Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

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

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

1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.

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

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

Annexure - I

(Schedule-A)

Site

Note: Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/location referred to in Annex-I to Schedule A shall be existing chainages; The risk pertaining to the adequacy of the executed works in accordance with the Manual & Contract Agreement shall be assumed solely by the Contractor. Prior to submitting the bid, the Contractor is permitted to conduct Non-Destructive Testing (NDT) on the structural elements. Any expenses to be incurred for rectification measures in the executed works, if deemed necessary, shall be assumed to be integrated into the bid by the Contractor.

1. Site

The Site of the Intermediate-Lane with shoulder Project Highway comprises the section of National Highway – 04 is from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH - 04 (Total length 26 Km) in the UT of A&N Islands. The land, carriageway and structures comprise the Site are described below.

2. Land

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

Land Details

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
1	155.000	12	
2	155.100	12	
3	155.200	12	
4	155.300	12	
5	155.400	12	
6	155.500	12	
7	155.600	12	
8	155.700	12	
9	155.800	12	
10	155.900	12	
11	156.000	12	
12	156.100	12	
13	156.200	12	
14	156.300	12	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
15	156.400	12	
16	156.500	12	
17	156.600	12	
18	156.700	12	
19	156.800	12	
20	156.900	12	
21	157.000	12	
22	157.100	12	
23	157.200	12	
24	157.300	12	
25	157.400	12	
26	157.500	12	
27	157.600	12	
28	157.700	12	
29	157.800	12	
30	157.900	12	
31	158.000	12	
32	158.100	12	
33	158.200	12	
34	158.300	12	
35	158.400	12	
36	158.500	12	
37	158.600	12	
38	158.700	12	
39	158.800	12	
40	158.900	12	
41	159.000	12	
42	159.100	12	
43	159.200	12	
44	159.300	12	
45	159.400	12	
46	159.500	12	
47	159.600	12	
48	159.700	12	
49	159.800	12	
50	159.900	12	
51	160.000	12	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
52	160.100	12	
53	160.200	12	
54	160.300	12	
55	160.400	12	
56	160.500	12	
57	160.600	12	
58	160.700	12	
59	160.800	12	
60	160.900	12	
61	161.000	12	
62	161.100	12	
63	161.200	12	
64	161.300	12	
65	161.400	12	
66	161.500	12	
67	161.600	12	
68	161.700	12	
69	161.800	12	
70	161.900	12	
71	162.000	12	
72	162.100	12	
73	162.200	12	
74	162.300	12	
75	162.400	12	
76	162.500	12	
77	162.600	12	
78	162.700	12	
79	162.800	12	
80	162.900	12	
81	163.000	12	
82	163.100	12	
83	163.200	27.5	Kaushalya Nagar
84	163.300	25	
85	163.400	21	
86	163.500	19	
87	163.600	21	
88	163.700	19	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
89	163.800	18.5	
90	163.900	20	
91	164.000	26	
92	164.100	20	
93	164.200	24	
94	164.300	25	
95	164.400	19	
96	164.500	20	
97	164.600	18	
98	164.700	24	
99	164.800	23	
100	164.900	25	
101	165.000	24	
102	165.100	16	
103	165.200	21	
104	165.300	18.5	
105	165.400	25	
106	165.500	28	
107	165.600	20	
108	165.700	22	
109	165.800	21	
110	165.900	20	
111	166.000	18	
112	166.100	20	
113	166.200	19	
114	166.300	21	
115	166.400	20.5	
116	166.500	22	
117	166.600	22.5	
118	166.700	20	
119	166.800	21	
120	166.900	19.5	
121	167.000	20.5	
122	167.100	28	Shaktigarh
123	167.200	28	
124	167.300	20	
125	167.400	15	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
126	167.500	13.5	
127	167.600	20	
128	167.700	21	
129	167.800	23.75	
130	167.900	34	
131	168.000	18	
132	168.100	21	
133	168.200	21	
134	168.300	21	
135	168.400	20	
136	168.500	22	
137	168.600	26	
138	168.700	18.5	
139	168.800	18	
140	168.900	22.5	
141	169.000	23.5	
142	169.100	19.5	
143	169.200	24	
144	169.300	26	
145	169.400	20.5	
146	169.500	23	
147	169.600	28	Laxmanpur
148	169.700	25	Bakultala
149	169.800	20	
150	169.900	18	
151	170.000	20	
152	170.100	19	
153	170.200	20	
154	170.300	22	
155	170.400	20	
156	170.500	15.25	
157	170.600	18	
158	170.700	14	
159	170.800	16.5	
160	170.900	15	
161	171.000	16	
162	171.100	15.25	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
163	171.200	14	
164	171.300	17	
165	171.400	16	
166	171.500	14.5	
167	171.600	15.5	
168	171.700	15	
169	171.800	14	
170	171.900	16.25	
171	172.000	14	Sabari
172	172.100	15	
173	172.200	15	
174	172.300	15	
175	172.400	15	
176	172.500	15.5	
177	172.600	15	
178	172.700	15	
179	172.800	15	
180	172.900	20	
181	173.000	15	
182	173.100	21	
183	173.200	15	
184	173.300	16	
185	173.400	15	
186	173.500	15	
187	173.600	25	
188	173.700	18	
189	173.800	15	
190	173.900	18	
191	174.000	15	
192	174.100	15	
193	174.200	15	
194	174.300	15	
195	174.400	15	
196	174.500	16	
197	174.600	18	
198	174.700	21	
199	174.800	20	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
200	174.900	16.25	
201	175.000	19	
202	175.100	20	Rampur
203	175.200	20	
204	175.300	15	
205	175.400	15	
206	175.500	15	
207	175.600	15	
208	175.700	15	
209	175.800	15	
210	175.900	17	
211	176.000	16	
212	176.100	15	
213	176.200	19	
214	176.300	17	
215	176.400	23	
216	176.500	15	
217	176.600	15	
218	176.700	15	
219	176.800	15	
220	176.900	15	
221	177.000	12	
222	177.100	25	
223	177.200	23	
224	177.300	24	
225	177.400	19.5	
226	177.500	16	Rangat
227	177.600	15	
228	177.700	16	
229	177.800	15	
230	177.900	18.5	
231	178.000	19	
232	178.100	17	
233	178.200	19	
234	178.300	20	
235	178.400	20	
236	178.500	20	

Sl. No.	Chainage(Km)	Existing ROW (in M)	Remarks
		Total	
237	178.600	20	
238	178.700	20	
239	178.800	20	
240	178.900	21	
241	179.000	20.5	
242	179.100	19	
243	179.200	20	Janakpur
244	179.300	20	
245	179.400	15	
246	179.500	15.5	
247	179.600	16	
248	179.700	12	
249	179.800	15	Dasrathpur
250	179.900	23	
251	180.000	10	
252	180.100	16	
253	180.200	10	
254	180.300	14	
255	180.400	14	
256	180.500	15	
257	180.600	12	
258	180.700	14	
259	180.800	13	
260	180.900	16	
261	181.000	12	

Note: Minimum Encumbrances free ROW is 12.0 m available all along the road.

3. Carriageway

The present carriageway of the Project Highway is of Intermediate Lane/two lane flexible pavement having varying carriageway varying as tabulated below. The type of the existing pavement is flexible as per following details:

S.no.	Existing Chainage (km)		Existing carriageway width (m)	Remarks
	From	To		
1	155+000	162+868	2.5 - 5.50	
2	162+868	165+520	5.0 - 15.00	
3	165+520	167+054	2.5 - 5.50	
4	167+054	168+326	5.0 - 15.00	
5	168+326	168+625	2.5 - 5.50	
6	168+625	169+425	5.0 - 15.00	
7	169+425	170+125	2.5 - 5.50	
8	170+125	171+646	5.0 - 15.00	
9	171+646	175+000	2.5 - 5.50	
10	175+000	180+842	5.0 - 15.00	
11	180+842	181+000	2.5 - 5.50	

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super-Structure		
1	177+347	OPEN	RC WALL	RC SOLID SLAB	11 x 7.32	8

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 withspan length(m)	Width (m)	ROB/ RUB
		Foundation	Super Structure			
NIL						

6. Grade separators

The Site includes the following grade separators:

	Existing	Type of Structure	No. of Spans with	

S. No	Chainage (km)	Foundation	Superstructure	span length (m)	Width (m)
NIL					

7. Minor Bridges

The Site includes the following minor bridges

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

8. Railway level crossings

The Site includes the following level crossing:

S. No.	Existing Chainage (km)	Remarks
NIL		

9. Underpasses (Vehicular, Non-Vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

SL NO	EXISTING CHAINAGE	TYPE OF CULVERT	SIZE OF SPAN (m)	Width
1	155+090	BOX	1x1.5x1.5	7.5
2	155+717	HPC	1x1.2	7.5
3	155+791	HPC	1x1.2	7.5
4	155+874	HPC	1x1.2	7.5
5	156+288	HPC	1x1.2	7.5
6	156+960	BOX	1x1.5x1.5	7.5
7	157+032	HPC	1x1.2	7.5
8	157+267	HPC	1x1.2	7.5
9	157+718	HPC	1x1.2	7.5
10	158+068	HPC	1X1.2	7.5
11	158+610	HPC	1x1.2	7.5
12	158+685	HPC	1x1.2	7.5
13	159+065	HPC	1x1.2	7.5
14	159+257	HPC	1x1.2	7.5
15	159+315	HPC	1x1.2	7.5
16	159+537	HPC	1x1.2	7.5
17	159+845	HPC	1x1.2	7.5
18	160+045	HPC	1x1.2	7.5
19	160+167	HPC	1x1.2	7.5
20	160+268	HPC	1x1.2	7.5
21	160+396	HPC	1x1.2	7.5
22	161+515	HPC	1x1.2	7.5
23	161+566	HPC	1x1.2	7.5
24	161+628	HPC	1x1.2	7.5
25	161+726	SLAB	1x2.2	7.5
26	162+035	SLAB	1x2.8	7.5
27	162+176	HPC	1x.2	7.5
28	162+292	HPC	1x1.2	7.5
29	162+455	HPC	1x1.2	7.5
30	162+513	HPC	1x1.2	7.5
31	162+587	HPC	1x1.2	7.5
32	162+728	HPC	1x1.2	7.5
33	163+035	HPC	2x1.2	10
34	163+131	HPC	1x1.2	10
35	163+200	HPC	1x1.2	10
36	163+504	BOX	1x2.0x1.5	10
37	163+704	BOX	1x2.0x1.5	10
38	164+809	BOX	1x2.5x2.0	10
39	164+950	BOX	1x1.5x1.5	10
40	165+194	HPC	1x1.2	10
41	165+440	HPC	1x1.2	10
42	165+480	HPC	1x1.2	10
43	165+720	HPC	1x1.2	7.5
44	165+763	HPC	1x1.2	7.5
45	165+838	HPC	1x1.2	7.5
46	165+919	HPC	1x1.2	7.5
47	165+944	SLAB	1x1.85	7.5
48	166+146	HPC	1x1.2	7.5
49	166+277	HPC	1x1.2	7.5
50	166+772	HPC	1x1.2	7.5
51	167+039	HPC	2x1.2	7.5
52	167+400	BOX	1x2.0x2.0	10
53	167+637	HPC	2x1.2	10
54	167+966	HPC	1x1.2	10
55	168+063	HPC	1x1.2	10
56	168+113	HPC	2x1.2	10

SL NO	EXISTING CHAINAGE	TYPE OF CULVERT	SIZE OF SPAN (m)	Width
57	168+593	BOX	1X1.5X1.5	7.5
58	168+805	HPC	1x1.2	10
59	168+925	BOX	1X1.5X1.5	10
60	169+011	BOX	1x1.5x1.5	10
61	169+312	HPC	1x1.2	10
62	169+837	HPC	2x1.2	7.5
63	170+521	HPC	1x1.2	10
64	170+573	HPC	1x1.2	10
65	170+680	SLAB	1x2.5	10
66	171+042	BOX	1x3.0x4.5	10
67	171+360	BOX	1x2.0x1.5	10
68	171+620	SLAB	1x3.8	7.5
69	171+768	BOX	1x2.0x2.5	7.5
70	171+815	SLAB	1x3.8	7.5
71	171+925	HPC	1x1.2	7.5
72	172+052	HPC	1x1.2	7.5
73	172+196	BOX	1x1.2	7.5
74	172+488	HPC	1x1.2	7.5
75	173+116	SLAB	1x3.7x3.5	7.5
76	173+364	BOX	1x1.6x4.0	7.5
77	178+665	BOX	1x2.0x1.5	10
78	179+970	HPC	1x1.2	10
79	180+098	SLAB	1x2.9	10
80	180+223	SLAB	1x2.3	10
81	180+578	HPC	1x1.2	10
82	180+798	HPC	1x1.2	10
83	180+808	HPC	1x1.2	10

Note: Protection works are balance in all culverts

11. Bus bays/Bus Shelters

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

S. No	Design Chainage (Km)	Side
1	155+369	LHS
2	155+394	RHS
3	163+140	LHS
4	164+375	LHS
5	164+812	RHS
6	165+040	LHS
7	165+390	RHS
8	165+645	LHS
9	167+201	LHS
10	167+259	RHS
11	167+500	RHS
12	167+619	RHS
13	167+666	LHS
14	168+250	RHS
15	168+375	RHS

S. No	Design Chainage (Km)	Side
16	168+962	LHS
17	169+790	LHS
18	170+250	RHS
19	174+926	LHS
20	175+210	RHS
21	175+404	RHS
22	176+234	LHS
23	176+325	RHS
24	177+530	RHS
25	178+350	LHS
26	178+600	RHS
27	179+113	LHS
28	179+120	RHS
29	179+218	RHS
30	180+700	RHS
31	180+733	LHS

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the roadside drains are as follows:

Sl No.	Side	Chainage		Length	Remarks
		From	To		
1	LHS	160+454	160+477	23	PCC
2	LHS	160+477	160+499	22	PCC
3	LHS	160+499	160+520	21	PCC
4	LHS	164+272	164+312	40	PCC
5	LHS	164+312	164+324	12	PCC
6	LHS	164+324	164+337	13	PCC
7	LHS	164+337	164+378	41	PCC
8	LHS	164+378	164+410	32	PCC
9	LHS	164+410	164+470	60	PCC
10	LHS	164+470	164+500	30	PCC
11	LHS	164+500	164+520	20	PCC
12	RHS	165+620	165+666	46	PCC
13	RHS	165+666	165+690	24	PCC
14	RHS	167+813	167+854	41	PCC
15	LHS	167+816	167+826	10	PCC
16	LHS	167+826	167+836	10	PCC
17	RHS	167+854	167+898	44	PCC

Sl No.	Side	Chainage		Length	Remarks
		From	To		
18	LHS	167+855	167+887	32	PCC
19	RHS	167+898	167+945	47	PCC
20	LHS	167+900	167+920	20	PCC
21	LHS	167+920	167+950	30	PCC
22	RHS	167+945	167+963	18	PCC
23	LHS	167+950	167+966	16	PCC
24	RHS	167+999	168+030	31	RCC
25	RHS	168+030	168+063	33	RCC
26	RHS	168+659	168+689	30	RCC
27	RHS	169+064	169+084	20	RCC
28	RHS	169+084	169+104	20	RCC
29	RHS	169+104	169+120	16	RCC
30	RHS	169+120	169+134	14	RCC
31	RHS	169+134	169+160	26	RCC
32	RHS	169+165	169+178	13	RCC
33	LHS	169+170	169+200	30	PCC
34	RHS	169+178	169+215	37	RCC
35	LHS	169+200	169+210	10	PCC
36	RHS	169+215	169+245	30	RCC
37	RHS	169+245	169+280	35	RCC
38	RHS	169+280	169+300	20	RCC
39	RHS	169+300	169+330	30	RCC
40	RHS	169+330	169+360	30	RCC
41	RHS	169+360	169+390	30	RCC
42	RHS	169+390	169+425	35	RCC
43	LHS	170+350	170+370	20	RCC
44	LHS	170+370	170+390	20	RCC
45	LHS	170+390	170+405	15	RCC
46	LHS	170+416	170+460	44	RCC
47	LHS	170+460	170+496	36	RCC
48	LHS	170+535	170+570	35	RCC
49	LHS	170+582	170+595	13	RCC
50	LHS	170+595	170+618	23	RCC
51	LHS	170+624	170+650	26	RCC
52	LHS	170+650	170+667	17	RCC
53	RHS	170+680	170+715	35	RCC
54	LHS	170+690	170+717	27	RCC
55	RHS	170+715	170+745	30	RCC
56	LHS	170+723	170+750	27	RCC
57	RHS	170+745	170+765	20	RCC
58	LHS	170+750	170+770	20	RCC
59	RHS	170+765	170+785	20	RCC
60	LHS	170+770	170+810	40	RCC
61	RHS	170+785	170+796	11	RCC
62	LHS	170+810	170+860	50	RCC
63	RHS	170+811	170+834	23	RCC
64	RHS	170+834	170+849	15	RCC
65	RHS	170+849	170+864	15	RCC
66	LHS	170+860	170+900	40	RCC
67	RHS	170+864	170+890	26	RCC
68	RHS	170+890	170+925	35	RCC
69	LHS	170+900	170+933	33	RCC

Sl No.	Side	Chainage		Length	Remarks
		From	To		
70	RHS	170+925	170+945	20	RCC
71	LHS	170+933	170+950	17	RCC
72	RHS	170+945	170+965	20	RCC
73	LHS	170+950	170+960	10	RCC
74	LHS	170+960	170+990	30	RCC
75	RHS	170+965	170+985	20	RCC
76	RHS	170+985	171+005	20	RCC
77	LHS	170+990	171+025	35	RCC
78	RHS	171+005	171+030	25	RCC
79	RHS	171+045	171+065	20	RCC
80	LHS	171+050	171+070	20	RCC
81	RHS	171+065	171+085	20	RCC
82	LHS	171+070	171+085	15	RCC
83	LHS	171+085	171+100	15	RCC
84	RHS	171+085	171+100	15	RCC
85	LHS	171+100	171+115	15	RCC
86	RHS	171+100	171+160	60	RCC
87	LHS	171+115	171+130	15	RCC
88	LHS	171+130	171+150	20	RCC
89	LHS	171+150	171+180	30	RCC
90	RHS	171+160	171+175	15	RCC
91	LHS	171+180	171+200	20	RCC
92	LHS	171+200	171+250	50	RCC
93	RHS	171+285	171+315	30	RCC
94	RHS	171+315	171+330	15	RCC
95	RHS	171+370	171+390	20	RCC
96	RHS	171+390	171+425	35	RCC
97	RHS	171+425	171+445	20	RCC
98	LHS	171+443	171+451	8	RCC
99	RHS	171+445	171+457	12	RCC
100	RHS	171+465	171+480	15	RCC
101	RHS	171+480	171+500	20	RCC
102	LHS	171+489	171495	6	RCC
103	RHS	171+500	171+520	20	RCC
104	RHS	171+520	171+538	18	RCC
105	RHS	171+538	171+548	10	RCC
106	RHS	171+548	171+560	12	RCC
107	RHS	171+560	171+572	12	RCC
108	RHS	171+572	171+584	12	RCC
109	RHS	171+584	171+620	36	RCC

14. Major junctions

The details of major junctions are as follows:

S. No	Existing Chainage (km)	At Grade	Grade Separated	Category of Cross Road+			
				NH	SH	MDR	Others
NIL							

NH= National Highway, SH= State Highway, MDR= Major District Road.

15. Minor junctions

The details of the minor junctions are as follows:

S. No	Existing Chainage (km)	Village Name	Side	Type of Junction	Remarks
1	163.757	Way to Police out Post	LHS	T-type	All works balance
2	164.336	Way to village	LHS	Y-type	All works balance
3	164.808	To factory	LHS	T-type	All works balance
4	167.022	Way to Bombay Giru Village	RHS	Y-type	All works balance
5	167.413	Way to Shaktigarh	RHS	Y-type	All works balance
6	167.757	Way to Shaktigarh	RHS	T-type	All works balance
7	169.543	Way to Laxman Pur	LHS	T-type	All works balance
8	169.918	Way to MR road to Kolsi	LHS	T-type	All works balance
9	170.218	Way to Chapa tikri	LHS	T-type	All works balance
10	170.37	Way to Sumkur jetty	RHS	Y-type	All works balance
11	170.485	Way to Vocational Training institute	RHS	T-type	All works balance
12	170.943	Way to Bishnupur	RHS	T-type	All works balance
13	171.664	Way to water tank	LHS	T-type	All works balance
14	175.232	Way to Irata village	RHS	Y-type	All works balance
15	175.304	Way to PWD sub division	RHS	T-type	All works balance
16	175.397	Way to village	RHS	T-type	All works balance
17	175.403	Way to village	LHS	Y-type	All works balance
18	175.788	Way to village	LHS	T-type	All works balance
19	175.995	Way to church	LHS	Y-type	All works balance
20	176.225	Way to TV centre	RHS	Y-type	All works balance
21	176.921	Way to village	LHS	Y-type	All works balance
22	176.975	Way to mithila village	RHS	Y-type	All works balance
23	177.275	Way to sarkar para village	LHS	T-type	All works balance
24	177.43	Way to rampur	LHS	Y-type	All works balance

S. No	Existing Chainage (km)	Village Name	Side	Type of Junction	Remarks
25	177.45	Way to Tosli	LHS	Y-type	All works balance
26	177.584	Way to village	LHS	T-type	All works balance
27	177.72	Way to Larai Basti	RHS	Y-type	All works balance
28	177.766	Way to tehsildar office	LHS	T-type	All works balance
29	178.025	Way to Dashrath pur	RHS	Y-type	All works balance
30	178.231	Way to village	RHS	T-type	All works balance
31	178.326	Way to janakpur	LHS	Y-type	All works balance
32	178.448	Way to rang ghat	RHS	Y-type	All works balance
33	178.49	Way to village	RHS	Y-type	All works balance
34	179.006	Way to haripadapur	LHS	Y-type	Partially completed
35	179.032	Way to village	LHS	T-type	Partially completed
36	179.125	Way to haripadapur	LHS	Y-type	Partially completed
37	179.21	Way to Dashrathpur	RHS	Y-type	Partially completed
38	179.247	Way to Dashrathpur	LHS	Y-type	Partially completed
39	179.268	Way to MR road	LHS	Y-type	Partially completed

16. Bypasses

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

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

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

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

Annex - II

(Schedule-A)

Dates for providing Right of Way

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

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

Annex-III

(Schedule-A)

Alignment Plans

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

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

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

Annex - IV

(Schedule-A)

Environment Clearances

1. The environment clearance is not required in light of circular S.O. 2559(E) dated 22.08.2013 of MOEF&CC.
2. **Wild Life clearances**: Not Applicable.
3. **Forest Clearances**: Stage-I Forest Clearance has been received from MoEF&CC on 03.02.2021 for diversion of 17.249 Ha. forest land and on 16.06.2023 for diversion of 11.725 Ha. of forest land for the project.

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 Highwaysdescribed in this Schedule-B and in Schedule-C.

2. Rehabilitation and Up gradation

Rehabilitation and up gradation shall include Intermediate Lane with Hard shoulder /2-lane with Paved shoulder of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3. Specifications and Standards

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

4. Availability of the aggregates in the A&N Island

It is hereby clarified that the public auction of quarries in the Andaman & Nicobar Islands is subject to the prescribed procedures of the Government of UT of A&N and the guidelines of the NGT. As per the contractual agreement, the EPC Contractor is solely responsible for sourcing raw materials, including aggregates, from all the available sources, including transportation from the Mainland or neighboring countries at their own cost and risk. The bid price submitted by the Contractor is presumed to include all associated risks and costs related to the procurement.

Annex - I

(Schedule-B)

Description of Intermediate-Lane

Project Description: - Rehabilitation and Up-gradation of NH-4 (Old NH-223) popularly known as Andaman Trunk Road (ATR) has been entrusted to NHIDCL for the entire stretch of 331 Km distributed in South Andaman and North & Middle Andaman. In North Andaman the stretch from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) is proposed to be upgraded to Intermediate/2-Lane with hard shoulder in the Union Territory. The road is to be constructed on the existing alignment only. There is no realignment.

1. WIDENING OF THE EXISTING HIGHWAY

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

1.2 WIDTH OF CARRIAGEWAY

1.2.1 Intermediate-Lane with hard shoulders in rural section and intermediate lane with covered drain with footpath in urban section shall be undertaken. The carriageway shall be 5.5m wide with hard shoulder in rural and Intermediate/Two lane with paved Shoulder urban section conformation with the typical cross sections drawings in the Manual.

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

S. No.	Built up Stretch (Township)	Design Chainage (Km)		Length (km)	Width (m)	TCS
		From	To			
1	Kaushalya Nagar	162.868	165.52	2652	10	TCS II
2	Shaktigarh	167.054	168.326	1272	10	TCS II
3	Shaktigarh	168.625	169.425	800	10	TCS II
4	Bakultala	170.125	171.646	1521	10	TCS II
5	Sabari, Rampur	171.646	177.6	5954	10	TCS II
6	Rangat	177.60	178	400	10	TCS II
7	Janakpur, Dasrathpur	178.00	180.842	2842	10	TCS II

* Exact location to be decided at site

1.2.2 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-

sectional features shall conform to paragraph 1.2.1 above

2. GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

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

2.2 Design Speed

The design speed shall be the minimum design speed of 60 km per hour (in accordancewith section 2 of the manual) for rolling terrain.

2.3 Improvement of the existing road geometry

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

Deficient Curves: -

S. No	Design Chainage (km)	S. No	Design Chainage (km)
1	156.183	25	173.148
2	156.325	26	173.247
3	156.569	27	173.584
4	156.64	28	173.734
5	157.521	29	175.946
6	158.626	30	176.009
7	159.633	31	176.081
8	159.868	32	176.188
9	160.484	33	176.255
10	160.611	34	176.317
11	160.738	35	176.387
12	165.131	36	176.433
13	165.500	37	176.535
14	165.594	38	176.618
15	166.588	39	177.275
16	166.807	40	179.682
17	168.956	41	179.817
18	169.116	42	180.055
19	171.776	43	180.132
20	172.261	44	180.22
21	172.372	45	180.387
22	172.759	46	180.609

S. No	Design Chainage (km)	S. No	Design Chainage (km)
23	172.9	47	180.676
24	173.084	48	180.778

2.4 Right of Way

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

2.5 Type of Shoulders

S. No.	Built up Stretch (Township)	Design Chainage (Km)		Reference to Cross Section
		From	To	
1	Kaushalyanagar	162.868	165.520	TCS II
2	Shaktigarh	167.054	168.326	TCS II
3		168.625	169.425	TCS II
4	Bakultala	170.125	171.646	TCS II
5	Sabari, Rampur	171.646	177.600	TCS II
6	Rangat	177.600	178.000	TCS II
7	Janakpur, Dasrathpur	178.000	180.842	TCS II

In built up area full road width to be paved whereas in other area hard shoulder of 0.5m on both sides is to be done as per applicable TCS.

2.6 Lateral and vertical clearances at underpasses

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

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

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

2.7 Lateral and vertical clearances at overpasses

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

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

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

2.8 Service roads

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

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

2.9 Grade separated structures

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

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

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

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

2.10 Cattle and pedestrian under pass / over pass

Cattle and pedestrian underpass shall be constructed as follows:

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

2.11 Typical cross-sections of the Project Highway

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

Sl. No.	Type of TCS	Length (m)

1	TCS I (Typical)	3185.4
2	TCS IA	5712
3	TCS IB	211
4	TCS IC	3118
5	TCS ID	1816.6
6	TCS IIA	870
7	TCS IIB	8188
8	TCS IIC	712
9	TCS IID	2187

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
1	155+000	155+077	77.00	TCS I C	TCS I
2	155+077	155+099	22.00	TCS I A	TCS I
3	155+099	155+119	20.00	TCS I C	TCS I
4	155+119	155+145	26.00	TCS I A	TCS I
5	155+145	155+167	22.00	TCS I C	TCS I
6	155+167	155+200	33.00	TCS I C	TCS I
7	155+200	155+207	7.00	TCS I A	TCS I
8	155+207	155+234	27.00	TCS I C	TCS I
9	155+234	155+239	5.00	TCS I C	TCS I
10	155+239	155+374	135.00	TCS I C	TCS I
11	155+374	155+385	11.00	TCS I A	TCS I
12	155+385	155+432	47.00	TCS I C	TCS I
13	155+432	155+453	21.00	TCS I A	TCS I
14	155+453	155+540	87.00	TCS I C	TCS I
15	155+540	155+551	11.00	TCS I A	TCS I
16	155+551	155+785	234.00	TCS I C	TCS I
17	155+785	155+794	9.00	TCS I C	TCS I
18	155+794	155+881	87.00	TCS I C	TCS I
19	155+881	155+896	15.00	TCS I C	TCS I
20	155+896	155+921	25.00	TCS I C	TCS I
21	155+921	155+941	20.00	TCS I C	TCS I
22	155+941	155+998	57.00	TCS I C	TCS I
23	155+998	156+007	9.00	TCS I C	TCS I
24	156+007	156+049	42.00	TCS I C	TCS I
25	156+049	156+056	7.00	TCS I C	TCS I
26	156+056	156+444	388.00	TCS I C	TCS I
27	156+444	156+454	10.00	TCS I C	TCS I
28	156+454	156+485	31.00	TCS I C	TCS I
29	156+485	156+572	87.00	TCS I C	TCS I
30	156+572	156+904	332.00	TCS I C	TCS I
31	156+904	156+914	10.00	TCS I C	TCS I
32	156+914	157+000	86.00	TCS I C	TCS I
33	157+000	157+100	100.00	TCS I A	TCS I
34	157+100	157+120	20.00	TCS I C	TCS I

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
35	157+120	157+480	360.00	TCS I A	TCS I
36	157+480	157+547	67.00	TCS I C	TCS I
37	157+547	157+571	24.00	TCS I C	TCS I
38	157+571	157+600	29.00	TCS I C	TCS I
39	157+600	157+679	79.00	TCS I A	TCS I
40	157+679	157+719	40.00	TCS I C	TCS I
41	157+719	157+732	13.00	TCS I A	TCS I
42	157+732	157+762	30.00	TCS I C	TCS I
43	157+762	157+868	106.00	TCS I A	TCS I
44	157+868	157+873	5.00	TCS I C	TCS I
45	157+873	157+883	10.00	TCS I C	TCS I
46	157+883	158+090	207.00	TCS I C	TCS I
47	158+090	158+100	10.00	TCS I C	TCS I
48	158+100	158+115	15.00	TCS I C	TCS I
49	158+115	158+347	232.00	TCS I A	TCS I
50	158+347	158+429	82.00	TCS I C	TCS I
51	158+429	158+443	14.00	TCS I C	TCS I
52	158+443	158+485	42.00	TCS I C	TCS I
53	158+485	158+520	35.00	TCS I C	TCS I
54	158+520	158+584	64.00	TCS I A	TCS I
55	158+584	158+654	70.00	TCS I C	TCS I
56	158+654	158+712	58.00	TCS I C	TCS I
57	158+712	158+783	71.00	TCS I C	TCS I
58	158+783	158+874	91.00	TCS I A	TCS I
59	158+874	158+911	37.00	TCS I C	TCS I
60	158+911	159+000	89.00	TCS I C	TCS I
61	159+000	159+104	104.00	TCS I A	TCS I
62	159+104	159+136	32.00	TCS I C	TCS I
63	159+136	159+157	21.00	TCS I C	TCS I
64	159+157	159+200	43.00	TCS I C	TCS I
65	159+200	160+287	1087.00	TCS I A	TCS I
66	160+287	160+292	5.00	TCS I C	TCS I
67	160+292	160+330	38.00	TCS I (TYPICAL)	TCS I
68	160+330	160+340	10.00	TCS I C	TCS I
69	160+340	160+418	78.00	TCS I (TYPICAL)	TCS I
70	160+418	160+450	32.00	TCS I A	TCS I
71	160+450	160+480	30.00	TCS I (TYPICAL)	TCS I
72	160+480	162+455	1975.00	TCS I A	TCS I
73	162+455	162+592	137.00	TCS I (TYPICAL)	TCS I
74	162+592	162+868	276.00	TCS I A	TCS I
75	162+868	163+080	232.00	TCS I A	TCS I
76	163+080	163+251	151.00	TCS II B	TCS II
77	163+251	163+264	13.00	TCS II A	TCS II
78	163+264	163+612	348.00	TCS II B	TCS II

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
79	163+612	163+664	52.00	TCS II C	TCS II
80	163+664	163+688	24.00	TCS II C	TCS II
81	163+688	163+724	36.00	TCS II C	TCS II
82	163+724	163+735	11.00	TCS II C	TCS II
83	163+735	163+757	22.00	TCS II C	TCS II
84	163+757	163+870	113.00	TCS II A	TCS II
85	163+870	163+919	49.00	TCS II C	TCS II
86	163+919	163+948	29.00	TCS II C	TCS II
87	163+948	164+216	268.00	TCS II C	TCS II
88	164+216	164+288	72.00	TCS II A	TCS II
89	164+288	164+666	378.00	TCS II B	TCS II
90	164+666	164+673	7.00	TCS II C	TCS II
91	164+673	164+718	45.00	TCS II A	TCS II
92	164+718	165+216	498.00	TCS II D	TCS II
93	165+216	165+520	304.00	TCS II B	TCS II
94	165+520	165+561	41.00	TCS I (TYPICAL)	TCS I
95	165+561	165+571	10.00	TCS I D	TCS I
96	165+571	165+632	61.00	TCS I (TYPICAL)	TCS I
97	165+632	165+654	22.00	TCS I D	TCS I
98	165+654	165+665	11.00	TCS I A	TCS I
99	165+665	165+680	15.00	TCS I D	TCS I
100	165+680	165+694	14.00	TCS I (TYPICAL)	TCS I
101	165+694	165+740	46.00	TCS I A	TCS I
102	165+740	165+860	120.00	TCS I C	TCS I
103	165+860	165+880	20.00	TCS I (TYPICAL)	TCS I
104	165+880	165+953	73.00	TCS I A	TCS I
105	165+953	165+983	30.00	TCS I C	TCS I
106	165+983	166+069	86.00	TCS I A	TCS I
107	166+069	166+137	68.00	TCS I (TYPICAL)	TCS I
108	166+137	166+145	8.00	TCS I B	TCS I
109	166+145	166+181	36.00	TCS I (TYPICAL)	TCS I
110	166+181	166+190	9.00	TCS I B	TCS I
111	166+190	166+289	99.00	TCS I (TYPICAL)	TCS I
112	166+289	166+314	25.00	TCS I A	TCS I
113	166+314	166+427	113.00	TCS I (TYPICAL)	TCS I
114	166+427	166+433	6.00	TCS I B	TCS I
115	166+433	166+440	7.00	TCS I A	TCS I
116	166+440	166+831	391.00	TCS I D	TCS I
117	166+831	166+851	20.00	TCS I A	TCS I
118	166+851	166+922	71.00	TCS I (TYPICAL)	TCS I
119	166+922	166+953	31.00	TCS I A	TCS I
120	166+953	167+085	132.00	TCS I (TYPICAL)	TCS I
121	167+085	167+122	37.00	TCS II B	TCS II
122	167+122	167+132	10.00	TCS II A	TCS II

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
123	167+132	167+536	404.00	TCS II B	TCS II
124	167+536	167+594	58.00	TCS II A	TCS II
125	167+594	167+680	86.00	TCS II C	TCS II
126	167+680	167+863	183.00	TCS II A	TCS II
127	167+863	168+259	396.00	TCS II B	TCS II
128	168+259	168+290	31.00	TCS II C	TCS II
129	168+290	168+326	36.00	TCS II B	TCS II
130	168+326	168+557	231.00	TCS I (TYPICAL)	TCS I
131	168+557	168+571	14.00	TCS I A	TCS I
132	168+571	168+625	54.00	TCS I (TYPICAL)	TCS I
133	168+625	168+926	301.00	TCS II B	TCS II
134	168+926	168+932	6.00	TCS II A	TCS II
135	168+932	169+150	218.00	TCS II B	TCS II
136	169+150	169+157	7.00	TCS II C	TCS II
137	169+157	169+425	268.00	TCS II B	TCS II
138	169+425	169+449	24.00	TCS I B	TCS I
139	169+449	169+455	6.00	TCS I B	TCS I
140	169+455	169+458	3.00	TCS I B	TCS I
141	169+458	169+467	9.00	TCS I B	TCS I
142	169+467	169+471	4.00	TCS I B	TCS I
143	169+471	169+482	11.00	TCS I B	TCS I
144	169+482	169+489	7.00	TCS I B	TCS I
145	169+489	169+516	27.00	TCS I B	TCS I
146	169+516	169+520	4.00	TCS I B	TCS I
147	169+520	169+542	22.00	TCS I B	TCS I
148	169+542	169+545	3.00	TCS I B	TCS I
149	169+545	169+613	68.00	TCS I B	TCS I
150	169+613	169+664	51.00	TCS I (TYPICAL)	TCS I
151	169+664	169+718	54.00	TCS I A	TCS I
152	169+718	169+883	165.00	TCS I (TYPICAL)	TCS I
153	169+883	169+888	5.00	TCS I D	TCS I
154	169+888	169+900	12.00	TCS I (TYPICAL)	TCS I
155	169+900	169+903	3.00	TCS I D	TCS I
156	169+903	170+014	111.00	TCS I (TYPICAL)	TCS I
157	170+014	170+043	29.00	TCS I A	TCS I
158	170+043	170+125	82.00	TCS I (TYPICAL)	TCS I
159	170+125	170+281	156.00	TCS II B	TCS II
160	170+281	170+420	139.00	TCS II D	TCS II
161	170+420	170+515	95.00	TCS II B	TCS II
162	170+515	170+535	20.00	TCS II A	TCS II
163	170+535	170+570	35.00	TCS II B	TCS II
164	170+570	170+573	3.00	TCS II C	TCS II
165	170+573	170+609	36.00	TCS II B	TCS II
166	170+609	170+616	7.00	TCS II C	TCS II

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
167	170+616	171+032	416.00	TCS II B	TCS II
168	171+032	171+052	20.00	TCS II A	TCS II
169	171+052	171+340	288.00	TCS II B	TCS II
170	171+340	171+350	10.00	TCS II C	TCS II
171	171+350	171+390	40.00	TCS II A	TCS II
172	171+390	171+400	10.00	TCS II C	TCS II
173	171+400	171+646	246.00	TCS II B	TCS II
174	171+646	171+755	109.00	TCS I (TYPICAL)	TCS I
175	171+755	171+778	23.00	TCS I A	TCS I
176	171+778	171+925	147.00	TCS I (TYPICAL)	TCS I
177	171+925	171+927	2.00	TCS I A	TCS I
178	171+927	171+935	8.00	TCS I D	TCS I
179	171+935	171+950	15.00	TCS I (TYPICAL)	TCS I
180	171+950	171+956	6.00	TCS I D	TCS I
181	171+956	171+960	4.00	TCS I (TYPICAL)	TCS I
182	171+960	171+963	3.10	TCS I D	TCS I
183	171+963	172+150	186.90	TCS I (TYPICAL)	TCS I
184	172+150	172+170	19.80	TCS I D	TCS I
185	172+170	172+310	140.20	TCS I (TYPICAL)	TCS I
186	172+310	172+336	25.90	TCS I D	TCS I
187	172+336	172+350	14.10	TCS I (TYPICAL)	TCS I
188	172+350	172+379	29.30	TCS I D	TCS I
189	172+379	172+440	60.70	TCS I (TYPICAL)	TCS I
190	172+440	172+461	21.00	TCS I D	TCS I
191	172+461	172+480	19.00	TCS I (TYPICAL)	TCS I
192	172+480	172+543	62.50	TCS I D	TCS I
193	172+543	172+550	7.50	TCS I (TYPICAL)	TCS I
194	172+550	172+560	10.00	TCS I D	TCS I
195	172+560	172+570	10.00	TCS I (TYPICAL)	TCS I
196	172+570	172+588	18.00	TCS I D	TCS I
197	172+588	172+600	12.00	TCS I (TYPICAL)	TCS I
198	172+600	172+714	114.00	TCS I D	TCS I
199	172+714	172+800	86.00	TCS I (TYPICAL)	TCS I
200	172+800	173+381	581.00	TCS I D	TCS I
201	173+381	173+410	29.00	TCS I (TYPICAL)	TCS I
202	173+410	173+417	7.00	TCS I D	TCS I
203	173+417	173+451	34.00	TCS I (TYPICAL)	TCS I
204	173+451	173+455	4.00	TCS I D	TCS I
205	173+455	173+472	17.00	TCS I (TYPICAL)	TCS I
206	173+472	173+475	3.00	TCS I D	TCS I
207	173+475	173+508	33.00	TCS I (TYPICAL)	TCS I
208	173+508	173+510	2.00	TCS I D	TCS I
209	173+510	173+550	40.00	TCS I (TYPICAL)	TCS I
210	173+550	173+647	97.00	TCS I D	TCS I

Sl. No	From	To	Length of Stretch	TCS Proposed	TCS
211	173+647	173+795	148.00	TCS I A	TCS I
212	173+795	173+900	105.00	TCS I D	TCS I
213	173+900	174+194	294.00	TCS I A	TCS I
214	174+194	174+292	98.00	TCS I (TYPICAL)	TCS I
215	174+292	174+546	254.00	TCS I D	TCS I
216	174+546	175+025	479.00	TCS I (TYPICAL)	TCS I
217	175+025	175+245	220.00	TCS II B	TCS II
218	175+245	175+280	35.00	TCS II A	TCS II
219	175+280	175+545	265.00	TCS II B	TCS II
220	175+545	175+700	155.00	TCS II A	TCS II
221	175+700	177+100	1400.00	TCS II B	TCS II
222	177+100	178+450	1350.00	TCS II D	TCS II
223	178+450	178+500	50.00	TCS II A	TCS II
224	178+500	179+200	700.00	TCS II B	TCS II
225	179+200	179+400	200.00	TCS II D	TCS II
226	179+400	180+090	690.00	TCS II B	TCS II
227	180+090	180+150	60.00	TCS II C	TCS II
228	180+150	180+280	130.00	TCS II B	TCS II
229	180+280	180+290	10.00	TCS II A	TCS II
230	180+290	180+395	105.00	TCS II B	TCS II
231	180+395	180+425	30.00	TCS II A	TCS II
232	180+425	180+754	329.00	TCS II B	TCS II
233	180+754	180+764	10.00	TCS II A	TCS II
234	180+764	181+000	236.00	TCS II B	TCS II

[Typical Cross Sections are appended separately]

TCS I A is proposed for Reconstruction of roads in Rural areas with Hard shoulder and Earthen shoulder of 0.5 m each on both sides along with Earthen drain/CC Lined Drain.

TCS I B is proposed for Partial reconstruction in Rural section with Hard shoulder and Earthen shoulder of 0.5 m each on both sides along with Earthen drain/CC Lined Drain.

TCS I (C) is proposed for Profile Correction of existing treated base layer in Rural area with Hard shoulder and Earthen shoulder of 0.5 m each on both sides along with earthen drain.

TCS I (D) is proposed for repair of existing road in Rural sections followed by a new BC layer in full width.

TCS I (Typical) shows intermediate lane in rural section with both side hard and earthen shoulder, 0.5 m each and earthen drain on both sides. The sections under TCS I (Typical) are under fair condition.

TCS II A is proposed for Reconstruction of roads in Urban paved shoulder and RCC Covered Drain with footpath on both sides.

TCS II B is proposed for widening of existing road in urban section with paved shoulder and RCC lined drain with foot path on both sides.

TCS II (C) is proposed for widening with profile correction in Urban Section with paved shoulder and RCC lined drain with foot path on both sides.

TCS II (D) is proposed for strengthening of existing two lane in Urban Section with paved shoulder and RCC lined drain with footpath on both sides.

TCS III is proposed for widening in varying width with paved shoulder and lined drain on both sides. Exact locations shall be as per site condition.

TCS-IV includes the proposed protection works (to be carried out as per provision under para 12 of Annex-I of Sch-B) in hilly areas.

3. INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per section 3 of the Manual. Existingintersections which are deficient shall be improved to the prescribed standards.
Properly designed intersections shall be provided at the locations and of the types andfeatures given in the table below:

a) At-grade intersections (Major Junctions)

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

b) At-grade intersections (Minor Junctions)

S. No	Design Chainage (km)	Type of Intersection	Status
1	163+624	T-type	All Works Balance
2	164+202	Y-type	All Works Balance
3	164+673	T-type	All Works Balance
4	166+879	Y-type	All Works Balance
5	167+266	Y-type	All Works Balance
6	167+610	T-type	All Works Balance
7	169+391	T-type	All Works Balance
8	169+765	T-type	All Works Balance
9	170+066	T-type	All Works Balance
10	170+218	Y-type	All Works Balance
11	170+332	T-type	All Works Balance
12	170+790	T-type	All Works Balance
13	171+510	T-type	All Works Balance
14	175+082	Y-type	All Works Balance
15	175+154	T-type	All Works Balance
16	175+248	T-type	All Works Balance
17	175+253	Y-type	All Works Balance
18	175+639	T-type	All Works Balance
19	175+844	Y-type	All Works Balance
20	176+065	Y-type	All Works Balance
21	176+760	Y-type	All Works Balance
22	176+815	Y-type	All Works Balance
23	177+118	T-type	All Works Balance
24	177+274	Y-type	All Works Balance

S. No	Design Chainage (km)	Type of Intersection	Status
25	177+323	Y-type	All Works Balance
26	177+427	T-type	All Works Balance
27	177+561	Y-type	All Works Balance
28	177+608	T-type	All Works Balance
29	177+865	Y-type	All Works Balance
30	178+127	T-type	All Works Balance
31	178+168	Y-type	All Works Balance
32	178+280	Y-type	All Works Balance
33	178+331	Y-type	All Works Balance
34	179.006	Y-type	Shoulder, Marking, Signages and drain
35	179.032	T-type	Shoulder, Marking, Signages and drain
36	179.125	Y-type	Shoulder, Marking, Signages and drain
37	179.21	Y-type	Shoulder, Marking, Signages and drain
38	179.247	Y-type	Shoulder, Marking, Signages and drain
39	179.268	Y-type	Shoulder, Marking, Signages and drain

c) Grade separated intersection without ramps

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

4. ROAD EMBANKMENT AND CUT SECTION

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

4.2 Raising of the existing road

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

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

5. PAVEMENT DESIGN

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

5.2 Type of pavement

Flexible Pavement will be constructed according to clause 7.3, 8.2 and 9.1 of IRC:37-2018 over cement stabilized 500 mm thick subgrade having 8% CBR.

5.3 Design Requirements

Design requirement for the flexible pavement shall be in accordance with section 5 of the IRC: SP-73-2015 and IRC:37-2018. Pavement shall be designed as per the provisions of IRC:37-2018 and pavement design should be made to the effective 8% CBR of subgrades before laying of sub base. The pavement shall be designed for an effective CBR of 8%. The contractor will ensure that the CBR of subgrade be improved in such a way that an effective CBR of 8% is achieved. This is all incidental to work and extra will not be paid on this account.

The thickness of the pavement layers for widening portion shall be as per IRC:37, independent of pavement composition of existing carriageway. However, the total pavement thickness of the widening portion shall not be less than the thickness of existing carriageway plus overlay.

The pavement shall be widened on one side or on both sides depending on the placement of the existing road within the right of way. This aspect may be decided in consultation with the Authority/Authority's Engineer in view of availability of land at site;

Before strengthening treatment is prescribed, a detailed pavement condition survey and evaluation shall be carried out in accordance with relevant IRC codes to determine:

(i) The extent of distress and nature of deficiency in the existing pavement structure,

And

(ii) Whether any special treatments e.g. provision for remedying reflection cracking, pavement internal drainage, sub-grade improvement/reconstruction, or rectification of any other deficiencies are warranted.

Before implementing the strengthening treatment, the existing pavement surface profile shall be checked and if found deficient, shall be corrected by providing a suitable profile corrective course or by milling and recycling. The profile corrective course shall meet the following requirements:

i) The profile corrective course shall not form part of the overlay thickness.

ii) Where the maximum thickness of profile corrective course is not more than 40 mm, it shall be constructed as an integral part of the overlay course. In other cases, the profile corrective course shall be constructed as a separate layer.

iii) Where it is to be laid as integral part of the overlay/strengthening course, the profile corrective course material shall be of the same specifications as that of the overlay/strengthening course.

In stretches where the pavement is damaged/deteriorated to such an extent that the use of Falling Weight Deflectometer (FWD) may not result in a realistic assessment of the strengthening treatment, pavement shall be designed as new pavement.

5.3.1 Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing

pavement shall be designed for a minimum design period of ***15 years***. Stage construction shall not be permitted.

5.3.2 Design Traffic

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

S. No.	Design Chainage (Km)		Minimum Design MSA for 15 yrs
	From	To	
1	155+000	180+842	20

The designs are indicative only and the contractor can submit the design as per the requirement. In all cases 40mm BC is mandatory requirement.

5.4 Reconstruction, Widening and Rectification of project stretches

Reconstruction, Widening and Rectification of stretches for matching the proposed plan & profile shall be taken up as per actual requirements. TCS summary is as given at para-2.11.

6. ROADSIDE DRAINAGE

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

RCC drains are to be provided at following locations

Sl. No.	Chainage		Side	Length
	From	To		
1	163+040	163+890	LHS	850.00
2	164+200	164+280	LHS	80.00
3	164+700	165+000	RHS	300.00
4	164+810	165+520	LHS	710.00
5	165+110	165+520	RHS	410.00
6	170+667	170+860	LHS	193.00
7	167+054	167+800	LHS	746.00
8	167+054	167+220	RHS	166.00
9	167+960	167+999	RHS	39.00
10	168+063	168+071	RHS	8.00
11	168+625	168+659	RHS	34.00
12	168+625	169+100	LHS	475.00
13	168+689	168+770	RHS	81.00
14	169+060	169+178	RHS	118.00
15	169+210	169+425	LHS	215.00
16	170+125	171+260	LHS	1135.00
17	170+125	171+646	RHS	1521.00
18	171+360	171+640	LHS	280.00
19	175+000	175+190	LHS	190.00
20	175+000	175+790	RHS	790.00

Sl. No.	Chainage		Side	Length
	From	To		
21	175+280	175+750	LHS	470.00
22	175+900	176+500	LHS	600.00
23	176+000	176+260	RHS	260.00
24	176+650	176+710	LHS	60.00
25	176+755	177+110	LHS	355.00
26	176+780	177+110	RHS	330.00
27	177+410	179+390	LHS	1980.00
28	177+450	179+725	RHS	2275.00
29	179+750	180+842	RHS	1092.00
	TOTAL (in mtr)			**15736.00**

CC Drains shall be provided at following chainages

Sl. No.	Description	Chainage		Length
		From	To	
1	PCC Drain	158+100	158+650	550.00
2	PCC Drain	161+230	161+280	50.00
3	PCC Drain	159+140	159+320	180.00
4	PCC Drain	161+355	161+375	20.00
5	PCC Drain	159+580	159+680	100.00
6	PCC Drain	161+600	161+650	50.00
7	PCC Drain	159+760	160+454	694.00
8	PCC Drain	164+337	164+378	41.00
9	PCC Drain	160+477	160+491	14.00
10	PCC Drain	167+800	167+813	13.00
11	PCC Drain	160+580	160+730	150.00
12	PCC Drain	167+854	167+855	1.00
13	PCC Drain	160+640	160+850	210.00
14	PCC Drain	167+887	167+888	1.00
15	PCC Drain	169+100	169+210	110.00
16	PCC Drain	176+500	176+650	150.00
17	PCC Drain	176+710	176+755	45.00
18	PCC Drain	163+900	164+090	190.00
19	PCC Drain	177+300	177+410	110.00
20	PCC Drain	165+640	165+710	70.00
21	PCC Drain	167+625	167+813	188.00
22	PCC Drain	172+100	172+660	560.00
	TOTAL (in mtr)			**3497.00**

Unlined Drains shall be provided at all the remaining sections.

7. DESIGN OF STRUCTURES

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with

section 7 of the manual and shall conform to the cross-sectional features and other details specified therein.

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

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

7.1.3 The following structures shall be provided with footpaths:

S. No.	Design Chainage (Km)	Remarks
NIL		

7.1.4 All bridges shall be high level bridges.

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

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

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

7.2 Culverts

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

7.2.2 ***Reconstruction of existing Box/ Hume Pipe culverts***:

The existing culverts at the following locations shall be reconstructed as new culverts where casting is not done. Where casting of the culverts has been completed, they may be completed in all aspects.

SL NO	EXISTING CHAINAGE	TYPE OF CULVERT	SIZE OF SPAN (m)	Width	SEGMENT/H.P.		RIGID & FLEXIBLE APRON, CURTAIN & RETINING WALL, CRASH BARRIER, PAINTING ETC	TCS
					CASTING	LAYING		
1	157+430	BOX	1x4.0x5.8	7.5	Balance	Balance	Balance	TCS-1
2	157+921	BOX	1x2.0x4.0	7.5	Balance	Balance	Balance	TCS-1
3	158+838	BOX	1x1.5x2.0	7.5	Balance	Balance	Balance	TCS-1
4	158+940	BOX	1x1.5x2.0	7.5	Balance	Balance	Balance	TCS-1
5	161+877	BOX	1x1.5x5.0	7.5	Balance	Balance	Balance	TCS-1
6	162+890	BOX	1x3.0x3.0	10	Balance	Balance	Balance	TCS-2
7	164+105	BOX	1x5.0x3.0	10	Balance	Balance	Balance	TCS-2
8	166+197	BOX	1x1.2	7.5	Balance	Balance	Balance	TCS-1
9	166+585	BOX	1x3.0x3.0	7.5	Done	Balance	Balance	TCS-1

10	170+414	BOX	1x0.75	10	Balance	Balance	Balance	TCS-2
11	172+783	BOX	1x3.0x4.0	7.5	Balance	Balance	Balance	TCS-1
12	174+340	BOX	1x1.5x2.0	7.5	Balance	Balance	Balance	TCS-1
13	175+220	BOX	1x1.7x2.0	10	Done	Balance	Balance	TCS-2
14	176+574	BOX	1x2.2x2.0	10	Done	Balance	Balance	TCS-2
15	176+775	BOX	1x1.5x2.0	10	Balance	Balance	Balance	TCS-2
16	177+308	BOX	1x2.4x2.5	10	Done	Balance	Balance	TCS-2
17	178+498	BOX	1x3.0x1.5	10	Done	Balance	Balance	TCS-2
18	178+854	BOX	1x5.0x2.0	10	Balance	Balance	Balance	TCS-2
19	179+273	BOX	1x1.5x2.0	7.5	Balance	Balance	Balance	TCS-2
20	179+853	BOX	1x1.5x3.0	10	Done	Balance	Balance	TCS-2
21	180+281	BOX	1x1.5x1.5	10	Done	Balance	Balance	TCS-2

7.2.3 Completion of partially constructed culverts

The following culverts which are partially completed at site shall be completed in all respects.

SL NO	EXISTING CHAINAGE	TYPE OF CULVERT	SIZE OF SPAN (m)	Width	SEGMENT/H.P.		RIGID APRON	FLEXIBLE APRON	CURTAIN WALL	RETAINING WALL	CRASH BARRIER	PAINTING	TCS
					CASTING	LAYING							
1	155+090	BOX	1x1.5x1.5	7.5	Done	Done	Balance	Balance	Balance	Balance	Balance	Balance	TCS-1
2	155+717	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
3	155+791	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
4	155+874	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
5	156+288	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
6	156+960	BOX	1x1.5x1.5	7.5	Done	Done	Balance	Balance	Balance	Balance	Balance	Balance	TCS-1
7	157+032	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
8	157+267	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
9	157+718	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
10	158+068	HPC	1X1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
11	158+610	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
12	158+685	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
13	159+065	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
14	159+257	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
15	159+315	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
16	159+537	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
17	159+845	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
18	160+045	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
19	160+167	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
20	160+268	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
21	160+396	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
22	161+515	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
23	161+566	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
24	161+628	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
25	162+176	HPC	1x.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
26	162+292	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
27	162+455	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
28	162+513	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
29	162+587	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
30	162+728	HPC	1x1.2	7.5	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-1
31	163+035	HPC	2x1.2	10	N/A	Done	N/A	Balance	N/A	N/A	N/A	Balance	TCS-2
32	163+131	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
33	163+200	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
34	163+504	BOX	1x2.0x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
35	163+704	BOX	1x2.0x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
36	164+809	BOX	1x2.5x2.0	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
37	164+950	BOX	1x1.5x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
38	165+194	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2

SL NO	EXISTING CHAINAGE	TYPE OF CULVERT	SIZE OF SPAN (m)	Width	SEGMENT/H.P.		RIGID APRON	FLEXIBLE APRON	CURTAIN WALL	RETAINING WALL	CRASH BARRIER	PAINTING	TCS
					CASTING	LAYING							
39	165+440	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
40	165+480	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
41	165+720	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
42	165+763	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
43	165+838	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
44	165+919	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
45	166+146	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
46	166+277	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
47	166+772	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
48	167+039	HPC	2x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
49	167+400	BOX	1x2.0x2.0	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
50	167+637	HPC	2x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
51	167+966	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
52	168+063	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
53	168+113	HPC	2x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
54	168+593	BOX	1X1.5X1.5	7.5	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-1
55	168+805	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
56	168+925	BOX	1X1.5X1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
57	169+011	BOX	1x1.5x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
58	169+312	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
59	169+837	HPC	2x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
60	170+521	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
61	170+573	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
62	171+042	BOX	1x3.0x4.5	10	Done	Done	1	Balance	Balance	Balance	Done	Done	TCS-2
63	171+360	BOX	1x2.0x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
64	171+768	BOX	1x2.0x2.5	7.5	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-1
65	171+925	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
66	172+052	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
67	172+488	HPC	1x1.2	7.5	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-1
68	173+364	BOX	1x1.6x4.0	7.5	Done	Done	1	Balance	Balance	Balance	Done	Done	TCS-1
69	178+665	BOX	1x2.0x1.5	10	Done	Done	1	Balance	Balance	Balance	Balance	Balance	TCS-2
70	179+970	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
71	180+578	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
72	180+798	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2
73	180+808	HPC	1x1.2	10	N/A	Done	1	N/A	Balance	N/A	N/A	N/A	TCS-2

7.2.4 Repairing and Maintenance *of Existing Culverts*

The following existing culverts, which are not to be reconstructed, shall be cleaned, repaired, painted and floor, wing wall, parapet & retaining wall on both side of culvert as per site requirements shall be constructed.

7.2.5 ***Completion, Maintenance and Repair Works of existing slab culverts***:

SL No	Existing chainage	Type of Culvert	Size of span (m)	Width	RIGID APPARON	FLEXIBLE APPARON	CURTAIN WALL	CRASH BARRIER	PAINTING	TCS-TYPE
1	161+726	SLAB	1x2.2	7.5	Balance	Balance	Balance	Balance	Balance	TCS-1
2	162+035	SLAB	1x2.8	7.5	Balance	Balance	Balance	Balance	Balance	TCS-1
3	165+944	SLAB	1x1.85	7.5	Done	Done	Done	Done	Done	TCS-1
4	170+680	SLAB	1x2.5	10	Balance	Balance	Balance	Balance	Balance	TCS-2
5	171+620	SLAB	1x3.8	7.5	Done	Done	Done	Done	Balance	TCS-1
6	171+815	SLAB	1x3.8	7.5	Done	Done	Done	Done	Done	TCS-1
7	172+196	BOX	1x1.2	7.5	Done	Done	Done	Done	Done	TCS-1
8	173+116	SLAB	1x3.7x3.5	7.5	Done	Done	Done	Done	Balance	TCS-1

9	180+098	SLAB	1x2.9	10	Done	Done	Done	Done	Balance	TCS-2
10	180+223	SLAB	1x2.3	10	Done	Done	Done	Done	Balance	TCS-2

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

7.2.6 Widening of Existing Culverts

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

S. No	Design Chainage (Km)	Structure Type	Openings / Spans x Length	Width of existing culvert (m)	Remark
NIL					

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

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

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

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

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

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened:

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

S. No.	Design Chainage	Width (m)	Total Length	Total proposed Width
1	164+529	5.2	42.90	8.5
2	165+555	5.3	24.30	8.5
3	168+362	5.2	12.00	8.5

4	169+488	5.2	42.60	8.5
5	170+099	5.2	24.4	8.5
6	179+382	4.5	13.80	8.5

(ii) The following narrow bridges shall be widened:

S. No.	Design Chainage (Km)	Width (m)	Extent* of Widening	Span Arrangement (m)	Type of Structure			Cross-Section at Deck Level for widening
					Foundation	Sub-Structure	Super-Structure	
NIL								

7.3.2 Additional new bridges

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

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

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

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

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

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

7.3.5 Drainage system for bridge deck

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

7.3.6 Structures in marine environment

The Project Alignment lies in the Marine Environment. Necessary measures of relevant manual to be taken for protecting structures in marine environment.

7.4 Rail-road bridges

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

7.4.2 Road over-bridges

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

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

7.4.3 Road under-bridges

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

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

7.5 Grade separated structures

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

7.6 Repairs and strengthening of bridges and structures

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

A. Bridges

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

B. ROB / RUB

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

C. Overpasses/Underpasses and other structures

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

NIL

7.7 List of Major Bridges and Structures

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

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

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

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

3. Cross road culvert to be provided at the location of Major Junction/ Minor Junctions or utility purposes etc. shall be decided with independent Engineer shall notbe treated as change of scope.

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORK.

8.1 Traffic control devices and road safety works shall be provided in accordance with Section9 of the IRC: SP:73-2015.

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

9. ROAD SIDE FURNITURE

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

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

9.2 Overhead traffic signs: location and size

a) Full width overhead signs: 2 Nos.

b) Cantilever overhead signs: Nil

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

10. COMPULSORY AFFORESTATION

The minimum number of 4624 trees are required to be planted by the contractor as compensatory afforestation shall be as per Forest Conservation Act and as per conditions of revenue authority while giving permission. Any increase or decrease in numbers of trees as specified (as 500) shall not be treated as change of scope.

11. HAZARDOUS LOCATIONS

The road side safety/Crash barriers shall be provided as mentioned in Sch-C. However, the actual length shall be identified as per requirement of clause 9.4 of IRC: SP:73-2015 in consultation with Authority Engineer. Any increase or decrease in length as specified shall not

be treated as change of scope.

12. Special Requirements for Hill Road

12.1 Breast Wall

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

Breast Wall locations

Sl. No	From	To	Side	Length (m)
1	159+760	160+780	LHS	1,020
2	161+590	161+650	LHS	60
3	159+320	159+500	RHS	180
4	159+580	159+680	RHS	100
5	160+640	160+850	RHS	210
Total length (m)				**1570**

12.2 Retaining wall

Retaining wall shall be provided in following sections of the project road.

Retaining Wall locations

Sl. No	From	To	Side	Length
1	162+250	162+350	LHS	100
2	165+870	165+950	LHS	80
3	166+120	166+180	LHS	60
4	168+300	168+420	LHS	120
5	168+420	168+480	LHS	60
6	171+920	171+980	LHS	60
7	172+720	172+820	LHS	100
8	174+800	175+000	LHS	200
9	159+800	160+480	RHS	680
10	162+250	162+350	RHS	100
11	165+870	165+950	RHS	80
12	166+120	166+180	RHS	60
13	168+420	168+480	RHS	60
14	172+720	172+820	RHS	100
Total length (m)				**1860**

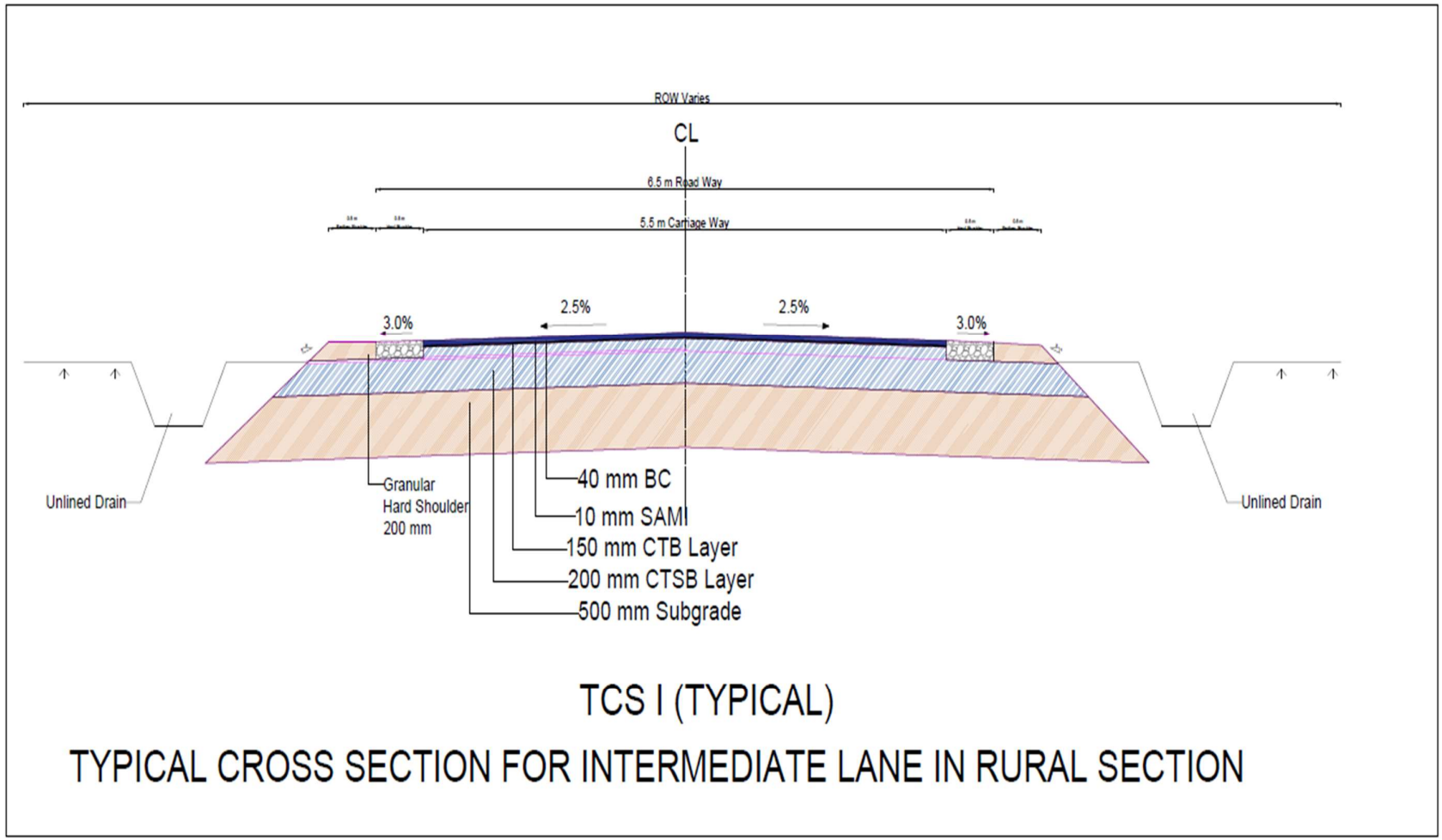
The minimum requirement of protection work is suggested above, as actual length of protection work required at site may vary. The above-mentioned locations are only

indicative in nature and the contractor is required to conduct the detailed investigations to assess the work as per site survey, investigations and assessments before the commencement of work.

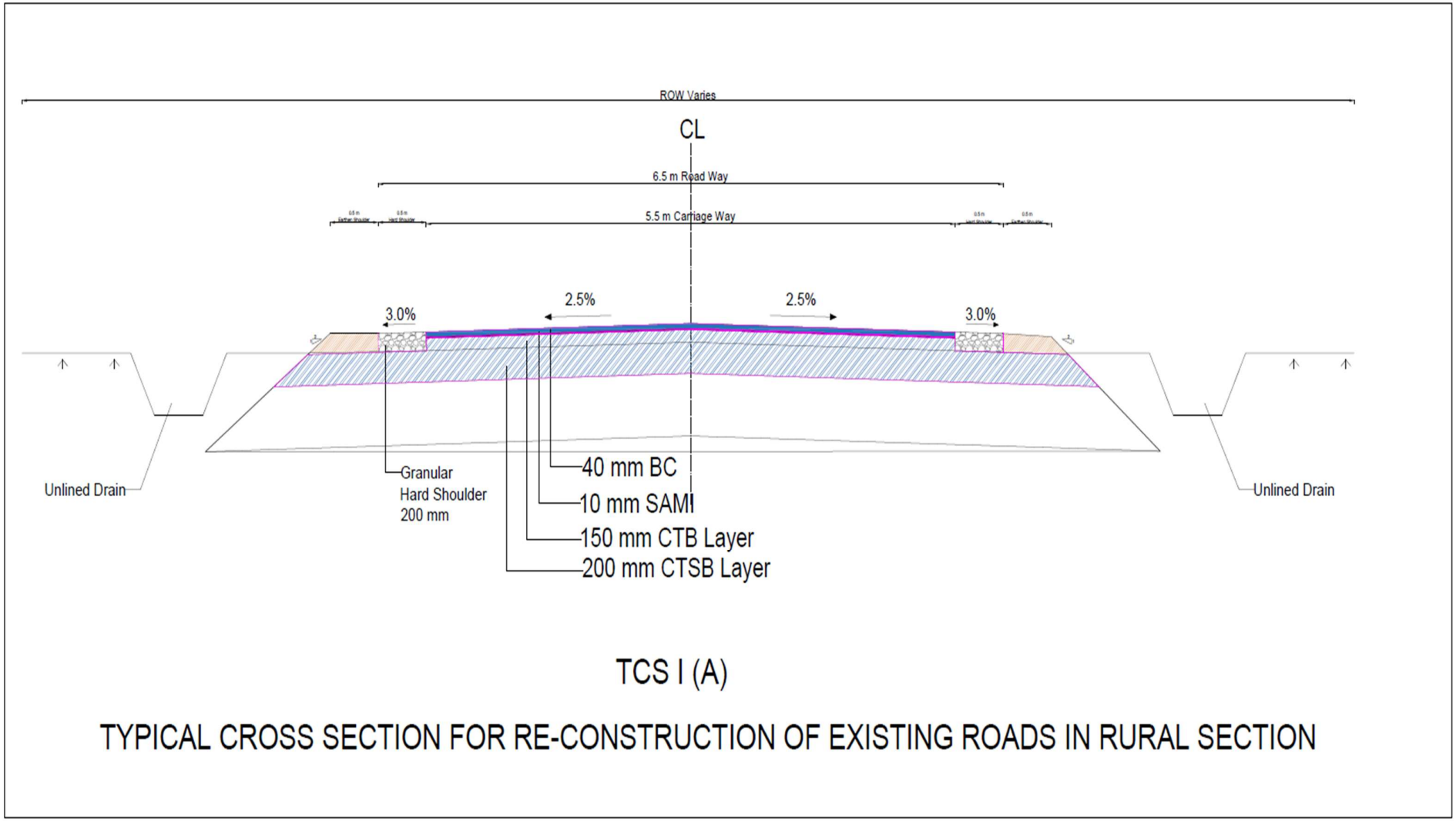
13. CHANGE OF SCOPE

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

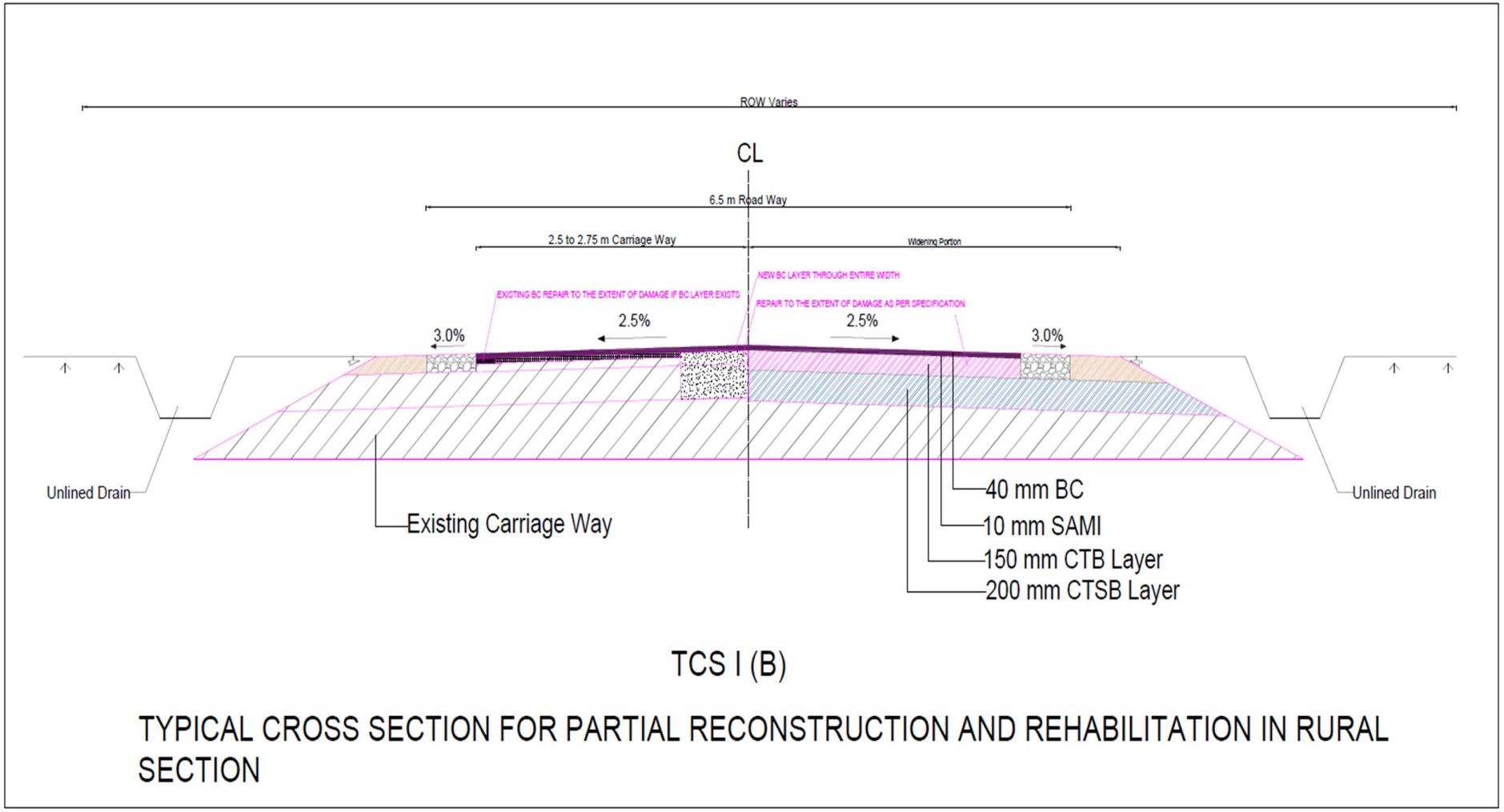
Appendix-B-I


ROW Varies
CL
6.5 m Road Way
5.5 m Carriage Way
3.0%
2.5%
2.5%
3.0%
Unlined Drain
Granular
Hard Shoulder
200 mm
40 mm BC
10 mm SAMI
150 mm CTB Layer
200 mm CTSB Layer
500 mm Subgrade
Unlined Drain
TCS I (TYPICAL)
TYPICAL CROSS SECTION FOR INTERMEDIATE LANE IN RURAL SECTION

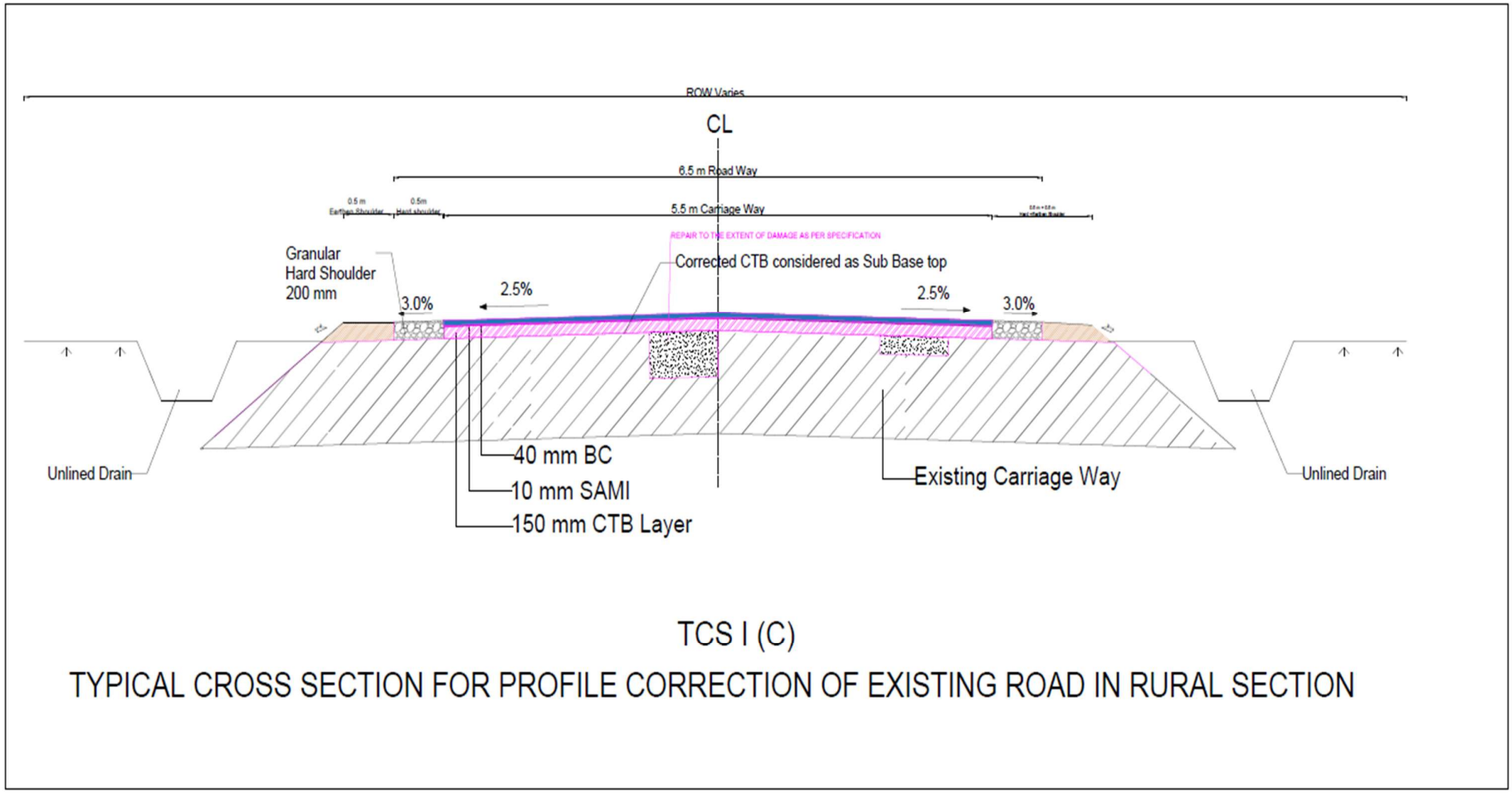
Appendix-B-I


ROW Varies
CL
6.5 m Road Way
5.5 m Carriage Way
3.0%
2.5%
2.5%
3.0%
Unlined Drain
Granular
Hard Shoulder
200 mm
40 mm BC
10 mm SAMI
150 mm CTB Layer
200 mm CTSB Layer
Unlined Drain
TCS I (A)
TYPICAL CROSS SECTION FOR RE-CONSTRUCTION OF EXISTING ROADS IN RURAL SECTION

Appendix-B-I


ROW Varies
CL
6.5 m Road Way
2.5 to 2.75 m Carriage Way
Widening Portion
NEW BC LAYER THROUGH ENTIRE WIDTH
EXISTING BC REPAIR TO THE EXTENT OF DAMAGE IF BC LAYER EXISTS
REPAIR TO THE EXTENT OF DAMAGE AS PER SPECIFICATION
3.0%
2.5%
2.5%
3.0%
Unlined Drain
Existing Carriage Way
40 mm BC
10 mm SAMI
150 mm CTB Layer
200 mm CTSB Layer
Unlined Drain
TCS I (B)
TYPICAL CROSS SECTION FOR PARTIAL RECONSTRUCTION AND REHABILITATION IN RURAL SECTION

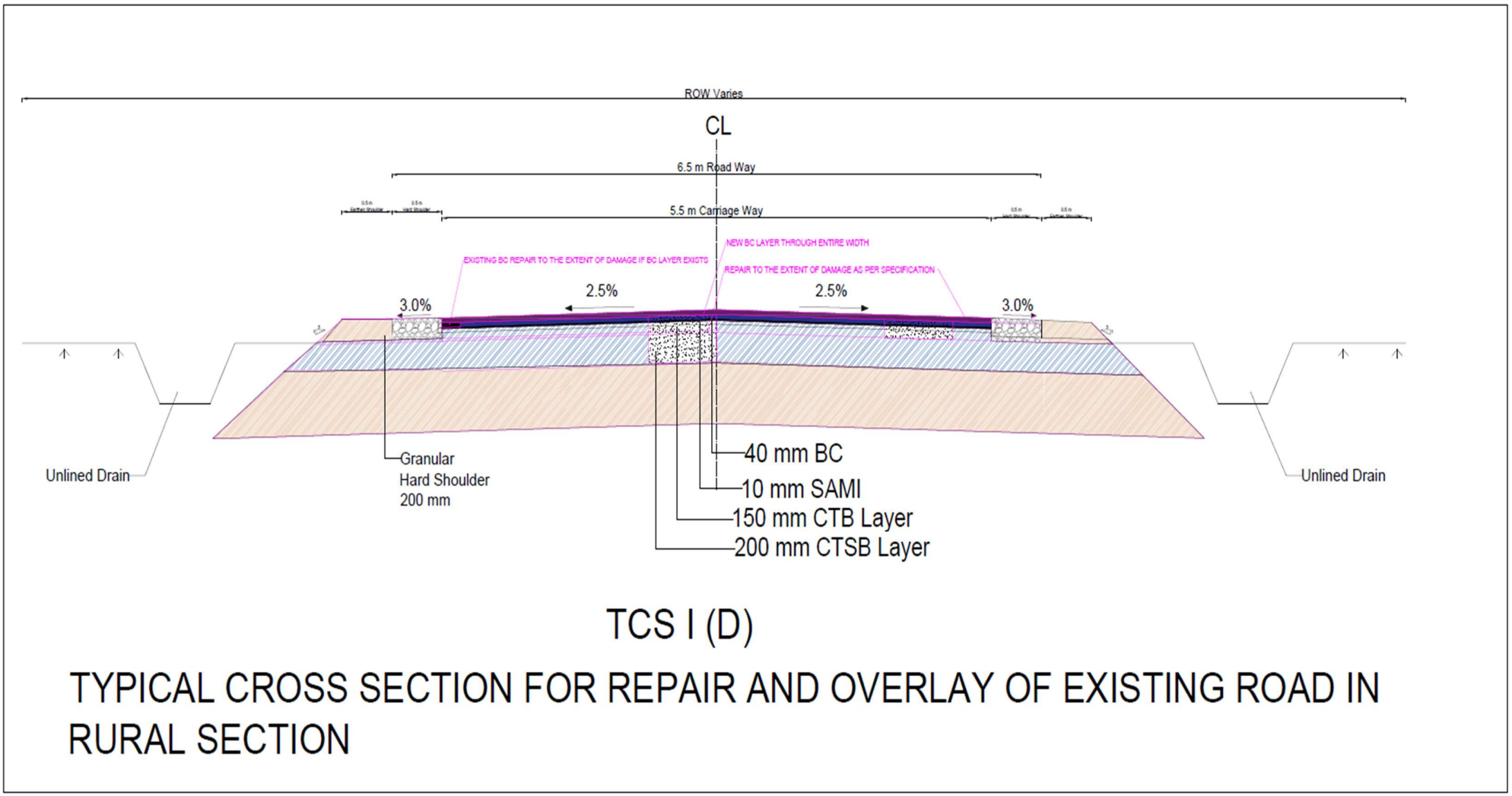
Appendix-B-I



TCS I (C)

TYPICAL CROSS SECTION FOR PROFILE CORRECTION OF EXISTING ROAD IN RURAL SECTION

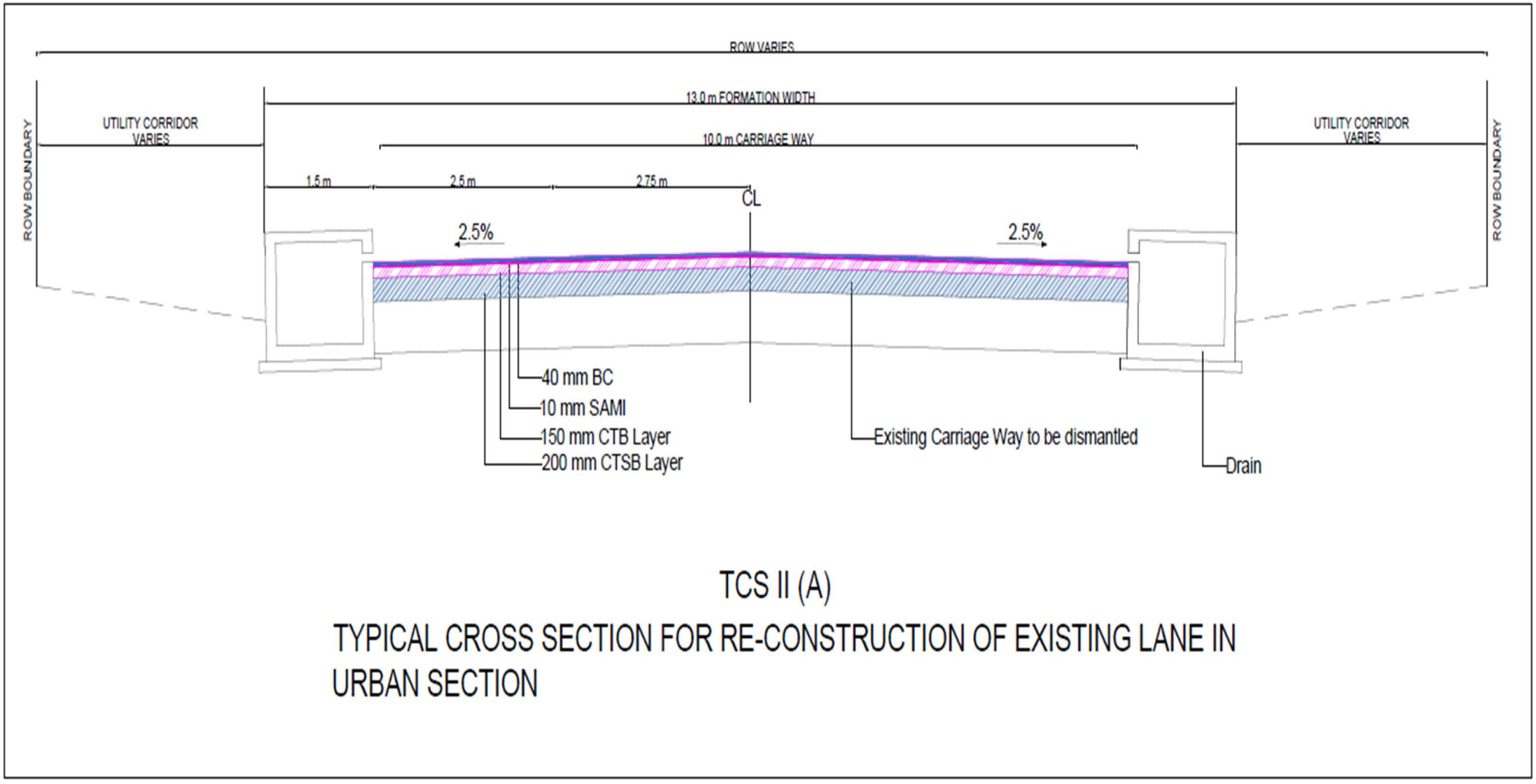
Appendix-B-I



TCS I (D)

TYPICAL CROSS SECTION FOR REPAIR AND OVERLAY OF EXISTING ROAD IN RURAL SECTION

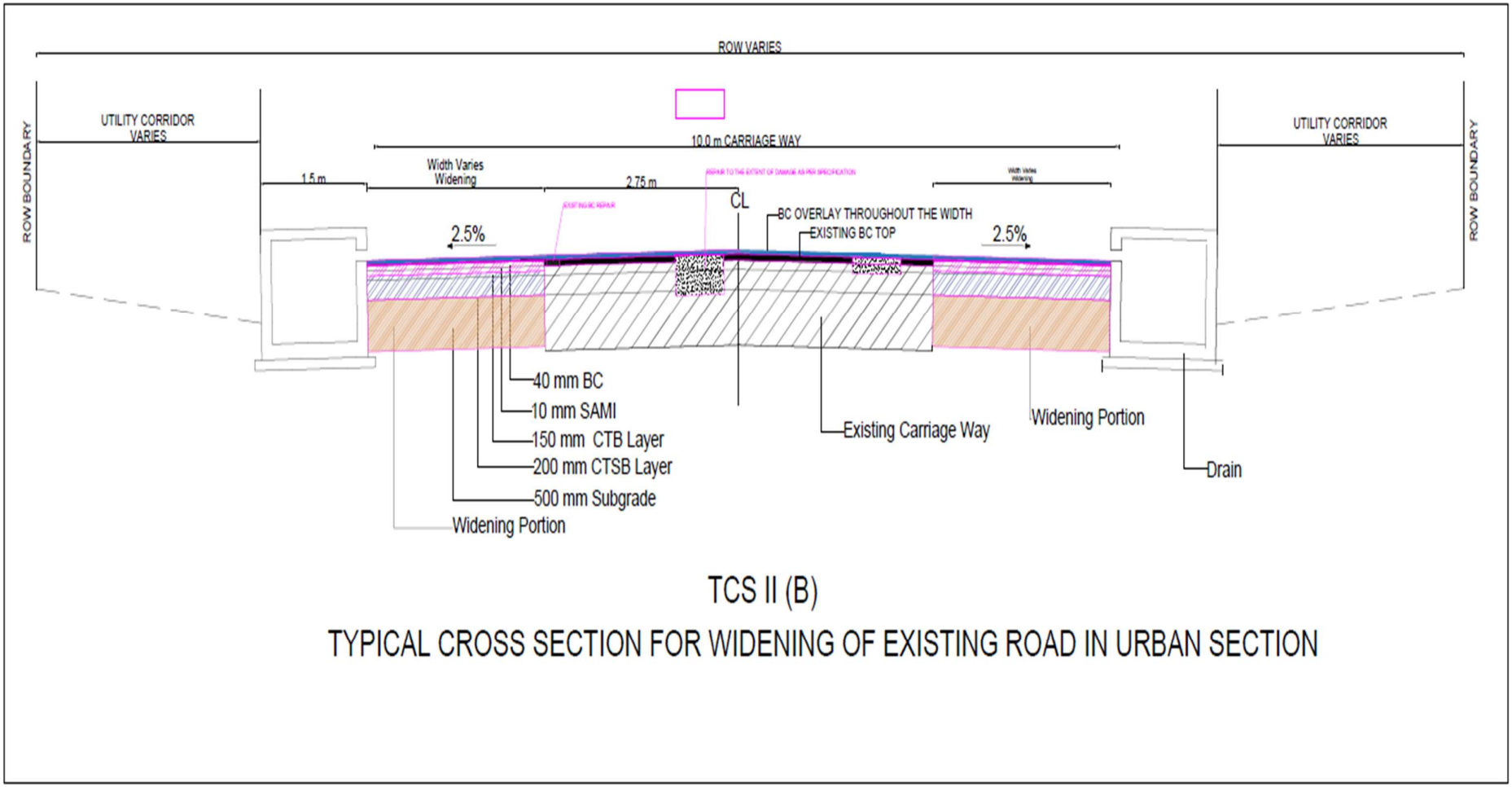
Appendix-B-I



TCS II (A)

TYPICAL CROSS SECTION FOR RE-CONSTRUCTION OF EXISTING LANE IN URBAN SECTION

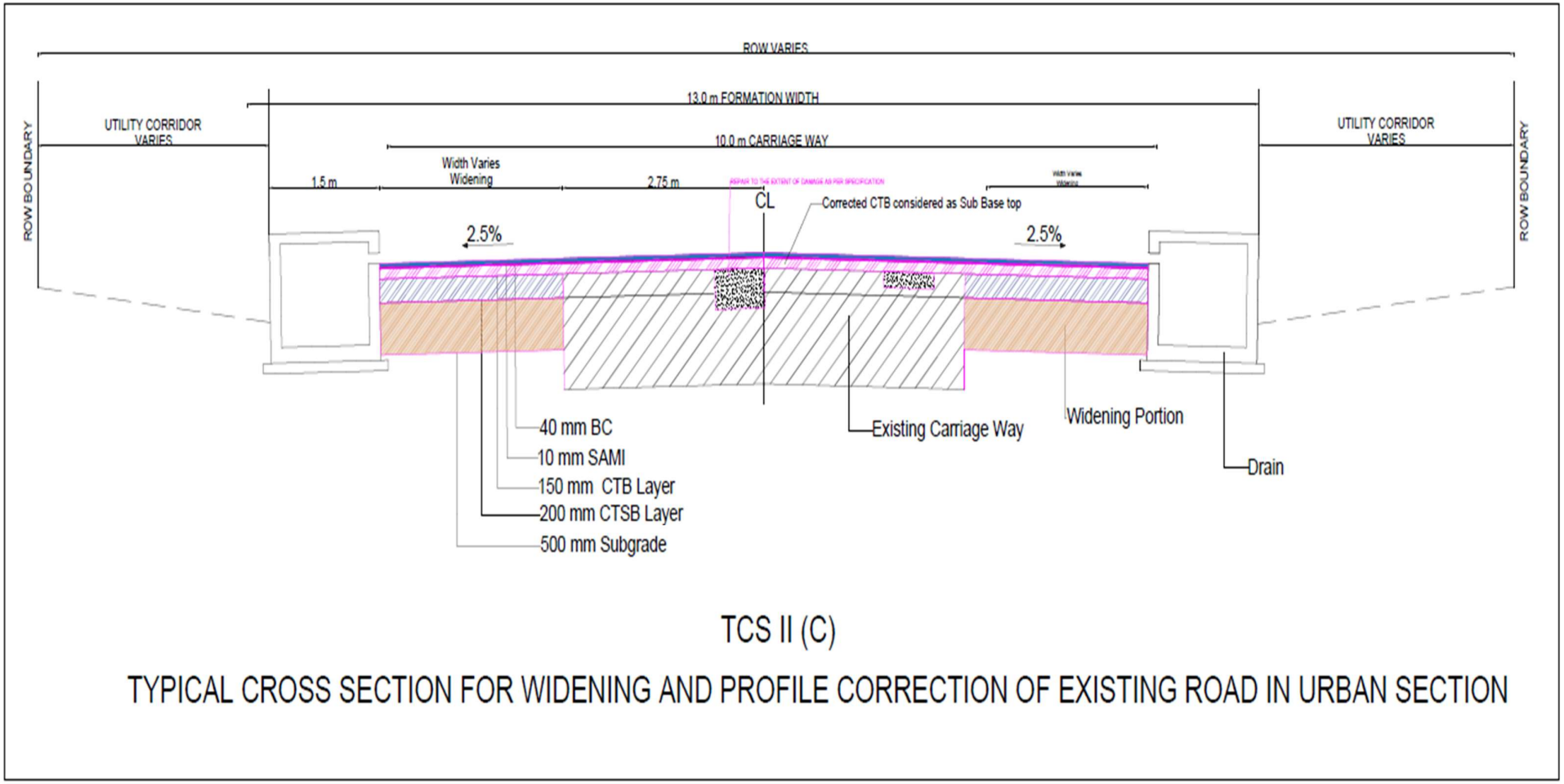
Appendix-B-I



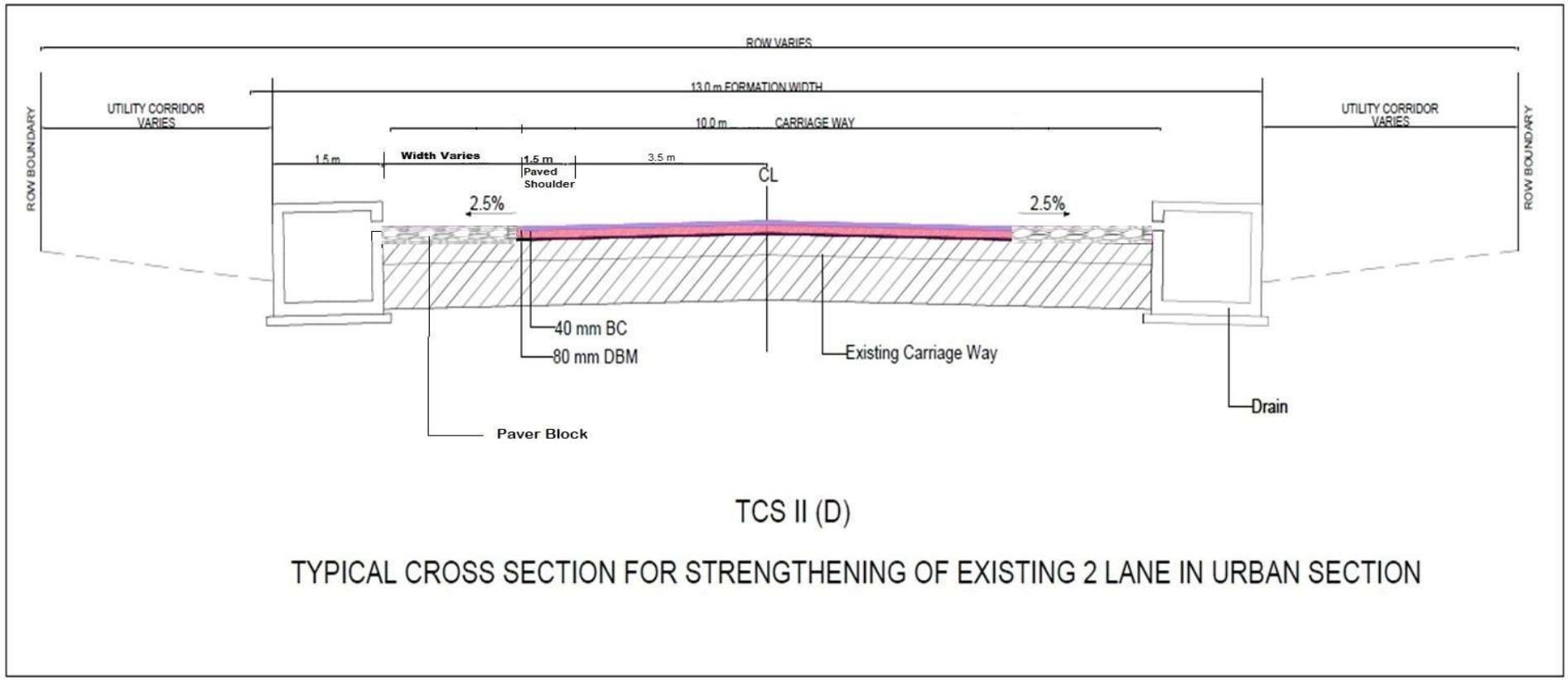
TCS II (B)

TYPICAL CROSS SECTION FOR WIDENING OF EXISTING ROAD IN URBAN SECTION

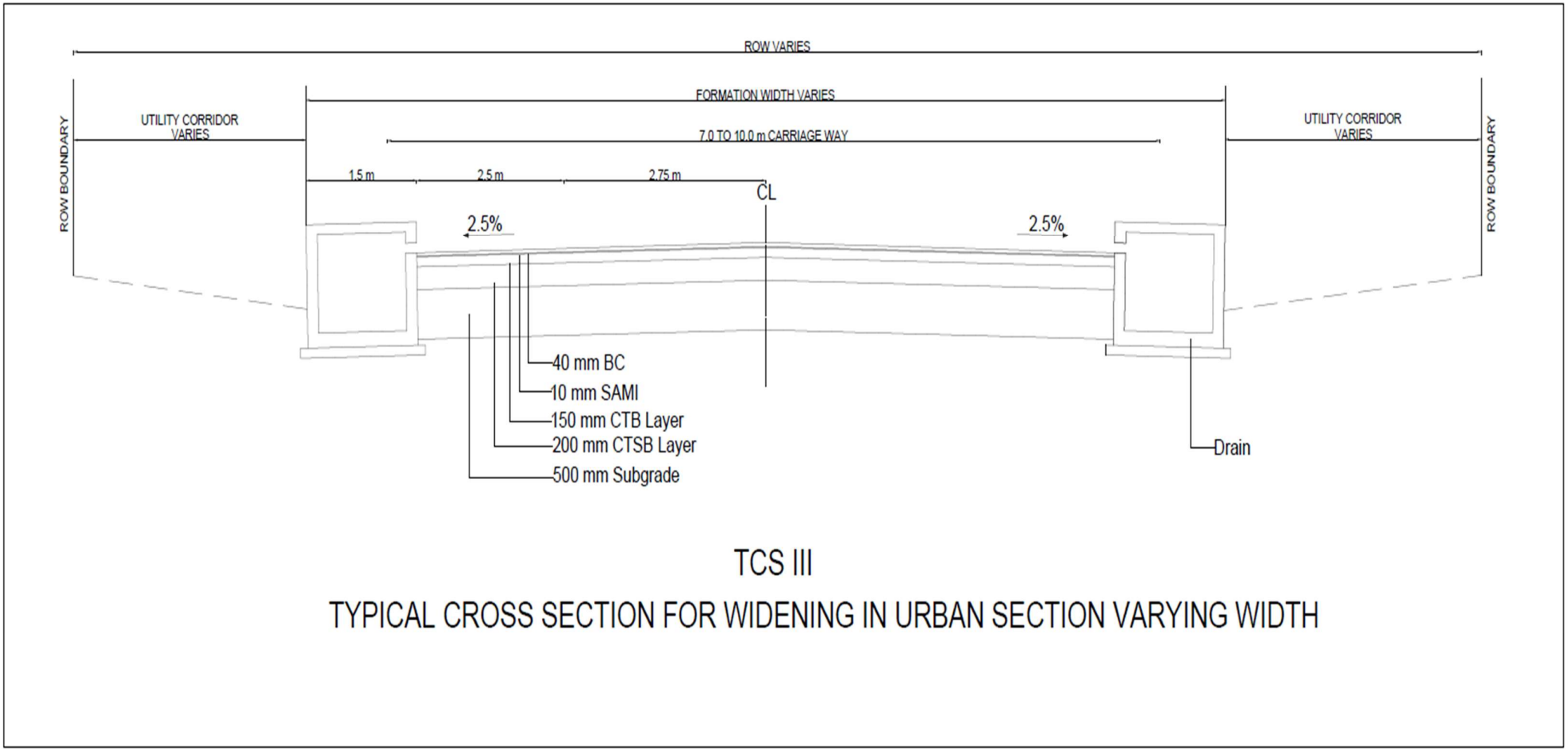
Appendix-B-I


ROW VARIES
13.0 m FORMATION WIDTH
10.0 m CARRIAGE WAY
UTILITY CORRIDOR VARIES
UTILITY CORRIDOR VARIES
ROW BOUNDARY
ROW BOUNDARY
Width Varies Widening
1.5 m
2.75 m
CL
Corrected CTB considered as Sub Base top
2.5%
2.5%
40 mm BC
10 mm SAMI
150 mm CTB Layer
200 mm CTSB Layer
500 mm Subgrade
Existing Carriage Way
Widening Portion
Drain
TCS II (C)
TYPICAL CROSS SECTION FOR WIDENING AND PROFILE CORRECTION OF EXISTING ROAD IN URBAN SECTION

Appendix-B-I


ROW VARIES
13.0 m FORMATION WIDTH
UTILITY CORRIDOR VARIES
10.0 m CARRIAGE WAY
UTILITY CORRIDOR VARIES
ROW BOUNDARY
ROW BOUNDARY
1.5 m
Width Varies
1.5 m Paved Shoulder
3.5 m
CL
2.5%
2.5%
40 mm BC
80 mm DBM
Existing Carriage Way
Drain
Paver Block
TCS II (D)
TYPICAL CROSS SECTION FOR STRENGTHENING OF EXISTING 2 LANE IN URBAN SECTION

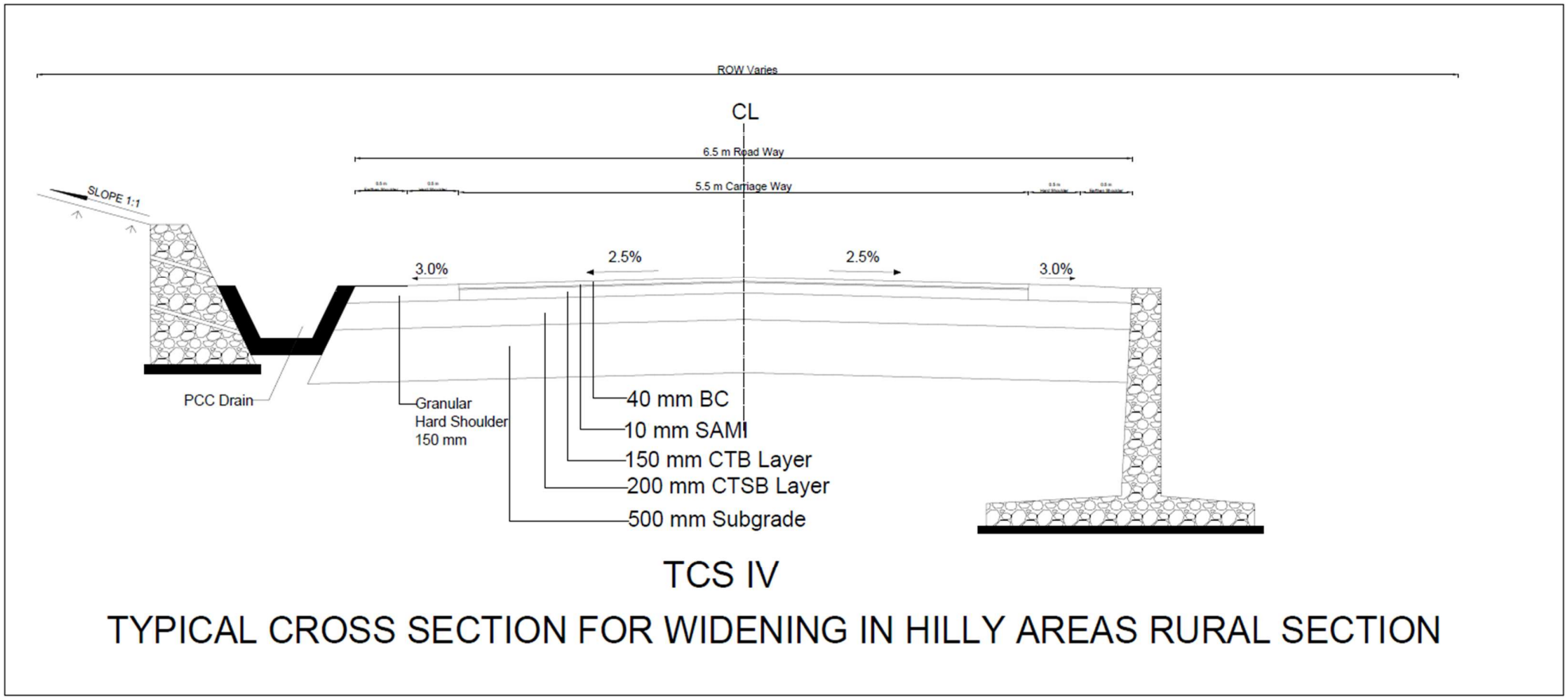
Appendix-B-I



TCS III

TYPICAL CROSS SECTION FOR WIDENING IN URBAN SECTION VARYING WIDTH

Appendix-B-I



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

SCHEDULE - C

(See Clause 2.1)

PROJECT FACILITIES

14. Project Facilities

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

14.1 Roadside furniture;

14.2 Pedestrian facilities;

14.3 Bus shelter

14.4 Others to be specified

15. Description of Project Facilities

Each of the Project Facilities is described below:

15.1 Roadside furniture;

The roadside furniture shall include the provision of:

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

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

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

iv. Crash barrier
Metal beam crash barrier having minimum length of 4859 mtr is proposed to be installed in sections of the project road having filling embankment height > 3m and as per site requirement. The location of various types of road side/median crash barriers and type of crash barrier (i.e. concrete/new jersey, semi-rigid/metal, flexible/wire rope barrier) shall be decided as per the relevant IRC guidelines and technical feasibility as stipulated in IRC 119-2015.

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

vi. Hectometer / Kilometer stones:
Hectometer/ Kilometer Stones for the entire Project Highway at the locations as suggested in Manual.

15.2 Pedestrian facilities;

The pedestrian facilities shall be provided as per the Manual.

15.3 Bus Shelter

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

15.4 Bus Shelter

- **Solar Street lights to be provided as specified in Manual.**

SCHEDULE – D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

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

2. Design Standards

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

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

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1. Specification and Standards

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

2. Deviations from the Specifications and Standards

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

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

a. In case of usage of soil stabilization technology, soil stabilizer shall be accredited by IRC as per IRC-28-1967.

b. Carriageway shall be 5.5 m with 0.5m hard shoulder on both sides in rural section and 7m to 10.0m carriageway with 1.5m footpath with drain in urban section wherever ROW is available. IRC: SP:73-2015 shall be followed to the extent as required for execution of work in consonance with plan & profile and TCS.

S. No.	Clause Referred in Manual	Item	Provisions as per Manual	Modified Provision
1	2.2.1	Design Speed	80 kmph (min. speed for plain/rolling terrain)	Design speed of 60 Kmph has been adopted, to accommodate the construction within the available ROW
2	7.3(iv)	Width of bridge	11 carriageways including0.5m Kerb shyness on both sides. 0.5m Crash barrier to be provided onboth sides after kerb shyness.	8.5m width including crash barrier has been provided because of less traffic on the road.

SCHEDULE – E

(See Clause 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

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

1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2of this Schedule-E within the time limit specified therein and any failure in this behalfshall 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 MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted 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 ofthis 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 rectificationthan 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 andthe 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 sentto 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. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex – I (Schedule-E)

Repair/rectification of Defects and deficiencies

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

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

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 of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm 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
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like Scale, Tape, odometer etc.		2-7 days	IRC:82-2015
	Bleeding	Nil	< 1 % of area	Daily			3-7 days	MORT&H Specification 3004.4
	Ravelling/ Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

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					
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricted to 30 cm from the edge	Daily			7- 15 days	IRC:82-2015
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	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-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2015
	Deflection/ Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

<table>
<tr><th rowspan="2">Asset Type</th><th rowspan="2">Performance Parameter</th><th colspan="2">Level of Service (LOS)</th><th>Frequency of Inspection</th><th>Tools/Equipment</th><th>Standards and References for Inspection and Data Analysis</th><th>Time limit for Rectification/Repair</th><th>Maintenance Specifications</th></tr>
<tr><th>Desirable</th><th>Acceptable</th><th></th><th></th><th></th><th></th><th></th></tr>
<tr><td rowspan="3">Rigid Pavement (Pavement of MCW, Service Road, Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)</td><td>Roughness BI</td><td>2200mm/km</td><td>2400mm/km</td><td>Bi-Annually</td><td>Class I Profilometer</td><td>ASTM E950 (98) :2004 and ASTM E1656 -94: 2000</td><td>180 days</td><td>IRC:SP:83-2008</td></tr>
<tr><td>Skid</td><td colspan="2">Skid Resistance no. at different speed of vehicles
<table><tr><th>Minimum SN</th><th>Traffic Speed (Km/h)</th></tr><tr><td>36</td><td>50</td></tr><tr><td>33</td><td>65</td></tr><tr><td>32</td><td>80</td></tr><tr><td>31</td><td>95</td></tr><tr><td>31</td><td>110</td></tr></table></td><td>Bi-Annually</td><td>SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)</td><td>IRC:SP:83-2008</td><td>180 days</td><td>IRC:SP:83-2008</td></tr>
<tr><td rowspan="3">Embankment/ Slope</td><td>Edge drop at shoulders</td><td>Nil</td><td>40mm</td><td>Daily</td><td rowspan="3">Length Measurement Unit like Scale, Tape, odometer etc.</td><td rowspan="3">IRC</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
<tr><td>Slope of camber/cross fall</td><td>Nil</td><td><2% variation in prescribed slope of camber /cross fall</td><td>Daily</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
<tr><td>Embankment Slopes</td><td>Nil</td><td><15 % variation in prescribe side slope</td><td>Daily</td><td>7-15 days</td><td>MORT&H Specification 408.4</td></tr>
</table>

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

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					
	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 < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-moving car	Seal without delay	Seal, and stitch if L > lm. Within 7days
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	**Single Transverse (or Diagonal) Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected.
			5	w > 6 mm, usually associated with	Not Applicable, as it may	

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**
				spalling, and/or slab rocking under traffic	be full depth	Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
3	**Single Longitudinal Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > l m. Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	w = 6.0 - 12.0 mm, usually associated with spalling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications - See Para 5.6.4 Within 15 days
4	**Multiple Cracks intersecting with one or more joints**	**w = width of crack**	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > l m. Within 15 days	-
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle		

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

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 = 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		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	three or four corners broken		Reinstate sub-base, and reconstruct the slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length (m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair - Cut out and replace

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	w > 3 mm, L > 3 m/m^2 and deformation		damaged area taking care not to damage reinforcement. Within 30days
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**	**Long Term**
					No action.	Not Applicable
			1	r < 2 %	Local repair of areas 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 > 25 mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < **2 %**	Local repair of areas damaged and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		
			3	r = 10 - 20%	Bonded Inlay within 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab within 30	

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

Joint Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total joint length	0	Difficult to discern.	**Short Term** No action.	**Long Term**
			1	Discernible, L< 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	Not Applicable
			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.	Not Applicable
			1	w < 10 mm	Apply low viscosity epoxy resin/ mortar in cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair. Within 15 days	
			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.

			3	f = 6 - 12 mm	Diamond Grinding	Within 30days
			4	f= 12 - 18 mm	Raise sunken slab.	Replace the slab as appropriate. Within 30days
			5	f> 18 mm	Strengthen subgrade and sub-base by grouting and raising sunken slab	
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 slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertical displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	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.	
			5	h > 100 mm	Within 30 days	
16	**Heave**	h = positive vertical displacement from normal profile. L = length	0	Not discernible. h < 5 mm	**Short Term** No action.	**Long Term** scrabble
			1	h = 5 - 15 mm	Follow up.	
			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		
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 ongoing Maintenance within 15 days	Replace in case of new construction. Within 30days
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	**Lane to Shoulder Dropoff**	f = difference of level	0	Nil, not discernible < 3mm	**Short Term**	**Long Term**
					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 dayss	
			4	f = 50 - 75 mm		For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30days
			5	f > 75 mm		
Drainage						
19	**Pumping**	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2	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/100 m stretch	5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	
20	**Ponding**	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	
			3 to 4	Blockages observed in	Clean drains etc within 7 days, Follow	Action required to stop

				drains, but water flowing	up	water damaging
			5	Ponding, accumulation of water observed	-do-	foundation within 30 days.

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td>Highway</td><td>Availability of Safe Sight Distance</td><td>As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.
<table><tr><th>Design Speed, kmph</th><th>Desirable Minimum Sight Distance (m)</th><th>Safe Stopping Sight Distance (m)</th></tr><tr><td>100</td><td>360</td><td>180</td></tr><tr><td>80</td><td>260</td><td>130</td></tr></table></td><td>Monthly</td><td>Manual Measurements with Odometer along with video/ image backup</td><td colspan="2">Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.
In case of permanent structure or design deficiency:
Removal of obstruction/improvement of deficiency at the earliest
Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td>IRC:SP 84-2014</td></tr>
</table>

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="3">Pavement Marking</td><td>Wear</td><td><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>
<tr><td>Day time Visibility</td><td>During expected life Service Time
Cement Road - 130mcd/m^2/lux
Bituminous Road - 100mcd/m^2/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td>Night Time Visibility</td><td><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u>
<table>
<tr><th>Design Speed</th><th colspan="2">(RL) Retro Reflectivity (mcd/m^2/lux)</th></tr>
<tr><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr>
<tr><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td>65 - 100</td><td>250</td><td>120</td></tr>
<tr><td>Above 100</td><td>350</td><td>150</td></tr>
</table>
<u>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</u>
Initial 7 days Retro reflectivity: 100 mcd/m^2/lux</td><td>Bi-Annually</td><td>As per Annexure-E 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>

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		Minimum Threshold Level: 50 mcd/m^2/lux					
	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
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of	RC:67-2012

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
						Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image 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 backup	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
	End Treatment of Traffic Safety Barriers	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84-2014

Table 4: Maintenance Criteria for Structures and Culverts:

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

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

	Protection works 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 inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.
	Rusted reinforcement	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the	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			repairs to affected concrete portion with epoxy mortar / concrete.		
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH specifications 2600 & 2700.
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications

	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No 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-substructure	Cracks/spalling of concrete/rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.
	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810 and IRC SP: 40-199.

Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron (concrete apron) not more than 1 sq.m	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.							

Rehabilitation and up-gradation of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH-04 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

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

Nature of Defect or deficiency		Time limit for repair/ rectification
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g) [Toll Plaza]		
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b) Foundations		
(i)	Scouring and/or cavitation	15 (fifteen) days
(c) Piers, abutments, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days

Nature of Defect or deficiency		Time limit for repair/ rectification
(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)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty four) hours

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

Schedule-F

(See Clause 3.1.5(a))

APPLICABLE PERMITS

1. Applicable Permits

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

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

Schedule-G

(See Clause 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I
(See Clause 7.1.1)
PERFORMANCE SECURITY

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

WHEREAS:

(A) _____[name and address of contractor] (hereinafter called "the Contractor") and [**NHIDCL**], (**"the Authority"**) have entered into an agreement (the **"Agreement"**) for **"Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/ 2-Lane with hard Shoulder in the Union Territory of Andaman & Nicobar Islands (Pkg-IIIB)",** subject to and in accordance with the provisions of the Agreement.

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

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

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

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

8. The Performance Security shall cease to be in force and effect upto 90 (ninety) days after the end of the Defects Liability Period as set forth in Clauses 17.1 of EPC agreement.

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

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

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

12. This guarantee shall also be operable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee beinginvoked and payment thereunder claimed, the said branch shall accept such invocationletter 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 SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Format of Insurance Surety Bond
[Performance Security/Additional Performance Security]

To

The Managing Director,
National Highways & Infrastructure Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi- 110001

WHEREAS_____[name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No. _____Dated_____ for construction of **"Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB"** (hereinafter called the "Contract").

AND WHEREAS the Contract requires the Contractor to furnish an [Performance Security/Additional Performance Security] for due and faithful performance of its obligations, under and in accordance with the Contract, during the [Construction Period/ Defects Liability Period and Maintenance Period) in a sum of Rs …….. cr. (Rupees .... crore) (the "Surety Bond amount").

AND WHEREAS we, through our branch at …… (the "Surety Insurer") have agreed to furnish this Surety Bond by way of Performance security.

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

1. The Surety Insurer herby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the (Construction Period/ Defects Liability Period and Maintenance Period' under and in accordance with the Contract, 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 Surety Bond 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 [Superintending Engineer of Ministry of Road Transport Et Highways], 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 Contract shall be conclusive, final and binding on the Surety Insurer. The Surety Insurer 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 Contract and its decision that the Contractor is in default shall be final and binding on the Surety Insurer, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Surety Bond, the Authority shalt be entitled to act as if the Surety Insurer were the principal debtor and any/Change in the constitution of the Contractor and/or the Surety Insurer, whether by their absorption with any other body or corporation or otherwise, shalt not in any way or manner affect the liability or obligation of the Surety insurer under this Surety Bond
4. It shall not be necessary, and the Surety Insurer hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Surety Insurer its demand under this Surety Bond.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Contract 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 Contract 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 Contract and/or the securities available to the Authority, and the Surety Insurer 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 Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law
6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Authority in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.
7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond 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 Surety Insurer under this Surety Bond all rights of the Authority under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder
8. The Surety Bond shall cease to be in force and effect on ****$. Unless3 a demand or claim under this Surety Bond is made in writing before expiry of the Surety Bond, the Surety Insurer shall be discharged from its liabilities hereunder.

9. The Surety Insurer undertakes not to revoke this Surety Bond 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 Surety Bond and the undersigned has full powers to do so on behalf of the Surety Insurer.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer 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

[$]Insert date atleast 2 (two) years from the date of issuance of this Surety Bond (in accordance with Clause 2.21 of the RFP). The Contractors can submit the BG for periods of two years at one time and keep on renewing the same till the DLP is over if they have problems in getting the BG in one go for the entire DLP.

be deemed to have been given at the time when it ought to have been delivered in due course of post 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 Surety Bond shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Contract.

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Annex-II

(Schedule-G)

(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

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

WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the **"Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/ 2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB"**, subject to and in accordance with the provisions of the Agreement.

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

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

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

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of theterms 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 anysuch law.

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

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

8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the Defects Liability Period specified in Clauses 17.1 of the Agreement.

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

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

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

12. This guarantee shall also be operable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee beinginvoked and payment thereunder claimed, the said branch shall accept such invocationletter 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 & InfrastructureDevelopment Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Annex-III

(Schedule-G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [**NHIDCL**], (hereinafter called "**the Authority**") for the "Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB", subject to and in accordance with the provisions of the Agreement.

(B) in accordance with the Clause 19.2 of the Agreement the Authority shall make to the Contractor advance payment (hereinafter called "Advance Payment") equal to 10% (ten per cent) of the contract price for mobilization expenses and acquisition of equipment; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equal to theamount of each installment to remain effective till the complete and fullrepayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement; and the amount of (first/second) installment of the Advance Payment is Rs. **** cr. (Rupees ***** crore) (the "Guarantee Amount").

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director, NHIDCL], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreementshall 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 anysuch law.

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

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

8. The guarantee shall cease to be in force and effect 90 (ninety) days after the end of the one year from the date of payment of the installment of the Advance Payment, as set forth in Clause 19.2 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

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

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

13. This guarantee shall also be operable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee beinginvoked and payment thereunder claimed, the said branch shall accept such invocationletter and make payment of amounts so demanded under the said invocation.

14. 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 SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank transport Bhawan, 1st Parliament Street, New Delhi-110001

15.15.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Schedule-H

(See Clauses 10.1.(iv) and 19.3)

Contract Price Weightages

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

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road works including culverts, widening and repair of culverts.	[34.66%]	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub-grade	[7.79%]
		(2) Sub-Base Course	[16.95%]
		(3) Non Bituminous Base Course	[15.25%]
		(4) Bituminous Base Course	[6.44%]
		(5) Wearing Coat	[26.25%]
		(6) Hard shoulder	[2.17%]
		(7) Widening and repair of culverts	[25.15%]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.1-	
		Reconstruction/ New 2-lane realignment/ bypass (Flexible pavement)	
		(1) Earthwork up totop of the sub-grade	[-]
		(2) Sub-Base Course	[-]
		(3) Non-Bituminous Base Course	[-]
		(4) Bituminous Base Course	[-]
		(5) Wearing Coat	[-]
		B.2- Reconstruction/ New 2-lane realignment/ Bypass (Rigid Pavement)	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(1) Earthwork up totop of the sub-grade	[**]
		(2) SubBaseCourse	[**]
		(3)Dry Lean Concrete(DLC) Course	[**]
		(4) Pavement Quality Control (PQC) Course	
		C.1- Reconstruction/ New service road (Flexible pavement)	[**]
			[**]
		(1) Earthwork up totop of the sub-grade	[**]
		(2) Sub Base Course	
		(3) Non-Bituminous Base Course	[**]
		(4) Bituminous Base Course	[**]
		(5) Wearing Coat	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		C.2- Reconstruction/ New Service road (Rigid Pavement)	[**]
		(1) Earthwork up totop of the sub-grade	[**]
		(2) Sub BaseCourse	[**]
		(3) Dry Lean Concrete (DLC) Course	[**]
		(4) Pavement Quality Control (PQC) Course	
		D- Re-Construction and New culverts on existing road, realignments,	[**]
		bypasses:	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		Culverts (length <6 m)	
Minor Bridges/ Under passes/ Over passes	[23.31%]	**A.1- Widening and Repair of Minor bridges (length > 6m and < 60 m)**	
		Minor bridges	[-]
		A.2- New Minor bridges (length >6 and <60 m.)	
		(1) **Foundation:** on completion of foundation work including foundation for wing and return wall	[42.56%]
		(2) Sub-structure: on completion of abutments, piers upto the abutment/pier cap.	[34.66%]
		(3) **Super-structure:** On completion of the super-structure in all respects including Wearing coat, bearings, expansion joints, hand rails, crash barriers, road	[15.91%]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		signs & markings, tests on completion etc. complete in all respect. (4) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use. (4) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects **B.1- Widening and Repair of underpasses /overpasses** Underpasses /Overpasses	[6.87%] [**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.2-New underpasses/ overpasses	[**]
		(1) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[**]
		(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	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		drainage facility complete in all respects as specified as specified. (3) **Approaches**: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[**]
Major Bridge (length> 60 m.) works and ROB/ RUB/ elevated sections/ flyovers including viaducts, if any	[-]	**A.1- Widening and repairs of Major Bridges** (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat including expansion joints	 [**] [**] [**] [**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(5) Miscellaneo usItems like hand rails, crash barriers,road markings etc.)	[**]
		(6) Wing walls/ return walls	[**]
		(7) Guide Bunds, River Training works etc.	[**]
		(8) Approaches (including Retaining walls, stone pitching andprotection works)	[**]
		A.2- New Major Bridges	
		(1) Foundation	[-]
		(2) Sub-structure	[-]
		(3) Super-structure	
		(a) Casting of girder/fabrication of girder	[**]
		(b) casting of segments	[-]
		(c) erection of deck slab and	

		bearings	[-]
		(4)Other ancillary works: Wearing Coat, hand rails, crash barriers, painting etc	[-]
		(5) Miscellaneous works: stone pitching, protection works excluding retaining walls/ reinforced earth walls/reinforced soil wall etc.	[**]
		(6) Wing/ return wall up to full height	[**]
		(7) Guide bunds, river training works etc	[**]
		(8) Retaining walls/ reinforced earth walls etc	
		(a) Panel casting	[**]
		(b) Erection of panel/ construction of retaining wall	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.1- Widening andrepair of **(a) ROB** **(b) RUB** (1) Foundation (2) Sub-structure (3) Super-structure (including bearings) (4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specifiedand (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.	[**] [**] [**] [**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	
		(6)Wing walls/return walls (7) Approaches (including Retaining walls, stone pitching andprotection works)	[**]
		B.2- New ROB/RUB (a)ROB (b) RUB	[**]
		(1) Foundation	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(2) Sub-structure	
		(3) Super structure (including bearings)	
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specifiedand (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specifiedas specified.	[**] [**] [**]
		(5) MiscellaneousItems like hand rails, crash barriers,road markings etc.)	[**]
		(6)Wing walls/return walls	
		(7) Approaches(including Retaining walls/Reinforced Earth wall, stonepitching andprotection works)	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		C.1- Widening and repair of Elevated Section/Flyovers / Grade Separators	[**]
		(1) Foundation	
		(2) Sub-structure	[**]
		(3) Super structure (including bearings)	
		(4) Wearing Coat including expansion joints	
		(5)Miscellaneous Items like hand rails, crash barriers, road markings etc.)	
		(6)Wing walls/return walls	
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stonepitching andprotection works)	[**] [**] [**]
		C.2-New Elevated Section/Flyover/	[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		Grade Separators	
		(1) Foundation	[**]
		(2) Sub-structure	
		(3) Super-structure (including bearings)	
		(4) Wearing Coatincluding expansionjoints	[**]
			[**]
		(5) Miscellaneous Items like hand rails, crash barriers,road markings etc.)	
		(6)Wing walls/return walls	
		(7) Approaches (including Retaining walls/Reinforce d Earth wall, stonepitching andprotection works)	[**]
			[**]
			[**]
			[**]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Other works	[42.03%]	(i) Toll Plaza	[**]
		(ii) Road side drains	
		(a) RCC Covered drain	[46.36%]
		(b) Lined drain	[2.64%]
		(c) Unlined drain	[0.05%]
		(iii) Road signs, markings, km stones, safety devices, ….	
		(a) Road marking	[1.49%]
		(b) Road signs, Km stone & safety device	[0.97%]
		(iv) Project facilities (a) Bus Bays	[**]
		(b) Truck lay-byes	
		(c) Rest areas	
		(d) Others (Incl. Street lighting facilities, site clearance etc)	[0.10%]
		(v) Road side plantation	[0.54%]
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/flyovers/grade separators and ROBs/RUBs.	[**] [**] [**]
		(vii) Safety and traffic management during construction	
		(viii) Protection work:	
		(a) Breast Wall	[10.94%]
		(b) Retaining wall	[14.29%]

		(ix) Crash Barrier (x) Junctions (xi)Environmental measures	[8.55%] [14.07%]

1.3 Procedure of estimating the value of work done

1.3.1 Road works.

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

Table 1.3.1

Stage of Payment	Percentage - weightage	Payment Procedure
A-Widening and strengthening of existing road (1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	[7.79%]	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 mtr. In case of hill cutting, the payment procedure will be as under
In case of hill cutting		
Hill cutting		Weightage of hill cutting shall be 40% of total cost of Earthwork (A(1)) as above). Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 mtr
Preparation of sub-grade		Weightage of subgrade shall be 60% of total cost of Earthwork (A(1) as above). Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 mtr
(2) Sub-Base Course	[16.95%]	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 mtr.
(3) Non Bituminous Base Course	[15.25 %]	
(4) Bituminous Base Course	[6.44%]	
(5) Wearing Coat	[26.25%]	
(6) Hard shoulder	[2.17%]	
(7) Widening and repair of culverts	[25.15%]	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 atleast five culverts.

B.1- Reconstruction/New 2-lane realignment/bypass **(Flexible pavement)** (1) Earthwork up to top of the subgrade		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 mtr.
(2) Sub Base Course		

Stage of Payment	Percentage - weightage	Payment Procedure
(3) Non-Bituminous Course		
(4) Bituminous Base Course		
(5) Wearing Coat		
B.2- Reconstruction/New 2-lane realignment/bypass **(Rigid pavement)** (1) Earthwork up to top of the sub-grade	[**]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less..
(2) Sub Base Course	[**]	
(3) Dry Lean Concrete (DLC) Course	[**]	
(4) Pavement Quality Control (PQC) Course	[**]	
C.1- Reconstruction/ New service road (Flexible pavement) (1) Earthwork up to	[**]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less..

Stage of Payment	Percentage - weightage	Payment Procedure
top of the sub-grade		
(2) Sub Base Course	[**]	
(3) Non-Bituminous Course	[**]	
(4) Bituminous Base Course	[**]	
(5) Wearing Coat	[**]	
C.2- Reconstruction/ New service road **(Rigid pavement)** (1) Earthwork up to top of the sub-grade	[**]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less..
(2) Sub Base Course	[**]	
(3) Dry Lean Concrete (DLC) Course	[**]	
(4) Pavement Quality Control (PQC)	[**]	

Stage of Payment	Percentage - weightage	Payment Procedure
Course		
D- Re-Construction and New culverts on existing road, realignments, **bypasses:** (1) Culverts (length < 6m)	[**]	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of atleast fiveculverts.

@. 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, maybe 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 andUnderpasses/Overpasses shall be as stated in table 1.3.2:

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
A.1-Widening and repair of minor bridges **(length > 6m and < 60m)**	**[**]**	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 & repairworks of a minor bridge.
A.2- New minor bridges (length >6m and <60m)		Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges.
In case of Box Structure		
In case of Single Cell Box Structure		Payment shall be made on the completion of Box Structure in all respect.
In case of Multi cell Box Structure		Unit of measurements shall be nos. of cells in Box Structure. Payment procedure shall be as under: Cost of completion of one Cell of structure of the Bridge shall be determined from total cost of Structure divided by total nos. of Cells in Structure at particular location. Payment of each stage shall be made on pro rata basis on completion of one cell (in full length measured in direction of water flow) of Structure in all respects.
In case of Pier Structure		
(i) Foundation : on completion of foundation work including foundation for wing and return wall	**[42.56%]**	(i) Foundation: Payment against Foundation shall be made on pro rata basis on completion of atleast two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure: on completion of abutments, piers upto the abutment/pier cap.	**[34.66%]**	(ii) Sub Structure: Payment against Sub Structure shall be made on pro rata basis on completion of atleast two sub structures upto abutment / pier cap level of each bridge.

	(iii) Superstructure: on completion of 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.	**[15.91%]**	(iii) Super structure: Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure of atleast one span in all respect as specified in the column of "Stage of Payment" in this Sub-clause.

(iii) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use. **(iv) Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects	**[6.87%]** [**]	(iii) **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. v) **Guide bunds and river training works:** Payment shall be made on pro rata basis on completion of a stage i.e. Completion of guide bunds and river training works in all respect as specified.
B.1-Widening and repair of underpasses/overpasses	**[**]**	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses

		Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/ Overpasses: **(i) Foundation +Sub-Structure:** On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap. (ii) **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.	[**] [**]	(i) **Foundation +Sub-Structure:** 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 againstfoundation + sub- structure shall be made on pro-rata basis oncompletion of a stage i.e. not less than 25% of the scope of foundation +sub-structure of each Underpasses/ Overpasses subject to completionof atleast twofoundations along withsub-structure upto abutment/pier cap level each underpass/overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified. (ii) **Super-structure:** Payment shall be made on pro-rata basis on

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.	[**]	completion of a stage i.e. completion of super-structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) **Approaches**: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all espect and fit for use.		(iii) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified.

1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
A.1- Widening and repairs of Major Bridges (i) Foundation	[**]	(i) **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 foundationshall 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 subject tocompletion of atleast two foundations of the major Bridge .
(ii) Sub-structure	[**]	In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified.
(iii) Super-structure	[**]	**(ii) 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 the major bridge subject to completion of atleast two sub-structures of abutments/piers upto

(including bearings)		abutment/pier cap level of the major bridge.
	[**]	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints		
(v) Miscellaneous Itemslike hand rails, crash barriers, road markings etc.	[**]	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(vi) Wing walls/return walls	[**]	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vii) Guide Bunds, River Training works etc.	[**]	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)		(vii) **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. **(viii) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A.2- New Major Bridges		
(i) Foundation: Foundation for abutment, piers (for pile foundation)		(i) Cost of each foundation shall be determined from cost of all foundations as under: Cost of one foundation of depth 'd'= (d/D) * Cost of all foundations D= sum of depth of all foundations; Depth of foundations shall be as per approved designs & drawings by AE. Payment against foundations shall be made on pro-rata basis on completion of a stage as under:
a. Piling		Weightage shall be 70 % of total cost of one foundation. Unit of measurement is no. of piles completed till bottom of Pile cap. Payment shall be made on pro rata basis on completion of a stage in nos. of not less than 50 % of total piles.
b. Pile cap		Weightage shall be 30 % of total cost of one foundation. Payment shall be on completion of a stage i.e. completion of Pile cap.

(ii) Sub-Structure for abutment, piers up to abutment/pier cap level		Cost of each substructure shall be determined from cost of all substructures as under: Cost of one substructure of height 'h'= (h/H) x cost of all substructures; where H = sum of height of all substructure (height of substructures shall be as per approved design and drawings by AE) Payment against sub-structure shall be made on pro-rata basis on completion of a stage as under:
(i) Upto Bottom of Pier cap level:		Weightage for pier upto bottom of pier cap level shall be 50% of total cost of one substructure. The payment for pier (s) shall be made on pro rata basis on completion of a stage as under: (a) In case of pier height up to 10 m: Payment against piers shall be made on pro-rata basis on completion of atleast two piers upto abutment/ pier cap level of each bridge. (b) In case of pier height is more 10 m : (a) on achieving atleast 20 m aggregate height in two nos. of piers, as per following combinations as under: (i) one full pier having total designed height of less than 10 m upto bottom of pier cap and one part pier having total designed height of more than 10 m (ii) Two part piers, each having total designed height of more than 10 m (b) Subsequent payments shall be on completion of each lift, on not less than 2 m in height, beyond the pier height of 10 m, upto the bottom of the pier cap level on pro rata basis.

		iii) In case, the last lift on any pier below the pier cap is less than 2 m, the payment of the last lift shall be made on pro rata basis.
(ii) Pier cap:		Weightage shall be 50% of total cost of one substructure. Payment shall be on completion of a stage i.e. completion of pier cap
(iii) Super-structure		
a) Casting of girder/ fabrication of girders (steel)		Unit of measurement is numbers. Payment against casting of girders shall be made on pro rata basis w.r.t. total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast five girders of the structures.
b) Casting of Segmentss		Unit measurement is numbers. Payment against casting of segments shall be made on pro rata basis with respect of total numbers of segments required in the structure on completion of a stage i.e. not less than completion of casting at least 10 (ten) segments of the structure.
c)_Erection of deck slab and bearings		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.
(iv) Other ancillary works: wearing coat, hand rails, crash barriers etc.		Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.

(iv) Miscellaneous works:	[**]	Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.
(iv) Wing wall/ return wall upto full height:	[**]	Payment shall be made on completion of all wing wall/ return wall for bridges as per weightage given in this table, completion in all respect as specified
(iv) Guide bunds, river training works, etc	[**]	Payment shall be made on pro-rata basis on completion of the stage in all respect as specified, for each structure.
(iv) Retaining walls/ reinforced earth walls, etc	[**]	
a) Panel casting		Unit of measurement is area in Sqm. Payment against casting of panels shall be made on pro rata basis with respect total area of panels required for the structure on completion of a stage i.e. not less than completion of casting of 25% of scope of RE wall panel of each bridge
b) Erection of panels/ construction of retaining wall		Unit of measurement is area in Sqm. Payment shall be made on pro rata basis on completion of stage i.e. completion of erection of panels/ Construction of retaining wall complete in all respect for atleast 25% scope of work for each structure
(vii) Guide Bunds, River Training works etc.	[**]	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.

B.1 -Widening and repairs of **(a) ROB** **(b) RUB** (i) Foundation	[**]	(i) **Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. 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 subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified.
(ii) Sub-structure	[**]	**(ii) 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 the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii) Super-structure (including bearings)	[**]	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[**]	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in
(v) Miscellaneous Itemslike hand rails, crash barriers, road markings etc.		

	[**]	case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.
(vi) Wing walls/return walls	[**]	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)		**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. **(vii) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.2- New **(a) ROB** **(b) RUB**		
(i) Foundation	[**]	(i) **Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. Payment

		against foundationshall 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 subject tocompletion of atleast two foundations of the ROB/RUB .
(ii) Sub-structure	[**]	In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified. **(ii) 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 the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii) Super-structure (including bearings)	[**]	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[**]	

	[**]	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.
(v) Miscellaneous Itemslike hand rails, crash barriers, road markings etc.	[**]	
(vi) Wing walls/return walls		
	[**]	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching andprotection works)		(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
		(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in

		all respects as specified.
C.1- Widening andrepairs of Elevated Section/Flyovers/ Grade Separators		
(i) Foundation	[**]	(i) **Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. 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 subject to completion of atleast two foundations of the structure .
(ii) Sub-structure	[**]	In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified.
(iii) Super-structure	[**]	**(ii) 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 the structure subject to

(including bearings)		completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
		(iii) **Super-structure:**
	[**]	Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[**]	
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.		**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
	[**]	
(vi) Wing walls/return walls		(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
	[**]	
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)		(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
		(vii) Approaches: Payments shall be

		made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C.2 -New Elevated Section/Flyovers/ Grade Separators		
(i) Foundation	[**]	(i) **Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. 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 subject to completion of atleast two foundations of the structure .
(ii) Sub-structure	[**]	In case where load testing is required for foundation, the trigger of first payment shall include load testingalso where specified.
		(ii) 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 the structure subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
(iii) Super-structure (including bearings)	[**]	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[**]	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[**]	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[**]	
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and	[**]	

protection works)		**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified. (vii) **Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

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

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

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll plaza	[**]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side drains		Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(A) RCC Covered Drain	46.36%	
(B) Lined Drain	2.64%	
(C) Unlined Drain	0.05%	
(iii) Road signs, markings, km stones, safety devices, …		
(A) Road Marking	1.49%	
(B) Road Signs, Km stone & Safety device	0.97%	
(iv) Project Facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus bays	[**]	
b)Truck lay-byes	[**]	
c)Rest areas	[**]	
d) Others (incl. Street	[0.10%]	

lighting facilities, site clearance etc)	[**]	
Stage of Payment	**Weightage**	**Payment Procedure**
(v) Roadside plantation	[0.54%]	Payment shall be made on pro rata basisfor completed facilities.
(vi) Safety and traffic management duringconstruction	[**]	Payment shall be made on pro-rata basis every six months.
(vii) Breast Wall	10.94%	Unit of Measurement is linear length in meters. 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) Retaining Wall	14.29%	
(ix) Metal Beam crash barrier	[8.55%]	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent) of the total length.
(x) Junctions	[14.07%]	Payment shall be made on pro-rata basis for completion of each junction
(xi) Environmental measures		Payment shall be made on pro-rata basis every six months.

2. Procedure for payment for Maintenance

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

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

SCHEDULE-I

(See Clause 10.2)

DRAWINGS

1. Drawings

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

2. Additional Drawings

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

Annex-I

(Schedule-I)

List of Drawings

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

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

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

SCHEDULE-J

(See Clause 10.3.2)

PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

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

2 Project Milestone

2.1 Project Milestone-I shall occur on the date falling on the 192nd (One Hundred Ninety Second) 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 329th (Three Hundred and Twenty Ninth) day from the Appointment 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 35% (thirty-five per cent) of the Contract Price and should have started construction of all bridges.

4 Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 466th (Four Hundred and Sixty Sixth) 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 70% (seventy per cent) of the Contract Price and should have started construction of all project facilities.

5 Scheduled Completion Date

5.1 The Scheduled Completion Date shall occur on the 548th (Five Hundred and Forty Eight only) day from the Appointed Date.

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

6 Extension of time

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

SCHEDULE-K

(See Clause 12.1.2)

Tests on Completion

1 Schedule for Tests

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

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

2 Tests

2.1 **Visual and physical test:** The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include (to be decided in consultation with Authority's Engineer as per relevant IRC codes/manual).

2.2 **Riding quality test:** Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipment 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 Non-destructive 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, except tests as specified in Clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing

equipment.

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 theAuthority.

4 Completion Certificate:

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

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

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

The first testing with the help of NSV shall be conducted at the time of issue of completion certificate.

SCHEDULE-L

(See Clause 12.2)

COMPLETION CERTIFICATE

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …… (the "Agreement"), for [**Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB**] (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE-M

(See Clauses 14.6., 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

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

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

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

2. Percentage reductions in lump sum payments

2.1 The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, rain cuts, 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 * (M1 or M2) * L1/L

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

M1 = Monthly lump-sum payment in accordance para 1.2 above of this schedule.

M2 = Monthly lump-sum payment in accordance para 1.2 above of this schedule

L1 = non-complying length

L = Total length of the road,

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

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

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

SCHEDULE-N

(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

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

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

1 Terms of Reference

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

2 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 [name and address of the Authority] (the "Authority") and ..... (the "Contractor") for [**Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB**] on EPC Basis, 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 Article 1 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

1. General

1.1 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.

1.2 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) issuance of completion certificate; or

(e) any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either party.

1.3 The Authority's Engineer shall submit regular periodic reports, at least once everymonth, 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.

1.4 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.

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

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

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

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 50 (fifty) 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 commentsto 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 12.2.

4.16 Authority's Engineer may recommend to the Authority suspension of the wholeor 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, 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 ofits 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 theProject 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 ofthe 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

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

9 Miscellaneous

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

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

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

them over to the Authority against receipt thereof.

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

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

SCHEDULE - O

(See Clauses 19.4.1, 19.6.1, and 19.8.1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) The estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;

(b) Amounts reflecting adjustments in price for the aforesaid claim;

(c) The estimated amount of each Change of Scope Order executed subsequent to the last claim;

(d) Amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);

(e) Total of (a), (b), (c) and (d) above;

(f) Deductions:

  (i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;

  (ii) Any amount towards deduction of taxes; and

  (iii) Total of (i) and (ii) above.

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor upto the last claim:

  (i) For the Works executed (excluding Change of Scope orders);
  (ii) For Change of Scope Orders, and
  (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

SCHEDULE - P

(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the 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 ofand 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 andthe Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

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

The insurance cover shall 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 thisAgreement excluding:

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

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

4. Insurance to be in joint names

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

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test

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

2. Visual and physical test

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

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, ……. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated …… (the "Agreement"), for [**Rehabilitation and up-gradation and completion of balance work of section from Km 155.00 to Km 181.00 (End of Jarwa to Rangat) of NH -4 (Total length 26 Km) to Intermediate Lane/2-lane with hard shoulders in the UT of A&N Islands on EPC basis - Package IIIB] (the "Project Highway")** on EPC Basis through ……. (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

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