National Highways & Infrastructure Development Corporation Limited

EPC Schedules

FOR

Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya.

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF INDIA)

FEBRUARY 2023

NHIDCL, 3RD FLOOR, PRESS TRUST OF INDIA BUILDING, 4, PARLIAMENT STREET,
NEW DELHI – 110001

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

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

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

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

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

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

Annex-I

(Schedule-A)

SITE

1. Site

The Site of the Two-Lane Project Highway comprises the section of National Highway-127B Road "Darugiri - Williamnagar section of project road (NH-127B) starts at Y-junction of NH62(New NH-217) (Existing chainage 112+000) near Darugiri village and terminates at existing junction with PWD Road (Existing chainage 151+060) near Rongrengiri Check post. The project road covers a total length of 39.060 km. The Project Road traverses through the East Garo Hills District in the State of Meghalaya. The land, carriageway and structures comprising the Site are described below. The land, carriageway and structures comprising the site are described below.

2. Land

The Site of the Project Highway comprises the land as described below:

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
1	0+000	0+580	580	15	15	30	Darugiri Reserve Forest
2	0+580	0+720	140	15	15	30	
3	0+720	1+830	1110	15	15	30	
4	1+830	2+150	320	12	12	24	Revenue
5	2+150	2+700	550	12	12	24	Revenue
6	2+700	2+717	17	12	12	24	Revenue
7	2+717	2+766	49	12	12	24	Revenue
8	2+766	2+780	14	12	12	24	Revenue
9	2+780	2+800	20	12	12	24	Revenue
10	2+800	2+816	16	12	12	24	Revenue
11	2+816	2+856	40	12	12	24	Revenue
12	2+856	2+875	19	12	12	24	Revenue
13	2+875	3+031	156	12	12	24	Revenue
14	3+031	3+143	112	12	12	24	Revenue
15	3+143	3+184	41	12	12	24	Revenue
16	3+184	3+220	36	12	12	24	Revenue
17	3+220	3+593	373	12	12	24	Revenue
18	3+593	3+666	73	12	12	24	Revenue
19	3+666	3+961	295	12	12	24	Revenue
20	3+961	3+964	3	12	12	24	Revenue
21	3+964	4+048	84	12	12	24	Revenue
22	4+048	4+120	72	12	12	24	Deemed Forest
23	4+120	4+127	7	12	12	24	Revenue
24	4+127	4+147	20	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
25	4+147	4+197	50	12	12	24	Revenue
26	4+197	4+230	33	12	12	24	Revenue
27	4+230	4+236	6	12	12	24	Revenue
28	4+236	4+320	84	12	12	24	Revenue
29	4+320	4+393	73	12	12	24	Revenue
30	4+393	4+397	4	12	12	24	Revenue
31	4+397	4+795	398	12	12	24	Revenue
32	4+795	4+925	130	12	12	24	Deemed Forest
33	4+925	4+931	6	12	12	24	Revenue
34	4+931	5+035	104	12	12	24	Revenue
35	5+035	5+047	12	12	12	24	Revenue
36	5+047	5+106	59	12	12	24	Deemed Forest
37	5+106	5+126	20	12	12	24	Revenue
38	5+126	5+153	27	12	12	24	Revenue
39	5+153	5+234	81	12	12	24	Revenue
40	5+234	5+305	71	12	12	24	Revenue
41	5+305	5+315	10	12	12	24	Revenue
42	5+315	5+518	203	12	12	24	Revenue
43	5+518	5+558	40	12	12	24	Revenue
44	5+558	5+740	182	12	12	24	Revenue
45	5+740	5+772	32	12	12	24	Revenue
46	5+772	5+817	45	12	12	24	Revenue
47	5+817	5+832	15	12	12	24	Revenue
48	5+832	5+895	63	12	12	24	Revenue
49	5+895	5+955	60	12	12	24	Revenue
50	5+955	5+957	2	12	12	24	Revenue
51	5+957	6+105	148	12	12	24	Revenue
52	6+105	6+353	248	12	12	24	Revenue
53	6+353	6+533	180	12	12	24	Revenue
54	6+533	6+553	20	12	12	24	Revenue
55	6+553	6+711	158	12	12	24	Deemed Forest
56	6+711	6+775	64	12	12	24	Deemed Forest
57	6+775	6+778	3	12	12	24	Revenue
58	6+778	6+856	78	12	12	24	Deemed Forest
59	6+856	6+859	3	12	12	24	Revenue
60	6+859	6+939	80	12	12	24	Deemed Forest
61	6+939	7+022	83	12	12	24	Deemed Forest
62	7+022	7+040	18	12	12	24	Revenue
63	7+040	7+200	160	12	12	24	Revenue
64	7+200	7+230	30	12	12	24	Revenue
65	7+230	7+275	45	12	12	24	Revenue
66	7+275	7+300	25	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
67	7+300	7+322	22	12	12	24	Revenue
68	7+322	7+331	9	12	12	24	Revenue
69	7+331	7+365	34	12	12	24	Revenue
70	7+365	7+390	25	12	12	24	Revenue
71	7+390	7+400	10	12	12	24	Revenue
72	7+400	7+600	200	12	12	24	Revenue
73	7+600	7+752	152	12	12	24	Revenue
74	7+752	7+881	129	12	12	24	Deemed Forest
75	7+881	8+124	243	12	12	24	Deemed Forest
76	8+124	8+136	12	12	12	24	Deemed Forest
77	8+136	8+211	75	12	12	24	Revenue
78	8+211	8+408	197	12	12	24	Revenue
79	8+408	8+485	77	12	12	24	Revenue
80	8+485	8+610	125	12	12	24	Revenue
81	8+610	8+647	37	12	12	24	Revenue
82	8+647	8+681	34	12	12	24	Revenue
83	8+681	8+773	92	12	12	24	Revenue
84	8+773	8+797	24	12	12	24	Revenue
85	8+797	8+814	17	12	12	24	Revenue
86	8+814	8+818	4	12	12	24	Revenue
87	8+818	8+830	12	12	12	24	Revenue
88	8+830	8+958	128	12	12	24	Revenue
89	8+958	9+021	63	12	12	24	Revenue
90	9+021	9+050	29	12	12	24	Revenue
91	9+050	9+058	8	12	12	24	Revenue
92	9+058	9+101	43	12	12	24	Revenue
93	9+101	9+135	34	12	12	24	Revenue
94	9+135	9+202	67	12	12	24	Revenue
95	9+202	9+208	6	12	12	24	Revenue
96	9+208	9+300	92	12	12	24	Revenue
97	9+300	9+403	103	12	12	24	Revenue
98	9+403	9+435	32	12	12	24	Revenue
99	9+435	9+506	71	12	12	24	Revenue
100	9+506	9+521	15	12	12	24	Revenue
101	9+521	9+682	161	12	12	24	Revenue
102	9+682	9+816	134	12	12	24	Revenue
103	9+816	9+835	19	12	12	24	Revenue
104	9+835	9+870	35	12	12	24	Revenue
105	9+870	9+930	60	12	12	24	Revenue
106	9+930	9+952	22	12	12	24	Revenue
107	9+952	9+981	29	12	12	24	Deemed Forest
108	9+981	10+061	80	12	12	24	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
109	10+061	10+079	18	12	12	24	Deemed Forest
110	10+079	10+312	233	12	12	24	Deemed Forest
111	10+312	10+408	96	12	12	24	Revenue
112	10+408	10+426	18	12	12	24	Deemed Forest
113	10+426	10+428	2	12	12	24	Deemed Forest
114	10+428	10+442	14	12	12	24	Deemed Forest
115	10+442	10+478	36	12	12	24	Revenue
116	10+478	10+491	13	12	12	24	Deemed Forest
117	10+491	10+525	34	12	12	24	Deemed Forest
118	10+525	10+539	14	12	12	24	Revenue
119	10+539	10+569	30	12	12	24	Revenue
120	10+569	10+582	13	12	12	24	Revenue
121	10+582	10+635	53	12	12	24	Revenue
122	10+635	10+650	15	12	12	24	Revenue
123	10+650	10+715	65	12	12	24	Revenue
124	10+715	10+730	15	12	12	24	Revenue
125	10+730	10+813	83	12	12	24	Revenue
126	10+813	10+826	13	12	12	24	Revenue
127	10+826	10+886	60	12	12	24	Revenue
128	10+886	10+895	9	12	12	24	Revenue
129	10+895	10+945	50	12	12	24	Revenue
130	10+945	10+950	5	12	12	24	Revenue
131	10+950	11+082	132	15	15	30	Songsak Reserve Forest
132	11+082	11+122	40	15	15	30	
133	11+122	11+302	180	15	15	30	
134	11+302	11+737	435	15	15	30	
135	11+737	11+751	14	15	15	30	
136	11+751	17+562	5811	15	15	30	
137	17+562	17+570	8	15	15	30	
138	17+570	17+670	100	15	15	30	
139	17+670	17+678	8	15	15	30	
140	17+678	17+685	7	15	15	30	
141	17+685	17+766	81	15	15	30	
142	17+766	18+065	299	15	15	30	
143	18+065	18+163	98	12	12	24	Revenue
144	18+163	18+240	77	12	12	24	Revenue
145	18+240	19+015	775	12	12	24	Revenue
146	19+015	19+018	3	12	12	24	Revenue
147	19+018	19+097	79	12	12	24	Revenue
148	19+097	19+155	58	12	12	24	Revenue
149	19+155	19+420	265	12	12	24	Revenue
150	19+420	19+460	40	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
151	19+460	19+483	23	12	12	24	Revenue
152	19+483	19+500	17	12	12	24	Revenue
153	19+500	19+668	168	12	12	24	Revenue
154	19+668	19+698	30	12	12	24	Revenue
155	19+698	19+718	20	12	12	24	Revenue
156	19+718	19+744	26	12	12	24	Revenue
157	19+744	19+825	81	12	12	24	Revenue
158	19+825	19+850	25	12	12	24	Revenue
159	19+850	19+902	52	12	12	24	Revenue
160	19+902	19+997	95	12	12	24	Revenue
161	19+997	20+211	214	12	12	24	Revenue
162	20+211	20+227	16	12	12	24	Revenue
163	20+227	20+269	42	12	12	24	Revenue
164	20+269	20+339	70	12	12	24	Revenue
165	20+339	20+395	56	12	12	24	Revenue
166	20+395	20+459	64	12	12	24	Revenue
167	20+459	20+477	18	12	12	24	Revenue
168	20+477	20+485	8	12	12	24	Revenue
169	20+485	20+500	15	12	12	24	Revenue
170	20+500	20+515	15	12	12	24	Revenue
171	20+515	20+579	64	12	12	24	Revenue
172	20+579	20+600	21	12	12	24	Revenue
173	20+600	20+770	170	12	12	24	Revenue
174	20+770	20+820	50	12	12	24	Revenue
175	20+820	20+960	140	12	12	24	Revenue
176	20+960	21+068	108	12	12	24	Revenue
177	21+068	21+074	6	12	12	24	Revenue
178	21+074	21+090	16	12	12	24	Revenue
179	21+090	21+145	55	12	12	24	Revenue
180	21+145	21+164	19	12	12	24	Revenue
181	21+164	21+207	43	12	12	24	Revenue
182	21+207	21+225	18	12	12	24	Revenue
183	21+225	21+240	15	12	12	24	Revenue
184	21+240	21+242	2	12	12	24	Revenue
185	21+242	21+248	6	12	12	24	Revenue
186	21+248	21+273	25	12	12	24	Revenue
187	21+273	21+357	84	12	12	24	Revenue
188	21+357	21+445	88	12	12	24	Revenue
189	21+445	21+469	24	12	12	24	Revenue
190	21+469	21+473	4	12	12	24	Revenue
191	21+473	21+567	94	12	12	24	Deemed Forest
192	21+567	21+599	32	12	12	24	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
193	21+599	21+617	18	12	12	24	Deemed Forest
194	21+617	21+697	80	12	12	24	Deemed Forest
195	21+697	21+702	5	12	12	24	Deemed Forest
196	21+702	21+715	13	12	12	24	Revenue
197	21+715	21+720	5	12	12	24	Revenue
198	21+720	21+775	55	12	12	24	Revenue
199	21+775	21+792	17	12	12	24	Revenue
200	21+792	21+798	6	12	12	24	Deemed Forest
201	21+798	21+821	23	12	12	24	Deemed Forest
202	21+821	21+860	39	12	12	24	Deemed Forest
203	21+860	21+873	13	16	12	28	Deemed Forest
204	21+873	21+887	14	16	12	28	Deemed Forest
205	21+887	21+936	49	16	12	28	Deemed Forest
206	21+936	21+950	14	16	12	28	Deemed Forest
207	21+950	21+960	10	16	12	28	Deemed Forest
208	21+960	22+000	40	18	12	30	Deemed Forest
209	22+000	22+007	7	20	12	32	Deemed Forest
210	22+007	22+010	3	20	12	32	Deemed Forest
211	22+010	22+020	10	20	12	32	Deemed Forest
212	22+020	22+040	20	22	22	44	Deemed Forest
213	22+040	22+043	3	23	23	46	Deemed Forest
214	22+043	22+080	37	23	23	46	Deemed Forest
215	22+080	22+100	20	25	23	48	Deemed Forest
216	22+100	22+113	13	26	24	50	Deemed Forest
217	22+113	22+120	7	26	24	50	Deemed Forest
218	22+120	22+140	20	26	25	51	Deemed Forest
219	22+140	22+180	40	26	26	52	Deemed Forest
220	22+180	22+220	40	120	50	170	Bridge
221	22+200	22+240	40	21	27	48	Deemed Forest
222	22+240	22+260	20	21	27	48	Deemed Forest
223	22+260	22+280	20	21	29	50	Deemed Forest
224	22+280	22+300	20	21	28	49	Deemed Forest
225	22+300	22+320	20	21	29	50	Deemed Forest
226	22+320	22+340	20	22	30	52	Deemed Forest
227	22+340	22+360	20	22	31	53	Deemed Forest
228	22+360	22+380	20	24	32	56	Deemed Forest
229	22+380	22+400	20	24	33	57	Deemed Forest
230	22+400	22+420	20	29	34	63	Deemed Forest
231	22+420	22+440	20	34	36	70	Deemed Forest
232	22+440	22+460	20	38	37	75	Deemed Forest
233	22+460	22+470	10	41	37	78	Deemed Forest
234	22+470	22+478	8	120	50	170	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
235	22+478	22+485	7	120	50	170	Deemed Forest
236	22+485	22+490	5	120	50	170	Deemed Forest
237	22+490	22+505	15	120	50	170	Revenue
238	22+505	22+560	55	42	38	80	Revenue
239	22+560	22+580	20	42	39	81	Revenue
240	22+580	22+600	20	42	38	80	Revenue
241	22+600	22+620	20	42	37	79	Revenue
242	22+620	22+660	40	120	50	170	Bridge
243	22+660	22+680	20	45	41	86	Revenue
244	22+680	22+700	20	45	41	86	Revenue
245	22+700	22+760	60	46	43	89	Revenue
246	22+760	22+840	80	46	49	95	Revenue
247	22+840	22+900	60	44	48	92	Revenue
248	22+900	22+920	20	44	46	90	Revenue
249	22+920	22+940	20	46	46	92	Revenue
250	22+940	22+960	20	47	47	94	Revenue
251	22+960	23+000	40	48	48	96	Revenue
252	23+000	23+040	40	50	48	98	Revenue
253	23+040	23+080	40	52	50	102	Revenue
254	23+080	23+100	20	54	51	105	Revenue
255	23+100	23+120	20	53	53	106	Revenue
256	23+120	23+140	20	52	56	108	Revenue
257	23+140	23+160	20	51	58	109	Revenue
258	23+160	23+200	40	51	59	110	Revenue
259	23+200	23+220	20	53	58	111	Revenue
260	23+220	23+240	20	55	57	112	Revenue
261	23+240	23+260	20	57	57	114	Revenue
262	23+260	23+300	40	59	56	115	Revenue
263	23+300	23+320	20	62	56	118	Revenue
264	23+320	23+340	20	63	56	119	Revenue
265	23+340	23+400	60	64	58	122	Revenue
266	23+400	23+440	40	65	58	123	Revenue
267	23+440	23+460	20	66	59	125	Revenue
268	23+460	23+480	20	67	60	127	Revenue
269	23+480	23+500	20	67	62	129	Revenue
270	23+500	23+520	20	67	64	131	Revenue
271	23+520	23+540	20	67	66	133	Revenue
272	23+540	23+560	20	67	69	136	Revenue
273	23+560	23+580	20	68	70	138	Revenue
274	23+580	23+600	20	69	72	141	Revenue
275	23+600	23+620	20	69	73	142	Revenue
276	23+620	23+640	20	70	75	145	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
277	23+640	23+660	20	70	77	147	Revenue
278	23+660	23+700	40	71	78	149	Revenue
279	23+700	23+740	40	69	81	150	Revenue
280	23+740	23+780	40	68	83	151	Revenue
281	23+780	23+800	20	69	83	152	Revenue
282	23+800	23+820	20	70	78	148	Revenue
283	23+820	23+840	20	71	78	149	Revenue
284	23+840	23+860	20	74	78	152	Revenue
285	23+860	23+880	20	75	79	154	Revenue
286	23+880	23+900	20	76	81	157	Revenue
287	23+900	23+920	20	78	78	156	Revenue
288	23+920	23+940	20	80	77	157	Revenue
289	23+940	23+960	20	83	77	160	Revenue
290	23+960	23+980	20	85	76	161	Revenue
291	23+980	24+000	20	85	77	162	Revenue
292	24+000	24+020	20	86	78	164	Revenue
293	24+020	24+040	20	86	80	166	Revenue
294	24+040	24+060	20	85	82	167	Revenue
295	24+060	24+080	20	85	85	170	Revenue
296	24+080	24+100	20	84	88	172	Revenue
297	24+100	24+120	20	84	90	174	Revenue
298	24+120	24+140	20	86	86	172	Revenue
299	24+140	24+160	20	90	84	174	Revenue
300	24+160	24+200	40	120	80	200	Bridge
301	24+200	24+240	40	97	83	180	Revenue
302	24+240	24+260	20	96	82	178	Revenue
303	24+260	24+280	20	95	81	176	Revenue
304	24+280	24+300	20	94	81	175	Revenue
305	24+300	24+340	40	93	80	173	Revenue
306	24+340	24+380	40	92	80	172	Revenue
307	24+380	24+460	80	90	81	171	Revenue
308	24+460	24+520	60	92	80	172	Revenue
309	24+520	24+560	40	93	78	171	Revenue
310	24+560	24+580	20	92	78	170	Revenue
311	24+580	24+600	20	87	78	165	Revenue
312	24+600	24+620	20	83	78	161	Revenue
313	24+620	24+640	20	82	80	162	Revenue
314	24+640	24+660	20	81	84	165	Revenue
315	24+660	24+680	20	81	88	169	Revenue
316	24+680	24+700	20	81	86	167	Revenue
317	24+700	24+720	20	80	86	166	Revenue
318	24+720	24+740	20	79	85	164	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
319	24+740	24+760	20	78	85	163	Revenue
320	24+760	24+780	20	77	84	161	Revenue
321	24+780	24+800	20	76	84	160	Revenue
322	24+800	24+820	20	75	83	158	Revenue
323	24+820	24+840	20	74	81	155	Revenue
324	24+840	24+860	20	72	78	150	Revenue
325	24+860	24+880	20	71	76	147	Revenue
326	24+880	24+900	20	70	75	145	Revenue
327	24+900	24+920	20	69	73	142	Revenue
328	24+920	24+940	20	65	72	137	Revenue
329	24+940	24+960	20	63	70	133	Revenue
330	24+960	24+980	20	61	68	129	Revenue
331	24+980	25+000	20	60	66	126	Revenue
332	25+000	25+020	20	58	65	123	Revenue
333	25+020	25+040	20	57	63	120	Revenue
334	25+040	25+060	20	54	61	115	Revenue
335	25+060	25+080	20	54	60	114	Revenue
336	25+080	25+100	20	52	58	110	Revenue
337	25+100	25+120	20	51	56	107	Revenue
338	25+120	25+140	20	50	54	104	Revenue
339	25+140	25+160	20	50	52	102	Revenue
340	25+160	25+180	20	50	50	100	Revenue
341	25+180	25+200	20	48	48	96	Revenue
342	25+200	25+220	20	46	47	93	Revenue
343	25+220	25+240	20	44	46	90	Revenue
344	25+240	25+260	20	42	44	86	Revenue
345	25+260	25+280	20	41	41	82	Revenue
346	25+280	25+300	20	39	39	78	Revenue
347	25+300	25+320	20	38	37	75	Revenue
348	25+320	25+340	20	36	35	71	Revenue
349	25+340	25+360	20	34	33	67	Revenue
350	25+360	25+380	20	31	32	63	Revenue
351	25+380	25+400	20	29	31	60	Revenue
352	25+400	25+420	20	27	29	56	Revenue
353	25+420	25+440	20	27	27	54	Revenue
354	25+440	25+460	20	25	26	51	Revenue
355	25+460	25+480	20	24	25	49	Revenue
356	25+480	25+500	20	23	24	47	Revenue
357	25+500	25+506	6	22	23	45	Revenue
358	25+506	25+520	14	22	23	45	Revenue
359	25+520	25+523	3	21	22	43	Revenue
360	25+523	25+540	17	21	22	43	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
361	25+540	25+575	35	20	12	32	Revenue
362	25+575	25+590	15	20	12	32	Revenue
363	25+590	25+620	30	20	12	32	Revenue
364	25+620	25+640	20	21	20	41	Revenue
365	25+640	25+660	20	20	12	32	Revenue
366	25+660	25+680	20	20	12	32	Revenue
367	25+680	25+700	20	19	12	31	Revenue
368	25+700	25+739	39	19	12	31	Revenue
369	25+739	25+805	66	19	12	31	Revenue
370	25+805	25+860	55	19	12	31	Revenue
371	25+860	25+880	20	18	12	30	Revenue
372	25+880	25+900	20	17	12	29	Revenue
373	25+900	25+912	12	16	12	28	Revenue
374	25+912	25+960	48	16	12	28	Revenue
375	25+960	25+980	20	17	12	29	Revenue
376	25+980	26+020	40	16	12	28	Revenue
377	26+020	26+080	60	15	12	27	Revenue
378	26+080	26+140	60	16	12	28	Revenue
379	26+140	26+160	20	17	12	29	Revenue
380	26+160	26+168	8	18	12	30	Revenue
381	26+168	26+180	12	18	12	30	Revenue
382	26+180	26+200	20	20	12	32	Revenue
383	26+200	26+220	20	22	23	45	Revenue
384	26+220	26+240	20	24	24	48	Revenue
385	26+240	26+260	20	25	25	50	Revenue
386	26+260	26+280	20	24	22	46	Revenue
387	26+280	26+290	10	23	18	41	Revenue
388	26+290	26+300	10	23	18	41	Revenue
389	26+300	26+320	20	23	15	38	Revenue
390	26+320	26+340	20	20	12	32	Revenue
391	26+340	26+348	8	16	12	28	Revenue
392	26+348	26+356	8	16	12	28	Revenue
393	26+356	26+360	4	16	12	28	Revenue
394	26+360	26+366	6	13	12	25	Revenue
395	26+366	26+400	34	13	12	25	Revenue
396	26+400	26+420	20	12	12	24	Revenue
397	26+420	26+433	13	12	12	24	Revenue
398	26+433	26+440	7	12	12	24	Revenue
399	26+440	26+452	12	12	12	24	Revenue
400	26+452	26+460	8	12	12	24	Revenue
401	26+460	26+484	24	12	12	24	Revenue
402	26+484	26+515	31	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
403	26+515	26+536	21	12	12	24	Revenue
404	26+536	26+580	44	12	12	24	Revenue
405	26+580	26+585	5	12	12	24	Revenue
406	26+585	26+600	15	12	12	24	Revenue
407	26+600	26+603	3	12	12	24	Revenue
408	26+603	26+629	26	12	12	24	Revenue
409	26+629	26+640	11	12	12	24	Revenue
410	26+640	26+653	13	12	12	24	Revenue
411	26+653	26+660	7	12	12	24	Revenue
412	26+660	26+720	60	12	12	24	Revenue
413	26+720	26+740	20	12	12	24	Revenue
414	26+740	26+760	20	12	12	24	Revenue
415	26+760	26+770	10	12	12	24	Revenue
416	26+770	26+782	12	12	12	24	Revenue
417	26+782	26+787	5	12	12	24	Revenue
418	26+787	26+805	18	12	12	24	Revenue
419	26+805	26+820	15	12	12	24	Revenue
420	26+820	26+863	43	12	12	24	Revenue
421	26+863	26+880	17	12	12	24	Revenue
422	26+880	26+934	54	13	12	25	Revenue
423	26+934	27+000	66	13	12	25	Revenue
424	27+000	27+004	4	12	12	24	Revenue
425	27+004	27+020	16	12	12	24	Revenue
426	27+020	27+060	40	12	12	24	Revenue
427	27+060	27+080	20	12	12	24	Revenue
428	27+080	27+120	40	12	12	24	Revenue
429	27+120	27+140	20	12	12	24	Revenue
430	27+140	27+148	8	12	12	24	Revenue
431	27+148	27+160	12	12	12	24	Revenue
432	27+160	27+180	20	14	12	26	Revenue
433	27+180	27+200	20	16	12	28	Revenue
434	27+200	27+220	20	18	12	30	Revenue
435	27+220	27+240	20	20	12	32	Revenue
436	27+240	27+260	20	21	16	37	Revenue
437	27+260	27+280	20	22	17	39	Revenue
438	27+280	27+300	20	23	18	41	Revenue
439	27+300	27+320	20	23	20	43	Revenue
440	27+320	27+340	20	23	21	44	Revenue
441	27+340	27+380	40	24	22	46	Revenue
442	27+380	27+410	30	26	23	49	Revenue
443	27+410	27+420	10	26	23	49	Deemed Forest
444	27+420	27+440	20	28	24	52	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
445	27+440	27+460	20	29	26	55	Deemed Forest
446	27+460	27+480	20	30	27	57	Deemed Forest
447	27+480	27+520	40	30	28	58	Deemed Forest
448	27+520	27+580	60	30	30	60	Deemed Forest
449	27+580	27+620	40	29	32	61	Deemed Forest
450	27+620	27+660	40	29	34	63	Deemed Forest
451	27+660	27+692	32	31	33	64	Deemed Forest
452	27+692	27+700	8	31	33	64	Deemed Forest
453	27+700	27+740	40	33	32	65	Deemed Forest
454	27+740	27+760	20	31	32	63	Deemed Forest
455	27+760	27+780	20	31	32	63	Deemed Forest
456	27+780	27+820	40	31	31	62	Deemed Forest
457	27+820	27+877	57	31	29	60	Deemed Forest
458	27+877	27+900	23	31	29	60	Revenue
459	27+900	27+920	20	32	29	61	Revenue
460	27+920	27+960	40	33	29	62	Revenue
461	27+960	28+000	40	31	30	61	Revenue
462	28+000	28+040	40	30	30	60	Revenue
463	28+040	28+140	100	29	30	59	Revenue
464	28+140	28+160	20	29	31	60	Revenue
465	28+160	28+180	20	30	31	61	Revenue
466	28+180	28+210	30	30	31	61	Revenue
467	28+210	28+220	10	30	31	61	Revenue
468	28+220	28+240	20	30	29	59	Revenue
469	28+240	28+260	20	29	26	55	Revenue
470	28+260	28+300	40	29	24	53	Revenue
471	28+300	28+340	40	30	26	56	Revenue
472	28+340	28+360	20	31	27	58	Revenue
473	28+360	28+400	40	30	27	57	Revenue
474	28+400	28+465	65	28	27	55	Revenue
475	28+465	28+480	15	28	27	55	Deemed Forest
476	28+480	28+513	33	29	25	54	Deemed Forest
477	28+513	28+520	7	29	25	54	Deemed Forest
478	28+520	28+540	20	28	25	53	Deemed Forest
479	28+540	28+550	10	28	24	52	Deemed Forest
480	28+550	28+580	30	28	24	52	Deemed Forest
481	28+580	28+590	10	27	24	51	Deemed Forest
482	28+590	28+600	10	27	24	51	Deemed Forest
483	28+600	28+620	20	25	23	48	Deemed Forest
484	28+620	28+640	20	23	23	46	Deemed Forest
485	28+640	28+660	20	20	12	32	Revenue
486	28+660	28+678	18	19	12	31	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
487	28+678	28+680	2	19	12	31	Deemed Forest
488	28+680	28+720	40	20	12	32	Deemed Forest
489	28+720	28+740	20	21	25	46	Deemed Forest
490	28+740	28+760	20	21	24	45	Deemed Forest
491	28+760	28+780	20	21	20	41	Deemed Forest
492	28+780	28+794	14	22	18	40	Deemed Forest
493	28+794	28+800	6	22	18	40	Deemed Forest
494	28+800	28+840	40	22	16	38	Deemed Forest
495	28+840	28+860	20	23	16	39	Deemed Forest
496	28+860	28+900	40	22	16	38	Deemed Forest
497	28+900	28+917	17	19	12	31	Deemed Forest
498	28+917	28+952	35	19	12	31	Deemed Forest
499	28+952	28+960	8	19	12	31	Deemed Forest
500	28+960	29+000	40	20	12	32	Deemed Forest
501	29+000	29+040	40	19	12	31	Deemed Forest
502	29+040	29+046	6	18	12	30	Deemed Forest
503	29+046	29+060	14	18	12	30	Deemed Forest
504	29+060	29+100	40	17	12	29	Deemed Forest
505	29+100	29+102	2	16	12	28	Deemed Forest
506	29+102	29+140	38	16	12	28	Deemed Forest
507	29+140	29+160	20	14	12	26	Deemed Forest
508	29+160	29+180	20	12	12	24	Deemed Forest
509	29+180	29+200	20	12	12	24	Deemed Forest
510	29+200	29+220	20	13	12	25	Deemed Forest
511	29+220	29+240	20	15	12	27	Deemed Forest
512	29+240	29+260	20	18	12	30	Deemed Forest
513	29+260	29+280	20	18	12	30	Deemed Forest
514	29+280	29+330	50	20	12	32	Deemed Forest
515	29+330	29+360	30	20	12	32	Deemed Forest
516	29+360	29+380	20	22	16	38	Deemed Forest
517	29+380	29+400	20	24	17	41	Deemed Forest
518	29+400	29+420	20	24	18	42	Deemed Forest
519	29+420	29+440	20	25	19	44	Deemed Forest
520	29+440	29+468	28	26	19	45	Deemed Forest
521	29+468	29+480	12	26	19	45	Deemed Forest
522	29+480	29+500	20	24	22	46	Deemed Forest
523	29+500	29+520	20	23	22	45	Deemed Forest
524	29+520	29+560	40	22	20	42	Deemed Forest
525	29+560	29+580	20	20	12	32	Deemed Forest
526	29+580	29+600	20	21	22	43	Deemed Forest
527	29+600	29+620	20	23	22	45	Deemed Forest
528	29+620	29+640	20	23	23	46	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
529	29+640	29+660	20	22	25	47	Deemed Forest
530	29+660	29+680	20	20	12	32	Deemed Forest
531	29+680	29+720	40	18	12	30	Deemed Forest
532	29+720	29+740	20	16	12	28	Deemed Forest
533	29+740	29+760	20	13	12	25	Deemed Forest
534	29+760	29+800	40	14	12	26	Deemed Forest
535	29+800	29+820	20	13	12	25	Deemed Forest
536	29+820	29+860	40	14	12	26	Deemed Forest
537	29+860	29+866	6	13	12	25	Deemed Forest
538	29+866	29+880	14	13	12	25	Deemed Forest
539	29+880	29+900	20	14	12	26	Deemed Forest
540	29+900	29+980	80	15	12	27	Deemed Forest
541	29+980	29+987	7	14	12	26	Deemed Forest
542	29+987	30+020	33	14	12	26	Deemed Forest
543	30+020	30+046	26	13	12	25	Deemed Forest
544	30+046	30+060	14	13	12	25	Deemed Forest
545	30+060	30+080	20	13	12	25	Revenue
546	30+080	30+100	20	12	12	24	Revenue
547	30+100	30+120	20	16	12	28	Revenue
548	30+120	30+180	60	20	12	32	Revenue
549	30+180	30+200	20	19	12	31	Revenue
550	30+200	30+218	18	15	12	27	Revenue
551	30+218	30+220	2	15	12	27	Revenue
552	30+220	30+231	11	12	12	24	Revenue
553	30+231	30+238	7	12	12	24	Deemed Forest
554	30+238	30+240	2	12	12	24	Deemed Forest
555	30+240	30+260	20	12	12	24	Deemed Forest
556	30+260	30+320	60	12	12	24	Deemed Forest
557	30+320	30+340	20	12	12	24	Deemed Forest
558	30+340	30+380	40	12	12	24	Deemed Forest
559	30+380	30+384	4	12	12	24	Deemed Forest
560	30+384	30+391	7	12	12	24	Deemed Forest
561	30+391	30+500	109	12	12	24	Deemed Forest
562	30+500	30+540	40	13	12	25	Deemed Forest
563	30+540	30+560	20	14	12	26	Deemed Forest
564	30+560	30+580	20	15	12	27	Deemed Forest
565	30+580	30+620	40	16	12	28	Deemed Forest
566	30+620	30+640	20	17	12	29	Deemed Forest
567	30+640	30+700	60	19	12	31	Deemed Forest
568	30+700	30+720	20	18	12	30	Deemed Forest
569	30+720	30+740	20	19	12	31	Deemed Forest
570	30+740	30+760	20	21	17	38	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
571	30+760	30+780	20	23	21	44	Deemed Forest
572	30+780	30+800	20	24	25	49	Deemed Forest
573	30+800	30+820	20	25	30	55	Deemed Forest
574	30+820	30+840	20	27	35	62	Deemed Forest
575	30+840	30+860	20	28	37	65	Deemed Forest
576	30+860	30+880	20	28	34	62	Deemed Forest
577	30+880	30+900	20	29	31	60	Deemed Forest
578	30+900	30+912	12	29	28	57	Deemed Forest
579	30+912	30+920	8	29	28	57	Deemed Forest
580	30+920	30+940	20	28	26	54	Deemed Forest
581	30+940	30+960	20	21	24	45	Deemed Forest
582	30+960	30+980	20	15	12	27	Deemed Forest
583	30+980	31+000	20	13	12	25	Deemed Forest
584	31+000	31+020	20	12	12	24	Deemed Forest
585	31+020	31+040	20	12	12	24	Deemed Forest
586	31+040	31+060	20	12	12	24	Deemed Forest
587	31+060	31+080	20	12	12	24	Deemed Forest
588	31+080	31+100	20	12	12	24	Deemed Forest
589	31+100	31+125	25	12	12	24	Deemed Forest
590	31+125	31+140	15	12	12	24	Deemed Forest
591	31+140	31+160	20	12	12	24	Deemed Forest
592	31+160	31+260	100	12	12	24	Deemed Forest
593	31+260	31+320	60	12	12	24	Deemed Forest
594	31+320	31+340	20	12	12	24	Deemed Forest
595	31+340	31+442	102	12	12	24	Deemed Forest
596	31+442	31+482	40	12	12	24	Deemed Forest
597	31+482	31+540	58	12	12	24	Deemed Forest
598	31+540	31+573	33	12	12	24	Deemed Forest
599	31+573	31+577	4	12	12	24	Revenue
600	31+577	31+780	203	12	12	24	Revenue
601	31+780	31+840	60	12	12	24	Revenue
602	31+840	31+880	40	12	12	24	Revenue
603	31+880	31+960	80	12	12	24	Revenue
604	31+960	32+000	40	12	12	24	Revenue
605	32+000	32+020	20	12	12	24	Revenue
606	32+020	32+035	15	12	12	24	Revenue
607	32+035	32+060	25	12	12	24	Revenue
608	32+060	32+080	20	12	12	24	Revenue
609	32+080	32+090	10	12	12	24	Revenue
610	32+090	32+100	10	12	12	24	Revenue
611	32+100	32+104	4	12	12	24	Revenue
612	32+104	32+116	12	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
613	32+116	32+120	4	12	12	24	Revenue
614	32+120	32+140	20	12	12	24	Revenue
615	32+140	32+200	60	12	12	24	Revenue
616	32+200	32+240	40	12	12	24	Revenue
617	32+240	32+264	24	13	12	25	Revenue
618	32+264	32+270	6	13	12	25	Revenue
619	32+270	32+280	10	13	12	25	Revenue
620	32+280	32+284	4	13	12	25	Revenue
621	32+284	32+300	16	13	12	25	Revenue
622	32+300	32+320	20	14	12	26	Revenue
623	32+320	32+340	20	15	12	27	Revenue
624	32+340	32+347	7	14	12	26	Revenue
625	32+347	32+368	21	14	12	26	Revenue
626	32+368	32+440	72	14	12	26	Revenue
627	32+440	32+442	2	13	12	25	Revenue
628	32+442	32+456	14	13	12	25	Revenue
629	32+456	32+480	24	13	12	25	Revenue
630	32+480	32+520	40	12	12	24	Revenue
631	32+520	32+526	6	12	12	24	Revenue
632	32+526	32+532	6	12	12	24	Revenue
633	32+532	32+680	148	12	12	24	Revenue
634	32+680	32+683	3	12	12	24	Revenue
635	32+683	32+730	47	12	12	24	Revenue
636	32+730	32+740	10	12	12	24	Revenue
637	32+740	32+800	60	12	12	24	Revenue
638	32+800	32+860	60	12	12	24	Revenue
639	32+860	32+960	100	12	12	24	Revenue
640	32+960	32+995	35	12	12	24	Revenue
641	32+995	33+020	25	12	12	24	Revenue
642	33+020	33+035	15	12	12	24	Revenue
643	33+035	33+040	5	12	12	24	Revenue
644	33+040	33+043	3	12	12	24	Revenue
645	33+043	33+055	12	12	12	24	Revenue
646	33+055	33+060	5	12	12	24	Revenue
647	33+060	33+080	20	12	12	24	Revenue
648	33+080	33+100	20	14	12	26	Revenue
649	33+100	33+120	20	16	12	28	Revenue
650	33+120	33+150	30	18	12	30	Revenue
651	33+150	33+153	3	18	12	30	Revenue
652	33+153	33+160	7	18	12	30	Revenue
653	33+160	33+180	20	17	12	29	Revenue
654	33+180	33+200	20	16	12	28	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
655	33+200	33+220	20	14	12	26	Revenue
656	33+220	33+240	20	12	12	24	Revenue
657	33+240	33+260	20	12	12	24	Revenue
658	33+260	33+280	20	12	12	24	Revenue
659	33+280	33+380	100	12	12	24	Revenue
660	33+380	33+400	20	12	12	24	Revenue
661	33+400	33+420	20	12	12	24	Revenue
662	33+420	33+460	40	13	12	25	Revenue
663	33+460	33+514	54	14	12	26	Revenue
664	33+514	33+517	3	15	15	30	Revenue
665	33+517	36+635	3103	15	15	30	Rongrenggiri Reserve Forest

3. Carriageway

The present carriageway of the Project Highway consists of two lane with earthen shoulders configuration. The type of the existing pavement of the section is flexible. Details of existing carriageway are given below.

S. no	Existing Chainage From	Existing Chainage To	C/W width (m)
1	0+000	39+060	7.00

4. Major Bridges

The Site includes the following Major Bridges:

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super-structure		
Nil						

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

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

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

6. Grade separators

The Site includes the following grade separators:

S. No.	Existing Chainage (Km)	Type of Structure		Span Arrangement (m)	Width (m)
		Foundation	Super structure		
Nil					

7. Minor bridges

The Site includes the following minor bridges:

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Sub-Structure	Supper-structure			
1	1+550	Open	Wall Type	RCC Girder	1 x 17	8.40	
2	2+125	Open	Wall Type	RCC Girder	1 x 17.30	8.40	
3	6+475	Open	Wall Type	RCC Girder	1 x 10	8.40	
4	7+565	Open	Wall Type	RCC Girder	1 x 11.20	8.40	
5	11+560	Open	Wall Type	RCC Girder	1 x 30	13.00	
6	18+355	Open	Wall Type	RCC Girder	1 x 18	13.00	
7	19+060	Open	Wall Type	RCC Slab	1 x 8.60	13.00	
8	19+450	Open	Wall Type	RCC Girder	1 x 19	13.00	
9	19+770	Open	Wall Type	RCC Slab	1 x 6.70	13.00	
10	20+490	Open	Wall Type	RCC Slab	1 x 11	8.40	
11	21+380	Open	Wall Type	RCC Girder	1 x 24	13.00	
12	21+540	Open	Wall Type	RCC Box Type	1 x 7	13.00	
13	22+650	Open	Wall Type	RCC Girder	1 x 12	13.00	
14	23+125	Open	Wall Type	RCC Box Type	1 x 13	13.00	
15	23+265	Open	Wall Type	RCC Slab	1 x 9	8.40	
16	24+935	Open	Wall Type	RCC Girder	1 x 13	8.40	
17	30+985	Open	Wall Type	RCC Slab	1 x 7	8.40	
18	31+025	Open	Wall Type	RCC Slab	1 x 7	8.40	
19	31+330	Open	Wall Type	RCC Slab	1 x 7	12.00	

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Sub-Structure	Supper-structure			
20	31+645	Open	Wall Type	RCC Girder	1 x 25	13.00	
21	33+590	Open	Wall Type	RCC Slab	1 x 7	8.40	
22	35+590	Open	Wall Type	RCC Girder	1 x 12	8.40	
23	37+060	Open	Wall Type	RCC Girder	1 x 25	12.00	

8. Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location (km)	Remarks
NIL		

9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses:

S. No.	Existing Chainage (Km)	Type of structure	No. of span with Span Arrangement (m)	width (m)
Nil				

10. Culverts

The Site has the following culverts:

(a) Box Culverts

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
1	0+545	Box Culvert	1 X 1.5	12
2	0+685	Box Culvert	1 X 1.5	12
3	0+845	Box Culvert	1 X 1.5	12
4	1+060	Box Culvert	1 X 2	12
5	1+225	Box Culvert	1 X 1.5	12
6	1+840	Box Culvert	1 X 1.5	12
7	2+370	Box Culvert	1 X 1.5	12
8	2+525	Box Culvert	1 X 1.5	12
9	2+745	Box Culvert	1 X 1.5	12
10	3+005	Box Culvert	1 X 2	12
11	3+645	Box Culvert	1 X 1.5	12
12	4+210	Box Culvert	1 X 1.5	12
13	4+705	Box Culvert	1 X 1.5	12

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
14	5+200	Box Culvert	1 X 1.5	12
15	5+585	Box Culvert	1 X 1.5	12
16	6+030	Box Culvert	1 X 1.5	12
17	6+740	Box Culvert	1 X 1.5	12
18	7+630	Box Culvert	1 X 1.5	12
19	7+905	Box Culvert	1 X 1.5	12
20	8+150	Box Culvert	1 X 1.5	12
21	8+370	Box Culvert	1 X 1.5	21
22	9+035	Box Culvert	1 X 1.5	16
23	9+240	Box Culvert	1 X 2	16
24	9+330	Box Culvert	1 X 2	12
25	9+555	Box Culvert	1 X 1.5	12
26	9+695	Box Culvert	1 X 1.5	12
27	9+775	Box Culvert	1 X 1.5	12
28	9+900	Box Culvert	1 X 1.5	12
29	9+995	Box Culvert	1 X 1.5	12
30	10+085	Box Culvert	1 X 1.5	12
31	10+175	Box Culvert	1 X 1.5	12
32	10+250	Box Culvert	1 X 1.5	12
33	10+675	Box Culvert	1 X 2	12
34	10+790	Box Culvert	1 X 1.5	12
35	10+960	Box Culvert	1 X 1.5	12
36	11+120	Box Culvert	1 X 1.5	12
37	11+315	Box Culvert	1 X 1.5	12
38	11+760	Box Culvert	1 X 1.5	12
39	11+935	Box Culvert	1 X 1.5	12
40	12+540	Box Culvert	1 X 1.5	12
41	12+790	Box Culvert	1 X 1.5	12
42	15+815	Box Culvert	1 X 1.5	12
43	16+300	Box Culvert	1 X 1.5	12
44	16+435	Box Culvert	1 X 1.5	12
45	16+665	Box Culvert	1 X 1.5	12
46	17+800	Box Culvert	1 X 1.5	12
47	17+930	Box Culvert	1 X 1.5	12
48	18+995	Box Culvert	1 X 1.5	12
49	19+160	Box Culvert	1 X 1.5	19
50	19+210	Box Culvert	1 X 1.5	14
51	19+310	Box Culvert	1 X 1.5	12
52	19+830	Box Culvert	1 X 1.5	12
53	20+020	Box Culvert	1 X 1.5	12
54	20+265	Box Culvert	1 X 6	8.4
55	20+835	Box Culvert	1 X 1.5	12

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
56	20+920	Box Culvert	1 X 1.5	12
57	21+090	Box Culvert	1 X 6	8.4
58	21+275	Box Culvert	1 X 1.5	12
59	21+680	Box Culvert	1 X 1.5	12
60	21+760	Box Culvert	1 X 1.5	12
61	21+890	Box Culvert	1 X 1.5	12
62	22+090	Box Culvert	1 X 1.5	12
63	22+130	Box Culvert	1 X 1.5	12
64	22+220	Box Culvert	1 X 1.5	12
65	22+340	Box Culvert	1 X 1.5	12
66	22+460	Box Culvert	1 X 1.5	12
67	22+820	Box Culvert	1 X 1.5	12
68	22+900	Box Culvert	1 X 1.5	12
69	23+395	Box Culvert	1 X 1.5	12
70	23+600	Box Culvert	1 X 1.5	12
71	23+815	Box Culvert	1 X 1.5	12
72	24+045	Box Culvert	1 X 1.5	12
73	24+220	Box Culvert	1 X 1.5	12
74	24+415	Box Culvert	1 X 1.5	12
75	25+030	Box Culvert	1 X 1.5	12
76	25+165	Box Culvert	1 X 1.5	12
77	25+300	Box Culvert	1 X 1.5	12
78	25+605	Box Culvert	1 X 1.5	12
79	25+885	Box Culvert	1 X 1.5	12
80	26+185	Box Culvert	1 X 1.5	12
81	26+355	Box Culvert	1 X 1.5	12
82	26+470	Box Culvert	1 X 1.5	12
83	26+620	Box Culvert	1 X 2	12
84	26+730	Box Culvert	1 X 1.5	12
85	26+830	Box Culvert	1 X 1.5	12
86	26+940	Box Culvert	1 X 1.5	12
87	27+295	Box Culvert	1 X 1.5	12
88	27+630	Box Culvert	1 X 1.5	12
89	27+820	Box Culvert	1 X 1.5	12
90	27+990	Box Culvert	1 X 1.5	12
91	28+175	Box Culvert	1 X 1.5	12
92	28+485	Box Culvert	1 X 1.5	12
93	28+665	Box Culvert	1 X 1.5	12
94	28+970	Box Culvert	1 X 1.5	12
95	29+110	Box Culvert	1 X 1.5	12
96	29+310	Box Culvert	1 X 1.5	12
97	29+405	Box Culvert	1 X 1.5	12

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
98	29+720	Box Culvert	1 X 1.5	12
99	29+910	Box Culvert	1 X 1.5	12
100	30+055	Box Culvert	1 X 1.5	12
101	30+170	Box Culvert	1 X 1.5	12
102	30+335	Box Culvert	1 X 1.5	12
103	30+485	Box Culvert	1 X 1.5	12
104	30+625	Box Culvert	1 X 1.5	12
105	30+745	Box Culvert	1 X 1.5	12
106	30+815	Box Culvert	1 X 1.5	12
107	31+210	Box Culvert	1 X 1.5	8.4
108	31+465	Box Culvert	1 X 1.5	12
109	32+155	Box Culvert	1 X 1.5	12
110	32+295	Box Culvert	1 X 1.5	12
111	32+370	Box Culvert	1 X 1.5	12
112	32+630	Box Culvert	1 X 1.5	12
113	32+730	Box Culvert	1 X 1.5	12
114	33+045	Box Culvert	1 X 1.5	12
115	33+185	Box Culvert	1 X 1.5	12
116	33+255	Box Culvert	1 X 1.5	12
117	33+310	Box Culvert	1 X 2	16
118	33+405	Box Culvert	1 X 1.5	12
119	33+490	Box Culvert	1 X 1.5	12
120	33+655	Box Culvert	1 X 1.5	12
121	33+735	Box Culvert	1 X 1.5	12
122	33+855	Box Culvert	1 X 1.5	12
123	33+915	Box Culvert	1 X 1.5	12
124	33+995	Box Culvert	1 X 1.5	12
125	34+215	Box Culvert	1 X 1.5	12
126	34+255	Box Culvert	1 X 1.5	12
127	34+335	Box Culvert	1 X 1.5	12
128	34+555	Box Culvert	1 X 1.5	12
129	34+750	Box Culvert	1 X 1.5	12
130	34+870	Box Culvert	1 X 1.5	12
131	35+095	Box Culvert	1 X 1.5	12
132	35+265	Box Culvert	1 X 1.5	12
133	35+355	Box Culvert	1 X 1.5	12
134	35+530	Box Culvert	1 X 1.5	12
135	35+685	Box Culvert	1 X 1.5	12
136	35+780	Box Culvert	1 X 1.5	12
137	35+905	Box Culvert	1 X 1.5	12
138	36+205	Box Culvert	1 X 1.5	12
139	37+155	Box Culvert	1 X 1.5	12

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
140	37+355	Box Culvert	1 X 1.5	12
141	37+780	Box Culvert	1 X 1.5	12
142	37+975	Box Culvert	1 X 2	12
143	39+020	Box Culvert	1 X 1.5	12

11. Bus shelters

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

S.N.	Chainage	Side
1	2+400	RHS
2	3+300	RHS
3	5+600	LHS
4	6+800	RHS
5	9+300	RHS
6	10+100	RHS
7	12+300	RHS
8	14+600	LHS
9	18+600	LHS
10	21+500	LHS
11	27+300	RHS
12	29+500	RHS
13	33+600	RHS
14	34+600	RHS
15	39+060	LHS

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Roadside drains

The details of the road side drains are as follows:

S. No.	Location		Type & Side		Length (Km)
	From (Km.)	To (Km.)	Masonry/cc (Pucca)	Earthen (Kutcha)	
1	0.040	0.140	RHS		0.100
2	1.320	1.545	LHS		0.225
3	2.465	2.840	RHS		0.375
4	3.200	3.295	RHS		0.095
5	3.310	3.490	LHS		0.180
6	3.615	3.705	RHS		0.090

S. No.	Location		Type & Side		Length (Km)
	From (Km.)	To (Km.)	Masonry/cc (Pucca)	Earthen (Kutcha)	
7	3.780	3.940	RHS		0.160
8	4.125	4.420	LHS		0.295
9	4.350	4.420	RHS		0.070
10	4.980	5.290	RHS		0.310
11	5.325	5.820	LHS		0.495
12	5.880	6.110	LHS		0.230
13	5.850	6.110	RHS		0.260
14	6.110	6.535	LHS		0.425
15	6.110	6.815	RHS		0.705
16	6.700	6.815	LHS		0.115
17	6.815	7.115	RHS		0.300
18	7.160	7.295	RHS		0.135
19	7.305	7.380	RHS		0.075
20	7.375	7.380	LHS		0.005
21	7.405	7.515	LHS		0.110
22	7.405	7.600	RHS		0.195
23	7.715	7.990	LHS		0.275
24	7.995	8.205	RHS		0.210
25	8.040	8.220	LHS		0.180
26	8.230	8.280	LHS		0.050
27	8.315	8.445	LHS		0.130
28	8.460	8.935	LHS		0.475
29	8.600	9.110	RHS		0.510
30	9.020	9.110	LHS		0.090
31	9.120	9.310	RHS		0.190
32	9.320	9.410	RHS		0.090
33	9.420	9.620	RHS		0.200
34	9.620	9.780	RHS		0.160
35	9.790	9.860	RHS		0.070
36	9.870	9.980	RHS		0.110
37	9.995	10.090	RHS		0.095
38	10.095	10.190	RHS		0.095
39	10.200	10.514	RHS		0.314
40	10.480	11.190	LHS		0.710
41	10.555	10.760	RHS		0.205
42	11.210	11.630	LHS		0.420
43	11.440	11.620	RHS		0.180
44	11.685	12.010	RHS		0.325
45	11.700	11.835	LHS		0.135
46	12.330	12.485	RHS		0.155
47	12.370	12.570	LHS		0.200
48	12.510	12.850	RHS		0.340
49	12.890	12.970	LHS		0.080

S. No.	Location		Type & Side		Length (Km)
	From (Km.)	To (Km.)	Masonry/cc (Pucca)	Earthen (Kutcha)	
50	12.920	12.970	RHS		0.050
51	13.010	13.295	RHS		0.285
52	13.010	13.295	RHS		0.285
53	13.700	13.860	RHS		0.160
54	13.815	13.970	LHS		0.155
55	14.000	14.070	RHS		0.070
56	14.880	14.930	RHS		0.050
57	14.990	15.110	LHS		0.120
58	15.385	15.580	RHS		0.195
59	15.650	15.880	RHS		0.230
60	16.010	16.125	RHS		0.115
61	16.125	16.390	LHS		0.265
62	16.520	16.730	LHS		0.210
63	16.590	17.140	RHS		0.550
64	17.440	17.590	LHS		0.150
65	17.770	18.170	RHS		0.400
66	18.210	18.360	LHS		0.150
67	18.520	18.860	RHS		0.340
68	18.860	19.080	LHS		0.220
69	19.010	21.350	RHS		2.340
70	21.510	21.595	RHS		0.085
71	21.625	22.600	RHS		0.975
72	22.775	23.150	RHS		0.375
73	23.220	24.280	RHS		1.060
74	23.820	23.890	LHS		0.070
75	24.300	24.990	RHS		0.690
76	24.500	24.760	LHS		0.260
77	25.115	26.285	LHS		1.170
78	25.590	25.900	RHS		0.310
79	25.290	26.680	RHS		1.390
80	26.710	27.950	LHS		1.240
81	27.980	28.080	LHS		0.100
82	28.080	39.060		BS	14.318

14. Major junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
1	0+000		At grade (Y)		NH-217 & NH-127B			
2	39+060		At grade (Y)		NH-127B & PWD road - Williamnagar			

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

15. Minor junctions

The details of the minor junctions/Subways (all at grade) are as follows:

S. No.	Design Chainage		Sides	Type	
	From km	To km		T & Y - junction	Cross road
1	1+070		LHS	T	VR
2	1+360		RHS	T	VR
3	1+490		RHS	T	VR
4	1+710		RHS	T	VR
5	2+685		RHS	T	VR
6	2+730		LHS	T	VR
7	2+820		LHS	Y	VR
8	2+920		LHS	T	VR
9	3+710		RHS	T	VR
10	3+780		LHS	Y	VR
11	3+880		RHS	Y	VR
12	4+000		RHS	T	VR
13	4+210		LHS	T	VR
14	4+320		RHS	T	VR
15	4+440		RHS	T	VR
16	4+600		RHS	Y	VR
17	4+750		RHS	Y	VR
18	5+000		LHS	Y	VR
19	5+430		RHS	T	VR
20	5+610		RHS	T	VR
21	5+760		RHS	T	VR
22	5+945		LHS	Y	VR
23	5+950		RHS	T	VR
24	6+380		LHS	T	VR
25	6+760		LHS	T	VR
26	7+000		RHS	Y	VR
27	7+500		LHS	T	VR
28	7+550		LHS	Y	VR
29	7+630		LHS	T	VR

S. No.	Design Chainage		Sides	Type	
	From km	To km		T & Y - junction	Cross road
30	7+855		LHS	T	VR
31	7+900		RHS	T	VR
32	8+050		LHS	T	VR
33	8+210		RHS	Y	VR
34	8+450		RHS	T	VR
35	8+540		LHS	Y	VR
36	8+690		RHS	T	VR
37	9+940		RHS	T	VR
38	10+290		LHS	Y	VR
39	10+350		LHS	Y	VR
40	10+760		LHS	T	VR
41	10+970		RHS	T	VR
42	11+080		RHS	T	VR
43	11+300		LHS	T	VR
44	11+500		LHS	T	VR
45	11+730		LHS	T	VR
46	11+940		LHS	T	VR
47	14+500		RHS	T	VR
48	15+310		LHS	Y	VR
49	15+360		LHS	Y	VR
50	17+740		RHS	Y	VR
51	17+930		RHS	Y	VR
52	17+990		RHS	Y	VR
53	18+200		RHS	Y	VR
54	18+310		RHS	T	VR
55	18+480		LHS	Y	VR
56	18+640		RHS	Y	VR
57	18+810		LHS	Y	VR
58	18+960		LHS	T	VR
59	19+180		RHS	T	VR
60	19+190		LHS	Y	VR
61	19+520		RHS	T	VR
62	19+590		RHS	T	VR
63	19+760		RHS	Y	VR
64	20+050		RHS	Y	VR
65	20+240		RHS	Y	VR
66	20+460		RHS	T	VR
67	20+630		LHS	T	VR
68	20+830		RHS	T	VR
69	20+950		RHS	Y	VR
70	22+060		LHS	T	VR
71	24+580		RHS	T	VR

S. No.	Design Chainage		Sides	Type	
	From km	To km		T & Y - junction	Cross road
72	25+070		RHS	T	VR
73	25+290		LHS	T	VR
74	25+440		LHS	T	VR
75	25+590		RHS	T	VR
76	25+700		RHS	Y	VR
77	25+880		RHS	T	VR
78	26+160		RHS	T	VR
79	26+190		RHS	Y	VR
80	26+210		LHS	Y	VR
81	27+610		LHS	Y	VR
82	27+860		RHS	Y	VR
83	28+190		RHS	T	VR
84	30+160		LHS	Y	VR
85	30+270		LHS	Y	VR
86	30+650		RHS	Y	VR
87	31+150		RHS	T	VR
88	33+320		LHS	T	VR
89	33+510		LHS	T	VR
90	34+050		LHS	Y	VR
91	34+280		LHS	Y	VR

16. Bypasses

The details of the bypasses are as follows:

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

17. Other structures

S. No.	Type of Structure	Existing Chainage (km) From km to km	Length (in Km)
NIL			

Annex – II

(See Clauses 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sl. No.	**From km to km**	**Length (km)**	**Width (m)**	**Date of providing Right of Way***
(1)	**(2)**	**(3)**	**(4)**	**(5)**
(I) Full Right of way (full width)				
(a) Stretch	From Existing Ch. km. 0+000 to Km 39+060	3**9.060**	As per Clause 1.2 of Schedule-A, Anne-I ROW Details	90 % On appointed date
(ii) Part Right of Way (part width)				
(a) Stretch				
(iii) Balance Right of Way (width)				10 % within 150 days from appointed date
(a) Stretch				

The details of land after Land acquisition are as follows:

S. No.	**Design Chainage**		**Length (m)**	**PRoW (m)**		**PROW (m)**	**Remarks**
	From (Km)	**To (Km)**		**LHS**	**RHS**		
1	0+000	0+580	580	15	15	30	Darugiri Reserve Forest
2	0+580	0+720	140	15	15	30	
3	0+720	1+830	1110	15	15	30	
4	1+830	2+150	320	12	12	24	Revenue
5	2+150	2+700	550	12	12	24	Revenue
6	2+700	2+717	17	12	12	24	Revenue
7	2+717	2+766	49	12	12	24	Revenue
8	2+766	2+780	14	12	12	24	Revenue
9	2+780	2+800	20	12	12	24	Revenue
10	2+800	2+816	16	12	12	24	Revenue
11	2+816	2+856	40	12	12	24	Revenue
12	2+856	2+875	19	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
13	2+875	3+031	156	12	12	24	Revenue
14	3+031	3+143	112	12	12	24	Revenue
15	3+143	3+184	41	12	12	24	Revenue
16	3+184	3+220	36	12	12	24	Revenue
17	3+220	3+593	373	12	12	24	Revenue
18	3+593	3+666	73	12	12	24	Revenue
19	3+666	3+961	295	12	12	24	Revenue
20	3+961	3+964	3	12	12	24	Revenue
21	3+964	4+048	84	12	12	24	Revenue
22	4+048	4+120	72	12	12	24	Deemed Forest
23	4+120	4+127	7	12	12	24	Revenue
24	4+127	4+147	20	12	12	24	Revenue
25	4+147	4+197	50	12	12	24	Revenue
26	4+197	4+230	33	12	12	24	Revenue
27	4+230	4+236	6	12	12	24	Revenue
28	4+236	4+320	84	12	12	24	Revenue
29	4+320	4+393	73	12	12	24	Revenue
30	4+393	4+397	4	12	12	24	Revenue
31	4+397	4+795	398	12	12	24	Revenue
32	4+795	4+925	130	12	12	24	Deemed Forest
33	4+925	4+931	6	12	12	24	Revenue
34	4+931	5+035	104	12	12	24	Revenue
35	5+035	5+047	12	12	12	24	Revenue
36	5+047	5+106	59	12	12	24	Deemed Forest
37	5+106	5+126	20	12	12	24	Revenue
38	5+126	5+153	27	12	12	24	Revenue
39	5+153	5+234	81	12	12	24	Revenue
40	5+234	5+305	71	12	12	24	Revenue
41	5+305	5+315	10	12	12	24	Revenue
42	5+315	5+518	203	12	12	24	Revenue
43	5+518	5+558	40	12	12	24	Revenue
44	5+558	5+740	182	12	12	24	Revenue
45	5+740	5+772	32	12	12	24	Revenue
46	5+772	5+817	45	12	12	24	Revenue
47	5+817	5+832	15	12	12	24	Revenue
48	5+832	5+895	63	12	12	24	Revenue
49	5+895	5+955	60	12	12	24	Revenue
50	5+955	5+957	2	12	12	24	Revenue
51	5+957	6+105	148	12	12	24	Revenue
52	6+105	6+353	248	12	12	24	Revenue
53	6+353	6+533	180	12	12	24	Revenue
54	6+533	6+553	20	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
55	6+553	6+711	158	12	12	24	Deemed Forest
56	6+711	6+775	64	12	12	24	Deemed Forest
57	6+775	6+778	3	12	12	24	Revenue
58	6+778	6+856	78	12	12	24	Deemed Forest
59	6+856	6+859	3	12	12	24	Revenue
60	6+859	6+939	80	12	12	24	Deemed Forest
61	6+939	7+022	83	12	12	24	Deemed Forest
62	7+022	7+040	18	12	12	24	Revenue
63	7+040	7+200	160	12	12	24	Revenue
64	7+200	7+230	30	12	12	24	Revenue
65	7+230	7+275	45	12	12	24	Revenue
66	7+275	7+300	25	12	12	24	Revenue
67	7+300	7+322	22	12	12	24	Revenue
68	7+322	7+331	9	12	12	24	Revenue
69	7+331	7+365	34	12	12	24	Revenue
70	7+365	7+390	25	12	12	24	Revenue
71	7+390	7+400	10	12	12	24	Revenue
72	7+400	7+600	200	12	12	24	Revenue
73	7+600	7+752	152	12	12	24	Revenue
74	7+752	7+881	129	12	12	24	Deemed Forest
75	7+881	8+124	243	12	12	24	Deemed Forest
76	8+124	8+136	12	12	12	24	Deemed Forest
77	8+136	8+211	75	12	12	24	Revenue
78	8+211	8+408	197	12	12	24	Revenue
79	8+408	8+485	77	12	12	24	Revenue
80	8+485	8+610	125	12	12	24	Revenue
81	8+610	8+647	37	12	12	24	Revenue
82	8+647	8+681	34	12	12	24	Revenue
83	8+681	8+773	92	12	12	24	Revenue
84	8+773	8+797	24	12	12	24	Revenue
85	8+797	8+814	17	12	12	24	Revenue
86	8+814	8+818	4	12	12	24	Revenue
87	8+818	8+830	12	12	12	24	Revenue
88	8+830	8+958	128	12	12	24	Revenue
89	8+958	9+021	63	12	12	24	Revenue
90	9+021	9+050	29	12	12	24	Revenue
91	9+050	9+058	8	12	12	24	Revenue
92	9+058	9+101	43	12	12	24	Revenue
93	9+101	9+135	34	12	12	24	Revenue
94	9+135	9+202	67	12	12	24	Revenue
95	9+202	9+208	6	12	12	24	Revenue
96	9+208	9+300	92	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
97	9+300	9+403	103	12	12	24	Revenue
98	9+403	9+435	32	12	12	24	Revenue
99	9+435	9+506	71	12	12	24	Revenue
100	9+506	9+521	15	12	12	24	Revenue
101	9+521	9+682	161	12	12	24	Revenue
102	9+682	9+816	134	12	12	24	Revenue
103	9+816	9+835	19	12	12	24	Revenue
104	9+835	9+870	35	12	12	24	Revenue
105	9+870	9+930	60	12	12	24	Revenue
106	9+930	9+952	22	12	12	24	Revenue
107	9+952	9+981	29	12	12	24	Deemed Forest
108	9+981	10+061	80	12	12	24	Deemed Forest
109	10+061	10+079	18	12	12	24	Deemed Forest
110	10+079	10+312	233	12	12	24	Deemed Forest
111	10+312	10+408	96	12	12	24	Revenue
112	10+408	10+426	18	12	12	24	Deemed Forest
113	10+426	10+428	2	12	12	24	Deemed Forest
114	10+428	10+442	14	12	12	24	Deemed Forest
115	10+442	10+478	36	12	12	24	Revenue
116	10+478	10+491	13	12	12	24	Deemed Forest
117	10+491	10+525	34	12	12	24	Deemed Forest
118	10+525	10+539	14	12	12	24	Revenue
119	10+539	10+569	30	12	12	24	Revenue
120	10+569	10+582	13	12	12	24	Revenue
121	10+582	10+635	53	12	12	24	Revenue
122	10+635	10+650	15	12	12	24	Revenue
123	10+650	10+715	65	12	12	24	Revenue
124	10+715	10+730	15	12	12	24	Revenue
125	10+730	10+813	83	12	12	24	Revenue
126	10+813	10+826	13	12	12	24	Revenue
127	10+826	10+886	60	12	12	24	Revenue
128	10+886	10+895	9	12	12	24	Revenue
129	10+895	10+945	50	12	12	24	Revenue
130	10+945	10+950	5	12	12	24	Revenue
131	10+950	11+082	132	15	15	30	Songsak Reserve Forest
132	11+082	11+122	40	15	15	30	
133	11+122	11+302	180	15	15	30	
134	11+302	11+737	435	15	15	30	
135	11+737	11+751	14	15	15	30	
136	11+751	17+562	5811	15	15	30	
137	17+562	17+570	8	15	15	30	
138	17+570	17+670	100	15	15	30	

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
139	17+670	17+678	8	15	15	30	
140	17+678	17+685	7	15	15	30	
141	17+685	17+766	81	15	15	30	
142	17+766	18+065	299	15	15	30	
143	18+065	18+163	98	12	12	24	Revenue
144	18+163	18+240	77	12	12	24	Revenue
145	18+240	19+015	775	12	12	24	Revenue
146	19+015	19+018	3	12	12	24	Revenue
147	19+018	19+097	79	12	12	24	Revenue
148	19+097	19+155	58	12	12	24	Revenue
149	19+155	19+420	265	12	12	24	Revenue
150	19+420	19+460	40	12	12	24	Revenue
151	19+460	19+483	23	12	12	24	Revenue
152	19+483	19+500	17	12	12	24	Revenue
153	19+500	19+668	168	12	12	24	Revenue
154	19+668	19+698	30	12	12	24	Revenue
155	19+698	19+718	20	12	12	24	Revenue
156	19+718	19+744	26	12	12	24	Revenue
157	19+744	19+825	81	12	12	24	Revenue
158	19+825	19+850	25	12	12	24	Revenue
159	19+850	19+902	52	12	12	24	Revenue
160	19+902	19+997	95	12	12	24	Revenue
161	19+997	20+211	214	12	12	24	Revenue
162	20+211	20+227	16	12	12	24	Revenue
163	20+227	20+269	42	12	12	24	Revenue
164	20+269	20+339	70	12	12	24	Revenue
165	20+339	20+395	56	12	12	24	Revenue
166	20+395	20+459	64	12	12	24	Revenue
167	20+459	20+477	18	12	12	24	Revenue
168	20+477	20+485	8	12	12	24	Revenue
169	20+485	20+500	15	12	12	24	Revenue
170	20+500	20+515	15	12	12	24	Revenue
171	20+515	20+579	64	12	12	24	Revenue
172	20+579	20+600	21	12	12	24	Revenue
173	20+600	20+770	170	12	12	24	Revenue
174	20+770	20+820	50	12	12	24	Revenue
175	20+820	20+960	140	12	12	24	Revenue
176	20+960	21+068	108	12	12	24	Revenue
177	21+068	21+074	6	12	12	24	Revenue
178	21+074	21+090	16	12	12	24	Revenue
179	21+090	21+145	55	12	12	24	Revenue
180	21+145	21+164	19	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
181	21+164	21+207	43	12	12	24	Revenue
182	21+207	21+225	18	12	12	24	Revenue
183	21+225	21+240	15	12	12	24	Revenue
184	21+240	21+242	2	12	12	24	Revenue
185	21+242	21+248	6	12	12	24	Revenue
186	21+248	21+273	25	12	12	24	Revenue
187	21+273	21+357	84	12	12	24	Revenue
188	21+357	21+445	88	12	12	24	Revenue
189	21+445	21+469	24	12	12	24	Revenue
190	21+469	21+473	4	12	12	24	Revenue
191	21+473	21+567	94	12	12	24	Deemed Forest
192	21+567	21+599	32	12	12	24	Deemed Forest
193	21+599	21+617	18	12	12	24	Deemed Forest
194	21+617	21+697	80	12	12	24	Deemed Forest
195	21+697	21+702	5	12	12	24	Deemed Forest
196	21+702	21+715	13	12	12	24	Revenue
197	21+715	21+720	5	12	12	24	Revenue
198	21+720	21+775	55	12	12	24	Revenue
199	21+775	21+792	17	12	12	24	Revenue
200	21+792	21+798	6	12	12	24	Deemed Forest
201	21+798	21+821	23	12	12	24	Deemed Forest
202	21+821	21+860	39	12	12	24	Deemed Forest
203	21+860	21+873	13	16	12	28	Deemed Forest
204	21+873	21+887	14	16	12	28	Deemed Forest
205	21+887	21+936	49	16	12	28	Deemed Forest
206	21+936	21+950	14	16	12	28	Deemed Forest
207	21+950	21+960	10	16	12	28	Deemed Forest
208	21+960	22+000	40	18	12	30	Deemed Forest
209	22+000	22+007	7	20	12	32	Deemed Forest
210	22+007	22+010	3	20	12	32	Deemed Forest
211	22+010	22+020	10	20	12	32	Deemed Forest
212	22+020	22+040	20	22	22	44	Deemed Forest
213	22+040	22+043	3	23	23	46	Deemed Forest
214	22+043	22+080	37	23	23	46	Deemed Forest
215	22+080	22+100	20	25	23	48	Deemed Forest
216	22+100	22+113	13	26	24	50	Deemed Forest
217	22+113	22+120	7	26	24	50	Deemed Forest
218	22+120	22+140	20	26	25	51	Deemed Forest
219	22+140	22+180	40	26	26	52	Deemed Forest
220	22+180	22+220	40	120	50	170	Bridge
221	22+200	22+240	40	21	27	48	Deemed Forest
222	22+240	22+260	20	21	27	48	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
223	22+260	22+280	20	21	29	50	Deemed Forest
224	22+280	22+300	20	21	28	49	Deemed Forest
225	22+300	22+320	20	21	29	50	Deemed Forest
226	22+320	22+340	20	22	30	52	Deemed Forest
227	22+340	22+360	20	22	31	53	Deemed Forest
228	22+360	22+380	20	24	32	56	Deemed Forest
229	22+380	22+400	20	24	33	57	Deemed Forest
230	22+400	22+420	20	29	34	63	Deemed Forest
231	22+420	22+440	20	34	36	70	Deemed Forest
232	22+440	22+460	20	38	37	75	Deemed Forest
233	22+460	22+470	10	41	37	78	Deemed Forest
234	22+470	22+478	8	120	50	170	Deemed Forest
235	22+478	22+485	7	120	50	170	Deemed Forest
236	22+485	22+490	5	120	50	170	Deemed Forest
237	22+490	22+505	15	120	50	170	Revenue
238	22+505	22+560	55	42	38	80	Revenue
239	22+560	22+580	20	42	39	81	Revenue
240	22+580	22+600	20	42	38	80	Revenue
241	22+600	22+620	20	42	37	79	Revenue
242	22+620	22+660	40	120	50	170	Bridge
243	22+660	22+680	20	45	41	86	Revenue
244	22+680	22+700	20	45	41	86	Revenue
245	22+700	22+760	60	46	43	89	Revenue
246	22+760	22+840	80	46	49	95	Revenue
247	22+840	22+900	60	44	48	92	Revenue
248	22+900	22+920	20	44	46	90	Revenue
249	22+920	22+940	20	46	46	92	Revenue
250	22+940	22+960	20	47	47	94	Revenue
251	22+960	23+000	40	48	48	96	Revenue
252	23+000	23+040	40	50	48	98	Revenue
253	23+040	23+080	40	52	50	102	Revenue
254	23+080	23+100	20	54	51	105	Revenue
255	23+100	23+120	20	53	53	106	Revenue
256	23+120	23+140	20	52	56	108	Revenue
257	23+140	23+160	20	51	58	109	Revenue
258	23+160	23+200	40	51	59	110	Revenue
259	23+200	23+220	20	53	58	111	Revenue
260	23+220	23+240	20	55	57	112	Revenue
261	23+240	23+260	20	57	57	114	Revenue
262	23+260	23+300	40	59	56	115	Revenue
263	23+300	23+320	20	62	56	118	Revenue
264	23+320	23+340	20	63	56	119	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
265	23+340	23+400	60	64	58	122	Revenue
266	23+400	23+440	40	65	58	123	Revenue
267	23+440	23+460	20	66	59	125	Revenue
268	23+460	23+480	20	67	60	127	Revenue
269	23+480	23+500	20	67	62	129	Revenue
270	23+500	23+520	20	67	64	131	Revenue
271	23+520	23+540	20	67	66	133	Revenue
272	23+540	23+560	20	67	69	136	Revenue
273	23+560	23+580	20	68	70	138	Revenue
274	23+580	23+600	20	69	72	141	Revenue
275	23+600	23+620	20	69	73	142	Revenue
276	23+620	23+640	20	70	75	145	Revenue
277	23+640	23+660	20	70	77	147	Revenue
278	23+660	23+700	40	71	78	149	Revenue
279	23+700	23+740	40	69	81	150	Revenue
280	23+740	23+780	40	68	83	151	Revenue
281	23+780	23+800	20	69	83	152	Revenue
282	23+800	23+820	20	70	78	148	Revenue
283	23+820	23+840	20	71	78	149	Revenue
284	23+840	23+860	20	74	78	152	Revenue
285	23+860	23+880	20	75	79	154	Revenue
286	23+880	23+900	20	76	81	157	Revenue
287	23+900	23+920	20	78	78	156	Revenue
288	23+920	23+940	20	80	77	157	Revenue
289	23+940	23+960	20	83	77	160	Revenue
290	23+960	23+980	20	85	76	161	Revenue
291	23+980	24+000	20	85	77	162	Revenue
292	24+000	24+020	20	86	78	164	Revenue
293	24+020	24+040	20	86	80	166	Revenue
294	24+040	24+060	20	85	82	167	Revenue
295	24+060	24+080	20	85	85	170	Revenue
296	24+080	24+100	20	84	88	172	Revenue
297	24+100	24+120	20	84	90	174	Revenue
298	24+120	24+140	20	86	86	172	Revenue
299	24+140	24+160	20	90	84	174	Revenue
300	24+160	24+200	40	120	80	200	Bridge
301	24+200	24+240	40	97	83	180	Revenue
302	24+240	24+260	20	96	82	178	Revenue
303	24+260	24+280	20	95	81	176	Revenue
304	24+280	24+300	20	94	81	175	Revenue
305	24+300	24+340	40	93	80	173	Revenue
306	24+340	24+380	40	92	80	172	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
307	24+380	24+460	80	90	81	171	Revenue
308	24+460	24+520	60	92	80	172	Revenue
309	24+520	24+560	40	93	78	171	Revenue
310	24+560	24+580	20	92	78	170	Revenue
311	24+580	24+600	20	87	78	165	Revenue
312	24+600	24+620	20	83	78	161	Revenue
313	24+620	24+640	20	82	80	162	Revenue
314	24+640	24+660	20	81	84	165	Revenue
315	24+660	24+680	20	81	88	169	Revenue
316	24+680	24+700	20	81	86	167	Revenue
317	24+700	24+720	20	80	86	166	Revenue
318	24+720	24+740	20	79	85	164	Revenue
319	24+740	24+760	20	78	85	163	Revenue
320	24+760	24+780	20	77	84	161	Revenue
321	24+780	24+800	20	76	84	160	Revenue
322	24+800	24+820	20	75	83	158	Revenue
323	24+820	24+840	20	74	81	155	Revenue
324	24+840	24+860	20	72	78	150	Revenue
325	24+860	24+880	20	71	76	147	Revenue
326	24+880	24+900	20	70	75	145	Revenue
327	24+900	24+920	20	69	73	142	Revenue
328	24+920	24+940	20	65	72	137	Revenue
329	24+940	24+960	20	63	70	133	Revenue
330	24+960	24+980	20	61	68	129	Revenue
331	24+980	25+000	20	60	66	126	Revenue
332	25+000	25+020	20	58	65	123	Revenue
333	25+020	25+040	20	57	63	120	Revenue
334	25+040	25+060	20	54	61	115	Revenue
335	25+060	25+080	20	54	60	114	Revenue
336	25+080	25+100	20	52	58	110	Revenue
337	25+100	25+120	20	51	56	107	Revenue
338	25+120	25+140	20	50	54	104	Revenue
339	25+140	25+160	20	50	52	102	Revenue
340	25+160	25+180	20	50	50	100	Revenue
341	25+180	25+200	20	48	48	96	Revenue
342	25+200	25+220	20	46	47	93	Revenue
343	25+220	25+240	20	44	46	90	Revenue
344	25+240	25+260	20	42	44	86	Revenue
345	25+260	25+280	20	41	41	82	Revenue
346	25+280	25+300	20	39	39	78	Revenue
347	25+300	25+320	20	38	37	75	Revenue
348	25+320	25+340	20	36	35	71	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
349	25+340	25+360	20	34	33	67	Revenue
350	25+360	25+380	20	31	32	63	Revenue
351	25+380	25+400	20	29	31	60	Revenue
352	25+400	25+420	20	27	29	56	Revenue
353	25+420	25+440	20	27	27	54	Revenue
354	25+440	25+460	20	25	26	51	Revenue
355	25+460	25+480	20	24	25	49	Revenue
356	25+480	25+500	20	23	24	47	Revenue
357	25+500	25+506	6	22	23	45	Revenue
358	25+506	25+520	14	22	23	45	Revenue
359	25+520	25+523	3	21	22	43	Revenue
360	25+523	25+540	17	21	22	43	Revenue
361	25+540	25+575	35	20	12	32	Revenue
362	25+575	25+590	15	20	12	32	Revenue
363	25+590	25+620	30	20	12	32	Revenue
364	25+620	25+640	20	21	20	41	Revenue
365	25+640	25+660	20	20	12	32	Revenue
366	25+660	25+680	20	20	12	32	Revenue
367	25+680	25+700	20	19	12	31	Revenue
368	25+700	25+739	39	19	12	31	Revenue
369	25+739	25+805	66	19	12	31	Revenue
370	25+805	25+860	55	19	12	31	Revenue
371	25+860	25+880	20	18	12	30	Revenue
372	25+880	25+900	20	17	12	29	Revenue
373	25+900	25+912	12	16	12	28	Revenue
374	25+912	25+960	48	16	12	28	Revenue
375	25+960	25+980	20	17	12	29	Revenue
376	25+980	26+020	40	16	12	28	Revenue
377	26+020	26+080	60	15	12	27	Revenue
378	26+080	26+140	60	16	12	28	Revenue
379	26+140	26+160	20	17	12	29	Revenue
380	26+160	26+168	8	18	12	30	Revenue
381	26+168	26+180	12	18	12	30	Revenue
382	26+180	26+200	20	20	12	32	Revenue
383	26+200	26+220	20	22	23	45	Revenue
384	26+220	26+240	20	24	24	48	Revenue
385	26+240	26+260	20	25	25	50	Revenue
386	26+260	26+280	20	24	22	46	Revenue
387	26+280	26+290	10	23	18	41	Revenue
388	26+290	26+300	10	23	18	41	Revenue
389	26+300	26+320	20	23	15	38	Revenue
390	26+320	26+340	20	20	12	32	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
391	26+340	26+348	8	16	12	28	Revenue
392	26+348	26+356	8	16	12	28	Revenue
393	26+356	26+360	4	16	12	28	Revenue
394	26+360	26+366	6	13	12	25	Revenue
395	26+366	26+400	34	13	12	25	Revenue
396	26+400	26+420	20	12	12	24	Revenue
397	26+420	26+433	13	12	12	24	Revenue
398	26+433	26+440	7	12	12	24	Revenue
399	26+440	26+452	12	12	12	24	Revenue
400	26+452	26+460	8	12	12	24	Revenue
401	26+460	26+484	24	12	12	24	Revenue
402	26+484	26+515	31	12	12	24	Revenue
403	26+515	26+536	21	12	12	24	Revenue
404	26+536	26+580	44	12	12	24	Revenue
405	26+580	26+585	5	12	12	24	Revenue
406	26+585	26+600	15	12	12	24	Revenue
407	26+600	26+603	3	12	12	24	Revenue
408	26+603	26+629	26	12	12	24	Revenue
409	26+629	26+640	11	12	12	24	Revenue
410	26+640	26+653	13	12	12	24	Revenue
411	26+653	26+660	7	12	12	24	Revenue
412	26+660	26+720	60	12	12	24	Revenue
413	26+720	26+740	20	12	12	24	Revenue
414	26+740	26+760	20	12	12	24	Revenue
415	26+760	26+770	10	12	12	24	Revenue
416	26+770	26+782	12	12	12	24	Revenue
417	26+782	26+787	5	12	12	24	Revenue
418	26+787	26+805	18	12	12	24	Revenue
419	26+805	26+820	15	12	12	24	Revenue
420	26+820	26+863	43	12	12	24	Revenue
421	26+863	26+880	17	12	12	24	Revenue
422	26+880	26+934	54	13	12	25	Revenue
423	26+934	27+000	66	13	12	25	Revenue
424	27+000	27+004	4	12	12	24	Revenue
425	27+004	27+020	16	12	12	24	Revenue
426	27+020	27+060	40	12	12	24	Revenue
427	27+060	27+080	20	12	12	24	Revenue
428	27+080	27+120	40	12	12	24	Revenue
429	27+120	27+140	20	12	12	24	Revenue
430	27+140	27+148	8	12	12	24	Revenue
431	27+148	27+160	12	12	12	24	Revenue
432	27+160	27+180	20	14	12	26	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
433	27+180	27+200	20	16	12	28	Revenue
434	27+200	27+220	20	18	12	30	Revenue
435	27+220	27+240	20	20	12	32	Revenue
436	27+240	27+260	20	21	16	37	Revenue
437	27+260	27+280	20	22	17	39	Revenue
438	27+280	27+300	20	23	18	41	Revenue
439	27+300	27+320	20	23	20	43	Revenue
440	27+320	27+340	20	23	21	44	Revenue
441	27+340	27+380	40	24	22	46	Revenue
442	27+380	27+410	30	26	23	49	Revenue
443	27+410	27+420	10	26	23	49	Deemed Forest
444	27+420	27+440	20	28	24	52	Deemed Forest
445	27+440	27+460	20	29	26	55	Deemed Forest
446	27+460	27+480	20	30	27	57	Deemed Forest
447	27+480	27+520	40	30	28	58	Deemed Forest
448	27+520	27+580	60	30	30	60	Deemed Forest
449	27+580	27+620	40	29	32	61	Deemed Forest
450	27+620	27+660	40	29	34	63	Deemed Forest
451	27+660	27+692	32	31	33	64	Deemed Forest
452	27+692	27+700	8	31	33	64	Deemed Forest
453	27+700	27+740	40	33	32	65	Deemed Forest
454	27+740	27+760	20	31	32	63	Deemed Forest
455	27+760	27+780	20	31	32	63	Deemed Forest
456	27+780	27+820	40	31	31	62	Deemed Forest
457	27+820	27+877	57	31	29	60	Deemed Forest
458	27+877	27+900	23	31	29	60	Revenue
459	27+900	27+920	20	32	29	61	Revenue
460	27+920	27+960	40	33	29	62	Revenue
461	27+960	28+000	40	31	30	61	Revenue
462	28+000	28+040	40	30	30	60	Revenue
463	28+040	28+140	100	29	30	59	Revenue
464	28+140	28+160	20	29	31	60	Revenue
465	28+160	28+180	20	30	31	61	Revenue
466	28+180	28+210	30	30	31	61	Revenue
467	28+210	28+220	10	30	31	61	Revenue
468	28+220	28+240	20	30	29	59	Revenue
469	28+240	28+260	20	29	26	55	Revenue
470	28+260	28+300	40	29	24	53	Revenue
471	28+300	28+340	40	30	26	56	Revenue
472	28+340	28+360	20	31	27	58	Revenue
473	28+360	28+400	40	30	27	57	Revenue
474	28+400	28+465	65	28	27	55	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
475	28+465	28+480	15	28	27	55	Deemed Forest
476	28+480	28+513	33	29	25	54	Deemed Forest
477	28+513	28+520	7	29	25	54	Deemed Forest
478	28+520	28+540	20	28	25	53	Deemed Forest
479	28+540	28+550	10	28	24	52	Deemed Forest
480	28+550	28+580	30	28	24	52	Deemed Forest
481	28+580	28+590	10	27	24	51	Deemed Forest
482	28+590	28+600	10	27	24	51	Deemed Forest
483	28+600	28+620	20	25	23	48	Deemed Forest
484	28+620	28+640	20	23	23	46	Deemed Forest
485	28+640	28+660	20	20	12	32	Revenue
486	28+660	28+678	18	19	12	31	Deemed Forest
487	28+678	28+680	2	19	12	31	Deemed Forest
488	28+680	28+720	40	20	12	32	Deemed Forest
489	28+720	28+740	20	21	25	46	Deemed Forest
490	28+740	28+760	20	21	24	45	Deemed Forest
491	28+760	28+780	20	21	20	41	Deemed Forest
492	28+780	28+794	14	22	18	40	Deemed Forest
493	28+794	28+800	6	22	18	40	Deemed Forest
494	28+800	28+840	40	22	16	38	Deemed Forest
495	28+840	28+860	20	23	16	39	Deemed Forest
496	28+860	28+900	40	22	16	38	Deemed Forest
497	28+900	28+917	17	19	12	31	Deemed Forest
498	28+917	28+952	35	19	12	31	Deemed Forest
499	28+952	28+960	8	19	12	31	Deemed Forest
500	28+960	29+000	40	20	12	32	Deemed Forest
501	29+000	29+040	40	19	12	31	Deemed Forest
502	29+040	29+046	6	18	12	30	Deemed Forest
503	29+046	29+060	14	18	12	30	Deemed Forest
504	29+060	29+100	40	17	12	29	Deemed Forest
505	29+100	29+102	2	16	12	28	Deemed Forest
506	29+102	29+140	38	16	12	28	Deemed Forest
507	29+140	29+160	20	14	12	26	Deemed Forest
508	29+160	29+180	20	12	12	24	Deemed Forest
509	29+180	29+200	20	12	12	24	Deemed Forest
510	29+200	29+220	20	13	12	25	Deemed Forest
511	29+220	29+240	20	15	12	27	Deemed Forest
512	29+240	29+260	20	18	12	30	Deemed Forest
513	29+260	29+280	20	18	12	30	Deemed Forest
514	29+280	29+330	50	20	12	32	Deemed Forest
515	29+330	29+360	30	20	12	32	Deemed Forest
516	29+360	29+380	20	22	16	38	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
517	29+380	29+400	20	24	17	41	Deemed Forest
518	29+400	29+420	20	24	18	42	Deemed Forest
519	29+420	29+440	20	25	19	44	Deemed Forest
520	29+440	29+468	28	26	19	45	Deemed Forest
521	29+468	29+480	12	26	19	45	Deemed Forest
522	29+480	29+500	20	24	22	46	Deemed Forest
523	29+500	29+520	20	23	22	45	Deemed Forest
524	29+520	29+560	40	22	20	42	Deemed Forest
525	29+560	29+580	20	20	12	32	Deemed Forest
526	29+580	29+600	20	21	22	43	Deemed Forest
527	29+600	29+620	20	23	22	45	Deemed Forest
528	29+620	29+640	20	23	23	46	Deemed Forest
529	29+640	29+660	20	22	25	47	Deemed Forest
530	29+660	29+680	20	20	12	32	Deemed Forest
531	29+680	29+720	40	18	12	30	Deemed Forest
532	29+720	29+740	20	16	12	28	Deemed Forest
533	29+740	29+760	20	13	12	25	Deemed Forest
534	29+760	29+800	40	14	12	26	Deemed Forest
535	29+800	29+820	20	13	12	25	Deemed Forest
536	29+820	29+860	40	14	12	26	Deemed Forest
537	29+860	29+866	6	13	12	25	Deemed Forest
538	29+866	29+880	14	13	12	25	Deemed Forest
539	29+880	29+900	20	14	12	26	Deemed Forest
540	29+900	29+980	80	15	12	27	Deemed Forest
541	29+980	29+987	7	14	12	26	Deemed Forest
542	29+987	30+020	33	14	12	26	Deemed Forest
543	30+020	30+046	26	13	12	25	Deemed Forest
544	30+046	30+060	14	13	12	25	Deemed Forest
545	30+060	30+080	20	13	12	25	Revenue
546	30+080	30+100	20	12	12	24	Revenue
547	30+100	30+120	20	16	12	28	Revenue
548	30+120	30+180	60	20	12	32	Revenue
549	30+180	30+200	20	19	12	31	Revenue
550	30+200	30+218	18	15	12	27	Revenue
551	30+218	30+220	2	15	12	27	Revenue
552	30+220	30+231	11	12	12	24	Revenue
553	30+231	30+238	7	12	12	24	Deemed Forest
554	30+238	30+240	2	12	12	24	Deemed Forest
555	30+240	30+260	20	12	12	24	Deemed Forest
556	30+260	30+320	60	12	12	24	Deemed Forest
557	30+320	30+340	20	12	12	24	Deemed Forest
558	30+340	30+380	40	12	12	24	Deemed Forest

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
559	30+380	30+384	4	12	12	24	Deemed Forest
560	30+384	30+391	7	12	12	24	Deemed Forest
561	30+391	30+500	109	12	12	24	Deemed Forest
562	30+500	30+540	40	13	12	25	Deemed Forest
563	30+540	30+560	20	14	12	26	Deemed Forest
564	30+560	30+580	20	15	12	27	Deemed Forest
565	30+580	30+620	40	16	12	28	Deemed Forest
566	30+620	30+640	20	17	12	29	Deemed Forest
567	30+640	30+700	60	19	12	31	Deemed Forest
568	30+700	30+720	20	18	12	30	Deemed Forest
569	30+720	30+740	20	19	12	31	Deemed Forest
570	30+740	30+760	20	21	17	38	Deemed Forest
571	30+760	30+780	20	23	21	44	Deemed Forest
572	30+780	30+800	20	24	25	49	Deemed Forest
573	30+800	30+820	20	25	30	55	Deemed Forest
574	30+820	30+840	20	27	35	62	Deemed Forest
575	30+840	30+860	20	28	37	65	Deemed Forest
576	30+860	30+880	20	28	34	62	Deemed Forest
577	30+880	30+900	20	29	31	60	Deemed Forest
578	30+900	30+912	12	29	28	57	Deemed Forest
579	30+912	30+920	8	29	28	57	Deemed Forest
580	30+920	30+940	20	28	26	54	Deemed Forest
581	30+940	30+960	20	21	24	45	Deemed Forest
582	30+960	30+980	20	15	12	27	Deemed Forest
583	30+980	31+000	20	13	12	25	Deemed Forest
584	31+000	31+020	20	12	12	24	Deemed Forest
585	31+020	31+040	20	12	12	24	Deemed Forest
586	31+040	31+060	20	12	12	24	Deemed Forest
587	31+060	31+080	20	12	12	24	Deemed Forest
588	31+080	31+100	20	12	12	24	Deemed Forest
589	31+100	31+125	25	12	12	24	Deemed Forest
590	31+125	31+140	15	12	12	24	Deemed Forest
591	31+140	31+160	20	12	12	24	Deemed Forest
592	31+160	31+260	100	12	12	24	Deemed Forest
593	31+260	31+320	60	12	12	24	Deemed Forest
594	31+320	31+340	20	12	12	24	Deemed Forest
595	31+340	31+442	102	12	12	24	Deemed Forest
596	31+442	31+482	40	12	12	24	Deemed Forest
597	31+482	31+540	58	12	12	24	Deemed Forest
598	31+540	31+573	33	12	12	24	Deemed Forest
599	31+573	31+577	4	12	12	24	Revenue
600	31+577	31+780	203	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
601	31+780	31+840	60	12	12	24	Revenue
602	31+840	31+880	40	12	12	24	Revenue
603	31+880	31+960	80	12	12	24	Revenue
604	31+960	32+000	40	12	12	24	Revenue
605	32+000	32+020	20	12	12	24	Revenue
606	32+020	32+035	15	12	12	24	Revenue
607	32+035	32+060	25	12	12	24	Revenue
608	32+060	32+080	20	12	12	24	Revenue
609	32+080	32+090	10	12	12	24	Revenue
610	32+090	32+100	10	12	12	24	Revenue
611	32+100	32+104	4	12	12	24	Revenue
612	32+104	32+116	12	12	12	24	Revenue
613	32+116	32+120	4	12	12	24	Revenue
614	32+120	32+140	20	12	12	24	Revenue
615	32+140	32+200	60	12	12	24	Revenue
616	32+200	32+240	40	12	12	24	Revenue
617	32+240	32+264	24	13	12	25	Revenue
618	32+264	32+270	6	13	12	25	Revenue
619	32+270	32+280	10	13	12	25	Revenue
620	32+280	32+284	4	13	12	25	Revenue
621	32+284	32+300	16	13	12	25	Revenue
622	32+300	32+320	20	14	12	26	Revenue
623	32+320	32+340	20	15	12	27	Revenue
624	32+340	32+347	7	14	12	26	Revenue
625	32+347	32+368	21	14	12	26	Revenue
626	32+368	32+440	72	14	12	26	Revenue
627	32+440	32+442	2	13	12	25	Revenue
628	32+442	32+456	14	13	12	25	Revenue
629	32+456	32+480	24	13	12	25	Revenue
630	32+480	32+520	40	12	12	24	Revenue
631	32+520	32+526	6	12	12	24	Revenue
632	32+526	32+532	6	12	12	24	Revenue
633	32+532	32+680	148	12	12	24	Revenue
634	32+680	32+683	3	12	12	24	Revenue
635	32+683	32+730	47	12	12	24	Revenue
636	32+730	32+740	10	12	12	24	Revenue
637	32+740	32+800	60	12	12	24	Revenue
638	32+800	32+860	60	12	12	24	Revenue
639	32+860	32+960	100	12	12	24	Revenue
640	32+960	32+995	35	12	12	24	Revenue
641	32+995	33+020	25	12	12	24	Revenue
642	33+020	33+035	15	12	12	24	Revenue

S. No.	Design Chainage		Length (m)	PRoW (m)		PROW (m)	Remarks
	From (Km)	To (Km)		LHS	RHS		
643	33+035	33+040	5	12	12	24	Revenue
644	33+040	33+043	3	12	12	24	Revenue
645	33+043	33+055	12	12	12	24	Revenue
646	33+055	33+060	5	12	12	24	Revenue
647	33+060	33+080	20	12	12	24	Revenue
648	33+080	33+100	20	14	12	26	Revenue
649	33+100	33+120	20	16	12	28	Revenue
650	33+120	33+150	30	18	12	30	Revenue
651	33+150	33+153	3	18	12	30	Revenue
652	33+153	33+160	7	18	12	30	Revenue
653	33+160	33+180	20	17	12	29	Revenue
654	33+180	33+200	20	16	12	28	Revenue
655	33+200	33+220	20	14	12	26	Revenue
656	33+220	33+240	20	12	12	24	Revenue
657	33+240	33+260	20	12	12	24	Revenue
658	33+260	33+280	20	12	12	24	Revenue
659	33+280	33+380	100	12	12	24	Revenue
660	33+380	33+400	20	12	12	24	Revenue
661	33+400	33+420	20	12	12	24	Revenue
662	33+420	33+460	40	13	12	25	Revenue
663	33+460	33+514	54	14	12	26	Revenue
664	33+514	33+517	3	15	15	30	Revenue
665	33+517	36+635	3103	15	15	30	Rongrenggiri Reserve Forest

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

Existing & Design Chainage

Sr. No.	Particular	As Per PWD	As per Survey on Existing Alignment	Design Alignment
1	Start Chainage (km)	112+000	0+000	0+000
2		113+000	1+000	1+000
3		114+000	2+000	2+000
4		115+000	3+000	3+000
5		116+000	4+000	4+000
6		117+000	5+000	4+950
7		118+000	6+000	5+950
8		119+000	7+000	6+950
9		120+000	8+000	7+900
10		121+000	9+000	8+900
11		122+000	10+000	9+830

Sr. No.	Particular	As Per PWD	As per Survey on Existing Alignment	Design Alignment
12		123+000	11+000	10+800
13		124+000	12+000	11+800
14		125+000	13+000	12+800
15		126+000	14+000	13+800
16		127+000	15+000	14+800
17		128+000	16+000	15+800
18		129+000	17+000	16+800
19		130+000	18+000	17+800
20		131+000	19+000	18+800
21		132+000	20+000	19+750
22		133+000	21+000	20+730
23		134+000	22+000	21+650
24		135+000	23+000	22+400
25		136+000	24+000	23+300
26		137+000	25+000	24+200
27		138+000	26+000	25+100
28		139+000	27+000	26+100
29		140+000	28+000	26+900
30		141+000	29+000	27+900
31		142+000	30+000	28+750
32		143+000	31+000	29+450
33		144+000	32+000	30+300
34		145+000	33+000	30+840
35		146+000	34+000	31+700
36		147+000	35+000	32+500
37		148+000	36+000	33+400
38		149+000	37+000	34+440
39		150+000	38+000	35+440
40		151+000	39+000	36+440
41	End Chainage (km)	151+060	39+060	36+635
	Length (km)	**39.060**	**39.060**	**36.635**

Annex - III

(Schedule-A)

Alignment Plans

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

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

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

Annex - IV

(Schedule-A)

Environment Clearances

1. **Environment Clearance**

   Environmental Clearance (EC) is not required for the Project Highway under Schedule 7(f) as per S.O. 2559 (E), MoEF Notification of 22nd August 2013 (as amendment of 14th September 2006) i.e., Expansion of National Highways greater than 100 km involving additional right of way or land acquisition greater than 40 m on the existing alignments and 60 m on re-alignment or bypasses.

2. **Wild Life clearances:**

   Not Applicable.

3. **Forest Clearances**:

   Forest Clearance will be Obtained from the Forest Department.

4. **No Muck dumping sites will be Proposed within the Reserved Forest area. The muck dumping sites shall be identified by the EPC contractor in consultation with the Local village head, District Administration & Forest department etc. for dumping of muck, and necessary clearances/NOCs/permission shall be obtained by the Contractor in addition to the applicable permissions and clearances as stated in Schedule F.**

Annex - V

(Schedule-A)

Existing Utility

(i) Electrical utilities

The site includes the following electrical utilities:

(a) Extra High-Tension Lines (EHT Lines) *

S. NO	Chainage		Length (in Km)				Crossings			
	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV
NIL										

(b) **High Tension/Low Tension Lines (HT/LT Lines) ***

(b) High Tension/Low Tension Lines (HT/LT Lines)											
Sr. No.	**Design Chainage (m)**		**Length (Km)**				**Crossing (m)**			**Transformer**	
	From	**To**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**RHS/LHS**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**Number**	**Capacity**
1	1380	1410	**30**			RHS					
2	1460	1490				LHS	**45**			**1**	**25kba**
3	1520	1580	**60**			LHS				**2**	**64kba**
4	2000	2030				BS	**30**				
5	2680	2710				LHS	**30**				
6	2780	2810	**30**			LHS					
7	2800	2830			**30**	LHS					
8	2820	2870			**50**	RHS					
9	2840	2870			**30**	RHS					
10	3040	3070	**30**			RHS					
11	3520	3560	**40**			LHS					
12	3740	3770			**30**	RHS					
13	3760	3825			**65**	LHS					
14	4410	4440				RHS	**30**			**2**	**64kba**
15	5365	5395				LHS	**30**			**1**	**25kba**
16	5545	5575				LHS	**30**			**1**	**25kba**
17	5545	5575				RHS	**30**				
18	5785	5815				LHS	**30**			**1**	**25kba**
19	11430	11460			**30**	RHS				**1**	**25kba**
20	11860	11890				RHS	**30**			**1**	**64kba**
21	12500	12530				LHS	**30**				
22	12860	12890				RHS			**30**		
23	13700	13730				LHS			**30**		

(b) High Tension/Low Tension Lines (HT/LT Lines)											
Sr. No.	**Design Chainage (m)**		**Length (Km)**				**Crossing (m)**			**Transformer**	
	From	**To**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**RHS/LHS**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**Number**	**Capacity**
24	13800	13830				LHS			**30**	**2**	**25kva**
25	13840	13870				LHS			**30**	**1**	**25kva**
26	16940	17005	**65**			LHS				**1**	**64kva**
27	17220	17300	**80**			LHS				**1**	**25kva**
28	17560	17590			**30**	RHS					
29	18580	18610			**30**	LHS					
30	18860	18890			**30**	RHS					
31	18920	18950				LHS	**30**			**2**	**25kva**
32	19700	19730				RHS	**30**				
33	19930	19960				RHS			**30**		
34	19940	19970				RHS			**30**		
35	20020	20050				LHS			**30**	**2**	**25kva**
36	21110	21140			**30**	LHS					
37	21140	21185			**45**	RHS					
38	21265	21335			**70**	RHS				**1**	**64kva**
39	21580	21610				LHS	**30**				
40	22780	22810				LHS	**30**				
41	23140	23170				LHS	**30**			**2**	**64kva**
42	24360	24390				BS			**30**		
43	25160	25190				RHS			**30**		
44	25220	25250			**30**	LHS					
45	26000	26030				LHS	**30**				
46	26560	26590				RHS	**30**			**1**	**25kva**
47	27180	27210	**30**			RHS					
48	27800	27830				RHS			**30**		

(b) High Tension/Low Tension Lines (HT/LT Lines)												
Sr. No.	**Design Chainage (m)**		**Length (Km)**				**Crossing (m)**			**Transformer**	
	From	**To**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**RHS/LHS**	**11 KV (HT)**	**33 KV (HT)**	**LT**	**Number**	**Capacity**
49	27960	27995	**35**			LHS					
50	28830	28860			**30**	LHS					
51	29280	29335			**55**	BS				1	25kva
52	31230	31300			**70**	LHS				1	64kva
53	32850	32880				LHS	**30**				
54	33130	33160				LHS	**30**				
55	33420	33450				LHS	**30**				
56	33530	33560				LHS			**30**		
	Total		400		655		615		330	25	
	Total length (m)		2000								

DETAILS OF EXISTING ELECTRICAL (LT POLES)

Details Of Existing Electrical (Lt Poles)							
Sl.No	**Design Chainage**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
1	1+820	RHS	GI(SP)(SHIFTING)	1	272886.93	2834444	
2	1+880	RHS	GI(SP)(SHIFTING)	1	272827.85	2834434	
3	1+940	RHS	GI(SP)(SHIFTING)	1	272771.61	2834413	
4	2+000	BS	GI(SP)(SHIFTING)	1	272717.33	2834388	
5	2+440	LHS	MS(SP)(SHIFTING)	1	272303.63	2834425	

Details Of Existing Electrical (Lt Poles)							
Sl.No	**Design Chainage**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
6	2+520	LHS	MS(SP)(SHIFTING)	1	272241.12	2834474	
7	2+580	LHS	MS(SP)(SHIFTING)	1	272194.53	2834512	
8	2+590	LHS	MS(SP)(SHIFTING)	1	272186.77	2834519	
9	2+620	LHS	MS(SP)(SHIFTING)	1	272163.48	2834537	
10	2+680	LHS	GI(SP)(SHIFTING)	1	272116.31	2834575	
11	2+720	LHS	GI(SP)(SHIFTING)	1	272080.74	2834593	
12	2+800	LHS	GI(SP)(SHIFTING)	1	272003.36	2834613	
13	2+820	RHS	GI(SP)(SHIFTING)	1	271983.92	2834617	
14	2+840	RHS	GI(SP)(SHIFTING)	1	271964.58	2834623	
15	3+520	RHS	GI(SP)(SHIFTING)	1	271404.11	2834920	
16	3+740	RHS	GI(SP)(SHIFTING)	1	271210.67	2834884	
17	3+760	LHS	GI(SP)(SHIFTING)	1	271191.77	2834890	
18	3+800	LHS	MS(SP)(SHIFTING)	1	271142.18	2834924	
19	7+440	LHS	MS(SP)(SHIFTING)	1	268425.09	2836490	
20	11+430	RHS	MS(SP)(SHIFTING)	1	265321.16	2837149	
21	18+380	LHS	MS(SP)(SHIFTING)	1	260188.4	2839376	
22	18+400	LHS	MS(SP)(SHIFTING)	1	260150.7	2839329	
23	18+420	LHS	MS(SP)(SHIFTING)	1	260138.13	2839314	
24	18+460	LHS	MS(SP)(SHIFTING)	1	260112.73	2839283	
25	18+520	LHS	MS(SP)(SHIFTING)	1	260067.86	2839243	
26	18+560	LHS	MS(SP)(SHIFTING)	1	260033.83	2839222	
27	18+580	LHS	MS(SP)(SHIFTING)	1	260016.65	2839212	
28	18+950	LHS	MS(SP)(SHIFTING)	1	259799.46	2838937	
29	18+960	RHS	MS(SP)(SHIFTING)	1	259790.39	2838933	
30	20+020	LHS	MS(SP)(SHIFTING)	1	258879.21	2839188	
31	21+100	RHS	MS(SP)(SHIFTING)	1	258156.01	2838664	

Details Of Existing Electrical (Lt Poles)							
Sl.No	**Design Chainage**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
32	21+140	RHS	MS(SP)(SHIFTING)	1	258157.17	2838550	
33	21+180	RHS	GI (SP) (SHIFTING) LT	1	258187.27	2838523	
34	21+190	RHS	GI (SP) (SHIFTING) LT	1	258194.8	2838517	
35	21+265	RHS	GI (SP) (SHIFTING) LT	1	258254.73	2838483	
36	22+700	LHS	GI (SP) (SHIFTING) LT	1	258654.22	2838448	
37	22+780	LHS	GI (SP) (SHIFTING) LT	1	258729.59	2838421	
38	23+140	LHS	GI (SP) (SHIFTING) LT	1	259541.9	2837615	
39	24+360	BS	MS (SP) (SHIFTING) LT	1	259517.6	2836607	
40	25+065	RHS	MS (SP) (SHIFTING) LT	1	259743.68	2836160	
41	25+680	LHS	MS (SP) (SHIFTING) LT	1	259555.8	2835752	
42	27+800	LHS	MS (SP) (SHIFTING) LT	1	258791.35	2834086	
43	28+620	LHS	GI (SP) (SHIFTING) LT	1	258509.04	2833379	
44	30+380	RHS	MS (SP) (SHIFTING) LT	1	257631.56	2832838	
45	30+580	LHS	GI (SP) (SHIFTING) LT	1	257459.64	2832896	
46	31+720	LHS	GI (SP) (SHIFTING) LT	1	256694.5	2832665	
47	31+840	LHS	GI (SP) (SHIFTING) LT	1	256656.12	2832553	
48	32+050	LHS	GI (SP) (SHIFTING) LT	1	256533.99	2832400	
49	32+100	LHS	GI (SP) (SHIFTING) LT	1	256493.43	2832372	
50	32+400	LHS	GI (SP) (SHIFTING) LT	1	256440.27	2832095	
51	33+030	LHS	GI (SP) (SHIFTING) LT	1	256335.65	2831518	
52	33+090	LHS	GI (SP) (SHIFTING) LT	1	256278.93	2831500	
53	33+130	LHS	MS (SP) (SHIFTING) LT	1	256239.43	2831493	
54	33+290	RHS	MS (SP) (SHIFTING) LT	1	256132.27	2831385	
55	33+530	LHS	MS (SP) (SHIFTING) LT	1	256127.71	2831376	
56	33+570	RHS	GI (SP) (SHIFTING) LT	1	256122.93	2831368	
57	33+660	RHS	GI (SP) (SHIFTING) LT	1	256117.59	2831359	

Details Of Existing Electrical (Lt Poles)							
Sl.No	**Design Chainage**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
58	33+670	RHS	GI (SP) (SHIFTING) LT	1	256111.34	2831351	
59	33+680	RHS	GI (SP) (SHIFTING) LT	1	256104.12	2831344	
60	33+930	LHS	GI (SP) (SHIFTING) LT	1	255873.34	2830858	
61	34+665	LHS	GI (SP) (SHIFTING) LT	1	255562.14	2830226	
62	36+380	LHS	GI (SP) (SHIFTING) LT	1	254907.08	2828811	

DETAILS OF EXISTING ELECTRICAL (HT 11 kv POLES)

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design Chainage**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
1	0+100	LHS	MS(SP)(SHIFTING)	1	274534.104	2834421.48	
2	0+400	LHS	MS(SP)(SHIFTING)	2	274524.213	2834420.006	
3	0+600	LHS	MS(SP)(SHIFTING)	2	274514.322	2834418.532	
4	0+800	LHS	MS(SP)(SHIFTING)	1	274504.431	2834417.057	
5	0+820	LHS	MS(SP)(SHIFTING)	1	274494.541	2834415.583	
6	0+860	LHS	MS(SP)(SHIFTING)	1	274484.641	2834414.174	
7	0+880	LHS	MS(SP)(SHIFTING)	1	274474.706	2834413.038	
8	0+940	LHS	MS(SP)(SHIFTING)	2	274464.728	2834412.39	
9	1+020	LHS	MS(SP)(SHIFTING)	1	274454.73	2834412.313	
10	1+200	LHS	MS(SP)(SHIFTING)	1	273559.339	2834210.032	
11	1+280	LHS	MS(SP)(SHIFTING)	1	273422.691	2834288.694	
12	1+340	LHS	MS(SP)(SHIFTING)	1	273350.917	2834408.666	
13	1+380	RHS	MS(SP)(SHIFTING)	2	273318.904	2834432.244	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
14	1+460	LHS	MS(SP)(SHIFTING)	2	273241.496	2834451.661	
15	1+520	LHS	MS(SP)(SHIFTING)	2	273182.67	2834463.47	
16	1+520	RHS	MS(SP)(SHIFTING)	1	273182.67	2834463.47	
17	1+700	LHS	MS(SP)(SHIFTING)	1	273006.349	2834453.328	
18	1+760	LHS	MS(SP)(SHIFTING)	1	272946.898	2834445.963	
19	1+920	LHS	MS(SP)(SHIFTING)	2	272789.93	2834421.491	
20	2+180	LHS	MS(SP)(SHIFTING)	1	272547.776	2834340.912	
21	2+220	LHS	MS(SP)(SHIFTING)	1	272508.883	2834350.25	
22	2+320	LHS	MS(SP)(SHIFTING)	2	272411.792	2834374.193	
23	2+380	LHS	MS(SP)(SHIFTING)	1	272355.346	2834394.284	
24	2+460	LHS	MS(SP)(SHIFTING)	3	272287.723	2834436.649	
25	2+680	LHS	MS(SP)(SHIFTING)	1	272116.306	2834574.506	
26	2+780	LHS	MS(SP)(SHIFTING)	2	272022.801	2834608.075	
27	3+040	RHS	MS(SP)(SHIFTING)	1	271802.992	2834737.99	
28	3+100	LHS	MS(SP)(SHIFTING)	2	271760.991	2834780.807	
29	3+520	LHS	MS(SP)(SHIFTING)	1	271404.108	2834919.832	
30	4+140	RHS	MS(SP)(SHIFTING)	2	270942.329	2835188.798	
31	4+290	RHS	MS(SP)(SHIFTING)	2	270889.427	2835318.667	
32	4+350	LHS	MS(SP)(SHIFTING)	1	270892.468	2835378.59	
33	4+410	RHS	MS(SP)(SHIFTING)	2	270878.257	2835435.836	
34	5+365	LHS	MS(SP)(SHIFTING)	3	270208.676	2835674.146	
35	5+545	LHS	MS(SP)(SHIFTING)	3	270202.351	2835681.89	
36	5+545	RHS	MS(SP)(SHIFTING)	2	270195.524	2835689.195	
37	5+725	LHS	MS(SP)(SHIFTING)	1	270188.226	2835696.028	
38	5+785	LHS	MS(SP)(SHIFTING)	2	270180.493	2835702.366	
39	5+905	RHS	MS(SP)(SHIFTING)	2	270172.431	2835708.281	
40	5+965	LHS	MS(SP)(SHIFTING)	2	269668.232	2835908.107	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
41	6+165	LHS	MS(SP)(SHIFTING)	1	269668.232	2835908.107	
42	6+285	LHS	MS(SP)(SHIFTING)	2	269468.859	2835919.537	
43	6+340	LHS	MS(SP)(SHIFTING)	1	269291.077	2835945.305	
44	6+480	LHS	MS(SP)(SHIFTING)	2	269154.861	2835975.241	
45	6+580	LHS	MS(SP)(SHIFTING)	1	269062.613	2836013.845	
46	6+680	LHS	MS(SP)(SHIFTING)	2	268970.375	2836052.473	
47	6+800	LHS	MS(SP)(SHIFTING)	2	268877.715	2836123.773	
48	7+770	RHS	MS(SP)(SHIFTING)	1	268207.702	2836719.498	
49	10+265	RHS	MS(SP)(SHIFTING)	2	266112.29	2837066.033	
50	11+800	RHS	MS(SP)(SHIFTING)	2	264990.164	2837105.602	
51	11+860	RHS	MS(SP)(SHIFTING)	1	264936.985	2837133.312	
52	11+900	LHS	MS(SP)(SHIFTING)	1	264900.685	2837150.104	
53	12+000	LHS	MS(SP)(SHIFTING)	1	264833.749	2837223.018	
54	12+420	LHS	MS(SP)(SHIFTING)	1	264432.675	2837296.362	
55	12+500	LHS	MS(SP)(SHIFTING)	2	264399.36	2837366.043	
56	12+560	LHS	MS(SP)(SHIFTING)	1	264393.669	2837425.595	
57	12+740	LHS	MS(SP)(SHIFTING)	2	264289.813	2837570.722	
58	12+860	RHS	MS(SP)(SHIFTING)	1	264258.28	2837685.868	
59	12+880	RHS	MS(SP)(SHIFTING)	1	264251.726	2837704.759	
60	12+940	LHS	MS(SP)(SHIFTING)	1	264227.843	2837759.795	
61	13+040	LHS	MS(SP)(SHIFTING)	2	264202.227	2837856.229	
62	13+120	LHS	MS(SP)(SHIFTING)	1	264178.037	2837932.24	
63	13+180	LHS	MS(SP)(SHIFTING)	2	264147.1	2837983.558	
64	13+320	LHS	MS(SP)(SHIFTING)	2	264075.044	2838103.268	
65	13+400	LHS	MS(SP)(SHIFTING)	1	264041.817	2838176.041	
66	13+620	LHS	MS(SP)(SHIFTING)	1	263907.868	2838344.81	
67	13+700	LHS	MS(SP)(SHIFTING)	2	263841.232	2838388.588	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
68	13+740	LHS	MS(SP)(SHIFTING)	1	263815.969	2838419.493	
69	13+800	LHS	MS(SP)(SHIFTING)	1	263780.585	2838467.843	
70	13+840	LHS	MS(SP)(SHIFTING)	2	263749.366	2838492.661	
71	14+060	LHS	MS(SP)(SHIFTING)	2	263538.53	2838550.589	
72	14+320	LHS	MS(SP)(SHIFTING)	2	263280.041	2838547.325	
73	14+380	LHS	MS(SP)(SHIFTING)	1	263220.097	2838548.977	
74	14+460	LHS	MS(SP)(SHIFTING)	1	262865.099	2838648.932	
75	14+540	LHS	MS(SP)(SHIFTING)	2	263060.709	2838561.678	
76	14+580	LHS	MS(SP)(SHIFTING)	1	263021.259	2838568.29	
77	14+960	LHS	MS(SP)(SHIFTING)	2	262668.954	2838622.563	
78	15+060	LHS	MS(SP)(SHIFTING)	1	262451.595	2838593.855	
79	15+180	LHS	MS(SP)(SHIFTING)	2	262441.688	2838592.499	
80	15+260	LHS	MS(SP)(SHIFTING)	1	262431.777	2838591.161	
81	15+340	LHS	MS(SP)(SHIFTING)	5	262421.867	2838589.823	
82	15+560	LHS	MS(SP)(SHIFTING)	1	262411.957	2838588.485	
83	15+660	LHS	MS(SP)(SHIFTING)	2	262402.05	2838587.128	
84	15+720	LHS	MS(SP)(SHIFTING)	1	262017.563	2838816.389	
85	15+900	LHS	MS(SP)(SHIFTING)	2	261948.081	2838981.173	
86	16+060	LHS	MS(SP)(SHIFTING)	2	261906.834	2839135.495	
87	16+200	LHS	MS(SP)(SHIFTING)	2	261904.488	2839145.216	
88	16+800	LHS	MS(SP)(SHIFTING)	2	261902.533	2839155.022	
89	16+840	LHS	MS(SP)(SHIFTING)	1	261900.972	2839164.899	
90	16+940	LHS	MS(SP)(SHIFTING)	2	261899.777	2839174.827	
91	17+020	RHS	MS(SP)(SHIFTING)	1	261227.157	2839620.992	
92	17+100	RHS	MS(SP)(SHIFTING)	2	261218.047	2839625.114	
93	17+220	LHS	MS(SP)(SHIFTING)	1	261208.935	2839629.236	
94	17+300	RHS	MS(SP)(SHIFTING)	2	261199.792	2839633.286	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
95	17+560	RHS	MS(SP)(SHIFTING)	2	261190.544	2839637.088	
96	17+645	RHS	MS(SP)(SHIFTING)	2	261181.135	2839640.472	
97	18+760	RHS	MS(SP)(SHIFTING)	2	260684.362	2839773.001	
98	18+820	RHS	MS(SP)(SHIFTING)	2	259903.683	2839014.487	
99	18+860	RHS	MS(SP)(SHIFTING)	1	259871.925	2838990.169	
100	18+920	LHS	MS(SP)(SHIFTING)	3	259824.191	2838953.818	
101	19+020	LHS	MS(SP)(SHIFTING)	2	259731.5	2838927.679	
102	19+085	LHS	MS(SP)(SHIFTING)	3	259678.923	2838955.4	
103	19+200	RHS	MS(SP)(SHIFTING)	2	259573.449	2839004.399	
104	19+285	RHS	MS(SP)(SHIFTING)	2	259494.204	2838993.448	
105	19+340	RHS	MS(SP)(SHIFTING)	1	259434.785	2838985.117	
106	19+400	RHS	MS(SP)(SHIFTING)	2	259375.197	2838981.157	
107	19+460	RHS	MS(SP)(SHIFTING)	2	259323.271	2839009.709	
108	19+560	RHS	MS(SP)(SHIFTING)	2	259230.115	2839024.405	
109	19+620	BS	MS(SP)(SHIFTING)	2	259180.004	2838991.543	
110	19+680	BS	MS(SP)(SHIFTING)	1	259170.903	2838987.412	
111	19+700	RHS	MS(SP)(SHIFTING)	1	259161.381	2838984.378	
112	19+740	RHS	MS(SP)(SHIFTING)	1	259151.568	2838982.482	
113	19+750	RHS	MS(SP)(SHIFTING)	1	259141.601	2838981.752	
114	19+770	RHS	MS(SP)(SHIFTING)	1	259131.616	2838982.196	
115	19+800	RHS	MS(SP)(SHIFTING)	1	259121.753	2838983.81	
116	19+830	LHS	MS(SP)(SHIFTING)	2	259112.147	2838986.569	
117	19+860	RHS	MS(SP)(SHIFTING)	1	259102.924	2838990.42	
118	19+900	RHS	MS(SP)(SHIFTING)	1	259094.071	2838995.066	
119	19+930	RHS	MS(SP)(SHIFTING)	2	258955.41	2839150.814	
120	19+940	RHS	MS(SP)(SHIFTING)	2	258949.891	2839159.144	
121	19+990	LHS	MS(SP)(SHIFTING)	2	258908.989	2839186.269	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
122	20+170	LHS	MS(SP)(SHIFTING)	2	258731.894	2839161.174	
123	20+250	LHS	MS(SP)(SHIFTING)	2	258686.955	2839098.708	
124	20+760	LHS	MS(SP)(SHIFTING)	2	258305.92	2838850.203	
125	21+105	RHS	MS(SP)(SHIFTING)	1	258148.786	2838656.8	
126	21+110	LHS	MS(SP)(SHIFTING)	1	258141.628	2838649.818	
127	21+110	LHS	MS(SP)(SHIFTING)	2	258134.85	2838642.469	
128	21+365	LHS	MS(SP)(SHIFTING)	2	258128.864	2838634.467	
129	21+500	LHS	MS(SP)(SHIFTING)	2	258124.168	2838625.653	
130	21+540	LHS	MS(SP)(SHIFTING)	2	258121.251	2838616.105	
131	21+580	LHS	MS(SP)(SHIFTING)	2	258120.29	2838606.168	
132	21+640	LHS	MS(SP)(SHIFTING)	1	258121.321	2838596.238	
133	21+670	LHS	MS(SP)(SHIFTING)	2	258124.305	2838586.711	
134	21+900	LHS	MS(SP)(SHIFTING)	3	258129.091	2838577.948	
135	22+080	LHS	MS(SP)(SHIFTING)	2	258952.152	2838272.253	
136	22+360	RHS	MS(SP)(SHIFTING)	3	259071.313	2838176.145	
137	22+740	LHS	MS(SP)(SHIFTING)	2	259351.276	2837884.36	
138	22+820	LHS	MS(SP)(SHIFTING)	2	259410.344	2837877.26	
139	23+420	LHS	MS(SP)(SHIFTING)	1	259577.671	2837352.228	
140	23+440	LHS	MS(SP)(SHIFTING)	2	259577.752	2837332.228	
141	23+540	LHS	MS(SP)(SHIFTING)	1	259595.036	2837214.278	
142	23+560	LHS	MS(SP)(SHIFTING)	2	259601.223	2837195.259	
143	23+640	LHS	MS(SP)(SHIFTING)	2	259622.732	2837139.32	
144	23+720	LHS	MS(SP)(SHIFTING)	2	259670.238	2837076.545	
145	23+885	LHS	MS(SP)(SHIFTING)	2	259772.261	2836965.095	
146	24+445	RHS	MS(SP)(SHIFTING)	2	259467.125	2836544.569	
147	24+510	RHS	MS(SP)(SHIFTING)	2	259460.992	2836536.67	
148	24+590	RHS	MS(SP)(SHIFTING)	2	259454.859	2836528.772	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
149	24+640	RHS	MS(SP)(SHIFTING)	2	259448.726	2836520.873	
150	24+670	RHS	MS(SP)(SHIFTING)	3	259442.592	2836512.975	
151	24+800	RHS	MS(SP)(SHIFTING)	1	259436.459	2836505.077	
152	24+800	RHS	MS(SP)(SHIFTING)	2	259430.326	2836497.178	
153	24+940	RHS	MS(SP)(SHIFTING)	2	259424.193	2836489.28	
154	25+080	RHS	MS(SP)(SHIFTING)	2	259748.445	2836140.325	
155	25+160	RHS	MS(SP)(SHIFTING)	2	259748.858	2836130.341	
156	25+200	LHS	MS(SP)(SHIFTING)	2	259747.941	2836120.391	
157	25+220	LHS	MS(SP)(SHIFTING)	2	259745.745	2836110.641	
158	25+460	RHS	MS(SP)(SHIFTING)	2	259742.608	2836101.148	
159	25+520	LHS	MS(SP)(SHIFTING)	2	259738.969	2836091.834	
160	25+540	RHS	MS(SP)(SHIFTING)	2	259735.212	2836082.567	
161	25+550	LHS	MS(SP)(SHIFTING)	2	259731.455	2836073.299	
162	25+620	RHS	MS(SP)(SHIFTING)	2	259727.717	2836064.024	
163	25+700	LHS	MS(SP)(SHIFTING)	2	259724.236	2836054.651	
164	25+720	LHS	MS(SP)(SHIFTING)	2	259721.373	2836045.072	
165	25+930	LHS	MS(SP)(SHIFTING)	2	259719.282	2836035.296	
166	26+000	LHS	MS(SP)(SHIFTING)	2	259314.075	2835579.853	
167	26+050	RHS	MS(SP)(SHIFTING)	3	259304.875	2835575.932	
168	26+120	RHS	MS(SP)(SHIFTING)	2	259295.676	2835572.011	
169	26+190	RHS	MS(SP)(SHIFTING)	2	259286.477	2835568.09	
170	26+280	RHS	MS(SP)(SHIFTING)	1	259277.278	2835564.169	
171	26+400	RHS	MS(SP)(SHIFTING)	2	259268.079	2835560.248	
172	26+420	RHS	MS(SP)(SHIFTING)	2	259258.884	2835556.315	
173	26+430	RHS	MS(SP)(SHIFTING)	2	259249.749	2835552.248	
174	26+460	RHS	MS(SP)(SHIFTING)	2	259240.755	2835547.879	
175	26+560	RHS	MS(SP)(SHIFTING)	2	259231.942	2835543.155	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
176	26+580	RHS	MS(SP)(SHIFTING)	1	259223.325	2835538.082	
177	26+720	RHS	MS(SP)(SHIFTING)	2	259214.918	2835532.669	
178	26+740	RHS	MS(SP)(SHIFTING)	2	259206.734	2835526.923	
179	27+180	RHS	MS(SP)(SHIFTING)	2	258850.958	2834634.033	
180	27+220	LHS	MS(SP)(SHIFTING)	2	258852.811	2834624.206	
181	27+360	LHS	MS(SP)(SHIFTING)	2	258854.663	2834614.379	
182	27+520	LHS	MS(SP)(SHIFTING)	2	258856.515	2834604.552	
183	27+640	LHS	MS(SP)(SHIFTING)	2	258858.368	2834594.725	
184	27+700	LHS	MS(SP)(SHIFTING)	2	258860.22	2834584.898	
185	27+900	LHS	MS(SP)(SHIFTING)	2	258862.072	2834575.071	
186	27+940	LHS	MS(SP)(SHIFTING)	2	258863.924	2834565.244	
187	27+960	LHS	MS(SP)(SHIFTING)	2	258718.559	2833945.056	
188	28+240	LHS	MS(SP)(SHIFTING)	2	258537.842	2833733.791	
189	28+260	LHS	MS(SP)(SHIFTING)	2	258530.266	2833727.265	
190	28+270	LHS	MS(SP)(SHIFTING)	1	258523.214	2833720.181	
191	28+340	LHS	MS(SP)(SHIFTING)	1	258517.047	2833712.319	
192	28+480	LHS	MS(SP)(SHIFTING)	2	258511.978	2833703.707	
193	28+630	LHS	MS(SP)(SHIFTING)	3	258508.1	2833694.498	
194	28+700	LHS	MS(SP)(SHIFTING)	2	258505.48	2833684.855	
195	28+830	BS	MS(SP)(SHIFTING)	2	258504.165	2833674.949	
196	28+890	LHS	MS(SP)(SHIFTING)	2	258504.064	2833664.954	
197	29+280	LHS	MS(SP)(SHIFTING)	2	258193.756	2833182.251	
198	29+390	LHS	MS(SP)(SHIFTING)	2	258192.704	2833192.179	
199	30+150	RHS	MS(SP)(SHIFTING)	2	257827.408	2832734.17	
200	30+345	RHS	MS(SP)(SHIFTING)	2	257817.755	2832731.586	
201	30+540	RHS	MS(SP)(SHIFTING)	2	257807.845	2832730.309	
202	30+630	LHS	MS(SP)(SHIFTING)	3	257797.852	2832730.361	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
203	30+730	RHS	MS(SP)(SHIFTING)	1	257787.955	2832731.74	
204	30+860	RHS	MS(SP)(SHIFTING)	2	257778.33	2832734.423	
205	30+960	RHS	MS(SP)(SHIFTING)	2	257147.577	2832824.794	
206	31+045	RHS	MS(SP)(SHIFTING)	2	257124.615	2832895.067	
207	31+300	LHS	MS(SP)(SHIFTING)	1	257126.486	2832904.89	
208	31+390	RHS	MS(SP)(SHIFTING)	2	257128.359	2832914.713	
209	31+430	LHS	MS(SP)(SHIFTING)	2	257130.229	2832924.537	
210	31+470	LHS	MS(SP)(SHIFTING)	3	257131.914	2832934.393	
211	31+545	LHS	MS(SP)(SHIFTING)	2	257132.942	2832944.336	
212	31+660	LHS	MS(SP)(SHIFTING)	3	257132.811	2832954.327	
213	31+800	LHS	MS(SP)(SHIFTING)	2	256675.959	2832587.633	
214	32+210	LHS	MS(SP)(SHIFTING)	2	256451.308	2832270.481	
215	32+370	LHS	MS(SP)(SHIFTING)	3	256447.772	2832261.127	
216	32+800	LHS	MS(SP)(SHIFTING)	2	256444.236	2832251.773	
217	32+850	LHS	MS(SP)(SHIFTING)	2	256440.7	2832242.419	
218	32+950	LHS	MS(SP)(SHIFTING)	2	256437.164	2832233.065	
219	33+030	LHS	MS(SP)(SHIFTING)	2	256335.651	2831517.701	
220	33+230	LHS	MS(SP)(SHIFTING)	2	256161.752	2831437.492	
221	33+420	LHS	MS(SP)(SHIFTING)	2	256156.245	2831429.145	
222	33+520	RHS	MS(SP)(SHIFTING)	2	256151.011	2831420.625	
223	33+750	RHS	MS(SP)(SHIFTING)	2	256146.058	2831411.938	
224	33+820	LHS	MS(SP)(SHIFTING)	2	256141.391	2831403.095	
225	33+850	LHS	MS(SP)(SHIFTING)	2	255921.58	2830921.777	
226	34+000	BS	MS(SP)(SHIFTING)	2	255833.976	2830800.195	
227	34+585	LHS	MS(SP)(SHIFTING)	2	255615.659	2830282.413	
228	34+740	LHS	MS(SP)(SHIFTING)	2	255505.209	2830171.404	
229	34+800	LHS	MS(SP)(SHIFTING)	2	255475.406	2830119.344	

DETAILS OF EXISTING ELECTRICAL (HT 11 Kvpoles)							
Sl.No	**Design**	**Side**	**Detail (Mild Steal/ Galvanizes Iron)**	**No. Of Poles**	**Northing**	**Easting**	**Remarks**
230	34+860	LHS	MS(SP)(SHIFTING)	2	255447.758	2830066.096	
231	36+760	LHS	MS(SP)(SHIFTING)	2	254959.609	2828577.359	
232	36+820	LHS	MS(SP)(SHIFTING)	1	254961.178	2828567.483	

Note: Total HT, LT, 11 KV Line =2.000 Km, Total LT Poles= 62 Nos., Total 11 KV Poles = 411 Nos., Transformer = 25 Nos

(ii) **Public Health utilities (Water/Sewage Pipe Lines)** *The site includes the following Public Health utilities:

(i) Public Health utilities (Water/Sewage pipe Lines)
* The site includes the following Public Health utilities:

Sr.No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings	
				Water Supply line			Water Supply line	
	From	To		With Pumping	With Gravity flow	DIA	With Gravity flow	DIA
1	3.5		**LHS**				0.09	100mm
2	4.2						0.19	65mm
3	15.2	16.75	RHS		1.55	100mm		
4	16.1	17.2	RHS		1.1	40mm		
5	18.45	18.6	RHS				0.083	25mm
6	20.14		Crossing Left to Right				0.16	50mm
7	20.16	20.33	LHS		0.17	80mm	0.124	40mm
8	22.25		Crossing Left to Right				0.15	65mm
9	24.35		Crossing Left to Right				0.126	40mm
10	24.82	25.3			0.48	50mm		
11	24.46	25.5			1.04	50mm		
12	25.46		RHS				0.144	

(i) Public Health utilities (Water/Sewage pipe Lines)

* The site includes the following Public Health utilities:

Sr.No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings	
				Water Supply line			Water Supply line	
	From	To		With Pumping	With Gravity flow	DIA	With Gravity flow	DIA
13	25.5		Crossing Left to Right				0.146	80mm
14	25.71		Crossing Left to Right				0.147	80mm
15	32.72	32.96			0.24	32mm		
16	32.96	34.78	LHS		1.82	40mm		
17	33.5		Crossing Left to Right				0.24	40mm
	TOTAL LENGTH (Km)				**6.4**		**1.6**	

Schedule B

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. Construction of Two Lane with Paved Shoulder

Rehabilitation and augmentation shall include Two-Laning with Paved Shoulders and Strengthening of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3 Specifications and Standards

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

Annex - I

(Schedule-B)

DESCRIPTION OF TWO-LANE WITH PAVED SHOULDER

Note: All the chainages/ location referred to in Annex-I to Schedule-B shall be Design chainages.

1 Widening of Existing Highway.

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

(ii) Width of Carriageway

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

Sr. No.	Built-up stretch (Township)	Location Design Chainage (km to km)		Width (m)	Typical cross section (Ref. to Manual)
1	Rongre	11+250	11+330	1X7.0 m CW +2x2.5 m paved shoulder +2x1 m Footpath Cum Drain	TCS-1
2	Songsak	18+140	18+980		TCS-1
3	Bonegre	20+780	21+100		TCS-1
4	Rongapgre	33+220	33+390		TCS-1

Note: 1) The Design chainages given in above table are indicative and stretches may increase or decrease depending upon profile designed by the contractor, however, this shall not be treated as change of scope.

(b) Where Toll Plaza, Bus Bays & Truck Lay Byes are constructed as per Schedule C a transition shall be provided as per the Manual.

(c) The entire cross-sectional elements shall be accommodated in the available/proposed ROW. If required, suitable retaining structures shall be provided to accommodate the highway cross section within the available/ proposed ROW and the same 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.

2 Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be minimum Design speed of 40 km per hr for Mountainous and Steep terrain, as per Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73-2018).

(iii) Improvement of the existing road geometrics

Ruling minimum Radius is 75m as per Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73-2018).

In the following sections, where improvement of the existing road geometrics to the prescribed standards (Minimum Desirable Radius / Ruling Minimum Radius 75 m) is not possible, 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. This Deviation has also been specified in Schedule-D if any.

S. No.	Stretch (km)		Radius (m)	Design Speed (Kmph)	Type of deficiency
	From	To			
(1)	(2)	(3)	(4)	(5)	(7)
NIL					

(a) Extra Widening on Curves

(i) On horizontal curve roadway width shall be increased to provide for extra widening of curve. The extra widening shall be provided as per Table 6.10 of IRC: 52, 2019 Guidelines for the Alignment Survey and Geometric Design of Hill Roads (Third Revision). This provision is in deviation from Manual and the Deviation is also specified in Schedule-D.

(ii) The width of carriageway at existing/ retained/ reconstructed/ additional new Minor Bridges, shall be same as specified in TCS and no extra widening shall be required.

(iii) The width of carriageway at reconstructed/additional new Culverts shall attract provision (i) above.

(b) The following bypasses shall be provided:

S. No.	Stretch Design Chainage (from km tom)	Length (Km)	Remarks
Nil			

(c) The following realignment shall be provided:

The following Stretches shall be realigned.

S.No.	Stretch Design Chainage (from km to km)	Length (Km)	Remarks
1	From Km 0+550 to km 0+740	0.190	Major Realignment
2	From Km 2+700 to km 2+900	0.200	Minor Realignment
3	From Km 4+050 to km 4+230	0.180	Minor Realignment
4	From Km 4+800 to km 5+030	0.230	Minor Realignment
5	From Km 6+700 to km 7+060	0.360	Minor Realignment
6	From Km 7+180 to km 7+400	0.220	Minor Realignment
7	From Km 8+100 to km 8+250	0.150	Minor Realignment
8	From Km 8+400 to km 8+500	0.100	Minor Realignment
9	From Km 8+630 to km 9+000	0.370	Major Realignment
10	From Km 9+130 to km 9+200	0.070	Minor Realignment
11	From Km 9+300 to km 9+670	0.370	Minor Realignment
12	From Km 9+900 to km 10+100	0.200	Minor Realignment
13	From Km 10+300 to km 11+300	1.000	Major Realignment
14	From Km 11+380 to km 11+480	0.100	Minor Realignment
15	From Km 11+700 to km 11+800	0.100	Minor Realignment
16	From Km 11+900 to km 12+020	0.120	Minor Realignment
17	From Km 14+660 to km 14+790	0.130	Minor Realignment
18	From Km 17+460 to km 17+800	0.340	Major Realignment
19	From Km 18+130 to km 18+250	0.120	Minor Realignment
20	From Km 19+400 to km 19+530	0.130	Minor Realignment
21	From Km 19+640 to km 20+610	0.970	Major Realignment
22	From Km 20+950 to km 23+320	2.370	Major Realignment
23	From Km 23+320 to km 24+800	1.480	Minor Realignment
24	From Km 25+000 to km 25+100	0.100	Minor Realignment
25	From Km 25+400 to km 27+200	1.800	Major Realignment
26	From Km 27+300 to km 27+900	0.600	Minor Realignment
27	From Km 28+150 to km 30+000	1.850	Major Realignment
28	From Km 30+200 to km 31+300	1.100	Major Realignment
29	From Km 32+200 to km 32+750	0.550	Minor Realignment
30	From Km 33+000 to km 33+200	0.200	Minor Realignment
	Total length of realignment =	**15.700**	

(iv) Right of Way

The details of the ROW are given in **Annex-II of Schedule-A.**

(v) Type of shoulders

(a) In built-up sections, 2.5m paved shoulder on either side as per TCS -01 shall be provided:

Sr. No.	Design Chainage (From)	Design Chainage (To)	Length (Km)	TCS
1	11+250	11+330	0.080	1
2	18+140	18+980	0.840	1
3	20+780	21+100	0.320	1
4	33+220	33+390	0.170	1

* Other Locations of Footpath shall be as per TCS/Schedule D

(b) In open country, 1.5m Paved Shoulder on both sides and 1.0m earthen shoulders on Both sides shall be provided as per TCS Schedule (Appendix-BI). The earthen shoulder shall be covered with granular material in full depth up to GSB layer as shown in typical cross section.

(c) Design and specifications of earthen shoulders and granular material shall conform to the requirements specified in the relevant manual.

(vi) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.10 of the Manual.

(b) Lateral & Vertical clearance: The width of the opening and vertical clearances at underpasses shall be as follows:

Sl. No.	Location (Design Chainage Km)	Span/ opening (m)	Remarks
(1)	(2)	(3)	(4)
Nil			

Note: -

- IRC Class Special Vehicle loading shall be considered in the structural design of bridges/Flyover/VUP.

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.

(b) Lateral & Vertical clearances at overpasses shall be as follows:

Sl. No.	Location (Design Chainage Km)	Span/ opening (m)	Remarks
(1)	(2)	(3)	(4)
Nil			

(viii) Slip Roads/Service Roads

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

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

(ix) Grade separated structures

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

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

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:

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

(x) Cattle and pedestrian under pass / over pass

Cattle and pedestrian underpass/ overpass shall be constructed as follows:

Sl. No.	Location	Type of crossing
NIL		

(xi) Typical cross-sections of the Project Highway

The schedule of typical cross-sections is given in the table below. Drawings of typical cross-sections are given in **Appendix B-I**.

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
1	0.000	0.200	0.200	2	2-Lane+PS (Overlay & Widening)	
2	0.200	0.260	0.060	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
3	0.260	0.550	0.290	2	2-Lane+PS (Overlay & Widening)	
4	0.550	0.750	0.200	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
5	0.750	2.630	1.880	2	2-Lane+PS (Overlay & Widening)	34.00
6	2.630	2.900	0.270	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	2.00
7	2.900	3.200	0.300	2	2-Lane+PS (Overlay & Widening)	9.00
8	3.200	3.380	0.180	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
9	3.380	4.050	0.670	2	2-Lane+PS (Overlay & Widening)	
10	4.050	4.280	0.230	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
11	4.280	4.780	0.500	2	2-Lane+PS (Overlay & Widening)	
12	4.780	5.170	0.390	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
13	5.170	6.700	1.530	2	2-Lane+PS (Overlay & Widening)	10.00
14	6.700	6.960	0.260	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
15	6.960	7.400	0.440	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
16	7.400	8.100	0.700	2	2-Lane+PS (Overlay & Widening)	11.00
17	8.100	8.480	0.380	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
18	8.480	9.060	0.580	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00
19	9.060	9.700	0.640	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	2.00
20	9.700	9.900	0.200	2	2-Lane+PS (Overlay & Widening)	
21	9.900	10.130	0.230	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	13.00
22	10.130	10.210	0.080	2	2-Lane+PS (Overlay & Widening)	
23	10.210	10.310	0.100	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
24	10.310	10.560	0.250	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00
25	10.560	11.160	0.600	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	20.00
26	11.160	11.250	0.090	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00
27	11.250	11.330	0.080	1	2-Lane+PS with Both side Drain (Built-up Section)	
28	11.330	11.800	0.470	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	2.00
29	11.800	11.900	0.100	2	2-Lane+PS (Overlay & Widening)	
30	11.900	12.050	0.150	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
31	12.050	14.640	2.590	2	2-Lane+PS (Overlay & Widening)	72.00
32	14.640	14.710	0.070	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
33	14.710	14.800	0.090	5	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)	
34	14.800	14.880	0.080	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
35	14.880	15.700	0.820	2	2-Lane+PS (Overlay & Widening)	9.00
36	15.700	15.800	0.100	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
37	15.800	15.920	0.120	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
38	15.920	16.050	0.130	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
39	16.050	16.300	0.250	2	2-Lane+PS (Overlay & Widening)	
40	16.300	16.340	0.040	5	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)	
41	16.340	16.380	0.040	5	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)	
42	16.380	16.540	0.160	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
43	16.540	16.760	0.220	2	2-Lane+PS (Overlay & Widening)	18.00
44	16.760	17.100	0.340	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
45	17.100	17.160	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
46	17.160	17.340	0.180	2	2-Lane+PS (Overlay & Widening)	
47	17.340	17.820	0.480	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	18.00
48	17.820	18.140	0.320	2	2-Lane+PS (Overlay & Widening)	
49	18.140	18.980	0.840	1	2-Lane+PS with Both side Drain (Built-up Section)	
50	18.980	18.990	0.010	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
51	18.990	19.070	0.080	9	2-Lane+PS with One side Retaining wall	
52	19.070	19.175	0.105	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
53	19.175	19.400	0.225	2	2-Lane+PS (Overlay & Widening)	
54	19.400	19.530	0.130	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
55	19.530	19.640	0.110	2	2-Lane+PS (Overlay & Widening)	
56	19.640	20.630	0.990	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	33.00
57	20.630	20.780	0.150	2	2-Lane+PS (Overlay & Widening)	
58	20.780	21.100	0.320	1	2-Lane+PS with Both side Drain (Built-up Section)	33.00
59	21.100	21.920	0.820	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	63.00
60	21.920	21.980	0.060	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	
61	21.980	25.860	3.880	6	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
62	25.860	26.160	0.300	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
63	26.160	26.260	0.100	6	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
64	26.260	26.320	0.060	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	
65	26.320	26.480	0.160	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
66	26.480	27.100	0.620	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	45.00
67	27.100	27.220	0.120	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
68	27.220	27.280	0.060	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	
69	27.280	28.760	1.480	6	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
70	28.760	28.900	0.140	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	9.00
71	28.900	29.190	0.290	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
72	29.190	29.240	0.050	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
73	29.240	29.380	0.140	9	2-Lane+PS with One side Retaining wall	
74	29.380	29.700	0.320	8	2-Lane+PS with Both side Retaining wall	
75	29.700	30.100	0.400	9	2-Lane+PS with One side Retaining wall	
76	30.100	30.160	0.060	8	2-Lane+PS with Both side Retaining wall	
77	30.160	30.200	0.040	9	2-Lane+PS with One side Retaining wall	
78	30.200	30.300	0.100	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
79	30.300	30.750	0.450	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
80	30.750	30.950	0.200	6	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
81	30.950	31.130	0.180	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	
82	31.130	31.170	0.040	5	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)	
83	31.170	31.210	0.040	7	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)	
84	31.210	31.250	0.040	5	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)	
85	31.250	31.410	0.160	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
86	31.410	31.590	0.180	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
87	31.590	32.100	0.510	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	32.00
88	32.100	32.830	0.730	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
89	32.830	33.120	0.290	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
90	33.120	33.220	0.100	9	2-Lane+PS with One side Retaining wall	

Sr. No.	Design Chainage From	Design Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
91	33.220	33.390	0.170	1	2-Lane+PS with Both side Drain (Built-up Section)	
92	33.390	33.790	0.400	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
93	33.790	33.870	0.080	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00
94	33.870	34.020	0.150	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
95	34.020	34.130	0.110	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
96	34.130	34.300	0.170	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
97	34.300	34.470	0.170	2	2-Lane+PS (Overlay & Widening)	
98	34.470	34.580	0.110	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
99	34.580	35.140	0.560	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
100	35.140	35.400	0.260	4	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
101	35.400	35.530	0.130	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
102	35.530	36.635	1.105	2	2-Lane+PS (Overlay & Widening)	27.00
			36.635	**Km.**		

Summary of TCS

Type	Total Length	Remarks
TCS 1	1.410	2-Lane+PS with Both side Drain (Built-up Section)
TCS 2	12.590	2-Lane+PS (Overlay & Widening)
TCS 3	9.465	2-Lane+PS in Fill Section (Banking Ht. less than 3m)
TCS 4	5.580	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)
TCS 5	0.250	2-Lane+PS with one side drain in Cut Section (Cutting Ht. less than 7m)
TCS 6	5.660	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)
TCS 7	0.540	2-Lane+PS with One side Breast wall & Both side Drain in Cut Section (One side cutting Ht. < 7m & one side Cutting Ht. > 7m)
TCS 8	0.380	2-Lane+PS with Both side Retaining wall
TCS 9	0.760	2-Lane+PS with One side Retaining wall
Total	**36.635**	

Note:

1) The cross-section and Design chainages as given in above table are indicative and stretches may increase or decrease in length depending upon profile designed by contractor, however, this shall not be treated as change of scope.
2) All the cross-sectional elements are to be accommodated within the proposed ROW. If required, suitable retaining structures along with drainage system shall be provided as per site condition and this will not constitute any change of scope.
3) The Contractor shall match the start and end points of Project Highway with Nearby Packages. Increase in length due to this shall not be treated as change of scope.

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:

(i) At grade Intersections

All intersections as per the site requirement shall be designed and constructed in accordance with the manual. A list of intersections is given in below table. Draft layout of major junctions is given in indicative Plan & Profile drawings for reference.

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
Major Intersections			
1	36+635	Y	NH-127B & PWD road -Williamnagar
Minor Intersections			
1	1+070	T	VR
2	1+360	T	VR
3	1+490	T	VR
4	1+710	T	VR
5	2+685	T	VR
6	2+730	T	VR
7	2+820	Y	VR
8	2+920	T	VR
9	3+710	T	VR
10	3+780	Y	VR
11	3+880	Y	VR
12	4+000	T	VR
13	4+210	T	VR
14	4+320	T	VR
15	4+440	T	VR
16	4+600	Y	VR

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
17	4+750	Y	VR
18	5+000	Y	VR
19	5+430	T	VR
20	5+610	T	VR
21	5+760	T	VR
22	5+945	Y	VR
23	5+950	T	VR
24	6+380	T	VR
25	6+760	T	VR
26	7+000	Y	VR
27	7+500	T	VR
28	7+550	Y	VR
29	7+630	T	VR
30	7+855	T	VR
31	7+900	T	VR
32	8+050	T	VR
33	8+210	Y	VR
34	8+450	T	VR
35	8+540	Y	VR
36	8+690	T	VR
37	9+940	T	VR
38	10+290	Y	VR
39	10+350	Y	VR
40	10+760	T	VR
41	10+970	T	VR
42	11+080	T	VR
43	11+300	T	VR
44	11+500	T	VR
45	11+730	T	VR
46	11+940	T	VR
47	14+500	T	VR
48	15+310	Y	VR
49	15+360	Y	VR
50	17+740	Y	VR
51	17+930	Y	VR
52	17+990	Y	VR
53	18+200	Y	VR
54	18+310	T	VR
55	18+480	Y	VR
56	18+640	Y	VR
57	18+810	Y	VR

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
58	18+960	T	VR
59	19+180	T	VR
60	19+190	Y	VR
61	19+520	T	VR
62	19+590	T	VR
63	19+760	Y	VR
64	20+050	Y	VR
65	20+240	Y	VR
66	20+460	T	VR
67	20+630	T	VR
68	20+830	T	VR
69	20+950	Y	VR
70	22+060	T	VR
71	24+580	T	VR
72	25+070	T	VR
73	25+290	T	VR
74	25+440	T	VR
75	25+590	T	VR
76	25+700	Y	VR
77	25+880	T	VR
78	26+160	T	VR
79	26+190	Y	VR
80	26+210	Y	VR
81	27+610	Y	VR
82	27+860	Y	VR
83	28+190	T	VR
84	30+160	Y	VR
85	30+270	Y	VR
86	30+650	Y	VR
87	31+150	T	VR
88	33+320	T	VR
89	33+510	T	VR
90	34+050	Y	VR
91	34+280	Y	VR

(ii) Grade separated intersection with/without ramps

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

Note:

1) It is clarified that if any other junction is identified during development/Construction of the project highway in addition to those mentioned above, shall also be improved with proper drainage facilities as per standards. They are deemed to be covered within the scope of work. The Numbers, locations & type of junctions shown in above table are minimum and may increase as per actual site conditions. Any increase in number will not constitute change of Scope.
2) The contractor shall take up 'Detailed Engineering study' to ascertain further details of all intersections and treatment of the intersections and all shall be designed in accordance with the latest guidelines mentioned in section-3 of relevant Manual as specified in Schedule-D. The same shall not constitute a Change of Scope, save and except any variations arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.
3) At locations of geometric improvement, the connectivity of built-ups area, along existing road, with the proposed highway shall be provided. All such locations shall be finalized as per site requirement in consultation with the Authority Engineer and it will not be treated as change in scope of work.

4. Road Embankment and Cut Section

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

(ii) Raising of the existing road/New carriageway

The existing road shall be raised as per design requirements in accordance with the manual in conformity to the minimum FRL.

Sl. No.	Design Chainage (from km to km)	Length (Km)	Extent of raising [Top of finished road level]
1	From Km 0+550 to km 0+750	0.200	As per Attached Plan & profile
2	From Km 2+630 to km 2+900	0.270	As per Attached Plan & profile
3	From Km 3+200 to km3+380	0.180	As per Attached Plan & profile
4	From Km 4+050 to km 4+280	0.230	As per Attached Plan & profile
5	From Km 4+780 to km 5+170	0.390	As per Attached Plan & profile
6	From Km 6+960 to km 7+400	0.440	As per Attached Plan & profile
7	From Km 8+100 to km 8+480	0.380	As per Attached Plan & profile
8	From Km 9+060 to km 9+700	0.640	As per Attached Plan & profile
9	From Km 9+900 to km 10+130	0.230	As per Attached Plan & profile
10	From Km 10+210 to km 10+310	0.100	As per Attached Plan & profile
11	From Km 10+560 to km 11+160	0.600	As per Attached Plan & profile
12	From Km 11+330 to km 11+800	0.470	As per Attached Plan & profile
13	From Km 11+900 to km 12+050	0.150	As per Attached Plan & profile
14	From Km 14+640 to km 14+710	0.070	As per Attached Plan & profile
15	From Km 14+800 to km 14+880	0.080	As per Attached Plan & profile
16	From Km 15+800 to km 15+920	0.120	As per Attached Plan & profile
17	From Km 17+100 to km 17+160	0.060	As per Attached Plan & profile

Sl. No.	Design Chainage (from km to km)	Length (Km)	Extent of raising [Top of finished road level]
18	From Km 17+340 to km 17+820	0.480	As per Attached Plan & profile
19	From Km 18+980 to km 18+990	0.010	As per Attached Plan & profile
20	From Km 18+990 to km 19+070	0.080	As per Attached Plan & profile
21	From Km 19+070 to km 19+175	0.105	As per Attached Plan & profile
22	From Km 19+400 to km 19+530	0.130	As per Attached Plan & profile
23	From Km 19+640 to km 20+630	0.990	As per Attached Plan & profile
24	From Km 26+480 to km 27+100	0.620	As per Attached Plan & profile
25	From Km 29+190 to km 29+240	0.050	As per Attached Plan & profile
26	From Km 29+240 to km 29+380	0.140	As per Attached Plan & profile
27	From Km 29+380 to km 29+700	0.320	As per Attached Plan & profile
28	From Km 29+700 to km 30+100	0.400	As per Attached Plan & profile
29	From Km 30+100 to km 30+160	0.060	As per Attached Plan & profile
30	From Km 30+160 to km 30+200	0.040	As per Attached Plan & profile
31	From Km 30+200 to km 30+300	0.100	As per Attached Plan & profile
32	From Km 31+250 to km 31+410	0.160	As per Attached Plan & profile
33	From Km 31+590 to km 32+100	0.510	As per Attached Plan & profile
34	From Km 32+830 to km 33+120	0.290	As per Attached Plan & profile
35	From Km 33+120 to km 33+220	0.100	As per Attached Plan & profile
36	From Km 33+390 to km 33+790	0.400	As per Attached Plan & profile
37	From Km 33+870 to km 34+020	0.150	As per Attached Plan & profile
38	From Km 34+130 to km 34+300	0.170	As per Attached Plan & profile
39	From Km 34+580 to km 35+140	0.560	As per Attached Plan & profile
40	From Km 35+400 to km 35+530	0.130	As per Attached Plan & profile
Total (Km)		**10.605**	

The Contractor may adopt suitable slope (angle) for the embankment as per the availability of fill material/design requirements. The slopes shall be checked for safety against failure. The slopes shall be protected with turfing/geo synthetics /geo green blanket/geo cells/stone pitching or any other method as per schedule D.

Wherever required, toe wall/retaining wall/Breast Wall/other protection works along with drainage system shall be provided to contain the toe of the earthwork, so that all the features shown in the TCS are accommodated in the ROW provided.

(iii) Cutting of the existing road/New carriageway

Sl. No.	Design Chainage (from km to km)	Length (Km)	Extent of Cutting [Top of finished road level]
1	From Km 0+200 to km 0+260	0.060	As per Attached Plan & profile
2	From Km 6+700 to km 6+960	0.260	As per Attached Plan & profile
3	From Km 8+480 to km 9+060	0.580	As per Attached Plan & profile
4	From Km 10+310 to km 10+560	0.250	As per Attached Plan & profile
5	From Km 11+160 to km 11+250	0.090	As per Attached Plan & profile
6	From Km 14+710 to km 14+800	0.090	As per Attached Plan & profile
7	From Km 15+700 to km 15+800	0.100	As per Attached Plan & profile
8	From Km 15+920 to km 16+050	0.130	As per Attached Plan & profile
9	From Km 16+300 to km 16+340	0.040	As per Attached Plan & profile

Sl. No.	Design Chainage (from km to km)	Length (Km)	Extent of Cutting [Top of finished road level]
10	From Km 16+340 to km 16+380	0.040	As per Attached Plan & profile
11	From Km 16+380 to km 16+540	0.160	As per Attached Plan & profile
12	From Km 16+760 to km 17+100	0.340	As per Attached Plan & profile
13	From Km 21+100 to km 21+920	0.820	As per Attached Plan & profile
14	From Km 21+920 to km 21+980	0.060	As per Attached Plan & profile
15	From Km 21+980 to km 25+860	3.880	As per Attached Plan & profile
16	From Km 25+860 to km 26+160	0.300	As per Attached Plan & profile
17	From Km 26+160 to km 26+260	0.100	As per Attached Plan & profile
18	From Km 26+260 to km 26+320	0.060	As per Attached Plan & profile
19	From Km 26+320 to km 26+480	0.160	As per Attached Plan & profile
20	From Km 27+100 to km 27+220	0.120	As per Attached Plan & profile
21	From Km 27+220 to km 27+280	0.060	As per Attached Plan & profile
22	From Km 27+280 to km 28+760	1.480	As per Attached Plan & profile
23	From Km 28+760 to km 28+900	0.140	As per Attached Plan & profile
24	From Km 28+900 to km 29+190	0.290	As per Attached Plan & profile
25	From Km 30+300 to km 30+750	0.450	As per Attached Plan & profile
26	From Km 30+750 to km 30+950	0.200	As per Attached Plan & profile
27	From Km 30+950 to km 31+130	0.180	As per Attached Plan & profile
28	From Km 31+130 to km 31+170	0.040	As per Attached Plan & profile
29	From Km 31+170 to km 31+210	0.040	As per Attached Plan & profile
30	From Km 31+210 to km 31+250	0.040	As per Attached Plan & profile
31	From Km 31+410 to km 31+590	0.180	As per Attached Plan & profile
32	From Km 32+100 to km 32+830	0.730	As per Attached Plan & profile
33	From Km 33+790 to km 33+870	0.080	As per Attached Plan & profile
34	From Km 34+020 to km 34+130	0.110	As per Attached Plan & profile
35	From Km 34+470 to km 34+580	0.110	As per Attached Plan & profile
36	From Km 35+140 to km 35+400	0.260	As per Attached Plan & profile
Total (Km)		**12.030**	

5. Pavement Design

(i) Pavement design shall be carried out in accordance with Section 5 of the Manual.

(ii) Type of pavement

The Flexible pavement shall be provided for the entire length of Two-lane with Paved Shoulder Project Highway for Main carriageway, Service Road, Bus bays and Truck Lay-Bye.

(iii) Design requirements

(a) Design Period and strategy

Flexible pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of minimum

20 MSA or as per actual traffic survey, whichever is higher. The entire road section proposed for development with Flexible pavement including paved shoulders shall be constructed after scarifying /dismantling the existing bituminous layers and reconstructing with minimum crust given in table below.

For reconstruction & new construction

S.No.	Description	Minimum Crust Composition of Flexible Pavement
1	BC	30 mm
2	DBM	50 mm
3	WMM	150 mm
4	CTSB	200 mm
5	Subgrade	500 mm (min. effective CBR 8%)

For Overlay & Widening

S.No.	Description	Minimum Crust Composition for overlay	Minimum Crust Composition for widening of existing road
1	BC	50 mm	30 mm
2	DBM		50 mm
3	WMM		150 mm
4	CTSB		200 mm
5	Subgrade		500 mm (min. effective CBR 8%)

Note-

(a) The contractor shall conduct the CBR Test and shall design the pavement as per IRC: 37-2018. Notwithstanding anything to the contrary contained in this agreement or the manual the contractor shall maintain minimum thickness as mentioned in the above tables or consider a higher crust thickness.

(b) In clayey soil areas (black cotton soil) excavate 600 mm depth and replace it with minimum 10% CBR sub grade material. If the soil below 600mm does not satisfy 97% of compaction and MDD of lab results, then excavate further 500mm and replace entire excavation with buffer layer. For this MORTH Specification, 2013 Clause 305 is applicable.

(c) The Crust Composition for Truck Lay Byes shall be as per Main Carriageway Clause 5.3.2 (a) above and as per IRC: SP: 73-2018.

(d) The Crust composition for Bus Bay shall be as per section 5.3.2 (a) of IRC SP 73- 2018.

(e) The Crust composition for Minor roads shall be as per section 5 of IRC SP 73- 2018.

(iv) **Reconstruction of Stretches**

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

Sr. No.	Stretch Design Chainage From km to km		Length (km)	Remarks
	From	To		
1	0+200	0+260	0.060	The existing 2-lane shall be reconstructed as new pavement.
2	0+740	0+750	0.010	The existing 2-lane shall be reconstructed as new pavement.
3	2+630	2+700	0.070	The existing 2-lane shall be reconstructed as new pavement.
4	3+200	3+380	0.180	The existing 2-lane shall be reconstructed as new pavement.
5	4+230	4+280	0.050	The existing 2-lane shall be reconstructed as new pavement.
6	4+780	4+800	0.020	The existing 2-lane shall be reconstructed as new pavement.
7	5+030	5+170	0.140	The existing 2-lane shall be reconstructed as new pavement.
8	7+060	7+180	0.120	The existing 2-lane shall be reconstructed as new pavement.
9	8+250	8+400	0.150	The existing 2-lane shall be reconstructed as new pavement.
10	8+500	8+630	0.130	The existing 2-lane shall be reconstructed as new pavement.
11	9+000	9+130	0.130	The existing 2-lane shall be reconstructed as new pavement.
12	9+200	9+300	0.100	The existing 2-lane shall be reconstructed as new pavement.
13	9+670	9+700	0.030	The existing 2-lane shall be reconstructed as new pavement.
14	10+100	10+130	0.030	The existing 2-lane shall be reconstructed as new pavement.
15	10+210	10+300	0.090	The existing 2-lane shall be reconstructed as new pavement.
16	11+300	11+380	0.080	The existing 2-lane shall be reconstructed as new pavement.
17	11+480	11+700	0.220	The existing 2-lane shall be reconstructed as new pavement.
18	12+020	12+050	0.030	The existing 2-lane shall be reconstructed as new pavement.

Sr. No.	Stretch Design Chainage From km to km		Length (km)	Remarks
	From	To		
19	14+640	14+660	0.020	The existing 2-lane shall be reconstructed as new pavement.
20	14+790	14+880	0.090	The existing 2-lane shall be reconstructed as new pavement.
21	15+700	16+050	0.350	The existing 2-lane shall be reconstructed as new pavement.
22	16+300	16+540	0.240	The existing 2-lane shall be reconstructed as new pavement.
23	16+760	17+160	0.400	The existing 2-lane shall be reconstructed as new pavement.
24	17+340	17+460	0.120	The existing 2-lane shall be reconstructed as new pavement.
25	17+800	17+820	0.020	The existing 2-lane shall be reconstructed as new pavement.
26	18+250	19+175	0.925	The existing 2-lane shall be reconstructed as new pavement.
27	20+610	20+630	0.020	The existing 2-lane shall be reconstructed as new pavement.
28	20+780	20+950	0.170	The existing 2-lane shall be reconstructed as new pavement.
29	24+800	25+000	0.200	The existing 2-lane shall be reconstructed as new pavement.
30	25+100	25+400	0.300	The existing 2-lane shall be reconstructed as new pavement.
31	27+200	27+300	0.100	The existing 2-lane shall be reconstructed as new pavement.
32	27+900	28+150	0.250	The existing 2-lane shall be reconstructed as new pavement.
33	30+000	30+200	0.200	The existing 2-lane shall be reconstructed as new pavement.
34	31+300	32+200	0.900	The existing 2-lane shall be reconstructed as new pavement.
35	32+750	33+000	0.250	The existing 2-lane shall be reconstructed as new pavement.
36	33+200	34+300	1.100	The existing 2-lane shall be reconstructed as new pavement.
37	34+470	35+530	1.060	The existing 2-lane shall be reconstructed as new pavement.
Total (Km)			**8.355**	

Note:

1) Contractor shall provide 65 mm Wearing coat comprising 40 mm BC & 25 mm Mastic Asphalt on all Structures and culverts which are designed without overburden.

(v) **Strengthening & widening of existing road stretches**

The following stretches of the existing road shall be Strengthened & Widened by Contractor as per Clause 5.9 of relevant Manual as specified in Schedule-D (IRC: SP: 73, 2018) as per the Design Traffic as specified (20 MSA).

Sr. No.	Stretch Design Chainage From km to km		Remarks
	From	To	Length (m)
1	0+000	0+200	0.200
2	0+260	0+550	0.290
3	0+750	2+630	1.880
4	2+900	3+200	0.300
5	3+380	4+050	0.670
6	4+280	4+780	0.500
7	5+170	6+700	1.530
8	7+400	8+100	0.700
9	9+700	9+900	0.200
10	10+130	10+210	0.080
11	11+800	11+900	0.100
12	12+050	14+640	2.590
13	14+880	15+700	0.820
14	16+050	16+300	0.250
15	16+540	16+760	0.220
16	17+160	17+340	0.180
17	17+820	18+130	0.310
18	19+175	19+400	0.225
19	19+530	19+640	0.110
20	20+630	20+780	0.150
21	34+300	34+470	0.170
22	35+530	36+635	1.105
		Total	**12.580**

Note:

1) Contractor shall provide 65 mm Wearing coat comprising 40 mm BC & 25 mm Mastic Asphalt on all Structures and culverts which are designed without overburden.

6 Road Side Drainage

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

Open lined drain shall be provided in the following stretches:

Left			Right		
From Design Chainage (Km)	To Design Chainage (Km)	Length (m)	From Chainage (Km)	To Chainage (Km)	Length (m)
0.200	0.260	60	0.200	0.260	60
6.700	6.960	260	6.700	6.960	260
8.480	8.895	415	8.480	8.895	415
8.904	9.060	156	8.904	9.060	156

Left			Right		
From Design Chainage (Km)	To Design Chainage (Km)	Length (m)	From Chainage (Km)	To Chainage (Km)	Length (m)
10.310	10.495	185	10.310	10.495	185
10.504	10.560	56	10.504	10.560	56
11.160	11.225	65	11.160	11.225	65
11.234	11.250	16	11.234	11.250	16
15.700	15.800	100	14.710	14.800	90
15.920	16.050	130	15.700	15.800	100
16.340	16.380	40	15.920	16.050	130
16.380	16.540	160	16.300	16.340	40
16.760	16.795	35	16.380	16.540	160
16.804	17.100	296	16.760	16.795	35
21.100	21.195	95	16.804	17.100	296
21.204	21.370	166	21.100	21.204	104
21.379	21.445	66	21.204	21.370	166
21.454	21.575	121	21.379	21.445	66
21.584	21.740	156	21.454	21.575	121
21.749	21.815	66	21.584	21.740	156
21.824	21.920	96	21.749	21.815	66
21.920	21.925	5	21.824	21.925	101
21.934	21.980	46	21.934	21.980	46
21.980	25.860	3880	21.980	22.015	35
25.860	25.915	55	22.024	22.189	165
25.924	26.020	96	22.211	22.340	129
26.029	26.160	131	22.349	22.479	130
26.160	26.260	100	22.501	22.631	130
26.260	26.295	35	22.648	22.755	107
26.304	26.320	16	22.764	22.930	166
26.320	26.480	160	22.939	22.995	56
27.104	27.220	116	23.004	23.125	121
27.220	27.280	60	23.134	23.340	206
27.280	27.410	130	23.349	23.510	161
27.419	27.590	171	23.519	23.595	76
27.599	27.675	76	23.604	23.690	86
27.684	27.845	161	23.699	23.885	186
27.854	28.760	906	23.894	24.149	255
28.760	28.795	35	24.171	24.250	79
28.804	28.900	96	24.259	24.455	196
28.900	29.190	290	24.464	24.645	181
30.300	30.750	450	24.654	24.715	61
30.750	30.864	114	24.724	24.995	271
30.875	30.950	75	25.004	25.295	291
30.950	31.025	75	25.304	25.455	151
31.034	31.104	70	25.464	25.565	101
31.115	31.130	15	25.574	25.710	136
31.175	31.210	35	25.719	25.825	106
31.410	31.432	22	25.834	25.915	81

Left			Right		
From Design Chainage (Km)	To Design Chainage (Km)	Length (m)	From Chainage (Km)	To Chainage (Km)	Length (m)
31.447	31.495	48	25.924	26.020	96
31.504	31.590	86	26.029	26.160	131
32.100	32.135	35	26.304	26.480	176
32.144	32.265	121	27.104	27.220	116
32.274	32.445	171	27.220	27.280	60
32.454	32.535	81	27.280	27.280	0
32.544	32.750	206	27.419	27.590	171
32.759	32.830	71	27.599	27.675	76
33.221	33.295	74	27.684	28.760	1076
33.304	33.390	86	28.760	28.795	35
33.790	33.805	15	28.804	28.905	101
33.814	33.870	56	28.914	29.025	111
34.020	34.130	110	29.034	29.145	111
34.470	34.580	110	29.154	29.190	36
35.140	35.400	260	30.300	30.565	265
			30.574	30.694	120
			30.705	30.750	45
			30.875	30.950	75
			31.034	31.104	70
			31.115	31.164	49
			31.210	31.250	40
			31.410	31.432	22
			31.447	31.495	48
			31.504	32.059	555
			32.070	32.135	65
			32.144	32.265	121
			32.274	32.445	171
			32.454	32.535	81
			32.544	32.750	206
			32.759	32.830	71
			33.790	33.805	15
			33.814	33.870	56
			34.020	34.130	110
			34.470	34.580	110
			35.140	35.400	260
Total		**11691**	**Total**		**11404**

Footpath cum RCC Covered Drain in Built-ups

S. no	Design Chainage (From)	Design Chainage (To)	Net Length (m)	Remarks
1	11+250	11+330	80	Both side
2	18+140	18+980	840	Both side
3	20+780	21+100	287	Both side

S. no	Design Chainage (From)	Design Chainage (To)	Net Length (m)	Remarks
4	33+220	33+390	170	Both side
Total (Km)			**=1377 x 2 =2754**	**(2.754 Km)**

Note:

1) The Length of the lined drains mentioned above are indicative and minimum. The actual length of the lined drains shall be determined by the Contractor keeping in view the drainage locations and in accordance with the Manual requirements with approval from the Authority/ Authority's Engineer. Any increase in the length of drain as specified in above location shall not constitute a Change of Scope.

2) Invert levels of the longitudinal drains shall be decided as per adjoining draining area and properties. All drains should be connected to nearest natural nallah/Drainage Source.

7 Designs of Structures

(i) General

(a) All bridges, culverts and other structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform the cross-sectional features and other details specified therein.

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

Sl. No.	Design Chainage(km)	Width of carriageway and cross-sectional features*
Minor Bridge		
1	1+530	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
2	2+100	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
3	6+415	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
4	7+460	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
5	20+235	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)

Sl. No.	Design Chainage(km)	Width of carriageway and cross-sectional features*
6	20+840	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
7	21+260	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
8	22+200	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
9	22+490	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
10	22+640	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
11	24+160	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
12	29+470	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
13	29+500	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
14	29+785	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
15	30+080	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
16	31+440	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)
17	33+210	TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)

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

(d)

Sl. No.	Design Chainage(km)	Remarks
(1)	(2)	(3)
Minor Bridge		
1	1+530	As per TCS-17 2 x 1.50m Footpath
2	2+100	As per TCS-17 2 x 1.50m Footpath
3	6+415	As per TCS-17 2 x 1.50m Footpath
4	7+460	As per TCS-17 2 x 1.50m Footpath
5	20+235	As per TCS-17 2 x 1.50m Footpath
6	20+840	As per TCS-17 2 x 1.50m Footpath
7	21+260	As per TCS-17 2 x 1.50m Footpath
8	22+200	As per TCS-17 2 x 1.50m Footpath
9	22+490	As per TCS-17 2 x 1.50m Footpath
10	22+640	As per TCS-17 2 x 1.50m Footpath
11	24+160	As per TCS-17 2 x 1.50m Footpath
12	29+470	As per TCS-17 2 x 1.50m Footpath
13	29+500	As per TCS-17 2 x 1.50m Footpath
14	29+785	As per TCS-17 2 x 1.50m Footpath
15	30+080	As per TCS-17 2 x 1.50m Footpath
16	31+440	As per TCS-17 2 x 1.50m Footpath
17	33+210	As per TCS-17 2 x 1.50m Footpath

(d) All bridges shall be high level bridges.

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

Sl. No.	Bridge at km	Utility service to be carried	Remarks
All Minor Bridges shall have raised footpath on as per TCS of the structure for the arrangement of utility services.			

(f) Cross-section of the new culverts and bridges at deck level shall conform to the typical cross-sections given in section 7 of the Manual.

(g) IRC Class Special Vehicle loading (385 T) shall be taken into account in the structural design of Elevated Viaduct, Major Bridges /Minor bridges/Flyover/VUP/ROB.

(ii) Culverts

(a) Overall minimum width of all culverts shall be more than 12.00m and transitions to be matched with the roadway width of the approaches.

(b) Reconstruction of existing culverts:

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

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
1	10+500	1 X 2	Box Culvert
2	10+900	1 X 1.5	Box Culvert
3	12+580	1 X 1.5	Box Culvert
4	17+580	1 X 1.5	Box Culvert
5	20+590	1 X 1.5	Box Culvert
6	21+030	1 X 1.5	Box Culvert
7	21+375	1 X 1.5	Box Culvert
8	21+450	1 X 1.5	Box Culvert
9	21+580	1 X 1.5	Box Culvert
10	21+820	1 X 1.5	Box Culvert
11	21+930	1 X 1.5	Box Culvert
12	22+020	1 X 1.5	Box Culvert
13	22+345	1 X 1.5	Box Culvert
14	22+760	1 X 1.5	Box Culvert
15	22+935	1 X 1.5	Box Culvert
16	23+130	1 X 1.5	Box Culvert
17	23+345	1 X 1.5	Box Culvert
18	23+515	1 X 1.5	Box Culvert
19	23+700	1 X 1.5	Box Culvert
20	24+255	1 X 1.5	Box Culvert
21	24+460	1 X 1.5	Box Culvert
22	24+720	1 X 1.5	Box Culvert
23	25+000	1 X 1.5	Box Culvert
24	25+300	1 X 1.5	Box Culvert
25	25+460	1 X 1.5	Box Culvert
26	25+570	1 X 1.5	Box Culvert
27	25+715	1 X 2	Box Culvert
28	25+830	1 X 1.5	Box Culvert
29	25+920	1 X 1.5	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
30	26+025	1 X 1.5	Box Culvert
31	26+765	1 X 1.5	Box Culvert
32	26+930	1 X 1.5	Box Culvert
33	27+100	1 X 1.5	Box Culvert
34	27+415	1 X 1.5	Box Culvert
35	27+595	1 X 1.5	Box Culvert
36	27+850	1 X 1.5	Box Culvert
37	27+995	1 X 1.5	Box Culvert
38	28+275	1 X 1.5	Box Culvert
39	28+565	1 X 1.5	Box Culvert
40	28+700	1 X 1.5	Box Culvert
41	29+270	1 X 1.5	Box Culvert
42	29+675	1 X 1.5	Box Culvert
43	30+570	1 X 1.5	Box Culvert
44	30+700	1 X 1.5	Box Culvert
45	31+030	1 X 1.5	Box Culvert
46	31+110	1 X 1.5	Box Culvert
47	31+170	1 X 2	Box Culvert
48	31+285	1 X 1.5	Box Culvert
49	31+335	1 X 1.5	Box Culvert
50	31+500	1 X 1.5	Box Culvert
51	32+450	1 X 1.5	Box Culvert
52	32+540	1 X 1.5	Box Culvert
53	32+755	1 X 1.5	Box Culvert
54	33+025	1 X 1.5	Box Culvert
55	33+300	1 X 1.5	Box Culvert
56	33+400	1 X 1.5	Box Culvert
57	33+510	1 X 1.5	Box Culvert

* Road level shall be minimum as per Proposed FRL provided in Alignment Plan at Annexure-III Schedule-A.

Note:

1) The proposed locations are minimum in number. Any change in number/length/span/height shall not be treated as change in scope of work.

2) The culvert location planned as Table above shall be adjusted accordingly to the exact location of cross-water stream or existing culvert located based on the topographic survey performed by the Contractor for the final drawings of the Detailed Design. The Contractor shall construct culvert in Skew Angle if required as per the site conditions. This shall be deemed to be included in the Scope of Work.

3) The Contractor shall carry out appropriate Ground improvement works as per the State of Art reports IRC-HRB: SR-13, SR-14 to increase the Safe Bearing Capacity of in-situ soil and reduce the settlement during the construction & post construction period.

4) The Contractor shall provide Granular Material below the foundation of Box Structure in case of presence of Clayey soils as per clause 23.3 of IRC: SP: 13, 2004.

5) The Contractor shall provide necessary Protection Works on upstream & downstream site of box structure as per Article 23 of IRC: SP: 13 and Figure 8.5 Culvert with retain wall on U/S & D/S Side, Catch pit, chute, Guide wall and Apron as per IRC: SP:48, 1998, as per the site requirement.

6) On the Culvert location at the end of roadway edges, Only RCC Crash Barriers shall be provided of minimum 1.1 m height.

7) The Contractor shall provide necessary Barrel length of Box as per the extra widening, embankment Height and site requirement. This shall not constitute Change of Scope.

(c) Widening of existing culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert location (Design Chainage)	Type, span height and width of existing culvert(m)	Repairs to be carried out
1	2+715	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
2	3+610	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
3	6+690	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
4	9+085	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
5	9+180	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
6	9+395	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)
7	9+610	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)
8	9+920	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)
9	10+075	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)
10	10+755	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)
11	11+725	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)
12	33+810	Box culvert (1 X 1.5) & Existing width=12m	Widening (RHS)

Sl. No.	Culvert location (Design Chainage)	Type, span height and width of existing culvert(m)	Repairs to be carried out
13	36+630	Box culvert (1 X 1.5) & Existing width=12m	Widening (LHS)

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

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
1	0+670	1 X 2	Box Culvert
2	4+000	1 X 2	Box Culvert
3	4+160	1 X 2	Box Culvert
4	6+980	1 X 2	Box Culvert
5	8+900	1 X 2	Box Culvert
6	10+010	1 X 2	Box Culvert
7	10+880	1 X 2	Box Culvert
8	11+080	1 X 2	Box Culvert
9	11+230	1 X 2	Box Culvert
10	12+680	1 X 2	Box Culvert
11	12+760	1 X 2	Box Culvert
12	13+150	1 X 2	Box Culvert
13	13+350	1 X 2	Box Culvert
14	13+700	1 X 2	Box Culvert
15	13+990	1 X 2	Box Culvert
16	14+180	1 X 2	Box Culvert
17	14+400	1 X 2	Box Culvert
18	14+680	1 X 2	Box Culvert
19	14+840	1 X 2	Box Culvert
20	15+340	1 X 2	Box Culvert
21	16+800	1 X 2	Box Culvert
22	17+130	1 X 2	Box Culvert
23	17+700	1 X 2	Box Culvert
24	20+010	1 X 6	Box Culvert
25	20+925	1 X 2	Box Culvert
26	21+200	1 X 2	Box Culvert
27	21+745	1 X 2	Box Culvert
28	23+000	1 X 2	Box Culvert
29	23+600	1 X 2	Box Culvert
30	23+890	1 X 2	Box Culvert
31	24+650	1 X 2	Box Culvert
32	26+300	1 X 2	Box Culvert
33	26+525	1 X 2	Box Culvert
34	26+575	1 X 2	Box Culvert
35	27+680	1 X 2	Box Culvert
36	28+160	1 X 2	Box Culvert
37	28+500	1 X 2	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
38	28+800	1 X 2	Box Culvert
39	28+910	1 X 2	Box Culvert
40	29+030	1 X 2	Box Culvert
41	29+150	1 X 2	Box Culvert
42	29+200	1 X 2	Box Culvert
43	29+355	1 X 2	Box Culvert
44	29+910	1 X 2	Box Culvert
45	29+980	1 X 2	Box Culvert
46	30+230	1 X 2	Box Culvert
47	30+870	1 X 3	Box Culvert
48	32+065	1 X 3	Box Culvert
49	32+140	1 X 2	Box Culvert
50	32+270	1 X 2	Box Culvert
51	33+140	1 X 2	Box Culvert
52	34+200	1 X 2	Box Culvert
53	35+900	1 X 2	Box Culvert
54	36+200	1 X 2	Box Culvert

****Additionally, RCC Barrel Shall be provided in all Major/minor junctions/Cross roads - 38 Nos. (RCC barrel length of min. 10m shall be provided of size 2m X 2m).**

* Road level shall be minimum as per Proposed FRL provided in Alignment Plan at Annexure-III Schedule-A.

Note:

(i) The proposed locations are minimum in number. Any change in number/length/span/height shall not be treated as change in scope of work.

(ii) The culvert location planned as Table above shall be adjusted accordingly to the exact location of cross-water stream or existing culvert located based on the topographic survey performed by the Contractor for the final drawings of the Detailed Design. The Contractor shall construct culvert in Skew Angle if required as per the site conditions. This shall be deemed to be included in the Scope of Work.

(iii) The Contractor shall carry out appropriate Ground improvement works as per the State of Art reports IRC-HRB: SR-13, SR-14 to increase the Safe Bearing Capacity of in-situ soil and reduce the settlement during the construction & post construction period.

(iv) The Contractor shall provide Granular Material below the foundation of Box Structure in case of presence of Clayey soils as per clause 23.3 of IRC: SP: 13, 2004.

(v) The Contractor shall provide necessary Protection Works on upstream & downstream site of box structure as per Article 23 of IRC: SP: 13 and Figure 8.5 Culvert with retain wall on U/S & D/S Side, Catch pit, chute, Guide wall and Apron as per IRC: SP:48, 1998, as per the site requirement.

(vi) On the Culvert location at the end of roadway edges, Only RCC Crash Barriers shall be provided of minimum 1.1 m height.

(vii) The Contractor shall provide necessary Barrel length of Box as per the extra widening, embankment Height and site requirement. This shall not constitute Change of Scope.

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

Sl. No.	Culvert Location (Design Chainage)	Type	No. of Spans x Clear Span (m)/Opening (m)	Repairs to be carried out specify*
1	0+545	Box Culvert	1 X 1.5	
2	0+830	Box Culvert	1 X 1.5	
3	1+035	Box Culvert	1 X 2	
4	1+210	Box Culvert	1 X 1.5	
5	1+815	Box Culvert	1 X 1.5	
6	2+350	Box Culvert	1 X 1.5	
7	2+500	Box Culvert	1 X 1.5	
8	2+970	Box Culvert	1 X 2	
9	4+645	Box Culvert	1 X 1.5	
10	5+140	Box Culvert	1 X 1.5	
11	5+525	Box Culvert	1 X 1.5	
12	5+970	Box Culvert	1 X 1.5	
13	7+525	Box Culvert	1 X 1.5	
14	7+800	Box Culvert	1 X 1.5	
15	8+045	Box Culvert	1 X 1.5	
16	8+260	Box Culvert	1 X 1.5	
17	9+530	Box Culvert	1 X 1.5	
18	9+735	Box Culvert	1 X 1.5	
19	9+835	Box Culvert	1 X 1.5	
20	10+600	Box Culvert	1 X 1.5	
21	11+555	Box Culvert	1 X 1.5	
22	12+325	Box Culvert	1 X 1.5	
23	15+590	Box Culvert	1 X 1.5	
24	16+080	Box Culvert	1 X 1.5	
25	16+215	Box Culvert	1 X 1.5	
26	16+445	Box Culvert	1 X 1.5	
27	18+755	Box Culvert	1 X 1.5	
28	18+915	Box Culvert	1 X 1.5	
29	18+965	Box Culvert	1 X 1.5	
30	19+070	Box Culvert	1 X 1.5	
31	19+585	Box Culvert	1 X 1.5	
32	19+780	Box Culvert	1 X 1.5	
33	20+670	Box Culvert	1 X 1.5	
34	31+580	Box Culvert	1 X 1.5	
35	31+700	Box Culvert	1 X 1.5	
36	31+760	Box Culvert	1 X 1.5	

Sl. No.	Culvert Location (Design Chainage)	Type	No. of Spans x Clear Span (m)/Opening (m)	Repairs to be carried out specify*
37	31+835	Box Culvert	1 X 1.5	
38	32+935	Box Culvert	1 X 1.5	
39	34+755	Box Culvert	1 X 1.5	
40	34+955	Box Culvert	1 X 1.5	
41	34+370	Box Culvert	1 X 1.5	
42	35+570	Box Culvert	1 X 2	

Note: The existing and retained culverts shall be inspected by Contractor to check and assess the requirement of repairs and /or strengthening or reconstruction as case may be. If so, required, the repair and/or strengthening or reconstruction work shall be carried out as per the assessment. This shall not constitute Change of Scope of work

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

(iii) Bridges

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

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

Sl. No.	Design Chainage(km)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
	Minor Bridge			
1	1+530	1 X 17	1 X 20	Reconstruction as per TCS-17
2	2+100	1 X 17.3	1 X 20	
3	7+460	1 X 11.2	1 X 12	
4	20+235	1 X 11	1 X 12	
5	21+260	1 X 7	1 X 8	
6	22+200	1 X 12	1 X 15	
7	22+490	1 X 13	1 X 15	
8	22+640	1 X 9	1 X 15	
9	24+160	1 X 13	1 X 15	
10	29+470	1 X 7	1 X 10	
11	29+500	1 X 7	1 X 10	
12	29+785	1 X 7	1 X 8	

Sl. No.	Design Chainage(km)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
13	30+080	1 X 25	1 X 25	
14	31+440	1 X 7	1 X 8	
15	33+210	1 X 12	1 X 15	

(ii) The following narrow bridges shall be widened:

Sl. No.	Design Chainage(km)	Existing width (m)	Extent of widening (m)	Cross-section at deck level for widening @
1	6+415	8.40	7.60 m {Widening (RHS)}	As per TCS-17

(b) **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.

Sl. No.	Design Chainage(km)	Total length (m)	Remarks, if any (Total width in m)
Minor Bridge			
1	20+840	1x8.00	As per TCS-17 1 x 16 (11.0m CW+ 2 x 1.50m Footpath + 2 x 0.50m Crash barrier + 2 x 0.50m RCC Railing)

Notes:

1) The bridge approaches, Abutments and Pier locations shall be protected as per IRC 89: 2019 River Training & control works on bridges.
2) The span and opening of these bridges as specified are indicative. The design of waterway has to be done as per site hydraulic requirement. Any change in this configuration shall not attract any change of Scope.
3) The contractor shall do proper coordination with nearby package contractor for smooth construction of Highway. Any incidental work in this regard shall deemed included in scope of work.
4) Proposed span arrangement is minimum and any increase in length/span/height shall not be treated as change in scope of work.
5) IRC Class Special Vehicle loading shall be considered in the structural **design of bridges/Flyover/VUP/FOB.**

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

Sl. No.	Location at Chainage	Remarks
NIL		

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

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

The following Major bridges shall be retained with repairs:

Sl. No.	**Location at km**	**Remarks**
Nil		

The following Minor bridges shall be retained with repairs:

Sl. No.	**Design Chainage (Km)**	**Remarks**
1	11+350	RCC Girder (1x30.00)
2	18+115	RCC Girder (1X18)
3	18+815	RCC Slab (1X8.6)
4	19+210	RCC Girder (1X19)
5	19+530	RCC Slab (1X6.7)
6	21+130	RCC Girder (1X24)
7	34+640	RCC Girder (1X25)

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in the Manual.

(f) Structures in marine environment

Following is the list of structures to be constructed.

Sr. No.	**Design Chainage (Km)**	**No. of Spans with Span Length (m)**	**Structure**
NIL			

(iv) Rail-road bridges

(a) Design, construction and detailing of ROB/RUB shall be as specified in the provision of relevant Manual.

(b) Road over-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Length of Structure (m)	Remarks
-NIL-			

(c) Road under-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Length of Structure (m)	Remarks
-NIL-			

(v) **Grade separated structures**

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

(vi) 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

Sl. No.	Design Chainage (Km)	Nature and extent of repairs /strengthening to be carried out
1	11+350	Replacement of expansion joints and plastering & pointing in cracks if any
2	18+115	Replacement of expansion joints and plastering & pointing in cracks if any
3	18+815	Replacement of expansion joints and plastering & pointing in cracks if any
4	19+210	Replacement of expansion joints and plastering & pointing in cracks if any
5	19+530	Replacement of expansion joints and plastering & pointing in cracks if any
6	21+130	Replacement of expansion joints and plastering & pointing in cracks if any
7	34+640	Replacement of expansion joints and plastering & pointing in cracks if any

Note: All the retained bridges are to be painted as per Manual or relevant codes.

(b) ROB / RUB

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

(c) Overpasses/Underpasses and other structures

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

(vi) List of major bridges and Structures

The Following is the list of Major Bridges and the structures.

SI. No.	Location (Km)
Nil	

8. Traffic Control Devices and Road Safety Works

(i) Traffic control devices and road safety works shall be provided in accordance with the provision of Section-9 of relevant Manual as specified in Schedule-D. The Minimum number / Quantities of Traffic Control Devices and Road Safety Works are specified in Schedule-C.

(a) Traffic/ Road Signs:

Traffic signs viz roadside signs, overhead signs, kerb mounted signs etc. along the entire Project highway shall be provided in accordance with section 9 of the manual.

(b) Pavement Marking:

Pavement markings shall cover road marking for the entire Project Highway as per manual.

Description	EDGE LINE				CENTRE LINE				
	Nos	Length	Width	Minimum Quantity	Length	Nos	Total Length of Strips	Width	Minimum Quantity
Straight Portion (Mcw)-2 Lane	2	23234	0.15	6970	23234	1	7745	0.10	775
Curve Portion (Mcw)-2 Lane	2	13401	0.15	4020	13401	1	6700	0.10	670
For junctions/Toll Plaza/Bus Bays/ Truck Lay byes wastage etc:				**15,543.750**	**Sq.m.**				
TOTAL QUANTITY (SQ.M):				**29,978.750**	**Sq.m.**				

Studs shall be installed all along the project highway on Paved shoulders on either side of main carriageway.

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
1	0+077	175	25	28	78.08	13
2	0+168	700	0	54	54.32	6
3	0+380	200	25	100	149.81	25
4	0+607	750	0	206	205.51	23
5	1+093	75	30	70	129.63	22
6	1+361	105	40	50	130.09	22
7	1+601	150	30	40	100.27	17
8	1+723	300	30	44	104.25	17
9	1+871	320	25	109	158.69	26
10	2+135	140	30	65	125.45	21
11	2+388	320	25	116	166.02	28
12	2+702	175	25	53	102.76	17
13	2+870	175	25	52	102.40	17
14	3+058	650	0	126	125.84	14
15	3+342	245	20	271	310.72	52
16	3+744	155	30	198	258.29	43
17	4+011	175	25	68	118.01	20
18	4+206	100	20	79	119.41	20
19	4+429	90	25	124	174.32	29
20	4+650	130	20	61	101.24	17
21	4+987	170	25	334	383.64	64
22	5+345	150	30	99	158.57	26
23	5+545	300	30	48	107.85	18
24	5+745	130	20	21	61.18	10
25	5+831	120	20	39	78.93	13
26	5+959	175	25	58	107.63	18
27	6+215	320	25	31	81.14	14
28	6+313	750	0	56	55.50	6
29	6+436	320	25	59	108.77	18
30	6+763	130	20	87	126.56	21
31	6+990	100	20	108	147.71	25
32	7+147	100	20	42	82.23	14
33	7+359	100	20	43	83.16	14
34	7+431	305	0	46	45.52	8
35	7+551	305	0	41	41.05	7
36	7+622	85	25	36	86.12	14
37	7+799	1500	0	41	40.53	2
38	7+938	750	0	14	13.62	2
39	8+060	230	20	44	83.69	14
40	8+171	75	30	48	107.97	18
41	8+278	75	30	22	82.23	14
42	8+450	100	20	33	72.67	12
43	8+542	125	20	25	65.16	11
44	8+628	250	20	33	73.42	12
45	8+811	150	30	130	190.40	32
46	9+129	80	25	152	202.48	34

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
47	9+423	125	20	205	244.58	41
48	9+706	150	30	18	78.38	13
49	9+912	100	20	75	115.14	19
50	10+233	130	20	104	144.49	24
51	10+435	75	30	76	135.85	23
52	10+584	75	30	92	152.04	25
53	10+779	125	20	30	69.67	12
54	10+960	75	30	114	174.02	29
55	11+262	75	30	107	166.64	28
56	11+404	80	25	30	80.30	13
57	11+541	100	20	22	62.00	10
58	11+672	75	30	62	122.12	20
59	11+825	505	0	65	64.74	7
60	11+921	100	20	32	72.03	12
61	12+038	100	20	79	118.87	20
62	12+295	150	30	32	92.47	15
63	12+446	85	25	75	124.53	21
64	12+576	145	15	85	114.82	19
65	12+752	125	20	47	87.01	15
66	12+859	305	15	59	88.74	15
67	12+968	300	30	37	97.24	16
68	13+107	285	30	87	147.12	25
69	13+269	505	0	90	90.11	10
70	13+535	275	30	144	203.51	34
71	13+696	165	15	62	91.82	15
72	13+821	150	15	79	109.43	18
73	13+964	315	25	41	91.41	15
74	14+164	315	25	55	105.03	18
75	14+325	315	25	30	80.03	13
76	14+506	500	0	56	55.55	6
77	14+645	125	20	55	94.76	16
78	14+759	75	30	54	114.35	19
79	14+863	175	25	35	85.41	14
80	15+045	305	0	62	61.99	10
81	15+158	650	0	55	54.85	6
82	15+234	750	0	20	19.56	2
83	15+383	100	20	82	122.35	20
84	15+617	650	0	75	74.64	8
85	15+711	125	20	17	57.44	10
86	15+828	400	20	107	147.23	25
87	15+989	320	15	31	60.51	10
88	16+069	250	20	43	82.89	14
89	16+173	250	20	23	62.53	10
90	16+311	75	30	94	153.88	26
91	16+444	75	30	18	78.28	13
92	16+633	145	15	48	77.84	13

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
93	16+740	150	30	12	72.36	12
94	16+819	100	20	19	59.01	10
95	16+924	300	15	56	85.72	14
96	16+983	305	0	28	28.27	5
97	17+099	200	25	75	125.42	21
98	17+210	305	0	29	29.18	5
99	17+347	90	25	78	127.50	21
100	17+533	75	30	94	154.06	26
101	17+819	305	0	21	20.88	3
102	17+916	75	30	14	73.77	12
103	18+004	80	25	42	92.18	15
104	18+154	50	40	23	102.81	17
105	18+258	100	20	26	65.54	11
106	18+317	305	0	25	24.89	4
107	18+492	250	20	68	108.43	18
108	18+660	120	20	95	134.63	22
109	18+785	75	30	33	93.15	16
110	18+998	100	20	109	148.53	25
111	19+169	75	30	28	88.03	15
112	19+407	80	25	39	89.37	15
113	19+522	82	25	81	131.05	22
114	19+657	85	25	73	123.39	21
115	19+835	75	30	27	87.19	15
116	19+966	75	30	79	138.92	23
117	20+193	75	30	57	116.63	19
118	20+343	75	30	38	98.13	16
119	20+493	305	0	104	104.13	17
120	20+625	130	20	73	113.05	19
121	20+804	75	30	60	120.35	20
122	20+970	100	20	27	67.39	11
123	21+071	50	40	43	122.99	20
124	21+252	75	30	47	106.71	18
125	21+522	75	30	45	104.52	17
126	21+687	275	30	77	137.08	23
127	22+022	75	30	91	150.53	25
128	22+205	50	40	77	157.13	26
129	22+375	75	30	76	136.14	23
130	22+638	305	0	42	41.88	7
131	22+760	75	30	33	92.90	15
132	22+873	55	40	36	115.88	19
133	23+106	75	30	15	75.27	13
134	23+216	100	20	74	113.71	19
135	23+356	305	0	46	45.82	8
136	23+505	250	20	58	97.62	16
137	23+619	305	0	45	45.01	8
138	23+698	100	20	44	84.38	14

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
139	23+808	75	30	31	90.51	15
140	23+919	65	35	21	91.17	15
141	24+042	160	0	79	78.52	13
142	24+145	75	30	46	105.93	18
143	24+354	125	20	33	73.30	12
144	24+612	75	30	101	161.10	27
145	24+766	305	0	86	86.32	14
146	24+905	80	25	31	81.04	14
147	24+975	305	0	47	47.10	8
148	25+072	75	30	61	120.74	20
149	25+214	125	20	82	122.35	20
150	25+443	75	30	105	164.59	27
151	25+615	110	20	32	72.32	12
152	25+740	75	30	68	128.05	21
153	25+908	75	30	18	77.90	13
154	26+101	250	20	57	96.89	16
155	26+300	150	30	45	104.86	17
156	26+422	120	20	20	60.39	10
157	26+507	250	20	18	58.09	10
158	26+603	75	30	25	85.16	14
159	26+775	100	20	39	79.21	13
160	26+903	75	30	77	136.52	23
161	27+039	305	0	49	49.13	8
162	27+141	305	0	39	38.72	6
163	27+334	110	20	18	58.36	10
164	27+427	75	30	25	85.37	14
165	27+570	75	30	60	119.51	20
166	27+682	250	20	39	79.26	13
167	27+794	250	20	44	84.45	14
168	27+874	100	20	11	50.74	8
169	27+941	125	20	18	57.56	10
170	28+125	125	20	19	58.74	10
171	28+282	75	30	46	105.60	18
172	28+364	100	20	13	53.10	9
173	28+440	75	30	12	72.28	12
174	28+605	50	40	70	149.97	25
175	28+760	60	35	89	159.20	27
343	28+907	100	20	55	95.48	16
344	29+039	100	20	17	56.62	9
345	29+161	50	40	90	170.02	28
346	29+296	50	20	56	95.77	16
347	29+486	50	40	58	138.23	23
348	29+626	50	40	11	91.20	15
349	29+709	50	40	23	102.86	17
350	29+835	100	20	37	77.29	13
351	29+943	305	0	41	41.35	7

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
352	30+161	75	30	82	142.15	24
353	30+362	250	20	31	71.40	12
354	30+480	75	30	47	107.35	18
355	30+604	150	15	63	93.40	16
356	30+780	50	40	38	117.77	20
357	30+944	50	40	110	190.19	32
358	31+150	50	40	95	174.90	29
359	31+299	75	30	26	85.94	14
360	31+388	305	0	19	18.84	3
361	31+459	75	30	43	102.98	17
362	31+542	305	0	20	20.20	3
363	31+596	500	0	53	53.09	6
364	31+720	100	20	31	71.39	12
365	31+788	80	25	8	57.91	10
366	31+876	130	20	19	58.54	10
367	31+966	75	30	44	104.20	17
368	32+085	75	30	35	95.08	16
369	32+343	75	30	52	112.17	19
370	32+456	75	30	42	101.64	17
371	32+557	75	30	8	68.17	11
372	32+671	125	20	77	116.82	19
373	32+747	305	0	31	30.53	5
374	32+860	650	0	54	54.09	6
375	33+004	125	20	119	158.69	26
376	33+170	75	30	31	91.39	15
377	33+247	305	0	37	36.85	6
378	33+331	75	30	20	79.90	13
379	33+434	75	30	15	75.10	13
380	33+508	305	0	53	53.25	9
381	33+597	120	20	57	96.78	16
382	33+730	80	25	10	59.80	10
383	33+818	75	30	47	106.89	18
384	33+962	500	0	66	66.47	7
385	34+087	75	30	25	84.89	14
386	34+183	75	30	25	85.44	14
387	34+268	305	0	17	17.10	3
388	34+323	305	0	26	25.97	4
389	34+378	305	0	12	11.61	2
390	34+498	150	30	32	92.50	15
391	34+603	75	30	30	89.62	15
392	34+700	130	20	44	84.39	14
393	34+783	305	0	18	17.56	3
394	34+883	200	25	42	91.76	15
395	34+972	200	25	19	69.12	12
396	35+068	305	0	23	22.63	4
397	35+122	305	0	48	47.96	8

S.No.	Design Chainage	Radius	Transition	Curve Length	Length	Numbers
398	35+197	145	15	27	56.50	9
399	35+312	130	20	130	170.48	28
400	35+488	85	25	72	122.46	20
401	35+703	75	30	26	85.78	14
402	35+799	150	30	33	93.07	16
402	35+989	650	0	113	113.32	13
402	36+143	100	20	39	79.37	13
402	36+294	195	15	142	171.68	29
402	36+476	250	20	18	58.45	10
TOTAL						**3842**

(ii) Specifications of the reflecting sheeting

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04 in accordance with Clause 9.2.3 of the Manual.

Note: Above quantity of road markings are indicative and minimum specified. The actual quantity of road markings shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

9. Roadside Furniture

(i) Roadside furniture shall be provided in accordance with the provisions of the Manual.

a) Road studs - Road studs shall be provided for the entire Project highway at median openings, bridges, VUP/Interchange/Flyover structures, approaches of bridges, VUP/Interchange/ Flyover, at curves on shoulder edge line, junctions, slip roads on both side of edge lines etc. in accordance with the manual.

b) LED traffic beacons - Shall be provided on entire project highway near pedestrian crossings, public gathering places, junctions etc. in accordance with the manual.

c) Pedestrian Guard Rail: Provide pedestrian guardrail at each bus stop location and other locations as per manual.

d) Delineators: Delineators for the entire Project Highway at the locations as suggested in relevant IRC Manual recommended in Schedule D.

e) Noise barriers: shall be provided in accordance with manual; Locations shall be decided as per site condition in consent with Authority.

f) Concrete Crash Barrier, Metal Beam Crash Barrier, Separators (MS Railings) – as per manual.

g) Traffic Safety Devices wherever required.

h) Hectometer/ Kilometer Stones.

i) Road Boundary Stones.

j) Roadside furniture like km/Hectometer Stones, Railings, Traffic Impact Attenuators, and Delineator shall be provided in accordance with the provision of section -9 of relevant Manual. The Minimum Numbers / Quantities of Roadside furniture are specified in Schedule-C.

(ii) Overhead traffic signs: -

a) Full Width Overhead signs shall be provided in accordance with section 9 of the manual.

b) Minimum number of full overhead gantry sign – 2 no and cantilever overhead gantry sign – 1 no shall be provided.

Note: - All Traffic Signs for Road Users would be provided as per Manual. However, the Contractor shall achieve the minimum numbers of Cautionary, Mandatory, Warning and informatory & all other Traffic Sign Boards as mentioned above. The said numbers of traffic signs are indicative and minimum specified. The actual numbers of traffic signs shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the numbers specified in this Clause and in the contract under other provisions shall not constitute a Change of Scope.

10. COMPULSORY AFFORESTATION

The trees should be planted by the Agency as compensatory afforestation according to The Forest Conservation Act, decided by Forest Department.

11. HAZARDOUS LOCATIONS

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

Semi rigid Thrie-beam crash barriers shall be installed all along the project highway on earthen shoulders on either side of main carriageway in a minimum length of 21093 m.

Left Side				Right Side			
Design chainage (From)	**Design chainage (To)**	**Length (m)**	**Remarks**	**Design chainage (From)**	**Design chainage (To)**	**Length (m)**	**Remark**
0.063	0.091	28	Curve	0.141	0.195	54	Curve
0.504	0.650	146	Curve	0.330	0.429	99	Curve
0.650	0.665	15	CD Approach	0.650	0.665	15	CD Approach
0.674	0.689	15	CD Approach	0.674	0.689	15	CD Approach
0.689	0.709	20	Curve	1.336	1.386	50	Curve
1.059	1.128	69	Curve	1.471	1.521	50	Bridge Approach
1.471	1.521	50	Bridge Approach	1.538	1.588	50	Bridge Approach
1.538	1.588	50	Bridge Approach	1.588	1.621	33	Curve
1.701	1.745	44	Curve	1.817	1.925	108	Curve
2.076	2.091	15	Bridge Approach	2.076	2.091	15	Bridge Approach
2.108	2.158	50	Bridge Approach	2.108	2.158	50	Bridge Approach
2.158	2.168	10	Curve	2.676	2.699	23	Curve
2.330	2.446	116	Curve	2.699	2.714	15	CD Approach
2.699	2.714	15	CD Approach	2.716	2.731	15	CD Approach
2.716	2.731	15	CD Approach	3.206	3.477	271	Curve

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
2.844	2.896	52	Curve	3.977	3.980	3	Curve
2.995	3.121	126	Curve	3.980	3.995	15	CD Approach
3.645	3.844	199	Curve	4.004	4.019	15	CD Approach
3.980	3.995	15	CD Approach	4.019	4.045	26	Curve
4.004	4.019	15	CD Approach	4.145	4.160	15	CD Approach
4.145	4.160	15	CD Approach	4.169	4.184	15	CD Approach
4.169	4.184	15	CD Approach	4.366	4.491	125	Curve
4.184	4.246	62	Curve	4.619	4.680	61	Curve
4.820	5.153	333	Curve	5.296	5.394	98	Curve
5.812	5.851	39	Curve	5.521	5.569	48	Curve
6.199	6.231	32	Curve	5.734	5.756	22	Curve
6.395	6.410	15	Bridge Approach	5.930	5.988	58	Curve
6.420	6.470	50	Bridge Approach	6.285	6.340	55	Curve
6.720	6.807	87	Curve	6.395	6.410	15	Bridge Approach
6.960	6.975	15	CD Approach	6.420	6.470	50	Bridge Approach
6.984	6.999	15	CD Approach	6.936	6.960	24	Curve
7.126	7.168	42	Curve	6.960	6.975	15	CD Approach
7.338	7.381	43	Curve	6.984	6.999	15	CD Approach
7.439	7.454	15	Bridge Approach	6.999	7.044	45	Curve
7.465	7.515	50	Bridge Approach	7.408	7.439	31	Curve
7.530	7.571	41	Curve	7.439	7.454	15	Bridge Approach
7.779	7.819	40	Curve	7.465	7.515	50	Bridge Approach
8.038	8.082	44	Curve	7.604	7.640	36	Curve
8.267	8.289	22	Curve	7.931	7.945	14	Curve
8.529	8.555	26	Curve	8.147	8.195	48	Curve
8.746	8.877	131	Curve	8.434	8.467	33	Curve
8.877	8.895	18	CD Approach	8.612	8.645	33	Curve
8.904	8.919	15	CD Approach	8.877	8.895	18	CD Approach
9.321	9.525	204	Curve	8.904	8.919	15	CD Approach
9.594	9.609	15	CD Approach	9.053	9.205	152	Curve
9.611	9.626	15	CD Approach	9.594	9.609	15	CD Approach
9.904	9.919	15	CD Approach	9.611	9.626	15	CD Approach
9.921	9.936	15	CD Approach	9.697	9.715	18	Curve
9.990	10.005	15	CD Approach	9.875	9.919	44	Curve
10.014	10.029	15	CD Approach	9.921	9.950	29	Curve
10.059	10.074	15	CD Approach	9.990	10.005	15	CD Approach
10.076	10.091	15	CD Approach	10.014	10.029	15	CD Approach
10.180	10.285	105	Curve	10.059	10.074	15	CD Approach
10.397	10.473	76	Curve	10.076	10.091	15	CD Approach
10.480	10.495	15	CD Approach	10.480	10.495	15	CD Approach
10.504	10.519	15	CD Approach	10.504	10.519	15	CD Approach
10.739	10.754	15	CD Approach	10.538	10.630	92	Curve
10.756	10.771	15	CD Approach	10.739	10.754	15	CD Approach
10.771	10.793	22	Curve	10.756	10.771	15	CD Approach

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
10.860	10.875	15	CD Approach	10.860	10.875	15	CD Approach
10.884	10.899	15	CD Approach	10.884	10.899	15	CD Approach
11.060	11.075	15	CD Approach	10.903	11.017	114	Curve
11.084	11.099	15	CD Approach	11.060	11.075	15	CD Approach
11.208	11.210	2	Curve	11.084	11.099	15	CD Approach
11.210	11.225	15	CD Approach	11.210	11.225	15	CD Approach
11.234	11.249	15	CD Approach	11.234	11.249	15	CD Approach
11.249	11.315	66	Curve	11.389	11.420	31	Curve
11.641	11.703	62	Curve	11.530	11.552	22	Curve
11.709	11.724	15	CD Approach	11.709	11.724	15	CD Approach
11.726	11.741	15	CD Approach	11.726	11.741	15	CD Approach
11.905	11.937	32	Curve	11.793	11.857	64	Curve
12.279	12.312	33	Curve	11.999	12.078	79	Curve
12.408	12.483	75	Curve	12.533	12.618	85	Curve
12.660	12.675	15	CD Approach	12.660	12.675	15	CD Approach
12.684	12.699	15	CD Approach	12.684	12.699	15	CD Approach
12.728	12.740	12	Curve	12.740	12.755	15	CD Approach
12.740	12.755	15	CD Approach	12.764	12.779	15	CD Approach
12.764	12.779	15	CD Approach	12.830	12.889	59	Curve
12.949	12.986	37	Curve	13.064	13.145	81	Curve
13.130	13.145	15	CD Approach	13.154	13.169	15	CD Approach
13.154	13.169	15	CD Approach	13.330	13.345	15	CD Approach
13.224	13.314	90	Curve	13.354	13.369	15	CD Approach
13.330	13.345	15	CD Approach	13.464	13.607	143	Curve
13.354	13.369	15	CD Approach	13.680	13.695	15	CD Approach
13.369	13.680	311	Curve	13.704	13.719	15	CD Approach
13.680	13.695	15	CD Approach	13.782	13.861	79	Curve
13.704	13.719	15	CD Approach	13.943	13.985	42	Curve
13.719	13.727	8	Curve	13.994	14.009	15	CD Approach
13.970	13.985	15	CD Approach	14.136	14.160	24	Curve
13.994	14.009	15	CD Approach	14.160	14.175	15	CD Approach
14.160	14.175	15	CD Approach	14.184	14.199	15	CD Approach
14.184	14.199	15	CD Approach	14.380	14.395	15	CD Approach
14.310	14.340	30	Curve	14.404	14.419	15	CD Approach
14.380	14.395	15	CD Approach	14.660	14.675	15	CD Approach
14.404	14.419	15	CD Approach	14.684	14.699	15	CD Approach
14.478	14.533	55	Curve	14.732	14.786	54	Curve
14.618	14.660	42	Curve	14.820	14.835	15	CD Approach
14.660	14.675	15	CD Approach	15.014	15.076	62	Curve
14.684	14.699	15	CD Approach	15.224	15.244	20	Curve
14.820	14.835	15	CD Approach	15.320	15.335	15	CD Approach
14.844	14.881	37	Curve	15.344	15.359	15	CD Approach
15.130	15.185	55	Curve	15.580	15.655	75	Curve
15.320	15.335	15	CD Approach	15.974	16.004	30	Curve

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
15.344	15.359	15	CD Approach	16.264	16.358	94	Curve
15.359	15.424	65	Curve	16.609	16.657	48	Curve
15.702	15.719	17	Curve	16.780	16.795	15	CD Approach
15.775	15.882	107	Curve	16.804	16.819	15	CD Approach
16.047	16.090	43	Curve	16.819	16.828	9	Curve
16.162	16.184	22	Curve	17.062	17.110	48	Curve
16.435	16.453	18	Curve	17.110	17.125	15	CD Approach
16.734	16.746	12	Curve	17.134	17.149	15	CD Approach
16.780	16.795	15	CD Approach	17.486	17.560	74	Curve
16.804	16.819	15	CD Approach	17.560	17.575	15	CD Approach
16.896	16.952	56	Curve	17.584	17.599	15	CD Approach
16.969	16.997	28	Curve	17.680	17.695	15	CD Approach
17.110	17.125	15	CD Approach	17.704	17.719	15	CD Approach
17.134	17.149	15	CD Approach	17.909	17.923	14	Curve
17.196	17.225	29	Curve	18.143	18.165	22	Curve
17.308	17.386	78	Curve	18.613	18.707	94	Curve
17.560	17.575	15	CD Approach	18.990	19.070	80	High Embankment
17.584	17.599	15	CD Approach	19.155	19.183	28	Curve
17.680	17.695	15	CD Approach	19.481	19.562	81	Curve
17.704	17.719	15	CD Approach	19.927	19.988	61	Curve
17.809	17.829	20	Curve	19.988	20.003	15	CD Approach
17.983	18.025	42	Curve	20.016	20.031	15	CD Approach
18.246	18.271	25	Curve	20.164	20.214	50	Curve
18.304	18.329	25	Curve	20.214	20.229	15	Bridge Approach
18.458	18.526	68	Curve	20.240	20.290	50	Bridge Approach
18.768	18.801	33	Curve	20.441	20.545	104	Curve
18.943	19.052	109	Curve	20.570	20.585	15	CD Approach
19.387	19.426	39	Curve	20.594	20.609	15	CD Approach
19.620	19.694	74	Curve	20.774	20.817	43	Curve
19.822	19.849	27	Curve	20.817	20.832	15	Bridge Approach
19.988	20.003	15	CD Approach	20.847	20.897	50	Bridge Approach
20.016	20.031	15	CD Approach	20.905	20.920	15	CD Approach
20.214	20.229	15	Bridge Approach	20.929	20.944	15	CD Approach
20.240	20.290	50	Bridge Approach	21.010	21.025	15	CD Approach
20.324	20.362	38	Curve	21.034	21.049	15	CD Approach
20.570	20.585	15	CD Approach	21.049	21.092	43	Curve
20.594	20.609	15	CD Approach	21.180	21.195	15	CD Approach
20.609	20.662	53	Curve	21.204	21.219	15	CD Approach
20.817	20.832	15	Bridge Approach	21.229	21.275	46	Curve
20.847	20.897	50	Bridge Approach	21.355	21.370	15	CD Approach
20.905	20.920	15	CD Approach	21.379	21.394	15	CD Approach
20.929	20.944	15	CD Approach	21.430	21.445	15	CD Approach
20.956	20.983	27	Curve	21.454	21.469	15	CD Approach
21.010	21.025	15	CD Approach	21.560	21.575	15	CD Approach

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
21.034	21.049	15	CD Approach	21.584	21.599	15	CD Approach
21.180	21.195	15	CD Approach	21.648	21.725	77	Curve
21.204	21.219	15	CD Approach	21.725	21.740	15	CD Approach
21.355	21.370	15	CD Approach	21.749	21.764	15	CD Approach
21.379	21.394	15	CD Approach	21.800	21.815	15	CD Approach
21.430	21.445	15	CD Approach	21.824	21.839	15	CD Approach
21.454	21.469	15	CD Approach	21.910	21.925	15	CD Approach
21.500	21.544	44	Curve	21.934	21.949	15	CD Approach
21.560	21.575	15	CD Approach	22.000	22.015	15	CD Approach
21.584	21.599	15	CD Approach	22.024	22.039	15	CD Approach
21.725	21.740	15	CD Approach	22.166	22.174	8	Curve
21.749	21.764	15	CD Approach	22.174	22.189	15	Bridge Approach
21.800	21.815	15	CD Approach	22.211	22.261	50	Bridge Approach
21.824	21.839	15	CD Approach	22.325	22.340	15	CD Approach
21.910	21.925	15	CD Approach	22.349	22.364	15	CD Approach
21.934	21.949	15	CD Approach	22.464	22.479	15	Bridge Approach
21.976	22.000	24	Curve	22.501	22.551	50	Bridge Approach
22.000	22.015	15	CD Approach	22.616	22.631	15	Bridge Approach
22.024	22.039	15	CD Approach	22.648	22.698	50	Bridge Approach
22.039	22.067	28	Curve	22.740	22.755	15	CD Approach
22.174	22.189	15	Bridge Approach	22.764	22.779	15	CD Approach
22.211	22.261	50	Bridge Approach	22.915	22.930	15	CD Approach
22.325	22.340	15	CD Approach	22.939	22.954	15	CD Approach
22.349	22.364	15	CD Approach	22.980	22.995	15	CD Approach
22.364	22.413	49	Curve	23.004	23.019	15	CD Approach
22.464	22.479	15	Bridge Approach	23.098	23.110	12	Curve
22.501	22.551	50	Bridge Approach	23.110	23.125	15	CD Approach
22.616	22.631	15	Bridge Approach	23.134	23.149	15	CD Approach
22.648	22.698	50	Bridge Approach	23.325	23.340	15	CD Approach
22.740	22.755	15	CD Approach	23.349	23.364	15	CD Approach
22.764	22.779	15	CD Approach	23.364	23.379	15	Curve
22.855	22.891	36	Curve	23.477	23.495	18	Curve
22.915	22.930	15	CD Approach	23.495	23.510	15	CD Approach
22.939	22.954	15	CD Approach	23.519	23.534	15	CD Approach
22.980	22.995	15	CD Approach	23.580	23.595	15	CD Approach
23.004	23.019	15	CD Approach	23.604	23.619	15	CD Approach
23.110	23.125	15	CD Approach	23.619	23.641	22	Curve
23.134	23.149	15	CD Approach	23.675	23.690	15	CD Approach
23.179	23.252	73	Curve	23.699	23.714	15	CD Approach
23.325	23.340	15	CD Approach	23.870	23.885	15	CD Approach
23.349	23.364	15	CD Approach	23.894	23.909	15	CD Approach
23.495	23.510	15	CD Approach	24.002	24.081	79	Curve
23.519	23.534	15	CD Approach	24.134	24.149	15	Bridge Approach
23.580	23.595	15	CD Approach	24.171	24.221	50	Bridge Approach

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
23.604	23.619	15	CD Approach	24.235	24.250	15	CD Approach
23.675	23.690	15	CD Approach	24.259	24.274	15	CD Approach
23.699	23.714	15	CD Approach	24.338	24.371	33	Curve
23.793	23.824	31	Curve	24.440	24.455	15	CD Approach
23.870	23.885	15	CD Approach	24.464	24.479	15	CD Approach
23.894	23.909	15	CD Approach	24.561	24.630	69	Curve
23.909	23.930	21	Curve	24.630	24.645	15	CD Approach
24.122	24.134	12	Curve	24.654	24.669	15	CD Approach
24.134	24.149	15	Bridge Approach	24.700	24.715	15	CD Approach
24.171	24.221	50	Bridge Approach	24.724	24.739	15	CD Approach
24.235	24.250	15	CD Approach	24.739	24.809	70	Curve
24.259	24.274	15	CD Approach	24.951	24.980	29	Curve
24.440	24.455	15	CD Approach	24.980	24.995	15	CD Approach
24.464	24.479	15	CD Approach	25.004	25.019	15	CD Approach
24.630	24.645	15	CD Approach	25.173	25.280	107	Curve
24.654	24.669	15	CD Approach	25.280	25.295	15	CD Approach
24.700	24.715	15	CD Approach	25.304	25.319	15	CD Approach
24.724	24.739	15	CD Approach	25.440	25.455	15	CD Approach
24.890	24.921	31	Curve	25.464	25.479	15	CD Approach
24.980	24.995	15	CD Approach	25.550	25.565	15	CD Approach
25.004	25.019	15	CD Approach	25.574	25.589	15	CD Approach
25.041	25.102	61	Curve	25.695	25.710	15	CD Approach
25.280	25.295	15	CD Approach	25.719	25.734	15	CD Approach
25.304	25.319	15	CD Approach	25.734	25.774	40	Curve
25.390	25.440	50	Curve	25.810	25.825	15	CD Approach
25.440	25.455	15	CD Approach	25.834	25.849	15	CD Approach
25.464	25.479	15	CD Approach	25.924	25.939	15	CD Approach
25.479	25.495	16	Curve	26.005	26.020	15	CD Approach
25.550	25.565	15	CD Approach	26.029	26.044	15	CD Approach
25.574	25.589	15	CD Approach	26.073	26.130	57	Curve
25.598	25.631	33	Curve	26.278	26.295	17	Curve
25.695	25.710	15	CD Approach	26.304	26.323	19	Curve
25.719	25.734	15	CD Approach	26.412	26.432	20	Curve
25.810	25.825	15	CD Approach	26.498	26.505	7	Curve
25.834	25.849	15	CD Approach	26.505	26.520	15	CD Approach
25.899	25.915	16	Curve	26.529	26.544	15	CD Approach
25.924	25.939	15	CD Approach	26.570	26.585	15	CD Approach
26.005	26.020	15	CD Approach	26.594	26.609	15	CD Approach
26.029	26.044	15	CD Approach	26.745	26.760	15	CD Approach
26.280	26.295	15	CD Approach	26.769	26.784	15	CD Approach
26.304	26.319	15	CD Approach	26.865	26.910	45	Curve
26.505	26.520	15	CD Approach	26.910	26.925	15	CD Approach
26.529	26.544	15	CD Approach	26.934	26.949	15	CD Approach
26.570	26.585	15	CD Approach	27.080	27.095	15	CD Approach

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
26.590	26.594	4	Curve	27.104	27.119	15	CD Approach
26.594	26.609	15	CD Approach	27.121	27.160	39	Curve
26.609	26.616	7	Curve	27.395	27.410	15	CD Approach
26.745	26.760	15	CD Approach	27.419	27.439	20	Curve
26.769	26.784	15	CD Approach	27.575	27.590	15	CD Approach
26.784	26.795	11	Curve	27.599	27.614	15	CD Approach
26.910	26.925	15	CD Approach	27.772	27.816	44	Curve
26.934	26.949	15	CD Approach	27.830	27.845	15	CD Approach
27.014	27.063	49	Curve	27.854	27.869	15	CD Approach
27.080	27.095	15	CD Approach	27.869	27.880	11	Curve
27.104	27.119	15	CD Approach	27.975	27.990	15	CD Approach
27.325	27.343	18	Curve	27.999	28.014	15	CD Approach
27.395	27.410	15	CD Approach	28.140	28.155	15	CD Approach
27.419	27.434	15	CD Approach	28.164	28.179	15	CD Approach
27.541	27.575	34	Curve	28.255	28.270	15	CD Approach
27.575	27.590	15	CD Approach	28.279	28.294	15	CD Approach
27.599	27.614	15	CD Approach	28.294	28.305	11	Curve
27.660	27.675	15	Curve	28.434	28.446	12	Curve
27.684	27.702	18	Curve	28.480	28.495	15	CD Approach
27.830	27.845	15	CD Approach	28.504	28.519	15	CD Approach
27.854	27.869	15	CD Approach	28.544	28.559	15	CD Approach
27.932	27.950	18	Curve	28.570	28.585	15	CD Approach
27.975	27.990	15	CD Approach	28.680	28.695	15	CD Approach
27.999	28.014	15	CD Approach	28.704	28.719	15	CD Approach
28.116	28.135	19	Curve	28.780	28.795	15	CD Approach
28.140	28.155	15	CD Approach	28.804	28.819	15	CD Approach
28.164	28.179	15	CD Approach	28.890	28.905	15	CD Approach
28.255	28.270	15	CD Approach	28.914	28.929	15	CD Approach
28.279	28.294	15	CD Approach	29.010	29.025	15	CD Approach
28.358	28.371	13	Curve	29.034	29.049	15	CD Approach
28.480	28.495	15	CD Approach	29.130	29.145	15	CD Approach
28.504	28.519	15	CD Approach	29.154	29.169	15	CD Approach
28.544	28.559	15	CD Approach	29.204	29.219	15	CD Approach
28.570	28.585	15	CD Approach	29.250	29.265	15	CD Approach
28.585	28.640	55	Curve	29.274	29.289	15	CD Approach
28.680	28.695	15	CD Approach	29.335	29.350	15	CD Approach
28.704	28.719	15	CD Approach	29.359	29.374	15	CD Approach
28.780	28.795	15	CD Approach	29.380	29.446	66	High Embankment
28.804	28.819	15	CD Approach	29.446	29.461	15	Bridge Approach
28.880	28.890	10	Curve	29.461	29.491	30	Bridge Approach
28.890	28.905	15	CD Approach	29.508	29.558	50	Bridge Approach
28.914	28.929	15	CD Approach	29.558	29.621	63	High Embankment
28.929	28.935	6	Curve	29.621	29.632	11	Curve

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
29.010	29.025	15	CD Approach	29.632	29.655	23	High Embankment
29.034	29.049	15	CD Approach	29.655	29.670	15	CD Approach
29.116	29.130	14	Curve	29.679	29.700	21	CD Approach
29.130	29.145	15	CD Approach	29.700	29.762	62	High Embankment
29.154	29.169	15	CD Approach	29.762	29.777	15	Bridge Approach
29.169	29.195	26	Curve	29.792	29.816	24	Bridge Approach
29.204	29.219	15	CD Approach	29.816	29.890	74	High Embankment
29.240	29.250	10	High Embankment	29.890	29.905	15	CD Approach
29.250	29.265	15	CD Approach	29.914	29.929	15	CD Approach
29.274	29.289	15	CD Approach	29.929	29.960	31	Curve
29.289	29.335	46	High Embankment	29.960	29.975	15	CD Approach
29.335	29.350	15	CD Approach	29.984	29.999	15	CD Approach
29.359	29.374	15	CD Approach	29.999	30.049	50	High Embankment
29.374	29.380	6	High Embankment	30.049	30.064	15	Bridge Approach
29.380	29.446	66	High Embankment	30.096	30.146	50	Bridge Approach
29.446	29.461	15	Bridge Approach	30.146	30.100	-46	High Embankment
29.478	29.491	13	Bridge Approach	30.100	30.160	60	High Embankment
29.508	29.558	50	Bridge Approach	30.210	30.225	15	CD Approach
29.558	29.655	97	High Embankment	30.234	30.249	15	CD Approach
29.655	29.670	15	CD Approach	30.457	30.504	47	Curve
29.679	29.694	15	CD Approach	30.550	30.565	15	CD Approach
29.694	29.697	3	High Embankment	30.574	30.589	15	CD Approach
29.697	29.720	23	Curve	30.679	30.694	15	CD Approach
29.762	29.777	15	Bridge Approach	30.705	30.720	15	CD Approach
29.792	29.816	24	Bridge Approach	30.761	30.798	37	Curve
29.816	29.854	38	Curve	30.849	30.864	15	CD Approach
29.890	29.905	15	CD Approach	30.875	30.890	15	CD Approach
29.914	29.929	15	CD Approach	31.010	31.025	15	CD Approach
29.960	29.975	15	CD Approach	31.034	31.049	15	CD Approach
29.984	29.999	15	CD Approach	31.089	31.103	14	CD Approach
30.049	30.064	15	Bridge Approach	31.115	31.130	15	CD Approach
30.096	30.146	50	Bridge Approach	31.130	31.149	19	Curve
30.146	30.202	56	Curve	31.149	31.164	15	CD Approach
30.210	30.225	15	CD Approach	31.175	31.190	15	CD Approach
30.234	30.249	15	CD Approach	31.190	31.198	8	Curve

Left Side				Right Side			
Design chainage (From)	Design chainage (To)	Length (m)	Remarks	Design chainage (From)	Design chainage (To)	Length (m)	Remark
30.346	30.377	31	Curve	31.265	31.280	15	CD Approach
30.550	30.565	15	CD Approach	31.315	31.330	15	CD Approach
30.574	30.589	15	CD Approach	31.339	31.354	15	CD Approach
30.589	30.635	46	Curve	31.417	31.432	15	Bridge Approach
30.679	30.694	15	CD Approach	31.447	31.495	48	Bridge Approach
30.705	30.720	15	CD Approach	31.504	31.519	15	CD Approach
30.849	30.864	15	CD Approach	31.704	31.736	32	Curve
30.875	30.890	15	CD Approach	31.867	31.886	19	Curve
30.890	30.999	109	Curve	32.044	32.059	15	CD Approach
31.010	31.025	15	CD Approach	32.070	32.085	15	CD Approach
31.034	31.049	15	CD Approach	32.085	32.103	18	Curve
31.089	31.104	15	CD Approach	32.120	32.135	15	CD Approach
31.115	31.130	15	CD Approach	32.144	32.159	15	CD Approach
31.149	31.164	15	CD Approach	32.250	32.265	15	CD Approach
31.175	31.190	15	CD Approach	32.274	32.289	15	CD Approach
31.265	31.280	15	CD Approach	32.317	32.369	52	Curve
31.286	31.304	18	Curve	32.430	32.445	15	CD Approach
31.315	31.330	15	CD Approach	32.454	32.469	15	CD Approach
31.339	31.354	15	CD Approach	32.520	32.535	15	CD Approach
31.378	31.397	19	Curve	32.544	32.553	9	CD Approach
31.417	31.432	15	Bridge Approach	32.553	32.561	8	Curve
31.447	31.495	48	Bridge Approach	32.732	32.750	18	Curve
31.504	31.519	15	CD Approach	32.759	32.774	15	CD Approach
31.532	31.552	20	Curve	32.833	32.887	54	Curve
31.570	31.623	53	Curve	33.005	33.020	15	CD Approach
31.784	31.791	7	Curve	33.029	33.044	15	CD Approach
31.943	31.988	45	Curve	33.120	33.135	15	CD Approach
32.044	32.059	15	CD Approach	33.144	33.154	10	CD Approach
32.070	32.085	15	CD Approach	33.154	33.183	29	Curve
32.120	32.135	15	CD Approach	33.183	33.198	15	Bridge Approach
32.144	32.159	15	CD Approach	33.221	33.271	50	Bridge Approach
32.250	32.265	15	CD Approach	33.280	33.295	15	CD Approach
32.274	32.289	15	CD Approach	33.304	33.319	15	CD Approach
32.430	32.445	15	CD Approach	33.380	33.395	15	CD Approach
32.454	32.469	15	CD Approach	33.404	33.419	15	CD Approach
32.469	32.477	8	Curve	33.426	33.441	15	Curve
32.520	32.535	15	CD Approach	33.490	33.505	15	CD Approach
32.544	32.559	15	CD Approach	33.514	33.529	15	CD Approach
32.632	32.709	77	Curve	33.568	33.625	57	Curve
32.735	32.750	15	CD Approach	33.725	33.735	10	Curve
32.759	32.774	15	CD Approach	33.790	33.805	15	CD Approach
32.945	33.005	60	Curve	33.814	33.829	15	CD Approach
33.005	33.020	15	CD Approach	33.929	33.995	66	Curve
33.029	33.044	15	CD Approach	34.075	34.099	24	Curve

Left Side				Right Side			
Design chainage (From)	**Design chainage (To)**	**Length (m)**	**Remarks**	**Design chainage (From)**	**Design chainage (To)**	**Length (m)**	**Remark**
33.044	33.064	20	Curve	34.180	34.195	15	CD Approach
33.120	33.135	15	CD Approach	34.204	34.219	15	CD Approach
33.144	33.159	15	CD Approach	34.482	34.514	32	Curve
33.159	33.183	24	High Embankment	34.678	34.723	45	Curve
33.183	33.198	15	Bridge Approach	34.774	34.792	18	Curve
33.221	33.271	50	Bridge Approach	34.962	34.982	20	Curve
33.280	33.295	15	CD Approach	35.057	35.080	23	Curve
33.304	33.319	15	CD Approach	35.184	35.210	26	Curve
33.321	33.341	20	Curve	35.452	35.525	73	Curve
33.380	33.395	15	CD Approach	35.690	35.716	26	Curve
33.404	33.419	15	CD Approach	35.880	35.895	15	CD Approach
33.482	33.490	8	Curve	35.904	35.919	15	CD Approach
33.490	33.505	15	CD Approach	35.932	36.046	114	Curve
33.514	33.529	15	CD Approach	36.180	36.195	15	CD Approach
33.529	33.535	6	Curve	36.204	36.219	15	CD Approach
33.790	33.805	15	CD Approach	36.223	36.364	141	Curve
33.814	33.829	15	CD Approach	36.610	36.625	15	CD Approach
33.829	33.842	13	Curve	36.750	36.765	15	CD Approach
34.170	34.180	10	Curve	36.775	36.790	15	CD Approach
34.180	34.195	15	CD Approach	37.211	37.226	15	CD Approach
34.204	34.219	15	CD Approach				
34.259	34.276	17	Curve				
34.310	34.336	26	Curve				
34.373	34.384	11	Curve				
34.588	34.618	30	Curve				
34.862	34.904	42	Curve				
35.098	35.146	48	Curve				
35.246	35.377	131	Curve				
35.783	35.816	33	Curve				
35.880	35.895	15	CD Approach				
35.904	35.919	15	CD Approach				
36.123	36.163	40	Curve				
36.180	36.195	15	CD Approach				
36.204	36.219	15	CD Approach				
36.466	36.485	19	Curve				
36.610	36.625	15	CD Approach				
	TOTAL	**10727 m**				**10366 m**	

Note: Above length of the Thrie-beam Crash Barriers is indicative and minimum specified. The actual length of the Thrie-beam Crash Barriers shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

12. SPECIAL REQUIREMENTS FOR HILL ROADS

(a) Slope Protection Structures

As the project involve cutting of existing hill slopes, it is imperative that slopes are stabilized for insuring longevity of the slopes and the roads.

The contractor shall be responsible for accurate assessment of the actual requirement as per schedule D & prepare design for slope protection & stabilization as per schedule D.

Structures for Slope protection and Retaining/Toe wall/ Breast Walls shall be designed and constructed as stipulated in Schedule-D.

Structures to be constructed for slope protection shown in the following Table:

(i) RCC Retaining wall *(Min. height 2 m)*

Left Side			Right Side		
Design chainage (From)	**Design chainage (To)**	**Length**	**Design chainage (From)**	**Design chainage (To)**	**Length**
29.240	29.240	0.000	18.990	19.070	0.080
29.274	29.350	0.076	29.380	29.380	0.000
29.359	29.380	0.021	29.478	29.491	0.013
29.478	29.491	0.013	29.508	29.670	0.162
29.508	29.670	0.162	29.679	29.700	0.021
29.679	29.700	0.021	29.792	29.905	0.113
30.100	30.160	0.060	29.914	29.975	0.061
30.160	30.200	0.040	29.984	30.064	0.080
33.120	33.135	0.015	30.096	30.160	0.064
33.144	33.198	0.054			0.000
		0.462			**0.594**

- **Height of retaining wall**
  1) **Length of retaining wall upto 3m=0.095 Km**
  2) **Length of retaining wall from 3m to 6m= 0.315 Km**
  3) **Length of retaining wall Above 6m= 0.646 Km**

Note: Above Location & length of the Retaining wall is indicative and minimum specified. The actual length of the Retaining wall shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

(ii) RCC Breast wall (Min. height 3m)

Left Side			Right Side		
Design chainage (From)	**Design chainage (To)**	**Length**	**Design chainage (From)**	**Design chainage (To)**	**Length**
21.934	22.015	0.081	21.934	22.015	0.081
22.024	22.189	0.165	22.024	22.189	0.165
22.211	22.340	0.129	22.211	22.340	0.129
22.349	22.479	0.130	22.349	22.479	0.130
22.501	22.631	0.130	22.501	22.631	0.130

Left Side			Right Side		
Design chainage (From)	Design chainage (To)	Length	Design chainage (From)	Design chainage (To)	Length
22.648	22.755	0.107	22.648	22.755	0.107
22.764	22.930	0.166	22.764	22.930	0.166
22.939	22.995	0.056	22.939	22.995	0.056
23.004	23.125	0.121	23.004	23.125	0.121
23.134	23.340	0.206	23.134	23.340	0.206
23.349	23.510	0.161	23.349	23.510	0.161
23.519	23.595	0.076	23.519	23.595	0.076
23.604	23.690	0.086	23.604	23.690	0.086
23.699	23.885	0.186	23.699	23.885	0.186
23.894	24.149	0.255	23.894	24.149	0.255
24.171	24.250	0.079	24.171	24.250	0.079
24.259	24.455	0.196	24.259	24.455	0.196
24.464	24.645	0.181	24.464	24.645	0.181
24.654	24.715	0.061	24.654	24.715	0.061
24.724	24.995	0.271	24.724	24.995	0.271
25.004	25.295	0.291	25.004	25.295	0.291
25.304	25.455	0.151	25.304	25.455	0.151
25.464	25.565	0.101	25.464	25.565	0.101
25.574	25.710	0.136	25.574	25.710	0.136
25.719	25.825	0.106	25.719	25.825	0.106
25.834	25.915	0.081	25.834	25.915	0.081
26.160	26.260	0.100	25.924	26.020	0.096
26.260	26.295	0.035	26.029	26.260	0.231
26.304	26.320	0.016	27.280	27.410	0.130
27.220	27.280	0.060	27.419	27.590	0.171
27.280	27.410	0.130	27.599	27.684	0.085
27.419	27.590	0.171	27.684	28.760	1.076
27.599	27.684	0.085	30.750	30.864	0.114
27.684	28.760	1.076	30.875	30.950	0.075
28.760	28.900	0.140	30.950	31.025	0.075
30.750	30.864	0.114	31.034	31.104	0.070
30.875	30.950	0.075	31.115	31.130	0.015
		0.000	31.170	31.210	0.040
		5.711			**5.887**

- **Height of Breast wall**
  1) **Length of Breast wall upto 3 m = Nil**
  2) **Length of Breast wall from 3m to 6m= 0.217 Km**
  3) **Length of Breast wall Above 6m = 11.381 Km**

Note: Above Location & length of the Breast wall is indicative and minimum specified. The actual length of the Breast wall shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

(iii) Stone pitching & RCC Toe Wall (Min. height 1.2 m)

Left Side			Right Side		
Design chainage (From)	Design chainage (To)	Length	Design chainage (From)	Design chainage (To)	Length
29.380	29.700	0.320	18.990	19.070	0.080
29.508	29.670	0.162	29.380	29.461	0.081
29.679	29.700	0.021	29.478	29.491	0.013
30.100	30.160	0.060	29.508	29.670	0.162
30.160	30.200	0.040	29.679	29.700	0.021
33.120	33.220	0.100	29.700	30.100	0.400
33.144	33.198	0.054	30.100	30.160	0.060
		0.757			**0.817**

Note: Above Location & length of the Stone Pitching & Toe wall is indicative and minimum specified. The actual length of the Stone Pitching & Toe wall shall be determined by the Contractor in accordance with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

(iv) Coir Erosion Control (Min. Area 271160 Sqm)

Sr. No.	Design chainage (From)	Design chainage (To)	Length (m)	Side	Avg. Height(m)
1	22+120	22+200	80	BS	11
2	22+300	22+350	50	BS	10
3	22+350	22+430	80	BS	16
4	22+430	22+580	150	BS	25
5	22+580	22+970	390	BS	27
6	22+970	23+080	110	BS	31
7	23+080	23+200	120	BS	33
8	23+200	23+300	100	BS	35
9	23+300	23+450	150	BS	38
10	23+450	23+650	200	BS	42
11	23+650	23+860	210	BS	48
12	23+860	24+060	200	BS	55
13	24+060	24+250	190	BS	58
14	24+250	24+900	650	BS	55
15	24+900	25+000	100	BS	47
16	25+000	25+200	200	BS	35
17	25+200	25+320	120	BS	24
18	25+200	25+500	300	BS	18
19	25+200	25+600	400	BS	11
20	26+180	26+300	120	BS	12
		Total	**3920**	**2X3920=7840m**	

Note: Above Location & length of the Coir erosion is indicative and minimum specified. The actual length of the Coir erosion shall be determined by the Contractor in accordance

with the Manual requirements with approval from the Authority's Engineer. Any increase in the length specified in this Clause of Schedule B shall not constitute a Change of Scope.

(c) Disposal of Debris: -

1) No Muck dumping sites will be Proposed within Reserved Forest area. The muck dumping sites shall be identified by the EPC contractor in consultation with the Local village head, District Administration & Forest department for dumping of muck, and necessary clearances/NOCs/permission shall be obtained by the Contractor in addition to the applicable permissions and clearances as stated in Schedule F.

13. CHANGE OF SCOPE

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

14. UTILITY DUCT

The Locations of utility ducts shall be constructed for full width of cross section in consultation with Authority Engineer. The utility work proposed by the contractor will not be entitled for any other extra cost and will not amount to change of scope. shall be finalized as per site requirement in consultation with Authority Engineer.

S. No.	Utility Duct (across)	Minimum Qty.
1	Single Row for one utility services	49 Location
2	Double Row for two utility services	73 Location

Appendix B-I

TYPE - 01

TYPICAL CROSS SECTION FOR 2 - LANE HIGHWAY IN BUILT-UP AREA (RECONSTRUCTION)

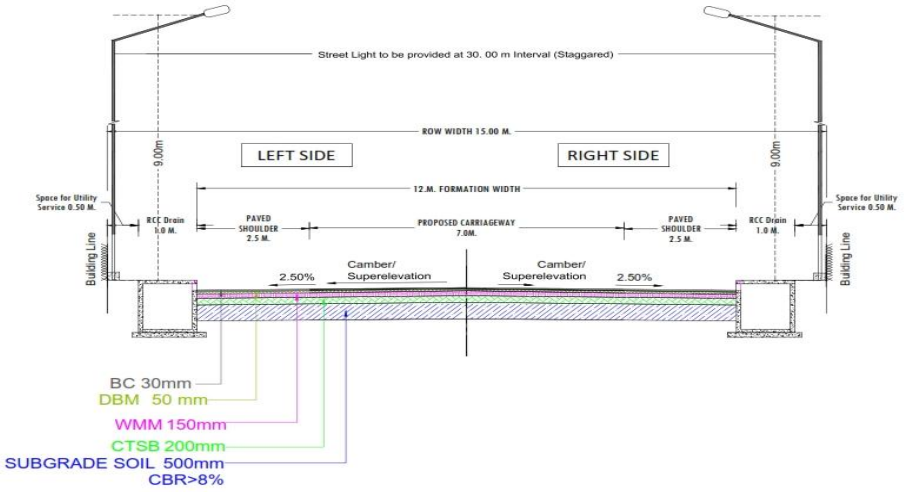

Fig. 2.6 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	11.250	11.330	0.080
2	18.140	18.980	0.840
3	20.780	21.100	0.320
4	33.220	33.390	0.170
	Total length		1.410

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

REV.	DATE	REVISIONS

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
in JV with Krishna Techno Consultant.
F-2, E-9/11A, Global Tower, Tridanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

PROJECT:
CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:

SIGNATURE:

DWG NO:- GIS/IB/NHIDCL/FS/TCS

DRAWN:	CHECKED:	DESIGNED:	APPROVED:
LK	SJ	SC	LA

TYPE - 02

TYPICAL CROSS SECTION FOR 2 - LANE WITH PAVED SHOULDER HIGHWAY (OVERLAY/WIDENING)

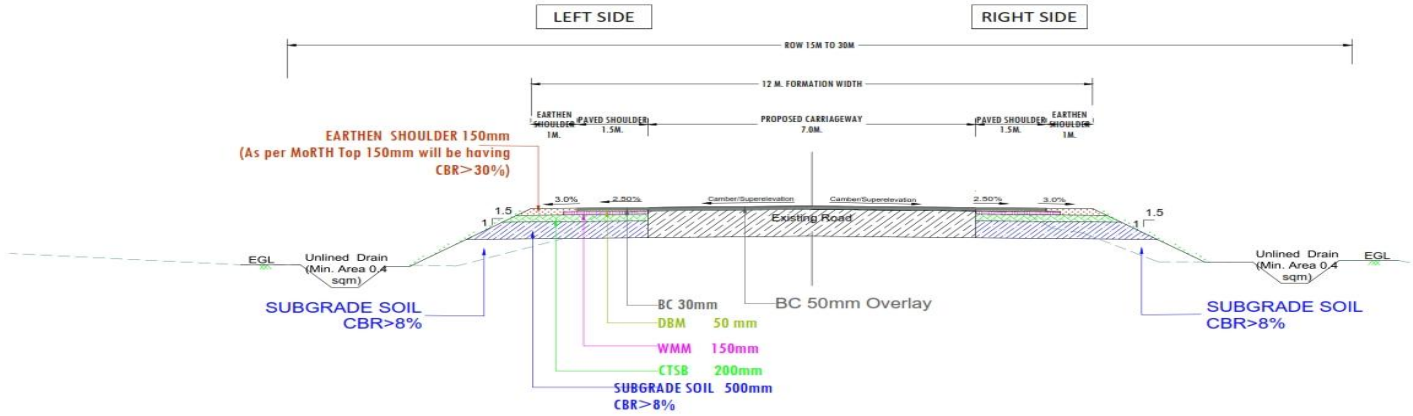

Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	0.000	0.200	0.200
2	0.260	0.550	0.290
3	0.750	2.630	1.880
4	2.900	3.200	0.300
5	3.380	4.050	0.670
6	4.280	4.780	0.500
7	5.170	6.700	1.530
8	7.400	8.100	0.700
9	9.700	9.900	0.200
10	10.130	10.210	0.080
11	11.800	11.900	0.100
12	12.050	14.640	2.590
13	14.880	15.700	0.820
14	16.050	16.300	0.250
15	16.540	16.760	0.220
16	17.160	17.340	0.180
17	17.820	18.140	0.320
18	19.175	19.400	0.225
19	19.530	19.640	0.110
20	20.630	20.780	0.150
21	34.300	34.470	0.170
22	35.530	36.635	1.105
	Total length		12.590

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. 50MM PCC M15 PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

REV.	DATE	REVISIONS

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
in JV with Krishna Techno Consultant.
F-2, E-8/134, Global Tower, Trilanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

PROJECT:
CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:
SIGNATURE:
DWG NO.:- GIS/18/NHIDCL/PS/TCS/
DRAWN: LK | CHECKED: SJ | DESIGNED: SC | APPROVED: LA

TYPE - 03

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY (NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINOUS TERRAIN)

BANKING SECTION HEIGHT LESS THAN 3m

LEFT SIDE RIGHT SIDE

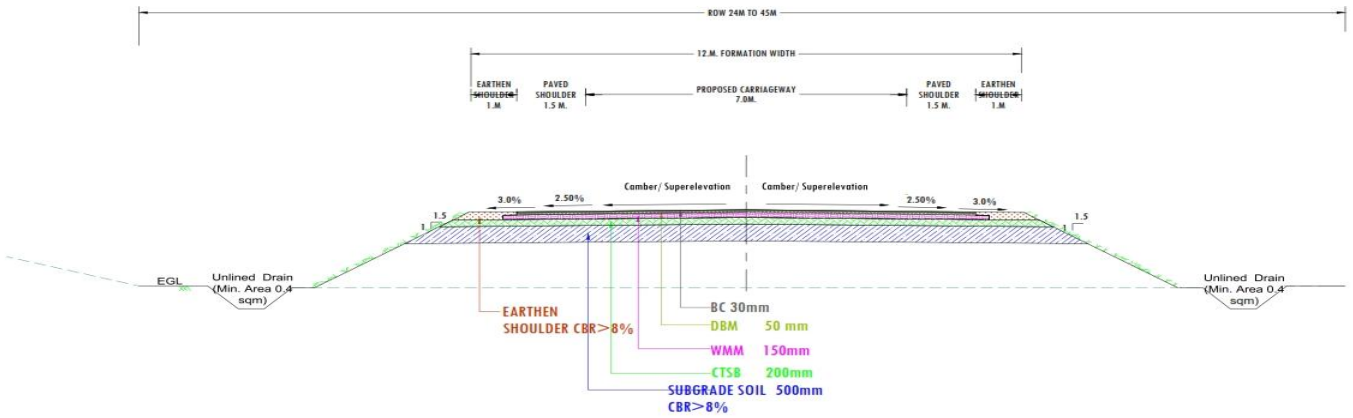

Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	0.550	0.750	0.200
2	2.630	2.900	0.270
3	3.200	3.380	0.180
4	4.050	4.280	0.230
5	4.780	5.170	0.390
6	6.960	7.400	0.440
7	8.100	8.480	0.380
8	9.060	9.700	0.640
9	9.900	10.130	0.230
10	10.210	10.310	0.100
11	10.560	11.160	0.600
12	11.330	11.800	0.470
13	11.900	12.050	0.150
14	14.640	14.710	0.070
15	14.800	14.880	0.080
16	15.800	15.920	0.120
17	17.100	17.160	0.060
18	17.340	17.820	0.480
19	18.980	18.990	0.010
20	19.070	19.175	0.105
21	19.400	19.530	0.130
22	19.640	20.630	0.990
23	26.480	27.100	0.620
24	29.190	29.240	0.050
25	30.200	30.300	0.100
26	31.250	31.410	0.160
27	31.590	32.100	0.510
28	32.830	33.120	0.290
29	33.390	33.790	0.400
30	33.870	34.020	0.150
31	34.130	34.300	0.170
32	34.580	35.140	0.560
33	35.400	35.530	0.130
	Total length		9.465

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

REV.	DATE	REVISIONS

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
in JV with Krishna Techno Consultant.
P-2, E-6/1A, Global Tower, Tridanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

PROJECT:
CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:
SIGNATURE:

DWG NO:- GIS/IB/NHIDCL/PS/TCS			
DRAWN:	CHECKED:	DESIGNED:	APPROVED:
LK	SJ	SC	LA

TYPE - 04

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY
(OPEN COUNTRY -MOUNTAINOUS TERRAIN)

CUTTING SECTION
CUTTING HEIGHT < 7m

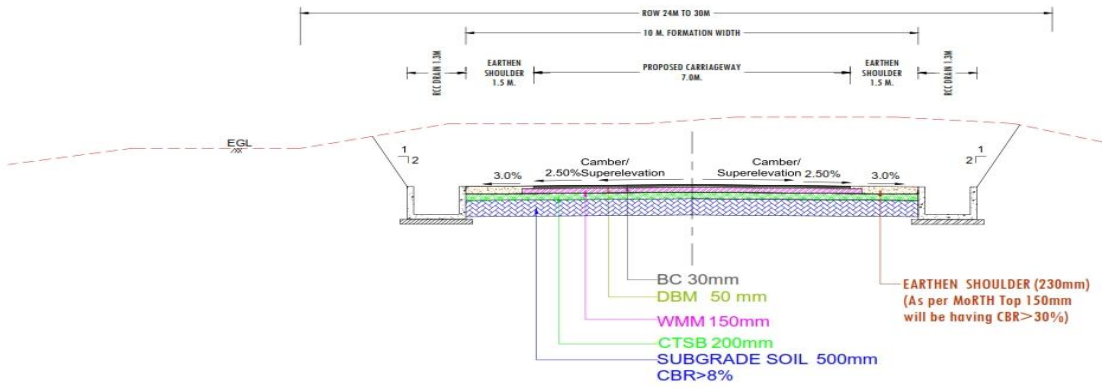

Fig. 2.9 Modified
As per IRC SP 73:
2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	0.200	0.260	0.060
2	6.700	6.960	0.260
3	8.480	9.060	0.580
4	10.310	10.560	0.250
5	11.160	11.250	0.090
6	15.700	15.800	0.100
7	15.920	16.050	0.130
8	16.380	16.540	0.160
9	16.760	17.100	0.340
10	21.100	21.920	0.820
11	25.860	26.160	0.300
12	26.320	26.480	0.160
13	27.100	27.220	0.120
14	28.900	29.190	0.290
15	30.300	30.750	0.450
16	31.410	31.590	0.180
17	32.100	32.830	0.730
18	33.790	33.870	0.080
19	34.020	34.130	0.110
20	34.470	34.580	0.110
21	35.140	35.400	0.260
	Total length		5.580

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

REV.	DATE	REVISIONS

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
In JV with Krishna Techno Consultant.
P-2, E-B/1A, Global Tower, Trilanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

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SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:

SIGNATURE:

DWG NO.:- GIS/1B/NHIDCL/FS/TCS

DRAWN	CHECKED	DESIGNED	APPROVED
LK	SJ	SC	LA

TYPE - 05

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY WITH ONE SIDE DRAIN (LHS/RHS)
(OPEN COUNTRY -MOUNTAINOUS TERRAIN)

CUTTING SECTION
CUTTING HEIGHT > 1m AND LESS THAN 7m

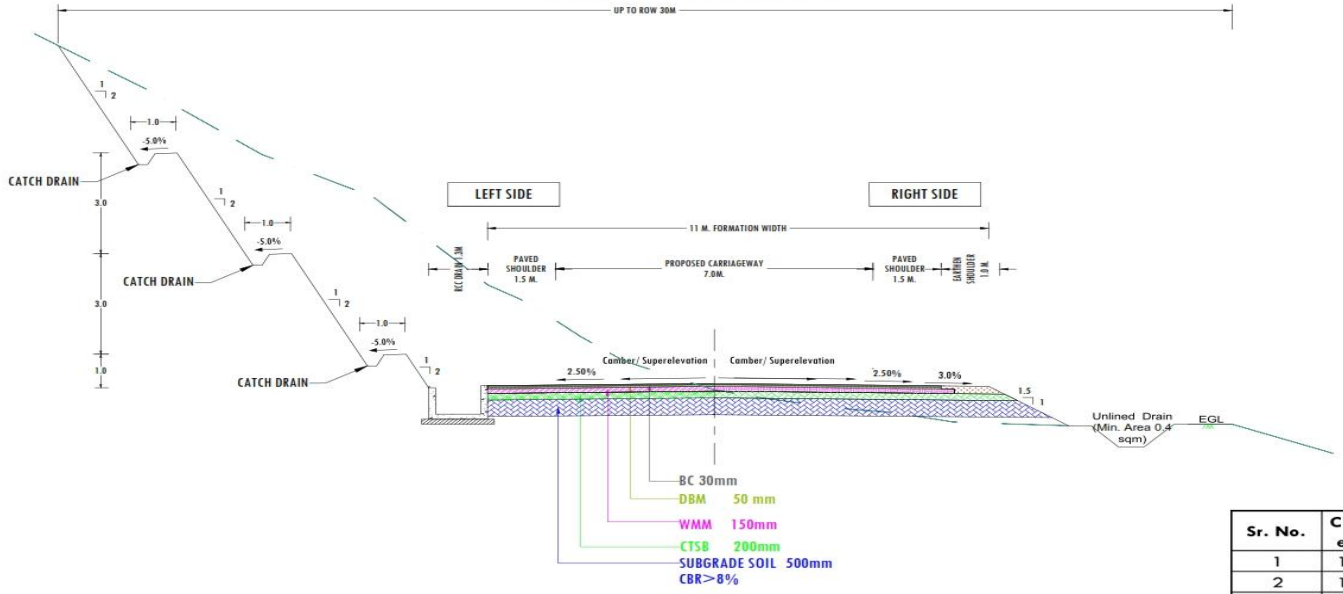

Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	14.710	14.800	0.090
2	16.300	16.340	0.040
3	16.340	16.380	0.040
4	31.130	31.170	0.040
5	31.210	31.250	0.040
	Total length		0.250

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.

REV.	DATE	REVISIONS

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PTI BUILDING, 4 PARLIAMENT STREET
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Global Infra Solutions
In JV with Krishna Techno Consultant.
F-2, E-8/1A, Global Tower, Trilanga, Bhopal -462039
e. globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

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SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:
SIGNATURE:

DWG NO.:- GIS/ISB/NHDCL/FS/TCS

DRAWN	CHECKED	DESIGNED	APPROVED
LK	SJ	SC	LA

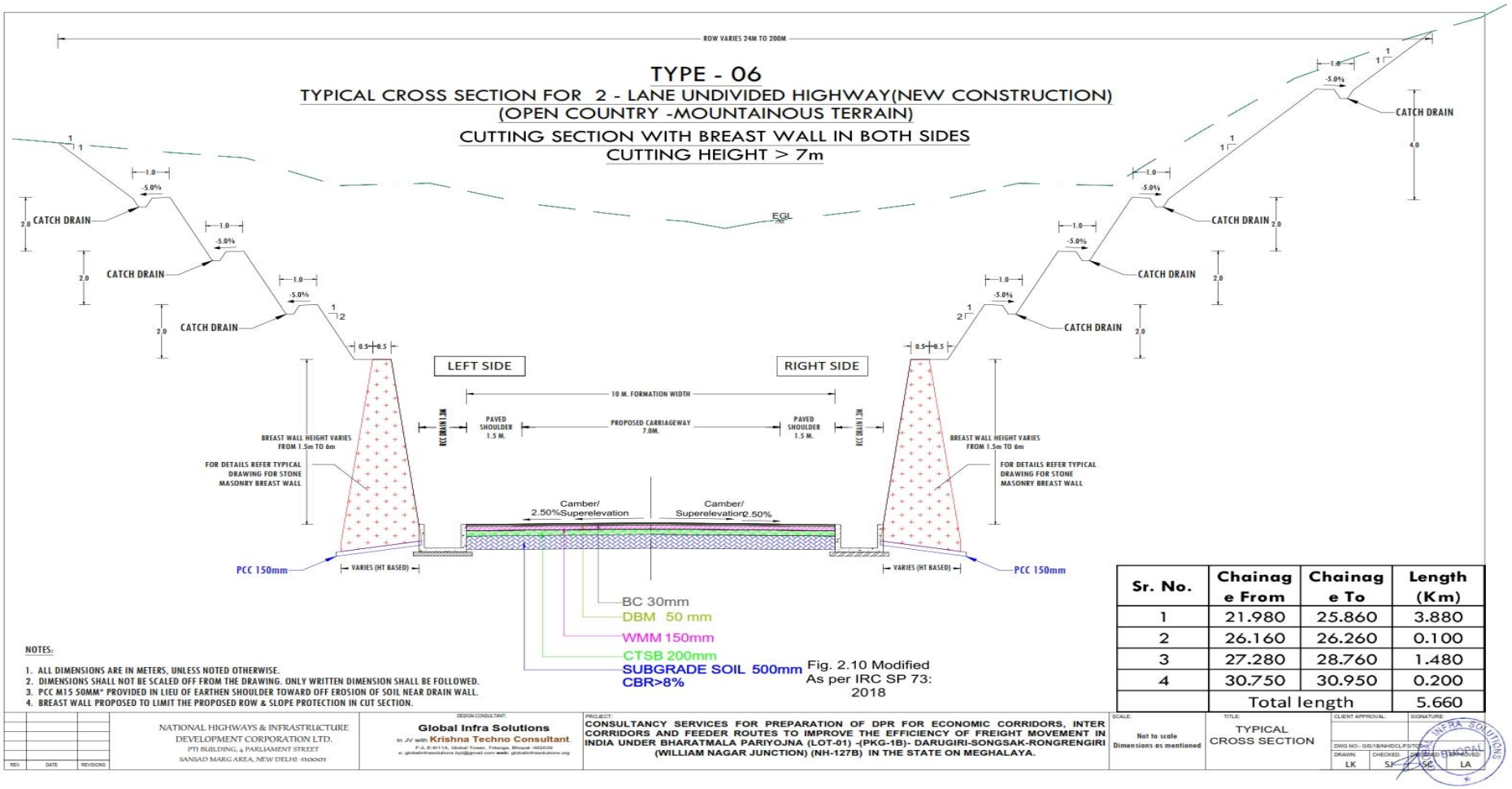

Fig. 2.10 Modified As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	21.980	25.860	3.880
2	26.160	26.260	0.100
3	27.280	28.760	1.480
4	30.750	30.950	0.200
	Total length		5.660

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.
4. BREAST WALL PROPOSED TO LIMIT THE PROPOSED ROW & SLOPE PROTECTION IN CUT SECTION.

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
in JV with Krishna Techno Consultant

PROJECT:
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SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: SIGNATURE:

DRAWN: LK CHECKED: SJ DESIGNED: SC APPROVED: LA

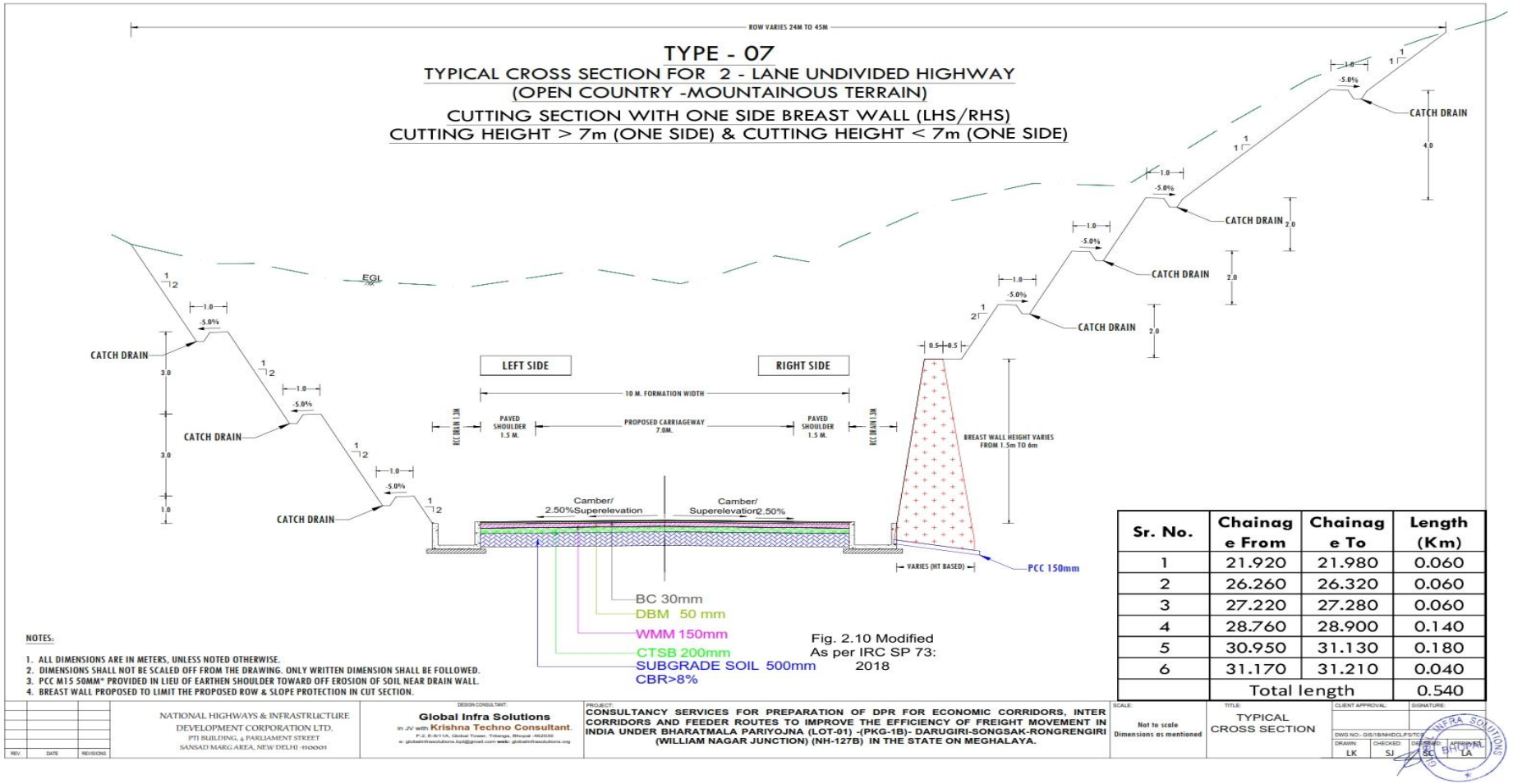

Fig. 2.10 Modified As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	21.920	21.980	0.060
2	26.260	26.320	0.060
3	27.220	27.280	0.060
4	28.760	28.900	0.140
5	30.950	31.130	0.180
6	31.170	31.210	0.040
	Total length		0.540

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.
4. BREAST WALL PROPOSED TO LIMIT THE PROPOSED ROW & SLOPE PROTECTION IN CUT SECTION.

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT: Global Infra Solutions in JV with Krishna Techno Consultant

PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: SIGNATURE:

DRAWN: LK CHECKED: SJ DESIGNED: SC APPROVED: LA

TYPE - 08

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINOUS TERRAIN)

BANKING SECTION WITH RETAINING WALL BOTH SIDES OFFSET FROM SHOULDER HEIGHT MORE THAN 3m

Sr. No.	Chainage From	Chainage To	Length (Km)
1	29.380	29.700	0.320
2	30.100	30.160	0.060
	Total length		0.380

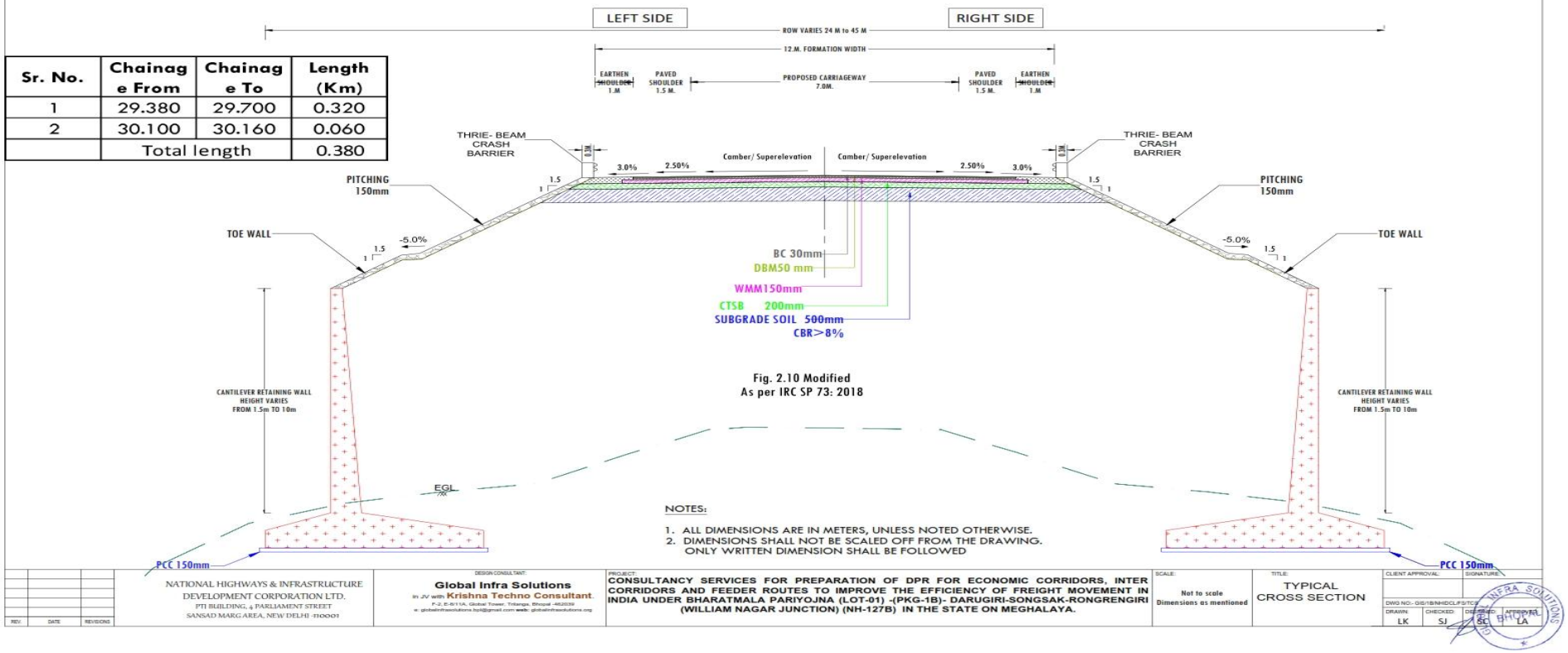

Fig. 2.10 Modified
As per IRC SP 73: 2018

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI BUILDING, 4 PARLIAMENT STREET SANSAD MARG AREA, NEW DELHI -110001	DESIGN CONSULTANT: Global Infra Solutions In JV with Krishna Techno Consultant.	PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.
SCALE: Not to scale Dimensions as mentioned	TITLE: TYPICAL CROSS SECTION	CLIENT APPROVAL: SIGNATURE: DRAWN: LK CHECKED: SJ DESIGNED: SC APPROVED: LA

TYPE - 09

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINOUS TERRAIN)

BANKING SECTION WITH RETAINING WALL IN RIGHT SIDE OFFSET FROM SHOULDER HEIGHT MORE THAN 3m

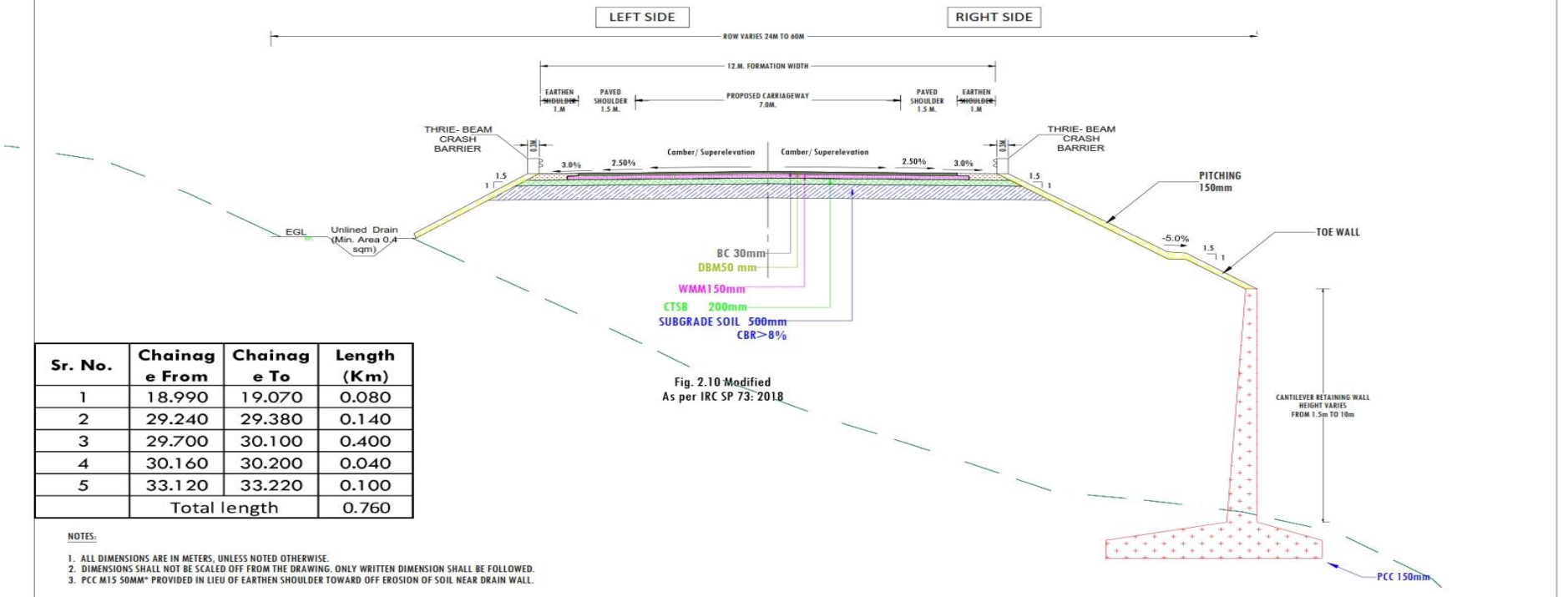

Fig. 2.10 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)
1	18.990	19.070	0.080
2	29.240	29.380	0.140
3	29.700	30.100	0.400
4	30.160	30.200	0.040
5	33.120	33.220	0.100
	Total length		0.760

NOTES:

1. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.
2. DIMENSIONS SHALL NOT BE SCALED OFF FROM THE DRAWING. ONLY WRITTEN DIMENSION SHALL BE FOLLOWED.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

REV.	DATE	REVISIONS

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
PTI BUILDING, 4 PARLIAMENT STREET
SANSAD MARG AREA, NEW DELHI -110001

DESIGN CONSULTANT:
Global Infra Solutions
In JV with Krishna Techno Consultant.
P-2, E-8/1 1A, Global Tower, Trilanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

PROJECT:
CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR ECONOMIC CORRIDORS, INTER CORRIDORS AND FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA UNDER BHARATMALA PARIYOJNA (LOT-01) -(PKG-1B)- DARUGIRI-SONGSAK-RONGRENGIRI (WILLIAM NAGAR JUNCTION) (NH-127B) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:
SIGNATURE:
DWG NO:- GIS/1B/NHIDCL/FS/TCS
DRAWN: LK
CHECKED: SJ
DESIGNED: SC
APPROVED: LA

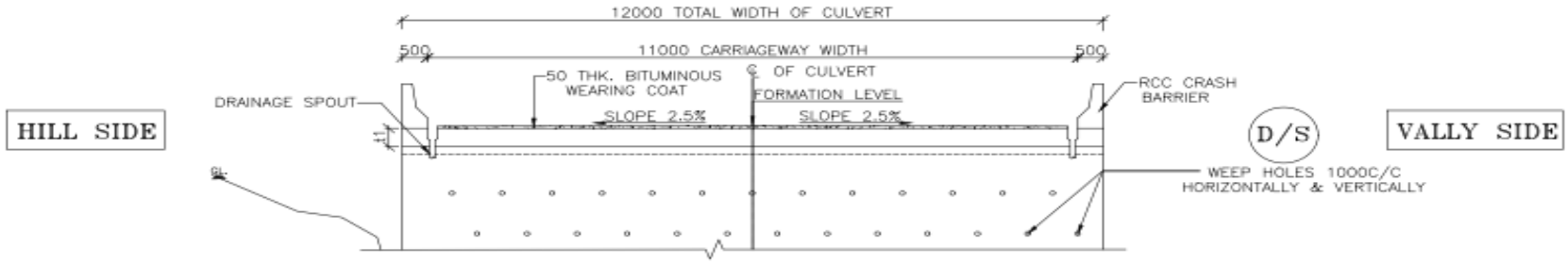

FIG. 7.4 AS PER IRC:SP-72-2018
TYPICAL CROSS SECTION OF CULVERT AT DECK LEVEL
2- LANE HIGHWAY
(TCS - 16)

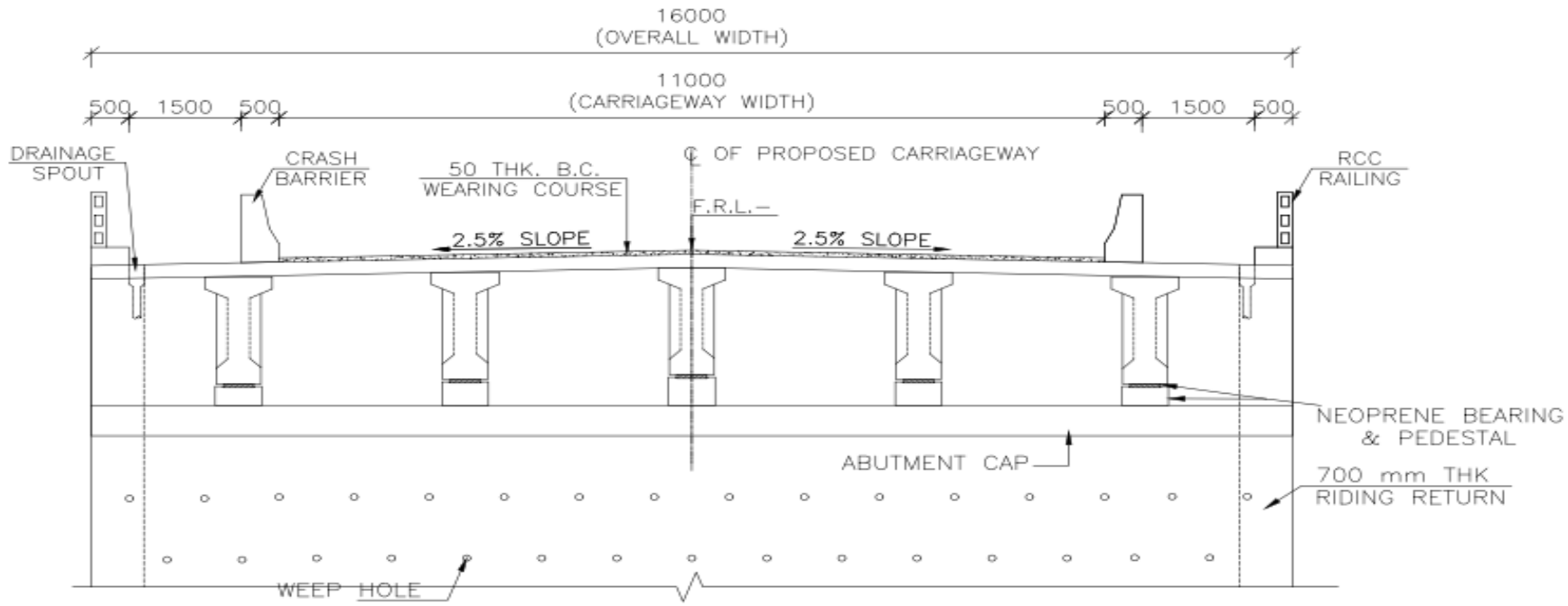

FIG. 7.6 MODIFIED AS PER IRC:SP–72–2018
TYPICAL CROSS SECTION OF BRIDGE WITH FOOTPATH
AT DECK LEVEL 2– LANE HIGHWAY
(TCS – 17)

(Schedule B-1)

1. The shifting of utilities and felling of trees shall be carried out by the Contractor. The details of utilities are as follows:

Sr. No	Type of Utility	Unit	Quantity
A	Electrical Utilities		
A1	Electrical Poles	Nos.	463
A2	Electrical cables	Meters	2000
A3	Transformers	Nos.	25
B	Water/Sewage pipeline		
B1	Sewage	Meters	-
B2	Water supply	Meters	8000
B3	Handpump/Tubewells	Nos.	-
C	Felling of trees	Nos.	3200

Schedule-C

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. The Project Facilities shall include:

(a) Toll plazas;
(b) Roadside furniture;
(c) Pedestrian facilities;
(d) Land Scaping and Tree Plantation;
(e) Truck lay-byes;
(f) Way-side amenities;
(g) Bus-bays and Passenger shelters;
(h) Others;
    1. Highway Patrol Units
    2. Highway lighting
    3. Emergency Medical Services
    4. Crane Services
    5. Communication System
    6. Advance Traffic Management System (A. T. M. S.)
    7. Operation and Maintenance Center

2 Description of Project Facilities

(a) Toll Plazas

Toll Plaza shall be provided as per as stipulated in section 10 of the Manual. Canopy of Toll Plaza should be designed to withstand load of solar panels in addition to other design loads. Location of toll plaza is as per the following details.

Sl. No.	Toll Plaza ID	Design Chainage	Side	Min Number of Lanes
NIL				

Note:

- Installation of two number dedicated ETC lane (one lane in each direction) and Hybrid ETC System with provision of medium speed WIM with bending plate technology in each lane, and Static Weigh Bridge (one lane in each direction) at Toll Plaza and Configuration with Advance Traffic Management System.
- Above mentioned toll lanes are indicative. However, the actual requirement of toll lanes shall be assessed by Contractor as per actual site condition and

Manual. The increase in number of toll lanes shall not be treated as change of scope.

- Solar panels shall be erected over the Toll Plaza Canopy to generate the green energy. Same shall be utilized for toll plaza lighting and other energy requirement within toll plaza area along with conventional lighting.

(b) Roadside furniture; as per **clause 9 of Annex-I Schedule B**

(c) Pedestrian facilities;

Pedestrian Guard rails shall be provided at junctions, Truck lay byes, bus bays and near schools and hospitals as per provisions in section 9.8 of the Manual

i. Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location and at other locations as per manual.

ii. Pedestrian Crossings: Provide pedestrian crossing facilities on locations as recommended in Schedule D.

(d) Land Scaping and Tree Plantation;

Land Scaping and tree plantation of the highway shall be provided as per section 11 of the manual. The locations for these provisions shall be finalized in consultation with Authority Engineer. Total 3200 nos. of trees (approx.) are identified to be affected in the proposed ROW, new trees to be planted by the EPC Contractor as per applicable law/guidelines. Any variation in no. of trees shall not constitute a change of scope.

(e) Truck lay-byes

Truck Lay bye shall be provided at the following locations in accordance with section 12.5 of the manual at 2 locations.

Sl. No.	Design Chainage (m)	Side
1	8+900	LHS
2	33+100	RHS

(f) Way-side Amenities[1]

As stipulated in section 12.10 of the manual, Way-side Amenities shall be provided at the following locations:

S. No.	Design Chainage	Side
NIL		

(g) Bus- shelters

Note: The contractor shall mark the RoW with boundary stones, in accordance with the provision of manual and IRC 25, immediately as the land is handed over to the contractor by the Authority and the RoW shall be verified and cross checked by the contractor in consultation with Authority, Authority Engineer and District Administration, prior to commencement of works.

Bus Shelter shall be provided along the project highway. Tentative locations for Bus shelters are indicated below, however, the same shall be finalized as per suitability of location and site requirement in consultation with the Authority's Engineer/ Authority. As stipulated in section 12.6 of the Manual, Bus- shelters shall be provided at below indicative locations.

Sr. No.	Design Chainage (m)	Side
1	0+200	LHS
2	3+730	LHS
3	7+510	LHS
4	11+240	RHS
5	18+780	LHS
6	20+980	RHS
7	24+420	RHS
8	25+480	LHS
9	27+600	RHS
10	29+900	RHS
11	33+180	LHS
12	36+100	LHS

(h) Public Toilet-12 Nos. proposed.

Note: However, the location of bus shelters & Public toilet shall be finalized as per suitability of location and site requirement in consultation with Authority. Any change in location shall not treated as change of scope.

(i) Others

1. Highway Patrol unit – as per manual
2. Highway LED Lighting: LED Lighting shall be provided at the following locations:
   a. LED Traffic Beacons at Junctions (118 Nos.) & Lighting on Bridges (38 Nos.) shall be provided at approach to bridges, Flyover, built up areas, bus stops, truck Lay-byes and rest areas as per manual recommended in Schedule D.
   b. Apart from above locations lighting shall be provided at underpasses and ROB/RUB and as per site condition in consultation with Engineer and shall not be treated as change of scope. On all grade separated structures Lightings will be provided on Top & Underside as per clause 12.4 of IRC SP 73-2018.

Sr. No	Design Chainage		Length (km)	Spacing (m)	Height of Pole (m)	No of One-way Light Poles	Remark
	From	To					
1	11.250	11.330	0.080	30	9	**3**	Rongre (Built-up)
2	18.140	18.980	0.840	30	9	**28**	Songsak (Built-up)
3	20.780	21.100	0.320	30	9	**11**	Tebil Bonegre (Built-up)

Sr. No	Design Chainage		Length (km)	Spacing (m)	Height of Pole (m)	No of One-way Light Poles	Remark
	From	To					
4	33.220	33.390	0.170	30	9	**6**	Rongapgre (Built-up)
	Total Length of Stretch:		**1.410**		**Total Nos.-**	**48**	

c. High Mast Lighting shall be provided at all Major Junctions, or any other location as per clause 12.4.3 of IRC SP 73-2018. Minimum 2 Nos. of High Mast shall be provided.

Sr.No	Design Chainage	Location	Height of HM (m)	Qty (Nos)
1	0+000	Darugiri Junction	25	1
2	36+630	Williamnagar Junction	25	1

3. Emergency Medical Services: Emergency medical Services shall be provided as per provisions of the manual.
4. Cranes services: One Cranes with 30 MT Capacity.
5. Communication System: Communication System shall be provided as per provisions of the manual.
6. Advance Traffic Management System (ATMS) as per technical specification: Provisions of other facilities, if required may be made in similar manner.
7. Operation and Maintenance Centre: Operation and Maintenance Centre shall be provided as per provisions of the manual.

j) **Traffic Diversion during Construction**

The traffic diversion plan during construction shall be prepared by Contractors per IRC: SP: 55 for the entire project highway. Separate traffic diversion plan shall be prepared for structures and CD works.

The Contractor shall provide necessary Men Power for guiding and regulation of Traffic during construction

Schedule-D

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:

a) Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73-2018), referred to herein as the Manual.

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Guidelines for the Alignment Survey and Geometric Design of Hill Roads (IRC:52-2019) and Manual of Specifications and Standards for Two-Laning of Highways with Earthen Shoulder (IRC: SP:73-2018), referred to as the Manual and Indian Road Congress (IRC) Codes and Standards and MORTH Specifications for Road and Bridge Works. Where the aforesaid Manuals, guidelines, codes, standards and specifications are silent on any aspect, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

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 the aforesaid Manual, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Manual shall be deemed to be amended to the extent set forth below;

1) IRC Class Special Vehicle loading shall be taken into account in the structural design of bridges/Flyover/VUP.

2) TCS of 2-Lane with paved shoulder, Width of bridges & Locations of Utility Duct

Sl. No.	Item	Clause reference of Manual	Description of Deviation
(1)	(2)	(3)	(4)
1	Design Speed	Clause 2.2.1 & Table 2.1 of IRC SP-73 2018	As per Manual
2	Extra Widening	Clause 2.7 & Table 2.4 of IRC SP-73 2018	Extra Widening may be provided at the curves for radius below 75 m, (para 6.8.5.2 of Hill Road manual may be referred for this purpose). Radius up to 20 m =extra width 1.5 m Radius 21-40m=1.5m Radius 41-60m=1.2m Radius 60-100m=0.90m Radius 101-300 m=0.60m

Sl. No.	Item	Clause reference of Manual	Description of Deviation
(1)	(2)	(3)	(4)
			Note: Extra Widening shall be provided at curves up to 75m radius as per IRC SP 73 2018 & extra widening for the curves with radius below 75 m shall be provided as per Hill Road manual IRC SP 48.
3	Super elevation	Clause 2.9.3 of IRC SP-73 2018	The Super elevation shall be as per Clause 6.8.2 of IRC: 52, 2019 Guidelines for the Alignment Survey and Geometric Design of Hill Roads (Third Revision). L
4	Typical Cross-sections	Clause 2.16 of IRC SP-73 2018	Typical Cross-sections shall be as per Schedule B,
5	Flexible pavement - design period and strategy	Clause 5.4.1 of IRC:SP:73-2018	Flexible pavement shall be designed for a minimum design period of 20 years, subject to the condition that design traffic shall not be less than 20 million Standards Axles (MSA) as per Clause 5.2 of Schedule-B, Annex-I.
6	Width of the Minor Bridges	Clause 7.3 iv) IRC: SP:73-2018	Width of the structures at deck Level for Minor Bridge shall be as per TCS-17 as provided in Schedule-B.

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 AND BRIDGE 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.

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.

Table -1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approaches	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/ reports/03031/)	24-48 hours	MORT&H Specification 3004.2
S of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15-30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
S of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Bleeding	Nil	< 1 % area	Daily	Scale, Tape odometer etc.		3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation / Breaking	Nil	< 1 m for any 100m section and width < 0.1m at any location, restricted to 30cm from the edge	Daily			7-15 days	IRC:82-2015

Asset Type	Performance	Level of Service (LOS)		Frequency of	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/	Maintenance
		Desirable	Accepta					

	Parameter		ble	Inspecti on			Repair	Specificat ions
	Roughnes s	2000 mm/km	2400 mm/km	Bi-Annuall y	Class I Profilomete r SCRIM (Sideway force Coefficient Routine Investigatio n Machine or equipment)	Class I Profilometer: ASTM E950 (98): 2004 – Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656-94:2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annuall y			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annuall y			180 days	IRC:82-2015
	Other Pavement Distresses			Bi-Annuall y			2-7 days	IRC:82-2015
	Deflection /Remaini ng Life			Annuall y	Falling W eight Deflectomet er	IRC 115:2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure,	Roughnes s BI	2200mm/km	2400mm /km	Bi-Annuall y	Class I Profilomete r	ASTME950(98) :2004 and ASTM E1656-94:2000	180 days	IRC:SP:83-2008
Asset Type	**Performa nce Parameter**	**Level of Service (LOS)**		**Frequen cy of Inspecti**	**Tools/Equi pment**	**Standards and References for Inspection and Data Analysis**	**Time limit for Rectification/ Repair**	**Maintena nce Specificat**
		Desirable	**Accepta ble**					

				on				**ions**
Approaches of connecting roads, slip roads, lay byes etc. as applicable)	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force	IRC:SP:83-2008	180 days	IRC:SP:83-2008
		Minimum SN	**Traffic Speed (Km/h)**		Coefficient Routine Investigation Machine or equivalent)			
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					
Embankment / Slopes	Edge drop at shoulders	Nil	40mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<20% variation in prescribed slope camber / cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15% variation in prescribe	Daily			7-15 days	MORT&H Specification 408.4
Asset Type	**Performance Parameter**	**Level of Service (LOS)**		**Frequency of Inspection**	**Tools/Equipment**	**Standards and References for Inspection and Data Analysis**	**Time limit for Rectification/ Repair**	**Maintenance Specifications**
		Desirable	**Acceptable**					

			Side slope					
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

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

Table -2: Maintenance Criteria for Rigid Pavements:

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
2	**Single Transverse (or Diagonal) Crack intersecting with one or more joints**	w= width of crack L= length of crack d= depth of crack D= depth of slab	0	Nil, not discernible	No Action	
			1	w< 0.2mm.hair cracks	Route and seal with epoxy Within 7 days	Staple or Dowel Bar Retrofit. Within 15 days
			2	w= 0.2 -0.5 mm, discernible from slow-moving car		
			3	w= 0.5 - 3.0 mm, discernible from fast-moving car	Route and seal and stitch, if L >1m. Within 7 days	
			4	w= 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected. Portion with norms and specifications – See Para 5.5 &9.2 Within 15 days
			5	w > 6 mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	
3	**Single Longitudional Crack intersecting with one or more joints**	w= width of crack L= length of crack d= depth of crack D= depth of slab	0	Nil, Not discernible	No, Action	
			1	w= 0.5 mm, discernible from slow-moving vehicle	Seal with epoxy, if L > 1m. Within 7 days	Staple or Dowel Bar Retrofit. Within 15 days
			2	w= 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > 1m. Within 15 days	-

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
			3	w= 3.0 - 6.0 mm	Staple, if L> 1m. Within 15 days	Partial Depth Repair with stapling. Within15 days
			4	w= 6.0 - 12.0 mm, usually associated with spalling		
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	Full depth Repair Dismantle and reconstruct affected portion as per norms and specifications See Para 5.6.4 Within 15 days
4	**Multiple Crack intersecting with one or more joints**	w= width of crack	0	Nil, Not discernible	No, Action	-
			1	w < 0.2 mm, hair cracks	Seal and stitch if L > 1m. Within 15 days	
			2	w= 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w= 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			4	w= 3.0 - 6.0 mm panel broken into 2 or 3 pieces		
			5	w > 6 mm and /or panel broken into more than 4 pieces		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
5	**Corner Break**	w= width of crack L= length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5mm, only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7 days
			2	w < 1.5mm, L < 0.6m, only one corner broken		
			3	w < 1.5mm, L < 0.6m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:83-2008) Within 15 days	Full depth repair
			4	w > 1.5mm, L > 0.6m or three corners broken		
			5	Three or four corners broken		Reinstate sub-base and reconstruct the slab as per norms and specifications Within 30 days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w= width of crack L= length (m/m2)	0	Nil, Not discernible		No, Action
			1	w < 0.5 mm, L< 3m / m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts.
			2	either w > 0.5 mm or L < 3m /m^2		
			3	w > 1.5mm and L < 3m /m^2		
			4	w > 3mm, L < 3m /m^2 and deformation		Full depth repair Cutout and replace damaged area taking care not to damage reinforcement. Within 30 days
			5	w > 3mm, L < 3m /m^2 and deformation		

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Type of Distress</th><th rowspan="2">Measured Parameter</th><th rowspan="2">Degree of Severity</th><th rowspan="2">Assessment Rating</th><th colspan="2">Repair Action</th></tr>
<tr><th>For the case d < D/2</th><th>For the case d > D/2</th></tr>
<tr><td colspan="7">Surface Defects</td></tr>
<tr><td rowspan="7">7</td><td rowspan="7">Ravelling or Honeycomb type surface</td><td rowspan="7">r= area damaged surface / total surface of slab (%)
h = maximum depth of damage</td><td rowspan="2">0</td><td rowspan="2">Nil, not discernible</td><td>Short Term</td><td>Long Term</td></tr>
<tr><td>No action.</td><td rowspan="5">Not Applicable</td></tr>
<tr><td>1</td><td>r < 2 %</td><td rowspan="2">Local repair of area damaged

and liable to be damaged.

Within 15 days</td></tr>
<tr><td>2</td><td>r = 2 - 10 %</td></tr>
<tr><td>3</td><td>r = 10 - 25 %</td><td rowspan="2">Bonded Inlay, 2 or 3 slabs if affecting.
Within 30 days</td></tr>
<tr><td>4</td><td>r = 25 - 50 %</td><td rowspan="2"></td></tr>
<tr><td>5</td><td>r > 50% and h > 25mm</td><td>Reconstruct slabs, 4 or more slabs if affecting.
Within 30 days</td></tr>
</table>

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Surface Defects						
8	**Scalling**	r= damaged surface / total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term** No action.	**Long Term** Not Applicable
			1	r < 2 %	Local repair of area damaged and liable to be damaged. Within 7 days	
			2	r = 2 - 10 %		
			3	r = 10 - 20 %	Bonded Inlay Within 15 days	
			4	r = 20 - 30 %		
			5	r > 30% and h > 25mm	Reconstruct slabs Within 30 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
9	**Polished Surface /Glazing**	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	t >1 mm		
			2	t = 1 - 0.6 mm	Monitor rate of deterioration Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
			3	t = 0.6 - 0.3 mm		
			4	t = 0.3 - 0.1 mm		
			5	t < 0.1 mm		
10	**Popout (Small Hole), Pothole Refer Para 8.4**	n = number/m^2 d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm ; n < 1 per 5 m^2	No action	
			1	d = 50 – 100 mm; h < 50 mm; n < 1 per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	Not Applicable
			2	d = 50 – 100 mm; h > 50 mm; n < 1 per 5 m^2		
			3	d = 100 – 300 mm; h < 100 mm; n < 1 per 5 m^2	Partial depth repair 110 mm i.e. 10mm more that the depth of the hole. Within 30 days	
			4	d = 10 – 300 mm; h > 100 mm; n < 1 per 5 m^2		
			5	d > 300 mm; h > 100 mm ; n > 1 per 5 m^2	Full depth repair. Within 30 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Joints Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total joint length			**Short Term**	**Long Term**
			0	Difficult to discern	No action	Not Applicable
			1	Discernible, L < 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25%insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	**Spalling of Joints**	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	
			1	w < 10 mm	Apply low viscosity epoxy resin / mortar in cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		Not Applicable

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Joints Defects						
			3	w = 20 – 40 mm, L > 25%	Partial Depth Repair. Within 15 days	Not Applicable
			4	w = 40 – 80 mm, L > 25%	30 – 50 mm deep, h = w + 20 % of w, within 30 days	
			5	w > 80 mm, and L > 25%	50 – 100 mm deep repair. H = w + 20% of w. Within 30 days	
13	**Faulting (or Stepping) in Cracks or Joints**	f = difference of level	0	not discernible, < 1 mm	No action.	No action
			1	f < 3 mm		
			2	f = 3 – 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate. Within 30 days
			3	f = 6 – 12 mm	Diamond Grinding	
			4	f = 12 – 18 mm	Raise sunken slab	Replace the slab as appropriate. Within 30 days
			5	f > 18 mm	Strengthen subgrade and sub – base by grouting and raising sunken slab	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Joints Defects						
14	**Blowup or Buckling**	h = vertical displacement from normal profile	0	Nil, not discernible	Short Term: No action	Long Term
			1	h < 6 mm		
			2	h = 6 – 12 mm	Install Signs to Warn Traffic Within 7 days	
			3	h = 12 – 25 mm		
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slab, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertical displacement from normal profile L = length	0	Not discernible, h < 5 mm	No action.	Not applicable
			1	h = 5 – 15 mm		
			2	h = 15 -30 mm, Nos < 20% joints	Install Signs to Warn Traffic Within 7 days	
			3	h = 30 – 50 mm		
			4	h > 50 mm or > 20 % joints	Strengthen subgrade. Reinstate pavement at normal level if L < 20 m. Within 30 days	
			5	h > 100 mm		

S.No.	Type of Distress	Measured	Degree	Assessment Rating	Repair Action

		Parameter	of Severity			
					For the case d < D/2	For the case d > D/2
Joints Defects						
					Short Term	**Long Term**
16	**Heave**	h = positive vertical displacement from normal profile. L = length	0	Not discernible, h < 5 mm	No action	
			1	h = 5 – 15 mm	Follow up	scrabble
			2	h = 15 – 30 mm, Nos < 20% joints	Install Signs to Warn Traffic Within 7 days	
			3	h = 30 – 50 mm		
			4	h > 50 mm or > 20% joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days	
			5	h > 100 mm		
			5	f > 18 mm	Strengthen subgrade and sub – base by grouting and raising sunken slab	
17	**Bump**	h = vertical displacement from normal profile.	0	h < 4 mm	No action	
			1	h = 4 – 7 mm	Grind, in case of new construction Within 7 days	Construction Limit for new Construction
			3	h = 7 – 15 mm	Grind, in case of on going maintenance Within 15 days	Replace in case of new construction. Within 30 days.
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30 days

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
Joints Defects						
					Short Term	**Long Term**
18	**Lane to Shoulder Dropoff**	f = difference of level	0	Nil, Not discernible, < 3 mm	No action	
			1	f = 3 – 10 mm	Spot repair of shoulder Within 7 days	
			2	f = 10 – 25 mm		
			3	f = 25 – 50 mm	Fill up shoulder Within 7 days	For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30 days
			4	f = 50 – 75 mm		
			5	f > 75 mm		
Drainage						
19	**Pumping**	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints without delay.	Inspect and repair sub-drainage at distressed sections and upstream.
			3 to 4	Appreciable/ Frequent 10- 25%	Lift or jack slab within 30 days	
		Nos/100m stretch	5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
20	Ponding	Ponding on slabs due to blockage of drains	0-2	not discernible problem	No Action	
			3 to 4	Blockage observed in drains, but water flowing	Clean drains etc within 7days follow up	Action required to stop water damaging foundation within 30 days
			5	Ponding, accumulation of water observed	-do-	

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.		Manual Measurements with Odometer	Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary		IRC:SP 84-2014

<table>
<tr><td rowspan="4">Highway</td><td rowspan="4">Availability of Safe Sight Distance</td><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance (m)</td><td>Safe Stopping Sight Distance (m)</td><td rowspan="4">Monthly</td><td rowspan="4">along with video/ image backup</td><td colspan="3" rowspan="4">encroachments.

In case of permanent structure or design deficiency:
Removal of obstruction/improvement of deficiency at the earliest
Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be</td><td rowspan="4"></td></tr>
<tr><td>100</td><td>360</td><td>180</td></tr>
<tr><td>80</td><td>260</td><td>130</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Pavement Marking</td><td>Wear</td><td colspan="3"><70% of marking remaining</td><td>Bi-Annually</td><td>Visual Assessment as per Annexure-F of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2 months</td><td>IRC:35-2015</td></tr>
</table>

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Day time Visibility	During expected life Service Time Cement Road - 130mcd/m^2/lux Bituminous Road - 100mcd/m^2/lux	Monthly	As per Annexure-D of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015
		Initial and Minimum Performance for Dry Retro reflectivity during night time:		As per Annexure-E	Re - painting	Cat-1 Defect – within 24 hours	IRC:35-2015

<table>
<tr><td></td><td>Night Time Visibility</td><td>Design Speed</td><td colspan="2">(RL) Retro Reflectivity (mcd/m^2/lux)</td><td>Bi-Annually</td><td>of IRC:35-2015</td><td></td><td>Cat-2 Defect – within 2 months</td><td></td></tr>
<tr><td></td><td></td><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Up to 65</td><td>200</td><td>80</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>65 - 100</td><td>250</td><td>120</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Above 100</td><td>350</td><td>150</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="3">Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Asset Type</td><td>Performance Parameter</td><td colspan="3">Level of Service (LOS)</td><td>Frequency of Measurement</td><td>Testing Method</td><td>Recommended Remedial measures</td><td>Time limit for Rectification</td><td>Specifications and Standards</td></tr>
<tr><td></td><td></td><td colspan="3">Initial 7 days Retro reflectivity: 100 mcd/m^2/lux
Minimum Threshold Level: 50 mcd/m^2/lux</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

	Skid Resistance	Initial and Minimum performance for Skid Resistance: Initial (7days): 55BPN Min. Threshold: 44BPN *Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
Road Signs	Shape and Position	Shape and Position as per IRC:67-2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards

	Retro reflectivity	As per specification in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with A S T M D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sign boards	IRC:67-2012
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance R	Raising Kerb eight	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image K backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC: SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image	Rectification	Within 15 days	IRC: SP:84-2014
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC: SP:84-2014, IRC:119-2015
Asset Type	**Performance Parameter**	**Level of Service (LOS)**	**Frequency of Measurement**	**Testing Method**	**Recommended Remedial measures**	**Time limit for Rectification**	**Specifications and Standards**

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement t	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification failure	8 hours	IRC:SP:84-2014
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay- bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15days	IRC:SP 84-2014

Asset Type	Performance Paramet	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectificati	Specification s and Standards
Pipe/Box/ slab culverts	Free waterway/ unobstructed flow section	85% of culvert normal flow area to available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35- 1990 if any, for	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-1993	15 days	IRC SP:40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregate					
			Frequency of		**Recommended**	**Time limit**	**Specification**

Asset Type	Performance Parameter	Level of Service (LOS)	Measurement	Testing Method	Remedial measures	for Rectification	s and Standards
	Protection work in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier	IRC: SP 40-1993 and IRC:SP: 13-2004.
Bridges including ROBS Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspections per IRCSP:35-1990	Repairs to BC or wearing coat	15 days	MORTH Specification 2811
Bridge – Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspections per IRCSP:35-1990	Repairs to BC or either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORTH Specification 3004.2 & 2811
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspections and detailed condition survey as per IRC SP:35-1990	Repairs and replacement of safety barriers as the case may be	3 days	IRC: 5-1998 IRC:SP: 84-2004. And IRC SP: 40- 1993

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Rusted reinforcement	Not more than 0.25 sq.m.	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti- corrosive coating before carrying out the repair to affected concrete portion with epoxy mortar / concrete.	15 days	IRC:SP: 40-1993. And MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m.					
	Delamination	Not more than 0.50 sq.m.					
	Cracks wider than 0.30 mm	Not more than 1m total length.	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigation causes for cracks development and carry out necessary rehabilitation.	48 hours	IRC:SP: 40-1993. And MORTH Specification 2800.
	Rain seepage through deck slab	Leakage- nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Grouting with slab at leakage areas, waterproofing, repairs to drainage spouts.	1months	MORTH Specification 2600 & 2700.
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity.	6months	IRC:SP: 51-1999.

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz.	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30m.	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTOLRFD Specification
	Leakage in Expansion Joints	No damage to elastomeric sealant compound in strip expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint.	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH Specification 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH Specification 2600 and IRC SP: 40-1993.

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH Specification 2700
Bridge sub structure	Cracks/spalling of concrete /rusted steel	No cracks spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed.	30 days	IRC:SP: 40-1993. And MORTH Specification 2800.
	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge	In case of failure of even one bearing on any pier/ abutment, all the bearings on that pier/ abutment shall be replaced, in order	3 months	MORTH Specification 2810 and IRC SP: 40-199.

		tearing of rubber not more		Inspection Unit	to get uniform load transfer on to bearings.		
Asset Type	**Performance Parameter**	**Level of Service (LOS)**	**Frequency of measurement**	**Testing Method**	**Recommended Remedial measures**	**Time limit for Rectification**	**Specifications and Standards**
		than 2 locations per side, no rupture of reinforcement or rubber.					
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level form the bridge	Bi-Annually	Condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/ abutment	1 months	IRC:SP: 40-1993. IRC: 83-2014 MORTH Specification 2500.
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m. damage to apron (concrete apron) not	2 times in a year (before and after rainy season)	Condition survey as per IRC SP: 35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier	MORTH Specification 2810 and IRC SP: 40-199.

		more than 1 sq.m.					

Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

	Nature of Defect or deficiency	Time limit for repair/ rectification
(b)	**Granular earth shoulders, sides lopes, drains and culvert**	
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (Seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (Seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (Thirty) days
(iv)	Rain cuts/gullies in slope	7 (Seven) days
(v)	Damage to or silting of culverts and side drains	7 (Seven) days
(vi)	Desilting of drains in urban/semi-urban areas	24 (Twenty Four) days
(vii)	Railing, parapets, crash barriers	7(seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required /Once every year
(iii)	Damaged/missing signs road requiring replacement	7 (Seven) days
(iv)	Damaged to road mark ups	7 (Seven) days
(d)	Road lighting	
(i)	Any major failure of the system	24 (Twenty Four) days
(ii)	Faults and minor failures	8 (eight) hours
(e)	**Trees and plantation**	

	Nature of Defect or deficiency	Time limit for repair/ rectification
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (Twenty Four) days
(ii)	Removal of fallen trees from carriageway	4 (Four) 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
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (Twenty Four) days
(g)	**[Toll Plaza]**	
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossing,[Traffic Aid Posts, Medical Aid Posts], and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	Within 48 (forty eight) hours Within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Foundations**	

	Nature of Defect or deficiency	Time limit for repair/ rectification
(i)	Scouring and / or cavitation	15 (fifteen) days
(c) Pipers, abutment, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent - holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damaged to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

	Nature of Defect or deficiency	**Time limit for repair/ rectification**
(iii)	Snow requiring clearance	24 (twenty four) hours

[**Note:** Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the competent authority.]

Schedule-F

(See Clause 3.1.5(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, 4, Parliament Street,
New Delhi-110001

WHEREAS:

(A)_____ [name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for "Construction of the Two – Lane with Paved Shoulders, **Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya**, 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 Construction Period and Defects Liability Period under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the guarantee amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the 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 Guarantee shall cease to be in force and effect on ****[$2]. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

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

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly 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.

13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001

14. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication no. 758, except that the supporting statement under Article 15 (a) is hereby excluded.

Signed and sealed this ……. day of ……. 20……. at ……

SIGNED, SEALED AND DELIVERED

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

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, 4, Parliament Street
New Delhi-110001

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 "Construction of the Two – Lane with Paved Shoulders, ***The name of the project highway is*** "**Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya".** subject to and in accordance with the provisions of the Agreement.

(A) In accordance with the Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called "**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. ……Cr. (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 General Manager in the 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 date of the Completion Certificate specified in Clause 12.4 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 there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001

14. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication no. 758, except that the supporting statement under Article 15 (a) is hereby excluded.

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, 4, Parliament Street,
New Delhi-110001

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 "Construction of the Two – Lane with Paved Shoulders, ***The name of the project highway is*** **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"** subject to and in accordance with the provisions of the Agreement.

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

(B) 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 irrevoc**ably, guarantee**s 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

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

amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the 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 on ****.[$4] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.

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

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly 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.

13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001

14. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication no. 758, except that the supporting statement under Article 15 (a) is hereby excluded.

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

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 Clauses10.1 (iv) and 19.3)

1 Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. …… Cr.

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

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
1	Road works including culverts, widening and repair of culverts.	65.13%	**A - Widening and strengthening of existing road**	
			(1) Earthwork up to top of the subgrade	1.98%
			(2) Subbase course (CTSB)	1.43%
			(3) Non-bituminous base course (WMM)	0.70%
			(4) Bituminous base	0.75%
			(5) wearing coat	2.11%
			(6) widening and repair of culverts	0.48%
			B.1 (i) - Reconstruction as 2-Lane +PS (Flexible pavement)	
			(1) Earthwork up to top of the subgrade	17.06%
			(2) Subbase course (CTSB)	2.86%
			(3) Non-bituminous base course (WMM)	1.63%
			(4) Bituminous base	2.56%
			(5) Wearing coat	1.55%
			B.1 (ii) - Realignment/ bypass (Flexible pavement)	
			(1) Earthwork up to top of the subgrade	45.12%
			(2) Subbase course (CTSB)	4.58%
			(3) Non-bituminous base course (WMM)	3.47%
			(4) Bituminous base	3.03%
			(5) Wearing coat	1.84%
			B.2-Reconstruction/New 2-Lane Realignment/ Bypass (Rigid Pavement)	
			(1) Earthwork up to top of the subgrade	0.00%
			(2) Subbase course (GSB)	0.00%
			(3) Dry lean concrete (DLC)	0.00%
			(4) Pavement quality concrete (PQC) course	0.00%
			C.1 - Reconstruction/ New Service Road (flexible Pavement)	
			(1) Earthwork up to top of the subgrade	0.00%
			(2) Subbase course (GSB)	0.00%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(3) Non-bituminous base course (WMM)	0.00%
			(4) Bituminous base	0.00%
			(5) wearing coat	0.00%
			C.2 - Reconstruction/ New Service Road (Rigid Pavement)	
			(1) Earthwork up to top of the subgrade	0.00%
			(2) Subbase course (GSB)	0.00%
			(3) Dry lean concrete (DLC)	0.00%
			(4) Pavement quality concrete (PQC) course	0.00%
			D. - Reconstruction & New Culverts on existing road, realignments, bypasses Culverts (length <6m)	8.85%
2	Minor Bridges/ Underpasses/ Overpasses	9.12%	**A.1 - Widening and repairs of Minor Bridges**	
			Widening of existing bridges	1.53%
			rehabilitation of existing bridges	0.19%
			A.2 - Reconstruction/ New of Minor Bridges	
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	74.29%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	11.35%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	11.37%
			(4) **Guide Bunds and River Training works:** (On completion of Guide Bunds and river training works complete in all respects.)	1.27%
			B.1 - Widening and repairs of Underpasses/Overpasses	
			Underpasses/ Overpasses	0.00%
			B.2 - New Underpasses/Overpasses	

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	0.00%
			(2) **Super-structure**: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified as specified.	0.00%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%
3	Major Bridge works and ROB/RUB/elevated sections/flyovers including viaducts, if any	0.00%	**A.1 - Widening and repairs of existing major bridges**	
			(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 barrier, 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, protection works).	0.00%
			A.2 - New major bridges	
			(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 barrier, road markings etc.	0.00%
			(6) Wing walls/return walls	0.00%
			(7) Guide bunds, river training works etc.	0.00%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.1 - Widening and repairs of (a) ROB and (b) RUB	
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%
			B.2 - New ROB / RUB	0.00%
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators	0.00%
			(1) Foundation	0.00%
			(2) Sub structure	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
			C.2 - New Elevated section/Flyover/Grade Separators	0.00%
			(1) Foundation:	0.00%
			(2) Sub-structure:	0.00%
			(3) Superstructure (including bearing)	0.00%
			(4) wearing coat including expansion joint	0.00%
			(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%
			(6) wing walls/return walls	0.00%
			(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%
4	Other works	24.87%	(i) Toll plaza	0.00%
			(ii) Road side drains	15.87%
			(iii) Road signs, markings, km stones safety Devices etc.	6.41%
			(iv) Project facilities	0.00%
			(a) Bus shelter	0.63%
			(b) Truck laybys	0.66%
			(c) Rest areas	0.00%
			(d) Others (To be specified)	
			(i) Street Lighting	0.40%
			(ii) Public Toilet	0.40%
			(iii) Utility Ducts	1.26%
			(iv) Junction improvement works including Connecting Road & Junction under Grade separator, noise barrier.	10.96%
			(v) Thrie Beam Crash Barrier	12.31%
			(vi) New Jersy Crash Barrier	0.00%
			(vii) Site clearance	0.39%
			(viii) Protection works retaining wall/Breast walls/toe walls other than approaches to the bridges, elevated sections, flyovers/ grade separators and ROBs/RUBs./Single Row for one & Two utility service	44.46%
			(ix) Boundary Stone	0.03%
			(x) Safety and traffic management during construction	0.13%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(xi) Side Slope Protection works and stone pitching	6.09%
5	Utility shifting	0.88%	PHE	40.00%
			MECL	60.00%
		100.00%	**Total**	**100.00%**

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
A - Widening and strengthening of existing road		
(1) Earthwork up to top of the subgrade	1.98%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of weightage of A (1) Preparation of Sub-Grade: 60% of weightage of A (1)
(2) Subbase course (CTSB)	1.43%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Non-bituminous base course (WMM)	0.70%	
(4) Bituminous base	0.75%	
(5) wearing coat	2.11%	
(6) widening and repair of culverts	0.48%	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least five culverts.
B.1 (i) - Reconstruction as 2-Lane +PS (Flexible pavement)		
(1) Earthwork up to top of the subgrade	17.06%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of weightage of A (1) Preparation of Sub-Grade: 60% of weightage of A (1).
(2) Subbase course (CTSB)	2.86%	Unit of measurement is linear length.

Stage for Payment	Percentage weightage	Payment Procedure
(3) Non-bituminous base course (WMM)	1.63%	Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(4) Bituminous base	2.56%	
(5) Wearing coat	1.55%	
B.1 (ii) - Realignment/ bypass (Flexible pavement)		
(1) Earthwork up to top of the subgrade	45.12%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under: Hill Cutting : 40% of weightage of A (1)Preparation of Sub-Grade: 60% of weightage of A (1).
(2) Subbase course (CTSB)	4.58%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Non-bituminous base course (WMM)	3.47%	
(4) Bituminous base	3.03%	
(5) Wearing coat	1.84%	
B.2 - Reconstruction realignment / bypass (Rigid Pavement)		
(1) Earthwork up to top of the subgrade	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of weightage of A (1) Preparation of Sub-Grade: 60% of weightage of A (1)
(2) Subbase course (GSB)	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Dry lean concrete (DLC)	0.00%	
(4) Pavement quality concrete (PQC) course	0.00%	
C.1 - Reconstruction/ New Service road (flexible Pavement)		
(1) Earthwork up to top of the subgrade	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of weightage of A (1) Preparation of Sub-Grade: 60% of weightage of A (1)
(2) Subbase course (GSB)	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Non-bituminous base course (WMM)	0.00%	
(4) Bituminous base	0.00%	
(5) wearing coat	0.00%	

Stage for Payment	Percentage weightage	Payment Procedure
C.2 - Reconstruction/ New Service road (Rigid Pavement)		
(1) Earthwork up to top of the subgrade	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under: Hill Cutting: 40% of weightage of A (1) Preparation of Sub-Grade: 60% of weightage of A (1)
(2) Subbase course (GSB)	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Dry lean concrete (DLC)	0.00%	
(4) Pavement quality concrete (PQC) course	0.00%	
D. - Reconstruction/ New culverts on existing road, realignment, bypasses	8.85%	Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least five culverts.

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

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

Where,

P = Contract Price

L = Total length in km Similarly, the rates per km for other stages shall be worked out accordingly.

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

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
A.1 - Widening and repairs of Minor Bridges		Cost of each minor bridge shall be

Stage of Payment	Weightage	Payment Procedure
Widening of existing bridges	1.53%	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
rehabilitation of existing bridges	0.19%	
A.2 - Reconstruction/ New of Minor Bridges		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	74.29%	Foundation + Substructure: 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 atleast two foundations along with sub-structure upto abutments/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 etc. complete in all respect.	11.35%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	11.37%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(4) **Guide Bunds and River Training works:** (On completion of Guide Bunds and river training works complete in all respects.)	1.27%	Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bund sand River training Works in all respects as specified
5) Miscellaneous items	0.00%	Cost of each underpass/overpass

Stage of Payment	Weightage	Payment Procedure
		shall be determined on pro rata basis with respect to the total linear length of the underpass/overpasses. Payment shall be made on the completion of widening & repair works of an underpass/overpasses.
B.1 - Widening and repairs of Underpasses/Overpasses		
Underpasses/ Overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening &repair works of an underpass/overpass.
B.2 - New Underpasses/Overpasses		
(1) **Foundation + Substructure**: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap	0.00%	Foundation: Cost of each Underpass/ Overpass shall be determined on pro-rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each Underpasses/ Overpasses.

1.3.3 Major Bridge works, ROB/RUB and Structures

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

Table 1.3.3

Stage of payment	Weightage	Payment procedure
A.1 - Widening and repairs of existing major bridges		
(1) Foundation:	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e., not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment

Stage of payment	Weightage	Payment procedure
		shall include load testing also where specified.
(2) Sub-structure:	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: 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 barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, river training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%	Approaches: Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
A.2 - New major bridges		
(1) Foundation:	0.00%	Foundation: Cost of each Major Bridge shall be determined on pro rat abasis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e., not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment

Stage of payment	Weightage	Payment procedure
		shall include load testing also where specified.
(2) Sub-structure:	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e., not lessthan25% of the scope of sub-structure of major bridge.
(3) Super-structure: (including bearings.)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure including bearings of at least one span in all respects as specified. In case of structures where pre- cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints	0.00%	Wearing Coat: 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 barrier, road markings etc.	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, river training works etc.	0.00%	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including retaining walls, stone pitching, protection works).	0.00%	Approaches: Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
B.1 - Widening and repairs of (a) ROB and (b) RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of

Stage of payment	Weightage	Payment procedure
		foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub structure	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Superstructure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super-structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50%ofthe stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including retaining walls, stone pitching, protection works).	0.00%	Payments shall be made on prorate basis on completion of 20% of the total area.
B.2 - New ROB / RUB		
(1) Foundation	0.00%	Foundation: Cost of each ROB/RUB shall be determined on pro rata basis

Stage of payment	Weightage	Payment procedure
		with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be Made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of the ROB/RUB.
(2) Sub structure	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Superstructure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super-structure including bearings of at least one span in all respects as specified. In case of structures where pre- cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) wearing coat: (a) in case of ROB - wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.	0.00%	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) In case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous items (like hand rails, crash barriers, road markings etc.)	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.1 - Widening and repairs of Elevated section/Flyover/Grade Separators		

Stage of payment	Weightage	Payment procedure
(1) Foundation	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e., not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub structure	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Superstructure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super-structure including bearings of at least one span in all respects a specified case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) wearing coat including expansion joint	0.00%	Wearing Coat: 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.)	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.2 - New Elevated section/Flyover/Grade		

Stage of payment	Weightage	Payment procedure
Separators		
(1) Foundation:	0.00%	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure:	0.00%	Sub-structure: Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Superstructure (including bearing)	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of super-structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) wearing coat including expansion joint	0.00%	Wearing Coat: 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.)	0.00%	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) wing walls/return walls	0.00%	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll plaza	0.00%	Payment of Toll Plaza shall be made on Pro rata basis as per following completed stages: (i) Rigid pavement upto DLC (LHS) - 12.5 % (ii) Rigid pavement upto DLC (RHS)- 12.5 % (iii) PQC (LHS)-25 % (iv) PQC (RHS)-25 % (v) Admin Building, Maintenance Building & Misc. Works-10% (vi) Canopy, Toll Booth, Safety Items & Miscellaneous Works-12.5 % (vii) Toll Plaza Tunnel-2.5 %
(ii) Road side drains	15.87%	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 05 % (five percent) of the total length.
(iii) Road signs, markings, km stones safety Devices etc.	6.41%	
(iv) Project facilities	0.00%	Payment shall be made on pro rata basis for completed facilities.
(a) Bus shelter	0.63%	
(b) Truck laybys	0.66%	
(c) Rest areas	0.00%	
(d) Others (To be specified)	0.00%	
(i) Street Lighting	0.40%	
(ii) Public Toilet	0.40%	
(iii) Utility Ducts	1.26%	
(iv) Junction improvement works including Connecting Road & Junction under Grade separator, noise barrier.	10.96%	Cost of each Junction shall be determined on pro rata basis with respect to the total number of junctions. Payment shall be made on the completion of at least five junctions.
(v) Thrie Beam Crash Barrier	12.31%	Unit of measurement is linear length.

Stage of Payment	Weightage	Payment Procedure
(vi) New Jersy Crash Barrier	0.00%	Unit of measurement is linear length.
(vii) Site clearance	0.39%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five Percent) of the total length.
(viii) Protection works retaining wall/Breast walls/toe walls other than approaches to the bridges, elevated sections, flyovers/ grade separators and ROBs/RUBs./Single Row for one & Two utility service	44.46%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five Percent) of the total length.
(ix) Boundary Stone	0.03%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length
(x) Safety and traffic management during construction	0.13%	Payment shall be made on prorate basis every six months.
(xi) Side Slope Protection works and stone pitching	6.09%	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 5 % (five percent) of the Total length.

1.3.5 Utility Shifting

Procedure for estimating the value of utility shifting works done shall be as stated in Table 1.3.5:

Table 1.3.5

Stage of Payment	Weightage	Payment procedure
PHE	40.00%	1. Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe li ne. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%). 2. Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 2S% of the crossings subject to a minimum of 8 crossings. 3. Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-SO%, Charging of line

Stage of Payment	Weightage	Payment procedure
		including all miscellaneous works and dismantling and site clearance-SO%). 4. Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe-SO%, Charging of line including all miscellaneous works and dismantling and site clearance-SO %)
MECL	60.00%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT/ HT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is Erection of Poles-20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance-40% (with DTR) and 50% without DTR) Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 4 crossings.] Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT/ HT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is Erection of Poles-20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance-40% (with DTR) and 50% without DTR) Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the Crossings subject to a minimum of 10 crossings.

2. Procedure for payment for Maintenance.

2.1 The cost for maintenance shall be as stated in Clause 14.1.(i)

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

Schedule - I

(See Clause 10.2 (iv))

1. Drawings

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

2. Additional Drawings: -

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

Annex – I

(Schedule - I)

List of Drawings

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

(a) Drawing of horizontal alignment, vertical profile and detailed cross sections;

(b) Drawings of cross drainage works, i.e. Bridges/Culverts/Flyovers and Other Structures;

(c) Drawings for River Training works;

(d) Drawings of interchanges, major intersections and underpasses;

(e) Drawing of control centre;

(f) Drawings of road furniture items including traffic signage, marking, safety barriers, etc;

(g) Drawings of traffic diversions plans and traffic control measures;

(h) Drawings of road drainage measures;

(i) Drawings of typical details slope protection measures;

(j) Drawings of landscaping and horticulture;

(k) Drawings of pedestrian crossing;

(l) Drawings of street lighting;

(m) General Arrangement showing Base Camp and Administrative Block;

(n) Any other drawings as per instruction of Authority Engineer.

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[$]

(i) Project Milestone-I shall occur on the date falling on the 256th (Two Hundred and Fifty Eight) day from the Appointed Date (the "**Project Milestone-I**").

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

3. Project Milestone-II[$]

(i) Project Milestone-II shall occur on the date falling on the 438th (Four hundred and Thirty Eight) day from the Appointed Date (the "**Project Milestone-II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 40% (thirty per cent) of the Contract Price and **should have started have started with the construction of all bridges and** should have completed the construction of project highway between **Design Chainage Km 21+000 to Km 26+500.**

4. Project Milestone-III[$]

(i) Project Milestone-III shall occur on the date falling on the 621st (Six hundred and Twenty One) day from the Appointed Date (the "**Project Milestone-III**").

[$] If total project length is say **'L' km** and the unencumbered length along existing road as handed over on the appointed date is **'L_1' km** (including bypasses, re-alignment, structure etc.) and balance length i.e. **'L2' km (L-L1)** is to be handed over on a later date as per the memorandum signed under provision of Clause 8.2.1 of the Contract Document, then the Project Milestone-I, II and III shall be linked to stage payment statement for amount in percentage of the contract price worked out on prorata basis for the **'L_1' km** length handed over of balance length, the subsequent Project Milestone shall be linked to stage payment statement for amount in percentage of the total contract price.

For example:

If the date for Milestone-I and Milestone-II is 438th and 621st day from appointed date and balance **'L_2' km** length is handed over after 621st day from appointed date, then the stage payment statement required for achieving Milestone-I and Milestone-II should be linked to Contract Price worked out on prorata basis for the **L_1 km length** [**i.e. for Contract Price x L_1/L**]. Subsequent Milestone i.e. Milestone-III will be linked to stage payment statement for amount in percentage of the total contract price. **In no case, there shall be any change in the schedule completion date unless extension of time has been granted by the Authority under Clause 10.3 and 10.5 of the contract agreement.**

In order for the above dispensation to come into operation, it is necessary that a suitable mechanism (like escrow account) is evolved between the parties to the effect that the payments released to the contractor under the above dispensation would be used for completion of the project in the first instance and shall be available to the Contractor only after meeting his project related commitments.

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 80% (sixty per cent) of the Contract Price and should have started construction of all project facilities.

5 Schedule Completion Date

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

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

6 Extension of time

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

Schedule-K
(See Clause 12.1.2)
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

I, …….. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for construction of the **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"** 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.

1. 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 affect 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.

2. In view of the foregoing, I am satisfied that that Project Highway from km 8.000 to km 65.000 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 AUTHORITY's ENGINEER by:
(Signature)	(Signature)

Schedule-L
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 **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"** 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

The Authority's Engineer by:

(Signature)
(Name)
(Designation)
(Address)

Schedule-M

(See Clauses 14.6., 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

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 x M xL1/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 non-compliance.

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

Schedule-N

(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

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

1.2 The Authority shall invite Expression of Interest from Consulting Engineering firms or bodies corporate to undertake and perform the duties and functions set forth in Annexure-I of Schedule-N and thereupon shortlist qualified firms in accordance with pre-determined criteria.

1.3 The Authority shall invite the aforesaid shortlisted firms to submit their respective technical and financial offers, each in separate sealed cover and/or upload online. All the technical bids so received shall be opened and pursuant to the evaluation thereof, the Authority shall open the financial bids in respect of each shortlisted firm and the order of priority as among these firms shall be determined on the basis of a weighted evaluation where technical and financial score shall be assigned respective weights of 80:20.

1.4 In the event of termination of the Technical Consultants appointed in accordance with the provisions of above Paragraphs 1.1 to 1.3, 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 **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"**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 0.2% of Contract Price.

3.3 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.

Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(f) the monthly payment admissible in accordance with the provisions of the agreement;

(g) the deductions for maintenance work not done;

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

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

(j) amount towards deduction of taxes

4. 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 cause 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. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences. The insurance cover shall be not less than: Rs. [*****]

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.

SCHEDULE-Q
(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:
Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be 2,500 (two thousand five hundred) mm for each kilometer.
2. Visual and physical test:
The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and the permissible values are given below: • Area of cracking not more than 2 % area
• Area of rutting with rut depth more than 10 mm - not more than 1 …. % area
• Area of stripping: not more than 2 % area
• Area of potholes: Nil
• Edge drop – Shall not be more than 15 mm

SCHEDULE-R
(See Clause 14.10)

Taking Over Certificate

I, …….. (Name and designation of the Authority's representative) under and in accordance with the Agreement dated …… (the "Agreement"), for **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"** ……. (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has Taken over the Project Highway from the Contractor on this day .....

SIGNED, SEALED AND DELIVERED

(Signature)
(Name of Authority's Engineer)
(Address)

SCHEDULE-S
(See Clause 17.7.2)

Performance Certificate

I, …….. (Name and designation of the Authority's representative) under and in accordance with the Agreement dated …… (the "Agreement"), for [construction and maintenance of the **"Improvement and Widening of National Highway No. 127B (Darugiri - Songsak - Williamnagar Junction Section) to Two Lane with paved shoulder from design Km 0+000 to Km 36+635 (Design length= 36.635 Km) (existing Km 112+000 to Km 151+060) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode in the state of Meghalaya"** …… (Name of Contractor), hereby certify that the Contractor has discharged all its obligations under the Agreement and in accordance with Article 17 of the Agreement I hereby issue Performance Certificate to the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)
(Name of Authority's Engineer)
(Address)

SCHEDULE-T
(See Clause 19.1.6)

Name of Currency	**A Amount of Currency**	**B Rate of Exchange* (Local Currency per Unit of Foreign Currency)**	**C Local Currency Equivalent**	**D Percentage of Net Bid Price (NTP) (100 x C) / NTP**
Local Currency (Indian Rupees)				
Foreign Currency 1 (Japanese Yen)				
Foreign Currency 2 (US Dollar)				
Net Bid Price				100.00

* The fixed rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the **Reserve Bank of India**.

1. Change in scope would require agreement between parties on currency.
2. Regarding damages by the Authority, financing charges for a payment delay will be in corresponding currency amounts.
3. Delay damages will be recovered in currencies in proportion which in which contract price is payable.