



## SHREM FINANCIAL PRIVATE LIMITED

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**Development of Mandsaur-Sitamau Road Section (SH-14)  
in the State of Madhya Pradesh on BOT Basis.**

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### TECHNICAL DUE DILIGENCE REPORT



**FEBRUARY, 2021**

**SUBMITTED BY**



**RUKY PROJECTS PRIVATE LIMITED**

**Hyderabad – 500 072**

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Development of Mandsaur-Sitamau Road Section (SH-14) in the  
State of Madhya Pradesh on BOT Basis.

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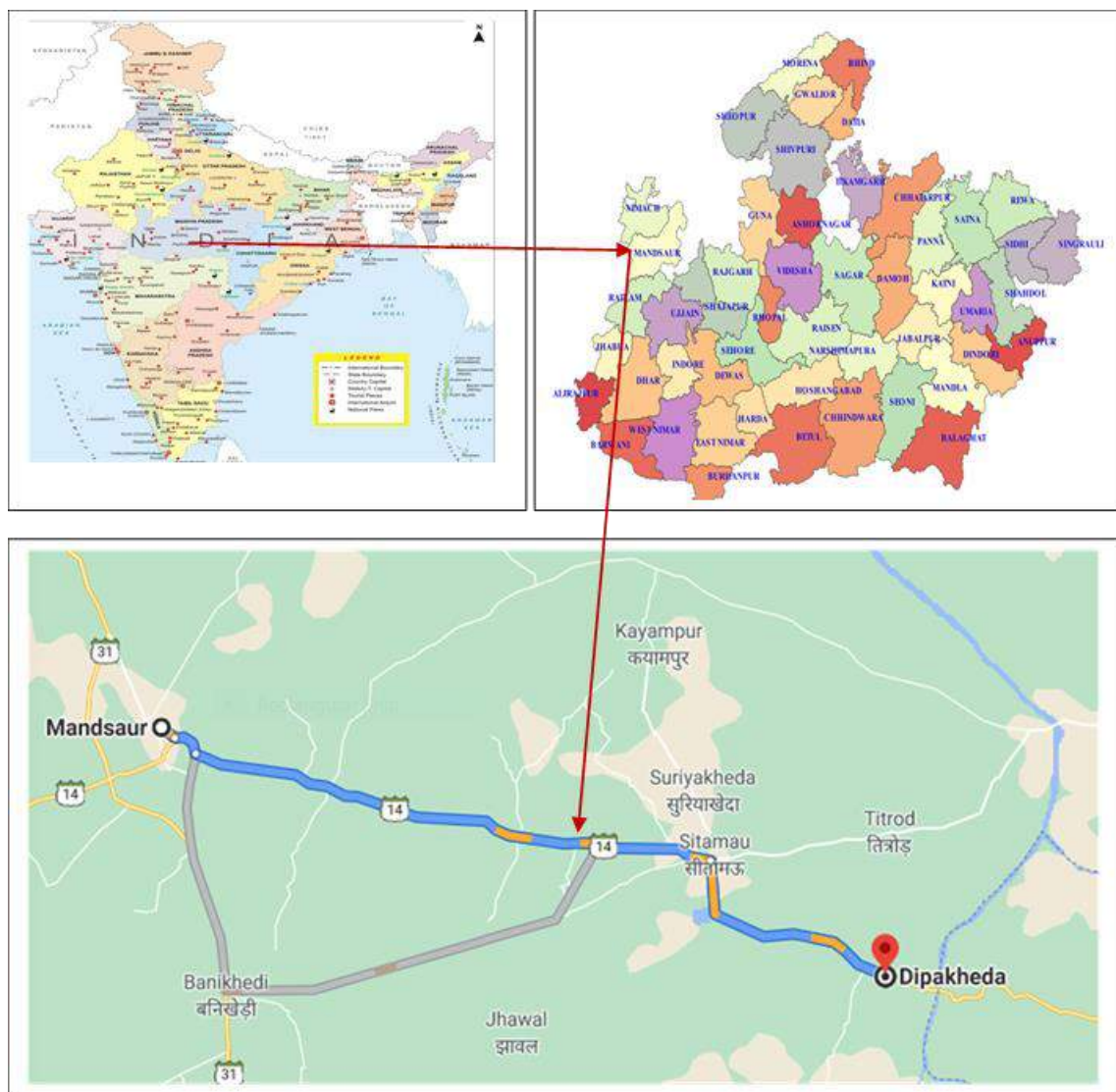


## CHAPTER 1. INTRODUCTION

### 1.1 General

Suryavanshi Infrastructure Private Limited. (herein after referred to as the “**Concessionaire**”) had augmented the existing road into Intermediate carriageway from Mandsaur near ROB to Sitamau near Chambal River Bridge (Up to Rajasthan Boarder) (44 Km length) section of SH-14 (here in after called “**Project Highway**”) in the state of Madhya Pradesh on design, build, operate and transfer (BOT), Toll basis in accordance with the terms and conditions set forth in the Concession Agreement executed with Madhya Pradesh Road Development Corporation Limited (herein after referred to as the “**MPRDC**”) on July 10, 2007.

Project Highway starts from Mandsaur near ROB (Km.0+000) and terminates at Sitamau near Chambal River Bridge (Km.44+000). Total length of the Project Highway is 44 Km. The Project road passes through plain terrain predominantly agricultural land with pockets of barren lands. Project Location map is given at **Figure 1.1**.



**Figure 1.1: Project Location Map**

SHREM ROADWAYS PRIVATE LIMITED (SRPL) acquired SURYAVANSHI INFRASTRUCTURE PRIVATE LIMITED vide agreement dated 26.3.2018.

SHREM FINANCIAL PVT LTD (SFPL) appointed RUKY Projects Pvt. Ltd. as consultants for detailed Technical Due Diligence Services of the above Road Project to know-how the present condition of Carriageway and Structures, probable costs of Operations and Maintenance during balance Concession period, additional road safety requirements if any and to review the traffic potential and to estimate the projected Toll Collection etc.

## 1.2 Project Data

**Table 1.1: Project Data**

S. No.	Particulars	Details
1	Name of the project	Reconstruction, Strengthening, widening & Rehabilitation of Mandsaur-Sitamau from Km. 18+000 to Km. 62+000 on BOT basis
2	Road Type	State Highway
3	Name of the Authority	Madhya Pradesh Road Development Corporation Limited
4	Name of the Concessionaire	Suryavanshi Infrastructure Private Limited
5	Name of the BOT Contractor	Dilip Buildcon Limited
6	Date of LOA	16.03.2007
7	Date of Agreement	10.07.2007
8	Design Length as per Schedule I of CA	44.000 Km.
9	Actual Length Constructed	44.000 Km.
10	Project Lane Configuration	Intermediate carriageway with Hard Shoulder
11	EPC Cost	Rs. 27.87 Cr.
12	Grant	Rs. 9.9 Cr
13	Nature of contract	BOT (Toll)
14	Toll collected by	Concessionaire
15	Concession Period*	25 years from the Commencement date
16	Commencement date	November 27, 2007
17	Concession End Date	November 26, 2032
18	Construction Period	15 months from the Commencement date.
19	Schedule Completion Date	February 26, 2009
20	Date of issuance of Provisional Certificate (Commercial Operation Date)	February 05, 2009



### 1.3 Scope of consultancy services

The scope of work includes providing Due Diligence of the project road and providing estimate of the anticipated maintenance works. Scope of the work as defined in the consultancy work order is listed below:

- Review of various contractual documents
- Collection of historic/past toll revenue data
- Collection of historic/past classified Traffic data from toll plaza and to estimate the projected traffic to arrive at revenue projections.
- Carryout detailed assessment of pavement condition and propose maintenance plan along with BOQ.
- Review of latest BBD/BI test report
- Carrying out inventory & condition survey of all elements of road like embankment slope, plantation, road furniture, tolling system etc., of the project.
- Carrying out inventory & condition survey of all structures (Major Bridges, Minor Bridges, ROB, RE Wall, Flyovers, VUPs, PUPs, Culverts etc.), suggest any rehabilitation & maintenance requirements along with BOQ.
- Carryout review of tolling system to evaluate the efficiency and functionality of tolling system and to identify and give suggestions to improve if any setbacks in the system.
- Carryout road safety audit on Project highway and provide suggestions for improvement.
- Assess and Provide BOQ and cost estimate for routine & periodic maintenance including O&M.
- Review of punch list items, NCR's to identify any uncompleted works as on date of submission of report.
- Review of validity of insurance and statutory compliances related to Project.
- Review of correspondences exchanged between parties on contract related issues and claims etc.
- Submission of detailed report on technical due diligence of the project.

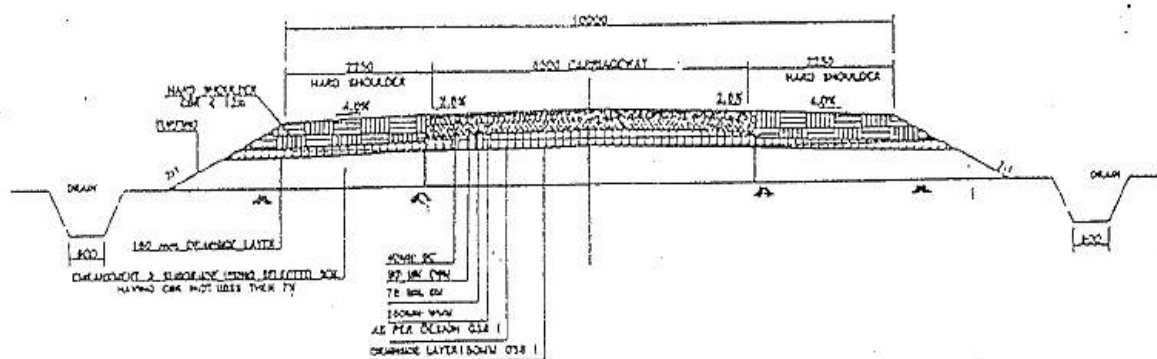
## 2.1 Salient Features of the Project

### Table 2.1: Salient Features

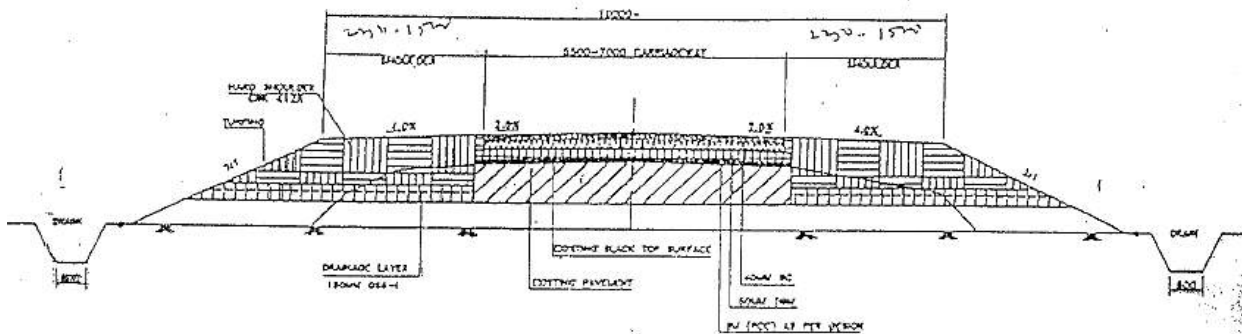
S No	Particulars	As per CA	As per COS*/Site requirement	As per Site
1	Total Length of Intermediate (Flexible)	43 Km	-	43 Km
2	Total Length of 5.5 to 7m wide (Flexible)	1 Km	-	1 Km
3	Toll Plaza	1 No.	-	1 No.
4	Major/Minor Junction	13 Nos.	-	13 Nos.
5	Major Bridges	1 No.	-	1 No.
6	Minor Bridges	3 Nos.	-	4* Nos.
7	Pipe Culverts	4 Nos.	-	27* Nos.
8	Slab Culverts	35Nos.		15* Nos.

\*As per Site condition 20 nos. of Slab Culverts are not constructed.

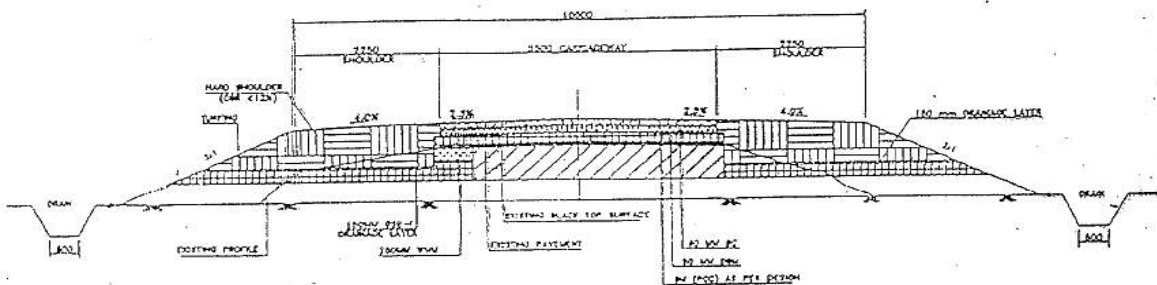
The Concessionaire has followed the Typical Cross Sections shown below as per schedule, during the construction.



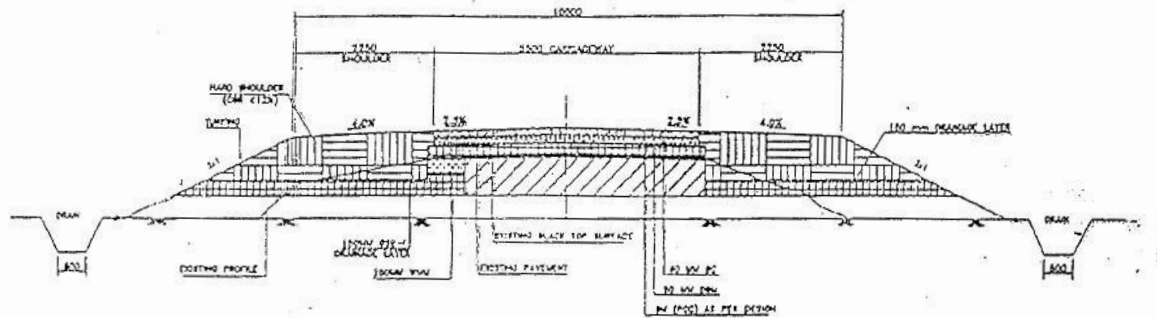
Cross section for new construction (5.5m Carriageway + 2.25m Hard shoulder on both sides)



**Figure 2.2: TCS- C of Schedule I of CA**  
Overlay on Existing Pavement (5.5m to 7m Carriageway + 2.25m to 1.5m on both sides)



**Figure 2.3: TCS-D of Schedule I of CA**  
(Overlay with widening (Both side) (5.5m Carriageway + 2.25m Hard shoulder on both sides)



**Figure 2.4: TCS-E of Schedule I of CA**

Overlay with one side widening (5.5m Carriageway + 2.25m Hard shoulder on both sides)

As built drawings are verified and found in accordance with TCS.

TCS Schedule is provided below.

**Table 2.2: TCS Schedule**

S No	From Chainage (Km)	To Chainage (Km)	Type of TCS
1	0+000	2+000	TCS-E of Schedule I of CA
2	2+000	10+000	TCS-D of Schedule I of CA
3	10+000	11+000	TCS-C of Schedule I of CA
4	11+000	12+000	TCS-D of Schedule I of CA

S No	From Chainage (Km)	To Chainage (Km)	Type of TCS
5	12+000	16+000	TCS-D of Schedule I of CA
6	16+000	19+000	TCS-D of Schedule I of CA
7	19+000	21+000	TCS-E of Schedule I of CA
8	21+000	43+000	TCS-D of Schedule I of CA
9	43+000	44+000	TCS-A of Schedule I of CA

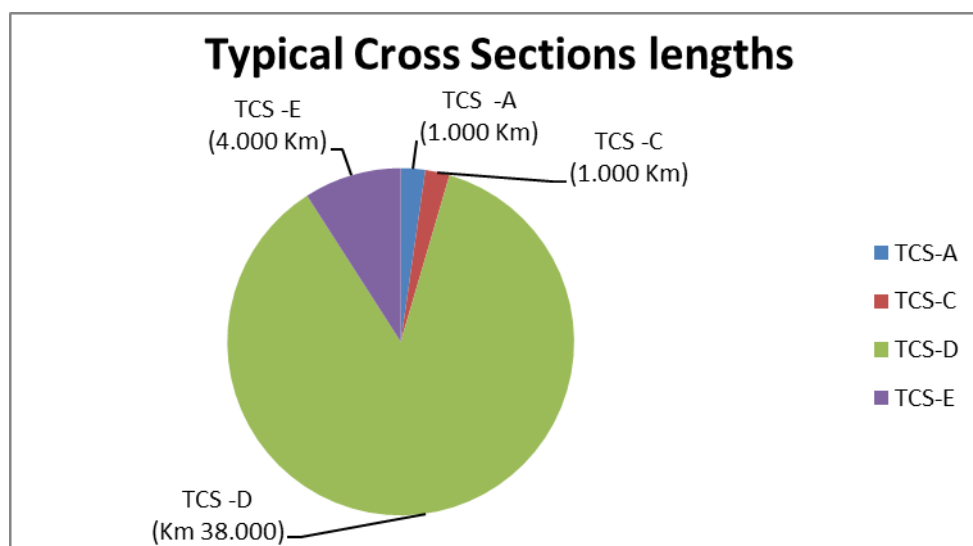


Figure 2.5: Pictorial Diagram of TCS Lengths.

### 2.3 Road Side Drainage

- To facilitate quick disposal of storm water from the Carriage way and to avoid accumulation of drainage from road side community on the Carriage Way, side drains are constructed along the main carriage way on both flanks as specified in Schedule I in conjunction with Schedule -J of the Concession Agreement.

### 2.4 Service Roads:

Service roads are not provided along the entire stretch of the project road as per provisions of Schedule I of the Concession Agreement.

### 2.5 Bypass/Realignment:

There are no Bypass/Realignment in the Project, as per provisions of Schedule I of the Concession Agreement

### 2.6 Summary of the Carriageway and PavementDetails:

Table 2.3: Summary of Carriageway and pavement Details

S No.	Description	Flexible	Rigid	Remarks
1	Total Length of Intermediate (Flexible)	43 Kms.	---	Fig.I.1, Fig.I.3 & Fig.I.4 of Schedule I of CA
2	Total Length of 5.5 to 7m wide (Flexible)	1 Kms.	---	Fig.I.2 of Schedule I of CA
3	Total Length of the	44.000	---	

S No.	Description	Flexible	Rigid	Remarks
	Project	Kms.		
<b>TYPE OF ALIGNMENT</b>				
4	New Alignment	---	---	
5	Realignment	---	---	
6	Strengthening	---	---	
7	Reconstruction	44.000 Kms.	---	
8	Total Length of the Project	44.000 Kms.	---	

## 2.7 Summary of Structures:

Summary of Structures as per provisions of schedule B of the CA is given below

**Table 2.4: Summary of Structures:**

S No	Description	Nos.
1	Major Bridges	1 No.
2	Minor Bridges	3 Nos.
3	Hume Pipe Culverts	4 Nos.
4	Slab Culverts	35 Nos.

## 2.8 Toll Plazas:

As per Schedule C of the CA provisions, one Toll Plaza has been constructed at Km. 21+800. Salient features of Toll Plaza are provided below.

- Each side comprises of, one normal lane and one extra wide lane and one lane for bikes.
- The lane width in normal lanes is 3.2 m and extra lane is of 4.5 m width.
- Single canopy is provided to cover the toll lanes.
- Toll plaza has been constructed as per standards set forth in Schedule J of CA having facilities like lighting, water supply and firefighting Arrangements.
- CCTV Cameras are installed and monitored in administrative building.

## 2.9 Bus shelters and truck lay byes:

There is no Bus Shelters and Truck lay Bys in the Project, as per provisions of Schedule I of the Concession Agreement.



**Km. 16+000**



**Km. 20+800**



**Km. 21+000**



**Km. 30+000**

**Figure 2.6: Photos Representing Existing Road Features**



### CHAPTER 3. ROAD INVENTORY & PAVEMENT CONDITION

#### 3.1 General

Road Inventory and pavement condition surveys were carried out by a team of Engineers and the features noted at site are presented in the following sections.

#### 3.2 Road Inventory

Inventory of the project road was carried out physically and the same is summarized in the following table. Few representative photographs are presented below.

**Table 3.1: Road Inventory**

S. No.	Features	Remarks
1.	Terrain	Plain Terrain
2.	Land Use	Most of the land is agricultural
3.	Total Length of the Project 2 lane	44.000 Km.
4.	Earthen shoulder	1 m to 1.5 m Width on site
5.	Toll Plaza	Km.21+800
6.	Sign boards	Sign boards are provided as per requirement
7.	Road Markings	Lane markings are provided as per requirement
8.	Street Lighting	Highway lighting provided as per requirement

#### 3.3 Pavement Condition

Pavement condition survey was carried out on the project road, based on observations supplemented with simple measurements. The criteria adopted for the classification of condition of the pavement is as per 4.2.1 of IRC 81-1997.

**Table 3.2: Pavement Classification**

Classification	Pavement condition
Good	No cracking, rutting less than 10mm
Fair	No cracking or cracking confined to single crack in the wheel track with rutting between 10mm and 20mm.
Poor	Extensive cracking and/or rutting greater than 20mm sections with cracking exceeding 20% shall be treated as failed.

Pavement surface condition assessment is a key component of infrastructure asset management. The information is used across a wide range of business processes which includes: Monitoring the performance of the road; Predicting future pavement conditions and assessing long term needs; Identifying rehabilitation and maintenance treatment options; investigate causes of pavement deterioration and evaluating specific treatment options; The purpose of the pavement condition survey is to provide a more accurate and detailed investigation of the pavement deterioration in order to assist in determining appropriate rehabilitation treatments.

#### 3.4 Pavement Condition Survey:

The survey on general pavement condition was primarily undertaken by means of slow drive- over survey and supplemented with measurements where ever necessary. Pavement assessment was done with the help of simple instruments using measuring tape, Straight edge. It was carried out to quantify pavement deficiency on a representative basis. Aspects of pavement condition assessment include surface defects, rut depth, cracking, pot holes, patched areas, shoulder conditions etc. An overall assessment of performance serviceability of the road was also done to rate the existing pavement and shoulder condition qualitatively.

The pavement condition is measured under the following sub-heads:

- Shoulder- (Composition/Condition)
- Riding Quality (Good/Fair/Poor/Very Poor)
- Pavement Condition-
  - Cracking (% of surface area)
  - Ravelling (%of surface area)
  - Potholes (%of surface area)
  - Patching (%of surface area)
  - Rut depth (Moderate 10 to 20 mm & Severe >20 mm)
  - Pavement edge drop (mm)
- Road Side Drain (Non-Existing/ Partially Functional/ Functional)

Upon verification of the Pavement condition in the above said manner, it is observed that the Pavement condition of Project road is good. The field measurements of the Pavement Condition survey are tabulated in the standard proforma as per IRC: SP-19 and is given in **ANNEXURE 1**. The summary of Pavement condition is given below.

**Table 3-3: Pavement condition summary**

From (km.)	To (km.)	Length (kms)	Condition
0+000	44+000	44.000	Good



**Km. 10+559**



**Km. 27+170**



**Km. 30+000**



**Km. 32+900**

**Figure 3.1 Representative Photos of Pavement Condition.**

## CHAPTER 4. INVENTORY AND REVIEW OF STRUCTURES

### 4.1 General Assessment and Details of the Existing structures

Inspection of existing structures on the project section was carried out, detailed inventory and condition is examined during the site visit as per the guide lines provided in IRC SP: 52-1999 & IRC SP: 35-1990.

### 4.2 Inventory of Structures

The details of structures at site is mentioned below.

**Table 4.1 List of Structures**

S. No.	Type of Structure	Numbers
1	Major bridges	01 Nos
2	Minor Bridge	04 Nos
3	Pipe culverts	27 Nos
4	Slab/Box Culverts	15 Nos

There is one Major bridge in the project stretch. The total length of the bridge is 144.5m with 17 spans of 8.5m. The superstructure is of RCC solid slab. The substructure is of wall type Course Rubble (CR) masonry piers and abutments, resting on open foundations. Detailed inventory and condition survey of bridges are given in **ANNEXURE 2**.

The culverts observed along the project road are mainly of two types viz. pipe culverts and RCC slab/box culverts. Condition of most of the culverts is fair. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3**.

### 4.3 Details of Major Bridges

The total length of the major bridge at Km 5+400 is 144.5m with 17 spans. The superstructure is of RCC solid slab. The substructure is of wall type Course Rubble (CR) masonry piers and abutments, resting on open foundations. Superstructure is seated on Tar paper bearings. Expansion joints are of Buried type. Steel railings have been provided on both sides of the deck.

**Table 4.2 List of Major Bridges**

S. No.	Chainage (Km.)	Span	Total Length of Bridge (m)
1	5+400	17 x 8.5m	144.5

The condition of the superstructure and substructure is good. Certain minor maintenance operations such as quadrant pitching, reflector plates, drainage spouts are to be carried out.

### 4.4 Details of Minor Bridges

There are 04 Nos minor bridges in the project stretch. The type of superstructure for minor bridges is RCC solid slab and RCC Girders and the substructure is RCC/PCC conventional wall type supported on open foundations. Expansion joints are buried type and bearings are tar paper and elastomeric bearings. RCC crash barriers are provided on all structures.



**Table 4.3 Inventory of Minor Bridges**

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
1	7+863	2x4.8	9.6	It has RCC solid slab superstructure supported on RCC/PCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tarpaper Bearings and buried type expansion joints.
2	16+095	3x16.6	49.8	It has RCC Girder type superstructure supported on RCC/PCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Elastomeric Bearings and buried type expansion joints.
3	22+333	3 x 6.1	18.3	It has RCC solid slab superstructure supported on RCC/PCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tarpaper Bearings and buried type expansion joints.
4	27+098	2 x 4.7	9.4	It has RCC solid slab superstructure supported on RCC/PCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.



**Km. 7+863**



**Km. 16+095**



**Km. 22+333**



**Km. 27+098**

**Figure 4.1: Representative photos for minor bridges**

#### 4.5 Details of Culverts

The culverts observed along the project road are mainly of two types viz. RCC Slab/Box culverts and Pipe culverts. The condition of culverts is generally good. For some of the pipe culverts vegetation and vent cleaning is required. In general, the conditions of all the structures are found satisfactory. The detailed condition of the same are given in the following sections. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3**.

##### 4.5.1. Details of the Slab/ Box Culverts

There details of slab/Box culvert in the project stretch are given below.

**Table 4.4 List of Slab/Box Culverts**

S. No.	Chainage (Km.)	Span (m)	Vent Size (m)
1	0+400	2 x 2.9	1.00
2	5+700	1 x 1.8	1.20
3	6+558	1x3.4	1.50
4	10+558	1x3.4	1.20
5	23+150	2 x 4.9	2.50
6	30+440	1 x 5.7	2.50
7	31+650	1 x 3.9	1.50
8	31+950	1 x 5.6	2.00
9	32+346	1 x 7	2.00
10	32+909	1 x 3.2	1.50
11	34+160	1 x 6.9	1.80
12	35+970	1 x 5.6	2.10
13	36+240	1 x 5.6	2.00
14	36+535	1 x 5.6	1.60
15	39+762	1 x 6.3	3.00

The general condition of above slab culverts is good. Maintenance is to be carried out before monsoon for vent clearance, Protection works etc.



**Km. 23+150**



**Km. 30+440**





**Km. 35+970**



**Km. 36+535**

**Figure 4.2: Representative photos of Slab Culverts**

#### 4.5.1. General Description of the Pipe Culverts

The details of the pipe culverts in the project stretch are given below.

**Table 4.5: List of Pipe Culverts**

S. No.	Chainage (Km.)	No. of Row/Dia.(m)	S. No.	Chainage (Km.)	No. of Row/Dia.(m)
1	2+450	1 x 1.0	15	1+150	2 x 1.0
2	3+440	1 x 1.2	16	6+900	2 x 1.2
3	10+250	1 x 1.2	17	13+062	2 x 1.2
4	12+500	1 x 1.2	18	18+880	2 x 1.2
5	28+470	1 x 1.0	19	19+920	2 x 1.2
6	28+820	1 x 1.0	20	24+940	2 x 1.2
7	28+980	1 x 1.0	21	27+420	2 x 1.0
8	29+240	1 x 1.0	22	39+220	2 x 1.0
9	29+100	1 x 1.0	23	42+170	2 x 1.0
10	30+550	1 x 1.0	24	12+060	3 x 1.2
11	37+600	1 x 1.0	25	18+450	3 x 1.2
12	38+650	1 x 1.0	26	27+823	3 x 1.0
13	40+850	1 x 1.0	27	41+850	3 x 1.0
14	41+320	1 x 1.0			

The general condition of above slab culverts is good. Maintenance is to be carried out before monsoon for vent clearance, Protection works etc.

## CHAPTER 5. PAVEMENT DESIGN VALIDATION AND OVERLAY SCHEDULES

### 5.1 General

Review of Pavement design report includes providing insights on design life of pavement, crust thickness, history of overlays on the existing pavement, pavement condition and CA provisions for the upcoming renewal cycles.

### 5.2 Pavement design validation

The flexible pavement has low flexural strength and hence layers reflect the deformation of the lower layers / sub-grade on to the surface layer after the withdrawal of wheel load. In order to control the deflections in the sub-grade so that no permanent deflections result, the pavement thickness is so designed that the stresses on the sub-grade soil are kept within its bearing capacity. Loading of bituminous pavement requires the stiffest layers to be placed at the surface with successive weaker layers down to sub-grade.

The project road is already operational and the standards applicable during the design development phase of the project road are taken into account for this review. Therefore, the design of pavement has been validated based on IRC: 37-2001 publication while the current publication is IRC: 37-2018.

#### Review of Pavement Design

As per the pavement design approved in the project, the following conclusions are given.

**Table 5.1: Flexible Pavement Design summary**

S. No.	Description/ Pavement layer	Design/Adopted Parameters
1	Sub Grade CBR (%)	8%
2	Design Life (Years)	25 years
3	Design Traffic (MSA)	30 MSA
4	Surface course (BC)	40mm
5	Binder course (DBM)	100 mm
6	Base course (WMM)	250 mm
7	Sub Base course (GSB)	200 mm

### 5.3 Validation of Pavement Design

The new pavement shall be designed in accordance with the IRC:37. "Guidelines for the Design of Flexible Pavements".

Pavement design validation is carried out as per actual traffic from COD. As per IRC 37, Vehicle Damage Factor (VDF), Distribution of commercial vehicles and growth rate values are 3.5, 0.75 and 5% respectively. Summary is given below.

**Table 5.2: Real Time Traffic from COD and Project Traffic Current years with 5% growth for CMSA**

FY Year	AADT in Vehicles					CVPD (Veh.)	MSA	CMSA	Year	Remarks
	Car	LCV	BUS	2-AT	MAV					
2016	997	566	99	47	129	840	0.81	0.81	9	Actual
2017	1026	501	95	45	139	780	0.75	1.55	10	Actual
2018	937	397	75	45	159	676	0.65	2.20	11	Actual
2019	1082	466	76	39	151	732	0.70	2.90	12	Actual
2020	1216	403	69	35	146	653	0.63	3.53	13	Actual
2021	1276	424	72	37	153	686	0.66	4.18	14	Projected
2022	1340	445	76	39	161	720	0.69	4.87	15	Projected
2023	1407	467	80	41	169	756	0.72	5.60	16	Projected
2024	1478	490	84	43	178	794	0.76	6.36	17	Projected
2025	1552	515	88	45	186	834	0.80	7.16	18	Projected
2026	1629	541	92	47	196	876	0.84	8.00	19	Projected
2027	1711	568	97	49	206	919	0.88	8.88	20	Projected
2028	1796	596	102	52	216	965	0.92	9.80	21	Projected
2029	1886	626	107	54	227	1014	0.97	10.78	22	Projected
2030	1980	657	112	57	238	1064	1.02	11.79	23	Projected
2031	2079	690	118	60	250	1118	1.07	12.87	24	Projected
2032	2183	725	124	63	262	1173	1.12	13.99	25	Projected

Based on the above actual traffic, estimated MSA at 14 years, 20 years and 25 years are 4.18, 8.88 and 13.99 of TP respectively.

Traffic considered in pavement design is more than projected traffic evaluated based on actual traffic up to 2020. Hence the pavement design adopted is found in order.

#### 5.4 Overlay during operation and maintenance

The pavement has been designed to cater traffic of 30 MSA for a design life of 25 years for Bituminous layers and Granular layers (up to end of year 2032), whereas the estimated traffic is 4.18 MSA, 8.88 MSA and 13.99 MSA for 14 years 20 years and 25 years respectively. This implies that pavement will be structurally adequate to cater the future traffic with periodic renewal carried out under the maintenance program.

However, it is recommended to carry out traffic survey, pavement condition and pavement strength evaluation before the end of Stage-I, II & III of design life (as per pavement design report) and prior to the end of concession period to evaluate the requirement of overlay.

#### 5.5 Maintenance/ Overlay schedule

Periodic Maintenance includes Profile corrective course overlaid with the periodic renewal of the wearing course of BC. The detail maintenance schedule is summarized below.

**Routine maintenance** - Every year

**Periodic Renewal for Flexible Pavement** - Proposed on or before 2021-22.

## CHAPTER 6. SAFETY AUDIT OF ROAD

### 6.1 General

Road Safety Audit (RSA) is defined as “the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users”.

Road Safety is a multi- sectorial and multi- dimensional issues. It incorporates the development and management of road infrastructure, provisions of safer vehicles, legislations and law enforcements, mobility planning, provisions of health and hospital services, child safety, urban land use planning.

A Key feature of a road safety audit is the use of a team of professionals with varied expertise. The team shall include highway safety engineers, highway design engineers, maintenance personal, and law enforcement. Additional specialties shall be added to the team as needed.

Central Road Research Institute (CRRI) has studied road safety elements extensively in the past and has come up with various manuals such as manual for safety in road design (1998), Road safety Audit Manual (2003) and Revised Road Safety Audit manual (2010). Indian Road Congress (IRC) has published Special provision SP-88, Manual on road Safety Audit. The methodology used for the design stage audit process is based on these manuals. Type Designs for Intersections on National Highways, 1992

**Table 6.1: Referred IRC Publications**

IRC Code No.	IRC Code Name
IRC : 35	Code of Practice for Road Markings
IRC : 38	Guidelines for Design of Horizontal curves for highways and Design tables
IRC : 67	Code of Practice for Road signs
IRC : 73	Geometric Design standards for rural highways (non-urban)
IRC:103	Guidelines for Pedestrian Facilities
IRC: SP-15	Ribbon Development along highways and its prevention
IRC: SP-23	Vertical curves for highways
IRC: SP-41	Guidelines on design of at-grade intersections in Rural and Urban areas
IRC: SP-55	Guidelines for safety in construction zones
IRC:SP- 88	Manual of Road Safety Audit

### 6.2 Road Safety Audit

During the site visit, it is observed that all safety items are provided as shown in the following table

S. No.	Item Description		Status	Condition
1	Sign Boards	Chevron signs	Available as per site requirement	Good
		Village sign Board	Available as per site requirement	Good
		Informatory Boards	Available as per site requirement	Good
		Object Hazard Markers at culverts	Available as per site requirement	Good
2	Road Marking	Lane Marking	Available as per site requirement	Fair



S. No.	Item Description		Status	Condition
3	W Beam Crash Barriers	At High Embankments	Available as per site requirement	Good

This Project Section is part of an important corridor. It is the Concessionaire's duty and responsibility to provide safe road for the commuters by assuring safe and hindrance free movement for both Traffic and Pedestrians along urban locations & habitations.



**Km. 1+650**



**Km. 7+683**



**Km. 16+000**



**Km. 20+800**



**Km. 23+150**



**Km. 32+900**

**Figure 6.1 Representative Photos during road safety audit**

### 6.3 Conclusion

Safety arrangements are made for road users along the Project road are found to be in conformity with project road requirements and good industry practice. However, a continuous monitoring on safety arrangements is required during the maintenance period.

## CHAPTER 7. TOLL PLAZA & HTMS

### 7.1 General

There is one toll Plazas on the project road at Km.21+800. Each side comprises of 1 normal lanes, 1 extra wide lane and 1 bike lane. The lane width in normal lanes was 3.2 m and extra wide lane was 4.5 m. The width of islands provided is 1.8 m. The single canopy is provided to cover the toll lanes. Toll plaza administrative building is G+1 RCC building with 8 rooms one of which is used as control room, one for UPS and one for Pantry.

### 7.2 Tolling Equipment and Control Room Equipment

List of equipment provided at toll plaza and control room is given below.

**Table 7.1 List of Equipment at Toll Plaza and Control Room**

S. No.	Item	Nos.
1	TLC (Toll lane Controller)	4
2	Monitor	4
3	Printer	4
4	Keyboard	4
5	CCTV Booth	4
6	Intercom-S	4
7	LPC	4
8	IC Camera	4
9	RFID	4
10	Barrier	4
11	Old Server	1
12	Technova Server	1
13	Check Post Server	1
14	Monitor	1
15	Keyboard	1
16	Monitor	1
17	Manager System	1
18	Keyboard	1
19	Monitor	1
20	WIFI HHT-Check Post	2
21	Fastag HHT	2
22	MPRDC System	1
23	Audit System	1
24	Keyboard	1
25	Monitor	1
26	Scanner	1
27	Printer	1
28	Biometric Machine	1
29	Intercom-M	1
30	Wifi-Router Tenda	1
31	Wifi-Router- CHECK POST	1
32	CCTV-Manager Room	1
33	CCTV- Server Room	1



S. No.	Item	Nos.
34	NVR	1
35	POE Switch	1
36	LED	1
37	HHM(Hand Held Machine)	2
38	CCTV	1
39	PTZ-LHS	1
40	PTZ-RHS	1
41	Check Post Booth CAMRA	1
42	PTZ- CHECK POST	1

### 7.3 Vehicles

The list of vehicles, which were observed at site, for operation of Highway and Toll Plaza are presented below.

**Table 7.2 List of Vehicles**

S. No.	Vehicle Type	No.
1	Patrol Vehicle	1
2	Ambulance	1



Toll Plaza



Toll Building

**Figure 7.1: Representative Photos of Toll plaza at 21+800**

## CHAPTER 8. TOLL REVENUE

### 8.1 Toll Revenue Calculations

In accordance with clause 6.1, the Concessionaire entitled to collect appropriate fee from the users.

Accordingly, the Concessionaire provided toll plaza wise details. Based on the data made available the summarized annual classified Traffic census details for the past eleven years are provided in Table 8.1 below. The Actual traffic data recorded below has been taken as a basis to calculate AACGR % (Annual Average Compound Growth Rate)

**Table 8.1: Year wise Traffic (Vehicles) Details**

FY Year	Car	LCV	Bus	Truck	MAV	Total Traffic
2009	138294	62661	46931	13750	26118	287754
2010	190847	105155	61533	21021	35873	414429
2011	225591	123640	65973	18951	53747	487902
2012	242408	152182	89654	21953	39829	546026
2013	316222	212567	79645	26332	54486	689252
2014	351799	203761	53506	23132	60057	692255
2015	364751	207143	36311	17053	47093	672351
2016	374672	182830	34582	16487	50647	659218
2017	342046	144739	27390	16509	58096	588780
2018	394754	169919	27785	14341	55017	661816
2019	444948	147668	25199	12820	53454	684089
<b>AACGR*</b>						<b>10.06%</b>

\* AACGR - Annual Average Compound Growth Rate

### 8.2 Actual Revenue Collection

In accordance with clause 17.5, "During the operation period, the Concessionaire shall furnish to MRPDC within 7 days of completion of each month, a statement of fee (Monthly fee statement)". As per provisions of CA the concessionaire submitted monthly fee statement and the summary of form submitted under Schedule M during the financial year 2019-20 is given under as Table 8.2.

**Table 8.2: Summary of 2019-20 Tollable traffic and revenue collected at Toll Plaza**

S. No.	Details	No. of Vehicles	Fee Collected (in lakh Rs.)
1	Car	245197	8581895
	Local S.J. car	21867	393606
	Local Personal Car	10959	287665
2	Mini Bus	89557	7522788
	Local S.J. Mini Bus	11974	502908
3	Bus	17825	3101550
	Local S.J. Bus	1308	113796
4	Truck	9390	1962510
	Local S.J. Truck	2264	237720
5	Heavy Truck	46721	19482657
	Local S.J. Heavy Truck	5098	1065482
	<b>Grand Total</b>	<b>462160</b>	<b>43252577</b>

Note: S.J.-Single Journey

The figures shown in Table 8.1 are Real time traffic data on project road for the past eleven years and the growth rate is calculated to be 10.06%. It is pertinent to note that the figures given in table 8.1 are inclusive of exempted /non tollable traffic.

The figures shown in Table 8.2 are actual tollable traffic based on which the toll revenue collected and is excluding of exempted/non tollable traffic. For the realistic estimate of the traffic growth and projected revenue calculation actual traffic based on which FY 2019-20 revenue collected (table 8-2) is considered as a base year traffic and the projected traffic growth rate is restricted to 5%.

Based on the base year traffic and growth rate as explained above traffic projections from year 2019-20 to till end of Concession period toll plaza wise are calculated and summarized below in Table 8.3.

**Table 8.3: Projected traffic**

FY Year	AADT in Vehicles					CVPD* (Veh.)	AADT in PCU					CVPD* (PCU)	Remarks
	Car	LCV	BUS	2-AT	MAV		Car	LCV	BUS	2-AT	MAV		
	PCU Factor						1	1.5	3	3	4.5		
2020	732	278	52	32	142	504	732	417	157	96	639	1309	Actual
2021	768	292	55	34	149	530	768	438	165	101	671	1375	Projected
2022	807	307	58	35	157	556	807	460	173	106	704	1443	Projected
2023	847	322	61	37	164	584	847	483	182	111	740	1516	Projected
2024	889	338	64	39	173	613	889	507	191	116	777	1591	Projected
2025	934	355	67	41	181	644	934	533	201	122	815	1671	Projected
2026	981	373	70	43	190	676	981	559	211	128	856	1754	Projected
2027	1030	391	74	45	200	710	1030	587	221	135	899	1842	Projected
2028	1081	411	77	47	210	745	1081	616	232	142	944	1934	Projected

FY	AADT in Vehicles					CVPD*	AADT in PCU					CVPD*	Remarks
2029	1135	432	81	50	220	783	1135	647	244	149	991	2031	Projected
2030	1192	453	85	52	231	822	1192	680	256	156	1041	2132	Projected
2031	1251	476	90	55	243	863	1251	714	269	164	1093	2239	Projected
2032	1314	500	94	57	255	906	1314	749	282	172	1147	2351	Projected
2033	1380	525	99	60	268	951	1380	787	297	181	1205	2469	Projected

\*CVPD: Commercial vehicle per day (LCV+BUS+2 AT+MAV)

### 8.3 Toll Revenue Calculations

The toll revenue for horizon year is calculated based on the input from the above data, actual toll rates collected on base year (2019-20), with Traffic growth, WPI growth and toll efficiency has been assumed 5%, 4% and 100% respectively and other inputs considered in revenue calculations is given in table 8.4

**Table 8.4: Toll Revenue inputs**

Particular	Toll plaza
Location	Km.21+800
4 lane length in km	0
2 lane length in km	44
Agreement Date	30-06-2007
Appointed Date	27-11-2007
Concession period	25
Commercial operation date	30-01-2009
Concession End Date	26-11-2032
Traffic study year	2020
<b>Vehicle Type</b>	<b>AADT (Veh.)</b>
Car/Jeep/Van	732
2-axle Bus	278
LCV/LGV	52
2A-Truck	32
MAV (2A-6A)	142
Growth Rate (%)	5%

The split trip type based on the available toll data from Concessionaire is used to derive the annual toll collection for each plaza. The revenue estimated and presented below. Detailed toll revenue estimation is given in **ANNEXURE 4**.

**Table 8.5 Toll Revenue Estimated (in Rs. lakhs)**

Financial Year	Annual Revenue of TP @ Km.21+800	Remarks
2019-20	432.526	Actual
2020-21	472.664	Projected
2021-22	515.110	Projected

Financial Year	Annual Revenue of TP @ Km.21+800	Remarks
2022-23	560.413	Projected
2023-24	609.593	Projected
2024-25	661.851	Projected
2025-26	717.811	Projected
2026-27	778.104	Projected
2027-28	843.836	Projected
2028-29	912.324	Projected
2029-30	986.189	Projected
2030-31	1064.684	Projected
2031-32	1148.563	Projected
2032-33	814.483	240 Days

## CHAPTER 9. OPERATION AND MAINTENANCE

### 9.1 General

As per Chapter XVI of the Concession Agreement (CA), the Concessionaire will operate and maintain the Project road by itself or through O & M Contractors and comply with specification and standards, and other requirements set forth in the Agreement, Good Industry Practice, Applicable Laws, applicable permits and manufacturer guidelines and instructions with respect to toll system.

### 9.2 Inspection

Inspection system followed is illustrated as divided into the following 3 types.

- **Visual Inspection:** Visual inspections are done at frequent intervals, and are intended to determine any potential traffic hazards to the road user or hampering the aesthetics of the project stretch. Visual inspections are meant to identify defects that constitute an imminent or immediate hazard to the public.
- **Detailed Inspection:** Detailed Inspections often require some measuring instruments, are done less frequently and are intended more towards determining performance and behavior of various elements. These inspections also indicate, need (if any) for thorough inspections. Detailed inspections are carried out primarily to establish programs of periodic or major maintenance tasks, and enhancement requirements not requiring urgent execution
- **Thorough Inspection:** Thorough Inspections are aimed at finding the cause and remedy of specific problems and at specific locations. Specialist's inspections are required once in a while. Thorough Inspections shall be carried out with highly sophisticated instruments

The inspection procedures will assist in identifying the need for replacement or renewal under planned program of maintenance and rehabilitation. The elements viz pavement, drainage, shoulders / slopes / Earthworks, structures and buildings are covered.

Maintenance program will be submitted to authority not later than 45 days prior to each accounting year.

### 9.3 Operations

#### Traffic Flow Operation & Traffic Management Plan

Following are the obligations of the Concessionaire for the regular and emergency operations of the Project road and Project Facilities.

- 1 Permitting smooth and uninterrupted flow of traffic during normal operating conditions.
- 2 Functioning of the Toll System including charging and collecting the fees from the road user in accordance with the CA.
- 3 Carrying out preventive and periodic maintenance of the Project road;
- 4 Undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;
- 5 Undertaking major maintenance such as resurfacing of pavements, repairs to structures, and repairs and refurbishment of tolling system and other equipment;



- 6 Functioning of the lighting system;
- 7 Functioning of the Patrolling System
- 8 Functioning of rescue and medical aid services
- 9 Ambulance as and when required
- 10 Functioning of the Project Facilities
- 11 Administrative, Operational and Maintenance Base Camp
- 12 Truck Lay byes
- 13 Pickup Bus stops / Bus Bays
- 14 Protection of the environment and provision of equipment and materials therefor;
- 15 Operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project road
- 16 Complying with Safety Requirements in accordance with Chapter XVIII.

#### **9.4 Operation of Toll Plaza**

There are two lanes in each direction operating at toll plaza, middle lanes are used by Car/LCV for collecting toll and extra wide lanes are utilized by wide vehicles like Bus/Trucks/Tractors and toll exempted vehicles. The cash collected is deposited on daily basis to the escrow account. In case of ETC system Toll collection is connected with Network system and directly deposited into the Escrow account

#### **9.5 Maintenance of Project road**

The maintenance methodology and yearly maintenance programme will guide the Maintenance team to undertake the routine & periodic maintenance works of the Project Facilities. This programme is the basic indicator of the intended works to be carried out by the Maintenance Team over a period of one year. Road maintenance can be carried out in four ways as listed below.

1. Preventive Maintenance
2. Routine Maintenance
3. Periodic Maintenance
4. Special repairs

##### **Preventive Maintenance**

Preventive maintenance is an organized, systematic process of applying a series of preventive treatments over the life of the pavement to minimize life cycle costs.

The strategy of applying periodic treatments at appropriate times in a pavement's life is economical than applying treatment at the end of pavement's life. Preventive maintenance is designed to retard pavement deterioration. Regular preventive maintenance will be carried out to ensure adherence to the Design Requirements and specifications throughout the Concession period.

The flexible pavement is in good condition and hence doesn't require any immediate or preventive interventions.

##### **Routine Maintenance:**

Routine maintenance, which involves repairing of cracks, replacement of safety girders along the highway, clearance of debris following accidents, ensuring functionality of sign posts, maintenance of a security set-up, and such other activities.

## Periodic Maintenance

In contrast to preventive maintenance treatments, periodic maintenance treatments are ideally applied on pavements to improve surface integrity and waterproofing, or to improve skid resistance, without increasing the strength of the pavement significantly. They are sometimes referred to as “functional overlays,” as they are intended to restore or enhance the ability of the roadway to serve its purpose (function), but do not increase the load-carrying capabilities. If the pavement failure is more and demands for a “structural overlay” they are intended to increase load-carrying capabilities of the project road.

The details of periodic maintenance schedule are given below.

**Table 9.1: Schedule and status of for Periodic Maintenance**

S. No.	Major Maintenance	Schedule	Status at site
1	1st Periodic Maintenance	2016	Completed
2	2 <sup>nd</sup> Periodic Maintenance Phase I	2021	Planned to execute
3	2 <sup>nd</sup> Periodic Maintenance Phase II	2022	Planned to execute
4	3 <sup>rd</sup> Periodic Maintenance	2028	Planned to execute
5	4 <sup>th</sup> Periodic Maintenance	2033	Planned to execute

## Special Repairs

The group of activities performed to restore the roadway following damage due to natural calamities such as heavy floods, sand storms, hurricanes, cyclones, earthquakes or landslides which shall be unpredictable. The affected Project road shall be rectified, and the system shall be restored to function as per programme prepared in consultation with Independent Engineer. Typical activities include,

- Culvert and bridge repairs
- Retaining wall repairs and construction;
- Construction of Diversions;
- Floodway repairs; and
- Flood damage restoration works, etc.

## 9.6 Review of Test Reports:

### 9.6.1. Bump Integrator Test:

Maintenance of road is dependent on several factors, one of which is the condition of Pavement surface. As such Roughness is the measurement of the riding quality, which in turn is the effect of total surface deterioration. Bump Integrator (BI) is one of the equipment needed for roughness measurement. The roughness of pavement surface is designated as uneven index value and expressed as surface roughness from which the condition of the road can be assessed.

The test was conducted in the month of January 2020. As per Schedule M of the CA, If the value exceeds 3000mm in a KM, the stretch shall be rectified. No stretch exceeded the permissible limit of 3000 mm in the Project road.

### 9.6.2. Benkelman Beam Deflection (BBD):

The performance of flexible pavement is closely related to the elastic deflection of pavement under the wheel loads. The deformation or elastic deflection under a given load depends upon subgrade soil type, its moisture content and compaction, the thickness and the quality of pavement courses, drainage conditions, pavement surface temperatures etc. BBD method is widely followed to evaluate the structural capacity of pavement and for estimation and design of overlay for strengthening of any weak pavement.

Concessionaire has conducted the test in January 2020. The test report has been verified and found within permissible limits as per IRC 81.

### 9.7 O&M Forecast

The O&M costs were estimated based on various parameters of CA, design reports and BBD/BI test results. The cost summary is given below, and detailed cost estimations are given in **ANNEXURE 5**.

**Table 9.2 Proposed Plan for Future Operation & Maintenance Cost (In Crores)**

Year	Routine maintenance ( In crores)	Incidental maintenance ( In crores)	Periodic / Major maintenance	Operational Expenses	Total cost per year
2020	0.149	0.126		0.45	<b>0.72</b>
2021	0.153	0.130	1.81	0.46	<b>2.55</b>
2022	0.158	0.134	4.36	0.47	<b>5.13</b>
2023	0.162	0.138		0.49	<b>0.79</b>
2024	0.167	0.142		0.50	<b>0.81</b>
2025	0.172	0.146		0.52	<b>0.84</b>
2026	0.177	0.151		0.53	<b>0.86</b>
2027	0.183	0.155		0.55	<b>0.89</b>
2028	0.188	0.160	7.31	0.57	<b>8.22</b>
2029	0.194	0.165		0.58	<b>0.94</b>
2030	0.200	0.170		0.60	<b>0.97</b>
2031	0.206	0.175		0.62	<b>1.00</b>
2032	0.212	0.180		0.64	<b>1.03</b>
2033	0.143	0.122	8.39	0.43	<b>9.09</b>
<b>Total</b>	<b>2.463</b>	<b>2.094</b>	<b>21.87</b>	<b>7.41</b>	<b>33.84</b>

## **CHAPTER 10. REVIEW OF CONCESSION AGREEMENT**

### **10.1 Scope of Work (Chapter II)**

Chapter II provides the scope of work, which includes the following.

- Construction of the Project road on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of Project Facilities as specified in Schedule-C, and in conformity with the Specifications and Standards set forth in Schedule-J.
- Operation and maintenance of the Project road in accordance with the provisions of Concession Agreement (CA)
- Performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this CA and matters incidental

### **10.2 Letter of Award**

After evaluation of the bids received, Authority will select one bidder considering their score in technical and financial bids. Further Authority will issue a Letter called LOA (Letter of Award) to the selected bidder requiring the execution of agreement within stipulated time.

### **10.3 Conditions precedent (Chapter IV)**

#### **Conditions precedent to be fulfilled by the Authority**

- Providing adequate Right of Way
- Providing necessary approvals as per the CA

#### **Conditions precedent to be fulfilled by the Concessionaire**

- Provide performance security to the Authority as per Cl.5.1
- Executed and procured Escrow Agreement & Substitution Agreement
- Procured all applicable permits specified in Schedule A
- Executed financing Agreements and delivering 3 copies of Financial Package
- Delivered to the Authority confirmation in original of the correctness of their representations and warranties set forth in Agreement and a legal opinion from the legal opinion from the legal counsel of the Concessionaire

### **10.4 Performance Security (Chapter V)**

- The Concessionaire shall submit the Performance security to the Authority within 180 days from the date of the Agreement,
- The Performance security shall remain in force and effect for a period of one year from the Appointed Date

Performance Security shall be released upon the Concessionaire expending on Project Construction an Aggregate sum that is not less than 50% of the Total Project Cost and 100% of its equity as certified by IE and auditors of concessionaire.

### 10.5 Major Obligations of the Concessionaire (Chapter VII)

- The Concessionaire shall obtain necessary permits in conformity with the applicable laws
- Procure appropriate rights for obtaining materials
- Perform and fulfil its obligations under financing Agreements
- To make reasonable efforts to facilitate the acquisition of land required for execution
- Transfer the Project road upon termination of the CA

### 10.6 Provisional Completion Certificate (Chapter XIII)

- A section of the project shall be deemed to be completed to open for traffic only when the completion certificate or provisional certificate for that section is issued in accordance with the CI 15. Copy enclosed at **ANNEXURE-6**.

### 10.7 Change of scope (Chapter XV)

No change of scope proposals was initiated during construction period.

### 10.8 O&M Obligations of the Concessionaire (Chapter XVI)

- Permitting safe, smooth and uninterrupted flow of traffic on the Project road
- Collecting and appropriating the Fee
- Minimizing the disruption to traffic in the event of accidents
- Undertaking routine maintenance including prompt repairs of pot holes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices
- Undertaking major maintenance such as resurfacing of pavements, repairs and refurbishments of tolling system and other equipment
- Preventing any unauthorized use of the Project road.
- Protection of environment and provision of equipment and materials
- Complying with safety Requirements in accordance with the provisions of the CA.

### 10.9 Project monitoring Fee

As per clause 6.10.3, Project Monitoring fee shall be paid by the Concessionaire at the rate of 1% of annual toll collected for the first ten years. Thereafter 2% from 11<sup>th</sup> to 15<sup>th</sup> year and 3% for remaining concession period.

### 10.10 Maintenance Requirements (Clause 16.2)

The Contractor shall procure that at all times during the Operations period; the Project road conforms to the maintenance requirements set forth in Schedule M of CA (The “**Maintenance Requirements**”).

### 10.11 Maintenance Manual (Clause 16.2)

No later than 180 (one hundred and eighty days prior to the Scheduled Two Laning Date, the Contractor shall, in consultation with the Independent Engineer, evolve a repair and maintenance manual (the “**Maintenance Manual**”) for the regular and preventive maintenance of the Project in conformity with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority

and 2 (two) copies to the Independent Engineer. The Maintenance Manual shall be revised and updated once every 3 (three) years and the provisions of this Clause shall apply, mutatis mutandis, to such revision.

#### **10.12 Maintenance Programme (Clause 16.3)**

- The Concessionaire has been submitting the Annual Maintenance Programme regularly as per the above clause.

#### **10.13 Monthly status reports (Chapter XVII)**

During the Operation Period, the Contractor shall, no later than 7 (seven) days after the close of each month, furnish to the Concessionaire, the Authority and the Independent Engineer a monthly report stating in reasonable detail the condition of the Project including its compliance or otherwise with the Maintenance Requirements, Maintenance Manual, Maintenance Program and Safety Requirements, and shall promptly give such other relevant information as may be required by the Concessionaire, Independent Engineer or the Authority. In particular, such report shall separately identify and state in reasonable detail the defects and deficiencies that require rectification.

#### **10.14 Monthly Fee Statement (Clause 17.5)**

During the Operations Period, the Contractor shall furnish to the Concessionaire and the Authority, if required by the Contractor, within 7 (seven) days of completion of each month, a statement of Fee.

#### **10.15 Grant/Subsidy (Chapter XXII)**

MPRDC agrees to pay to the concessionaire grant or subsidy as cash supported by way of outright grant equal to the sum set forth in the bid of the bidder and accepted by MPRDC namely Rs. 9.9 Crores in accordance with the province of this class-XXII.

#### **10.16 Force Majeure (Chapter XXVIII)**

Non-political event mean act of God or events beyond the reasonable control of the affected party.

#### **10.17 Change in Law (Chapter XXXI)**

If as a result of change in law, the concessionaire suffers an increase in costs or reduction in revenues or other financial burden, the aggregate financial effect of which exceeds Rs. 35 Lacs or 0.5% of the realizable fee whichever is higher.



## CHAPTER 11. INSURANCE

### 11.1 Details of Insurance

As per clause 26.1 of the Concession Agreement, the Concessionaire shall affect and maintain at its own cost during the Operation Period such insurances for such maximum sums as may be required under the Financing Agreements and the Applicable laws, and such insurances as may be necessary or prudent in accordance with Good Industry Practice.

Accordingly, the Concessionaire has procured the following insurances for mitigating the risks. Copy of Insurances are enclosed at **ANNEXURE-7**.

**Table 11.1 Insurance Details**

Name of the Policy	Insurance Company	Policy No	Effective Period		Description of the Property
			From	To	
Electronic Equipment Insurance Policy schedule	Oriental Insurance Company Ltd	171200/44/2021/50	7.10.2020	6.10.2021	EEl Equipment installed in the Project Highway
Fire Industrial All Risk Policy	Oriental Insurance Company Ltd	171200/11/2021/395	4.02.2021	3.02.2022	Roads Inclusive of Service Road, Structures, Bridges (Major, Minor, Railway, River Including all Other Bridges) , Underpasses, Culverts, drainages, Utilities, Slabs Box, Causeways, Machineries
Standard Fire & Special Perils Policy	Oriental Insurance Company Ltd	171200/11/2021/394	4.02.2021	3.02.2022	Toll Plaza Building & Booths, TMS, HTMS, Office & IT Equipment, Road Furniture, Fixtures, Electrical Poles, Lighting & Fittings, Signboard, Safety/concrete/protection barrier, gantry various equipment.
Employees Compensation Insurance Policy	HDFC ERGO General Insurance Company Ltd	311420338797690000	19.5.2020	18.05.2021	All categories of Employees of the Contractor & sub-contractor engaged in the Project

## **CHAPTER 12. CONCLUSION**

### **12.1 General**

Based on detailed site inspection, review of various documents and reports as described in the preceding chapters technical over view of the Project is provided below.

### **12.2 Pavement Condition**

The overall project pavement condition is good. RCC drains are constructed in Built up locations and earthen drains in rural locations resulting in, effective drainage system along the project road. Shoulder condition is fair.

### **12.3 Condition of Structures**

General condition of Bridges is good. No major structural defects were noticed. General condition of Culverts is good. Observed vegetation growth in vents of Box and Hume Pipe culverts and they are getting cleared during regular maintenance period.

### **12.4 Traffic Growth**

Based on real time traffic, the traffic growth observed is 10.06%, whereas 5% growth is considered while evaluating forecast of traffic volumes.

### **12.5 Project Facilities:**

Toll Plaza is located at Km. 21+800 and is operational. Toll Plaza is operated by ETC Toll collection system and connected by network system monitored in administrative building. Medical Aid posts found in functional condition. Avenue plantation and landscaping at Toll Plaza is provided and being maintained.

### **12.6 Road safety**

Pavement marking is in fair condition and number of sign boards are provided as per IRC SP 73-2007. The condition of signboards & other road appurtenances like metal beam crash barriers is fair.

### **12.7 Maintenance**

- The routine maintenance being carried out by O&M contractor effectively, based on documents reviewed, time to time observations made by client/Authority, being complied and no outstanding NCR's are to be attended as on date.
- Major maintenance (MM) /Periodic maintenance will be carried out in 2021, 2028 and 2033.

### **12.8 Epilogue**

The project is designed and constructed as per the stipulated specifications besides maintenance work, being carried out timely and effectively to keep the road in traffic worthy and safe at all times.

## ANNEXURES

**Annexure 1: Pavement Condition**

Condition: G=Good, F=Fair, P=Poor &amp; VP=Very poor    Rutting: M=Moderate &amp; S=Severe    Drain: LD=Lined open Drain, ULD=Unlined Drain, CD=Covered Drain, NO=No drain, PF=Partial Function, F= Functional

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair / Poor)	Road Side Drain		Remarks
From	To	Cracking (%)	Raveling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P /VP)		Composition	Condition (Fair / Poor/ Damaged)		Type (LD/ULD/CD/NO)	Condition (PF/F)***	
0+000	1+000								G		E	F	F	ULD	PF	
1+000	2+000								G		E	F	F	ULD	PF	
2+000	3+000								G		E	F	F	ULD	PF	
3+000	4+000								G		E	F	F	ULD	PF	
4+000	5+000								G		E	F	F	ULD	PF	
5+000	6+000								G		E	F	F	ULD	PF	
6+000	7+000								G		E	F	F	ULD	PF	
7+000	8+000								G		E	F	F	ULD	PF	
8+000	9+000								G		E	F	F	ULD	PF	
9+000	10+000								G		E	F	F	ULD	PF	
10+000	11+000								G		E	F	F	ULD	PF	
11+000	12+000								G		E	F	F	ULD	PF	
12+000	13+000								G		E	F	F	ULD	PF	
13+000	14+000								G		E	F	F	ULD	PF	
14+000	15+000								G		E	F	F	ULD	PF	
15+000	16+000								G		E	F	F	ULD	PF	
16+000	17+000								G		E	F	F	ULD	PF	
17+000	18+000								G		E	F	F	ULD	PF	
18+000	19+000								G		E	F	F	ULD	PF	
19+000	20+000								G		E	F	F	ULD	PF	
20+000	21+000								G		E	F	F	ULD	PF	
21+000	22+000								G		E	F	F	ULD	PF	
22+000	23+000								G		E	F	F	ULD	PF	
23+000	24+000								G		E	F	F	ULD	PF	
24+000	25+000								G		E	F	F	ULD	PF	
25+000	26+000								G		E	F	F	ULD	PF	
26+000	27+000								G		E	F	F	ULD	PF	
27+000	28+000								G		E	F	F	ULD	PF	
28+000	29+000								G		E	F	F	ULD	PF	
29+000	30+000								G		E	F	F	ULD	PF	
30+000	31+000								G		E	F	F	ULD	PF	
31+000	32+000								G		E	F	F	ULD	PF	
32+000	33+000								G		E	F	F	ULD	PF	
33+000	34+000								G		E	F	F	ULD	PF	
34+000	35+000								G		E	F	F	ULD	PF	
35+000	36+000								G		E	F	F	ULD	PF	

Condition: G=Good, F=Fair, P=Poor & VP=Very poor    Rutting: M=Moderate & S=Severe    Drain: LD=Lined open Drain, ULD=Unlined Drain, CD=Covered Drain, NO=No drain, PF=Partial Function, F= Functional

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair / Poor)	Road Side Drain		Remarks
From	To	Cracking (%)	Raveling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P /VP)		Composition	Condition (Fair / Poor/ Damaged)		Type (LD/ULD/CD/NO)	Condition (PF/F)***	
36+000	37+000								G		E	F	F	ULD	PF	
37+000	38+000								G		E	F	F	ULD	PF	
38+000	39+000								G		E	F	F	ULD	PF	
39+000	40+000								G		E	F	F	ULD	PF	
40+000	41+000								G		E	F	F	ULD	PF	
41+000	42+000								G		E	F	F	ULD	PF	
42+000	43+000								G		E	F	F	ULD	PF	
43+000	44+000								G		E	F	F	ULD	PF	



**Annexure 2: Condition of Structures**

S. No.	Chainage (Km.)	Type of Structure	Substructure	Superstructure	Expansion Joint	Approach slabs	Drainage spouts	Wearing coat	Bearings	Quadrant Pitching
1	5+400	Major Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Vegetation observed
2	7+863	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
3	16+095	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	Good	Good
4	22+333	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
5	27+098	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good

**Annexure 3: Condition of Box/slab Culverts**

S. No.	Chainage (Km.)	Box/slab	Return wall	Quadrant pitching	Toe wall	Aprons
1	0+400	Good	Good	Fair	Fair	Fair
2	5+700	Good	Good	Fair	Fair	Fair
3	6+558	Good	Good	Fair	Fair	Fair
4	10+558	Good	Good	Fair	Fair	Fair
5	23+150	Good	Good	Fair	Fair	Fair
6	30+440	Good	Good	Fair	Fair	Fair
7	31+650	Good	Good	Fair	Fair	Fair
8	31+950	Good	Good	Fair	Fair	Fair
9	32+346	Good	Good	Fair	Fair	Fair
10	32+909	Good	Good	Fair	Fair	Fair
11	34+160	Good	Good	Fair	Fair	Fair
12	35+970	Good	Good	Fair	Fair	Fair
13	36+240	Good	Good	Fair	Fair	Fair
14	36+535	Good	Good	Fair	Fair	Fair
15	39+762	Good	Good	Fair	Fair	Fair

**Condition of Hume Pipe Culverts**

S. No.	Chainage	Hume Pipe	Head wall	Quadrant pitching	Toe wall
1	2+450	Good	Fair	Fair	Fair
2	3+440	Good	Fair	Fair	Fair
3	10+250	Good	Fair	Fair	Fair
4	12+500	Good	Fair	Fair	Fair
5	28+470	Good	Fair	Fair	Fair
6	28+820	Good	Fair	Fair	Fair
7	28+980	Good	Fair	Fair	Fair
8	29+240	Good	Fair	Fair	Fair
9	29+100	Good	Fair	Fair	Fair
10	30+550	Good	Fair	Fair	Fair
11	37+600	Good	Fair	Fair	Fair
12	38+650	Good	Fair	Fair	Fair
13	40+850	Good	Fair	Fair	Fair
14	41+320	Good	Fair	Fair	Fair
15	1+150	Good	Fair	Fair	Fair
16	6+900	Good	Fair	Fair	Fair
17	13+062	Good	Fair	Fair	Fair
18	18+880	Good	Fair	Fair	Fair

S. No.	Chainage	Hume Pipe	Head wall	Quadrant pitching	Toe wall
19	19+920	Good	Fair	Fair	Fair
20	24+940	Good	Fair	Fair	Fair
21	27+420	Good	Fair	Fair	Fair
22	39+220	Good	Fair	Fair	Fair
23	42+170	Good	Fair	Fair	Fair
24	12+060	Good	Fair	Fair	Fair
25	18+450	Good	Fair	Fair	Fair
26	27+823	Good	Fair	Fair	Fair
27	41+850	Good	Fair	Fair	Fair

#### Annexure 4: Toll Revenue Calculations

##### 1. Tollable Traffic considered for Toll Revenue in No.s (AADT):

**Table-1: Details of Tollable Traffic (Base Year 2019-20)**

Vehicle Type	Traffic (AADT)
	Km.21+800
Car	732
LCV	278
Bus	52
Truck	32
MAV	142

##### 2. Traffic Growth Rates:

**Table-2: Details of Growth rates adopted (%)**

Year	Car	LCV	BUS	Truck	MAV
2019-25	5.00	5.00	5.00	5.00	5.00
2025-30 Beyond	5.00	5.00	5.00	5.00	5.00

##### 3. Trip Distribution Ratio as per the Toll Data:

**Table-3: Details of Trip Distribution (Base Year 2019-20)**

Vehicle Type	Single Trip	Local Return (Commercial)	Local Return (personal)	Total
Car	88%	8%	4%	100%
LCV	88%	12%		100%
Bus	93%	7%		100%
Truck	81%	19%		100%
MAV	90%	10%		100%

##### 4. Toll Rates :

**Table-4: Details of Toll Fee (Base Year 2019-20)**

Vehicle Type	Toll Fee at Km. 21+800
Car	35
LCV	84
Bus	174
Truck	209
MAV	417

**Toll Plaza-1 Revenue:**

Years	Car/Jeep	LCV	Bus	Trucks	MAV	Total in Rs.	Total in Lakhs.	Cumulative Lakhs.
2019-20	9263166	8025696	3215346	2200230	20548139	43252577	432.526	432.526
2020-21	10144767	8780656	3510499	2404553	22425935	47266409	472.664	905.190
2021-22	11043152	9551444	3830012	2623808	24462622	51511038	515.110	1420.300
2022-23	12006015	10377359	4165130	2845872	26646914	56041289	560.413	1980.713
2023-24	13037556	11334759	4532134	3097343	28957494	60959286	609.593	2590.306
2024-25	14142236	12285545	4925426	3366846	31465048	66185100	661.851	3252.157
2025-26	15324790	13303072	5346716	3655556	34150963	71781098	717.811	3969.968
2026-27	16590244	14475881	5788620	3964720	36990941	77810407	778.104	4748.072
2027-28	18105469	15644259	6271009	4295662	40067199	84383598	843.836	5591.908
2028-29	19561127	16893284	6787166	4632225	43358605	91232408	912.324	6504.232
2029-30	21117086	18325624	7328609	5010144	46837464	98618926	986.189	7490.421
2030-31	22779739	19756566	7918413	5414275	50599408	106468400	1064.684	8555.105
2031-32	24555864	21284788	8548876	5846293	54620454	114856274	1148.563	9703.668
2032-33	26452652	23029334	9210257	6307978	58869040	81448281	814.483	10518.151



**Annexure 5: Operation & Maintenance cost**  
**Routine Maintenance cost for 1 year**

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
1	General Cleaning in Carriageway & Shoulders Rural area	Monthly	Km	44	12	4	350	739,200	04 Nos of Labour
2	General Cleaning in Carriageway & Shoulders Urban area	Twice in a month	kms	1	24	4	350	33,600	04 Nos of Labour
3	Watering in Median Plants	Once in Week	Km	1	52	1	1939	100,828	01 Nos of Labour
6	ROW Cleaning	Half yearly	Km	22	2	5	350	77,000	5 Nos of labour per KM (50% of the Project length)
7	Cleaning of Culverts	Half yearly	Nos	39	2	2	650	101,400	3 Nos of Labour along with JCB or Excavator
8	Road Furniture Cleaning	Quarterly	Km	44	4	2	350	123,200	02 Nos of Labour
10	General Cleaning in Building & Facilities	Daily	Nos	1.00	6	60	350	126,000	02 Nos of Labour for 30 days
11	Bridges	Half yearly	Nos	3	2	2	350	4,200	02 Nos of Labour for removal of vegetation/Structure
								<b>1,305,428</b>	
	<b>EQUIPMENT SUPPLY</b>							-	
1	TRUCK TIPPER 6-8 CUM CAPACITY	Monthly	Nos	1	12	1	50000	50,000	(2000000 is the cost of vehicle, considering 10% Rental per year) including maintenance

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
2	Toll plaza AMC	Yearly	Nos		12	1	5000	60,000	10000/month
								<b>110,000</b>	
1	Consumables for Medical Aid Post and Ambulance	Monthly	Nos	12		1	2500	30000	2500 Per month for per set (Per set - Per toll plaza)
2	Consumables for Route Patrolling & Crane	Monthly	Nos	12		1	2500	30000	2500 Per month for per set (Per set - Per toll plaza)
								<b>70,000</b>	
								<b>1,485,428.00</b>	

## Incidental cost for 1 year

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
1	Road marking	Half yearly	Sqm	1	1	1027	516	529,932	10 % of Total Project length on B/S for 1 year
2	Carriageway Maintenance (Pot Holes etc )	Yearly	Sq.m	1	1	277	168	46,536	5% of Flexible Pavement
3	Maintenance of Earthen Shoulder	Half yearly	Cum	1	3	660	225	445,500	5% of total Shoulder length throughout the project
4	Sign Board	Quarterly	Km	1	1	13	4000	52,000	2.5 % of Total sign boards per half year (considered 500 Nos )
5	MBCB	Monthly	RMT			37.5	2400	90,000	2.5% of Total qty per year - (considered 2400 per number)
6	Mile Stone ( KM Stone/ HM Stone / ROW stone etc.)	Quarterly	Nos	44	4	11	2250	99,000	5 % of total stones per year (unable to understand the backup)
	<b>Total amount for 1 Year</b>							<b>1,262,968</b>	

## Operational Expenses

S. No.	PARTICULARS	Amount
1	Man Power	₹ 3,432,000
2	Fuel for Generator & Vehicles	₹ 600,000
3	Electricity	₹ 330,000
4	Stationary	₹ 10,000
5	Replacement of Electrical Fixtures	₹ 20,453
6	Refurbishment of Toll Plaza Equipment	₹ 75,000
	<b>Total Amount</b>	<b>₹ 4,467,453</b>

## Summary of Major maintenance

Description	Due date	Base cost	Esc Period	Escallation Rate per Year	Cost of MMR on due date @ 3% Escalation	In crores
Date of Estimation	20-01-2021					
1st Major Maintenance - Highway	01-04-2021	1,80,28,365	0.20	3.0%	1,81,36,535	1.81
1st Major Maintenance - Highways	01-04-2022	4,20,66,185	1.20	3.0%	4,35,80,568	4.36
2nd Major Maintenance - Highways	01-04-2028	6,00,94,550	7.20	3.0%	7,30,74,973	7.31
2nd Major Maintenance - Highways	01-04-2033	6,00,94,550	13.20	3.0%	8,38,91,992	8.39
				<b>Total</b>	<b>₹ 21,86,84,067</b>	<b>21.87</b>

## Major maintenance BOQ

S. No.	DESCRIPTION	Unit	QUANTITY	RATE	AMOUNT
	<b>Pavement (Asphalt &amp; Concrete)</b>				
1	Providing and applying tack coat with Rapid Setting Bitumen Emulsion using emulsion pressure distributor on the prepared bituminous/granular surface cleaned with			-	

S. No.	DESCRIPTION	Unit	QUANTITY	RATE	AMOUNT
	mechanical broom, Ref. to Technical specification 503.				
(a)	On Bituminous surface @ 2.0 kg to 3.0 kg/10 sq.m.	Sqm	2,46,500.00	14.00	34,51,000
2	Providing and laying bituminous concrete using a batch type Hot Mix Plant using crushed aggregates of size (table 500-17), premixed with VG Grade Bitumen and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers, Pneumatic Tyre Rollers to achieve the desired compaction as per Technical specification clause No. 507 and mix design conforming the IRC -111 and IRC 37.	Cum	5,546.25	7,480.00	4,14,85,950
3	Micro surfacing	Sqm	61,625.00	160.00	98,60,000
	<b>Total</b>				<b>5,47,96,950</b>
	<b>Junctions, Traffic Signs Marking and Other Appurtenances</b>			-	
1	Providing and laying of <b>cement concrete kerb without channel</b> (M-20 Grade) over WMM foundation using kerb laying machine & proper curing complete, as per drawing & technical specification clause no.409, 1700 and as per the instructions of Employer's representative. - <b>Consider 5% for construction period.</b>	Rmt	-	380.00	
2	Providing and laying lane markings of hot applied thermoplastic compound 2.5 mm thick including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes, Ref. to Technical specification 803.	Sqm	10,266.67	516.00	52,97,600
3	Road Studs	Nos	-	750.00	
	<b>Total</b>			-	<b>52,97,600</b>
	<b>Grand Total</b>				<b>6,00,94,550</b>

**Annexure 6: Provisional Completion Certificate**



**MADHYA PRADESH ROAD DEVELOPMENT CORPORATION LIMITED**

(Govt. of M.P. Undertaking)

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Website : www.mprdc.nic.in.

No. MPRDDC/BOT/M-S/2009/2098  
Bhopal, dated 27 June, 2009

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that M/s Suryavanshi Infrastructure Pvt. Ltd. Bhopal were awarded the work of Development, Construction, Up-gradation and Maintenance of Mandsaur-Sitamau Road on BOT basis. M/s Suryavanshi Infrastructure Pvt. Ltd. appointed M/s Dilip Buildcon Pvt. Ltd. as their Engineering, Procurement & Construction (EPC) Contractor for construction of the project. The project was provisionally completed on 05.02.2009 and toll has started. As per the Statutory Auditor's certificate, Concessionaire has spent an amount of Rs. 32.08 crores on construction of the project.

This certificate is issued on the request of the company for the purpose of tendering, pre-qualification in other projects/bids only.

  
(Neeraj Vijay)  
Dy.General Manager



**Annexure 7: Insurance**

This Document is Digitally Signed

Signer: ATUL JERATH  
Date: Wed, Nov 11, 2020 14:28:30 IST  
Location: NOIDA  
Reason: Signing Policy for OICL

**ELECTRONIC EQUIPMENT INSURANCE POLICY SCHEDULE**

<b>Policy No</b> :	171200/44/2021/50	<b>Prev Policy No</b> :	
<b>Cover Note No</b> :	ER1700203543	<b>Cover Note Dt</b> :	07/10/2020
<b>Insured's Code</b> :	116612568	<b>Issuing Office Code</b> :	171200
<b>Insured's Name</b> :	Suryavanshi Infrastructure Pvt. Ltd. (GSTIN: 23AAKCS8735P1ZL)	<b>Issuing Office Name</b> :	CBU Vadodara (GSTIN: 24AAACT06)
<b>Address</b> :	Plot No 5, Inside Govind Naryan Singh Gate, Chuna Bhatti, Kolar Road, Bhopal, Madhya Pradesh, 462016	<b>Address</b> :	1st FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
<b>Tel /Fax /Email</b> :	BHOPAL/MA 462016	<b>Tel /Fax /Email</b> :	0265-2427075 / 0265-2436654 / 171200@orientalinsurance.co.in

<b>Agent/Broker Details</b>	
<b>Dev.Off.Code</b> :	
<b>Agent/Broker</b> :	LC0000000179 (1149)UNISON INSURANCE BROKING SERVICES P LTD
<b>Address</b> :	601-602, 6TH FLOOR AURAM NR VASNA, HP PETROL PUMP MARKAND DESAI RAOD VADODARA 390015 GUJARAT INDIA, MOB NO 9898295111 PHONE NO 0265- 2252274, BARODA, GUJARAT, 396007
<b>Tel/Fax/Email</b> :	0265-2252274/0265-2357445/0265-2356033/

Period of Insurance : FROM 00:00 ON 07/10/2020 TO MIDNIGHT OF 06/10/2021

Collection No & Dt : DC\_I\_IND 3214001026 - 13/10/2020 GST INVOICE NO :2419569440 UIN :0

Gross Premium : 1,323 GST : 238 Stamp Duty : 1 Total : 1,561

**RISK DETAILS**

**Section I :** EEI - EQUIPMENT

**Sum Insured :** 29,40,009

1 Location of the Risk : AS PER LIST ATTACHED  
Mandsaur- Sitamau Road (SH-14) of M.P.  
State Highway,  
BOT Group-IV Road Projects, Mandsaur, Madhya  
Pradesh- 458001  
MADHYA PRADESH - 458001

SI No.	Description of Items	Manufacturer Name	Year of Annual Manufacture	Annual Maintenance Contract	Identification No.	Escalation %	Sum Insured
1	AS PER LIST	AS PER LIST	2018		AS PER LIST		29,40,009

**Deductible / Excess for :** AS PER LIST ATTACHED

**Excess :**

- (a) For equipment with value upto Rs. 1 lakh  
1) For PC : 5% of claim amount subject to minimum of Rs.2500/-  
2) For Equipment other than PC :  
(i) Equipment (other than Winchester Drive and/or Hard Disc)- 5% of claim amount subject to a minimum of Rs.1000/-  
(ii) Winchester Drive and/or Hard Disc-10% of claim amount subject to a minimum of Rs.2500/-  
(b) For equipment with value more Rs. 1 lakh -

**Place :** -

**Date :** 12/10/2020

This is an electronically generated document (Policy Schedule).The  
Policy document duly stamped will be sent by post.

For and on behalf of  
The Oriental Insurance Company Limited

In case of any query regarding the Policy please call Toll Free No.  
1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U68010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee  
IRDA Regn. No. 556 - Now you can buy and renew selected policies online at [www.orientalinsurance.org.in](http://www.orientalinsurance.org.in)

Page 1 of 2

This Document is Digitally Signed

Signer: ATUL JERATH  
Date: Wed, Nov 11, 2020 14:28:30 IST  
Location: NOIDA  
Reason: Signing Policy for OICL

Attached to and forming part of policy number 171200/44/2021/50

2) Equipment (Other than Whole Dis-Cover) of claimable subject to minimum of Rs. 10,000/-

In case of computers, the term 'equipment' shall include the entire computer system comprising of CPU, Key boards, Monitors, Printers, Stabilizers, UPS.

**SCHEDULE OF PREMIUM**

Cover Description	Premium
TOTAL PREMIUM	1,323
ADD :IGST	238
STAMP DUTY	1
TOTAL AMOUNT	1,561

Total Sum Insured In Words : Indian Rupees Twenty-Nine Lakhs Forty Thousand Nine Only

Total Amount Paid : Indian Rupees One Thousand Five Hundred Sixty-One Only

The Insurance under this policy is extended to cover risks of (as per forms attached):

EAR - EARTHQUAKE COVER

STFI Inclusion Cover

**Excess / Deductible :**

The following minimum deductibles are applicable based on Sum Insured of the policy

The Insurance under this policy is subject to warranties & Clauses (as per forms attached) :

In the event of a claim under the policy exceeding Rs.1lac or a claim for refund of premium exceeding Rs1lac,the insured will comply with the provisions of the AML policy of the Company.The AML policy is available in all our operating Offices as well as company's website.

Communicable Disease Exclusion Clause

Exclusion-Any Direct or indirect loss by infectious or contagious disease

The insurance under this policy is subject to conditions, clauses, warranties, endorsements as per forms attached.

Warranted that in case of dishonour of premium cheque(s) the Company shall not be liable under the policy and the policy shall be void abinitio (from inception).

In witness whereof the undersigned being authorised by and on behalf of the company has/have herein to set his/their hands at CBU Vadodara (GSTIN: 24AAACT0627R2Z4) on 12TH DAY OF OCTOBER 2020

For and on behalf of  
The Oriental Insurance Company Limited

Entered By : FARHAN KHAN

Examined By : A K Pamar

Authorised Signatory

Place : -

Date : 12/10/2020

For and on behalf of  
The Oriental Insurance Company Limited

This is an electronically generated document (Policy Schedule).The Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U68010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 2 of 2

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at [www.orientalinsurance.org.in](http://www.orientalinsurance.org.in)

**FIRE INDUSTRIAL ALL RISK POLICY SCHEDULE**

<b>Policy No</b>	: 171200/11/2021/395	<b>Prev Policy No</b>	: 171200/11/2020/555
<b>Cover Note No</b>	:	<b>Cover Note Dt</b>	:
<b>Insured's Name</b>	: 104353027 - Suryavanshi Infrastructure Pvt. Ltd. (GSTIN: 23AAKCS8735P1ZL)	<b>Issuing Office</b>	: 171200 - CBU Vadodara (GSTIN: 24AAACT0627R2Z4)
<b>Address</b>	: Plot no. 5, Inside Govind Narayan Singhgate, Chunabhathi, Kolar Road, Bhopal - 462016, M.P.	<b>Address</b>	: 1st FLOOR, KIRTI TOWER, TILAK ROAD VADODARA  GUJARAT 390001
	BHOPAL 462016		
<b>Tel./Fax./Email</b>	: / / 0 / NA	<b>Tel./Fax./Email</b>	: 0265-2427075 / 0265-2436654 / 171200@orientalinsurance.co.in
<b>Dev. Officer</b>	:	<b>BROKER</b>	: LC0000000179 (1149)UNISON INSURANCE BROKING SERVICES P LTD

**Period of Insurance: FROM 00:00 ON 04/02/2021 TO MIDNIGHT OF 03/02/2022**

<b>Collection No &amp; Dt</b>	: DC_L/INDCSH 3214001387 - 04/02/2021	<b>GST INVOICE NO</b>	: 2419815016	<b>UIN</b>	: 0
<b>Gross Premium</b>	: 2,95,640	<b>GST</b>	: 53,215	<b>Stamp Duty</b>	: .5
				<b>Total</b>	: 3,48,855

**Co Insurance Details** :

S.No	Co Insurer Name	Share %
1	CBU Vadodara	60.00
2	BAJAJ ALLINZE GEN INSURANCE	40.00

**SECTION I** : IAR - STANDARD FIRE AND SPECIALS PERILS SECTION

**Location of the Risk** : Operation & maintenance of Roads, Bridges and any other property on the stretch asdescribed in  
the property to be covered  
Mandsaur- Sitamau Road, (SH-14) of M.P. State Highway, BOT Group-IV Road Projects,  
Mandsaur, Madhya Pradesh- 458001

**Deductible** :

**Risk Description** : Roads

**Block Description** : 1

SMI Description	Nature of Stock	Sum Insured
Roads Incl Service Road, Structures, Bridges (Major, Minor, Railway, River Incl all Other Bridges) , Underpasses, Culverts, drainages, Utilities, Slabs Box, Causeways, Machineries(Full desc.-As per annexure)		30,75,91,165

Cover Wise Details	Sum Insured	Premium
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**Place** :

**Date** : 04/02/2021



For and on behalf of  
The Oriental Insurance Company Limited

This is an electronically generated document (Policy Schedule).The  
Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll  
Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 1 of 4

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Attached to and forming part of policy number 171200/11/2021/395

Cover Wise Details	Sum Insured	Premium
Fire Basic Cover	30,75,91,165	1,69,175.14
STFI Cover	30,75,91,165	1,07,656.91
Earth Quake	30,75,91,165	15,379.56

SECTION III : IAR-BREAKDOWN SECTION

Item Description	Identificaton No.	Year of Make
------------------	-------------------	--------------

AS PER ANNEXURE

SMI Description	Sum Insured
Machinery Sum Insured	1,00,00,000

Cover Wise Details	Sum Insured	Premium
Breakdown Cover	1,00,00,000	2,500.00

SECTION II : IAR-FLOP SECTION

Type of Industry	: CONTINUOUS INDUSTRY	Basis of Indemnity	: OUTPUT BASIS
Indemnity Period	: 12 Months	Annual Gross Profit	: 1000000
Total Sum Insured	: 10,00,000	Time Exclusion	:

Cover Wise Details	Sum Insured	Premium
Fire LOP-Basic Cover	10,00,000	928.00

SCHEDULE OF PREMIUM

Fire Basic Cover	1,69,175.14
ADD :STFI Cover	1,07,656.91
ADD :Earth Quake	15,379.56
Fire LOP-Basic Cover	928.00
Breakdown Cover	2,500.00
TOTAL PREMIUM	2,95,640.00
ADD :IGST	53,215.00
STAMP DUTY	0.50
TOTAL AMOUNT	3,48,855.00

Sum Insured In Words :

Machinery Damage : Indian Rupees Thirty Crores Seventy-Five Lakhs Ninety-One Thousand One Hundred Sixty-Five Only  
( This Sum Insured Includes Machinery Breakdown Sum Insured Indian Rupees Only )

Place :

Date : 04/02/2021



IRDA-REGNO-556

For and on behalf of  
The Oriental Insurance Company Limited

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Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll  
Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

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Attached to and forming part of policy number 171200/11/2021/395

Business Interruption :

(I) FLOP Indian Rupees Ten Lakhs Only

(II) MLOP Nil

Total Premium In Words : Indian Rupees Three Lakhs Forty-Eight Thousand Eight Hundred Fifty-Five Only

The Insurance under this policy is to cover Risks otherwise stated and attached hereto :

STFI Cover

Earth Quake

Excess / deductible : The following minimum deductibles are applicable based on the per location sum insured of the policy (MD + BI sum insured combined)					
Sum Insured band INR (MD+BI sum insured combined) per location	MATERIAL DAMAGE		BUSINESS INTERRUPTION		
	% of Claim	Subject to Minimum Deductible in INR	FLOP		MLOP
			(no. of days of standard Gross Profit)		(no. of days of Standard Gross Profit)
			for other than Petro Chemical Risks	for Petro Chemical Risks	
Upto 100 Cr	5	5,000,00	7	14	14
Above 100 Cr and upto 1500 Cr	5	10,000,00	7	14	14
Above 1500 Cr and upto 2500 Cr	5	25,000,00	7	14	14
Above 2500 Cr	5	50,000,00	14	21	21

The Insurance under this policy is subject to warranties & Clauses otherwise stated herein:

1. Removal Of Debris Clause (Upto 1% Of The Claim Amount)
2. Reinstatement Value Policies Clause
3. Architects, Surveyors And Consulting Engineer S Fees (Upto 3% Of The Claim Amount)
4. Held in Trust Clause; Waiver of Subrogation Clause; STFI Clause; 72 Hours Clause On account payment Clause.
5. Nominated Adjustor Clause (Upto Rs. RO Limit)- 1) Bhatawadekar IS&LAPL, 2) Proclaim IS&LAPL, 3) Protocol IS&LAPL, 4) Mehta & Padamsey IS&LAPL
6. Add on Cover: Minor Works cover upto 1,00,00,000 - AOA Limit Rs.20 Lac and AOY Rs.1 Cr, Loss Minimization / Fire Fighting Expenses, Expediting Expenses, Cost of re writing records, Claims Preparation Expenses each covered upto Rs. 1,00,00,000/-
7. Co-Insured-Madhya Pradesh Road Development Corporation
8. In the event of a claim under the policy exceeding Rs.1lac or a claim for refund of premium exceeding Rs.1lac, the insured will comply with the provisions of the AML policy of the Company. The AML policy is available in all our operating Offices as well as company's website.
9. Class Of Constriction
10. Plinth & Foundation
11. Endorsement - Earthquake (Fire And Shock) - Add On Cover
12. Designation Of Property Clause
13. Local Authorities Clause
14. Add on Cover: Immediate Repairs ,ROD, Architect & Surveyor fees each covered upto Rs. 1 Cr., Omission to insure, Escalation each covered upto 5% of BMA Sl.
15. CO INSURANCE CONDITION

Financier's Names are as stated herein

None

Place :

Date : 04/02/2021



IRDA-REGNO-556

For and on behalf of  
The Oriental Insurance Company Limited

This is an electronically generated document (Policy Schedule). The  
Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll  
Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee

Page 3 of 4

IRDA Recn. No. 556 - Now you can buy and renew selected policies online at [www.orientalinsurance.org.in](http://www.orientalinsurance.org.in)

Attached to and forming part of policy number 171200/11/2021/395

The insurance under this policy is subject to conditions, clauses, warranties, endorsements as per forms attached.

Warranted that in case of dishonour of premium cheque(s) the Company shall not be liable under the policy and the policy shall be void abinitio (from inception).

In witness whereof the undersigned being authorised by and on behalf of the company has/have herein to set his/their hands at on 04TH DAY OF FEBRUARY 2021

Entered By : SUMAN BHARTI

For and on behalf of  
The Oriental Insurance Company Limited

Examined By : A K Parmar

Policy Printed By : 970042 IP :

Policy Printed On : 04-FEB-21 15:53:57

Authorised Signatory

Place :  
Date : 04/02/2021



IRDA-REGNO-556

For and on behalf of  
The Oriental Insurance Company Limited

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Policy document duly stamped will be sent by post.

In case of any query regarding the Policy please call Toll  
Free No. 1800 11 8485 and 011 33208485.

Authorised Signatory

CIN: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee  
IRDA Regn. No. 556 - Now you can buy and renew selected policies online at [www.orientalinsurance.org.in](http://www.orientalinsurance.org.in)

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## HDFC ERGO General Insurance Company Limited



May 13, 2020

**SURYAVANSHI INFRASTRUCTURE PVT LTD**

PLOT NO. 5, GOVIND NARAYAN SINGH GATE,  
CHUNA BHATTI, BHOPAL,  
BHOPAL,  
MADHYA PRADESH, 462016.



Dear Customer,

**Sub: Employees Compensation Insurance Policy No: 3114203387976900000**

We thank you for having preferred us for your Insurance requirements. We at HDFC ERGO General Insurance believe "Insurance" as not only to be an assurance to indemnify in the event of unfortunate circumstances, but one that signifies protection and support, which you can count on when you need it most.

The Insurance Policy enclosed herewith is a written agreement providing confirmation of our responsibility towards you that puts insurance coverage into effect against stipulated perils.

Please note that the policy has been issued based on the information contained in the proposal form and / or documents received from you or your representative / broker.

Name of the Intermediary : GLOBAL INSURANCE BROKERS PVT LTD

Intermediary Code : 200113159801

Where the proposal form is not received, information obtained from you or your representative /broker, whether orally or otherwise, is captured in the policy document.

If you wish to contact us in reference to your existing policy and /or other general insurance solutions offered by us, you may write to our correspondence address as mentioned below. Alternatively, you may visit our website [www.hdfcergo.com](http://www.hdfcergo.com) . To enable us to serve you better, you are requested to quote your Policy Number in all correspondences.

Thanking you once again for choosing HDFC ERGO General Insurance Company Limited and looking forward to many more years of association.

Yours sincerely,

Authorised Signatory

3114203387976900000

Page 1 of 13

HDFC ERGO General Insurance Company Limited (Formerly HDFC General Insurance Limited)

LIN : IRDAN125P0017V02201112 | IRDAI Reg No.146 | CIN : U08030MH2007PLC177117

Registered & Corporate Office:  
1st Floor, HDFC House, 195 - 199 Backbay Reclamation,  
H. T. Park Marg, Churchgate, Mumbai - 400 020

Customer Service Address:  
D-301, 3rd Floor, Eastern Business District (Magnet Mall),  
LBS Marg, Bandrup (West), Mumbai - 400 078

Toll Free Number: 1800 2700 700  
Telephone : +91 22 6638 3600 Fax: 91 22 6638 3699  
Email : [care@hdfcergo.com](mailto:care@hdfcergo.com)

## HDFC ERGO General Insurance Company Limited

Certificate of Insurance cum Policy Schedule

Policy No. 3114203387976900000

Employees Compensation Insurance



Insured Name		SURYAVANSHI INFRASTRUCTURE PVT LTD (PAN Number:AACCD6124B)			Business	OTHERS		
Correspondence Address		PLOT NO. 5, GOVIND NARAYAN SINGH GATE,CHUNA BHATTI, BHOPAL,BHOPAL,MADHYA PRADESH,462016.						
Mobile		Phone		E Mail		Policy Issuance Date	13/05/2020	
Period of Insurance		From Date & Time		19/05/2020 00:01 AM		To Date & Time		18/05/2021 Midnight

### LAW

The Policy covers Liability of the Insured under the following Law(s) shown as covered, subject to claim being otherwise admissible as per terms, conditions and exclusions of the Policy and subject to Limit of Indemnity as stipulated against each Law:

Sr. No.	Law	Limit of Indemnity
a.	Employee's Compensation Act, 1923 and subsequent amendments thereof prior to the date of issue of this Policy	Subject otherwise, to the terms, conditions & Exclusions of the Policy, the amount of liability incurred by the Insured
b.	Common Law	<p>Subject otherwise, to the terms, conditions &amp; Exclusions of the Policy, the amount of liability incurred by the Insured, but not exceeding:-</p> <p>a) Limit Per Employee for any number of accidents during Period of Insurance ₹. Unlimited</p> <p>b) Limit Per Accident for any number of Employees ₹. Unlimited</p> <p>c) Aggregate Limit for all accidents and claims arising there from during the Period of Insurance ₹. Unlimited</p>

EC-13-0005  
3114203387976900000

Page 2 of 13

HDFC ERGO General Insurance Company Limited (Formerly HDFC General Insurance Limited)

UIN : IRDAN125P0017V02201112 | IRDAI Reg No.146 | CIN : U68030MH0007PLC177117

Registered & Corporate Office:  
1st Floor, HDFC House, 105 - 106 Backbay Reclamation,

Customer Service Address:  
D-301, 3rd Floor, Eastern Business District (Magnet Mall),

Toll Free Number: 1800 2700 700  
Telephone : +91 22 6638 3600 Fax: 91 22 6638 3650

**Annexure 8: Project Photos**

