SHREM FINANCIAL PRIVATE LIMITED

Rehabilitation and up-gradation of NH-66 (Erstwhile NH-17) from Km.406.030 to Km.450.170 (Kalmath to Zarap section) to Four Lane with pave shoulder in the State of Maharashtra under NHDP-IV on Hybrid Annuity Mode

TECHNICAL DUE DILIGENCE REPORT

FEBRUARY, 2021

SUBMITTED BY

RUKY PROJECTS PRIVATE LIMITED
Hyderabad – 500 072
www.rukyprojects.com

Rehabilitation and up-gradation of NH-66 (Erstwhile NH-17) from Km.406.030 to Km.450.170 (Kalmath to Zarap section) to Four Lane with pave shoulder in the State of Maharashtra under NHDP-IV on Hybrid Annuity Mode

This document has been issued and amended as follows:

Report No.	Issue	Date	Description
RU-DD Report-Kalmath-Zarap	01	February 2021	Technical Due Diligence Report

RUKY Projects Private Limited
#1403A, Manjeera Trinity Corporate, JNTU-HITEC City Road,
Kukatpally, Hyderabad – 500 072, Telangana, India,
+91 40 4855 7777 / 2304 4777
www.rukyprojects.com

DISCLAIMER AND CONSENT FOR USE

This report has been prepared for the benefit of SHREM FINANCIAL PRIVATE LIMITED (SFPL), the investment Manager of Shrem InvIT (Trust), for and in connection with initial offer of units representing an undivided beneficial interest in the Trust. In Preparing this report, RUKY Projects Pvt Ltd has relied, in whole or in part, on data and information provided by SFPL and **DBL KALMATH ZARAP HIGHWAYS LIMITED** which RUKY Project Pvt Ltd has assumed to be accurate, complete, reliable and correct.

This report may be reproduced and included in the preliminary placement memorandum, placement memorandum and any other documents prepared in connection with the aforesaid initial offer of units of the Trust and may be made available for inspection in the manner specified therein. In connection with the report, the following details in relation to the Technical Consultant may be included in preliminary placement memorandum and the placement memorandum and any other documents prepared in connection with the aforesaid initial offer of units of the Trust.

Technical Consultant:
RUKY PROJECTS PRIVATE LIMITED
Flat No. 1403A, 14th Floor,
Manjeera Trinity Corporate,
JNTU-Hitech City Road, Kukatpally,
Hyderabad – 500072
www.rukyprojects.com

Contact Person of Consultant: Mr. C Ramanaiah
Email: ramana_c@rukyprojects.com
Tel: +91 40 4855 7777

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

CHAPTER 1. INTRODUCTION

1.1 General

DBL Kalmath Zarap Highways Limited (herein after referred to as "**Concessionaire**") had augmented the existing two lane road "Kalmath-Zarap section of NH-17(New NH-66) in the State of Maharashtra, in accordance with the provisions of the Concession Agreement executed with National Highways Authority of India (herein after referred to as "Authority") on 9th February, 2017 on Design, Build, Operate and Transfer (DBOT) on Hybrid Annuity Mode (HAM).

The Project Highway starts at Km. 406+030 (Near Kalmath) and ends at Km 450+170 (Near Zarap) on NH-17 (New NH-66). Project is 4 lane and is awarded under Hybrid Annuity Mode. It passes through settlements namely Sindhudurg, Kalmath, and Zarap. Project location map is provided at **Figure 1-1.**

Figure 1.1: Project Location Map

SHREM INFRAVENTURE PRIVATE LIMITED (SIPL) acquired DBL KALMATH ZARAP HIGHWAYS PRIVATE LIMITED vide agreement dated 26.03.2018.

SHREM FINANCIAL PRIVATE LIMITED (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 and to review the annuity payments received and future schedule of annuity payments.

1.2 The Project Data

Table 1.1: Project Data

S. No.	Particulars	Details
1	Name of the project	Rehabilitation and upgradation of NH-66 (Erstwhile NH-17) from Km. 406+030 to Km. 450+170 (Kalmath to Zarap Section) to Four lane with paved shoulder in the State of Maharashtra under NHDP-IV on Hybrid Annuity Mode.
2	Road Type	National Highway
3	Name of the Authority	National Highways Authority of India
4	Name of the Concessionaire	DBL Kalmath Zarap Highways Limited
5	Name of the EPC Contractor	Dilip Buildcon Limited
6	Date of LOA	25.11.2016
7	Date of Agreement	09.02.2017
8	Design Length as per Schedule B of CA	43.905 Km
9	Project Lane Configuration	Four Lane
10	Bid Project Cost	Rs. 914 Cr
11	EPC Cost	Rs. 698 .09 Cr
12	Nature of contract	DBFOT (Hybrid Annuity)
13	Toll collected by	The Authority
14	Concession End Date	22.03.2035
15	Concession Period	15 Years from COD
16	Appointed date	01.02.2018

S. No.	Particulars	Details
17	Construction Period	730 days from the Appointed Date+285 days EOT
18	Schedule Completion Date	01.02.2020
19	Date of issuance of Provisional Certificate (COD)	23.03.2020
20	Bonus on early completion	Applicable as per Cl.23.5 of CA
21	Date of issuance of Completion Certificate	---
22	Annuity Amount	As per Cl.23.4 and Cl.23.6.3 of CA
23	Total Number of Annuities payable after COD	30 Nos.
24	First Annuity Payment Date	23.09.2020
25	Total Number of Annuity Payments received as on January 2021	1 No.

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, 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 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 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 CA	As per COS	As per Site
1	Total Length of Main Carriageway with Rigid Pavement	29.197 Kms.	---	33.560 Kms.
2	Total Length of Main Carriageway with Flexible Pavement (Considering both sides)	14.708 Kms.		10.345 Kms.
3	Total length of Service Roads	23.938 Kms.	---	23.938 Kms.
4	Total length of Slip Roads	---	---	---
5	Toll Plazas	1 No.	---	1 No.
6	Bus Bays with Bus Shelters	46 Nos.	---	43Nos. Completed and 3 Nos. Construction Pending
7	Truck Lay Bays	1 Nos.	---	1 No.
8	Major Junctions	5 Nos.	---	5 Nos.
9	Minor Junctions	61 Nos.	---	61 Nos.
10	Vehicular underpasses	7 Nos.	-2 Nos.	5 Nos.
11	Light Vehicular underpasses	3Nos.	2 Nos.	5 Nos.
12	Pedestrian underpasses	---	1 No.	1 No.
13	Subways	---	1 No.	1 No.
14	Flyovers	1 No.	---	1 No.
15	Major Bridges	4 Nos.	3 Nos.	7Nos.
16	Minor Bridges	8Nos.	1 Nos.	9 Nos.
17	Hume Pipe Culverts	101 Nos.	29 Nos.	*127 Nos.
18	Slab/Box Culverts	19 Nos.	---	19 Nos.

* As per site condition Total 127 Nos. of pipe culverts constructed.

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.

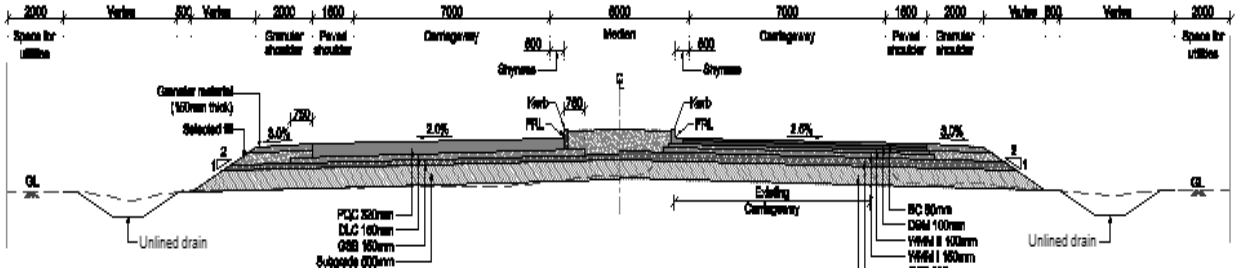

Figure 2.1: TCS 1.1- 4 Lane Rural Area (Right Side Existing Road)

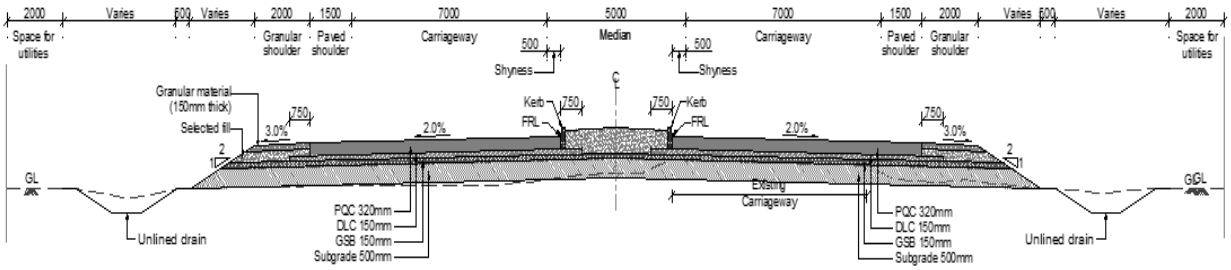

Figure 2.2: TCS 1.2- 4 Lane Rural Area (Right Side Existing Road)

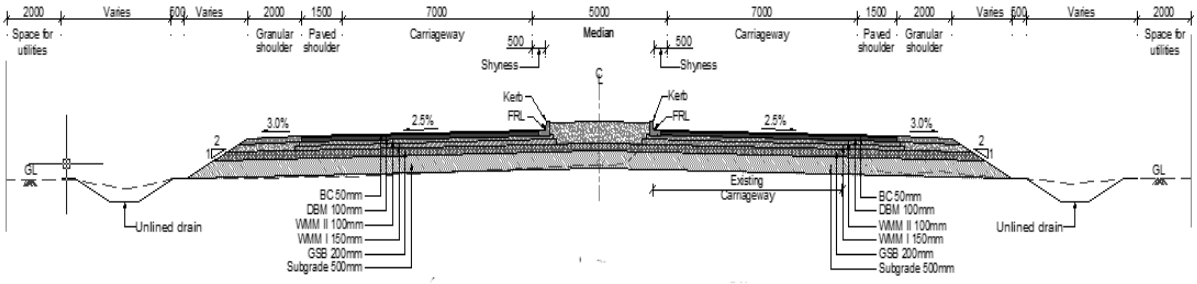

Figure 2.3: TCS 1.3- 4 Lane Rural Area (Right Side Existing Road)

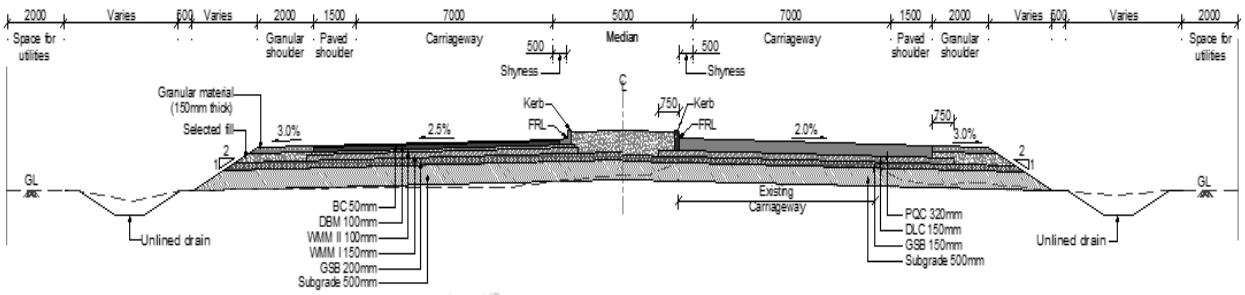

Figure 2.4: TCS 1.4- 4 Lane Rural Area (Right Side Existing Road)

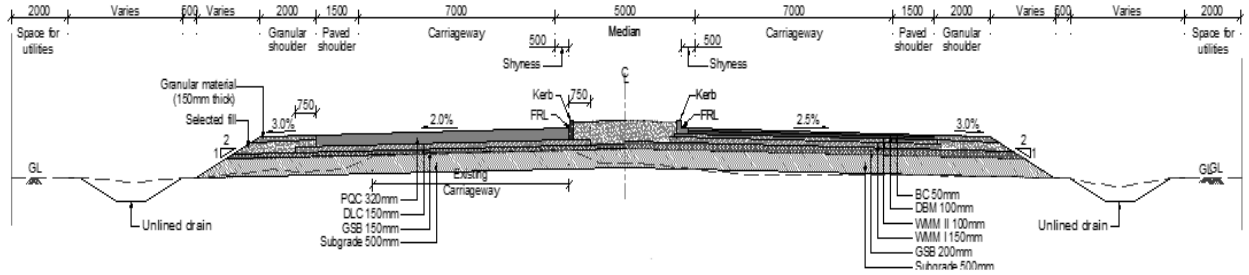

Figure 2.5: TCS 1A.1- 4 Lane Rural Area (Left Side Existing Road)

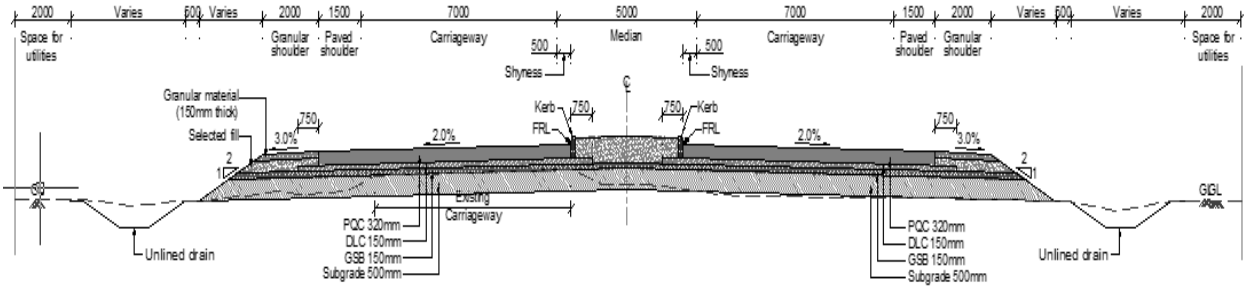

Figure 2.6: TCS 1A.2- 4 Lane Rural Area (Left Side Existing Road)

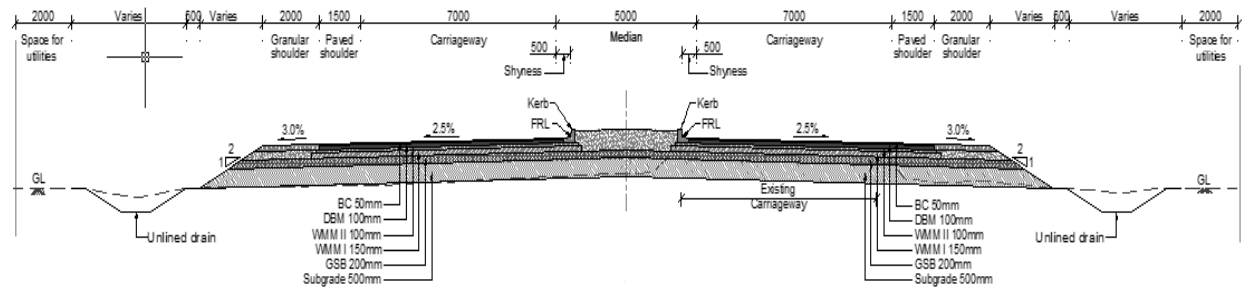

Figure 2.7: TCS 1A.3- 4 Lane Rural Area (Left Side Existing Road)

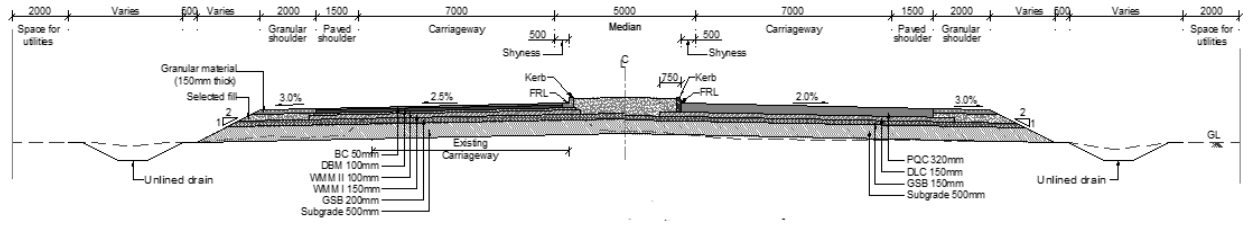

Figure 2.8: TCS 1A.4- 4 Lane Rural Area (Left Side Existing Road)

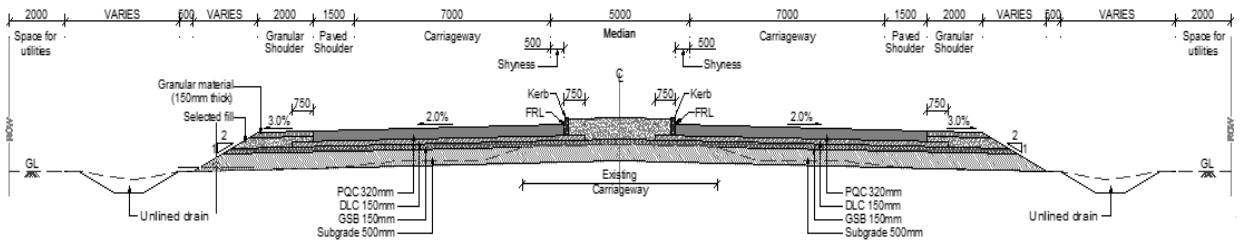

Figure 2.9: TCS 1B.1- 4 Lane Rural Area (Center Existing Road)

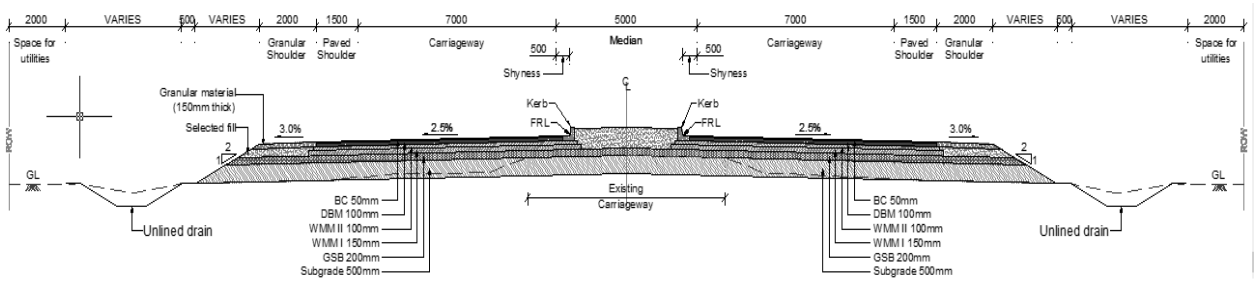

Figure 2.10: TCS 1B.2- 4 Lane Rural Area (Center Existing Road)

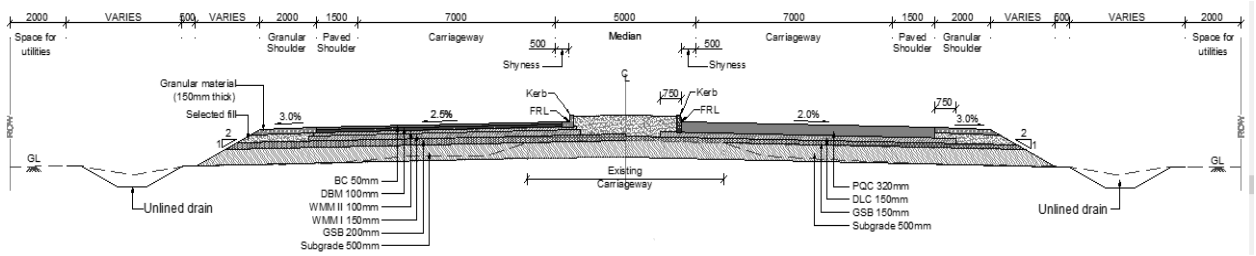

Figure 2.11- TCS 1B.3- 4 Lane Rural Area (Center Existing Road)

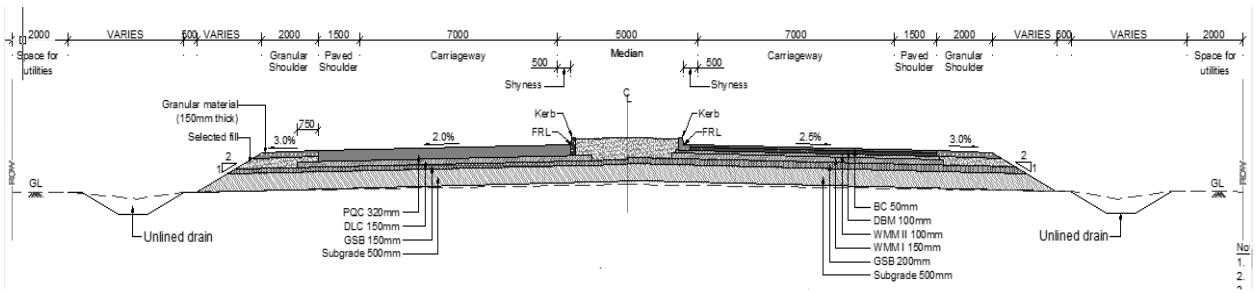

Figure 2.12: TCS 1C.1- New Alignment / Realignment For 4 - Lane In Rural Area

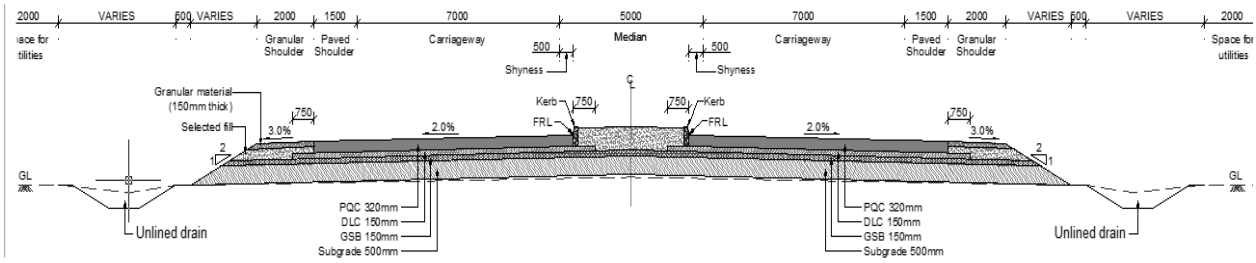

Figure 2.13: TCS 1C.2- New Alignment / Realignment For 4 - Lane In Rural Area

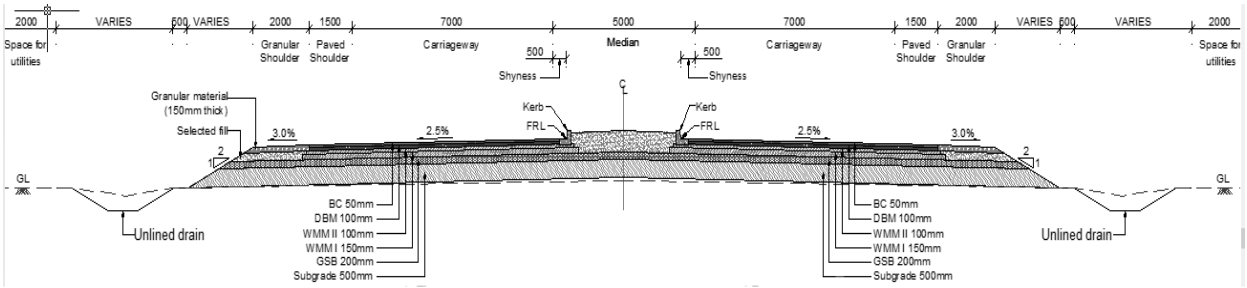

Figure 2.14: TCS 1C.3- New Alignment / Realignment For 4 - Lane In Rural Area

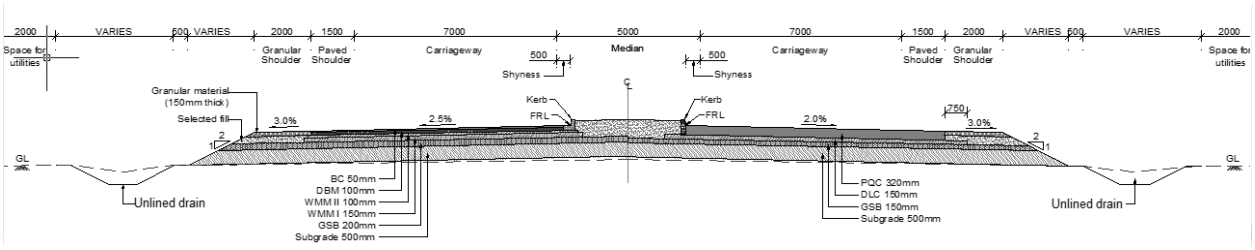

Figure 2.15: TCS 1C.4- New Alignment / Realignment

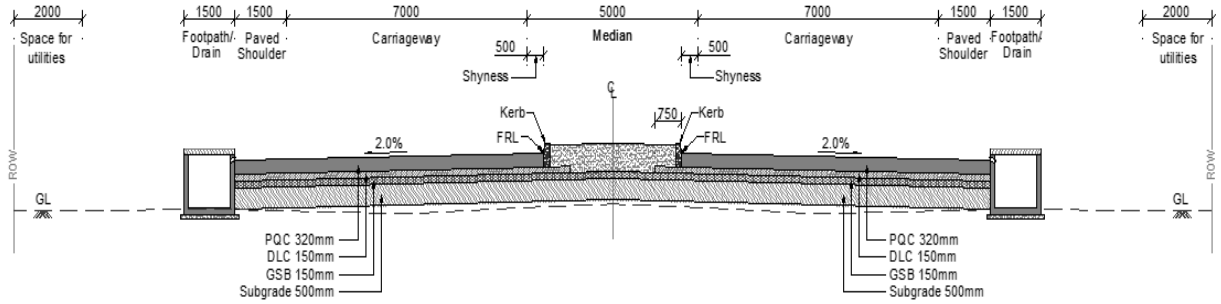

Figure 2.16: TCS 1D- TOLL PLAZA

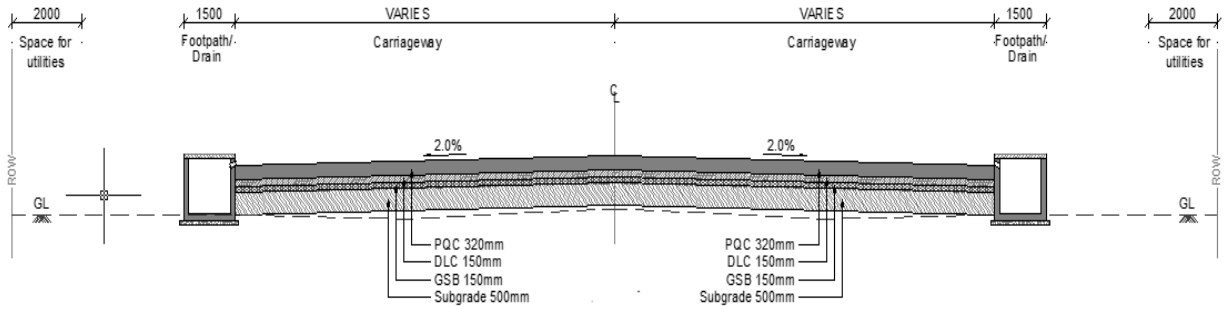

Figure 2.17: TCS 1E- TOLL PLAZA

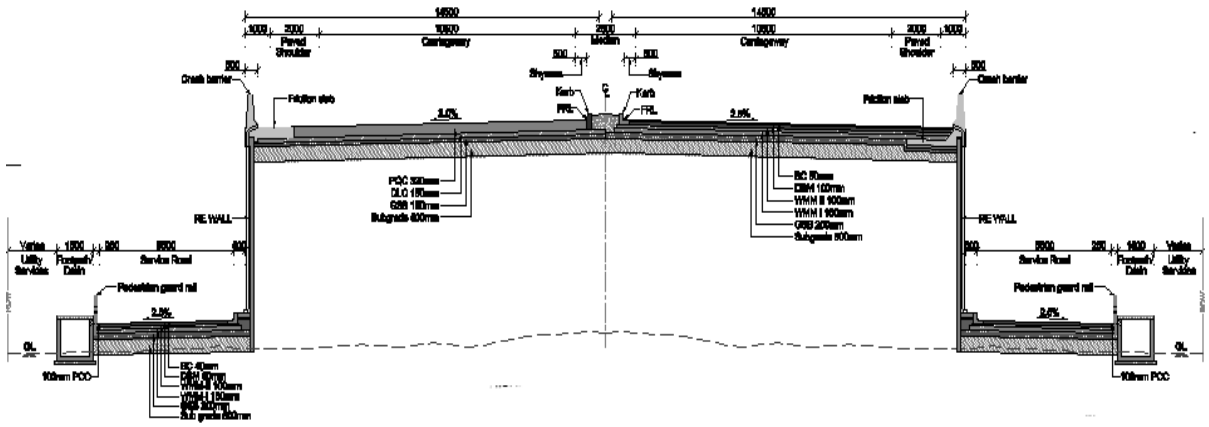

Figure 2.18: TCS 8.1- Vehicular / Light Vehicular Underpass

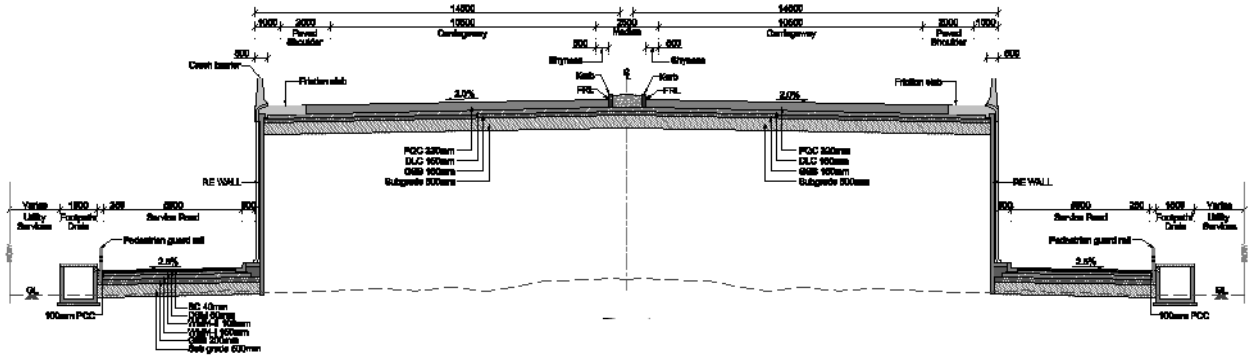

Figure 2.19: TCS 8.2- Vehicular / Light Vehicular Underpass

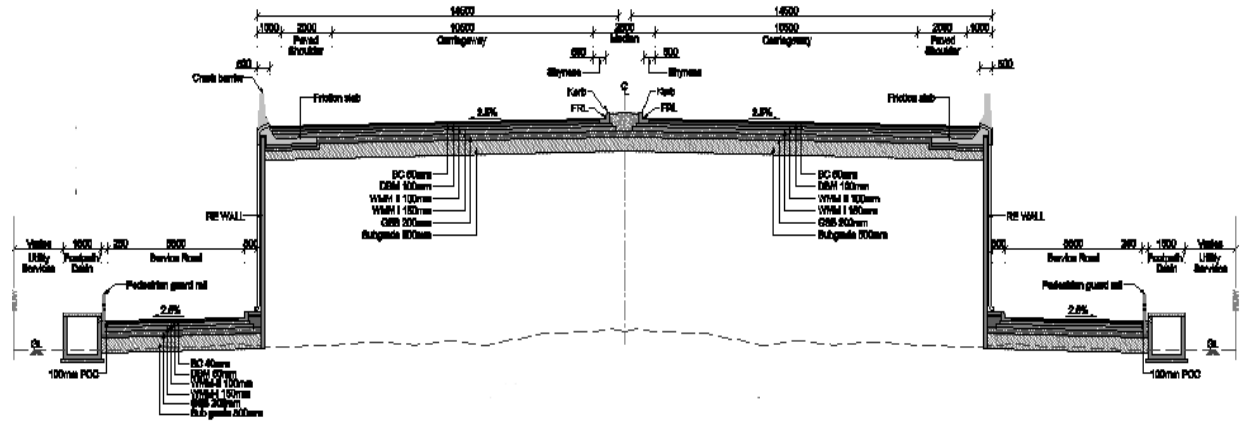

Figure 2.20: TCS 8.3- Vehicular / Light Vehicular Underpass

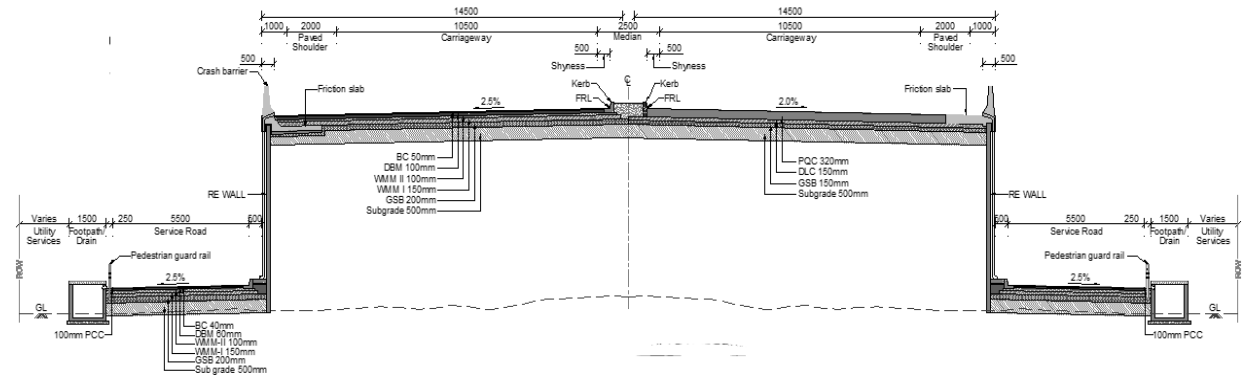

Figure 2.21: TCS 8.4- Vehicular / Light Vehicular Underpass

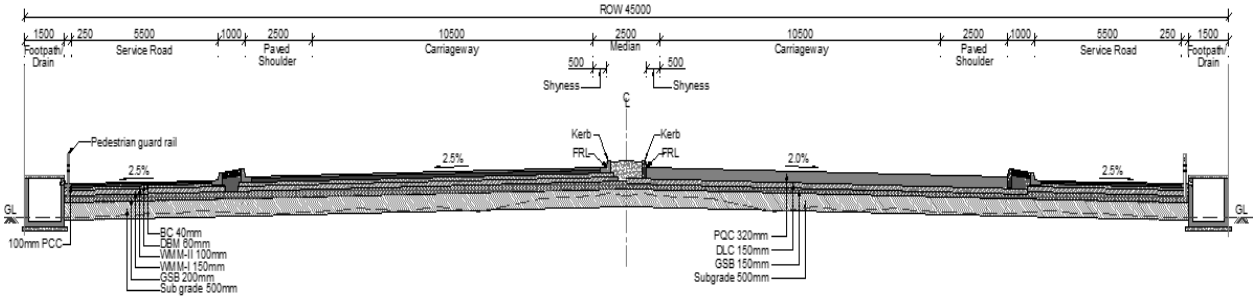

Figure 2.22: TCS 8.5- 6 Lane Widening In Rural Area

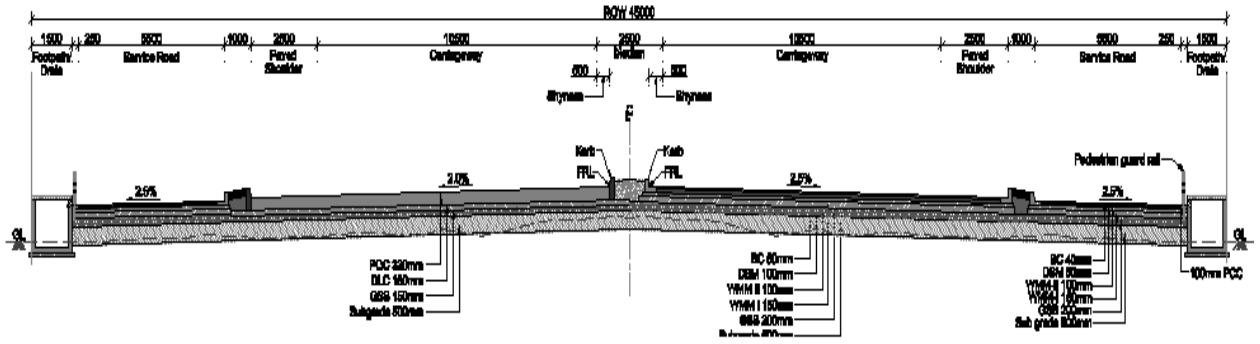

Figure 2.23: TCS 8.6- 6 Lane Widening In Rural Area

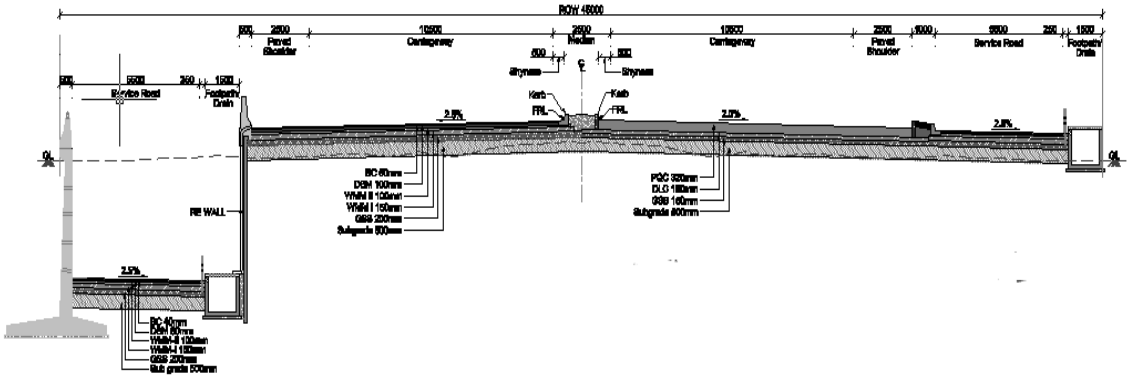

Figure 2.24: TCS 8.7- 6 Lane Widening In Rural Area

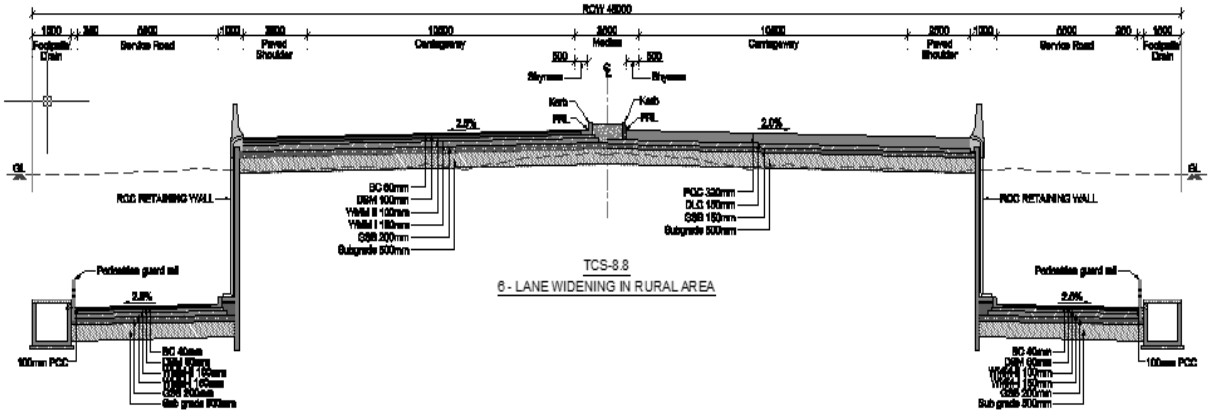

Figure 2.25: TCS 8.8- 6 Lane Widening In Rural Area

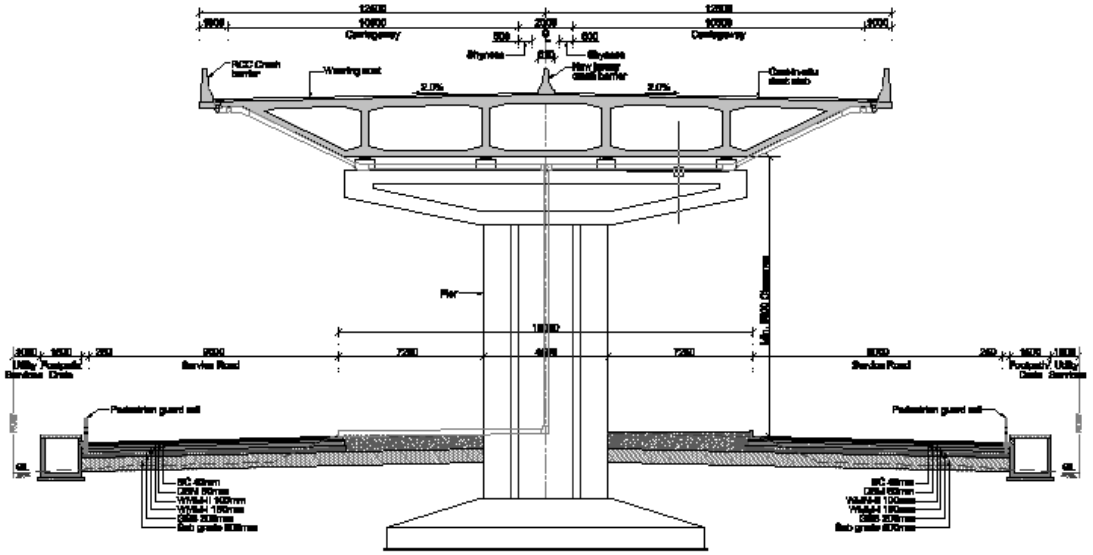

Figure 2.26: TCS 9- Elevated Structures Location

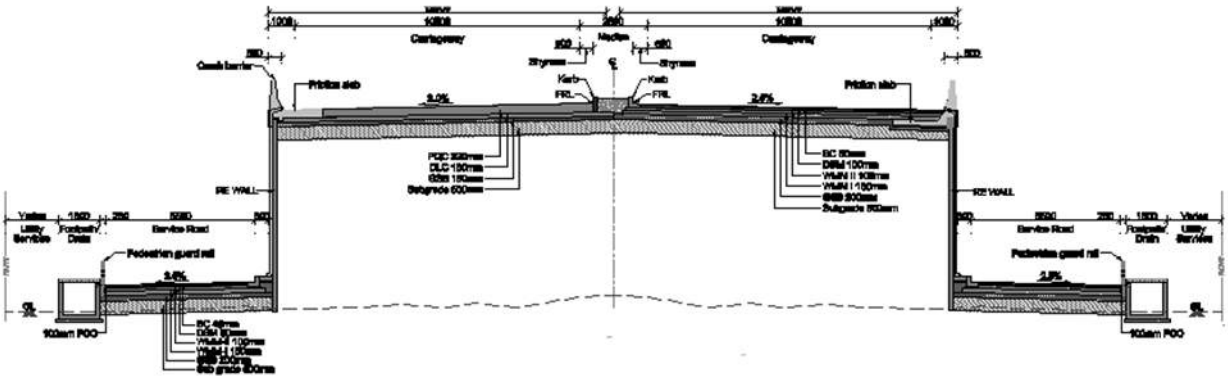

Figure 2.27: TCS 10.1- Approach Of Elevated Structures

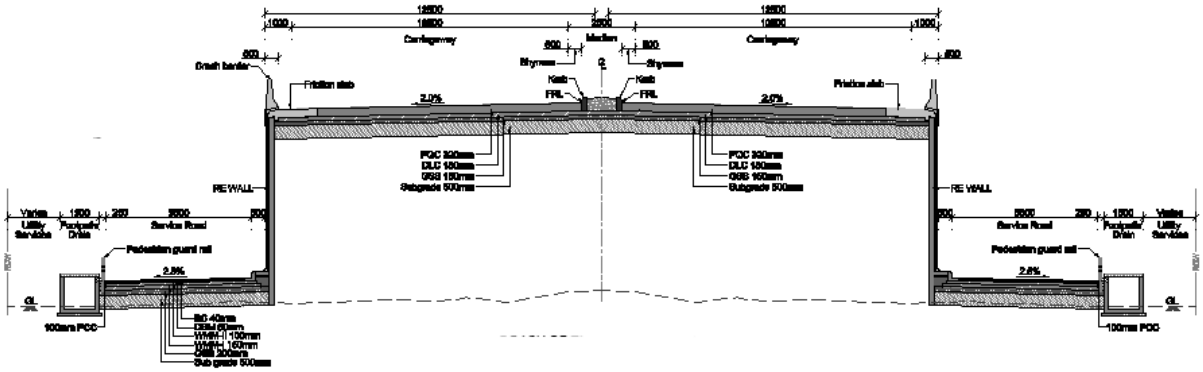

Figure 2.28: TCS 10.2- Approach Of Elevated Structures

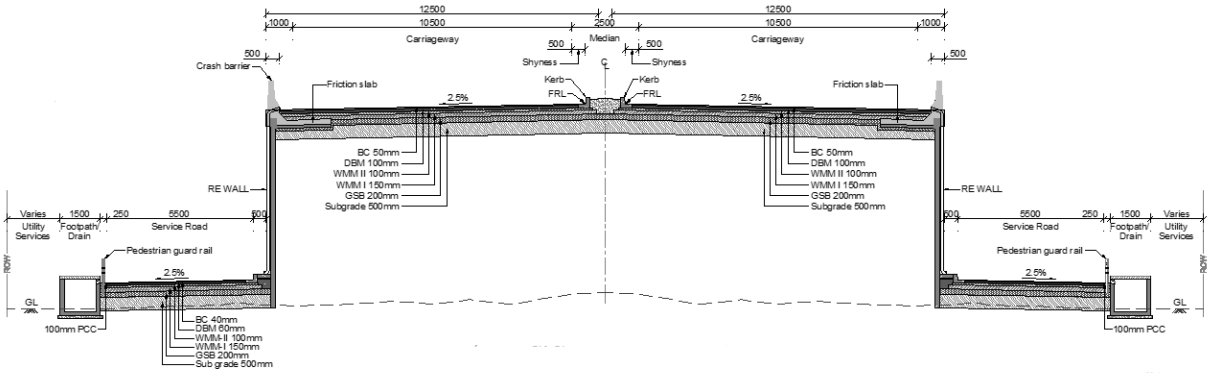

Figure 2.29: TCS 10.3- Approach Of Elevated Structures

TCS Schedule is provided below.

Table 2.2: TCS Schedule

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
1	237+655	237+728	73	MAJOR BRIDGE
2	237+728	237+800	72	TCS-10.3
3	237+800	237+830	30	TCS-10.1
4	237+830	238+320	490	TCS-10.2
5	238+320	239+580	1260	TCS-9
6	239+580	239+836	256	TCS-10.2
7	239+836	239+863	27	TCS-10.1
8	239+863	239+927	64	TCS-1A.3
9	239+927	240+053	126	MAJOR BRIDGE
10	240+053	240+070	17	TCS-1A.3
11	240+070	240+380	310	TCS-1.4
12	240+380	240+670	290	TCS-1A.4
13	240+670	240+800	130	TCS-1.4
14	240+800	240+930	130	TCS-1A.4
15	240+930	240+990	60	TCS-1A.3
16	240+990	241+060	70	TCS-1.3
17	241+060	241+380	320	TCS-1.1
18	241+380	241+445	65	TCS-1.3

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
19	241+445	241+640	195	TCS-1A.4
20	241+640	242+190	550	TCS-1.4
21	242+190	242+570	380	TCS-1A.4
22	242+570	242+735	165	TCS-1C.4
23	242+735	242+765	30	TCS-1C.3
24	242+765	242+910	145	TCS-1C.4
25	242+910	242+940	30	TCS-1C.3
26	242+940	242+961	21	MINOR BRIDGE
27	242+961	243+050	89	TCS-1A.3
28	243+050	244+180	1130	TCS-1A.4
29	244+180	244+200	20	TCS-1A.3
30	244+200	244+221	21	MINOR BRIDGE
31	244+221	244+235	14	TCS-1C.3
32	244+235	244+495	260	TCS-1C.1
33	244+495	244+505	10	TCS-1C.3
34	244+505	244+810	305	TCS-1C.4
35	244+810	244+925	115	TCS-1B.3
36	244+925	244+970	45	TCS-1.4
37	244+970	246+760	66	TCS-1.2
38	246+760	247+270	510	TCS-1C.2
39	247+270	248+315	1045	TCS-1.2
40	248+315	248+390	75	TCS-1.4
41	248+390	248+430	40	TCS-1.3
42	248+430	248+451	21	MINOR BRIDGE
43	248+451	248+475	24	TCS-1C.3
44	248+475	248+545	70	TCS-1C.4

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
45	248+545	248+800	255	TCS-1C.2
46	248+800	249+060	260	TCS-1A.2
47	249+060	250+130	1070	TCS-1.2
48	250+130	250+230	100	TCS-1D TOLL PLAZA
49	250+230	250+585	355	TCS-1E TOLL PLAZA
50	250+585	250+730	145	TCS-1D TOLL PLAZA
51	250+730	251+140	410	TCS-1C.2
52	251+140	251+400	260	TCS-1A.2
53	251+400	251+550	150	TCS-1A.4
54	251+550	251+610	60	TCS-1C.3
55	251+610	251+694	84	MAJOR BRIDGE
56	251+694	251+790	96	TCS-1C.3
57	251+790	251+855	65	TCS-1C.4
58	251+855	251+870	15	TCS-1C.1
59	251+870	252+000	130	TCS-1C.2
60	252+000	252+100	100	TCS-1B.1
61	252+100	252+430	330	TCS-1A.2
62	252+430	252+450	20	TCS-1A.3
63	252+450	252+455	5	TCS-8.3
64	252+455	253+545	1090	TCS-8.2
65	253+545	253+830	285	TCS-1.1
66	253+830	253+835	5	TCS-1.3
67	253+835	253+856	21	MINOR BRIDGE
68	253+856	253+890	34	TCS-1.3
69	253+890	254+150	260	TCS-1.1
70	254+150	254+223	73	TCS-1A.1

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
71	254+223	254+445	222	TCS-1A.2
72	254+445	254+475	30	TCS-1A.4
73	254+475	254+600	125	TCS-1A.3
74	254+600	254+682	82	TCS-1A.1
75	254+682	255+650	968	TCS-1A.2
76	255+650	256+090	440	TCS-1.2
77	256+090	256+600	510	TCS-1B.1
78	256+600	258+098	1498	TCS-8.2
79	258+098	258+125	27	TCS-8.3
80	258+125	259+120	995	TCS-8.2
81	259+120	259+320	200	TCS-8.3
82	259+320	259+358	38	TCS-1A.3
83	259+358	259+376	18	TCS-1A.4
84	259+376	260+300	924	TCS-1A.2
85	260+300	260+530	230	TCS-1B.1
86	260+530	260+695	165	TCS-1A.2
87	260+695	260+887	191.7	TCS-1A.4
88	260+887	260+957	70	MAJOR BRIDGE
89	260+957	261+676	719.3	TCS-1A.4
90	261+676	262+320	644	TCS-1A.2
91	262+320	262+338	18	TCS-1A.1
92	262+338	262+406	68	TCS-1A.3
93	262+406	262+448	42	TCS-1A.1
94	262+448	262+790	342	TCS-1A.2
95	262+790	263+330	540	TCS-1.1
96	263+330	263+400	70	TCS-1.3

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
97	263+400	263+418	18	TCS-8.3
98	263+418	263+431	13	TCS-8.1
99	263+431	264+498	1067	TCS-8.2
100	264+498	264+560	62	TCS-8.4
101	264+560	264+600	40	TCS-1B.3
102	264+600	265+030	430	TCS-1A.4
103	265+030	265+110	80	TCS-1A.3
104	265+110	265+184	74	TCS-1C.3
105	265+184	265+227	43	MAJOR BRIDGE
106	265+227	265+390	163	TCS-1C.3
107	265+390	265+420	30	TCS-1C.4
108	265+420	265+600	180	TCS-1C.2
109	265+600	265+690	90	TCS-1A.2
110	265+690	266+085	395	TCS-1A.4
111	266+085	266+170	85	TCS-1A.3
112	266+170	266+180	10	TCS-8.1
113	266+180	266+750	570	TCS-8.2
114	266+750	266+760	10	TCS-8.3
115	266+760	266+975	215	TCS-1B.2
116	266+975	267+779	803.5	TCS-1A.1
117	267+779	267+800	21.5	TCS-1A.2
118	267+800	268+055	255	TCS-1A.4
119	268+055	268+263	208	TCS-1A.3
120	268+263	268+415	152	TCS-1A.4
121	268+415	268+426	10.5	TCS-1A.3
122	268+426	268+500	74.5	TCS-1A.1

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
123	268+500	268+545	45	TCS-1A.3
124	268+545	268+906	361	TCS-1A.1
125	268+906	268+916	10	TCS-1B.2
126	268+916	269+300	384	TCS-1A.1
127	269+300	269+345	45	TCS-1B.2
128	269+345	269+543	198	TCS-1.4
129	269+543	269+558	15	TCS-1.3
130	269+558	269+633	75	MAJOR BRIDGE
131	269+633	269+650	17	TCS-1.3
132	269+650	270+065	415	TCS-1.4
133	270+065	270+198	133	TCS-1.3
134	270+198	270+318	120	MAJOR BRIDGE
135	270+318	270+360	42	TCS-8.4
136	270+360	270+420	60	TCS-8.3
137	270+420	271+270	850	TCS-8.2
138	271+270	271+450	180	TCS-8.5
139	271+450	272+050	600	TCS-8.7
140	272+050	272+330	280	TCS-8.5
141	272+330	272+580	250	TCS-8.8
142	272+580	272+665	85	TCS-8.5
143	272+665	273+335	670	TCS-8.6
144	273+335	273+435	100	TCS-1A.1
145	273+435	273+564	129	TCS-1A.3
146	273+564	273+585	21	MINOR BRIDGE
147	273+585	273+675	90	TCS-1A.3
148	273+675	274+225	550	TCS-1A.4

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
149	274+225	274+355	130	TCS-1A.2
150	274+355	274+628	273	TCS-1.2
151	274+628	274+705	77	TCS-1.1
152	274+705	275+128	422.5	TCS-1A.2
153	275+128	275+153	25	TCS-1A.4
154	275+153	275+215	62.5	TCS-1.3
155	275+215	275+225	10	MINOR BRIDGE
156	275+225	275+250	25	TCS-1.3
157	275+250	275+285	35	TCS-1.4
158	275+285	275+300	15	TCS-1.2
159	275+300	275+630	330	TCS-1A.2
160	275+630	275+700	70	TCS-8.3
161	275+700	276+283	583	TCS-8.2
162	276+283	276+320	37	TCS-8.3
163	276+320	276+430	110	TCS-1.3
164	276+430	276+440	10	TCS-1.1
165	276+440	278+150	1710	TCS-1.2
166	278+150	278+905	755	TCS-1A.2
167	278+905	279+013	107.5	TCS-1C.2
168	279+013	279+100	87.5	TCS-1C.4
169	279+100	279+115	15	TCS-8.4
170	279+115	279+663	548	TCS-8.2
171	279+663	279+675	12	TCS-8.3
172	279+675	279+854	179	TCS-1A.3
173	279+854	279+949	95	TCS-1.1
174	279+949	280+230	281	TCS-1.2

S.No.	From (Km.)	To (Km.)	Length (m)	TYPES
175	280+230	281+115	885	TCS-1B.1
176	281+115	281+415	300	TCS-1A.2
177	281+415	281+560	145	TCS-1A.3

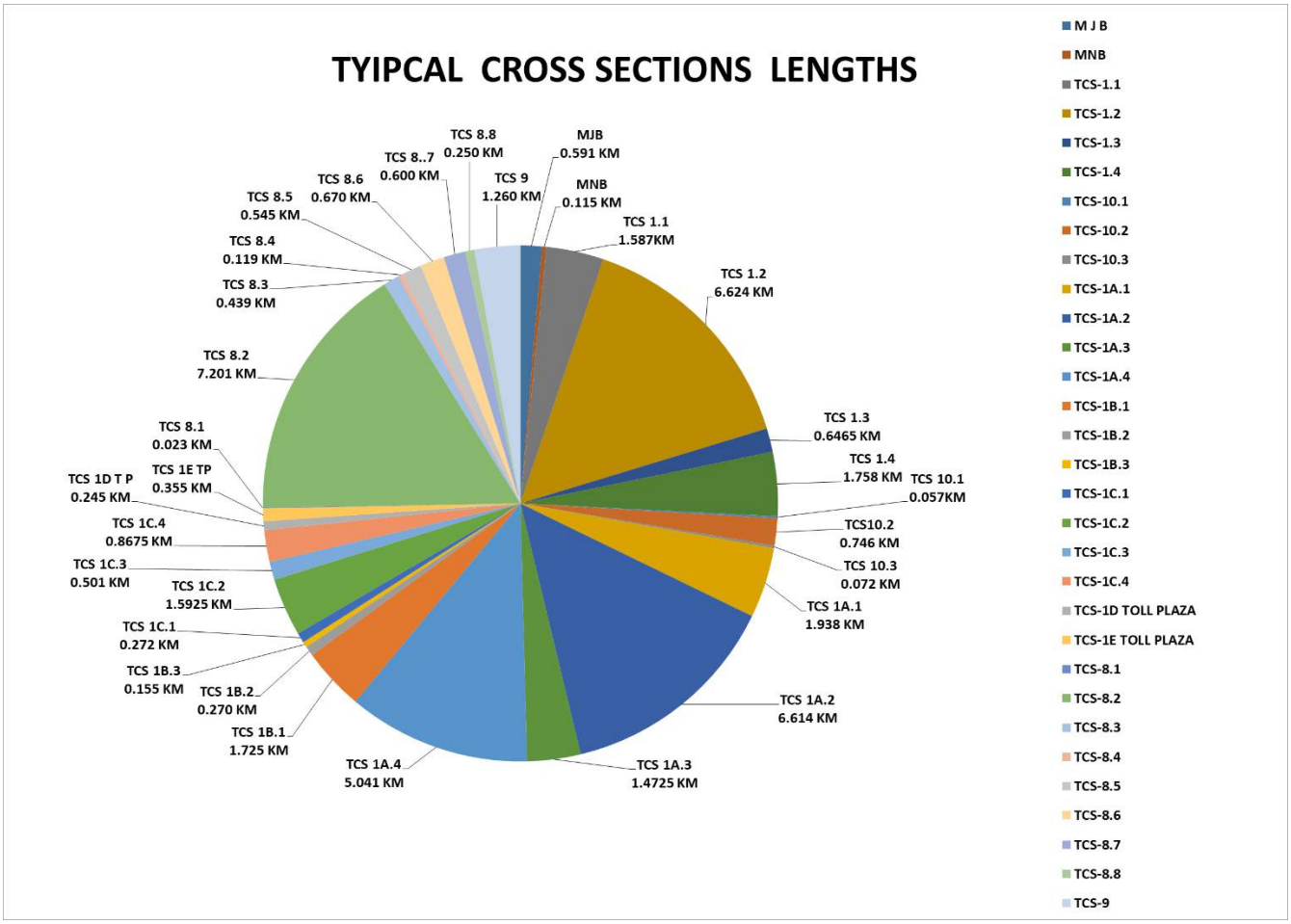

Figure 2.30: Pictorial Diagram of TCS Lengths.

2.3 Road Side Drainage

- To facilitate quick disposal of storm water from the Carriageway and to avoid accumulation of drainage from the Carriageway, RCC 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 constructed in open and rural areas.

2.4 Service Roads

Service Roads and Slip Roads are provided as per the provisions of Schedule B of the Concession Agreement. The details are provided below.

Table 2.3: List of Service Road locations

S. No.	Design Chainage (Km.)		Length (m)	Side	Service Road Width (m)	Linear Length of Service Road (m)
	From	To				
1	237+728	238+320	592	Both Side	5.5	1184
2	238+320	239+580	1260	Both Side	9.0	2520
3	239+580	239+850	270	Both Side	5.5	540
4	252+450	253+015	565	Both Side	5.5	1130
5	253+015	253+035	20	Both Side	5.5	40
6	253+035	253+545	510	Both Side	5.5	1020
7	256+600	257+124	524	Both Side	5.5	1048
8	257+124	257+136	12	Both Side	5.5	24
9	257+136	258+102	966	Both Side	5.5	1932
10	258+102	258+110	8	Both Side	5.5	16
11	258+110	258+639	529	Both Side	5.5	1058
12	258+639	258+651	12	Both Side	5.5	24
13	258+651	258+725	74	Both Side	5.5	148
14	258+725	258+733	8	Both Side	5.5	16
15	258+733	259+320	587	Both Side	5.5	1174
16	263+400	264+209	809	Both Side	5.5	1618
17	264+209	264+221	12	Both Side	5.5	24
18	264+221	264+560	339	Both Side	5.5	678
19	266+170	266+474	304	Both Side	5.5	608
20	266+474	266+486	12	Both Side	5.5	24
21	266+486	266+760	274	Both Side	5.5	548
22	270+318	270+598	280	Both Side	5.5	560
23	270+598	270+613	15	Both Side	5.5	30
24	270+613	271+735	1122	Both Side	5.5	2244

S. No.	Design Chainage (Km.)		Length (m)	Side	Service Road Width (m)	Linear Length of Service Road (m)
	From	To				
25	271+735	271+755	20	Both Side	5.5	40
26	271+755	272+029	274	Both Side	5.5	548
27	272+029	272+041	12	Both Side	5.5	24
28	272+041	273+335	1294	Both Side	5.5	2588
29	275+630	276+024	394	Both Side	5.5	788
30	276+024	276+036	12	Both Side	5.5	24
31	276+036	276+320	284	Both Side	5.5	568
32	278+905	279+190	285	Both Side	5.5	570
33	279+190	279+202	12	Both Side	5.5	24
34	279+202	279+480	278	Both Side	5.5	556
					Total	23938

2.5 Bypass/Realignment

As per the provisions of Schedule B of the Concession Agreement Realignment is provided at the following locations.

Table 2.4: Realignment stretches

S.No.	From (Km.)	To (Km.)	Length (m)
1	245+740	245+890	150
2	247+060	247+200	140
3	248+560	248+700	140
4	250+890	251+050	160
5	265+110	265+185	75
6	265+227	265+590	363
Total			**1028**

2.6 Intersections

Locations of Major Intersections and Minor junctions are provided in Schedule B of the Concession Agreement. Details are given below.

Table 2.5: List of Major Junctions

S.No.	Design Chainage (Km.)	Type of Junction	Side	
			LHS	RHS
1	253+030	3-Arms	-	Kasal Bus stand
2	252+800	3-Arms	-	Kasal Bus stand
3	271+747	3-Arms	-	MIDC
4	272+040	3-Arms	-	Kudal
5	281+580	3-Arms	-	Bypass Junction

Table 2.6: List of Minor Junctions

S.No.	Design Chainage (Km.)	Type of Junction	Side	
			LHS	RHS
1	238+060	3-Arms	Temple	-
2	238+460	3-Arms	Cross Road	-
3	238+540	4-Arms	City	Aarchra
4	238+900	3-Arms	Cross Road	-
5	239+170	4-Arms	Teliyadi	Bijli Nagar
6	239+400	3-Arms	Cross Road	-
7	239+560	3-Arms	Nardare	-
8	240+150	3-Arms	Cross Road	-
9	240+560	3-Arms	Temple	-
10	242+200	3-Arms	-	Saatral
11	242+485	3-Arms	Cross Road	-
12	242+900	3-Arms	Vagde	-
13	245+140	3-Arms	-	Ashroundi
14	245+190	3-Arms	Kashavan	-
15	245+550	3-Arms	Mud Road	-
16	246+500	3-Arms	-	Ashroundi

S.No.	Design Chainage (Km.)	Type of Junction	Side	
			LHS	RHS
17	248+365	3-Arms	Bordve Mdr	-
18	251+540	3-Arms	-	Poipe
19	251+760	3-Arms	-	Dhokamawad
20	252+360	3-Arms	-	Village Road
21	252+800	3-Arms	Gram Panchayat Kasal	-
22	253+030	3-Arms	Village Road	-
23	254+600	3-Arms	Village Road	-
24	255+870	3-Arms	-	Bambuli
25	256+620	3-Arms	Banjarewadi	
26	256+780	3-Arms	-	Jaitapvar colony
27	256+890	3-Arms	-	Jaitapvar colony
28	257+220	3-Arms	Bca colony	-
29	257+700	3-Arms	Salochana Nagar	-
30	258+250	3-Arms	Ghariwari	-
31	258+890	3-Arms	Oorosh	-
32	259+340	3-Arms	Oorash Phase 3	-
33	260+165	3-Arms	Oorosh Khurd	Shindhudurg Nagri
34	260+220	3-Arms	-	-
35	261+650	3-Arms	Collage	-
36	261+300	3-Arms	Humarkala	-
37	261+400	3-Arms	Humarkala	-
38	258+888	3-Arms	Humarkala	-
39	262+640	3-Arms	Humarkala	Pandur
40	264+700	3-Arms	-	-
41	267+700	3-Arms	Siddhawan	-

S.No.	Design Chainage (Km.)	Type of Junction	Side	
			LHS	RHS
42	268+525	3-Arms	Cross Road	-
43	268+675	3-Arms	Cross Road	-
44	268+900	4-Arms	Pavsi Village	-
45	269+500	3-Arms	-	Binketwari
46	270+000	3-Arms	-	Pavsi
47	270+100	3-Arms	Ghavnde	Pavsi
48	272+200	3-Arms	Kudal	-
49	272+430	3-Arms	Nakshatra Nagri	-
50	272+580	3-Arms	Kudal Sagirde	-
51	273+000	3-Arms	Piguli Gangawada	-
52	273+760	3-Arms	-	Piguli
53	274+820	3-Arms	-	Piguli
54	275+085	3-Arms	-	Vangurla Malva
55	275+640	3-Arms	-	Bhibhne
56	278+950	3-Arms	-	Bambarwada
57	279+380	3-Arms	-	School
58	279+850	3-Arms	Main Goan	Vagrola Banda
59	280+190	3-Arms	-	Yaswant K Roa Bidye Marg
60	280+370	3-Arms	-	-
61	280+790	3-Arms	-	Kumbharwadi

2.7 Grade Separated Structures and underpasses

As per the provisions of Schedule B of the Concession Agreement 3 nos. of Light Vehicular Underpass, 1 flyover and 7 nos. of Vehicular Underpass structures are provided in the Project Corridor. Details are provided in **Chapter 4**.

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 Details

Summary of Carriageway Details is given below:

Table 2.7: Summary of Carriageway Details

S. No.	Description	Flexible (Kms.)	Rigid (Kms.)
1	4 Lane Paved shoulder		43.905
2	Service Roads	23.938	
3	Total Length	23.938	43.905
TYPE OF ALIGNMENT			
4	Widening	---	29.615
5	Realignment	---	1.028
6	Flyover approaches	---	13.262
7	Total Length of the Project	---	43.905

2.10 Summary of Structures

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

Table 2.8: Summary of Structures

S.No.	Description	Major Bridges	Minor Bridges	Hume Pipe Culverts	Box/Slab Culverts	Underpasses /Fly over/Sudway
1	Retained				2	
2	Widening		2			
3	Reconstruction			94	15	
4	New	4	6	7	2	VUP - 5 LVUP - 5 PUP - 1 FLYOVER - 1 SUBWAY - 1
5	Improvement					
	Total	**4**	**8**	**101**	**19**	**13**

2.11 Toll Plazas

- One toll Plaza is provided on the project road at Km. 250+407, which comprises of eight lanes.
- The width of each toll lane is provided 3.2 m, except for the lane for over dimensioned vehicles, where it is 4.5 m.
- Between each toll lane of the toll plaza, traffic islands are constructed to accommodate tollbooth.
- Protective barriers of reinforced concrete and traffic impact attenuators are placed in the front of each island to prevent out of control approaching vehicles crashing into the tollbooth.
- The canopy is provided for weather protection to toll operators, drivers and facilities. The canopy is designed aesthetically pleasing with cylindrical support columns located at traffic island so that there is no restriction on visibility and traffic movement.
- Total 7 Nos. toll booths are provided in toll plaza.
- Toll Plaza is updated to ETC Lane system as per the Change of Scope Order issued to the Concessionaire.
- List of tolling equipment provided at site is furnished in Toll Plaza & HTMS Chapter.

2.12 Bus bays/Bus shelters

As per provisions of Schedule C of CA bus shelters are provided at 46 locations. Details are provided below.

Table 2.9: List of Bus shelters

S. No.	Design Chainage (Km.)	Side	S. No.	Design Chainage (Km.)	Side
1	238+340	LHS	24	264+015	RHS
2	238+385	RHS	25	267+020	LHS
3	239+330	LHS	26	267+085	RHS
4	239+345	RHS	27	268+990	LHS
5	239+880	RHS	28	268+992	RHS
6	239+880	LHS	29	272+850	LHS
7	241+642	RHS	30	272+850	RHS
8	241+745	LHS	31	272+850	LHS
9	242+525	RHS	32	272+962	RHS
10	242+475	LHS	33	273+732	LHS
11	246+265	LHS	34	273+812	RHS

S. No.	Design Chainage (Km.)	Side
12	246+333	RHS
13	249+225	RHS
14	249+227	LHS
15	252+560	LHS
16	252+615	RHS
17	256+980	LHS
18	257+030	RHS
19	258+960	LHS
20	258+958	RHS
21	262+365	LHS
22	262+445	RHS
23	264+165	RHS

S. No.	Design Chainage (Km.)	Side
35	274+503	LHS
36	274+515	RHS
37	275+423	RHS
38	275+472	LHS
39	277+300	RHS
40	277+410	LHS
41	278+005	RHS
42	278+540	LHS
43	280+880	RHS
44	280+915	LHS
45	280+990	LHS
46	281+040	RHS

2.13 Other Project Facilities Provided as per Schedule C of CA

- Roadside furniture: Sign Boards Kilometer stones, Road Marking and object/hazard markers are provided in accordance with IRC-SP: 84-2014.
- 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: Median plantation and Avenue plantation on both sides of the Project Corridor is provided 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, Bus bays and Truck Lay byes and is functional.

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 provided below

3.2 Road Inventory

Inventory of the project road was carried out physically and the same is summarized in the following Table 3-1. Few representative photographs are presented below.

Table 3.1: Road Inventory

S. No.	Features	Remarks
1	Terrain	Plain rolling Terrain
2	Land Use	Agriculture and forest
3	Four lane length	43.905 km
4	Earthen shoulder	1.0 m to 1.5m Width on site
5	Junctions	66 Nos.
6	Toll Plazas	At Km. 250+407
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	43 Nos.
10	Highway Lighting	Provided as per requirement
11	Avenue plantation	Provided

3.3 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 3.2: 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.

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 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

As per the provisions of Schedule B, the Concessionaire has constructed the Main Carriageway with Rigid Pavement and Service & Slip Roads with Flexible Pavement. Pavement Design submitted by the Concessionaire was reviewed and found in accordance with the provisions of IRC:37 and IRC 58. Design parameters are provided below. CBR considered for Flexible Pavement was 13% and Effective CBR for Rigid pavement was 7%. Based on CBR values, axle loads and Traffic the crust designed is satisfactory. The crust details are given below.

Table 3.3: For Rigid pavement –Main carriage way

1	PQC	320mm
2	DLC	150mm
3	GSB	150mm
4	Sub Grade	500mm

Table 3.4: For Flexible pavement –Main carriage way

1	BC	50 mm
2	DBM	100 mm
3	WMM	250 mm
4	GSB	200 mm
5	Sub Grade	500 mm

Table 3.5: Flexible Pavement-Service Roads

1	BC	40mm
2	DBM	60mm
3	WMM	250mm
4	GSB	200mm
5	Sub Grade	500mm

Based on the review on Designs submitted by the Concessionaire, the above crust is safe for project.

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 3.6: Pavement condition summary

From (Km.)	To (Km.)	Length (Kms.)	Condition
237+655	281+560	43.905	Good

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 guidelines provided in IRC SP: 52-1999 & IRC SP: 35-1990.

4.2 Inventory of Structures

The structures along the project highway are listed below.

Table 4.1: List of Structures

S. No.	Type of Structure	Numbers
1	Major bridges	07 Nos.
2	Minor Bridge	09 Nos.
3	Underpasses/flyovers	13 Nos.
4	Pipe culverts	127 Nos.
5	Slab/Box Culverts	19 Nos.

The Super Structure of the Major Bridge is of RCC Girders/ RCC Solid slabs resting on RCC wall type piers and abutments with open foundation. The superstructure of Minor bridges is of RCC solid slab/RCC Girder and the substructures are of PCC/RCC 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. Structural condition of most of the culverts is fair except in few locations. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3.**

4.3 Details of Major Bridges

The total length of the Major bridge at Km. 237+688 is 73.2m with 4 spans. The superstructure consists of RCC I Girder. Each Pier and Abutment is regular RCC wall type abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

The total length of the Major bridge at Km. 239+992 is 63.0m with 4 spans. The superstructure consists of PSC I Girder. Each Pier and Abutment is regular RCC wall type abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

The total length of the Major bridge at Km. 251+655 is 84.0m with 4 spans. The superstructure consists of RCC I Girder. Each pier and whereas abutment is regular RCC wall type/circular abutment. Open foundations have been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

The total length of the Major bridge at Km. 260+921 is 70.0m with 5 spans. The superstructure consists of RCC solid slab. Each pier and whereas abutment is regular RCC wall type abutment. Open foundations have

been constructed for all piers and abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC Crash barrier have been provided on both sides of the deck.

The total length of the Major bridge at Km. 265+205 is 62.0m with 2 spans. The superstructure consists of PSC I Girder. Each Pier and Abutment is regular RCC wall type abutment. Open foundations have been constructed for all Piers and Abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

The total length of the Major bridge at Km. 269+595 is 75.0m with 3 spans. The superstructure consists of PSC I Girder. Each Pier and Abutment is regular RCC wall type abutment. Open foundations have been constructed for all Piers and Abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

The total length of the Major bridge at Km. 270+258 is 120.0m with 4 spans. The superstructure consists of PSC I Girder. Each Pier and Abutment is regular RCC wall type abutment. Open foundations have been constructed for all Piers and Abutments. Superstructure is seated on Elastomeric bearings. Expansion joints are of Strip seal type. RCC railings have been provided on both sides of the deck.

Table 4.2: List of Major Bridges

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)
1	237+688	2x21.8+2x14.8	73.2
2	239+992	4 x 31.50	63
3	251+655	4x21.00	84
4	260+921	5 X 14.00	70
5	265+205	2x31.00	62
6	269+595	3 x 25.00	75
7	270+258	4 x 30.00	120

The condition of the Superstructure and Substructure is good. Certain Minor maintenance operations such as quadrant pitching, reflector plates, cleaning of drainage spouts and strip seal expansion joints are to be carried out.

4.4 Details of Minor Bridges

The details of Minor bridges in the project stretch are listed below. 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/Strip seal and bearings are Tar paper and elastomeric bearings. RCC Railing/ crash barriers are provided on all structures.

Table 4.3: Inventory of Minor Bridges

S. No.	Chainage (Km.)	Span (m)	Total Length of Bridge (m)	Description
1	242+952	2 x 10.50	10.5	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
2	244+207	3 x 7.00	21.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
3	248+442	3 x 7.00	21.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
4	253+857	3 x 7.00	21.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
5	258+109	1 x 8.00	8.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
6	258+728	1 x 8.00	8.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
7	270+42	1 x 7.00	7.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
8	273+576	3 x 7.00	21.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.
9	275+219	1 x 10.00	10.0	It has RCC Box structure. It has RCC Railing, bituminous wearing coat.

4.5 Details of Underpass

The details of Underpasses in the project stretch are listed below. The type of superstructure for underpass/Flyover is RCC/PSC I Girder/RCC Box type and the substructure is PCC/RCC conventional wall type supported on open foundations. Expansion joints are buried type/Strip seal and bearings are tarpaper and elastomeric bearings. RCC crash barriers are provided on all structures.

Table 4.4: Inventory of Underpass/Flyovers

S. No.	Chainage (Km.)	Type	Span (m.)	Total Length of Bridge (m)	Description
1	238+062	LVUP	1 x 10.00	10	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
2	238+230	PUP	1 x 7.00	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
3	238+950	FLYOVER	21x28.6+	1260	It has PSC/RCC I Girder and PSC Box Girder structure. It

S. No.	Chainage (Km.)	Type	Span (m.)	Total Length of Bridge (m)	Description
			20x29+2x40		has RCC crash barrier, bituminous wearing coat, Strip seal expansion joints.
4	253+090	VUP	1 x 20	20	It has RCC I Girder. It has RCC crash barrier, bituminous wearing coat, Strip seal expansion joints.
5	257+122	VUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
6	258+645	VUP	1 x 20	20	It has RCC I Girder. It has RCC crash barrier, bituminous wearing coat, Strip seal expansion joints.
7	264+210	VUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
8	266+515	LVUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
9	270+098	LVUP	1 x 8.00	8	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
10	270+600	VUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
11	271+740	SUBWAY	1 x 7.00	7	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
12	276+018	LVUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.
13	279+378	LVUP	1 x 15	15	It has RCC Box structure. It has RCC crash barrier, bituminous wearing coat.

4.6 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. The detailed condition of the same are given the following sections. Detailed inventory and condition survey of culverts are given in **ANNEXURE 3.**

4.6.1. Slab/Box Culverts

The details of slab/Box culverts in the project stretch are listed below.

Table 4.5: List of Slab/Box Culverts

S. No.	Chainage (Km.)	Span (m)	Vent Size (m)
1	237+847	1 x 6.00	4.0
2	238+310	1 x 2.50	2.1
3	239+366	1 X 3.0	3.6
4	240+133	1 x 2.00	1.9
5	240+393	1 x 4.00	3.8
6	242+456	1 x 6.00	1.15
7	243+163	1 x 2.00	1.5
8	250+914	1 x 4.00	1.5
9	253+663	1 x 5.30	3.6
10	256+138	1 x 2.00	1.9
11	262+380	1 x 5.00	1.15
12	263+095	1 x 4.50	1.5
13	265+512	1 x 2.00	2.0
14	266+810	1 x 4.50	1.9
15	268+137	1 x 4.50	3.8
16	269+735	1 x 4.00	1.15
17	269+835	1 x 3.00	1.5
18	274+664	1 x 4.50	2.0
19	279+621	1 x 3.00	2.1

4.6.2. Condition of the Slab/Box Culverts:

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

4.6.3. General Description of the Pipe Culverts

There are 127 Nos. of pipe culverts in the project stretch. The details of the culverts are as given below.

Table 4.6: List of Pipe Culverts

S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)	S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)
1	238+081	HPC	1 x 1.20	64	260+744	HPC	1 x 0.9
2	239+015	HPC	2 x 1.20	65	261+262	HPC	1 x 1.20
3	239+478	HPC	1 x 1.20	66	261+621	HPC	1 x 1.20
4	239+749	HPC	1 x 1.20	67	261+694	HPC	1 x 1.20
5	239+857	HPC	1 x 1.20	68	261+745	HPC	1 x 1.20
6	240+494	HPC	1 x 1.20	69	261+996	HPC	1 x 1.20
7	241+493	HPC	3 x 1.20	70	262+531	HPC	1 x 1.20
8	241+920	HPC	1 x 1.20	71	262+699	HPC	1 x 1.20
9	242+777	HPC	4 x 1.20	72	263+273	HPC	1 x 1.20
10	243+508	HPC	2 x 1.20	73	263+494	HPC	1 x 1.20
11	243+777	HPC	1 x 1.20	74	263+596	HPC	2 x 0.9
12	243+874	HPC	2 x 1.20	75	264+286	HPC	1 x 1.20
13	243+998	HPC	1 x 1.20	76	264+436	HPC	4 x 1.20
14	244+150	HPC	1 x 1.20	77	264+657	HPC	1 x 0.9
15	244+558	HPC	2 x 1.20	78	264+964	HPC	1 x 1.20
16	245+562	HPC	1 x 1.20	79	265+352	HPC	1 x 1.20
17	245+659	HPC	1 x 1.20	80	265+691	HPC	1 x 1.20
18	245+782	HPC	1 x 1.20	81	265+783	HPC	1 x 1.20
19	246+342	HPC	1 x 1.20	82	266+236	HPC	1 x 1.20
20	246+996	HPC	1 x 1.20	83	266+533	HPC	1 x 1.20

S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)
21	247+815	HPC	1 x 1.20
22	248+640	HPC	1 x 1.20
23	248+918	HPC	1 x 1.20
24	249+003	HPC	1 x 1.20
25	249+141	HPC	2 x 1.20
26	249+209	HPC	1 x 1.20
27	249+624	HPC	4 x 1.20
28	249+752	HPC	1 x 1.20
29	250+758	HPC	2 x 1.20
30	250+852	HPC	2 x 1.20
31	251+017	HPC	1 x 1.20
32	251+148	HPC	1 x 1.20
33	251+374	HPC	1 x 1.20
34	251+955	HPC	1 x 1.20
35	252+009	HPC	1 x 1.20
36	252+202	HPC	1 x 1.20
37	252+565	HPC	4 x 1.20
38	252+640	HPC	1 x 1.20
39	253+059	HPC	1 x 1.20
40	253+200	HPC	1 x 1.20
41	253+239	HPC	1 x 1.20
42	253+447	HPC	1 x 1.20
43	253+473	HPC	1 x 1.20
44	254+680	HPC	1 x 1.20
45	254+946	HPC	1 x 1.20

S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)
84	266+869	HPC	2 x 1.20
85	267+032	HPC	1 x 1.20
86	267+363	HPC	1 x 1.20
87	267+576	HPC	1 x 1.20
88	267+757	HPC	2 x 1.20
89	268+431	HPC	1 x 1.20
90	268+880	HPC	1 x 1.20
91	268+920	HPC	1 x 1.20
92	269+424	HPC	1 x 1.20
93	269+540	HPC	1 x 1.20
94	270+008	HPC	2 x 1.20
95	270+144	HPC	2 x 1.20
96	270+480	HPC	2 x 1.20
97	270+802	HPC	1 x 1.20
98	270+919	HPC	1 x 1.20
99	271+040	HPC	1 x 1.20
100	271+171	HPC	1 x 1.20
101	271+995	HPC	1 x 1.20
102	272+312	HPC	1 x 1.20
103	272+411	HPC	1 x 1.20
104	272+516	HPC	1 x 1.20
105	272+800	HPC	1 x 1.20
106	273+235	HPC	1 x 1.20
107	273+347	HPC	1 x 1.20
108	274+010	HPC	3 x 1.20

S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)
46	255+056	HPC	3 x 1.20
47	255+182	HPC	4 x 1.20
48	255+377	HPC	1 x 1.20
49	255+722	HPC	1 x 1.20
50	256+073	HPC	1 x 1.20
51	256+564	HPC	1 x 1.20
52	256+699	HPC	1 x 1.20
53	256+999	HPC	2 x 1.20
54	257+650	HPC	1 x 1.20
55	258+323	HPC	1 x 1.20
56	259+033	HPC	1 x 1.20
57	259+271	HPC	3 x 1.20
58	259+327	HPC	1 x 1.20
59	259+405	HPC	1 x 1.20
60	259+560	HPC	2 x 1.20
61	259+977	HPC	4 x 1.20
62	260+647	HPC	1 x 0.9
63	260+685	HPC	1 x 0.9

S. No.	Chainage (Km.)	Type of Structure	No. of Rows X Dia (m)
109	275+006	HPC	1 x 1.20
110	275+440	HPC	1 x 1.20
111	275+719	HPC	1 x 1.20
112	276+138	HPC	1 x 1.20
113	276+566	HPC	1 x 1.20
114	276+752	HPC	1 x 1.20
115	276+976	HPC	1 x 1.20
116	277+489	HPC	1 x 1.20
117	277+792	HPC	1 x 1.20
118	278+050	HPC	1 x 1.20
119	278+173	HPC	1 x 1.20
120	278+500	HPC	1 x 1.20
121	278+692	HPC	1 x 1.20
122	279+097	HPC	2 x 1.20
123	279+197	HPC	1 x 1.20
124	279+928	HPC	1 x 1.20
125	280+501	HPC	4 x 1.20
126	281+296	HPC	1 x 1.20
127	281+648	HPC	1 x 1.20

4.6.4. Condition of the Pipe Culverts

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

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 5. REVIEW OF PAVEMENT DESIGN

5.1 General

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

5.2 Pavement design

The Pavement Design shall be carried out in accordance with Indian Roads Congress guidelines. The pavement is designed in accordance with IRC: 58-2015 "Guidelines for the Design of Plain Jointed Rigid Pavements for Highways", IRC: SP 84-2014, IRC: 15-2011 "Construction Concrete Road (FOURTH REVISION)" and relevant clauses of schedule B of the EPC agreement. Pavement crust thickness for main carriageway as per pavement design report summarized below.

Table 5.1: Rigid Pavement Design for Main carriageway

Description	Design/Adopted Parameters
CBR of sub grade	8 %
Two-way commercial traffic volume per day	1777
Design life in years	30
Pavement Quality Concrete (PQC) – (mm)	320
Dry Lean Concrete (DLC) – (mm)	150
Drainage Layer (GSB) - (mm)	150
Diameter of Dowel Bar (mm)	36
Length of Dowel Bar (mm)	500
Spacing of Dowel Bars (mm)	300
Diameter of Tie Bar (mm)	12 (Deformed)
Length of Tie Bar (mm)	640
Spacing of Tie Bars (mm)	490

As per schedule D, (Annexure-I), clause 2, pavements for Slip road/Service road shall be flexible pavement and designed as per provision of design manual IRC: SP: 84:2014. The design traffic in case of service road shall be ten million standard axles as per Cl:5.5.5 of IRC: SP: 84:2014. The crust composition shall be designed in accordance with the IRC:37. "Guidelines for the Design of Flexible Pavements".

Table 5.2: Flexible Pavement for service road

S. No.	Description/ Pavement layer	Design/Adopted Parameters
1	Sub Grade CBR (%)	8 %
2	Design Life (Years)	20 years
3	Design Traffic (MSA)	10 MSA
4	Surface course (BC)	40mm
5	Binder course (DBM)	60 mm
6	Base course (WMM)	250 mm
7	Sub Base course (GSB)	200 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.

5.3 Maintenance/ Overlay schedule

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

Routine maintenance - Every year
Periodic Renewal for Flexible Pavement – Next Periodic Renewal proposed on or before 2027 and 2033.
Periodic Maintenance for Rigid Pavement – Re-texturing shall be done at least once in 10 years from construction. (As per IRC 58-2015).

CHAPTER 6. SAFETY AUDIT OF ROAD

6.1 General

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

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

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

Central Road Research Institute (CRRI) has studied road safety elements extensively in the past and has come up with various manuals such as manual for safety in road design (1998), Road safety Audit Manual (2003) and Revised Road Safety Audit manual (2010). Indian Road Congress (IRC) has published Special provision SP-88, Manual on road Safety Audit. The methodology used for the design stage audit process is based on these manuals 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
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
		Other Sign Boards	Available as per site requirement	Good
		Gantry Sign Boards	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 & Bridge Approaches	Available as per site requirement	Good
4	Median kerb	Along the Project Highway	Provided as per IRC SP:84-2014	Good
5	Road studs & Solar Blinkers	Along the Project Highway	Provided as per IRC SP:84-2014	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.

The Concessionaire is maintaining the safety features in good condition from time to time in accordance with the provisions of Schedule K of the Concession Agreement.

6.3 Conclusion

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

CHAPTER 7. TOLL PLAZA & HTMS

7.1 General:

There is one toll Plaza on the project road at Km. 250+407. The width of each toll lane is provided 3.2 m, except for the lane for over dimensioned vehicles, where it is 4.5 m. between each toll lane of the toll plaza, traffic islands is constructed to accommodate tollbooth. Protective barriers of reinforced concrete and traffic impact attenuators is placed at the front of each island to prevent out of control approaching vehicles crashing into the toll booth. The canopy is provided for weather protection to toll operators, drivers and facilities. The canopy is designed aesthetically pleasing with cylindrical support columns located at traffic island so that there is no restriction on visibility and traffic movement. Total 7 Nos. toll booths are provided in toll plaza. Toll Plaza is updated to ETC Lane system as per the Change of Scope Order issued to the Concessionaire.

7.2 Tolling Equipment and Control Room Equipment

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

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

S. No.	Description	Qty
1	LC WITH INDUSTRIAL PC SMPS & ACCESSORIES	6
2	AVC SENSORS INCLUDING (TMS & HTMS)	10
3	LANE EXIT BARRIER WITH LOOPS & DETECTOR	8
4	OVERHEAD LANE STATUS LIGHT (OHLS)	10
5	TRAFFIC LIGHT (TMS & HTMS)	8
6	INCIDENT CAPTURE CAMERA (TMS & HTMS)	10
7	LICENSE PLATE IMAGE CAPTURE CAMERA	10
8	LUGS, CONDUITS, CONNECTORS AND SEALANT	1
9	ELECTRONICS ENCLOSURE (TMS & HTMS)	10
10	10 KVA ONLINE UPS WITH 30 MINS BACKUP	2
11	CABLING/NETWORKING FOR LANE (TMS & HTMS)	1
12	OPERATOR MONITOR (TMS & HTMS)	8
13	THERMAL RECEIPT PRINTER (TMS & HTMS)	8
14	MANUAL BOOTH CONTROLLER (TMS & HTMS)	8

S. No.	Description	Qty
15	INTERCOM SLAVE UNIT (TMS & HTMS)	8
16	BARCODE READER (TMS & HTMS)	8
17	CASHUP PC (TMS & HTMS)	8
18	AUDIT, POS, LSDU, REPORTS, WIM PC (TMS)	1
19	POS PRINTER - THERMAL (TMS & HTMS)	1
20	INTERCOM MASTER UNIT - 20 CHANNEL (TMS)	1
21	6 KVA ONLINE UPS WITH 30 MINS BACKUP	1
22	CABLING/NETWORKING FOR LANE (TMS & HTMS)	1
23	S/W LANE LEVEL FOR SEMI AUTOMATIC LANES	1
24	S/W LANE LEVEL FOR SEMI AUTOMATIC LANES	6
25	PLAZA TMS SERVER RD450	4
26	PTZ CAMERAS (30X ZOOM) (TMS & HTMS)	1
27	BOOTH MONITORING CAMERA IP BASED (TMS)	2
28	PLAZA MONITORING CAMERA (TMS & HTMS)	10
29	IR BULLET CAMERA 3 MP - TMS	5
30	NVR 32 CHANNEL (TMS & HTMS)	3
31	CONTROL KEYBOARD AND ACESSORIES (TMS)	1
32	CCTV MONITOR 42" (TMS & HTMS)	1
33	RFID ETC TRANSCEIVER WITH ACCESSORIES	1
34	RFID ETC TRANSCEIVER WITH ACCESSORIES	2
35	TRAFFIC LIGHT (TMS & HTMS)	4
36	LANE EXIT BARRIER WITH LOOPS & DETECTOR	6
37	POS ETC RFID READER (TMS & HTMS)	2
38	LIGHT CURTAIN (OPTICAL SEPARATOR)	1
39	LC WITH INDUSTRIAL PC SMPS & ACCESSORIES	6
40	RFID TAG (TMS)	4

S. No.	Description	Qty
41	MSWIM 3 MTR (TMS & HTMS)	5
42	MSWIM 3.5 MTR (TMS & HTMS)	8
43	USER FARE DISPLAY 2- LINES,12-CHARACTER	2
44	PLAZA SOFTWARE (TMS & HTMS)	10
45	PLAZA SOFTWARE (TMS & HTMS)	1

7.3 Vehicles

The vehicles required for the operation of the highway as per requirement under the contract and observed at site are presented in the below Table.

Table 7.2: List of Vehicles

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

CHAPTER 8. SCHEDULE OF ANNUITY PAYMENTS

8.1 Hybrid Annuity Model (HAM)

Hybrid annuity model is the PPP model which allows the payment of 40% of the Project cost during construction period based on progress milestones set forth by Authority to Concessionaire and Payment of balance 60% to the Concessionaire Biannually with the Interest during the balance concession period.

8.2 Payment during Construction

As per the provisions of Article 23 of the Concession Agreement, 40% of the Bid Project Cost adjusted with Price Index in accordance with Clause 23.2.3 of the CA, shall be paid during the Construction Period. Amount payable during construction period shall be paid in five equal installments upon achieving the following Project Milestones.

Table 8.1: Schedule of Payment Milestones

S. No.	Payment Milestone No	Criteria for releasing the Payment
1	I	On Achievement of 20% of Physical Progress
2	II	On Achievement of 40% of Physical Progress
3	III	On Achievement of 60% of Physical Progress
4	IV	On Achievement of 75% of Physical Progress
5	V	On Achievement of 90% of Physical Progress

During the Operation Period, remaining 60% of the balance Completion Cost shall be paid in 30 Annuities each Annuity payable biannually. Each Annuity amount shall be based on the percentages of the balance Completion Cost mentioned in 23.6.3 of the Concession Agreement. During the Operation Period following payment components are payable.

- Annuity Payment as per the Annuity Payment Schedule provided in 23.6.3 of the Concession Agreement.
- As per clause 23.6.4 of CA, Interest shall be due and payable on reducing balance of completion cost at an interest rate equal to the applicable Bank Rate Plus 3%
- O & M Payment as a lump sum amount as per Clause 23.7.1 of the Concession Agreement.

Details of Annuity payments are as below.

Table 8.2: Schedule of Annuity Payments

Annuity No.	% of Completion Cost remaining to be paid on COD	Annuity due Date	Annuity paid Date
1	2.10%	19/09/2020	12-Oct-20
2	2.17%	19/03/2021	--

Annuity No.	% of Completion Cost remaining to be paid on COD	Annuity due Date	Annuity paid Date
3	2.24%	19/09/2021	--
4	2.31%	19/03/2022	--
5	2.38%	19/09/2022	--
6	2.45%	19/03/2023	--
7	2.52%	19/09/2023	--
8	2.60%	19/03/2024	--
9	2.68%	19/09/2024	--
10	2.76%	19/03/2025	--
11	2.84%	19/09/2025	--
12	2.93%	19/03/2026	--
13	3.02%	19/09/2026	--
14	3.11%	19/03/2027	--
15	3.20%	19/09/2027	--
16	3.30%	19/03/2028	--
17	3.40%	19/09/2028	--
18	3.50%	19/03/2029	--
19	3.61%	19/09/2029	--
20	3.72%	19/03/2030	--
21	3.83%	19/09/2030	--
22	3.94%	19/03/2031	--
23	4.06%	19/09/2031	--
24	4.18%	19/03/2032	--
25	4.25%	19/09/2032	--
26	4.25%	19/03/2033	--
27	4.44%	19/09/2033	--

Annuity No.	% of Completion Cost remaining to be paid on COD	Annuity due Date	Annuity paid Date
28	4.71%	19/03/2034	--
29	4.75%	19/09/2034	--
30	4.75%	19/03/2035	--

CHAPTER 9. OPERATION AND MAINTENANCE

9.1 General

As per Article 17 of CA, the Concessionaire will operate and maintain the Project roads 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 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.

9.3 Operations

9.3.1. 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. Functioning of the Toll System including charging and collecting the fees from the road user in accordance with the CA.
iii. Carrying out preventive maintenance of the Project road;
iv. Taking-up routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices;
v. Taking-up major maintenance such as resurfacing of pavements, repairs to structures, and repairs and refurbishment of tolling system and other equipment;
vi. Maintenance of the lighting system to be functional;

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

9.4 Operation of Toll Plazas

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.

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

9.5.1. 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.

9.5.2. 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.

9.5.3. 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. The details of periodic maintenance schedule are given below.

Table 9.1: Schedule and status of for Periodic Maintenance

Description	Schedule of Major Maintenance	Status of Major Maintenance
1st Periodic Maintenance	2027	Planned to execute
2nd Periodic Maintenance	2033	Planned to execute

9.5.4. Special Repairs

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

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.

9.6 Review of Test Reports

9.6.1. Bump Integrator Test:

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

As per Schedule K of CA, if any stretch exceeds 2750mm in a KM, the stretch shall be rectified. however, the independent Engineer has not issued any NCRS in this Regard

9.7 O & M Forecast

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

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

Year	Routine maintenance	Incidental maintenance	Periodic / Major maintenance	Operational Expenses	Total cost per year
2020	1.565	2.056		4.48	8.10
2021	1.612	2.118		4.61	8.34
2022	1.660	2.181		4.75	8.59
2023	1.710	2.247		4.89	8.85
2024	1.762	2.314		5.04	9.12
2025	1.814	2.384		5.19	9.39
2026	1.869	2.455		5.35	9.67
2027	1.925	2.529	31.64	5.51	41.60
2028	1.983	2.605		5.67	10.26
2029	2.042	2.683		5.84	10.57
2030	2.103	2.763		6.02	10.89
2031	2.166	2.846		6.20	11.21
2032	2.231	2.932		6.39	11.55
2033	2.298	3.020	41.92	6.58	53.82
2034	2.367	3.110		6.77	12.25
2035	2.378	3.124		6.81	12.31
Total	**31.488**	**41.367**	**73.56**	**90.11**	**236.52**

CHAPTER 10. REVIEW OF CONCESSION AGREEMENT

10.1 General: Scope of Work (Article 2)

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

- Operation and Maintenance of the Project Highway 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;
- collection of Fee from the Users of the Project; subject and in accordance with the provisions of the Concession Agreement;
- performance and fulfillment of all other obligations of the Contractor in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Contractor under this Agreement

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 5**.

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 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 E of CA
- 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 fulfill 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 Concession Agreement

10.5 Performance Security (Article 9)

- The Concessionaire shall submit the Performance security to the Authority within 30 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 30% of the Total Project Cost.

10.6 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

10.7 Provisional 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. Provisional Completion Certificate given in **ANNEXURE 6**.

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.

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 NHAI are provided in **Annexure 8**.

10.11 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
- Taking-up routine maintenance including prompt repairs of pot holes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices
- Taking up major maintenance such as resurfacing of pavements, repairs and refurbishments of tolling system and other equipment

- Preventing any unauthorized use of the Project road.
- Protection of environment and provision of equipment and materials
- Complying with safety Requirements in accordance with the provisions of the CA.

10.12 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**").

10.13 Maintenance Manual (Clause 17.3)

No later than 90 (ninety) days prior to the Scheduled Two Laning Date, the Contractor shall, in consultation with the Independent Engineer, evolve a repair and maintenance manual (the "**Maintenance Manual**") for the regular and preventive maintenance of the Project in conformity with the Specifications and Standards, Maintenance Requirements, Safety Requirements and Good Industry Practice, and shall provide 5 (five) copies thereof to the Authority and 2 (two) copies to the Independent Engineer. The Maintenance Manual shall be revised and updated once every 3 (three) years and the provisions of this Clause shall apply, mutatis mutandis, to such revision.

10.14 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 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.
- 2% (two percent) of the performance security, and
- 0.1% (zero decimal 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 Payment of Bid Project Cost (Article 23)

The Authority agrees to pay 40% of the Bid Project Cost in five installments against the achievement of Project Milestones specified in Clause 23.4 of the Concession Agreement and the amount shall be adjusted with Price index.

Remaining balance completion cost shall be paid as per the % of balance completion cost biannually from the date of COD. Percentage of amounts payable for each Annuity is specified in 23.6.3 of the Concession Agreement.

10.18 Change in Law (Article 35)

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 26.1 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. Insurance copies are provided in **ANNEXURE 7**. Accordingly, the Concessionaire has procured the following insurances for mitigating the risks

Table 11.1: Insurance Details

Name of the Policy	Insurance Company	Policy No	Effective Period		Property covered
			From	To	
Electronic Equipment Insurance	The Oriental Insurance Company Limited	171200/44/2021/38	08.09.2020	07.09.2021	Electronic equipment provided for Road and Bridges stretch connection
Employees Compensation Insurance	HDFC ERGO General Insurance Co Ltd	31142033702 39300000	24.03.2020	23.03.2021	All categories of Employees of the Contractor & sub-contractor engaged in the Project
Standard Fire & Special Perils Policy	The Oriental Insurance Co Ltd	171200/11/2021/408	05.10.2020	04.10.2021	Toll Plaza Building, and its assets & Toll Booths, Equipment, Road furniture, Fixtures, Electrical poles etc.
Fire Industrial All Risk Policy	The Oriental Insurance Co Ltd	171200/11/2021/407	05.10.2020	04.10.2021	Operation and maintenance of Roads, Bridges etc.

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 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.

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 being cleared during regular maintenance period.

12.4 Project Facilities

Toll Plaza is constructed at Km. 250+407 and is operational. Toll Plaza is operated by ETC Toll collection system and connected by network system monitored in administrative building. Bus bays and truck lay byes are in fair condition. Medical Aid posts found functional. Avenue plantation and landscaping at Toll Plaza is provided and being maintained well. Highway lighting is provided at toll plaza, bus bay and truck lay bye locations and the same is found functional.

12.5 Road safety

Pavement marking is in fair condition and number of sign boards are provided as per IRC SP 84-2014. The condition of signboards & other road appurtenances like metal beam crash barriers is fair.

12.6 Maintenance

- Routine maintenance is being carried out by O & M contractor effectively, based on documents reviewed, time-to-time observations made by client/Authority are being complied and no outstanding NCR's are to be attended as on date.
- Major maintenance (MM) /Periodic maintenance is scheduled in the year 2027.

12.7 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 in traffic worthy and safe at all times.

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 (%)	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)
237+655	238+000								G		PS	F	F	LD	F
238+000	239+000								G		PS	F	F	LD	F
239+000	240+000								G		PS	F	F	LD	F
240+000	241+000								G		ES	F	F	ULD	PF
241+000	242+000								G		ES	F	F	ULD	PF
242+000	243+000								G		ES	F	F	ULD	PF
243+000	244+000								G		ES	F	F	ULD	PF
244+000	245+000								G		ES	F	F	ULD	PF
245+000	246+000								G		ES	F	F	ULD	PF
246+000	247+000								G		ES	F	F	ULD	PF

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

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair / Poor)	Road Side Drain	
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)
247+000	248+000								G		ES	F	F	ULD	PF
248+000	249+000								G		ES	F	F	ULD	PF
249+000	250+000								G		ES	F	F	ULD	PF
250+000	251+000								G		PS	F	F	LD	F
251+000	252+000								G		PS	F	F	LD	F
252+000	253+000								G		PS	F	F	LD	F
253+000	254+000								G		ES	F	F	ULD	PF
254+000	255+000								G		ES	F	F	ULD	PF
255+000	256+000								G		ES	F	F	ULD	PF
256+000	257+000								G		PS	F	F	LD	F
257+000	258+000								G		PS	F	F	LD	F

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 (%)	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)
258+000	259+000								G		PS	F	F	LD	F
259+000	260+000								G		ES	F	F	ULD	PF
260+000	261+000								G		ES	F	F	ULD	PF
261+000	262+000								G		ES	F	F	ULD	PF
262+000	263+000								G		ES	F	F	ULD	PF
263+000	264+000								G		PS	F	F	LD	F
264+000	265+000								G		PS	F	F	LD	F
265+000	266+000								G		ES	F	F	ULD	PF
266+000	267+000								G		PS	F	F	LD	F
267+000	268+000								G		PS	F	F	LD	F
268+000	269+000								G		ES	F	F	ULD	PF

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

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair / Poor)	Road Side Drain	
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)
269+000	270+000								G		ES	F	F	ULD	PF
270+000	271+000								G		PS	F	F	LD	F
271+000	272+000								G		PS	F	F	LD	F
272+000	273+000								G		PS	F	F	LD	PF
273+000	274+000								G		ES	F	F	ULD	PF
274+000	275+000								G		ES	F	F	ULD	PF
275+000	276+000								G		PS	F	F	LD	F
276+000	277+000								G		PS	F	F	LD	F
277+000	278+000								G		PS	F	F	LD	F
278+000	279+000								G		PS	F	F	LD	F
279+000	280+000								G		ES	F	F	ULD	PF

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

Chainage (Km.)		Pavement Condition						Riding Quality		Pavement Edge Drop (cm)	Shoulder		Embankment Condition (Good/Fair / Poor)	Road Side Drain	
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)
280+000	281+000								G		ES	F	F	ULD	PF
281+000	281+560								G		ES	F	F	ULD	PF

Annexure 2: Condition of structures

S.No.	Chainage (Km.)	Type of Structure	Substructure	Superstructure	Wearing coat	Bearings	Quadrant Pitching	Toe wall	Aprons
1	237+688	Major bridge	Good	Good	Good	Good	Good	Good	-
2	239+992	Major bridge	Good	Good	Good	Good	Good	Good	-
3	251+655	Major bridge	Good	Good	Good	Good	Good	Good	-
4	260+921	Major bridge	Good	Good	Good	Good	Good	Good	-
5	265+205	Major bridge	Good	Good	Good	Good	Good	Good	-
6	269+595	Major bridge	Good	Good	Good	Good	Good	Good	-
7	270+258	Major bridge	Good	Good	Good	Good	Good	Good	-
8	242+952	Major bridge	Good	Good	Good	Good	Good	Good	-
9	244+207	Minor bridge	Good	Good	Good	-	Good	Good	-
10	248+442	Minor bridge	Good	Good	Good	-	Good	Good	-
11	253+857	Minor bridge	Good	Good	Good	-	Good	Good	-
12	258+109	Minor bridge	Good	Good	Good	-	Good	Good	-
13	258+728	Minor bridge	Good	Good	Good	-	Good	Good	-
14	270+420	Minor bridge	Good	Good	Good	-	Good	Good	-
15	273+576	Minor bridge	Good	Good	Good	-	Good	Good	-

S.No.	Chainage (Km.)	Type of Structure	Substructure	Superstructure	Wearing coat	Bearings	Quadrant Pitching	Toe wall	Aprons
16	275+219	Minor bridge	Good	Good	Good	-	Good	Good	-
17	238+062	LVUP	Good	Good	Good	-	Good	Good	-
18	238+230	PUP	Good	Good	Good	-	Good	Good	-
19	238+950	FLYOVER	Good	Good	Good	-	Good	Good	-
20	253+090	VUP	Good	Good	Good	-	Good	Good	-
21	257+122	VUP	Good	Good	Good	-	Good	Good	-
22	258+645	VUP	Good	Good	Good	-	Good	Good	-
23	264+210	VUP	Good	Good	Good	-	Good	Good	-
24	266+515	LVUP	Good	Good	Good	-	Good	Good	-
25	270+098	LVUP	Good	Good	Good	-	Good	Good	-
26	270+600	VUP	Good	Good	Good	-	Good	Good	-
27	271+740	Subway	Good	Good	Good	-	Good	Good	-
28	276+018	LVUP	Good	Good	Good	-	Good	Good	-
29	279+378	LVUP	Good	Good	Good	-	Good	Good	-

Annexure 3: Condition of Culverts

Hume Pipe Culverts

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
1	238+081	Good	Good	Fair	fair
2	239+015	Good	Good	Fair	fair
3	239+478	Good	Good	Fair	fair
4	239+749	Good	Good	Fair	fair
5	239+857	Good	Good	Fair	fair
6	240+494	Good	Good	Fair	fair
7	241+493	Good	Good	Fair	fair
8	241+920	Good	Good	Fair	fair
9	242+777	Good	Good	Fair	fair
10	243+508	Good	Good	Fair	Good
11	243+777	Good	Good	Fair	Good
12	243+874	Good	Good	Fair	Good
13	243+998	Good	Good	Fair	Good
14	244+150	Good	Good	Fair	fair
15	244+558	Good	Good	Fair	fair
16	245+562	Good	Good	Fair	Good
17	245+659	Good	Good	Fair	Good
18	245+782	Good	Good	Fair	Good
19	246+342	Good	Good	Fair	Good
20	246+996	Good	Good	Fair	Good
21	247+815	Good	Good	Fair	Good
22	248+640	Good	Good	Fair	Good
23	248+918	Good	Good	Fair	Good
24	249+003	Good	Good	Fair	Good

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
25	249+141	Good	Good	Fair	Good
26	249+209	Good	Good	Fair	Good
27	249+624	Good	Good	Fair	Good
28	249+752	Good	Good	Fair	Good
29	250+758	Good	Good	Fair	Good
30	250+852	Good	Good	Fair	fair
31	251+017	Good	Good	Fair	fair
32	251+148	Good	Good	Fair	Good
33	251+374	Good	Good	Fair	fair
34	251+955	Good	Good	Fair	Good
35	252+009	Good	Good	Fair	Good
36	252+202	Good	Good	Fair	fair
37	252+565	Good	Good	Fair	fair
38	252+640	Good	Good	Fair	fair
39	253+059	Good	Good	Fair	Good
40	253+200	Good	Good	Fair	Good
41	253+239	Good	Good	Fair	Good
42	253+447	Good	Good	Fair	fair
43	253+473	Good	Good	Fair	fair
44	254+680	Good	Good	Fair	fair
45	254+946	Good	Good	Fair	Good
46	255+056	Good	Good	Fair	Good
47	255+182	Good	Good	Fair	Good
48	255+377	Good	Good	Fair	Good
49	255+722	Good	Good	Fair	Good

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
50	256+073	Good	Good	Fair	Good
51	256+564	Good	Good	Fair	Good
52	256+699	Good	Good	Fair	Good
53	256+999	Good	Good	Fair	Good
54	257+650	Good	Good	Fair	Good
55	258+323	Good	Good	Fair	Good
56	259+033	Good	Good	Fair	Good
57	259+271	Good	Good	Fair	Good
58	259+327	Good	Good	Fair	Good
59	259+405	Good	Good	Fair	Good
60	259+560	Good	Good	Fair	Good
61	259+977	Good	Good	Fair	Good
62	260+647	Good	Good	Fair	Good
63	260+685	Good	Good	Fair	Good
64	260+744	Good	Good	Fair	Good
65	261+262	Good	Good	Fair	Good
66	261+621	Good	Good	Fair	Good
67	261+694	Good	Good	Fair	Good
68	261+745	Good	Good	Fair	Good
69	261+996	Good	Good	Fair	Good
70	262+531	Good	Good	Fair	Good
71	262+699	Good	Good	Fair	Good
72	263+273	Good	Good	Fair	Good
73	263+494	Good	Good	Fair	Good
74	263+596	Good	Good	Fair	Good

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
75	264+286	Good	Good	Fair	Good
76	264+436	Good	Good	Fair	Good
77	264+657	Good	Good	Fair	Good
78	264+964	Good	Good	Fair	Good
79	265+352	Good	Good	Fair	Good
80	265+691	Good	Good	Fair	Good
81	265+783	Good	Good	Fair	Good
82	266+236	Good	Good	Fair	Good
83	266+533	Good	Good	Fair	Good
84	266+869	Good	Good	Fair	Good
85	267+032	Good	Good	Fair	Good
86	267+363	Good	Good	Fair	Good
87	267+576	Good	Good	Fair	Good
88	267+757	Good	Good	Fair	Good
89	268+431	Good	Good	Fair	Good
90	268+880	Good	Good	Fair	Good
91	268+920	Good	Good	Fair	Good
92	269+424	Good	Good	Fair	Good
93	269+540	Good	Good	Fair	Good
94	270+008	Good	Good	Fair	Good
95	270+144	Good	Good	Fair	Good
96	270+480	Good	Good	Fair	Good
97	270+802	Good	Good	Fair	Good
98	270+919	Good	Good	Fair	Good
99	271+040	Good	Good	Fair	Good

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
100	271+171	Good	Good	Fair	Good
101	271+995	Good	Good	Fair	Good
102	272+312	Good	Good	Fair	Good
103	272+411	Good	Good	Fair	Good
104	272+516	Good	Good	Fair	Good
105	272+800	Good	Good	Fair	Good
106	273+235	Good	Good	Fair	Good
107	273+347	Good	Good	Fair	Good
108	274+010	Good	Good	Fair	Good
109	275+006	Good	Good	Fair	Good
110	275+440	Good	Good	Fair	Good
111	275+719	Good	Good	Fair	Good
112	276+138	Good	Good	Fair	Good
113	276+566	Good	Good	Fair	Good
114	276+752	Good	Good	Fair	Good
115	276+976	Good	Good	Fair	Good
116	277+489	Good	Good	Fair	Good
117	277+792	Good	Good	Fair	Good
118	278+050	Good	Good	Fair	Good
119	278+173	Good	Good	Fair	Good
120	278+500	Good	Good	Fair	Good
121	278+692	Good	Good	Fair	Good
122	279+097	Good	Good	Fair	Good
123	279+197	Good	Good	Fair	Good
124	279+928	Good	Good	Fair	Good

S. No.	Chainage (Km.)	Hume Pipe	Head wall	Quadrant pitching	Toe wall
125	280+501	Good	Good	Fair	Good
126	281+296	Good	Good	Fair	Good
127	281+648	Good	Good	Fair	Good

Box /Slab Culverts

S. No.	Chainage (Km.)	Condition	Return wall	Quadrant pitching	Toe wall	Parapet wall
1	237+847	Good	Good	Fair	Good	Good
2	238+310	Good	Good	Fair	Good	Good
3	239+366	Good	Good	Fair	Good	Good
4	240+133	Good	Good	Fair	Good	Good
5	240+393	Good	Good	Fair	Good	Good
6	242+456	Good	Good	Fair	Good	Good
7	243+163	Good	Good	Fair	Good	Good
8	250+914	Good	Good	Fair	Good	Good
9	253+663	Good	Good	Fair	Good	Good
10	256+138	Good	Good	Fair	Good	Good
11	262+380	Good	Good	Fair	Good	Good
12	263+095	Good	Good	Fair	Good	Good
13	265+512	Good	Good	Fair	Good	Good
14	266+810	Good	Good	Fair	Good	Good
15	268+137	Good	Good	Fair	Good	Good
16	269+735	Good	Good	Fair	Good	Good
17	269+835	Good	Good	Fair	Good	Good
18	274+664	Good	Good	Fair	Good	Good
19	279+621	Good	Good	Fair	Good	Good

Annexure 4: Operation & Maintenance cost

Routine Maintenance cost for 1 year (1st Cycle) for Four Lane with paved shoulder of NH-66 Kalmath to Zarap section

S.No.	Item		Unit	No	Frequency per year	Quantity	Rate (Rs)	Amount (Rs)	Remarks
1	General Cleaning in Carriageway & Shoulders Rural area	Monthly	Km.	31.838	12	4	350	5,34,878	04 nos of Labour
2	General Cleaning in Carriageway & Shoulders Urban area	Twice in a month	Km.	12.067	24	4	350	4,05,451	04 nos of Labour
3	Watering in Median Plants	Once in Week	Km.	43.905	52	1	1939	44,26,853	01 nos of Labour
4	Watering in Avenue plants	Once in Week	Km.	31.838	52	32	1939	32,10,162	
5	Median Maintenance (Grass cutting and plant trimming)	Once in Month	Km.	31.838	12	12	21000	2,52,000	02 nos of Labour - 2 x 350 = 700 x 30 = 2,52,000
6	ROW Cleaning	Half yearly	Km.	30.7335	2	10	350	2,15,135	10 Nos of labour per KM (70% of the Project length)
7	Cleaning of Culverts	Half yearly	Nos.	236	2	3	650	9,20,400	3 nos of Labour along with JCB or Excavator
8	Road Furniture Cleaning	Quarterly	Km.	43.905	4	2	350	1,22,934	02 nos of Labour

9	Maintenance of Bus shelters	Monthly	Nos.	0	12	2	350	-	2 nos/ Bus shelter/month
10	General Cleaning in Building & Facilities	Daily	Nos.	1	12	60	350	2,52,000	02 nos of Labour for 30 days
11	Bridges	Half yearly	Nos.	26	2	4	350	72,800	04 nos of Labour for removal of vegetation/Structure
13	Carriageway Maintenance (Pot Holes etc.)	Yearly	Sqm.	15	1	550	124	10,23,000	2.5% of CW area considered 22.0x1000x2.5%
								1,14,35,613	
	EQUIPMENT SUPPLY								
1	TRUCK TIPPER 6-8 CUM CAPACITY	Monthly	Nos.		12			4,00,000	(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
2	Water Tanker Cap 12 KL for Median	Monthly	Nos.	43.905	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		250000	5,00,000	(2500000 is the cost of vehicle, considering 20% Rental per year) including maintenance
5	Grass cutter	Monthly	Nos.	43.905	12	2	12000	26,343	(12000/year)
6	Manhoise / Skyscraper	Monthly	Nos.		12		4,00,000	4,00,000	(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
7	Bikes	Monthly	Nos.	43.905	4	3	2500	29,270	Per Supervisor
8	Building Maintenance	Yearly			12	1	25000	3,00,000	25000/ month
9	Toll plaza AMC	Yearly	Nos.		12	1	100000	12,00,000	100000/month
								28,55,613	

1	Patrolling vehicle	Monthly	Nos.	12		2	300000	600000	(1500000 is the cost of vehicle, considering 20% Rental per year) including maintenance

2	Ambulance	Monthly	Nos.	12		1	240000	240000	(1200000 is the cost of vehicle, considering 20% Rental per year) including maintenance (1 Ambulance/toll plaza)
3	Tow away trucks and Crane	Monthly	Nos.	12		1	400000	400000	(2000000 is the cost of vehicle, considering 20% Rental per year) including maintenance
4	Consumables for Medical Aid Post and Ambulance	Monthly	Nos.	12		1	5000	60000	5000 Per month for per set (Per set - Per toll plaza)
5	Consumables for Route Patrolling & Crane	Monthly	Nos.	12		1	5000	60000	5000 Per month for per set (Per set - Per toll plaza)
								13,60,000	
Operation & Maintenance cost								**1,56,51,225.70**	

Incidental cost for 1 year (1st Cycle) for Four Lane with paved shoulder of NH-66 Kalmath to Zarap section

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
1	Road marking	Half yearly	Sqm.	1	1	6242.2635	516	32,21,008	33 % of Total Project length on B/S for 1 year
2	Carriageway Maintenance (Pot Holes etc.)	Yearly	Sqm.	1	1	220.8152	168	37,097	2% of Flexible Pavement (changed quantities to only Service road portion)
3	Maintenance of Earthen Shoulder	Half yearly	Cum.	1	3	1317.15	225	8,89,076	10% of total Shoulder length throughout the project
4	Sign Board	Half yearly	Nos.	1	2	95	4500	8,55,000	5 % of Total sign boards of 1900 nos for Half Year
5	MBCB	Monthly	RMT.	43.905		1000	2400	24,00,000	5% of Total qty per year - (considered 2400 per Rm)
6	Mile Stone (KM Stone/ HM Stone / ROW stone etc.)	Quarterly	Nos.	43.905	4	11	2250	99,000	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.	43.905	1	1756.2	250	4,39,050	2 % of total Kerbings per year
9	Electrical Poles	Yearly	Nos.	5618	1	169	55000	92,95,000	3 % of total poles per year

Incidental cost for 1 year (1st Cycle) for Four Lane with paved shoulder of NH-66 Kalmath to Zarap section

S. No.	Item		Unit	No	Frequency	Quantity	Rate	Amount	Remarks
10	Replacement of Rigid pavement Panels	Yearly	Ls.	1	1	525.07	4000	21,00,276	Considered 0.5% of the total volume in O & M period,
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.	10255		307.662	3985	12,26,033	3% of Length replacement in every 5 years (Quantity to be estimated)
Total amount for 1 Year								**2,05,61,540**	

Operation Expenses

S. No.	Particulars	Amounts
1	Man Power	₹ 99,60,000
2	Fuel for Generator & Vehicles	₹ 1,28,04,000
3	Electricity	₹ 1,51,80,000
4	Stationary	₹ 1,00,000
5	Replacement of Electrical Fixtures	₹ 61,43,395
6	Refurbishment of Toll Plaza Equipment	₹ 6,00,000
Total Amount		**₹ 4,47,87,395**

Abstract Summary of Major/Periodic Maintenance

Description	Due Date	Base Cost (Rs)	Esc period	Escalation rate per year	Cost of MMR on due date @ 3% escalation	Rs In crores
Date of Estimation	23-MAY-20					
1st major maintenance - Highway	22-MAY-27	2439,28,938	7.00	3.0%	**2951,54,015**	**29.52**
1st major maintenance - Structures	22-MAY-27	175,59,171	7.00	3.0%	**212,46,597**	**2.12**
2nd major maintenance - Highways	22-MAY-32	2882,00,203	12.00	3.0%	**3919,52,277**	**39.20**
2nd major maintenance - Structures	22-MAY-32	200,22,024	12.00	3.0%	**272,29,953**	**2.72**
				Total	**₹ 7355,82,842**	**73.56**

Major Maintenance BOQ

BoQ Item No.	DESCRIPTION	Unit	Qty	RATE	AMOUNT Rs.	Qty	RATE	AMOUNT Rs.
	Chapter 4. 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 sqm.	Sqm.	4,11,559.00	14	57,61,826	4,11,559.00	14	57,61,826
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.	16,462.36	7,682.00	12,64,63,850	28,650.52	7,682.00	22,00,93,295
3	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.	40,838.35	250	1,02,09,588	40,838.35	250	1,02,09,588
4	Texturing of Rigid pavement (considering 50% for 7 years)	Sqm.	87,511.50	130	1,13,76,495	87,511.50	130	1,13,76,495
5	Earthern shoulder @ service roads	Cum.	7,285.40	250	18,21,350	7,285.40	250	18,21,350

BoQ Item No.	DESCRIPTION	Unit	Qty	RATE	AMOUNT Rs.	Qty	RATE	AMOUNT Rs.
6	Micro surfacing	Sqm.	4,40,244.00	175	7,70,42,700		175	
	Total				**23,26,75,808**	-	-	**24,92,62,553**
	Chapter 9 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		72,854.00	380	2,76,84,520
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.	18,915.95	516	97,60,630	18,915.95	516	97,60,630
3	Road Studs	Nos.	1,990.00	750	14,92,500	1,990.00	750	14,92,500
	Total Chapter 9			-	**1,12,53,130**	-	-	**3,89,37,650**
	Grand Total				**24,39,28,938**	-		**28,82,00,203**

Annexure 5: Letter of Award

GOVERNMENT OF INDIA
MINISTRY OF ROAD TRANSPORT & HIGHWAYS

Transport Bhawan,
1, Parliament Street,
New Delhi–110 001

No. RW/NH-37015/26/2016/NHDP-IVA **Dated 25th November, 2016**

To

M/s Dilip Buildcon Limited,
[Kind Attn: Sh. Kundan Kumar Das, AGM Business Development],
Plot No. 5, Inside Govind Narayan Singh Gate,
Chuna Bhatti, Kolar Road, Bhopal – 462 016, email: db@dilipbuildcon.co.in

Subject: Rehabilitation and up-gradation of NH-66 (Erstwhile NH-17) from Km 406/030 to Km 450/170 [Kalmath to Zarap section] to four-lane with paved shoulder in the state of Maharashtra under NHDP–IV on Hybrid Annuity Mode.

Reference: Tender Notice no. RW/NH-37015/26/2016/NHDP-IV dated 02.09.2016 [Tender ID 28016]

This is to notify that your bid dated 17.10.2016 for execution of the work for "**Rehabilitation and up-gradation of NH-66 (erstwhile NH-17) from Km 406/030 to Km 450/170 [Kalmath to Zarap section] to four lane with paved shoulder in the state of Maharashtra under NHDP–IV on Hybrid Annuity Mode**" for the "**Bid Project Cost of Rs. 914,00,00,000/- (Rupees Nine Hundred Fourteen Crores only)**" and "**First Year O&M Cost of Rs. 3,00,00,000/- (Rupees Three Crores only)**" is hereby accepted by the Ministry of Road Transport & Highways declaring you as the "**Selected bidder**" as per the provisions of Clause 1.2.6 of RFP. Accordingly, this Letter of Award (the LoA) is being issued, in duplicate, to you.

2. Accordingly, you are requested to ensure the followings within stipulated time:

(i) You shall sign and return the duplicate copy of the LOA in acknowledgement thereof, within 7 **(seven)** days of the receipt of the LOA as per clause 3.8.4 of RFP. A copy of the same may be endorsed to Chief Engineer (NH), PWD Maharashtra, Navi Mumbai.

(ii) You shall promote and incorporate the Concessionaire as a limited liability company under the Companies Act 2013, as the entity which shall undertake and perform the obligations and exercise the rights of the Bidder under the LOA, including the obligation to enter into this Concession Agreement pursuant to the LOA for undertaking the Project.

(iii) The Concessionaire has to join in the said request of the selected bidder/Consortium to the Authority to accept it as the entity which shall undertake and perform the obligations and exercise the rights of the selected bidder/Consortium including the obligation to enter into this Concession Agreement pursuant to the LOA. The Concessionaire has to further represent to the effect that it has been promoted by the selected bidder/Consortium for the purposes hereof and has delivered to the Authority a legal opinion with respect to the authority of the Concessionaire to enter into this Concession Agreement and the enforceability of the provisions thereof.

25/11/16

(iv) The Concessionaire shall execute the Concession Agreement with Chief Engineer (NH), PWD Maharashtra within **45 (Forty five) days** of the date of issue of LOA in pursuant to clause 1.3 of RFP; and

(v) The Concessionaire shall, for the performance of its obligations hereunder during the Construction Period, provide to the Authority no later than **30 (Thirty) days** from the date of this agreement, an irrevocable and unconditional guarantee from a Bank for a sum equivalent to 5% **(Five per cent)** of the **Bid Project Cost [Rs. 45.70 crores (Rupees Forty Five Crores and Seventy Lakhs only)]** in the form set forth in Schedule-F **(the "Performance Security")**.

3. You are required to comply with all the terms and conditions set forth in the RFP documents and subsequent addendum/corrigendum issued. In case of any delay/default on your part, you shall be liable for action as stated in the RFP Document.

(A.K. Nagpal)
Chief Engineer (NHDP-IVA)

Copy to:

1. PPS to Secretary (RT&H)
2. PPS to ADG-I, MoRT&H, New Delhi
3. CE (P-6), MoRT&H, New Delhi
4. Principal Secretary to Govt. of Maharashtra, Public Works Department, Mumbai
5. Chief Engineer (NH), PWD Maharashtra, Konkan Bhawan, Mumbai for further necessary action as per para 2 above.
6. Regional Officer, MoRT&H, Mumbai
7. Finance Wing

Annexure 6: Provisional Certificate

Schedule-J

"PROVISIONAL CERTIFICATE"

1. We, Artefact Projects Ltd. acting as Independent Engineer, under and in accordance with the Concession Agreement dated 09.02.2017 **(the "Agreement"),** for development and operation of Four-Laning of the Kalmath to Zarap Section of National Highway No. 17 ((New NH-66) from Km. 406.030 to Km. 450.170 Design Ch. Km. 237.655 to Km. 281.560) Project (the **"Project Highway"**) on design , build, operate and transfer (the "DBOT Annuity or Hybrid Annuity") basis through M/s. DBL Kalmath Zarap Highways Limited, hereby certify that the tests specified in Article 14 and Schedule-I of the Concession Agreement have been undertaken for the partial Project / section of **40.108 Km** (from Design Ch. Km. 239.580 to Km. 251.400, Km. 251.610 to Km. 265.245, Km. 265.545 to Km. 271.270 and Km. 272.630 to Km. 281.560) of the Project to determine compliance thereof with the provisions of the Agreement.

2. Construction Works forming part of the Project/section of the Project 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 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 Authority or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. We are 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/section of **40.108 Km** (from Design Ch. Km. 239.580 to Km. 251.400, Km. 251.610 to Km. 265.245, Km. 265.545 to Km. 271.270 and Km. 272.630 to Km. 281.560) of the Project, pending completion thereof.

3. In view of the foregoing, We are satisfied that the partial Project/section of **40.108 Km** of the Project can be safely and reliably placed in commercial service of the Users thereof, and in terms of the Agreement, the Project/section of the Project is hereby provisionally declared fit for entry into commercial operation on this the **23rd** day of March 2020.

ACCEPTED, SIGNED, SEALED AND DELIVERED
FOR AND ON BEHALF OF
CONCESSIONAIRE By:

DBL KALMATH ZARAP HIGHWAYS LIMITED

K. K. Gautam
Authorized Signatory
M/s DBL Kalmath Zarap Highways Limited

SIGNED, SEALED AND DELIVERED
FOR AND ON BEHALF OF
INDEPENDENT ENGINEER By:

ARTEFACT PROJECTS LIMITED NAGPUR

Siddharth Shah
Authorized Signatory
M/s Artefact Projects Limited

b. The Safety Audit was carried out on **25.01.2020 to 26.01.2020** by the Safety Auditors **(M/s Indian Infratech)** appointed by the PWD to check the compliances prior to the issue of Provisional Completion Certificate. Subsequently, the Opening Stage Safety Audit Report was submitted to the PWD-NH Division, Ratnagiri by the safety consultant vide their letter no. IIT/RSC/HAM/pkg-5/20 dated 27.01.2020. The Concessionaire vide their letter no. DBL KZHL/MORT&H/Kalmath-Zarap/2019-20/580 dated 28.01.2020 informed that necessary improvements/corrections have been made at site.

c. All tests specified in **Schedule-I** of the Concession Agreement have been successfully completed in accordance with **Clause 14.1.1** of the Concession Agreement & submitted by the concessionaire vide their letter no. DBL KZHL/MORT&H/Kalmath-Zarap/2019-20/587 dated 27.02.2020. Substantial work by the Concessnaire qualifying for PCOD has been completed within the Scheduled Project Completion Date of 31.01.2020.

d. All NCRs in the PCOD stretches are duly complied by the Concessionaire and have been satisfactorily closed.

In view of the above, we hereby issue **"Provisional Completion Certificate" (Annexure-C)** for the length of **40.108 Km** out of **43.905 Km** (details as per Para 3 above) along with appended Punch List as per **Annexure-A** of this letter.

Kindly acknowledge the receipt.
Thanking you,

Yours faithfully,
For **Artefact Projects Ltd.**

Siddharth Shah
Authorized Representative

Encl: 1.Annexure-A : Punch List –A (work to be completed within 90 days from date of issuance of PCOD)
2.Annexure-B : List –B (Incomplete stretches for the reasons not attributable to the concessionaire to be completed beyond the Scheduled Project Completion Date as per the Concession Agreement)
3.Annexure-C : Provisional Certificate as per Schedule-J of Concession Agreement

Cc.: 1. Regional Officer - MORTH, Mumbai, Maharashtra - For Information
2.Chief Engineer, National Highway (P.W.D.), Konkan Bhavan, Navi Mumbai - For Information
3. Superintending Engineer, PWD, NH-Division, Bandra-Mumbai - For Information
4. Executive Engineer, PWD, NH Division Ratnagiri - For Information & necessary action

Annexure 7: Insurance

This Document is Digitally Signed
Signer: ATUL JERATH
Date: Fri, Nov 6, 2020 14:15:33 IST
Location: NOIDA
Reason: Signing Authority of OICL

ELECTRONIC EQUIPMENT INSURANCE POLICY SCHEDULE

Policy No	: **171200/44/2021/38**	**Prev Policy No**	:
Cover Note No	: ER1700203530	Cover Note Dt	: 08/09/2020
Insured's Code	: 106657808	Issuing Office Code	: 171200
Insured's Name	: DBL Kalmath Zarap Highways Ltd. (GSTIN: 27AAFCD9602H1ZM)	Issuing Office Name	: CBU Vadodara (GSTIN: 24AAACT06
Address	: Flat No. 301, Apartment No. A-06 SLPL doctor colony Samaj Ekta Gruhnirman Society,Somalvada Nagpur, Maharashtra ¿ 440015	Address	: Ist FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel /Fax /Email	: / / 0 / avni.sheth@unisoninsurance.net NAGPUR 440015	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 3214000846 - 17/09/2020 GST INVOICE NO :2419487409 UIN :0
Gross Premium : 8,358 GST : 1,504 Stamp Duty : 1 Total : 9,862

RISK DETAILS

Section I : EEI - EQUIPMENT

Sum Insured : 1,67,16,947

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

MAHARASHTRA - 416602

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		1,67,16,947

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 : 17/09/2020

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

Attached to and forming part of policy number 171200/44/2021/38

2) Winchester Drive and/or Hard Disc-25% of claim amount subject to a minimum of Rs.10,000/-

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

SCHEDULE OF PREMIUM

Cover Description	Premium
TOTAL PREMIUM	8,358
ADD : IGST	1,504
STAMP DUTY	1
TOTAL AMOUNT	9,862

Total Sum Insured In Words : Indian Rupees One Crore Sixty-Seven Lakhs Sixteen Thousand Nine Hundred Forty-Seven Only
Total Amount Paid : Indian Rupees Nine Thousand Eight Hundred Sixty-Two Only

The Insurance under this policy is extended to cover risks of (as per forms attached):
EAR - EARTHQUAKE COVER
STFI Inclusion Cover

Excess / Deductible :
The following minimum deductibles are applicable based on Sum Insured of the policy

The Insurance under this policy is subject to warranties & Clauses (as per forms attached) :
In the event of a claim under the policy exceeding Rs.1lac or a claim for refund of premium exceeding Rs1lac,the insured will comply with the provisions of the AML policy of the Company.The AML policy is available in all our operating Offices as well as company's website.
Communicable Disease Exclusion Clause
Exclusion-Any Direct or indirect loss by infectious or contagious disease

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

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

In witness whereof the undersigned being authorised by and on behalf of the company has/have herein to set his/their hands at CBU Vadodara (GSTIN: 24AAACT0627R2Z4) on 17TH DAY OF SEPTEMBER 2020

For and on behalf of
The Oriental Insurance Company Limited

Entered By : FARHAN KHAN
Examined By : A K Parmar

Authorised Signatory

Place : -
Date : 17/09/2020

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 2 of 2
IRDA Regn. No. 556 - Now you can buy and renew selected policies online at www.orientalinsurance.org.in

FIRE INDUSTRIAL ALL RISK POLICY SCHEDULE

Policy No	: 171200/11/2021/407	Prev Policy No	:
Cover Note No	: 170000171/2068	Cover Note Dt	: 09/02/2021
Insured's Name	: 108857808 - DSL Kalmath Zarap Highways Ltd. (GSTIN: 27AAFCD9903H1ZM)	Issuing Office	: 171200 - CBU Vadodara (GSTIN: 24AAACT2627F1Z4)
Address	: Flat No. 301, Apartment No. A-06 SUPL doctor colony Samaj Seva Gruhnirman Society, Somalwada Nagpur, Maharashtra :. 440015 NAGPUR 440015	Address	: 1st FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel./Fax /Email	: / / 0 / NA	Tel./Fax /Email	: 0265-2427073 / 0265-2436654 / 171200@orientalinsurance.co.in
Dev./Officer	:	BROKER	: LG/000000179 (1140)UNISON INSURANCE BROKING SERVICES P LTD

Period of Insurance: FROM 00:00 ON 09/02/2021 TO MIDNIGHT OF 04/10/2021

Collection No & Dt : DC_I_IND 3214001413 - 12/02/2021 GST INVOICE NO :2419839882 UIN :0

Gross Premium : 63,45,086 GST : 11,42,115 Stamp Duty : .5 Total : 74,87,201

Co Insurance Details :

Sl.No	Co-Insurer Name	Share %
1	CBU Vadodara	60.00
2	BAJAJ ALLIANZ GEN INSURANCE	40.00

SECTION I : IAR - STANDARD FIRE AND SPECIALS PERILS SECTION

Location of the Risk : Operation & maintenance of Roads, Bridges NH-66 (Erstwhile NH-17) From Km 406.030 to Km 450.170 to four lane with paved shoulder under NHDP-IV on hybrid annuity, Sindhudurg, Konkan, Maharashtra-416602

Deductible :

Risk Description : Roads

Block Description : 1

Sub Description	Nature of Stock	Sum Insured
Roads Incl Service Road, Structures, Underpasses,drainages, Utilities, Stone Box, Causeways, Machineries(Full descr as per annexure)		336,17,27,909
Bridges (Major, Minor, Railway, River Incl all Other Bridges) ,Culverts		297,82,43,143

SCHEDULE OF PREMIUM

Place :
Date : 12/02/2021

For and on behalf of
The Oriental Insurance Company Limited

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

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

Authorized 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

STANDARD FIRE & SPECIAL PERILS POLICY SCHEDULE

Policy No	: 171200/11/2021/408	Prev Policy No	: -
Cover Note No	: 1700001712069	Cover Note Dt	: 09/02/2021
Insured's Name	: 106657808 - DBL Kalmath Zarap Highways Ltd. (GSTIN: 27AAFCD9602H1ZM)	Issuing Office	: 171200 - CBU Vadodara (GSTIN: 24AAACT0627R2Z4)
Address	: Flat No. 301, Apartment No. A-06 SLPL doctor colony Samaj Ekta Gruhnirman Society,Somalvada Nagpur, Maharashtra ¿ 440015 NAGPUR 440015	Address	: Ist FLOOR, KIRTI TOWER, TILAK ROAD VADODARA GUJARAT 390001
Tel /Fax /Email	: / / 0 / NA	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,390007
Tel/Fax/Email	

Period of Insurance : FROM 00:00 ON 09/02/2021 TO MIDNIGHT OF 04/10/2021

Collection No & Dt : DC_I_IND 3214001413 - 12/02/2021 GST INVOICE NO :2419836095 UIN :0

Gross Premium : 4,28,408 GST : 77,113 Stamp Duty : .5 Total : 5,05,521

Co Insurance Details :

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

RISK DETAILS

1 Location of the Risk : NH-66 (Erstwhile NH-17) From Km 406.030 to Km 450.170to four lane with paved shoulder under NHDP-IV on hybrid annuity, Sindhudurg, Kankavli, Maharashtra- 416602

MAHARASHTRA
SINDHUDURG
416602
SINDHUDURG

Risk Description : Roads

Place :
Date : 12/02/2021

For and on behalf of
The Oriental Insurance Company Limited

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

In case of any query regarding the Policy please call Toll Free No. 1800 11 8485 and 011 38208485.

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

HDFC ERGO General Insurance Company Limited

March 27, 2020

DILIP BUILDCON LIMITED

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

Dear Customer,

Sub: Employees Compensation Insurance Policy No: 3114203370239300000

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

3114203370239300000 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, Bhanduo (West), Mumbai - 400 078

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

HDFC ERGO General Insurance Company Limited

Certificate of Insurance cum Policy Schedule

Policy No. 3114203370239300000 **Employees Compensation Insurance**

Insured Name	DILIP BUILDCON LIMITED (PAN Number:AACCD6124B)	**Business**	OTHERS
Correspondence Address	PLOT NO. 5, GOVIND NARAYAN SINGH GATE,CHUNA BHATTI, BHOPAL,MADHYA PRADESH,BHOPAL,MADHYA PRADESH,462016.		

Mobile		**Phone**		**E Mail**		**Policy Issuance Date**	27/03/2020

Period of Insurance	From Date & Time	24/03/2020 00:01 AM	To Date & Time	23/03/2021 Midnight

LAW

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

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

EC-13-0005
3114203370239300000 Page 2 of 13

Annexure 8: Change of Scope

S. No.	Description	Status of the work	Status of COS Approval
1	Additional cross Drainage Structure-29 Nos	Work has been completed at site.	COS Proposal has been approved by the Competent Authority, Minutes of meeting vide letter dated 15.03.2019
2	Construction of at Grade 6 lane road with service road(1100mt) on both sides in place of 2Nos. of VUPs at Km. 271+740 & Km. 272+035. Considered under Negative COS	Work is completed except 1.5 km length of Service Road	COS Proposal has been forwarded by the E.E NH Division, Ratnagiri to the SE recommending to issue change of scope Order. Vide letter No. NHD/RTN/PB/PO-1/3276 Dated 06.11.2019
3	Major and Minor Bridges-3 Nos	2 Major Bridges are completed while one Major Bridge is in progress	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020
4	LVUP at Km. 238+065	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020
5	LVUP @Km. 270+100	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020

S. No.	Description	Status of the work	Status of COS Approval
6	New MNB and Drain Ch. 270+420	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020
7	PUP @Km. 238+230	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020
8	Subway @ Km. 271+741	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020
9	Construction of Retaining wall	Completed	Proposal has been forwarded to the Competent Authority by the SE, NH Circle, Navi Mumbai for approval vide letter No. SE/NHC/PB/PO-2/PKG-10/2020/339 Dated 04.03.2020
10	Installation of Hybrid ETC lanes & Toll plaza level equipment	Completed	COS Proposal has been forwarded by the S.E NH Circle, Navi Mumbai to the CE, NH recommending to issue change of scope Order. Vide letter No. SE/NHC/TC/Pkg.10/COS/150/2020 Dated 24.01.2020