SHREM FINANCIAL PRIVATE LIMITED

Development of Ashoknagar- Vidisha Major District Road in the State of Madhya Pradesh on BOT (Toll+ Annuity) Basis

TECHNICAL DUE DILIGENCE REPORT

FEBRUARY, 2021

SUBMITTED BY

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Development of Ashoknagar- Vidisha Major District Road in the State of Madhya Pradesh on BOT (Toll+ Annuity) Basis

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CHAPTER 1. INTRODUCTION

1.1 General:

DBL ASHOKNAGAR-VIDISHA TOLLWAYS LIMITED. (herein after referred to as the "Concessionaire") had augmented the existing road into two lane undivided carriageway from Bypass junction of Ashoknagar to Bangla Chauraha (35.680 Kms. length) section of Major District Road (here in after called "Project Highway") in the state of Madhya Pradesh on design, build, finance, operate and transfer (DBFOT), Toll + Annuity 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 "MPRDCL") on March 22, 2013.

Project Road starts from Bypass Junction of Ashoknagar (Km. 0+100) in Ashoknagar and terminates at Bangla Chauraha (Km. 35+682). Total length of the Project Highway is 35.682 Kms. The Project road passes through plain terrain predominantly agricultural land except some Built-up sections viz. Athaikheda, Kharila and Bangla Chouraha. Project Location map is given at **Figure 1.1**.

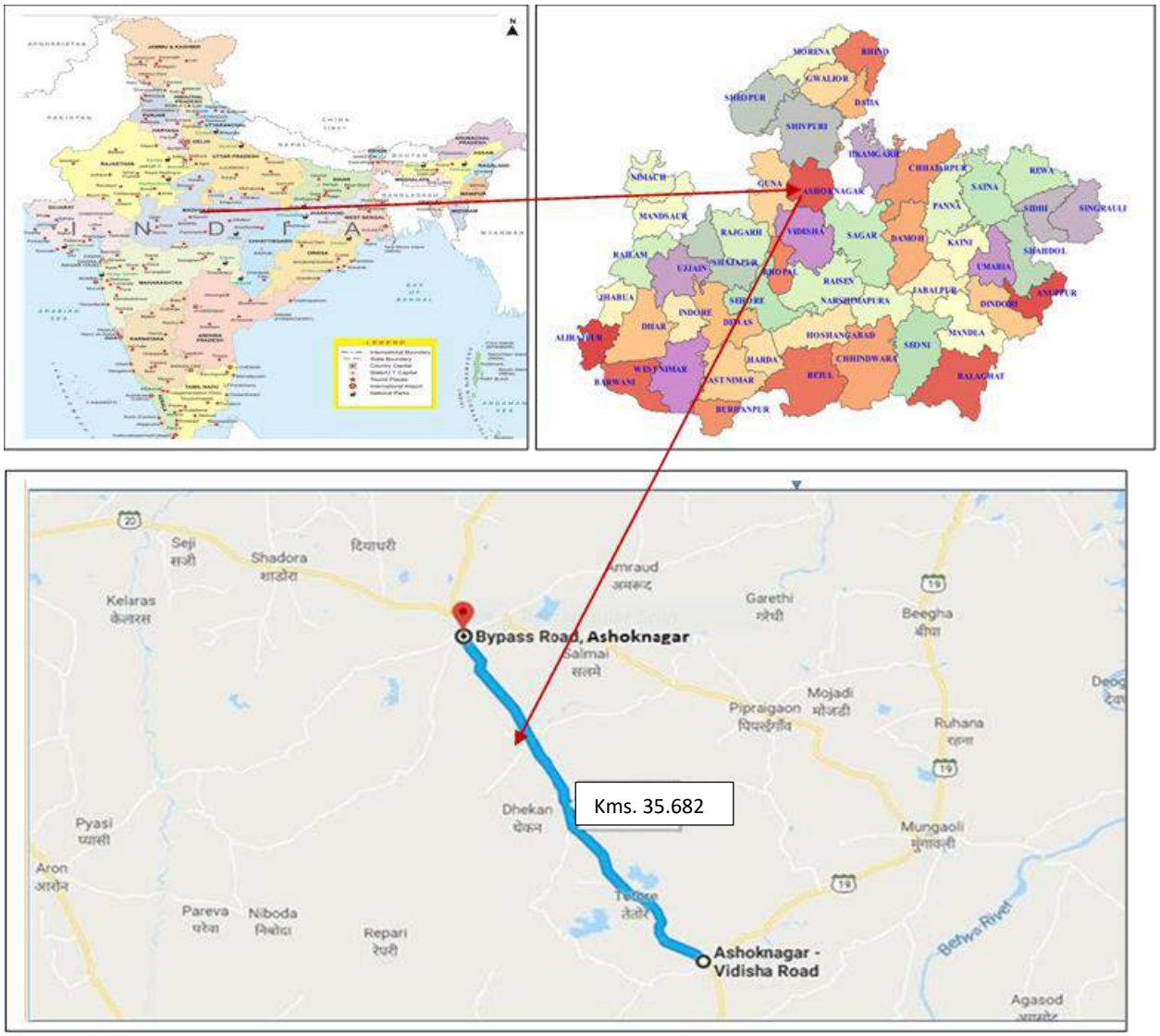


Figure 1.1: Project Location Map

SHREM ROADWAYS PVT. LTD. (SRPL) acquired DBL ASHOKNAGAR-VIDISHA TOLLWAYS LIMITED vide agreement dated 26th March 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

The details of the Project are listed in the following table.

Table 1.1: Project Data

S. No.	Particulars	Details
1	Name of the project	Construction, Operation and maintenance of road from Ashoknagar to Bangla chauraha on DBFOT (Design, Build, Finance, Operate and Transfer) on Toll Plus Annuity Basis.
2	Road Type	Major District Road (MDR)
3	Name of the Authority	Madhya Pradesh Road Development Corporation Limited
4	Name of the Concessionaire	DBL Ashoknagar-Vidisha Tollways Limited
5	Name of the EPC Contractor	Dilip Build con Limited
6	Date of LOA	08.02.2013
7	Date of Agreement	22.03.2013
8	Design Length as per Schedule B	35.682 Kms.
9	Length omitted under negative Change in Scope	0.107 Kms.
10	Actual Length Constructed	35.575 Kms.
11	Project Lane Configuration	2 Lane
12	EPC Cost	Rs. 77.22 Cr.
13	Nature of contract	BOT (Toll + Annuity)
14	Toll collected by	Concessionaire
15	Concession Period	15 years from the Appointed date
16	Appointed date	09.11.2013
17	Concession end date	08.11.2028
18	Construction Period	730 days from the Appointed date.
19	Schedule Completion Date	08.11.2015
20	Date of issuance of Provisional Certificate (Commercial Operation Date)	26.07.2014
21	Date of issuance of Completion Certificate	22.10.2014
22	Annuity Amount (every six months)	Rs 5.04 Cr
23	Total Number of Annuities payable	26 Nos.
24	First Annuity Payment Date	26.01.2015
25	Total Number of Annuity Paid	13 Nos.

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 out 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.

CHAPTER 2. PROJECT DESCRIPTION & TECHNICAL DETAILS

2.1 Salient Features of the Project

The salient features of the Project as per schedule B and Schedule C of CA including Change of scope are listed in the following **Table 2.1**.

Table 2.1: Salient Features

S. No.	Particulars	As per CA	As per COS	As per Site
1	Total Length	35.682 Kms.	-0.107 Kms.	35.575 Kms.
2	Total Length of 2Lane (Flexible)	33.682 Kms.	+0.093 Kms.	33.775 Kms.
3	Total Length of 4Lane (Flexible)	2.00 Kms.	-0.200 Kms.	1.800 Kms.
4	Toll Plaza	1 No.	-	1 No.
5	Bus Shelters	16 Nos.	-	16 Nos.
6	Truck Lay Bays (Both sides)	2 Nos.	-	2 Nos.
7	Major Junction	2 Nos.	-	2 Nos.
8	Minor Junctions	9 Nos.	-	9 Nos.
9	ROB	Nil	-	Nil
10	Major Bridges	1 No.	-	1 No.
11	Minor Bridges	9 Nos.	+1 Nos.	10 Nos.
12	Pipe Culverts	14 Nos.	-2 &+1 Nos.	15* Nos.
13	Slab/Box Culverts	19 Nos.	-1 & +2 Nos.	19* Nos.

*As per site requirement two additional pipe culverts are constructed and one Box Culvert is not constructed as per site condition.

2.2 Typical Cross Section (TCS) Schedule:

The Concessionaire has followed the following Typical Cross Section figures shown below during the construction and schedule of TCS is given in Table 2.2 below.

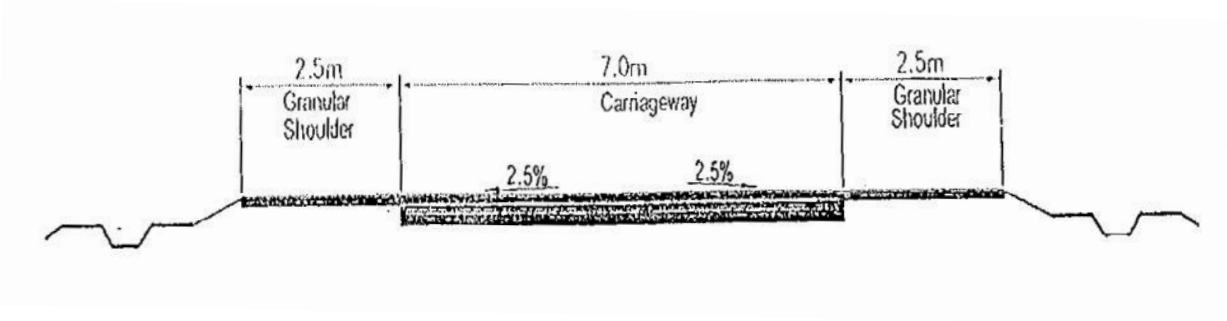


Figure 2.1: TCS 2.1 2-Lane Carriageway with Hard Shoulders without service road (Open Country-Plain/rolling terrain)

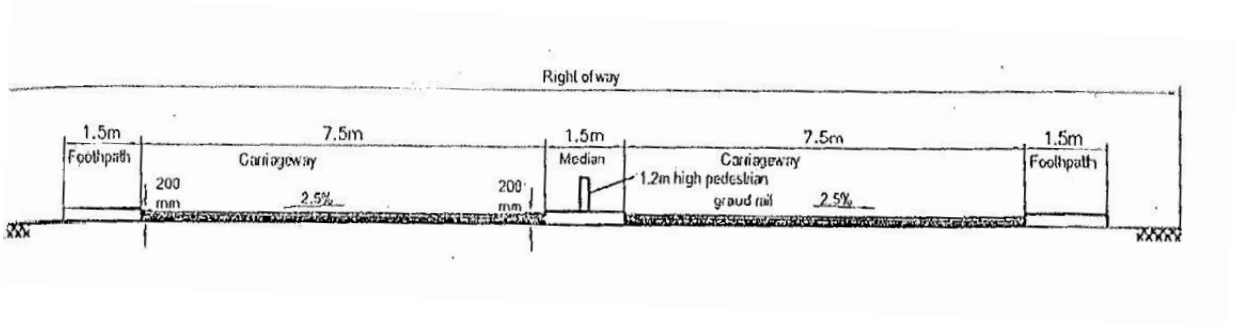


Figure 2.2: TCS 2.2 4-Lane divided Carriageway with Footpath (Built-up area)

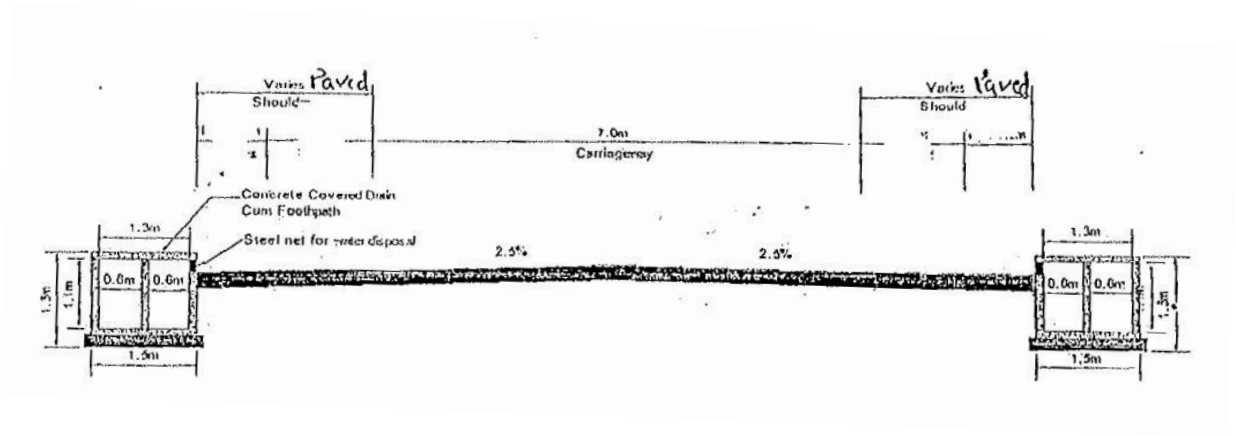


Figure 2.3: TCS 2.3 2-Lane Carriageway with Paved Shoulder (Built-up area)

Table 2.2: TCS Schedule

S. No	From (Km.)	To (Km.)	Lengths(Km.)	Type of TCS
1	0+000	0+200	0.200	TCS 2.3 of Schedule D of CA
2	0+200	2+000	1.800	TCS 2.2 of Schedule D of CA
3	2+000	16+160	14.160	TCS 2.1 of Schedule D of CA
4	16+160	17+000	0.840	TCS 2.3 of Schedule D of CA
5	17+000	17+680	0.680	TCS 2.1 of Schedule D of CA
6	17+680	18+231	0.551	TCS 2.3 of Schedule D of CA
7	18+231	19+800	1.569	TCS 2.1 of Schedule D of CA
8	19.800	20+090	0.290	TCS 2.3 of Schedule D of CA
9	20+090	35+050	14.960	TCS 2.1 of Schedule D of CA
10	35+050	35+575	0.525	TCS 2.3 of Schedule D of CA

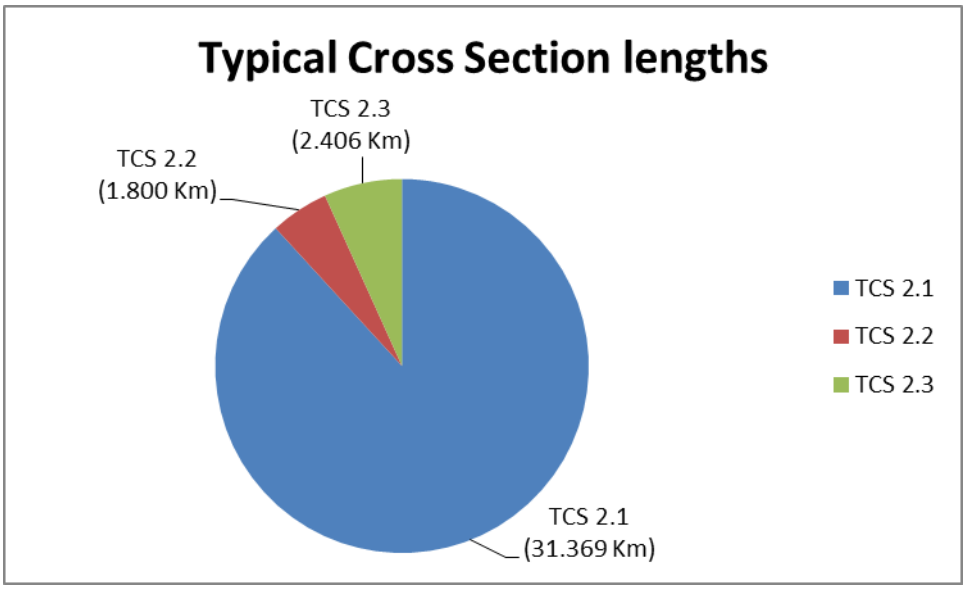


Figure 2.4: Pictorial Diagram of TCS Lengths.

2.3 Road Side Drainage:

- To facilitate quick disposal of storm water from the Carriageway and to avoid accumulation of drainage from road side community on the Carriageway, RCC side drains are constructed along the main carriageway on both flanks as specified in Schedule B of the CA in strict adherence to the Standard Specifications set forth in Schedule D of the CA.
- The Concessionaire has provided RCC covered drains with footpath in built up areas and earthen drains in open & rural areas.

2.4 Service Roads

Service roads are not provided along the entire stretch of the project road as per provisions of Schedule B of the CA.

2.5 Bypass/Realignment

There is no bypass / realignment proposed on the project road as per provisions of Schedule B of the CA.

2.6 Intersections

As per provisions of Schedule B of the CA, 2 Major Junctions and 9 Minor Junctions are provided. Details are given below.

Table 2.3: List of Junctions

S. No	Chainage (Km.)	Side
Major Intersection		
1	0+000	LHS
2	35+682	LHS
Minor Intersection		
1	0+100	RHS
2	1+600	LHS

S. No	Chainage (Km.)	Side
3	3+400	LHS
4	10+200	RHS
5	11+000	RHS
6	16+800	RHS
7	17+400	RHS
8	18+500	RHS
9	21+500	RHS

2.7 Grade Separated Structures and underpasses:

There are no Grade separated structures in the Project, as per provisions of Schedule B of the CA.

2.8 Road Under Bridge:

There are no RUBs in the Project, as per provisions of Schedule B of the CA.

2.9 Summary of Carriageway and pavement Details:

Table 2.4: Summary of Carriageway and pavement Details

S. No.	Description	Flexible (Kms.)	Rigid (Kms.)	Remarks
1	2 Lane with Earthen shoulder	31.369	---	Fig 2.1 of Schedule D of the CA
2	2 Lane with Paved shoulder	2.406	---	Fig 2.3 of Schedule D of the CA.
3	4 Lane	1.800	---	Fig 2.2 of Schedule D of the CA
4	Total Length of the Project	35.575	---	
Type of Alignment				
5	New Alignment	---	---	
6	Realignment	---	---	
7	Strengthening	---	---	
8	Reconstruction	35.575	---	
9	Total Length of the Project	35.575	---	

2.10 Summary of Structures and Culverts:

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

Table 2.5: Summary of Structures

S. No.	Description	Major Bridges	Minor Bridges	Hume Pipe Culverts	Box/Slab Culverts
1	Retained	---	---	---	---
2	Widening	---	3	3	2
3	Reconstruction	1	6	4	17
4	New	---	---	7	---
5	Improvement	---	---	---	---
6	**Total**	**1**	**9**	**14**	**19**

2.11 Toll Plazas:

As per Schedule C of the CA provisions, one Toll Plaza has been constructed at Km. 7+300. Salient features of Toll Plaza are provided below.

- Each side comprises of, one normal lane and one extra wide lane.
- 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 D of the CA having facilities like lighting, water supply and firefighting Arrangements.
- Close circuit cameras are installed and monitored in administrative building.

2.12 Bus shelters and truck lay byes:

As per provisions of Schedule C of the CA bus shelters are provided at 16 locations and truck lay bays at 2 locations. Details of Chainage location are listed in the following Table 2.6.

Table 2.6: List of Bus shelters/Truck Lay bays

S. No.	Chainage (Km.)	Side*	Description
1	0+100	RHS	Bus shelter
2	0+120	LHS	Bus shelter
3	0+550	RHS	Bus shelter
4	0+570	LHS	Bus shelter
5	3+400	LHS	Bus shelter
6	3+600	RHS	Bus shelter
7	10+200	LHS	Bus shelter
8	10+200	RHS	Bus shelter
9	16+500	RHS	Bus shelter
10	16+520	RHS	Bus shelter
11	17+750	BHS	Truck Lay bay
12	18+500	LHS	Bus shelter
13	18+500	RHS	Bus shelter
14	21+500	LHS	Bus shelter
15	21+500	RHS	Bus shelter
16	35+100	BHS	Truck Lay bay
17	35+250	RHS	Bus shelter
18	35+250	LHS	Bus shelter

*Note: LHS-Left Hand Side, RHS-Right Hand Side

2.13 Other Project Facilities Provided as per Schedule C

- Roadside furniture: Sign boards, kilometer stones, road marking and object/hazard markers are provided in accordance with IRC-SP: 73-2007.
- Traffic safety devices: W beam crash barriers, parapet walls are provided as per the provisions of Schedule C of the CA.
- Landscaping: provided at toll plaza location and being maintained

- Tree plantation: Tree plantation is provided on both sides, for the full length of project corridor and being maintained.
- Medical Aid Post: Provided at toll plaza location and operational.
- Highway Lighting: Highway lighting is provided at Toll Plaza location and is functional.

Km. 0+000

Km. 0+200

Km. 1+800

Km. 2+000

Km. 2+000

Km. 4+600

Km. 6+200

Km. 7+300

Km. 8+600

Km. 10+300

Figure 2.5: Representative Photos of Project Facilities

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 sections below:

3.2 Road Inventory

Inventory of the project road was carried out physically, and the details are summarized in **Table 3.1**. Few representative photographs are presented in **Figure 3.1**.

Table 3.1: Road Inventory

S. No.	Features	Remarks
1	Terrain	Plain Terrain
2	Land Use	Built Up 12 %, Agriculture 45% and Barren 43%
3	Two lane length	33.775 Kms.
4	Four lane length	1.800 kms.
5	Earthen shoulder	2 m to 2.5 m Width on site
6	Junctions	11 Nos.
7	Toll Plaza	Km. 7+300
8	Sign boards	Sign boards are provided as per requirement
9	Road Markings	Lane markings are provided as per requirement
10	Bus Bays /shelters	16 Nos.
11	Truck Lay bye	02 Nos.
12	Street Lighting	Highway lighting provided as per requirement
13	Avenue plantation	Provided

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 Condi-tion 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 Chainage (Km.)	To Chainage (Km.)	Length (Kms.)	Condition
0+000	35+575	35.575	Good

Km. 8+600

Km. 10+300

Km. 16+000 BC

Km. 16+100

Km. 23+050

Km. 23+700

Km. 24+100

Km. 25+300

Km. 35+682

Figure 3.1: Representative photos of Pavement Condition

CHAPTER 4. INVENTORY AND CONDITION OF STRUCTURES

4.1 General Assessment and Condition of the 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 list of structures as per the site is enclosed below

Table 4.1: List of Structures

S. No.	Type of Structure	Numbers
1	Major bridges	1
2	Minor Bridge	10
3	Pipe culverts	15
4	Slab/Box Culverts	19

Bridges with RCC T Beam and Slab and RCC solid slab superstructure are supported on wall type piers and abutments. Single / multi cell box cell structure has been provided at some bridge locations. The condition of the structures is generally good. 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. The 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

Major bridge at Km 9+900 has span arrangement of 6x14.9m with a total length of 89.4m. It has RCC solid slab superstructure supported on wall type piers and abutments. Other features include elastomeric bearings, RCC crash barrier and bituminous wearing coat.

Table 4.2: List of Major Bridge

S. No.	Chainage (Km.)	Span	Total Length of Bridge (m)
1	9+900	6 x 14.9	89.40

The condition of the superstructure and substructure of major bridge is good.

Km. 9+900

Figure 4.1: Representative photos of Major Bridges

4.4 Details of Minor Bridges

There are 10Nos. minor bridges on the project road. These bridges have box cell type structure RCC T Beam and slab and RCC solid slab type of superstructure supported on wall type piers and abutments with open foundations.

Table 4.3: Inventory of Minor Bridges

S. No.	Chainage (Km.)	Span Arrangement	Total Length of Bridge (m)	Description
1	3+200 (3+150)	2 x 14.7	29.4	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Elastomeric Bearings and buried type expansion joints.
2	10+950	6 x 8.2	49.2	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
3	16+050 (15+900)	1 x 7.1	8.2	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
4	16+750	3 x 5.4	16.2	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
5	18+300	2 x 6.8	14.9	It has existing RCC solid slab superstructure supported on CR masonry wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
6	20+700	2 x 5.0	11.0	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
7	23+050	2 x 5.0	11.0	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
8	28+800 (28+775)	1 x 7.1	8.2	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
9	30+900 (30+960)	2 x 10.0	20.0	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC crash barrier, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
10	5+021	1 x 6.7	6.70	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.

Km. 3+200

Km. 10+950

Km. 23+050

Km. 20+700

Figure 4.2: Representative photos of 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 condition of all the structures is found satisfactory. The detailed condition of the same are given the following sections. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3.**

4.6 Details of Slab/Box Culverts

There are 19 Nos. of slab/Box culvert in the project stretch. The details of the culverts are as given below.

Table 4.4: List of Slab/Box Culverts

S. No.	Chainage (Km.)	Type	Span (m)
1	4+350 (4+250)	Slab	1 x 5.7
2	14+600	Box	1 x 3.9
3	22+150	Box	1 x 4
4	23+700	Box	1 x 6.2
5	24+100	Box	1 x 3
6	24+500 (24+760)	Box	1 x 4

S. No.	Chainage (Km.)	Type	Span (m)
7	25+350	Box	1 x 3
8	25+900	Box	1 x 3
9	26+750	Box	1 x 4.9
10	27+150	Box	1 x 6
11	27+900 (extra)	Box	1 x 2.1
12	28+100	Slab	1 x 2.6
13	28+400 (28+370)	Box	1 x 4.1
14	29+200	Box	1 x 5
15	29+400	Box	1 x 3.8
16	30+325	Box	1 x 3
17	31+650	Box	1 x 6.2
18	32+050 (32+100)	Box	1 x 3
19	32+300	Box	1 x 4

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

Km. 22+150

Km. 23+700

Km. 24+500

Km. 25+350

Km. 25+900

Figure 4.3: Representative photos of Box/Slab Culverts

4.7 Details of the Pipe Culverts

There are 15 Nos. of pipe culverts in the project stretch. The details of the culverts are as given below.

Table 4.5: List of Pipe Culverts

S. No.	Chainage (Km.)	Type	No. of Rows& Dia (m)
1	0+100	Pipe	1 x 1.2
2	1+200	Pipe	1 x 1.2
3	2+000 (1+950)	Pipe	2 x 1
4	3+850	Pipe	1 x 1.2
5	6+605 (extra)	Pipe	1 x 1
6	7+900	Pipe	1 x 1.2
7	9+500 (9+375)	Pipe	1 x 1
8	14+250	Pipe	1 x 1.2
9	15.320	Pipe	1 x 1.2
10	15+350 (15+205)	Pipe	1 x 1.2
11	16+650	Pipe	1 x 1.2
12	17+150 (17+070)	Pipe	1 x 1.2
13	18+650	Pipe	1 x 1.2
14	27+360	Pipe	1 x 1.2
15	33+050	Pipe	1 x 1.2

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

Km. 18+650

Figure 4.4: Representative photos of Pipe Culverts

CHAPTER 5. PAVEMENT DESIGN VALIDATION AND OVERLAY SCHEDULES

5.1 General

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

5.2 Pavement design

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: 37-2012 publication while the current publication is IRC: 37-2018.

5.3 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 Parameters
1	Sub Grade CBR (%)	10%
2	Design Life (Years)	15 years
3	Design Traffic (MSA)	10 MSA
4	Surface course (BC)	40 mm
5	Binder course (DBM)	50 mm
6	Base course (WMM)	250 mm
7	Sub Base course (GSB)	200 mm

5.4 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 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: Flexible Pavement Design Traffic Validation

FY Year	AADT in Vehicles					CVPD (Veh.)	MSA	CMSA	Year	Remarks
	Car	LCV	BUS	2-AT	MAV					
2016	445	183	32	94	159	468	0.45	0.45	3	Actual
2017	651	165	30	59	100	354	0.34	0.79	4	Actual
2018	842	207	28	48	127	411	0.39	1.18	5	Actual
2019	658	207	30	34	106	378	0.36	1.54	6	Actual
2020	677	212	28	38	92	371	0.36	1.90	7	Actual
2021	711	222	30	40	97	389	0.37	2.27	8	Projected
2022	747	234	31	42	102	409	0.39	2.66	9	Projected
2023	784	245	33	44	107	429	0.41	3.07	10	Projected
2024	823	257	34	47	112	451	0.43	3.51	11	Projected
2025	864	270	36	49	118	473	0.45	3.96	12	Projected
2026	908	284	38	51	124	497	0.48	4.44	13	Projected
2027	953	298	40	54	130	522	0.50	4.94	14	Projected
2028	1001	313	42	57	137	548	0.52	5.46	15	Projected

Based on the above actual traffic, estimated MSA at 15 years is 5.46. Traffic considered in pavement design(10MSA) is more than estimated traffic based on actual traffic. Hence the pavement design adopted is found in order.

5.5 Overlay during operation and maintenance

The pavement has been designed to cater traffic of 10 MSA for a design life of 15 years after construction (up to 2028), whereas the actual traffic at pavement design stage is 2.08 MSA for 15 years. 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 8 years of design life (as per pavement design report) and prior to end of concession period to evaluate the requirement of overlay.

Maintenance/ Overlay schedule

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

Routine maintenance - Every year
Periodic Renewal for Flexible Pavement – next major maintenance proposed in the year 2021.

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 has 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 like 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

6.2 Existing Road Safety Audit

During the site visit, it is observed that all safety items are provided as shown in the following Table 6.2.

Table 6.2: Safety Items

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	Studs & Lane Marking	Available as per site requirement	Good
3	Metal 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.

Few Observations on the road furniture in safety aspects for the project road are mentioned below:

- At few places, reflectors were missing on the sign boards and few sig boards were also damaged.
- The object hazard markers are placed only on one side of Head walls/parapet walls of all structures, whereas it is to be installed on both sides at structures.

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.

Km. 2+000

Km. 4+600

Km. 6+200

Km. 7+000

Km. 8+600

Km. 8+600

Km. 10+200

Km. 16+100

Km. 16+100

Km. 17+100

Km. 18+400

Km. 18+400

Km. 18+500

Km. 25+300

Km. 25+900

Km. 26+200

Km. 26+300

Km. 29+400

Figure 6.1: Representative photos during road safety audit

CHAPTER 7. TOLL PLAZA & HTMS

7.1 General

There is one toll Plazas on the project road at Km. 7+300. Each side comprises of 1 Normal Lanes, 1 extra wide lane. Only one lane in each direction is operational and the extra wide lane is used as bike lane. The lane width in normal lanes was 3.20m. The width of islands provided is 1.8m. The single canopy is provided to cover the toll lanes. Toll plaza building is single floor building which houses control room, UPS and Pantry.

7.2 Tolling Equipment's

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

Table 7.1: List of TMS Lane Assets

S. No.	Description	No
1	TLC (Toll lane Controller)	4
2	Monitor	4
3	Printer	4
4	Keyboard	4
5	CCTV Booth	4
6	Intercom-S	4
7	IC Camera	4
8	LPIC	4
9	Barrier	4
10	UFD	4
11	Traffic Light	4
12	OHLS	4
13	AVC Laser	4
14	RFID Reader	4

7.3 Control Room Equipment's

A server is provided in the control room. Along with the server, three workstations are provided to manage the Audit and other purpose.

Table 7.2: Equipment provided at Control Room

S. No.	Description	No
1	Data Server	1
2	Keyboard	1
3	Monitor	1
4	Manager System	1
5	Keyboard	1
6	Monitor	1

S. No.	Description	No
7	Audit System	1
8	Keyboard	1
9	Monitor	1
10	Scanner	1
11	Printer	1
12	Biometric Machine	1
13	Intercome-M	2
14	Wifi-Router Tenda	1
15	NVR	1
16	Network Rack	1
17	POE Switch	1
18	HHM(Hand Held Machine)	2
19	CCTV	1
20	PTZ-LHS	1
21	PTZ-RHS	1
22	F router	1
23	Router	1
24	DVR	1
25	DVR Monitor	1
26	NVR Monitor	1

7.4 Vehicles

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

Table 7.3: List of Vehicles

S. No.	Vehicle Type	No.
1	Patrol Vehicle	1
2	Ambulance	1
3	Water Tanker	1

Figure 7.1: Representative photos of Toll Plaza at Km. 7+300

CHAPTER 8. TOLL REVENUE

8.1 Traffic Census

In accordance with clause 22.1, the Concessionaire shall install, maintain and operate electronic/computerized traffic counters at each of the Toll Plazas and collect data relating to the number and types of vehicles using the Project Highway. A weekly statement of such data shall be complied and furnished forthwith by the Concessionaire to MPRDC substantially in the form specified in Schedule N of CA.

Accordingly, the Concessionaire provided toll plaza wise details. Based on the data made available the summarized annual classified Traffic census details for the past five 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 as per schedule N of CA

FY Year	Car	LCV	Bus	Truck	MAV	Total Traffic
2016	162326	66776	11566	34390	58018	333076
2017	237500	60349	10892	21418	36470	366629
2018	307362	75669	10344	17488	46451	457314
2019	240277	75663	10860	12555	38769	378124
2020	247856	77528	10318	14017	33841	383560
AACGR* (%)						**4.7%**

*AACGR- Annual Average Compound Growth Rate

8.2 Actual Revenue Collection

In accordance with clause 19.5, "During the operation period, the Concessionaire shall furnish to MRPDC within 7 days of completion of each month, a statement of fee substantially in the form set forth in Schedule-M (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

Description	Car	Car(pass)	LCV	Bus	Truck	MAV	Total
In Nos.	180593	2471	77171	10280	13883	33777	318175
Toll Revenue collection in Rs.	3611860	197675	3858550	1055310	1706710	8296730	18726835

The figures shown in Table 8.1 are Real time traffic data on project road for the past five years and the growth rate is calculated to be 4.7%. 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	502	211	28	38	93	370	502	317	84	114	416	932	Actual
2021	527	222	30	40	97	389	527	333	89	120	437	979	Projected
2022	553	233	31	42	102	408	553	350	93	126	459	1028	Projected
2023	581	245	33	44	107	429	581	367	98	132	482	1079	Projected
2024	610	257	34	46	112	450	610	385	103	139	506	1133	Projected
2025	640	270	36	49	118	472	640	405	108	146	531	1190	Projected
2026	672	283	38	51	124	496	672	425	113	153	558	1249	Projected
2027	706	297	40	54	130	521	706	446	119	161	586	1312	Projected
2028	741	312	42	56	137	547	741	469	125	169	615	1377	Projected
2029	778	328	44	59	144	574	778	492	131	177	646	1446	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 1
Location	Km. 7+300
4 lane length in km	
2 lane length in km	35.682
Agreement Date	22-03-2013
Appointed Date	09-11-2013
Concession period	15 years
Commercial operation date	26-Jul-14
Concession End Date	08-Nov-28
Traffic study year	2020

Particular	Toll plaza 1
Vehicle Type	**AADT**
Car/Jeep/Van	502
2-axle Bus	211
LCV/LGV	28
2A-Truck	38
MAV (2A-6A)	93
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. 7+300)	Remarks
2019-20	187.268	Actual
2020-21	201.005	Projected
2021-22	220.350	Projected
2022-23	236.803	Projected
2023-24	270.017	Projected
2024-25	289.353	Projected
2025-26	309.184	Projected
2026-27	335.783	Projected
2027-28	359.510	Projected
2028-29	237.665	222 Days

CHAPTER 9. OPERATION AND MAINTENANCE

9.1 General

As per Article 17 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 beginning of each accounting year during the operation period.

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 Article 18.

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

9.6 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.

9.7 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.

9.8 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
1	1st Periodic Maintenance	2021	Planned to execute
2	2nd Periodic Maintenance	2028	Planned to execute

9.9 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 Highway shall be rectified, and the system shall be restored to function as per Programme prepared in consultation with Independent Engineer. Typical activities include,

a. Culvert and bridge repairs
b. Retaining wall repairs and construction;
c. Construction of Diversions;
d. Floodway repairs; and
e. Flood damage restoration works, etc.

9.10 Review of Test Reports:

9.10.1. 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 July 2020. As per Schedule K, 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.

9.10.2. 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. The BBD Test is to be carried yearly.

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

9.10.3. 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
2021	0.137	0.210	5.09	0.40	5.84
2022	0.141	0.217		0.41	0.77
2023	0.145	0.223		0.42	0.79
2024	0.149	0.230		0.44	0.82
2025	0.154	0.237		0.45	0.84
2026	0.158	0.244		0.46	0.87
2027	0.163	0.251		0.48	0.89
2028	0.168	0.259	-	0.49	0.92
2029	0.105	0.162	6.12	0.31	6.69
Total	**1.32**	**2.03**	**11.21**	**3.86**	**18.42**

CHAPTER 10. REVIEW OF CONCESSION AGREEMENT

10.1 Scope of Work (Article 2)

Article 2 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-D.
- 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. The issued LOA copy given in **ANNEXURE 6.**

10.3 Conditions precedent (Article 4)

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

- Executed and procured Escrow Agreement & Substitution Agreement
- Procured all applicable permits specified in Schedule E
- 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 Major Obligations of the Concessionaire (Clause 5.1)

- 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

10.5 Obligations relating to the Competing Roads (Clause 6.3)

Neither Authority nor any Governmental Instrumentality shall construct the Competing Road before 10th Anniversary of the Appointed Date.

10.6 Performance Security (Article 9)

- 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 20% of the Total Project Cost.

10.7 Provisional Completion Certificate (Clause 14.3)

Upon completion of works in accordance with the specifications and standards set forth in the Schedule B, C and D of CA and after determining the tests on completion successful the Independent engineer shall issue the Completion Certificate in the form set forth in Schedule J of CA. Provisional Completion Certificate given in **ANNEXURE 7**.

10.8 Completion Certificate (Clause 14.4)

Upon completion of Punch list items appended to the Provisional Completion Certificate within 90 days of issuance of Provisional Complete Certificate, Completion Certificate shall be issued to the Concessionaire. Completion Certificate given in **ANNEXURE 8**

10.9 Commercial Operation Date (COD) (clause 15.1)

COD shall be the date on which the Provisional Completion Certificate is issued by the Independent Engineer. With COD the Project shall enter into commercial service and the Concessionaire is entitled to demand and collect Fee.

10.10 Change of scope (Article 16)

Change of scope proposals that were initiated during construction period and consented by the MPRDCL are provided in **ANNEXURE 10.**

10.11 O&M Obligations of the Concessionaire (Clause 17.1)

- Permitting safe, smooth and uninterrupted flow of traffic on the Project Highway
- 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 Highway.
- Protection of environment and provision of equipment and materials
- Complying with safety Requirements in accordance with the provisions of the Contract Agreement.

10.12 Maintenance Requirements (Clause 17.2)

The Contractor shall procure that at all times during the Operations Period; the Project Highway conforms to the maintenance requirements set forth in Schedule K (the "Maintenance Requirements").

10.13 Maintenance Manual (Clause 17.3)

No later than 180 (one hundred and eighty) days prior to the Scheduled Two Lanning 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.

10.14 Maintenance Programme (Clause 17.4)

On or before COD and no later than 45 days prior to the beginning of each Accounting year during the Operation Period as the case may be the Concessionaire shall provide to the Authority and Independent Engineer its proposed annual Programme of preventive, urgent and the schedule maintenance.
The Concessionaire has been submitting the Annual Maintenance Programme regularly as per the above clause.

10.15 Damages for breach of Maintenance Obligations (Clause 17.8)

In the event that the Contractor fails to repair or rectify any defect or deficiency set forth in the Maintenance Requirements within the period specified therein, it shall be deemed to be in breach of this Agreement and the Concessionaire shall be entitled to recover Damages, to be calculated and paid for each day of delay until the breach is cured, at the higher of the following.
0.5% (zero decimal five percent) of the Average Daily Fee, and

0.1% (zero point one per cent) of the cost of such repair or rectification as estimated by the Independent Engineer.

10.16 Monthly status reports (Clause 19.1)

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.

10.17 Monthly Fee Statement (Clause 19.5)

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 substantially in the format set out in the Concession Agreement ("Monthly Fee Statement").

10.18 Annuity (Clause 25.1.1)

The Authority agrees and undertakes to pay the Concessionaire for each annuity Payment period on each annuity payment date as set forth in schedule Y the sum of Rs 5.04 Crores.

As per Clause 25.2.1, In case the COD is different from the Schedule Y, then the annuity payment schedule shall be suitably modified to be a period of 6 months from the preceding Annuity Payment date.

Table 10.1: Status of Annuity Payments

S. No.	Particulars	Payment Paid on
1	1st Annuity	02-Feb-15
2	2nd Annuity	30-Jul-15
3	3rd Annuity	29-Jan-16
4	4th Annuity	30-Jul-16
5	5th Annuity	07-Feb-17
6	6th Annuity	8-Aug-17
7	7th Annuity	07-Feb-18
8	8th Annuity	26-Jul-18
9	9th Annuity	30-Jan-19
10	10th Annuity	29-Jul-19
11	11th Annuity	03-Feb-20
12	12th Annuity	28-Jul-20
13	13th Annuity	28-Jan-21

10.19 Concession Fee (Article 26):

In consideration of the grant of Concession, the Concessionaire shall pay Concession Fee of Rs 1.00 per year during the Concession Period
Concession Fee shall be paid in advance within 90 days of the commencement of the Accounting Year. Yearly the Concessionaire is paying the Concession Fee to the MPRDC

10.20 Toll fee Clause 27.1.1:

Toll Fees Shall be revised annually in accordance with Clause 27.2.1.

10.21 Change in Law (Article 41):

The Contractor acknowledges that the Contractor shall be responsible for any consequences arising from any Change in Law and the Contractor shall at its own costs and expenses, undertake the compliance with any such Change in Law, however, in the event any receivables are obtained by the Concessionaire from the Authority, towards the losses incurred by the Concessionaire on account of Change in Law, then the Contractor shall ensure that such receivables are passed to the Concessionaire.

CHAPTER 11. INSURANCE

11.1 Details of Insurance

As per clause 32.1 of the Concession Agreement (CA), the Concessionaire shall effect 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 following policies being maintained by the concessionaire copies of the same are provided in **Annexure-9**.

Table 11.1: Insurance Details

Name of the Policy	Insurance Company	Policy No	Effective Period		Description of the Property
			From	To	
Standard Fire & Special Perils Policy	Oriental Insurance Company Ltd	171200/11/2020/253	16.12.2020	15.12.2021	Fully constructed Road of Ashoknagar-bridges and Concrete/Steel
Fire Industrial All Risk Policy	Oriental Insurance Company Ltd	171200/11/2021/254	15.12.2020	15.12.2021	Operation & Maintenance of Road, Bridges and any other property on the stretch.
Electronic Equipment Insurance Policy schedule	Oriental Insurance Company Ltd	171200/44/2021/45	08.09.2020	07.09.2021	Equipment's for Toll plaza
Employees Compensation Insurance Policy	HDFC ERGO General Insurance Company Ltd	31142033880230000000	19.05.2020	18.05.2021	All categories of Employees of DBL & sub-contractor engaged in Project SPV

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 data collected from the submissions made as per Schedule N, the traffic growth observed almost 5% and the same is considered while estimating forecast of traffic volumes.

12.5 Project Facilities

Toll Plaza is located at Km.7+300 and is operational. Toll Plaza is operated by ETC Toll collection system and connected by network system monitored in administrative building. Bus bays are in fair condition. Medical Aid posts found functional. Avenue plantation and landscaping at Toll Plaza is provided and being maintained. Highway lighting is provided at toll plaza locations and found functional.

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 sign boards & 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 is scheduled in 2021 and 2028.

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 & 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	
From	To	Cracking (%)	Raveling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (Kms/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/P	F	F	LD	F
1+000	2+000								G		E/P	F	F	LD	F
2+000	3+000								G		E/P & E	F	F	LD	F
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/P & E	F	F	LD	F
10+000	11+000								G		E/P & E	F	F	LD	F
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/P & E	F	F	LD	F
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/P &	F	F	LD	F

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair/Poor)	Road Side Drain	
From	To	Cracking (%)	Raveling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (Kms/hr)	Quality (G/F/P /VP)		Composition	Condition (Fair / Poor/ Damaged)		Type (LD/ULD/CD/ NO)	Condition (PF/F)***
											E				
29+000	30+000	1	3						F		E	F	F	ULD	PF
30+000	31+000								G		E/P & E	F	F	LD	F
31+000	32+000								G		E/P & E	F	F	LD	F
32+000	33+000								G		E	F	F	ULD	PF
33+000	34+000								G		E/P & E	F	F	LD	F
34+000	35+000								G		E/P & E	F	F	LD	F
35+000	35+575								G		E	F	F	ULD	PF

Annexure 2: Condition of structures

Type of Structure	Minor bdg. Upgraded to Major Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge	Minor Bridge
Chainage (Km.)	**9+900**	**10+950**	**16+750**	**18+300**	**3+200**	**16+050**	**20+700**	**23+050**	**28+800**	**30+900**	**5+021**
Substructure	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Superstructure	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Expansion Joint	Fair	Fair	Fair	Fair	Fair	-	-	-	-	Fair	-
Approach slabs	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
Drainage spouts	-	-	-	-	-	-	-	-	-	-	-
Wearing coat	Good	Good	Good	Good	Good	Good	Fair	Fair	Good	Fair	Fair
Bearings	-	-	-	-	-	-	-	-	-	-	-
Quadrant Pitching	Good	Fair	Fair	Good	Fair	Good	Fair	Fair	Good	Good	Good
Toe wall	-	-	-	-	-	-	-	-	-	-	-
Aprons	Good	Good	Good	Good	Fair	Good	Fair	Good	Good	Good	Good

Annexure 3: Condition of Culverts

Box/Slab Culverts

S. No.	Chainage (Km.)	Condition	Return wall	Quadrant pitching	Toe wall	Aprons	Parapet wall
1	4+350	Good	Good	Good	Fair	Fair	Good
2	14+600	Good	Good	Fair	Fair	Fair	Good
3	22+150	Good	Good	Good	Fair	Fair	Good
4	23+700	Good	Good	Fair	Fair	Fair	Good
5	24+100	Good	Good	Good	Fair	Fair	Good
6	24+500	Good	Fair	Fair	Fair	Fair	Good
7	25+350	Good	Good	Good	Fair	Fair	Good
8	25+900	Good	Good	Good	Fair	Fair	Good
9	26+750	Good	Good	Good	Fair	Fair	Good
10	27+150	Good	Good	Good	Fair	Fair	Good
11	27+900	Good	Good	Good	Fair	Fair	Good
12	28+100	Fair	Good	Good	Fair	Fair	Good
13	28+400	Good	Good	Good	Fair	Fair	Good
14	29+200	Good	Fair	Fair	Fair	Fair	Good
15	29+400	Good	Good	Fair	Fair	Fair	Good
16	30+325	Good	Good	Fair	Fair	Fair	Good
17	31+650	Good	Good	Fair	Fair	Fair	Good
18	32+050	Good	Good	Good	Fair	Fair	Good
19	32+300	Good	Good	Good	Fair	Fair	Good

Hume Pipe Culverts

S. No.	Chainage (km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
1	0+100	Good	Good	Fair	-
2	1+200	Good	Good	Fair	-
3	2+000	Fair	Good	Fair	-
4	3+850	Good	Good	Fair	-
5	6+500	Good	Good	Fair	-
6	7+900	Fair	Good	Fair	-
7	9+500	Good	Good	Fair	-
8	14+250	Good	Good	Fair	-
9	15+320	Good	Good	Fair	-
10	15+350	Good	Good	Fair	-
11	16+650	Good	Good	Fair	-
12	17+150	Good	Good	Fair	-
13	18+650	Good	Good	Fair	-
14	27+360	Good	Good	Fair	-
15	33+050	Good	Good	Fair	-

Annexure 4: Estimation of Toll Revenue

Toll Plaza-I:

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.7.300
Car/Taxi/Van	502
LCV	211
Bus	28
Truck	38
MAV	93

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	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 Pass	Total
Car/Taxi/Van	99%	1%	100%
LCV	100%	0%	100%
Bus	100%	0%	100%
Truck	100%	0%	100%
MAV	100%	0%	100%

4. **Toll Rates:**

Table-4: Details of Toll Fee

Vehicle Type	Toll Fee at Km.7.300 (2019-2020)
Car/Taxi/Van	20
LCV	50
Bus	105
Truck	125
MAV	250

Toll Plaza-1 Revenue (Km.7.300):

Years	Car/Jeep	Car/Jeep (local pass)	LCV	Bus	Trucks	MAV	Total in RS	Total in Lakh.	Cumulative (in Lacs)
2019-20	3611860	197675	3858550	1055310	1706710	8296730	18726835	187.268	187.268
2020-21	3792453	220531	4051478	1133370	1895030	9007591	20100452	201.005	388.273
2021-22	3982076	231558	4679457	1246707	2066311	9828871	22034979	220.350	608.623
2022-23	4181179	257438	4913429	1368544	2249983	10709760	23680334	236.803	845.426
2023-24	5487798	285327	5628110	1499449	2446857	11654167	27001706	270.017	1115.443
2024-25	5762188	299593	5909515	1640022	2657793	12666239	28935350	289.353	1404.797
2025-26	6050297	331129	6204991	1790904	2790682	13750383	30918387	309.184	1713.980
2026-27	6352812	347686	7058178	1880449	3027890	14911276	33578291	335.783	2049.763
2027-28	6670453	383324	7411086	2050413	3281842	16153882	35951000	359.510	2409.273
2028-29	7003975	421656	8380228	2232672	3553620	17483471	23766543	237.665	2646.939

Annexure 5: O&M Costs

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	35+575	12	4	350	597,660	04 nos of Labour
2	General Cleaning in Carriageway & Shoulders Urban area	Twice in a month	Km	2+406	24	4	350	80,842	04 nos of Labour
3	Watering in Median Plants	Once in Week	Km	2+406	52	1	1939	242,592	01 nos of Labour
4	ROW Cleaning	Half yearly	Km	17+7875	2	5	350	62,256	5 Nos of labour per KM (50% of the Project length)
5	Cleaning of Culverts	Half yearly	Nos	34	2	2	650	88,400	3 nos of Labour along with JCB or Excavator
6	Road Furniture Cleaning	Quarterly	Km	35+575	4	1	350	49,805	02 nos of Labour
7	Maintenance of Bus shelters	Monthly	Nos	16	6	1	350	33,600	2 nos/ Bus shelter/month
8	General Cleaning in Building & Facilities	Daily	Nos	3.00	6	15	350	94,500	02 nos of Labour for 30 days
9	Bridges	Half yearly	Nos	10	2	2	350	14,000	02 nos of Labour for removal of vegetation/Structure
Routine Maintenance cost for 1 year								**1,263,655**	

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
	EQUIPMENT SUPPLY								
1	TRUCK TIPPER 6-8 CUM CAPACITY	Monthly	Nos	1	12	1	15000	15,000	(2000000 is the cost of vehicle, considering 10% Rental per year) including maintenance
2	Grass cutter	Monthly	Nos	1.8	12	0	12000	1,080	(12000/year)

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
3	Manholes / Skyscraper	Monthly	Nos		12		400000	-	(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
4	Bikes	Monthly	Nos	1.8	12	0	2500	3,600	Per Supervisor/Per Month
5	Toll plaza AMC	Yearly	Nos		12	1	5000	60,000	10000/month
								79,680	
1	Ambulance	Monthly	Nos	12		1	10000	10000	(1200000 is the cost of vehicle, considering 10% Rental per year) including maintenance (1 Ambulance/toll plaza)
2	Consumables for Medical Aid Post and Ambulance	Monthly	Nos	12		1	500	6000	2500 Per month for per set (Per set - Per toll plaza)
3	Consumables for Route Patrolling & Crane	Monthly	Nos	12		1	500	6000	2500 Per month for per set (Per set - Per toll plaza)
								22,000	
Total O&M Costs								**1,365,335.00**	

Incidental cost for 1 year

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
1	Road marking	Half yearly	Sqm	1	1	2878	516	1,485,048	10 % of Total Project length on B/S for 1 year
2	Carriageway Maintenance (Pot Holes etc.)	Yearly	Sq.m	1	1	211	168	35,448	5% of Flexible Pavement
3	Maintenance of Earthen Shoulder	Half yearly	Cum	1	3	533.625	225	360,197	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)

Incidental cost for 1 year

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
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	35.575	4	9	2250	81,000	5 % of total stones per year (unable to understand the backup)
Total incidental cost for 1 Year								**2,103,693**	

Operational Expenses

S.No.	Particulars	Amount
1	Man Power	₹ 2,736,000
2	Fuel for Generator & Vehicles	₹ 804,000
3	Electricity	₹ 330,000
4	Stationary	₹ 10,000
5	Replacement of Electrical Fixtures	₹ 38,550
6	Refurbishment of Toll Plaza Equipment	₹ 75,000
	Total Amount	₹ 3,993,550

Major Maintenance BOQ

S. No.	Description	Unit	Quantity	Rate	Amount	Quantity	Rate	Amount
	Pavement (Asphalt & Concrete)							
1	Providing and applying tack coat with Rapid Setting Bitumen Emulsion using emulsion pressure distributor on the prepared bituminous/granular surface cleaned with mechanical broom, Ref. to Technical specification 503.			-			-	
(a)	On Bituminous surface @ 2.0 kg to 3.0 kg/10 sq.m.	Sqm	-	14.00		-	14.00	

S. No.	Description	Unit	Quantity	Rate	Amount	Quantity	Rate	Amount
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	-	7,480.00		-	7,480.00	
3	Providing and laying Semi dense bituminous concrete using a batch type Hot Mix Plant using crushed aggregates of size	Cum	3,383.04	6,800.00	2,30,04,655	3,383.04	6,800.00	2,30,04,655
4	Providing Micro surfacing	Sqm	1,35,321.50	160.00	2,16,51,440	1,35,321.50	160.00	2,16,51,440
5	Repair of joint Grooves with Epoxy Mortar Repair of spalled joint grooves of contraction joints, longitudinal joints and expansion joints in concrete pavements using epoxy mortar or epoxy concrete)	MTRS	-	250.00			250.00	
6	Texturing of Rigid pavement (considering 50% for 7 years)	Sqm	-	130.00		-	130.00	
	Total				**4,46,56,095**			**4,46,56,095**
	Junctions, Traffic Signs Marking and Other Appurtenances			-			-	
1	Providing and laying of **cement concrete kerb without channel** (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. - **Consider**	Rmt	-	380.00		-	380.00	

S. No.	Description	Unit	Quantity	Rate	Amount	Quantity	Rate	Amount
	5% for construction period.							
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	8,720.83	516.00	44,99,950	8,720.83	516.00	44,99,950
3	Road Studs	Nos	-	750.00		-	750.00	
4	Kerb painting		-	250.00		-	250.00	
	Total			-	**44,99,950**		-	**44,99,950**
	Grand Total				**4,91,56,045**			**4,91,56,045**

Annexure 6: Letter of Award

MADHYA PRADESH ROAD DEVELOPMENT CORPORATION LIMITED
(Govt. of M.P. Undertaking)
16-A, Arera Hills, Bhopal - 462 011
Tel.: (O) 0755-2765196, 205, 213, 216 (EPBX) Fax : 91-755-2572643
Website : www.mprdc.nic.in.

No. MPRDC/BOT/A-V/2012/ 13324
Bhopal, dated 08 February,2013

M/s Dilip Buildcon Ltd.,
E-5/99, Arera Colony,
Bhopal
Fax: 4247574

Sub: **Regarding, Strengthening, Widening, Maintaining and Operating of Ashoknagar-Vidisha Major District Road on BOT (Toll + Annuity) basis**

In response to your Pre-Qualification you have submitted Technical and Financial Bid for development of **Ashoknagar-Vidisha Major District Road on BOT (Toll+Annuity) basis**. In this connection, kindly refer to the clarification, addendum etc. issued from time to time before submission of the tender document.

Also refer to your bid documents containing an unconditional price bid of **Rs. 5.04 crores (Rupees five crores four lacs only)** as Annuity Amount payable in terms of Clause 25 of the Concession Agreement.

Pursuant to our acceptance of your tender and decision to award the work to you, we request you to send your acceptance and sign the Concession Agreement within the time stipulated in the Tender.

Yours faithfully

Encl: **Duplicate copy of LoA**

(Arun Paliwal)
Dy. General Manager

Connecting People Through quality infrastructure

Annexure 7: Provisional Completion Certificate

VAIDYA ORGANISATION
INFRASTRUCTURE DEVELOPMENT CONSULTANT

Head Off. : 311- Indraprasth Tower, 6/1 M.G. Road, Indore (M.P.)
Tel/Fax : 0751- 4050850, Mob : 98262-80850, E-mail : Vaidyamk@yahoo.com.uk
Gwalior Off. : 468- Hargovindpuram, City Center, Thatipur, Gwalior (M.P.)
Tel/ Fax : 0751- 4010803, Mob : 94256-09290, E-mail : vaidya.tlgwalior@gmail.com

Provisional Certificate

1. I, **R.P. Mishra** (Name of Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated **22nd March 2013** (the "Agreement") for development of the **Ashoknagar-Vidisha Road** section (**km 0+000 to km 35+661**) of MDR the "Project Highway" on build, Operate, and Transfer {BOT(Toll+Annuity)} basis, through **M/s DBL Ashoknagar-Vidisha Tollways Ltd., Bhopal (M.P.),** hereby certify that the tests specified in article 14 and Schedule-I of the agreement have been undertaken to determine compliance of the Project Highway with the provision of the Agreement.
2. Construction works that were found to be incomplete and/or deficient have been specified in the Punch List appended hereto, and the concessionaire has agreed and accepted that it shall complete and/or rectify all such works in the time and manner set forth in the Agreement. (Some of the incomplete works have been delayed as a result of reasons attributable to the MPRDC or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. Through the remaining incomplete works have been delayed as a result of reason attributable to the concessionaire), I am satisfied that having regard to the nature and extent of such incomplete works, it would not be prudent to withhold commercial operation of the Project Highway pending completion thereof.
3. In view of the foregoing, I am satisfied that the Project Highway can be safely and reliably placed in commercial service of the users thereof, and in terms of the Agreement, the Project Highway is hereby Provisionally declared fit for entry into commercial operation on this the **26th** day of **July 2014.**

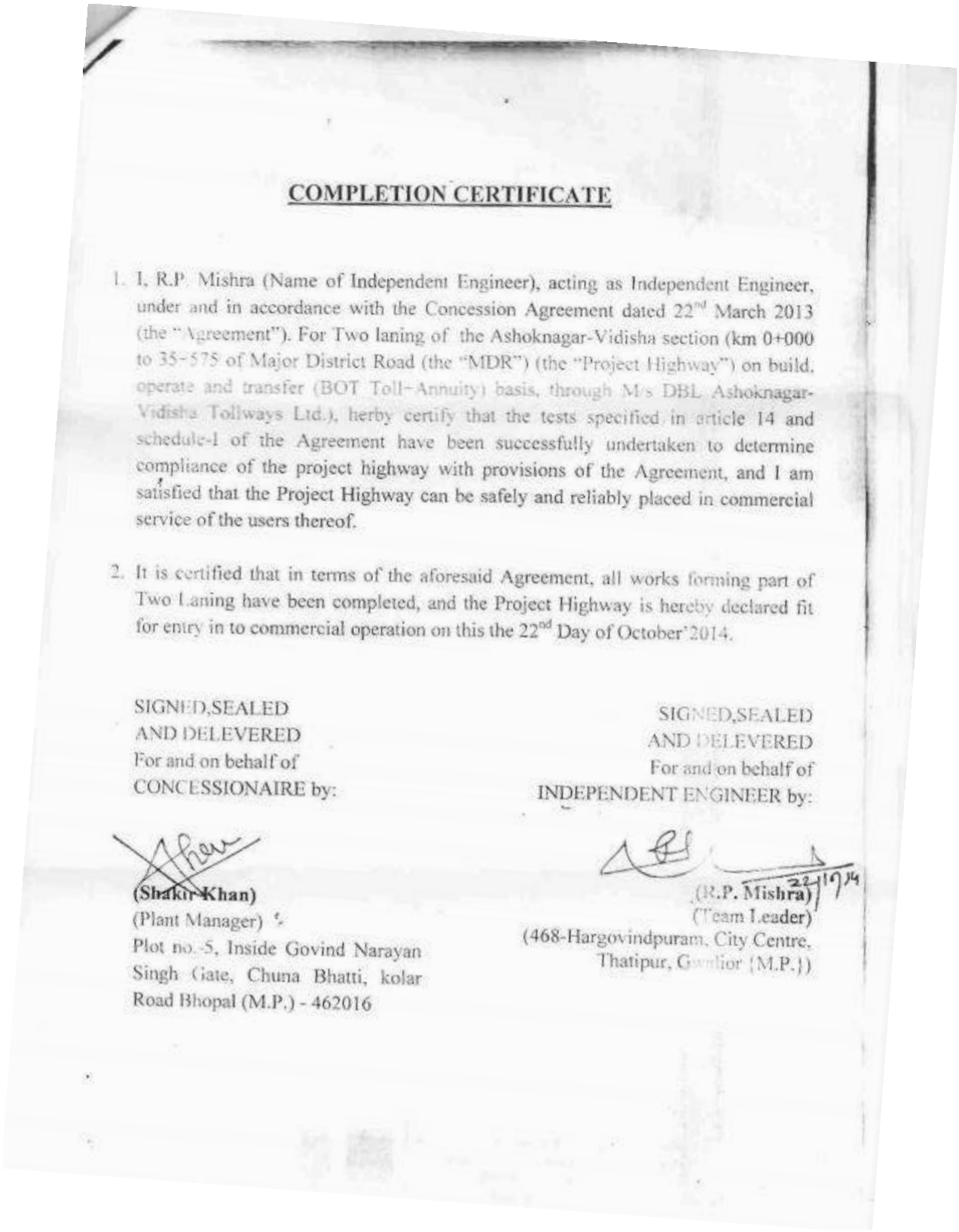
ACCEPTED, SIGNED, SEALED
AND DELIEVERED
For and on behalf of
CONCESSIONAIRE by:

(Devendra Jain)
(Director)
M/s DBL Ashoknagar-Vidisha Tollways Ltd., Bhopal (M.P.)
(Address:- E-5/99, Arera Colony, Bhopal (M.P.)

ACCEPTED, SIGNED, SEALED
AND DELIEVERED
For and on behalf of
INDEPENDENT ENGINEER by:

(R.P. Mishra) 26/07/2014
(Team Leader)
Vaidya Organisation
(Address:- 468- Hargovindpuram, City Centre, Thatipur, Gwalior (M.P.)

Annexure 8: Completion Certificate



COMPLETION CERTIFICATE

1. I, R.P. Mishra (Name of Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated 22nd March 2013 (the "Agreement"). For Two laning of the Ashoknagar-Vidisha section (km 0+000 to 35+575 of Major District Road (the "MDR") (the "Project Highway") on build, operate and transfer (BOT Toll-Annuity) basis, through M/s DBL Ashoknagar-Vidisha Tollways Ltd.), herby certify that the tests specified in article 14 and schedule-I of the Agreement have been successfully undertaken to determine compliance of the project highway with provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in commercial service of the users thereof.

2. It is certified that in terms of the aforesaid Agreement, all works forming part of Two Laning have been completed, and the Project Highway is hereby declared fit for entry in to commercial operation on this the 22nd Day of October'2014.

SIGNED,SEALED
AND DELEVERED
For and on behalf of
CONCESSIONAIRE by:

(Shakir Khan)
(Plant Manager)
Plot no.-5, Inside Govind Narayan Singh Gate, Chuna Bhatti, kolar Road Bhopal (M.P.) - 462016

SIGNED,SEALED
AND DELEVERED
For and on behalf of
INDEPENDENT ENGINEER by:

(R.P. Mishra) 22/10/14
(Team Leader)
(468-Hargovindpuram, City Centre, Thatipur, Gwalior (M.P.))

Annexure 9: Insurance

This Document is Digitally Signed
Signer: ATUL JERATH
Date: Thursday, S... 24, 2020 5:50 AM
Location: NOIDA

ELECTRONIC EQUIPMENT INSURANCE POLICY SCHEDULE

Policy No	: **171200/44/2021/45**	**Prev Policy No**	:
Cover Note No	: ER1700203538	Cover Note Dt	: 08/09/2020
Insured's Code	: 102436990	Issuing Office Code	: 171200
Insured's Name	: DBL Ashok Nagar Vidisha Tollways Ltd. (GSTIN: 23AAECD5553C1Z3)	Issuing Office Name	: CBL Vadodara (GSTIN: 24AAACT06
Address	: Plot no. 5, Inside Govind Narayan Singhgate, Chunabhatti, Kolar Road, Bhopal, 462016, M.P.	Address	: Ist FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel /Fax /Email	: BHOPAL462016@unisoninsurance.net	Tel /Fax /Email	: 0265-2427075 / 0265-2436654 / 171200@orientalinsurance.co.in

Agent/Broker Details

Dev.Off.Code	:
Agent/Broker	: **LC0000000179 (1149)UNISON INSURANCE BROKING SERVICES P LTD**
Address	: **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**
Tel/Fax/Email	: **0265-2252274/0265-2357445/0265-2356033/**

Period of Insurance : FROM 00:00 ON 08/09/2020 TO MIDNIGHT OF 07/09/2021

Collection No & Dt : DC_I_IND 3214000877 - 23/09/2020 GST INVOICE NO :2419502808 UIN :0

Gross Premium : 1,043 GST : 188 Stamp Duty : 1 Total : 1,231

RISK DETAILS

Section I : EEI - EQUIPMENT

Sum Insured : 23,17,803

1 Location of the Risk : AS PER LIST ATTACHED
Road and bridge stretch connecting from Ashoknagar to Vidisha

MADHYA PRADESH - 464001

Sl No.	Description of Items	Manufacturer Name	Year of Manufacture	Annual Maintenance Contract	Identification No.	Escalation %	Sum Insured
1	AS PER LIST	AS PER LIST	2018		AS PER LIST		23,17,803

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 -
1) Equipment (other than Winchester Drive)- 5% of claim amount subject to a minimum of Rs.2,500/-

Place : -
Date : 22/09/2020

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: U66010DL1947GOI007158 All the Amounts mentioned in this policy are in Indian Rupee Page 1 of 2

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

This Document is Digitally Signed
Signer: ATUL JERATH
Date: Wed, Dec 23, 2020 11:27:23 IST
Location: NOIDA
Reason: Signing Policy for OICL

FIRE INDUSTRIAL ALL RISK POLICY SCHEDULE

Policy No	: **171200/11/2021/254**	**Prev Policy No**	: **171200/11/2020/478**
Cover Note No	:	Cover Note Dt	:
Insured's Name	: 102436990 - DBL Ashok Nagar Vidisha Tollways Ltd. (GSTIN: 23AAECD5553C1Z3)	Issuing Office	: 171200 - CBU Vadodara (GSTIN: 24AAACT0627R2Z4)
Address	: Plot no. 5, Inside Govind Narayan Singhgate, Chunabhatti, Kolar Road, Bhopal, 462016, M.P. BHOPAL 462016	Address	: Ist FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel /Fax /Email	: / / 0 / avni.sheth@unisoninsurance.net	Tel /Fax /Email	: 0265-2427075 / 0265-2436654 / 171200@orientalinsurance.co.in
Dev.Officer	:	BROKER	: LC0000000179 (1149)UNISON INSURANCE BROKING SERVICES P LTD

Period of Insurance: FROM 00:00 ON 16/12/2020 TO MIDNIGHT OF 15/12/2021

Collection No & Dt : DC_I_INDCSH 3214001253 - 15/12/2020 GST INVOICE NO :2419707235 UIN :0

Gross Premium : 9,25,755 GST : 1,66,636 Stamp Duty : .5 Total : 10,92,391

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
Fully constructed road of Ashok Nagar Vidisha Major district road on BOT (Toll+Annuity) basis, From KM 0.10 to KM 35.68 (design length 35.58 Km) in the state of Madhya Pradesh ¿ 473330

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)		97,08,88,929

SCHEDULE OF PREMIUM

Place :
Date : 15/12/2020

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 1 of 4

IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

This Document is Digitally Signed
Signer: ATUL JERATH
Date: Wed, Dec 23, 2020 11:27:13 IST
Location: NOIDA
Reason: Signing Policy for OICL

STANDARD FIRE & SPECIAL PERILS POLICY SCHEDULE

Policy No	**: 171200/11/2021/253**	**Prev Policy No**	**: 171200/11/2020/477**
Cover Note No	: -	Cover Note Dt	:
Insured's Name	: 102436990 - DBL Ashok Nagar Vidisha Tollways Ltd. (GSTIN: 23AAECD5553C1Z3)	Issuing Office	: 171200 - CBU Vadodara (GSTIN: 24AAACT0627R2Z4)
Address	: Plot no. 5, Inside Govind Narayan Singhgate, Chunabhatti, Kolar Road, Bhopal, 462016, M.P. BHOPAL 462016	Address	: Ist FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel /Fax /Email	: / / 0 / avni.sheth@unisoninsurance.net	Tel /Fax /Email	: 0265-2427075 / 0265-2436654 / 171200@orientalinsurance.co.in

Agent/Broker Details

Dev.Off.Code :

Agent/Broker : LC0000000179 (1149)UNISON INSURANCE BROKING SERVICES P LTD

Address Tel/Fax/Email : 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

Period of Insurance : FROM 00:00 ON 16/12/2020 TO MIDNIGHT OF 15/12/2021

Collection No & Dt : DC_I_INDCSH 3214001253 - 15/12/2020 GST INVOICE NO :2419707268 UIN :0

Gross Premium : 79,153 GST : 14,248 Stamp Duty : .5 Total : 93,401

Co Insurance Details :

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

RISK DETAILS

1 Location of the Risk : Fully constructed road of Ashok Nagar Vidisha Major district road on BOT (Toll+Annuity basis, From KM 0.10 to KM 35.68 (design length 35.58 Km) in the state of Madhya Pradesh ¿ 473330

MADHYA PRADESH
VIDISHA
464001
VIDISHA

Risk Description : Roads

SCHEDULE OF PREMIUM

TOTAL PREMIUM	79,153.00
ADD :GST	14,248.00
STAMP DUTY	0.50
TOTAL AMOUNT	93,401.00

Date : 15/12/2020

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

Page 1 of 3

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HDFC ERGO General Insurance Company Limited

May 13, 2020

DBL ASHOK NAGAR VIDISHA TOLLWAYS LTD

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

Dear Customer,

Sub: Employees Compensation Insurance Policy No: 3114203388023000000

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	:	200113159601

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 . 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

3114203388023000000 Page 1 of 13

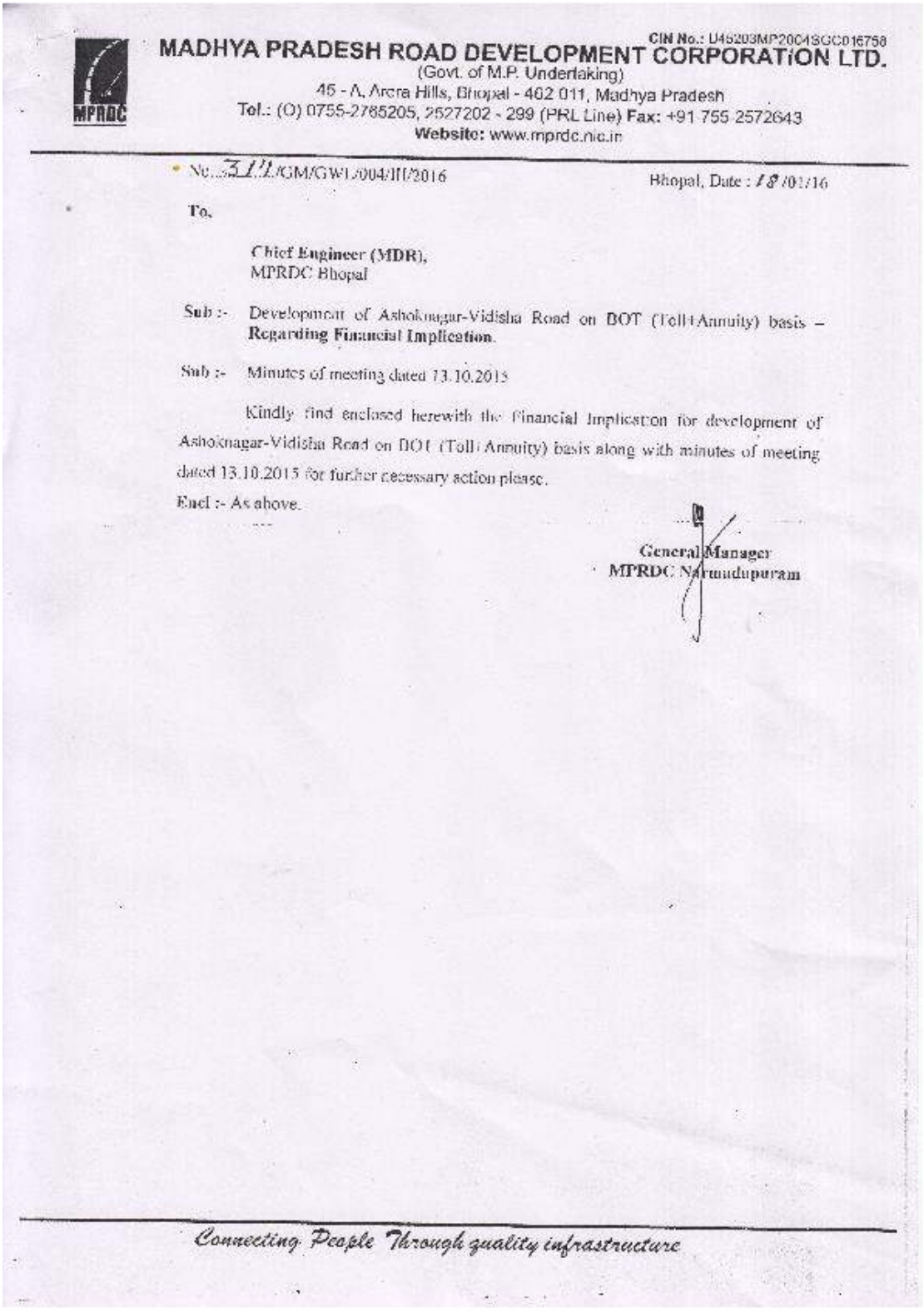
HDFC ERGO General Insurance Company Limited (Formerly HDFC General Insurance Limited) | UIN : IRDAN125P0017V02201112 | IRDAI Reg No. 146 | CIN : U66030MH2007PLC177117

Registered & Corporate Office: 1st Floor,HDFC House, 165 - 166 Backbay Reclamation, H. T. Parekh Marg, Churchgate, Mumbai - 400 020

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

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

Annexure 10: Change of Scope



CIN No.: U45203MP2004SGC016758

MADHYA PRADESH ROAD DEVELOPMENT CORPORATION LTD.
(Govt. of M.P. Undertaking)
45 - A, Arera Hills, Bhopal - 462 011, Madhya Pradesh
Tel.: (O) 0755-2765205, 2527202 - 299 (PRL Line) Fax: +91 755 2572643
Website: www.mprdc.nic.in

No.: 311/GM/GWL/004/III/2016 Bhopal, Date : 18/01/16

To,

Chief Engineer (MDR),
MPRDC Bhopal

Sub :- Development of Ashoknagar-Vidisha Road on BOT (Toll+Annuity) basis – **Regarding Financial Implication.**

Sub :- Minutes of meeting dated 13.10.2015

Kindly find enclosed herewith the Financial Implication for development of Ashoknagar-Vidisha Road on BOT (Toll+Annuity) basis along with minutes of meeting dated 13.10.2015 for further necessary action please.

Encl :- As above.

General Manager
MPRDC Narmadapuram

Connecting People Through quality infrastructure

(1)

MINUTES OF MEETING

FINANCIAL IMPLICATION OF APPROVED CHANGE OF SCOPE

NAME OF ROAD: ASHOKNAGAR-VIDISHA ROAD (MDR) ON BOT (TOLL + ANNUITY)

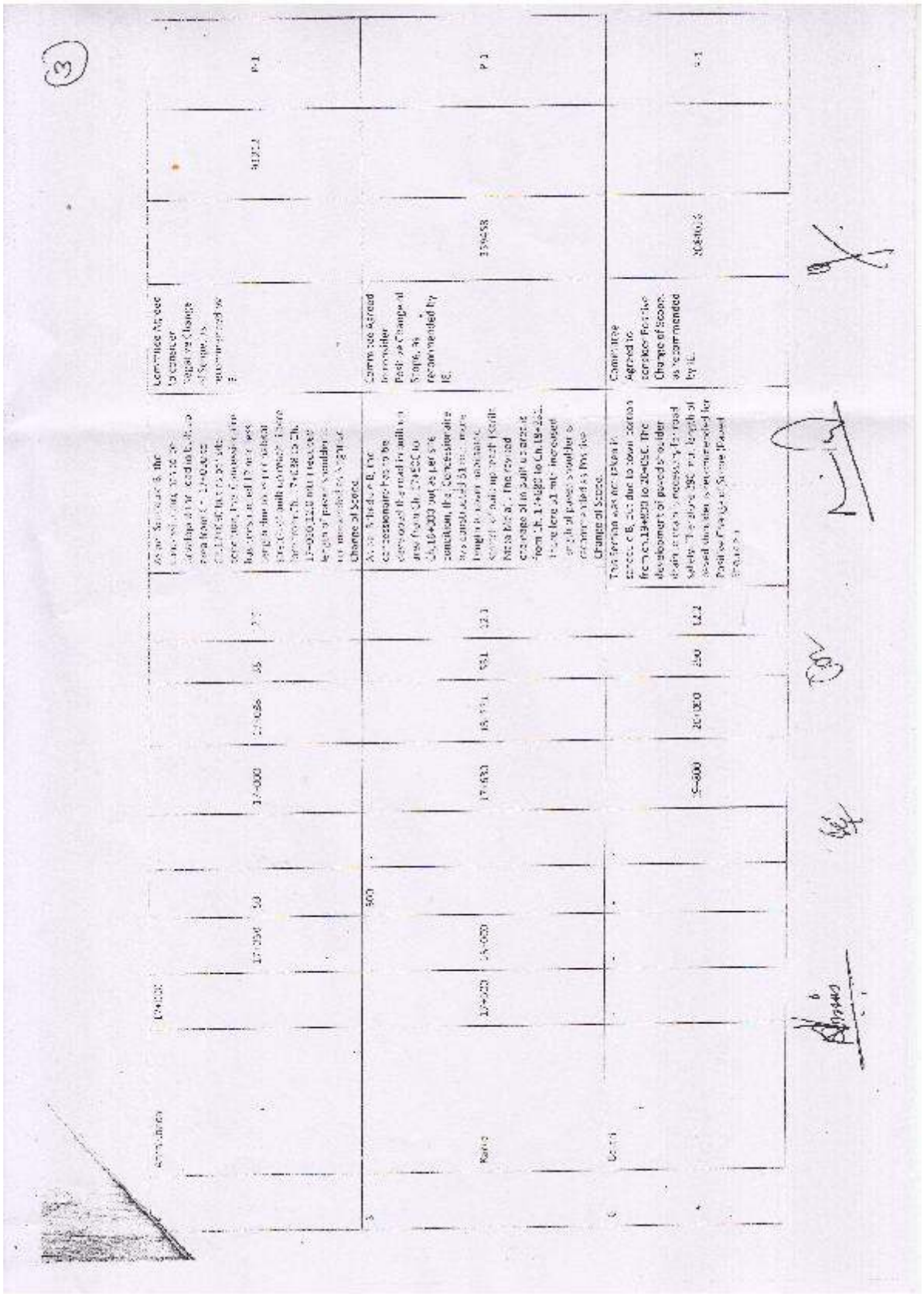
Meeting of Committee formed at the level of General Manager (T&D) of M.P.R.D.C. Gwalior for Financial Implication of Approved Change of Scope by Secretary committee of M.P.R.D.C. on dated 13.02.2015, for development of above road on BOT (Toll+Annuity) basis. Meeting was been held in the office of General Manager MPRDC Bhopal on dated 13.10.2015. Following officials were present in the meeting:-

1. Shri. S. S. Meena, General Manager, MPRDC,Bhopal
2. Shri. Pankaj Ojha, Divisional Manager, MPRDC, Gwalior
3. Shri Anil Srivastav, AGM (WORK), MPRDC, Bhopal
5. Shri Manoj Vaidya, Proprietor M/s Vaidya Organisation, Indore
6. Shri Nitin Shrivastava General Manager M/s Dilip Buildcon Limited, Bhopal the Concessionaire

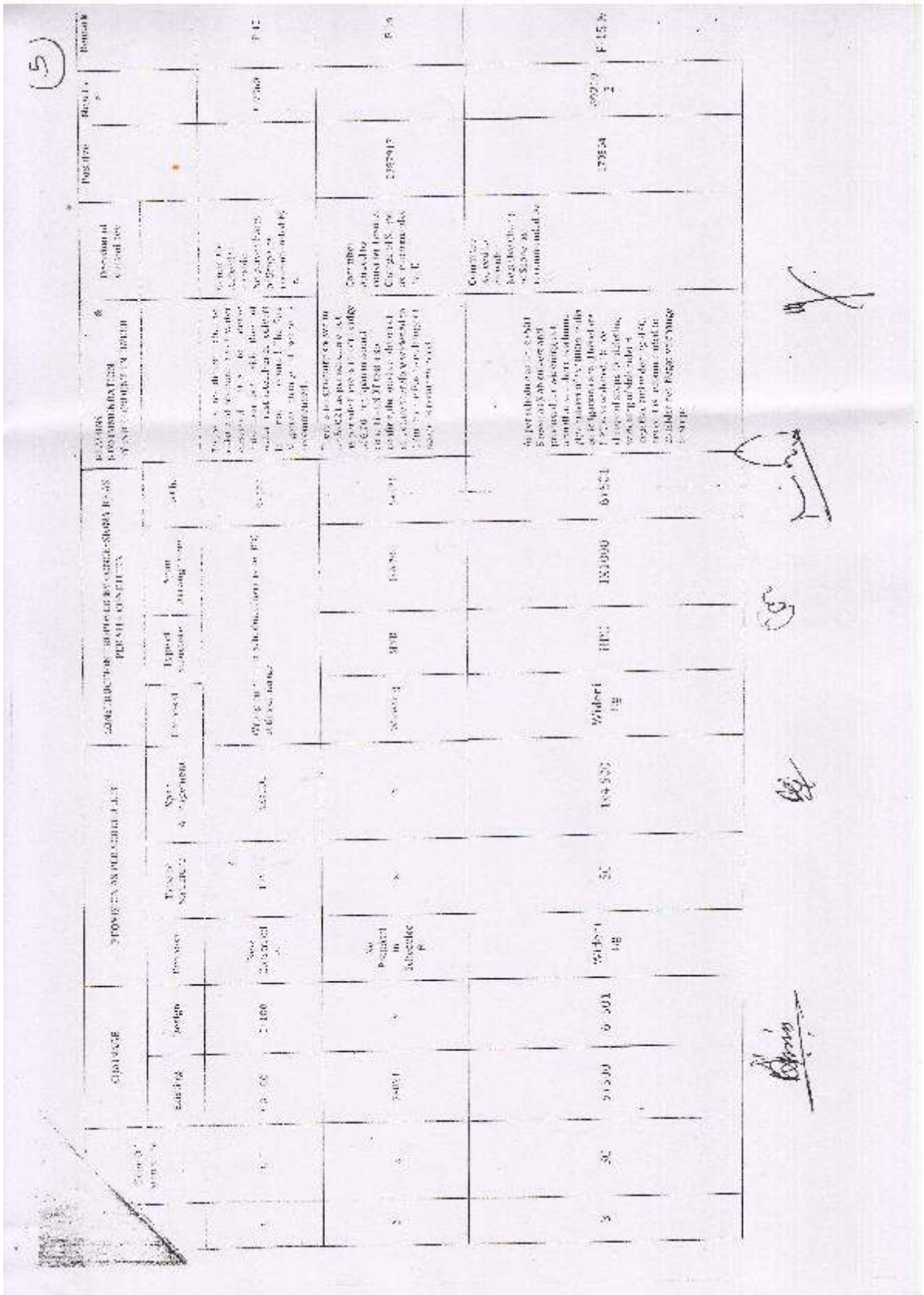
Brief Details of Project:-

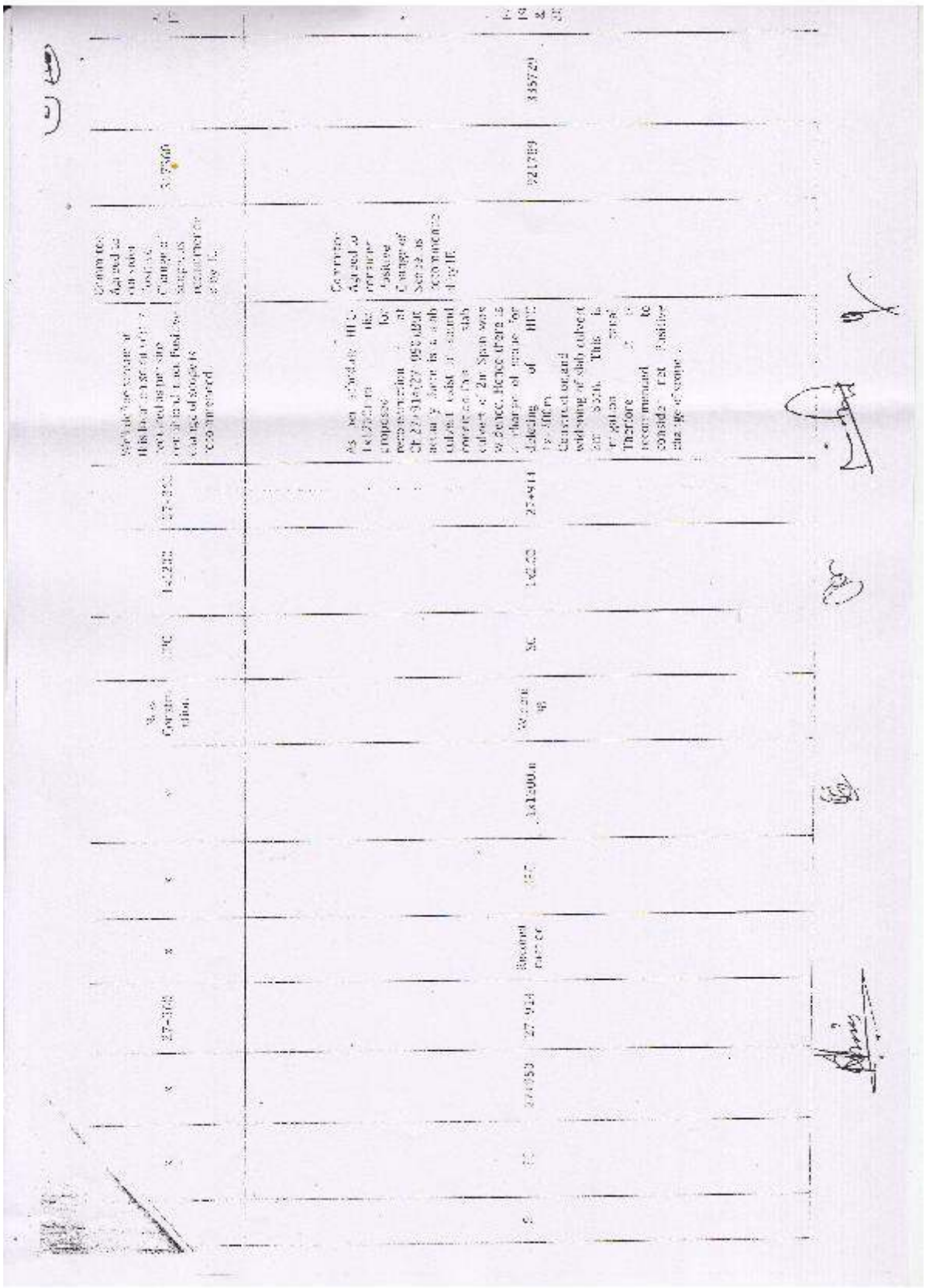
1.	Name of Work	:- Development of Ashoknagar-Vidisha Road (MDR)on BOT(Toll+Annuity)
2.	Name of Concessionaire	:- M/S DB Ashoknagar-Vidisha Tollways Limited Project, Bhopal.
3.	Length of Project	:- 35.575 Km.
4.	Total Project Cost	:- Rs 85.44 Cr
5.	Date of Provisional Completion Certificate	:- 26.07.2014
6.	Date of Completion Certificate	:- 22.10.2014
7.	Annuity	:- Rs 5.04 Cr
8.	Financial Implication Positive	:- Rs 20,48,694.00 /-
9.	Road Safety Fund i.e. 0.25 % of TFC on Rs 85.44 Cr	:- Rs 21,36,000.00 /-
10.	Status of As Built Drawing	:- Submitted to Divisional Manager MPRDC Gwalior Office
11.	Financial Implication Calculated	:- As per PWD SOR w.e.f. 01.02.2013
12.	Rates	:- Above/Below/At SOR, to be decided by HO MPRDC Bhopal

The Financial Implication submitted by Independent Engineer vides its letter no. VD/TL/2012/MDR/AAVR/Final-Variation/1-029 dated 16.04.2015. These have been checked and Certified by the above committee in meeting as above.



Total = 5382337 3200768





(7)

6	30	28+123	28+100	widened	60	1x4.00	Widened	30	1x2.00	28+100	The schedule proposed for widening of slab culvert 1x4m span at ch.28+100 but at site,the slab culvert at this chainage having the span of 2m, which was widened.Hence a change of scope for widening of slab culvert in 2m span in place of 4m as proposed in schedule. Therefore it is recommended to consider for Negative change of scope.	Committee Agreed to consider Negative Change of Scope as recommended by IE	1932041	4525046
										Total =			7738612	5871327

1. Positive Variation Highway Work As per Page No. 04 Amount **Rs.53,82,330.00**
2. Positive Variation Structure Work As per Page No. 07 Amount **Rs.57,38,612.00**

Total Positive = **Rs. 1,11.20942.00**

3. Negative Variation Highway Work As per Page No. 04 Amount **Rs.32,00,768.00**
4. Negative Variation Structure Work As per Page No. 07 Amount **Rs.58,71,327.00**

Total Negative = Rs. 90,72,095.00
Total Net Positive Variation = Rs. 20,48,847.00
Cost of Safety Fund = Rs. 21,36,000.00
Diffrence of Amount = Rs. 87,153.00

Note :- Financial Implication has been calculated as SOR w.e.f. 01.02.2013. Premium /Discount may be finalised at Head Office Level

(N.K. Srivastava) General Manager M/s DBL	(Manoj Vaidya) Proprietor Vaidya Organisation	(Anil Srivastava) AGM (MDR) MPRDC	Pankaj Ojha DM (Gwalior) MPRDC	(BS Meena) General Manager MPRDC Bhopal

Annexure 11: Project Photos