



SHREM FINANCIAL PRIVATE LIMITED

**Design, Build, Finance, Operate, Maintain and Transfer
(DBFOMT) of Hirekerur-Ranibennur in the State of Karnataka on
DBFOMT Hybrid Annuity Basis**

TECHNICAL DUE DILIGENCE REPORT



FEBRUARY, 2021

SUBMITTED BY



RUKY PROJECTS PRIVATE LIMITED
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Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) of Hirekerur-Ranibennur in the State of Karnataka on DBFOMT Hybrid Annuity Basis

This document has been issued and amended as follows:

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CHAPTER 1. INTRODUCTION

1.1 General

DBL Hirekerur Ranibennur Tollways Ltd. (herein after referred to as the “Concessionaire”) had augmented the existing State Highway from “Hirekerur – Ranibennur section in the State of Karnataka, in accordance with the provisions of the Concession Agreement executed with Karnataka Road Development Corporation Limited (herein after referred to as the “KRDC”) on 16th Day of December 2015. on Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) Hybrid Annuity Basis.

The project road comprises of three State Highways viz., SH-62, SH-76 and SH-57. The Project Road starts from Hirekerur and ends at Ranibennur intersecting with NH-4. The road passes through Hirekerur, Chikkerur, Haunsabavi, Koda, Halageri and Ranibennur.

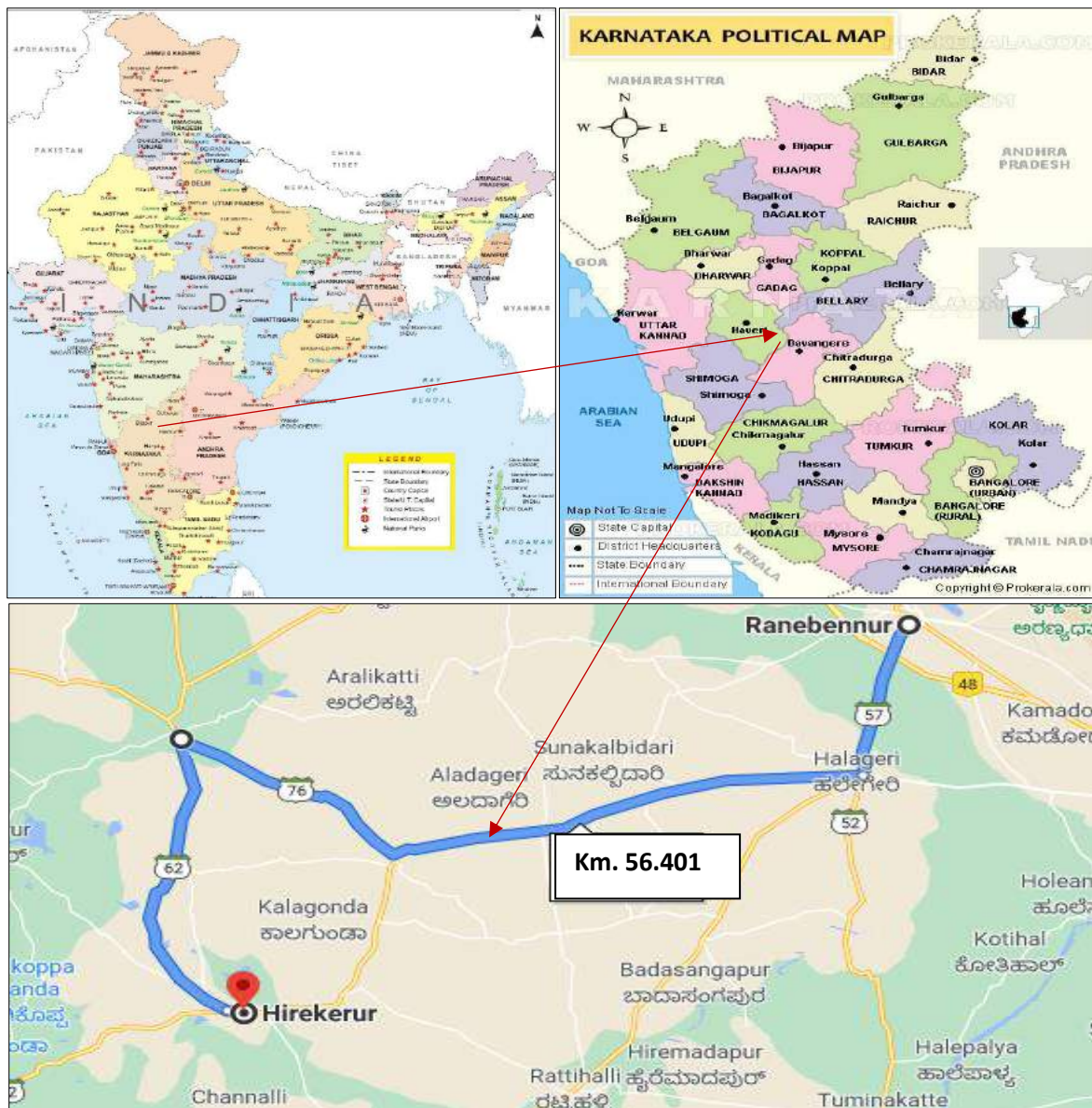


Figure 1.1: Project Location Map

SHREM ROADWAYS PVT. LTD. (SRPL) acquired DBL Hirekerur Ranibennur Tollways Ltd vide agreement dated 26 March 2018.

SHREM FINANCIAL PVT. LTD (SFPL). appointed RUKY Projects Pvt. Ltd. as consultant 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.

1.2 The Project Data

Table 1.1: Project Data

S. No.	Particulars	Details
1	Name of the project	Development of Hirekerur-Haunsabavi-Ranibennur (SH-62, SH-76 &SH-57) in the State of Karnataka on DBFOMT Annuity basis.
2	Road Type	State Highway
3	Name of the Authority	KRDCL
4	Name of the Concessionaire	DBL Hirekerur Ranibennur Tollways Ltd
5	Name of the EPC Contractor	Dilip Buildcon Limited
6	Date of LOA	11.09.2015
7	Date of Agreement	16.12.2015
8	Date of Supplementary Agreement	29.09.2016
9	Design Length as per Schedule B of CA	56.401 Km.
10	Actual Length Constructed	56.401 Km.
11	Project Lane Configuration	Two Lane
12	EPC Cost	174.2 Crores
13	Nature of contract	DBFOMT
14	Toll collected by	KRDCL
15	Concession Period	10 years from appointed date
16	Appointed date	29.09.2016
17	Concession End Date	28.09.2026
18	Construction Period	730 days
19	Schedule Completion Date	28-09-2018
20	Date of issuance of Provisional Certificate (Commercial Operation Date)	24.02.2018
21	Date of issuance of Completion Certificate	Yet to be received
22	Annuity Amount (every six months)	Rs. 19.62 Cr
23	Total Number of Annuities payable	16 Nos.
24	First Annuity Payment Date	28-03-2019
25	Total Number of Annuity Payments paid	4 Nos

1.3 Scope of Consultancy Services

The scope of work includes providing Technical Due Diligence of the Project Highway 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
- 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 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 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 Concession Agreement (CA) including Change of scope are listed in the following **Table 2.1**.

Table 2.1: Salient Features

S. No.	Particulars	As per Schedule B	COS	As per Site
1	Total Length of 2-Lane with paved & earthen shoulder	47.301 Kms.		47.301 Kms.
2	Length of 2-Lane with paved shoulder	7.450 Kms.	1.650 Kms. Added	9.100 Kms.
3	Length of 4-Lane road	1.650 Kms.	-1.650 Kms. (4 Lane) to (2-Lane)	
4	Toll Plaza	1. Km. 19+050 2. Km. 43+660		1. Km. 19+050 (SH:76 Km. 153+900) 2. Km. 43+660 (SH:62 Km. 32+300)
5	Bus Bays / Bus Shelters	22 Nos.		8 Nos both Bus shelters and Bus bays completed. 6Nos only bus bays completed. 8Nos descoped.
6	Truck Lay Bays	Nil		Nil
7	Major Junction	9 Nos.		9 Nos.
8	Minor Junctions	22 Nos.		22 Nos.
9	RUB/ROB	Nil		Nil
10	Level Crossing	Nil		Nil
11	Bypass	Chikkerur (Km. 11+200 to Km. 13+192) 1.992 Kms.		1.992 Kms.
12	Re alignment	Km. 14+246 to Km. 14+366 (0.120 Kms.) Km. 15+000 to Km. 15+120 (0.120 Kms.)		Km. 14+246 to Km. 14+366 (0.120 Kms.) Km.15+000 to Km. 15+120 (0.120 Kms.)
13	Major Bridges	0 Nos.		0 Nos.
14	Minor Bridges	11 Nos.		11
15	Causeway	0 Nos.		0 Nos.
16	Box/Slab Culverts	15 Nos.		18 Nos*.
17	Pipe Culverts	81 Nos.		76 Nos*.

*As per site requirement, 3 additional box culverts are constructed and 5 pipe culverts are not constructed as per site condition.

2.2 Typical Cross Section (TCS) Schedule

The Concessionaire has followed the Typical Cross Section Schedule, shown below as per Schedule B of CA during the Construction.

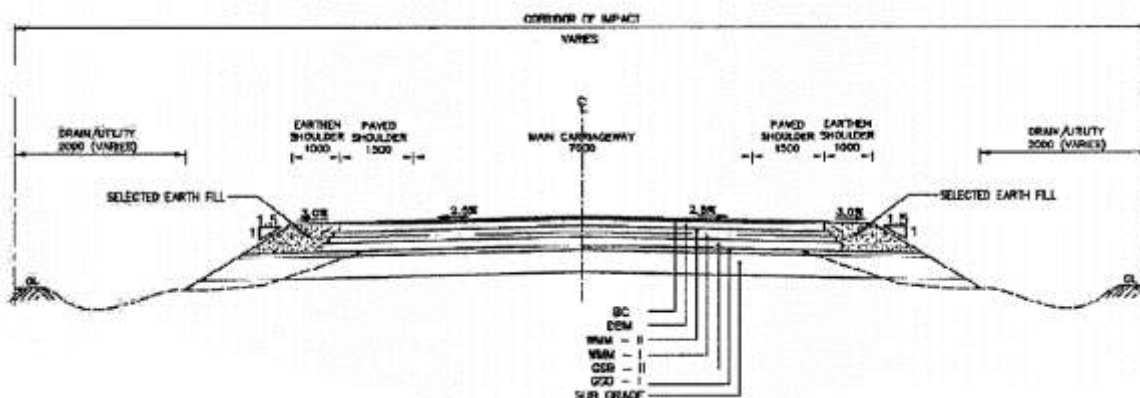


Figure 2.1: TCS-A of CA Rural cross section with paved shoulder

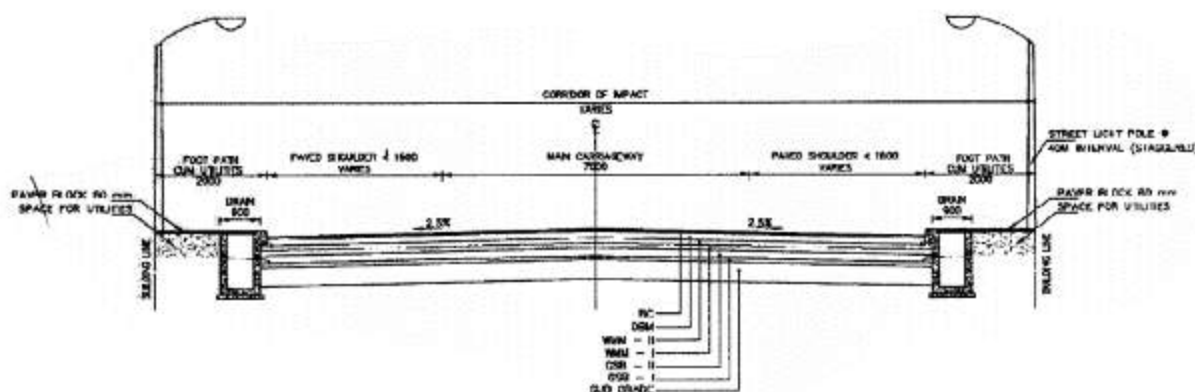


Figure 2.2: TCS-B of CA 2 Lane carriageway with Paved shoulder in Built-up area

TCS Schedule is provided below.

Table 2.2: TCS Schedule

S. No.	From (Km.)	To (Km.)	Length (Kms.)	Type of TCS
1	0+000	1+650	1.650	TCS B
2	1+650	8+500	6.850	TCS A
3	8+500	9+000	0.500	TCS B
4	9+000	13+192	4.192	TCS A
5	13+192	16+650	3.458	TCS A
6	16+650	17+400	0.750	TCS B
7	17+400	19+800	2.400	TCS A
8	19+800	22+500	2.700	TCS B
9	22+500	26+100	3.600	TCS A
10	26+100	26+800	0.700	TCS B

S. No.	From (Km.)	To (Km.)	Length (Kms.)	Type of TCS
11	26+800	31+700	4.900	TCS A
12	31+700	32+700	1.000	TCS B
13	32+700	49+400	16.700	TCS A
14	49+400	51+200	1.800	TCS B
15	51+200	56+401	5.201	TCS A

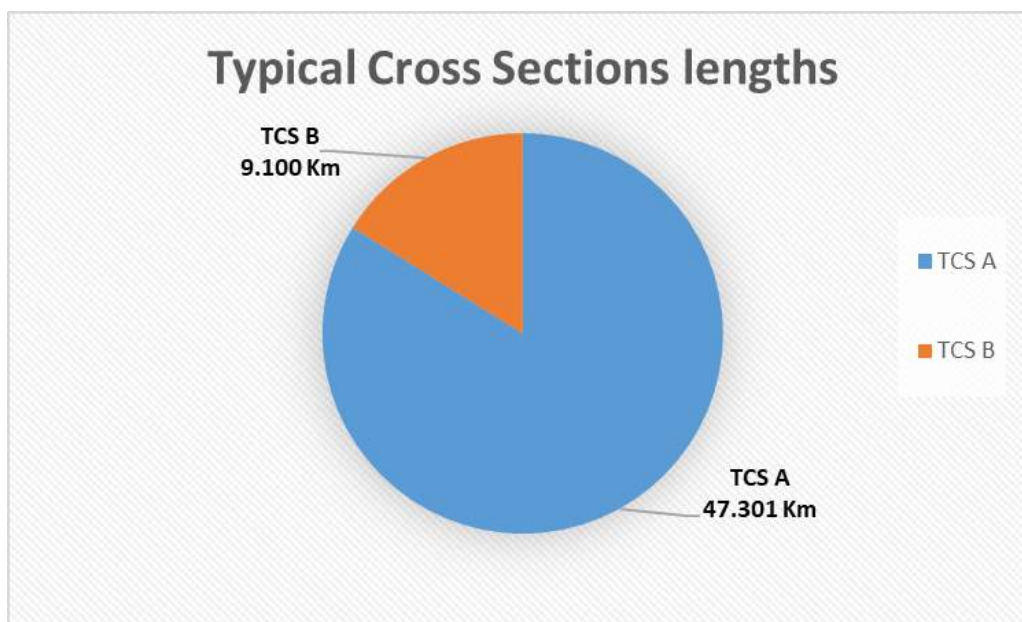


Figure 2.3: Pictorial Diagram of TCS Lengths.

2.3 Road Side Drainage

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

2.4 Service Roads

Service road is not proposed along the entire stretch of the project road as per provisions of Schedule B of CA.

2.5 Bypass/Realignment

Realignments at Chikkerur from Km. 11+200 to Km. 13+192 (1.992 Kms.), from Km. 14+246 to Km. 14+366 (0.120 Kms.) and from Km. 15+000 to Km. 15+120 (0.120 Kms.) are proposed on the project road as per provisions of Schedule B of CA.

2.6 Intersections

As per provisions of Schedule B of CA, 9 Major Junctions and 22 Minor Junctions are provided. Details are given below.

Table 2.3: List of Junctions

S. No.	Chainage (Km.)	Type of Junction	Side	Major/ Minor
1	0+000	T	LHS	Major
2	1+040	T	RHS	Major
3	1+630	T	RHS	Minor
4	3+660	T	LHS	Minor
5	5+790	T	RHS	Minor
6	8+290	T	RHS	Minor
7	11+20	T	RHS	Major
8	14+950	T	LHS	Minor
9	16+40	T	RHS	Minor
10	16+835	X	both	Minor
11	19+270	T	LHS	Minor
12	20+080	T	RHS	Minor
13	20+680	X	both	Minor
14	22+040	T	RHS	Major
15	22+240	T	LHS	Major
16	24+690	X	both	Major
17	26+570	T	RHS	Minor
18	28+140	T	LHS	Minor
19	29+655	X	both	Minor
20	31+835	T	LHS	Minor
21	32+480	T	LHS	Minor
22	35+545	T	RHS	Major
23	36+400	T	LHS	Minor
24	38+145	T	LHS	Minor
25	40+405	X	both	Minor
26	42+305	T	RHS	Minor
27	42+415	T	LHS	Minor
28	45+960	T	RHS	Minor
29	50+015	T	RHS	Minor
30	50+640	X	both	Major
31	56+401	T	LHS	Major

2.7 Grade Separated Structures and underpasses

Grade Separated Structures and underpasses are not proposed as per provisions of Schedule B of CA.

2.8 Road Over Bridge (ROB)

ROB is not proposed in the project road as per provisions of Schedule B of CA.

2.9 Carriageway and pavement Details

Summary of Carriageway Details is given below:

Table 2.4: Summary of Carriageway and pavement Details

S. No.	Description	Flexible (Kms.)	Rigid (Kms.)	Remarks
1	Total Length of 2-Lane with paved & earthen shoulder	47.301	---	Type-A of Schedule B of CA
2	Length of 2-Lane with paved shoulder	7.450	---	Type-B of Schedule B of CA
3	Length of 4-Lane road	1.650	---	Type-D of Schedule B of CA
4	Total Length	56.401	---	
TYPE OF ALIGNMENT				
5	New Alignment	---	---	
6	Realignment	---	---	
7	Strengthening	---	---	
8	Reconstruction	56.401	---	
9	Total Length of the Project	56.401	---	

2.10 Summary of Structures

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

Table 2.5: Summary of Structures

S. No.	Description	Minor Bridges	Pipe Culverts	Box/Slab Culverts
1	Retained	4	5	2
2	Widening		17	4
3	New/ Reconstruction	7	59	9
	Total	11	81	15

2.11 Toll Plazas

- There are two toll Plazas on the project road at Km. 19+030 & Km. 43+700.
- Toll Plaza 1 at Km. 19+030 comprises of 4 lanes.
- one lane in each direction is used for four wheelers and the other lane is used as bike lane.
- Toll Plaza 2 which is at Km. 43+700 comprises of 4 lanes.
- One lane in each direction is used for four wheelers and the other lane is used as bike lane.
- List of tolling equipment provided at site is furnished in the Detailed Report.

2.12 Bus bays/Bus shelters

As per provisions of Schedule C of CA bus shelters are provided at 22 locations. Details are provided below.

Table 2.6: List of Bus shelters

S. No.	Chainage (Km.)	Bus bays/ Bus shelter
1	3+550	Bus shelter
2	3+750	Bus shelter
3	8+660	Bus shelter
4	8+720	Bus shelter
5	14+650	Bus shelter
6	14+690	Bus shelter
7	21+880	Bus shelter
8	22+100	Bus shelter
9	26+500	Bus shelter
10	26+410	Bus shelter
11	28+310	Bus shelter
12	28+010	Bus shelter
13	35+430	Bus shelter
14	35+500	Bus shelter
15	36+300	Bus shelter
16	36+480	Bus shelter
17	40+440	Bus shelter
18	40+500	Bus shelter
19	42+220	Bus shelter
20	42+270	Bus shelter
21	45+940	Bus shelter
22	46+050	Bus shelter

2.13 Other Project Facilities Provided as per Schedule C of CA

- Road side 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 CA.
- Landscaping: Provided at Toll Plaza location and being maintained
- Tree Plantation: Tree plantation is provided on both sides of the Project Corridor all along the way and is being maintained.
- Medical Aid Post: Provided at Toll Plaza location and is operational
- Highway Lighting: Highway lighting is provided at Toll Plaza and Built-up sections and is functional.



Km. 8+600



Km. 22+114

Figure 2.4: Representative Photos of Bus Shelters

CHAPTER 3. STATUS OF WORK AFTER PCOD

3.1 General

In accordance with Clause 14.3 of Concession Agreement, Provisional certificate was issued on 24th February, 2018 for completed length of 50.071 Kms. The details of completed length and balance length are given in the following **Tables 3.1 & 3.2.**

Table 3.1: Details of Completed Length

From (Km.)	To (Km.)	Length (Kms.)
1+720	11+200	9.480
14+300	18+880	4.580
19+220	20+080	0.860
20+850	43+450	22.60
43+850	56+401	12.551
	Total	50.071

The work in balance sections, which could not be completed due to delay in handing over of land within 240 days of appointed date, is as follows.

Table 3.2: Details of Balance Length

From (Km.)	To (Km.)	Length (Kms.)
0+000	1+720	1.720
11+200	14+300	2.390
18+880	19+220	0.340
20+080	20+850	0.770
43+450	43+850	0.400
	Total	5.620

3.2 Punch list

A Punch list is a list of tasks and items that need to be completed before a construction project can be considered finished. Accordingly, two punch lists were given along with Provisional Certificate. Punch list-I, balance works pending due to reasons attributable to authority. Punch List-II, works delayed attributable to concessionaire are included in this list and shall be completed within 90 days from the issuance of Provisional certificate. The details of Punch list-I are given in the following **Table 3.3.**

Table 3.3: Punch List-I

S. No.	Item	Location	Remarks
Punch List for Provisional completion Sections-I			
1	Foot path	Km. 19+800 to Km. 20+080, Km. 20+850 to Km. 22+300 = 2.200 Kms.	Delay in water pipeline shifting
2	Development of bus bays	14 Locations	Delay in Land acquisition

Punch List for Non-Provisional completion Sections-I

S. No.	Item	Location	Length (Kms.)	Remarks
1	Hirekerur town section 4 lane overlay with widening including RCC drain and Footpath	Km. 0+000 to Km. 1+720	1.720	Completed
2	Chikkelur bypass	Km. 11+200 to Km. 13+192	1.990	Completed
3	Realignment portion	Km. 13+900 to Km. 14+300	0.400	Completed
4	Building works and PQC road work at toll plaza location-2 Nos	Km. 19+050 and Km. 43+670	0.740	Completed
5	Hansubhavi town section	Km. 20+080 to Km. 20+850	0.770	Delay in rehabilitation and resettlement

Punch List-II, items to be started or in progress shall be completed within 90 days from the issuance of Provisional certificate. The details are given in the following **Table 3.4**.

Table 3.4: Punch List-II

S. No.	Item	Location	Remarks
1	Bed Protection works of CD structures		In progress
2	Providing Kerb and Footpath	A length of 1.300 Kms.	In progress
3	Embankment slope protection works	Stone pitching 0.360 Kms, Geogreen-0.840 Kms. and turfing	Completed
4	Ground water recharge pits	10 locations	Completed
5	Bus shelters	8 locations	Completed
6	Energising of street lights	Urban sections	Completed

CHAPTER 4. ROAD INVENTORY & PAVEMENT CONDITION

4.1 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 provided below

4.2 Road Inventory

Inventory of the project road was carried out physically and the same is summarized in the following **Table 4.1**. Few representative photographs are presented below.

Table 4.1: Road Inventory

S. No.	Features	Remarks
1	Terrain	Plain & Rolling
2	Land Use	Mixture of Un-irrigated cultivated land and irrigated cultivated land, and barren land
3	Two lane length	56.401 Kms.
4	Earthen shoulder	1.500 m on each side
5	Junctions	31 Nos.
6	Toll Plazas	2 Nos.
7	Sign boards	Sign boards are provided as per Highway requirements
8	Road Markings	Lane markings are provided as per Highway requirement
9	Bus Bays /shelters	14 Nos.
10	Highway Lighting	Provided as per requirement
11	Avenue plantation	Provided



Km. 33+418



Km. 56+380



Km. 48+518

Figure 4.1: Representative Photos of Existing Road Features

4.3 Pavement Condition

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

Table 4.2: Pavement Condition 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.

Assessment of the condition of Pavement surface is a key component of infrastructure asset management. The information 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.

4.4 Pavement Condition Survey

The survey on general pavement condition was primarily undertaken by means of slow drive-over survey, and supplemented with measurements wherever 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, potholes, 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 was 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 4.3: Pavement condition summary

From (Km.)	To (Km.)	Length (Kms.)	Condition
0+000	56+401	56.401	Good



Km. 23+760



Km. 26+050



Km. 39+165



Km. 46+929



Km. 53+139

Figure 4.2: Representative photos of Pavement Condition

CHAPTER 5. INVENTORY AND CONDITION OF STRUCTURES

5.1 General Assessment and Details of the Existing structures

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

5.2 Inventory of Structures

There are 11 Nos Minor Bridges, 76 Nos Pipe culverts and 18 Nos Slab/ Box culverts along the project road.

Table 5.1: List of Structures

S. No.	Type of Structure	Numbers
1	Major bridges	0
2	Minor Bridge	11
3	Pipe culverts	76
4	Slab/Box Culverts	18

The superstructures of the minor bridges are of RCC solid slab/RCC Box and the substructures are of PCC conventional wall type supported on open foundations. Detailed inventory and condition survey of bridges are given in **ANNEXURE 2**. The culverts observed along the project road are mainly of two types viz. pipe culverts and RCC slab/box culverts. Condition of most of the culverts is fair except in few locations. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3**.

5.3 Details of Minor Bridges

There are 11 minor bridges in the project stretch. The type of superstructure for minor bridges is RCC solid slab/RCC Box type and the substructure is PCC/RCC conventional wall type supported on open foundations. Expansion joints are buried type and bearings are tar paper. RCC Railing are provided in all structures.

Table 5.2: Inventory of Minor Bridges

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
1	12+270	1 x 10.0	10	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC Railing, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
2	12+450	1 x 10.0	10	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC Railing, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
3	14+608	2 x 3.0	6	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.
4	27+399	2 x 4.0	8	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.
5	44+339	4 x 12.1	48.4	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.
6	44+903	1 x 6.3	6.3	It has RCC solid slab superstructure supported on

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
				RCC wall type piers and abutment. Other features are RCC Railing, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
7	49+256	2 X 6.3	12.6	It has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC Railing, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
8	51+376	4 X 9.0	9	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.
9	52+422	4 X 6.0	6	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.
10	52+422	1 X 9.0	9	MNB has RCC solid slab superstructure supported on RCC wall type piers and abutment. Other features are RCC Railing, bituminous wearing coat, and Tar paper Bearings and buried type expansion joints.
11	53+166	2 X 4.0	8	It has RCC Box structure. It has RCC Parapet wall, bituminous wearing coat.



Km. 44+339



Km. 51+376



Km. 53+166

Figure 5.1: Representative photos for Minor Bridges

5.4 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**.

5.4.1 General description of the Slab/Box Culverts

There are 18 Nos. of slab/Box culvert in the project stretch. The details of the culverts are as given below.

Table 5.3: List of Slab/Box Culverts

S. No.	Chainage @ Km.	Span (m)	Vent Size (m)
1	3+054	1 x 2.6	1.000
2	5+225 (Extra)	1 x 1.0	1.000
3	6+104	1 x 4.1	4.100
4	7+640	1 x 4.0	3.500
5	12+791	1 x 3.6	2.600
6	12+924	1 x 3.5	3.100
7	23+798	1 x 4.0	1.500
8	25+639	1 x 1.0	1.000
9	26+047	1 x 1.0	1.000
10	26+942	1 x 1.0	1.000
11	28+198 (Pipe to Box)	1 x 4.0	1.500
12	29+342	1 x 1.8	2.100
13	32+280	1 x 3.0	2.100
14	32+463	2 x 3.0	2.100
15	33+418	1 x 5.0	2.400
16	39+165	1 x 4.0	2.500
17	48+514	1 x 2.0	2.100
18	50+775	1 x 3.0	2.100

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



Km. 6+104



Km. 26+047



Km. 26+942/26+950



Km. 39+165

Figure 5.2: Representative photos for Box/Slab culverts

5.4.2 General Description of the Pipe Culverts

There are 76 Nos. of pipe culverts in the project stretch. The details of the culverts are as given below.

Table 5.4: List of Pipe Culverts

S. No.	Chainage @ Km.	No. of Rows X Dia.(m.)	S. No.	Chainage @ Km.	No. of Rows X Dia.(m.)
1	0+033	1 x 0.9	39	18+410	2 x 0.9
2	0+037	1 x 1.2	40	18+656	1 x 1.2
3	2+122	2 x 1.2	41	19+306	1 x 1.2
4	2+520	1 x 1.2	42	20+728	1 x 1.0
5	3+268	2 x 0.9	43	22+040	1 x 1.0
6	3+718	1 x 1.2	44	22+666	1 x 1.0
7	4+348	1 x 1.2	45	22+976	2 x 0.9
8	4+575	1 x 1.2	46	24+850	2 x 0.9
9	6+333	1 x 1.2	47	26+168	2 x 0.9
10	6+690	1 x 1.2	48	27+016	2 x 0.9
11	6+989	2 x 0.9	49	27+219	2 x 0.9
12	8+471	1 x 1.2	50	28+392	2 x 0.9
13	8+923	1 x 1.2	51	28+693	2 x 0.9
14	9+143	1 x 1.2	52	29+533	2 x 0.9
15	9+807	2 x 0.9	53	35+625	2 x 0.9
16	10+191	2 x 1.2	54	36+264	1 x 1.0
17	10+522	1 x 1.2	55	36+339	1 x 1.2
18	10+960	3 x 1.2	56	37+754	1 x 1.2
19	11+220	2 x 1.2	57	40+996	1 x 1.2
20	11+485	1 x 1.2	58	41+198	1 x 1.2
21	11+651 (Extra)	2 x 0.9	59	41+448	1 x 1.0
22	11+703	1 x 1.2	60	41+655	1 x 1.0
23	11+960	1 x 1.2	61	42+110	1 x 1.2
24	12+170	1 x 1.2	62	42+695	2 x 0.9
25	12+675	1 x 1.2	63	45+058	2 x 0.9
26	13+063	1 x 1.2	64	45+219	2 x 0.9

S. No.	Chainage @ Km.	No. of Rows X Dia.(m.)	S. No.	Chainage @ Km.	No. of Rows X Dia.(m.)
27	13+195	1 x 1.2	65	45+863	2 x 0.9
28	13+912	1 x 1.2	66	46+929	2 x 0.9
29	14+070	1 x 1.2	67	47+184	2 x 0.9
30	14+235	1 x 1.2	68	48+040	1 x 1.2
31	15+683	1 x 1.2	69	48+890	1 x 1.2
32	16+163	1 x 1.2	70	49+830	1 x 1.2
33	16+500	1 x 1.2	71	50+050	1 x 1.2
34	16+565	1 x 1.2	72	50+636	1 x 1.2
35	16+845	1 x 1.2	73	51+110	1 x 1.2
36	17+087	1 x 1.2	74	51+983	1 x 1.2
37	17+319	1 x 1.2	75	55+041	1 x 1.0
38	17+965	1 x 1.2	76	55+375	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. 6+333



Km. 11+485



Km. 46+929

Figure 5.3: Representative photos of Pipe Culvert

The culverts are in fair condition and can be retained in the present condition with following repairs/rehabilitation measures.

- Chocked culverts must be cleared.
- Debris and garbage near outside the vents must be removed.

CHAPTER 6. PAVEMENT DESIGN VALIDATION AND OVERLAY SCHEDULES

6.1 General

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

6.2 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.

6.2.1 Pavement design crust thickness

The new pavement shall be designed in accordance with the IRC:37. "Guidelines for the Design of Flexible Pavements". Rigid pavement shall be designed in accordance with the method prescribed in IRC:58. "Guidelines for the Design of Plain Jointed Rigid Pavements for Highways".

The project road has been divided into 2 sections i.e. HS-1 (from Km. 0+000 to Km. 33+050) and HS-2 (from Km. 33+050 to Km. 56+401). The design traffic as per traffic during design stage and design traffic as per CA is summarized below

Table 6.1: Design Traffic Summary

HS	Existing Chainage	As per traffic surveys		As per schedule		Adopted for design	
		10 years MSA (Bituminous layer)	15 years MSA (Non-Bituminous layer)	10 years MSA (Bituminous layer)	15 years MSA (Non-Bituminous layer)	10 years MSA (Bituminous layer)	15 years MSA (Non-Bituminous layer)
1	Km. 32+270	0.78	1.44	0.67	1.17	0.78	1.44
2	Km. 153+950	2.08	3.83	3.12	5.52	3.12	5.52

As per schedule, Appendix B-II, "The design of the crust for the project road shall be done for schedule MSA or as per actual traffic whichever is more". Since the calculated MSA of the project road is coming out higher in HS-1 and lower in HS-2, with respect to the values provided in Schedule B of Concession Agreement, therefore MSA as per actual traffic for HS-1 and as per given in schedule B for HS-2 has been adopted for the design of crust for the road. Pavement crust thickness in the pavement design report for flexible pavement is as follows: -

Table 6.2: Flexible Pavement Design summary

S. No.	Description/ Pavement layer	Design/Adopted Parameters	
		HS-1	HS-2
1	Sub Grade CBR (%)	7 %	7 %
2	Design Life (Years)	10 years for bituminous 15 years for non-bituminous	10 years for bituminous 15 years for non-bituminous
3	Design Traffic (MSA)	0.78 MSA for bituminous 1.44 MSA for non-bituminous	3.12 MSA for bituminous 5.52 MSA for non-bituminous
4	Surface course (BC)	40 mm	40 mm
5	Binder course (DBM)	50 mm	50 mm
6	Base course (WMM)	250 mm	250 mm
7	Sub Base course (GSB)	150 mm	230 mm

The Pavement crust has been designed according to IRC specification and found in order, the adopted/ Constructed pavement layer thickness is adequately provided than actual/designed thickness.

6.3 Overlay during operation and maintenance

The pavement has been designed to cater traffic of 0.78 MSA and 3.12 MSA (up to 2027 for 10 years) for HS-1 and HS-2 respectively. This implies that pavement will be structurally adequate to cater the future traffic with periodic renewal carried out under the maintenance program.

However, as per clause 2.3.7 of Schedule K of CA, periodic renewal shall be carried out as and when required and at least once between 5th and 7th year (from COD) within the concession period, the periodic maintenance activities shall also include profile corrective course overlaid with the periodic renewal of the wearing course of BC 25 mm thickness of the road pavement, the concessionaire may adopt cost effective treatment like asphalt recycling, stone mastic, micro seal etc.

Based on the present available data It is envisaged that existing pavement require overlay (periodic renewal) in the year of 2025. Nevertheless, the pavement shall be maintained to the desired level of performance by carrying out periodical renewals as mentioned in subsequent sections.

6.4 Maintenance/ Overlay schedule

Periodic Maintenance shall be carried out as and when required based on the road condition and at least once in 7 years from COD and in the last year of Concession period as a good industry practice. It includes Profile corrective course overlaid with the periodic renewal of the wearing course of BC minimum 25 mm thickness. The detail maintenance schedule is summarized below.

Routine maintenance - Every year

Periodic Renewal for Flexible Pavement – Proposed in the year 2025

CHAPTER 7. SAFETY AUDIT OF ROAD

7.1 General

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

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

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

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

Table 7.1: Referred IRC Publications

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

7.2 Existing Road Safety Audit

During the site visit it is observed that all safety items are provided as shown in the following **Table 7.2**.

Table 7.2: Safety Items

S. No.	Item Description		Status	Condition
Road Furniture				
1	Sign Boards	Chevron Signs	Available as per site requirement	Good
		Village sign boards	Available as per site requirement	Good
		Information Boards	Available as per site requirement	Good

S. No.	Item Description		Status	Condition
		Other Sign Boards	Available as per site requirement	Good
		Gantry Sign Boards	Available as per site requirement	Good
2	Solar Blinkers/Rumble strips		Available as per site requirement	Good
3	Road Marking	Studs & Lane marking	Available as per site requirement	Fair
4	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.

7.3 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 highly appreciated during the maintenance period.



Km. 0+000



Km. 6+100



Km. 7+680



Km. 48+200



Km. 49+270



Km. 56+330



Km. 56+330

Figure 7.1: Representative photos of Sign Boards

CHAPTER 8. TOLL PLAZA & HTMS

8.1 General:

There are two toll Plazas on the project road at Km. 19+030 & Km. 43+700 and both are in operation. Control room, Traffic aid post, medical aid post, quarters completed except some portion of compound walls, PQC on extra wide lane and plumbing works. The compound wall was not constructed due to adjacent land owner's objection. The same was intimated to Authority vide Letter No.DHRTL/KRDCL/WCP-05/2019-20/681 dated 14.01.2020 and DHRTL/KRDCL/WCP-05/2019-20/688 dated 25.01.2020.

As per clause 2(g) of Schedule-C, the Concessionaire has to maintain Highway patrol, Ambulance, Crane at site office and the Concessionaire is maintaining the Highway patrolling vehicle and Ambulance.

Letter No. DHRTL/KRDCL/WCP-05/2020-21/736 dated 10.06.2020 elucidates that TP1 and TP2 are fully functional including TMS and toll collection also started since 16th Sept 2019.

8.2 Tolling Equipment and Control Room Equipment

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

Table 8.1: List of Equipment at Two Toll Plaza and Control Rooms

S. No.	Item Description	Qty.
	Lane Equipment	
1	Combined Toll Lane Controller And	12
2	Toll Collector Keyboard Qwerty Tvs	12
3	Avc Sensor Includes 3Set-Height Sensor-Ir	12
4	Thermal Receipt Printer Epson Tm-T88	12
5	Overhead Lane Signals (300Mm Dia)	12
6	Lane Incident Capture Camera	12
7	User Fare Display 2- Lines,12-Character	12
8	Intercom Slave Unit AI Phones Nem-10/C	12
9	Lane Barrier Wejoin Wjdz102-11	12
10	Barcode Reader Honeywell Voyager 1250G	12
11	T & G Smart Card Reader Spectra/ Hid	12
12	Traffic light (TMS & HTMS)	12
13	IR Barrier Safety (TMS & HTMS)	12
14	Manual Booth Controller	12
15	10 KVA Online UPS With 30 Mins Backup	2
16	Lane Networking For 8 Semi-Automatic	2
17	Server Rackvalrackmoducab Wan	2
18	Admin/LSDU Workstation Lenovo	4
19	Cashu Up/Audit Workstation Lenovo	4
20	POS T & G Smart Card Reader spectra	2
21	Thermal Receipt Printer Epson Tm-T88 IV	2
22	Online UPS 6 Kva with 30 Mins Backup	2
	Control Room	
1	Microsoft SQL Server 2012 Standard	2
2	Windows Server 2012 Standard Edition	2

S. No.	Item Description	Qty.
3	Semi-Automatic Lane Software	12
4	Semi-Automatic Plaza Software with Admin	2
5	TMS Server (TMS & HTMS)	2
6	Cabling Toll Lane Equipment	12

8.3 Vehicles

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

Table 8.2: List of Vehicles

S. No.	Vehicle Type	Toll Plaza 1	Toll Plaza 2
1	Patrol Vehicle	1 No	1 No
2	Ambulance	1 No.	1 No.
3	Crane	-	1No

Toll Plaza -1



Km. 19+030



Km. 19+030

Toll Plaza -2



Km. 43+700



Km. 43+700

Figure 8.1: Representative photos of Toll Plaza

CHAPTER 9. SCHEDULE OF ANNUITY PAYMENTS

9.1 Hybrid Annuity Model (HAM)

Hybrid annuity model is the PPP model in which Authority makes payment of 40% of the Bid Project cost during construction period based on progress milestones set forth in Concession Agreement. Payment of the balance 60% of the Bid Project Cost is made in form of bi-annual annuities with interest during the operational phase of concession.

In this HAM model, as per Cl. 27.5 Lump sum payment is given in four installments during the construction phase as below.

Table 9.1: Lump Sum Payment

Installment No	Amount in Rs. (Crores)	% Progress during construction
First	17.594	25
Second	17.594	50
Third	17.594	75
Fourth	17.594	On COD

9.2 Schedule of Annuity Payments

As per 27.1, the concessionaire upon achieving COD, Authority agrees to pay Rs. 19.62crores as per schedule-M.

Table 9.2: Schedule of Annuity Payments

S No.	Particulars	Annuity Due Date	Payment Paid on
1	1 st Annuity	28.03.2019	28-Mar-19
2	2 nd Annuity	29.09.2019	18-Dec-19
3	3 rd Annuity	28.03.2020	29-Mar-20
4	4 th Annuity	29.09.2020	19-Nov-20
5	5 th Annuity	28.03.2021	
6	6 th Annuity	29.09.2021	
7	7 th Annuity	28.03.2022	
8	8 th Annuity	29.09.2022	
9	9 th Annuity	28.03.2023	
10	10 th Annuity	29.09.2023	
11	11 th Annuity	28.03.2024	
12	12 th Annuity	29.09.2024	
13	13 th Annuity	28.03.2025	
14	14 th Annuity	29.09.2025	
15	15 th Annuity	28.03.2026	
16	16 th Annuity	29.09.2026	

CHAPTER 10. OPERATION AND MAINTENANCE

10.1 General

As per Article 17 of the Concession Agreement, the Concessionaire will operate and maintain the Project Highways by itself or through O & M Contractors and comply with specification and standards, and other requirements set forth in this Agreement, Good Industry Practice, Applicable Laws, applicable permits and manufacturer guidelines.

10.2 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 if there is any need for thorough inspections. Detailed inspections are carried out primarily to establish programs of periodic or major maintenance tasks, and enhancement requirements not requiring urgent execution
- **Thorough Inspection:** Thorough Inspections are aimed at finding the cause and remedy of specific problems and at specific locations. Specialist's inspections are required once in a while. Thorough Inspections shall be carried out with highly sophisticated instruments

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

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

10.3 Operations

10.3.1 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.

- i. Permitting smooth and uninterrupted flow of traffic during normal operating conditions.
- ii. carrying out preventive and periodic maintenance of the Project road;
- iii. undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;
- iv. Undertaking major maintenance such as resurfacing of pavements, repairs to structures.
- v. Functioning of the lighting system;
- vi. Functioning of the Patrolling System

- vii. Functioning of rescue and medical aid services
- viii. Ambulance as and when required
- ix. Functioning of the Project Facilities
- x. Administrative, Operational and Maintenance Base Camp
- xi. Truck Lay byes
- xii. Pickup Bus stops / Bus Bays
- xiii. protection of the environment and provision of equipment and materials therefor;
- xiv. Operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project road
- xv. complying with Safety Requirements in accordance with Article 18.

10.4 Operation of Toll Plaza

One lane in each direction is currently under operational and the extra wide lane is opened only for wide vehicles. The tolling is manned by two people per direction per shift with a day having two shifts. Toll Manager takes care of the daily operation and carries out the task of patrolling on bike. 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.

10.5 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.

- i. Preventive Maintenance
- ii. Routine Maintenance
- iii. Periodic Maintenance
- iv. Special repairs

10.5.1 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 does not require any immediate or preventive interventions.

10.5.2 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.

10.5.3 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.

However, as per Schedule M, cl.3.3.7 periodic maintenance of BC shall be laid as required and at least once in six years from COD and in the last year of concession period.

The details of periodic maintenance schedule are given below.

Table 10.1: Schedule and status of for Major Maintenance

S. No.	Major Maintenance	Schedule	Status at site
1	1st Periodic Maintenance	2025	Planned to execute

10.5.4 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,

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

10.6 Review of Test Reports

Bump Integrator Test:

Maintenance of road is dependent on several factors, one of which is the condition of the pavement surface. Treatment can be suggested based on the condition of surface of road. As such Roughness is the measurement of 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.

The concessionaire shall measure the road roughness at least twice in every year. Accordingly, the BI test was conducted in August 2020. As per Schedule K during the maintenance period, laying of the renewal coat shall be initiated if the stretch exceeds 2500mm/Km. The values obtained from the test report are verified and found within the above said limits. Hence no renewal coat is required.

Further it is to be noted that Concessionaire shall handover the project with riding quality with acceptable roughness value 2000mm/Km.

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.

As per Schedule K, BBD tests shall be conducted every year soon after rainy season. Deflection exceeds 1mm, a bituminous overlay shall be provided to bring it back to 0.6mm. DBL has conducted BBD test in Feb 2020 and deflection not exceeded 1mm. Hence overlay is not required.

Also a mandatory strengthening course shall be provided over the period 5th/6th years after COD. Moreover, the deflection assessed by BBD test at the end of the concession period shall not exceed 1mm.

Environmental Quality Monitoring

In Feb 2020, Concessionaire has conducted Ambient air quality test, Noise quality test, Water quality test and soil quality test in accordance with Schedule L. The values are within the permissible limits.

10.7 O&M Forecast

The O&M costs were estimated based on various parameters of CA, design reports and BBD/BI test results. The cost summary is given below, and detailed cost estimations are given in **ANNEXURE 4**.

Table 10.2: Proposed Plan for Future Operation & Maintenance Cost (In Crores)

Year	Routine maintenance (In crores)	Incidental maintenance (In crores)	Periodic / Major maintenance	Operational Expenses	Total cost per year
2020	0.344	0.341		1.32	2.01
2021	0.354	0.351		1.36	2.07
2022	0.365	0.362		1.40	2.13
2023	0.376	0.372		1.44	2.19
2024	0.387	0.384	19.23	1.49	21.49
2025	0.399	0.395	19.76	1.53	22.09
2026	0.411	0.407		1.58	2.40
2027	0.210	0.208		0.81	1.22
Total	2.85	2.82	38.99	10.94	55.59

CHAPTER 11. REVIEW OF CONCESSION AGREEMENT

11.1 General: Scope of Project (Article 2)

Article 2 provides the scope of work which includes the following.

- construction of the Project Highway on the Site set forth in schedule B and C and in conformity with the Specifications and Standards (Schedule D) and Schedule L;
- operation and maintenance of the Project Highway in accordance with the provisions of this Agreement
- performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental

11.2 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 5**.

11.3 Conditions precedent (Article 4):

Conditions precedent to be fulfilled by the Authority:

- Providing adequate Right of Way
- Providing necessary approvals as per the Concession Agreement

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 A
- Executed financing Agreements and delivering 3 copies of Financial Package
- Delivered to the Authority confirmation in original of the correctness of their representations and warranties set forth in Agreement and a legal opinion from the legal opinion from the legal counsel of the Concessionaire

11.3.1 Performance Security (Article 9):

- The Concessionaire shall submit the Performance security to the Authority within 120 days from the date of the Agreement,
- The Performance security shall remain in force throughout the Construction period
- Performance Security shall be released on Commercial Operation Date.

11.3.2 Tests (Clause 13.3)

For determining that the Project, conforms to the Maintenance Requirements, the Independent Engineer shall require the Concessionaire (Concessionaire shall in turn require the Contractor) to carry out, or cause to be carried out, tests specified by it in accordance with Good Industry Practice. One half of the costs incurred on such tests, and to the extent certified by the Independent Engineer as reasonable, shall be reimbursed by the Authority to the Concessionaire.

11.4 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 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. Copy of the provisional certificate is provided at **Annexure 6**.

11.5 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.

11.6 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.

11.7 Change of scope (Article 16)

Change of scope proposals that were initiated during construction period and consented by the KRDCL are provided at **Annexure 8**.

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

- Permitting safe, smooth and uninterrupted flow of traffic on the Project road
- Collecting and appropriating the Fee
- Minimizing the disruption to traffic in the event of accidents
- Undertaking routine maintenance including prompt repairs of pot holes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices
- Preventing any unauthorized use of the Project road.
- Protection of environment and provision of equipment and materials

11.9 Maintenance Requirements (Clause 17.2)

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

11.10 Maintenance Manual (Clause 17.3)

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

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

11.11 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.

11.12 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 the 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 decimal one per cent) of the cost of such repair or rectification as estimated by the Independent Engineer.

11.13 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.

11.14 Annuity (Article 27)

The Authority agrees and undertakes to pay the Concessionaire for each annuity Payment period on each annuity payment date as set forth in schedule M of the CA the sum of Rs 19.62Crores.

11.15 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.

11.16 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 12. INSURANCE

12.1 Details of Insurance:

As per clause 32.1 of the 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. Copies of insurance are provided at **Annexure7**.

Accordingly, the Concessionaire has procured the following insurances for mitigating the risks

Table 12.1: Insurance Details

Name of the Policy	Insurance Company	Policy No	Effective Period	
			From	To
Civil Engineering Complete Risk	National Insurance Company Limited	321300441910002005	27.03.2020	26.03.2021

CHAPTER 13.CONCLUSION

13.1 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.

13.2 Pavement Condition

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

13.3 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 being cleared during regular maintenance period.

13.4 Project Facilities

Two Toll Plazas are constructed one at Km.19+030 & the other Km. 43+700. Bus bays are in fair condition. Medical Aid posts found functional. Highway lighting is provided at toll plaza locations and the same is found functional.

13.5 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.

13.6 Maintenance

A dedicated team is appointed for routine maintenance works and working effectively. Major maintenance (MM) /Periodic maintenance was carried out recently and next MM is scheduled in 2025.

13.7 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 smooth and safe.

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)	Road Side Drain		Remarks
From	To	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P/VP)		Composition	Condition (Fair / Poor / Damaged)		Type (LD/ULD/CD/NO)	Condition (PF/F)***	
0+000	1+000								G		P	F	G	LD	PF	
1+000	1+650								G		P	F	G	LD	PF	
1+650	2+000								G		P+E	F	G	ULD	F	
2+000	3+000								G		P+E	F	G	ULD	PF	
3+000	4+000								G		P+E	F	G	ULD	F	
4+000	5+000								G		P+E	F	G	ULD	F	
5+000	6+000								G		P+E	F	G	ULD	PF	
6+000	7+000								G		P+E	F	G	ULD	F	
7+000	8+000								G		P+E	F	G	ULD	PF	
8+000	8+500								G		P+E	F	G	ULD	F	
8+500	9+000								G		P	F	G	LD	F	
9+000	10+000								G		P+E	F	G	ULD	F	
10+000	11+000								G		P+E	F	G	ULD	PF	
11+000	12+000								G		P+E	F	G	ULD	PF	
12+000	13+192								G		P+E	F	G	ULD	PF	
13+192	14+000								G		P	F	G	LD	F	

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair)	Road Side Drain		Remarks
From	To	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P/VP)		Composition	Condition (Fair / Poor / Damaged)		Type (LD/ULD/CD/N O)	Condition (PF/F)***	
14+000	15+000								G		P+E	F	G	ULD	F	
15+000	16+000								G		P+E	F	G	ULD	PF	
16+000	16+650								G		P+E	F	G	ULD	F	
16+650	17+400								G		P	F	G	LD	PF	
17+400	18+400								G		P+E	F	G	ULD	F	
18+400	19+800								G		P+E	F	G	ULD	F	
19+800	21+000								G		P	F	G	LD	PF	
21+000	22+000								G		P	F	G	LD	PF	
22+000	22+500								G		P	F	G	LD	F	
22+500	23+000								G		P+E	F	G	ULD	F	
23+000	24+000								G		P+E	F	G	ULD	PF	
24+000	25+000								G		P+E	F	G	ULD	F	
25+000	26+100								G		P+E	F	G	ULD	F	
26+100	26+800								G		P	F	G	LD	F	
26+800	28+000								G		P+E	F	G	ULD	F	
28+000	29+000								G		P+E	F	G	ULD	PF	
29+000	30+000								G		P+E	F	G	ULD	F	
30+000	31+000								G		P+E	F	G	ULD	F	
31+000	31+700								G		P+E	F	G	ULD	F	

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair)	Road Side Drain		Remarks
From	To	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P/VP)		Composition	Condition (Fair / Poor / Damaged)		Type (LD/ULD/CD/N O)	Condition (PF/F)***	
31+700	32+700								G		P	F	G	LD	F	
32+700	34+000								G		P+E	F	G	ULD	F	
34+000	35+000								G		P+E	F	G	ULD	F	
35+000	36+000								G		P+E	F	G	ULD	PF	
36+000	37+000								G		P+E	F	G	ULD	F	
37+000	38+000								G		P+E	F	G	ULD	PF	
38+000	39+000								G		P+E	F	G	ULD	F	
39+000	40+000								G		P+E	F	G	ULD	PF	
40+000	41+000								G		P+E	F	G	ULD	F	
41+000	42+000								G		P+E	F	G	ULD	F	
42+000	43+000								G		P+E	F	G	ULD	F	
43+000	44+000								G		P+E	F	G	ULD	PF	
44+000	45+000								G		P+E	F	G	ULD	F	
45+000	46+000								G		P+E	F	G	ULD	F	
46+000	47+000								G		P+E	F	G	ULD	F	
47+000	48+000								G		P+E	F	G	ULD	PF	
48+000	49+400								G		P+E	F	G	ULD	F	
49+400	51+200								G		P	F	G	LD	F	
51+200	52+000								G		P+E	F	G	ULD	PF	

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair)	Road Side Drain		Remarks
From	To	Cracking (%)	Ravelling (%)	Potholing (%)	Bleeding (%)	Rutting	Patching (%)	Speed (km/hr)	Quality (G/F/P/VP)		Composition	Condition (Fair / Poor / Damaged)		Type (LD/ULD/CD/N O)	Condition (PF/F)***	
52+000	53+000								G		P+E	F	G	ULD	F	
53+000	54+000								G		P+E	F	G	ULD	F	
54+000	55+000								G		P+E	F	G	ULD	F	
55+000	56+401								G		P+E	F	G	ULD	PF	

Annexure 2: Condition of Structures

S. No.	Chainage (Km.)	Type of Structure	Substructure	Superstructure	Expansion Joint	Approach slabs	Drainage spouts	Wearing coat	Bearings	Quadrant Pitching
1	12+270	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Vegetation observed
2	12+450	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
3	14+608	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
4	27+399	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
5	44+339	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	Good	Good
6	44+903	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	Good	Good
7	49+256	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	Good	Good
8	51+376	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
9	52+422	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
10	52+422	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good
11	53+166	Minor Bridge	Good	Good	Fair	Fair	Fair	Fair	-	Good

Annexure 3: Condition of Culverts

Condition of Box/slab Culverts

S. No	Chainage (Km.)	Box/slab	Return wall	Quadrant pitching	Toe wall	Aprons
1	3+054	Good	Good	Fair	Fair	Fair
2	5+225 (Extra)	Good	Good	Fair	Fair	Fair
3	6+104	Good	Good	Fair	Fair	Fair
4	7+640	Good	Good	Fair	Fair	Fair
5	12+791	Good	Good	Fair	Fair	Fair
6	12+924	Good	Good	Fair	Fair	Fair
7	23+798	Good	Good	Fair	Fair	Fair
8	25+639	Good	Good	Fair	Fair	Fair
9	26+047	Good	Good	Fair	Fair	Fair
10	26+942	Good	Good	Fair	Fair	Fair
11	28+198 (Pipe to Box)	Good	Good	Fair	Fair	Fair
12	29+342	Good	Good	Fair	Fair	Fair
13	32+280	Good	Good	Fair	Fair	Fair
14	32+463	Good	Good	Fair	Fair	Fair
15	33+418	Good	Good	Fair	Fair	Fair
16	39+165	Good	Good	Fair	Fair	Fair
17	48+514	Good	Good	Fair	Fair	Fair
18	50+775	Good	Good	Fair	Fair	Fair

Condition of Hume Pipe Culverts

S. No	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
1	0+033	Good	Fair	Fair	Fair
2	0+037	Good	Fair	Fair	Fair
3	2+122	Good	Fair	Fair	Fair
4	2+520	Good	Fair	Fair	Fair
5	3+268	Good	Fair	Fair	Fair
6	3+718	Good	Fair	Fair	Fair
7	4+348	Good	Fair	Fair	Fair
8	4+575	Good	Fair	Fair	Fair
9	6+333	Good	Fair	Fair	Fair
10	6+690	Good	Fair	Fair	Fair
11	6+989	Good	Fair	Fair	Fair
12	8+471	Good	Fair	Fair	Fair
13	8+923	Good	Fair	Fair	Fair
14	9+143	Good	Fair	Fair	Fair
15	9+807	Good	Fair	Fair	Fair
16	10+191	Good	Fair	Fair	Fair
17	10+522	Good	Fair	Fair	Fair
18	10+960	Good	Fair	Fair	Fair
19	11+220	Good	Fair	Fair	Fair
20	11+485	Good	Fair	Fair	Fair
21	11+651 (Extra)	Good	Fair	Fair	Fair

S. No	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
22	11+703	Good	Fair	Fair	Fair
23	11+960	Good	Fair	Fair	Fair
24	12+170	Good	Fair	Fair	Fair
25	12+675	Good	Fair	Fair	Fair
26	13+063	Good	Fair	Fair	Fair
27	13+195	Good	Fair	Fair	Fair
28	13+912	Good	Fair	Fair	Fair
29	14+070	Good	Fair	Fair	Fair
30	14+235	Good	Fair	Fair	Fair
31	15+683	Good	Fair	Fair	Fair
32	16+163	Good	Fair	Fair	Fair
33	16+500	Good	Fair	Fair	Fair
34	16+565	Good	Fair	Fair	Fair
35	16+845	Good	Fair	Fair	Fair
36	17+087	Good	Fair	Fair	Fair
37	17+319	Good	Fair	Fair	Fair
38	17+965	Good	Fair	Fair	Fair
39	18+410	Good	Fair	Fair	Fair
40	18+656	Good	Fair	Fair	Fair
41	19+306	Good	Fair	Fair	Fair
42	20+728	Good	Fair	Fair	Fair
43	22+040	Good	Fair	Fair	Fair
44	22+666	Good	Fair	Fair	Fair
45	22+976	Good	Fair	Fair	Fair
46	24+850	Good	Fair	Fair	Fair
47	26+168	Good	Fair	Fair	Fair
48	27+016	Good	Good	Fair	Good
49	27+219	Good	Fair	Fair	Fair
50	28+392	Good	Good	Fair	Fair
51	28+693	Good	Good	Fair	Fair
52	29+533	Good	Good	Fair	Fair
53	35+625	Good	Good	Fair	Fair
54	36+264	Good	Good	Fair	Fair
55	36+339	Good	Good	Fair	Fair
56	37+754	Good	Good	Fair	Fair
57	40+996	Good	Good	Fair	Fair
58	41+198	Good	Good	Fair	Fair
59	41+448	Good	Good	Fair	Fair
60	41+655	Good	Good	Fair	Fair
61	42+110	Good	Good	Fair	Fair
62	42+695	Good	Good	Fair	Fair
63	45+058	Good	Good	Fair	Fair
64	45+219	Good	Good	Fair	Fair
65	45+863	Good	Good	Fair	Fair

S. No	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
66	46+929	Good	Good	Fair	Fair
67	47+184	Good	Good	Fair	Fair
68	48+040	Good	Good	Fair	Fair
69	48+890	Good	Good	Fair	Fair
70	49+830	Good	Good	Fair	Fair
71	50+050	Good	Good	Fair	Fair
72	50+636	Good	Good	Fair	Fair
73	51+110	Good	Good	Fair	Fair
74	51+983	Good	Good	Fair	Fair
75	55+041	Good	Good	Fair	Fair
76	55+375	Good	Good	Fair	Fair

Annexure 4: Operation & Maintenance cost

Routine Maintenance cost for 1 year

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
1	General Cleaning in Carriageway & Shoulders Rural area	Monthly	Km.	56.401	12	4	350	9,47,537	04 nos of Labour
2	General Cleaning in Carriageway & Shoulders Urban area	Twice in a month	Kms.	9.1	24	4	350	3,05,760	04 nos of Labour
3	Watering in Median Plants	Once in Week	Km.	9.1	52	1	1939	9,17,535	01 nos of Labour
4	Watering in Avenue plants	Once in Week	Km.	0	52	0	1939	-	
5	Median Maintenance (Grass cutting and plant trimming)	Once in Month	Km.	9.1	12	0	21000	-	02 nos of Labour - 2 x 350 = 700 x 30 = 2,52,000
6	ROW Cleaning	Half yearly	Km.	28.2005	2	5	350	98,702	5 Nos of labour per KM (50% of the Project length)
7	Cleaning of Culverts	Half yearly	Nos.	94	2	2	650	2,44,400	3 nos of Labour along with JCB or Excavator
8	Road Furniture Cleaning	Quarterly	Km.	56.401	4	2	350	1,57,923	02 nos of Labour
9	Maintenance of Bus shelters	Monthly	Nos.	22	6	2	350	92,400	2 nos/ Bus shelter/month
10	General Cleaning in Building & Facilities	Daily	Nos.	2.00	6	60	350	2,52,000	02 nos of Labour for 30 days
11	Bridges	Half yearly	Nos.	11	2	2	350	15,400	02 nos of Labour for removal of vegetation/Structure

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
								30,31,657	
	EQUIPMENT SUPPLY								
1	TRUCK TIPPER 6-8 CUM CAPACITY	Monthly	Nos.	1	12	1	10000	10,000	Considered Rs 10,000/- per vehicle including maintenance
2	Water Tanker Cap 12 KL for Median	Monthly	Nos.	0.0	12	0	440000	-	(2200000 is the cost of vehicle, considering 20% Rental per year) including maintenance
3	Tractor Mounted Water Tanker Cap 6 KL for RoW	Monthly	Nos.		12		160000	-	(800000 is the cost of vehicle, considering 20% Rental per year) including maintenance
4	Mechanical Sweeper	Monthly	Nos.		12		500000	-	(2500000 is the cost of vehicle, considering 20% Rental per year) including maintenance
5	Grass cutter	Monthly	Nos.	0.0	12	0	12000	-	(12000/year)
6	Manhoise/ Skyscraper	Monthly	Nos.		12		400000	-	(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
7	Bikes	Monthly	Nos.	0.0	12	0	2500	-	Per Supervisor/Per Month
8	Building Maintenance	Yearly			12	2	5000	1,20,000	5000/month
9	Toll plaza AMC	Yearly	Nos.		12	2	5000	1,20,000	5000/month
								2,50,000	
1	Patrolling vehicle	Monthly	Nos.	12		1	10000	10000	Considered Rs 10,000/- per vehicle including maintenance
2	Ambulance	Monthly	Nos.	12		1	10000	10000	Considered Rs 10,000/- per vehicle including maintenance
3	Tow away trucks and	Monthly	Nos.	12		2	40000	80000	Considered Rs 40,000/- per vehicle

S. No.	Item		Unit	No	Frequency per year	Quantity	Rate	Amount	Remarks
	Crane								including maintenance
4	Consumables for Medical Aid Post and Ambulance	Monthly	Nos.	12		1	2500	30000	2500 Per month for per set (Per set - Per toll plaza)
5	Consumables for Route Patrolling & Crane	Monthly	Nos.	12		1	2500	30000	2500 Per month for per set (Per set - Per toll plaza)
								1,60,000	
								34,41,657.00	

Incidental cost for 1 year

S. No	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
1	Road marking	Half yearly	Sqm.	1	1	4343	516	22,40,988	33 % of Total Project length on B/S for 1 year
2	Carriageway Maintenance (Pot Holes etc)	Yearly	Sqm.	1	1	1128	168	1,89,504	5% of Flexible Pavement
3	Maintenance of Earthen Shoulder	Half yearly	Cum.	1	3	846.015	225	5,71,060	5% of total Shoulder length throughout the project
4	Sign Board	Quarterly	Km.	1	1	25	4000	1,00,000	5 % of Total sign boards per half year (considered 500 nos)
5	MBCB	Monthly	RMT.			75	2400	1,80,000	5% of Total qty per year - (considered 2400 per number)
6	Mile Stone (KM Stone/ HM Stone / ROW stone etc.)	Quarterly	Nos.	56.401	4	14	2250	1,26,000	5 % of total stones per year (unable to understand the backup)
7	ROW Fencing (If available)	Quarterly	Km.		4			-	10 % of total ROW fencing per year
8	Kerb	Yearly	Km.	0	1	0.0	250	-	2 % of total Kerbings per year
9	Electrical Poles	Yearly	Nos.	0	1	0	55000	-	3 % of total poles per year

S. No	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
10	Replacement of Rigid pavement Panels	Yearly	Ls.	1	1	0.00	4000	-	Considered 1% of the total volume
11	Providing Reinforced cement concrete crash barrier at the edges of the bridge structures constructed with M-40 grade concrete with HYSD-Fe 500 TMT reinforcement concrete per Rmt conforming to IRC:21 and fixing with dowel bars 16 mm dia to old concrete using epoxy grout as per drawing and Technical Specifications and as directed by the Engineer.	Yearly	RMT.	0		0.00	3985	-	3% of Length replacement in every 5 years (Quantity to be estimated)
Total amount for 1 Year								34,07,552	

Operational Expenses

S. No.	Particulars	Amount
1	Man Power	₹ 88,80,000
2	Fuel for Generator & Vehicles	₹ 22,44,000
3	Electricity	₹ 19,80,000
4	Stationary	₹ 10,000
5	Replacement of Electrical Fixtures	₹ 31,467
6	Refurbishment of Toll Plaza Equipment	₹ 75,000
	Total Amount	₹ 1,32,20,467

Summary of Major Maintenance

Description	Due date	Base cost	Esc Period	Escalation Rate per Year	Cost of MMR on due date @ 3% Escalation	In crores
Date of Estimation	30-01-2021					
Major Maintenance - Highway	01-04-2024	17,54,75,041	3.20	3.0%	19,23,20,645	19.23
Major Maintenance - Highway	01-04-2025	17,54,75,041	4.20	3.0%	19,75,84,896	19.76
				Total	₹ 38,99,05,542	38.99

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.	5,64,010.00	14.00	78,96,140	5,64,010.00	14.00	78,96,140
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.	22,560.40	7,480.00	16,87,51,792	22,560.40	7,480.00	16,87,51,792
3	Providing and laying bituminous concrete using a batch type Hot Mix Plant using crushed aggregates of size	Cum.	22,560.40	6,800.00	15,34,10,720	22,560.40	6,800.00	15,34,10,720

4	Micro surfacing	Sqm.	-	160.00		-	160.00	
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				33,00,58,652			33,00,58,652
	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 5% for construction period.	RMT.	-	380.00		-	380.00	
2	Providing and laying lane markings of hot applied thermoplastic compound 2.5 mm thick including reflectorizing glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35. The finished surface to be level, uniform and free from streaks and holes,Ref. to Technical specification 803.	Sqm.	13,160.23	516.00	67,90,680	13,160.23	516.00	67,90,680
3	Road Studs	Nos.	18,801.00	750.00	1,41,00,750	18,801.00	750.00	1,41,00,750
4	Kerb painting		-	250.00		-	250.00	
	Total			-	2,08,91,430		-	2,08,91,430
	Grand Total				35,09,50,082			35,09,50,082

Annexure 5: Letter of Award



KARNATAKA ROAD DEVELOPMENT CORPORATION LTD.

KRDCL/WCP5/ LOA /2015-16 -1908

Date: 11-09-2015

To
M/s Dilip Buildcon Limited,
Plot No. 5, Inside Govind Narayan Singh Gate,
Chuna Bhatti, Kolar Road,
Bhopal (M.P.) - 462 016

Kind Attn: **Mr. Dilip Suryavanshi**
Email: db@dilipbuildcon.co.in

LETTER OF AWARD

Sir,

Sub: "Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) of Existing State Highway Hirekerur – Ranibennur in the State of Karnataka on DBFOMT Annuity Basis (WCP-5)" – Letter of Award (LoA)

Ref.: (i) RFP issued on 10th April 2015
(ii) Your bid submitted on June 17th, 2015

This is to notify that your bid submitted for the captioned project (the "Project") for a semi-annual annuity quote of Rs19,62,00,000 (Rupees Nineteen Crore and Sixty Two Lakh) is hereby accepted by the Government of Karnataka by declaring you as the "Selected Bidder". The concession period is 10 (ten) years including construction period of 24 (twenty four) months.

1. The semi-annual annuity quoted by you shall be disbursed in accordance with the provisions of Draft Concession Agreement (DCA).
2. Lumpsum Payment of Rs 70,37,60,000 (Rupees Seventy Crore, Thirty Seven Lakh and Sixty Thousand) shall be disbursed in accordance with the provisions of Draft Concession Agreement (DCA) in four equal instalments.
3. In accordance with the clause 3.3.2 of the Project RFP Document, you are hereby requested to confirm your acceptance of this Letter of Award within 7 days of its receipt. Thereafter, pursuant to clause 1.3 of the Project RFP Document, you are required to execute the Concession Agreement within 45 days from the issue of LoA.
4. You shall promote and incorporate the Concessionaire as a limited liability company under the Companies Act 1956/2013 as applicable, as the entity which shall undertake and perform the obligations and exercise rights of the Bidder under the LoA, including the obligation to enter into the Concession Agreement pursuant to the LoA for executing the Project.

Annexure 6: Provisional Certificate



**Intercontinental Consultants
and Technocrats Pvt. Ltd.**

ICT.761.TPV: 2384



30th March 2018

The Managing Director,
Karnataka Road Development Corporation Ltd.
1st Floor,
16/J, Miller Tank Bed Area,
Thimmiah Road Cross,
Bengaluru – 560 052

✓ **Mr. Anil Kumar KK,** Authorized Signatory
DBL Hirekerur Ranibennur Tollways
Limited (DBHHRTL) Plot No.5,
Inside Govind Narayan Singh Gate
Chuna Bhatti, Kolar Road
Bhopal – 462 016, MP

Sub: Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) of Existing State Highway Hirekerur-Ranibennur in the State of Karnataka on DBFOMT Annuity Basis –
Issue of Provisional Completion Certificate under Article 14 of the Concession Agreement – Reg.

Dear Sir,

- Ref. 1. Concessionaire letter no. DHRTL/KRDCL/WCP-05/2017-18/473 dt. 15.02.2018.
2. Concessionaire letter no. DHRTL/KRDCL/WCP-05/2017-18/483 dt. 21.02.2018.
3. IE letter no. ICT/761/TL/2018/KRDCL/108 dt.24.02.2018.
4. MD, KRDCL letter no. KRDCL/cofinance/2017-18/3509 dt. 27.03.2018.
- Pursuant to Article – 14 of Concession Agreement M/s. DBL Hirekerur Ranibennur Tollways Limited "the Concessionaire" has informed vide letters under Ref. – 1 & 2 that they have completed 50.071 km of the project length (length handed over to the Concessionaire within 8 months in accordance with First Supplementary Agreement signed on 29th September 2016) and have requested for issuance of Provisional Certificate (Copies of letters enclosed as Annexure-I & IA). Details of completed length are as follows:

Sl No.	Description	From Chainage	To Chainage	Length (Km)
1	Stretch - I	1+720	11+200	9.480
2	Stretch - II	14+300	18+880	4.580
3	Stretch - III	19+220	20+080	0.860
4	Stretch - IV	20+850	43+450	22.600
5	Stretch - V	43+850	56+401	12.551
Total Length				50.071 Km
Total Project Length = 55.693 Km				

Contd... 2



Innovative, Creative & Technologically Sustainable Infrastructure Solutions

CIN : U74899DL1987P1C026913

Corporate Office :
A-8, Green Park,
New Delhi-110 016, INDIA

Telephone :
+91-11-40863000

Fax :
+91-11-26855252

Email :
business@ictonline.com

Website :
http://www.ictonline.com



- 2 -

3. The work in balance sections which could not be completed due to delay in handover of land within 240 days of Appointed Date are as follows:

Sl.No.	From Chainage	To Chainage	Length (Km)	Remarks
1	0+000	1+720	1.720	Hirekerur Town. Constraints of Utilities (Electrical Poles and Water Pipelines)
2	11+200	14+300	2.390	Chikkerur Bypass. Land Acquisition is under progress.
3	18+880	19+220	0.340	Toll Plaza-I. Land Acquisition is under progress.
4	20+080	20+850	0.770	Hamsbhavi Town R & R issues. ROW not available.
5	43+450	43+850	0.400	Toll Plaza-II. Land Acquisition is under progress.
Total Length			5.620 Km	

4. Following reports and successful test results have already been attached with IE letter dt. 24.02.2018 addressed to the Managing Director, KRDCL, Bengaluru, with copies to all concerned:
- (a) Road Safety Review Reports.
 - (b) Schedule 'I' Test results.
 - (c) Certified Check List for ensuring required safety and reliability for commercial operation.
5. Except the stretches mentioned in para 3 above, all other parts of the Project Highway can be safely and reliably placed under commercial operations and fulfill the obligation of Article – 15.
6. Pursuant to Clause 14.3 of the Concession Agreement, the Concessionaire has completed 50.071 Km length of the Project Highway in accordance with and as specified in Schedule-B and Schedule-C and in conformity with the specifications and standards set forth in Schedule-D of the Concession Agreement. Accordingly, pursuant to Clause 14.3 of the Concession Agreement, the Provisional Certificate of the above work covering a length of 50.071 Km w.e.f. 24th February 2018 is to be issued to the Concessionaire.
7. After compliances of the above and after concurrence of the Authority vide letter nc.3509 dt. 27.03.2018 mentioned under reference 4 above, the Independent Engineer is pleased to issue the Provisional Certificate w.e.f. 24th February 2018 for 50.071 km length of Project Highway out of a total length of 55.693 km in accordance with Clause 14.3 of the Concession Agreement. Provisional Certificate is attached.

Contd...3.....



Innovative, Creative & Technologically Sustainable Infrastructure Solutions

CIN : U74899DL1987PTC026913

Corporate Office :
A-8, Green Park,
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Telephone :
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Fax :
+91-11-26855252

Email :
business@ictonline.com

Website :
http://www.ictonline.com

Annexure 7: Insurance

पॉलिसी अनुसूची / Policy Schedule - Civil Engineering Completed Risk

Policy Number: 321300441910002005

व्यवसाय स्रोत / Business Source: 910355

जारीकर्ता कार्यालय / Issuing Office: 321300

विक्रय चैनल कोड / Sales Channel Code: 91035500000001

कार्यालय कोड / Office Code: 321300

नाम / Name: Aspire Insurance Brokers Pvt Ltd - HO Contact Number: 8291914819

कार्यालय पता / Office Address: BHOPAL, DIVISION II B-8, Indrapuri, B H E L, Bhopal, Madhya Pradesh - 462022.

सह दलाल कोड / Co Broker Code:

State Code: 23, Madhya Pradesh

GSTIN: 23AAACN967612B

Customer Care Toll Free Number: 1800 345 0330

Contact Number: 755 2682822

eMail: 321300@nic.co.in

email: customer.support@nic.co.in

Mobile Number:

ग्राहक का नाम / Customer Name: DBL HIREKERUR RANIBENNUR TOLLWAYS LTD

ग्राहक आईडी / Customer ID: 9701851848

पैन / PAN: AAFC05001L

पता / Address: NO-77, BEHIND RMP QUARTERS, 5TH STAGE, KUVEMPUNAGARA, MYSORE-570023, City: MYSORE, District: MYSORE, State: KARNATAKA, PIN: 570023.

फोन / Phone:

ई-मेल / E-Mail:

Cell: 9826292328

पॉलिसी: 27/03/2020 से 00:00 से 26/03/2021 को मध्य रात्रि तक प्रभावी / Policy Effective from 00:00 hours, on 27/03/2020 to midnight of 26/03/2021

वृत्तिका / Premium	रकम / Amount	कवर नोट संख्या और तारीख / Cover Note Number and Date	विवरण / Details
CGST	₹ 0.00	NA	
SGST/UTGST	₹ 0.00		
IGST	₹ 3,69,148.00		
वेस्टा काउ ड्रॉप / Kerala Flood Cess	₹ 0.00	परस्ताव संख्या और तारीख / Proposal Number and Date	6800200327087095 Dt. 27/03/2020
कम / Less GST TDS	₹ 0.00		
कुन-पुनर्प्राप्त योग्य स्टाम्प / Recoverable Stamp Duty	₹ 0.00	रसीद संख्या और तारीख / Receipt Number and Date	321300611910007666 Dt. 27/03/2020
कुल / Total Amount	₹ 24,19,979.00	पहिली पॉलिसी संख्या और समाप्ति तारीख / Previous Policy Number and Expiry Date	NA

(Rupees Twenty Four Lakh Nineteen Thousand Nine Hundred Seventy Nine Only.)

Location: State Highway Hirekerur - Ranibennur, Karnataka Haveri, Haveri - District Others, 581101.

Sr.No	Type of Risk	Description Of Risk	Earthquake Zone	Sum Insured of the risk(₹)	Excess(₹)
1	Roads	ROAD AND STRUCTURE Road Furniture, Fixtures, Electrical Poles Lighting & Fittings, Signboard & Safety Barrier	Zone IV	1,94,87,35,000.00	1,00,000.00
2	Roads		Zone IV	10,25,65,000.00	1,00,000.00

सर्ग्य, खंड, पुनर्प्राप्ति एवं वारंटी / Clauses, Endorsements and Warranties Applicable: Policy is subject to following conditions: POLICY IS SUBJECT TO THE FOLLOWING CONDITIONS:

1. Excess applicable under the policy is: (a) Upto SI of Rs 500 Cr = 10% of Claim subject to Minimum of Rs 5 lacs & (b) SI above 500 Cr & upto 1500 Cr = 10% of Claim subject to Minimum of Rs 10 lacs. Entire Road package will be treated as One location for application of Excess.
2. Policy is Applicable for Roads & Road side structures & Toll plazas & Bridges & Flyovers on Land.
3. No Coverage for (Road) Transportation Tunnels.
4. No Coverage for Marine Vessel Impact Damage.
5. Each 72 hour period will be treated as One occurrence/event for STFI & EQ for application of Excess.

PROJECT DETAILS COVERED UNDER THE POLICY AS FOLLOWS:
Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) of Existing State Highway Hirekerur - Ranibennur in the state of Karnataka on DBFOMT Annuity Basis (WCP-5).

Name of the co insured under the policy is Dilip Buildcon Ltd. & KRDC.

Name of the contractor under the policy is Dilip Buildcon Ltd and subcontractor is VARIOUS. Agreed Bank Clause, Terrorism Damage Exclusion Warranty, Riot, Strike, and Malicious Damage Clause.

Printed on 27/03/2020 by ID: 75159



THE NEW INDIA ASSURANCE CO. LTD.
(Government of India Undertaking)

WC - Hirekerur

ADJUSTMENT VOUCHER

Issuing Office : BHOPAL DO-1 (450100)
Address : C.D.U. - I, BLOCK NO 3, IIIND FLOOR,
PARYAVAS BHAWAN, ARERA HILLS,
BHOPAL, 462011
Phone : 07554203271
Email : nis.450100@newindia.co.in
Fax : 07554203274
Collection Number : 4501008119000007523
Collection Date : 12/02/2020
Business Source Code : 1D5140053
PAN No of Payer : AACCB6124B

Received with thanks from M/S GILIP BUILDCON LTD.

The amount received/Adjusted is towards -

Policy No.	A/C Description	Amount ₹	A/C Code	Sub A/C Code
45010036190100000053	Cash Deposit Account-450100	6545.00	5076.450100	CD0000941977

Total = ₹ 19635.00

Your Payment/Adjustment Details are as under -

Mode	Amount ₹	Cheque No.	Cheque Date	Drawee Bank	Drawee Branch	Reference No.	Scrub/9G/A PD Balance
Advance Premium Deposit	6545.00	N.A.	N.A.	N.A.	N.A.	4501001910015530	2897771.0 0

Total = ₹ 19635.00

Utilization details of the Collected Amount :

Premium	GST	Stamp Duty	Excess Amount
5547.00	998.00	0.00	0

Sl no.	Agency Code	Agency Name	Department Code
1	NA	GLOBAL INSURANCE BROKERS PRIVATE LTD.	36

For The New India Assurance Company Limited

Date of Issue: 12/02/2020

Cashier's Initial

Authorized Signatory

Note -
1. Please note the Policy Number, Collection Number and date in all future correspondence.
2. NIA shall not be liable for any claim arising out of sales made during the period between the due date and date of payment of the installment if the premium paid has been exhausted by turnover declarations if there is insufficient premium balance.

Tax Invoice No : 45010019P0009348

IRDA Registration Number: 190

Signature valid
Digitally signed by
New India Assurance Co. Ltd.
Date: 2020.02.12
16:54:57 IST

Policy No. : 45010036190100000053 Document generated by 37225 at 12/02/2020 16:54:57 Hours.
Regd. & Head Office: New India Assurance Bldg., 87 M.G. Road, Fort, Mumbai - 400 001. TOLL FREE No. 1 800 209 1415.

Page 1 of 1

Annexure 8: Change of Scope

Design, Build, Finance, Operate, Maintain and Transfer (DBFOMT) of Existing State Highway Hirekerur-Ranibennur in the State of Karnataka on DBFOMT Annuity Basis WCP-5							
Authority	: Karnataka Road Development Corporation Limited						
Independent Engineer	: Intercontinental Consultants and Technocrats Pvt. Ltd						
Concessionaire	: DBL Hirekerur Ranibennur Tollways Limited						
Sr. No.	Description	Unit	As per contract Scope	Completed	Balance		Remarks
					To be Completed	To be De-Scope	
1	Hamsabavi Town (Km. 19+800 to Km. 22+500)	Km	2.7	1.98	0	0.72	Excluding Drain, Footpath, Kerb, Electrical pole, Stud, busbay etc.
2	Change in Cross section of Hirekerur Town (Km. 0+000 to Km. 1+650)	Km	1.65	1.65	0	0	
3	Overlay Proposal of Hirekerur Town (Km. 0+000 to Km. 1+650)	Km	1.65	1.65	0	0	
4	Electrical Pole						
	(i) For fixing in Median	No's	43	0	0	43	
	(ii) For fixing in Footpath	No's	217	188	0	29	
5	Bus bay	No's	22	8	14	0	
6	Bus shelter	No's	22	7	14	1	
7	RCC Drain	Rmt	18520	15170	1740	1610	Revised Scope as per Authority letter 997, 16.07.2017
8	Drain Side Kerb	Rmt	18200	15225	1125	1850	
9	Footpath	Rmt	18200	14715	0	3485	
10	Road Stud	No's	1817	1244	0	573	
11	Metal Beam Crash Barrier	Rmt	7200	6800	400	0	
12	Raised Pedestrian Crossing	No's	24	21	1	2	
13	Ground Water Discharge Pits	No's	12	10	2	0	
Grand Total							