National Highways & Infrastructure Development Corporation Limited

EPC Schedules

FOR

Improvement/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode.

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

JANUARY 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-217 (Old NH-62) Road "Dainadubi-Darugiri section of project road (NH-217) starts at Dainadubi (Assam/Meghalaya State Border) (Existing Ch.- 8+600 of Old NH-62) and ends at Darugiri (Y-Junction between NH-217 & NH-127B) (Existing Ch.- 53+000 of Old NH-62). The project road covers a total length of 40.840 km. The part of the project road (15.070 Km) passes through North Garo Hills District and the remaining part (25.770 Km) passes through East Garo Hills District 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:

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
1	0+000	0+021	21.00	22	22	44
2	0+021	0+030	9.00	22	22	44
3	0+030	0+043	13.00	22	22	44
4	0+043	0+045	2.00	22	21	43
5	0+045	0+158	113.00	22	21	43
6	0+158	0+161	3.00	12	12	24
7	0+161	0+183	22.00	12	12	24
8	0+183	0+384	201.00	22	22	44
9	0+384	0+396	12.00	22	22	44
10	0+396	1+224	828.00	22	22	44
11	1+224	1+314	90.00	22	22	44
12	1+314	3+370	2056.00	22	22	44
13	3+370	3+422	52.00	12	22	34
14	3+422	3+844	422.00	22	22	44
15	3+844	3+939	95.00	22	22	44
16	3+939	4+016	77.00	16	22	38
17	4+016	4+047	31.00	12	22	34
18	4+044	4+047	3.00	22	16	38
19	4+047	4+068	21.00	22	16	38
20	4+068	4+334	266.00	22	22	44
21	4+334	4+377	43.00	12	22	34

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
22	4+377	4+464	87.00	22	22	44
23	4+464	4+472	8.00	22	22	44
24	4+472	4+519	47.00	22	22	44
25	4+519	4+557	38.00	22	22	44
26	4+557	4+561	4.00	12	22	34
27	4+561	4+734	173.00	22	22	44
28	4+734	4+772	38.00	15	22	37
29	4+772	4+880	108.00	14	22	36
30	4+887	4+941	54.00	22	22	44
31	4+941	4+981	40.00	22	22	44
32	4+981	5+061	80.00	22	22	44
33	5+061	5+117	56.00	22	22	44
34	5+117	5+143	26.00	22	22	44
35	5+143	5+154	11.00	22	22	44
36	5+154	5+327	173.00	22	16	38
37	5+327	5+334	7.00	12	12	24
38	5+334	5+493	159.00	22	22	44
39	5+493	8+680	3187.00	22	22	44
40	8+680	8+805	125.00	26	15	41
41	8+805	8+930	125.00	25	22	47
42	8+930	9+000	70.00	12	40	52
43	9+000	9+137	137.00	26	22	48
44	9+137	9+677	540.00	12	22	34
45	9+677	9+690	13.00	12	12	24
46	9+690	9+745	55.00	12	12	24
47	9+745	9+930	185.00	12	12	24
48	9+930	9+966	36.00	14.5	12.5	27
49	9+966	10+410	444.00	12	12	24
50	10+410	10+472	62.00	12	12	24
51	10+472	11+316	844.00	12	22	34
52	11+316	11+407	91.00	22	22	44
53	11+407	11+907	500.00	22	22	43
54	11+907	11+910	3.00	22	22	43
55	11+910	11+950	40.00	16	22	38
56	11+950	12+015	65.00	12	22	34
57	12+015	12+285	270.00	16	22	38
58	12+285	12+400	115.00	28	22	50

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
59	12+400	12+457	57.00	20	22	42
60	12+457	12+490	33.00	20	20	40
61	12+490	12+543	53.00	20	22	42
62	12+543	12+568	25.00	16	22	38
63	12+568	12+682	114.00	22	22	44
64	12+682	12+755	73.00	20	22	42
65	12+755	12+835	80.00	22	50	72
66	12+835	12+843	8.00	22	50	72
67	12+843	12+872	29.00	22	50	72
68	12+872	12+921	49.00	22	56	78
69	12+921	12+966	45.00	12	56	68
70	12+966	12+980	14.00	12	21	33
71	12+980	13+033	53.00	12	21	33
72	13+033	13+131	98.00	22	30	52
73	13+131	13+200	69.00	28	21	49
74	13+200	13+300	100.00	28	15	43
75	13+300	13+331	31.00	28	21	49
76	13+331	13+360	29.00	22	21	43
77	13+360	13+390	30.00	22	40	62
78	13+390	13+415	25.00	22	21	43
79	13+415	13+457	42.00	18	20	38
80	13+457	13+517	60.00	18	12	30
81	13+517	13+560	43.00	18	12	30
82	13+560	13+585	25.00	22	22	44
83	13+585	13+600	15.00	22	48	70
84	13+600	13+715	115.00	22	48	70
85	13+715	13+800	85.00	18	22	40
86	13+800	13+920	120.00	22	22	44
87	13+920	13+955	35.00	12	22	34
88	13+955	13+961	6.00	22	22	44
89	13+961	14+000	39.00	22	22	44
90	14+000	14+008	8.00	22	40	62
91	14+008	14+026	18.00	16	40	56
92	14+026	14+075	49.00	22	40	62
93	14+075	14+085	10.00	20	22	42
94	14+085	14+100	15.00	20	22	42
95	14+100	14+150	50.00	20	22	42
96	14+150	14+155	5.00	22	22	44

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
97	14+155	14+185	30.00	22	22	44
98	14+185	14+235	50.00	22	18	40
99	14+235	14+290	55.00	22	22	44
100	14+290	14+360	70.00	22	16	38
101	14+360	14+390	30.00	22	22	44
102	14+390	14+440	50.00	20	22	42
103	14+440	14+465	25.00	22	22	44
104	14+465	14+475	10.00	22	22	44
105	14+475	14+565	90.00	18	22	40
106	14+565	14+595	30.00	22	22	44
107	14+595	14+603	8.00	22	20	42
108	14+603	14+635	32.00	20	20	40
109	14+635	14+655	20.00	20	20	40
110	14+655	14+705	50.00	22	22	44
111	14+705	14+800	95.00	22	20	42
112	14+800	14+845	45.00	22	25	47
113	14+845	14+850	5.00	22	25	47
114	14+850	15+026	176.00	36	22	58
115	15+026	15+038	12.00	36	25	61
116	15+038	15+050	12.00	36	25	61
117	15+050	15+131	81.00	36	22	58
118	15+131	15+170	39.00	36	25	61
119	15+170	15+200	30.00	45	25	70
120	15+200	15+220	20.00	45	35	80
121	15+220	15+277	57.00	45	22	67
122	15+277	15+285	8.00	45	35	80
123	15+285	15+320	35.00	60	35	95
124	15+320	15+337	17.00	60	35	95
125	15+337	15+416	79.00	60	22	82
126	15+416	15+480	64.00	60	35	95
127	15+480	15+520	40.00	60	22	82
128	15+520	15+530	10.00	60	22	82
129	15+530	15+600	70.00	60	35	95
130	15+600	15+650	50.00	63	35	98
131	15+650	15+672	22.00	63	22	85
132	15+672	15+729	57.00	63	40	103
133	15+729	15+770	41.00	63	40	103
134	15+770	15+785	15.00	63	40	103

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
135	15+785	15+800	15.00	63	40	103
136	15+800	15+867	67.00	60	22	82
137	15+867	15+885	18.00	60	40	100
138	15+885	15+900	15.00	60	40	100
139	15+900	16+040	140.00	50	40	90
140	16+040	16+055	15.00	50	22	72
141	16+055	16+062	7.00	50	22	72
142	16+062	16+100	38.00	50	40	90
143	16+100	16+114	14.00	50	45	95
144	16+114	16+170	56.00	50	45	95
145	16+170	16+200	30.00	50	45	95
146	16+200	16+210	10.00	22	40	62
147	16+210	16+230	20.00	22	40	62
148	16+230	16+250	20.00	35	42	77
149	16+250	16+284	34.00	35	42	77
150	16+284	16+300	16.00	35	42	77
151	16+300	16+430	130.00	30	42	72
152	16+430	16+500	70.00	30	45	75
153	16+500	16+600	100.00	19	40	59
154	16+600	16+610	10.00	25	22	47
155	16+610	16+630	20.00	19	22	41
156	16+630	16+650	20.00	20	30	50
157	16+650	16+653	3.00	20	30	50
158	16+653	16+662	9.00	20	30	50
159	16+662	16+700	38.00	20	30	50
160	16+700	16+713	13.00	20	20	40
161	16+713	16+755	42.00	20	20	40
162	16+755	16+770	15.00	18	20	38
163	16+770	16+800	30.00	18	20	38
164	16+800	16+820	20.00	18	16	34
165	16+820	16+830	10.00	12	16	28
166	16+830	16+900	70.00	12	16	28
167	16+900	17+023	123.00	35	25	60
168	17+023	17+050	27.00	19	12	31

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
169	17+050	17+069	19.00	12	12	24
170	17+069	17+100	31.00	12	12	24
171	17+100	17+124	24.00	19	12	31
172	17+124	17+200	76.00	19	14	33
173	17+200	17+310	110.00	19	15	34
174	17+310	17+350	40.00	19	14	33
175	17+350	17+432	82.00	15	14	29
176	17+432	17+533	101.00	19	14	33
177	17+533	17+559	26.00	19	12	31
178	17+559	17+567	8.00	19	14	33
179	17+567	17+600	33.00	23	14	37
180	17+600	17+665	65.00	32	16	48
181	17+665	17+700	35.00	32	16	48
182	17+700	17+728	28.00	23	12	35
183	17+728	17+756	28.00	23	12	35
184	17+756	17+780	24.00	19	12	31
185	17+780	17+900	120.00	12	12	24
186	17+900	17+910	10.00	19	12	31
187	17+910	18+000	90.00	18	12	30
188	18+000	18+046	46.00	18	12	30
189	18+046	18+100	54.00	16	12	28
190	18+100	18+200	100.00	16	12	28
191	18+200	18+272	72.00	12	12	24
192	18+272	18+291	19.00	12	12	24
193	18+291	18+318	27.00	22	12	34
194	18+318	18+650	332.00	22	31	53
195	18+650	18+681	31.00	22	22	44
196	18+681	18+900	219.00	22	22	44
197	18+900	18+928	28.00	22	22	44
198	18+928	19+288	360.00	19	22	41
199	19+288	19+308	20.00	19	22	41
200	19+308	19+506	198.00	20	22	42
201	19+506	20+018	512.00	30	19	48
202	20+018	21+665	1647.00	30	19	48

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
203	21+665	21+785	120.00	30	22	52
204	21+785	21+816	31.00	15	22	37
205	21+816	21+913	97.00	30	22	52
206	21+913	22+041	128.00	12	22	34
207	22+041	22+349	308.00	30	22	52
208	22+349	22+453	104.00	30	12	42
209	22+453	22+620	167.00	30	22	52
210	22+620	22+693	73.00	15	22	37
211	22+693	22+783	90.00	30	22	52
212	22+783	22+828	45.00	15	22	37
213	22+828	23+046	218.00	30	22	52
214	23+046	23+160	114.00	22	22	44
215	23+160	23+204	44.00	22	22	44
216	23+204	23+470	266.00	30	22	52
217	23+470	23+579	109.00	20	22	42
218	23+579	23+604	25.00	14	22	36
219	23+604	23+640	36.00	30	22	52
220	23+640	23+670	30.00	30	20	50
221	23+670	23+700	30.00	30	22	52
222	23+700	23+746	46.00	30	22	52
223	23+746	23+764	18.00	30	22	52
224	23+764	23+886	122.00	30	22	52
225	23+886	23+940	54.00	30	22	52
226	23+940	23+972	32.00	20	22	42
227	23+972	24+008	36.00	22	22	44
228	24+008	24+025	17.00	22	12	34
229	24+025	24+047	22.00	19	12	31
230	24+047	24+060	13.00	19	22	40
231	24+060	24+080	20.00	19	22	40
232	24+080	24+188	108.00	19	22	40
233	24+188	24+223	35.00	16	22	38
234	24+223	24+263	40.00	16	12	28
235	24+263	24+276	13.00	12	12	24
236	24+276	24+288	12.00	12	22	34
237	24+288	24+300	12.00	19	22	40

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
238	24+300	24+350	50.00	19	38	57
239	24+350	24+374	24.00	12	38	50
240	24+374	24+420	46.00	19	38	57
241	24+420	24+567	147.00	18	22	40
242	24+567	24+668	101.00	19	22	40
243	24+668	24+700	32.00	18	22	40
244	24+700	24+723	23.00	22	12	34
245	24+723	24+793	70.00	22	12	34
246	24+793	24+820	27.00	22	22	44
247	24+820	24+865	45.00	19	30	49
248	24+865	24+938	73.00	28	22	50
249	24+938	24+940	2.00	12	18	30
250	24+940	25+000	60.00	12	18	30
251	25+000	25+153	153.00	18	18	36
252	25+153	25+159	6.00	19	18	37
253	25+159	25+173	14.00	19	35	54
254	25+173	25+200	27.00	19	22	40
255	25+200	25+214	14.00	30	22	52
256	25+214	25+240	26.00	30	35	65
257	25+240	25+375	135.00	30	18	48
258	25+375	25+380	5.00	12	22	34
259	25+380	25+439	59.00	12	22	34
260	25+439	25+568	129.00	12	15	27
261	25+568	25+584	16.00	12	22	34
262	25+584	25+728	144.00	19	15	34
263	25+728	25+772	44.00	12	15	27
264	25+772	25+912	140.00	19	22	40
265	25+912	25+980	68.00	12	22	34
266	25+980	25+996	16.00	19	22	40
267	25+996	26+005	9.00	22	22	44
268	26+005	26+030	25.00	22	22	44
269	26+030	26+066	36.00	22	22	44
270	26+066	26+100	34.00	12	12	24
271	26+100	26+127	27.00	15	12	27
272	26+127	26+142	15.00	15	22	37

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
273	26+142	26+245	103.00	22	22	44
274	26+245	26+275	30.00	15	22	37
275	26+275	26+335	60.00	15	12	27
276	26+335	26+375	40.00	15	22	37
277	26+375	26+386	11.00	15	22	37
278	26+386	26+410	24.00	22	22	43
279	26+410	26+430	20.00	22	15	37
280	26+430	26+460	30.00	22	22	43
281	26+460	26+490	30.00	15	22	37
282	26+490	26+545	55.00	22	22	43
283	26+540	26+570	30.00	15	22	37
284	26+570	26+655	85.00	22	22	43
285	26+655	26+670	15.00	18	22	40
286	26+670	26+714	44.00	18	12	30
287	26+714	26+749	35.00	18	12	30
288	26+749	26+760	11.00	18	12	30
289	26+760	26+860	100.00	22	22	43
290	26+860	26+878	18.00	22	22	43
291	26+878	26+990	112.00	20	22	42
292	26+990	27+005	15.00	20	22	42
293	27+005	27+025	20.00	22	22	43
294	27+025	27+125	100.00	11	19	30
295	27+125	27+255	130.00	22	22	43
296	27+255	27+445	190.00	30	22	52
297	27+445	27+635	190.00	22	22	43
298	27+635	27+671	36.00	18	12	30
299	27+671	27+700	29.00	18	12	30
300	27+700	27+725	25.00	18	12	30
301	27+725	29+565	1840.00	22	22	43
302	29+565	29+613	48.00	15	15	30
303	29+613	29+746	133.00	15	15	30
304	29+746	29+770	24.00	15	15	30
305	29+770	31+250	1480.00	22	22	43
306	31+250	31+276	26.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
307	31+276	31+306	30.00	15	15	30
308	31+306	31+336	30.00	15	15	30
309	31+336	31+366	30.00	15	15	30
310	31+366	31+396	30.00	15	15	30
311	31+396	31+426	30.00	15	15	30
312	31+426	31+450	24.00	15	15	30
313	31+450	31+485	35.00	15	15	30
314	31+485	31+515	30.00	15	15	30
315	31+515	31+545	30.00	15	15	30
316	31+545	31+575	30.00	15	15	30
317	31+575	31+605	30.00	15	15	30
318	31+605	31+635	30.00	15	15	30
319	31+635	31+665	30.00	15	15	30
320	31+665	31+695	30.00	15	15	30
321	31+695	31+725	30.00	15	15	30
322	31+725	31+755	30.00	15	15	30
323	31+755	31+785	30.00	15	15	30
324	31+785	31+815	30.00	15	15	30
325	31+815	31+845	30.00	15	15	30
326	31+845	31+876	31.00	15	15	30
327	31+876	31+908	32.00	15	15	30
328	31+908	31+930	22.00	14	14	28
329	31+930	31+962	32.00	14	14	28
330	31+962	31+989	27.00	14	14	28
331	31+989	32+020	31.00	15	15	30
332	32+020	32+050	30.00	14	20	34
333	32+050	32+079	29.00	15	15	30
334	32+079	32+107	28.00	15	15	30
335	32+107	32+137	30.00	15	15	30
336	32+137	32+169	32.00	15	15	30
337	32+169	32+201	32.00	15	15	30
338	32+201	32+228	27.00	15	15	30
339	32+228	32+238	10.00	15	15	30
340	32+238	32+267	29.00	15	15	30
341	32+267	32+296	29.00	15	14	29

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
342	32+296	32+326	30.00	15	15	30
343	32+326	32+357	31.00	15	15	30
344	32+357	32+387	30.00	15	15	30
345	32+387	32+416	29.00	15	15	30
346	32+416	32+448	32.00	14	15	29
347	32+448	32+478	30.00	15	15	30
348	32+478	32+507	29.00	15	15	30
349	32+507	32+550	43.00	15	15	30
350	32+550	32+566	16.00	15	15	30
351	32+566	32+596	30.00	15	15	30
352	32+596	32+607	11.00	15	15	30
353	32+607	32+627	20.00	15	15	30
354	32+627	32+657	30.00	15	15	30
355	32+657	32+687	30.00	14	15	29
356	32+687	32+717	30.00	15	15	30
357	32+717	32+746	29.00	15	15	30
358	32+746	32+770	24.00	15	15	30
359	32+770	32+800	30.00	15	15	30
360	32+800	32+833	33.00	15	15	30
361	32+833	32+868	35.00	15	14	29
362	32+868	32+875	7.00	15	15	30
363	32+875	32+929	54.00	15	15	30
364	32+929	32+956	27.00	15	15	30
365	32+956	32+987	31.00	15	15	30
366	32+987	33+016	29.00	15	15	30
367	33+016	33+046	30.00	15	15	30
368	33+046	33+074	28.00	15	15	30
369	33+074	33+104	30.00	14	15	29
370	33+104	33+134	30.00	15	15	30
371	33+134	33+165	31.00	15	15	30
372	33+165	33+195	30.00	15	15	30
373	33+195	33+200	5.00	15	15	30
374	33+200	33+233	33.00	14	15	29
375	33+233	33+245	12.00	12	15	27

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
376	33+245	33+262	17.00	12	15	27
377	33+262	33+303	41.00	12	15	27
378	33+303	33+324	21.00	18	15	33
379	33+324	33+355	31.00	18	15	33
380	33+355	33+399	44.00	18	15	33
381	33+399	33+410	11.00	18	14	32
382	33+410	33+416	6.00	18	15	33
383	33+416	33+450	34.00	18	15	33
384	33+450	33+459	9.00	18	15	33
385	33+459	33+468	9.00	13	14	27
386	33+468	33+499	31.00	15	14	29
387	33+499	33+528	29.00	13	15	28
388	33+528	33+552	24.00	13	15	28
389	33+552	33+577	25.00	13	15	28
390	33+577	33+600	23.00	13	15	28
391	33+600	33+639	39.00	13	15	28
392	33+639	33+640	1.00	13	15	28
393	33+640	33+680	40.00	25	18	43
394	33+680	33+694	14.00	25	18	43
395	33+694	33+703	9.00	25	18	43
396	33+703	33+755	52.00	25	18	43
397	33+755	33+783	28.00	15	15	30
398	33+783	33+814	31.00	15	15	30
399	33+814	33+843	29.00	12	12	24
400	33+843	33+873	30.00	12	12	24
401	33+873	33+902	29.00	13	12	25
402	33+902	33+933	31.00	12	12	24
403	33+933	33+962	29.00	12	12	24
404	33+962	33+996	34.00	12	12	24
405	33+996	34+015	19.00	12	12	24
406	34+015	34+044	29.00	12	12	24
407	34+044	34+057	13.00	12	12	24
408	34+057	34+094	37.00	12	12	24
409	34+094	34+120	26.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
410	34+120	34+152	32.00	12	12	24
411	34+152	34+193	41.00	12	12	24
412	34+193	34+214	21.00	12	12	24
413	34+214	34+245	31.00	12	12	24
414	34+245	34+276	31.00	12	12	24
415	34+276	34+304	28.00	12	12	24
416	34+304	34+334	30.00	12	12	24
417	34+334	34+363	29.00	12	12	24
418	34+363	34+396	33.00	12	12	24
419	34+396	34+422	26.00	12	12	24
420	34+422	34+453	31.00	12	12	24
421	34+453	34+483	30.00	12	12	24
422	34+483	34+512	29.00	12	12	24
423	34+512	34+543	31.00	12	12	24
424	34+543	34+573	30.00	12	12	24
425	34+573	34+602	29.00	12	12	24
426	34+602	34+630	28.00	12	12	24
427	34+630	34+663	33.00	12	12	24
428	34+663	34+693	30.00	12	12	24
429	34+693	34+721	28.00	12	12	24
430	34+721	34+752	31.00	12	12	24
431	34+752	34+784	32.00	12	12	24
432	34+784	34+812	28.00	12	12	24
433	34+812	34+842	30.00	12	12	24
434	34+842	34+873	31.00	12	12	24
435	34+873	34+901	28.00	12	12	24
436	34+901	34+931	30.00	12	12	24
437	34+931	34+962	31.00	12	12	24
438	34+962	34+994	32.00	12	12	24
439	34+994	35+022	28.00	12	12	24
440	35+022	35+052	30.00	12	12	24
441	35+052	35+063	11.00	12	12	24
442	35+063	35+093	30.00	15	15	30
443	35+093	35+122	29.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
444	35+122	35+152	30.00	12	12	24
445	35+152	35+182	30.00	15	15	30
446	35+182	35+212	30.00	12	12	24
447	35+212	35+242	30.00	12	12	24
448	35+242	35+274	32.00	12	12	24
449	35+274	35+302	28.00	12	12	24
450	35+302	35+332	30.00	12	12	24
451	35+332	35+360	28.00	12	12	24
452	35+360	35+391	31.00	12	12	24
453	35+391	35+416	25.00	12	12	24
454	35+416	35+438	22.00	12	12	24
455	35+438	35+465	27.00	12	12	24
456	35+465	35+480	15.00	12	12	24
457	35+480	35+492	12.00	12	12	24
458	35+492	35+518	26.00	12	12	24
459	35+518	35+540	22.00	12	12	24
460	35+540	35+575	35.00	12	12	24
461	35+575	35+605	30.00	12	12	24
462	35+605	35+634	29.00	12	12	24
463	35+634	35+656	22.00	12	12	24
464	35+656	35+696	40.00	12	12	24
465	35+696	35+723	27.00	12	12	24
466	35+723	35+745	22.00	12	12	24
467	35+745	35+779	34.00	12	12	24
468	35+779	35+811	32.00	12	12	24
469	35+811	35+841	30.00	12	12	24
470	35+841	35+871	30.00	12	12	24
471	35+871	35+901	30.00	12	12	24
472	35+901	35+931	30.00	12	12	24
473	35+931	35+961	30.00	12	12	24
474	35+961	35+989	28.00	12	12	24
475	35+989	36+020	31.00	12	12	24
476	36+020	36+030	10.00	12	12	24
477	36+030	36+059	29.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
478	36+059	36+100	41.00	12	12	24
479	36+100	36+119	19.00	12	12	24
480	36+119	36+149	30.00	12	12	24
481	36+149	36+179	30.00	15	12	27
482	36+179	36+209	30.00	15	12	27
483	36+209	36+238	29.00	15	12	27
484	36+238	36+270	32.00	15	12	27
485	36+270	36+299	29.00	15	12	27
486	36+299	36+328	29.00	15	12	27
487	36+328	36+356	28.00	15	12	27
488	36+356	36+368	12.00	15	12	27
489	36+368	36+384	16.00	15	12	27
490	36+384	36+411	27.00	15	12	27
491	36+411	36+428	17.00	15	12	27
492	36+428	36+434	6.00	15	12	27
493	36+434	36+469	35.00	15	12	27
494	36+469	36+497	28.00	15	12	27
495	36+497	36+528	31.00	15	12	27
496	36+528	36+557	29.00	15	12	27
497	36+557	36+587	30.00	15	12	27
498	36+587	36+612	25.00	18	12	30
499	36+612	36+639	27.00	18	12	30
500	36+639	36+655	16.00	18	16	34
501	36+655	36+670	15.00	18	16	34
502	36+670	36+680	10.00	18	16	34
503	36+680	36+695	15.00	18	16	34
504	36+695	36+713	18.00	18	16	34
505	36+713	36+719	6.00	18	16	34
506	36+719	36+740	21.00	18	16	34
507	36+740	36+772	32.00	18	16	34
508	36+772	36+784	12.00	18	16	34
509	36+784	36+816	32.00	18	12	30
510	36+816	36+820	4.00	12	12	24
511	36+820	36+842	22.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
512	36+842	36+856	14.00	12	12	24
513	36+856	36+879	23.00	12	12	24
514	36+879	36+888	9.00	12	12	24
515	36+888	36+918	30.00	12	12	24
516	36+918	36+927	9.00	12	12	24
517	36+927	36+944	17.00	12	12	24
518	36+944	36+953	9.00	12	12	24
519	36+953	36+973	20.00	12	12	24
520	36+973	36+977	4.00	12	12	24
521	36+977	37+005	28.00	15	12	27
522	37+005	37+033	28.00	15	12	27
523	37+033	37+059	26.00	15	12	27
524	37+059	37+067	8.00	15	12	27
525	37+067	37+090	23.00	15	12	27
526	37+090	37+120	30.00	15	15	30
527	37+120	37+150	30.00	15	15	30
528	37+150	37+182	32.00	15	15	30
529	37+182	37+211	29.00	15	15	30
530	37+211	37+239	28.00	15	15	30
531	37+239	37+270	31.00	15	15	30
532	37+239	37+264	25.00	15	15	30
533	37+270	37+280	10.00	15	15	30
534	37+280	37+290	10.00	12	18	30
535	37+290	37+320	30.00	12	18	30
536	37+320	37+346	26.00	12	18	30
537	37+346	37+365	19.00	12	18	30
538	37+365	37+378	13.00	12	18	30
539	37+378	37+406	28.00	18	18	36
540	37+406	37+438	32.00	16	18	34
541	37+438	37+467	29.00	16	18	34
542	37+467	37+496	29.00	16	18	34
543	37+496	37+521	25.00	16	18	34
544	37+521	37+545	24.00	16	18	34
545	37+545	37+579	34.00	15	12	27

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
546	37+579	37+606	27.00	15	12	27
547	37+606	37+638	32.00	12	12	24
548	37+638	37+669	31.00	12	12	24
549	37+669	37+687	18.00	12	12	24
550	37+687	37+699	12.00	12	12	24
551	37+699	37+726	27.00	12	12	24
552	37+726	37+757	31.00	12	12	24
553	37+757	37+787	30.00	12	12	24
554	37+787	37+814	27.00	12	12	24
555	37+814	37+846	32.00	12	12	24
556	37+846	37+856	10.00	12	12	24
557	37+856	37+887	31.00	12	12	24
558	37+887	37+914	27.00	12	12	24
559	37+914	37+948	34.00	12	12	24
560	37+948	37+975	27.00	12	12	24
561	37+975	38+005	30.00	12	12	24
562	38+005	38+027	22.00	12	12	24
563	38+027	38+033	6.00	12	12	24
564	38+033	38+041	8.00	18	12	30
565	38+041	38+088	47.00	18	12	30
566	38+088	38+100	12.00	12	12	24
567	38+100	38+117	17.00	12	12	24
568	38+117	38+140	23.00	12	12	24
569	38+140	38+177	37.00	12	12	24
570	38+177	38+200	23.00	12	12	24
571	38+200	38+220	20.00	12	12	24
572	38+220	38+230	10.00	12	12	24
573	38+230	38+258	28.00	12	12	24
574	38+258	38+289	31.00	12	12	24
575	38+289	38+318	29.00	12	12	24
576	38+318	38+348	30.00	12	12	24
577	38+348	38+378	30.00	12	12	24
578	38+378	38+408	30.00	12	12	24
579	38+408	38+438	30.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
580	38+438	38+468	30.00	12	12	24
581	38+468	38+498	30.00	12	12	24
582	38+498	38+528	30.00	12	12	24
583	38+528	38+558	30.00	12	12	24
584	38+558	38+588	30.00	12	12	24
585	38+588	38+618	30.00	12	12	24
586	38+618	38+646	28.00	12	12	24
587	38+646	38+674	28.00	12	12	24
588	38+674	38+705	31.00	12	12	24
589	38+705	38+734	29.00	15	12	27
590	38+734	38+764	30.00	15	12	27
591	38+764	38+793	29.00	15	12	27
592	38+793	38+820	27.00	15	15	30
593	38+820	38+834	14.00	15	15	30
594	38+834	38+864	30.00	15	15	30
595	38+864	38+894	30.00	15	15	30
596	38+894	38+924	30.00	15	15	30
597	38+924	38+954	30.00	15	15	30
598	38+954	38+984	30.00	15	15	30
599	38+984	39+014	30.00	15	15	30
600	39+014	39+044	30.00	15	15	30
601	39+044	39+074	30.00	15	15	30
602	39+074	39+104	30.00	15	15	30
603	39+104	39+134	30.00	15	15	30
604	39+134	39+164	30.00	15	15	30
605	39+164	39+194	30.00	15	15	30
606	39+194	39+224	30.00	15	15	30
607	39+224	39+254	30.00	15	15	30
608	39+254	39+284	30.00	15	15	30
609	39+284	39+314	30.00	15	15	30
610	39+314	39+344	30.00	15	15	30
611	39+344	39+374	30.00	15	15	30
612	39+374	39+404	30.00	15	15	30
613	39+404	39+434	30.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
614	39+434	39+464	30.00	15	15	30
615	39+464	39+494	30.00	15	15	30
616	39+494	39+524	30.00	15	15	30
617	39+524	39+554	30.00	15	15	30
618	39+554	39+584	30.00	15	15	30
619	39+584	39+614	30.00	15	15	30
620	39+614	39+644	30.00	15	15	30
621	39+644	39+674	30.00	15	15	30
622	39+674	39+704	30.00	15	15	30
623	39+704	39+734	30.00	15	15	30
624	39+734	39+764	30.00	15	15	30
625	39+764	39+794	30.00	15	15	30
626	39+794	39+824	30.00	15	15	30
627	39+824	39+831	7.00	15	15	30
628	39+831	39+861	30.00	15	15	30
629	39+861	39+891	30.00	15	15	30
630	39+891	39+921	30.00	15	15	30
631	39+921	39+951	30.00	15	15	30
632	39+951	39+981	30.00	15	15	30
633	39+981	40+011	30.00	15	15	30
634	40+011	40+041	30.00	15	15	30
635	40+041	40+071	30.00	15	15	30
636	40+071	40+101	30.00	15	15	30
637	40+101	40+131	30.00	15	15	30
638	40+131	40+161	30.00	15	15	30
639	40+161	40+191	30.00	15	15	30
640	40+191	40+221	30.00	15	15	30
641	40+221	40+250	29.00	15	15	30
642	40+250	40+274	24.00	15	15	30
643	40+274	40+305	31.00	15	15	30
644	40+305	40+315	10.00	15	15	30
645	40+315	40+334	19.00	15	15	30
646	40+334	40+365	31.00	15	15	30
647	40+365	40+395	30.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
648	40+395	40+425	30.00	15	15	30
649	40+425	40+454	29.00	15	15	30
650	40+454	40+483	29.00	15	15	30
651	40+483	40+513	30.00	15	15	30
652	40+513	40+543	30.00	15	15	30
653	40+543	40+573	30.00	15	15	30
654	40+573	40+603	30.00	15	15	30
655	40+603	40+633	30.00	15	15	30
656	40+633	40+663	30.00	15	15	30
657	40+663	40+693	30.00	15	15	30
658	40+693	40+723	30.00	15	15	30
659	40+723	40+753	30.00	15	15	30
660	40+753	40+783	30.00	15	15	30
661	40+783	40+800	17.00	15	15	30
662	40+800	40+840	40.00	15	15	30

3. Carriageway

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

S. no	Design Chainage From	Design Chainage To	C/W width (m)
1	0+000	40+840	5.50 -7 m varies

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		
1	8+800	Well Foundation	Rcc Circular Pier & Rcc Wall Type Abutment	Box Type Girder	2 x 40.30 + 1 x 50.0	12.00

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	0+935	Raft	RCC Wall	RCC Slab	2 x 6	12.00	
2	3+280	WELL	RCC	STELL TRUSS	1 x 37.5	8.00	
3	5+640	OPEN	STONE MASONARY	RCC T BEAM	1 x 16	5.00	
4	11+815	OPEN	RCC WALL TYPE	RCC SLAB	1 x 11	8.00	
5	24+990	OPEN	RCC WALL TYPE	RCC SLAB	1 x 8	8.40	
6	31+485	WELL	RCC	STELL TRUSS	1 x 31	8.00	
7	32+995	WELL	RCC	STELL TRUSS	1 x 45	8.00	
8	36+465	OPEN	RCC WALL TYPE	RCC T BEAM	1 x 25	8.00	

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Sub-Structure	Supper-structure			
9	40+805	OPEN	RCC WALL TYPE	RCC T BEAM	1 x 16	4.80	
10	42+230	OPEN	RCC WALL TYPE	RCC SLAB	1 x 10.80	8.00	
11	42+380	OPEN	RCC WALL TYPE	RCC T BEAM	1 x 25	8.70	
12	43+295	OPEN	RCC WALL TYPE	RCC T BEAM	1 x 7	9.00	

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) Slab Culverts

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
1	0+175	Slab Culvert	1X4	8.6
2	1+485	Slab Culvert	1X1.5	9
3	1+610	Slab Culvert	1X1.5	9
4	1+750	Slab Culvert	1X4	9
5	2+515	Slab Culvert	1X1.5	9
6	4+210	Slab Culvert	1X1.5	9
7	4+400	Slab Culvert	1X1.5	9
8	4+630	Slab Culvert	1X1.5	9
9	4+930	Slab Culvert	1X1.5	9
10	7+860	Slab Culvert	1X1.5	9
11	8+180	Slab Culvert	1X1.5	9
12	8+620	Slab Culvert	1X2.5	9
13	9+150	Slab Culvert	1X2.5	9
14	9+715	Slab Culvert	1X1.5	9

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
15	9+950	Slab Culvert	1X1.5	9
16	10+095	Slab Culvert	1X1.5	9
17	10+125	Slab Culvert	1X1.5	9
18	10+330	Slab Culvert	1X1.5	9
19	10+395	Slab Culvert	1X1	9
20	10+790	Slab Culvert	1X1	9
21	10+895	Slab Culvert	1X1	9
22	11+270	Slab Culvert	1X1.5	9
23	11+420	Slab Culvert	1X1.5	9
24	12+000	Slab Culvert	1X3	9
25	12+300	Slab Culvert	1X3.5	9
26	12+360	Slab Culvert	1X6	9
27	12+615	Slab Culvert	1X2	9
28	12+745	Slab Culvert	1X1.5	9
29	12+800	Slab Culvert	1X1	10
30	12+945	Slab Culvert	1X1.5	9
31	13+045	Slab Culvert	1X1	9
32	13+165	Slab Culvert	1X1	9
33	13+255	Slab Culvert	1X4	9
34	13+475	Slab Culvert	1X4	9
35	13+545	Slab Culvert	1X1	9
36	13+630	Slab Culvert	1X4	10
37	13+900	Slab Culvert	1X1.5	10
38	13+960	Slab Culvert	1X1.5	10
39	14+025	Slab Culvert	1X1	9
40	14+255	Slab Culvert	1X1	9
41	14+505	Slab Culvert	1X1	9
42	14+845	Slab Culvert	1X1.5	9
43	15+555	Slab Culvert	1X1	9
44	15+785	Slab Culvert	1X1.5	9
45	15+805	Slab Culvert	1X1.5	9
46	16+100	Slab Culvert	1X1.5	10
47	16+155	Slab Culvert	1X1	9
48	16+585	Slab Culvert	1X1.5	9
49	16+620	Slab Culvert	1X1.5	10
50	16+860	Slab Culvert	1X1.5	10
51	17+570	Slab Culvert	1X1.5	9
52	17+670	Slab Culvert	1X1	10
53	17+770	Slab Culvert	1X1.5	9
54	17+970	Slab Culvert	1X2	9
55	18+060	Slab Culvert	1X1	10
56	18+415	Slab Culvert	1X1	9
57	18+575	Slab Culvert	1X1	9

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
58	19+130	Slab Culvert	1X1.5	10
59	19+255	Slab Culvert	1X1.5	9
60	19+610	Slab Culvert	1X3.5	9
61	19+670	Slab Culvert	1X1.5	9
62	20+115	Slab Culvert	1X4	9
63	20+545	Slab Culvert	1X4	9
64	20+790	Slab Culvert	1X1.5	9
65	20+845	Slab Culvert	1X1.5	9
66	21+115	Slab Culvert	1X1	9
67	21+305	Slab Culvert	1X1.5	9
68	21+655	Slab Culvert	1X1.5	9
69	21+820	Slab Culvert	1X6	9
70	22+090	Slab Culvert	1X1.5	9
71	22+220	Slab Culvert	1X1.5	9
72	22+275	Slab Culvert	1X1.5	9
73	22+720	Slab Culvert	1X1.5	9
74	22+785	Slab Culvert	1X1.5	9
75	23+340	Slab Culvert	1X5.5	9
76	23+445	Slab Culvert	1X1.5	9
77	23+600	Slab Culvert	1X1	9
78	23+700	Slab Culvert	1X1	9
79	23+825	Slab Culvert	1X1.5	9
80	24+090	Slab Culvert	1X1.5	9
81	24+140	Slab Culvert	1X3.5	9
82	24+525	Slab Culvert	1X3.5	9
83	25+545	Slab Culvert	1X1	9
84	25+765	Slab Culvert	1X1.5	9
85	26+005	Slab Culvert	1X1	9
86	26+165	Slab Culvert	1X1.5	9
87	26+355	Slab Culvert	1X1.5	9
88	26+590	Slab Culvert	1X1	9
89	26+955	Slab Culvert	1X1.5	9
90	27+230	Slab Culvert	1X3.5	9
91	27+470	Slab Culvert	1X1.5	9
92	27+615	Slab Culvert	1X1.5	9
93	27+660	Slab Culvert	1X1	9
94	27+855	Slab Culvert	1X1	9
95	27+950	Slab Culvert	1X3	9
96	28+205	Slab Culvert	1X1.5	9
97	28+520	Slab Culvert	1X3.5	9
98	28+815	Slab Culvert	1X1	9
99	29+070	Slab Culvert	1X1	9
100	29+120	Slab Culvert	1X3.5	9

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
101	29+295	Slab Culvert	1X1.5	9
102	29+390	Slab Culvert	1X1.5	9
103	29+605	Slab Culvert	1X1.5	9
104	29+860	Slab Culvert	1X2.5	9
105	30+140	Slab Culvert	1X1.5	9
106	30+290	Slab Culvert	1X1.5	9
107	30+450	Slab Culvert	1X1.5	9
108	31+090	Slab Culvert	1X2.5	9
109	31+295	Slab Culvert	1X2.5	9
110	32+200	Slab Culvert	1X1	10
111	32+510	Slab Culvert	1X2.5	9
112	32+715	Slab Culvert	1X2.5	9
113	32+855	Slab Culvert	1X1	9
114	33+340	Slab Culvert	1X2.5	9
115	33+485	Slab Culvert	1X2.5	9
116	33+785	Slab Culvert	1X3	9
117	34+115	Slab Culvert	1X1.2	9
118	34+650	Slab Culvert	1X2.5	9
119	34+785	Slab Culvert	1X1.5	9
120	35+060	Slab Culvert	1X3	9
121	35+330	Slab Culvert	1X1.5	9
122	35+905	Slab Culvert	1X1.5	9
123	37+040	Slab Culvert	1X1.5	9
124	37+400	Slab Culvert	1X1.5	9
125	37+560	Slab Culvert	1X4.1	9
126	37+670	Slab Culvert	1X2.5	9
127	37+990	Slab Culvert	1X4.1	9
128	38+220	Slab Culvert	1X1	9
129	38+310	Slab Culvert	1X1.5	9
130	39+235	Slab Culvert	1X2	9
131	39+520	Slab Culvert	1X1.5	9
132	39+805	Slab Culvert	1X1.5	9
133	39+975	Slab Culvert	1X1.5	9
134	40+470	Slab Culvert	1X1	9
135	40+620	Slab Culvert	1X1.5	9
136	41+030	Slab Culvert	1X1.5	9
137	41+245	Slab Culvert	1X1.5	9
138	41+320	Slab Culvert	1X2	9
139	41+395	Slab Culvert	1X1.5	9
140	41+490	Slab Culvert	1X1.5	9
141	41+560	Slab Culvert	1X2	9
142	41+800	Slab Culvert	1X1	9
143	41+990	Slab Culvert	1X1	9

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
144	43+000	Slab Culvert	1X1+1X0.75	9
145	44+060	Slab Culvert	1X1	9

(b) Box Culvert

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
1	5+530	Box Culvert	1X1.5	9
2	18+695	Box Culvert	1X1.5	9
3	24+760	Box Culvert	1X1.5	9
4	35+830	Box Culvert	1X1.5	9
5	38+750	Box Culvert	1X2.0	9
6	38+900	Box Culvert	1X2.0	9
7	38+970	Box Culvert	1X1.5	9
8	39+100	Box Culvert	1X1.0	9
9	39+180	Box Culvert	1X1.5	9
10	39+330	Box Culvert	1X1.5	9
11	40+070	Box Culvert	1X1.5	9
12	40+300	Box Culvert	1X1.0	9
13	40+340	Box Culvert	1X1.0	9

(C) Hume Pipe Culverts

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
1	4+490	HPC	5 x 1.2	9.00
2	23+785	HPC	1 x 1.2	9.00
3	24+370	HPC	1 x 1.2	9.00
4	24+855	HPC	1 x 1.2	9.00
5	26+440	HPC	1 x 1.2	12.00
6	27+200	HPC	1 x 1.2	9.00
7	27+505	HPC	1 x 1.2	9.00
8	27+745	HPC	1 x 1.2	10.00
9	28+080	HPC	1 x 1.2	9.00
10	28+320	HPC	1 x 1.2	9.00
11	28+675	HPC	1 x 1.2	12.00
12	28+880	HPC	1 x 1.2	9.00
13	29+940	HPC	1 x 1.2	9.00
14	30+570	HPC	1 x 1.2	10.00

Sr. No.	Existing Chainage (m)	Type of Culvert	Span/ Opening with span Length (m)	Width (m)
15	36+750	HPC	1 x 1.2	10.00
16	42+780	HPC	1 x 1.2	9.00
17	43+535	HPC	1 x 1.2	9.00

11. Bus shelters

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

S.N.	Chainage	Side
1	0.110	RHS
2	1.470	RHS
3	4.500	LHS
4	6.600	RHS
5	9.200	RHS
6	16.690	RHS
7	17+320	LHS
8	21.780	LHS
9	23.730	RHS
10	39.000	RHS
11	39.290	RHS

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	0.000	0.100		LHS	0.100
2	0.160	0.200		LHS	0.040
3	0.865	0.875		RHS	0.010
4	0.960	0.970		LHS	0.010
5	0.970	1.085		RHS	0.115
6	1.320	1.350		RHS	0.030
7	1.560	1.640		RHS	0.080
8	1.690	1.780		BS	0.090
9	1.690	1.920		LHS	0.230
10	1.950	2.120		RHS	0.170
11	1.950	2.200		LHS	0.250
12	2.240	2.440		LHS	0.200

S. No.	Location		Type & Side		Length (Km)
	From (Km.)	To (Km.)	Masonry/cc (Pucca)	Earthen (Kutcha)	
13	2.380	2.595		BS	0.215
14	2.595	2.710		BHS	0.115
15	2.790	3.050		LHS	0.260
16	3.120	3.250		BS	0.130
17	3.310	3.810		BS	0.500
18	4.200	4.290		BS	0.090
19	4.950	5.040		LHS	0.090
20	5.280	5.550		LHS	0.270
21	5.550	5.600		BS	0.050
22	5.710	5.790		BS	0.080
23	6.110	6.300		LHS	0.190
24	6.510	6.600		LHS	0.090
25	6.715	6.860		LHS	0.145
26	6.980	7.315		BS	0.335
27	6.980	7.850		LHS	0.870
28	8.500	8.580		BS	0.080
29	8.500	8.630		RHS	0.130
30	9.450	9.510		LHS	0.060
31	10.100	10.610		LHS	0.510
32	10.900	11.090		LHS	0.190
33	11.090	11.260		LHS	0.170
34	11.350	11.740		BS	0.390
35	11.740	11.770		LHS	0.030
36	12.170	12.490		LHS	0.320
37	13.490	13.530		BS	0.040
38	13.490	13.620		LHS	0.130
39	13.640	13.915		LHS	0.275
40	14.050	14.425		LHS	0.375
41	14.700	15.440		LHS	0.740
42	15.470	15.620		LHS	0.150
43	15.700	15.710		RHS	0.010
44	15.930	16.090		LHS	0.160
45	16.410	16.580		LHS	0.170
46	16.580	17.180	LHS		0.600
47	18.510	18.580		LHS	0.070
48	18.700	18.920		BHS	0.220
49	19.340	19.490		LHS	0.150
50	19.600	19.970		BS	0.370
51	19.600	20.080		LHS	0.480
52	20.180	20.225	LHS		0.045
53	20.350	20.800		BS	0.450
54	20.920	21.210		BS	0.290
55	20.920	21.470		RHS	0.550

S. No.	Location		Type & Side		Length (Km)
	From (Km.)	To (Km.)	Masonry/cc (Pucca)	Earthen (Kutcha)	
56	20.920	21.780		BS	0.860
57	21.910	22.000		LHS	0.090
58	22.000	22.820		BS	0.820
59	22.920	23.000	LHS		0.080
60	23.340	23.690		BS	0.350
61	23.770	24.040		LHS	0.270
62	24.040	24.220		BS	0.180
63	24.220	24.550		BS	0.330
64	25.230	25.310	LHS		0.080
65	25.470	25.540		LHS	0.070
66	25.570	26.200		LHS	0.630
67	26.210	26.390		RHS	0.180
68	26.400	26.640		BS	0.240
69	28.460	28.710		LHS	0.250
70	28.720	28.820		BS	0.100
71	29.270	29.740		RHS	0.470
72	30.230	31.460		BS	1.230
73	31.560	31.880		LHS	0.320
74	32.310	32.980		BS	0.670
75	33.280	34.410		BS	1.130
76	33.280	35.000		RHS	1.720
77	35.090	35.560		BS	0.470
78	36.920	37.110	LHS	RHS	0.190
79	37.300	37.330		LHS	0.030
80	37.470	37.630	BS		0.160
81	37.670	37.800		LHS	0.130
82	37.800	37.930	LHS		0.130
83	38.200	38.400		LHS	0.200
84	38.490	38.600		LHS	0.110
85	38.660	39.110		LHS	0.450
86	39.380	39.520	LHS		0.140
87	39.380	39.650		RHS	0.270
88	39.800	40.150		LHS	0.350
89	40.650	41.050		LHS	0.400
90	41.250	41.510		BS	0.260
91	41.520	41.690		LHS	0.170
92	42.000	42.230		RHS	0.230
93	43.570	43.620		BS	0.050
94	43.790	44.080		RHS	0.290
95	44.100	44.400		BS	0.300

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)
1	33+965		At grade (T)		NH-127B			
2	40+840		At grade (Y)		NH-217 & NH-127B			

(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.	Location		Sides	Type	
	From km	To km		T -junction	Cross road
1	0+040		RHS	T	VR
2	0+120		LHS	Y	VR
3	0+180		RHS	T	VR
4	0+195		LHS	T	VR
5	0+290		RHS	T	VR
6	0+400		RHS	T	VR
7	0+440		LHS	T	VR
8	0+660		LHS	T	VR
9	0+790		RHS	T	VR
10	0+840		LHS	T	VR
11	1+147		LHS	T	VR
12	1+270		RHS	T	VR
13	1+365		LHS	T	VR
14	1+464		RHS	T	VR
15	1+683		LHS	T	VR
16	1+732		RHS	Y	VR
17	1+823		LHS	T	VR
18	1+950		LHS	T	VR
19	2+076		LHS	T	VR
20	2+147		RHS	T	VR
21	2+261		LHS	T	VR
22	2+575		LHS	T	VR
23	2+940		LHS	T	VR
24	3+123		RHS	Y	VR
25	3+505		LHS	T	VR
26	3+820		LHS	T	VR
27	4+030		RHS	Y	VR
28	4+049		LHS	T	VR
29	4+448		RHS	T	VR
30	4+537		LHS	T	VR
31	4+700		LHS	T	VR

S. No.	Location		Sides	Type	
	From km	To km		T -junction	Cross road
32	4+856		LHS	T	VR
33	5+170		LHS	Y	VR
34	5+199		RHS	Y	VR
35	5+710		LHS	T	VR
36	6+365		RHS	T	VR
37	6+625		RHS	T	VR
38	6+980		RHS	T	VR
39	8+000		RHS	T	VR
40	8+220		RHS	T	VR
41	8+564		LHS	Y	VR
42	8+710		RHS	T	VR
43	8+900		LHS	T	VR
44	9+130		LHS	T	VR
45	11+300		LHS	Y	VR
46	11+560		RHS	Y	VR
47	11+570		LHS	T	VR
48	11+680		RHS	T	VR
49	11+760		LHS	T	VR
50	11+870		LHS	T	VR
51	11+900		RHS	Y	VR
52	12+230		LHS	Y	VR
53	12+720		RHS	Y	VR
54	13+950		RHS	T	VR
55	16+160		RHS	Y	VR
56	16+200		LHS	T	VR
57	16+980		LHS	Y	VR
58	17+500		LHS	Y	VR
59	17+550		LHS	Y	VR
60	18+030		RHS	Y	VR
61	18+360		LHS	T	VR
62	19+140		LHS	T	VR
63	19+450		RHS	Y	VR
64	19+460		LHS	T	VR
65	19+540		LHS	T	VR
66	19+915		RHS	T	VR
67	20+000		LHS	Y	VR
68	20+100		LHS	T	VR
69	20+110		RHS	Y	VR
70	20+250		LHS	T	VR
71	20+310		LHS	Y	VR
72	20+615		LHS	Y	VR
73	21+640		LHS	Y	VR
74	22+015		RHS	T	VR

S. No.	Location		Sides	Type	
	From km	To km		T -junction	Cross road
75	23+140		LHS	Y	VR
76	23+150		RHS	T	VR
77	23+250		LHS	T	VR
78	23+260		RHS	T	VR
79	24+400		RHS	Y	VR
80	24+900		RHS	T	VR
81	27+820		RHS	T	VR
82	32+635		RHS	T	VR
83	32+890		LHS	Y	VR
84	33+030		RHS	T	VR
85	33+020		LHS	Y	VR
86	33+100		LHS	Y	VR
87	33+340		RHS	T	VR
88	33+440		LHS	T	VR
89	33+770		RHS	T	VR
90	34+080		RHS	T	VR
91	34+300		RHS	T	VR
92	34+370		LHS	T	VR
93	34+610		RHS	T	VR
94	34+678		RHS	Y	VR
95	34+715		RHS	Y	VR
96	34+930		LHS	Y	VR
97	35+130		LHS	Y	VR
98	35+335		LHS	T	VR
99	35+535		RHS	T	VR
100	35+890		LHS	T	VR
101	35+970		RHS	T	VR
102	36+020		LHS	T	VR
103	36+030		LHS	T	VR
104	36+060		RHS	T	VR
105	36+242		LHS	T	VR
106	36+352		LHS	T	VR
107	36+610		LHS	T	VR
108	36+870		RHS	T	VR
109	36+935		LHS	T	VR
110	37+080		RHS	T	VR
111	37+170		LHS	T	VR
112	38+160		LHS	T	VR
113	38+200		RHS	T	VR
114	38+340		RHS	T	VR
115	38+770		LHS	T	VR
116	38+930		RHS	Y	VR
117	39+825		RHS	T	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 44+40	44.400	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:

Sr.No.	**Proposed ROW**					
	Design (Km.) From	**Design (Km.) To**	**Length (m)**	**PROW (m.) LHS**	**PROW (m.) RHS**	**Width of PROW (m.)**
1	0+000	0+021	21.00	22	22	44
2	0+021	0+030	9.00	22	22	44
3	0+030	0+043	13.00	22	22	44
4	0+043	0+045	2.00	22	21	43
5	0+045	0+158	113.00	22	21	43
6	0+158	0+161	3.00	12	12	24
7	0+161	0+183	22.00	12	12	24
8	0+183	0+384	201.00	22	22	44
9	0+384	0+396	12.00	22	22	44
10	0+396	1+224	828.00	22	22	44
11	1+224	1+314	90.00	22	22	44

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
12	1+314	3+370	2056.00	22	22	44
13	3+370	3+422	52.00	12	22	34
14	3+422	3+844	422.00	22	22	44
15	3+844	3+939	95.00	22	22	44
16	3+939	4+016	77.00	16	22	38
17	4+016	4+047	31.00	12	22	34
18	4+044	4+047	3.00	22	16	38
19	4+047	4+068	21.00	22	16	38
20	4+068	4+334	266.00	22	22	44
21	4+334	4+377	43.00	12	22	34
22	4+377	4+464	87.00	22	22	44
23	4+464	4+472	8.00	22	22	44
24	4+472	4+519	47.00	22	22	44
25	4+519	4+557	38.00	22	22	44
26	4+557	4+561	4.00	12	22	34
27	4+561	4+734	173.00	22	22	44
28	4+734	4+772	38.00	15	22	37
29	4+772	4+880	108.00	14	22	36
30	4+887	4+941	54.00	22	22	44
31	4+941	4+981	40.00	22	22	44
32	4+981	5+061	80.00	22	22	44
33	5+061	5+117	56.00	22	22	44
34	5+117	5+143	26.00	22	22	44
35	5+143	5+154	11.00	22	22	44
36	5+154	5+327	173.00	22	16	38
37	5+327	5+334	7.00	12	12	24
38	5+334	5+493	159.00	22	22	44
39	5+493	8+680	3187.00	22	22	44
40	8+680	8+805	125.00	26	15	41
41	8+805	8+930	125.00	25	22	47
42	8+930	9+000	70.00	12	40	52
43	9+000	9+137	137.00	26	22	48
44	9+137	9+677	540.00	12	22	34
45	9+677	9+690	13.00	12	12	24
46	9+690	9+745	55.00	12	12	24
47	9+745	9+930	185.00	12	12	24
48	9+930	9+966	36.00	14.5	12.5	27

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
49	9+966	10+410	444.00	12	12	24
50	10+410	10+472	62.00	12	12	24
51	10+472	11+316	844.00	12	22	34
52	11+316	11+407	91.00	22	22	44
53	11+407	11+907	500.00	22	22	43
54	11+907	11+910	3.00	22	22	43
55	11+910	11+950	40.00	16	22	38
56	11+950	12+015	65.00	12	22	34
57	12+015	12+285	270.00	16	22	38
58	12+285	12+400	115.00	28	22	50
59	12+400	12+457	57.00	20	22	42
60	12+457	12+490	33.00	20	20	40
61	12+490	12+543	53.00	20	22	42
62	12+543	12+568	25.00	16	22	38
63	12+568	12+682	114.00	22	22	44
64	12+682	12+755	73.00	20	22	42
65	12+755	12+835	80.00	22	50	72
66	12+835	12+843	8.00	22	50	72
67	12+843	12+872	29.00	22	50	72
68	12+872	12+921	49.00	22	56	78
69	12+921	12+966	45.00	12	56	68
70	12+966	12+980	14.00	12	21	33
71	12+980	13+033	53.00	12	21	33
72	13+033	13+131	98.00	22	30	52
73	13+131	13+200	69.00	28	21	49
74	13+200	13+300	100.00	28	15	43
75	13+300	13+331	31.00	28	21	49
76	13+331	13+360	29.00	22	21	43
77	13+360	13+390	30.00	22	40	62
78	13+390	13+415	25.00	22	21	43
79	13+415	13+457	42.00	18	20	38
80	13+457	13+517	60.00	18	12	30
81	13+517	13+560	43.00	18	12	30
82	13+560	13+585	25.00	22	22	44
83	13+585	13+600	15.00	22	48	70
84	13+600	13+715	115.00	22	48	70
85	13+715	13+800	85.00	18	22	40
86	13+800	13+920	120.00	22	22	44

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
87	13+920	13+955	35.00	12	22	34
88	13+955	13+961	6.00	22	22	44
89	13+961	14+000	39.00	22	22	44
90	14+000	14+008	8.00	22	40	62
91	14+008	14+026	18.00	16	40	56
92	14+026	14+075	49.00	22	40	62
93	14+075	14+085	10.00	20	22	42
94	14+085	14+100	15.00	20	22	42
95	14+100	14+150	50.00	20	22	42
96	14+150	14+155	5.00	22	22	44
97	14+155	14+185	30.00	22	22	44
98	14+185	14+235	50.00	22	18	40
99	14+235	14+290	55.00	22	22	44
100	14+290	14+360	70.00	22	16	38
101	14+360	14+390	30.00	22	22	44
102	14+390	14+440	50.00	20	22	42
103	14+440	14+465	25.00	22	22	44
104	14+465	14+475	10.00	22	22	44
105	14+475	14+565	90.00	18	22	40
106	14+565	14+595	30.00	22	22	44
107	14+595	14+603	8.00	22	20	42
108	14+603	14+635	32.00	20	20	40
109	14+635	14+655	20.00	20	20	40
110	14+655	14+705	50.00	22	22	44
111	14+705	14+800	95.00	22	20	42
112	14+800	14+845	45.00	22	25	47
113	14+845	14+850	5.00	22	25	47
114	14+850	15+026	176.00	36	22	58
115	15+026	15+038	12.00	36	25	61
116	15+038	15+050	12.00	36	25	61
117	15+050	15+131	81.00	36	22	58
118	15+131	15+170	39.00	36	25	61
119	15+170	15+200	30.00	45	25	70
120	15+200	15+220	20.00	45	35	80
121	15+220	15+277	57.00	45	22	67
122	15+277	15+285	8.00	45	35	80
123	15+285	15+320	35.00	60	35	95
124	15+320	15+337	17.00	60	35	95

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
125	15+337	15+416	79.00	60	22	82
126	15+416	15+480	64.00	60	35	95
127	15+480	15+520	40.00	60	22	82
128	15+520	15+530	10.00	60	22	82
129	15+530	15+600	70.00	60	35	95
130	15+600	15+650	50.00	63	35	98
131	15+650	15+672	22.00	63	22	85
132	15+672	15+729	57.00	63	40	103
133	15+729	15+770	41.00	63	40	103
134	15+770	15+785	15.00	63	40	103
135	15+785	15+800	15.00	63	40	103
136	15+800	15+867	67.00	60	22	82
137	15+867	15+885	18.00	60	40	100
138	15+885	15+900	15.00	60	40	100
139	15+900	16+040	140.00	50	40	90
140	16+040	16+055	15.00	50	22	72
141	16+055	16+062	7.00	50	22	72
142	16+062	16+100	38.00	50	40	90
143	16+100	16+114	14.00	50	45	95
144	16+114	16+170	56.00	50	45	95
145	16+170	16+200	30.00	50	45	95
146	16+200	16+210	10.00	22	40	62
147	16+210	16+230	20.00	22	40	62
148	16+230	16+250	20.00	35	42	77
149	16+250	16+284	34.00	35	42	77
150	16+284	16+300	16.00	35	42	77
151	16+300	16+430	130.00	30	42	72
152	16+430	16+500	70.00	30	45	75
153	16+500	16+600	100.00	19	40	59
154	16+600	16+610	10.00	25	22	47
155	16+610	16+630	20.00	19	22	41
156	16+630	16+650	20.00	20	30	50
157	16+650	16+653	3.00	20	30	50
158	16+653	16+662	9.00	20	30	50
159	16+662	16+700	38.00	20	30	50

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
160	16+700	16+713	13.00	20	20	40
161	16+713	16+755	42.00	20	20	40
162	16+755	16+770	15.00	18	20	38
163	16+770	16+800	30.00	18	20	38
164	16+800	16+820	20.00	18	16	34
165	16+820	16+830	10.00	12	16	28
166	16+830	16+900	70.00	12	16	28
167	16+900	17+023	123.00	35	25	60
168	17+023	17+050	27.00	19	12	31
169	17+050	17+069	19.00	12	12	24
170	17+069	17+100	31.00	12	12	24
171	17+100	17+124	24.00	19	12	31
172	17+124	17+200	76.00	19	14	33
173	17+200	17+310	110.00	19	15	34
174	17+310	17+350	40.00	19	14	33
175	17+350	17+432	82.00	15	14	29
176	17+432	17+533	101.00	19	14	33
177	17+533	17+559	26.00	19	12	31
178	17+559	17+567	8.00	19	14	33
179	17+567	17+600	33.00	23	14	37
180	17+600	17+665	65.00	32	16	48
181	17+665	17+700	35.00	32	16	48
182	17+700	17+728	28.00	23	12	35
183	17+728	17+756	28.00	23	12	35
184	17+756	17+780	24.00	19	12	31
185	17+780	17+900	120.00	12	12	24
186	17+900	17+910	10.00	19	12	31
187	17+910	18+000	90.00	18	12	30
188	18+000	18+046	46.00	18	12	30
189	18+046	18+100	54.00	16	12	28
190	18+100	18+200	100.00	16	12	28
191	18+200	18+272	72.00	12	12	24
192	18+272	18+291	19.00	12	12	24
193	18+291	18+318	27.00	22	12	34

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
194	18+318	18+650	332.00	22	31	53
195	18+650	18+681	31.00	22	22	44
196	18+681	18+900	219.00	22	22	44
197	18+900	18+928	28.00	22	22	44
198	18+928	19+288	360.00	19	22	41
199	19+288	19+308	20.00	19	22	41
200	19+308	19+506	198.00	20	22	42
201	19+506	20+018	512.00	30	19	48
202	20+018	21+665	1647.00	30	19	48
203	21+665	21+785	120.00	30	22	52
204	21+785	21+816	31.00	15	22	37
205	21+816	21+913	97.00	30	22	52
206	21+913	22+041	128.00	12	22	34
207	22+041	22+349	308.00	30	22	52
208	22+349	22+453	104.00	30	12	42
209	22+453	22+620	167.00	30	22	52
210	22+620	22+693	73.00	15	22	37
211	22+693	22+783	90.00	30	22	52
212	22+783	22+828	45.00	15	22	37
213	22+828	23+046	218.00	30	22	52
214	23+046	23+160	114.00	22	22	44
215	23+160	23+204	44.00	22	22	44
216	23+204	23+470	266.00	30	22	52
217	23+470	23+579	109.00	20	22	42
218	23+579	23+604	25.00	14	22	36
219	23+604	23+640	36.00	30	22	52
220	23+640	23+670	30.00	30	20	50
221	23+670	23+700	30.00	30	22	52
222	23+700	23+746	46.00	30	22	52
223	23+746	23+764	18.00	30	22	52
224	23+764	23+886	122.00	30	22	52
225	23+886	23+940	54.00	30	22	52
226	23+940	23+972	32.00	20	22	42
227	23+972	24+008	36.00	22	22	44
228	24+008	24+025	17.00	22	12	34

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
229	24+025	24+047	22.00	19	12	31
230	24+047	24+060	13.00	19	22	40
231	24+060	24+080	20.00	19	22	40
232	24+080	24+188	108.00	19	22	40
233	24+188	24+223	35.00	16	22	38
234	24+223	24+263	40.00	16	12	28
235	24+263	24+276	13.00	12	12	24
236	24+276	24+288	12.00	12	22	34
237	24+288	24+300	12.00	19	22	40
238	24+300	24+350	50.00	19	38	57
239	24+350	24+374	24.00	12	38	50
240	24+374	24+420	46.00	19	38	57
241	24+420	24+567	147.00	18	22	40
242	24+567	24+668	101.00	19	22	40
243	24+668	24+700	32.00	18	22	40
244	24+700	24+723	23.00	22	12	34
245	24+723	24+793	70.00	22	12	34
246	24+793	24+820	27.00	22	22	44
247	24+820	24+865	45.00	19	30	49
248	24+865	24+938	73.00	28	22	50
249	24+938	24+940	2.00	12	18	30
250	24+940	25+000	60.00	12	18	30
251	25+000	25+153	153.00	18	18	36
252	25+153	25+159	6.00	19	18	37
253	25+159	25+173	14.00	19	35	54
254	25+173	25+200	27.00	19	22	40
255	25+200	25+214	14.00	30	22	52
256	25+214	25+240	26.00	30	35	65
257	25+240	25+375	135.00	30	18	48
258	25+375	25+380	5.00	12	22	34
259	25+380	25+439	59.00	12	22	34
260	25+439	25+568	129.00	12	15	27
261	25+568	25+584	16.00	12	22	34
262	25+584	25+728	144.00	19	15	34
263	25+728	25+772	44.00	12	15	27

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
264	25+772	25+912	140.00	19	22	40
265	25+912	25+980	68.00	12	22	34
266	25+980	25+996	16.00	19	22	40
267	25+996	26+005	9.00	22	22	44
268	26+005	26+030	25.00	22	22	44
269	26+030	26+066	36.00	22	22	44
270	26+066	26+100	34.00	12	12	24
271	26+100	26+127	27.00	15	12	27
272	26+127	26+142	15.00	15	22	37
273	26+142	26+245	103.00	22	22	44
274	26+245	26+275	30.00	15	22	37
275	26+275	26+335	60.00	15	12	27
276	26+335	26+375	40.00	15	22	37
277	26+375	26+386	11.00	15	22	37
278	26+386	26+410	24.00	22	22	43
279	26+410	26+430	20.00	22	15	37
280	26+430	26+460	30.00	22	22	43
281	26+460	26+490	30.00	15	22	37
282	26+490	26+545	55.00	22	22	43
283	26+540	26+570	30.00	15	22	37
284	26+570	26+655	85.00	22	22	43
285	26+655	26+670	15.00	18	22	40
286	26+670	26+714	44.00	18	12	30
287	26+714	26+749	35.00	18	12	30
288	26+749	26+760	11.00	18	12	30
289	26+760	26+860	100.00	22	22	43
290	26+860	26+878	18.00	22	22	43
291	26+878	26+990	112.00	20	22	42
292	26+990	27+005	15.00	20	22	42
293	27+005	27+025	20.00	22	22	43
294	27+025	27+125	100.00	11	19	30
295	27+125	27+255	130.00	22	22	43
296	27+255	27+445	190.00	30	22	52
297	27+445	27+635	190.00	22	22	43

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
298	27+635	27+671	36.00	18	12	30
299	27+671	27+700	29.00	18	12	30
300	27+700	27+725	25.00	18	12	30
301	27+725	29+565	1840.00	22	22	43
302	29+565	29+613	48.00	15	15	30
303	29+613	29+746	133.00	15	15	30
304	29+746	29+770	24.00	15	15	30
305	29+770	31+250	1480.00	22	22	43
306	31+250	31+276	26.00	15	15	30
307	31+276	31+306	30.00	15	15	30
308	31+306	31+336	30.00	15	15	30
309	31+336	31+366	30.00	15	15	30
310	31+366	31+396	30.00	15	15	30
311	31+396	31+426	30.00	15	15	30
312	31+426	31+450	24.00	15	15	30
313	31+450	31+485	35.00	15	15	30
314	31+485	31+515	30.00	15	15	30
315	31+515	31+545	30.00	15	15	30
316	31+545	31+575	30.00	15	15	30
317	31+575	31+605	30.00	15	15	30
318	31+605	31+635	30.00	15	15	30
319	31+635	31+665	30.00	15	15	30
320	31+665	31+695	30.00	15	15	30
321	31+695	31+725	30.00	15	15	30
322	31+725	31+755	30.00	15	15	30
323	31+755	31+785	30.00	15	15	30
324	31+785	31+815	30.00	15	15	30
325	31+815	31+845	30.00	15	15	30
326	31+845	31+876	31.00	15	15	30
327	31+876	31+908	32.00	15	15	30
328	31+908	31+930	22.00	14	14	28
329	31+930	31+962	32.00	14	14	28
330	31+962	31+989	27.00	14	14	28
331	31+989	32+020	31.00	15	15	30
332	32+020	32+050	30.00	14	20	34

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
333	32+050	32+079	29.00	15	15	30
334	32+079	32+107	28.00	15	15	30
335	32+107	32+137	30.00	15	15	30
336	32+137	32+169	32.00	15	15	30
337	32+169	32+201	32.00	15	15	30
338	32+201	32+228	27.00	15	15	30
339	32+228	32+238	10.00	15	15	30
340	32+238	32+267	29.00	15	15	30
341	32+267	32+296	29.00	15	14	29
342	32+296	32+326	30.00	15	15	30
343	32+326	32+357	31.00	15	15	30
344	32+357	32+387	30.00	15	15	30
345	32+387	32+416	29.00	15	15	30
346	32+416	32+448	32.00	14	15	29
347	32+448	32+478	30.00	15	15	30
348	32+478	32+507	29.00	15	15	30
349	32+507	32+550	43.00	15	15	30
350	32+550	32+566	16.00	15	15	30
351	32+566	32+596	30.00	15	15	30
352	32+596	32+607	11.00	15	15	30
353	32+607	32+627	20.00	15	15	30
354	32+627	32+657	30.00	15	15	30
355	32+657	32+687	30.00	14	15	29
356	32+687	32+717	30.00	15	15	30
357	32+717	32+746	29.00	15	15	30
358	32+746	32+770	24.00	15	15	30
359	32+770	32+800	30.00	15	15	30
360	32+800	32+833	33.00	15	15	30
361	32+833	32+868	35.00	15	14	29
362	32+868	32+875	7.00	15	15	30
363	32+875	32+929	54.00	15	15	30
364	32+929	32+956	27.00	15	15	30
365	32+956	32+987	31.00	15	15	30
366	32+987	33+016	29.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
367	33+016	33+046	30.00	15	15	30
368	33+046	33+074	28.00	15	15	30
369	33+074	33+104	30.00	14	15	29
370	33+104	33+134	30.00	15	15	30
371	33+134	33+165	31.00	15	15	30
372	33+165	33+195	30.00	15	15	30
373	33+195	33+200	5.00	15	15	30
374	33+200	33+233	33.00	14	15	29
375	33+233	33+245	12.00	12	15	27
376	33+245	33+262	17.00	12	15	27
377	33+262	33+303	41.00	12	15	27
378	33+303	33+324	21.00	18	15	33
379	33+324	33+355	31.00	18	15	33
380	33+355	33+399	44.00	18	15	33
381	33+399	33+410	11.00	18	14	32
382	33+410	33+416	6.00	18	15	33
383	33+416	33+450	34.00	18	15	33
384	33+450	33+459	9.00	18	15	33
385	33+459	33+468	9.00	13	14	27
386	33+468	33+499	31.00	15	14	29
387	33+499	33+528	29.00	13	15	28
388	33+528	33+552	24.00	13	15	28
389	33+552	33+577	25.00	13	15	28
390	33+577	33+600	23.00	13	15	28
391	33+600	33+639	39.00	13	15	28
392	33+639	33+640	1.00	13	15	28
393	33+640	33+680	40.00	25	18	43
394	33+680	33+694	14.00	25	18	43
395	33+694	33+703	9.00	25	18	43
396	33+703	33+755	52.00	25	18	43
397	33+755	33+783	28.00	15	15	30
398	33+783	33+814	31.00	15	15	30
399	33+814	33+843	29.00	12	12	24
400	33+843	33+873	30.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
401	33+873	33+902	29.00	13	12	25
402	33+902	33+933	31.00	12	12	24
403	33+933	33+962	29.00	12	12	24
404	33+962	33+996	34.00	12	12	24
405	33+996	34+015	19.00	12	12	24
406	34+015	34+044	29.00	12	12	24
407	34+044	34+057	13.00	12	12	24
408	34+057	34+094	37.00	12	12	24
409	34+094	34+120	26.00	12	12	24
410	34+120	34+152	32.00	12	12	24
411	34+152	34+193	41.00	12	12	24
412	34+193	34+214	21.00	12	12	24
413	34+214	34+245	31.00	12	12	24
414	34+245	34+276	31.00	12	12	24
415	34+276	34+304	28.00	12	12	24
416	34+304	34+334	30.00	12	12	24
417	34+334	34+363	29.00	12	12	24
418	34+363	34+396	33.00	12	12	24
419	34+396	34+422	26.00	12	12	24
420	34+422	34+453	31.00	12	12	24
421	34+453	34+483	30.00	12	12	24
422	34+483	34+512	29.00	12	12	24
423	34+512	34+543	31.00	12	12	24
424	34+543	34+573	30.00	12	12	24
425	34+573	34+602	29.00	12	12	24
426	34+602	34+630	28.00	12	12	24
427	34+630	34+663	33.00	12	12	24
428	34+663	34+693	30.00	12	12	24
429	34+693	34+721	28.00	12	12	24
430	34+721	34+752	31.00	12	12	24
431	34+752	34+784	32.00	12	12	24
432	34+784	34+812	28.00	12	12	24
433	34+812	34+842	30.00	12	12	24
434	34+842	34+873	31.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
435	34+873	34+901	28.00	12	12	24
436	34+901	34+931	30.00	12	12	24
437	34+931	34+962	31.00	12	12	24
438	34+962	34+994	32.00	12	12	24
439	34+994	35+022	28.00	12	12	24
440	35+022	35+052	30.00	12	12	24
441	35+052	35+063	11.00	12	12	24
442	35+063	35+093	30.00	15	15	30
443	35+093	35+122	29.00	12	12	24
444	35+122	35+152	30.00	12	12	24
445	35+152	35+182	30.00	15	15	30
446	35+182	35+212	30.00	12	12	24
447	35+212	35+242	30.00	12	12	24
448	35+242	35+274	32.00	12	12	24
449	35+274	35+302	28.00	12	12	24
450	35+302	35+332	30.00	12	12	24
451	35+332	35+360	28.00	12	12	24
452	35+360	35+391	31.00	12	12	24
453	35+391	35+416	25.00	12	12	24
454	35+416	35+438	22.00	12	12	24
455	35+438	35+465	27.00	12	12	24
456	35+465	35+480	15.00	12	12	24
457	35+480	35+492	12.00	12	12	24
458	35+492	35+518	26.00	12	12	24
459	35+518	35+540	22.00	12	12	24
460	35+540	35+575	35.00	12	12	24
461	35+575	35+605	30.00	12	12	24
462	35+605	35+634	29.00	12	12	24
463	35+634	35+656	22.00	12	12	24
464	35+656	35+696	40.00	12	12	24
465	35+696	35+723	27.00	12	12	24
466	35+723	35+745	22.00	12	12	24
467	35+745	35+779	34.00	12	12	24
468	35+779	35+811	32.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
469	35+811	35+841	30.00	12	12	24
470	35+841	35+871	30.00	12	12	24
471	35+871	35+901	30.00	12	12	24
472	35+901	35+931	30.00	12	12	24
473	35+931	35+961	30.00	12	12	24
474	35+961	35+989	28.00	12	12	24
475	35+989	36+020	31.00	12	12	24
476	36+020	36+030	10.00	12	12	24
477	36+030	36+059	29.00	12	12	24
478	36+059	36+100	41.00	12	12	24
479	36+100	36+119	19.00	12	12	24
480	36+119	36+149	30.00	12	12	24
481	36+149	36+179	30.00	15	12	27
482	36+179	36+209	30.00	15	12	27
483	36+209	36+238	29.00	15	12	27
484	36+238	36+270	32.00	15	12	27
485	36+270	36+299	29.00	15	12	27
486	36+299	36+328	29.00	15	12	27
487	36+328	36+356	28.00	15	12	27
488	36+356	36+368	12.00	15	12	27
489	36+368	36+384	16.00	15	12	27
490	36+384	36+411	27.00	15	12	27
491	36+411	36+428	17.00	15	12	27
492	36+428	36+434	6.00	15	12	27
493	36+434	36+469	35.00	15	12	27
494	36+469	36+497	28.00	15	12	27
495	36+497	36+528	31.00	15	12	27
496	36+528	36+557	29.00	15	12	27
497	36+557	36+587	30.00	15	12	27
498	36+587	36+612	25.00	18	12	30
499	36+612	36+639	27.00	18	12	30
500	36+639	36+655	16.00	18	16	34
501	36+655	36+670	15.00	18	16	34
502	36+670	36+680	10.00	18	16	34

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
503	36+680	36+695	15.00	18	16	34
504	36+695	36+713	18.00	18	16	34
505	36+713	36+719	6.00	18	16	34
506	36+719	36+740	21.00	18	16	34
507	36+740	36+772	32.00	18	16	34
508	36+772	36+784	12.00	18	16	34
509	36+784	36+816	32.00	18	12	30
510	36+816	36+820	4.00	12	12	24
511	36+820	36+842	22.00	12	12	24
512	36+842	36+856	14.00	12	12	24
513	36+856	36+879	23.00	12	12	24
514	36+879	36+888	9.00	12	12	24
515	36+888	36+918	30.00	12	12	24
516	36+918	36+927	9.00	12	12	24
517	36+927	36+944	17.00	12	12	24
518	36+944	36+953	9.00	12	12	24
519	36+953	36+973	20.00	12	12	24
520	36+973	36+977	4.00	12	12	24
521	36+977	37+005	28.00	15	12	27
522	37+005	37+033	28.00	15	12	27
523	37+033	37+059	26.00	15	12	27
524	37+059	37+067	8.00	15	12	27
525	37+067	37+090	23.00	15	12	27
526	37+090	37+120	30.00	15	15	30
527	37+120	37+150	30.00	15	15	30
528	37+150	37+182	32.00	15	15	30
529	37+182	37+211	29.00	15	15	30
530	37+211	37+239	28.00	15	15	30
531	37+239	37+270	31.00	15	15	30
532	37+239	37+264	25.00	15	15	30
533	37+270	37+280	10.00	15	15	30
534	37+280	37+290	10.00	12	18	30
535	37+290	37+320	30.00	12	18	30
536	37+320	37+346	26.00	12	18	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
537	37+346	37+365	19.00	12	18	30
538	37+365	37+378	13.00	12	18	30
539	37+378	37+406	28.00	18	18	36
540	37+406	37+438	32.00	16	18	34
541	37+438	37+467	29.00	16	18	34
542	37+467	37+496	29.00	16	18	34
543	37+496	37+521	25.00	16	18	34
544	37+521	37+545	24.00	16	18	34
545	37+545	37+579	34.00	15	12	27
546	37+579	37+606	27.00	15	12	27
547	37+606	37+638	32.00	12	12	24
548	37+638	37+669	31.00	12	12	24
549	37+669	37+687	18.00	12	12	24
550	37+687	37+699	12.00	12	12	24
551	37+699	37+726	27.00	12	12	24
552	37+726	37+757	31.00	12	12	24
553	37+757	37+787	30.00	12	12	24
554	37+787	37+814	27.00	12	12	24
555	37+814	37+846	32.00	12	12	24
556	37+846	37+856	10.00	12	12	24
557	37+856	37+887	31.00	12	12	24
558	37+887	37+914	27.00	12	12	24
559	37+914	37+948	34.00	12	12	24
560	37+948	37+975	27.00	12	12	24
561	37+975	38+005	30.00	12	12	24
562	38+005	38+027	22.00	12	12	24
563	38+027	38+033	6.00	12	12	24
564	38+033	38+041	8.00	18	12	30
565	38+041	38+088	47.00	18	12	30
566	38+088	38+100	12.00	12	12	24
567	38+100	38+117	17.00	12	12	24
568	38+117	38+140	23.00	12	12	24
569	38+140	38+177	37.00	12	12	24
570	38+177	38+200	23.00	12	12	24

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
571	38+200	38+220	20.00	12	12	24
572	38+220	38+230	10.00	12	12	24
573	38+230	38+258	28.00	12	12	24
574	38+258	38+289	31.00	12	12	24
575	38+289	38+318	29.00	12	12	24
576	38+318	38+348	30.00	12	12	24
577	38+348	38+378	30.00	12	12	24
578	38+378	38+408	30.00	12	12	24
579	38+408	38+438	30.00	12	12	24
580	38+438	38+468	30.00	12	12	24
581	38+468	38+498	30.00	12	12	24
582	38+498	38+528	30.00	12	12	24
583	38+528	38+558	30.00	12	12	24
584	38+558	38+588	30.00	12	12	24
585	38+588	38+618	30.00	12	12	24
586	38+618	38+646	28.00	12	12	24
587	38+646	38+674	28.00	12	12	24
588	38+674	38+705	31.00	12	12	24
589	38+705	38+734	29.00	15	12	27
590	38+734	38+764	30.00	15	12	27
591	38+764	38+793	29.00	15	12	27
592	38+793	38+820	27.00	15	15	30
593	38+820	38+834	14.00	15	15	30
594	38+834	38+864	30.00	15	15	30
595	38+864	38+894	30.00	15	15	30
596	38+894	38+924	30.00	15	15	30
597	38+924	38+954	30.00	15	15	30
598	38+954	38+984	30.00	15	15	30
599	38+984	39+014	30.00	15	15	30
600	39+014	39+044	30.00	15	15	30
601	39+044	39+074	30.00	15	15	30
602	39+074	39+104	30.00	15	15	30
603	39+104	39+134	30.00	15	15	30
604	39+134	39+164	30.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
605	39+164	39+194	30.00	15	15	30
606	39+194	39+224	30.00	15	15	30
607	39+224	39+254	30.00	15	15	30
608	39+254	39+284	30.00	15	15	30
609	39+284	39+314	30.00	15	15	30
610	39+314	39+344	30.00	15	15	30
611	39+344	39+374	30.00	15	15	30
612	39+374	39+404	30.00	15	15	30
613	39+404	39+434	30.00	15	15	30
614	39+434	39+464	30.00	15	15	30
615	39+464	39+494	30.00	15	15	30
616	39+494	39+524	30.00	15	15	30
617	39+524	39+554	30.00	15	15	30
618	39+554	39+584	30.00	15	15	30
619	39+584	39+614	30.00	15	15	30
620	39+614	39+644	30.00	15	15	30
621	39+644	39+674	30.00	15	15	30
622	39+674	39+704	30.00	15	15	30
623	39+704	39+734	30.00	15	15	30
624	39+734	39+764	30.00	15	15	30
625	39+764	39+794	30.00	15	15	30
626	39+794	39+824	30.00	15	15	30
627	39+824	39+831	7.00	15	15	30
628	39+831	39+861	30.00	15	15	30
629	39+861	39+891	30.00	15	15	30
630	39+891	39+921	30.00	15	15	30
631	39+921	39+951	30.00	15	15	30
632	39+951	39+981	30.00	15	15	30
633	39+981	40+011	30.00	15	15	30
634	40+011	40+041	30.00	15	15	30
635	40+041	40+071	30.00	15	15	30
636	40+071	40+101	30.00	15	15	30
637	40+101	40+131	30.00	15	15	30
638	40+131	40+161	30.00	15	15	30

Sr.No.	Proposed ROW					
	Design (Km.) From	Design (Km.) To	Length (m)	PROW (m.) LHS	PROW (m.) RHS	Width of PROW (m.)
639	40+161	40+191	30.00	15	15	30
640	40+191	40+221	30.00	15	15	30
641	40+221	40+250	29.00	15	15	30
642	40+250	40+274	24.00	15	15	30
643	40+274	40+305	31.00	15	15	30
644	40+305	40+315	10.00	15	15	30
645	40+315	40+334	19.00	15	15	30
646	40+334	40+365	31.00	15	15	30
647	40+365	40+395	30.00	15	15	30
648	40+395	40+425	30.00	15	15	30
649	40+425	40+454	29.00	15	15	30
650	40+454	40+483	29.00	15	15	30
651	40+483	40+513	30.00	15	15	30
652	40+513	40+543	30.00	15	15	30
653	40+543	40+573	30.00	15	15	30
654	40+573	40+603	30.00	15	15	30
655	40+603	40+633	30.00	15	15	30
656	40+633	40+663	30.00	15	15	30
657	40+663	40+693	30.00	15	15	30
658	40+693	40+723	30.00	15	15	30
659	40+723	40+753	30.00	15	15	30
660	40+753	40+783	30.00	15	15	30
661	40+783	40+800	17.00	15	15	30
662	40+800	40+840	40.00	15	15	30

*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)	8+600	0+000	0+000
2		9+600	1+000	1+000
3		10+600	2+000	2+000
4		11+600	3+000	3+000
5		12+600	4+000	4+000
6		13+600	5+000	5+000

Sr. No.	Particular	As Per PWD	As per Survey on Existing Alignment	Design Alignment
7		14+600	6+000	6+000
8		15+600	7+000	7+000
9		16+600	8+000	8+000
10		17+600	9+000	9+000
11		18+600	10+000	10+000
12		19+600	11+000	10+970
13		20+600	12+000	11+970
14		21+600	13+000	12+970
15		22+600	14+030	13+670
16		23+600	15+030	14+350
17		24+600	16+000	15+200
18		25+600	17+020	15+920
19		26+600	18+030	16+800
20		27+600	19+040	17+600
21		28+600	20+040	18+360
22		29+600	21+040	19+350
23		30+600	22+030	20+350
24		31+600	23+030	21+340
25		32+600	24+050	22+280
26		33+600	25+040	23+170
27		34+600	26+070	23+950
28		35+600	27+100	24+800
29		36+600	28+000	25+440
30		37+600	29+050	26+150
31		38+600	30+050	27+000
32		39+600	31+050	27+900
33		40+600	32+050	28+900
34		41+600	33+060	29+900
35		42+600	34+050	30+900
36		43+600	35+060	31+900
37		44+600	36+060	32+900
38		45+600	37+030	33+700
39		46+600	38+070	34+720
40		47+600	39+050	35+680
41		48+600	40+070	36+670
42		49+600	41+080	37+540
43		50+600	42+060	38+500
44		51+600	43+070	39+500
45		52+600	44+080	40+490
46	End Chainage (km)	53+000	44+400	40+840
	Length (km)	**44.400**	**44.400**	**40.840**

Annex - III

(Schedule-A)

Alignment Plans

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

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

(ii) Traffic Signage plan of the Project Highway showing numbers & 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 40m on the existing alignments and 60m 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) ***

Sr. No.	Design Chainage (km)		Length (Km)				Crossing (m)			Transformers	
	From	To	11 KV (HT)	33 KV (HT)	LT	RHS/LHS	11 KV (HT)	33 KV (HT)	LT	Number	Capacity
1	0.01	0.04			0.03	RHS					
2	0.05	0.06	0.01			LHS	0.045			1	25kba
3	0.07	0.09			0.02	RHS				1	64kba
4	0.18	0.45			0.27	RHS					
5	0.55	0.61			0.06	RHS					
6	0.81	0.87	0.06			LHS					
7	0.92	0.95				RHS	0.06				
8	1.2	1.25			0.05	LHS			0.05		
9	1.32	1.38			0.06	RHS			0.065		
10	1.6	1.68	0.08			LHS	0.045				
11	1.82	2.1	0.28			RHS	0.145				
12	2.13	2.19	0.06			RHS	0.06				
13	2.22	2.27	0.05			RHS	0.06				
14	2.3	2.8			0.5	LHS			0.045		
15	2.85	3.15			0.3	LHS			0.045		
16	3.81	4.02			0.21	RHS			0.15		
17	4.05	4.37			0.32	LHS			0.22		
18	6.1	6.15			0.05	LHS			0.045		
19	6.2	6.25			0.05	RHS					
20	6.6	7.8	1.2			RHS	0.045				
21	9.7	9.82			0.12	LHS					
22	9.88	9.9			0.02	LHS			0.065		
23	10.9	10.95			0.05	RHS			0.06		
24	11.39	11.99			0.6	LHS			0.45	1	25kba

Sr. No.	Design Chainage (km)		Length (Km)				Crossing (m)			Transformers	
	From	To	11 KV (HT)	33 KV (HT)	LT	RHS/LHS	11 KV (HT)	33 KV (HT)	LT	Number	Capacity
25	12.09	12.8			0.71	RHS			0.045		
26	15.76	16.12			0.36	RHS			0.045		
27	17.48	18.88			1.4	RHS					
28	19.05	19.24			0.19	LHS					
29	19.54	20.6	1.06			RHS	0.345				
30	21.72	21.9	0.18			RHS	0.045				
31	22.9	23.45			0.55	LHS				1	25kba
32	23.25	23.42	0.17			LHS	0.045				
33	23.45	23.72			0.27	RHS					
34	24.4	24.43			0.03	RHS			0.138		
35	25.62	25.7			0.08	RHS			0.045	1	25kba
36	31.76	32.96			1.2	RHS			0.545		
37	33.05	33.16			0.11	LHS			0.045		
38	33.3	33.34			0.04	LHS			0.045		
39	33.64	33.67			0.03	LHS			0.045		
40	33.835	33.97			0.135	LHS			0.045		
41	34.1	34.33			0.23	RHS			0.045	1	64kba
42	34.36	34.38			0.02	LHS			0.045		
43	34.52	34.56			0.04	LHS			0.045		
44	34.64	34.89			0.25	RHS			0.545		
45	35.19	36.53			1.34	RHS			0.4		
46	37.52	37.74			0.22	LHS			0.045		
47	37.75	38.77			1.02	RHS			0.73545		
48	39.01	39.09			0.08	LHS					
49	40.45	40.83	0.38			LHS	0.24				

Sr. No.	Design Chainage (km)		Length (Km)				Crossing (m)			Transformers	
	From	To	11 KV (HT)	33 KV (HT)	LT	RHS/LHS	11 KV (HT)	33 KV (HT)	LT	Number	Capacity
	Total		3.53		11.015		1.135		4.05345	6	
	Total length (Km)		19.73345								

DETAILS OF EXISTING ELECTRICAL (LT POLES)

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
1	0+010	RHS	GI(SP)(SHIFTING)	1	2867494.2	277091	
2	0+030	RHS	GI(SP)(SHIFTING)	1	2867477.7	277102	
3	0+070	RHS	GI(SP)(SHIFTING)	1	2864142.1	277553	
4	0+090	RHS	GI(SP)(SHIFTING)	1	2864129.6	277538	
5	0+180	RHS	MS(SP)(SHIFTING)	1	2864073.1	277468	
6	0+220	RHS	MS(SP)(SHIFTING)	1	2864048	277437	
7	0+280	RHS	MS(SP)(SHIFTING)	1	2864010.3	277390	
8	0+320	RHS	MS(SP)(SHIFTING)	1	2864004.1	277382	
9	0+510	LHS	MS(SP)(SHIFTING)	1	2863997.8	277374	
10	0+550	RHS	GI(SP)(SHIFTING)	1	2863991.5	277367	
11	0+580	RHS	GI(SP)(SHIFTING)	1	2863985.2	277359	
12	0+610	RHS	GI(SP)(SHIFTING)	1	2863979	277351	
13	0+650	LHS	GI(SP)(SHIFTING)	1	2863972.7	277343	
14	0+660	RHS	GI(SP)(SHIFTING)	1	2863966.4	277335	
15	0+690	LHS	GI(SP)(SHIFTING)	1	2863960.1	277328	
16	0+720	BS	GI(SP)(SHIFTING)	1	2863953.8	277320	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
17	0+730	LHS	GI(SP)(SHIFTING)	1	2863542	277356	
18	0+810	RHS	MS(SP)(SHIFTING)	1	2863534	277362	
19	0+850	RHS	MS(SP)(SHIFTING)	1	2863526.1	277368	
20	0+920	LHS	MS(SP)(SHIFTING)	1	2863518.1	277374	
21	0+950	LHS	MS(SP)(SHIFTING)	1	2863510.1	277380	
22	1+030	BS	MS(SP)(SHIFTING)	1	2863502.2	277386	
23	1+120	LHS	MS(SP)(SHIFTING)	1	2863364.4	277466	
24	1+150	BS	MS(SP)(SHIFTING)	1	2863355	277470	
25	1+200	LHS	MS(SP)(SHIFTING)	1	2863345.6	277473	
26	1+250	LHS	MS(SP)(SHIFTING)	1	2863336.1	277476	
27	1+320	RHS	MS(SP)(SHIFTING)	1	2863326.5	277479	
28	1+350	RHS	MS(SP)(SHIFTING)	1	2863316.9	277482	
29	1+380	RHS	MS(SP)(SHIFTING)	1	2863307.2	277484	
30	1+430	RHS	MS(SP)(SHIFTING)	1	2863297.5	277487	
31	1+470	RHS	MS(SP)(SHIFTING)	1	2863287.7	277489	
32	1+520	RHS	MS(SP)(SHIFTING)	1	2863277.9	277491	
33	1+570	RHS	GI (SP) (SHIFTING) LT	1	2863268	277492	
34	1+590	RHS	GI (SP) (SHIFTING) LT	1	2863258.2	277494	
35	1+790	RHS	GI (SP) (SHIFTING) LT	1	2863248.3	277495	
36	2+210	LHS	GI (SP) (SHIFTING) LT	1	2866534.2	277283	
37	2+300	LHS	GI (SP) (SHIFTING) LT	1	2866524.4	277285	
38	2+340	LHS	GI (SP) (SHIFTING) LT	1	2866514.6	277287	
39	2+410	LHS	MS (SP) (SHIFTING) LT	1	2866504.8	277288	
40	2+440	LHS	MS (SP) (SHIFTING) LT	1	2866494.9	277290	
41	2+550	LHS	MS (SP) (SHIFTING) LT	1	2866485	277292	
42	2+600	LHS	MS (SP) (SHIFTING) LT	1	2866475.1	277293	
43	2+620	LHS	GI (SP) (SHIFTING) LT	1	2866465.2	277294	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
44	2+850	RHS	MS (SP) (SHIFTING) LT	1	2866455.3	277295	
45	2+920	BS	GI (SP) (SHIFTING) LT	1	2866445.3	277296	
46	3+120	RHS	GI (SP) (SHIFTING) LT	1	2859293.7	277692	
47	3+800	LHS	GI (SP) (SHIFTING) LT	1	2859289.9	277682	
48	3+810	RHS	GI (SP) (SHIFTING) LT	1	2859286.1	277673	
49	3+830	RHS	GI (SP) (SHIFTING) LT	1	2859282.3	277664	
50	3+860	RHS	GI (SP) (SHIFTING) LT	1	2859278.5	277655	
51	3+920	RHS	GI (SP) (SHIFTING) LT	1	2859274.8	277645	
52	3+950	RHS	GI (SP) (SHIFTING) LT	1	2859271.3	277636	
53	3+990	RHS	MS (SP) (SHIFTING) LT	1	2859268.4	277626	
54	4+020	RHS	GI LHS TO RHS (CROSSING) 440 V	1	2864745.4	277384	
55	4+040	LHS	MS (SP) (SHIFTING) LT	1	2864735.4	277385	
56	4+050	RHS	GI (SP) (SHIFTING) LT	1	2864725.4	277385	
57	4+080	RHS	GI (SP) (SHIFTING) LT	1	2864715.4	277386	
58	4+120	RHS	GI (SP) (SHIFTING) LT	1	2864705.5	277387	
59	4+200	RHS	GI (SP) (SHIFTING) LT	1	2864695.5	277387	
60	4+220	RHS	GI (SP) (SHIFTING) LT	1	2864685.5	277387	
61	4+250	RHS	GI (SP) (SHIFTING) LT	1	2864675.5	277387	
62	4+320	RHS	GI (SP) (SHIFTING) LT	1	2864665.5	277387	
63	4+370	RHS	GI (SP) (SHIFTING) LT	1	2864655.5	277387	
64	5+100	RHS	GI (SP) (SHIFTING) LT	1	2862899.8	277522	
65	5+160	LHS	GI (SP) (SHIFTING) LT	1	2862889.9	277523	
66	5+400	LHS	MS (SP) (SHIFTING) LT	1	2862880	277525	
67	6+100	LHS	MS (SP) (SHIFTING) LT	1	2866245.4	277296	
68	6+150	LHS	MS (SP) (SHIFTING) LT	1	2866235.4	277296	
69	6+170	BS	MS (SP) (SHIFTING) LT	1	2866225.4	277296	
70	6+200	LHS	MS (SP) (SHIFTING) LT	1	2866215.4	277296	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
71	6+250	LHS	MS (SP) (SHIFTING) LT	1	2866205.4	277295	
72	6+370	RHS	GI (SP) (SHIFTING) LT	1	2866195.4	277295	
73	6+550	LHS	GI (SP) (SHIFTING) LT	1	2866185.4	277295	
74	6+600	RHS	GI LHS TO RHS (CROSSING) 440 V	1	2866175.4	277294	
75	9+700	LHS	GI (SP) (SHIFTING) LT	1	2854243.7	280418	
76	9+790	LHS	GI (SP) (SHIFTING) LT	1	2854233.7	280418	
77	9+820	LHS	MS (SP) (SHIFTING) LT	1	2854223.7	280417	
78	9+880	LHS	MS (SP) (SHIFTING) LT	1	2854213.8	280417	
79	9+900	LHS	GI (SP) (SHIFTING) LT	1	2854203.8	280416	
80	10+900	RHS	GI (SP) (SHIFTING) LT	1	2855736	279600	
81	10+950	RHS	GI (SP) (SHIFTING) LT	1	2855729.4	279607	
82	11+340	RHS	MS (SP) (SHIFTING) LT	1	2855722.3	279614	
83	11+390	LHS	MS (SP) (SHIFTING) LT	1	2855816	279886	
84	11+420	LHS	GI (SP) (SHIFTING) LT	1	2855823.5	279893	
85	11+490	RHS	MS (SP) (SHIFTING) LT	1	2855830.8	279900	
86	11+510	RHS	MS (SP) (SHIFTING) LT	1	2855836.6	279908	
87	11+540	RHS	MS (SP) (SHIFTING) LT	1	2855841.9	279916	
88	11+570	RHS	MS (SP) (SHIFTING) LT	1	2855849.2	279945	
89	11+740	RHS	MS (SP) (SHIFTING) LT	1	2855849.6	279955	
90	11+890	RHS	MS (SP) (SHIFTING) LT	1	2855847.8	279965	
91	11+930	RHS	MS (SP) (SHIFTING) LT	1	2855845.5	279975	
92	11+960	RHS	MS (SP) (SHIFTING) LT	1	2855439.3	280057	
93	11+990	RHS	MS (SP) (SHIFTING) LT	1	2855429.4	280055	
94	12+050	RHS	MS (SP) (SHIFTING) LT	1	2855281.2	280037	
95	12+090	RHS	MS (SP) (SHIFTING) LT	1	2855271.4	280039	
96	12+100	RHS	MS (SP) (SHIFTING) LT	1	2858828.8	277472	
97	15+760	RHS	MS (SP) (SHIFTING) LT	1	2856099.1	279393	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
98	15+790	RHS	MS (SP) (SHIFTING) LT	1	2856095.6	279383	
99	15+910	RHS	MS (SP) (SHIFTING) LT	1	2856092.4	279374	
100	16+000	RHS	MS (SP) (SHIFTING) LT	1	2855940.3	279175	
101	16+080	RHS	MS (SP) (SHIFTING) LT	1	2855932.5	279169	
102	16+120	RHS	MS (SP) (SHIFTING) LT	1	2855924.5	279163	
103	17+320	RHS	MS (SP) (SHIFTING) LT	1	2857545.9	278398	
104	17+480	LHS	MS (SP) (SHIFTING) LT	1	2857391.7	278407	
105	18+370	LHS	MS (SP) (SHIFTING) LT	1	2854986	280068	
106	19+220	LHS	MS (SP) (SHIFTING) LT	1	2854323.3	280415	
107	19+240	LHS	MS (SP) (SHIFTING) LT	1	2854303.6	280418	
108	20+070	RHS	MS (SP) (SHIFTING) LT	1	2852448.9	280721	
109	22+900	RHS	MS (SP) (SHIFTING) LT	1	2841220.2	279869	
110	23+250	LHS	MS (SP) (SHIFTING) LT	1	2840822.6	279713	
111	23+450	RHS	MS (SP) (SHIFTING) LT	1	2840814.2	279708	
112	23+620	RHS	MS (SP) (SHIFTING) LT	1	2840806.2	279702	
113	24+000	RHS	MS (SP) (SHIFTING) LT	1	2840295.1	279377	
114	24+010	RHS	MS (SP) (SHIFTING) LT	1	2840286.6	279372	
115	24+390	LHS	MS (SP) (SHIFTING) LT	1	2846186.5	281543	
116	24+400	RHS	MS (SP) (SHIFTING) LT	1	2846177	281540	
117	24+410	RHS	GI (SP) (SHIFTING) LT	1	2846167.5	281537	
118	24+420	RHS	MS (SP) (SHIFTING) LT	1	2846158.1	281534	
119	25+620	RHS	MS (SP) (SHIFTING) LT	1	2844027.2	281130	
120	25+650	RHS	MS (SP) (SHIFTING) LT	1	2844017.3	281128	
121	32+760	RHS	MS (SP) (SHIFTING) LT	1	2835769.2	275979	
122	32+820	RHS	MS (SP) (SHIFTING) LT	1	2835762.8	275972	
123	32+930	RHS	MS (SP) (SHIFTING) LT	1	2835756.3	275964	
124	32+960	RHS	MS (SP) (SHIFTING) LT	1	2835749.3	275957	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
125	33+030	RHS	MS (SP) (SHIFTING) LT	1	2835543.2	275799	
126	33+300	LHS	MS (SP) (SHIFTING) LT	1	2835504.4	275768	
127	33+640	LHS	MS (SP) (SHIFTING) LT	1	2835116.3	275377	
128	33+760	RHS	MS (SP) (SHIFTING) LT	1	2840233.4	279327	
129	33+860	LHS	MS (SP) (SHIFTING) LT	1	2840218.2	279314	
130	33+970	LHS	GI (SP) (SHIFTING) LT	1	2840026.2	279443	
131	34+100	RHS	GI (SP) (SHIFTING) LT	1	2839913.2	279396	
132	34+200	RHS	GI (SP) (SHIFTING) LT	1	2839897.8	279383	
133	34+330	LHS	GI (SP) (SHIFTING) LT	1	2839871.7	279369	
134	34+380	RHS	GI (SP) (SHIFTING) LT	1	2839678.9	279266	
135	34+420	LHS	GI (SP) (SHIFTING) LT	1	2839674	279258	
136	34+505	LHS	GI (SP) (SHIFTING) LT	1	2839623.9	279196	
137	34+505	RHS	GI (SP) (SHIFTING) LT	1	2839616.4	279189	
138	34+520	RHS	GI (SP) (SHIFTING) LT	1	2839608.5	279183	
139	34+520	LHS	GI (SP) (SHIFTING) LT	1	2839599.8	279178	
140	34+545	LHS	GI (SP) (SHIFTING) LT	1	2839561.1	279174	
141	34+565	LHS	MS (SP) (SHIFTING) LT	1	2839525.1	279191	
142	34+640	RHS	MS (SP) (SHIFTING) LT	1	2839516.4	279196	
143	34+745	RHS	MS (SP) (SHIFTING) LT	1	2839385	279198	
144	35+665	RHS	MS (SP) (SHIFTING) LT	1	2838644.3	278872	
145	35+820	RHS	MS (SP) (SHIFTING) LT	1	2838636.6	278865	
146	36+930	LHS	MS (SP) (SHIFTING) LT	1	2836696.9	276999	
147	36+940	LHS	MS (SP) (SHIFTING) LT	1	2836689.6	276992	
148	37+350	RHS	MS (SP) (SHIFTING) LT	1	2838251	278574	
149	38+240	RHS	MS (SP) (SHIFTING) LT	1	2837749.4	278077	
150	38+290	RHS	MS (SP) (SHIFTING) LT	1	2837732.1	278067	
151	38+340	RHS	MS (SP) (SHIFTING) LT	1	2837724	278061	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
152	38+370	RHS	GI (SP) (SHIFTING) LT	1	2837716.9	278054	
153	38+485	RHS	MS (SP) (SHIFTING) LT	1	2837525.6	277839	
154	38+610	RHS	MS (SP) (SHIFTING) LT	1	2837516.9	277834	
155	38+770	RHS	GI (SP) (SHIFTING) LT	1	2837272.5	277683	
156	38+935	LHS	GI (SP) (SHIFTING) LT	1	2837264.1	277678	
157	38+960	LHS	MS (SP) (SHIFTING) LT	1	2837067.5	277606	
158	39+080	LHS	MS (SP) (SHIFTING) LT	1	2837010	277589	
159	39+840	LHS	MS (SP) (SHIFTING) LT	1	2837000.6	277586	
160	39+900	LHS	MS (SP) (SHIFTING) LT	1	2836991.2	277582	

DETAILS OF EXISTING ELECTRICAL (HT 11 kv POLES)

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
1	0+050	LHS	MS(SP)(SHIFTING)	2	2867461.228	277113.4013	
2	0+100	LHS	MS(SP)(SHIFTING)	2	2864123.313	277530.0465	
3	0+820	RHS	MS(SP)(SHIFTING)	2	2863541.981	277355.9045	
4	0+855	RHS	MS(SP)(SHIFTING)	1	2863518.09	277374.0535	
5	0+870	RHS	MS(SP)(SHIFTING)	1	2863502.163	277386.1528	
6	1+000	RHS	MS(SP)(SHIFTING)	1	2863392.059	277454.6852	
7	1+070	BS	MS(SP)(SHIFTING)	2	2863326.503	277479.0674	
8	1+430	LHS	MS(SP)(SHIFTING)	2	2867301.098	277193.6863	
9	1+600	LHS	MS(SP)(SHIFTING)	2	2867139.435	277246.1703	
10	1+640	LHS	MS(SP)(SHIFTING)	1	2867100.225	277253.9767	
11	1+680	LHS	MS(SP)(SHIFTING)	3	2867060.438	277257.934	
12	1+720	BS	MS(SP)(SHIFTING)	1	2867020.485	277259.9571	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
13	1+740	LHS	MS(SP)(SHIFTING)	1	2867000.507	277260.9258	
14	1+820	RHS	MS(SP)(SHIFTING)	2	2866920.593	277264.8009	
15	1+850	RHS	MS(SP)(SHIFTING)	2	2866890.625	277266.2541	
16	1+920	RHS	GI (SP) (SHIFTING) LT	4	2866820.686	277269.2197	
17	1+930	LHS	GI (SP) (SHIFTING) LT	2	2866810.686	277269.3537	
18	2+130	RHS	GI (SP) (SHIFTING) LT	2	2866612.317	277265.224	
19	2+190	RHS	GI (SP) (SHIFTING) LT	2	2866553.766	277278.3589	
20	2+220	RHS	GI (SP) (SHIFTING) LT	2	2866524.448	277284.7266	
21	2+270	RHS	GI (SP) (SHIFTING) LT	2	2866475.149	277293.0291	
22	3+150	RHS	MS (SP) (SHIFTING) LT	1	2859257.329	277567.5224	
23	4+420	LHS	MS (SP) (SHIFTING) LT	1	2864411.388	277469.7579	
24	6+680	RHS	MS (SP) (SHIFTING) LT	1	2865674.408	277359.6715	
25	9+850	RHS	MS (SP) (SHIFTING) LT	2	2854093.829	280412.189	
26	12+240	RHS	MS(SP)(SHIFTING)	2	2858734.498	277613.7533	
27	12+520	RHS	MS(SP)(SHIFTING)	2	2858547.288	277818.9636	
28	12+700	RHS	MS(SP)(SHIFTING)	2	2858437.467	277957.6533	
29	12+750	RHS	MS(SP)(SHIFTING)	2	2858404.639	277994.8738	
30	12+800	RHS	MS(SP)(SHIFTING)	2	2858361.374	278019.7101	
31	13+700	RHS	MS(SP)(SHIFTING)	2	2849308.632	280778.3276	
32	14+080	RHS	MS(SP)(SHIFTING)	1	2848953.133	280901.0447	
33	16+620	LHS	MS(SP)(SHIFTING)	1	2855558.403	279409.5376	
34	17+550	LHS	MS(SP)(SHIFTING)	2	2857325.146	278421.8278	
35	18+800	LHS	MS(SP)(SHIFTING)	2	2854676.954	280256.2834	
36	18+880	LHS	MS(SP)(SHIFTING)	2	2854598.942	280239.3598	
37	18+920	RHS	MS(SP)(SHIFTING)	1	2854559.123	280241.4412	
38	19+540	RHS	MS(SP)(SHIFTING)	1	2852943.478	280775.8504	
39	20+700	RHS	MS(SP)(SHIFTING)	2	2851840.6	280791.4682	
40	23+420	LHS	MS(SP)(SHIFTING)	2	2840775.943	279662.7335	

Sl.No	Design Chainage	Side	Detail (Mild Steal/ Galvanizes Iron)	No. Of Poles	Northing	Easting	Remarks
41	33+300	RHS	GI (SP) (SHIFTING) LT	2	2835352.241	275637.9887	
42	34+890	RHS	GI (SP) (SHIFTING) LT	3	2839250.419	279131.4049	
43	36+110	RHS	GI (SP) (SHIFTING) LT	3	2836735.696	277044.8228	
44	37+750	RHS	GI (SP) (SHIFTING) LT	3	2837991.492	278320.4304	
45	38+000	RHS	GI (SP) (SHIFTING) LT	3	2837835.084	278140.1804	
46	38+290	RHS	GI (SP) (SHIFTING) LT	3	2837633.454	277941.6068	
47	38+435	RHS	MS (SP) (SHIFTING) LT	1	2837525.647	277839.1006	
48	38+520	RHS	MS (SP) (SHIFTING) LT	2	2837453.113	277805.507	
49	38+610	RHS	MS (SP) (SHIFTING) LT	2	2837372.455	277765.9564	
50	38+930	BS	MS (SP) (SHIFTING) LT	2	2837096.201	277614.8053	
51	39+060	LHS	MS(SP)(SHIFTING)	2	2836973.642	277572.5447	
52	40+450	LHS	MS(SP)(SHIFTING)	2	2834566.685	274868.3219	
53	40+520	LHS	MS(SP)(SHIFTING)	2	2834530.6	274809.4336	
54	40+600	LHS	MS(SP)(SHIFTING)	2	2834501.121	274735.0545	
55	40+700	LHS	MS(SP)(SHIFTING)	2	2834464.273	274642.0805	
56	40+780	LHS	MS(SP)(SHIFTING)	2	2834434.794	274567.7013	
57	40+830	RHS	MS(SP)(SHIFTING)	2	2834431.109	274558.4039	

Note: Total HT, LT, 11 KV Line =19.733 Km , Total LT Poles= 160 Nos., Total 11 KV Poles = 108 Nos.

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

S.No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings		
	From	To		Water Supply line			Water Supply line		
				With Pumping	With Gravity flow	Dia	With Pumping	With Gravity flow	Dia
1	0+060	2+960	RHS		2.9	150mm			
2	3+500		LHS					90	80mm
3	4+200							90	65mm
4	15+200	15+750	RHS		0.55	150mm			
5	16+100	16+780	RHS		0.68	40mm			
6	17+030		Crossing Right to Left					30	40mm
7	17+120		Crossing Left to Right					45	25mm
8	17+250		Crossing Right to Left					53	40mm
9	17+260	19+460	RHS		2.2	40mm		125	40mm
10	17+670		Crossing			40mm		77	40mm
11	18+450		Crossing Left to Right					65	40mm
12	18+450	18+600	RHS					88	25mm
13	20+140		Crossing Left to Right					266	65mm
14	21+390	23+620	LHS		2.23	80mm		24	80mm
15	21+620		Crossing Left to Right					92	80mm

S.No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings		
	From	To		Water Supply line			Water Supply line		
				With Pumping	With Gravity flow	Dia	With Pumping	With Gravity flow	Dia
16	23+140		Crossing Left to Right					150	50mm
17	23+140	26+210	LHS		3.07	50mm		190	50mm
18	24+350		Crossing Left to Right					127	40mm
19	24+940		Crossing Left to Right					68	80mm
20	25+430		Crossing Left to Right					65	80mm
21	25+460		RHS					44	
22	25+500		Crossing Left to Right					46	80mm&25mm
23	25+710		Crossing Left to Right					45	80mm
24	30+000	31+100	RHS		1.1	80mm			
25	32+680		Crossing Right to Left					345	65mm
26	32+080	34+070	RHS		1.99	25mm			25mm
27	32+530	34+780	LHS		2.25	40mm			40mm
28	33+700		Crossing Left to Right					43	40mm
29	34+300		Crossing Left to Right					45	100mm
30	34+520		Crossing Left to Right					45	40mm&25mm

S.No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings		
	From	To		Water Supply line			Water Supply line		
				With Pumping	With Gravity flow	Dia	With Pumping	With Gravity flow	Dia
31	35+380		Crossing Left to Right					294	65mm
32	35+384	38+590	RHS		3.206	25mm			25mm
33	35+590		Crossing Left to Right					40	25mm
34	38+220		Crossing Left to Right					16	25mm
35	38+200	39+400	RHS		1.2	15mm		31	15mm
36	38+770	39+970	LHS		1.2	40mm			40mm
37	39+970		Crossing Left to Right					238	65mm
	TOTAL LENGTH (m)				**22576**			**2877**	
	TOTAL LENGTH (Km)				**22.576**			**2.877**	

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	Dainadubi	0+000	0+700	1X7.0 m CW +2x2.5 m paved shoulder +2x1 m Footpath Cum Drain	TCS-1
2	Wa'Geasi	10+900	11+200		TCS-1
3	Pakregre Dodoggittim	33+050	33+245		TCS-1A
4	Rongjeng Bazar	34+030	34+700	2X7.0 m CW +2x2.5 m paved shoulder +2 m Footpath Cum Drain including utility duct	TCS-1B
5	Imsamdrop	34+700	35+060	1X7.0 m CW +2x2.5 m paved shoulder +2x1 m Footpath Cum Drain	TCS-1A

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.

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
(1)	(2)	(3)	(4)
1	Nil		

(c) The following realignment shall be provided:

The following Stretches shall be realigned.

Sl. No.	Stretch Design Chainage (from km to km)	Length (Km)	Remarks
(1)	(2)	(3)	(4)
1	From Km 3+100 to km 3+200	0.100	Minor Realignment
2	From Km 3+950 to km 4+050	0.100	Minor Realignment
3	From Km 8+600 to km 8+700	0.100	Minor Realignment
4	From Km 9+070 to km 9+170	0.100	Minor Realignment
5	From Km 9+200 to km 9+350	0.150	Minor Realignment
6	From Km 9+660 to km 9+770	0.110	Major Realignment
7	From Km 10+360 to km 10+650	0.290	Major Realignment
8	From Km 11+520 to km 11+620	0.100	Minor Realignment
9	From Km 11+900 to km 11+980	0.080	Minor Realignment
10	From Km 12+390 to km 12+535	0.145	Major Realignment
11	From Km 12+670 to km 13+800	1.130	Major Realignment
12	From Km 13+900 to km 17+140	3.240	Major Realignment
13	From Km 17+300 to km 17+400	0.100	Minor Realignment
14	From Km 17+530 to km 17+910	0.380	Major Realignment
15	From Km 18+050 to km 18+500	0.450	Major Realignment
16	From Km 21+500 to km 22+200	0.700	Major Realignment
17	From Km 22+320 to km 22+880	0.560	Major Realignment
18	From Km 23+030 to km 23+300	0.270	Major Realignment
19	From Km 23+430 to km 27+800	4.370	Major Realignment
20	From Km 29+500 to km 29+800	0.300	Major Realignment
21	From Km 30+600 to km 30+700	0.100	Minor Realignment
22	From Km 32+530 to km 32+900	0.370	Major Realignment
23	From Km 33+290 to km 33+770	0.480	Major Realignment
24	From Km 33+950 to km 34+100	0.150	Major Realignment
25	From Km 35+230 to km 35+550	0.320	Major Realignment
26	From Km 36+320 to km 36+870	0.550	Major Realignment
27	From Km 37+100 to km 37+400	0.300	Minor Realignment
28	From Km 37+500 to km 37+620	0.120	Major Realignment
29	From Km 38+000 to km 38+250	0.250	Major Realignment

Sl. No.	Stretch Design Chainage (from km to km)	Length (Km)	Remarks
30	From Km 38+600 to km 38+800	0.200	Major Realignment
31	From Km 40+100 to km 40+200	0.100	Minor Realignment
32	From Km 40+230 to km 40+340	0.110	Minor Realignment
	Total length of realignment =	**Km 15.825**	

(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 with footpath cum covered drains of 1.75m either side as per TCS -01 & TCS-01A shall be provided. Except in Rongjeng Market section where 4-lane section have been proposed for upgradation and as per TCS-1B, 2.5m paved Shoulder and 2.0m Footpath cum RCC Covered Drain including Utility Duct are proposed:

Sr. No.	Design Chainage (From)	Design Chainage (To)	Length (Km)	TCS
1	0.000	0.700	0.700	1
2	10.900	11.200	0.300	1
3	33.050	33.245	0.195	1A
4	34.030	34.700	0.670	1B
5	34.700	35.060	0.360	1A

* 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.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
1	0+000	0+700	0.700	1	2-Lane+PS with Both side Drain in Built-up Section (Overlay Widening)	24.00
2	0+700	1+300	0.600	2	2-Lane+PS (Overlay & Widening)	12.00
3	1+300	1+600	0.300	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10.00
4	1+600	3+300	1.700	2	2-Lane+PS (Overlay & Widening)	88.00
5	3+300	3+740	0.440	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
6	3+740	3+980	0.240	2	2-Lane+PS (Overlay & Widening)	
7	3+980	4+800	0.820	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	24.00
8	4+800	5+300	0.500	2	2-Lane+PS (Overlay & Widening)	10
9	5+300	5+880	0.580	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	48.00
10	5+880	7+750	1.870	2	2-Lane+PS (Overlay & Widening)	50
11	7+750	8+620	0.870	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	44.00
12	8+620	8+920	0.300	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	132.00
13	8+920	8+980	0.060	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
14	8+980	9+120	0.140	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
15	9+120	9+180	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12
16	9+180	9+650	0.470	2	2-Lane+PS (Overlay & Widening)	
17	9+650	9+700	0.050	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
18	9+700	9+750	0.050	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10.00
19	9+750	10+020	0.270	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12.00

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
20	10+020	10+180	0.160	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	22.00
21	10+180	10+240	0.060	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
22	10+240	10+270	0.030	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
23	10+270	10+360	0.090	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12.00
24	10+360	10+750	0.390	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	20.00
25	10+750	10+900	0.150	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	20.00
26	10+900	11+200	0.300	1	2-Lane+PS with Both side Drain in Built-up Section (Overlay Widening)	
27	11+200	11+600	0.400	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	20.00
28	11+600	11+620	0.020	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
29	11+620	11+860	0.240	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	22.00
30	11+860	12+220	0.360	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12.00
31	12+220	12+760	0.540	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	76.00
32	12+760	12+820	0.060	15	2-Lane+PS in Fill Section (with both side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	22.00
33	12+820	12+900	0.080	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10.00
34	12+900	13+130	0.230	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	24.00
35	13+130	13+170	0.040	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
36	13+170	13+300	0.130	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
37	13+300	13+380	0.080	15	2-Lane+PS in Fill Section (with both side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	42.00
38	13+380	13+440	0.060	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	14
39	13+440	13+580	0.140	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
40	13+580	13+700	0.120	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	22.00
41	13+700	13+900	0.200	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	20.00
42	13+900	13+920	0.020	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
43	13+920	13+970	0.050	9	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
44	13+970	14+030	0.060	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
45	14+030	14+060	0.030	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12.00
46	14+060	16+520	2.460	9	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	162
47	16+520	16+580	0.060	8	2-Lane+PS with Right side Breast wall in Cut Section (Cutting Ht. > 7m)	
48	16+580	16+620	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10.00
49	16+620	16+680	0.060	8	2-Lane+PS with Right side Breast wall in Cut Section (Cutting Ht. > 7m)	
50	16+680	16+720	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
51	16+720	16+860	0.140	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	20
52	16+860	16+900	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
53	16+900	17+040	0.140	15	2-Lane+PS in Fill Section (with both side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
54	17+040	17+180	0.140	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	10
55	17+180	17+240	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
56	17+240	17+320	0.080	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
57	17+320	17+390	0.070	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
58	17+390	17+460	0.070	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
59	17+460	17+580	0.120	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
60	17+580	17+680	0.100	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
61	17+680	17+880	0.200	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	10.00
62	17+880	18+020	0.140	10	2-Lane+PS in Fill Section (with Left side Retaining wall (Banking ht. more than 3m)	14
63	18+020	18+060	0.040	12	2-Lane in Fill Section (with Right side Retaining wall (Banking ht. more than 3m)	10
64	18+060	18+100	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
65	18+100	18+430	0.330	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
66	18+430	18+490	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	14
67	18+490	18+600	0.110	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
68	18+600	18+800	0.200	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
69	18+800	19+000	0.200	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	14
70	19+000	19+140	0.140	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10
71	19+140	19+320	0.180	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	10
72	19+320	19+390	0.070	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
73	19+390	19+450	0.060	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
74	19+450	19+580	0.130	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	10.00
75	19+580	19+600	0.020	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
76	19+600	19+700	0.100	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10.00
77	19+700	19+920	0.220	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10
78	19+920	19+980	0.060	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
79	19+980	20+100	0.120	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
80	20+100	20+200	0.100	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	14
81	20+200	20+240	0.040	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
82	20+240	20+300	0.060	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
83	20+300	20+400	0.100	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
84	20+400	20+640	0.240	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	32
85	20+640	20+840	0.200	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
86	20+840	20+900	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
87	20+900	21+000	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
88	21+000	21+040	0.040	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
89	21+040	21+100	0.060	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	12.00
90	21+100	21+250	0.150	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
91	21+250	21+460	0.210	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
92	21+460	21+580	0.120	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
93	21+580	21+620	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	14
94	21+620	21+720	0.100	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	10
95	21+720	21+760	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
96	21+760	21+840	0.080	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
97	21+840	22+060	0.220	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	32
98	22+060	22+100	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	12
99	22+100	22+240	0.140	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
100	22+240	22+380	0.140	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	12.00
101	22+380	22+480	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	14.00
102	22+480	22+580	0.100	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
103	22+580	22+620	0.040	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	12.00
104	22+620	22+680	0.060	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	14.00
105	22+680	23+040	0.360	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	36.00
106	23+040	23+160	0.120	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
107	23+160	23+220	0.060	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	18
108	23+220	23+420	0.200	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
109	23+420	23+520	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
110	23+520	23+580	0.060	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	10.00

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
111	23+580	23+640	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
112	23+640	23+680	0.040	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	10.00
113	23+680	23+960	0.280	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	20.00
114	23+960	24+040	0.080	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10
115	24+040	24+200	0.160	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	10
116	24+200	24+240	0.040	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
117	24+240	24+280	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
118	24+280	24+380	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	20.00
119	24+380	24+400	0.020	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
120	24+400	24+460	0.060	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
121	24+460	24+580	0.120	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	9
122	24+580	24+660	0.080	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
123	24+660	24+700	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
124	24+700	24+740	0.040	9	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
125	24+740	24+780	0.040	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
126	24+780	24+880	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	22.00
127	24+880	24+940	0.060	15	2-Lane+PS in Fill Section (with both side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
128	24+940	25+040	0.100	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	10
129	25+040	25+140	0.100	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
130	25+140	25+180	0.040	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	9
131	25+180	25+680	0.500	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	37.00
132	25+680	25+720	0.040	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	9
133	25+720	25+860	0.140	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	22.00
134	25+860	26+060	0.200	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	19.00
135	26+060	26+270	0.210	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	23.00
136	26+270	26+600	0.330	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	18.00
137	26+600	26+680	0.080	12	2-Lane in Fill Section (with Right side Retaining wall (Banking ht. more than 3m)	9.00
138	26+680	26+740	0.060	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
139	26+740	27+060	0.320	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	29
140	27+060	27+120	0.060	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
141	27+120	27+800	0.680	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	37
142	27+800	28+000	0.200	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10
143	28+000	28+180	0.180	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	10
144	28+180	28+300	0.120	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
145	28+300	28+650	0.350	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	43.00
146	28+650	29+290	0.640	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
147	29+290	29+580	0.290	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	20
148	29+580	29+760	0.180	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9.00
149	29+760	29+800	0.040	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
150	29+800	30+400	0.600	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	79.00
151	30+400	30+600	0.200	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
152	30+600	31+060	0.460	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	19.00
153	31+060	31+420	0.360	2	2-Lane+PS (Overlay & Widening)	
154	31+420	31+520	0.100	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10.00
155	31+520	31+600	0.080	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
156	31+600	31+750	0.150	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
157	31+750	31+850	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
158	31+850	31+920	0.070	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	10.00
159	31+920	32+020	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
160	32+020	32+080	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
161	32+080	32+290	0.210	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	9.00
162	32+290	32+520	0.230	2	2-Lane+PS (Overlay & Widening)	
163	32+520	32+600	0.080	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
164	32+600	32+740	0.140	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	28.00
165	32+740	32+780	0.040	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
166	32+780	32+880	0.100	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
167	32+880	33+050	0.170	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
168	33+050	33+245	0.195	1A	2-Lane+PS with Both side Drain (Reconstruction) (Built-up Section)	
169	33+245	33+310	0.065	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	32
170	33+310	33+340	0.030	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9
171	33+340	33+440	0.100	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
172	33+440	33+480	0.040	9	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	9
173	33+480	33+540	0.060	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
174	33+540	33+600	0.060	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
175	33+600	33+640	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
176	33+640	33+760	0.120	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	9.00
177	33+760	33+820	0.060	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
178	33+820	33+940	0.120	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
179	33+940	33+980	0.040	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
180	33+980	34+030	0.050	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
181	34+030	34+700	0.670	1B	4-Lane+PS with Both side Drain (Reconstruction) (Rongjeng Market)	58
182	34+700	35+060	0.360	1A	2-Lane+PS with Both side Drain (Reconstruction) (Built-up Section)	19
183	35+060	35+260	0.200	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
184	35+260	35+320	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9
185	35+320	35+380	0.060	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
186	35+380	35+420	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9
187	35+420	35+500	0.080	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
188	35+500	35+540	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
189	35+540	36+200	0.660	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	45.00
190	36+200	36+420	0.220	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	9
191	36+420	36+460	0.040	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	9
192	36+460	36+500	0.040	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	
193	36+500	36+540	0.040	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
194	36+540	36+680	0.140	7	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)	9
195	36+680	36+720	0.040	9	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)	
196	36+720	36+780	0.060	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	9
197	36+780	37+060	0.280	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	28
198	37+060	37+220	0.160	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	18
199	37+220	37+260	0.040	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
200	37+260	37+340	0.080	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	27.00
201	37+340	37+440	0.100	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
202	37+440	37+680	0.240	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	18

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Remark	CD Length (m)
203	37+680	37+800	0.120	6A	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)	18.00
204	37+800	38+120	0.320	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	36.00
205	38+120	38+220	0.100	5	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)	
206	38+220	38+350	0.130	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	9.00
207	38+350	38+460	0.110	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	9.00
208	38+460	38+520	0.060	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
209	38+520	38+620	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	
210	38+620	38+720	0.100	13	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	17
211	38+720	38+820	0.100	6	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)	
212	38+820	38+920	0.100	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
213	38+920	39+100	0.180	11	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)	
214	39+100	39+300	0.200	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	9
215	39+300	40+440	1.140	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	44
216	40+440	40+540	0.100	4	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)	9
217	40+540	40+840	0.300	3	2-Lane+PS in Fill Section (Banking Ht. less than 3m)	
Total (Km)			**40.840**			

Summary of TCS

Type	Total Length	Remarks
TCS 1	1.000	2-Lane+PS with Both side Drain in Built-up Section (Overlay Widening)
TCS 1A	0.555	2-Lane+PS with Both side Drain in Built-up Section (Reconstruction)
TCS 1B	0.670	4-Lane+PS with Both side Drain including utility duct (Reconstruction) (Rongjeng Market)
TCS 2	5.970	2-Lane+PS (Overlay & Widening)
TCS 3	11.325	2-Lane+PS in Fill Section (Banking Ht. less than 3m)
TCS 4	3.020	2-Lane+PS with both side toe wall in Fill Section (Banking Ht. more than 3m)
TCS 5	3.130	2-Lane+PS with both side drain in Cut Section (Ht. less than 7m)
TCS 6	6.300	2-Lane+PS with left side drain in Cut Section (Cutting Ht. >1m & less than 7m)
TCS 6A	0.910	2-Lane+PS with Right side drain in Cut Section (Cutting Ht. >1m & less than 7m)
TCS 7	1.070	2-Lane+PS with left side Breast wall in Cut Section (Cutting Ht. > 7m)
TCS 8	0.120	2-Lane+PS with Right side Breast wall in Cut Section (Cutting Ht. > 7m)
TCS 9	2.630	2-Lane+PS with Both side Breast wall in Cut Section (Cutting Ht. > 7m)
TCS 10	0.140	2-Lane+PS in Fill Section (with Left side Retaining wall (Banking ht. more than 3m)
TCS 11	1.460	2-Lane+PS in Fill Section (with Left side Retaining wall offset from Shoulder/ Banking ht. more than 3m)
TCS 12	0.120	2-Lane in Fill Section (with Right side Retaining wall (Banking ht. more than 3m)
TCS 13	2.080	2-Lane+PS in Fill Section (with Right side Retaining wall offset from Shoulder/ Banking ht. more than 3m)
TCS 15	0.340	2-Lane+PS in Fill Section (with both side Retaining wall offset from Shoulder/ Banking ht. more than 3m)
Total	**40.840**	

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	33+965	T	NH-127B
2	40+840	Y	NH-217 & NH-127B
Minor Intersections			
1	0+040	T	VR
2	0+120	Y	VR
3	0+180	T	VR
4	0+195	T	VR
5	0+290	T	VR
6	0+400	T	VR
7	0+440	T	VR
8	0+660	T	VR
9	0+790	T	VR
10	0+840	T	VR
11	1+147	T	VR
12	1+270	T	VR
13	1+365	T	VR
14	1+464	T	VR
15	1+683	T	VR
16	1+732	Y	VR
17	1+823	T	VR

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
18	1+950	T	VR
19	2+076	T	VR
20	2+147	T	VR
21	2+261	T	VR
22	2+575	T	VR
23	2+940	T	VR
24	3+123	Y	VR
25	3+505	T	VR
26	3+820	T	VR
27	4+030	Y	VR
28	4+049	T	VR
29	4+448	T	VR
30	4+537	T	VR
31	4+700	T	VR
32	4+856	T	VR
33	5+170	Y	VR
34	5+199	Y	VR
35	5+710	T	VR
36	6+365	T	VR
37	6+625	T	VR
38	6+980	T	VR
39	8+000	T	VR
40	8+220	T	VR
41	8+564	Y	VR
42	8+710	T	VR
43	8+900	T	VR
44	9+130	T	VR
45	11+300	Y	VR
46	11+560	Y	VR
47	11+570	T	VR
48	11+680	T	VR
49	11+760	T	VR
50	11+870	T	VR
51	11+900	Y	VR
52	12+230	Y	VR
53	12+720	Y	VR
54	13+950	T	VR
55	16+160	Y	VR
56	16+200	T	VR
57	16+980	Y	VR
58	17+500	Y	VR
59	17+550	Y	VR
60	18+030	Y	VR

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
61	18+360	T	VR
62	19+140	T	VR
63	19+450	Y	VR
64	19+460	T	VR
65	19+540	T	VR
66	19+915	T	VR
67	20+000	Y	VR
68	20+100	T	VR
69	20+110	Y	VR
70	20+250	T	VR
71	20+310	Y	VR
72	20+615	Y	VR
73	21+640	Y	VR
74	22+015	T	VR
75	23+140	Y	VR
76	23+150	T	VR
77	23+250	T	VR
78	23+260	T	VR
79	24+400	Y	VR
80	24+900	T	VR
81	27+820	T	VR
82	32+635	T	VR
83	32+890	Y	VR
84	33+030	T	VR
85	33+020	Y	VR
86	33+100	Y	VR
87	33+340	T	VR
88	33+440	T	VR
89	33+770	T	VR
90	34+080	T	VR
91	34+300	T	VR
92	34+370	T	VR
93	34+610	T	VR
94	34+678	Y	VR
95	34+715	Y	VR
96	34+930	Y	VR
97	35+130	Y	VR
98	35+335	T	VR
99	35+535	T	VR
100	35+890	T	VR
101	35+970	T	VR
102	36+020	T	VR
103	36+030	T	VR

Sl. No.	Location of intersection (Design Chainage)	Type of intersection	Other features
104	36+060	T	VR
105	36+242	T	VR
106	36+352	T	VR
107	36+610	T	VR
108	36+870	T	VR
109	36+935	T	VR
110	37+080	T	VR
111	37+170	T	VR
112	38+160	T	VR
113	38+200	T	VR
114	38+340	T	VR
115	38+770	T	VR
116	38+930	Y	VR
117	39+825	T	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.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
1	From Km 1+300 to km 1+600	0.300	AS per Attached Plan & profile
2	From Km 3+300 to km 3+740	0.440	AS per Attached Plan & profile
3	From Km 3+980 to km 4+800	0.820	AS per Attached Plan & profile
4	From Km 5+300 to km 5+880	0.580	AS per Attached Plan & profile
5	From Km 7+750 to km 8+620	0.870	AS per Attached Plan & profile
6	From Km 8+620 to km 8+920	0.300	AS per Attached Plan & profile
7	From Km 9+120 to km 9+180	0.060	AS per Attached Plan & profile
8	From Km 9+650 to km 9+700	0.050	AS per Attached Plan & profile
9	From Km 9+700 to km 9+750	0.050	AS per Attached Plan & profile
10	From Km 9+750 to km 10+020	0.270	AS per Attached Plan & profile
11	From Km 10+270 to km 10+360	0.090	AS per Attached Plan & profile
12	From Km 10+750 to km 10+900	0.150	AS per Attached Plan & profile
13	From Km 11+200 to km 11+600	0.400	AS per Attached Plan & profile
14	From Km 11+620 to km 11+860	0.240	AS per Attached Plan & profile
15	From Km 11+860 to km 12+220	0.360	AS per Attached Plan & profile
16	From Km 12+220 to km 12+760	0.540	AS per Attached Plan & profile
17	From Km 12+760 to km 12+820	0.060	AS per Attached Plan & profile
18	From Km 12+820 to km 12+900	0.080	AS per Attached Plan & profile
19	From Km 12+900 to km 13+130	0.230	AS per Attached Plan & profile
20	From Km 13+300 to km 13+380	0.080	AS per Attached Plan & profile
21	From Km 13+580 to km 13+700	0.120	AS per Attached Plan & profile
22	From Km 14+030 to km 14+060	0.030	AS per Attached Plan & profile
23	From Km 16+580 to km 16+620	0.040	AS per Attached Plan & profile
24	From Km 16+720 to km 16+860	0.140	AS per Attached Plan & profile
25	From Km 16+900 to km 17+040	0.140	AS per Attached Plan & profile
26	From Km 17+040 to km 17+180	0.140	AS per Attached Plan & profile
27	From Km 17+180 to km 17+240	0.060	AS per Attached Plan & profile
28	From Km 17+240 to km 17+320	0.080	AS per Attached Plan & profile
29	From Km 17+390 to km 17+460	0.070	AS per Attached Plan & profile
30	From Km 17+580 to km 17+680	0.100	AS per Attached Plan & profile
31	From Km 17+880 to km 18+020	0.140	AS per Attached Plan & profile
32	From Km 18+020 to km 18+060	0.040	AS per Attached Plan & profile
33	From Km 18+060 to km 18+100	0.040	AS per Attached Plan & profile
34	From Km 18+430 to km 18+490	0.060	AS per Attached Plan & profile
35	From Km 18+600 to km 18+800	0.200	AS per Attached Plan & profile
36	From Km 19+000 to km 19+140	0.140	AS per Attached Plan & profile
37	From Km 19+320 to km 19+390	0.070	AS per Attached Plan & profile
38	From Km 19+390 to km 19+450	0.060	AS per Attached Plan & profile

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
39	From Km 19+450 to km 19+580	0.130	AS per Attached Plan & profile
40	From Km 19+580 to km 19+600	0.020	AS per Attached Plan & profile
41	From Km 19+600 to km 19+700	0.100	AS per Attached Plan & profile
42	From Km 19+700 to km 19+920	0.220	AS per Attached Plan & profile
43	From Km 19+920 to km 19+980	0.060	AS per Attached Plan & profile
44	From Km 19+980 to km 20+100	0.120	AS per Attached Plan & profile
45	From Km 20+100 to km 20+200	0.100	AS per Attached Plan & profile
46	From Km 20+200 to km 20+240	0.040	AS per Attached Plan & profile
47	From Km 20+400 to km 20+640	0.240	AS per Attached Plan & profile
48	From Km 20+840 to km 20+900	0.060	AS per Attached Plan & profile
49	From Km 20+900 to km 21+000	0.100	AS per Attached Plan & profile
50	From Km 21+000 to km 21+040	0.040	AS per Attached Plan & profile
51	From Km 21+040 to km 21+100	0.060	AS per Attached Plan & profile
52	From Km 21+460 to km 21+580	0.120	AS per Attached Plan & profile
53	From Km 21+620 to km 21+720	0.100	AS per Attached Plan & profile
54	From Km 22+060 to km 22+100	0.040	AS per Attached Plan & profile
55	From Km 22+240 to km 22+380	0.140	AS per Attached Plan & profile
56	From Km 22+380 to km 22+480	0.100	AS per Attached Plan & profile
57	From Km 23+040 to km 23+160	0.120	AS per Attached Plan & profile
58	From Km 23+160 to km 23+220	0.060	AS per Attached Plan & profile
59	From Km 23+220 to km 23+420	0.200	AS per Attached Plan & profile
60	From Km 23+420 to km 23+520	0.100	AS per Attached Plan & profile
61	From Km 23+580 to km 23+640	0.060	AS per Attached Plan & profile
62	From Km 23+640 to km 23+680	0.040	AS per Attached Plan & profile
63	From Km 23+960 to km 24+040	0.080	AS per Attached Plan & profile
64	From Km 24+280 to km 24+380	0.100	AS per Attached Plan & profile
65	From Km 24+380 to km 24+400	0.020	AS per Attached Plan & profile
66	From Km 24+660 to km 24+700	0.040	AS per Attached Plan & profile
67	From Km 24+780 to km 24+880	0.100	AS per Attached Plan & profile
68	From Km 24+880 to km 24+940	0.060	AS per Attached Plan & profile
69	From Km 25+140 to km 25+180	0.040	AS per Attached Plan & profile
70	From Km 25+680 to km 25+720	0.040	AS per Attached Plan & profile
71	From Km 25+860 to km 26+060	0.200	AS per Attached Plan & profile
72	From Km 26+270 to km 26+600	0.330	AS per Attached Plan & profile
73	From Km 26+600 to km 26+680	0.080	AS per Attached Plan & profile
74	From Km 27+060 to km 27+120	0.060	AS per Attached Plan & profile
75	From Km 27+800 to km 28+000	0.200	AS per Attached Plan & profile
76	From Km 28+000 to km 28+180	0.180	AS per Attached Plan & profile
77	From Km 28+180 to km 28+300	0.120	AS per Attached Plan & profile
78	From Km 28+650 to km 29+290	0.640	AS per Attached Plan & profile
79	From Km 29+760 to km 29+800	0.040	AS per Attached Plan & profile
80	From Km 29+800 to km 30+400	0.600	AS per Attached Plan & profile
81	From Km 30+600 to km 31+060	0.460	AS per Attached Plan & profile
82	From Km 31+420 to km 31+520	0.100	AS per Attached Plan & profile

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
83	From Km 31+600 to km 31+750	0.150	AS per Attached Plan & profile
84	From Km 31+750 to km 31+850	0.100	AS per Attached Plan & profile
85	From Km 31+850 to km 31+920	0.070	AS per Attached Plan & profile
86	From Km 31+920 to km 32+020	0.100	AS per Attached Plan & profile
87	From Km 32+020 to km 32+080	0.060	AS per Attached Plan & profile
88	From Km 32+600 to km 32+740	0.140	AS per Attached Plan & profile
89	From Km 32+740 to km 32+780	0.040	AS per Attached Plan & profile
90	From Km 32+780 to km 32+880	0.100	AS per Attached Plan & profile
91	From Km 33+245 to km 33+310	0.065	AS per Attached Plan & profile
92	From Km 33+340 to km 33+440	0.100	AS per Attached Plan & profile
93	From Km 33+540 to km 33+600	0.060	AS per Attached Plan & profile
94	From Km 33+600 to km 33+640	0.040	AS per Attached Plan & profile
95	From Km 33+640 to km 33+760	0.120	AS per Attached Plan & profile
96	From Km 33+940 to km 33+980	0.040	AS per Attached Plan & profile
97	From Km 35+260 to km 35+320	0.060	AS per Attached Plan & profile
98	From Km 35+380 to km 35+420	0.040	AS per Attached Plan & profile
99	From Km 35+500 to km 35+540	0.040	AS per Attached Plan & profile
100	From Km 36+780 to km 37+060	0.280	AS per Attached Plan & profile
101	From Km 37+060 to km 37+220	0.160	AS per Attached Plan & profile
102	From Km 37+220 to km 37+260	0.040	AS per Attached Plan & profile
103	From Km 37+340 to km 37+440	0.100	AS per Attached Plan & profile
104	From Km 37+440 to km 37+680	0.240	AS per Attached Plan & profile
105	From Km 37+800 to km 38+120	0.320	AS per Attached Plan & profile
106	From Km 38+220 to km 38+350	0.130	AS per Attached Plan & profile
107	From Km 38+350 to km 38+460	0.110	AS per Attached Plan & profile
108	From Km 38+460 to km 38+520	0.060	AS per Attached Plan & profile
109	From Km 38+520 to km 38+620	0.100	AS per Attached Plan & profile
110	From Km 38+620 to km 38+720	0.100	AS per Attached Plan & profile
111	From Km 38+820 to km 38+920	0.100	AS per Attached Plan & profile
112	From Km 38+920 to km 39+100	0.180	AS per Attached Plan & profile
113	From Km 39+100 to km 39+300	0.200	AS per Attached Plan & profile
114	From Km 39+300 to km 40+440	1.140	AS per Attached Plan & profile
115	From Km 40+440 to km 40+540	0.100	AS per Attached Plan & profile
116	From Km 40+540 to km 40+840	0.300	AS per Attached Plan & profile
Total (Km)		**18.485**	

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.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
1	From Km 8+920 to km 8+980	0.060	AS per Attached Plan & profile
2	From Km 8+980 to km 9+120	0.140	AS per Attached Plan & profile
3	From Km 10+020 to km 10+180	0.160	AS per Attached Plan & profile
4	From Km 10+180 to km 10+240	0.060	AS per Attached Plan & profile
5	From Km 10+240 to km 10+270	0.030	AS per Attached Plan & profile
6	From Km 10+360 to km 10+750	0.390	AS per Attached Plan & profile
7	From Km 11+600 to km 11+620	0.020	AS per Attached Plan & profile
8	From Km 13+130 to km 13+170	0.040	AS per Attached Plan & profile
9	From Km 13+170 to km 13+300	0.130	AS per Attached Plan & profile
10	From Km 13+380 to km 13+440	0.060	AS per Attached Plan & profile
11	From Km 13+440 to km 13+580	0.140	AS per Attached Plan & profile
12	From Km 13+700 to km 13+900	0.200	AS per Attached Plan & profile
13	From Km 13+900 to km 13+920	0.020	AS per Attached Plan & profile
14	From Km 13+920 to km 13+970	0.050	AS per Attached Plan & profile
15	From Km 13+970 to km 14+030	0.060	AS per Attached Plan & profile
16	From Km 14+060 to km 16+520	2.460	AS per Attached Plan & profile
17	From Km 16+520 to km 16+580	0.060	AS per Attached Plan & profile
18	From Km 16+620 to km 16+680	0.060	AS per Attached Plan & profile
19	From Km 16+680 to km 16+720	0.040	AS per Attached Plan & profile
20	From Km 16+860 to km 16+900	0.040	AS per Attached Plan & profile
21	From Km 17+320 to km 17+390	0.070	AS per Attached Plan & profile
22	From Km 17+460 to km 17+580	0.120	AS per Attached Plan & profile
23	From Km 17+680 to km 17+880	0.200	AS per Attached Plan & profile
24	From Km 18+100 to km 18+430	0.330	AS per Attached Plan & profile
25	From Km 18+490 to km 18+600	0.110	AS per Attached Plan & profile
26	From Km 18+800 to km 19+000	0.200	AS per Attached Plan & profile
27	From Km 19+140 to km 19+320	0.180	AS per Attached Plan & profile
28	From Km 20+240 to km 20+300	0.060	AS per Attached Plan & profile
29	From Km 20+300 to km 20+400	0.100	AS per Attached Plan & profile
30	From Km 20+640 to km 20+840	0.200	AS per Attached Plan & profile
31	From Km 21+100 to km 21+250	0.150	AS per Attached Plan & profile
32	From Km 21+250 to km 21+460	0.210	AS per Attached Plan & profile
33	From Km 21+580 to km 21+620	0.040	AS per Attached Plan & profile
34	From Km 21+720 to km 21+760	0.040	AS per Attached Plan & profile
35	From Km 21+760 to km 21+840	0.080	AS per Attached Plan & profile
36	From Km 21+840 to km 22+060	0.220	AS per Attached Plan & profile
37	From Km 22+100 to km 22+240	0.140	AS per Attached Plan & profile
38	From Km 22+480 to km 22+580	0.100	AS per Attached Plan & profile
39	From Km 22+580 to km 22+620	0.040	AS per Attached Plan & profile
40	From Km 22+620 to km 22+680	0.060	AS per Attached Plan & profile
41	From Km 22+680 to km 23+040	0.360	AS per Attached Plan & profile
42	From Km 23+520 to km 23+580	0.060	AS per Attached Plan & profile
43	From Km 23+680 to km 23+960	0.280	AS per Attached Plan & profile

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
44	From Km 24+040 to km 24+200	0.160	AS per Attached Plan & profile
45	From Km 24+200 to km 24+240	0.040	AS per Attached Plan & profile
46	From Km 24+240 to km 24+280	0.040	AS per Attached Plan & profile
47	From Km 24+400 to km 24+460	0.060	AS per Attached Plan & profile
48	From Km 24+460 to km 24+580	0.120	AS per Attached Plan & profile
49	From Km 24+580 to km 24+660	0.080	AS per Attached Plan & profile
50	From Km 24+700 to km 24+740	0.040	AS per Attached Plan & profile
51	From Km 24+740 to km 24+780	0.040	AS per Attached Plan & profile
52	From Km 24+940 to km 25+040	0.100	AS per Attached Plan & profile
53	From Km 25+040 to km 25+140	0.100	AS per Attached Plan & profile
54	From Km 25+180 to km 25+680	0.500	AS per Attached Plan & profile
55	From Km 25+720 to km 25+860	0.140	AS per Attached Plan & profile
56	From Km 26+060 to km 26+270	0.210	AS per Attached Plan & profile
57	From Km 26+680 to km 26+740	0.060	AS per Attached Plan & profile
58	From Km 26+740 to km 27+060	0.320	AS per Attached Plan & profile
59	From Km 27+120 to km 27+800	0.680	AS per Attached Plan & profile
60	From Km 28+300 to km 28+650	0.350	AS per Attached Plan & profile
61	From Km 29+290 to km 29+580	0.290	AS per Attached Plan & profile
62	From Km 29+580 to km 29+760	0.180	AS per Attached Plan & profile
63	From Km 30+400 to km 30+600	0.200	AS per Attached Plan & profile
64	From Km 31+520 to km 31+600	0.080	AS per Attached Plan & profile
65	From Km 32+080 to km 32+290	0.210	AS per Attached Plan & profile
66	From Km 32+520 to km 32+600	0.080	AS per Attached Plan & profile
67	From Km 32+880 to km 33+050	0.170	AS per Attached Plan & profile
68	From Km 33+310 to km 33+340	0.030	AS per Attached Plan & profile
69	From Km 33+440 to km 33+480	0.040	AS per Attached Plan & profile
70	From Km 33+480 to km 33+540	0.060	AS per Attached Plan & profile
71	From Km 33+760 to km 33+820	0.060	AS per Attached Plan & profile
72	From Km 33+820 to km 33+940	0.120	AS per Attached Plan & profile
73	From Km 33+980 to km 34+030	0.050	AS per Attached Plan & profile
74	From Km 35+060 to km 35+260	0.200	AS per Attached Plan & profile
75	From Km 35+320 to km 35+380	0.060	AS per Attached Plan & profile
76	From Km 35+420 to km 35+500	0.080	AS per Attached Plan & profile
77	From Km 35+540 to km 36+200	0.660	AS per Attached Plan & profile
78	From Km 36+200 to km 36+420	0.220	AS per Attached Plan & profile
79	From Km 36+420 to km 36+460	0.040	AS per Attached Plan & profile
80	From Km 36+460 to km 36+500	0.040	AS per Attached Plan & profile
81	From Km 36+500 to km 36+540	0.040	AS per Attached Plan & profile
82	From Km 36+540 to km 36+680	0.140	AS per Attached Plan & profile
83	From Km 36+680 to km 36+720	0.040	AS per Attached Plan & profile
84	From Km 36+720 to km 36+780	0.060	AS per Attached Plan & profile
85	From Km 37+260 to km 37+340	0.080	AS per Attached Plan & profile
86	From Km 37+680 to km 37+800	0.120	AS per Attached Plan & profile

Sl. No.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
87	From Km 38+120 to km 38+220	0.100	AS per Attached Plan & profile
88	From Km 38+720 to km 38+820	0.100	AS per Attached Plan & profile
Total (Km)		**14.160**	

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) In clayey soil areas (black cotton soil) excavate 600mm 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.

(b) 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.

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

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

(e) The contractor shall confirm the MORTH Specification section 600 and IRC SP 46 for Steel fibre reinforcement concrete (SFRC) to reduce the shrinkage cracking and post- cracking.

(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+000	0+700	0.700	The existing Intermediate/2-lane shall be reconstructed as new pavement.
2	1+300	1+600	0.300	The existing Intermediate/2-lane shall be reconstructed as new pavement.
3	3+300	3+740	0.440	The existing Intermediate/2-lane shall be reconstructed as new pavement.

Sr. No.	Stretch Design Chainage From km to km		Length (km)	Remarks
	From	To		
4	4+050	4+800	0.750	The existing Intermediate/2-lane shall be reconstructed as new pavement.
5	5+300	5+880	0.580	The existing Intermediate/2-lane shall be reconstructed as new pavement.
6	7+750	8+600	0.850	The existing Intermediate/2-lane shall be reconstructed as new pavement.
7	8+700	9+070	0.370	The existing Intermediate/2-lane shall be reconstructed as new pavement.
8	9+170	9+180	0.010	The existing Intermediate/2-lane shall be reconstructed as new pavement.
9	9+650	9+660	0.010	The existing Intermediate/2-lane shall be reconstructed as new pavement.
10	9+770	10+360	0.590	The existing Intermediate/2-lane shall be reconstructed as new pavement.
11	10+650	11+520	0.870	The existing Intermediate/2-lane shall be reconstructed as new pavement.
12	11+620	11+900	0.280	The existing Intermediate/2-lane shall be reconstructed as new pavement.
13	11+980	12+390	0.410	The existing Intermediate/2-lane shall be reconstructed as new pavement.
14	12+535	12+670	0.135	The existing Intermediate/2-lane shall be reconstructed as new pavement.
15	13+800	13+900	0.100	The existing Intermediate/2-lane shall be reconstructed as new pavement.
16	17+140	17+300	0.160	The existing Intermediate/2-lane shall be reconstructed as new pavement.
17	17+400	17+530	0.130	The existing Intermediate/2-lane shall be reconstructed as new pavement.
18	17+910	18+050	0.140	The existing Intermediate/2-lane shall be reconstructed as new pavement.
19	18+500	21+500	3.000	The existing Intermediate/2-lane shall be reconstructed as new pavement.
20	22+200	22+320	0.120	The existing Intermediate/2-lane shall be reconstructed as new pavement.
21	22+880	23+030	0.150	The existing Intermediate/2-lane shall be reconstructed as new pavement.
22	23+300	23+430	0.130	The existing Intermediate/2-lane shall be reconstructed as new pavement.
23	27+800	29+500	1.700	The existing Intermediate/2-lane shall be reconstructed as new pavement.
24	29+800	30+600	0.800	The existing Intermediate/2-lane shall be reconstructed as new pavement.
25	30+700	31+060	0.360	The existing Intermediate/2-lane shall be reconstructed as new pavement.
26	31+420	32+290	0.870	The existing Intermediate/2-lane shall be reconstructed as new pavement.

Sr. No.	Stretch Design Chainage From km to km		Length (km)	Remarks
	From	To		
27	32+520	32+530	0.010	The existing Intermediate/2-lane shall be reconstructed as new pavement.
28	32+900	33+290	0.390	The existing Intermediate/2-lane shall be reconstructed as new pavement.
29	33+770	33+950	0.180	The existing Intermediate/2-lane shall be reconstructed as new pavement.
30	34+100	35+230	1.130	The existing Intermediate/2-lane shall be reconstructed as new pavement.
31	35+550	36+320	0.770	The existing Intermediate/2-lane shall be reconstructed as new pavement.
32	36+870	37+100	0.230	The existing Intermediate/2-lane shall be reconstructed as new pavement.
33	37+400	37+500	0.100	The existing Intermediate/2-lane shall be reconstructed as new pavement.
34	37+620	38+000	0.380	The existing Intermediate/2-lane shall be reconstructed as new pavement.
35	38+250	38+600	0.350	The existing Intermediate/2-lane shall be reconstructed as new pavement.
36	38+800	40+100	1.300	The existing Intermediate/2-lane shall be reconstructed as new pavement.
37	40+200	40+230	0.030	The existing Intermediate/2-lane shall be reconstructed as new pavement.
38	40+340	40+840	0.500	The existing Intermediate/2-lane shall be reconstructed as new pavement.
Total (Km)			**19.325**	

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+700	0.700
2	0+700	1+300	0.600
3	1+600	3+300	1.700
4	3+740	3+980	0.240
5	4+800	5+300	0.500
6	5+880	7+750	1.870
7	9+180	9+650	0.470
8	10+900	11+200	0.300

Sr. No.	Stretch Design Chainage From km to km		Remarks
	From	To	Length (m)
9	31+060	31+420	0.360
10	32+290	32+520	0.230
		Total	**6.970**

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 Chainage (Km)	To Chainage (Km)	Length (M)	From Chainage (Km)	To Chainage (Km)	Length (M)
8+920	8+980	60	8+980	9+120	140
8+980	9+120	140	13+900	13+920	20
10+020	10+095	75	13+920	13+970	50
10+105	10+180	75	14+060	14+130	70
10+180	10+240	60	14+140	15+275	1135
10+240	10+270	30	15+285	16+520	1235
10+360	10+485	125	16+620	16+680	60
10+495	10+750	255	16+680	16+720	40
11+600	11+620	20	16+860	16+900	40
13+130	13+170	40	17+460	17+580	120
13+170	13+300	130	17+680	17+735	55
13+380	13+440	60	17+745	17+880	135
13+440	13+580	140	18+100	18+430	330
13+700	13+785	85	19+140	19+160	20
13+795	13+895	100	19+170	19+320	150
13+900	13+920	20	20+240	20+300	60
13+920	13+970	50	21+250	21+460	210
13+970	14+030	60	21+580	21+583	3
14+060	14+130	70	21+597	21+620	23
14+140	15+275	1135	21+720	21+760	40
15+285	16+520	1235	22+100	22+240	140
16+680	16+720	40	22+480	22+580	100
16+860	16+900	40	22+620	22+680	60
17+320	17+390	70	23+520	23+580	60
18+100	18+430	330	22+680	22+688	8
18+490	18+600	110	22+702	22+728	26

LEFT			RIGHT		
From Chainage (Km)	To Chainage (Km)	Length (M)	From Chainage (Km)	To Chainage (Km)	Length (M)
18+800	18+873	73	22+742	22+914	172
18+887	19+000	113	22+926	23+005	79
20+240	20+300	60	23+015	23+040	25
20+300	20+395	95	24+240	24+280	40
20+640	20+840	200	24+400	24+460	60
21+100	21+250	150	24+700	24+740	40
21+250	21+460	210	24+740	24+780	40
21+580	21+583	3	25+040	25+065	25
21+597	21+620	23	25+075	25+140	65
21+720	21+760	40	28+300	28+328	28
21+760	21+840	80	28+372	28+650	278
21+840	21+870	30	29+580	29+760	180
21+880	21+955	75	30+400	30+600	200
21+965	22+025	60	31+520	31+600	80
22+031	22+060	29	32+520	32+600	80
22+100	22+240	140	32+880	33+050	170
22+480	22+580	100	33+310	33+315	5
22+580	22+594	14	33+325	33+340	15
22+606	22+620	14	33+440	33+480	40
22+620	22+680	60	33+480	33+540	60
22+680	22+688	8	33+760	33+820	60
22+702	22+728	26	33+820	33+940	120
22+742	22+914	172	33+980	34+030	50
22+926	23+005	79	36+680	36+715	35
23+015	23+040	25	36+725	36+780	55
23+520	23+545	25	37+260	37+281	21
23+555	23+580	25	37+309	37+340	31
23+680	23+744	64	38+120	38+220	100
23+756	23+884	128			
23+896	23+960	64			
24+040	24+184	144			
24+196	24+200	4			
24+200	24+240	40			
24+240	24+280	40			
24+400	24+460	60			
24+460	24+545	85			
24+555	24+580	25			
24+580	24+660	80			
24+700	24+740	40			
24+740	24+780	40			
24+940	25+014	74			

LEFT			RIGHT		
From Chainage (Km)	To Chainage (Km)	Length (M)	From Chainage (Km)	To Chainage (Km)	Length (M)
25+026	25+040	14			
25+040	25+065	25			
25+075	25+140	65			
25+180	25+194	14			
25+206	25+410	204			
25+420	25+495	75			
25+505	25+680	175			
25+720	25+730	10			
25+740	25+790	50			
25+797	25+860	63			
26+060	26+159	99			
26+171	26+223	52			
26+237	26+270	33			
26+680	26+740	60			
26+740	26+844	104			
26+856	27+060	204			
27+120	27+189	69			
27+201	27+355	154			
27+365	27+455	90			
27+465	27+640	175			
27+650	27+800	150			
28+300	28+328	28			
28+372	28+650	278			
29+290	29+364	74			
29+376	29+580	204			
29+580	29+760	180			
30+400	30+600	200			
31+520	31+600	80			
32+080	32+290	210			
32+520	32+600	80			
33+310	33+315	5			
33+325	33+340	15			
33+440	33+455	15			
33+465	33+480	15			
33+820	33+940	120			
33+980	34+030	50			
35+060	35+260	200			
35+320	35+380	60			
35+420	35+500	80			
35+540	35+600	60			
35+610	35+725	115			

LEFT			RIGHT		
From Chainage (Km)	To Chainage (Km)	Length (M)	From Chainage (Km)	To Chainage (Km)	Length (M)
35+735	35+795	60			
35+805	35+880	75			
35+890	35+955	65			
35+965	36+140	175			
36+150	36+330	180			
36+340	36+420	80			
36+435	36+460	25			
36+460	36+500	40			
36+500	36+540	40			
36+540	36+580	40			
36+590	36+635	45			
36+680	36+715	35			
36+725	36+780	55			
37+260	37+281	21			
37+309	37+340	31			
38+120	38+220	100			
38+720	38+820	100			
Total (km)		**12.493**	**Total (km)**		**6.484**

Footpath cum RCC Covered Drain

S. no	Design Chainage (From)	Design Chainage (To)	Net Length (m)	Remarks
1	0+000	0+168	168	Both side
2	0+182	0+700	518	Both side
3	1+900	11+200	300	Both side
4	33+050	33+245	195	Both side
5	34+700	35+060	360	Both side
Total (Km)			**=1541 x 2 =3082**	**(3.082 Km)**

Footpath cum RCC Covered Drain with utility duct in built-up of Rongjeng Markert area

S. no	Design Chainage (From)	Design Chainage (To)	Net Length after deduction of CD Length (m)	Remarks
1	34+030	34+700	=612 x 2= 1224	Both side

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.	Bridge Deign Chainage at	Width of carriageway and cross-sectional features*
		Minor Bridge
1	3+280	TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 0.350 hand rail + 0.150m shyness)
2	5+645	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	8+180	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	8+615	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	11+775	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)
6	12+310	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	12+820	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	13+380	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	23+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)

Sl. No.	Bridge Deign Chainage at	Width of carriageway and cross-sectional features*
10	28+350	TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 1 x 0.50m RCC Railing)
11	29+850	TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 0.350 hand rail + 0.150m shyness)
12	33+255	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	37+295	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	38+650	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	38+800	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	39+710	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:

Sl. No.	Location at km	Remarks
(1)	(2)	(3)
Minor Bridge		
1	3+280	As per TCS-18 1 x 1.50m Footpath
2	5+645	As per TCS-17 2 x 1.50m Footpath
3	8+180	As per TCS-17 2 x 1.50m Footpath
4	8+615	As per TCS-17 2 x 1.50m Footpath
5	11+775	As per TCS-17 2 x 1.50m Footpath
6	12+310	As per TCS-17 2 x 1.50m Footpath
7	12+820	As per TCS-17 2 x 1.50m Footpath
8	13+380	As per TCS-17 2 x 1.50m Footpath

Sl. No.	Location at km	Remarks
(1)	(2)	(3)
9	23+160	As per TCS-17 2 x 1.50m Footpath
10	28+350	As per TCS-18 1 x 1.50m Footpath
11	29+850	As per TCS-18 1 x 1.50m Footpath
12	33+255	As per TCS-17 2 x 1.50m Footpath
13	37+295	As per TCS-17 2 x 1.50m Footpath
14	38+650	As per TCS-17 2 x 1.50m Footpath
15	38+800	As per TCS-17 2 x 1.50m Footpath
16	39+710	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	0+175	1 x 6	Box Culvert
2	1+485	1 x 2	Box Culvert
3	1+610	1 x 2	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
4	1+750	1 x 6	Box Culvert
5	2+510	1 x 2	Box Culvert
6	4+215	1 x 3	Box Culvert
7	4+410	1 x 2	Box Culvert
8	4+490	1 x 6	Box Culvert
9	4+625	1 x 2	Box Culvert
10	4+930	1 x 2	Box Culvert
11	5+530	1 x 2	Box Culvert
12	7+860	1 x 3	Box Culvert
13	9+150	1 x 3	Box Culvert
14	10+100	1 x 2	Box Culvert
15	10+310	1 x 3	Box Culvert
16	10+370	1 x 2	Box Culvert
17	10+760	1 x 2	Box Culvert
18	10+860	1 x 2	Box Culvert
19	11+240	1 x 2	Box Culvert
20	11+400	1 x 2	Box Culvert
21	11+960	1 x 3	Box Culvert
22	12+250	1 x 6	Box Culvert
23	12+535	1 x 3	Box Culvert
24	12+665	1 x 3	Box Culvert
25	12+885	1 x 2	Box Culvert
26	13+000	1 x 2	Box Culvert
27	13+075	1 x 6	Box Culvert
28	13+300	1 x 6	Box Culvert
29	13+650	1 x 3	Box Culvert
30	13+880	1 x 2	Box Culvert
31	14+990	1 x 2	Box Culvert
32	15+020	1 x 2	Box Culvert
33	15+280	1 x 2	Box Culvert
34	15+345	1 x 2	Box Culvert
35	15+600	1 x 2	Box Culvert
36	15+620	1 x 2	Box Culvert
37	16+420	1 x 2	Box Culvert
38	16+720	1 x 2	Box Culvert
39	16+960	1 x 2	Box Culvert
40	17+125	1 x 2	Box Culvert
41	17+250	1 x 2	Box Culvert
42	18+000	1 x 6	Box Culvert
43	18+050	1 x 6	Box Culvert
44	18+440	1 x 6	Box Culvert
45	18+880	1 x 6	Box Culvert
46	19+100	1 x 2	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
47	19+165	1 x 2	Box Culvert
48	19+450	1 x 2	Box Culvert
49	19+625	1 x 2	Box Culvert
50	19+970	1 x 2	Box Culvert
51	20+135	1 x 6	Box Culvert
52	20+400	1 x 2	Box Culvert
53	20+530	1 x 3	Box Culvert
54	20+585	1 x 2	Box Culvert
55	21+025	1 x 2	Box Culvert
56	21+090	1 x 3	Box Culvert
57	21+590	1 x 6	Box Culvert
58	21+715	1 x 2	Box Culvert
59	21+875	1 x 2	Box Culvert
60	22+070	1 x 3	Box Culvert
61	22+325	1 x 3	Box Culvert
62	22+600	1 x 3	Box Culvert
63	22+735	1 x 6	Box Culvert
64	22+920	1 x 3	Box Culvert
65	23+010	1 x 2	Box Culvert
66	23+750	1 x 3	Box Culvert
67	23+890	1 x 3	Box Culvert
68	24+190	1 x 3	Box Culvert
69	24+370	1 x 3	Box Culvert
70	24+680	1 x 2	Box Culvert
71	24+820	1 x 2	Box Culvert
72	24+870	1 x 6	Box Culvert
73	25+150	1 x 2	Box Culvert
74	25+610	1 x 2	Box Culvert
75	25+790	1 x 6	Box Culvert
76	26+050	1 x 3	Box Culvert
77	26+165	1 x 3	Box Culvert
78	26+230	1 x 6	Box Culvert
79	26+450	1 x 2	Box Culvert
80	26+630	1 x 2	Box Culvert
81	26+850	1 x 3	Box Culvert
82	27+195	1 x 3	Box Culvert
83	27+360	1 x 2	Box Culvert
84	27+460	1 x 2	Box Culvert
85	27+950	1 x 3	Box Culvert
86	28+155	1 x 3	Box Culvert
87	29+060	1 x 2	Box Culvert
88	29+370	1 x 3	Box Culvert
89	30+190	1 x 3	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
90	30+330	1 x 3	Box Culvert
91	30+635	1 x 3	Box Culvert
92	30+960	1 x 2	Box Culvert
93	31+500	1 x 3	Box Culvert
94	31+630	1 x 2	Box Culvert
95	31+900	1 x 3	Box Culvert
96	32+170	1 x 2	Box Culvert
97	33+460	1 x 2	Box Culvert
98	34+220	1 x 6	Box Culvert
99	34+330	1 x 3	Box Culvert
100	34+645	1 x 6	Box Culvert
101	34+875	1 x 2	Box Culvert
102	34+970	1 x 2	Box Culvert
103	35+605	1 x 2	Box Culvert
104	35+730	1 x 2	Box Culvert
105	35+800	1 x 2	Box Culvert
106	35+885	1 x 2	Box Culvert
107	35+960	1 x 2	Box Culvert
108	36+145	1 x 2	Box Culvert
109	36+430	1 x 2	Box Culvert
110	36+585	1 x 2	Box Culvert
111	36+640	1 x 2	Box Culvert
112	36+960	1 x 2	Box Culvert
113	37+100	1 x 2	Box Culvert
114	37+495	1 x 2	Box Culvert
115	37+715	1 x 2	Box Culvert
116	37+790	1 x 2	Box Culvert
117	37+850	1 x 2	Box Culvert
118	37+940	1 x 2	Box Culvert
119	38+000	1 x 2	Box Culvert
120	38+250	1 x 2	Box Culvert
121	38+425	1 x 2	Box Culvert
122	39+200	1 x 2	Box Culvert
123	39+430	1 x 2	Box Culvert
124	39+965	1 x 2	Box Culvert
125	40+480	1 x 2	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	Type, span height and width of existing culvert(m)	Repairs to be carried out
Nil			

(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	-2	-3	-4
1	0+640	1 x 2	Box Culvert
2	2+600	1 x 2	Box Culvert
3	2+800	1 x 2	Box Culvert
4	3+440	1 x 2	Box Culvert
5	3+800	1 x 2	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
6	5+260	1 x 2	Box Culvert
7	5+860	1 x 2	Box Culvert
8	6+190	1 x 2	Box Culvert
9	6+700	1 x 2	Box Culvert
10	7+020	1 x 2	Box Culvert
11	7+300	1 x 2	Box Culvert
12	7+580	1 x 2	Box Culvert
13	9+720	1 x 2	Box Culvert
14	9+930	1 x 3	Box Culvert
15	10+080	1 x 3	Box Culvert
16	10+490	1 x 2	Box Culvert
17	12+490	1 x 2	Box Culvert
18	12+725	1 x 2	Box Culvert
19	13+400	1 x 6	Box Culvert
20	13+600	1 x 2	Box Culvert
21	13+800	1 x 2	Box Culvert
22	13+960	1 x 2	Box Culvert
23	14+040	1 x 3	Box Culvert
24	14+135	1 x 2	Box Culvert
25	14+200	1 x 2	Box Culvert
26	14+300	1 x 2	Box Culvert
27	14+500	1 x 2	Box Culvert
28	14+630	1 x 3	Box Culvert
29	14+740	1 x 2	Box Culvert
30	15+480	1 x 2	Box Culvert
31	15+810	1 x 2	Box Culvert
32	15+935	1 x 2	Box Culvert
33	16+500	1 x 2	Box Culvert
34	16+610	1 x 2	Box Culvert
35	17+000	1 x 2	Box Culvert
36	17+420	1 x 2	Box Culvert
37	17+620	1 x 2	Box Culvert
38	17+780	1 x 2	Box Culvert
39	21+960	1 x 2	Box Culvert
40	22+025	1 x 3	Box Culvert
41	22+385	1 x 6	Box Culvert
42	22+695	1 x 6	Box Culvert
43	23+550	1 x 2	Box Culvert
44	23+640	1 x 3	Box Culvert
45	24+030	1 x 2	Box Culvert
46	24+365	1 x 2	Box Culvert

Sl. No.	Design Chainage (Km)	No. of Spans x Clear Span (m)/Opening (m)	Remarks (Proposed Type) *
47	24+550	1 x 2	Box Culvert
48	25+020	1 x 3	Box Culvert
49	25+070	1 x 2	Box Culvert
50	25+200	1 x 3	Box Culvert
51	25+415	1 x 2	Box Culvert
52	25+500	1 x 2	Box Culvert
53	25+700	1 x 2	Box Culvert
54	25+735	1 x 2	Box Culvert
55	25+925	1 x 2	Box Culvert
56	26+350	1 x 2	Box Culvert
57	26+930	1 x 2	Box Culvert
58	27+045	1 x 2	Box Culvert
59	27+645	1 x 2	Box Culvert
60	29+575	1 x 3	Box Culvert
61	29+720	1 x 2	Box Culvert
62	32+600	1 x 2	Box Culvert
63	32+640	1 x 2	Box Culvert
64	32+705	1 x 3	Box Culvert
65	33+320	1 x 2	Box Culvert
66	33+700	1 x 2	Box Culvert
67	34+050	1 x 3	Box Culvert
68	34+595	1 x 3	Box Culvert
69	35+305	1 x 2	Box Culvert
70	35+400	1 x 2	Box Culvert
71	35+520	1 x 2	Box Culvert
72	36+335	1 x 2	Box Culvert
73	36+720	1 x 2	Box Culvert
74	36+800	1 x 3	Box Culvert
75	36+840	1 x 2	Box Culvert
76	37+180	1 x 2	Box Culvert
77	37+525	1 x 2	Box Culvert
78	38+050	1 x 2	Box Culvert
79	39+060	1 x 2	Box Culvert
80	39+460	1 x 2	Box Culvert
81	40+275	1 x 2	Box Culvert

****Additionally, RCC Barrel Shall be provided in all Major/minor junctions/Cross roads - 119 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:

S. no.	Location	Type of repair required
Nil		

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

(iii) Bridges

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

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

Sl. No.	**Bridge location (km)**	**Salient details of existing bridge**	**Adequacy or otherwise of the existing waterway, vertical clearance, etc***	**Remarks**
Minor Bridge				
1	5+645	1x16	1x20	Reconstruction

Sl. No.	Bridge location (km)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
2	11+775	1x11	1X15	with as per TCS-17
3	23+160	1x8	1X10	
4	33+255	1x25	1x25	
5	37+295	1x16	1x20	
6	38+650	1x7	1X10	
7	38+800	1x25	1x25	
8	39+710	1x7	1X10	

(ii) The following narrow bridges shall be widened:

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

(b) **Additional New bridges**

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

Sl. No.	Location (km)	Total length (m)	Remarks, if any (Total width in m)
Minor Bridge			
1	3+280	1x45.00	As per TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 0.350 hand rail + 0.150m
2	8+180	1x7.00	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)
3	8+615	1x7.00	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)
4	12+310	1x10.00	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)
5	12+820	1x15.00	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)

Sl. No.	Location (km)	Total length (m)	Remarks, if any (Total width in m)
6	13+380	1x20.00	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)
7	28+350	1x36.00	As per TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 1 x 0.50m RCC Railing)
8	29+850	1x52.00	As per TCS-18 1 x 12.5 (9.50m CW+ 1 x 1.50m Footpath + 2 x 0.50m Crash barrier + 0.350 hand rail + 0.150m

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.**

6) The Bridges at Km **3+280, Km 28+350 & Km 29+850 shall be constructed parallel to the existing bridge as new bridge.**

(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
1	8+800	RCC BOX Girder ((1X50+2X40.30)

The following Minor bridges shall be retained with repairs:

Sl. No.	Location at km	Remarks
1	0+935	RCC BOX TYPE (2x6.00)
2	3+280	STEEL BRIDGE (1X37.5)
3	28+350	STEEL BRIDGE (1X31)
4	29+850	STEEL BRIDGE (1X45)

(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.	Location of bridge (km)	Nature and extent of repairs /strengthening to be carried out
As per table on para 7 (iii) d		

(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)
1	8+800

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	2	23696	0.15	7109	23696	1	7899	0.10	790

Description	EDGE LINE				CENTRE LINE				
	Nos	Length	Width	Minimum Quantity	Length	Nos	Total Length of Strips	Width	Minimum Quantity
Lane									
Straight Portion (Mcw)-4 Lane	2	1340	0.15	402	1340	2	447	0.10	89
Curve Portion (Mcw)-2 Lane	2	15804	0.15	4741	15804	1	7902	0.10	790
For junctions/Toll Plaza/Bus Bays/ Truck Lay byes wastage etc:				**17,401.875**	**Sq.m.**				
TOTAL QUANTITY (SQ.M):				**31,322.875**	**Sq.m.**				

Studs shall be installed all along the project highway on Paved shoulders on either side of main carriageway in a minimum length of 3616 m.

SUMMARY OF STUDS						
S.No.	Chainage	Radius	Transition	Curve Length	Length	Numbers
1	145.180	400	25	78	127.62	21
2	294.941	1500	0	53	52.95	3
3	437.357	400	25	79	128.85	21
4	756.597	370	30	48	107.61	18
5	877.542	220	45	39	129.04	22
6	1101.119	700	0	169	169.24	19
7	1392.136	1000	0	77	76.59	4
8	1533.843	220	45	31	121.42	20
9	1846.455	580	20	98	137.79	15
10	2021.758	240	45	43	133.45	22
11	2197.440	170	40	42	122.29	20
12	2492.081	1700	0	144	144.19	8
13	2909.487	750	0	126	126.25	14
14	3154.925	75	30	109	168.79	28
15	3357.233	65	35	67	137.25	23
16	3556.067	135	35	111	180.64	30
17	4036.793	100	45	50	139.52	23
18	4298.271	270	40	121	201.14	34
19	4651.320	490	20	296	336.10	37
20	4953.051	900	0	130	129.86	7
21	5141.750	750	0	61	60.97	7
22	5235.555	235	45	31	121.17	20

SUMMARY OF STUDS						
S.No.	Chainage	Radius	Transition	Curve Length	Length	Numbers
23	5460.937	465	25	102	152.19	17
24	5645.184	290	35	101	170.94	28
25	6232.042	450	25	116	166.20	28
26	6545.292	1200	0	65	65.18	4
27	6695.270	430	25	94	144.18	24
28	6914.647	520	20	94	133.92	15
29	7314.331	170	40	50	130.14	22
30	7813.925	320	35	57	126.59	21
31	8222.093	505	20	150	190.14	21
32	8526.232	300	15	130	159.92	27
33	8687.431	60	35	29	99.00	16
34	8920.679	55	40	45	125.44	21
35	9093.166	125	20	11	50.81	8
36	9167.947	120	20	33	72.67	12
37	9311.892	130	20	100	140.47	23
38	9604.139	125	20	111	150.56	25
39	9989.831	470	20	130	170.16	19
40	10210.756	180	25	60	109.89	18
41	10335.059	125	35	49	119.34	20
42	10556.097	200	25	30	79.98	13
43	10640.868	135	15	50	79.76	13
44	10798.192	250	20	131	170.85	28
45	11015.369	210	20	80	120.15	20
46	11194.652	295	15	57	86.57	14
47	11364.222	130	20	109	148.59	25
48	11516.709	85	25	43	92.71	15
49	11634.872	75	30	51	110.84	18
50	11752.461	75	30	40	99.79	17
51	11919.839	195	25	150	200.22	33
52	12177.418	120	20	195	235.32	39
53	12357.112	100	20	71	110.59	18
54	12661.827	75	30	42	101.93	17
55	12782.052	105	20	67	106.91	18
56	13300.168	75	30	112	172.21	29
57	13493.595	105	20	45	84.84	14
58	13735.922	75	30	88	147.87	25
59	13893.185	75	30	25	85.06	14
60	14149.748	75	30	164	224.22	37
61	14473.416	85	25	160	209.97	35
62	14698.213	75	30	115	174.98	29
63	15042.885	75	30	133	193.25	32
64	15324.545	155	30	51	111.41	19
65	15664.138	155	30	82	142.36	24

SUMMARY OF STUDS						
S.No.	Chainage	Radius	Transition	Curve Length	Length	Numbers
66	15844.826	110	40	66	145.92	24
67	16053.636	75	30	97	157.19	26
68	16286.772	110	40	129	209.41	35
69	16552.616	175	25	172	222.15	37
70	16807.367	140	15	111	141.34	24
71	17160.837	2500	0	96	96.28	FALSE
72	17391.191	120	20	77	116.99	19
73	17540.091	100	20	56	96.32	16
74	17718.631	750	0	163	163.40	18
75	18070.276	155	30	87	146.96	24
76	18455.568	235	20	307	346.58	58
77	18866.418	145	30	123	183.32	31
78	19013.843	115	20	51	91.26	15
79	19103.237	150	15	33	62.66	10
80	19205.625	125	20	41	81.09	14
81	19430.482	850	0	125	125.30	7
82	19675.619	155	30	34	93.79	16
83	19821.291	225	20	139	178.69	30
84	20024.075	205	25	55	105.46	18
85	20198.792	190	25	68	117.73	20
86	20330.704	190	25	59	108.90	18
87	20562.169	1200	0	179	179.21	10
88	21032.344	2500	0	159	159.49	FALSE
89	21328.737	305	15	186	215.81	36
90	21580.832	75	30	51	110.55	18
91	21686.081	85	25	30	80.22	13
92	21849.912	200	25	44	93.96	16
93	22006.484	200	25	42	91.92	15
94	22180.577	300	15	135	164.58	27
95	22610.076	235	20	101	141.04	24
96	22879.917	145	30	74	134.07	22
97	23076.922	100	20	93	133.07	22
98	23253.234	100	20	100	140.10	23
99	23661.094	405	15	148	177.66	30
100	24037.425	230	20	113	152.97	25
101	24222.304	250	20	74	113.97	19
102	24445.653	250	20	159	199.12	33
103	24945.164	600	15	568	597.89	66
104	25667.494	260	20	82	122.21	20
105	26020.388	145	30	173	232.71	39
106	26215.023	110	20	81	121.25	20
107	26542.049	250	20	107	147.47	25
108	26891.056	150	30	63	122.96	20

SUMMARY OF STUDS						
S.No.	Chainage	Radius	Transition	Curve Length	Length	Numbers
109	27188.657	220	20	143	183.32	31
110	27498.642	165	30	245	305.03	51
111	27768.677	150	30	123	182.78	30
112	28058.725	100	20	38	77.89	13
113	28190.427	190	25	107	157.25	26
114	28409.904	165	30	46	105.84	18
115	28607.569	130	20	21	60.64	10
116	28701.524	85	25	42	91.80	15
117	28844.327	245	20	65	105.33	18
118	29374.000	480	20	250	290.17	32
119	29724.424	200	20	163	202.67	34
120	29907.028	100	45	43	132.51	22
121	30021.301	200	25	31	80.50	13
122	30277.837	230	20	47	87.49	15
123	30369.858	180	25	24	74.27	12
124	30486.901	280	15	57	86.58	14
125	30710.732	100	45	51	141.35	24
126	30957.755	110	40	43	122.55	20
127	31095.884	190	25	57	106.76	18
128	31271.352	120	35	95	164.86	27
129	31446.134	150	30	109	169.35	28
130	31630.269	650	0	107	106.63	12
131	31800.886	110	20	50	89.53	15
132	31951.056	110	20	86	125.70	21
133	32083.243	350	0	96	96.14	16
134	32429.672	150	30	11	70.93	12
135	32582.573	75	30	110	170.24	28
136	32795.475	75	30	108	167.89	28
137	32968.536	100	20	54	93.73	16
138	33104.276	100	20	94	134.30	22
139	33238.612	280	0	92	92.30	15
140	33343.116	55	40	30	110.37	18
141	33483.226	100	20	79	119.11	20
142	33742.450	85	25	58	108.45	18
143	33958.666	75	30	78	138.45	23
144	34227.542	150	30	36	96.39	16
145	34361.540	200	20	23	63.35	11
146	34698.231	150	30	33	92.89	15
147	34792.932	80	25	24	74.24	12
148	34905.968	150	30	22	82.42	14
149	35038.719	80	25	36	86.32	14
150	35219.124	80	25	62	112.14	19
151	35416.223	100	20	41	81.47	14

SUMMARY OF STUDS						
S.No.	**Chainage**	**Radius**	**Transition**	**Curve Length**	**Length**	**Numbers**
152	35527.915	300	15	94	123.52	21
153	35649.933	85	25	43	93.31	16
154	35755.155	100	20	34	74.28	12
155	36013.139	320	15	160	189.72	32
156	36226.662	300	15	92	121.60	20
157	36383.801	300	15	124	153.63	26
158	36667.098	125	20	29	69.09	12
159	36882.349	75	30	75	134.59	22
160	37058.267	75	30	67	126.99	21
161	37186.371	305	0	92	91.70	15
162	37360.019	300	15	119	149.10	25
163	37743.279	1000	0	166	166.31	9
164	38144.619	1000	0	123	122.87	7
165	38626.030	350	25	28	78.37	13
166	38783.066	350	25	114	163.53	27
167	38962.170	750	0	95	95.33	11
168	39072.776	650	0	121	120.76	13
169	39229.702	750	0	61	60.72	7
170	39394.149	160	30	50	109.71	18
171	39538.524	145	30	53	112.59	19
172	39700.023	305	30	45	105.41	18
173	39922.125	500	20	112	152.19	17
174	40240.206	225	20	211	250.83	42
175	40461.736	100	20	92	131.71	22
TOTAL	**3616.000**					

(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.

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) 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 – 6 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 12604 m.

LEFT SIDE			RIGHT SIDE			
From (Km.)	To (Km.)	Length (M)	From (Km.)	To (Km.)	Length (M)	Remark
11.620	11.746	126	11.620	11.746	126	High Embankment
11.786	11.860	74	11.786	11.860	74	High Embankment
12.220	12.243	23	12.220	12.243	23	High Embankment
12.257	12.301	44	12.257	12.301	44	High Embankment
12.319	12.485	166	12.319	12.485	166	High Embankment

LEFT SIDE			RIGHT SIDE			
From (Km.)	To (Km.)	Length (M)	From (Km.)	To (Km.)	Length (M)	Remark
12.495	12.529	34	12.495	12.529	34	High Embankment
12.541	12.659	118	12.541	12.659	118	High Embankment
12.671	12.720	49	12.671	12.720	49	High Embankment
12.730	12.760	30	12.730	12.760	30	High Embankment
12.760	12.809	49	12.760	12.809	49	High Embankment
12.820	12.880	60	12.820	12.880	60	High Embankment
12.890	12.900	10	12.890	12.900	10	High Embankment
12.900	12.995	95	12.900	12.995	95	High Embankment
13.005	13.068	63	13.005	13.068	63	High Embankment
13.082	13.130	48	13.082	13.130	48	High Embankment
13.307	13.380	73	13.307	13.380	73	High Embankment
13.580	13.595	15	13.580	13.595	15	High Embankment
13.605	13.644	39	13.605	13.644	39	High Embankment
13.656	13.700	44	13.656	13.700	44	High Embankment
16.900	16.995	95	16.900	16.995	95	High Embankment
17.005	17.040	35	17.005	17.040	35	High Embankment
17.040	17.120	80	17.040	17.120	80	High Embankment
17.130	17.180	50	17.130	17.180	50	High Embankment
17.240	17.245	5	17.240	17.245	5	High Embankment
17.255	17.320	65	17.255	17.320	65	High Embankment
17.580	17.680	100	17.580	17.680	100	High Embankment
17.880	18.020	140	18.020	18.060	40	High Embankment
19.390	19.445	55	19.390	19.445	55	High Embankment
19.455	19.580	125	19.455	19.580	125	High Embankment
19.600	19.620	20	19.600	19.620	20	High Embankment
19.630	19.700	70	19.630	19.700	70	High Embankment
19.920	19.965	45	19.920	19.965	45	High Embankment
19.975	19.980	5	19.975	19.980	5	High Embankment
20.100	20.128	28	20.100	20.128	28	High Embankment
20.142	20.200	58	20.142	20.200	58	High Embankment
20.200	20.240	40	20.200	20.240	40	High Embankment
20.405	20.524	119	20.405	20.524	119	High Embankment
20.536	20.580	44	20.536	20.580	44	High Embankment
20.590	20.640	50	20.590	20.640	50	High Embankment
20.900	21.000	100	20.900	21.000	100	High Embankment
21.000	21.020	20	21.000	21.020	20	High Embankment
21.030	21.040	10	21.030	21.040	10	High Embankment
21.040	21.084	44	21.040	21.084	44	High Embankment
21.096	21.100	4	21.096	21.100	4	High Embankment
21.460	21.580	120	21.460	21.580	120	High Embankment
21.620	21.710	90	21.620	21.710	90	High Embankment
22.240	22.378	138	22.240	22.378	138	High Embankment
22.378	22.480	102	22.378	22.480	102	High Embankment
23.169	23.220	51	23.169	23.220	51	High Embankment

LEFT SIDE			RIGHT SIDE			
From (Km.)	To (Km.)	Length (M)	From (Km.)	To (Km.)	Length (M)	Remark
23.420	23.520	100	23.420	23.520	100	High Embankment
23.640	23.680	40	23.640	23.680	40	High Embankment
24.290	24.360	70	24.290	24.360	70	High Embankment
24.370	24.380	10	24.370	24.380	10	High Embankment
24.380	24.400	20	24.380	24.400	20	High Embankment
24.780	24.815	35	24.780	24.815	35	High Embankment
24.825	24.863	38	24.825	24.863	38	High Embankment
24.877	24.880	3	24.877	24.880	3	High Embankment
24.880	24.940	60	24.880	24.940	60	High Embankment
25.140	25.145	5	25.140	25.145	5	High Embankment
25.155	25.180	25	25.155	25.180	25	High Embankment
25.680	25.695	15	25.680	25.695	15	High Embankment
25.705	25.720	15	25.705	25.720	15	High Embankment
26.270	26.345	75	26.270	26.345	75	High Embankment
26.355	26.445	90	26.355	26.445	90	High Embankment
26.455	26.600	145	26.455	26.600	145	High Embankment
27.060	27.120	60	26.600	26.625	25	High Embankment
28.000	28.149	149	26.635	26.680	45	High Embankment
28.161	28.180	19	27.060	27.120	60	High Embankment
28.180	28.300	120	28.000	28.149	149	High Embankment
29.760	29.800	40	28.161	28.180	19	High Embankment
31.750	31.850	100	28.180	28.300	120	High Embankment
31.920	32.020	100	29.760	29.800	40	High Embankment
32.605	32.635	30	31.750	31.850	100	High Embankment
32.645	32.699	54	31.920	32.020	100	High Embankment
32.711	32.740	29	32.605	32.635	30	High Embankment
32.740	32.780	40	32.645	32.699	54	High Embankment
32.780	32.880	100	32.711	32.740	29	High Embankment
33.340	33.440	100	32.740	32.780	40	High Embankment
33.540	33.600	60	33.940	33.980	40	High Embankment
33.640	33.760	120	34.030	34.045	15	High Embankment
33.940	33.980	40	34.055	34.080	25	High Embankment
34.030	34.045	15	37.060	37.095	35	High Embankment
34.055	34.080	25	37.105	37.175	70	High Embankment
37.060	37.095	35	37.185	37.220	35	High Embankment
37.105	37.175	70	37.440	37.490	50	High Embankment
37.185	37.220	35	37.500	37.520	20	High Embankment
37.440	37.490	50	37.530	37.680	150	High Embankment
37.500	37.520	20	37.800	37.845	45	High Embankment
37.530	37.680	150	37.855	37.935	80	High Embankment
37.800	37.845	45	37.945	37.995	50	High Embankment
37.855	37.935	80	38.005	38.045	40	High Embankment
37.945	37.995	50	38.055	38.120	65	High Embankment
38.005	38.045	40	38.350	38.420	70	High Embankment

LEFT SIDE			RIGHT SIDE			
From (Km.)	To (Km.)	Length (M)	From (Km.)	To (Km.)	Length (M)	Remark
38.055	38.120	65	38.430	38.460	30	High Embankment
38.350	38.420	70	38.520	38.620	100	High Embankment
38.430	38.460	30	38.620	38.641	21	High Embankment
38.520	38.620	100	38.659	38.720	61	High Embankment
38.620	38.641	21	38.820	38.920	100	High Embankment
38.659	38.720	61	38.920	39.100	180	High Embankment
38.820	38.920	100	39.100	39.195	95	High Embankment
38.920	39.100	180	39.205	39.300	95	High Embankment
39.100	39.195	95	40.440	40.540	100	High Embankment
39.205	39.300	95				
40.440	40.540	100				
	TOTAL	**6507 m**			**6097 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 2m)***

Left Side			Right Side		
From	To	Length	From	To	Length
12.760	12.820	0.060	12.760	12.820	0.060
13.307	13.380	0.073	12.831	12.900	0.069
16.900	17.040	0.140	12.900	12.995	0.095
17.580	17.615	0.035	13.005	13.130	0.125
17.625	17.680	0.055	13.307	13.380	0.073
17.880	18.020	0.140	13.580	13.595	0.015
23.169	23.220	0.051	13.605	13.644	0.039
24.880	24.940	0.060	13.656	13.700	0.044
29.760	29.800	0.040	16.900	16.995	0.095

Left Side			Right Side		
From	To	Length	From	To	Length
32.740	32.780	0.040	17.005	17.040	0.035
32.780	32.880	0.100	17.240	17.245	0.005
33.340	33.440	0.100	17.255	17.320	0.065
33.540	33.600	0.060	18.020	18.045	0.025
33.640	33.760	0.120	18.055	18.060	0.005
37.440	37.490	0.050	19.390	19.450	0.060
37.500	37.520	0.020	19.600	19.620	0.020
37.530	37.680	0.150	19.630	19.700	0.070
37.800	37.845	0.045	19.920	19.965	0.045
37.855	37.935	0.080	19.975	19.980	0.005
37.945	37.995	0.050	20.100	20.128	0.028
38.005	38.045	0.040	20.142	20.200	0.058
38.055	38.120	0.065	21.000	21.020	0.020
38.820	38.920	0.100	21.030	21.040	0.010
38.920	39.100	0.180	21.620	21.710	0.090
			22.240	22.319	0.079
			22.331	22.380	0.049
			24.380	24.400	0.020
			24.880	24.940	0.060
			25.140	25.145	0.005
			25.155	25.180	0.025
			26.270	26.345	0.075
			26.355	26.445	0.090
			26.455	26.600	0.145
			26.600	26.625	0.025
			26.635	26.680	0.045
			27.060	27.120	0.060
			28.180	28.300	0.120
			32.605	32.635	0.030
			32.645	32.699	0.054
			32.711	32.740	0.029
			37.060	37.095	0.035
			37.105	37.175	0.070
			37.185	37.220	0.035
			38.620	38.641	0.021
			38.659	38.720	0.061
		1.854			**2.289**

- **Height of retaining wall**
  1) **Length of retaining wall upto 3m=1.185 Km**
  2) **Length of retaining wall from 3m to 6m= 1.345 Km**
  3) **Length of retaining wall Above 6m= 1.613 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		
From	**To**	**Length**	**From**	**To**	**Length**
13.170	13.300	0.130	13.920	13.970	0.050
13.440	13.580	0.140	14.060	16.520	2.460
13.920	13.970	0.050	16.520	16.580	0.060
13.970	14.030	0.060	16.620	16.680	0.060
14.060	16.520	2.460	24.700	24.740	0.040
21.760	21.840	0.080	33.440	33.480	0.040
22.580	22.620	0.040	36.680	36.720	0.040
24.200	24.240	0.040			
24.460	24.580	0.120			
24.700	24.740	0.040			
26.680	26.740	0.060			
33.440	33.480	0.040			
36.200	36.420	0.220			
36.460	36.500	0.040			
36.540	36.680	0.140			
36.680	36.720	0.040			
		3.700			**2.750**

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 1.2m)

Left Side			Right Side		
From	**To**	**Length**	**From**	**To**	**Length**
11.620	11.746	0.126	11.620	11.746	0.126
11.786	11.860	0.074	11.786	11.860	0.074
12.220	12.243	0.023	12.220	12.243	0.023
12.257	12.301	0.044	12.257	12.301	0.044
12.319	12.485	0.166	12.319	12.485	0.166
12.495	12.529	0.034	12.495	12.529	0.034
12.541	12.659	0.118	12.541	12.659	0.118
12.671	12.720	0.049	12.671	12.720	0.049
12.730	12.760	0.030	12.730	12.760	0.030
12.760	12.809	0.049	12.760	12.809	0.049
12.820	12.880	0.060	12.820	12.880	0.060

Left Side			Right Side		
From	To	Length	From	To	Length
12.890	12.900	0.010	12.890	12.900	0.010
12.900	12.995	0.095	12.900	12.995	0.095
13.005	13.068	0.063	13.005	13.068	0.063
13.082	13.130	0.048	13.082	13.130	0.048
13.307	13.380	0.073	13.307	13.380	0.073
13.580	13.595	0.015	13.580	13.595	0.015
13.605	13.644	0.039	13.605	13.644	0.039
13.656	13.700	0.044	13.656	13.700	0.044
16.900	16.995	0.095	16.900	16.995	0.095
17.005	17.040	0.035	17.005	17.040	0.035
17.040	17.120	0.080	17.040	17.120	0.080
17.130	17.180	0.050	17.130	17.180	0.050
17.240	17.245	0.005	17.240	17.245	0.005
17.255	17.320	0.065	17.255	17.320	0.065
17.580	17.680	0.100	17.580	17.680	0.100
19.390	19.445	0.055	19.390	19.445	0.055
19.455	19.580	0.125	19.455	19.580	0.125
19.600	19.620	0.020	19.600	19.620	0.020
19.630	19.700	0.070	19.630	19.700	0.070
19.920	19.965	0.045	19.920	19.965	0.045
19.975	19.980	0.005	19.975	19.980	0.005
20.100	20.128	0.028	20.100	20.128	0.028
20.142	20.200	0.058	20.142	20.200	0.058
20.200	20.240	0.040	20.200	20.240	0.040
20.405	20.524	0.119	20.405	20.524	0.119
20.536	20.580	0.044	20.536	20.580	0.044
20.590	20.640	0.050	20.590	20.640	0.050
20.900	21.000	0.100	20.900	21.000	0.100
21.000	21.020	0.020	21.000	21.020	0.020
21.030	21.040	0.010	21.030	21.040	0.010
21.040	21.084	0.044	21.040	21.084	0.044
21.096	21.100	0.004	21.096	21.100	0.004
21.460	21.580	0.120	21.460	21.580	0.120
21.620	21.710	0.090	21.620	21.710	0.090
22.240	22.378	0.138	22.240	22.378	0.138
22.378	22.480	0.102	22.378	22.480	0.102
23.169	23.220	0.051	23.169	23.220	0.051
23.420	23.520	0.100	23.420	23.520	0.100
23.640	23.680	0.040	23.640	23.680	0.040
24.290	24.360	0.070	24.290	24.360	0.070
24.370	24.380	0.010	24.370	24.380	0.010
24.380	24.400	0.020	24.380	24.400	0.020
24.780	24.815	0.035	24.780	24.815	0.035
24.825	24.863	0.038	24.825	24.863	0.038

Left Side			Right Side		
From	To	Length	From	To	Length
24.877	24.880	0.003	24.877	24.880	0.003
24.880	24.940	0.060	24.880	24.940	0.060
25.140	25.145	0.005	25.140	25.145	0.005
25.155	25.180	0.025	25.155	25.180	0.025
25.680	25.695	0.015	25.680	25.695	0.015
25.705	25.720	0.015	25.705	25.720	0.015
26.270	26.345	0.075	26.270	26.345	0.075
26.355	26.445	0.090	26.355	26.445	0.090
26.455	26.600	0.145	26.455	26.600	0.145
27.060	27.120	0.060	27.060	27.120	0.060
28.000	28.149	0.149	28.000	28.149	0.149
28.161	28.180	0.019	28.161	28.180	0.019
28.180	28.300	0.120	28.180	28.300	0.120
29.760	29.800	0.040	29.760	29.800	0.040
31.750	31.850	0.100	31.750	31.850	0.100
31.920	32.020	0.100	31.920	32.020	0.100
32.605	32.635	0.030	32.605	32.635	0.030
32.645	32.699	0.054	32.645	32.699	0.054
32.711	32.740	0.029	32.711	32.740	0.029
32.740	32.780	0.040	32.740	32.780	0.040
33.340	33.440	0.100	33.340	33.440	0.100
33.540	33.600	0.060	33.540	33.600	0.060
33.640	33.760	0.120	33.640	33.760	0.120
33.940	33.980	0.040	33.940	33.980	0.040
34.030	34.045	0.015	34.030	34.045	0.015
34.055	34.080	0.025	34.055	34.080	0.025
37.060	37.095	0.035	37.060	37.095	0.035
37.105	37.175	0.070	37.105	37.175	0.070
37.185	37.220	0.035	37.185	37.220	0.035
37.440	37.490	0.050	37.440	37.490	0.050
37.500	37.520	0.020	37.500	37.520	0.020
37.530	37.680	0.150	37.530	37.680	0.150
37.800	37.845	0.045	37.800	37.845	0.045
37.855	37.935	0.080	37.855	37.935	0.080
37.945	37.995	0.050	37.945	37.995	0.050
38.005	38.045	0.040	38.005	38.045	0.040
38.055	38.120	0.065	38.055	38.120	0.065
38.350	38.420	0.070	38.350	38.420	0.070
38.430	38.460	0.030	38.430	38.460	0.030
38.520	38.620	0.100	38.520	38.620	0.100
38.620	38.641	0.021	38.620	38.641	0.021
38.659	38.720	0.061	38.659	38.720	0.061
38.820	38.920	0.100	38.820	38.920	0.100
38.920	39.100	0.180	38.920	39.100	0.180
39.100	39.195	0.095	39.100	39.195	0.095

Left Side			Right Side		
From	To	Length	From	To	Length
39.205	39.300	0.095	39.205	39.300	0.095
40.440	40.540	0.100	40.440	40.540	0.100
		6.267			**6.267**

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 61750 Sqm)

Sr. No.	CH. From (m)	CH. To (m)	Length (m)	Side	Avg Height(m)
1	14420	14450	30	Both Side	11
2	14500	14560	60	Both Side	15
3	14600	14660	60	Both Side	16
4	14720	14780	60	Both Side	16
5	14840	16700	1860	Both Side	30
6	21780	21810	30	Both Side	12
7	23780	23810	30	Both Side	12
8	24220	24250	30	Both Side	11
9	24460	24500	40	Both Side	13
10	29740	29770	30	Both Side	10
11	33460	33490	30	Both Side	16
12	36640	36670	30	Both Side	15
		Total	**2290**		

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

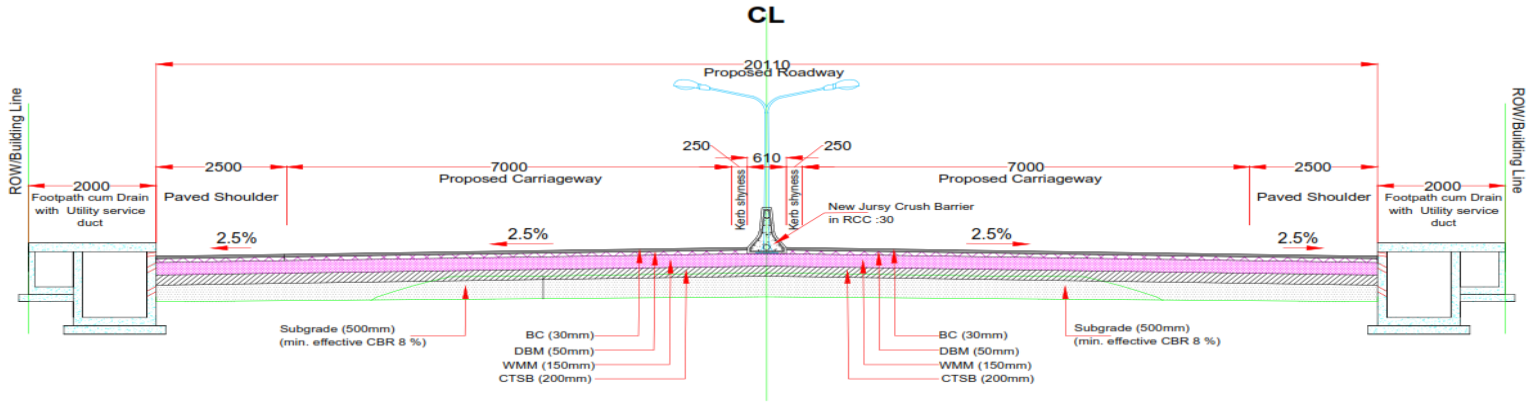
required based on detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Articled 13.

14. UTILITY DUCT

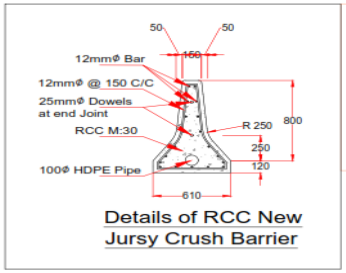
The Locations of utility ducts shall be constructed for full width of cross section in consultation with Authority Engineer. The utility work proposed by the contractor will not be entitled for any other extra cost and will not amount to change of scope. shall be finalized as per site requirement in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

S. No.	Utility Duct (across)	Minimum Qty.
1	Single Row for one utility services	51 Location
2	Double Row for two utility services	85 Location

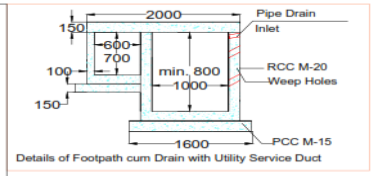
Appendix B-I



TCS-01B: RECONSTRUCTION OF EXISTING 2-LANE/INTERMEDIATE LANE TO 4-LANE DIVIDED CARRIAGEWAY WITH PAVER BLOCK FLOORING & RCC COVERED DRAIN IN BUILT-UP AREA (RONGJENG MARKET)
ALL DIMENSIONS ARE IN MM



Details of RCC New Jursy Crush Barrier



Details of Footpath cum Drain with Utility Service Duct

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	34.030	34.700	0.670	1B
	Total		0.670	km

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-811A, Global Tower, Tridanga, Bhopal -462039
e: globalinfrasolutions.hpl@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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/18/NHDCL/PKG/05

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

TYPE - 01A

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

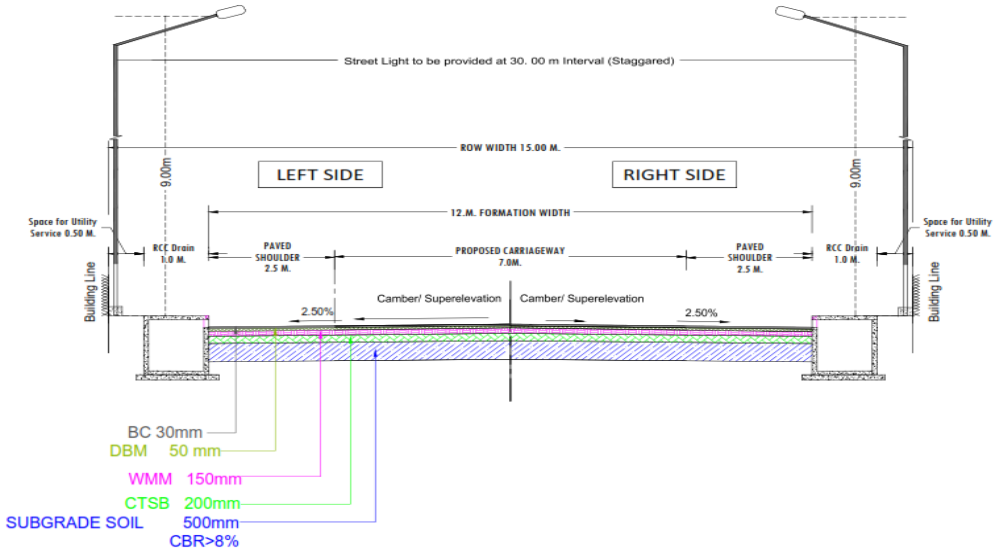


Fig. 2.6 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	33.050	33.245	0.195	1A
2	34.700	35.060	0.360	1A
	Total		0.555	km

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-811A, Global Tower, Tribanga, 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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/PS/TCS

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

TYPE - 01

TYPICAL CROSS SECTION FOR 2 - LANE HIGHWAY IN BUILT-UP AREA (OVERLAY/WIDENING)

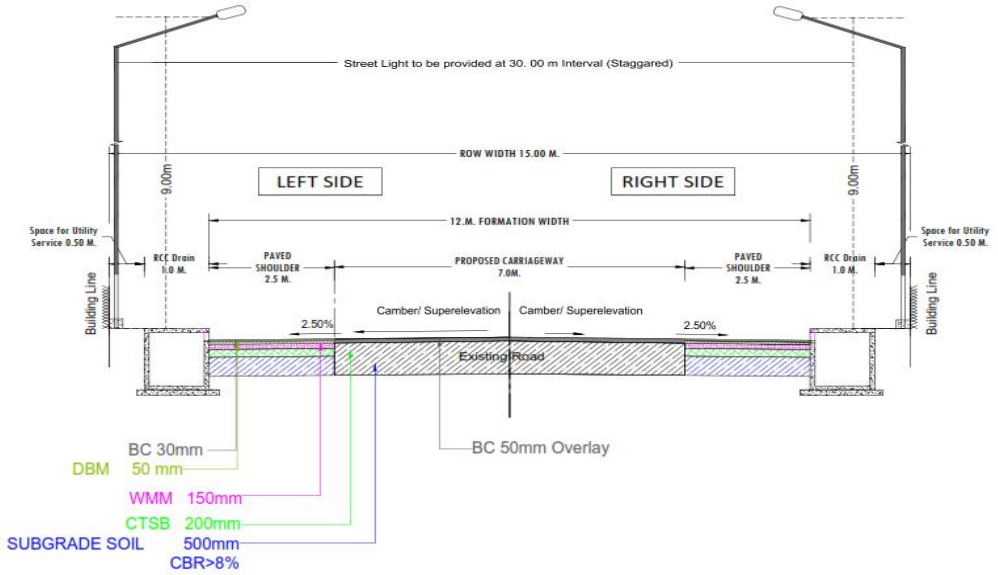


Fig. 2.6 Modified
As per IRC SP 73: 2018

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.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	0.000	0.700	0.700	1
2	10.900	11.200	0.300	1
	Total		1.000	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TS/TCS

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

TYPE - 02

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY OVERLAY (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

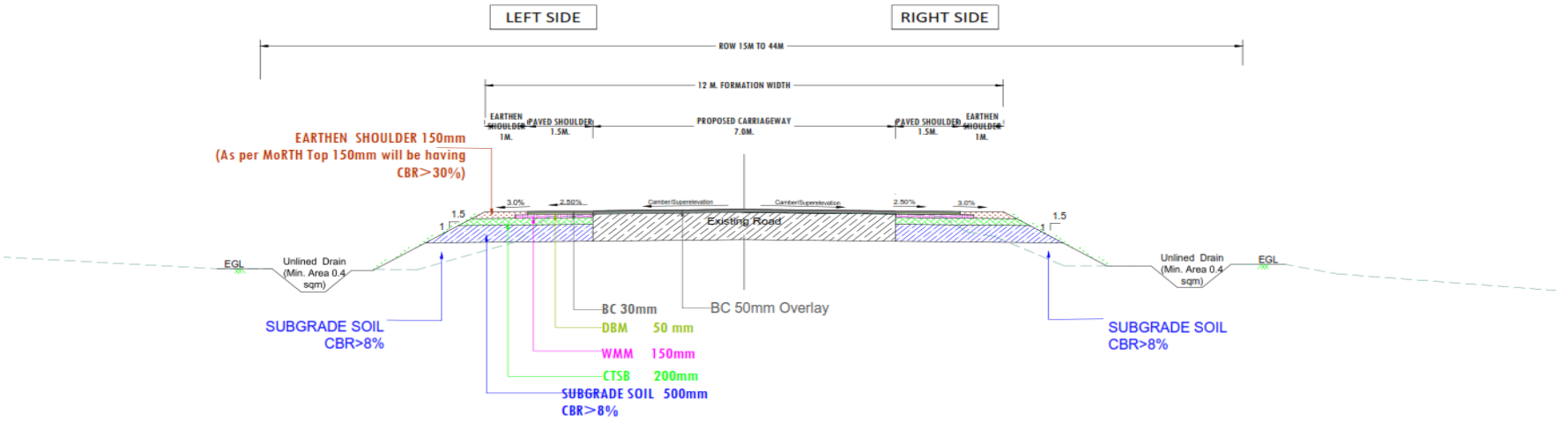


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	0.700	1.300	0.600	2
2	1.600	3.300	1.700	2
3	3.740	3.980	0.240	2
4	4.800	5.300	0.500	2
5	5.880	7.750	1.870	2
6	9.180	9.650	0.470	2
7	31.060	31.420	0.360	2
8	32.290	32.520	0.230	2
	Total		5.970	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TCS/02

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

TYPE - 03

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY (NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

BANKING SECTION
HEIGHT LESS THAN 3m

LEFT SIDE | RIGHT SIDE

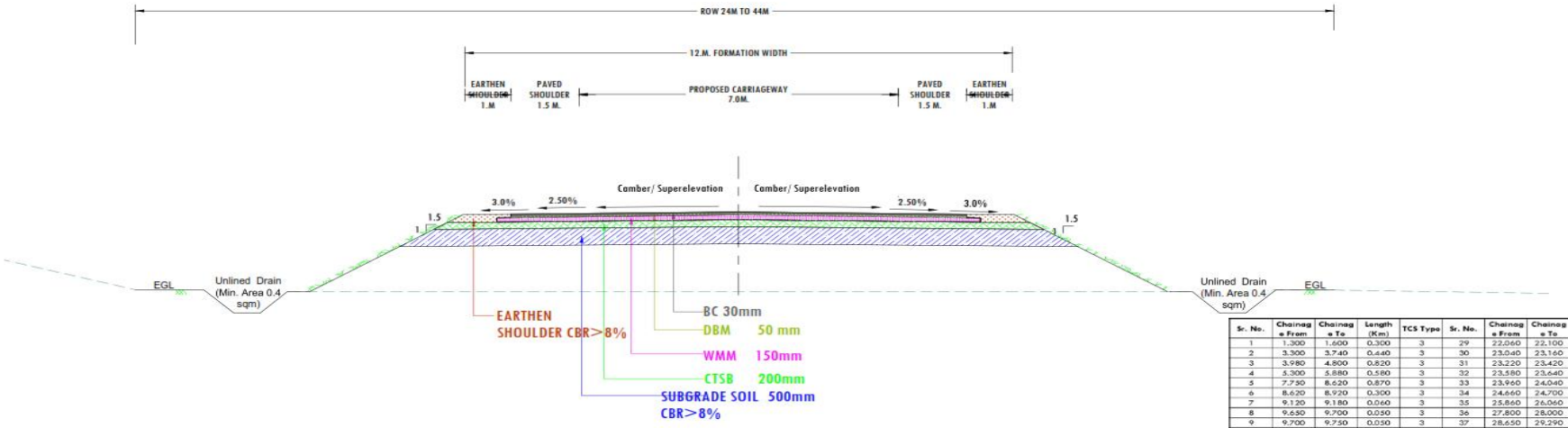


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type	Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	1.300	1.600	0.300	3	29	22.060	22.100	0.040	3
2	3.300	3.740	0.440	3	30	23.040	23.160	0.120	3
3	3.980	4.800	0.820	3	31	23.220	23.420	0.200	3
4	5.300	5.880	0.580	3	32	23.580	23.640	0.060	3
5	7.750	8.620	0.870	3	33	23.960	24.040	0.080	3
6	8.620	8.920	0.300	3	34	24.660	24.700	0.040	3
7	9.120	9.180	0.060	3	35	25.860	26.060	0.200	3
8	9.650	9.700	0.050	3	36	27.800	28.000	0.200	3
9	9.700	9.750	0.050	3	37	28.650	29.290	0.640	3
10	9.750	10.020	0.270	3	38	29.800	30.400	0.600	3
11	10.270	10.360	0.090	3	39	30.600	31.060	0.460	3
12	10.750	10.900	0.150	3	40	31.420	31.520	0.100	3
13	11.200	11.600	0.400	3	41	31.600	31.750	0.150	3
14	11.860	12.220	0.360	3	42	31.850	31.920	0.070	3
15	14.030	14.060	0.030	3	43	32.020	32.080	0.060	3
16	16.580	16.620	0.040	3	44	33.245	33.310	0.065	3
17	16.720	16.860	0.140	3	45	33.600	33.640	0.040	3
18	17.180	17.240	0.060	3	46	35.260	35.320	0.060	3
19	17.390	17.460	0.070	3	47	35.380	35.420	0.040	3
20	18.060	18.100	0.040	3	48	35.500	35.540	0.040	3
21	18.430	18.490	0.060	3	49	36.780	37.060	0.280	3
22	18.600	18.800	0.200	3	50	37.220	37.260	0.040	3
23	19.000	19.140	0.140	3	51	37.340	37.440	0.100	3
24	19.320	19.390	0.070	3	52	38.220	38.350	0.130	3
25	19.580	19.600	0.020	3	53	38.460	38.520	0.060	3
26	19.700	19.920	0.220	3	54	39.300	40.440	1.140	3
27	19.980	20.100	0.120	3	55	40.540	40.840	0.300	3
28	20.840	20.900	0.060	3		Total		11.325	Km

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-8/11A, 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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE OF MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL:

SIGNATURE:

DWG NO:- GIS/1B/NH217/FS/TCS

DRAWN	CHECKED	DESIGNED	APPROVED
LK	SH	SC	LA

TYPE - 04

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

BANKING SECTION
HEIGHT MORE THAN 3m

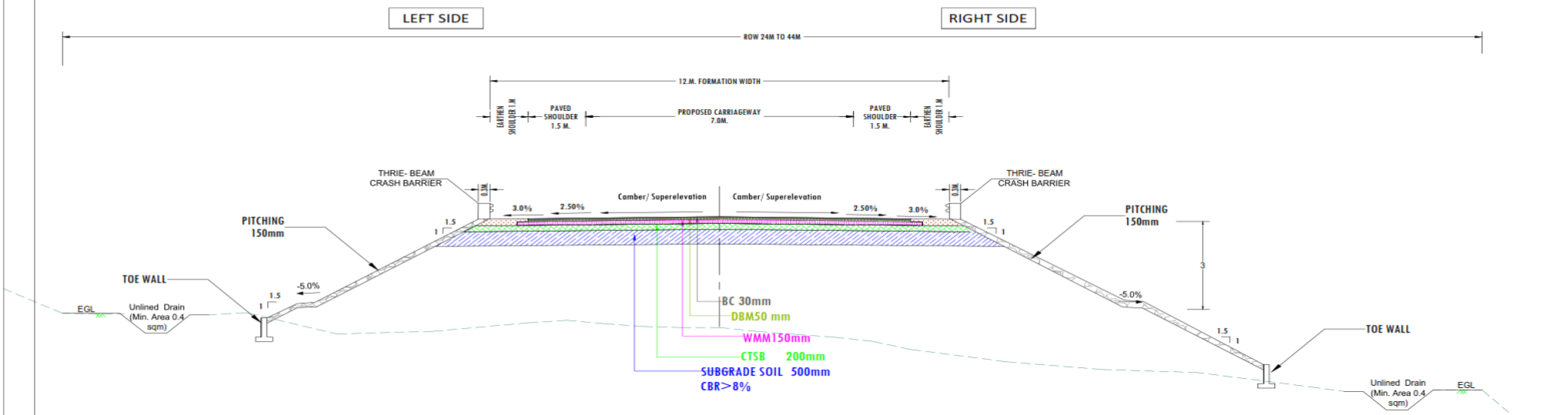


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainag e From	Chainag e To	Length (Km)	TCS Type
1	11.620	11.860	0.240	-II
2	12.220	12.760	0.540	-II
3	17.040	17.180	0.140	-II
4	19.450	19.580	0.130	-II
5	20.200	20.240	0.040	-II
6	20.400	20.440	0.040	-II
7	20.900	21.000	0.100	-II
8	21.040	21.100	0.060	-II
9	21.460	21.580	0.120	-II
10	22.390	22.490	0.100	-II
11	23.420	23.520	0.100	-II
12	23.640	23.680	0.040	-II
13	24.280	24.380	0.100	-II
14	24.780	24.880	0.100	-II
15	25.650	25.730	0.080	-II
16	26.000	26.100	0.100	-II
17	31.730	31.830	0.100	-II
18	31.920	32.020	0.100	-II
19	33.940	33.980	0.040	-II
20	39.350	39.460	0.110	-II
21	39.520	39.620	0.100	-II
22	39.100	39.300	0.200	-II
23	40.440	40.540	0.100	-II
		Total	2.930	km

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-911A, Global Tower, Tribanga, Bhopal -462039
e: globalinfrasolutions.bpl@gmail.com web: globalinfrasolutions.org

PROJECT:
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SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

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

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

TYPE - 05

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

CUTTING SECTION
CUTTING HEIGHT < 1m

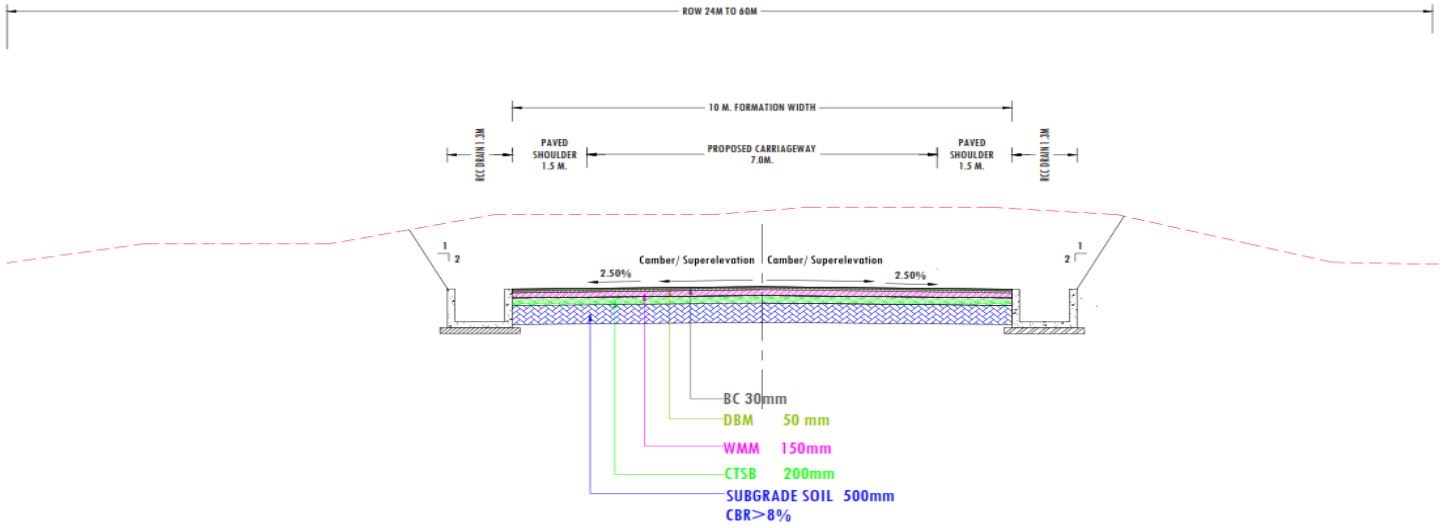


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	8.980	9.120	0.140	5
2	13.900	13.920	0.020	5
3	16.680	16.720	0.040	5
4	16.860	16.900	0.040	5
5	18.100	18.430	0.330	5
6	20.240	20.300	0.060	5
7	21.250	21.460	0.210	5
8	21.580	21.620	0.040	5
9	21.720	21.760	0.040	5
10	22.100	22.240	0.140	5
11	22.480	22.580	0.100	5
12	22.620	22.680	0.060	5
13	23.520	23.580	0.060	5
14	23.680	23.960	0.280	5
15	24.240	24.280	0.040	5
16	24.400	24.460	0.060	5
17	24.740	24.780	0.040	5
18	25.040	25.140	0.100	5
19	28.300	28.650	0.350	5
20	29.580	29.760	0.180	5
21	30.400	30.600	0.200	5
22	31.520	31.600	0.080	5
23	32.520	32.600	0.080	5
24	33.310	33.340	0.030	5
25	33.820	33.940	0.120	5
26	33.980	34.030	0.050	5
27	36.720	36.780	0.060	5
28	37.260	37.340	0.080	5
29	38.120	38.220	0.100	5
	Total		3.130	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/IB/NHIDCL/TS/105

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

TYPE - 06 A

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

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

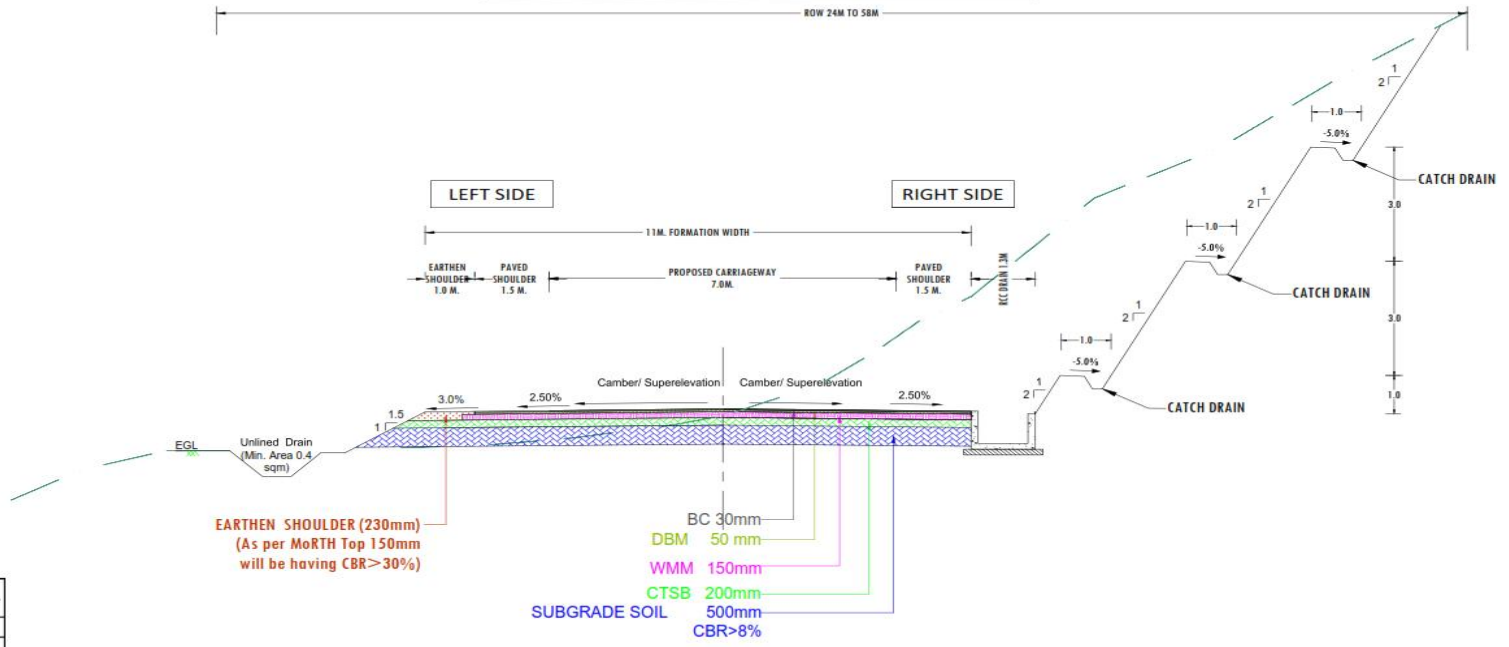


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	17.460	17.580	0.120	6A
2	17.680	17.880	0.200	6A
3	19.140	19.320	0.180	6A
4	32.880	33.050	0.170	6A
5	33.480	33.540	0.060	6A
6	33.760	33.820	0.060	6A
7	37.680	37.800	0.120	6A
Total			0.910	km

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-91A, 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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TCS/06

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

TYPE - 06

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

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

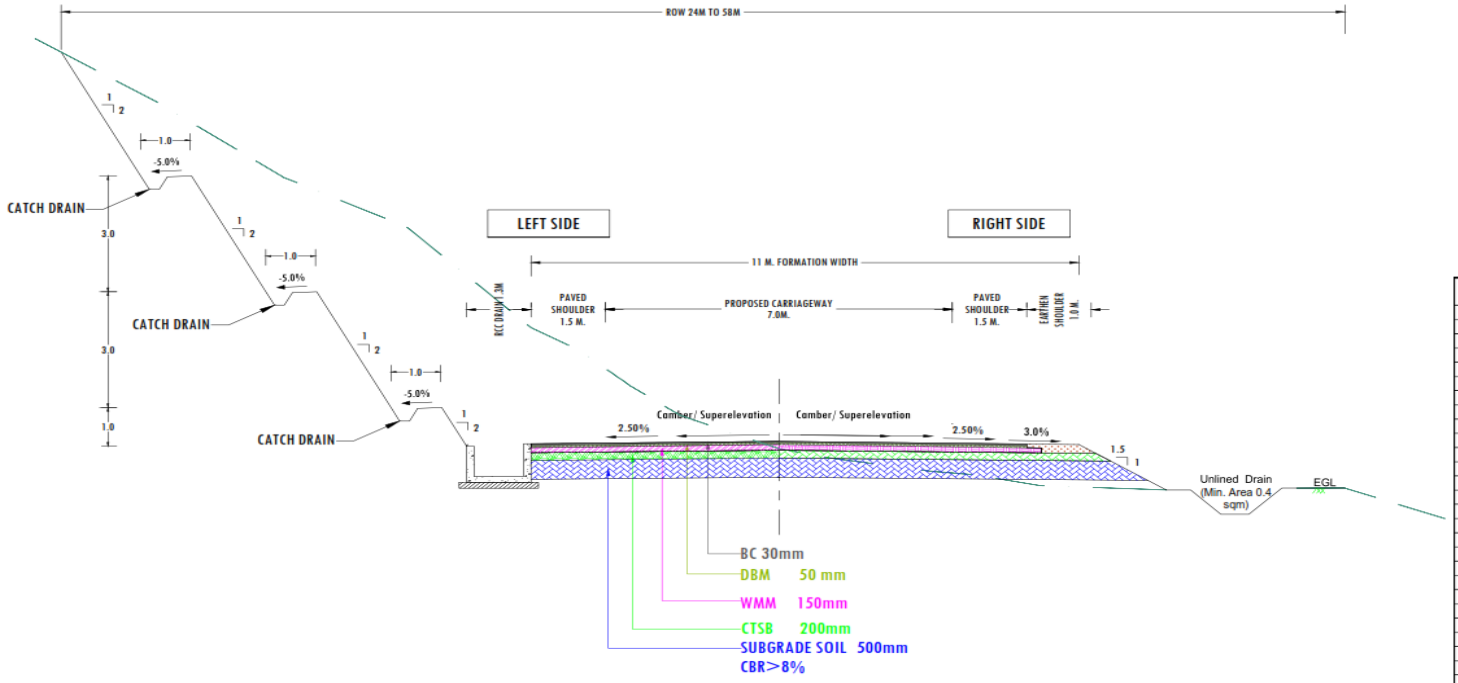


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	8.920	8.980	0.060	6
2	10.020	10.180	0.160	6
3	10.180	10.240	0.060	6
4	10.240	10.270	0.030	6
5	10.360	10.750	0.390	6
6	11.600	11.620	0.020	6
7	13.130	13.170	0.040	6
8	13.380	13.440	0.060	6
9	13.700	13.900	0.200	6
10	17.320	17.390	0.070	6
11	18.490	18.600	0.110	6
12	18.800	19.000	0.200	6
13	20.300	20.400	0.100	6
14	20.640	20.840	0.200	6
15	21.100	21.250	0.150	6
16	21.840	22.060	0.220	6
17	22.680	23.040	0.360	6
18	24.040	24.200	0.160	6
19	24.580	24.660	0.080	6
20	24.940	25.040	0.100	6
21	25.180	25.680	0.500	6
22	25.720	25.860	0.140	6
23	26.060	26.270	0.210	6
24	26.740	27.060	0.320	6
25	27.120	27.800	0.680	6
26	29.290	29.580	0.290	6
27	32.080	32.290	0.210	6
28	35.060	35.260	0.200	6
29	35.320	35.380	0.060	6
30	35.420	35.500	0.080	6
31	35.540	36.200	0.660	6
32	36.420	36.460	0.040	6
33	36.500	36.540	0.040	6
34	38.720	38.820	0.100	6
		Total	6.300	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE:
Not to scale
Dimensions as mentioned

TITLE:
TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

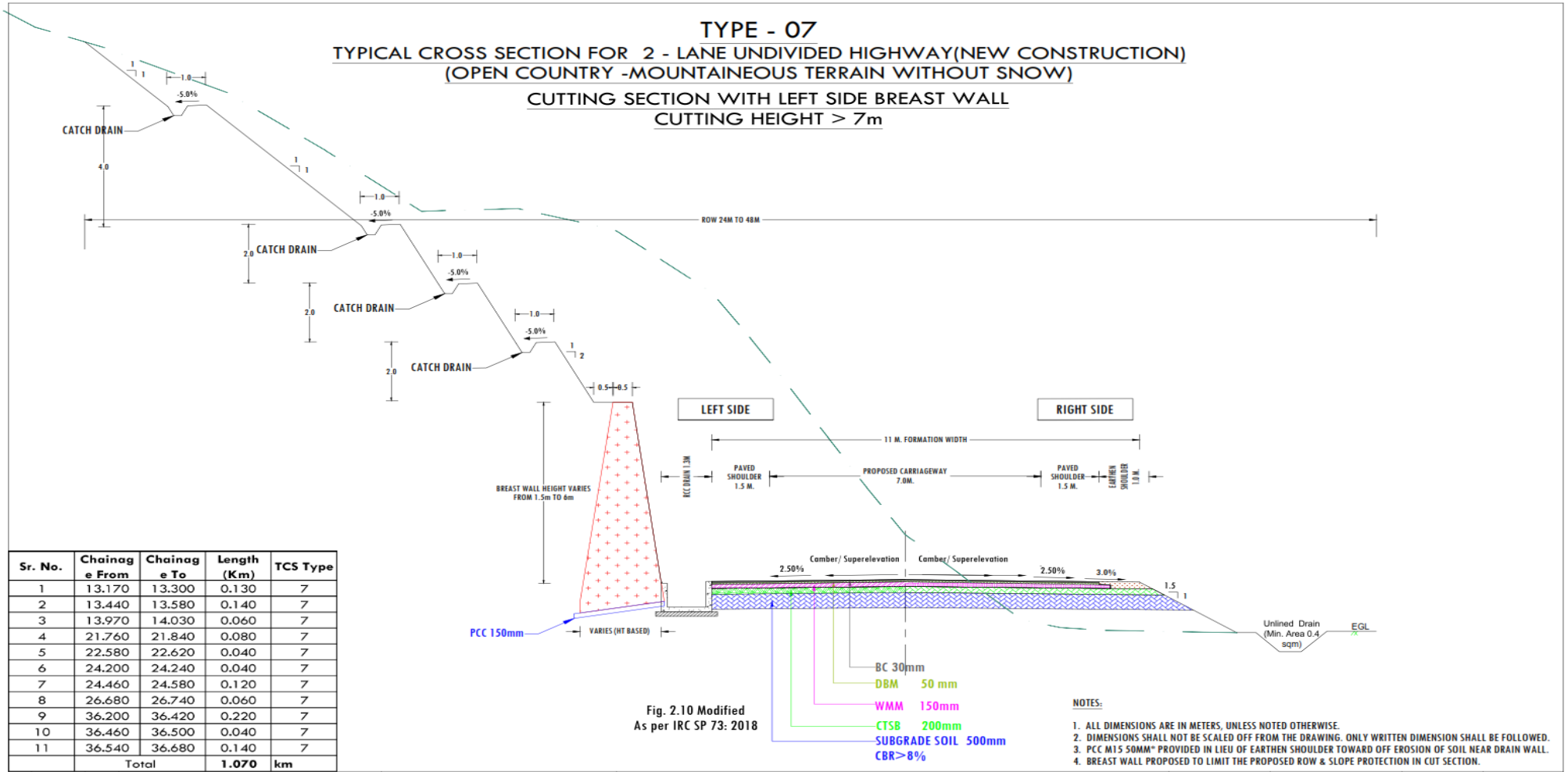
DWG NO:- GIS/1B/NHIDCL/DS/TCS

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

TYPE - 07

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

CUTTING SECTION WITH LEFT SIDE BREAST WALL
CUTTING HEIGHT > 7m



Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	13.170	13.300	0.130	7
2	13.440	13.580	0.140	7
3	13.970	14.030	0.060	7
4	21.760	21.840	0.080	7
5	22.580	22.620	0.040	7
6	24.200	24.240	0.040	7
7	24.460	24.580	0.120	7
8	26.680	26.740	0.060	7
9	36.200	36.420	0.220	7
10	36.460	36.500	0.040	7
11	36.540	36.680	0.140	7
	Total		1.070	km

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.
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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHDCL/TCS/07

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

TYPE - 8

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

CUTTING SECTION WITH RIGHT SIDE BREAST WALL CUTTING HEIGHT > 7m

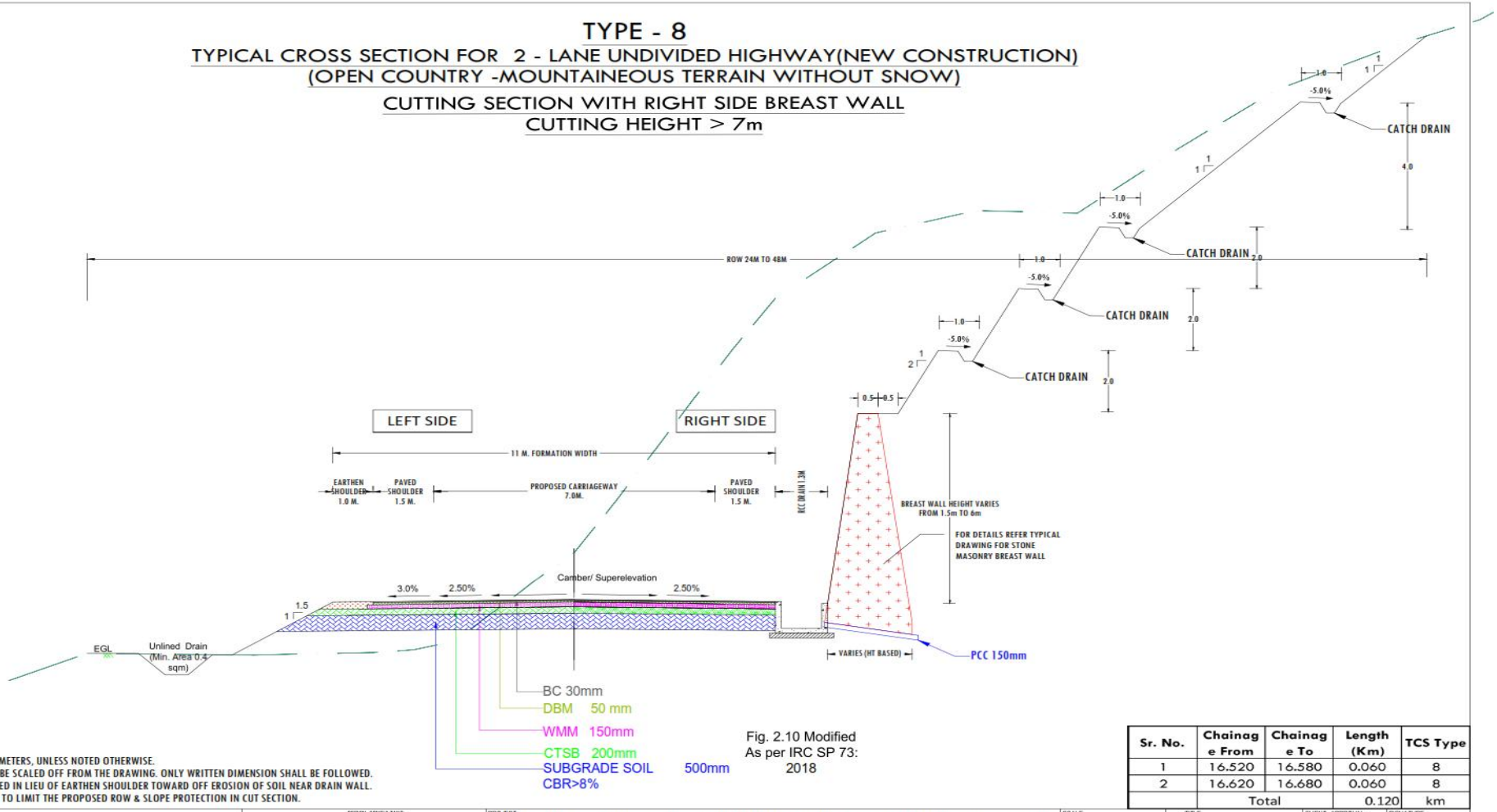


Fig. 2.10 Modified As per IRC SP 73: 2018

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.
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.

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	16.520	16.580	0.060	8
2	16.620	16.680	0.060	8
	Total		0.120	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TS/T08

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

TYPE - 9

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)
CUTTING SECTION WITH BREAST WALL IN BOTH SIDES
CUTTING HEIGHT > 7m

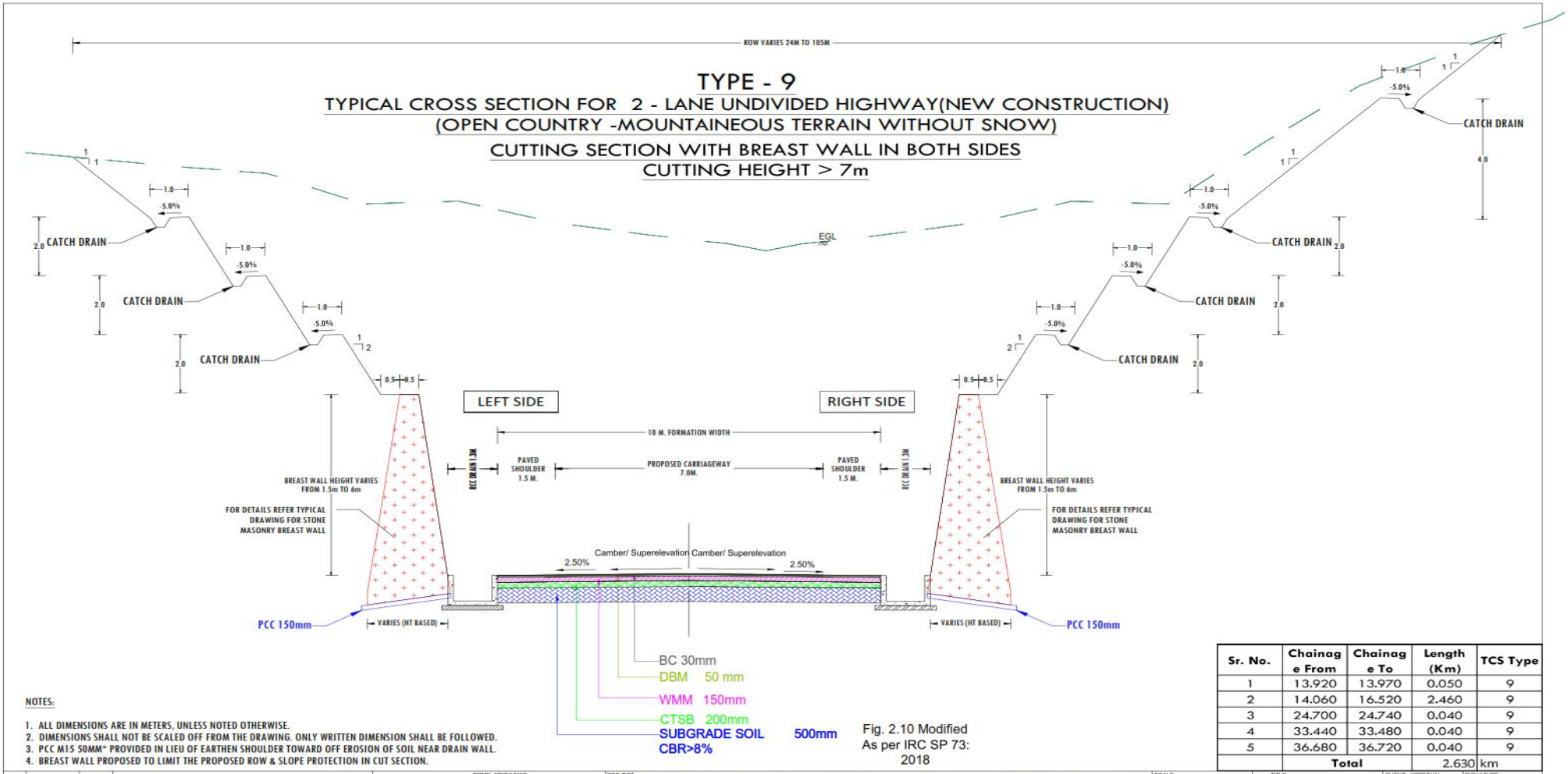


Fig. 2.10 Modified As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	13.920	13.970	0.050	9
2	14.060	16.520	2.460	9
3	24.700	24.740	0.040	9
4	33.440	33.480	0.040	9
5	36.680	36.720	0.040	9
	Total		2.630	km

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.

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

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/PS/105

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

TYPE - 10

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

BANKING SECTION WITH RETAINING WALL IN LEFT SIDE HEIGHT MORE THAN 3m

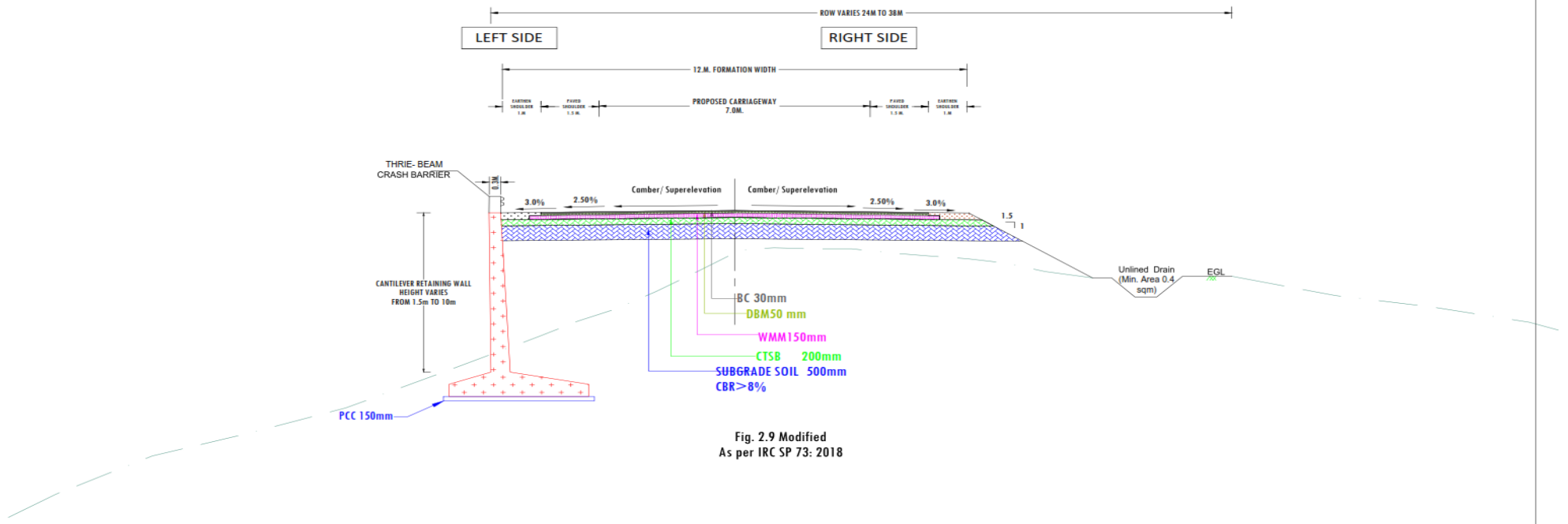


Fig. 2.9 Modified
As per IRC SP 73: 2018

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.
3. PCC M15 50MM* PROVIDED IN LIEU OF EARTHEN SHOULDER TOWARD OFF EROSION OF SOIL NEAR DRAIN WALL.

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	17.880	18.020	0.140	10
	Total		0.140	Km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TS/105

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

TYPE - 11

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)
BANKING SECTION WITH RETAINING WALL IN LEFT SIDE OFFSET FROM SHOULDER
HEIGHT MORE THAN 3m

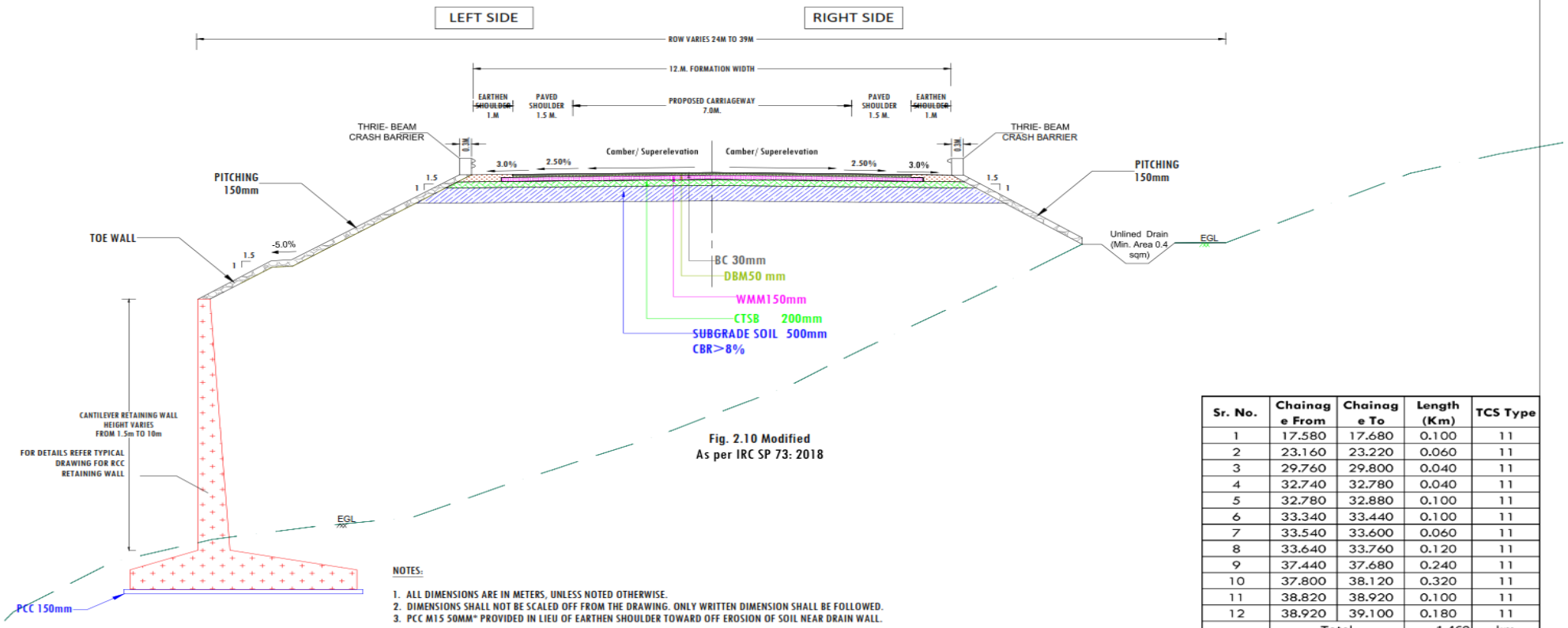


Fig. 2.10 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	17.580	17.680	0.100	11
2	23.160	23.220	0.060	11
3	29.760	29.800	0.040	11
4	32.740	32.780	0.040	11
5	32.780	32.880	0.100	11
6	33.340	33.440	0.100	11
7	33.540	33.600	0.060	11
8	33.640	33.760	0.120	11
9	37.440	37.680	0.240	11
10	37.800	38.120	0.320	11
11	38.820	38.920	0.100	11
12	38.920	39.100	0.180	11
	Total		1.460	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHDCL/TCS/06

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

TYPE - 12

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

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

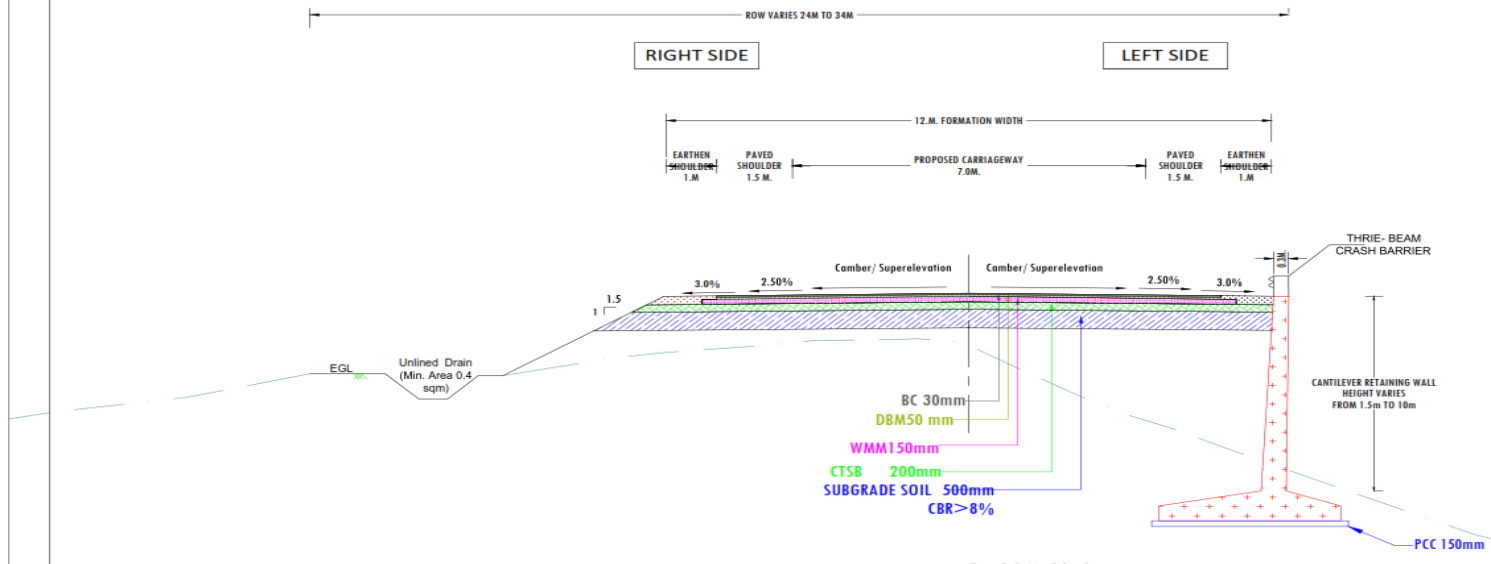


Fig. 2.9 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	18.020	18.060	0.040	12
2	26.600	26.680	0.080	12
	Total		0.120	Km

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-5/11A, 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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TCS/105

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

TYPE - 13

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

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

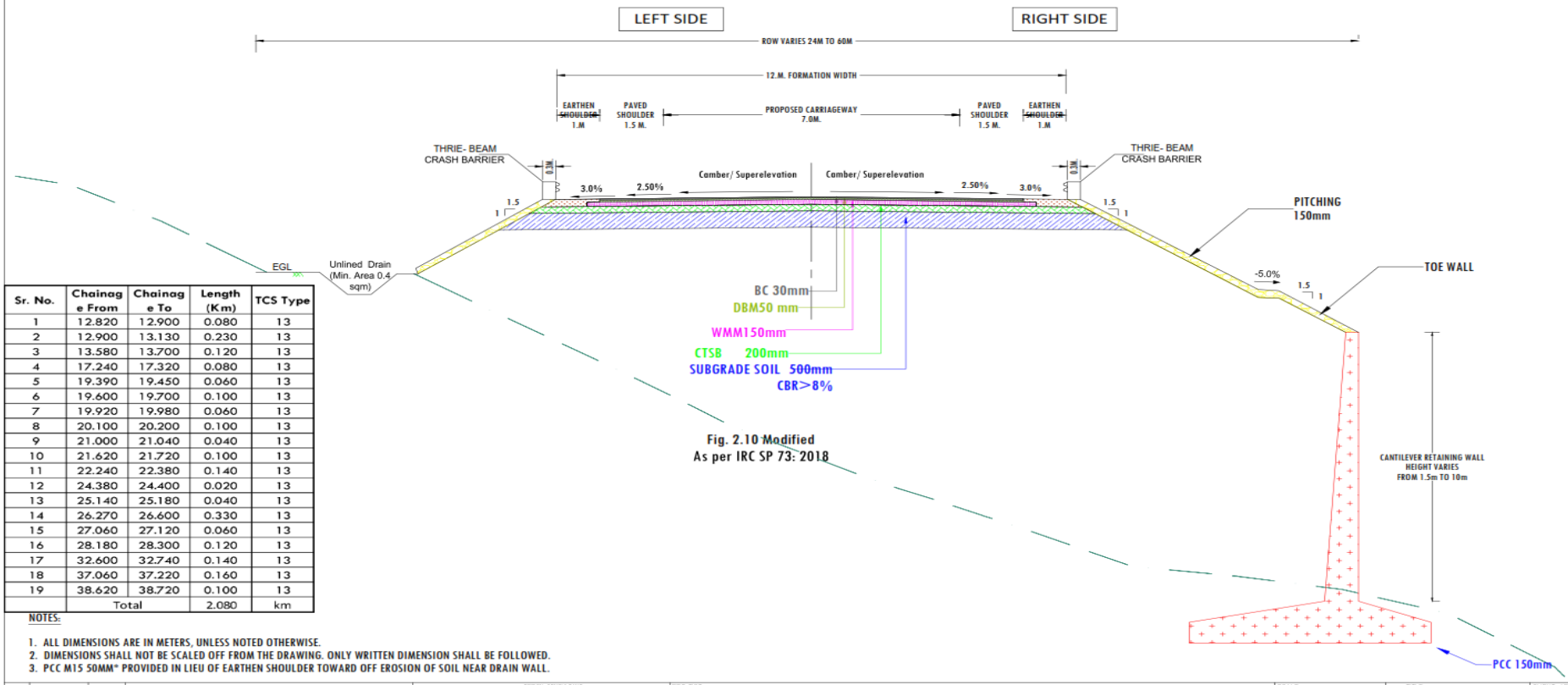


Fig. 2.10 Modified
As per IRC SP 73: 2018

Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	12.820	12.900	0.080	13
2	12.900	13.130	0.230	13
3	13.580	13.700	0.120	13
4	17.240	17.320	0.080	13
5	19.390	19.450	0.060	13
6	19.600	19.700	0.100	13
7	19.920	19.980	0.060	13
8	20.100	20.200	0.100	13
9	21.000	21.040	0.040	13
10	21.620	21.720	0.100	13
11	22.240	22.380	0.140	13
12	24.380	24.400	0.020	13
13	25.140	25.180	0.040	13
14	26.270	26.600	0.330	13
15	27.060	27.120	0.060	13
16	28.180	28.300	0.120	13
17	32.600	32.740	0.140	13
18	37.060	37.220	0.160	13
19	38.620	38.720	0.100	13
	Total		2.080	km

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.

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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHDCL/TS/105

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

TYPE - 14

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION) (OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)

BANKING SECTION WITH RETAINING WALL IN BOTH SIDE HEIGHT MORE THAN 3m

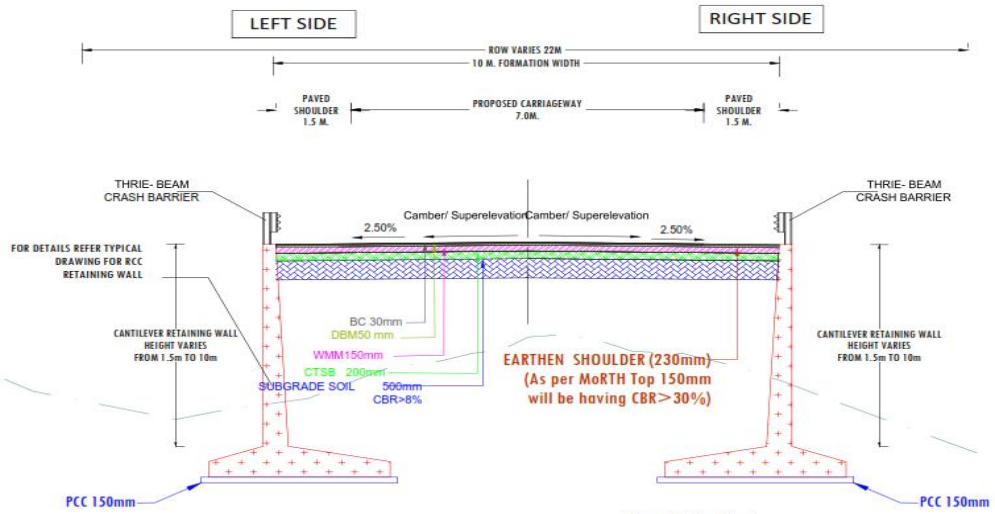


Fig. 2.9 Modified
As per IRC SP 73: 2018

S. No	Chainage From	Chainage To	Length (Km)	TCS Type
1	39.980	40.020	0.040	14
	Total Length		0.040	

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

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SCALE: Not to scale Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

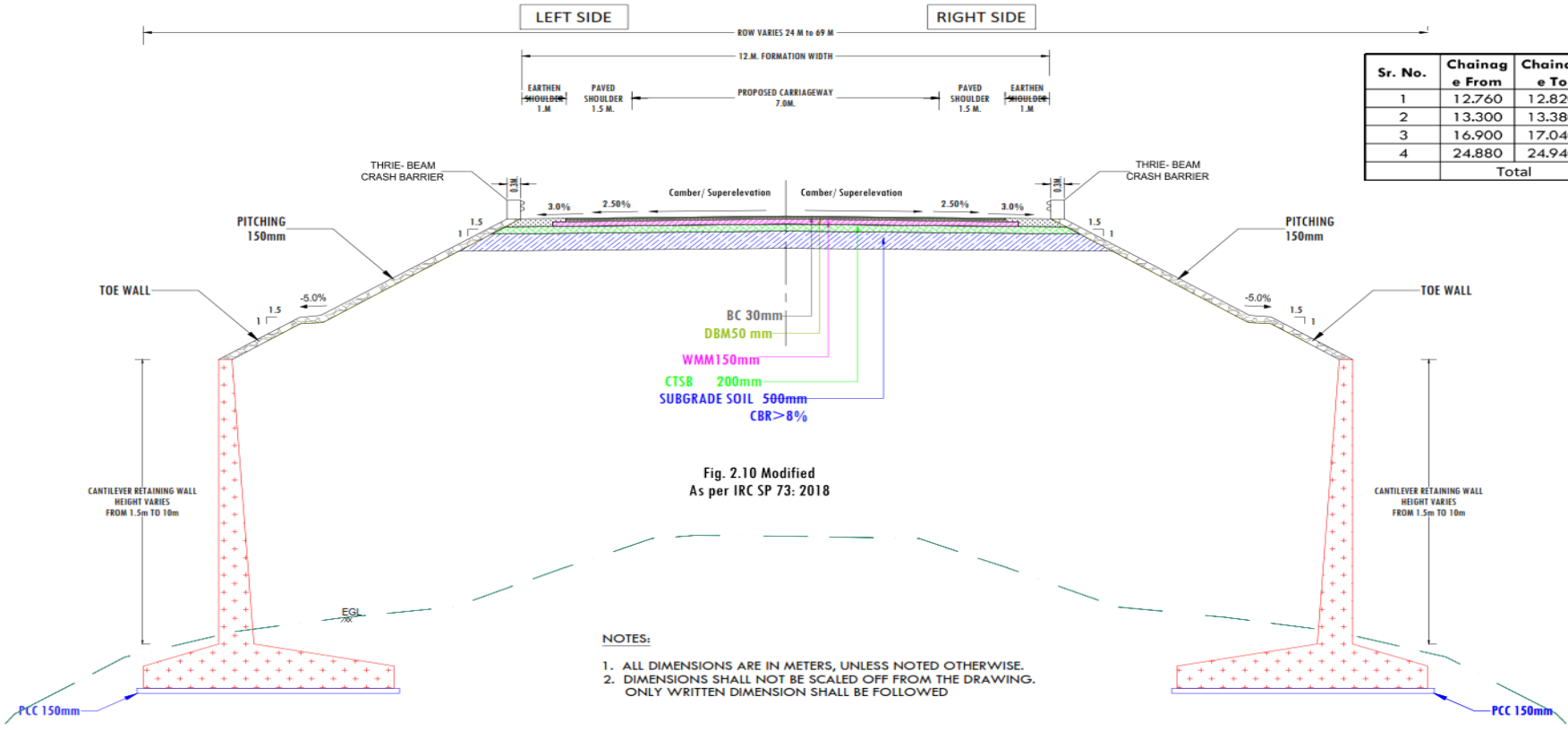
CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TS/105

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

TYPE - 15

TYPICAL CROSS SECTION FOR 2 - LANE UNDIVIDED HIGHWAY(NEW CONSTRUCTION)
(OPEN COUNTRY -MOUNTAINEOUS TERRAIN WITHOUT SNOW)
BANKING SECTION WITH RETAINING WALL BOTH SIDES OFFSET FROM SHOULDER HEIGHT MORE THAN 3m



Sr. No.	Chainage From	Chainage To	Length (Km)	TCS Type
1	12.760	12.820	0.060	15
2	13.300	13.380	0.080	15
3	16.900	17.040	0.140	15
4	24.880	24.940	0.060	15
	Total		0.340	km

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:
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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)- DAINADUBI TO DARUGIRI JUNCTION ROAD (NH-217) IN THE STATE ON MEGHALAYA.

SCALE: Not to scale
Dimensions as mentioned

TITLE: TYPICAL CROSS SECTION

CLIENT APPROVAL: | SIGNATURE:

DWG NO:- GIS/1B/NHIDCL/TS/105

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

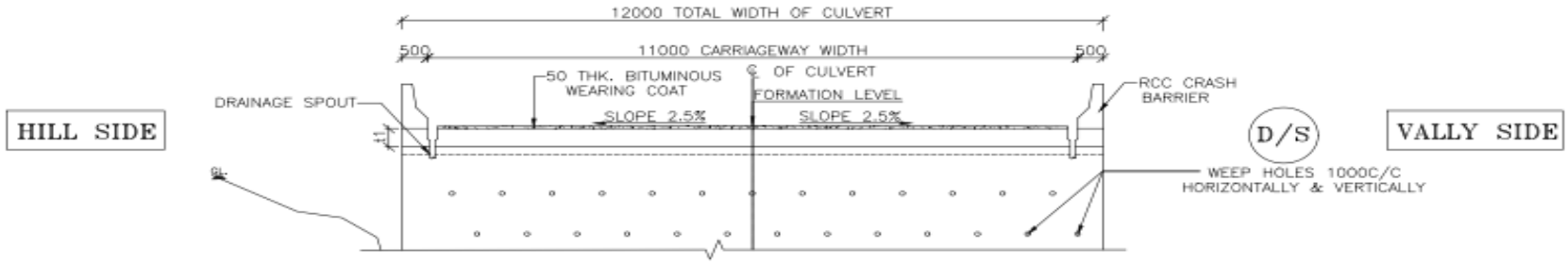

FIG. 7.4 AS PER IRC:SP–72–2018
TYPICAL CROSS SECTION OF CULVERT AT DECK LEVEL
2– LANE HIGHWAY
(TCS – 16)

REV.	DATE	REVISIONS	CLIENT:	DESIGN CONSULTANTS:	PROJECT:	TITLE:	CLIENT APPROVAL / SIGNATURE
			NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI BUILDING, 4 PARLIAMENT STREET SANSAD MARG AREA, NEW DELHI - 110001	Global Infra Solutions in JV with Krishna Techno Consultants Pvt. Ltd. and association with Infycons Creative Software Pvt. Ltd.	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).	TCS - 16 AS PER IRC:SP-72-2018 TYPICAL CROSS SECTION OF CULVERT AT DECK LEVEL 2- LANE HIGHWAY SCALE: NTS	DAINADUBI TO DARUGIRI ROAD

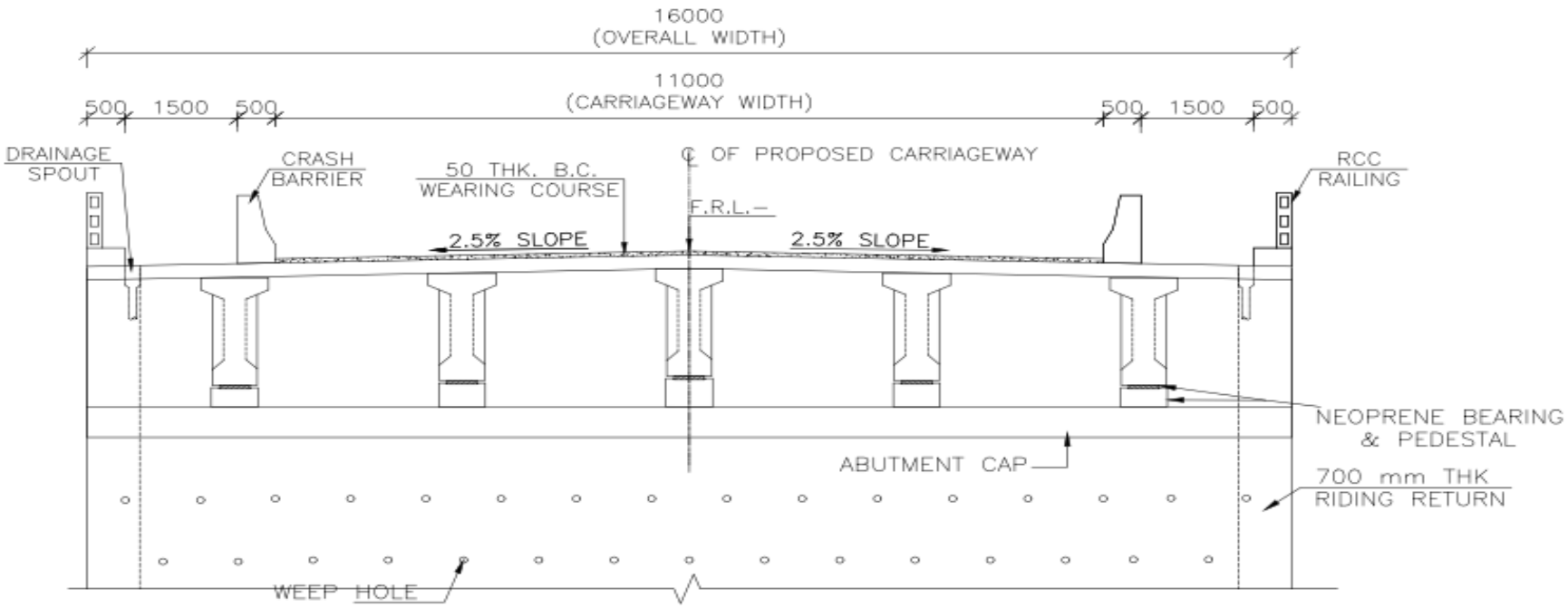

FIG. 7.6 MODIFIED AS PER IRC:SP–72–2018
TYPICAL CROSS SECTION OF BRIDGE WITH FOOTPATH
AT DECK LEVEL 2– LANE HIGHWAY
(TCS – 17)

REV.	DATE	REVISIONS	CLIENT:	DESIGN CONSULTANT:	PROJECT:	TITLE:	CLIENT APPROVAL / SIGNATURE
			NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI BUILDING, 4 PARLIAMENT STREET SANSAD MARG AREA, NEW DELHI - 110001	Global Infra Solutions in JV with Krishna Techno Consultants Pvt. Ltd. and association with InFocons Creative Software Pvt. Ltd.	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).	TCS - 17 AS PER IRC:SP-72-2018 TYPICAL CROSS SECTION OF BRIDGE WITH FOOTPATH AT DECK LEVEL 2-LANE HIGHWAY SCALE: NTS	DAINADUBI TO DARUGIRI ROAD

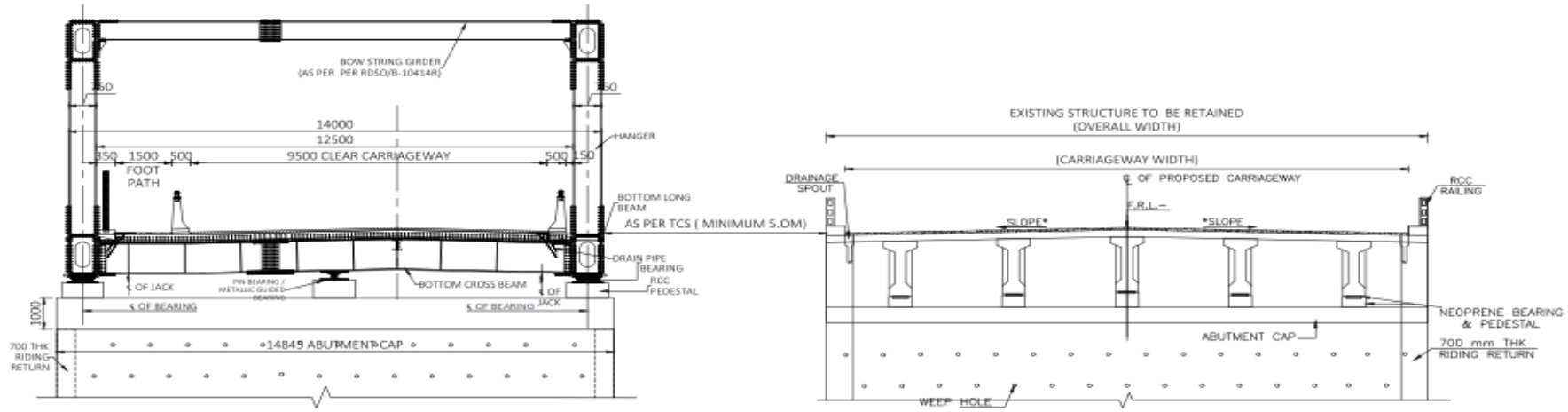

FIG. 7.8 MODIFIED AS PER IRC:SP-72-2018
TYPICAL CROSS SECTION OF 4 LANE BRIDGE WITH
FOOTPATH AT DECK LEVEL 2- LANE HIGHWAY
(TCS - 18)

CONSULTANT :	CLIENT :	PROJECT TITLE :
NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. PTI BUILDING, 4 PARLIAMENT STREET SANSAD MARG AREA, NEW DELHI - 110001	Global Infra Solutions in JV with Krishna Techno Consultants Pvt. Ltd. and association with Infycons Creative Software Pvt. Ltd.	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).

(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.	268
A2	Electrical cables	Meters	19733
A3	Transformers	Nos.	06
B	Water/Sewage pipeline		
B1	Sewage	Meters	-
B2	Water supply	Meters	25500
B3	Handpump/Tubewells	Nos.	-
C	Felling of trees	Nos.	3000

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 3000 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 4 locations.

Sl. No.	**Design Chainage (m)**	**Side**
1	9+730	LHS
2	10+460	RHS
3	37+565	RHS
4	38+175	LHS

(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		

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.

(g) Bus- shelters

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.	Chainage (m)	SIDE
1	0+200	LHS
2	0+220	RHS
3	0+760	LHS
4	1+400	RHS
5	3+990	LHS
6	5+050	RHS
7	6+300	LHS
8	6+400	RHS
9	8+700	RHS
10	8+900	LHS
11	11+050	RHS
12	11+860	LHS
13	17+150	LHS
14	20+120	LHS
15	23+300	RHS
16	33+050	LHS
17	33+930	RHS
18	34+000	LHS
19	38+720	RHS
20	39+900	LHS

(h) Public Toilet-06 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.

Details of Street Lights							
Sr. No	Design Chainage		Length (km)	Spacing (m)	Height of Pole (m)	No of One way Light Poles	Remark
	From	To					
1	0+000	0+700	0.700	30	9	***23***	Dainadubi (Built-up)
2	10+900	11+200	0.300	30	9	***10***	Wa'geasi (Market/Built-up)
3	33+050	33+245	0.195	30	9	***7***	Rongjeng (Built-up)
4	34+120	35+060	0.940	30	9	***31***	Rongjeng (Market/Built-up)
	Total Length of Stretch:		**2.135**		**Total Nos.-**	**71**	

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 3 Nos. of High Mast shall be provided.

Sr.No	Design Chainage	Location	Height of HM (m)	Qty (Nos)
1	0+150	Dainadubi Checkpost	25	1
2	33+965	Rongjeng Junction	25	1
3	40+840	Darugiri 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 & 18 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		

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						
7	**Ravelling or Honeycomb type surface**	r= area 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 15 days	
			2	r = 2 - 10 %		
			3	r = 10 - 25 %	Bonded Inlay, 2 or 3 slabs if affecting. Within 30 days	
			4	r = 25 - 50 %		
			5	r > 50% and h > 25mm	Reconstruct slabs, 4 or more slabs if affecting. 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
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/m2/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/m2/lux
Minimum Threshold Level: 50 mcd/m2/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)	Landslids 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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode**, 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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode.** 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

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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"** 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.

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

SIGNED, SEALED AND DELIVERED

[$]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).

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.	54.22%	**A - Widening and strengthening of existing road**	
			(1) Earthwork up to top of the subgrade	0.59%
			(2) Subbase course (CTSB)	0.95%
			(3) Non-bituminous base course (WMM)	0.50%
			(4) Bituminous base	0.56%
			(5) wearing coat	1.46%
			(6) widening and repair of culverts	0.00%
			B.1 (i) - Reconstruction as 2-Lane +PS (Flexible pavement)	
			(1) Earthwork up to top of the subgrade	5.41%
			(2) Subbase course (CTSB)	4.25%
			(3) Non-bituminous base course (WMM)	2.36%
			(4) Bituminous base	4.44%
			(5) Wearing coat	2.52%
			B.1 (ii) - Reconstruction as 4-Lane +PS (Flexible pavement)	
			(1) Earthwork up to top of the subgrade	0.28%
			(2) Subbase course (CTSB)	0.29%
			(3) Non-bituminous base course (WMM)	0.24%
			(4) Bituminous base	0.28%
			(5) Wearing coat	0.17%
			B.1 (iii) - Realignment/ bypass (Flexible pavement)	
			(1) Earthwork up to top of the subgrade	36.12%
			(2) Subbase course (CTSB)	5.57%
			(3) Non-bituminous base course (WMM)	4.29%
			(4) Bituminous base	3.73%
			(5) Wearing coat	2.27%
			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%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(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%
			(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)	23.71%
2	Minor Bridges/ Underpasses/ Overpasses	17.80%	**A.1 - Widening and repairs of Minor Bridges**	
			Widening of existing bridges	0.00%
			rehabilitation of existing bridges	0.07%
			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	70.12%
			(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.	27.81%
			(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	1.17%
			(4) **Guide Bunds and River Training works:** (On completion of Guide Bunds and river training works complete in all respects.)	0.83%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			B.1 - Widening and repairs of Underpasses/Overpasses	
			Underpasses/ Overpasses	0.00%
			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%
			(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	0.01%	**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	100.00%
			(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%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(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%
			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%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(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%
			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	26.89%	(i) Toll plaza	0.00%
			(ii) Road side drains	13.74%
			(iii) Road signs, markings, km stones safety Devices etc.	6.20%
			(iv) Project facilities	0.00%
			(a) Bus shelter	0.94%
			(b) Truck laybys	1.27%
			(c) Rest areas	0.00%
			(d) Others (To be specified)	
			(i) Street Lighting	0.73%
			(ii) Public Toilet	0.19%
			(iii) Utility Ducts	1.38%
			(iv) Junction improvement works including Connecting Road & Junction under Grade separator, noise barrier.	17.13%
			(v) Thrie Beam Crash Barrier	7.03%
			(vi) New Jersy Crash Barrier	0.31%
			(vii) Site clearance	0.45%

S. No.	Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4	5
			(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	34.01%
			(ix) Boundary Stone	0.02%
			(x) Safety and traffic management during construction	0.21%
			(xi) Side Slope Protection works and stone pitching	16.39%
5	Utility shifting	1.08%	PHE	40.67%
			MECL	59.33%
		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	0.59%	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)	0.95%	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)	0.50%	
(4) Bituminous base	0.56%	
(5) wearing coat	1.46%	
(6) widening and repair of culverts	0.00%	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)		

Stage for Payment	Percentage weightage	Payment Procedure
(1) Earthwork up to top of the subgrade	5.41%	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)	4.25%	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)	2.36%	
(4) Bituminous base	4.44%	
(5) Wearing coat	2.52%	
B.1 (ii) - Reconstruction as 4-Lane +PS (Flexible pavement)		
(1) Earthwork up to top of the subgrade	0.28%	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)	0.29%	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)	0.24%	
(4) Bituminous base	0.28%	
(5) Wearing coat	0.17%	
B.1 (iii) - Realignment/ bypass (Flexible pavement)		
(1) Earthwork up to top of the subgrade	36.12%	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)	5.57%	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)	4.29%	
(4) Bituminous base	3.73%	
(5) Wearing coat	2.27%	
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.

Stage for Payment	Percentage weightage	Payment Procedure
		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%	
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	23.71%	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 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
Widening of existing bridges	0.00%	
rehabilitation of existing bridges	0.07%	
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	70.12%	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	27.81%	Super-structure: Payment shall be

Stage of Payment	Weightage	Payment Procedure
in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.		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.	1.17%	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.)	0.83%	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 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

Stage of Payment	Weightage	Payment Procedure
		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 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	100.00%	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.

Stage of payment	Weightage	Payment procedure
(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 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

Stage of payment	Weightage	Payment procedure
		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 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	0.00%	Wearing Coat: Payment shall be made on completion

Stage of payment	Weightage	Payment procedure
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.		(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 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	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

Stage of payment	Weightage	Payment procedure
specified and (b) in case of RUB - rigid pavement under RUB including drainage facility complete in all respect as specified.		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		
(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%

Stage of payment	Weightage	Payment procedure
		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 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

Stage of payment	Weightage	Payment procedure
		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	13.74%	Unit of measurement is linear

Stage of Payment	Weightage	Payment Procedure
(iii) Road signs, markings, km stones safety Devices etc.	6.20%	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.
(iv) Project facilities	0.00%	Payment shall be made on pro rata basis for completed facilities.
(a) Bus shelter	0.94%	
(b) Truck laybys	1.27%	
(c) Rest areas	0.00%	
(d) Others (To be specified)		
(i) Street Lighting	0.73%	
(ii) Public Toilet	0.19%	
(iii) Utility Ducts	1.38%	
(iv) Junction improvement works including Connecting Road & Junction under Grade separator, noise barrier.	17.13%	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	7.03%	Unit of measurement is linear length.
(vi) New Jersy Crash Barrier	0.31%	Unit of measurement is linear length.
(vii) Site clearance	0.45%	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	34.01%	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	0.02%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length
(x) Safety and traffic management during construction	0.21%	Payment shall be made on prorate basis every six months.
(xi) Side Slope Protection works and stone pitching	16.39%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on

Stage of Payment	Weightage	Payment Procedure
		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	40.67%	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 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	59.33%	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

Stage of Payment	Weightage	Payment procedure
		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[$]

2.1 2.1 Project Milestone-I shall occur on the date falling on the 128th (One Hundred and Twenty Eight) day from the Appointed Date (the "**Project Milestone-I**").

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

3. Project Milestone-II[$]

3.1 Project Milestone-II shall occur on the date falling on the 219th (Two hundred and Nineteen) day from the Appointed Date (the "**Project Milestone-II**").

3.2 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.

4. Project Milestone-III[$]

4.1 Project Milestone-III shall occur on the date falling on the 310th (Three hundred and Ten) day from the Appointed Date (the "**Project Milestone-III**").

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

5 Schedule Completion Date

5.1 The Scheduled Completion Date shall occur on the 365th (Three Thousand and Sixty Five) day from the Appointed Date.

[$] 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 180th and 300th day from appointed date and balance **'L_2' km** length is handed over after 300th 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.

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

6 Extension of time

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

Schedule-K
(See Clause 12.1.2)
Tests on Completion

1. **Schedule for Tests**

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

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

2 Tests

2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include all the tests specified in IRC code, manual and MORTH specifications for the road and Bridge works, 5th revision, 2013.

2.2 Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.

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

2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

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

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

3 Agency for conducting Tests

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

4. **Completion Certificate**

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

Schedule-L

(See Clause 12.2 and 12.4)

PROVISIONAL CERTIFICATE

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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"** 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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"** 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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"**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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"** …….. (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/Widening of National Highway No. 217 (Dainadubi-Darugiri Section) to Two lane with paved shoulder in the state of Meghalaya, from design Km 0+000 to Km 40+840 (Design Length= 40.840 Km) (existing Km 8+600 to Km 53+000 of Old NH-62) under Bharatmala Pariyojana (Lot-1) Pkg-1B on EPC mode"** …….. (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.