

Operation & Maintenance Report- FY2027

**4-Laning of Chutmalpur - Ganeshpur section
of NH-72A from Ch. 0.000 to Ch. 17.900 &
Roorkee – Chutmalpur -Gagalehri section of
NH-73 from Ch. 0.000 to Ch. 35.400 in the state
of Uttar Pradesh & Uttarakhand on Hybrid
Annuity Basis (Pkg-1) : CGRG**

**SAMARTH INFRAENGG Technocrats
Private Limited**



May 2026

TABLE OF CONTENTS

OPERATION & MAINTENANCE REPORT, FY2027 -CGRG	1
1.1 INTRODUCTION	1
1.2 PROJECT AT GLANCE.....	2
1.3 SCOPE OF SERVICES	3
1.4 REVIEW OF CONCESSION AGREEMENT	4
1.5 REVIEW OF PAVEMENT DESIGN	7
1.6 MAINTENANCE REQUIREMENTS.....	10
1.7 ROAD INVENTORY	10
1.8 ROAD WORKS	16
1.9 STRUCTURES	17
1.10 COSTING	20

LIST OF TABLES

Table 1: Chronology of Project Milestones	3
Table 2: Detailed Inventory	16
Table 3: Summary of Major Structures	17
Table 4: Details of Major CD & Other Structures along Project Road	18
Table 5: Summary of Basic Material Rates excluding GST.....	20
Table 6: Summary of Major Material Rates excluding GST	21
Table 7: Summary of 1 st year O&M Costs	26
Table 8: Summary of Periodic Maintenance Costs.....	27
Table 9: Cost Abstract	28

LIST OF ABBREVIATIONS AND SYMBOLS

AADT	-Average Annual Daily Traffic
AE	-Authority Engineer
AMC	-Annual Maintenance Contract
ATMS	-Advanced Traffic Management System
BC	-Bituminous Concrete
BOQ	-Bill of Quantities
BOT	-Build, Operate & Transfer
CA	-Concession Agreement
CBR	-Californian Bearing Ratio
CCB	-Concrete Crash Barrier
CCR	-Cement Concrete Railing
COD	-Commercial Operation Date
COS	-Change of scope
CPI	-Consumer Price Index
CUP	-Cattle Under pass
CVC	-Classified Volume Count
CVPD	-Commercial Vehicles per Day
DBM	-Dense Bituminous Concrete
DPR	-Detailed Project Report
ECB	-Emergency Call Box
EPC	-Engineering, Procurement and Construction
ESI	- Employees' State Insurance
FDD	-Filed Dry Density
FOB	-Foot Over Bridge
FRL	-Finished Road Level
FSI	-Free Swell Index
FWD	-Falling Weight Deflectometer
FY	-Financial Year
GOI	- Government of India
GR	-Growth Rates
GS	-Grade Separated
GSB	-Granular Sub Base
GST	-Goods and Services Tax
HCPT	-Half cell Potential Test
HPC	-Hume Pipe Culvert
HR	- Human Resources
HTMS	-Highway Traffic Management Systems

IE	-Independent Engineer
IRC	- Indian Roads Congress
IRC SP	- Indian Roads Congress Special Publications
IRI	-International Roughness Index
Km	-kilometer
LHS	-Left Hand Side
LL	-Liquid Limit
LS	-Lumpsum
m	-Meter
MBIU	-Mobile Bridge Inspection Unit
MCB	-Metal Beam Crash Barrier
MCS	-Micro Surfacing
MCW	-Main Carriageway
MDD	-Maximum Dry Density
MHR	-Metallic Hand Rail
MJB	-Major Bridge
mm	-Millimeter
MM	-Major Maintenance
MNB	-Minor Bridge
MoRTH	- Ministry of Road Transport & Highways
Mpa	-Mega Pascal
MR	-Resilient Modulus
MSA	-Million Standard Axle
NDT	-Non-Destructive Testing
NHAI	- National Highways Authority of India
NSV	-Network survey Vehicle
O&M	- Operation and Maintenance
OL	-Overlay
PF	-Provident Fund
PGR	-Pedestrian Guard Rail
PI	-Plasticity Index
PL	-Plastic Limit
PM	-Periodic Maintenance
PUP	-Pedestrian Under pass
R&R	-Repair and Rehabilitation
RCC	-Reinforced Cement Concrete
RE Wall	-Reinforced Earth Wall
RHS	-Right Hand Side
RHT	-Rebound Hammer Test
RM	-Routine Maintenance

ROB	-Road Over Bridge
RPO	-Route Patrol Officer
RUB	-Road Under Bridge
SDBC	-Semi-Dense Bituminous Concrete
SPV	-Special Purpose Vehicle
SR	-Service Road
SWB	-Static Weigh Bridge
TCS	-Typical cross Section
TDRT	-Transient Dynamic Response test
TMS	-Toll Management System
UI	-Unevenness Index
UPVT	-Ultra Pulse Velocity test
VDF	-Vehicle Damage Factor
VG	-Viscosity Grade
VUP	-Vehicular Under pass
WBM	-Water Bound Macadam
WMM	-Wet Mix Macadam
WPI	-Wholesale Price Index

Operation & Maintenance Report, FY2027 -CGRG

1.1 INTRODUCTION

The Government of India had entrusted to the Authority the development maintenance and management of National Highway No. 72A and 73 including the section from km 0.000 to km 16.000 of NH-72A and from km 0.000 to km 33.000 of NH-73 (approx. 53.300 km). The Authority had resolved to augment the existing road from km 0.000 to km 16.000 of NH-72A and from km 0.000 to km 33.000 of NH-73 (approximately 53.300 km) on the Chutmalpur-Ganeshpur and Roorkee-Chutmalpur-Gagalheri sections of National Highway No. 72A and 73 respectively (hereinafter called the "NH 72A and 73") in the States of Uttarakhand and Uttar Pradesh by Four-Laning thereof (the "Project") on design, build, operate and transfer (the "DBOT Annuity" or "Hybrid Annuity") basis. which shall be partly financed by the Concessionaire who shall recover its investment and costs through payments to be made by the Authority, in accordance with the terms and conditions to be set forth in a concession agreement to be entered into.

The Authority had accordingly invited the bid proposals and upon the evaluation of received bids, the Authority has awarded the Project to M/s **MBL Infrastructures Ltd.** Consequent to this, M/s **MBL Infrastructures Ltd.** formed a Special Purpose Vehicle (SPV) in the name of **MBL(CGRG) Road Limited**, (Concessionaire) for implementation/execution of the project. Further, recently the name of the Concessionaire has been changed to M/s **NXT-INFRA CGRG Highways Limited** with effect from Dt. 30.10.2023.

Concessionaire could not achieve the Financial Close within the stipulated time and has submitted a proposal for induction of Welspun Enterprise Ltd (Welspun) as a "Sponsor" of the project and subsequent to detailed deliberations, Authority approved for acquisition of 49% equity in the project company by Welspun.

After delinking from km 0+000 to km 11+288 (Roorkee Bypass), The Concessionaire has achieved PCOD for the remaining length of project on 05.08.2020. To process the PCOD, NHAI has made 2nd supplementary agreement on 31.07.2020 to complete this delinked Roorkee bypass works within 90days of issuance of PCOD. Further, PCOD-II received on 14.03.2022 and then completion certificate on 07.10.2022 for full project length.

This project road is acquired by M/s Actis GP LLP and is presently under Operation and Maintenance phase.

Nxt Infra Trust is a registered Indian infrastructure investment trust which has invested in road infrastructure assets in India with an initial portfolio for six Project SPVs. The Trust is sponsored by Actis Highway Infra - Limited (the "Sponsor"), part of the Actis Group, which is a global investor in sustainable infrastructure.

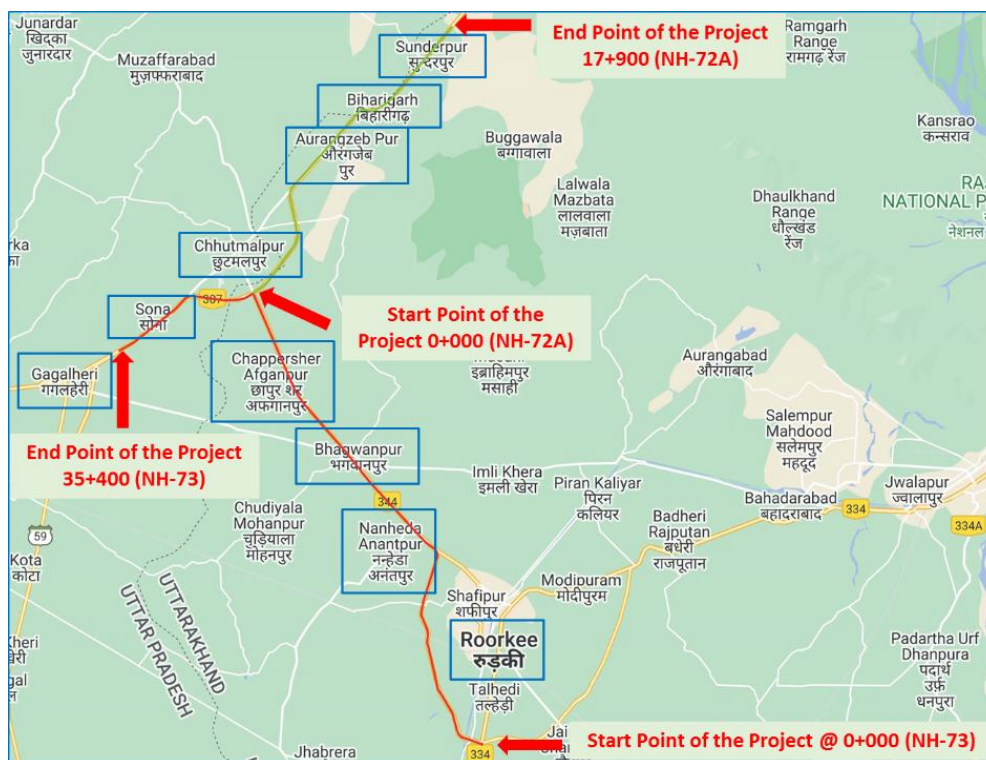
Actis GP LLP Ltd has engaged M/s Samarth Infra-engg Technocrats to undertake due-diligence study for self-assessment and/or for its Concessioning Authority and/ or for InvIT purpose and/ or for its present/ future investors/ lenders whom this Report will be presented as Vendors Technical Due Diligence Report.

This report is the updated Due diligence report incorporating the improvements and developments and then to evaluate the asset condition and work out O&M Cost, Major Maintenance cost and additional facilities cost/improvement works of the project during the Concession period.

1.2 PROJECT AT GLANCE

The project corridor comprises a 4-lane divided carriageway spanning two sections of the National Highway: NH-72A and NH-73. The entire corridor features rigid pavement, with carriageway widths of 7.0m and 10.5m, supplemented by a 1.5m paved shoulder and a 0.5m shyness strip on each side. The alignment predominantly traverses plain terrain.

The project NH-73 passes through builtup areas such as Roorkee, Bhagwanpur, Chutmalpur, Sona and Gagalehri, while NH-72A runs through Chutmalpur, Aurangzebpur, Biharigarh and Sundarpur. Notably, the highway designations have been updated: NH-73 is now NH-344, and NH-72A has been renumbered as NH-307.



Photographs showing the various corridors of the project road are presented below:



Following Table highlights the total project at a glance:

Table 1: Chronology of Project Milestones

S No.	Description	Date
1.	Date of Signing the Concession Agreement	27 th May 2016
2.	Appointment Date	28 th Feb 2018
3.	Scheduled Project completion (730 days from Appointed date)	27 th Feb 2020
4.	Date of issue of Provisional Completion Certificate (PCOD-1) (Except Roorkee Bypass -11.288 KM)	5 th Aug 2020
	PCOD-2	14 th March 2022
	Completion certificate for Full Project Length	7 th Oct 2022
5.	Scheduled End of Concession	4 th Aug 2035

1.3 SCOPE OF SERVICES

The main objective of the study is to review the current status of project corridor including details pertaining to its construction and maintenance and to provide requisite technical due diligence for said project.

The scope of services as defined in the “terms of reference” for consultants is as below:

- Updating the inventory of Highway & Structures based on latest improvements in the project based on the discussions and data provided by project managers.
- Reviewing and updating the immediate repair works cost based on discussion with site team
- Revising the MMR based on any latest field investigation reports provided by client
- Preparation of detailed O&M & MMR cost estimate as per latest labour wages and material rates
- Preparation of detailed project report for each project
- Scope includes submission of project wise Annual Valuation Report including the revision of such reports based on discussion with your team.

1.4 REVIEW OF CONCESSION AGREEMENT

1. Concession Parties and date of execution of Agreement: NHAI referred as “Authority” entered in to Agreement with M/s MBL (CGRG) Road Ltd referred as “Concessionaire” on 27.05.2016. Further, first supplementary concession agreement made on 19.01.2018, WELSPUN Enterprises Limited has acquired 49% of equity with neither party shall be liable to pay damages for non- achievement of Appointed Date.
2. Appointed Date, Commercial Operation Date (Article 3 & 4, Article 12): As the Concession Agreement was signed on 27 May, 2016, with the settlement agreement made on 19th Jan 2018. With no penalties on either party, appointed date issued by Authority on 28 Feb 2018. Accordingly, construction period is 730 days from Appointed date, and Concession period is 15 years from COD.
3. Concession Period (Clause 3): This includes Construction Period of 730 days and Operation Period of 15 years commencing from COD. As the Appointed Date is declared on 28.02.2018, considering 730days as Construction period, the scheduled construction completion date is 27.02.2020. IE has proposed to delinking Roorkee bypass (km0 to km11.288) due to LA issue and issued PCOD on 05.08.2020 with an agreement to complete this delinked portion within 90days. Accordingly, 15yrs from COD, end of concession period is 04.08.2035 (scheduled date 26.02.2035). Further, PCOD-II received on 14.03.2022 and then completion certificate on 07.10.2022 for full project length.
4. Obligations of Concessionaire & Authority (Article 5 & 6): The Concessionaire and Authority have fulfilled most of the obligations.
5. Representation and
6. warranties (Article 7): The Concessionaire shall at no time undertake any change of ownership except in accordance with Clause 5.3. Concessionaire has submitted a proposal for induction of Welspun Enterprise Ltd (Welspun”) as a sponsor of the project and subsequent to detailed deliberations, Authority approved for acquisition of 49% equity in the project company by Welspun.
7. Performance Security (Article-9.3): The performance security bank guarantee (PSBG) is Rs 47.10 Cr.
8. Right of Way (Article 10): If the Authority is unable to provide the remaining site within 180 days from the Appointed Date, the remaining Site of the Project Highway shall be removed from the scope of the work under the provision of Change of Scope. Right of Way is granted within 180 (one hundred

and eighty) days of the Appointed Date shall be completed on or before the Scheduled Completion Date.

9. Construction of the Project (Schedule-G, Article12): Construction period 730 days from the appointed date i.e., schedule date of completion is on 27th Feb 2020. As EOT granted for 165 days due to COVID outbreak, the revised schedule date, i.e., on 17th April 2021.

Milestone	Completion days	Schedule date	Actual achieved	Delay/(early) days	% Total Capital Cost (TCC) / Physical progress in %
MS-I	214	29/09/2018	18/10/2018	18	20% of TCC / 20% Physical Progress
MS-II	365	27/02/2019	27/02/2019	-	35% of TCC / 35% Physical Progress
MS-III	548	29/08/2019	14/10/2019	45 days	75% of TCC / 75% Physical Progress
MS-IV	730	27/02/2020	05/08/2020	-	100% of TCC / 100% Physical Progress

Note: No penalties on either party for delayed completion, accordingly issued PCOD on 05.08.2020, with 2nd Supplementary agreement made to complete the unfinished Roorkee bypass works within 90days from issuance of PCOD. Due to Covid-19 EOT-1 granted for 165days and the revised schedule completion date 17.04.2021. Further, considering second wave of COVID-19 IE recommended concessionaire's proposal for extension up to 28.01.2022. Further, Roorkee bypass is also completed and PCOD-II received on 14.03.2022 and then completion certificate on 07.10.2022 for full project length.

10. Monitoring of Construction (Article 13): The Concessionaire shall, perform all the tests as per Schedule-I, with the instructions of the Independent Engineer. Half of the costs incurred on such tests, and to the extent certified by the Independent Engineer as reasonable, shall be reimbursed by Authority the to the Concessionaire.
11. Completion Certificate/ Provisional Certificate (Article-14): Independent Engineer may, upon request of Concessionaire, issue a provisional certificate for completion of 100% construction site, which made available to the Concessionaire up to 182days from Appointed Date. Provisional certificate should have list of outstanding items in the punch list. These shall be completed within 90 days from issue of Provisional certificate. Authority shall recover damages for any delay in completion as per clause 14.4.1.
12. Change of Scope (Article 16): Any additional works and services which are not included in scope of project shall be addressed in Change of Scope Notice. The costs thereof shall be expended by concessionaire and reimbursed by Authority with an advance payment of 20% of agreed COS cost.
- All COS works completed and all related payments done by Authority.
13. Reduction of Scope (Article 16.6): if Concessionaire fails to complete the construction works on Force Majeure or for reasons attributable to Authority or under right-of-way clause 10.3.1. On direction of Authority, IE shall assess the civil cost for reduced scope as per Clause 16.6.1. Thus, revised Bid Project Cost shall be calculated. Accordingly, O&M cost shall be reduced or increase in proportion to reduction or increase in the length of the Project Highway.

14. Operation & Maintenance (Article 17): Concessionaire to maintain project road as per Schedule-K requirements. The roughness value exceeding 2750mm/km in a stretch of 1km should be rectified with 180days.
 15. Safety requirements (Article 18): All costs and expenses arising related to safety requirement shall be borne by Concessionaire as per scope of the project. If any not forming the scope shall be as per Article 16, change of scope.
 16. Renumeration to Independent Engineer (Article 21.3): As per Schedule-M, one- half of remuneration towards the cost and expenses of the Independent Engineer during the development and construction period shall be borne by Concessionaire by do not exceeding 3% of the BPC. Payment in excess of 3% shall borne entirely by Authority. All the payments made to independent Engineer during O&M period shall be borne equally by Authority and Concessionaire.
 17. Financial Close (Article 22.1): Concessionaire to achieve Financial close within 150 days from date of the agreement. In the event of delay, further extension not exceeding 120days, subject to payment of damages to the Authority in the sum calculated at a rate of 0.05% of Performance security for each day of delay. Beyond this further 95 days shall be allowed with 0.1% of Performance security for each day of delay.
 18. Bid Project Cost (Article-23): The cost of construction of the project (BPC) is Rs.942 Cr. and will be adjusted for the price index multiple. 40% of this Cost shall be payable to Concessionaire during Construction period in 5 installments of 8% each with adjusted price index multiple. Clarification sought from the Concessionaire about the total amount received against the receivable amount in the consolidated format.

The remaining 60% of Bid Project Cost, adjusted for Price Index multiple, shall be payable in 30 biannual installments commencing from 180th day of COD with the percentage payments as suggested in the table 23.6.3 along with the interest as per 23.6.4.

The first year O&M Bid cost is 10 Cr. and any expenses in excess of O&M payments shall be borne by Concessionaire. O&M payments due payable to the Concessionaire shall be paid in 2 equal biannual installments and disbursed by the Authority together with corresponding installments of Annuity payments.
 19. Mobilization Advance (Article 23.8): Upon request from Concessionaire, 10% of Bid Project Cost shall be paid by Authority. This shall be repaid by Concessionaire with Bank interest compounded annually in 4 equal installments from each payment made by Authority to Concessionaire.
 20. Insurance (Article 26): The Concessionaire has been fulfilling this obligation.
 21. Force Majeure (Article 28): As per Clause 28.6.2, at any time after the Appointed Date, if any Force Majeure Event occurs) before COD, the Concession Period and the dates set forth in the Project Completion Schedule shall be extended by a period equal in length to the duration for which such Force Majeure Event subsists; or (b) after COD, the Concessionaire shall be entitled to receive Annuity payments plus interest due and payable under this Agreement.
 22. Change in Law (Article 35): As a result of Change in Law, if Concessionaire suffers an increase in cost or reduction in the net after-tax return subject to higher of 1.62 Cr or 2% of Total Annuity payments in any accounting year, Concessionaire may notify Authority to amend the agreement so as to place Concessionaire in same financial position as before the Change in Law.
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23. Dispute resolution (Article 38): Any dispute not resolved amicably by conciliation, arbitration shall be held in accordance with rules of Society for Affordable Redressal of Disputes (SAROD), New Delhi or such other rules in-line with Arbitration and Conciliation Act, 1996. Place of such arbitration shall be the Delhi and the language of arbitration proceedings shall be English.

1.5 REVIEW OF PAVEMENT DESIGN

➤ The Review of CA Stipulations for Pavement Design

The Schedule B, Clause 4.8 says Rigid pavement shall be provided on entire project length and at all toll plaza locations, bus bays, truck laybys and wayside amenities location. Flexible pavement shall be provided on service road/slip road sections. The minimum thickness for PQC is 300mm and DLC is 150mm. However, Schedule D suggests that Four-Laning with paved shoulders of the Project Highway shall conform to Manual of Specifications and Standards for Four-Laning of Highways through PPP IRC: SP:84-2014.

A) Rigid Pavement:

Clause 5.3.1 of IRC SP: 84-2014 stipulate that the new pavement shall be designed in accordance with the IRC: 58 Guidelines for the Design of Plain Jointed Rigid Pavements for Highways.

Clause 5.4.2 (i) of IRC SP: 84-2014 stipulates that the rigid pavement shall be designed for a minimum design period of 30 years. Stage Construction shall not be permitted.

Clause 5.4.2 (ii) of IRC SP: 84-2014 specifies that the Pavement Quality Concrete (PQC) shall rest over Dry lean Concrete (DLC) sub base of 150mm thickness.

Clause 5.4.2 (iii) of IRC SP: 84-2014 specifies that “A separation membrane shall be used between the PQC & DLC as per Clause 602.5 of MORTH Specifications”.

Clause 5.4.2 (iv) of IRC SP: 84-2014 specifies that the DLC shall meet the minimum cement and comprehensive strength requirement as prescribed in IRC: SP: 49. The DLC shall extend beyond the PQC (including that in shoulder, if any) by 0.75m on either side.

Clause 5.4.2 (v) of IRC SP: 84-2014 specifies that Below DLC layer, a properly designed drainage layer Granular Sub Base (GSB) of 150mm thickness shall be provided throughout the road width. It shall be designed to obtain a drainage coefficient of not less than 30m per day.

B) Flexible Pavement:

Clause 5.3.1 of IRC SP: 84-2014 stipulate that the new pavement shall be designed in accordance with the IRC: 37 Guidelines for the Design of Flexible Pavement.

Clause 5.4.1 (i) of IRC SP: 84-2014 stipulates that the flexible pavement shall be designed for a minimum design period of 15 years or operation period, whichever is more. **Stage Construction will be permissible subject to the requirements specified in para (ii) below.**

Clause 5.4.1 (ii) of IRC SP: 84-2014 specifies that “Alternative strategies or combination of initial design, strengthening and maintenance can be developed by the Concessionaire to provide the specified level of pavement performance over the operation period subject to satisfying the following minimum design requirements”.

Clause 5.4.1 (ii) (a) indicates that, the thickness of sub-base and base of pavement section is designed for a minimum design period of 15 years or the operation period, whichever is more and the **initial bituminous surfacing for a minimum design period of 10 years.**

Clause 5.4.1 (ii-(b)) indicates that, the pavement shall be strengthened by bituminous overlay as and when required to extend the pavement life to full operation period. The thickness of bituminous overlay shall be determined on the basis of relevant IRC codes, IRC:81.

Clause 5.5.5 indicates that, the design traffic in case of Service Road shall be 10 MSA. The crust composition shall be provided accordingly.

Clause 5.9.6 (i) of IRC SP: 84-2014 stipulate the thickness of the bituminous overlay shall be determined on the basis of FWD Technique and the design traffic as per the procedure outlined in IRC: 81 as also from structural numbers of existing pavement layers.

Clause 5.9.6 (ii) of the same manual also stipulates that the **initial strengthening shall be done for a minimum design period of 10 years.** Subsequent strengthening to extend the pavement to full operation period shall be implemented at the end of initial design period or earlier, in case of any structural distress in the pavement or if the surface roughness exceeds the value specified in Schedule-K of the CA.

Clause 5.9.6 (iv) of the same Section stipulate that the thickness of Bituminous Overlay for pavement strengthening shall not be less than 50 mm Bituminous concrete, after attending to the requirements of profile corrective course”.

➤ **The Review Approved Pavement Design Report**

As per section 5 of Schedule B, the scope of Pavement improvement for the project road includes:

- a) Pavement design shall be carried out in accordance with IRC: SP-84-2014 four lane manual, IRC 37-2012 and IRC 58:2015
- b) The existing road shall be reconstructed as Rigid Pavement and Flexible Pavement in Service Road/ Slip Road.
- c) Flexible Pavement shall be designed for a minimum period of 15 years excluding construction period.
- d) Rigid Pavement shall be designed for a minimum period of 30 years.

✓ **Adopted ADT**

The design of Pavement is based on the data provided by the Traffic report. ADT adopted for design of Pavement as per Traffic Report is presented below

Type of Vehicle	ADT at Km 17.500(NH-72A)	ADT at Km 15.800 (NH-73)
Mini Bus	41	62
Bus	756	1017
LCV	630	1724
2A Truck	1011	1949
3A Truck	369	880
MAV	157	612

✓ New Construction of Rigid Pavement

Design of New construction was carried out in accordance with IRC 58-2015. The pavement layer for new construction has been designed for 30-year design traffic for the PQC layers. The Pavement layer thickness proposed for new construction is as

ROORKEE-CHUTMALPUR-GAGALHERI SECTION OF NH-73 & NH-72A (MCW)

Length (Km)	Pavement Layer	Design Period (Years)	Pavement Thickness as Per Design (mm)	Adopted as Per Schedule(mm)
35.4 & 17.900	Pavement Quality Concrete (PQC)	30	260	300
	Dry Lean Concrete (DLC)		150	150
	Granular Sub Base (GSB)		150	150
	Subgrade		500	500

✓ New Construction of Flexible Pavement

For new construction of service/slip road (with flexible pavement) Roorkee -Chutmalpur-Gagalheri section of NH-73 & NH-72A for 10 msa, 10% CBR and 15-year design period with following thicknesses:

Length (Km)	Pavement Layer	Pavement Thickness as Per Design (mm)
28.080 & 11.181	Bituminous Concrete (BC)	40
	Dense Bituminous Macadam (DBM)	50
	Wet mix Macadam (WMM)	250
	Granular Sub Base (GSB)	200

1.6 MAINTENANCE REQUIREMENTS

Concessionaire shall undertake maintenance requirements as per Schedule-K of CA, below is the requirement

S. No	Description	Length (Km)	Lanes	Applicable Schedule for O&M	Maximum Roughness Allowed
1	CGRG	53.3	4LPS	Schedule-K	2750 mm/Km

As per Manual, IRC SP:84-2014:

S. No	Description	Length (Km)	Lanes	Maximum allowable deflection	Frequency of Roughness Test	Frequency of FWD Test
1	CGRG	53.3	4LPS	1.2mm	Twice a Year	In every 5 Years

No specific Handing Over (Divestment) requirements are mentioned under CA. It shall be same as Schedule-K

1.7 ROAD INVENTORY

The project corridor has Rigid pavement in the entire length with 7.0m & 10.5m wide carriageway plus 1.5m paved shoulder and 0.5m shyness on each side. The project corridor generally runs in plain terrain. The land use along the project road is Agriculture land and Built-up Area. It passes through built-up areas such as Roorkee, Bhagwanpur, Chhutmalpur, Sona and Gagalehri on NH-73 and on NH-72A it passes through Chhutmalpur, Aurangzebpur, Biharigarh and Sundarpur etc. In general, road embankments are in the range of 1.0m-2.5m height. Embankments higher than 2.5m are observed mainly in the approaches of CD structures and Underpass locations.

Typical View of Project Road is shown below:



A view of the Project Road with Median 4m wide at km 0.000 - NH-73



A view of the Project Road with Median 4m at Km 5.000 - NH-73



A view of the Project Road with Median 4m at Km 10.000 - NH-73



A view of the Project Road with Median 4m at Km 20.000 - NH-73



A view of the Project Road with Median 4m at Km 35.000 - NH-73



A view of the Project Road with Median 4m at Km 0.000 - NH-72A



A view of the Project Road with Median 4m at Km 5.000 - NH-72A

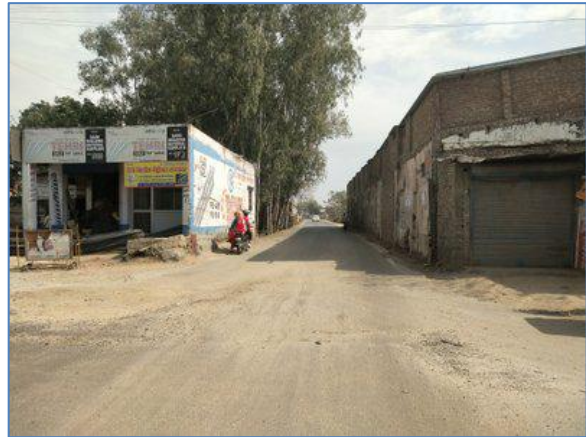


A view of the Project Road with Median 4m at Km 15.000 - NH-72A

The Project Road has 2 Major junctions and 20 Minor junctions. Photographs showing junctions locations are presented below:



Major Junction @ km 0.000 LHS - NH-73



Minor Junction @ km 16.673 RHS - NH-73

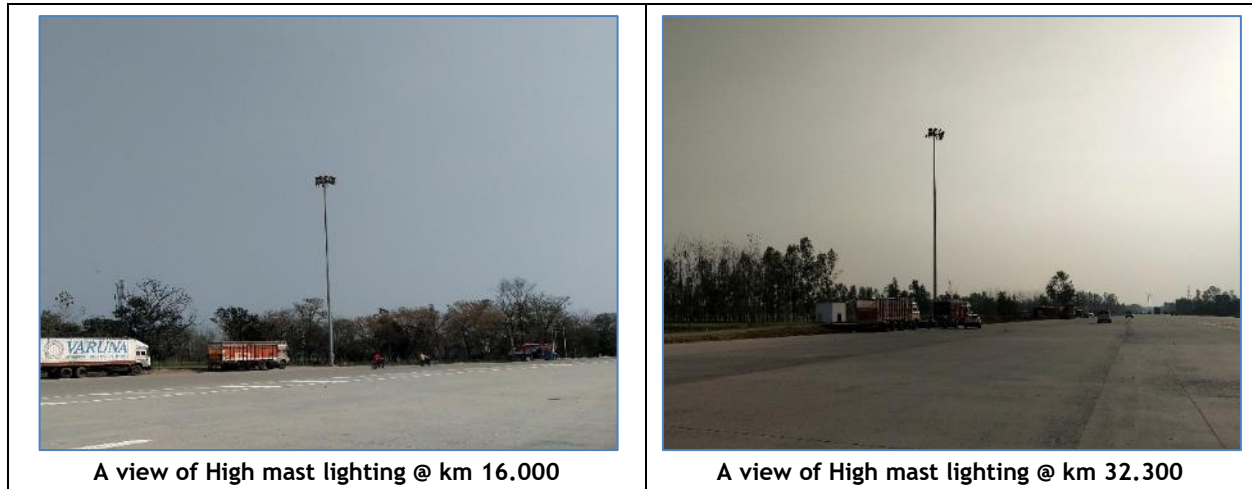


Minor Junction @ km 7.704 LHS - NH-72A

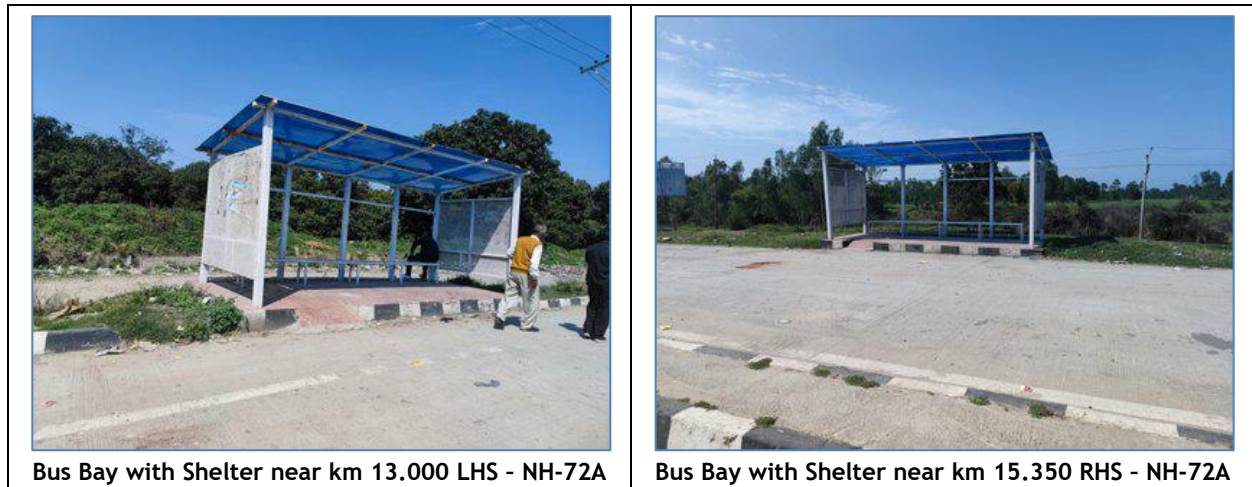


Minor Junction @ km 15.764 LHS - NH-72A

About 22 numbers of High mast lighting is observed along the project road. Mostly they are located at Junctions and Toll Plaza locations. Few photos showing High mast lighting are presented below:



All together the Project Road has about 28 nos. of Bus Bay with Bus shelters, 5 nos. Bus Bay and 7 nos. Bus Shelters are observed along the project corridor. Few photos taken at the Bus Bays/Bus Shelter are presented below:



The Project Road features four truck lay-bys cum rest areas, with two on the left-hand side and two on the right-hand side along the stretch. Each lay-by is constructed with rigid pavement and is equipped with toilet blocks. In addition, the areas are illuminated with a mix of single-arm, double-arm, and high-mast lighting systems. Below are few photos showcasing these truck lay-by sections:



Truck Layby Cum Rest Area km 34.650 RHS - NH-73



Truck Layby Cum Rest Area km10.270 LHS- NH-72A

The Project Road has two Toll Plaza at Km 15.900 & Km 32.300. Rigid pavement exists at the toll plaza and in tapering portions at both toll plazas. Toll Plaza has sixteen lanes including two reversable at each plaza locations. Eight high mast lights on either ends of the toll plaza are provided at both the locations.



Toll Plaza @ 15+900 (Bhagwanpur Village)



Admin Building @ 15+900

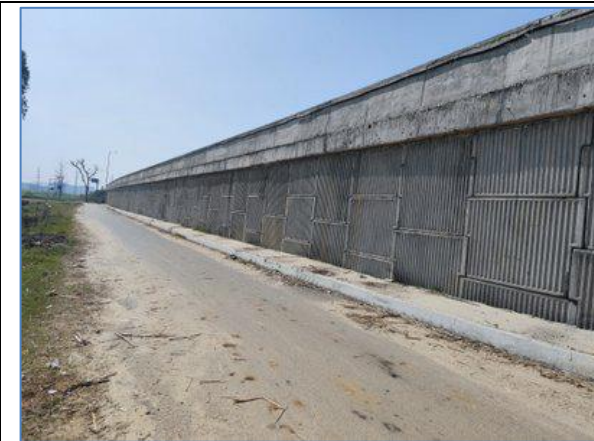


Toll Plaza @ 32+300 (Sayeed Mazra Village)



Admin Building @ 32+300

Service road/slip roads of varying carriageway width of 5.5m to 7.0m have been observed along the Project Corridor. Service road/slip roads have been constructed at built-up area and Underpass locations of the project corridor. Photos depicting the service road pavement surface type, Condition and the other associated features like drain, pedestrian guard rails and metal Beam crash barriers on the separator are presented below. Few photos taken at service road locations are presented below:



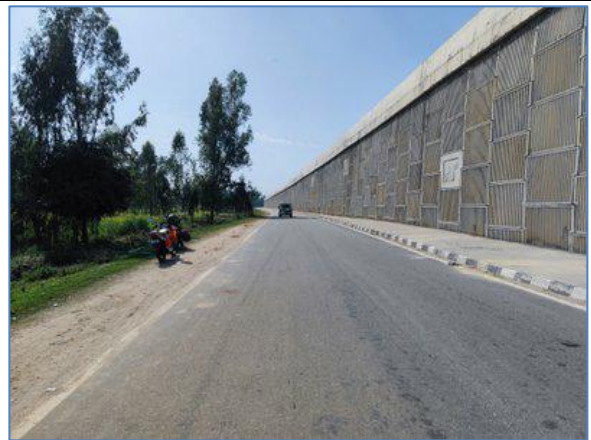
Service Road @ km 2.050 RHS - NH73



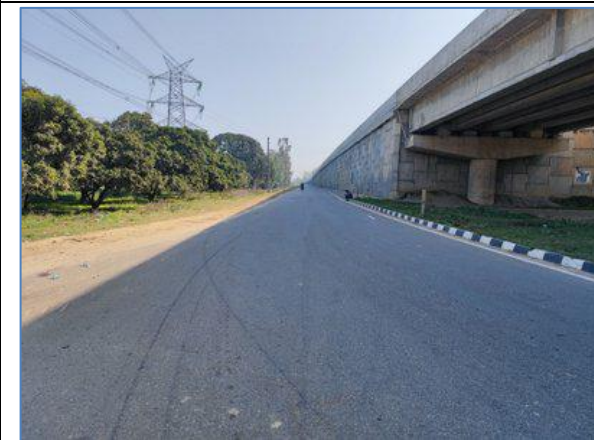
Service Road @ km 12.050 LHS - NH73



Service Road @ km 24.200 RHS - NH73



Service Road @ km 27.400 LHS - NH73



Service Road @ km 0.000 LHS - NH-72A



Service Road @ km 11.700 LHS - NH-72A

1.8 ROAD WORKS

The Road inventory and structure inventory data for the Project stretch are highlighted in following table.

Table 2: Detailed Inventory

S No.	Particulars	Length/ Nos.	As per Site
1	Start Chainage (Km)-NH-73	km.	0.000
2	End chainage (Km)-NH-73	km.	35.400
3	Start Chainage (Km)-NH-72A	km.	0.000
4	End chainage (Km)-NH-72A	km.	17.900
5	Length of the Project Corridor	Kms	53.300
6	Service Road / Slip Road	Kms	32.65
7	Toll Plaza	No.	2
8	No of Lanes (Both side)	No.	16
9	ROBs	No.	1
10	Flyovers	No.	1
11	VUPs	No.	5
12	LVUP's	No.	9
13	PUP's/CUP's	No.	9
14	Major Bridges	No.	3
15	Minor Bridges	No.	11
16	Culverts (Pipe)	No.	44
17	Culvert (Slab/Box)	No.	18
18	Major Junctions	No.	2
19	Minor junctions	No.	20
20	High Embankments	Kms	18.16
21	Partial RCC Wall with Embankment	Kms	0.49
22	RE Blocks/PANELS	Kms	8.48
23	Bus Bays with Shelter	No.	28
24	Bus Bays	No.	5
25	Bus Shelters	No.	7
26	Truck Laybys	No.	4
27	Rest Areas	No.	4
28	High Mast Lights	No.	22
29	Highway Lighting (length only)	Kms	38.45
30	Single Arm Lightings	No.	228
31	Double Arm Lightings	No.	1299
32	Solar Blinkers	No.	30
33	RCC Cover Drain	Kms	11.92

S No.	Particulars	Length/ Nos.	As per Site
34	Median Cuts	No.	639
35	Chutes	No.	1037
36	Median Opening	No.	12
37	Median kerb Damages	m	162.00
38	Median Plantation Functional	Kms	36.98
39	Road Markings	Sqm	79920
40	W-Beam Safety Barriers	Kms	29.370
41	Rigid Concrete Barriers	Kms	11.99
42	Concrete Railing	Kms	0.96
43	Pedestrian Guard Rails	Kms	17.13
44	Delineators	No.	59
45	Kilometre Stones	No.	97
46	Hectometer Stones	No.	244
47	Road Signs	No.	803
48	Gantry Sign Boards	No.	10
49	Cantilever Sign Boards	No.	7
50	Varying Message Signs (VMS)	No.	5
51	Emergency Call Box	No.	20
52	Anti-Glare	No.	3870

1.9 STRUCTURES

List of Structures found during the inventory surveys along the corridor are as follows:

Table 3: Summary of Major Structures

S. No	Type of Str	No. of Str		Total No. of Str's	Total No. of Locations
		LHS	RHS		
1	ROB	1	1	2	1
2	MJB	3	3	6	3
3	MNB	11	11	22	11
4	FLYOVER	1	1	2	1
5	VUP	5	5	10	5
6	CUP	8	8	16	8
7	LVUP	9	9	18	9
8	PUP	1	1	2	1
9	Pipe Culverts	-	-	44	44
10	Box/ Slab Culverts	-	-	18	18

Table 4: Details of Major CD & Other Structures along Project Road

S. No	Design Chainage	Type of Str.	Side	Str. on	Age of Structure	Span Arrangement (No x Length)	Deck Width	Remarks
1	6+490	ROB	LHS	MCW	New	2 x 40 + 1 x 37 + 2 x 40	12.5	
2	6+490	ROB	RHS	MCW	New	2 x 40 + 1 x 37 + 2 x 40	12.5	
3	27+193	Flyover	LHS	MCW	New	1 x 35 + 1 x 40 + 1 x 35	14.5	
4	27+193	Flyover	RHS	MCW	New	1 x 35 + 1 x 40 + 1 x 35	14.5	
5	10+610	MJB	LHS	MCW	Old	4 x 30	12.5	
6	10+610	MJB	RHS	MCW	New	4 x 30	12.5	
7	0+845	MJB	LHS	MCW	New	1 x 15 + 1 x 90 + 1 x 15	12.5	
8	0+845	MJB	RHS	MCW	New	1 x 15 + 1 x 90 + 1 x 15	12.5	
9	2+598	MJB	LHS	MCW	New	1 x 20 + 1 x 35 + 1 x 10 + 1 x 45 + 1 x 15	12.5	
10	2+598	MJB	RHS	MCW	New	1 x 20 + 1 x 35 + 1 x 10 + 1 x 45 + 1 x 15	12.5	
11	1+195	MNB	LHS	MCW	New	1 x 8	12.5	
12	1+195	MNB	RHS	MCW	New	1 x 8	12.5	
13	1+917	MNB	LHS	MCW	New	2 x 8	12.5	
14	1+917	MNB	RHS	MCW	New	2 x 8	12.5	
15	6+866	MNB	LHS	MCW	New	3 x 3	12.5	
16	6+866	MNB	RHS	MCW	New	3 x 3	12.5	
17	8+044	MNB	LHS	MCW	New	1 x 7	12.5	
18	8+044	MNB	RHS	MCW	New	1 x 7	12.5	
19	8+044	MNB	LHS	SR	New	1 x 7	10.5	
20	8+044	MNB	RHS	SR	New	1 x 7	10.5	
21	8+146	MNB	LHS	MCW	New	3 x 2.5	13.5	
22	8+146	MNB	RHS	MCW	New	3 x 2.5	13.5	
23	9+053	MNB	LHS	MCW	New	3 x 4	14.5	
24	9+053	MNB	RHS	MCW	New	3 x 4	14.5	
25	11+882	MNB	LHS	MCW	New	1 x 8.3	12.5	
26	11+882	MNB	RHS	MCW	New	1 x 8.3	12.5	
27	11+882	MNB	LHS	SR	New	1 x 8.3	10.5	
28	11+882	MNB	RHS	SR	New	1 x 8.3	10.5	
29	13+420	MNB	LHS	MCW	Old	3 x 6	14.5	
30	13+420	MNB	RHS	MCW	New	3 x 6	14.5	
31	0+386	MNB	LHS	MCW	New	1 x 12	12.5	
32	0+386	MNB	RHS	MCW	New	1 x 12	12.5	
33	0+600	MNB	LHS	MCW	New	2 x 6	12.5	
34	0+600	MNB	RHS	MCW	New	2 x 6	12.5	
35	0+600	MNB	LHS	SR	New	2 x 6	8.5	
36	0+600	MNB	RHS	SR	New	2 x 6	8.5	
37	2+284	MNB	LHS	MCW	New	1 x 8	10.5	

S. No	Design Chainage	Type of Str.	Side	Str. on	Age of Structure	Span Arrangement (No x Length)	Deck Width	Remarks
38	2+284	MNB	RHS	MCW	New	1 x 8	10.5	
39	2+284	MNB	LHS	SR	New	1 x 8	10.88	
40	2+284	MNB	RHS	SR	New	1 x 8	10.88	
41	4+355	VUP	LHS	MCW	New	1 x 12.185	14.5	
42	4+355	VUP	RHS	MCW	New	1 x 12.185	14.5	
43	6+130	VUP	LHS	MCW	New	1 x 12	14.5	
44	6+130	VUP	RHS	MCW	New	1 x 12	14.5	
45	12+930	VUP	LHS	MCW	New	1 x 12	12	
46	12+930	VUP	RHS	MCW	New	1 x 12	12	
47	16+674	VUP	LHS	MCW	New	1 x 12	12	
48	16+674	VUP	RHS	MCW	New	1 x 12	12	
49	17+826	VUP	LHS	MCW	New	1 x 12	12	
50	17+826	VUP	RHS	MCW	New	1 x 12	12	
51	1+705	LVUP	LHS	MCW	New	1 x 10.5	14.5	
52	1+705	LVUP	RHS	MCW	New	1 x 10.5	14.5	
53	3+270	LVUP	LHS	MCW	New	1 x 10.5	14.5	
54	3+270	LVUP	RHS	MCW	New	1 x 10.5	14.5	
55	1+900	LVUP	LHS	MCW	New	1 x 12.125	14.5	
56	1+900	LVUP	RHS	MCW	New	1 x 12.125	14.5	
57	5+825	LVUP	LHS	MCW	New	1 x 10.5	12	
58	5+825	LVUP	RHS	MCW	New	1 x 10.5	12	
59	7+300	LVUP	LHS	MCW	New	1 x 10.5	14.5	
60	7+300	LVUP	RHS	MCW	New	1 x 10.5	14.5	
61	9+265	LVUP	LHS	MCW	New	1 x 10.5	14.5	
62	9+265	LVUP	RHS	MCW	New	1 x 10.5	14.5	
63	10+900	LVUP	LHS	MCW	New	1 x 10.5	14.5	
64	10+900	LVUP	RHS	MCW	New	1 x 10.5	14.5	

1.10 COSTING

Cost Component for various items and activities have been worked out by considering the Best Industry practice and most appropriate methods. Detailed quantities for work items have been estimated based on the details presented in previous chapters for various heads.

The gist of the cost components considered are presented below:

- Immediate Repair's Cost
- Routine Maintenance Cost
- Incident Management Cost
- Operations Cost
- Periodic Maintenance Cost
- Year-on-Year total O&M Costs

1.10.1 RATE ANALYSIS

Detailed rate analysis has been carried out based on MORTH guidelines to arrive at the unit rates of various items. Material rates and their leads from the project corridor are considered as per the material investigations done on the project road. Summary of unit rates arrived at are presented in table below:

Table 5: Summary of Basic Material Rates excluding GST

S.No	Type of Material	Units	Source	Average Lead in Kms	Market Rates (Rs) Adopted for Rate Analysis - including lead
1	Aggregate				
a)	40 mm	Cum	Crusher	37.75	1,343
b)	20 mm	Cum	Crusher	37.75	1,407
c)	12 mm	Cum	Crusher	37.75	1,401
d)	6 mm	Cum	Crusher	37.75	1,381
e)	Dust	Cum	Crusher	37.75	1,396
2	Gravel/Moorum				
	Embankment	Cum	Borrow Area	4.30	21
	Subgrade	Cum	Borrow Area	4.30	21
3	Other Major Material				
	Bitumen 60/70	MT	Mathura	332.00	42,415
	Bitumen 80/100	MT	Mathura	332.00	41,731
	CRMB	MT	Mathura	332.00	27,531
	Emulsion	MT	Mathura	332.00	52,324
	Steel	MT	Outlet	95.00	53,428
	HTS Strands	MT	Yamuna Nagar	95.00	75,428
	Cement	MT	Yamuna Nagar	95.00	7,728
	Structural Steel	MT	Yamuna Nagar	95.00	76,328
	VG-40 (for FY27)	MT	Mathura	332.00	88,197
	VG-40 (for FY28 onwards)	MT	Mathura	332.00	52,167

Table 6: Summary of Major Material Rates excluding GST

S.no	Activities	Unit	Rate (Rs) per Unit	Remarks
1	BC (for FY27)	Cum	17,232	VG-40
	BC (for FY28 onwards)	Cum	11,788	VG-40
2	Tack Coat	Sqm	15	
3	DBM	Cum	10,741	VG-40
4	PC	Sqm	40	
5	WMM	Cum	2,679	
6	GSB	Cum	2,290	
7	Embankment	Cum	217	
8	Subgrade	Cum	257	
9	Shoulder Filling	Cum	257	
10	Thermoplastic Paint	Sqm	452	
11	Road Studs	Nos	196	
12	DLC	Cum	5,544	
13	PQC	Cum	10,423	
14	RE panel	Sqm	4,129	
15	M-15	Cum	8,958	
16	M-20	Cum	9,362	
17	M-25	Cum	9,957	
18	M-30	Cum	9,971	
19	M-35	Cum	11,012	
20	M-40	Cum	12,467	
21	M-45	Cum	12,737	
22	M-50	Cum	14,588	
23	Reinforcement steel	MT	75,233	
24	1.2m Dia pile	Rm	15,280	
25	HT strands	MT	1,31,770	

Note:

- 1) For Major Maintenance in FY27, the prevailing market rate of bitumen has been considered. However, for the remaining concession period from FY28 onwards, FY25 rates have been adopted and escalated at 5% per annum for a period of 2 years, considering that the cost estimates are presented at FY27 base-year prices.
- 2) Labour: Central Minimum Wages as on April'2026 for "C Area" Category of construction workers Rates

1.10.2 IMMEDIATE REPAIRS COSTS

Costs associated with immediate repairs are estimated based on the detailed asset inventory and condition assessment surveys, Pavement condition and structural condition assessment surveys. Items which are not executed as part of scope or in damaged condition have been considered for immediate costs as a part of 1-year capex. Following items are mainly considered for immediate costs:

- Scope which is not executed
- Road work items
- Bridge Work Items
- Pavement Rehabilitation works
- Structural Rehabilitation works
- Drainage Works
- Slope Protection works
- Safety Works

Presently, there are no immediate requirement costs anticipated for FY2027.

1.10.3 ROUTINE MAINTENANCE & INCIDENT MANAGEMENT COSTS

Routine maintenance costs include general maintenance costs of road elements, bridge elements and road furniture and appurtenances. This can be mainly divided into two parts as:

- ✓ General Maintenance of Works
- ✓ Repairs to Highway & Bridge Elements

General Routine Maintenance

General Routine Maintenance of Roads generally include following items:

- Cleaning of Project facilities
- Structures cleaning,
- Cleaning of ROW
- Cleaning and Maintenance of Toll Plaza
- Unlined Drain Maintenance
- Lined Drain Maintenance
- Maintenance of Highway Lighting at Toll Plaza and other project locations
- Median Plantation maintenance & Avenue plantation maintenance:
- Maintenance of Road Furniture
- Maintenance of Road Safety Items

The above items are estimated by considering the detailed break-up of following items:

- Manpower including Managers/Labour etc
- Vehicles for Labour Transport/Water Tankers/Sweeping Machines Etc
- Resources/Equipment's such as grass cutters, tools, jet sprayers, hydraulic trimmers etc

Repairs to Highway & Bridge Works

Repairs to highway and bridge works have been estimated based on the assumed quantities (Percentage basis) of execution for every year.

These items include the following:

1	Providing treatment for sealing of road surface / isolated cracks at scattered locations
	i) covered with 6.7 mm size stone chipping @ 0.1 cum/ 10 sqm.
	ii) covered with dry coarse sand passing through 2.36 mm sieve and retained on 180-micron sieve @ 0.03 cum/10 sqm heated to 600 C
	iii) filling discrete cracks with slow curing bitumen emulsion as per Technical Specification Clause 3004.3.3
2	Providing treatment to bleeding bituminous surface at scattered locations
3	Providing localized repair to rutted portion and edge breaking of bituminous surface
4	Providing treatment and repair to pot-holes and patch work
5	Providing and laying dense bituminous macadam using bitumen grade VG 40 complete as per Technical Specification Clause 507
6	Providing and laying bituminous concrete (asphaltic concrete)
	(a) Using bitumen (VG-40) as per IRC: SP: 53
7	Road Roughness survey
8	Turfing on embankment slopes and at all other Project Facilities
9	Providing repair to stone pitching/apron at scattered locations
10	Rain Cuts Maintenance: Restoration of rain cuts soil, moorum, gravel or a mixture of these
11	Providing and laying apron/ stone pitching on slopes of guide bunds/ road embankment / other location
12	Providing and laying stone aggregate filter material (150 mm compacted thickness) underneath pitching
13	Unlined drain
14	Filling in median island with approved materials with all leads and lifts complete as per TS Clause No. 407
15	Replacing damaged / broken railing with new pre-cast / cast-in-situ, concrete railing to match with existing design and pattern.
24	Carrying out repair to road signs including strengthening resetting or otherwise repairing signs and delineators
	a) Road sign board mounted on single post
	b) Road sign board mounted on double post
	c) Overhead/ Gantry Sign boards
	d) Delineator
25	Supplying and fixing at site retro-reflectorized type sign boards/signs
	90cm Equilateral triangle
	60cm circular
	90 cm circular
	90cm high octagon
	80cm x 60cm rectangle
	Chevron signs 60cm x 45cm
	Place identification signs (Fig 15.7 of IRC 67)
	Providing and fixing Object Markers
	Providing and fixing of retro-reflectorized Route Marker signs (size 450mm x 600mm)
26	Hazard Marker Sign:
	a) size 90 x 30 cm
	b) size 30cm triangular side cluster of red reflectors (screen printed)
27	Cats Eyes/Raised pavement marker (NMC Nails Less)

28	Painting two coats on old surface after minor repairs to give an even and smooth surface and printing letters and figures with synthetic enamel paint
	a) Hectometer stones
	b) Kilometer Stone
	c) 5 Kilometer stone
	d) Boundary stone
	e) Guard stone
29	Providing painting lettering and fixing of distance measurement stones including dismantling of old damaged/ broken ones, confirming to TS Clause 804
	a) Hectometer stones
	b) Kilometer Stone
	c) 5 Kilometer stone
	d) Boundary stone
	e) Guard stone
30	Providing and fixing road delineators conforming to TS Clause No. 805 as directed by the Engineer.
31	Repainting the kerb stones and separation barrier with first quality synthetic enamel paint of approved brand
32	Painting all types of pavement markings including lines, dashes, arrows etc. on roads as per relevant IRC/MOST standards after cleaning the surface complete in all respects as directed by the Engineer.
	a) Hot applied Thermoplastic compound
	(i) Lane / Centre Line / Edge Line
	(ii) Direction Arrows
	(iii) Diagonal Chevrons Markings
33	Supplying and laying cast-in-situ cement concrete kerb without channel section
	a) by Manual/machine including formwork
34	Major repair / replacement of metal beam crash barrier (W profile guard rails)
35	Providing and fixing chain link/ welded mesh fencing / square bars fencing
36	Dismantling the old damaged chain link/welded mesh / square bars fencing and replacing it with new chain link/ welded mesh/square bars fencing
37	Provision of rumble strips
38	Shoulder Maintenance:
39	synthetic enamel paint of approved brand on metal pedestrian guard rail
40	Dismantling of wearing course

B. Structures

1. Wearing coat comprising of 50 mm thick BC.
2. Cleaning and adding rubber sealant near expansion joints.
3. Modular Expansion joints.
4. Replacement of Damaged Concrete Railing all complete as per technical specifications and as directed by the Engineer
5. Provision of an RCC crash barrier (0.35sqm cross sectional area) constructed with M-40 grade concrete including reinforcement
6. Cleaning of rocker & roller bearing using high pressure water jet, free from rust scales, re-setting & greasing the bearings using graphite grease including cost of materials, labour etc., complete.
7. POT PTF Bearings greasing and maintaining (sand plastering).
8. Elastomeric Bearings and maintaining.
9. Cutting of groove of 15 mm x 15 mm along crack and sealing the same with epoxy putty including cost of material, labour etc.

10. Carrying out 50 to 60 mm thick shortcreting using a mix proportion of 1:2:2 (cement: sand:6 mm down aggregate) added with Polypropylene fibers at a dosage rate of 125 gms/bag of cement including cost of labour, material, scaffolding, equipment etc. complete.
11. Repair of Floor Aprons, pitching and other protection works
12. Cleaning of Drainage Spouts
13. M-25 Concrete

Incident Management Cost

Incident Management & Safety items include the following:

- ✓ ATMS control room operations,
- ✓ Regular patrolling & reaching accident/incident site,
- ✓ providing relief to injured persons including taking them to nearest hospital and attending to the safety requirements at the location (putting cones, safely guide & manage the traffic using signs, safety barricades, etc.),
- ✓ removal of accident /breakdown vehicles, removing of dead animals/birds lying on the highway and loading, unloading, transportation & disposal of surplus material left over by accidental vehicle or otherwise lying on road (on carriageway) and
- ✓ Encroachment prevention & removal with all lead & lifts complete with proper communication equipment,
- ✓ consumables, materials, suitable Towing vehicles, Ambulance, patrolling vehicles and manpower like drivers, helpers, para-medical staff, labours including deployment of crane and all works shall be done as per requirement and as directed by Client representative and as per Relevant Specifications as applicable.

1.10.4 OPERATIONS COSTS

Cost towards Operations include the following:

- Electricity Bill of lighting
- Toll Plaza Operation cost
- Operation and management costs of rest areas and lay byes
- SPV Costs
- Survey Costs
- Insurance
- IE Fee
- Administrative Cost

Following table depicts the cost of operations for the project:

Table 7: Summary of 1st year O&M Costs

S No	Description	Amount in Lakhs.
SPV - Expenditure		
1	SPV staff	117.00
2	Highway lighting - Power Charges	147.00
3	Highway lighting - Maintenance charges	17.00
4	Tolling and HTMS AMC/ Spare Parts	49.61
5	Surveys & Investigations (BBD, Roughness)	5.28
6	IE fees	74.11
7	Insurance Charges	41.73
8	Audit Charges	11.56
9	LIE Fee	84.00
10	Admin cost - Board Meeting Expenses, valuation etc.	
Agency - Expenditure		-
11	Toll Operation - Agency	-
12	Route patrolling	223.27
13	Cost towards Periodic Vehicle replacement	
14	TAP & MAP	-
15	Routine maintenance	254.91
16	Repair of Road - BOQ Items	159.25
17	Repair of Structures	22.27
1st year O&M Costs, (including GST)		1,206.99

Note: The cost is inclusive of GST@18% without escalation and the amount is in Lakhs considering FY27 rates.

1.10.5 PERIODIC MAINTENANCE COSTS

Cost towards major maintenance include following:

- ✓ Cost of Periodic maintenance of Pavement based on Finalized MM schedule
- ✓ Cost of Periodic Maintenance of Structures
- ✓ Cost of Periodic replacement of Toll Equipment's & Software

Following table includes the cost of Major Maintenance works for the project:

Table 8: Summary of Periodic Maintenance Costs

Year	Functional +Structural overlay MCW+ S/R	Major Maintenance of Rigid Pavement	Replacement of ATMS @ every 7 Years	Replacement of TMS @ every 5 years	Structure specified repairs
2026-2027	453.47	893.01	-	559.35	-
2027-2028	341.77	513.10	-	-	-
2028-2029	341.77	513.10	278.30	-	-
2029-2030	167.36	-	-	-	-
2030-2031	-	-	-	-	-
2031-2032	-	-	-	559.35	-
2032-2033	334.72	-	-	-	-
2033-2034	976.32	1,903.08	278.30	-	356.81
2034-2035	-	-	-	-	-
2035-2036	167.36	-	-	559.35	-
TOTAL	2782.78	3822.29	556.60	1678.04	356.81

Note: The cost is inclusive of GST@18% without escalation and the amount is in Lakhs considering FY27 rates.

1.10.6 TOTAL OPERATION & MAINTENANCE COSTS

Year on year operation cost is summation of following:

- ✓ Immediate Costs
- ✓ Routine Maintenance & Incident Management
- ✓ Periodic Maintenance
- ✓ Operations Cost

Following table presents the summary of Operations & Maintenance cost for the project.

Table 9: Cost Abstract

Year	SUMMARY OF VARIOUS EXPENSES in Rs. Lakhs				
	Immediate Repair's Cost	Toll Collection Expenses	Routine Maintenance + Incident Management	Periodic Maintenance (Functional +Struc Overlay+ Toll collection system)	Total Cost
2026-2027		-	1,225.49	1905.82	3,131.31
2027-2028		-	1,197.17	854.88	2,052.05
2028-2029		-	1,197.17	1133.18	2,330.35
2029-2030		-	1,197.17	167.36	1,364.53
2030-2031		-	1,292.04	-	1,292.04
2031-2032		-	1,197.17	559.35	1,756.52
2032-2033		-	1,197.17	334.72	1,531.89
2033-2034		-	1,197.17	3,514.50	4,711.67
2034-2035		-	1,225.49	-	1,225.49
2035-2036		-	486.69	726.71	1,213.40
Total Cost:	-	-	11,412.74	9,196.52	20,609.26

Note: The cost is inclusive of GST@18% without escalation and the amount is in Lakhs considering FY27 rates.