Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

1.1 2-lane/2-lane with Paved Shoulder shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

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

1.3 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 8.2.1 of this Agreement.

1.4 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.

1.5 The status of the environment clearances obtained or awaited is given in Annex - IV.

Annexure - 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 with paved shoulder Project Highway comprises the section of National Highway – 223 is divided into three stretches which is not continous i.e. 1st stretch after Middle Strait at Km 107.760 to Humphrey bridge at Km 129.445, 2nd stretch after the Humphrey bridge at Km 130.600 to Kadamtala at Km 138.00 and 3rd stretch from end of Jarwa at Km 155 to Rangat at Km 181 in the Union Territory of Andaman & Nicobar Islands. The land, carriageway and structures comprises 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:

Land Details (Km 107.760 to 129.445 & Km 130.600 to 138)

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
1	107.700	6	9	15	Nilambur
2	107.800	11.5	10	21.5	
3	107.900	9	10	19	
4	108.000	10	7	17	
5	108.100	9	10	19	
6	108.200	9.5	9.5	19	
7	108.300	10	8	18	
8	108.400	10	14	24	
9	108.500	9	12	21	Kanchangarh
10	108.600	10	8	18	
11	108.700	10	8	18	
12	108.800	9.5	9.5	19	
13	108.900	9	10.5	19.5	
14	109.000	8	8	16	
15	109.100	9	13	22	
16	109.200	9	7.5	16.5	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
17	109.300	7	6	13	
18	109.400	9	10	19	
19	109.500	7.5	7.5	15	
20	109.600	7	7	14	
21	109.700	7	8	15	
22	109.800	8.5	9	17.5	
23	109.900	10	7	17	
24	110.000	9	7	16	
25	110.100	7	9	16	
26	110.200	11	7.5	18.5	
27	110.300	7	9	16	
28	110.400	12	7.5	19.5	
29	110.500	9.5	10	19.5	
30	110.600	9	13	22	
31	110.700	10.5	13	23.5	
32	110.800	12	9	21	
33	110.900	8.5	8	16.5	
34	111.000	5.5	5	10.5	Sundergarh
35	111.100	6	5.5	11.5	
36	111.200	6.5	5	11.5	
37	111.300	7	7	14	
38	111.400	8.5	6.5	15	
39	111.500	6	7	13	
40	111.600	8	8	16	
41	111.700	12	12	24	
42	111.800	13	13	26	
43	111.900	12.5	12.5	25	
44	112.000	12.5	12.5	25	
45	112.100	12.5	10.5	23	
46	112.200	12.5	11	23.5	
47	112.300	10.5	8.5	19	
48	112.400	8	8	16	
49	112.500	10	10	20	
50	112.600	13	12	25	
51	112.700	12.5	12.5	25	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
52	112.800	12.5	12.5	25	
53	112.900	12	8	20	
54	113.000	10	10	20	
55	113.100	15	15	30	
56	113.200	15	15	30	
57	113.300	15	15	30	
58	113.400	15	15	30	
59	113.500	15	15	30	
60	113.600	15	15	30	
61	113.700	15	15	30	
62	113.800	15	15	30	
63	113.900	15	15	30	
64	114.000	15	15	30	
65	114.100	15	15	30	
66	114.200	15	15	30	
67	114.300	15	15	30	
68	114.400	15	15	30	
69	114.500	15	15	30	
70	114.600	15	15	30	
71	114.700	15	15	30	
72	114.800	15	15	30	
73	114.900	15	15	30	
74	115.000	15	15	30	
75	115.100	15	15	30	
76	115.200	15	15	30	
77	115.300	15	15	30	
78	115.400	15	15	30	
79	115.500	15	15	30	
80	115.600	15	15	30	
81	115.700	15	15	30	
82	115.800	15	15	30	
83	115.900	15	15	30	
84	116.000	15	15	30	
85	116.100	15	15	30	
86	116.200	15	15	30	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
87	116.300	15	15	30	
88	116.400	15	15	30	
89	116.500	15	15	30	
90	116.600	15	15	30	
91	116.700	15	15	30	
92	116.800	15	15	30	
93	116.900	15	15	30	
94	117.000	15	15	30	
95	117.100	15	15	30	
96	117.200	15	15	30	
97	117.300	15	15	30	
98	117.400	15	15	30	
99	117.500	15	15	30	
100	117.600	15	15	30	
101	117.700	15	15	30	
102	117.800	15	15	30	
103	117.900	15	15	30	
104	118.000	15	15	30	
105	118.100	15	15	30	
106	118.200	15	15	30	
107	118.300	15	15	30	
108	118.400	15	15	30	
109	118.500	15	15	30	
110	118.600	15	15	30	
111	118.700	15	15	30	
112	118.800	15	15	30	
113	118.900	15	15	30	
114	119.000	15	15	30	
115	119.100	15	15	30	
116	119.200	15	15	30	
117	119.300	15	15	30	
118	119.400	15	15	30	
119	119.500	15	15	30	
120	119.600	15	15	30	
121	119.700	15	15	30	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
122	119.800	15	15	30	
123	119.900	15	15	30	
124	120.000	15	15	30	
125	120.100	15	15	30	
126	120.200	15	15	30	
127	120.300	15	15	30	
128	120.400	15	15	30	
129	120.500	15	15	30	
130	120.600	15	15	30	
131	120.700	15	15	30	
132	120.800	15	15	30	
133	120.900	15	15	30	
134	121.000	15	15	30	
135	121.100	15	15	30	
136	121.200	15	15	30	
137	121.300	15	15	30	
138	121.400	15	15	30	
139	121.500	15	15	30	
140	121.600	15	15	30	
141	121.700	15	15	30	
142	121.800	15	15	30	
143	121.900	15	15	30	
144	122.000	15	15	30	
145	122.100	15	15	30	
146	122.200	15	15	30	
147	122.300	15	15	30	
148	122.400	15	15	30	
149	122.500	15	15	30	Adajig
150	122.600	11	13	24	
151	122.700	10	12	22	
152	122.800	9	14	23	
153	122.900	11	11	22	
154	123.000	12.5	12.5	25	
155	123.100	12.5	12.5	25	
156	123.200	13	14	27	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
157	123.300	11	13	24	
158	123.400	10	12	22	
159	123.500	12	13	25	
160	123.600	12	10	22	
161	123.700	12	13.5	25.5	
162	123.800	12.5	15	27.5	
163	123.900	12.5	12.5	25	
164	124.000	15	15	30	
165	124.100	15	15	30	
166	124.200	15	15	30	
167	124.300	15	15	30	
168	124.400	15	15	30	
169	124.500	15	15	30	
170	124.600	15	15	30	
171	124.700	15	15	30	
172	124.800	15	15	30	
173	124.900	15	15	30	
174	125.000	15	15	30	
175	125.100	15	15	30	
176	125.200	15	15	30	
177	125.300	15	15	30	
178	125.400	15	15	30	
179	125.500	15	15	30	
180	125.600	15	15	30	
181	125.700	15	15	30	
182	125.800	15	15	30	
183	125.900	15	15	30	
184	126.000	15	15	30	
185	126.100	15	15	30	
186	126.200	15	15	30	
187	126.300	15	15	30	
188	126.400	15	15	30	
189	126.500	15	15	30	
190	126.600	15	15	30	
191	126.700	15	15	30	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
192	126.800	15	15	30	
193	126.900	15	15	30	
194	127.000	15	15	30	
195	127.100	15	15	30	
196	127.200	15	15	30	
197	127.300	15	15	30	
198	127.400	15	15	30	
199	127.500	15	15	30	
200	127.600	15	15	30	
201	127.700	15	15	30	
202	127.800	15	15	30	
203	127.900	15	15	30	
204	128.000	15	15	30	
205	128.100	15	15	30	
206	128.200	15	15	30	
207	128.300	15	15	30	
210	128.400	15	15	30	
211	128.500	15	15	30	
212	128.600	15	15	30	
213	128.700	15	15	30	
214	128.800	15	15	30	
215	128.900	15	15	30	
216	129.000	15	15	30	
217	129.100	15	15	30	
218	129.200	15	15	30	
219	129.300	15	15	30	
220	129.400	15	15	30	
221	129.500	15	15	30	
222	130.600	10.5	10.5	21	
223	130.700	11	11	22	
224	130.800	11.25	11.25	22.5	
225	130.900	10.25	10.25	20.5	
226	131.000	9.75	9.75	19.5	
227	131.100	10.5	10.5	21	
228	131.200	9	11	20	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
229	131.300	9	9	18	
230	131.400	10	10	20	
231	131.500	10	10	20	Santanu
232	131.600	10	10	20	
233	131.700	9.75	9.75	19.5	
234	131.800	9.75	10	19.75	
235	131.900	10	9.5	19.5	
236	132.000	8	6	14	
237	132.100	10.5	10.5	21	
238	132.200	10	9	19	
239	132.300	10.5	10.5	21	
240	132.400	9.5	9.5	19	
241	132.500	10	10	20	
242	132.600	9	9	18	
243	132.700	10	10	20	
244	132.800	10	10	20	
245	132.900	9.5	9.5	19	
246	133.000	10	10	20	
247	133.100	9	10	19	
248	133.200	9.5	9.5	19	
249	133.300	8.5	8.5	17	
250	133.400	10	10	20	
251	133.500	10	8.5	18.5	
252	133.600	11	11	22	
253	133.700	10	10	20	
254	133.800	12.5	11.5	24	
255	133.900	10.5	11.5	22	
256	134.000	11	11	22	
257	134.100	12	9	21	
258	134.200	12	11	23	
259	134.300	10	10	20	
260	134.400	10	10	20	
261	134.500	11	11	22	Kadamtala
262	134.600	13	12	25	
263	134.700	12	12	24	

S.No.	Chainage(km)	Existing ROW (in M)			Remarks
		Right side	Left side	Total	
264	134.800	12	12	24	
265	134.900	11.25	11.25	22.5	
266	135.000	12	12	24	
267	135.100	10	10	20	
268	135.200	10	10	20	
269	135.300	10.25	10.25	20.5	
270	135.400	10.5	10.5	21	
271	135.500	10	10	20	
272	135.600	10.5	10	20.5	
273	135.700	9.5	9.5	19	
274	135.800	9.75	9.75	19.5	
275	135.900	10	10	20	
276	136.000	10	10	20	
277	136.100	10	8.5	18.5	
278	136.200	10.25	10.25	20.5	
279	136.300	10.25	10.25	20.5	
280	136.400	10	10	20	
281	136.500	10	10	20	
282	136.600	10	10	20	
283	136.700	10.5	10.5	21	
284	136.800	12	12	24	
285	136.900	12.5	12.5	25	
286	137.000	12.5	12.5	25	
287	137.100	11	12	23	
288	137.200	10.25	10.5	20.75	
289	137.300	10	10	20	
290	137.400	15	15	30	
291	137.500	15	15	30	
292	137.600	15	15	30	
293	137.700	15	15	30	
294	137.800	15	15	30	
295	137.900	15	15	30	
296	138.000	15	15	30	

Land Details (Km 155.0 to 181.0)

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
1	155.000	15	15	30	
2	155.100	15	15	30	
3	155.200	15	15	30	
4	155.300	15	15	30	
5	155.400	15	15	30	
6	155.500	15	15	30	
7	155.600	15	15	30	
8	155.700	15	15	30	
9	155.800	15	15	30	
10	155.900	15	15	30	
11	156.000	15	15	30	
12	156.100	15	15	30	
13	156.200	15	15	30	
14	156.300	15	15	30	
15	156.400	15	15	30	
16	156.500	15	15	30	
17	156.600	15	15	30	
18	156.700	15	15	30	
19	156.800	15	15	30	
20	156.900	15	15	30	
21	157.000	15	15	30	
22	157.100	15	15	30	
23	157.200	15	15	30	
24	157.300	15	15	30	
25	157.400	15	15	30	
26	157.500	15	15	30	
27	157.600	15	15	30	
28	157.700	15	15	30	
29	157.800	15	15	30	
30	157.900	15	15	30	
31	158.000	15	15	30	
32	158.100	15	15	30	
33	158.200	15	15	30	
34	158.300	15	15	30	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
35	158.400	15	15	30	
36	158.500	15	15	30	
37	158.600	15	15	30	
38	158.700	15	15	30	
39	158.800	15	15	30	
40	158.900	15	15	30	
41	159.000	15	15	30	
42	159.100	15	15	30	
43	159.200	15	15	30	
44	159.300	15	15	30	
45	159.400	15	15	30	
46	159.500	15	15	30	
47	159.600	15	15	30	
48	159.700	15	15	30	
49	159.800	15	15	30	
50	159.900	15	15	30	
51	160.000	15	15	30	
52	160.100	15	15	30	
53	160.200	15	15	30	
54	160.300	15	15	30	
55	160.400	15	15	30	
56	160.500	15	15	30	
57	160.600	15	15	30	
58	160.700	15	15	30	
59	160.800	15	15	30	
60	160.900	15	15	30	
61	161.000	15	15	30	
62	161.100	15	15	30	
63	161.200	15	15	30	
64	161.300	15	15	30	
65	161.400	15	15	30	
66	161.500	15	15	30	
67	161.600	15	15	30	
68	161.700	15	15	30	
69	161.800	15	15	30	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
70	161.900	15	15	30	
71	162.000	15	15	30	
72	162.100	15	15	30	
73	162.200	15	15	30	
74	162.300	15	15	30	
75	162.400	15	15	30	
76	162.500	15	15	30	
77	162.600	15	15	30	
78	162.700	15	15	30	
79	162.800	15	15	30	
80	162.900	15	15	30	
81	163.000	15	15	30	
82	163.100	15	15	30	
83	163.200	11	16.5	27.5	Kaushalyanagar
84	163.300	10	15	25	
85	163.400	9	12	21	
86	163.500	8	11	19	
87	163.600	9	12	21	
88	163.700	10	9	19	
89	163.800	10.5	8	18.5	
90	163.900	10	10	20	
91	164.000	12	14	26	
92	164.100	10	10	20	
93	164.200	12	12	24	
94	164.300	15	10	25	
95	164.400	9	10	19	
96	164.500	10	10	20	
97	164.600	9.5	8.5	18	
98	164.700	12	12	24	
99	164.800	11.5	11.5	23	
100	164.900	12.5	12.5	25	
101	165.000	12	12	24	
102	165.100	8	8	16	
103	165.200	10	11	21	
104	165.300	7	11.5	18.5	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
105	165.400	15	10	25	
106	165.500	8	20	28	
107	165.600	10	10	20	
108	165.700	11	11	22	
109	165.800	10.5	10.5	21	
110	165.900	10	10	20	
111	166.000	9	9	18	
112	166.100	11	9	20	
113	166.200	12	7	19	
114	166.300	10	11	21	
115	166.400	10.25	10.25	20.5	
116	166.500	11	11	22	
117	166.600	11.25	11.25	22.5	
118	166.700	10	10	20	
119	166.800	10.5	10.5	21	
120	166.900	10	9.5	19.5	
121	167.000	10	10.5	20.5	
122	167.100	15	13	28	Shaktigarh
123	167.200	17	11	28	
124	167.300	9	11	20	
125	167.400	7.5	7.5	15	
126	167.500	6.5	7	13.5	
127	167.600	10	10	20	
128	167.700	10.5	10.5	21	
129	167.800	12	11.75	23.75	
130	167.900	14	20	34	
131	168.000	10	8	18	
132	168.100	10	11	21	
133	168.200	10	11	21	
134	168.300	10	11	21	
135	168.400	10	10	20	
136	168.500	10	12	22	
137	168.600	10	16	26	
138	168.700	11	7.5	18.5	
139	168.800	9	9	18	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
140	168.900	11	11.5	22.5	
141	169.000	11	12.5	23.5	
142	169.100	12	7.5	19.5	
143	169.200	15	9	24	
144	169.300	12.5	13.5	26	
145	169.400	10.5	10	20.5	
146	169.500	12	11	23	
147	169.600	12	16	28	Laxmanpur
148	169.700	11	14	25	Bakultala
149	169.800	10	10	20	
150	169.900	8	10	18	
151	170.000	10	10	20	
152	170.100	9	10	19	
153	170.200	10	10	20	
154	170.300	12	10	22	
155	170.400	10	10	20	
156	170.500	8.5	6.75	15.25	
157	170.600	9	9	18	
158	170.700	7	7	14	
159	170.800	8.25	8.25	16.5	
160	170.900	7	8	15	
161	171.000	6	10	16	
162	171.100	7.75	7.5	15.25	
163	171.200	7	7	14	
164	171.300	8	9	17	
165	171.400	8	8	16	
166	171.500	7.5	7	14.5	
167	171.600	7.5	8	15.5	
168	171.700	8	7	15	
169	171.800	7	7	14	
170	171.900	8	8.25	16.25	
171	172.000	7	7	14	Sabari
172	172.100	8	7	15	
173	172.200	7.5	7.5	15	
174	172.300	7.5	7.5	15	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
175	172.400	9	6	15	
176	172.500	7.75	7.75	15.5	
177	172.600	7.5	7.5	15	
178	172.700	7.5	7.5	15	
179	172.800	7.5	7.5	15	
180	172.900	6	14	20	
181	173.000	7.5	7.5	15	
182	173.100	11	10	21	
183	173.200	7.5	7.5	15	
184	173.300	8	8	16	
185	173.400	7.5	7.5	15	
186	173.500	7.5	7.5	15	
187	173.600	8	17	25	
188	173.700	8	10	18	
189	173.800	7.5	7.5	15	
190	173.900	8	10	18	
191	174.000	7.5	7.5	15	
192	174.100	7.5	7.5	15	
193	174.200	7.5	7.5	15	
194	174.300	7.5	7.5	15	
195	174.400	7.5	7.5	15	
196	174.500	8	8	16	
197	174.600	9	9	18	
198	174.700	9	12	21	
199	174.800	8	12	20	
200	174.900	8	8.25	16.25	
201	175.000	10	9	19	
202	175.100	10	10	20	Rampur
203	175.200	10	10	20	
204	175.300	7.5	7.5	15	
205	175.400	7.5	7.5	15	
206	175.500	7.5	7.5	15	
207	175.600	7.5	7.5	15	
208	175.700	7.5	7.5	15	
209	175.800	7.5	7.5	15	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
210	175.900	8.5	8.5	17	
211	176.000	8	8	16	
212	176.100	7.5	7.5	15	
213	176.200	8	11	19	
214	176.300	8.5	8.5	17	
215	176.400	13	10	23	
216	176.500	7.5	7.5	15	
217	176.600	7.5	7.5	15	
218	176.700	7.5	7.5	15	
219	176.800	7.5	7.5	15	
220	176.900	7.5	7.5	15	
221	177.000	6	6	12	
222	177.100	12.5	12.5	25	
223	177.200	11.5	11.5	23	
224	177.300	11	13	24	
225	177.400	9.75	9.75	19.5	
226	177.500	8.5	7.5	16	Rangat
227	177.600	7.5	7.5	15	
228	177.700	8	8	16	
229	177.800	8	7	15	
230	177.900	9	9.5	18.5	
231	178.000	9.5	9.5	19	
232	178.100	8.5	8.5	17	
233	178.200	9.5	9.5	19	
234	178.300	10	10	20	
235	178.400	10	10	20	
236	178.500	10	10	20	
237	178.600	10	10	20	
238	178.700	10	10	20	
239	178.800	10	10	20	
240	178.900	10.5	10.5	21	
241	179.000	10.25	10.25	20.5	
242	179.100	9.5	9.5	19	
243	179.200	10	10	20	Janakpur
244	179.300	10	10	20	

Sl. No.	Chainage (Km)	Existing ROW (in M)			Remarks
		Left side	Right side	Total	
245	179.400	7.5	7.5	15	
246	179.500	7.5	8	15.5	
247	179.600	7	9	16	
248	179.700	5	7	12	
249	179.800	8	7	15	Dasrathpur
250	179.900	10	13	23	
251	180.000	5	5	10	
252	180.100	8	8	16	
253	180.200	5	5	10	
254	180.300	7	7	14	
255	180.400	7	7	14	
256	180.500	7.5	7.5	15	
257	180.600	6	6	12	
258	180.700	7	7	14	
259	180.800	6.5	6.5	13	
260	180.900	6	10	16	
261	181.000	6	6	12	

3. Carriageway

The present carriageway of the Project Highway is of. Single Lane/Intermediate lane having width of 3.5-5.0m. The type of the existing pavement is flexible as per following details;

S. No	Existing Chainage (km)		Existing carriageway width (m)	Remarks
	From	To		
1	107.760	129.445	3.5-5.0	Flexible Pavement
2	130.600	138.000	3.5-5.0	Flexible Pavement
3	155.000	181.000	3.5-5.0	Flexible Pavement

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super-Structure		
1	177.347	OPEN	RC WALL	RC SOLID SLAB	11 x 7.32	8.0

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

6. Grade separators

The Site includes the following grade separators:

S. No	Existing 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.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (c/c of exp gap)	Total Width (m)
		Foundation	Sub-Structure	Super-Structure		
1	119.120	HP Type			16 x 0.9	6.0
2	122.171	Open	RC Wall	RC Solid Slab	2 x 5.7	7.4
3	131.327	Open	RC Wall	RC Solid Slab	3 x 6.0	7.8
4	136.122	Open	RC Wall	RC Solid Slab	3 x 6.0	7.8
5	155.150	Open	RC Wall	RC Solid Slab	2x6.5	7.8
6	159.735	Open	RC Wall	RC Solid Slab	7.3 + 7.2 + 2x7.4 + 6.7	7.8
7	164.664	Open	RC Wall	RC Solid Slab	3 x 6.3 + 4 x 6.0	5.2
8	165.690	Open	RC Wall	RC Solid Slab	6.3 + 3 x 6.0	5.3
9	168.511	Open	RC Wall	RC Solid Slab	2 x 6.0	5.2
10	169.628	Open	RC Wall	RC Solid Slab	2 x 6.3 + 5 x 6.0	5.2
11	170.251	Open	RC Wall	RC Solid Slab	2 x 6.2 + 2 x 6.0	5.2
12	179.544	Open	RC Wall	RC Solid Slab	3 x 4.6	4.5

8. Railway level crossings

The Site includes the following level crossing:

S. No.	Existing Chainage (km)	Remarks
NIL		

9. Underpasses (Vehicular, Non Vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
Km 107.760 to 129.445				
1	108.005	HP	1x0.90	12.6
2	108.237	Slab	1x2.3	7.6
3	109.175	Slab	1x1.6	7.6
4	109.245	HP	1x0.9	9.2
5	109.375	Slab	1x1.6	7.8
6	109.610	Slab	1x1.6	7.6
7	109.822	HP	1x0.9	6.2
8	110.050	HP	1x1.2	9.7
9	110.368	Slab	1x1.8	7.7
10	110.535	Slab	1x1.8	7.7
11	110.675	HP	1x0.6	7.7
12	110.762	HP	1x0.9	9.1
13	110.924	Slab	1x1.8	7.6
14	111.372	HP	1x0.90	10.5
15	111.606	Slab	1x3.0	6.8
16	112.252	HP	2x0.9	7.8
17	112.455	Slab	1x1.9	9.3
18	112.825	HP	2x0.9	8.9
19	113.028	Slab	1x5.8	7.1
20	113.646	HP	1x0.9	9
21	113.762	HP	1x0.6	10.3
22	114.958	H.P	2x1.0	9.2

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
23	115.260	H.P	1x0.9	14.4
24	115.624	H.P	1x0.9	8.9
25	116.052	H.P	1x1.2	8.9
26	116.708	H.P	2x0.6	22.5
27	119.962	H.P	1x0.9	14.4
28	120.302	H.P	1x0.9	8.7
29	121.615	H.P	2x0.9	9
30	121.962	Slab	1x3.1	9
31	122.125	Pipe	1x0.9	7.3
32	122.426	H.P	2x0.6	16.5
33	122.562	H.P	2x0.9	18.5
34	122.745	H.P	1x0.9	14.1
35	123.199	H.P	1x0.9	9.2
36	123.618	Slab	1x4.8	6.4
37	123.963	HP	2x0.6	7
38	124.440	H.P	1x1.2	14.4
39	124.586	H.P	1x0.9	9.6
40	124.781	H.P	1x0.9	8.7
41	124.910	Slab	1x2.0	6.5
42	125.111	H.P	2x0.6	10
43	125.425	Slab	1x2.2	6.6
44	125.545	Slab	1x2.0	6.6
45	126.038	H.P	2x0.9	14.5
46	126.337	Slab	1x4.8	6.6
47	127.340	H.P	1x0.9	8.8
48	128.368	HP	1x1.2	7.4
49	129.150	H.P	1x0.9	7.6
50	129.270	H.P	1x0.6	10.4
Km 130.600 to Km 138.000				
51	130.920	HP	2 x0.75	8
52	131.625	HP	1 x 0.70	8
53	131.700	HP	1x0.65	7.85
54	131.836	HP	2 x0.75	7.6
55	132.070	HP	2x0.75	8
56	132.375	SLAB	1x6.15	7.75

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
57	132.752	H.P	1x0.75	8
58	133.013	H.P	1x0.75	8
59	133.140	H.P	1x075	8
60	133.322	H.P	2x0.75	7.75
61	133.475	H.P	1x0.75	8
62	133.600	H.P	BLOCK	8
63	133.687	H.P	BLOCK	8.2
64	133.773	H.P	2x0.75	8.2
65	133.894	H.P	1x0.75	8.25
66	134.025	SLAB	1x2.8	8.6
67	134.400	H.P	2x0.75	8.3
68	135.442	H.P	BLOCK	8.45
69	135.533	H.P	1x0.75	8.4
70	135.820	H.P	2x0.75	8.35
71	136.224	H.P	2x0.65	8.45
72	136.424	H.P	1x0.75	8.65
73	136.602	H.P	2x0.70	8.3
74	137.121	H.P	1x0.70	8.55
75	137.220	H.P	2x0.75	8.3
76	137.357	H.P	3x0.70	8.4
Km 155.0 to Km 181.0				
77	155.09	HP	1x0.80	10.35
78	155.72	HP	1X0.9	10.20
79	155.796	H.P	1X0.8	14.90
80	155.875	H.P	1X0.9	18.20
81	156.287	H.P	1X0.55	8.20
82	156.965	H.P	2X0.75	14.50
83	157.037	H.P	1X0.60	14.50
84	157.262	H.P	1X0.90	15.00
85	157.436	Slab	1x5.0	7.80
86	157.725	H.P	1X0.50	12.00
87	157.925	H.P	5X0.80	12.2
88	158.623	H.P	1X0.55	12.80
89	158.697	H.P	1X0.75	12.6
90	158.847	H.P	1X0.75	10.30

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
91	158.95	H.P	BLOCKED	19.00
92	159.082	H.P	2X0.75	15.00
93	159.275	H.P	1X0.75	12.90
94	159.368	H.P	1X0.75	7.40
95	159.558	H.P	2X0.75	8.60
96	159.87	H.P	1X0.75	12.00
97	160.067	H.P	1X0.70	8.40
98	160.185	H.P	1X0.75	8.30
99	160.29	H.P	1X0.70	8.20
100	160.42	H.P	1X0.65	7.30
101	161.624	H.P	1X0.75	12.30
102	161.674	H.P	1X0.75	8.80
103	161.732	H.P	1X0.75	9.90
104	161.83	SLAB	1X2.2	8.20
105	161.98	SLAB	1x1.1	12.40
106	162.143	SLAB	1X2.8	8.60
107	162.28	H.P	1X0.75	10.10
108	162.4	H.P	2X0.75	8.90
109	162.57	H.P	2X0.75	9.20
110	162.62	H.P	1X0.75	9.20
111	162.695	H.P	1X0.75	8.40
112	162.835	H.P	1X0.75	8.30
113	163.002	H.P	2X0.75	11.10
114	163.148	H.P	1X0.75	8.80
115	163.245	H.P	1X0.75	8.90
116	163.315	H.P	1X0.75	8.40
117	163.62	H.P	2X0.75	8.60
118	163.82	H.P	2X0.75	7.00
119	164.22	H.P	1X0.75	8.00
120	164.925	BOX	1X2.6	8.40
121	165.07	SLAB	1X1.8	14.70
122	165.307	H.P	2X0.75	8.3
123	165.55	H.P	1X0.75	11.10
124	165.595	H.P	BLOCKED	13.00
125	165.837	H.P	2X0.65	10.20

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
126	165.879	H.P	1X0.75	18.10
127	165.951	H.P	2X0.75	14.80
128	166.038	H.P	1X0.75	11.50
129	166.061	BOX	1X1.85	8.30
130	166.265	H.P	1X0.75	8.40
131	166.318	BOX	1X1.2	8.40
132	166.398	H.P	1X0.75	8.55
133	166.705	H.P	2X0.75	11.80
134	166.895	H.P	1X0.75	7.9
135	167.158	H.P	2X0.75	12.30
136	167.523	H.P	2X0.75	8.40
137	167.772	H.P	1X0.75	12.40
138	168.087	H.P	1X0.75	12.40
139	168.185	H.P	1X0.75	8.60
140	168.235	H.P	2X0.75	8.40
141	168.718	H.P	1X0.75	9.60
142	168.927	H.P	1X0.75	7.90
143	169.049	H.P	2X0.75	8.30
144	169.132	H.P	2X0.75	7.80
145	169.435	H.P	2X0.75	8.30
146	169.962	H.P	2X0.70	7.50
147	170.535	BOX	1X0.75	7.80
148	170.645	BOX	1X0.60	8.00
149	170.704	SLAB	1X2.5	7.80
150	171.17	SLAB	1X1.8	7.80
151	171.48	SLAB	1X2.1	6.00
152	171.747	SLAB	1X3.8	8.00
153	171.892	BOX	1X0.90	10.60
154	171.94	BOX	1X3.8	14.30
155	172.05	SLAB	1X.90	8.10
156	172.175	HP+BOX	1X0.90	13.10
157	172.322	BOX	1X1.2	7.80
158	172.615	H.P	1X0.85	9.50
159	172.912	SLAB	1X2.6	9.60
160	173.245	SLAB	1X3.7	10.60

S. No	Existing Chainage (Km)	Type of culvert	Span/ Opening with Span length (m)	Width (m)
161	173.495	SLAB	1X1.6	7.80
162	174.47	H.P	1X0.75	10.30
163	175.349	SLAB	1X1.7	12.4
164	176.704	SLAB	1X2.2	9
165	176.91	SLAB	1X1.4	7.8
166	177.445	SLAB	1X2.4	17.3
167	178.63	SLAB	1X3	8.45
168	178.8	H.P	1X0.75	8
169	178.99	SLAB	1X2.1	8.2
170	179.413	H.P	2X0.8	9.3
171	179.99	BOX	1X1.2	8.75
172	180.1	H.P	1X0.90	11
173	180.225	Slab	1X2.9	10.3
174	180.352	SLAB	1X2.3	11.1
175	180.412	H.P	2X0.9	10
176	180.711	BOX	1X0.9	9.80
177	180.93	H.P	BLOCKED	8.80
178	180.94	H.P	1X0.75	8.00

11. Bus bays/Bus Shelters

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

S.No.	Existing Chainage	Side
Km 107.760 to 129.445		
1	108.688	Right
2	108.95	Left
3	111.219	Left
4	115.2	Right
5	123.355	Right
Km 130.600 to 138.0		
6	131.882	Right
7	132.412	Left
8	133.500	Right
9	134.214	Left

S.No.	Existing Chainage	Side
Km 155.0 to 181.0		
10	164.375	Left
11	164.812	Right
12	165.645	Left
13	167.259	Right
14	167.619	Right
15	168.375	Right
16	168.962	Left
17	175.210	Right
18	175.404	Right
18	176.325	Right
19	178.350	Left
20	178.600	Right
21	179.218	Right
22	180.700	Right

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the roadside drains are as follows:

S.No.	Existing Chainage (km)		Side
	From	To	
Km 107.760 to 129.445			
1	107.760	107.810	Both side
2	107.810	108.000	LHS
3	108.030	108.113	RHS
4	108.113	108.205	Both side
5	108.205	108.325	RHS
6	108.325	108.393	Both side

S.No.	Existing Chainage (km)		Side
	From	To	
7	108.393	108.600	RHS
8	108.600	108.750	LHS
9	108.750	108.800	Both side
10	108.960	109.780	RHS
11	110.670	111.445	LHS
12	112.461	112.600	LHS
13	112.600	112.757	Both side
14	112.757	112.825	LHS
15	113.770	113.916	RHS
16	118.730	118.970	RHS
17	121.300	121.960	RHS
18	122.835	123.225	RHS
19	123.225	123.400	Both side
20	126.330	126.605	LHS
21	128.925	129.005	RHS
Km 130.600 to 138.0			
22	130.575	131.100	LHS
23	131.525	132.180	RHS
24	132.377	132.756	RHS
25	133.150	133.685	RHS
26	133.725	134.010	RHS
27	134.025	134.300	LHS
28	134.300	134.386	Both side
29	134.386	134.675	RHS
30	134.675	135.435	Both side
31	135.435	136.110	LHS
32	136.927	137.114	RHS
Km 155.0 to 181.0			
33	158.250	158.375	RHS
34	159.475	159.550	RHS
35	159.857	160.061	LHS
36	163.312	163.530	LHS
37	164.400	164.587	LHS
38	165.000	165.190	LHS
39	165.353	165.473	LHS

S.No.	Existing Chainage (km)		Side
	From	To	
40	166.125	166.188	RHS
41	170.260	170.330	RHS
42	170.330	170.375	LHS
43	170.375	170.425	Both side
44	170.425	170.450	RHS
45	170.475	170.800	RHS
46	171.180	171.510	RHS
47	175.275	175.346	RHS
48	176.368	176.550	LHS
49	176.570	176.620	LHS
50	176.850	176.900	LHS
51	177.450	177.630	LHS
52	178.075	178.625	LHS
53	178.996	179.033	RHS
54	179.762	179.900	RHS
55	180.970	181.020	RHS

14. Major junctions

The details of major junctions are as follows:

S.No	Existing Chainage (km)	At Grade	Grade Separated	Category of Cross Road+			
				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:

S. No	Existing Chainage (km)	Village Name	Side	Type of Junction
Km 107.760 to 129.445				
1	108.937	Way to village	RHS	Y-type
2	110.688	Way to village	LHS	Y-type
3	122.132	Way to village	RHS	Y-type
4	123.400	Way to village	LHS	T-type

S. No	Existing Chainage (km)	Village Name	Side	Type of Junction
Km 130.600 to 138.0				
5	131.154	Way to Uttara village	RHS	Y-type
6	131.428	Way to Baragool	RHS	Y-type
7	131.931	Way to Baragool	RHS	Y-type
8	133.253	Way to Shantanu	LHS	Y-type
9	134.534	Way to Kadamtala	LHS	Y-type
10	135.050	Way to Kadamtala	LHS	Y-type
11	135.180	Way to Shantipur	LHS	Y-type
12	135.650	Way to Atharji	LHS	T-type
13	136.594	Way to Jarawa Tikri	RHS	Y-type
Km 155.0 to 181.0				
14	163.757	Way to Police out Post	LHS	T-type
15	164.336	Way to village	LHS	Y-type
16	164.808	To factory	LHS	T-type
17	167.022	Way to Bombay Giru Village	RHS	Y-type
18	167.413	Way to Shaktigarh	RHS	Y-type
19	167.757	Way to Shaktigarh	RHS	T-type
20	169.543	Way to Laxman Pur	LHS	T-type
21	169.918	Way to MR road to Kolsi	LHS	T-type
22	170.218	Way to Chapa tikri	LHS	T-type
23	170.370	Way to Sumkur jetty	RHS	Y-type
24	170.485	Way to Vocational Training institute	RHS	T-type
25	170.943	Way to Bishnupur	RHS	T-type
26	171.664	Way to water tank	LHS	T-type
27	175.232	Way to Irata village	RHS	Y-type
28	175.304	Way to PWD sub division	RHS	T-type
29	175.397	Way to village	RHS	T-type
30	175.403	Way to village	LHS	Y-type
31	175.788	Way to village	LHS	T-type
32	175.995	Way to church	LHS	Y-type
33	176.225	Way to TV centre	RHS	Y-type
34	176.921	Way to village	LHS	Y-type
35	176.975	Way to mithila village	RHS	Y-type
36	177.275	Way to sarkar para village	LHS	T-type
37	177.430	Way to rampur	LHS	Y-type

S. No	Existing Chainage (km)	Village Name	Side	Type of Junction
38	177.450	Way to Tosli	LHS	Y-type
39	177.584	Way to village	LHS	T-type
40	177.720	Way to Larai Basti	RHS	Y-type
41	177.766	Way to tehsildar office	LHS	T-type
42	178.025	Way to Dashrath pur	RHS	Y-type
43	178.231	Way to village	RHS	T-type
44	178.326	Way to janakpur	LHS	Y-type
45	178.448	Way to rang ghat	RHS	Y-type
46	178.490	Way to village	RHS	Y-type
47	179.006	Way to haripadapur	LHS	Y-type
48	179.032	Way to village	LHS	T-type
49	179.125	Way to haripadapur	LHS	Y-type
50	179.210	Way to Dashrathpur	RHS	Y-type
51	179.247	Way to Dashrathpur	LHS	Y-type
52	179.268	Way to MR road	LHS	Y-type

16. Bypasses

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

S. No	Name of bypass (Town)	Existing Chainage (Km)		Length (Km)
		From	To	
NIL				

17. Other Structures : Following are the details of existing causeways:

S. No	Existing Chainage (km)	Structure Type	Openings / Spans X Length	Width (m)
NIL				

18. Existing Chainages corresponding to Design Chainage

The relationship between the "Existing Chainage" and the "Design Chainage" as per field surveys is given below in Table-

S. No.	Existing Chainage (Km)	Design Chainage (Km)	Remarks
Km 107.760 to 129.445			
1	108.000	108.009	Nilambur
2	109.000	109.002	Baratang
3	110.000	110.014	S-creek Market
4	111.000	110.993	S-creek Market

S. No.	Existing Chainage (Km)	Design Chainage (Km)	Remarks
5	112.000	111.987	Forest
6	113.000	112.987	Forest
7	114.000	113.996	Forest
8	115.000	114.966	Forest
9	116.000	115.956	Forest
10	117.000	116.935	Forest
11	118.000	117.946	Forest
12	119.000	118.938	Lorozig
13	120.000	119.946	Forest
14	121.000	120.942	Forest
15	122.000	121.934	Forest
16	123.000	122.918	Adazig village
17	124.000	123.917	Forest
18	125.000	124.905	Forest
19	126.000	125.896	Forest
20	127.000	126.891	Forest
21	128.000	127.871	Forest
22	129.000	128.857	Forest
Km 130.600 to 138.0			
23	131.000	130.984	Uttra
24	132.000	131.967	Uttra
25	133.000	132.965	Shantanu
26	134.000	133.954	Shantanu
27	135.000	134.945	Kadamtala
28	136.000	135.939	Kadamtala
29	137.000	136.936	Kadamtala
30	138.000	137.930	
Km 155.0 to 181.0			
31	155.000	155.000	Forest
32	156.000	155.994	Forest
33	157.000	156.987	Forest
34	158.000	157.977	Forest
35	159.000	158.966	Forest
36	160.000	159.962	Forest
37	161.000	160.876	Forest
38	162.000	161.874	Forest

S. No.	Existing Chainage (Km)	Design Chainage (Km)	Remarks
39	163.000	162.868	Kaushlyanagar
40	164.000	163.867	Kaushlyanagar
41	165.000	164.866	Kaushlyanagar
42	166.000	165.861	Kaushlyanagar
43	167.000	166.859	Shaktigarh
44	168.000	167.852	Shaktigarh
45	169.000	168.849	Shaktigarh
46	170.000	169.848	Bakultala
47	171.000	170.846	Bakultala
48	172.000	171.846	Forest
49	173.000	172.844	Forest
50	174.000	173.843	Forest
51	175.000	174.851	Rampur
52	176.000	175.846	Rampur
53	177.000	176.842	Rangat
54	178.000	177.842	Rangat
55	179.000	178.838	Rangat
56	180.000	179.843	Dasrathpur
57	181.000	180.842	Dasrathpur

Annex - II

(Schedule-A)

Dates for providing Right of Way

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

S. No.	Design Chainage (Km)		Design Length (Km)	Width (In Meter)	Dates of Providing ROW
	From	To			
1	2	3	4	5	6
	Part Right of Way				
	Width of Land as per Clause 2 of Annexure-I of Schedule A				On 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:

The alignment plan of the Project Highway is available on E-Portal and in digital form in CD

Annex - IV

(Schedule-A)

Environment Clearances

Not Applicable for this section.

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 Upgradation

Rehabilitation and Upgradation shall include Two-Laning with Paved shoulder 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

1. WIDENING OF THE EXISTING HIGHWAY

1.1 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 plain/rolling terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

1.2.1 Two-Laning with hard shoulders in rural section and two-laning with covered drain with footpath in urban section shall be undertaken. The carriageway shall be 7m wide in rural and 10m wide in urban section conformation with the typical cross sections drawings in the Manual.

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

S.No.	Built up Stretch (Township)	Design Chainage (Km)		Length (km)	Width (m)	Typical Cross Section Proposed
		From	To			
Km 107.760 to 129.445						
1	Nilambur	107.760	108.000	240	10	TCS II
2	Baratang	108.520	109.220	700	10	TCS II
3	S-Creek Market	110.560	111.500	940	10	TCS II
4	Adazig Village	122.340	123.520	1180	10	TCS II
Km 130.600 to 138.0						
5	Uttra, Shantanu, Kadamtala	130.600	136.986	6386	10	TCS II
Km 155.0 to 181.0						
6	Kaushalyanagar	162.868	165.520	2652	10	TCS II
7	Shaktigarh	167.054	168.326	1272	10	TCS II

S.No.	Built up Stretch (Township)	Design Chainage (Km)		Length (km)	Width (m)	Typical Cross Section Proposed
		From	To			
8		168.625	169.425	800	10	TCS II
9	Bakultala	170.125	171.646	1521	10	TCS II
10	Sabari, Rampur, Rangat, Janakpur, Dashrathpur	175.000	180.842	5817	10	TCS II

1.2.2 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.2.1 above

2. GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

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

2.2 Design Speed

The design speed shall be the minimum design speed of 80 km per hour (in accordance with section 2 of the manual) for rolling terrain.

2.3 Improvement of the existing road geometry

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

Deficient Curves:-

S.No	Design Chainage (km)
Km 107.760 to 129.445	
1	108.692
2	108.954
3	109.077
4	109.471
5	109.794
6	110.013
7	110.141
8	118.994

S.No	Design Chainage (km)
9	121.956
10	122.054
11	124.175
12	124.296
13	125.219
Km 130.600 to 138.0	
14	135.112
Km 155.0 to 181.0	
15	156.183
16	156.325
17	156.569
18	156.640
19	157.521
20	158.626
21	159.633
22	159.868
23	160.484
24	160.611
25	160.738
26	165.131
27	165.500
28	165.594
29	166.588
30	166.807
31	168.956
32	169.116
33	171.776
34	172.261
35	172.372
36	172.759
37	172.900
38	173.084
39	173.148
40	173.247
41	173.584
42	173.734

S.No	Design Chainage (km)
43	175.946
44	176.009
45	176.081
46	176.188
47	176.255
48	176.317
49	176.387
50	176.433
51	176.535
52	176.618
53	177.275
54	179.682
55	179.817
56	180.055
57	180.132
58	180.220
59	180.387
60	180.609
61	180.676
62	180.778

Bypasses

S. No	DesignChainage (Km)		Length (Km)	Name of village	Remarks
	From	To			
NIL					

2.4 Right of Way

The Site of the Project Highway comprises the land as described in Annexure-I of Schedule-A.

2.5 Type of Shoulders

a) In built up section, footpath over drain shall be provided in the following stretches:

S.No.	Built up Stretch (Township)	Design Chainage (Km)		Reference to Cross Section
		From	To	

S.No.	Built up Stretch (Township)	Design Chainage (Km)		Reference to Cross Section
		From	To	
Km 107.760 to 129.445				
1	Nilambur	107.760	108.000	TCS II
2	Baratang	108.520	109.220	TCS II
3	S-Creek Market	110.560	111.500	TCS II
4	Adazig Village	122.340	123.520	TCS II
Km 130.600 to 138.0				
5	Uttra, Shantanu, Kadamtala	130.600	136.986	TCS II
Km 155.0 to 181.0				
6	Kaushalyanagar	162.868	165.520	TCS II
7	Shaktigarh	167.054	168.326	TCS II
8		168.625	169.425	TCS II
9	Bakultala	170.125	171.646	TCS II
10	Sabari, Rampur, Rangat, Janakpur, Dashrathpur	175.000	180.842	TCS II

b) Design and specification of paved shoulder and granular material shall confirm to the requirements specified in paragraph 5.9.9 and 5.9.10 of the Manual.

2.6 Lateral and vertical clearances at underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.11 of the Manual.

2.6.2 Lateral clearance: The width of the opening at the underpasses shall be as follows:

S. No.	Design Chainage (Km)	Span/opening (m)	Remarks
NIL			

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses and provision of guardrails/crash barriers shall be as per paragraph 2.12 of the Manual.

2.7.2 Lateral clearance: The width of the opening at the overpasses shall be as follows:

S. No.	Design Chainage (Km)	Span/opening (m)	Remarks
NIL			

2.8 Service roads

Service roads/Slip Roads shall be constructed at the locations and for the lengths indicated below:

S. No	Design Chainage (Km)	RHS/LHS	Length of the Service Road (m)
NIL			

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.14 of the Manual. The requisite particulars are given below:

S. No.	Design Chainage (Km)	Length (m)	Number and length of spans	Approach gradient	Remarks, if any
NIL					

2.9.2 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:

S. No.	Design Chainage (Km)	Type of structure Length (m)	Cross road at		
			Existing level	Raised Level	Lowered Level
NIL					

2.10 Cattle and pedestrian under pass / over pass

Cattle and pedestrian underpass shall be constructed as follows:

S. No.	Design Chainage (Km)	Type of Crossing
NIL		

2.11 Typical cross-sections of the Project Highway

Indicative typical cross sections along with different types of cross-sections required to be developed in different segments of the project highway are indicated in Appendix B-I. Cross Section schedule for the project highway is as follows:

S.No	Existing Chainage		Design Chainage		Widening Proposal	Length (m)	TCS Proposed
	From	To	From	To			
Km 107.760 to 129.445							
1	107.762	108.000	107.760	108.000	Widening-Urban	240	TCS II
2	108.000	108.433	108.000	108.440	Widening	440	TCS I
3	108.433	108.512	108.440	108.520	New Const.-Cutting	80	TCS IV**
4	108.512	109.220	108.520	109.220	Widening-Urban	700	TCS II
5	109.220	109.320	109.220	109.320	New Const.-Cutting	100	TCS IV**
6	109.320	109.780	109.320	109.780	Widening	460	TCS I
7	109.780	110.265	109.780	110.280	Widening	500	TCS III*
8	110.265	110.348	110.280	110.360	New Const.-Cutting	80	TCS IV**
9	110.348	110.466	110.360	110.480	Widening	120	TCS I
10	110.466	110.546	110.480	110.560	Widening	80	TCS III*
11	110.546	111.507	110.560	111.500	Widening-Urban	940	TCS II
12	11.507	111.677	111.500	111.680	Widening	180	TCS III*
13	111.677	112.232	111.680	112.220	Widening	540	TCS I
14	112.232	112.473	112.220	112.460	Widening	240	TCS III*
15	112.473	112.633	112.460	112.620	Widening	160	TCS I
16	112.633	112.673	112.620	112.660	New Const.-Cutting	40	TCS IV**
17	112.673	112.782	112.660	112.780	Widening	120	TCS I
18	112.782	113.336	112.780	113.320	Widening	540	TCS III*
19	113.336	113.616	113.320	113.600	New Const.-Cutting	280	TCS IV**
20	113.316	113.936	113.600	113.920	Widening	320	TCS III*
21	113.936	114.054	113.920	114.020	New Const.-Filling	100	TCS V
22	114.054	114.154	114.020	114.120	Widening	100	TCS III*
23	114.154	114.455	114.120	114.420	New Const.-Filling	300	TCS V
24	114.455	114.935	114.420	114.900	Widening	480	TCS I
25	114.935	115.114	114.900	115.080	Widening	180	TCS III*
26	115.114	115.654	115.080	115.620	Widening	540	TCS I
27	115.654	116.002	115.620	115.960	New Const.-Cutting	340	TCS IV**
28	116.002	116.143	115.960	116.100	New Const.-Filling	140	TCS V
29	116.143	116.465	116.100	116.420	New Const.-Cutting	320	TCS IV**

S.No	Existing Chainage		Design Chainage		Widening Proposal	Length (m)	TCS Proposed
	From	To	From	To			
30	116.465	116.605	116.420	116.560	Widening	140	TCS I
31	116.605	116.865	116.560	116.820	New Const.-Filling	260	TCS V
32	116.865	116.965	116.820	116.920	Widening	100	TCS I
33	116.965	117.308	116.920	117.240	New Const.-Cutting	320	TCS IV**
34	117.308	118.214	117.240	118.160	Widening	920	TCS I
35	118.214	118.273	118.160	118.220	New Const.-Cutting	60	TCS IV**
36	118.273	118.373	118.220	118.320	Widening	100	TCS I
37	118.373	118.913	118.320	118.860	New Const.-Cutting	540	TCS IV**
38	118.913	119.403	118.860	119.340	New Const.-Filling	480	TCS V
39	119.403	119.525	119.340	119.460	New Const.-Cutting	120	TCS IV**
40	119.525	119.685	119.460	119.620	Widening	160	TCS III*
41	119.685	119.805	119.620	119.740	New Const.-Cutting	120	TCS IV**
42	119.805	119.885	119.740	119.820	Widening	80	TCS I
43	119.885	120.014	119.820	119.960	Widening	140	TCS III*
44	120.014	120.214	119.960	120.160	Widening	200	TCS I
45	120.214	120.254	120.160	120.200	New Const.-Cutting	40	TCS IV**
46	120.254	120.553	120.200	120.500	Widening	300	TCS I
47	120.553	120.635	120.500	120.580	New Const.-Filling	80	TCS V
48	120.635	120.735	120.580	120.680	Widening	100	TCS I
49	120.735	120.854	120.680	120.800	New Const.-Filling	120	TCS V
50	120.854	120.885	120.800	120.840	New Const.-Cutting	40	TCS IV**
51	120.885	121.198	120.840	121.140	Widening	300	TCS I
52	121.198	121.457	121.140	121.400	New Const.-Cutting	260	TCS IV**
53	121.457	121.617	121.400	121.560	Widening	160	TCS I
54	121.617	121.720	121.560	121.660	New Const.-Cutting	100	TCS IV**
55	121.720	121.920	121.660	121.860	Widening	200	TCS I
56	121.920	122.007	121.860	121.940	Widening	80	TCS III*
57	122.007	122.090	121.940	122.020	New Const.-Cutting	80	TCS IV**
58	122.090	122.414	122.020	122.340	New Const.-Filling	320	TCS V

S.No	Existing Chainage		Design Chainage		Widening Proposal	Length (m)	TCS Proposed
	From	To	From	To			
59	122.414	123.603	122.340	123.520	Widening-Urban	1180	TCS II
60	123.603	123.883	123.520	123.800	Widening	280	TCS I
61	123.883	123.923	123.800	123.840	New Const.-Cutting	40	TCS IV**
62	123.923	124.204	123.840	124.120	Widening	280	TCS I
63	124.204	124.266	124.120	124.180	New Const.-Cutting	60	TCS IV**
64	124.266	124.471	124.180	124.380	Widening	200	TCS III*
65	124.471	124.510	124.380	124.420	New Const.-Cutting	40	TCS IV**
66	124.510	125.177	124.420	124.980	Widening	560	TCS I
67	125.177	125.257	124.980	125.060	Widening	80	TCS III*
68	125.257	126.262	125.060	126.160	Widening	1100	TCS I
69	126.262	126.423	126.160	126.320	Widening	160	TCS III*
70	126.423	126.664	126.320	126.560	Widening	240	TCS I
71	126.664	126.746	126.560	126.640	New Const.-Cutting	80	TCS IV**
72	126.746	126.846	126.640	126.740	Widening	100	TCS I
73	126.846	126.966	126.740	126.860	Widening	120	TCS III*
74	126.966	127.060	126.860	126.960	Widening	100	TCS I
75	127.060	127.129	126.960	127.020	New Const.-Cutting	60	TCS IV**
76	127.129	127.630	127.020	127.520	Widening	500	TCS I
77	127.630	127.734	127.520	127.620	Widening	100	TCS III*
78	127.734	127.895	127.620	127.780	Widening	160	TCS I
79	127.895	128.009	127.780	127.860	Widening	80	TCS III*
80	128.009	128.129	127.860	128.000	Widening	140	TCS I
81	128.129	128.180	128.000	128.060	Widening	60	TCS III*
82	128.180	128.511	128.060	128.380	Widening	320	TCS I
83	128.511	128.571	128.380	128.440	New Const.-Cutting	60	TCS IV**
84	128.571	128.651	128.440	128.520	Widening	80	TCS I
85	128.651	128.876	128.520	128.740	New Const.-Cutting	220	TCS IV**
86	128.876	129.163	128.740	129.020	Widening	280	TCS I
87	129.163	129.203	129.020	129.060	New Const.-Cutting	40	TCS IV**

S.No	Existing Chainage		Design Chainage		Widening Proposal	Length (m)	TCS Proposed
	From	To	From	To			
88	129.203	129.325	129.060	129.180	Widening	120	TCS I
89	129.325	129.445	129.180	129.300	New Const.-Cutting	120	TCS IV**
Km 130.600 to 138.0							
1	130.600	137.050	130.600	136.986	Widening-Urban	6386	TCS II
2	137.050	137.223	136.986	137.160	Widening	174	TCS III*
3	137.223	137.345	137.160	137.280	Widening	120	TCS I
4	137.345	137.486	137.280	137.420	New Const.-Filling	140	TCS V
5	137.486	137.565	137.420	137.500	Widening	80	TCS I
6	137.565	138.000	137.500	137.930	New Const.-Cutting	430	TCS IV**
Km 155.0 to 181.0							
1	155.000	155.478	155.000	155.490	Widening	490	TCS I
2	155.478	155.616	155.490	155.610	New Const.	120	TCS IV**
3	155.616	156.758	155.610	156.750	Widening	1140	TCS I
4	156.758	156.855	156.750	156.850	New Const.	100	TCS IV**
5	156.855	157.288	156.850	157.275	Widening	425	TCS I
6	157.288	157.39	157.275	157.375	New Const.	100	TCS IV**
7	157.390	157.973	157.375	157.950	Widening	575	TCS I
8	157.973	158.379	157.950	158.350	New Const.	400	TCS IV**
9	158.379	160.088	158.350	160.050	Widening	1700	TCS I
10	160.088	160.169	160.050	160.130	Widening	80	TCS III*
11	160.169	160.24	160.130	160.225	Widening	95	TCS I
12	160.240	160.533	160.225	160.475	Widening	250	TCS III*
13	160.533	160.741	160.475	160.700	New Const.	225	TCS IV**
14	160.741	161.148	160.700	161.025	Widening	325	TCS I
15	161.148	161.325	161.025	161.200	New Const.	175	TCS IV**
16	161.325	162.48	161.200	162.355	Widening	1155	TCS I
17	162.480	162.536	162.355	162.410	New Const.	55	TCS IV**
18	162.536	163.000	162.410	162.868	Widening	458	TCS I
19	163.000	165.712	162.868	165.520	Widening-Urban	2652	TCS II
20	165.712	165.836	165.520	165.700	New Const.	180	TCS IV**
21	165.836	166.016	165.700	165.875	Widening	175	TCS I

S.No	Existing Chainage		Design Chainage		Widening Proposal	Length (m)	TCS Proposed
	From	To	From	To			
22	166.016	166.315	165.875	166.175	Widening	300	TCS III*
23	166.315	167.203	166.175	167.054	Widening	879	TCS I
24	167.203	168.475	167.054	168.326	Widening-Urban	1272	TCS II
25	168.475	168.776	168.326	168.625	Widening	299	TCS III*
26	168.776	169.577	168.625	169.425	Widening-Urban	800	TCS II
27	169.577	169.752	169.425	169.600	Widening	175	TCS III*
28	169.752	169.928	169.600	169.775	Widening	175	TCS I
29	169.928	170.277	169.775	170.125	Widening	350	TCS III*
30	170.277	171.802	170.125	171.646	Widening-Urban	1521	TCS II
31	171.802	172.33	171.646	172.175	Widening	529	TCS I
32	172.330	172.805	172.175	172.650	New Const.	475	TCS IV**
33	172.805	172.88	172.650	172.725	Widening	75	TCS I
34	172.880	172.830	172.725	172.830	Widening	105	TCS III*
35	172.830	172.935	172.830	172.935	New Const.	105	TCS IV**
36	172.935	173.200	172.935	173.200	Widening	265	TCS III*
37	173.200	173.770	173.200	173.770	Widening	570	TCS I
38	173.770	173.900	173.770	173.900	New Const.	130	TCS IV**
39	173.900	174.200	173.900	174.200	Widening	300	TCS I
40	174.200	174.920	174.200	174.920	Widening	720	TCS III*
41	174.920	174.955	174.920	174.955	New Const.	35	TCS IV**
42	174.955	175.025	174.955	175.025	Widening	70	TCS I
43	175.025	180.842	175.025	180.842	Widening-Urban	5817	TCS II

[Typical Cross Sections are appended separately]

* Retaining wall and Breast wall shown in TCS drawing is typical. Location of these components should be applied as per site condition.

** TCS IV is proposed for cutting in rural section and drawing shown for the same is typical. Whereever required the breast wall must be provided, if there is cutting in hill.

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.

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

a) **At-grade intersections (Major Junctions)**

S. No.	Design Chainage (Km)	Type of Intersection	Other features	Remarks
Nil				

b) **At-grade intersections (Minor Junctions)**

S.No	Design Chainage (km)	Type of Intersection
Km 107.760 to 129.445		
1	108+945	Y-type
2	110+700	Y-type
3	122+060	Y-type
4	123+319	T-type
Km 130.600 to 138.0		
5	131+139	Y-type
6	131+410	Y-type
7	131+915	Y-type
8	133+217	Y-type
9	134+490	Y-type
10	134+995	Y-type
11	135+125	Y-type
12	135+597	T-type
13	136+534	Y-type
Km 155.0 to 181.0		
14	163+624	T-type
15	164+202	Y-type
16	164+673	T-type
17	166+879	Y-type
18	167+266	Y-type
19	167+610	T-type
20	169+391	T-type
21	169+765	T-type
22	170+066	T-type
23	170+218	Y-type
24	170+332	T-type
25	170+790	T-type

S.No	Design Chainage (km)	Type of Intersection
26	171+510	T-type
27	175+082	Y-type
28	175+154	T-type
29	175+248	T-type
30	175+253	Y-type
31	175+639	T-type
32	175+844	Y-type
33	176+065	Y-type
34	176+760	Y-type
35	176+815	Y-type
36	177+118	T-type
37	177+274	Y-type
38	177+323	Y-type
39	177+427	T-type
40	177+561	Y-type
41	177+608	T-type
42	177+865	Y-type
43	178+127	T-type
44	178+168	Y-type
45	178+280	Y-type
46	178+331	Y-type
47	178+844	Y-type
48	178+870	T-type
49	178+963	Y-type
50	179+048	Y-type
51	179+085	Y-type
52	179+106	Y-type

c) Grade separated intersection without ramps

S. No.	Design Chainage (Km)	Salient features	Minimum length of viaduct to be provided	Road to be carried over/under the structures
NIL				

4. ROAD EMBANKMENT AND CUT SECTION

4.1 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.

4.2 Raising of the existing road

The existing road shall be raised at the required locations as per proposed plan and profile including the following sections:

S. No	Design Chainage (Km)		Length (Km)	Extent of raising (Top of finished road level)
	From	To		
NIL				

5. PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with Section 5 of the Manual.

5.2 Type of pavement

Flexible Pavement will be designed in accordance with the IRC:37-2012.

5.3 Design Requirements

Design requirement for the flexible pavement shall be in accordance with section 5 of the IRC:SP-73-2015 and IRC:37-2012. Cement treated base and subbase shall be provided as per the provisions of IRC:37-2012.

5.3.1 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 ***15 years***. Stage construction shall not be permitted.

5.3.2 Design Traffic

Not with standing anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic as given below.

S. No.	Design Chainage (Km)		Minimum Design MSA for 15 yrs
	From	To	
1	107+760	129+300	20
2	130+600	137+930	20
3	155+000	180+842	20

5.4 Reconstruction of stretches

Reconstruction of stretches for matching the proposed plan & profile shall be taken up as per actual requirements.

S. No	Design Chainage (Km)		Remarks
	From	To	
NIL			

6. ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual.

7. DESIGN OF STRUCTURES

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the manual and shall conform to the cross-sectional features and other details specified therein.

7.1.2 Width of the carriageway of new structures of more than 60m length shall be as follows, if the carriageway width is different from 7.5m in the table below.

S.No	Design Chainage (Km)	Width of Carriageway (m) and cross sectional features
NIL		

7.1.3 The following structures shall be provided with footpaths:

S. No.	Design Chainage (Km)	Remarks
NIL		

7.1.4 All bridges shall be high-level bridges. **No**

7.1.5 The following structures shall be designed to carry utility services specified in table below.

S. No.	Design Chainage (Km)	Utility service to be carried	Remarks
NIL			

7.1.6 Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections for the Project Highway.

7.2 Culverts

7.2.1 The Culverts overall width shall be equal to the roadway width of the approaches.

7.2.2 ***Reconstruction of existing culverts***:

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

S. No	Design Chainage (Km)	Type of culvert proposed	Span/ Opening with Span length (m)*
Km 107.760 to 129.445			
1	108+014	Box	1x1.5x1.5
2	109+175	Box	1x1.5x1.5
3	109+245	Box	1x1.5x1.5
4	109+375	Box	1x1.5x1.5
5	109+61	Box	1x1.5x1.5
6	109+822	Box	1x1.5x1.5
7	110+065	Box	1x1.5x1.5
8	110+382	Box	1x2.0x1.5
9	110+548	Box	1x2.0x1.5
10	110+688	Box	1x1.5x1.5
11	110+775	Box	1x1.5x1.5
12	110+938	Box	1x1.5x1.5
13	111+365	Box	1x1.5x1.5
14	112+239	Box	1x1.5x1.5
15	112+813	Box	1x1.5x1.5
16	113+63	Box	1x1.5x1.5
17	113+745	Box	1x1.5x1.5
18	114+922	Box	1x2.0x1.5
19	115+226	Box	1x1.5x1.5
20	115+592	Box	1x1.5x1.5
21	116+008	Box	1x1.5x1.5
22	116+663	Box	1x1.5x1.5
23	119+893	Box	1x1.5x1.5
24	120+247	Box	1x1.5x1.5
25	121+557	Box	1x1.5x1.5
26	122+058	Box	1x1.5x1.5
27	122+352	Box	1x1.5x1.5
28	122+488	Box	1x1.5x1.5
29	122+671	Box	1x1.5x1.5
30	123+117	Box	1x1.5x1.5
31	123+879	Box	1x1.5x1.5

S. No	Design Chainage (Km)	Type of culvert proposed	Span/ Opening with Span length (m)*
32	124+35	Box	1x1.5x1.5
33	124+494	Box	1x1.5x1.5
34	124+689	Box	1x1.5x1.5
35	125+015	Box	1x1.5x1.5
36	125+934	Box	1x1.5x1.5
37	127+229	Box	1x1.5x1.5
38	128+237	Box	1x1.5x1.5
39	129+006	Box	1x1.5x1.5
40	129+126	Box	1x1.5x1.5
Km 130.600 to 138.0			
41	130+913	Box	1x1.5x1.5
42	131+607	HP	1x1.2
43	131+682	HP	1x1.2
44	131+820	Box	1x1.5x1.5
45	132+035	Box	1x1.5x1.5
46	132+724	Box	1x1.5x1.5
47	132+977	HP	1x1.2
48	133+104	Box	1x1.5x1.5
49	133+285	Box	1x1.5x1.5
50	133+438	Box	1x1.5x1.5
51	133+565	HP	1x1.2
52	133+647	Box	1x1.5x1.5
53	133+732	Box	1x1.5x1.5
54	133+854	HP	1x1.2
55	134+355	Box	1x1.5x1.5
56	135+387	Box	1x1.5x1.5
57	135+479	Box	1x1.5x1.5
58	135+765	HP	1x1.2
59	136+160	Box	1x1.5x1.5
60	136+362	HP	1x1.2
61	136+541	Box	1x1.5x1.5
62	137+056	Box	1x1.5x1.5

S. No	Design Chainage (Km)	Type of culvert proposed	Span/ Opening with Span length (m)*
63	137+153	Box	1x1.5x1.5
64	137+293	Box	1x1.5x1.5
Km 155.0 to 181.0			
65	155+09	HP	1x1.2
66	155+712	HP	1x1.2
67	155+789	HP	1x1.2
68	155+868	Box	1x1.5x1.5
69	156+28	HP	1x1.2
70	156+956	Box	1x1.5x1.5
71	157+025	HP	1x1.2
72	157+249	Box	1x1.5x1.5
73	157+423	Box	1X5.0X4.0
74	157+706	HP	1x1.2
75	157+9	Box	1x3x3
76	158+598	Box	1x1.5x1.5
77	158+672	HP	1x1.2
78	158+823	HP	1x1.2
79	158+925	Box	1x1.5x1.5
80	159+048	HP	1x1.2
81	159+239	HP	1x1.2
82	159+331	Box	1x1.5x1.5
83	159+519	HP	1x1.2
84	159+833	Box	1x1.5x1.5
85	160+029	HP	1x1.2
86	160+146	HP	1x1.2
87	160+25	Box	1x1.5x1.5
88	160+38	Box	1x1.5x1.5
89	161+5	HP	1x1.2
90	161+549	HP	1x1.2
91	161+605	HP	1x1.2
92	161+704	Box	1x2.5x2.5
93	161+854	Box	1x1.5x1.5

S. No	Design Chainage (Km)	Type of culvert proposed	Span/ Opening with Span length (m)*
94	162+016	Box	1x3x2.5
95	162+154	HP	1x1.2
96	162+273	HP	2x1.2
97	162+444	HP	2x1.2
98	162+494	HP	1x1.2
99	162+569	HP	1x1.2
100	162+708	Box	1x1.5x1.5
101	162+868	HP	2x1.2
102	163+017	HP	1x1.2
103	163+113	HP	1x1.2
104	163+183	Box	1x1.5x1.5
105	163+487	Box	1x2x1.5
106	163+687	Box	1x2x2
107	164+087	Box	1x1.5x1.5
108	165+172	Box	1x1.5x1.5
109	165+414	HP	1x1.2
110	165+46	HP	1x1.2
111	165+701	Box	1x1.5x1.5
112	165+743	HP	1x1.2
113	165+815	HP	2x1.2
114	165+9	HP	1x1.2
115	166+125	HP	1x1.2
116	166+178	Box	1x1.5x2
117	166+258	Box	1x1.5x1.5
118	166+565	HP	2x1.2
119	166+754	Box	1x1.5x2
120	167+015	HP	2x1.2
121	167+376	HP	2x1.2
122	167+624	HP	1x1.2
123	167+939	HP	1x1.2
124	168+036	HP	1x1.2
125	168+086	HP	2x1.2

S. No	Design Chainage (Km)	Type of culvert proposed	Span/ Opening with Span length (m)*
126	168+567	Box	1x1.5x1.5
127	168+775	HP	1x1.2
128	168+898	Box	1x1.5x1.5
129	168+98	Box	1x1.5x1.5
130	169+283	Box	1x1.5x1.5
131	169+809	Box	1x1.5x1.5
132	170+492	Box	1x1.5x1.5
133	171+015	Box	1x2x1.5
134	171+325	Box	1x1.5x1.5
135	171+737	Box	1x1.5x1.5
136	171+896	Box	1x1.5x1.5
137	172+021	HP	1x1.2
138	172+168	Box	1x2x1.5
139	172+46	HP	1x1.2
140	172+754	Box	1x3x3
141	173+342	Box	1x1.5x1.5
142	174+317	HP	1x1.2
143	175+197	Box	1x2x1.5
144	176+749	Box	1x1.5x1.5
145	177+288	Box	1x1.5x1.5
146	178+642	HP	1x1.2
147	179+251	Box	1x2x1.5
148	179+826	Box	1x1.5x1.5
149	179+942	HP	1x1.2
150	180+251	HP	1x1.2
151	180+774	Box	1x1.5x1.5
152	180+784	Box	1x1.5x1.5

*Note- height of opening shall be kept according to adjoining TCS.

7.2.3 *Widening of Existing Culverts*

All existing culverts, which are not to be reconstructed, shall be widened up to the roadway width of the Project Highway & as per the typical cross section given in the Manual and the existing width portion of culverts shall be repaired as per site requirements.

S. No	Design Chainage (Km)	Structure Type	Openings / Spans x Length	Width of existing culvert (m)	Remark
Km 107.760 to 129.445					
1	108+245	Slab	1x2.3	7.6	
2	111+600	Slab	1x3.0	6.8	
3	112+442	Slab	1x1.9	9.3	
4	113+016	Slab	1x5.8	7.1	
5	121+900	Slab	1x3.1	9	
6	123+534	Slab	1x4.8	6.4	
7	124+818	Slab	1x2.0	6.5	
8	125+325	Slab	1x2.2	6.6	
9	125+445	Slab	1x2.0	6.6	
10	126+234	Slab	1x4.8	6.6	
Km 130.600 to 138.0					
11	132+340	SLAB	1X6.15 1 X5.4	7.75	
12	133+978	SLAB	1X2.8 - 1X2.1	8.6	
Km 155.0 to 181.0					
13	164+789	Box	1x2.6	8.40	
14	165+921	Box	1x1.85	8.30	
15	170+382	Box	1x0.75	7.80	
16	170+648	Slab	1x2.5	7.80	
17	171+593	Slab	1x3.8	8.00	
18	173+092	Slab	1x3.7	10.60	
19	176+543	Slab	1x2.2	9	
20	178+472	Slab	1x3	8.45	
21	178+831	Slab	1x2.1	8.2	
22	180+194	Slab	1x2.3	11.1	
23	180+556	Box	1x0.9	9.80	

7.2.4 Additional new culverts (given in table below) shall be constructed for width equal to the roadway width of the Project Highway & as per typical cross-section given in the manual:

S. No.	Design Chainage (Km)	Proposed type	No. of Spans X span length (m)
NIL			

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

S. No.	Design Chainage (Km)	Type of repair required
1	164+936	General Maintenance
2	171+786	General Maintenance
3	180+086	General Maintenance

7.2.6 Floor protection works shall be as specified in the relevant IRC Codes and Specifications

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened:

(i) The Existing bridges at the following locations shall be reconstructed:

S. No	Bridge Location (Design Chainage, in Km)	Salient Features of Existing Bridge		Features of Proposed Bridge	
		No. of Spans with Span Length (c/c of exp. Gap)	Total Width (m)	Proposed Length (m)	Total proposed Width
1	119+054	16 x 0.9	6.0	12	8.5
2	122+096	2 x 5.7	7.4	12	8.5

NOTE: GAD is given in CD

(ii) The following narrow bridges shall be widened:

S.No.	Design Chainage (Km)	Width (m)	Extent* of Widening	Span Arrangement (m)	Type of Structure			Cross Section at Deck Level for widening
					Foundation	Sub-Structure	Super-Structure	
1	164+529	5.2	3.9	3 x 6.3 + 4 x 6.0	Open	RC Wall	RC Solid Slab	8.5
2	165+555	5.3	3.9	6.3 + 3 x 6.0	Open	RC Wall	RC Solid Slab	8.5
3	168+362	5.2	3.9	2 x 6.0	Open	RC Wall	RC Solid Slab	8.5
4	169+488	5.2	3.9	2 x 6.3 + 5 x 6.0	Open	RC Wall	RC Solid Slab	8.5
5	170+099	5.2	3.9	2 x 6.2 + 2 x 6.0	Open	RC Wall	RC Solid Slab	8.5
6	179+382	4.5	4.6	3 x 4.6	Open	RC Wall	RC Solid Slab	8.5

7.3.2 *Additional new bridges*

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

S. No.	Bridge Location (Design Chainage, in Km)	Total Length (m)	Remarks
NIL			

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

S. No.	Design Chainage (Km)	Total length (m)	Remarks
NIL			

7.3.4 Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows

S. No.	Design Chainage (Km)	Existing span arrangement (m)	Remarks
NIL			

7.3.5 *Drainage system for bridge deck*
An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual

7.3.6 *Structures in marine environment*
The Project Alignment does not lie in Marine Alignment.

7.4 Rail-road bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in the Manual. The Width of proposed ROB shall be as specified in Schedule D.

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

S. No	Proposed Structure	Existing Chainage	Design Chainage	Name of Crossing	Proposed structural configuration	Proposed Super Structure	Proposed span arrangement (m)	Total Width of Structure
NIL								

7.4.3 **Road under-bridges**

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

S. No	Design Chainage (Km)	Number and length of span (m)
NIL		

7.5 Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9 and 3 of this Annex-I.

7.6 Repairs and strengthening of bridges and structures

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

A. Bridges

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
1	131+310	Minor repair works
2	136+062	Minor repair works
3	155+150	Minor repair works
4	159+698	Minor repair works
5	177+190	Minor repair works

B. ROB / RUB

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

C. Overpasses/Underpasses and other structures

S. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
NIL		

7.7 List of Major Bridges and Structures

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

S. No.	Type of Structure	Design Chainage (Km)	Remark
NIL			

Note: - *1. The location and vent size of all the culverts proposed for irrigation purposes shall be decided in consultation with irrigation authority/ independent engineer.*

2. Width of culvert shall be reconciled as per cross section at that location

3. Cross road culvert to be provided at the location of Major Junction/ Minor Junctions or utility purposes etc. shall be decided with independent Engineer shall not be treated as change of scope.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORK.

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of the IRC:SP:73-2015.

8.2 Specifications of the reflective sheeting shall be as per the Manual of Specifications (IRC:SP:73-2015).

9. ROAD SIDE FURNITURE

9.1 Road side furniture shall be provided in accordance with the provisions of Section 11 of the IRC:SP:73-2015.

a) Road boundary stones for the entire project highway.
b) Pedestrian guard rails: At each bus stop location.
c) Delineators: For the entire project highway at the locations as suggested in schedule D.

9.2 Overhead traffic signs: location and size

a) Full width overhead signs: 2 Nos.

b) Cantilever overhead signs: Nil

c) Overhead Traffic Signs (locations & Size) shall conform to the Manual of Specifications (IRC:SP:73-2015).

10. COMPULSORY AFFORESTATION

The minimum number of trees 8477 are required to be planted by the contractor as compensatory afforestation shall be as per Forest Conservation Act and as per conditions of revenue authority while giving permission. Any increase or decrease in numbers of trees as specified (as 500) shall not be treated as change of scope.

11. HAZARDOUS LOCATIONS

The road side safety/Crash barriers shall be provided at following locations for minimum length as per the Manual of Specifications (IRC:SP:73-2015). However, the actual length shall be identified as per requirement of clause 9.4 of IRC:SP:73-2015 in consultation with Authority Engineer. Any increase or decrease in length as specified shall not be treated as change of scope.

S. No.	Design Chainage (km)		Type	Side	Length of Barrier (m)	Remark
	From	To				
Nil						

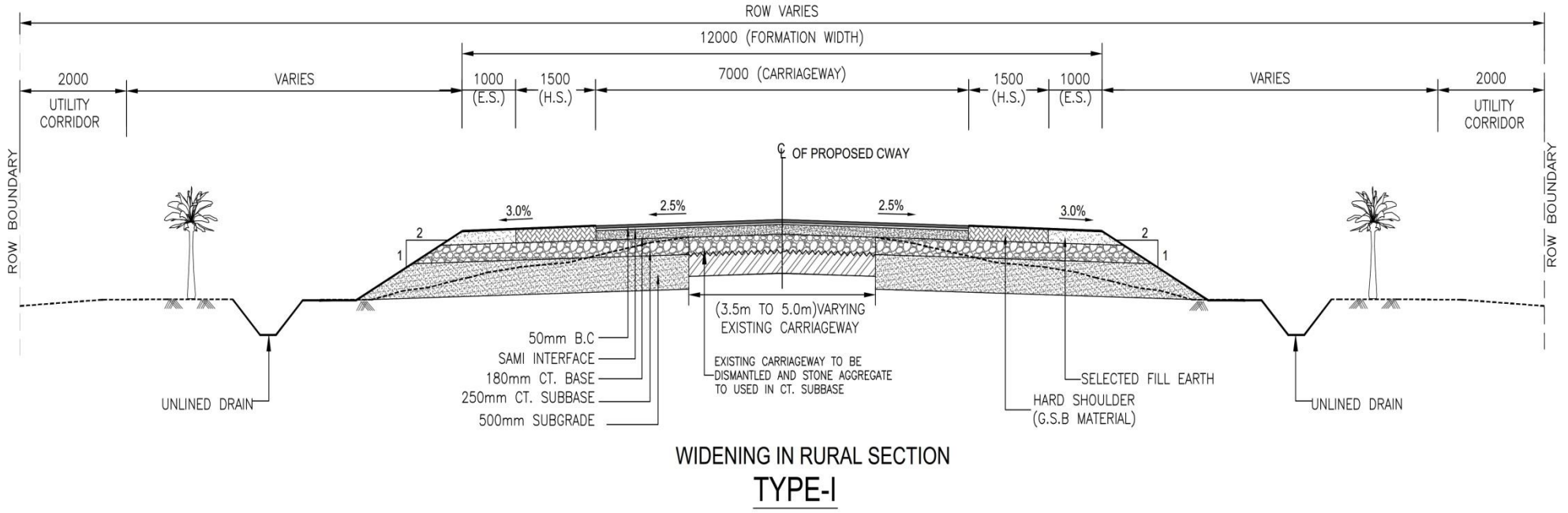
12. SPECIAL REQUIREMENTS FOR HILL ROAD

Not Applicable

13. CHANGE OF SCOPE

The length of Structures and bridges specified hereinabove shall be treated as an approximate assessment. The Contractor in accordance with the Specifications and Standards shall determine the actual lengths as required on the basis of detailed investigations. 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.

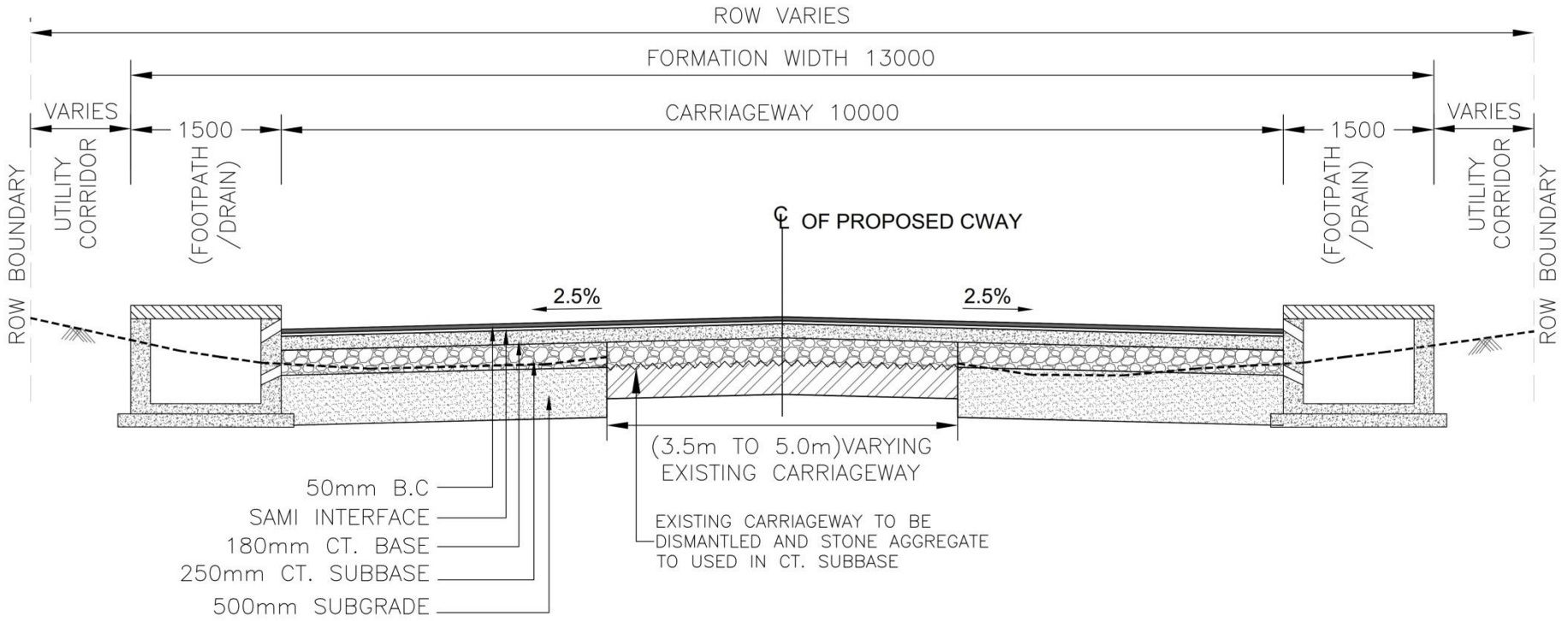
Appendix-B-I



WIDENING IN RURAL SECTION

TYPE-I

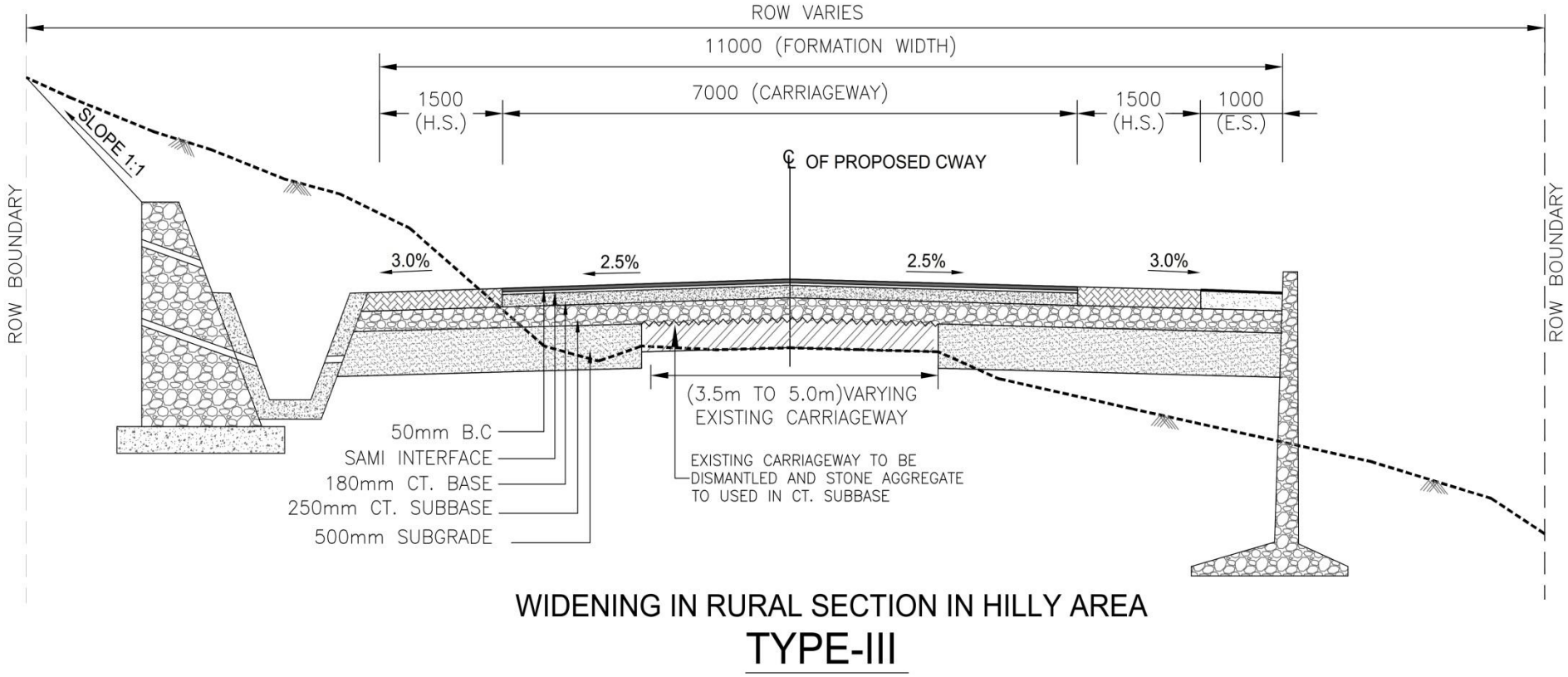
Appendix-B-I



WIDENING IN URBAN SECTION

TYPE-II

Appendix-B-I

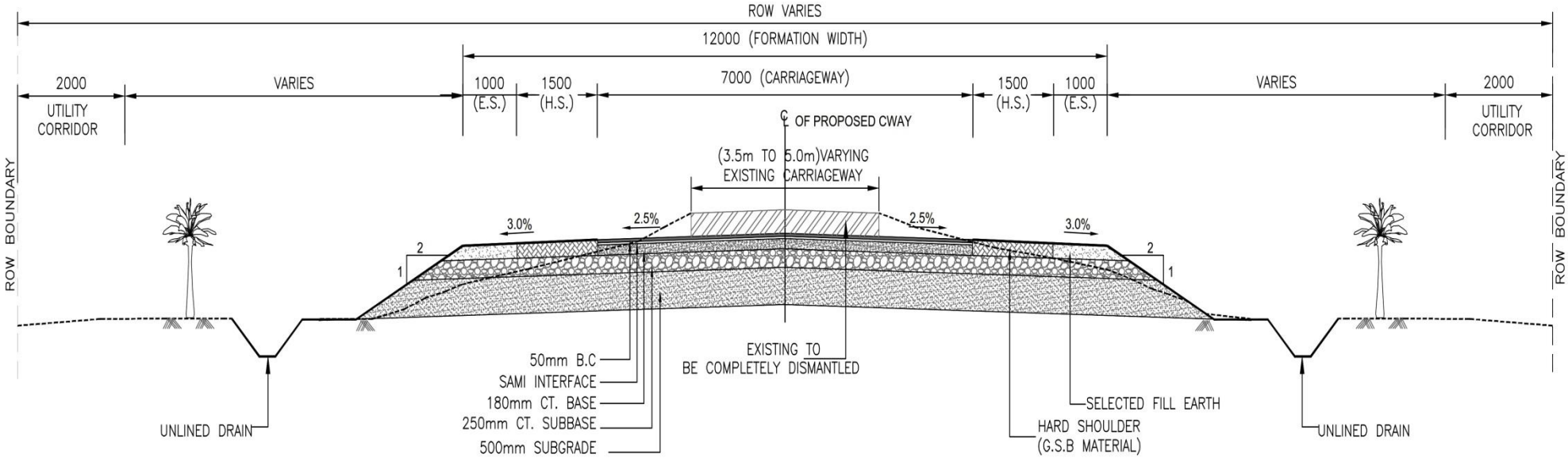


WIDENING IN RURAL SECTION IN HILLY AREA

TYPE-III

* Retaining wall and Breast wall shown in TCS drawing is typical. Location of these components should be applied as per site condition.

Appendix-B-I

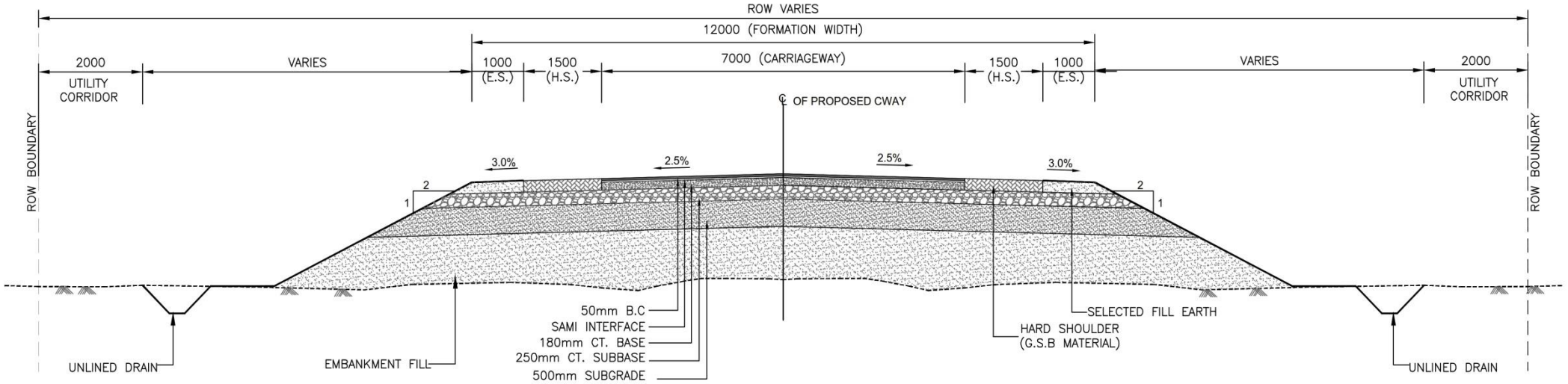


NEW CONSTRUCTION IN RURAL SECTION (CUTTING)

TYPE-IV

** TCS IV is proposed for cutting in rural section and drawing shown for the same is typical. Where ever required the breast wall must be provided, if there is cutting in hill.

Appendix-B-I



NEW CONSTRUCTION IN RURAL SECTION (FILLING)

TYPE-V

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) Roadside furniture;

b) Pedestrian facilities;

c) Bus shelter

d) Breast Wall & Retaining Wall

Others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Roadside furniture;

The roadside furniture shall include the provision of:

i. **Traffic Signs**:
Traffic signs include roadside signs, overhead signs and kerb-mounted signs along the entire Project Highway as per the manual of specifications.

ii. Pavement Markings:
Pavement markings shall cover road marking as per the manual of specifications.

iii. LED Traffic Blinkers:
LED Traffic Blinkers for the entire project highway at the locations as suggested in Manual.

iv. Crash barrier
As per clause 9.4 of IRC:SP-73 and as per details given in schedule-B

v. Delineators
Delineators for the entire Project Highway at the locations as suggested in Manual.

vi. **Hectometre / Kilometre stones:**
Hectometre/ Kilometre Stones for the entire Project Highway at the locations as suggested in Manual.

b) Pedestrian facilities;

The pedestrian facilities shall be provided as per the Manual.

c) Bus Shelter

The Contractor shall provide additional 16 nos. of Bus Shelters along the project highway and the locations are given below. The design of Bus Shelters should be aesthetically pleased with surrounding. The locations of these bus shelters shall be finalized by the Contractor in consultation with Authority's Engineer.

S. No.	Existing Chainage	Design Chainage	Side
Km 107.760 to 129.445			
1	111.637	111+630	Right
2	115.534	115+500	Left
3	119.125	119+060	Right
4	119.5	119+436	Left
5	122.725	122+651	Left
Km 130.600 to 138.0			
6	135.475	135+421	Right
7	136.2	136+139	Left
Km 155.0 to 181.0			
8	155.375	155+369	Left
9	155.4	155+394	Right
10	165.525	165+39	Right
11	167.35	167+201	Left
12	167.815	167+666	Left
13	175.075	174+926	Left
14	176.389	176+234	Left
15	179.275	179+113	Left
16	180.889	180+733	Left

d) Breast Wall / Retaining Wall

Breast Wall have been proposed along the roadway edge on the hilly side of the section of project road where cutting is required or cutting is more than available ROW. In hilly sections, breast Wall of Random Rubble Masonary shall be provided.

Breast wall and Retaining wall shall be provided as specified in table below & in accordance with the Manual of Specifications and Standards as referred in Schedule-D.

Breast Wall locations

S.No	Design Chainage		Side	Length (m)
	From	To		
Km 107.760 to 129.445				
1	109.260	109.300	Left	40
2	110.300	110.360	Left	60
3	110.480	110.520	Left	40
4	112.620	112.640	Right	20
5	112.780	112.880	Left	100
6	113.360	113.600	Both	480
7	114.060	114.080	Left	20
8	115.000	115.020	Left	20
9	115.640	115.920	Both	560
10	116.120	116.220	Both	200
11	117.000	117.200	Both	400
12	118.400	118.780	Both	760
13	119.360	119.440	Both	160
14	121.200	121.300	Both	200
15	121.620	121.660	Left	40
16	121.980	122.020	Right	40
17	123.830	123.840	Both	20
18	124.160	124.180	Right	20
19	126.580	126.640	Left	60
20	127.000	127.020	Right	20
21	128.400	128.440	Right	40
22	128.560	128.620	Both	120
23	129.040	129.050	Right	10
24	129.200	129.300	Both	200
Km 130.600 to 138.0				
27	137.100	137.120	Right	20
28	137.540	137.580	Right	40
29	137.600	137.880	Both	560
Km 155.0 to 181.0				
30	157.275	157.375	Both	200
31	158.225	158.275	Both	100
32	158.275	158.325	Left	50
33	160.05	160.13	Left	80

S.No	Design Chainage		Side	Length (m)
	From	To		
34	160.225	160.3	Right	75
35	160.3	160.35	Both	100
36	160.35	160.4	Left	50
37	160.4	160.45	Both	100
38	160.45	160.475	Right	25
39	160.65	160.7	Right	50
40	161.025	161.075	Right	50
Total Length (m)=				**5130**

Retaining wall shall be proposed to be installed in sections of the project road having filling embankment height > 3m or toe of the filling section is beyond available ROW to confine it within ROW.

Retaining Wall locations

S.No	Design Chainage		Side	Length (m)
	From	To		
Km 107.760 to 129.445				
1	109.800	109.840	Right	40
2	109.920	109.960	Right	40
3	110.180	110.280	Right	100
4	110.280	111.660	Both	2760
5	112.220	112.240	Right	20
6	112.240	112.280	Both	80
7	112.440	112.460	Right	20
8	112.960	113.020	Right	60
9	113.020	113.080	Left	60
10	113.180	113.200	Right	20
11	113.220	113.280	Both	120
12	113.620	113.660	Left	40
13	113.740	113.800	Left	60
14	113.900	113.920	Left	20
15	113.920	114.020	Left	100
16	114.120	114.185	Right	65
17	118.980	119.260	Both	560
18	119.500	119.560	Both	120
19	119.840	119.940	Left	100
20	121.860	121.920	Both	120

S.No	Design Chainage		Side	Length (m)
	From	To		
21	122.060	122.220	Left	160
22	124.240	124.340	Left	100
23	124.340	124.360	Both	40
24	125.000	125.060	Left	60
25	126.160	126.260	Right	100
26	126.280	126.320	Left	40
27	126.760	126.780	Right	20
28	126.780	126.860	Left	80
29	126.860	127.620	Left	760
30	127.620	127.860	Left	240
31	127.860	128.060	Left	200
Km 130.600 to 138.0				
32	137.020	137.060	Left	40
33	137.140	137.160	Both	40
Km 155.0 to 181.0				
34	160.3	160.45	Right	150
35	165.875	165.95	Both	150
36	166.125	166.175	Both	100
37	168.326	168.425	Left	99
38	168.425	168.475	Both	100
39	168.475	168.625	Right	150
40	169.425	169.6	Left	175
41	169.775	170.125	Both	700
42	172.725	172.775	Both	100
43	172.935	173.2	Left	265
44	174.2	174.35	Right	150
45	174.425	174.8	Both	750
46	174.8	174.85	Left	50
Total Length (m)=				**9324**

SCHEDULE – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

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

2. Design Standards

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

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

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1. Specification 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 Engineer in charge.

2. Deviations from the Specifications and Standards

2.1. 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.

2.2. 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:

a. In case of usage of soil stabilization technology, soil stabilizer shall be accredited by IRC.

b. Carriageway shall be 7.0m with 1.5m hard shoulder in rural section and 10.0m carriageway with 1.5m footpath with drain in urban section wherever ROW is available. IRC:SP:73-2015 shall be followed to the extent as required for execution of work in consonance with plan & profile and TCS.

S. No.	Clause Referred in Manual	Item	Provisions as per Manual	Modified Provision
1	2.2.1	Design Speed	80 kmph (min. speed for plain/rolling terrain)	Design speed has not been as per Manual in order to minimize the land acquisition and to restrict the construction within the available ROW
2	7.3(iv)	Width of bridge	11 carriageway including 0.5m Kerb shyness on both sides. 0.5m Crash barrier to be provided on both sides after kerb shyness.	8.5m width including crash barrier has been provided because of less traffic on the road.

SCHEDULE – E

(See Clause 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

1.1. The Contractor shall, at all-time maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

1.2 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.

1.3. All Materials, works and construction operations shall conform to the "SPECIFICATIONS FOR ROAD ANDBRIDGE WORKS (FIFTH REVISION, April 2013)", including latest corrections slips, issued by the Ministry of Surface Transport & Highways, Government of India and published by the Indian Roads Congress.

This being not an item rate contract, the procedure for Measurement and Payment for the items of works shall be in accordance with provision of Article 19 of the Agreement. Therefore the Sub Clauses of measurement for payment and rates in above specifications stand deleted.

Where the specifications for a work are not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

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: SP:35. 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 torrential rains, floods, earthquake or other natural disasters shall be undertaken by the Contractor at its own cost and/or out of the proceeds of insurance.

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

The Contractor shall repair and rectify the defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

Nature of Defect or deficiency		Time limit for repair/ rectification
ROADS		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Any significant change in roughness value from original value [more than 5%] in a stretch of 1 km (as measured by a Calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (Thirty) days
(vi)	Skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(x)	Any other defects/deficiency not covered	3 (Three) days

	above but pointed out by Engineer	
(b)	**Granular earth shoulders, side slopes, drains and culverts**	
(i)	Edge drop at shoulders exceeding 40 mm	7 (Seven) days
(ii)	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
(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 hours
(vii)	Railing, parapets, crash barriers	7 (Seven) days (Restore immediately if causing safety hazard)
(viii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of KM stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Danaged/missing roa signs required replacement	7 (Seven) days
(iv)	Damage to road mark ups	7 (Seven) days
(v)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours

(iii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (Thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(vi)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(f)	**Other Project Facilities, Rest Area and Approach roads**	
(i)	Damage in pedestrian facilities, truck lay-buys, bus-bays, bus-shelters, cattle, crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Cleaning of toilets	Every 4 hours
(iii)	Defects in electrical, water and sanitary installations	24 hours
(iv)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(v)	Rescue operations and attendance at accidents	Round the clock patrolling Inform police and other agencies immediately Removal of vehicles or debris. Assistance for first-aid and transport of accident victim to hospital Arrangement for safe movement of traffic

(vi)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days
(vii)	Damaged vehicles or debris on the road	4 (Four) hours
(viii)	Malfunctioning of the mobile cranes	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/scaling Temporary measures Permanent measures	 Within 48 hours Within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Bearings (metallic) of bridges**	
(i)	Deformation	15 (fifteen) days Greasing of metallic bearings once in a year
(c)	**Joints**	
(i)	malfunctioning of joints	15 (fifteen) days
(ii)	Any other defects/deficiency not covered above (a) , (b) &(c) but pointed out by Engineer	3 (Three) days
(d)	**Foundations**	
(i)	Scouring and/or cavitation	15 (fifteen) days
(e)	**Piers, abutments, return walls and wing walls**	
(i)	Cracks and damages including settlement and tilting, Spalling, scaling	30 (thirty) days
(ii)	Any other defects/deficiency not covered above (d) & (e) but pointed out by Engineer	3 (Three) 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 of safety)
(iv)	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
(viii)	Any other defects/deficiency not covered above but pointed out by Engineer	3 (Three) days

The failure to address above measures for any of the defects/deficiency may attract reduction in payment as per schedule M

Schedule-F

(See Clause 3.1.5(a))

APPLICABLE PERMITS

1. **Applicable Permits**

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 Panchayat 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, clearances or approvals required under Applicable Laws.

1.2 Applicable permits, as required, relating to environmental protection and conservation shall have been produced by the Authority in accordance with the provisions of this Agreement

Schedule-G

(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I

(See Clause 7.1.1)

PERFORMANCE SECURITY

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands", 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 and Defects Liability Period (as defined in the Agreement) in a sum of Rs. …. Crore (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 and 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 [Executive Director, NHIDCL], 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 difference 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 Performance Security shall cease to be in force and effect upto 90 (ninety) days after the end of the Defects Liability Period as set forth in Clauses 17.1 of EPC agreement.

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 authorized 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 para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands", subject to and in accordance with the provisions of the Agreement.

a. in accordance with the Clause 7.5.3 of the Agreement, whenever the amount of the retention money (hereinafter called "Retention Money") held by the Authority exceeds 1% (one per cent) of the Contract Price, the Contractor may, at its option, withdraw the Retention Money after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

b. We, …….. through our branch at ……. (the "Bank") have agreed to furnish this bank guarantee (hereinafter called the "Guarantee") for the amount of Rs. ……. (……. in words) (the "**Guarantee Amount"**).

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

1. The Bank hereby unconditionally and irrevocably 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 [Executive Director, NHIDCL], 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 difference 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 Retention Money and 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 Retention Money.

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 90 (ninety) days after the end of the Defects Liability Period specified in Clauses 17.1 of the Agreement.

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 authorized 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 para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This guarantee shall also be operable at our…… Branch at New Delhi, 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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-III

(Schedule-G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

The Managing Director,
NHIDCL,
3rd Floor, PTI Building, Sansad Marg,
New Delhi

WHEREAS:

(A) [name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [**NHIDCL**], (hereinafter called "**the Authority**") for the "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands", subject to and in accordance with the provisions of the Agreement.

(B) in accordance with the Clause 19.2 of the Agreement the Authority shall make to the Contractor advance payment (hereinafter called "Advance Payment") equal to 10% (ten per cent) of the contract price for mobilization expenses and acquisition of equipment; 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 equal to the amount of each 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; and the amount of (first/second) installment of the Advance Payment 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:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment 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 [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment 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 difference 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 90 (ninety) days after the end of the one year from the date of payment of the installment of the Advance Payment, as set forth in Clause 19.2 of the Agreement.

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 authorized 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 para 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. Notwithstanding anything contained herein before, our liability under this Bank Guarantee is restricted to Rs._____ (Rs._____ in words) and the bank guarantee shall remain valid till _____. Unless a claim or a demand in writing is served upon us on or before_____ all our liability under this Bank Guarantee shall cease.

13. This guarantee shall also be operable at our…… Branch at New Delhi, 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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)

Schedule-H

(See Clauses 10.1.4 and 19.3)

Contract Price Weightages

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

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	**2**	**3**	**4**
Road works including culverts, widening and repair of culverts	56.06%	**B.1- Reconstruction/ New 4-lane realignment/bypass (Flexible pavement)**	
		(1) Earthwork up to top of the sub-grade	12.65%
		(2) Treated Sub-Base Course	32.01%
		(3) Treated Base Course	20.02%
		(4) Bituminous Base Course	0.00
		(5) Wearing Coat	19.56%
		D-Re-Construction and New culverts on existing road, realignments, bypasses:	
		Culverts (lengths < 6m)	15.77%
Minor Bridges/ Underpasses/ Overpasses	4.03%	**A.1- Widening and Repair of Minor bridges (length >6 m and < 60 m)**	
		Minor bridges	48.77%
		A.2- New Minor bridges (length >6 m and < 60 m)	
		(1) Foundation + Sub- Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/ pier cap.	42.08%

		(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 in all respect.	7.13%
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	2.02%
Major Bridge works	0.10%	**A.1- Widening and Repair of Major bridges**	
		Major Bridges	100%
		A.2 -New major bridges & Viaduct	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/ return walls	0.00%
		(7) Guide Bunds, River Training works etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
Other works	39.82%	(i) Road side drains	37.16%
		(ii) Road signs, markings, km stones, safety devices,….	6.55%
		(iii) Junctions	7.79%
		(iv) Protection Works	44.98%
		(v) Project facilities (a) Bus Bays (b) Truck lay-byes (c) Rest areas (d) others	2.74% 0.000% 0.000% 0.000%

		(vi) Repair of Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.000%
		(vii) Site Clearance & Dismantling	0.77%
		(viii) Safety and traffic management during construction	0.00%

- The above list is illustrative and may require modification as per the scope of the work.

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 for Payment	Percentage weightage	Payment Procedure
B.1- Reconstruction/ New 4-lane realignment/bypass (Flexible pavement)		
(1) Earthwork up to top of the sub-grade	12.65%	Unit of measurement is linear length for two lane. 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.
(2) Treated Sub-Base Course	32.01%	
(3) Treated Base Course	20.02%	
(4) Bituminous Base Course	0.00	
(5) Wearing Coat	19.56%	
D-Re-construction and New culverts on existing road, realignments, bypasses:		
(1) Culverts (length < 6m)	15.77%	Cost of each culvert shall be determined on pro- rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts.

@ 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 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 Bridge 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 Repair of Minor bridges (length >6 m and < 60 m)	48.77%	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- <u>New minor bridges</u>		
(1) Foundation + Sub- Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/ pier cap.	48.02%	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 + sub-structure shall be made on pro-rata basis on completion of a

		stage i.e. not less than 25% of the scope of foundation + sub-structure of each bridge subject to completion of at least two foundations along with sub-structure upto abutment/pier cap level 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 in all respect.	7.13%	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.
(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	2.02%	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.

1.3.3 Major Bridge works & Viaducts

Procedure for estimating the value of Major Bridge works & Viaducts shall be as stated in table 1.3.3:

Table 1.3.3

Stage for Payment	**Percentage weightage**	**Payment Procedure**
A.1- Widening and Repair of Major bridges	100%	Cost of each major bridge shall be determined on pro rata basis with respect to the total linear length of the major bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.

A.2-New major bridges & Viaduct		
(1) Foundation	0.000%	Cost of each major bridge/ Viaduct shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridge/ Viaduct. 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/ Viaduct subject to completion of at least two foundations of the Major bridge/ Viaduct. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.000%	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 the Major bridge/ Viaduct subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the Major bridge/ Viaduct.
(3) Super-structure (including bearings)	0.000%	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.
(4) Wearing Coat including expansion joints	0.000%	Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.000%	Payment shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/ return walls	0.000%	Payment shall be made on completion of all wing walls/return walls complete in all

		respects as specified.
(7) Guide Bunds, River Training works etc.	0.000%	Payment 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)	0.000%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respect as specified.

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 for Payment		**Percentage weightage**	**Payment Procedure**
(i) Road side drains		37.16%	Unit of measurement is linear length in km. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(ii) Road signs, markings, km stones, safety devices,….		6.55%	
(iii) Junctions		7.79%	Payment shall be made on pro rata basis for completed facilities.
(iv) Protection works		44.98%	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 10% (ten per cent) of the total length.
(v) Project facilities	(i) Bus byes	2.74%	Payment shall be made on pro-rata basis for completed facilities.
	(ii) Truck lay bye	0.000%	
	(iii) Rest areas	0.000%	
	(iv) others	0.000%	
(vi) Repair of Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs		0.000%	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 10% (ten per cent) of the total length.
(vii) Site Clearance & Dismantling		0.77%	

(v) Safety and traffic management during construction	0.000%	Payment shall be made on pro rata basis every six months.

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)

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

Alignment Plan and longitudinal Section are enclosed in digital form in CD marked as Annex-I

[Note: The Authority shall describe in this Annex-I, all the Drawings that the Contractor is required to furnish under Clause 10.2.]

- Horizontal and Vertical Alignment (with plan & profile) with details of reference pillars. Horizontal Intersection Point, Vertical Intersection Points, elements of curves, and sight distances.
- Cross-section at 50m interval along the alignment within ROW.
- Typical Cross-section with details of pavement structures.
- Detailed drawings of individual Bridges/Structures/ROB.
- Detailed drawing for individual culverts.
- Detailed layout drawings for intersections and interchanges.
- Drawings for Road sign, Markings.
- Traffic Management drawings for safety in construction zones.
- Detailed drawings of guide bunds and protection works and retaining structures.
- Detailed drawings of Drainage including Masonry drains and other drains.

SCHEDULE-J

(See Clause 10.3.2)

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

2.1 Project Milestone-I shall occur on the date falling on the 120th (One Twenty) day from the Appointed Date (the "**Project Milestone-I"**).

2.2 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 completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 330th (Three hundred and thirty) day from the Appointment Date (the **"Project Milestone-II**").

Prior to the occurrence of Project Milestone-II, the Contractor shall have commenced construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements completion schedule in reference to Schedule-H Items, Stages and Sub-stages payment statements for an amount not less than 35% (thirty five per cent) of the Contract Price.

4. Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 540th (five hundred and Fourty) day from the Appointed Date (the "**Project Milestone-III"**).

4.2 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 payment Statements for an amount not less than 60% (sixty per cent) of the Contract Price.

5 Schedule Completion Date

5.1 The Schedule Completion Date shall occur on the 730th (seven hundred and thirtieth) day from the Appointed Date.

5.2 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 12.1.2)

Tests on Completion

1. Schedule for Tests

1.1 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.

1.2 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

2.1 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: all the tests specified in IRC code, manual and MORTH specifications for the road and Bridge works, 5th revision, 2013.

2.2 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 [2,000 (two thousand)] mm for each kilometer.

2.3 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) meters or more shall also be subjected to load testing.

2.4 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.

2.5 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.

2.6 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.

SCHEDULE-L

(See Clause 12.2 and 12.4)

PROVISIONAL CERTIFICATE

1. I, …….. (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for construction of the "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2. Construction Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the users of the Project Highway or other their safety. The contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid punch list.

3. In view of the foregoing, I am satisfied that that Project Highway can be safety and reliably placed in service of the users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the ……day of …….20 …..

ACCEPTED, SIGNED, SEALED AND DELIVERED

For and on behalf of

CONTRACTOR

by:

SIGNED, SEALED AND DELIVERED

For and on behalf of

by Authority's Engineer

(Signature) (Signature)

COMPLETION CERTIFICATE

1. I, …….. (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for construction of the "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands 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 safety 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

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

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

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

1.3 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

2.1 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%
(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%

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

R=P/100 * M * 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 noncompliance 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 noncompliance.

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

1.1 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 Ministry of Road Transport and Highways (the "**Authority**") and ..... (the "**Contractor**") for "Rehabilitation and up-gradation of section from Km 107.760 to Km 129.445 (After Middle strait to Humphrey), Km 130.600 to Km 138 (After Humphrey to Kadamtala) & Km 155.00 to Km 181.0 (End of Jarwa to Rangat) of NH-4 (Total length: 54.71 Km) to 2-Lane with hard shoulder in the Union Territory of Andaman & Nicobar Islands, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

2.1 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.

2.2 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.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3. General

3.1 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.

3.2 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).

3.2 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.

3.4 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.

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

3.6 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

4.1 During the Construction Period, the Authority's Engineer shall review 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 10.1.6. The Authority's Engineer shall complete such review 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.

4.2 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.

4.3 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.

4.4 The Authority's Engineer shall complete the review 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.

4.5 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.

4.6 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.

4.7 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.

4.8 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.

4.9 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.

4.10 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.

4.11 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.

4.12 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.

4.13 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.

4.14 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.

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

4.16 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.

4.17 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.

4.18 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

5.1 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.

5.2 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.

5.3 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.

5.4 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.

5.5 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

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

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

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

7. Payments

7.1 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).

7.2 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.

7.3 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.

7.4 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

9.1 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.

9.2 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.

9.3 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.

9.4 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.

9.5 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 19.3.1 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 13.2.3 (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

1.1. The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the last 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.

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the authority and the Contractor against all loss or damage from whatsoever 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 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 arises from a cuase occurring prior to the issue of 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

3.1. The Contractor shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Paragraph l 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 and occurring before the issue of the Performance Certificate. 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 as per the applicable laws of government and procedure in vogue.

3.2 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 and 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.