Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

(i) Site of the Two-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

(ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.

(iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.

(iv) The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The contractor, however, improve/upgrade the Road Profile as indicated in Annexure-III based on site/design requirement.

(v) The status of the environment clearances obtained or awaited is given in Annex IV.

Annex - I
(Schedule-A)

Site

[Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/location referred to in Annex-I to Schedule-A shall be existing chainages.]

1. Site

The Site of the [Two-Lane] Project Highway comprises the section of NH-102Bcommencing from km 73+000 to km 93+280i.e. G. Bualjang Village to Kangkap Village in the state of Manipur. The land, carriageway and structures comprising the Site are described below.

2. Land

The Site of the Project Highway comprises the land (sum total of land already in possession and land to be possessed) as described below:

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
1	73.000	73.100	9.4	24	
2	73.100	73.200	8.9	24	
3	73.200	73.300	8	24	
4	73.300	73.400	9.2	24	
5	73.400	73.500	9.2	24	
6	73.500	73.600	8.2	24	
7	73.600	73.700	7.3	24	
8	73.700	73.800	11.9	24	
9	73.800	73.900	14.9	14	
10	73.900	74.000	10.5	14	
11	74.000	74.100	8.4	14	
12	74.100	74.200	7.1	24	
13	74.200	74.300	8.4	24	
14	74.300	74.400	8	24	
15	74.400	74.500	5.3	24	
16	74.500	74.600	7.9	24	
17	74.600	74.700	8.5	24	
18	74.700	74.800	7.6	24	
19	74.800	74.900	7.5	24	
20	74.900	75.000	7.4	24	
21	75.000	75.100	7.9	24	
22	75.100	75.200	9.6	24	
23	75.200	75.300	8.4	24	
24	75.300	75.400	6.4	24	
25	75.400	75.500	8.5	24	
26	75.500	75.600	7.7	24	
27	75.600	75.700	8.7	24	
28	75.700	75.800	8.4	24	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
29	75.800	75.900	8.7	24	
30	75.900	76.000	6.6	24	
31	76.000	76.100	6.9	24	
32	76.100	76.200	6.7	24	
33	76.200	76.300	8.1	22	
34	76.300	76.400	11	22	
35	76.400	76.500	8.4	22	
36	76.500	76.600	7.6	22	
37	76.600	76.700	9	22	
38	76.700	76.800	9	22	
39	76.800	76.900	5.9	22	
40	76.900	77.000	7.6	22	
41	77.000	77.100	7.2	22	
42	77.100	77.200	8.3	22	
43	77.200	77.300	7.2	22	
44	77.300	77.400	6.5	22	
45	77.400	77.500	8.3	22	
46	77.500	77.600	8.7	22	
47	77.600	77.700	7.7	22	
48	77.700	77.800	7.1	22	
49	77.800	77.900	7	22	
50	77.900	78.000	7.4	22	
51	78.000	78.100	6.2	22	
52	78.100	78.200	7.3	22	
53	78.200	78.300	8	20	
54	78.300	78.400	7.4	20	
55	78.400	78.500	9.4	20	
56	78.500	78.600	10.3	20	
57	78.600	78.700	7.3	20	
58	78.700	78.800	7.1	20	
59	78.800	78.900	5.4	22	
60	78.900	79.000	6.3	22	
61	79.000	79.100	6.5	22	
62	79.100	79.200	7.5	22	
63	79.200	79.300	6	22	
64	79.300	79.400	8	20	
65	79.400	79.500	7	20	
66	79.500	79.600	7.2	20	
67	79.600	79.700	8.8	20	
68	79.700	79.800	9.4	20	
69	79.800	79.900	8.6	20	
70	79.900	80.000	9.4	20	
71	80.000	80.100	8.9	20	
72	80.100	80.200	8.2	20	
73	80.200	80.300	6.9	20	
74	80.300	80.400	10.9	20	
75	80.400	80.500	9.2	20	
76	80.500	80.600	8.6	20	
77	80.600	80.700	5.7	20	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
78	80.700	80.800	5.3	20	
79	80.800	80.900	8.2	20	
80	80.900	81.000	11.6	20	
81	81.000	81.100	6.3	20	
82	81.100	81.200	8.3	20	
83	81.200	81.300	8.1	20	
84	81.300	81.400	7.9	20	
85	81.400	81.500	8.6	20	
86	81.500	81.600	7.5	20	
87	81.600	81.700	8.1	20	
88	81.700	81.800	7.5	20	
89	81.800	81.900	7.8	20	
90	81.900	82.000	9.6	20	
91	82.000	82.100	10.1	22	
92	82.100	82.200	8.3	20	
93	82.200	82.300	9.8	20	
94	82.300	82.400	8.7	20	
95	82.400	82.500	11.4	20	
96	82.500	82.600	8	22	
97	82.600	82.700	8.5	22	
98	82.700	82.800	8.8	22	
99	82.800	82.900	26.6	22	
100	82.900	83.000	8.6	22	
101	83.000	83.100	7.2	22	
102	83.100	83.200	10.4	20	
103	83.200	83.300	8.4	20	
104	83.300	83.400	7.6	20	
105	83.400	83.500	7.7	20	
106	83.500	83.600	6.5	20	
107	83.600	83.700	7.8	20	
108	83.700	83.800	7.6	22	
109	83.800	83.900	9.3	22	
110	83.900	84.000	11.3	22	
111	84.000	84.100	10.1	20	
112	84.100	84.200	9.2	20	
113	84.200	84.300	11.2	20	
114	84.300	84.400	6.1	22	
115	84.400	84.500	9.6	22	
116	84.500	84.600	14.3	22	
117	84.600	84.700	9.9	22	
118	84.700	84.800	8.5	22	
119	84.800	84.900	8.3	22	
120	84.900	85.000	6.4	22	
121	85.000	85.100	7.6	22	
122	85.100	85.200	8.6	22	
123	85.200	85.300	8	22	
124	85.300	85.400	5.7	22	
125	85.400	85.500	8.6	22	
126	85.500	85.600	9.2	22	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
127	85.600	85.700	7.3	22	
128	85.700	85.800	7.8	22	
129	85.800	85.900	7.5	22	
130	85.900	86.000	8.2	22	
131	86.000	86.100	9.3	22	
132	86.100	86.200	8.3	22	
133	86.200	86.300	8.5	22	
134	86.300	86.400	7.7	22	
135	86.400	86.500	7.1	22	
136	86.500	86.600	4.8	22	
137	86.600	86.700	6.5	22	
138	86.700	86.800	6.6	22	
139	86.800	86.900	6.3	22	
140	86.900	87.000	6.5	22	
141	87.000	87.100	6.3	22	
142	87.100	87.200	7.2	22	
143	87.200	87.300	7.2	22	
144	87.300	87.400	9.4	22	
145	87.400	87.500	7.7	22	
146	87.500	87.600	10.5	22	
147	87.600	87.700	7.1	22	
148	87.700	87.800	7.9	22	
149	87.800	87.900	4.9	22	
150	87.900	88.000	7.2	22	
151	88.000	88.100	6.1	22	
152	88.100	88.200	7.1	22	
153	88.200	88.300	8.3	22	
154	88.300	88.400	4.1	22	
155	88.400	88.500	5	22	
156	88.500	88.600	6.9	22	
157	88.600	88.700	7.1	22	
158	88.700	88.800	7.2	22	
159	88.800	88.900	5.5	24	
160	88.900	88.980	10.3	24	

3. Carriageway

The present carriageway of the Project Highway is Two Lane from km 74+000 to km 93+280. The type of the existing pavement is [flexible].

4. Major Bridges

The Site includes the following Major Bridges:

S.No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	**Sub-structure**	**Superstructure**		
NIL						

5 Road over-bridges (ROB)/ Road under-bridges (RUB)

The Site includes the following ROB (road over railway line)/RUB (road under railway line):

S.No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	ROB/ RUB
		Foundation	Superstructure			
NIL						

6 Grade separators

The Site includes the following grade separators:

S.No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)
		Foundation	Superstructure		
NIL					

7 Minor bridges

The Site includes the following minor bridges:

S. No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-structure	Super-structure		
1	88.883	Open	Wall	RCC Slab Bridge	1X7.0	6.90
2	90.160	Open	Wall	RCC Slab Bridge	1X6.9	8.60
3	90.327	Open	Wall	RCC Slab Bridge	1X7.0	8.90

8 Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location (km)	Remarks
NIL		

9 Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

S. No.	Chainage (km)	Type of Structure	No. of Spans with span length (m)	Width (m)
NIL				

10 Culverts

The Site has the following culverts:

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
1	73.004	Slab	2X2.49M	2.9
2	73.113	HP	1.2M DIA	3.4
3	73.805	Slab	1X3.40M	3.6
4	73.886	HP	1.2M DIA	3.4
5	74.247	Slab	1X2.86M	3.2
6	74.736	Slab	1X3.86M	3.4
7	75.388	Slab	1X2.58M	2.8
8	76.298	Slab	COVERED BY SOIL	3.4
9	76.508	HP	1X1.2M	3.2
10	76.878	HP	1X1.2M	3.6
11	77.244	HP	1X1.2M	3.4
12	77.503	Slab	1X1.45M	3.1
13	77.813	Slab	1X2.62M	2.8
14	77.852	HP	1X1.2M	3.4
15	77.865	HP	1X1.2M	2.8
16	78.025	Slab	1X2.0M	2.9
17	78.386	Slab	COVERED BY SOIL	3.2
18	78.453	HP	1X1.2M	3.6
19	78.487	Slab	1X2.84M	3.2
20	78.567	Box	1X1.81M	3.5
21	78.92	Slab	1X2.20M	3
22	78.953	HP	1X1.20M	3.4
23	79.466	HP	1X1.20M	2.8
24	79.678	Slab	1X2.66M	2.9
25	79.948	HP	1X1.20M	3.2
26	80.018	Slab	1X2.95M	3.6
27	80.172	HP	1X1.20M	3.4
28	80.353	HP	1X1.20M	3.1
29	80.655	HP	1X1.20M	2.8
30	80.744	Slab	1X1.260M	2.9
31	81.029	Slab	1X1.340M	3.4
32	81.042	Slab	1X1.470M	3.2
33	81.248	Slab	1X1.20M	3.6
34	81.738	HP	1X1.20M	3.1
35	81.86	HP	1X0.9M	2.8
36	82.079	Slab	1X1.32M	2.9
37	82.15	HP	1X0.9M	3.4
38	82.4	Slab	1X1.650M	2.9
39	82.729	HP	1X0.9M	3.4
40	83.456	Slab	1X1.340M	3.2
41	83.53	HP	1X1.200M	3.6
42	83.662	Slab	1X1.5M	3.2
43	83.9	HP	1X1.200M	3.5
44	84.207	Slab	1X3.85M	3

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
45	84.5	Slab	1X4.2M	3.4
46	84.7	HP	1X1.200M	3.1
47	84.77	HP	1X1.200M	3.4
48	84.869	HP	1X1.200M	2.9
49	85.094	HP	1X1.200M	3.4
50	85.123	Slab	1X1.76M	3.2
51	85.316	HP	1X0.9M	3.6
52	85.9	HP	1X1.200M	3.2
53	86.648	Slab	1X1.200M	3.5
54	86.832	Slab	1X1.43M	3
55	87.456	HP	1X1.200M	3.4
56	88.051	HP	1X1.200M	3.1
57	88.347	HP	1X1.200M	3.2
58	88.886	RCC	1X7.3M	3.6
59	88.945	HP	1X0.9M	3.2
60	89.21	Slab	1X2.61M	3.5
61	89.41	HP	1X1.200M	3
62	89.514	HP	1X1.200M	3.4
63	89.844	Slab	1X3.8M	3.1
64	90.177	Box	1X6.22M	2.9
65	90.328	Box	1X6.52M	3.4
66	90.464	Box	1X2.89M	3.2
67	90.809	Box	1X3.75M	3.6
68	91.157	PIPE	1 X 1.2M	3.5
69	91.696	SLAB	1 X 1.210M	3.2
70	91.867	PIPE	1.2M DIA	3
71	91.978	SLAB	1 X 1.220M	3.1
72	92.267	SLAB	1 X 1.510M	3
73	92.447	HP	1 X 1.2M	3
74	92.771	SLAB	1 X 1.2M	3
75	93.03	SLAB	1 X 3.2M	2.5
76	93.144	HP	1 X 1.2M	2.7
77	93.192	SLAB	1 X 2.6M	3
78	93.278	SLAB	1 X 3.3M	3.4

11 Bus bays

The details of bus bays on the Site are as follows:

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
NIL				

12 Truck Lay byes

The details of truck lay byes are as follows:

S. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand Side

NIL

13 Road side drains

The details of the roadside drains are as follows:

Sl. No.	Location		Type	
	From km	To km	Masonry/cc (Pucca)	Earthen (Kutcha)
1	73+600	74+130	Pucca (Single Side)	
2	74+200	93+280	Earthen (Hill Side)	

14 Major junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	To km			NH	SH	MDR	Others
Nil								

(NH: National Highway, SH: State Highway, MDR: Major District Road)

15 Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Location		Type of intersection	
	From Km	To Km	T-Junction	Cross Road
1	74+000		T	3-Legged
2	90+310		Y	3-Legged
3	90+360		Y	3-Legged

16 Bypasses

The details of the existing road sections proposed to be bypassed are as follows:

S. No.	Name of bypass (town)	Chainage (km) From km to km	Length (in Km)
NIL			

[17 Other structures] -NIL

[Provide details of other structures, if any.]

Annex – II

(Schedule-A)

Dates for providing Right of Way

The dates on which the Authority shall provide Right of Way of Construction Zone to the Contractor on different stretches of the Site are stated below:

Sl. No	**From km to km**	**Length (km)**	**Width (m)**	**Date of providing ROW***
1	**2**	**3**	**4**	**5**
(i) Full Right of Way (full width) (a) Stretch (b) Stretch (c) Stretch				The Construction of Project Highway will be implemented within the existing ROW as much as possible and acquiring additional land wherever necessary, details of which are already given in Article-2 of Annexure – I of Schedule – A.
(ii) Part Right of Way (part width) (a) Stretch (b) Stretch (c) Stretch				
(iii) Balance Right of Way (width) a) Stretch b) Stretch c) Stretch				

* The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.

Annex - III

(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway shall be modified in the following sections as per the alignment plan indicated below:

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement.

(ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per relevant specifications/IRC Codes/Manual.

Annex - IV

(Schedule-A)

Environment Clearances

The following environment clearances have been obtained:

- Environmental Clearance is not required as per new Notification of MoEF dated 22/08/2013.

SCHEDULE - B

(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2 [Rehabilitation and augmentation]

[Rehabilitation and augmentation] shall include [Two-Laning and strengthening] of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3 Specifications and Standards

The Project Highway shall be designed and constructed in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

Annex - I
(Schedule-B)

Description of [Two-Laning]

[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Specifications and Standards for [Two Laning of Highways (IRC:SP:73-2015)], referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.]

1 WIDENING OF THE EXISTING HIGHWAY

(i) The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for Hilly terrain to the extent land is available.

(ii) Width of Carriageway

(a) Two-Lanning [with] hard shoulders shall be undertaken. The paved carriageway shall be [7(seven) m] wide.

Provided that in the built-up areas the width of the carriageway shall be as specified in the following table:

Sl. No.	Built-up stretch (Township)	Location		Width (m)	Typical Cross Section (Refer to Manual)	Remarks
1	G. Bualjang	69.875	75.165	7	As per Attached Drawing	7 m Carriageway
2	Lungthul (L)	75.165	82.730	7		
3	Lungthul (D)	82.730	84.890	7		
4	Kangkap	84.890	88.980	7		

(b) Except as otherwise provided in this Agreement the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.1above.

2 GEOMETRIC DESIGN AND GENERAL FEATURES

(i) General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual.

(ii) Design speed

For Mountainous terrain design speed shall be the minimum design speed of 40-60 km/hr and for sharp curve and hair pin bend locations speed reduces upto 30kmph & 20 kmph respectively.

(iii) Improvement of the existing road geometrics

The stretches where design speed reduces below 40 kmph are summarized below:

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
1	69+805 to 69+839	Sharp Bend	Design Speed = 20 Kmph
2	69+911 to 69+924	Sharp Bend	Design Speed = 20 Kmph
3	69+950 to 70+059	Sharp Bend	Design Speed = 20 Kmph
4	70+092 to 70+128	Sharp Bend	Design Speed = 20 Kmph
5	70+161 to 70+173	Sharp Bend	Design Speed = 20 Kmph
6	70+260 to 70+286	Sharp Bend	Design Speed = 20 Kmph
7	70+314 to 70+327	Sharp Bend	Design Speed = 30 Kmph
8	70+379 to 70+387	Sharp Bend	Design Speed = 30 Kmph
9	70+419 to 70+472	Sharp Bend	Design Speed = 20 Kmph
10	70+502 to 70+538	Sharp Bend	Design Speed = 20 Kmph
11	70+625 to 70+669	Sharp Bend	Design Speed = 20 Kmph
12	70+727 to 70+776	Sharp Bend	Design Speed = 20 Kmph
13	70+786 to 70+822	Sharp Bend	Design Speed = 20 Kmph
14	70+852 to 70+865	Sharp Bend	Design Speed = 20 Kmph
15	70+902 to 70+911	Sharp Bend	Design Speed = 20 Kmph
16	70+971 to 70+997	Sharp Bend	Design Speed = 20 Kmph
17	71+011 to 71+066	Sharp Bend	Design Speed = 20 Kmph
18	71+078 to 71+107	Sharp Bend	Design Speed = 20 Kmph
19	71+149 to 71+183	Sharp Bend	Design Speed = 30 Kmph
20	71+320 to 71+333	Sharp Bend	Design Speed = 20 Kmph
21	71+467 to 71+482	Sharp Bend	Design Speed = 30 Kmph
22	71+542 to 71+579	Sharp Bend	Design Speed = 20 Kmph
23	71+701 to 71+758	Sharp Bend	Design Speed = 30 Kmph
24	71+816 to 71+859	Sharp Bend	Design Speed = 20 Kmph
25	72+201 to 72+240	Sharp Bend	Design Speed = 20 Kmph
26	72+506 to 72+537	Sharp Bend	Design Speed = 30 Kmph
27	72+632 to 72+678	Sharp Bend	Design Speed = 20 Kmph
28	72+750 to 72+788	Sharp Bend	Design Speed = 30 Kmph
29	72+941 to 72+968	Sharp Bend	Design Speed = 30 Kmph
30	73+001 to 73+015	Sharp Bend	Design Speed = 30 Kmph
31	73+090 to 73+109	Sharp Bend	Design Speed = 30 Kmph
32	73+200 to 73+217	Sharp Bend	Design Speed = 20 Kmph
33	73+430 to 73+470	Sharp Bend	Design Speed = 20 Kmph
34	73+636 to 73+654	Sharp Bend	Design Speed = 20 Kmph
35	73+773 to 73+806	Sharp Bend	Design Speed = 20 Kmph
36	73+847 to 73+867	Sharp Bend	Design Speed = 30 Kmph
37	73+911 to 73+954	Sharp Bend	Design Speed = 20 Kmph
38	74+014 to 74+034	Sharp Bend	Design Speed = 30 Kmph
39	74+571 to 74+612	Sharp Bend	Design Speed = 20 Kmph
40	74+673 to 74+689	Sharp Bend	Design Speed = 20 Kmph
41	74+735 to 74+769	Sharp Bend	Design Speed = 20 Kmph
42	74+820 to 74+827	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
43	74+890 to 74+947	Sharp Bend	Design Speed = 30 Kmph
44	75+137 to 75+203	Sharp Bend	Design Speed = 30 Kmph
45	75+378 to 75+399	Sharp Bend	Design Speed = 20 Kmph
46	75+539 to 75+568	Sharp Bend	Design Speed = 20 Kmph
47	75+640 to 75+658	Sharp Bend	Design Speed = 30 Kmph
48	75+707 to 75+734	Sharp Bend	Design Speed = 20 Kmph
49	75+856 to 75+874	Sharp Bend	Design Speed = 20 Kmph
50	75+959 to 75+986	Sharp Bend	Design Speed = 20 Kmph
51	76+071 to 76+101	Sharp Bend	Design Speed = 30 Kmph
52	76+166 to 76+184	Sharp Bend	Design Speed = 20 Kmph
53	76+891 to 76+946	Sharp Bend	Design Speed = 30 Kmph
54	77+011 to 77+043	Sharp Bend	Design Speed = 30 Kmph
55	77+138 to 77+167	Sharp Bend	Design Speed = 20 Kmph
56	77+231 to 77+247	Sharp Bend	Design Speed = 30 Kmph
57	77+290 to 77+313	Sharp Bend	Design Speed = 30 Kmph
58	77+383 to 77+398	Sharp Bend	Design Speed = 30 Kmph
59	77+462 to 77+488	Sharp Bend	Design Speed = 20 Kmph
60	77+543 to 77+568	Sharp Bend	Design Speed = 30 Kmph
61	78+468 to 78+485	Sharp Bend	Design Speed = 30 Kmph
62	78+540 to 78+551	Sharp Bend	Design Speed = 30 Kmph
63	78+584 to 78+607	Sharp Bend	Design Speed = 30 Kmph
64	78+657 to 78+680	Sharp Bend	Design Speed = 30 Kmph
65	78+970 to 79+015	Sharp Bend	Design Speed = 30 Kmph
66	79+186 to 79+229	Sharp Bend	Design Speed = 20 Kmph
67	80+253 to 80+276	Sharp Bend	Design Speed = 30 Kmph
68	80+401 to 80+412	Sharp Bend	Design Speed = 20 Kmph
69	80+490 to 80+499	Sharp Bend	Design Speed = 20 Kmph
70	81+015 to 81+020	Sharp Bend	Design Speed = 30 Kmph
71	81+101 to 81+127	Sharp Bend	Design Speed = 20 Kmph
72	81+230 to 81+255	Sharp Bend	Design Speed = 20 Kmph
73	82+040 to 82+064	Sharp Bend	Design Speed = 30 Kmph
74	82+126 to 82+160	Sharp Bend	Design Speed = 20 Kmph
75	82+345 to 82+364	Sharp Bend	Design Speed = 30 Kmph
76	82+414 to 82+440	Sharp Bend	Design Speed = 30 Kmph
77	82+725 to 82+759	Sharp Bend	Design Speed = 20 Kmph
78	83+340 to 83+371	Sharp Bend	Design Speed = 20 Kmph
79	83+587 to 83+594	Sharp Bend	Design Speed = 20 Kmph
80	83+640 to 83+655	Sharp Bend	Design Speed = 20 Kmph
81	83+688 to 83+695	Sharp Bend	Design Speed = 30 Kmph
82	83+757 to 83+792	Sharp Bend	Design Speed = 30 Kmph
83	83+853 to 83+879	Sharp Bend	Design Speed = 30 Kmph
84	83+978 to 84+012	Sharp Bend	Design Speed = 20 Kmph
85	84+734 to 84+749	Sharp Bend	Design Speed = 30 Kmph
86	84+871 to 84+910	Sharp Bend	Design Speed = 20 Kmph
87	85+487 to 85+502	Sharp Bend	Design Speed = 30 Kmph
88	85+928 to 85+957	Sharp Bend	Design Speed = 20 Kmph
89	85+988 to 86+075	Sharp Bend	Design Speed = 30 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
90	86+183 to 86+206	Sharp Bend	Design Speed = 20 Kmph
91	86+258 to 86+266	Sharp Bend	Design Speed = 20 Kmph
92	86+319 to 86+366	Sharp Bend	Design Speed = 20 Kmph
93	86+400 to 86+408	Sharp Bend	Design Speed = 20 Kmph
94	86+429 to 86+446	Sharp Bend	Design Speed = 20 Kmph
95	86+490 to 86+497	Sharp Bend	Design Speed = 20 Kmph
96	86+580 to 86+605	Sharp Bend	Design Speed = 30 Kmph
97	86+657 to 86+702	Sharp Bend	Design Speed = 20 Kmph
98	86+792 to 86+820	Sharp Bend	Design Speed = 30 Kmph
99	87+008 to 87+017	Sharp Bend	Design Speed = 20 Kmph
100	87+113 to 87+128	Sharp Bend	Design Speed = 20 Kmph
101	87+159 to 87+180	Sharp Bend	Design Speed = 20 Kmph
102	87+234 to 87+248	Sharp Bend	Design Speed = 20 Kmph
103	87+759 to 87+778	Sharp Bend	Design Speed = 20 Kmph
104	87+831 to 87+841	Sharp Bend	Design Speed = 20 Kmph
105	87+887 to 87+914	Sharp Bend	Design Speed = 20 Kmph
106	87+969 to 87+978	Sharp Bend	Design Speed = 20 Kmph
107	88+066 to 88+080	Sharp Bend	Design Speed = 20 Kmph
108	88+158 to 88+167	Sharp Bend	Design Speed = 20 Kmph
109	88+232 to 88+246	Sharp Bend	Design Speed = 20 Kmph
110	88+298 to 88+301	Sharp Bend	Design Speed = 20 Kmph
111	88+430 to 88+438	Sharp Bend	Design Speed = 20 Kmph
112	88+498 to 88+514	Sharp Bend	Design Speed = 20 Kmph
113	88+568 to 88+580	Sharp Bend	Design Speed = 20 Kmph
114	88+727 to 88+756	Sharp Bend	Design Speed = 20 Kmph
115	88+864 to 88+876	Sharp Bend	Design Speed = 30 Kmph

In the following sections where improvement of the existing road geometrics to the prescribed standards is not possible the existing road geometrics shall be improved to the extent possible within the existing right of way and proper road signs and safety Measures shall be provided.

(iv) Right of Way

[Refer to provision of relevant manual]. Details of the Right of Way are given in Annex II of Schedule-A.

(v) Type of shoulders

Refer to provision of relevant Manual and specify

(a) Inbuilt-up sections .footpaths/fully paved shoulders shall be provided in the following stretches:

Sl. No.	Stretch (from Km to Km)	Fully Paved shoulders/footpaths	Reference to cross section
Nil			

(b) Hard shoulders of 1.5 m width shall be provided with selected earth wherever applicable as per TCS drawing.

(c) Design and specifications of paved shoulders and granular material shall conform to the requirement specified in the relevant Manual.

(vi) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per requirements specified in the relevant Manual

(b) Lateral clearance: The width of the opening at the underpasses shall be as follows:

Sl. No.	Location (chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per requirements specified in the relevant Manual

(b) Lateral clearance: The width of the opening at the overpasses shall be as follows:

Sl. No.	Location (chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

(viii) Service roads

Service roads shall be constructed at the locations and for the lengths indicated below: [Refer requirements specified in the relevant Manual]

Sl No.	Location of service road (from km to km)	Right hand side (RHS)/Left hand side (LHS)/ or Both sides	Length (km) of service road
NIL			

(ix) Grade separated structures

(a) Grade separated structures shall be provided as provision of the Manual. The requisite particulars are given below:

[Refer to requirements specified in the relevant Manual]

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach gradient	Remarks, if any
NIL					

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows: [Refer to provision of the Manual and specify the type of vehicular under pass/ overpass structure

and whether the cross road is to be carried at the existing level, raised or lowered]

Sl. No.	Location	Type of structure Length (m)	Cross road at			Remarks, if any
			Existing Level	Raised Level	Lowered Level	
NIL						

(x) Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/ overpass shall be constructed as follows: [Refer to provision of the relevant Manual and specify the requirements of cattle and pedestrian underpass/ overpass]

Sl. No.	Location	Type of crossing
NIL		

(xi) Typical cross-sections of the Project Highway

[Give typical cross-sections of the Project Highway by reference to the Manual]As per attached Drawings

TCS Type	Description	Length (m)
TCS-1	Two Lane carriageway with hard shoulder in built up area with both side footpath cum RCC covered drain (existing pavement)	1480
TCS-2	Two Lane carriageway with hard shoulder and one side toe wall & one side retaining wall (existing pavement)	50
TCS-3	Two Lane carriageway with hard shoulder and one side toe wall (existing pavement)	0
TCS-4	Two Lane carriageway with hard shoulder in rural area (existing pavement)	450
TCS-4A	Two Lane carriageway with hard shoulder in rural area (realignment stretch)	0
TCS-5	Two Lane carriageway with hard shoulder and one side toe wall & one side trapezoidal drain (existing pavement)	160
TCS-5A	Two Lane carriageway with hard shoulder and one side toe wall & one side trapezoidal drain (realignment stretch)	0
TCS-6	Two Lane carriageway with hard shoulder and both side trapezoidal drain (existing pavement)	2870
TCS-6A	Two Lane carriageway with hard shoulder and both side trapezoidal drain (realignment stretch)	0
TCS-7	Two Lane carriageway with hard shoulder and one side trapezoidal drain (existing pavement)	5685
TCS-7A	Two Lane carriageway with hard shoulder and one side trapezoidal drain (realignment stretch)	0
TCS-8	Two Lane carriageway with hard shoulder and one side breast wall (existing pavement)	4695
TCS-8A	Two Lane carriageway with hard shoulder and one side breast wall (realignment stretch)	0
TCS-9	Two Lane carriageway with hard shoulder and one side breast wall & one side drain (existing pavement)	1850
TCS-9A	Two Lane carriageway with hard shoulder and one side breast wall & one side drain (realignment stretch)	0

TCS Type	Description	Length (m)
TCS-10	Two Lane carriageway with hard shoulder and one side retaining wall (existing pavement)	250
TCS-10A	Two Lane carriageway with hard shoulder and one side retaining wall (realignment stretch)	0
TCS-11	Two Lane carriageway with hard shoulder and one side retaining wall & one side drain (existing pavement)	600
TCS-11A	Two Lane carriageway with hard shoulder and one side retaining wall & one side drain (realignment stretch)	0
TCS-12	Two Lane carriageway with hard shoulder and one side retaining wall & one breast wall (existing pavement)	300
TCS-12A	Two Lane carriageway with hard shoulder and one side retaining wall & one breast wall (realignment stretch)	0
TCS-13	Two Lane carriageway with hard shoulder and both side retaining wall (existing pavement)	0
TCS-13A	Two Lane carriageway with hard shoulder and both side retaining wall (realignment stretch)	0
TCS-14	Two Lane carriageway with hard shoulder and one side toe wall & one side breast wall (existing pavement)	250
TCS-15	Two Lane carriageway with hard shoulder and both side breast wall (existing pavement)	465
TCS-15A	Two Lane carriageway with hard shoulder and both side breast wall (realignment stretch)	0

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	**To**			
69875	69920	4.96	40.04	TCS-7
69920	69970	2.6	47.4	TCS-5
69970	70420		450	TCS-8
70420	70520		100	TCS-6
70520	70620	2.6	97.4	TCS-14
70620	70670	4.96	45.04	TCS-2
70670	70900	2.6	227.4	TCS-1
70900	71120	3.84	216.16	TCS-8
71120	71270	2.6	147.4	TCS-7
71270	71570	4.96	295.04	TCS-9
71570	71620		50	TCS-14
71620	71670		50	TCS-11
71670	71720		50	TCS-7
71720	71770	2.6	47.4	TCS-10
71770	71820		50	TCS-5
71820	71870		50	TCS-7
71870	72270	3.84	396.16	TCS-8
72270	72370		100	TCS-12
72370	72620	2.7	247.3	TCS-11
72620	72670		50	TCS-7
72670	73270		600	TCS-9
73270	73370	2.6	97.4	TCS-6
73370	73620		250	TCS-9
73620	73720	2.6	97.4	TCS-6
73720	73820		100	TCS-9
73820	74020		200	TCS-6
74020	74120		100	TCS-9

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
74120	74420	2.6	297.4	TCS-7
74420	74570		150	TCS-8
74570	74620	5.2	44.8	TCS-4
74620	74770		150	TCS-7
74770	74920	2.6	147.4	TCS-8
74920	75120		200	TCS-6
75120	75220	6.44	93.56	TCS-4
75220	75270	2.7	47.3	TCS-10
75270	75420		150	TCS-8
75420	75570	5.2	144.8	TCS-7
75570	75620		50	TCS-9
75620	75720	2.7	97.3	TCS-11
75720	76120	2.6	397.4	TCS-8
76120	76170		50	TCS-6
76170	76320	3.84	146.16	TCS-7
76320	76420		100	TCS-8
76420	76470	2.6	47.4	TCS-11
76470	76620		150	TCS-6
76620	76720		100	TCS-7
76720	76770		50	TCS-6
76770	76920	2.6	147.4	TCS-7
76920	77020		100	TCS-6
77020	78280	15.7	1244.3	TCS-7
78280	79230	13.1	936.9	TCS-1
79230	79720	2.6	487.4	TCS-8
79720	79820		100	TCS-14
79820	79970	5.2	144.8	TCS-7
79970	80120	2.6	147.4	TCS-10
80120	80670	4.96	545.04	TCS-7
80670	80820	2.6	147.4	TCS-8
80820	81070	7.8	242.2	TCS-7
81070	81370	2.6	297.4	TCS-8
81370	81470	2.6	97.4	TCS-7
81470	81670		200	TCS-8
81670	81820		150	TCS-7
81820	81870		50	TCS-8
81870	82020	2.6	147.4	TCS-4
82020	82420	2.6	397.4	TCS-7
82420	82570		150	TCS-8
82570	82620		50	TCS-11
82620	82870	2.7	247.3	TCS-8
82870	83070	2.6	197.4	TCS-6
83070	83170		100	TCS-8
83170	83220		50	TCS-9
83220	83370		150	TCS-7
83370	83470		100	TCS-8
83470	83620	2.6	147.4	TCS-9
83620	83770		150	TCS-7
83770	83920		150	TCS-12

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
83920	84020	2.6	97.4	TCS-7
84020	84620	2.6	597.4	TCS-8
84620	84670	2.6	47.4	TCS-11
84670	84870		200	TCS-8
84870	84920	2.7	47.3	TCS-4
84920	84970		50	TCS-12
84970	85120		150	TCS-9
85120	85220	2.6	97.4	TCS-4
85220	85570	5.2	344.8	TCS-7
85570	85635		65	TCS-6
85635	85720	2.6	82.4	TCS-8
85720	85770		50	TCS-11
85770	85940	2.7	167.3	TCS-7
85940	86040		100	TCS-9
86040	86150	6.84	103.16	TCS-7
86150	86450	10.68	289.32	TCS-1
86450	86810	6.84	353.16	TCS-7
86810	86870		60	TCS-5
86870	86980	2.6	107.4	TCS-15
86980	87130	2.6	147.4	TCS-6
87130	87375	5.2	239.8	TCS-15
87375	88025	7.8	642.2	TCS-6
88025	88135		110	TCS-15
88135	88890	14.24	740.76	TCS-6
88890	88980	7.68	82.32	TCS-7

3 INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per Section 3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

[Refer to the provision of the Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement]

Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

(i) At-grade intersections

Major Intersections

Sl. No.	Location of intersection (Km)	Type of intersection	Other features	Remarks
Nil				

Minor Intersections

Sl. No.	Location of intersection (Km)	Type of intersection	Other features
1	70.850	T-Type	Village Road
2	86.200	Y-Type	Village Road
3	86.270	Y-Type	Village Road

(ii) Grade separated intersection with/without ramps

Sl. No.	Location	Salient features	Minimum length of viaduct to be provided	Road to be carried over/under the structures
NIL				

4 ROAD EMBANKMENT AND CUT SECTION

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

(ii) Raising of the existing road [Refer to provision of the relevent Manual and specify sections to be raised]

The existing road shall be raised in the following sections:

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
NIL			

5 PAVEMENT DESIGN

(i) Pavement design shall be carried out in accordance with provision of the relevant manual.

(ii) Type of pavement

Flexible Pavement

(iii) Design requirements

[Refer to provision of the relevant Manual and specify design requirements and strategy]

(a) Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual. The Contractor shall design the pavement for design traffic of 20 msa.

(iv) Reconstruction of stretches

[Refer to provision of the relevant Manual and specify the stretches if any to be reconstructed.]

The following stretches of the existing road shall be reconstructed. These shall be designed as new pavement.

SL NO.	Stretch from Km to Km	Remarks	TCS Type
1	69+875 to 69+920	Reconstruction	TCS-7
2	69+920 to 69+970	Reconstruction	TCS-5
3	69+970 to 70+420	Reconstruction	TCS-8
4	70+420 to 70+520	Reconstruction	TCS-6
5	70+520 to 70+620	Reconstruction	TCS-14
6	70+620 to 70+670	Reconstruction	TCS-2
7	70+670 to 70+900	Reconstruction	TCS-1
8	70+900 to 71+120	Reconstruction	TCS-8
9	71+120 to 71+270	Reconstruction	TCS-7
10	71+270 to 71+570	Reconstruction	TCS-9
11	71+570 to 71+620	Reconstruction	TCS-14
12	71+620 to 71+670	Reconstruction	TCS-11
13	71+670 to 71+720	Reconstruction	TCS-7
14	71+720 to 71+770	Reconstruction	TCS-10
15	71+770 to 71+820	Reconstruction	TCS-5
16	71+820 to 71+870	Reconstruction	TCS-7
17	71+870 to 72+270	Reconstruction	TCS-8
18	72+270 to 72+370	Reconstruction	TCS-12
19	72+370 to 72+620	Reconstruction	TCS-11
20	72+620 to 72+670	Reconstruction	TCS-7
21	72+670 to 73+270	Reconstruction	TCS-9
22	73+270 to 73+370	Reconstruction	TCS-6
23	73+370 to 73+620	Reconstruction	TCS-9
24	73+620 to 73+720	Reconstruction	TCS-6
25	73+720 to 73+820	Reconstruction	TCS-9
26	73+820 to 74+020	Reconstruction	TCS-6
27	74+020 to 74+120	Reconstruction	TCS-9
28	74+120 to 74+420	Reconstruction	TCS-7
29	74+420 to 74+570	Reconstruction	TCS-8
30	74+570 to 74+620	Reconstruction	TCS-4
31	74+620 to 74+770	Reconstruction	TCS-7
32	74+770 to 74+920	Reconstruction	TCS-8
33	74+920 to 75+120	Reconstruction	TCS-6
34	75+120 to 75+220	Reconstruction	TCS-4
35	75+220 to 75+270	Reconstruction	TCS-10
36	75+270 to 75+420	Reconstruction	TCS-8
37	75+420 to 75+570	Reconstruction	TCS-7
38	75+570 to 75+620	Reconstruction	TCS-9
39	75+620 to 75+720	Reconstruction	TCS-11
40	75+720 to 76+120	Reconstruction	TCS-8
41	76+120 to 76+170	Reconstruction	TCS-6
42	76+170 to 76+320	Reconstruction	TCS-7
43	76+320 to 76+420	Reconstruction	TCS-8
44	76+420 to 76+470	Reconstruction	TCS-11
45	76+470 to 76+620	Reconstruction	TCS-6
46	76+620 to 76+720	Reconstruction	TCS-7

SL NO.	Stretch from Km to Km	Remarks	TCS Type
47	76+720 to 76+770	Reconstruction	TCS-6
48	76+770 to 76+920	Reconstruction	TCS-7
49	76+920 to 77+020	Reconstruction	TCS-6
50	77+020 to 78+280	Reconstruction	TCS-7
51	78+280 to 79+230	Reconstruction	TCS-1
52	79+230 to 79+720	Reconstruction	TCS-8
53	79+720 to 79+820	Reconstruction	TCS-14
54	79+820 to 79+970	Reconstruction	TCS-7
55	79+970 to 80+120	Reconstruction	TCS-10
56	80+120 to 80+670	Reconstruction	TCS-7
57	80+670 to 80+820	Reconstruction	TCS-8
58	80+820 to 81+070	Reconstruction	TCS-7
59	81+070 to 81+370	Reconstruction	TCS-8
60	81+370 to 81+470	Reconstruction	TCS-7
61	81+470 to 81+670	Reconstruction	TCS-8
62	81+670 to 81+820	Reconstruction	TCS-7
63	81+820 to 81+870	Reconstruction	TCS-8
64	81+870 to 82+020	Reconstruction	TCS-4
65	82+020 to 82+420	Reconstruction	TCS-7
66	82+420 to 82+570	Reconstruction	TCS-8
67	82+570 to 82+620	Reconstruction	TCS-11
68	82+620 to 82+870	Reconstruction	TCS-8
69	82+870 to 83+070	Reconstruction	TCS-6
70	83+070 to 83+170	Reconstruction	TCS-8
71	83+170 to 83+220	Reconstruction	TCS-9
72	83+220 to 83+370	Reconstruction	TCS-7
73	83+370 to 83+470	Reconstruction	TCS-8
74	83+470 to 83+620	Reconstruction	TCS-9
75	83+620 to 83+770	Reconstruction	TCS-7
76	83+770 to 83+920	Reconstruction	TCS-12
77	83+920 to 84+020	Reconstruction	TCS-7
78	84+020 to 84+620	Reconstruction	TCS-8
79	84+620 to 84+670	Reconstruction	TCS-11
80	84+670 to 84+870	Reconstruction	TCS-8
81	84+870 to 84+920	Reconstruction	TCS-4
82	84+920 to 84+970	Reconstruction	TCS-12
83	84+970 to 85+120	Reconstruction	TCS-9
84	85+120 to 85+220	Reconstruction	TCS-4
85	85+220 to 85+570	Reconstruction	TCS-7
86	85+570 to 85+635	Reconstruction	TCS-6
87	85+635 to 85+720	Reconstruction	TCS-8
88	85+720 to 85+770	Reconstruction	TCS-11
89	85+770 to 85+940	Reconstruction	TCS-7
90	85+940 to 86+040	Reconstruction	TCS-9
91	86+040 to 86+150	Reconstruction	TCS-7
92	86+150 to 86+450	Reconstruction	TCS-1
93	86+450 to 86+810	Reconstruction	TCS-7
94	86+810 to 86+870	Reconstruction	TCS-5
95	86+870 to 86+980	Reconstruction	TCS-15
96	86+980 to 87+130	Reconstruction	TCS-6

SL NO.	Stretch from Km to Km	Remarks	TCS Type
97	87+130 to 87+375	Reconstruction	TCS-15
98	87+375 to 88+025	Reconstruction	TCS-6
99	88+025 to 88+135	Reconstruction	TCS-15
100	88+135 to 88+890	Reconstruction	TCS-6
101	88+890 to 88+980	Reconstruction	TCS-7

6 ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway has been provided in the table given below

RCC Covered Drain

Chainage		Side	Net Length (m)
From (m)	To (m)		
70670	70900	Both	455
78280	79230	Both	1874
86150	86450	Both	579
Total Length =			2907

RR Masonry Trapezoidal Drain

Chainage		Side	Net Length (m)
From (m)	To (m)		
69875	69920	Single	40
69920	69970	Single	47
70420	70520	Both	200
71120	71270	Single	147
71270	71570	Single	295
71620	71670	Single	50
71670	71720	Single	50
71770	71820	Single	50
71820	71870	Single	50
72370	72620	Single	247
72620	72670	Single	50
72670	73270	Single	600
73270	73370	Both	195
73370	73620	Single	250
73620	73720	Both	195
73720	73820	Single	100
73820	74020	Both	400
74020	74120	Single	100
74120	74420	Single	297
74620	74770	Single	150
74920	75120	Both	400
75420	75570	Single	145
75570	75620	Single	50
75620	75720	Single	97
76120	76170	Both	100
76170	76320	Single	146

Chainage		Side	Net Length (m)
From (m)	To (m)		
76420	76470	Single	47
76470	76620	Both	300
76620	76720	Single	100
76720	76770	Both	100
76770	76920	Single	147
76920	77020	Both	200
77020	78280	Single	1244
79820	79970	Single	145
80120	80670	Single	545
80820	81070	Single	242
81370	81470	Single	97
81670	81820	Single	150
82020	82420	Single	397
82570	82620	Single	50
82870	83070	Both	395
83170	83220	Single	50
83220	83370	Single	150
83470	83620	Single	147
83620	83770	Single	150
83920	84020	Single	97
84620	84670	Single	47
84970	85120	Single	150
85220	85570	Single	345
85570	85635	Both	130
85720	85770	Single	50
85770	85940	Single	167
85940	86040	Single	100
86040	86150	Single	103
86450	86810	Single	353
86810	86870	Single	60
86980	87130	Both	295
87375	88025	Both	1284
88135	88890	Both	1482
88890	88980	Single	82
Total Length =			**13857**

7 DESIGN OF STRUCTURES

(i) General

(a) All bridges, culverts and structures shall be designed and constructed in accordance with provision of the relevent Manual and shall conform to the cross-sectional features and other details specified therein.

(b) Width of the carriageway of new bridges and structures shall be as follows:

[Refer to provision of the relevent Manual and specify the width of carriageway of new bridges and structures of more than 60 (sixty) meter length, if the carriageway width is different from 7.5 (seven point five) meters in the table below.]

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
Nil		

(c) The following structures shall be provided with footpaths:

[Refer to the provision of the relevant Manual and provide details of new Structures with footpath.]

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
Nil		

(d) All bridges shall be high-level bridges.

[Refer to the provision of the relevant Manual and state if there is any exception]

(e) The following structures shall be designed to carry utility services specified in table below:

[Refer to the provision of the relevant Manual and provide details]

Sl. No.	Bridge at km	Utility service to be carried	Remarks
NIL			

(f) Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in the provision of the relevant Manual.

(ii) Culverts

(a) Overall width of all culverts shall be equal to the roadway width of the approaches.

(b) *Reconstruction of existing culverts:*

The existing culverts at the following locations shall be re-constructed as new culverts:

[Refer to the provision of the relevant Manual and provide details]

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
1	69.878	4.0 X 4.0	Single Span
2	69.964	2.0 X 2.0	Single Span
3	70.656	4.0 X 4.0	Single Span
4	70.736	2.0 X 2.0	Single Span
5	71.097	3.0 X 3.0	Single Span
6	71.565	4.0 X 4.0	Single Span
7	72.231	3.0 X 3.0	Single Span
8	73.287	2.0 X 2.0	Single Span
9	74.270	2.0 X 2.0	Single Span
10	74.615	2.0 X 2.0	Single Span
11	75.138	2.0 X 2.0	Single Span
12	75.168	3.0 X 3.0	Single Span
13	75.236	2.0 X 3.0	Single Span

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
14	75.548	2.0 X 2.0	Single Span
15	75.569	2.0 X 2.0	Single Span
16	76.056	2.0 X 2.0	Single Span
17	76.262	3.0 X 3.0	Single Span
18	77.166	2.0 X 3.0	Single Span
19	77.228	2.0 X 2.0	Single Span
20	77.504	2.0 X 2.0	Single Span
21	77.695	2.0 X 2.0	Single Span
22	78.181	2.0 X 2.0	Single Span
23	78.293	2.0 X 3.0	Single Span
24	78.490	2.0 X 2.0	Single Span
25	78.553	2.0 X 2.0	Single Span
26	79.129	2.0 X 2.0	Single Span
27	79.844	2.0 X 2.0	Single Span
28	79.911	2.0 X 2.0	Single Span
29	80.036	2.0 X 2.0	Single Span
30	80.487	4.0 X 4.0	Single Span
31	80.738	2.0 X 2.0	Single Span
32	80.900	2.0 X 2.0	Single Span
33	80.950	2.0 X 2.0	Single Span
34	81.045	2.0 X 2.0	Single Span
35	81.265	2.0 X 2.0	Single Span
36	81.450	2.0 X 2.0	Single Span
37	82.000	2.0 X 2.0	Single Span
38	82.737	2.0 X 3.0	Single Span
39	82.908	2.0 X 2.0	Single Span
40	83.522	2.0 X 2.0	Single Span
41	84.909	2.0 X 3.0	Single Span
42	85.184	2.0 X 2.0	Single Span
43	85.362	2.0 X 2.0	Single Span
44	85.440	2.0 X 2.0	Single Span
45	86.070	5.0 X 5.0	Single Span
46	86.227	5.0 X 5.0	Single Span
47	86.360	3.0 X 3.0	Single Span
48	86.685	5.0 X 5.0	Single Span
49	87.005	2.0 X 2.0	Single Span
50	87.665	2.0 X 2.0	Single Span
51	87.759	2.0 X 2.0	Single Span
52	88.002	2.0 X 2.0	Single Span
53	88.187	2.0 X 2.0	Single Span
54	88.512	2.0 X 2.0	Single Span
55	88.738	3.0 X 3.0	Single Span
56	88.851	2.0 X 2.0	Single Span
57	88.894	3.0 X 3.0	Single Span
58	88.977	3.0 X 3.0	Single Span

*[Specify modifications, if any, required in the road level, etc.]

(c) *Widening of existing culverts*

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in provision of the relevant Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert Location	Type, span, height and width of existing culvert (m)	Repairs to be carried out [specify]
NIL			

(d) Additional new culverts shall be constructed as per particulars given in the table below:

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
1	70.553	2.0 X 2.0	Single Span
2	71.246	2.0 X 2.0	Single Span
3	71.752	2.0 X 2.0	Single Span
4	72.581	2.0 X 3.0	Single Span
5	73.656	2.0 X 2.0	Single Span
6	74.577	2.0 X 2.0	Single Span
7	74.831	2.0 X 2.0	Single Span
8	75.683	2.0 X 3.0	Single Span
9	76.445	2.0 X 2.0	Single Span
10	76.777	2.0 X 2.0	Single Span
11	77.965	2.0 X 2.0	Single Span
12	78.782	2.0 X 2.0	Single Span
13	79.449	2.0 X 2.0	Single Span
14	82.283	2.0 X 2.0	Single Span
15	83.928	2.0 X 2.0	Single Span
16	84.241	2.0 X 2.0	Single Span
17	84.639	2.0 X 2.0	Single Span
18	85.650	2.0 X 2.0	Single Span
19	85.931	2.0 X 3.0	Single Span
20	86.884	2.0 X 2.0	Single Span
21	87.132	2.0 X 2.0	Single Span
22	87.272	2.0 X 2.0	Single Span
23	88.363	2.0 X 2.0	Single Span

(e) Repairs/replacements of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

Refer to the provision of the relevant Manual and provide details

Sl. No.	Location at km	Type of repair required
NIL		

(f) Floor protection works shall be as specified in the relevant IRC Codes and Specifications.

(iii) Bridges

(a) *Existing bridges to be re- constructed/widened*

(i) The existing bridges at the following locations shall be re-constructed as new Structures:]

[Refer to the provision of the relevant Manual and provide details]

Sl. No.	Bridge location (km)	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance etc.*	Remarks
		Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
Nil					

(ii) The following narrow bridges shall be widened:

Sl. No.	Location (km)	Existing width (m)	Extent of widening (m)	Cross-section at deck level for widening @
NIL				

(b) *Additional new bridges*
[Specify additional new bridges if required. And attach GAD]

New bridges at the following locations on the Project Highway shall be constructed. GADs for the new bridges are attached in the drawings folder.

Sl. No.	Location (km)	Total Length (m)	Remarks.If any
Nil			

(c) The railings of existing bridges shall be replaced by crash barriers at the following locations:

[Refer to provision of the relevant Manual and provide details:]

Sl. No.	Location at km	Remarks
NIL		

(d) Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Sl. No.	Location at km	Remarks
NIL		

(e) *Drainage system for bridge decks*

An effective drainage system for bridge decks shall be provided as specified in provision of the relevant Manual

(f) *Structures in marine environment*

[Refer to provision of the relevant Manual and specify the necessary measures / treatments for protecting structures in marine environment, where applicable]

(iv) Rail-road bridges

(a) Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. [Refer to provision of the relevant Manual and specify modification, if any]

(b) *Road over-bridges*

Road over-bridges (road over rail) shall be provided at the following level crossings, as per GAD drawings attached:

Sl. No.	**Location of Level crossing** (chainage km)	**Length of bridge** (m)
NIL		

(c) *Road under-bridges*

Road under-bridges (road under railway line) shall be provided at the following level crossings, as per GAD drawings attached:

Sl. No.	**Location of Level crossing** (chainage km)	**Number and length of span** (m)
NIL		

(v) Grade separated structures

[Refer to provision of the relevant Manual]

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2(ix) and 3 of this Annex-I..

(vi) Repairs and strengthening of bridges and structures

[Refer to provision of the relevant Manual and provide details]

The existing bridges and structures to be repaired/strengthened, and the nature and extent of repairs /strengthening required are given below:

A. Bridges

Sl. No.	**Location of bridge** (km)	**Nature and extent of repairs /strengthening to be carried out**
NIL		

B. ROB / RUB

Sl. No.	**Location of ROB/RUB** (km)	**Nature and extent of repairs /strengthening to be carried out**
NIL		

C. Overpasses/Underpasses and other structures

Sl. No.	Location of Structure (km)	Nature and extent of repairs /strengthening to be carried out
NIL		

(vii) List of Major Bridges and Structures

The following is the list of the Major Bridges and Structures:

Sl. No.	Location
NIL	

8 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

(i) Traffic control devices and road safety works shall be provided in accordance with provision of the relevant Manual.

Sl. No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
1	Total No of Street Light=	Nos	89
2	Kilometer stones=	Nos	15
3	5th Kilometer stones=	Nos	4
4	Boundary Stones=	Nos	194
5	Delineators (100 cm long and circular shaped)+Hazard marker =	Nos	2202
6	Road Stud=	Nos	9747
7	900 mm Octagonal	Nos	2
8	600 mm circular	Nos	75
9	900 mm Triangular	Nos	237
10	800 mm x 600 mm rectangular	Nos	6
11	Direction Sign < 0.9 sqm	sqm	4
12	Direction Sign > 0.9 sqm	sqm	2
13	Convex Mirror for Blind Curve	Nos	20
14	Rumble Strip=	sqm	112

(ii) Specifications of the reflective sheeting. [Refer to the provision of the relevant Manual and specify]

9. Roadside Furniture

(i) Road side furniture shall be provided in accordance with article 8(i) of this schedule.

(ii) Overhead traffic signs: location and size

Sl. No.	Location (Km)	Size
Nil		

10 COMPULSORY AFFORESTATION

[Refer to provision of relevant Manual and specify the number of trees which are required to be planted by the Contractor as compensatory a forestation.]

11 HAZARDOUS LOCATIONS

The safety barriers shall also be provided at the following hazardous locations:

a) Breast Wall

Chainage		Side	Net Length (m)
From (m)	To (m)		
69970	70420	Single	450
70520	70620	Single	97
70900	71120	Single	216
71270	71570	Single	295
71570	71620	Single	50
71870	72270	Single	396
72270	72370	Single	100
72670	73270	Single	600
73370	73620	Single	250
73720	73820	Single	100
74020	74120	Single	100
74420	74570	Single	150
74770	74920	Single	147
75270	75420	Single	150
75570	75620	Single	50
75720	76120	Single	397
76320	76420	Single	100
79230	79720	Single	487
79720	79820	Single	100
80670	80820	Single	147
81070	81370	Single	297
81470	81670	Single	200
81820	81870	Single	50
82420	82570	Single	150
82620	82870	Single	247
83070	83170	Single	100
83170	83220	Single	50
83370	83470	Single	100
83470	83620	Single	147
83770	83920	Single	150
84020	84620	Single	597
84670	84870	Single	200
84920	84970	Single	50
84970	85120	Single	150
85635	85720	Single	82
85940	86040	Single	100
86870	86980	Both	215
87130	87375	Both	480
88025	88135	Both	220
Total Length =			7971

b) Retaining Wall

Chainage	Side	Net Length

From	To		
70620	70670	single	45
71620	71670	single	50
71720	71770	single	47
72270	72370	single	100
72370	72620	single	247
75220	75270	single	47
75620	75720	single	100
76420	76470	single	47
79970	80120	single	147
82570	82620	single	47
83770	83920	single	147
84620	84670	single	47
84920	84970	single	50
85720	85770	single	50
Total Length =			1174

c) Toe wall

Chainage		Side	Net Length (m)
From (m)	To (m)		
69920	69970	Single	47.4
70520	70620	Single	97.4
70620	70670	Single	45.04
71570	71620	Single	50
71770	71820	Single	50
79720	79820	Single	100
86810	86870	Single	60
Total Length =			**449.84**

d) Metal Beam Crash Barrier

Chainage		Side	Net Length (m)
From (m)	To (m)		
69920	69970	Single	47.4
70520	70620	Single	97.4
70620	70670	Both	90.08
71570	71620	Single	50
71620	71670	Single	50
71720	71770	Single	47.4
71770	71820	Single	50
72270	72370	Single	100
72370	72620	Single	247.3
75220	75270	Single	47.3
75620	75720	Single	97.3
76420	76470	Single	47.4
79720	79820	Single	100
79970	80120	Single	147.4
82570	82620	Single	50
83770	83920	Single	150
84620	84670	Single	47.4
84920	84970	Single	50
85720	85770	Single	50

Chainage		Side	Net Length (m)
From (m)	To (m)		
86810	86870	Single	60
Total Length =			1626.38

d) Hydro seeding and Turfing

Protection Type	Total Quantity(unit)
Hydro seeding	63765 sq m
Turfing	7272 sq m

12 Special Requirement for Hill Roads

[Refer to the provision of relevant Manual and provide details where relevant and required.]

13 CHANGE OF SCOPE

The length of Structures and bridges specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

Schedule-B1)

1. The shifting of utilities and felling of trees shall be carried out by the concerned department. The cost of the same shall be borne by the concerned department.

SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

The Contractor shall construct the Project Facilities in accordance with the provisions of this Agreement. Such Project Facilities shall include:

(a) Toll plaza[s]

(b) Road side furniture;

(c) Pedestrian facilities;

(d) Truck Lay byes;

(e) Bus-bays and passenger shelters;

(f) Rest areas; and

(g) Others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Toll Plaza: -

Sl. No.	Design Chainage (km)	Name of the Place
Nil		

b) Road side furniture: -

Sl. No.	Description	Location	Design Standard
1	Traffic sign & pavement marking	Entire Length (As per Schedule B)	As per Manual
2	Km Stone, 5th kilometre stone	Entire Length	As per Manual
3	Boundary Stone	Entire Length	As per Manual
4	Roadside Delineator, marker & Road Stud	As per Schedule B	As per Manual
5	Metal beam crash barrier	As per Schedule B	As per Manual

C) Pedestrian Facility:-

Pedestrian facilities in the form of foot path shall be provided in the built up area (refer typical cross – section drawing). Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL.

d) Truck Lay bye:-

Sl. No.	Truck lay bye Chainage(Both Side)	Name of the Place
Nil		

e) Bus Bay &Passenger shelter:-

Sl. No.	Project Facility	Location (km)	Design Requirements	Other Essential Details
1	Bus Bay &Passenger shelter	70+950 (Both side)	Bus Bays & Passenger shelter have been placed on both side of proposed roadway	Dimension of Bus Bay (L X B = 59.0 m X 3.0 m) Dimension of Passenger Shelter (L X B = 6.0 m X 2.0 m) (Refer Passenger Shelter Drawing)
2	Bus Bay & Passenger shelter	78+150 (Both side)		
3	Bus Bay & Passenger shelter	86+130 (Both side)		

f) Rest Areas

Sl. No.	Rest Area Chainage	Name of the Place
Nil		

g) Others to be specified

Street Lighting:
Total 89 Nos. Street lighting shall be provided in junction, passenger shelters & bridge locations.

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

The Contractor shall comply with the Specifications and Standards set forth in Annex- I of this Schedule-D for construction of the Project Highway.

2. Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the following documents:

[Manual of Specifications and Standards for Two Lanning of Highways (IRC: SP: 73-2015), referred to herein as the Manual]

[Note: Specify the relevant Manual, Specifications and Standards]

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for [Two-Lanning of Highways (IRC:SP:73-2015)], referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

(i) The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.

(ii) [Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:]

<table>
<tr><th>Item</th><th>Manual Clause Reference</th><th colspan="5">Provision as per Manual</th><th colspan="5">Modified Provision</th></tr>
<tr><td rowspan="5">Shoulder</td><td rowspan="5">2.6</td><td colspan="5"><u>Mountainous Terrain</u></td><td colspan="5"><u>Mountainous Terrain</u></td></tr>
<tr><td rowspan="2">Type of Section</td><td rowspan="2"></td><td colspan="3">Width of Shoulder (m)</td><td rowspan="2">Type of Section</td><td rowspan="2"></td><td colspan="3">Width of Shoulder (m)</td></tr>
<tr><td>Paved</td><td>Earthen</td><td>Total</td><td>Paved</td><td>Earthen</td><td>Total</td></tr>
<tr><td rowspan="2">Open Country with Isolated Built-up Area</td><td>Hill Side</td><td>1.5</td><td>-</td><td>1.5</td><td rowspan="2">Open Country with Isolated Built-up Area</td><td>Hill Side</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Valley Side</td><td>1.5</td><td>1</td><td>2.5</td><td>Valley Side</td><td>-</td><td>Up to 1.0 m</td><td>1</td></tr>
<tr><td rowspan="2">Built-up Area and Approaches to grade separated structures/ bridges</td><td>Hill Side</td><td>0.25 m + 1.5 m (Raised)</td><td>-</td><td>1.75</td><td rowspan="2">Built-up Area and Approaches to grade separated structures/ bridges</td><td>Hill Side</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Valley Side</td><td>0.25 m + 1.5 m (Raised)</td><td>-</td><td>1.75</td><td>Valley Side</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>Design Speed</td><td>2.2</td><td colspan="5"><u>Mountainous Terrain:</u>
Ruling : 60 Kmph
Minimum : 40 Kmph</td><td colspan="5"><u>Mountainous Terrain:</u>
Design Speed followed 40-60 kmph in general. However design speed has been reduced to 20 kmph due to site constraints and to accommodate the proposal within EROW.
(Refer Horizontal Alignment Drawing and Table 1.1 below)</td></tr>
<tr><td>Extra Widening</td><td>2.7</td><td colspan="5">Extra Widening has been proposed as per IRC: SP: 73-2015
Radius | Extra Widening</td><td colspan="5">Extra Widening has been proposed as per IRC: SP: 48-1998 (Table 6.9) of Hill Road Manual.
Radius | Extra Widening</td></tr>
</table>

Item	Manual Clause Reference	Provision as per Manual			Modified Provision		
		75-100 m	0.9 m		21-40 m	1.5 m	
		101-300 m	0.6 m		41-60 m	1.2 m	
					61-100 m	0.9 m	
					75-100 m	0.9 m	
					101-300 m	0.6 m	
					Above 300 m	NIL	
Radii Of Horizontal Curve	2.9.4	**Mountainous Terrain:** Desirable Minimum Radius: 150 m Absolute Minimum Radius: 75 m			Radius below 75 m has been provided in the location listed in table 1.		

Table 1.1: Locations where Design Speed is less than40 kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
1	69+805 to 69+839	Sharp Bend	Design Speed = 20 Kmph
2	69+911 to 69+924	Sharp Bend	Design Speed = 20 Kmph
3	69+950 to 70+059	Sharp Bend	Design Speed = 20 Kmph
4	70+092 to 70+128	Sharp Bend	Design Speed = 20 Kmph
5	70+161 to 70+173	Sharp Bend	Design Speed = 20 Kmph
6	70+260 to 70+286	Sharp Bend	Design Speed = 20 Kmph
7	70+314 to 70+327	Sharp Bend	Design Speed = 30 Kmph
8	70+379 to 70+387	Sharp Bend	Design Speed = 30 Kmph
9	70+419 to 70+472	Sharp Bend	Design Speed = 20 Kmph
10	70+502 to 70+538	Sharp Bend	Design Speed = 20 Kmph
11	70+625 to 70+669	Sharp Bend	Design Speed = 20 Kmph
12	70+727 to 70+776	Sharp Bend	Design Speed = 20 Kmph
13	70+786 to 70+822	Sharp Bend	Design Speed = 20 Kmph
14	70+852 to 70+865	Sharp Bend	Design Speed = 20 Kmph
15	70+902 to 70+911	Sharp Bend	Design Speed = 20 Kmph
16	70+971 to 70+997	Sharp Bend	Design Speed = 20 Kmph
17	71+011 to 71+066	Sharp Bend	Design Speed = 20 Kmph
18	71+078 to 71+107	Sharp Bend	Design Speed = 20 Kmph
19	71+149 to 71+183	Sharp Bend	Design Speed = 30 Kmph
20	71+320 to 71+333	Sharp Bend	Design Speed = 20 Kmph
21	71+467 to 71+482	Sharp Bend	Design Speed = 30 Kmph
22	71+542 to 71+579	Sharp Bend	Design Speed = 20 Kmph
23	71+701 to 71+758	Sharp Bend	Design Speed = 30 Kmph
24	71+816 to 71+859	Sharp Bend	Design Speed = 20 Kmph
25	72+201 to 72+240	Sharp Bend	Design Speed = 20 Kmph
26	72+506 to 72+537	Sharp Bend	Design Speed = 30 Kmph
27	72+632 to 72+678	Sharp Bend	Design Speed = 20 Kmph
28	72+750 to 72+788	Sharp Bend	Design Speed = 30 Kmph
29	72+941 to 72+968	Sharp Bend	Design Speed = 30 Kmph
30	73+001 to 73+015	Sharp Bend	Design Speed = 30 Kmph
31	73+090 to 73+109	Sharp Bend	Design Speed = 30 Kmph
32	73+200 to 73+217	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
33	73+430 to 73+470	Sharp Bend	Design Speed = 20 Kmph
34	73+636 to 73+654	Sharp Bend	Design Speed = 20 Kmph
35	73+773 to 73+806	Sharp Bend	Design Speed = 20 Kmph
36	73+847 to 73+867	Sharp Bend	Design Speed = 30 Kmph
37	73+911 to 73+954	Sharp Bend	Design Speed = 20 Kmph
38	74+014 to 74+034	Sharp Bend	Design Speed = 30 Kmph
39	74+571 to 74+612	Sharp Bend	Design Speed = 20 Kmph
40	74+673 to 74+689	Sharp Bend	Design Speed = 20 Kmph
41	74+735 to 74+769	Sharp Bend	Design Speed = 20 Kmph
42	74+820 to 74+827	Sharp Bend	Design Speed = 20 Kmph
43	74+890 to 74+947	Sharp Bend	Design Speed = 30 Kmph
44	75+137 to 75+203	Sharp Bend	Design Speed = 30 Kmph
45	75+378 to 75+399	Sharp Bend	Design Speed = 20 Kmph
46	75+539 to 75+568	Sharp Bend	Design Speed = 20 Kmph
47	75+640 to 75+658	Sharp Bend	Design Speed = 30 Kmph
48	75+707 to 75+734	Sharp Bend	Design Speed = 20 Kmph
49	75+856 to 75+874	Sharp Bend	Design Speed = 20 Kmph
50	75+959 to 75+986	Sharp Bend	Design Speed = 20 Kmph
51	76+071 to 76+101	Sharp Bend	Design Speed = 30 Kmph
52	76+166 to 76+184	Sharp Bend	Design Speed = 20 Kmph
53	76+891 to 76+946	Sharp Bend	Design Speed = 30 Kmph
54	77+011 to 77+043	Sharp Bend	Design Speed = 30 Kmph
55	77+138 to 77+167	Sharp Bend	Design Speed = 20 Kmph
56	77+231 to 77+247	Sharp Bend	Design Speed = 30 Kmph
57	77+290 to 77+313	Sharp Bend	Design Speed = 30 Kmph
58	77+383 to 77+398	Sharp Bend	Design Speed = 30 Kmph
59	77+462 to 77+488	Sharp Bend	Design Speed = 20 Kmph
60	77+543 to 77+568	Sharp Bend	Design Speed = 30 Kmph
61	78+468 to 78+485	Sharp Bend	Design Speed = 30 Kmph
62	78+540 to 78+551	Sharp Bend	Design Speed = 30 Kmph
63	78+584 to 78+607	Sharp Bend	Design Speed = 30 Kmph
64	78+657 to 78+680	Sharp Bend	Design Speed = 30 Kmph
65	78+970 to 79+015	Sharp Bend	Design Speed = 30 Kmph
66	79+186 to 79+229	Sharp Bend	Design Speed = 20 Kmph
67	80+253 to 80+276	Sharp Bend	Design Speed = 30 Kmph
68	80+401 to 80+412	Sharp Bend	Design Speed = 20 Kmph
69	80+490 to 80+499	Sharp Bend	Design Speed = 20 Kmph
70	81+015 to 81+020	Sharp Bend	Design Speed = 30 Kmph
71	81+101 to 81+127	Sharp Bend	Design Speed = 20 Kmph
72	81+230 to 81+255	Sharp Bend	Design Speed = 20 Kmph
73	82+040 to 82+064	Sharp Bend	Design Speed = 30 Kmph
74	82+126 to 82+160	Sharp Bend	Design Speed = 20 Kmph
75	82+345 to 82+364	Sharp Bend	Design Speed = 30 Kmph
76	82+414 to 82+440	Sharp Bend	Design Speed = 30 Kmph
77	82+725 to 82+759	Sharp Bend	Design Speed = 20 Kmph
78	83+340 to 83+371	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
79	83+587 to 83+594	Sharp Bend	Design Speed = 20 Kmph
80	83+640 to 83+655	Sharp Bend	Design Speed = 20 Kmph
81	83+688 to 83+695	Sharp Bend	Design Speed = 30 Kmph
82	83+757 to 83+792	Sharp Bend	Design Speed = 30 Kmph
83	83+853 to 83+879	Sharp Bend	Design Speed = 30 Kmph
84	83+978 to 84+012	Sharp Bend	Design Speed = 20 Kmph
85	84+734 to 84+749	Sharp Bend	Design Speed = 30 Kmph
86	84+871 to 84+910	Sharp Bend	Design Speed = 20 Kmph
87	85+487 to 85+502	Sharp Bend	Design Speed = 30 Kmph
88	85+928 to 85+957	Sharp Bend	Design Speed = 20 Kmph
89	85+988 to 86+075	Sharp Bend	Design Speed = 30 Kmph
90	86+183 to 86+206	Sharp Bend	Design Speed = 20 Kmph
91	86+258 to 86+266	Sharp Bend	Design Speed = 20 Kmph
92	86+319 to 86+366	Sharp Bend	Design Speed = 20 Kmph
93	86+400 to 86+408	Sharp Bend	Design Speed = 20 Kmph
94	86+429 to 86+446	Sharp Bend	Design Speed = 20 Kmph
95	86+490 to 86+497	Sharp Bend	Design Speed = 20 Kmph
96	86+580 to 86+605	Sharp Bend	Design Speed = 30 Kmph
97	86+657 to 86+702	Sharp Bend	Design Speed = 20 Kmph
98	86+792 to 86+820	Sharp Bend	Design Speed = 30 Kmph
99	87+008 to 87+017	Sharp Bend	Design Speed = 20 Kmph
100	87+113 to 87+128	Sharp Bend	Design Speed = 20 Kmph
101	87+159 to 87+180	Sharp Bend	Design Speed = 20 Kmph
102	87+234 to 87+248	Sharp Bend	Design Speed = 20 Kmph
103	87+759 to 87+778	Sharp Bend	Design Speed = 20 Kmph
104	87+831 to 87+841	Sharp Bend	Design Speed = 20 Kmph
105	87+887 to 87+914	Sharp Bend	Design Speed = 20 Kmph
106	87+969 to 87+978	Sharp Bend	Design Speed = 20 Kmph
107	88+066 to 88+080	Sharp Bend	Design Speed = 20 Kmph
108	88+158 to 88+167	Sharp Bend	Design Speed = 20 Kmph
109	88+232 to 88+246	Sharp Bend	Design Speed = 20 Kmph
110	88+298 to 88+301	Sharp Bend	Design Speed = 20 Kmph
111	88+430 to 88+438	Sharp Bend	Design Speed = 20 Kmph
112	88+498 to 88+514	Sharp Bend	Design Speed = 20 Kmph
113	88+568 to 88+580	Sharp Bend	Design Speed = 20 Kmph
114	88+727 to 88+756	Sharp Bend	Design Speed = 20 Kmph
115	88+864 to 88+876	Sharp Bend	Design Speed = 30 Kmph

Table 1.2: Locations where Radii of Horizontal Curve is less than 75 m

Sl. No.	HIP No.	Stretch (from km to km)	Radius
1	593	69+805 to 69+839	30
2	594	69+911 to 69+924	20
3	596	70+092 to 70+128	20
4	597	70+161 to 70+173	20
5	599	70+314 to 70+327	40

Sl. No.	HIP No.	Stretch (from km to km)	Radius
6	600	70+379 to 70+387	50
7	602	70+502 to 70+538	20
8	603	70+625 to 70+669	20
9	606	70+852 to 70+865	30
10	607	70+902 to 70+911	20
11	612	71+320 to 71+333	30
12	614	71+542 to 71+579	20
13	616	71+816 to 71+859	20
14	617	71+932 to 71+938	60
15	620	72+201 to 72+240	20
16	622	72+506 to 72+537	50
17	623	72+632 to 72+678	20
18	624	72+750 to 72+788	60
19	626	72+941 to 72+968	40
20	627	73+001 to 73+015	40
21	628	73+090 to 73+109	50
22	629	73+200 to 73+217	30
23	631	73+430 to 73+470	25
24	633	73+636 to 73+654	30
25	634	73+773 to 73+806	30
26	635	73+847 to 73+867	50
27	636	73+911 to 73+954	20
28	637	74+014 to 74+034	50
29	638	74+225 to 74+241	70
30	639	74+571 to 74+612	25
31	640	74+673 to 74+689	30
32	641	74+735 to 74+769	20
33	642	74+820 to 74+827	30
34	643	74+890 to 74+947	50
35	644	75+137 to 75+203	35
36	645	75+378 to 75+399	25
37	647	75+539 to 75+568	25
38	649	75+707 to 75+734	25
39	650	75+856 to 75+874	25
40	651	75+959 to 75+986	25
41	652	76+071 to 76+101	60
42	653	76+166 to 76+184	30
43	658	76+891 to 76+946	35
44	659	77+011 to 77+043	50
45	660	77+138 to 77+167	20
46	662	77+290 to 77+313	40
47	663	77+383 to 77+398	50
48	664	77+462 to 77+488	25
49	665	77+543 to 77+568	50
50	670	78+162 to 78+244	70
51	671	78+350 to 78+365	60
52	672	78+468 to 78+485	40
53	673	78+540 to 78+551	40

Sl. No.	HIP No.	Stretch (from km to km)	Radius
54	674	78+584 to 78+607	50
55	675	78+657 to 78+680	60
56	677	78+810 to 78+865	70
57	678	78+970 to 79+015	50
58	681	79+186 to 79+229	25
59	684	79+508 to 79+515	50
60	690	80+253 to 80+276	40
61	691	80+401 to 80+412	25
62	692	80+490 to 80+499	25
63	693	80+623 to 80+632	60
64	694	80+786 to 80+808	50
65	695	80+898 to 80+915	50
66	696	81+015 to 81+020	35
67	697	81+101 to 81+127	30
68	698	81+230 to 81+255	25
69	699	81+416 to 81+431	60
70	700	81+502 to 81+527	60
71	703	81+938 to 81+960	60
72	704	82+040 to 82+064	40
73	705	82+126 to 82+160	25
74	707	82+345 to 82+364	50
75	708	82+414 to 82+440	35
76	710	82+725 to 82+759	25
77	715	83+189 to 83+198	70
78	717	83+340 to 83+371	20
79	718	83+463 to 83+498	70
80	719	83+587 to 83+594	20
81	720	83+640 to 83+655	20
82	721	83+688 to 83+695	45
83	722	83+757 to 83+792	35
84	723	83+853 to 83+879	50
85	724	83+978 to 84+012	25
86	727	84+310 to 84+428	66
87	728	84+603 to 84+655	70
88	729	84+734 to 84+749	50
89	731	84+871 to 84+910	20
90	733	85+286 to 85+295	60
91	735	85+487 to 85+502	30
92	736	85+559 to 85+582	60
93	739	85+928 to 85+957	20
94	740	85+988 to 86+075	40.5
95	741	86+183 to 86+206	30
96	742	86+258 to 86+266	30
97	743	86+319 to 86+366	24
98	744	86+400 to 86+408	20
99	746	86+490 to 86+497	30
100	748	86+580 to 86+605	70
101	749	86+657 to 86+702	20

Sl. No.	HIP No.	Stretch (from km to km)	Radius
102	750	86+792 to 86+820	30
103	752	87+008 to 87+017	40
104	753	87+113 to 87+128	20
105	754	87+159 to 87+180	20
106	755	87+234 to 87+248	20
107	757	87+392 to 87+407	60
108	758	87+545 to 87+566	50
109	759	87+759 to 87+778	35
110	760	87+831 to 87+841	60
111	761	87+887 to 87+914	35
112	762	87+969 to 87+978	35
113	764	88+158 to 88+167	60
114	765	88+232 to 88+246	40
115	766	88+298 to 88+301	40
116	768	88+498 to 88+514	20
117	769	88+568 to 88+580	30
118	771	88+864 to 88+876	60

(iii) [Note1: Deviations from the aforesaid Specifications and Standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project-specific requirements.]

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1 Maintenance Requirements

(i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

(ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

(iii) All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

[Specify all the relevant documents]

2. Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3. Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with

reasons thereof.

5. Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6. Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approaches of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm indepth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82- 2015
	Bleeding	Nil	< 0.1 % of area	Daily	Scale, Tape, odometer etc.		3-7 days	MORT&H Specification 3004.4
	Raveling / Stripping	Nil	< 0.1 % of area	Daily			7-15 days	IRC:82- 2015 read with IRC SP 81
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricted to 30 cm from the edge	Daily	Scale, Tape, odometer etc.			IRC:82- 2015
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM	Class I Profilometer : ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-			180 days	BS: 7941-1: 2006

				Annually	(Sideway-force Coefficient Routine Investigation Machine or equivalent)	Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment		
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82- 2015
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82- 2015
	Deflection/ Remaining Life			Annually	Falling Weight Deflect meter	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade Structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Roughness BI	2200m m/km	2400mm /km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 - 94: 2000	180 days	IRC:SP:83-2008
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	RC:SP:83-2008	180 days	IRC:SP:83-2008
		Minimum SN	**Traffic Speed (Km/h)**					
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					

Embankment/ Slope	Edge drop at shoulders	Nil	40 mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<2% variation in prescribed slope of camber /cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribe side slope	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the following table

Table -2: Maintenance Criteria for Rigid Pavements:

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2 Short Term	For the case d > D/2 Long Term
CRACKING						
1.	Single Discrete Cracks Not intersecting with any joint	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	Not applicable
			1	w < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-moving car		Seal, and stitch if L > lm.
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car	Seal without delay	Within 7days
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l m.	Staple or Dowel Bar Retrofit, FDR for affected portion.
			5	w > 3 mm.	Within 7 days	Within 15days
2.	**Single Transverse (or Diagonal) Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy.	Staple or Dowel Bar Retrofit.
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle	Within 7 days	Within 15 days
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit.	Full Depth Repair Dismantle and

					Within 15 days	reconstruct affected. Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
			5	w > 6 mm, usually associated with spelling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	
3	Single Longitudinal Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > l m. Within 15 days	
			3	w = 3.0 – 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair with stapling. Within 15days
			4	w = 6.0 - 12.0 mm, usually associated with spalling		
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications - See Para 5.6.4 Within 15days

4	Multiple Cracks intersecting with one or more joints	w = width of crack	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > l m.	
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle	Within 15 days	
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate Sub-base, Reconstruct whole slab as per specifications within 30 days
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3 pieces		
			5	w > 6 mm and/or panel broken into more than 4 pieces		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to	Seal with epoxy seal with epoxy
			2	w < 1.5 mm; L < 0.6 m, only one corner broken	secure broken parts Within 7 days	Within 7 days
			3	w < 1.5 mm; L < 0.6 m, two corners broken		
			4	w > 1.5 mm; L > 0.6 m or three corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008)	Full depth repair
			5	three or four corners broken	Within 15 days	Reinstate sub-base, and reconstruct the

						slab as per norms and specifications within 30days
6	Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)	w = width of crack L = length (m/m2)	0	Nil, not discernible	**Not Applicable, as it may be full depth**	No Action
			1	w < 0.5 mm; L < 3 m/m2		Seal with low viscosity epoxy to secure broken parts. Within 15 days
			2	either w > 0.5 mm or L < 3 m/m2		
			3	w > 1.5 mm and L < 3 m/m2		
			4	w > 3 mm, L < 3 m/m2 and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage Reinforcement. Within 30days
			5	w > 3 mm, L > 3 m/m2 and deformation		
7	Raveling or Honeycomb type surface	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	No Action	
			1	r < 2 %	Local repair of areas Damaged	
			2	r = 2 - 10 %	and liable to be damaged. Within 15 days	
			3	r = 10-25%	Bonded Inlay, 2 or 3 slabs if	

			4	r = 25 - 50 %	Affecting Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	Scaling	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	Short Term No Action	Long Term
			1	r < 2 %	Local repair of areas Damaged and liable to be damaged. Within 7days Bonded Inlay within 15 Days	
			2	r = 2 - 10 %		
			3	r = 10 - 20%		
			4	r = 10 - 30%	Reconstruct slab within 30 days	
			5	r>30 % and h> 25mm		
9	Polished Surface/Glazing	t = texture depth, sand patch test	0		No action	
			1	t > 1 mm		

						Not Applicable
			2	t = 1 – 0.6 mm		
			3	t = 0.6 – 0.3 mm	Monitor rate of deterioration	
			4	t = 0.3 – 0.1 mm	Diamond Grinding if Affecting	
			5	t < 0.1 mm	50% or more slabs in a Continuous stretch of minimum 5 km. Within 30 days	
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number/m^2 d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m^2	No action.	Not Applicable
			1	d = 50 - 100 mm; h < 50 mm; n < 1 per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	
			2	d = 50 - 100 mm; h > 50 mm; n < 1 per 5 m^2	Partial depth repair 110mm	
			3	d = 100 - 300 mm; h < 100 mm n < 1 per 5 m^2		
			4	d = 100 - 300 mm; h > 100	i.e.10 mm more than the depth of the hole.	

				mm; n < 1 per 5 m^2	Within 30 days	
			5	d > 300 mm; h > 100 mm: n > 1 per 5 m^2	Full depth repair. Within 30 days	
11	Joint Seal Defects	loss or damage L = Length as % total joint length	0	Difficult to discern.	No action.	Not Applicable
			1	Discernible, L< 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			2	Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in Selected locations. Within 7 days	
			4	Severe; w > 3 mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	Spalling of Joints	w = width on either side of the joint L = length of spalled portion (as % joint	0	Nil, not discernible	No action.	
			1	w < 10 mm	Apply low viscosity epoxy resin/ mortar	

		length)	2 3 4 5	w = 10 - 20 mm, L < 25% w = 20 - 40 mm, L > 25% w = 40 - 80 mm, L > 25% w > 80 mm, and L > 25%	in cracked portion. Within 7 days Partial Depth Repair. Within 15 days 30 - 50 mm deep, h = w + 20% of w, within 30 days 50 - 100 mm deep repair. H = w + 20% of w. Within 30 days	Not Applicable
13	Faulting (or Stepping) in Cracks or Joints	f = difference of level	0 1	not discernible, < 1 mm f < 3 mm	No action.	No action.
			2 3	f = 3 - 6 mm f = 6 - 12 mm	Determine cause and observe, take action for diamond grinding Diamond Grinding	Replace the slab as appropriate. Within 30days

			4 5	f= 12 - 18 mm f> 18 mm	Raise sunken slab. Strengthen sub-grade and sub-base by grouting and raising sunken slab	Replace the slab as appropriate. Within 30days
14	Blowup or Buckling	h = vertical displacement from normal profile	0	Nil, not discernible	No Action	
			1	h < 6 mm		
			2	h = 6 - 12 mm	Install Signs to Warn Traffic	
			3	h = 12 - 25 mm	within 7 days	
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	Depression	h = negative vertical displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	
			1	h = 5 - 15 mm		

			2	h = 15-30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	Not Applicable
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Strengthen subgrade. Reinstate pavement at normal level if L < 20 m.	
			5	h > 100 mm	Within 30 days	
16	Heave	h = positive vertical displacement from normal profile. L = length	0	Not discernible. h < 5 mm	No action.	scrabble
			1	h = 5 - 15 mm	Follow up.	
			2	h = 15 - 30 mm, Nos <20% joints	Install Signs to Warn Traffic	
			3	h = 30 - 50 mm	within 7 days	
			4	h > 50 mm or > 20% joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m.	
			5	h > 100 mm		

					Within 30 days	
17	Bump	h = vertical displacement from normal profile	0 1	h < 4 mm h = 4 - 7 mm	No action Grind, in case of new construction within 7 days	Construction Limit for New Construction.
			3	h = 7 - 15 mm	Grind, in case of ongoing Maintenance within 15 days	Replace in case of new construction. Within 30days
			4	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	**Lane to Shoulder Dropoff**	f = difference of level	0	Nil, not discernible < 3mm	**Short Term** No Action	**Long Term**
			1 2	f = 3 - 10 mm f = 10 - 25 mm	Spot repair of shoulder within 7 days	

			3 4	f = 25 - 50 mm f = 50 - 75 mm	Fill up shoulder within 7 dayss	For any 100 m Stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30days
			5	f > 75 mm		
Drainage						
19	Pumping	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2 3 to 4	slight/ occasional Nos < 10% appreciable/ Frequent 10 - 25%	Repair cracks and joints Without delay. Lift or jack slab within 30 days.	Inspect and repair sub-drainage at distressed sections and upstream.
			5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	
20	Ponding	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	

			3 to 4	Blockages observed in drains, but water flowing	Clean drains etc within 7 days, Follow up	Action required to stop water damaging foundation within 30 days.
			5	Ponding, accumulation of water observed	-do	

Table -3: Maintenance Criteria for Safety Related Items and Other Furniture Items:

Asset Type	Performance Parameter	Level of Service (LOS)			Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Highway	Availability of Safe Sight Distance	As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.			Monthly	Manual Measurements with O dometer along with video/ image backup	Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction/improvement of deficiency at the earliest Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.		IRC:SP 84-2014
		Design Speed, kmph	**Desirable Minimum Sight Distance (m)**	**Safe Stopping Sight Distance (m)**					
		100	360	180					
		80	260	130					
Pavement Marking	Wear	<70% of marking remaining			Bi-Annually	**Visual Assessment as per Annexure-F**	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect -	IRC:35-2015

<table>
<tr><td></td><td></td><td></td><td></td><td>of IRC:35-2015</td><td></td><td>within 2 months</td><td></td></tr>
<tr><td></td><td>Day time Visibility</td><td>During expected life Service Time
Cement Road - 130mcd/m2/lux
Bituminous Road - 100mcd/m2/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td></td><td rowspan="6">Night Time Visibility</td><td><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u></td><td rowspan="6">Bi-Annually</td><td rowspan="6">As per Annexure-E of IRC:35-2015</td><td rowspan="6">Re - painting</td><td rowspan="6">Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months</td><td rowspan="6">IRC:35-2015</td></tr>
<tr><td></td><td>Design Speed</td><td>(RL) Retro Reflectivity (mcd/m2/lux)</td></tr>
<tr><td></td><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td></td><td>65-100</td><td>250</td><td>120</td></tr>
<tr><td></td><td>Above 100</td><td>350</td><td>150</td></tr>
<tr><td></td><td>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</td></tr>
<tr><td>Road Signs</td><td>Shape and Position</td><td>Shape and Position as per IRC:67-2012.
Signboard should be clearly visible for
the design speed of the section.</td><td>Daily</td><td>Visual with video/image backup</td><td>Improvement of shape, in case if shape is damaged.

Relocation as Per requirement</td><td>48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of</td><td>IRC:67-2012</td></tr>
</table>

						Gantry/Cantilever Sign boards	
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of Each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/ Cantilever Sign boards	IRC:67-2012
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	IRC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	IRC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2014
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC:SP:84-2014,

				backup			IRC:119- 2015
	End Treatment of Traffic Safety Barriers	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119- 2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119- 2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014

Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, busshelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84-2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Pipe/box/slab culverts	Free waterway/ unobstructed flow section	85% of culvert normal flow area to available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation.	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not					

		more than 1m aggregatelength					
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concreteapron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	**3** days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.

	Rusted reinforcement	Not more than 0.25 sq.m	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					
	Delamination	Not more than 0.50 sq.m					
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH specifications 2600 & 2700
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads	6 months	IRC SP: 51-1999.

					capacity		
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes	3 days	MORTH specification 2700.

		silt, debris, clogging of drainage spout collection chamber.		Mobile Bridge Inspection Unit	with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed		
Bridge-substructure	Cracks/ spalling of concrete/ Rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.
	Bearings	Delaminating of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/ abutment shall be replaced, in order to get uniform	3 months	MORTH specification 2810 and IRC SP: 40-199.

		side, no rupture of reinforcement or rubber			load transfer on to bearings.		
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual Inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of oubt, use Underwater camera for inspection of deep wells in major Rivers.	suitable protection works around pier/abutment	1 months	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron (concrete apron) not more than 1 sq.m	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days After defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.							

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

In addition to above, for hill roads the following provisions for maintenance is also to done.

Hill Roads		
(i)	Damage to Retaining wall/ Breast wall	7 (Seven) days
(ii)	Landslides requiring clearance	12 (Twelve) hours
(iii)	Snow requiring clearance	24 (Twenty Four) hours

Note: For all tables 1 to 5 above, latest BIS & IRC standards (even those not indicated herewith) along with MoRTH specifications shall be binding for all maintenance activities.

A. Flexible Pavement

Nature of Defect or deficiency		**Time limit for repair/ rectification**
(b) Granular earth shoulders, side slopes, drains and culverts		
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi- urban areas	24 (twenty four) hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c) Road side furniture including road sign and pavement marking		
(i)	Damage to shape or position, poor visibility or loss of retro- reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every year
(iii)	Damaged/missing signs road requiring replacement	7 (seven) days
(vi)	Damage to road mark ups	7 (seven) days
(d) Road lighting		
(i)	Any major failure of the system	24 (twenty four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e) Trees and plantation		
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four)hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(vi)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary	24 (twenty four) hours

	installations	
(g) [Toll Plaza]		
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b) Foundations		
(i)	Scouring and/or cavitation	15 (fifteen) days
(c) Piers, abutments, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(vi)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty four) hours
[Note: Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]		

SCHEDULE - F
(See Clause 3.1.7(a))

APPLICABLE PERMITS

1 Applicable Permits

(i) The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

(a) Permission of the State Government for extraction of boulders from quarry;

(b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;

(c) License for use of explosives;

(d) Permission of the State Government for drawing water from river/reservoir;

(e) License from inspector of factories or other competent Authority for setting up batching plant;

(f) Clearance of Pollution Control Board for setting up batching plant;

(g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;

(h) Permission of Village Panchayats and State Government for borrow earth; and

(i) Any other permits or clearances required under Applicable Laws.

(ii) Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee
[Performance Security/Additional Performance Security]

To,

Managing Director, NHIDCL,

National Highways & Infrastructure Development Corporation Ltd.

(A) _____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "**Agreement**") for the "**Name of work"** (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs….. cr. (Rupees ……..….. crore) (the "**Guarantee Amount**").

(C) We, …….. through our branch at ……. (the "**Bank**") have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee**") by way of Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways & Infrastructure Development Corporation Ltd. , that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as

to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****[$]. Unless a demand or claim

[$] Insert date being 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 7.2 of the Agreement).

under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operatable at our…….. Branch at New Delhi (Complete Address of bank branch is mandatory), from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this ……. day of …….., 20…… at ……. SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

To,

Managing Director, NHIDCL,

National Highways & Infrastructure Development Corporation Ltd.

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the "**Name of work"** (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing *@Bank Rate + 3%* advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. ------ cr. (Rupees ------ crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the **"Guarantee Amount")**[$]**.**

(C) We, …….. through our branch at ……. (the "**Bank"**) have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee"**) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

[$] The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment.

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways & Infrastructure Development Corporation Ltd., that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****.[$] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operatable at our…….. Branch at New Delhi (Complete Address of bank branch is mandatory), from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

S.No.	Particulars	Details

[$] Insert a date being 90 (ninety) days after the end of one year from the date of payment of the Advance payment to the Contractor (in accordance with Clause 19.2 of the Agreement).

1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this ……. day of …….., 20…… at ……. SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

(i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.

(ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Schedule - H

(See Clauses 10.1 (iv) and 19.3)

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. ****

1.2 Proportions of the Contract Price for different stages of Construction of the Project Highway shall be as specified below:

Item	Weightage in % of CP	Stage for Payment	Percentage
1	2	3	4
Road Works including Culverts, widening and repair of culverts	67.91 %	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Non bituminous Base course	[Nil]
		(4) Bituminous Basecourse	[Nil]
		(5) Wearing Coat	[Nil]
		(6) Widening and repair of culverts	[Nil]
		B.1-Reconstruction/New 2-Lane Realignment /Bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	25.63%
		(2) Sub-base Course	23.58%
		(3) Non bituminous Base course	13.83%
		(4) Bituminous Base course	13.8%
		(5) Wearing Coat	7.93%
		B.2-Reconstruction/New 8-Lane Realignment/ Bypass (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		C.1-Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Non bituminous Base course	[Nil]
		(4) Bituminous Basecourse	[Nil]
		(5) Wearing Coat	[Nil]
		C.2- Reconstruction/New Service road (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction & New Culverts on existing road, realignments, bypasses Culverts (length <6m)	15.22%
Minor bridge/ Underpasses/ Overpasses	NIL	**A.1-widening and repairing of Minor Bridges (length >6 m&<60m)**	
		Minor Bridges	[Nil]
		A.2- New Minor bridges (length >6 mand<60m)	

Item	Weightage in % of CP	Stage for Payment	Percentage
		(1) Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	[Nil]
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road, signs & markings, tests on completion etc. complete in all respect.	[Nil]
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	[Nil]
		(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	[Nil]
		B.1- Widening and repairs of underpasses/overpasses	
		Underpasses/ Overpasses	[Nil]
		B.2-NewUnderpasses/Overpasses	
		(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[Nil]
		(2)Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified.	[Nil]
		(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]
Major bridge(length>60 m) works and ROB/RUB/elevated sections/flyovers including viaducts, if any	0.000 %	**A.1- Widening and repairs of Major Bridges**	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7)Guide Bunds,River Training works etc.	[Nil]
		(8)Approaches(including Retaining walls, stone	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		pitching and protection works)	
		A.2-NewMajorBridges	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7)Guide Bunds, River Training works etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]
		B.1-Wideningandrepairsof (a) ROB (b) RUB	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-Structure (Including bearings)	[Nil]
		(4)Wearing Coat(a)in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) In case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7) Approaches (Including Retaining walls, Stone Pitching and protection works)	[Nil]
		B.2-NewROB/RUB	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-Structure (Including bearings)	[Nil]
		(4) Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		protection works)	
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	32.09 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	20.02%
		(iii) Road signs, markings, km stones, safety devices etc	3.81%
		(iv) Project facilities	
		a) Bus Bays	1.80 %
		b) Truck Lay-byes	[Nil]
		c) Passenger Shelter	0.27%
		d) Rest Area	[Nil]
		(v) Road side Plantation	[Nil]
		(vi) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]
		(vii) Safety &Traffic Management during const.	[Nil]
		(viii) Breast Wall	51.69%
		(ix) Toe Wall	0.91%
		(x) Retaining Wall	13.86%
		(xi) Boundary wall	[Nil]
		(xii) Site Clearance & Dismantling	1.68%
		(xiii) Protection Works	5.95%

1.3 Procedure of estimating the value of work done

1.3.1 Road works

Procedure for estimating the value of road work done shall be as follows:

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & Strengthening of road		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in a length of not less than 5(five) percent of the total length.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Non bituminous Base course	[Nil]	
(4) Bituminous Base course	[Nil]	
(5) Wearing Coat	[Nil]	
(6) Widening and repair of culverts	[Nil]	Cost of ten completed culverts shall be determined on pro-rata basis with respect to the total number of culverts.
B.1- Reconstruction/New2-Lane Realignment/Bypass(Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in full length or 0.5 (half) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	25.63%	
(2) Sub-base Course	23.58%	
(3) Non bituminous Base course	13.83%	
(4) Bituminous Base course	13.8%	
(5) Wearing Coat	7.93%	
B.2- Reconstruction/New 8-Lane Realignment/Bypass (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
C.1- Reconstruction/New Service Road/ Slip Road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Non bituminous Base course	[Nil]	
(4) Bituminous Basecourse	[Nil]	
(5) Wearing Coat	[Nil]	
C.2- Reconstruction/New Service road (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in full length or 5(five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Dry Lean Concrete (DLC)Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
D-Reconstruction & New Culverts on existing road, realignments, bypasses		Cost of each culverts shall be determined on pro-rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts
Culverts (length <6m)	15.22%	

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of

bituminous work shall be determined as follows:

Cost per km = P x weightage for road work x weightage for bituminous work x (1/L)

Where,

P = Contract Price

L = Total length in km

Similarly, the rates per km for other stages shall be worked out accordingly.

Note: The length affected due to law and order problems or litigation during execution due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.2 Minor Bridges and Underpasses/Overpasses.

Procedure for estimating the value of Minor bridge and Underpasses/Overpasses shall be as stated in table 1.3.2:

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repairs of Minor Bridges(length>6m&<60m)	NIL	Cost of each minor bridge shall be determined on pro-rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge
A.2- New Minor Bridges (length > 6m & < 60m)		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	NIL	Foundation: Cost of each minor bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road,signs & markings, tests on completion etc. complete in all respect.	NIL	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(3)Approaches :On completion of approaches including Retaining walls, stone pitching,	[Nil]	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in

Stage of Payment	Weightage	Payment Procedure
protection works complete in all and fit for use		this sub-clause.
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	[Nil]	Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bund sand River training Works in all respects as specified
B.1- Widening and repairs of underpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro-rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/Overpasses		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	[Nil]	Foundation: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each Underpasses/ Overpasses. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified.	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

1.3.3 Major Bridge works, ROB/RUB and Structures.

Procedure for estimating the value of Major Bridge works, ROB/RUB and Structures shall be as stated in table 1.3.3:

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
A.1- Widening and repairs of Major Bridges		
(1) Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Guide Bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
A.2-NewMajorBridges		
(1)Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the

Stage of Payment	Weightage	Payment Procedure
		trigger of first payment shall include load testing also where specified.
(2)Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not lessthan25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Guide bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
B.1- Widening and repairs of (a)ROB (b)RUB		
(1) Foundations	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-Structure (Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50%ofthe stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above

Stage of Payment	Weightage	Payment Procedure
(4) Wearing Coat(a)in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (Including Retaining walls, Stone Pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.
B.2-NewROB/RUB		
(1) Foundation	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-structure (including bearing)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) In case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.1-Wideningandrepairs of Elevated Section/ Flyovers/Grade Separators		
(1) Foundations	[Nil]	Foundation: Cost of each structure shall be determined on pro-rata basis with respect to the total linear length (m)of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.2- New Elevated Section/ Flyovers/Grade Separators		
(1) Foundations	[Nil]	Foundation: Cost of each structure shall be determined on pro-rata basis with respect to the total linear length (m)of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

Stage of Payment	Weightage	Payment Procedure
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3)Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders foreach span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.

Note: (1) In case of innovate Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of Competent Authority.

(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements before bidding with due approval of Competent Authority.

1.3.4 Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.4.

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
(1) Toll Plaza	[Nil]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro-rata basis with respect to the total of all toll plaza.
(2) Roadside drains	20.02%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(3) Road signs, markings, km stones, safety devices etc.	3.81%	
(4) Project Facilities		Payment shall be made on pro-rata basis for completed facilities.
a) Bus Bays	1.8%	

Stage of Payment	Weightage	Payment Procedure
b) Truck Lay-byes	[Nil]	
c) Passenger Shelter	0.27%	
d) Rest Area	[Nil]	
(5) Road side Plantation including Horticulture in Wayside Amenities	[Nil]	Unit of measurement is linear length
(6) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(7) Safety and traffic management during construction	[Nil]	Payment shall be made on prorate basis every six months.
(8) Protection Works		Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(a) Retaining Wall	13.86%	
(b) Breast Wall	51.69%	
(c) Toe Wall	0.91%	
(9) Site Clearance & Dismantling	1.68%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.
(10) Protection Works	5.95%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1.1.

2.2 Payment for Maintenance shall be made in quarterly instalments in accordance with the provisions of Clause 19.7.

SCHEDULE - I
(See Clause 10.2 (iv))

DRAWINGS

1 Drawings

In compliance of the obligations set forth in Clause 10.2 of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-I.

2 Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of Annex-I of this Schedule-I.

Annex – I

(Schedule - I)

List of Drawings

1. A minimum list of the drawings of the various components/elements of the project highway and project facility required to be submitted by the Contractor is given below:

(a) Drawing of horizontal alignment, vertical profile and detailed cross sections
(b) Drawings of cross drainage works i.e. Bridges/Culverts/Flyovers and Other Structures.
(c) Drawings for River Training works
(d) Drawings of interchanges, major intersections and underpasses
(e) Drawing of control centre
(f) Drawings of road furniture items including traffic signage, marking, safety barriers, etc.
(g) Drawings of traffic diversions plans and traffic control measures
(h) Drawings of road drainage measures
(i) Drawings of typical details slope protection measures
(j) Drawings of landscaping and horticulture
(k) Drawings of pedestrian crossing
(k) Drawings of street lighting
(l) Any other drawings as per instruction of Authority Engineer
(m) General Arrangement showing Base Camp and Administrative Block

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the Scheduled Completion Date. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the 256th day from then Appointed Date (the "Project Milestone- I").

(ii) Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the 438th day from the Appointed Date (the "Project Milestone- II").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty five per cent) of the Contract Price and should have started construction of all bridges

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the 621th day from the Appointed Date (the "Project Milestone- III").

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price and should have started construction of all project facilities.

5. Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the 730th day from the Appointed Date.

(ii) On or before the Scheduled Completion Date, the Contractor shall have completed construction in accordance with this Agreement.

6. Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE - K
(See Clause 12.1 (ii))

Tests on Completion

1 Schedule for Tests

(i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.

(ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2 Tests

(i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].

(ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.

(iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.

(iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and standards, except tests as specified in clause 5,but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

(v) Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.

(vi) Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3 Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer or such other agency or person as it may specify in consultation with the Authority.

4 Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12.

5. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

S.No.	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Survey Vehicle (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
3	Strength of pavement	Falling Weight Deflectometer (FWD)	At least once a year
4	Bridges	Mobile Bridge Inspection Unit (MBU)	At least twice a year (As per survey months defined for the state basis rainy season)
5	Road signs	Retro-reflectometer	At least twice a year (As per survey months defined for the state basis rainy season)

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

Schedule – L

(See Clause 12.2)

Completion Certificate

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …… (the "**Agreement**"), for **"Name of work"** (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the …… day of …… 20…..

SIGNED, SEALED AND DELIVERED

For and on behalf of

the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE - M

(See Clauses 14.6, 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

1. Payment reduction for non-compliance with the Maintenance Requirements

(i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

(ii) Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.

(iii) The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments

- The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	**Bridges and Culverts**	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
S. No.	**Item/Defect/Deficiency**	**Percentage**
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

(ii) The amount to be deducted from monthly lump-sum payment for non compliance of particular item shall be calculated as under:

$$R=P/100 \times (M_1 \text{ or } M_2) \times L1/L$$

Where P = Percentage of particular item/Defect/deficiency for deduction

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying length

L = Total length of the road,

R = Reduction (the amount to be deducted for non compliance for a particular item/Defect/deficiency

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non compliance.

For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

SCHEDULE - N
(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

1.1 The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2 Terms of Reference

The Terms of Reference for the Authority's Engineer (the "**TOR**") shall substantially conform with Annex 1 to this Schedule N.

3 Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annex – I
(Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

1 Scope

(i) These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "Agreement), which has been entered into between the NHIDCL(the "Authority") and ..... (the "Contractor")# **"Name of Work** and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

- In case the bid of Authority's Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

(ii) The TOR shall apply to construction and maintenance of the Project Highway.

2 Definitions and interpretation

(i) The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

(ii) References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

(iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

(i) The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

(ii) The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

(a) any Time Extension;

(b) any additional cost to be paid by the Authority to the Contractor;

(c) the Termination Payment; or

(d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

(iii) The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports

shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

(iv) The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.

(v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

(vi) In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4 **Construction Period**

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

(ii) The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

(iii) The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto.

(iv) The Authority's Engineer shall complete the review and approve of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

(v) The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

(vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

(vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In

particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

(viii) The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

(ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

(x) The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

(xi) The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

(xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

(xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

(xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

(xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor'squality control records and documents before the Completion Certificate is issued pursuant to Clause 12.4.

(xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

(xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

(i) The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

(ii) The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

(iii) The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

(iv) In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

(v) The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 Determination of costs and time

(i) The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.

(ii) The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

(iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments

(i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).

(ii) Authority's Engineer shall –

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

(iii) The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

(iv) The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified in the Agreement.

9 Miscellaneous

(i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

(ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including „as-built" Drawings, and keep them in its safe custody.

(iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

(iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

(v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

SCHEDULE – O

(See Clauses 19.4.1, 19.6.1, and 19.8.1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) the estimated amount for the Works executed in accordance with Clause 19.3(i) subsequent to the last claim;
(b) amounts reflecting adjustments in price for the aforesaid claim;
(c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;
(d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2(iii) (a);
(e) total of (a), (b), (c) and (d) above;
(f) Deductions:
  (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
  (ii) Any amount towards deduction of taxes; and
  (iii) Total of (i) and (ii) above.
(g) Net claim: (e) – (f) (iii);
(h) The amounts received by the Contractor upto the last claim:
  (i) For the Works executed (excluding Change of Scope orders);
  (ii) For Change of Scope Orders, and
  (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(a) the monthly payment admissible in accordance with the provisions of the Agreement;

(b) the deductions for maintenance work not done;

(c) net payment for maintenance due, (a) minus (b);

(d) amounts reflecting adjustments in price under Clause 19.12; and

(e) amount towards deduction of taxes.

3. Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

SCHEDULE - P
(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

(i) The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

(i) The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.
The insurance cover shall be not less than: Rs. [*****]

(ii) The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor’s performance of this Agreement excluding:

(a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and

(b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. **Insurance to be in joint names**

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractor and the Authority.

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,200 (two thousand and two hundred only)] mm for each kilometre.

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirement of maintenance mentioned in Schedule-E.

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, …….. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated ……. (the "Agreement"), for **"Name of work"** (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through …….. (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

***** End of the Document *****