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 108+610 to km 134+270 i.e. Songtal Village to Khuanggin 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	108.610	108.700	7.1	14	
2	108.700	108.800	9.3	14	
3	108.800	108.900	5.4	14	
4	108.900	109.000	6.1	14	
5	109.000	109.100	5.6	14	
6	109.100	109.200	6.9	14	
7	109.200	109.300	7.8	14	
8	109.300	109.400	5.6	14	
9	109.400	109.500	9.5	14	
10	109.500	109.600	6.9	14	
11	109.600	109.700	5.6	14	
12	109.700	109.800	7.3	14	
13	109.800	109.900	5.4	14	
14	109.900	110.000	6.2	14	
15	110.000	110.100	6.6	14	
16	110.100	110.200	5.4	14	
17	110.200	110.300	5.4	14	
18	110.300	110.400	5.4	14	
19	110.400	110.500	5.4	14	
20	110.500	110.600	5.3	14	
21	110.600	110.700	8.2	14	
22	110.700	110.800	5.5	14	
23	110.800	110.900	6.4	14	
24	110.900	111.000	4.4	14	
25	111.000	111.100	4	14	
26	111.100	111.200	4.2	14	
27	111.200	111.300	5.3	14	
28	111.300	111.400	6.1	14	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
29	111.400	111.500	6.9	14	
30	111.500	111.600	5.6	14	
31	111.600	111.700	6.2	14	
32	111.700	111.800	7.2	14	
33	111.800	111.900	6.4	14	
34	111.900	112.000	7.1	14	
35	112.000	112.100	7.5	14	
36	112.100	112.200	7.6	14	
37	112.200	112.300	6.2	14	
38	112.300	112.400	6.9	14	
39	112.400	112.500	8.5	14	
40	112.500	112.600	7.8	14	
41	112.600	112.700	7.8	14	
42	112.700	112.800	7.2	14	
43	112.800	112.900	6	14	
44	112.900	113.000	6.8	14	
45	113.000	113.100	7.4	14	
46	113.100	113.200	7.1	14	
47	113.200	113.300	7.2	14	
48	113.300	113.400	7.9	14	
49	113.400	113.500	6.7	14	
50	113.500	113.600	6.4	14	
51	113.600	113.700	5.6	14	
52	113.700	113.800	5	14	
53	113.800	113.900	8.8	14	
54	113.900	114.000	6	14	
55	114.000	114.100	6.8	14	
56	114.100	114.200	7.9	14	
57	114.200	114.300	7.6	14	
58	114.300	114.400	6.1	14	
59	114.400	114.500	7.4	14	
60	114.500	114.600	5.5	14	
61	114.600	114.700	6.4	14	
62	114.700	114.800	5.4	14	
63	114.800	114.900	5.9	14	
64	114.900	115.000	7.1	14	
65	115.000	115.100	6.5	14	
66	115.100	115.200	5.3	24	
67	115.200	115.300	7.2	24	
68	115.300	115.400	7	24	
69	115.400	115.500	6.9	24	
70	115.500	115.600	8.1	24	
71	115.600	115.700	6.8	24	
72	115.700	115.800	6.7	24	
73	115.800	115.900	6.3	24	
74	115.900	116.000	6.2	24	
75	116.000	116.100	6.6	24	
76	116.100	116.200	7.5	20	
77	116.200	116.300	5.8	20	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
78	116.300	116.400	7.6	20	
79	116.400	116.500	7.1	20	
80	116.500	116.600	7.1	20	
81	116.600	116.700	5.8	20	
82	116.700	116.800	5.8	20	
83	116.800	116.900	7.2	20	
84	116.900	117.000	5.6	20	
85	117.000	117.100	5.6	20	
86	117.100	117.200	5.7	20	
87	117.200	117.300	6.7	20	
88	117.300	117.400	6	20	
89	117.400	117.500	6.8	20	
90	117.500	117.600	5.6	20	
91	117.600	117.700	4.7	20	
92	117.700	117.800	5.4	20	
93	117.800	117.900	6.1	20	
94	117.900	118.000	7	20	
95	118.000	118.100	6.7	20	
96	118.100	118.200	6.3	20	
97	118.200	118.300	5.5	22	
98	118.300	118.400	6.1	22	
99	118.400	118.500	7.4	20	
100	118.500	118.600	6.5	20	
101	118.600	118.700	6.5	20	
102	118.700	118.800	6.9	20	
103	118.800	118.900	6.5	20	
104	118.900	119.000	6.4	20	
105	119.000	119.100	5.7	20	
106	119.500	119.600	4.9	22	
107	119.600	119.700	5.3	22	
108	119.700	119.800	6.5	22	
109	119.800	119.900	6.4	22	
110	119.900	120.000	6.9	22	
111	120.000	120.100	5.7	24	
112	120.100	120.200	7.8	24	
113	120.200	120.300	7.9	22	
114	120.300	120.400	7.2	22	
115	120.400	120.500	8.9	22	
116	120.500	120.600	7.1	22	
117	120.600	120.700	6.9	22	
118	120.700	120.800	8.5	20	
119	120.800	120.900	8.2	20	
120	120.900	121.000	8	20	
121	121.000	121.100	8.4	22	
122	121.100	121.200	8.5	22	
123	121.200	121.300	10.7	22	
124	121.300	121.400	8.6	22	
125	121.400	121.500	9.2	22	
126	121.500	121.600	10.4	20	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
127	121.600	121.700	10.5	20	
128	121.700	121.800	10.5	20	
129	121.800	121.900	12.8	20	
130	121.900	122.000	8.9	20	
131	122.000	122.100	9.1	22	
132	122.100	122.200	11.6	22	
133	122.200	122.300	8.3	22	
134	122.300	122.400	9.2	22	
135	122.400	122.500	7.9	22	
136	122.500	122.600	8.1	22	
137	122.600	122.700	9	22	
138	122.700	122.800	8.4	22	
139	122.800	122.900	10.1	22	
140	122.900	123.000	9.1	22	
141	123.000	123.100	7.3	22	
142	123.100	123.200	9.5	22	
143	123.200	123.300	10	22	
144	123.300	123.400	-	20	Realignment Stretch
145	123.400	123.500	-	20	
146	123.500	123.600	-	20	
147	123.600	123.700	-	22	
148	123.700	123.800	-	22	
149	123.800	123.900	-	22	
150	123.900	124.000	-	22	
151	124.000	124.100	-	22	
152	124.100	124.200	-	22	
153	124.200	124.300	-	22	
154	124.300	124.400	-	22	
155	124.400	124.500	-	22	
156	124.500	124.600	-	22	
157	124.600	124.700	-	22	
158	124.700	124.800	-	22	
159	124.800	124.900	-	24	
160	124.900	125.000	-	24	
161	125.000	125.100	-	24	
162	125.100	125.200	-	24	
163	125.200	125.300	-	24	
164	125.300	125.400	-	24	
165	125.400	125.500	-	24	
166	125.500	125.600	-	24	
167	125.600	125.700	-	24	
168	125.700	125.800	-	24	
169	125.800	125.900	-	24	
170	125.900	126.000	-	24	
171	126.000	126.100	-	24	
172	126.100	126.200	-	24	
173	126.200	126.300	-	24	
174	126.300	126.400	-	24	
175	126.400	126.500	-	24	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
176	126.500	126.600	-	24	
177	126.600	126.700	-	24	
178	126.700	126.800	-	24	
179	126.800	126.900	-	24	
180	126.900	127.000	-	24	
181	127.000	127.100	-	24	
182	127.100	127.200	-	24	
183	127.200	127.300	-	24	
184	127.300	127.400	-	24	
185	127.400	127.500	-	24	
186	127.500	127.600	-	24	
187	127.600	127.700	-	24	
188	127.700	127.800	-	24	
189	127.800	127.900	-	24	
190	127.900	128.000	-	24	
191	128.000	128.100	-	24	
192	128.100	128.200	-	24	
193	128.200	128.300	-	24	
194	128.300	128.400	-	24	
195	128.400	128.500	-	24	
196	128.500	128.600	-	24	
197	128.600	128.700	-	24	
198	128.700	128.800	-	24	
199	128.800	128.900	-	24	
200	128.900	129.000	-	24	
201	129.000	129.100	-	24	
202	129.100	129.200	-	24	
203	129.200	129.300	-	24	
204	129.300	129.400	-	24	
205	129.400	129.500	-	24	
206	129.500	129.600	-	24	
207	129.600	129.700	-	24	
208	129.700	129.800	-	24	
209	129.800	129.900	-	24	
210	129.900	130.000	-	24	
211	130.000	130.100	-	24	
212	130.100	130.200	-	24	
213	130.200	130.300	-	24	
214	130.300	130.400	-	24	
215	130.400	130.500	-	24	
216	130.500	130.600	-	24	
217	130.600	130.700	-	24	
218	130.700	130.800	-	24	
219	130.800	130.900	-	24	
220	130.900	131.000	-	24	
221	131.000	131.100	-	24	
222	131.100	131.200	-	24	
223	131.200	131.300	-	24	
224	131.300	131.400	-	24	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
225	131.400	131.500	-	24	
226	131.500	131.600	-	24	
227	131.600	131.700	-	24	
228	131.700	131.800	-	24	
229	131.800	131.900	-	24	
230	131.900	132.000	-	24	
231	132.000	132.100	-	24	
232	132.100	132.200	-	24	
233	132.200	132.300	-	22	
234	132.300	132.400	-	22	
235	132.400	132.500	-	22	
236	132.500	132.600	-	22	
237	132.600	132.700	-	22	
238	132.700	132.800	7.7	22	
239	132.800	132.900	7	22	
240	132.900	133.000	8.6	22	
241	133.000	133.100	8.9	22	
242	133.100	133.200	6.6	22	
243	133.200	133.300	6.3	22	
244	133.300	133.400	7.1	22	
245	133.400	133.500	6.4	22	
246	133.500	133.600	8.4	22	
247	133.600	133.700	7.7	22	
248	133.700	133.800	6.3	22	
249	133.800	133.900	7.8	22	
250	133.900	134.000	7.9	22	
251	134.000	134.100	8.4	22	
252	134.100	134.200	5.6	22	
253	134.200	134.270	6.5	22	

3. Carriageway

The present carriageway of the Project Highway is Two Lane from km 108+610 to km 134+270. 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	127.090	Open	Wall	Bailey Bridge	1x12.20	4.20
2	128.750	Open	Wall	Bailey Bridge	1x12.10	4.10

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	108.620	SLAB	1 X 5.3M	3.1
2	108.700	SLAB	COVERED BY SOIL	2.9
3	108.752	SLAB	1 X 4.5M	2.7
4	109.490	SLAB	1 X 1.7M	2.7
5	109.730	PIPE	1 X 1.2M	3

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
6	109.898	PIPE	1 X 1.2M	3.4
7	110.423	PIPE	1 X 1.2M	3
8	110.601	PIPE	1 X 1.2M	3.4
9	111.357	HP	1 X 1.0M	3
10	111.57	HP	1 X 1.0M	3
11	111.818	HP	1 X 1.0M	2.5
12	112.02	RCC	1 X 2.3M	2.7
13	112.14	HP	1 X 1.0M	3
14	112.377	HP	1 X 1.0M	3.4
15	112.559	HP	1 X 1.0M	3
16	112.795	HP	1 X 1.0M	3.2
17	112.99	RCC	1 X 2.7M	3.4
18	113.26	RCC	1 X 2.4M	3.1
19	113.462	HP	1 X 1.0M	2.9
20	113.673	HP	1 X 1.0M	2.7
21	113.905	RCC	1 X 5.3M	2.5
22	114.257	HP	1 X 1.0M	2.7
23	114.547	RCC	1 X 4.4M	3
24	114.675	RCC	1 X 4.2M	3.4
25	114.923	HP	1 X 1.0M	3
26	115.07	HP	1 X 1.0M	3.2
27	115.353	RCC	1 X 5.8M	3.4
28	115.575	RCC	1 X 1.7M	3.1
29	115.726	HP	1 X 1.0M	2.9
30	115.8	HP	1 X 1.0M	2.7
31	116.126	HP	1 X 1.0M	2.7
32	116.45	RCC	1 X 6.0M	2.7
33	116.577	RCC	1 X 2.5M	3
34	116.685	HP	1 X 1.0M	3.4
35	116.835	HP	1 X 1.0M	3
36	117.06	HP	1 X 1.0M	3.4
37	117.215	HP	1 X 1.0M	3
38	117.469	HP	1 X 1.0M	3
39	117.557	HP	1 X 1.0M	2.5
40	117.92	HP	1 X 1.0M	2.7
41	118.055	HP	1 X 1.0M	3
42	118.38	RCC	1 X 2.8M	3.4
43	118.447	HP	1 X 1.0M	3
44	118.523	HP	1 X 1.0M	3.2
45	118.647	HP	1 X 1.0M	3.4
46	118.699	HP	1 X 1.0M	3.1
47	118.977	HP	1 X 1.0M	2.9
48	119.16	HP	1 X 1.0M	2.7
49	119.645	HP	1 X 1.0M	2.5
50	119.76	HP	1 X 1.0M	2.7
51	119.899	RCC	1 X 1.0M	3
52	119.99	RCC	1 X 4.3M	3.4
53	120.36	RCC	1 X 4.2M	3
54	120.48	HP	1 X 1.0M	3.2

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
55	120.605	HP	1 X 1.0M	3.4
56	120.665	HP	1 X 1.0M	3.1
57	120.725	RCC	1 X 4.18M	2.9
58	120.972	HP	1 X 1.0M	2.7
59	121.11	HP	1 X 1.0M	3.4
60	121.305	HP	1 X 1.0M	3.1
61	121.447	HP	1 X 1.0M	2.9
62	121.652	HP	1 X 1.0M	2.7
63	121.82	HP	1 X 1.0M	2.5
64	123.005	RCC	1 X 4.12M	2.7
65	123.06	RCC	1 X 3.80M	3
66	123.48	RCC	1 X 3.04M	3.4
67	123.6	RCC	1 X 5.08M	3
68	123.73	HP	1 X 1.0M	3.2
69	123.83	RCC	1 X 3.92M	3
70	124.555	RCC	COVERED BY SOIL	3.4
71	125.1	HP	1 X 1.0M	3
72	125.18	RCC	1 X 2.75M	3.4
73	125.345	HP	COVERED BY SOIL	3
74	125.525	HP	1 X 1.0M	3
75	125.71	HP	1 X 1.0M	2.5
76	125.97	HP	1 X 1.0M	2.7
77	126.348	RCC	1 X 2.7M	3
78	126.475	RCC	1 X 3.75M	3.4
79	127.2	RCC	1 X 2.68M	3
80	127.45	RCC	1 X 2.30M	3
81	127.525	RCC	1 X 2.33M	2.5
82	127.63	RCC	1 X 2.68M	2.7
83	127.68	RCC	1 X 2.30M	3
84	127.78	RCC	1 X 2.33M	3.4
85	127.875	RCC	1 X 2.63M	3
86	128.48	RCC	1 X 2.37M	3
87	128.36	RCC	1 X 2.75M	2.5
88	128.565	RCC	1 X 2.33M	2.7
89	128.805	RCC	1 X 2.63M	3
90	129.24	RCC	1 X 2.68M	3.4
91	129.42	RCC	1 X 2.30M	3
92	129.473	RCC	1 X 2.33M	3.4
93	129.7	RCC	1 X 2.63M	3
94	130.3	RCC	1 X 2.37M	3
95	130.525	RCC	1 X 2.68M	2.5
96	130.75	RCC	1 X 2.30M	3.4
97	130.825	RCC	1 X 2.33M	3
98	131.025	RCC	1 X 2.63M	3
99	131.245	RCC	1 X 2.37M	2.5
100	131.59	RCC	1 X 2.75M	2.7
101	132.03	RCC	1 X 2.63M	3
102	132.299	RCC	1 X 2.37M	3.4
103	132.772	RCC	1 X 2.37M	3

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
104	133.065	RCC	1 X 2.75M	3
105	133.125	RCC	1 X 2.63M	3.4
106	133.41	RCC	1 X 2.37M	3
107	133.52	RCC	1 X 2.75M	3.4
108	133.81	HP	1 X 1.0M	3

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	108+610	134+270	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	114+105		T	3-Legged

Sl. No.	Location		Type of intersection	
	From Km	To Km	T-Junction	Cross Road
2	114+965		T	3-Legged
3	123+300		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	Songtal	103.525	120.350	7	As per Attached Drawing	7 m Carriageway
2	Songtal (RHS)	120.350	121.769			
3	Khuanggin (LHS)	120.350	121.769	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	103+505 to 103+538	Sharp Bend	Design Speed = 20 Kmph
2	103+579 to 103+589	Sharp Bend	Design Speed = 20 Kmph
3	103+631 to 103+684	Sharp Bend	Design Speed = 20 Kmph
4	104+222 to 104+270	Sharp Bend	Design Speed = 20 Kmph
5	104+342 to 104+395	Sharp Bend	Design Speed = 20 Kmph
6	104+523 to 104+545	Sharp Bend	Design Speed = 20 Kmph
7	104+591 to 104+604	Sharp Bend	Design Speed = 20 Kmph
8	104+727 to 104+740	Sharp Bend	Design Speed = 20 Kmph
9	104+785 to 104+815	Sharp Bend	Design Speed = 20 Kmph
10	105+139 to 105+149	Sharp Bend	Design Speed = 30 Kmph
11	105+214 to 105+225	Sharp Bend	Design Speed = 30 Kmph
12	105+285 to 105+289	Sharp Bend	Design Speed = 30 Kmph
13	105+321 to 105+337	Sharp Bend	Design Speed = 20 Kmph
14	105+457 to 105+490	Sharp Bend	Design Speed = 30 Kmph
15	105+527 to 105+541	Sharp Bend	Design Speed = 30 Kmph
16	105+586 to 105+594	Sharp Bend	Design Speed = 20 Kmph
17	105+687 to 105+693	Sharp Bend	Design Speed = 30 Kmph
18	106+348 to 106+374	Sharp Bend	Design Speed = 20 Kmph
19	106+997 to 107+016	Sharp Bend	Design Speed = 20 Kmph
20	107+092 to 107+109	Sharp Bend	Design Speed = 20 Kmph
21	107+150 to 107+168	Sharp Bend	Design Speed = 20 Kmph
22	107+266 to 107+285	Sharp Bend	Design Speed = 20 Kmph
23	107+309 to 107+332	Sharp Bend	Design Speed = 30 Kmph
24	107+647 to 107+665	Sharp Bend	Design Speed = 20 Kmph
25	107+696 to 107+717	Sharp Bend	Design Speed = 30 Kmph
26	107+740 to 107+761	Sharp Bend	Design Speed = 30 Kmph
27	107+787 to 107+794	Sharp Bend	Design Speed = 25 Kmph
28	107+875 to 107+901	Sharp Bend	Design Speed = 30 Kmph
29	107+941 to 107+965	Sharp Bend	Design Speed = 30 Kmph
30	108+009 to 108+012	Sharp Bend	Design Speed = 30 Kmph
31	108+104 to 108+118	Sharp Bend	Design Speed = 30 Kmph
32	108+151 to 108+166	Sharp Bend	Design Speed = 30 Kmph
33	108+206 to 108+216	Sharp Bend	Design Speed = 30 Kmph
34	108+588 to 108+602	Sharp Bend	Design Speed = 20 Kmph
35	108+625 to 108+720	Sharp Bend	Design Speed = 30 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
36	108+755 to 108+765	Sharp Bend	Design Speed = 30 Kmph
37	108+841 to 108+864	Sharp Bend	Design Speed = 30 Kmph
38	108+905 to 108+924	Sharp Bend	Design Speed = 30 Kmph
39	108+964 to 108+975	Sharp Bend	Design Speed = 30 Kmph
40	109+048 to 109+060	Sharp Bend	Design Speed = 30 Kmph
41	109+150 to 109+180	Sharp Bend	Design Speed = 30 Kmph
42	109+228 to 109+251	Sharp Bend	Design Speed = 20 Kmph
43	109+309 to 109+336	Sharp Bend	Design Speed = 20 Kmph
44	109+395 to 109+415	Sharp Bend	Design Speed = 30 Kmph
45	109+555 to 109+568	Sharp Bend	Design Speed = 30 Kmph
46	109+628 to 109+641	Sharp Bend	Design Speed = 30 Kmph
47	109+877 to 109+932	Sharp Bend	Design Speed = 30 Kmph
48	110+014 to 110+048	Sharp Bend	Design Speed = 20 Kmph
49	110+110 to 110+219	Sharp Bend	Design Speed = 20 Kmph
50	110+249 to 110+255	Sharp Bend	Design Speed = 20 Kmph
51	110+309 to 110+325	Sharp Bend	Design Speed = 30 Kmph
52	110+569 to 110+609	Sharp Bend	Design Speed = 20 Kmph
53	110+651 to 110+652	Sharp Bend	Design Speed = 30 Kmph
54	111+315 to 111+329	Sharp Bend	Design Speed = 20 Kmph
55	111+380 to 111+406	Sharp Bend	Design Speed = 20 Kmph
56	111+472 to 111+476	Sharp Bend	Design Speed = 30 Kmph
57	111+932 to 111+955	Sharp Bend	Design Speed = 20 Kmph
58	112+057 to 112+066	Sharp Bend	Design Speed = 30 Kmph
59	112+162 to 112+199	Sharp Bend	Design Speed = 30 Kmph
60	112+313 to 112+343	Sharp Bend	Design Speed = 20 Kmph
61	112+711 to 112+772	Sharp Bend	Design Speed = 30 Kmph
62	112+826 to 112+970	Sharp Bend	Design Speed = 30 Kmph
63	113+112 to 113+126	Sharp Bend	Design Speed = 30 Kmph
64	113+179 to 113+181	Sharp Bend	Design Speed = 30 Kmph
65	113+236 to 113+250	Sharp Bend	Design Speed = 20 Kmph
66	113+302 to 113+319	Sharp Bend	Design Speed = 20 Kmph
67	113+758 to 113+800	Sharp Bend	Design Speed = 20 Kmph
68	114+434 to 114+448	Sharp Bend	Design Speed = 20 Kmph
69	114+487 to 114+503	Sharp Bend	Design Speed = 20 Kmph
70	114+678 to 114+726	Sharp Bend	Design Speed = 20 Kmph
71	114+838 to 114+858	Sharp Bend	Design Speed = 20 Kmph
72	115+048 to 115+086	Sharp Bend	Design Speed = 30 Kmph
73	115+170 to 115+189	Sharp Bend	Design Speed = 30 Kmph
74	117+527 to 117+529	Sharp Bend	Design Speed = 30 Kmph
75	117+626 to 117+648	Sharp Bend	Design Speed = 20 Kmph
76	117+700 to 117+740	Sharp Bend	Design Speed = 20 Kmph
77	117+799 to 117+805	Sharp Bend	Design Speed = 30 Kmph
78	117+861 to 117+904	Sharp Bend	Design Speed = 20 Kmph
79	117+951 to 117+960	Sharp Bend	Design Speed = 30 Kmph
80	118+023 to 118+065	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
81	118+143 to 118+163	Sharp Bend	Design Speed = 20 Kmph
82	118+255 to 118+296	Sharp Bend	Design Speed = 30 Kmph
83	118+457 to 118+502	Sharp Bend	Design Speed = 20 Kmph
84	118+609 to 118+610	Sharp Bend	Design Speed = 30 Kmph
85	118+661 to 118+702	Sharp Bend	Design Speed = 20 Kmph
86	118+942 to 118+968	Sharp Bend	Design Speed = 30 Kmph
87	119+023 to 119+038	Sharp Bend	Design Speed = 30 Kmph
88	119+084 to 119+111	Sharp Bend	Design Speed = 20 Kmph
89	119+176 to 119+181	Sharp Bend	Design Speed = 20 Kmph
90	119+218 to 119+223	Sharp Bend	Design Speed = 20 Kmph
91	119+286 to 119+302	Sharp Bend	Design Speed = 20 Kmph
92	119+383 to 119+423	Sharp Bend	Design Speed = 30 Kmph
93	119+521 to 119+547	Sharp Bend	Design Speed = 20 Kmph
94	119+597 to 119+614	Sharp Bend	Design Speed = 20 Kmph
95	119+670 to 119+687	Sharp Bend	Design Speed = 20 Kmph
96	119+726 to 119+741	Sharp Bend	Design Speed = 20 Kmph
97	119+783 to 119+798	Sharp Bend	Design Speed = 20 Kmph
98	119+997 to 120+008	Sharp Bend	Design Speed = 30 Kmph
99	120+103 to 120+141	Sharp Bend	Design Speed = 20 Kmph
100	120+220 to 120+232	Sharp Bend	Design Speed = 20 Kmph
101	120+372 to 120+425	Sharp Bend	Design Speed = 30 Kmph
102	120+490 to 120+498	Sharp Bend	Design Speed = 30 Kmph
103	120+625 to 120+656	Sharp Bend	Design Speed = 30 Kmph
104	120+717 to 120+740	Sharp Bend	Design Speed = 20 Kmph
105	120+980 to 120+988	Sharp Bend	Design Speed = 30 Kmph
106	121+114 to 121+138	Sharp Bend	Design Speed = 20 Kmph
107	121+200 to 121+219	Sharp Bend	Design Speed = 20 Kmph
108	121+606 to 121+627	Sharp Bend	Design Speed = 20 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)	1150
TCS-2	Two Lane carriageway with hard shoulder and one side toe wall & one side retaining wall (existing pavement)	0
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)	0
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)	0
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)	3760
TCS-6A	Two Lane carriageway with hard shoulder and both side trapezoidal drain (realignment stretch)	1460
TCS-7	Two Lane carriageway with hard shoulder and one side trapezoidal drain (existing pavement)	4490
TCS-7A	Two Lane carriageway with hard shoulder and one side trapezoidal drain (realignment stretch)	690
TCS-8	Two Lane carriageway with hard shoulder and one side breast wall (existing pavement)	135
TCS-8A	Two Lane carriageway with hard shoulder and one side breast wall (realignment stretch)	0

TCS Type	Description	Length (m)
TCS-9	Two Lane carriageway with hard shoulder and one side breast wall & one side drain (existing pavement)	0
TCS-9A	Two Lane carriageway with hard shoulder and one side breast wall & one side drain (realignment stretch)	0
TCS-10	Two Lane carriageway with hard shoulder and one side retaining wall (existing pavement)	0
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)	3580
TCS-11A	Two Lane carriageway with hard shoulder and one side retaining wall & one side drain (realignment stretch)	1974
TCS-12	Two Lane carriageway with hard shoulder and one side retaining wall & one breast wall (existing pavement)	50
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)	40
TCS-13A	Two Lane carriageway with hard shoulder and both side retaining wall (realignment stretch)	25
TCS-14	Two Lane carriageway with hard shoulder and one side toe wall & one side breast wall (existing pavement)	0
TCS-15	Two Lane carriageway with hard shoulder and both side breast wall (existing pavement)	100
TCS-15A	Two Lane carriageway with hard shoulder and both side breast wall (realignment stretch)	0
TCS-16	Two Lane carriageway with hard shoulder and both side composite RE wall (existing pavement)	0
TCS-16A	Two Lane carriageway with hard shoulder and both side composite RE wall (realignment stretch)	150
TCS-17	Two Lane carriageway with hard shoulder and one side drain & one side composite RE wall (existing pavement)	0
TCS-17A	Two Lane carriageway with hard shoulder and one side drain & one side composite RE wall (realignment stretch)	640
Total Length =		**18244**

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
103525	103800	9.44	265.56	TCS-6
103800	103850		50	TCS-15
103850	104000	2.6	147.4	TCS-6
104000	104100		100	TCS-11
104100	104140		40	TCS-13
104140	104320	2.6	177.4	TCS-6
104320	104370	2.6	47.4	TCS-15
104370	104475		105	TCS-6
104475	104630		155	TCS-7
104630	104730	2.6	97.4	TCS-6
104730	104780		50	TCS-12
104780	105125	5.3	339.7	TCS-17A
105125	105200		75	TCS-11
105200	105250	2.7	47.3	TCS-11

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
105250	105350		100	TCS-11
105350	105450	2.7	97.3	TCS-17A
105450	105525		75	TCS-11
105525	105600		75	TCS-17A
105600	105640		37.4	TCS-16A
105640	105725	2.6	85	TCS-11
105725	105850		125	TCS-11
105850	105900	2.6	47.4	TCS-11
105900	105950		50	TCS-7
105950	106150		197.4	TCS-11
106150	106225	2.6	75	TCS-6
106225	106300		75	TCS-11
106300	106430	2.6	127.4	TCS-7
106430	106500		70	TCS-11
106500	106565		65	TCS-7
106565	106725	2.6	157.4	TCS-11
106725	106785	2.7	57.3	TCS-16A
106785	106850		65	TCS-6
106850	107250	5.2	394.8	TCS-7
107250	107290	2.6	37.4	TCS-11
107290	107340		50	TCS-7
107340	107420	2.7	77.3	TCS-6
107420	108200	12.88	767.12	TCS-7
108200	109350	19	1131	TCS-1
109350	109400	4.96	45.04	TCS-16A
109400	109590		190	TCS-6
109590	109625	2.6	32.4	TCS-11
109625	109720		95	TCS-7
109720	109850	2.6	127.4	TCS-11
109850	110250	6.84	393.16	TCS-7
110250	110630	7.8	372.2	TCS-6
110630	110750		120	TCS-7
110750	110800	2.6	47.4	TCS-11
110800	111050		250	TCS-7
111050	111100	6.84	43.16	TCS-11
111100	111440	6.44	333.56	TCS-7
111440	111580	2.7	137.3	TCS-11
111580	111670	2.7	90	TCS-7
111670	111720		47.3	TCS-11
111720	111740		20	TCS-7
111740	111900	2.6	157.4	TCS-11
111900	112025		125	TCS-7
112025	112110	2.6	82.4	TCS-11
112110	112150	2.6	37.4	TCS-7
112150	112425	2.6	272.4	TCS-11
112425	112575	2.6	147.4	TCS-7
112575	112630	2.6	52.4	TCS-11
112630	112690		60	TCS-7
112690	112740	2.6	47.4	TCS-11

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
112740	112875		135	TCS-8
112875	112975	3.84	96.16	TCS-11
112975	113050	2.6	72.4	TCS-7
113050	113090	2.7	37.3	TCS-11
113090	113185		95	TCS-11
113185	113340	5.2	149.8	TCS-7
113340	113370		30	TCS-11
113370	113420		50	TCS-7
113420	113440		20	TCS-11
113440	113575	2.6	132.4	TCS-7
113575	113650		75	TCS-11
113650	113775	2.6	122.4	TCS-6
113775	114175	7.9	392.1	TCS-11
114175	114260		85	TCS-7
114260	114435	5.3	169.7	TCS-11
114435	114700	5.2	259.8	TCS-6
114700	114765		65	TCS-11
114765	115015	2.6	247.4	TCS-6
115015	115230	10.16	204.84	TCS-11
115230	115600	5.2	364.8	TCS-6
115600	115680	2.6	77.4	TCS-11
115680	116025	5.2	339.8	TCS-7
116025	116150	2.6	122.4	TCS-6
116150	116475	2.6	322.4	TCS-7
116475	117500	15.12	1009.88	TCS-6
117500	117900	5.4	394.6	TCS-6A
117900	118020		120	TCS-17A
118020	118080		60	TCS-11A
118080	118175		95	TCS-11A
118175	118275		100	TCS-11A
118275	118670		395	TCS-6A
118670	118700	2.7	27.3	TCS-11A
118700	118725		25	TCS-13A
118725	119275	5.2	544.8	TCS-11A
119275	119360		85	TCS-7A
119360	119475		115	TCS-11A
119475	119540		65	TCS-6A
119540	119750	2.6	207.4	TCS-11A
119750	119825		75	TCS-7A
119825	119875		50	TCS-11A
119875	119920		45	TCS-7A
119920	120225	2.6	302.4	TCS-6A
120225	120450	80	145	TCS-11A
120450	120600		150	TCS-6A
120600	120725	3.84	121.16	TCS-11A
120725	120820	3.84	91.16	TCS-7A
120820	120870		50	TCS-11A
120870	121100		230	TCS-7A
121100	121160	3.84	56.16	TCS-11A

Chainage (m)		Length of CD	Net Length (m)	TCS No.
From	To			
121160	121250		90	TCS-7A
121250	121300		50	TCS-11A
121300	121370		70	TCS-7A
121370	121475	2.6	102.4	TCS-11A
121475	121620		145	TCS-6A
121620	121769		149	TCS-11A
Total Length		**349.54**	**17894**	

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	108+800	T-Type	Village Road
2	109+640	T-Type	Village Road
3	123+300	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 relevant 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	103+525 to 103+800	Reconstruction	TCS-6
2	103+800 to 103+850	Reconstruction	TCS-15
3	103+850 to 104+000	Reconstruction	TCS-6
4	104+000 to 104+100	Reconstruction	TCS-11
5	104+100 to 104+140	Reconstruction	TCS-13
6	104+140 to 104+320	Reconstruction	TCS-6
7	104+320 to 104+370	Reconstruction	TCS-15
8	104+370 to 104+475	Reconstruction	TCS-6
9	104+475 to 104+630	Reconstruction	TCS-7
10	104+630 to 104+730	Reconstruction	TCS-6

SL NO.	Stretch from Km to Km	Remarks	TCS Type
11	104+730 to 104+780	Reconstruction	TCS-12
12	105+125 to 105+200	Reconstruction	TCS-11
13	105+200 to 105+250	Reconstruction	TCS-11
14	105+250 to 105+350	Reconstruction	TCS-11
15	105+450 to 105+525	Reconstruction	TCS-11
16	105+640 to 105+725	Reconstruction	TCS-11
17	105+725 to 105+850	Reconstruction	TCS-11
18	105+850 to 105+900	Reconstruction	TCS-11
19	105+900 to 105+950	Reconstruction	TCS-7
20	105+950 to 106+150	Reconstruction	TCS-11
21	106+150 to 106+225	Reconstruction	TCS-6
22	106+225 to 106+300	Reconstruction	TCS-11
23	106+300 to 106+430	Reconstruction	TCS-7
24	106+430 to 106+500	Reconstruction	TCS-11
25	106+500 to 106+565	Reconstruction	TCS-7
26	106+565 to 106+725	Reconstruction	TCS-11
27	106+785 to 106+850	Reconstruction	TCS-6
28	106+850 to 107+250	Reconstruction	TCS-7
29	107+250 to 107+290	Reconstruction	TCS-11
30	107+290 to 107+340	Reconstruction	TCS-7
31	107+340 to 107+420	Reconstruction	TCS-6
32	107+420 to 108+200	Reconstruction	TCS-7
33	108+200 to 109+350	Reconstruction	TCS-1
34	109+400 to 109+590	Reconstruction	TCS-6
35	109+590 to 109+625	Reconstruction	TCS-11
36	109+625 to 109+720	Reconstruction	TCS-7
37	109+720 to 109+850	Reconstruction	TCS-11
38	109+850 to 110+250	Reconstruction	TCS-7
39	110+250 to 110+630	Reconstruction	TCS-6
40	110+630 to 110+750	Reconstruction	TCS-7
41	110+750 to 110+800	Reconstruction	TCS-11
42	110+800 to 111+050	Reconstruction	TCS-7
43	111+050 to 111+100	Reconstruction	TCS-11
44	111+100 to 111+440	Reconstruction	TCS-7
45	111+440 to 111+580	Reconstruction	TCS-11
46	111+580 to 111+670	Reconstruction	TCS-7
47	111+670 to 111+720	Reconstruction	TCS-11
48	111+720 to 111+740	Reconstruction	TCS-7
49	111+740 to 111+900	Reconstruction	TCS-11
50	111+900 to 112+025	Reconstruction	TCS-7
51	112+025 to 112+110	Reconstruction	TCS-11
52	112+110 to 112+150	Reconstruction	TCS-7
53	112+150 to 112+425	Reconstruction	TCS-11
54	112+425 to 112+575	Reconstruction	TCS-7
55	112+575 to 112+630	Reconstruction	TCS-11
56	112+630 to 112+690	Reconstruction	TCS-7
57	112+690 to 112+740	Reconstruction	TCS-11
58	112+740 to 112+875	Reconstruction	TCS-8

SL NO.	Stretch from Km to Km	Remarks	TCS Type
59	112+875 to 112+975	Reconstruction	TCS-11
60	112+975 to 113+050	Reconstruction	TCS-7
61	113+050 to 113+090	Reconstruction	TCS-11
62	113+090 to 113+185	Reconstruction	TCS-11
63	113+185 to 113+340	Reconstruction	TCS-7
64	113+340 to 113+370	Reconstruction	TCS-11
65	113+370 to 113+420	Reconstruction	TCS-7
66	113+420 to 113+440	Reconstruction	TCS-11
67	113+440 to 113+575	Reconstruction	TCS-7
68	113+575 to 113+650	Reconstruction	TCS-11
69	113+650 to 113+775	Reconstruction	TCS-6
70	113+775 to 114+175	Reconstruction	TCS-11
71	114+175 to 114+260	Reconstruction	TCS-7
72	114+260 to 114+435	Reconstruction	TCS-11
73	114+435 to 114+700	Reconstruction	TCS-6
74	114+700 to 114+765	Reconstruction	TCS-11
75	114+765 to 115+015	Reconstruction	TCS-6
76	115+015 to 115+230	Reconstruction	TCS-11
77	115+230 to 115+600	Reconstruction	TCS-6
78	115+600 to 115+680	Reconstruction	TCS-11
79	115+680 to 116+025	Reconstruction	TCS-7
80	116+025 to 116+150	Reconstruction	TCS-6
81	116+150 to 116+475	Reconstruction	TCS-7
82	116+475 to 117+500	Reconstruction	TCS-6

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)		
108200	109350	Both	2262
Total Length =			**2262**

RR Masonry Trapezoidal Drain

Chainage		Side	Net Length (m)
From (m)	To (m)		
103525	103800	Both	531
103850	104000	Both	295
104000	104100	Single	100
104140	104320	Both	355
104370	104475	Both	210
104475	104630	Single	155
104630	104730	Both	195
104780	105125	Single	340
105125	105200	Single	75

Chainage		Side	Net Length (m)
From (m)	To (m)		
105200	105250	Single	47
105250	105350	Single	100
105350	105450	Single	97
105450	105525	Single	75
105525	105600	Single	75
105640	105725	Single	82
105725	105850	Single	125
105850	105900	Single	47
105900	105950	Single	50
105950	106150	Single	200
106150	106225	Both	145
106225	106300	Single	75
106300	106430	Single	127
106430	106500	Single	70
106500	106565	Single	65
106565	106725	Single	157
106785	106850	Both	130
106850	107250	Single	395
107250	107290	Single	37
107290	107340	Single	50
107340	107420	Both	155
107420	108200	Single	767
109400	109590	Both	380
109590	109625	Single	32
109625	109720	Single	95
109720	109850	Single	127
109850	110250	Single	393
110250	110630	Both	744
110630	110750	Single	120
110750	110800	Single	47
110800	111050	Single	250
111050	111100	Single	43
111100	111440	Single	334
111440	111580	Single	137
111580	111670	Single	87
111670	111720	Single	50
111720	111740	Single	20
111740	111900	Single	157
111900	112025	Single	125
112025	112110	Single	82
112110	112150	Single	37
112150	112425	Single	272
112425	112575	Single	147
112575	112630	Single	52
112630	112690	Single	60
112690	112740	Single	47
112875	112975	Single	96
112975	113050	Single	72
113050	113090	Single	37

Chainage		Side	Net Length (m)
From (m)	To (m)		
113090	113185	Single	95
113185	113340	Single	150
113340	113370	Single	30
113370	113420	Single	50
113420	113440	Single	20
113440	113575	Single	132
113575	113650	Single	75
113650	113775	Both	245
113775	114175	Single	392
114175	114260	Single	85
114260	114435	Single	170
114435	114700	Both	520
114700	114765	Single	65
114765	115015	Both	495
115015	115230	Single	205
115230	115600	Both	730
115600	115680	Single	77
115680	116025	Single	340
116025	116150	Both	245
116150	116475	Single	322
116475	117500	Both	2020
117500	117900	Both	789
117900	118020	Single	120
118020	118080	Single	60
118080	118175	Single	95
118175	118275	Single	100
118275	118670	Both	790
118670	118700	Single	27
118725	119275	Single	545
119275	119360	Single	85
119360	119475	Single	115
119475	119540	Both	130
119540	119750	Single	207
119750	119825	Single	75
119825	119875	Single	50
119875	119920	Single	45
119920	120225	Both	605
120225	120450	Single	145
120450	120600	Both	300
120600	120725	Single	121
120725	120820	Single	91
120820	120870	Single	50
120870	121100	Single	230
121100	121160	Single	56
121160	121250	Single	90
121250	121300	Single	50
121300	121370	Single	70
121370	121475	Single	102
121475	121620	Both	290

Chainage		Side	Net Length (m)
From (m)	To (m)		
121620	121769	Single	149
Total Length =			**21422**

7 DESIGN OF STRUCTURES

(i) General

(a) All bridges, culverts and structures shall be designed and constructed in accordance with provision of the relevant 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 relevant 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	103.532	5.0 X 5.0	Single Span
2	103.600	2.0 X 2.0	Single Span
3	103.656	5.0 X 5.0	Single Span
4	104.366	2.0 X 2.0	Single Span
5	104.728	2.0 X 2.0	Single Span
6	105.240	2.0 X 3.0	Single Span
7	106.154	2.0 X 2.0	Single Span
8	106.350	2.0 X 2.0	Single Span
9	106.585	2.0 X 2.0	Single Span
10	106.880	2.0 X 2.0	Single Span
11	107.103	2.0 X 2.0	Single Span
12	107.274	2.0 X 2.0	Single Span
13	107.512	2.0 X 2.0	Single Span
14	107.703	3.0 X 3.0	Single Span
15	107.958	3.0 X 3.0	Single Span
16	108.159	2.0 X 2.0	Single Span
17	108.358	2.0 X 2.0	Single Span
18	108.597	5.0 X 3.0	Single Span
19	108.945	2.0 X 2.0	Single Span
20	109.240	4.0 X 4.0	Single Span
21	109.600	2.0 X 2.0	Single Span
22	109.750	2.0 X 2.0	Single Span
23	110.035	5.0 X 5.0	Single Span
24	110.256	2.0 X 2.0	Single Span
25	110.397	2.0 X 2.0	Single Span
26	110.462	2.0 X 2.0	Single Span
27	110.773	2.0 X 2.0	Single Span
28	111.084	5.0 X 5.0	Single Span
29	111.212	3.0 X 3.0	Single Span
30	111.321	2.0 X 2.0	Single Span
31	111.454	2.0 X 3.0	Single Span
32	111.668	2.0 X 3.0	Single Span
33	111.818	2.0 X 2.0	Single Span
34	112.061	2.0 X 2.0	Single Span
35	112.149	2.0 X 2.0	Single Span
36	112.484	2.0 X 2.0	Single Span
37	112.620	2.0 X 2.0	Single Span
38	112.948	3.0 X 3.0	Single Span

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
39	113.008	2.0 X 2.0	Single Span
40	113.187	2.0 X 2.0	Single Span
41	113.230	2.0 X 2.0	Single Span
42	113.502	2.0 X 2.0	Single Span
43	114.154	2.0 X 2.0	Single Span
44	114.270	2.0 X 2.0	Single Span
45	114.404	2.0 X 3.0	Single Span
46	114.930	2.0 X 2.0	Single Span
47	115.020	2.0 X 2.0	Single Span
48	115.078	2.0 X 2.0	Single Span
49	115.146	4.0 X 4.0	Single Span
50	115.386	2.0 X 2.0	Single Span
51	115.530	2.0 X 2.0	Single Span
52	115.660	2.0 X 2.0	Single Span
53	115.791	2.0 X 2.0	Single Span
54	115.996	2.0 X 2.0	Single Span
55	116.146	2.0 X 2.0	Single Span
56	117.281	4.0 X 4.0	Single Span
57	117.336	4.0 X 4.0	Single Span
58	120.683	3.0 X 3.0	Single Span
59	120.744	3.0 X 3.0	Single Span
60	121.121	3.0 X 3.0	Single Span
61	121.393	2.0 X 2.0	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	103.925	2.0 X 2.0	Single Span
2	104.149	2.0 X 2.0	Single Span
3	104.899	2.0 X 2.0	Single Span
4	105.070	2.0 X 3.0	Single Span
5	105.410	2.0 X 3.0	Single Span
6	105.645	2.0 X 2.0	Single Span
7	105.895	2.0 X 2.0	Single Span
8	106.760	2.0 X 3.0	Single Span
9	107.416	2.0 X 3.0	Single Span
10	108.296	2.0 X 3.0	Single Span
11	109.380	4.0 X 4.0	Single Span

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
12	112.342	2.0 X 2.0	Single Span
13	112.719	2.0 X 2.0	Single Span
14	113.075	2.0 X 3.0	Single Span
15	113.670	2.0 X 2.0	Single Span
16	113.817	2.0 X 3.0	Single Span
17	114.008	2.0 X 2.0	Single Span
18	114.520	2.0 X 2.0	Single Span
19	114.688	2.0 X 2.0	Single Span
20	116.432	2.0 X 2.0	Single Span
21	116.720	2.0 X 2.0	Single Span
22	116.985	2.0 X 2.0	Single Span
23	117.586	2.0 X 3.0	Single Span
24	117.729	2.0 X 3.0	Single Span
25	118.690	2.0 X 3.0	Single Span
26	118.999	2.0 X 2.0	Single Span
27	119.196	2.0 X 2.0	Single Span
28	119.555	2.0 X 2.0	Single Span
29	119.931	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 (Km)
1	120+306

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	56
2	Kilometer stones=	Nos	14
3	5th Kilometer stones=	Nos	4

Sl. No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
4	Boundary Stones=	Nos	185
5	Delineators (100 cm long and circular shaped)+Hazard marker =	Nos	988
6	Road Stud=	Nos	6807
7	900 mm Octagonal	Nos	4
8	600 mm circular	Nos	150
9	900 mm Triangular	Nos	380
10	800 mm x 600 mm rectangular	Nos	2
11	Direction Sign < 0.9 sqm	sqm	6
12	Direction Sign > 0.9 sqm	sqm	0
13	Convex Mirror for Blind Curve	Nos	3
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
1	121+769	16.0 m X 12.0 m

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)		
103800	103850	Both	100
104320	104370	Both	95
104730	104780	Single	50
112740	112875	Single	135
Total Length =			**380 m**

b) Retaining Wall

Chainage		Side	Net Length
From	To		
104000	104100	single	100
104100	104140	both	80
104730	104780	single	50
105125	105200	single	75

Chainage		Side	Net Length
From	To		
105200	105250	single	47
105250	105350	single	100
105450	105525	single	75
105640	105725	single	82
105725	105850	single	125
105850	105900	single	47
105950	106150	single	200
106225	106300	single	75
106430	106500	single	70
106565	106725	single	157
107250	107290	single	37
109590	109625	single	32
109720	109850	single	127
110750	110800	single	47
111050	111100	single	43
111440	111580	single	137
111670	111720	single	50
111740	111900	single	157
112025	112110	single	82
112150	112425	single	272
112575	112630	single	52
112690	112740	single	47
112875	112975	single	96
113050	113090	single	37
113090	113185	single	95
113340	113370	single	30
113420	113440	single	20
113575	113650	single	75
113775	114175	single	392
114260	114435	single	170
114700	114765	single	65
115015	115230	single	205
115600	115680	single	77
118020	118080	single	60
118080	118175	single	95
118175	118275	single	100
118670	118700	single	27
118700	118725	both	50
118725	119275	single	545
119360	119475	single	115
119540	119750	single	207
119825	119875	single	50
120225	120450	single	145
120600	120725	single	121
120820	120870	single	50
121100	121160	single	56
121250	121300	single	50
121370	121475	single	102
121620	121769	single	149

Chainage		Side	Net Length
From	To		
Total Length =			5557 m

c) Composite RE Wall

Chainage		Side	Net Length (m)
From (m)	To (m)		
104780	105125	Single	340
105350	105450	Single	97
105525	105600	Single	75
105600	105640	Both	80
106725	106785	Both	115
109350	109400	Both	90
117900	118020	Single	120
Total Length =			917 m

d) Metal Beam Crash Barrier

Chainage		Side	Net Length
From	To		
104000	104100	single	100
104100	104140	both	80
104730	104780	single	50
105125	105200	single	75
105200	105250	single	47
105250	105350	single	100
105450	105525	single	75
105640	105725	single	82
105725	105850	single	125
105850	105900	single	47
105950	106150	single	200
106225	106300	single	75
106430	106500	single	70
106565	106725	single	157
107250	107290	single	37
109590	109625	single	32
109720	109850	single	127
110750	110800	single	47
111050	111100	single	43
111440	111580	single	137
111670	111720	single	50
111740	111900	single	157
112025	112110	single	82
112150	112425	single	272
112575	112630	single	52
112690	112740	single	47
112875	112975	single	96
113050	113090	single	37
113090	113185	single	95
113340	113370	single	30
113420	113440	single	20
113575	113650	single	75

Chainage		Side	Net Length
From	To		
113775	114175	single	392
114260	114435	single	170
114700	114765	single	65
115015	115230	single	205
115600	115680	single	77
118020	118080	single	60
118080	118175	single	95
118175	118275	single	100
118670	118700	single	27
118700	118725	both	50
118725	119275	single	545
119360	119475	single	115
119540	119750	single	207
119825	119875	single	50
120225	120450	single	145
120600	120725	single	121
120820	120870	single	50
121100	121160	single	56
121250	121300	single	50
121370	121475	single	102
121620	121769	single	149
Total Length =			**5557 m**

e) Hydro seeding and Turfing

Protection Type	Total Quantity(unit)
Hydro seeding	3038 sq m
Turfing	24853 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

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	109+480 (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)

f) Rest Areas

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

g) Others to be specified

Street Lighting:
Total 56 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.

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</td><td colspan="5">Extra Widening has been proposed as per IRC: SP: 48-1998 (Table 6.9) of Hill Road Manual.
Radius | Extra</td></tr>
</table>

Item	Manual Clause Reference	Provision as per Manual		Modified Provision	
			Widening		Widening
		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	103+505 to 103+538	Sharp Bend	Design Speed = 20 Kmph
2	103+579 to 103+589	Sharp Bend	Design Speed = 20 Kmph
3	103+631 to 103+684	Sharp Bend	Design Speed = 20 Kmph
4	104+222 to 104+270	Sharp Bend	Design Speed = 20 Kmph
5	104+342 to 104+395	Sharp Bend	Design Speed = 20 Kmph
6	104+523 to 104+545	Sharp Bend	Design Speed = 20 Kmph
7	104+591 to 104+604	Sharp Bend	Design Speed = 20 Kmph
8	104+727 to 104+740	Sharp Bend	Design Speed = 20 Kmph
9	104+785 to 104+815	Sharp Bend	Design Speed = 20 Kmph
10	105+139 to 105+149	Sharp Bend	Design Speed = 30 Kmph
11	105+214 to 105+225	Sharp Bend	Design Speed = 30 Kmph
12	105+285 to 105+289	Sharp Bend	Design Speed = 30 Kmph
13	105+321 to 105+337	Sharp Bend	Design Speed = 20 Kmph
14	105+457 to 105+490	Sharp Bend	Design Speed = 30 Kmph
15	105+527 to 105+541	Sharp Bend	Design Speed = 30 Kmph
16	105+586 to 105+594	Sharp Bend	Design Speed = 20 Kmph
17	105+687 to 105+693	Sharp Bend	Design Speed = 30 Kmph
18	106+348 to 106+374	Sharp Bend	Design Speed = 20 Kmph
19	106+997 to 107+016	Sharp Bend	Design Speed = 20 Kmph
20	107+092 to 107+109	Sharp Bend	Design Speed = 20 Kmph
21	107+150 to 107+168	Sharp Bend	Design Speed = 20 Kmph
22	107+266 to 107+285	Sharp Bend	Design Speed = 20 Kmph
23	107+309 to 107+332	Sharp Bend	Design Speed = 30 Kmph
24	107+647 to 107+665	Sharp Bend	Design Speed = 20 Kmph
25	107+696 to 107+717	Sharp Bend	Design Speed = 30 Kmph
26	107+740 to 107+761	Sharp Bend	Design Speed = 30 Kmph
27	107+787 to 107+794	Sharp Bend	Design Speed = 25 Kmph
28	107+875 to 107+901	Sharp Bend	Design Speed = 30 Kmph
29	107+941 to 107+965	Sharp Bend	Design Speed = 30 Kmph
30	108+009 to 108+012	Sharp Bend	Design Speed = 30 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
31	108+104 to 108+118	Sharp Bend	Design Speed = 30 Kmph
32	108+151 to 108+166	Sharp Bend	Design Speed = 30 Kmph
33	108+206 to 108+216	Sharp Bend	Design Speed = 30 Kmph
34	108+588 to 108+602	Sharp Bend	Design Speed = 20 Kmph
35	108+625 to 108+720	Sharp Bend	Design Speed = 30 Kmph
36	108+755 to 108+765	Sharp Bend	Design Speed = 30 Kmph
37	108+841 to 108+864	Sharp Bend	Design Speed = 30 Kmph
38	108+905 to 108+924	Sharp Bend	Design Speed = 30 Kmph
39	108+964 to 108+975	Sharp Bend	Design Speed = 30 Kmph
40	109+048 to 109+060	Sharp Bend	Design Speed = 30 Kmph
41	109+150 to 109+180	Sharp Bend	Design Speed = 30 Kmph
42	109+228 to 109+251	Sharp Bend	Design Speed = 20 Kmph
43	109+309 to 109+336	Sharp Bend	Design Speed = 20 Kmph
44	109+395 to 109+415	Sharp Bend	Design Speed = 30 Kmph
45	109+555 to 109+568	Sharp Bend	Design Speed = 30 Kmph
46	109+628 to 109+641	Sharp Bend	Design Speed = 30 Kmph
47	109+877 to 109+932	Sharp Bend	Design Speed = 30 Kmph
48	110+014 to 110+048	Sharp Bend	Design Speed = 20 Kmph
49	110+110 to 110+219	Sharp Bend	Design Speed = 20 Kmph
50	110+249 to 110+255	Sharp Bend	Design Speed = 20 Kmph
51	110+309 to 110+325	Sharp Bend	Design Speed = 30 Kmph
52	110+569 to 110+609	Sharp Bend	Design Speed = 20 Kmph
53	110+651 to 110+652	Sharp Bend	Design Speed = 30 Kmph
54	111+315 to 111+329	Sharp Bend	Design Speed = 20 Kmph
55	111+380 to 111+406	Sharp Bend	Design Speed = 20 Kmph
56	111+472 to 111+476	Sharp Bend	Design Speed = 30 Kmph
57	111+932 to 111+955	Sharp Bend	Design Speed = 20 Kmph
58	112+057 to 112+066	Sharp Bend	Design Speed = 30 Kmph
59	112+162 to 112+199	Sharp Bend	Design Speed = 30 Kmph
60	112+313 to 112+343	Sharp Bend	Design Speed = 20 Kmph
61	112+711 to 112+772	Sharp Bend	Design Speed = 30 Kmph
62	112+826 to 112+970	Sharp Bend	Design Speed = 30 Kmph
63	113+112 to 113+126	Sharp Bend	Design Speed = 30 Kmph
64	113+179 to 113+181	Sharp Bend	Design Speed = 30 Kmph
65	113+236 to 113+250	Sharp Bend	Design Speed = 20 Kmph
66	113+302 to 113+319	Sharp Bend	Design Speed = 20 Kmph
67	113+758 to 113+800	Sharp Bend	Design Speed = 20 Kmph
68	114+434 to 114+448	Sharp Bend	Design Speed = 20 Kmph
69	114+487 to 114+503	Sharp Bend	Design Speed = 20 Kmph
70	114+678 to 114+726	Sharp Bend	Design Speed = 20 Kmph
71	114+838 to 114+858	Sharp Bend	Design Speed = 20 Kmph
72	115+048 to 115+086	Sharp Bend	Design Speed = 30 Kmph
73	115+170 to 115+189	Sharp Bend	Design Speed = 30 Kmph
74	117+527 to 117+529	Sharp Bend	Design Speed = 30 Kmph
75	117+626 to 117+648	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
76	117+700 to 117+740	Sharp Bend	Design Speed = 20 Kmph
77	117+799 to 117+805	Sharp Bend	Design Speed = 30 Kmph
78	117+861 to 117+904	Sharp Bend	Design Speed = 20 Kmph
79	117+951 to 117+960	Sharp Bend	Design Speed = 30 Kmph
80	118+023 to 118+065	Sharp Bend	Design Speed = 20 Kmph
81	118+143 to 118+163	Sharp Bend	Design Speed = 20 Kmph
82	118+255 to 118+296	Sharp Bend	Design Speed = 30 Kmph
83	118+457 to 118+502	Sharp Bend	Design Speed = 20 Kmph
84	118+609 to 118+610	Sharp Bend	Design Speed = 30 Kmph
85	118+661 to 118+702	Sharp Bend	Design Speed = 20 Kmph
86	118+942 to 118+968	Sharp Bend	Design Speed = 30 Kmph
87	119+023 to 119+038	Sharp Bend	Design Speed = 30 Kmph
88	119+084 to 119+111	Sharp Bend	Design Speed = 20 Kmph
89	119+176 to 119+181	Sharp Bend	Design Speed = 20 Kmph
90	119+218 to 119+223	Sharp Bend	Design Speed = 20 Kmph
91	119+286 to 119+302	Sharp Bend	Design Speed = 20 Kmph
92	119+383 to 119+423	Sharp Bend	Design Speed = 30 Kmph
93	119+521 to 119+547	Sharp Bend	Design Speed = 20 Kmph
94	119+597 to 119+614	Sharp Bend	Design Speed = 20 Kmph
95	119+670 to 119+687	Sharp Bend	Design Speed = 20 Kmph
96	119+726 to 119+741	Sharp Bend	Design Speed = 20 Kmph
97	119+783 to 119+798	Sharp Bend	Design Speed = 20 Kmph
98	119+997 to 120+008	Sharp Bend	Design Speed = 30 Kmph
99	120+103 to 120+141	Sharp Bend	Design Speed = 20 Kmph
100	120+220 to 120+232	Sharp Bend	Design Speed = 20 Kmph
101	120+372 to 120+425	Sharp Bend	Design Speed = 30 Kmph
102	120+490 to 120+498	Sharp Bend	Design Speed = 30 Kmph
103	120+625 to 120+656	Sharp Bend	Design Speed = 30 Kmph
104	120+717 to 120+740	Sharp Bend	Design Speed = 20 Kmph
105	120+980 to 120+988	Sharp Bend	Design Speed = 30 Kmph
106	121+114 to 121+138	Sharp Bend	Design Speed = 20 Kmph
107	121+200 to 121+219	Sharp Bend	Design Speed = 20 Kmph
108	121+606 to 121+627	Sharp Bend	Design Speed = 20 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	617	71+932 to 71+938	60
2	638	74+225 to 74+241	70
3	670	78+162 to 78+244	70
4	671	78+350 to 78+365	60
5	677	78+810 to 78+865	70
6	684	79+508 to 79+515	50

Sl No.	HIP No.	Stretch (from km to km)	Radius
7	693	80+623 to 80+632	60
8	694	80+786 to 80+808	50
9	695	80+898 to 80+915	50
10	699	81+416 to 81+431	60
11	700	81+502 to 81+527	60
12	703	81+938 to 81+960	60
13	715	83+189 to 83+198	70
14	718	83+463 to 83+498	70
15	727	84+310 to 84+428	66
16	728	84+603 to 84+655	70
17	733	85+286 to 85+295	60
18	736	85+559 to 85+582	60
19	757	87+392 to 87+407	60
20	758	87+545 to 87+566	50
21	776	89+508 to 89+527	60
22	778	89+755 to 89+771	50
23	781	90+062 to 90+089	60
24	782	90+270 to 90+293	60
25	783	90+436 to 90+453	50
26	787	90+828 to 90+833	70
27	788	90+912 to 90+915	50
28	797	91+927 to 91+927	50
29	800	92+195 to 92+200	60
30	826	94+838 to 94+856	60
31	827	94+927 to 94+935	60
32	833	95+493 to 95+502	60
33	837	95+986 to 96+013	50
34	839	96+231 to 96+257	60
35	848	96+936 to 97+026	70
36	851	97+425 to 97+435	60
37	853	97+557 to 97+577	50
38	868	98+847 to 98+910	70
39	870	99+071 to 99+189	70
40	875	99+681 to 99+701	60
41	877	99+902 to 99+960	60
42	887	100+645 to 100+658	60
43	888	100+716 to 100+719	60
44	911	103+505 to 103+538	30
45	912	103+579 to 103+589	30
46	913	103+631 to 103+684	30
47	914	103+776 to 103+800	50
48	915	103+946 to 103+953	50
49	917	104+222 to 104+270	30
50	918	104+342 to 104+395	30
51	919	104+523 to 104+545	40
52	920	104+591 to 104+604	20

Sl No.	HIP No.	Stretch (from km to km)	Radius
53	921	104+727 to 104+740	20
54	922	104+785 to 104+815	30
55	924	105+039 to 105+043	50
56	925	105+139 to 105+149	30
57	926	105+214 to 105+225	40
58	927	105+285 to 105+289	60
59	928	105+321 to 105+337	20
60	929	105+457 to 105+490	40
61	931	105+586 to 105+594	20
62	932	105+687 to 105+693	40
63	938	106+348 to 106+374	20
64	943	106+997 to 107+016	30
65	944	107+092 to 107+109	30
66	945	107+150 to 107+168	30
67	946	107+266 to 107+285	30
68	950	107+647 to 107+665	30
69	951	107+696 to 107+717	50
70	953	107+787 to 107+794	30
71	954	107+875 to 107+901	60
72	955	107+941 to 107+965	60
73	956	108+009 to 108+012	40
74	957	108+104 to 108+118	40
75	958	108+151 to 108+166	40
76	959	108+206 to 108+216	60
77	961	108+457 to 108+462	60
78	962	108+588 to 108+602	25
79	964	108+755 to 108+765	50
80	965	108+841 to 108+864	50
81	967	108+964 to 108+975	50
82	968	109+048 to 109+060	50
83	970	109+228 to 109+251	20
84	971	109+309 to 109+336	20
85	972	109+395 to 109+415	50
86	973	109+555 to 109+568	50
87	974	109+628 to 109+641	70
88	977	109+877 to 109+932	50
89	978	110+014 to 110+048	20
90	980	110+249 to 110+255	20
91	981	110+309 to 110+325	50
92	984	110+569 to 110+609	20
93	988	111+102 to 111+106	60
94	990	111+315 to 111+329	20
95	991	111+380 to 111+406	40
96	992	111+472 to 111+476	50
97	995	111+932 to 111+955	20
98	996	112+057 to 112+066	50

Sl No.	HIP No.	Stretch (from km to km)	Radius
99	997	112+162 to 112+199	40
100	998	112+313 to 112+343	20
101	1001	112+711 to 112+772	40
102	1003	113+112 to 113+126	30
103	1004	113+179 to 113+181	40
104	1005	113+236 to 113+250	20
105	1006	113+302 to 113+319	20
106	1011	113+758 to 113+800	20
107	1017	114+344 to 114+351	50
108	1018	114+434 to 114+448	40
109	1019	114+487 to 114+503	30
110	1020	114+678 to 114+726	20
111	1021	114+838 to 114+858	40
112	1022	115+048 to 115+086	40
113	1023	115+170 to 115+189	40
114	1028	115+898 to 115+899	60
115	1029	115+987 to 116+001	60
116	1033	116+382 to 116+423	50
117	1038	117+116 to 117+150	50
118	1041	117+527 to 117+529	50
119	1042	117+626 to 117+648	20
120	1043	117+700 to 117+740	20
121	1044	117+799 to 117+805	50
122	1045	117+861 to 117+904	20
123	1046	117+951 to 117+960	60
124	1047	118+023 to 118+065	20
125	1048	118+143 to 118+163	20
126	1049	118+255 to 118+296	60
127	1050	118+457 to 118+502	20
128	1051	118+609 to 118+610	50
129	1052	118+661 to 118+702	20
130	1054	118+942 to 118+968	50
131	1055	119+023 to 119+038	40
132	1056	119+084 to 119+111	20
133	1057	119+176 to 119+181	30
134	1058	119+218 to 119+223	30
135	1059	119+286 to 119+302	30
136	1060	119+383 to 119+423	60
137	1061	119+521 to 119+547	20
138	1062	119+597 to 119+614	30
139	1063	119+670 to 119+687	20
140	1064	119+726 to 119+741	30
141	1065	119+783 to 119+798	30
142	1067	119+997 to 120+008	40
143	1068	120+103 to 120+141	20
144	1069	120+220 to 120+232	25

Sl No.	HIP No.	Stretch (from km to km)	Radius
145	1070	120+372 to 120+425	40
146	1071	120+490 to 120+498	60
147	1072	120+625 to 120+656	60
148	1073	120+717 to 120+740	20
149	1075	120+980 to 120+988	40
150	1076	121+114 to 121+138	20
151	1077	121+200 to 121+219	20
152	1079	121+606 to 121+627	20

(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

			5	w > 6 mm, usually associated with spelling, and/or slab rocking under traffic	Within 15 days Not Applicable, as it may be full depth	reconstruct affected. Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
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		

			2	t = 1 – 0.6 mm		Not Applicable
			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		
			3	d = 100 - 300 mm; h < 100 mm n < 1 per 5 m^2	Partial depth repair 110mm	
			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 1 2 3 4 5	Nil, not discernible h < 6 mm h = 6 - 12 mm h = 12 - 25 mm h > 25 mm shattered slabs, ie 4 or more pieces	No Action Install Signs to Warn Traffic within 7 days Full Depth Repair. Within 30 days Replace broken slabs. Within 30 days	
15	Depression	h = negative vertical displacement from normal profile L =length	0 1	Not discernible, h < 5 mm h = 5 - 15 mm	No action.	

			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	49.07 %	**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	27.35%
		(2) Sub-base Course	23%
		(3) Non bituminous Base course	13.65%
		(4) Bituminous Basecourse	11.91%
		(5) Wearing Coat	6.84%
		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)	17.25%
Minor bridge/ Underpasses/ Overpasses	NIL	**A.1-widening and repairing of Minor Bridges (length >6 m&<60m)**	
		Minor Bridges	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		A.2- New Minor bridges (length >6 mand<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]
		(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	3.58 %	**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 pitching and protection works)	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		A.2-NewMajorBridges	
		(1)Foundation	19.58%
		(2)Sub-structure	22.12%
		(3)Super-structure(including bearings)	48.81%
		(4)Wearing Coat including expansion joints	4.56%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	2.39%
		(6) Wing walls/return walls	[Nil]
		(7)Guide Bunds, River Training works etc.	0.28%
		(8)Approaches(including Retaining walls, stone pitching and protection works)	2.26%
		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	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		walls/Reinforced Earth wall, stone pitching and 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	47.34 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	12.71%
		(iii) Road signs, markings, km stones, safety devices etc	1.47%
		(iv) Project facilities	
		a) Bus Bays	0.3 %
		b) Truck Lay-byes	[Nil]
		c) Passenger Shelter	0.04%
		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	1.21%
		(ix) Toe Wall	[Nil]
		(x) Retaining Wall	26.73%
		(xi) Boundary wall	[Nil]
		(xii) Site Clearance & Dismantling	0.54%
		(xiii) Protection Works	2.05 %
		(xiv) Composite RE Wall	54.95%

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	27.35%	
(2) Sub-base Course	23%	
(3) Non bituminous Base course	13.65%	
(4) Bituminous Base course	11.91%	
(5) Wearing Coat	6.84%	
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 culvert shall be determined on pro-rata basis with respect to the total number of culverts.
Culverts (length <6m)	17.05%	

Stage of Payment	Percentage weightage	Payment Procedure
		Payment shall be made on the completion of at least five culverts

@ 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 of Payment	Weightage	Payment Procedure
		stage specified as above
(3)Approaches :On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	[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 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	19.58%	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	22.12%	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)	48.81%	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	4.56%	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.	2.39%	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.	0.28%	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)	2.26%	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	12.71%	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.	1.47%	
(4) Project Facilities		Payment shall be made on pro-rata basis for

Stage of Payment	Weightage	Payment Procedure
a) Bus Bays	0.3%	completed facilities.
b) Truck Lay-byes	[Nil]	
c) Passenger Shelter	0.04%	
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	26.73%	
(b) Breast Wall	1.21%	
(c) Toe Wall	NIL	
(9) Site Clearance & Dismantling	0.54%	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	2.05%	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.
(11)Composite RE Wall	54.95%	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 *****