction or increase in the length of the project highway. In this clause though the COS for reduction or increase in the length is given but in case of revision in width of road (either single lane or intermediate lane) then there is no provision for proportionate reduction in O&M payments as provided in clause 23.7. In case of Package AM-94 in Amravati district, as mentioned in **Paragraph 2.7.2**, the road length was passing through forest area which was not allowed for widening and only overlaying work on existing road was done. However, the O&M cost was not reduced in absence of clarity in clause 16.7.

Government accepted the fact and replied (March 2025) that necessary instructions shall be issued to the field officers.

## **2.8 Execution of the packages**

The second objective of this performance audit was to assess whether individual packages were executed as per norms, guidelines and CA.

Audit scrutinized the DPR, tender document, concession agreement, execution of work as per schedule of CA, physical inspection of created assets and records related to O&M. The audit findings are discussed in succeeding paragraphs:

### **2.8.1 Adoption of higher specification for crust thickness resulted in unwarranted cost to the packages**

Department *vide* circular of May 2017 instructed to follow specifications mentioned in IRC SP-73 (2015) for execution of two-lane with pave shoulder work while giving technical sanction to HAM works. As per IRC SP-73 (2015), flexible pavement should be designed for a design period of 15 years and subject to the condition that design traffic should not be less than 20 Million Standard Axles (MSA<sup>16</sup>). It was further instructed that if in any case, specification of IRC SP-73 (2015) could not be followed, the reasons thereof may be point-wise noted. IRC SP-73 (2015) also specified that the thickness of the pavement layers for widening and strengthening of existing pavement to two lanes shall be as per IRC: 37-2012. It also provides the specifications to be used for different designed MSA.

Audit observed from the respective DPRs of 18 packages out of 42 selected packages that the MSA was estimated based on projected traffic load for the design period of 15 years on the proposed roads ranging between 0.01 MSA and

<sup>16</sup> MSA is a unit of measurement for the traffic-carrying capacity of a road which depends on various factors, including the number of commercial vehicles, annual growth, design period, lane factor, and vehicle damage factor. MSA is used to determine the thickness of pavement layers in road construction.

8 MSA for which the required crust thickness of flexible pavement was to be considered as specified in IRC: 37-2012. However, higher specification for crust thickness of flexible pavement was provided than required as per the projected MSA in DPRs as detailed in **Appendix 2.1.3**. This has resulted in unwarranted cost of ₹ 297.97 crore in 18 packages.

Government replied (December 2024) that in one case (MU-3) traffic from National Highway got diverted to the project road and in other cases, because of road under HAM, the traffic got induced and even the traffic in the vicinity started flowing on HAM road.

The reply is not acceptable as MSA was calculated considering the increase in traffic per year for fifteen years. Despite that, the crust provided for the roads were much higher than projected in DPR. The documentary evidence in support of achievement of current traffic count was neither produced at the time of audit nor with reply.

**2.8.2 Acceptance of tender without fulfilment of financial capacity by the bidder on account of deficiency in Bid evaluation**

The tender notice for each HAM package was invited for the specified Estimated Project Cost (EPC) for which the instructions for bidders with the terms and conditions of bidding were mentioned under Request for Proposal (RFP).

As per clause 2.2.2 of RFP, the eligibility and qualification criteria prescribed that the bidder shall have a minimum net worth (Financial Capacity) of 25 *per cent* of the EPC at the close of the preceding Financial Year. It implies that the total financial capacity against combined EPC of all the works got by an agency in the State is to be verified against the eligibility criteria of financial capacity. Further, condition 2.2.2 (B) of RFP stipulates that each member of the consortium shall have a minimum Net worth of 12.5 *per cent* of EPC in the immediately preceding Financial Year.

Audit observed in PW Region, Chhatrapati Sambhajinagar, that five HAM packages having total EPC of ₹ 1157.09 crore were awarded (April 2018) to M/s ABC Ltd for which the minimum net worth of ₹ 289.28 crore (25 *per cent* of total EPC of five packages) was required in preceding year as per clause 2.2.2 of RFP as shown in **Table 4** (first five cases). Further, two more packages (AU-L1 and AU-L2) having total EPC of ₹ 1982.13 crore with minimum net worth requirement of ₹ 495.53 crore were awarded (October/November 2018) to the same bidder as detailed in **Table 4**.

Table 4: Details of packages with EPC and net worth

(₹ in crore)

Package No.	EPC	Required Net worth	Date of Award
AU-100A*	180.91	45.23	16/04/2018
AU-100B	207.88	51.97	18/04/2018
AU-102*	213.11	53.28	18/04/2018
AU-99*	255.74	63.94	16/04/2018
AU-98*	299.45	74.86	18/04/2018
AU-L1 <sup>17</sup>	550.77	137.69	30/10/2018
AU-L2	1431.36	357.84	05/11/2018
<b>Total</b>	<b>3,139.22</b>	<b>784.81</b>	

(Source – Information furnished by PW divisions)

\* AU-100A, AU-102, AU-99 & AU-98 are not sample packages but considered for evaluation of financial capacity of concessionaire.

The department accepted the bids initially for five packages where the net worth requirement was of ₹ 289.28 crore against the total net worth of the bidder in preceding year (2017-18) of ₹ 427.44 crore. However, while accepting tenders for two packages (AU-L1 and AU-L2), the departmental authorities did not to consider the earlier awarded works while evaluating the bidders' financial capacity. Audit is of the view that the works already awarded should have been considered to assess the collective financial standing of the bidder. The required net worth of ₹ 784.81 crore by combining five earlier packages and subsequent two packages was much more than the bidder's total net worth in preceding year (2017-18) of ₹ 427.44 crore. Thus, the award of works in October/ November 2018 to the same bidder is a violation of the norms specified in the RFP.

Further, the bid of the ABC joint venture<sup>18</sup> with XYZ for the AU-L1 package was accepted, even though the financial capacity of the consortium partner, M/s XYZ, was not submitted.

Government replied (March 2025) that a circular was issued (June 2019) wherein it was stated that for evaluating financial bid, net available net worth should be considered by deducting net worth of other projects for which bidding made by single bidder.

### 2.8.3 Construction and maintenance of road works.

As per clause 17.1.1 of the CA, during the operation period, the concessionaire shall operate and maintain the project in accordance with this agreement and further as per clause 17.2 of CA, the concessionaire shall procure that at all times during the operation period; the project conforms to the maintenance requirements set forth in as per schedule-K of CA.

To assess the execution and maintenance of road by the concessionaire in accordance with CA during construction, operation and maintenance period, audit conducted joint physical verification with the official of the divisions of selected 42 packages. Audit noticed three instances of under-utilization of roads, two instances of not ensuring safety features, eight instances of lack of

<sup>17</sup> M/s ABC (JV) M/s XYZ

<sup>18</sup> The package was awarded to ABC JV M/s XYZ. Net worth of ABC Ltd was ₹ 427.44 crore whereas the net worth of M/s XYZ was not submitted.

connectivity and seven cases where several stretches of roads were found damaged during physical verification as discussed in succeeding paragraphs.

### **2.8.3.1 Under-utilisation of roads due to existence of weak, narrow and incomplete bridges**

Audit observed that roads under the three out of 24 selected completed packages were not fully utilised due to existence of weak and narrow bridges in between the roads as discussed below:

#### **1. Package AU-L1 (AU-124)**

Two minor bridges falling between the stretches of road constructed under HAM were not reconstructed. These bridges were weak and in damaged condition as the reinforced steel are exposed which is not safe for commuters as depicted in **Photographs** below.



Government replied (March 2025) that instruction would be issued to complete the construction of minor bridges.

#### **2. Package NSK-55B**

Non-widening of narrow bridge of 5.5 metre on irrigation canal at chainage 8/100 on the road constructed under HAM, created bottlenecks hampering the smooth plying of traffic.

Government replied (March 2025) that instruction would be issued to complete the construction of minor bridges.

The fact remains that due to non-widening of narrow bridge and non-construction of weak bridges, the objective of uninterrupted traffic was not achieved.

#### **3. Package NSK-65**

The work of improvement of roads in Package NSK-65 was divided into two different road stretches: NSK-65A<sup>19</sup> from Chopda to Jalgaon and NSK-65B<sup>20</sup> from Jalgaon to Yawal. Both the proposed roads pass through the Tapi river where bridges on both the sides were to be constructed for ensuring direct connectivity. Even being aware of the fact that Right of Way for construction of road was not in existence for the length of 1.575 km in Package NSK-65A and 2.40 km in Package NSK-65B as the stretches were lying in submerged areas of Tapi river, the roads were undertaken for execution (April 2019) under

<sup>19</sup> Improvement of Chopda to Jalgaon Road SH 40 total length, length 42.80 km

<sup>20</sup> Improvement of Yawal to Jalgaon length of 20 km

HAM. For bridge to be constructed (HAM package NSK-65A), work order was issued to Public Works Department in July 2022 with the stipulated period of completion of 24 months and on HAM package NSK-65B work order was issued to Irrigation Department in July 2021 with the stipulated period of 12 months extension was granted up to June 2023. Though, both the HAM packages were completed and commercial operations on these roads were started since October, 2021, direct connectivity between Chopda to Jalgaon and Yawal to Jalgaon could not be established due to non-completion of bridges as shown in **Photograph 3** below.



**Photograph-3-Incomplete bridgework over Tapi river in Bhokar village**

(Source: 'BEAMS' website)

Date of picture: 17 November 2023

Thus, taking up of these roads under HAM before construction of bridge works did not serve the intended benefit of direct connectivity between Jalgaon to Chopda/Yawal despite incurring an expenditure of ₹ 7.20 crore on O&M<sup>21</sup> on the road work executed by the department.

Government accepted the fact (March 2025) and stated that the construction work of bridges would be completed by June and December 2025.

### 2.8.3.2 Crash barriers, retaining wall, protection for safety of commuters

For the safety of commuters, crash barriers or retaining walls should be provided as per Schedule C of CA. Audit observed during joint physical verification that in two out of 42 selected packages, there was non-execution of crash barriers or retaining wall for safety of commuters.

#### 1. Package NSK-62 A

Audit observed that the concessionaire did not execute the work of Retaining wall/Parapet wall<sup>22</sup> and Protection wall<sup>23</sup> on both sides with metal crash barrier<sup>24</sup> as prescribed in typical cross section (TCS) under schedule of CA. The photograph of site visit showing the road passing through hilly terrain with one side of road having deep valley was shown below.

<sup>21</sup> From October 2021 to April 2023

<sup>22</sup> Chainage 12/500 to 21/450

<sup>23</sup> Chainage km 8/400 to 10/100

<sup>24</sup> Chainage 5/400 to 8/400 & 10/100 to 12/500



## **2. Package PN-32**

At chainage from km 101/800 to 102/200 and km 103/700 to 104/000, crash barriers or protection wall were not provided.

Government confirmed the fact (December 2024/March 2025) that due to site conditions, local and ROW issues, provision of crash barriers could not be executed.

The fact remains that non-construction of crash barriers/protection wall poses risk to the commuters.

### **2.8.3.3 Non-construction of stretches of road noticed in physical verification**

Audit observed that in eight out of 42 selected packages, the portion of road was not constructed due to non-availability of Right of Way, forest clearance, protest by villagers and railway land due to which construction could not be started and the length was later descoped as detailed below.

#### **1. Package PN-43**

Burungwadi-Bhilwadi road, km 42/400 to 43/100 was not constructed due to incomplete Rail over Bridge (ROB).

GoM, in reply (December 2024/ March 2025), confirmed the fact and stated that the length has been descoped.

The facts remained that the connectivity will not be established without completion of ROB.

#### **2. Package PN-32**

Pargaon-Daund road, km 78/640 to 79/180 was not constructed due to non-availability of Right of Way, opposition from villagers *etc.*

GoM, in reply (December 2024/ March 2025), confirmed the fact and stated the length has been descoped.

The facts remained that the continuous two-lane road connectivity will not be established without completion of said stretch of road.

#### **3. Package NSK-55A**

The road work of SH-27 was held up and the project is being delayed due to non-completion of approaches of the ROB for want of land acquisition as depicted in **photograph** below:



Photograph- 6 NSK-55A

GoM, in reply (December 2024/ March 2025), stated that the ROB work cannot be done now as new bridge is being constructed by PWD through another scheme, hence, the work was descope.

The facts remained that the connectivity will not be established without the completion of bridge.

#### 4. Package NSK-55B

The road length of 80 metre was not executed due to proposed construction of ROB on same length.

GoM, in reply (December 2024/ March 2025), stated this length comes under railway-crossing, hence, descope.

The facts remained that the connectivity will not be established without completion of ROB.

#### 5. Package AU-107, AU-108 and AU-114

The stretch of 3.310 km (AU-107), stretch of 5.20 km (AU-108) and stretch of 3.10 km (AU-114) was not constructed for want of forest clearance.

#### 6. Package AU-105

The stretch of 8.50 km part of New Greenfield Alignment MSH-16 was not constructed for want of land acquisition.

#### 2.8.3.4 Non-maintenance of roads noticed during physical verification

Audit observed that in seven out of 42 selected packages, several stretches of road were found damaged during joint physical verification as detailed below:

##### 1. Package NSK-55B

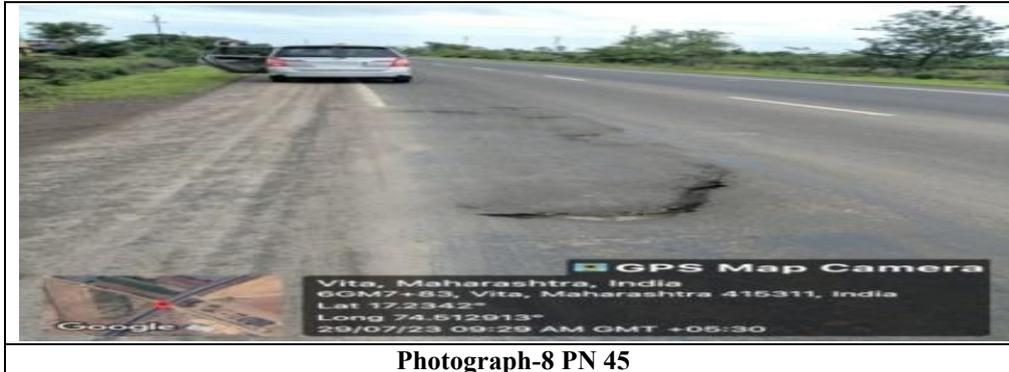
In chainage from 0/000 to 0/700 cracks were noticed in cement concrete road while from 29/000 to 34/000, damages in carriageway were found as depicted in **photograph** below:



Photograph-7 NSK-55B

## 2. Package PN 45

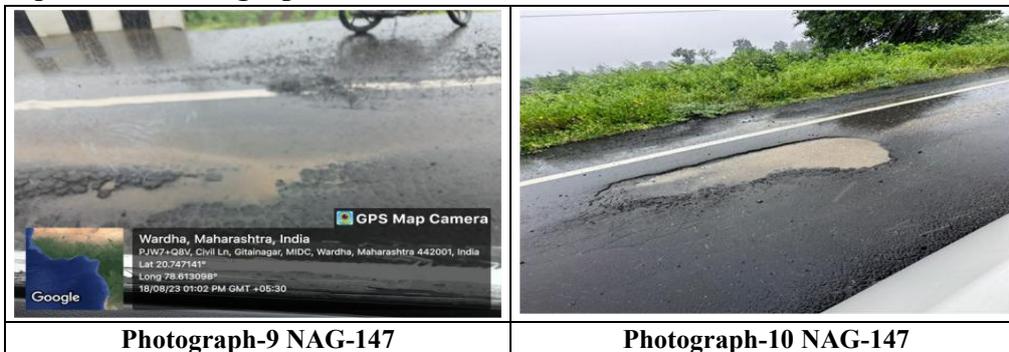
Damages in carriage way were found and the uneven patch-work was noticed as depicted in **Photograph** below.



Photograph-8 PN 45

## 3. Package NAG-147

The rutting and slippage have been found on wheel path at some chainages as depicted in **Photograph** below:



Photograph-9 NAG-147



Photograph-10 NAG-147

## 4. Package NSK-55A

Damages were noticed in the widening part of the road as depicted in **Photographs** below:



Photograph-11 NSK-55A



Photograph-12 NSK-55A

## 5. Package AM-77

The depressions on the carriageway and patches of resurfacing were found indicating substandard work as depicted in **Photograph** below:



Photograph-13 AM-77

## 6. Package NAG-141

Depression of surfaces, potholes and minor cracks were found on various location of carriageway indicating inappropriate work between chainage Km. 0/800 to Km. 24/500 as depicted in **Photograph** below:



**Photograph-14 NAG-141**

## 7. Package NSK-56

The alligator or map cracking and slippage have been found in 21.41 km on wheel path as depicted in **Photograph** below:



**Photograph-15 NSK-56**

Government replied (March 2025) that the rectifications were carried out.

The fact remains that the concessionaire has not maintained the road in accordance with CA during the O&M period.

### Good Practice

Ashta-vinayak darshan is pilgrimage to the eight temples of Lord Ganesha in Maharashtra situated at Morgaon, Sidhhatek, Ranjangaon, Ozar, Lenyadri, Theur, Pali and Mahad. The total distance required to visit Ashtavinayak temples is 606 km which usually took almost 2-3 days to complete the Ashta-vinayak darshan.

HAM packages viz. PN 31, 32, 33, 34 and 35 were taken up for connecting these Ashta-vinayak Temples. After completion of the packages, the travel time is reduced to 13 hours and 30 minutes for Ashta-vinayak darshan.

## 2.9 Financial Management

The third audit objective was to assess the terms and conditions for payment mechanism to the concessionaire outlined in the concession agreement were strictly followed.

The audit findings are discussed in succeeding paragraphs:

**2.9.1 Avoidable expenditure on interest of ₹ 4.65 crore for delayed payment to concessionaires**

Clause 23 of the CA stipulates the method and quantum of milestone and annuity payments during construction and maintenance period respectively. Further, Article 41.4 stipulates that in the event of delay beyond specified period, the defaulting party shall pay interest for the period of delay calculated at a rate equal to four *per cent* above the daily average bank rate, and the recovery shall be without prejudice to the rights of the parties under the agreement including termination thereof.

Audit observed in three<sup>25</sup> out of 42 selected HAM packages, that the implementing PW divisions failed to make payment for milestone and annuity to the respective concessionaires within the prescribed time limit due to short/delay in release of funds by GoM. As a result, the interest for delayed payment was claimed by the concessionaires and paid by the PW divisions as detailed in **Table-5**.

**Table 5: Interest paid for delayed payments**

Package	Implementing PW Division	Construction period interest		Annuity payment interest	
		Range of delay in days	Amount of interest paid (₹ in lakh)	Range of delay in days	Amount of interest paid (₹ in lakh)
AM-77	Washim	28 to 363	132.48	7 to 79	18.27
AM-78 A	Washim	4 to 74	11.86	-	-
NSK-65	Jalgaon	10 to 347	302.86	-	-
<b>Total</b>			<b>447.2(A)</b>		<b>18.27 (B)</b>
<b>Grand Total (A+B)</b>			<b>465.47</b>		

(Source: Information furnished by PW divisions)

Government accepted the fact and stated (March 2025) that due care would be taken in future to avoid interest payment.

**2.9.2 Excess payment to the concessionaires**

Clause 23 of MCA envisaged various provisions regarding payments to the concessionaire, including milestone payments during construction period, computation of completion cost, and the calculation of the balance completion costs to be paid in annuities. It also covers the payment of annuities, the application of interest thereon, payment of operation and maintenance costs and the composition of the Price Index Multiple (PIM).

Audit observed instances of excess payments in test-checked packages, as discussed in the following paragraph:

<sup>25</sup> AM-77 (2019-20, Demand-54.14 crore, Release-49.06) (2020-21, Demand-25.10, Release-6.11) (2021-22, Demand-76.66, Release-53.58) (2022-23, Demand-19.41, Release-12.29) AM-78A (2019-20, Demand-21.60, Release-21.26), NSK-65 (2019-20, Demand-61.50, Release-61.26) (2020-21, Demand-22.29, Release-22.29) (2021-22, Demand-66.37, Release-66.37)

### 2.9.2.1 Excess payments on account of Annuity and Interest

Clause 23.6.2 defined balance completion cost as completion cost, worked out as per method prescribed in Clause 23.6.1 of the concession agreement, minus amount paid during construction period which shall be due and payable in biannual instalments (Annuity Payments) at the rate of prescribed percentage over a period of 10 years commencing from commercial operation date (COD).

Further as per clause 23.6.4 of the CA, each of the biannual installments payable hereunder shall be paid along with interest due and payable on the reducing balance of completion cost at an interest rate equal to the applicable bank rate plus three *per cent*.

Audit observed that in three<sup>26</sup> out of 24 completed selected packages, excess payment of annuity of ₹ 2.47 crore and excess payment of interest of ₹ 19.80 crore was made due to consideration of incorrect completion cost, short adjustment of payment made during construction and application of incorrect rate of interest while calculating interest payable on annuity as shown in *Appendix 2.1.4*.

Government replied (December 2024) in two cases that the excess payment was inadvertently made to the concessionaire and letter for recovery has been sent to the concessionaire. In the Exit Meeting Government stated (March 2025) that recovery details will be submitted shortly. In respect of AU 106 package, the Division further replied (June 2025) that the amount will be recovered from the next annuity payment.

### 2.9.2.2 Excess payment of ₹ 1.02 crore towards price variation due to wrong composition of price index

As per clause 23.2 of MCA, the BPC specified shall be revised from time to time to reflect the variation in Price Index. The Authority shall compute the variation in Price Index occurring between the Reference Index Date preceding the Bid Date and the Reference Index Date preceding the date of Invoice and shall express the latter as a multiple of the former the “Price Index Multiple” (PIM). All Invoices to be submitted by the Concessionaire to the Authority during construction period shall be the product of the relevant proportion of the BPC and the PIM applicable on the date of Invoice. Further, clause 42.1 provides Price index comprise of 70 *per cent* of WPI<sup>27</sup> and 30 *per cent* of CPI<sup>28</sup> (IW). Further, as per clause 23.3.1, 60 *per cent* of the Bid Project Cost, adjusted for the Price Index Multiple, shall be due and payable to the concessionaire in five equal installments of 12 *per cent* each during the construction period in accordance with the provisions of clause 23.4.

Audit observed in respect of one (NAG-136) out of 42 selected packages that, the division paid ₹ 14.87 crore on account of price escalation to the concessionaire by adopting 60 *per cent* of WPI and 40 *per cent* of CPI in the

<sup>26</sup> MU-02, MU-03 and AU-106

<sup>27</sup> WPI<sub>2</sub>: Wholesale Price Index for reference index preceding the invoice date  
WPI<sub>1</sub>: Wholesale Price Index for reference index preceding the bid date

<sup>28</sup> CPI<sub>2</sub>: Consumer Price Index (Industrial Worker) for reference index preceding invoice date  
CPI<sub>1</sub>: Consumer Price Index (Industrial Worker) for reference index preceding the bid date

concession agreement, which was in deviation from the composition of price index prescribed in MCA. The price escalation payable as per MCA works out to ₹ 13.85 crore as detailed in **Table-6**.

**Table-6: Excess payment of price variation due to wrong composition of price index April 2019 to May 2023**

(₹ in crore)					
MS	BPC	WPI2/ WPI1	CPI2/ CPI1	ABPC <sup>29</sup>	PE=12% (ABPC-BPC)
1	2	3	4	5 = (2*70%*3)+ (2*30%*4)	6
PM-01	133.95	1.03	1.20	144.80	1.30
PM-02	133.95	1.04	1.20	145.74	1.41
PM-03	133.95	1.31	1.44	180.70	5.61
PM-04	133.95	1.29	1.47	180.03	5.53
				<b>PE =A</b>	<b>13.85</b>
				<b>PE paid=B</b>	<b>14.87</b>
				<b>Excess PE=B-A</b>	<b>1.02</b>

(Source: Information furnished by PW divisions)

Thus, due to the wrong composition of price index considered in the CA, the concessionaire was paid an extra amount of ₹ 1.02 crore (₹ 14.87 - ₹ 13.85 crore) on account of price variation till fourth milestone.

During the Exit meeting, Government accepted (March 2025) that wrong composition of price index was adopted in one case erroneously.

### **2.9.2.3 Addendum to contract condition for adjusted BPC resulted in excess payment to the concessionaire**

As per clause 23.2 of CA, the BPC specified shall be revised from time to time to reflect the variation in price index. The Authority shall compute the variation in price index as per specified formula and shall express it as Price Index Multiple (PIM). All invoices to be submitted by the concessionaire to the Authority for and in respect of the construction period shall be the product of the relevant proportion of the BPC and the applicable PIM.

Audit observed that PW Region, Konkan had issued an addendum in reference to the clause 23.2 of CA, specifying a separate formula for payment of price escalation for materials- Bitumen, Cement and Steel, in violation of MCA. Adoption of a separate formula by the region has resulted into excess payment to the concessionaire as discussed below:

#### **a) Excess payment of ₹ 22.49 crore on price escalation**

Audit observed that in four out of six selected packages of PW Region, Konkan, due to changes in CA through addendum, the amount of price escalation had increased by ₹ 22.49 crore as shown in the **Table 7**.

<sup>29</sup> Adjusted Bid Price cost is calculated BPC \* {(70% of WPI price index i.e. WPI2/WPI1)+ (30% of CPI price index i.e. CPI2/CPI1)}

Table 7: Excess payment of price escalation

Package No.	Name of division	PE payable as per MCA	(₹ in crore)	
			Total PE paid by the division till latest milestone including PE for Bitumen, Cement and Steel	Excess payment
MU-06	EE, PWD-2, Thane	6.40	9.42	3.02
MU-04	EE, PWD-2, Thane	7.30	10.82	3.52
MU-170	EE, PWD, Alibag	10.66	20.68	10.02
MU-174	EE, PWD, Mahad	11.35	17.28	5.93
<b>Total</b>		<b>35.71</b>	<b>58.20</b>	<b>22.49</b>

(Source – Information furnished by PW divisions)

The concessionaires were paid ₹ 58.20 crore for price escalation against payable of ₹ 35.71 crore as per CA. The approval of the Government for issue of an addendum to the concession agreement was not found on record.

#### b) Excess determination of balance cost

As per clause 23.6.1 and 23.6.2 of CA, the balance completion cost defined as completion cost minus amount paid during construction period shall be due and payable in biannual instalments (Annuity Payments) at the rate of prescribed percentage over a period of 10 years commencing from COD.

Audit observed in package MU-04 and MU-06 that the completion cost was worked out to ₹ 131.03 crore and ₹ 112.86 crore respectively. The balance cost for annuity was ₹ 54.37 crore and ₹ 46.74 crore. However, while calculating the balance completion cost payable to concessionaire as Annuity Payments, the division did not adjust the price escalation component paid on account of Bitumen, Cement & Steel of ₹ 4.32 crore in MU-04 and ₹ 3.67 crore in MU-06 which resulted in excess determination of balance completion cost for annuity payments.

Government stated (December 2024) that considering the fact that rate of these materials changes abnormally, decision was taken and addendum was issued by the CE office. Reply is not acceptable as this was in deviation from the MCA.

The Government further stated (March 2025) that instruction would be issued to all CEs so that no modification to MCA be done without approval of government.

### 2.9.3 Delayed Submission of Performance Security

As per clause 9.1.1 of the CA, concessionaire must provide performance security (PS) in the form of irrevocable and unconditional bank guarantee at the rate of five *per cent* of BPC within 90 days<sup>30</sup> of signing of the CA. In case, the concessionaire fails to provide required PS within 90 days, then it shall pay damages of an amount calculated at the rate of 0.3 *per cent* of the PS for each day of delay limited to the amount of bid security.

Audit observed that in eight out of 42 selected packages, the PS was submitted with a delay ranging between nine days to 282 days from the stipulated date as shown in **Table-8**.

<sup>30</sup> Increased to 90 days from 30 days *vide* department's letter dated 31 October 2018.

**Table-8: Delayed submission of Performance Security**

Name of HAM Package	Estimated project cost (EPC)	Actual Date of submission of Performance Security	Amount of Performance Security	Date of signing of CA	Due date for Performance Security i.e. within 90 days from signing of CA	Delay in submission of Performance Security (Days)	Damages to be levied	Bid Security i.e. 1 per cent of EPC	Damages to be recovered restricted to Bid Security
1	2 (₹ in crore)	3	4 (₹ in crore)	5	6	7	8 = (4*7*0.3 per cent) (₹ in crore)	9 = (one per cent of 2) (₹ in crore)	10 (₹ in crore)
NSK-56	139.00	30.01.2019	7.63	18.08.2018	16.11.2018	75	1.72	1.39	1.39
PN-38	162.18	21.02.2019	8.75	14.08.2018	12.11.2018	101	2.65	1.62	1.62
NSK-68	108.82	01.12.2018	5.63	24.08.2018	22.11.2018	09	0.15	1.09	0.15
NAG-137	158.30	05.08.2020	7.60	08.03.2019	06.06.2019	282*	6.43	1.58	1.58
NAG-139	200.22	12.06.2019	11.00 <sup>31</sup>	15.10.2018	13.01.2019	150	4.95	2.00	2.00
AU-100B	207.88	05.03.2019	9.27	13.08.2018	11.11.2018	114	3.17	2.08	2.08
NAG-141	94.91	29.12.2018	5.31	21.09.2018	20.12.2018	09	0.14	0.95	0.14
PN-163	209.40	21.05.2020	10.99	26.11.2019	24.02.2020	19*	0.63	2.09	0.63
<b>Total</b>							<b>19.84</b>		<b>9.59</b>

Source: Information furnished by PW divisions

\*Covid period days excluded

However, the required damages amounting to ₹ 9.59 crore on account of delay in submission of PS was not recovered from the concessionaires.

Government accepted (March 2025) and replied that the matter would be verified and intimated to audit.

#### **2.9.4 Delayed execution of escrow agreement and non/short infusion of equity in escrow account by the concessionaire**

Article 4.1.3 of the CA, the conditions precedent required to be satisfied by the concessionaire within a period of 150 days from the date of this agreement. The execution and procurement of 'Escrow Agreement' is one of the conditions precedents, which required to be fulfilled, else damages under Article 4.3 are payable by the concessionaire at the rate of 0.3 per cent of the performance security for each day of delay, subject to maximum of bid security. Further as per the CA, the concessionaire and the Government should deposit all the funds pertaining to the package in an escrow account maintained with the bank. All expenses on the construction of the project were to be incurred from the escrow account. However, Audit observed cases of direct investment by the concessionaire without routing it through the escrow account in two<sup>32</sup> packages and delay in infusion of equity in escrow account in 13 selected packages<sup>33</sup>.

Audit further observed that in four out of 42 selected packages, the escrow agreement was executed with a delay ranging from 52 days to 428 days. However, the damages amounting to ₹ 7.32 crore on account of delayed

<sup>31</sup> 1. 03541LG001619, 2. 03541LG001819 and 3. 62951LG000619/dated; 12.06.2019 for ₹ 5.00 crore, ₹ 5.00 crore and ₹ 1.00 crore respectively.

<sup>32</sup> NAG-147 and NSK-65

<sup>33</sup> PN-28, PN32, PN-33, PN-34, PN-163, PN-43, PN-45, AU L-1, AU L-2, NSK-56, PN-36, PN-38 and NSK-68

execution of escrow agreement was not recovered from the concessionaire by the PW division as detailed in **Table-9**.

**Table-9: Delayed execution of Escrow agreement**

Package No.	EPC	Due date of Escrow Agreement (150 days from CA)	Date of Escrow Agreement	Delay (in days)	Amount of Performance Security	Damages to be levied (0.3% of performance security/day)	Bid Security i.e. 1 per cent of EPC	Damages to be recovered restricted to Bid security
(1)	(2) (₹ in crore)	(3)	(4)	(5)=(4)-(3)	(6) (₹ in crore)	(7)=(0.3% of (6) *5) (₹ in crore)	(8)=1 % of (2) (₹ in crore)	(9) (₹ in crore)
MU-02	218.00	26-01-2019	25-09-2020	428*	10.88	13.97	2.18	2.18
MU-03	180.00	26-01-2019	08-05-2019	102	9.05	2.77	1.8	1.80
AU-106	181.96	11-05-2019	02-07-2019	52	11.25	1.76	1.82	1.76
NAG-137	158.30	05-08-2019	07-08-2020	222*	7.60	5.06	1.58	1.58
<b>Total</b>								<b>7.32</b>

(Source: Information furnished by PW divisions)

\*Covid period days excluded

In respect of MU-02 and MU-03 Government replied (December 2024) that it seems that inadvertently different dates have been considered by Audit. Escrow agreement in both these cases were signed on 30 October 2018.

Though the concessionaire had opened the escrow account in Bank of Maharashtra in October 2018 for both the packages, however, copy of the tripartite escrow agreements were not furnished to Audit. The actual escrow agreements were executed with the Catholic Syrian Bank in May 2019 for MU-03 package and September 2020 for MU-02 package.

Government further replied (March 2025) that recovery is made in package (AU-106) and recovery, if required, will be made in remaining cases.

### **2.9.5 Irregularities noticed in payment and recovery of Mobilization Advance**

As per article 23.8 of the CA, an advance payment of 10 *per cent* of the BPC in two installments of five *per cent* each may be made to the concessionaire as mobilization advance (MA). However, the second instalment may be paid at any time after 60 days from the Appointed Date. The rate of interest on the MA shall be equal to the bank rate, compounded annually. The MA shall be recovered in four equal instalments and the interest thereon shall be recovered as fifth and final instalment upon expiry of 120 days from the date of recovery of the fourth installment.

Audit observed instances of short recovery of interest on MA to the tune of ₹ 2.25 crore in seven out of 42 selected packages due to application of incorrect rate of interest, non-compounding of interest annually and interest not charged for the entire period till recovery of MA with interest. The details are given in **Table-10**.

**Table-10: Details of short recovery of interest on Mobilization Advance**

(₹ in lakh)		
Name of the Package	Short recovery of Interest	Remarks
NAG-132	9.96	Incorrect bank rate was applied for interest calculation on MA and interest was not charged for 30 days <i>i.e.</i> interest was charged up to 27.02.2020 instead of 26.03.2020.
NAG-141	31.13	Interest was not charged for the period till recovery of MA and interest. Further the interest was also not calculated at annual compounding basis.
PN-48	57.01	Incorrect Bank Rate was applied for interest calculation on MA. Interest was not charged between the period 4 <sup>th</sup> MS and 5 <sup>th</sup> MS and not compounded annually.
AU-L1	75.63	The division had recovered fourth installment of mobilization advance from the fourth milestone payment bill on 31.03.2023. However, no interest recovered after 27.07.2022.
AM-1 (A to E)	25.59	The interest was not calculated at annual compounding basis.
MU-170	11.86	Incorrect bank rate was applied for interest calculation on MA.
MU-174	13.61	Incorrect Bank Rate was applied for interest calculate on MA, interest was not charged between the period of 4 <sup>th</sup> MS and 5 <sup>th</sup> MS and not compounded annually.
<b>Total</b>	<b>224.79</b>	

Government replied (December 2024/March 2025) that recovery has been made in packages NAG-132, NAG-141, AU-L1, MU-170 and MU-174. In two packages (PN-48 and AM-1), it has been replied that the amount would be recovered from next annuity payment.

### **2.9.6 Non-recovery of damages from the concessionaire**

As per clause 12.3.2 of CA, the concessionaire shall construct in four project milestones as set forth in Schedule-G and if the concessionaire fails to achieve any project milestone within a period of 90 days from the date set forth in Schedule-G, unless such failure has occurred due to *Force Majeure* or for reasons attributable to the Authority, it shall pay damages in a sum calculated at the rate of 0.1 *per cent* of the amount of performance security for each day of delay until such project milestone is achieved. Further, as per clause 15.2 of the CA, if Commercial Operation Date (COD) does not occur prior to the 91<sup>st</sup> day of the scheduled completion date, damages at the rate of 0.2 *per cent* of the amount of PS for each day of delay as specified in the CA is leviable.

As per schedule G, the project milestones are based on certain percentage of physical progress to be achieved by the concessionaire within the prescribed period from the date of commencement of project as elaborated in **Table 11**.

**Table 11: Period prescribed for achievement of project milestone**

Project Milestone	Physical progress (%)	Period (days)
I	20	180
II	35	400
III	75	600
Schedule Completion	100	730

Audit observed that in five out of 42 selected packages, the respective concessionaires achieved different project milestones with delays ranging from 36 to 906 days. However, damages of ₹ 56.88 crore as shown in **Appendix 2.1.5** for the delay were not recovered. In two cases (PN-26 and PN-36) proposal for termination of contract was submitted to Government which is pending (December 2024).

Government replied (March 2025) that the recovery is done in some of the cases and in some cases approval for extension of milestone dates of packages is underway.

### 2.9.7 Shortcomings noticed in payment of GST by Concessionaires

Audit observed instances of excess payment of GST to concessionaires in seven out of 42 selected packages as discussed in succeeding paragraphs:

#### 2.9.7.1 Irregular payment of GST

Audit observed that in five out of 42 packages under two regions, the estimated project cost (EPC) put to tender was inclusive of GST. The CE of Konkan Region had also clarified in the pre-bid meeting with the bidders in case of two packages (MU-02 and MU-03) that EPC is inclusive of GST. However, the division has paid GST of ₹ 81.20 crore on adjusted BPC in five packages without taking the cognizance of the said clarification given by the CEs.

This has resulted in inadmissible payment of GST to the concessionaire of ₹ 81.20 crore as detailed in **Table 12**.

**Table 12: Excess payment of GST**

Package No. (Name of the PW division)	GST paid as per the last bill
MU-02 (Jawhar)	26.34
MU-03 (Jawhar)	21.70
MU-04* (Thane)	11.19
MU-06* (Thane)	9.64
AM-82A (Buldhana)	12.33
<b>Total</b>	<b>81.20</b>

\*GST was paid only on 60 per cent of value of work done and annuity.  
(Source – Information furnished by PW Divisions)

Government replied (March 2025) that recovery would be affected.

#### 2.9.7.2 Excess payment of GST of ₹ 1.12 crore

Audit observed that in package AU-106<sup>34</sup>, an amount of ₹ 32.76 crore was paid on account of GST to the concessionaire on work done of ₹ 272.97 crore considering the BPC of ₹ 225.00 crore up to fifth payment milestones. However, the GST payable works out to ₹ 31.64 crore on work done cost of ₹ 263.63 crore considering the revised BPC of ₹ 217.31 crore after descoping the unexecuted work. Hence, non-consideration of the revised BPC of ₹ 217.31 crore for calculation of GST payment, resulted in an excess payment of GST of ₹ 1.12 crore to the concessionaire.

<sup>34</sup> The construction of two laning road with paved shoulders under HAM Mudkhed Umari Ramkhadk Babulgaon Dharmabad Chincholi km 0/00 to 67/559 (length- 67.559 km).

Government accepted the facts (March 2025) and replied that recovery would be affected.

### **2.9.8 Irregular payment of royalty of ₹ 1.40 crore to the concessionaire**

As per clause 23.4 read with clause 23.1 of MCA, the BPC prescribed all the costs<sup>35</sup> except additional cost arising on account of price variation in Price Index, Change in Law, *Force Majeure*. For avoidance of doubt, the BPC represents the amount due and payable to the concessionaire.

Audit observed in fifth milestone payment of package MU-170, separate amount of ₹ 1.40 crore on account of royalty was made in addition to regular payment. As no separate payment was to be made on account of royalty in terms of CA, the separate payment of ₹ 1.40 crore to the concessionaire was irregular.

Government replied (March 2025) that the royalty amount of ₹ 20.46 lakh and ₹ 25.63 lakh has already been deducted from 11<sup>th</sup> and 19<sup>th</sup> RA Bill respectively. The remaining royalty amount of ₹ 94.03 lakh will be deducted from forthcoming annuity payment.

### **2.10 Monitoring and Evaluation/Quality Control**

The fourth objective of this performance audit was to assess whether mechanism for monitoring and evaluation of the road quality was adequate and effective.

Audit scrutinized the records relating to the monitoring of HAM projects at different levels considering existing monitoring and quality control mechanism and in terms of the provisions of the CA of HAM.

The audit findings are discussed in succeeding paragraphs:

#### **2.10.1 Inspection of project execution at various levels of Department**

Paragraph 23 to 45 of Maharashtra Public Works Manual 1984 defines that the CE shall provide prompt technical guidance and tighter and closer inspection and supervision ensuring both quality and progress of work. SE has to inspect the various works within his circle and EE at the division level is responsible for the execution and management of all works. In addition, the SEs of Vigilance and Quality Control Circles (VQCC) are also entrusted with the inspection of works and testing of materials to assess the quality of work.

Audit observed that no specific target for inspection of HAM packages was fixed at CE/SE/EE levels. The information of inspection obtained in case of 22 out of 42 selected packages revealed that the number of inspections carried out in the HAM packages were not uniform and varies ranged from one to 68 inspections at EE level, from one to 14 inspections at SE level and from one to four inspections at CE level. Moreover, out of 22 packages, no visits by CE in nine packages, by SE in six packages and by EE in three packages as shown in **Appendix 2.1.6 (a)**.

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<sup>35</sup> Inclusive of cost of construction Interest during construction, working capital, physical contingencies and all other costs, expenses and charges for and in respect of construction of the project

In case of 20 HAM packages<sup>36</sup>, the Department did not furnish the information on inspection carried out.

Further, the Department directed (October 2018) that, 20 *per cent* of 138 prescribed periodical inspection (28 inspections) has to be carried out annually for HAM works by the VQCC. The observations of VQCC have to be complied with promptly by the respective PW divisions.

Analysis of information obtained from all six<sup>37</sup> VQCCs revealed that, during last five years (2018-19 to 2022-23) there was significant shortfall in inspection and increase in pendency of compliance to the observations of VQCCs.

No inspection was carried out in 2018-19 and from 2019-20 to 2022-23, there was short fall in inspections ranging from 54 *per cent* to 100 *per cent* in all six regions as shown in *Appendix 2.1.6 (b)*. The pendency of compliance to observations of VQCC was ranged from 16 *per cent* to 100 *per cent* in all six regions as shown in *Appendix 2.1.6 (c)*.

Thus, VQCCs did not conduct inspection of HAM projects as prescribed. Further, respective PW divisions failed to comply VQCC's observations.

Government replied (March 2025) that there are in-built provisions for quality monitoring of HAM projects in the Concession Agreement by Independent Engineer (IE) and in addition, VQCC wing was directed to inspect/ quality check all the HAM projects.

The reply is not acceptable as there was shortfall in inspection by the VQCC during 2018-19 to 2022-23. Thus, the opportunity of ensuring quality check at departmental level remained unchecked.

### 2.10.2 Independent Engineer

Model Concessionaire Agreement (MCA) of HAM provides a monitoring system through appointment of Independent Engineer (IE) in every three years from development period to maintenance period of the project work. Article 21.1 of MCA provides that, an IE shall be appointed by the Authority within 60 days of entering into CA.

IEs have to appoint five key personnel and four sub-professional staff (for 74-man months in the two-year period of construction), the list of which is to be provided to the Department. In addition, IEs had to make provision for survey equipment, office expenses, other support staff, contingencies *etc.* The payment of the IEs on this account must not exceed three *per cent* of the Bid Project Cost (BPC) which were to be borne by the concessionaire and the department equally.

#### 2.10.2.1 Delay in appointment of IEs for construction period

Audit noticed that there were delays in appointment of IEs ranging from 22 days to 464 days in case of 33 packages. Furthermore, in case of 20 packages, the

<sup>36</sup> NSK-56, MU-174, NAG-132, MU-02, MU-03, MU-04, MU-06, AU-106, AM-02, AM-83B, AU-L1, MU-170, AU-180, AU-L2, NSK-165, PN-25, PN-26, PN-36, PN-38, AU-100B

<sup>37</sup> VQCC at newly formed Nanded Region is not created and Aurangabad VQCC looking after the work of Nanded Region

appointment of IEs was done after the scheduled appointment date ranging from 2 to 249 days from the appointed date. The details are given in **Appendix 2.1.7**.

Government replied (December 2024/March 2025) that even though the appointment of IE got delayed, barring few cases all the appointments were done before the appointed date of the concessionaire.

Reply is not acceptable as delay in appointment of IE from appointed date was noticed in 20 sampled packages. Thus, various specialized works such as review of drawings, detailed design, and construction methodology, quality assurance procedures *etc.* remained to be ensured till the appointment of IEs.

### **2.10.2.2 Non-appointment of IE for O&M period**

As per terms of reference given in Schedule-N of CA, the role of IE shall include operation period responsibilities<sup>38</sup>.

Audit observed that department neither appointed any IE for O&M periods of HAM works nor issued orders for executing the work of IE by concerned sub-divisions having jurisdiction over the corresponding HAM package. In absence of IEs in O&M period, it could not be ensured that the roads were maintained properly. As mentioned in **Paragraph 2.8.3.4** during physical visits it was observed in seven out of 24 completed packages the maintenance of road was poor.

Government replied (March 2025) that circular would be issued regarding monitoring by the department in O&M period.

The fact remains that during the O&M period, in absence of IE and lack of proper instructions for monitoring through departmental engineer resulted in poor maintenance of the road.

### **2.10.3 Video recording and development of project-specific website**

As per clause 13.6 of CA, during the construction period the concessionaire shall provide to the Authority for every calendar quarter, a video recording, covering the status and progress of construction works in that quarter within seven days of the appointed date and thereafter, no later than 15 days after the close of each quarter. The concessionaire shall also develop a project-specific website which shall be accessible to the public and upload the time stamp picture of the development of project highway each week.

In case of 42 sampled packages, the package-wise information regarding conducting video recording and status of development of project specific website was called for, as at the time of audit it was not available.

Government, in reply (December 2024), stated that video recordings of the progress of the projects were taken and few of the video recordings were uploaded to the website and rest can be made available by concerned division. Government further stated (March 2025) that project specific website and data would be updated.

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<sup>38</sup> Comments on safety report received from safety consultant, Review the Annual Maintenance Program and Review of monthly status report furnished by the concessionaire, inspect the project once in every month and verify whether any test is required to be carried out and the project is in conformity with good industry practice

The fact remains that, in the absence of updated website, the status and progress of construction works were not accessible to the public, which contravened the conditions of the CA.

#### **2.10.4 Delay in appointment of Safety Consultants**

Article 18 of the CA provides that the Authority will appoint the Safety Consultant, for carrying out safety audit of the Project in accordance with the Safety Requirements. According to schedule L, the Department shall appoint a Safety consultant within 90 days of signing CA. The Safety Consultant has to carry out safety audit at the design<sup>39</sup> stage of the project and provide his recommendations. The Authority has to carry out safety audit<sup>40</sup> prior to Commercial Operation Date (COD) of the completed construction works.

Audit observed that there were delays in appointment of Safety Consultant (SC) ranging from 39 to 1290 days in 29 selected packages. Further, in case of 27 packages, the appointment of SCs was done after passing of the period ranging from 2 to 1352 days from the appointed date (*i.e.*, commencement of construction). The details are given in *Appendix 2.1.8*.

Government replied (March 2025) that appropriate instructions would be issued to follow safety norms.

#### **2.11 Conclusion**

GoM has taken up road development through HAM so that more roads can be covered through private equity which can be repaid through annuity payment for 10 years after the completion of the construction work. The roads were also to be maintained by the concessionaire till the end of the annuity period for which separate O&M cost was payable.

As on February 2025, 80 *per cent* (112 out of 140) packages were completed (Road length 7188.21 km) and 20 *per cent* (28 packages) were ongoing (Road length 1823.09 km).

The DPR preparation was not done comprehensively and the incorrect clause included in RFP had resulted in unwarranted payment for DPR preparation. The objective of uninterrupted traffic through road connectivity was not achieved in cases where works were taken up without forest clearance. Unrealistic loading of insurance charges and patrolling for O&M in the estimate were noticed.

Higher specification for crust thickness was provided in DPR than required as per the projected traffic growth resulted in unwarranted cost. While awarding multiple packages to single bidder the departmental authorities did not consider the earlier awarded works while evaluating the bidders' financial capacity. The roads were not fully utilized due to non-coverage of narrow minor bridges, reconstruction of weak bridges and incomplete bridges in between the roads. Road stretches were not constructed due to various reasons, resulting in lack of

<sup>39</sup> By analyzing data on all fatal crashes and other road accidents, which occurred on the project in the preceding two years and check with the relevant drawings containing design details that have a bearing on safety of Users provided by concessionaire.

<sup>40</sup> To inspect the project to assess the adequacy of safety measures for reducing accident hazards on the project with the guidelines of IRC and notify the same to the division.

connectivity. Completed works were not maintained in accordance with the terms of CA during O&M period.

Delayed milestone payments resulted in avoidable payment of interest. Instances of excess payment due to incorrect calculation/clause of price escalation/ determination of balance cost was noticed. Delays were observed in submitting performance security, execution of escrow agreement and achievement of physical progress of work within the prescribed time. GST was paid separately, even though it was already included in the project cost.

No specific target for inspection of HAM packages was fixed at CE/SE/EE levels and there was significant shortfall in inspection by VQCCs. There were significant delays in appointment of IEs as well as Safety Consultants during construction of Roads. Neither IEs were appointed for monitoring in O&M period nor orders were issued for monitoring by concerned sub-divisions.

Though the construction of Roads in majority works was completed, the department may look into the deficiencies for rectification as the payments would be continued to be made to the concessionaire for annuity till the end of the annuity period.

#### **Recommendations**

- 1. Detailed Project Reports should be prepared thoroughly, with realistic assessments of site-specific constraints to avoid unwarranted costs and ensure accurate scope of work.*
- 2. O & M costs should be estimated based on actual and justifiable parameters such as realistic insurance charges, need-based patrolling requirements.*
- 3. Timely financial allocations may be ensured to avoid interest payments to concessionaire due to delayed payment.*
- 4. The payment to the concessionaires may be made after ensuring correct calculation of payments due, including balance completion costs, price escalation etc.*
- 5. O & M costs should be paid only after ensuring that the maintenance of roads is carried out by the concessionaire as per the provisions of the CA through efficient monitoring.*