NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
(Ministry of Road, Transport & Highways)
Government of India

Schedules

FOR

"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"

Engineering, Procurement & Construction (EPC) Mode

BID DOCUMENT

November 2017

National Highways & Infrastructure Development Corporation Ltd
(A Government of India Undertaking)

SCHEDULE – A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

1.1 Site of the Two-Laning of Existing **Chakabama – Zunheboto Road** on EPC basis from Existing km 100+345 to km 122+250 (Design **km 95+000 to km 115+534)** in the state of Nagaland under SARDP-NE, Project Highway shall include the land, buildings, structures and road works as described in **Annex-I** of this Schedule-A.

The Project alignment is approachable for all location for execution of works.

1.2 The dates of handing over the Right of Way to the Contractor are specified in **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's 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, may 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**.

Annex I
(Schedule-A)

1. Site

1.1 Existing **Chakabama-Zunheboto Road** is 122.250 Km in length and after DPR preparation the designated length is 115.534 Km. The complete road has been divided into five Packages for construction. The packages are as follows-

S. No.	Package Name	Existing Chainage(Km)		Design Chainage(Km)		Design Length (Km)
		From	To	From	To	
1	Package-1	0+000	25+760	0+000	25+000	25.000
2	Package-2	25+760	52+370	25+000	50+000	25.000
3	Package-3	52+370	79+040	50+000	75+000	25.000
4	Package-4	79+040	100+345	75+000	95+000	20.000
5	Package-5	100+345	122+250	95+000	115+534	25.534

The site for the instant work i.e. design Km 95.00 to design Km 115.534 is either single lane or proposed for re-alignments. The Site of the [Single Lane] Project Highway comprises of Chakabama – Zunheboto road commencing from Existing km 100.345 to km 122.250 (Design km 95+000 to km 115+534) in the State of Nagaland. The road is of sub-standard single lane with poor road surface, passing through mountainous/steep terrain, in general. The road is deficient in geometric features at almost all locations. The stretch lies within Phek and Zunheboto districts of Nagaland State.

The project corridor passes through Zhekiye, Shoixe, Sukhalu, and Zunheboto Town.

There are certain stretches along Project Highway wherein construction activities (earthwork in excavation) have been commenced by agency under previously awarded terminated works.

The consolidated statement of Existing Chainage, Design Chainage, Improvement Proposal and Construction carried out fully or partially by Previous Contractor is as tabulated below-

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
1	0+000	0+350	350	0+000	0+350	350	Widening and Strengthening	Earthwork in Excavation
2	0+350	0+590	240	0+350	0+550	200	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
3	0+590	0+907	317	0+550	0+850	300	Widening and Strengthening	Earthwork in Excavation
4	0+907	1+007	100	0+850	0+900	50	Realignment	Earthwork in Excavation
5	1+007	1+030	23	0+900	0+920	20	Widening and Strengthening	Earthwork in Excavation
6	1+030	1+107	77	0+920	0+990	70	Realignment	Earthwork in Excavation
7	1+107	1+205	98	0+990	1+100	110	Widening and Strengthening	Earthwork in Excavation
8	1+205	1+267	62	1+100	1+150	50	Realignment	Earthwork in Excavation
9	1+267	1+580	313	1+150	1+450	300	Widening and Strengthening	Earthwork in Excavation
10	1+580	1+627	47	1+450	1+490	40	Realignment	Earthwork in Excavation
11	1+627	2+400	773	1+490	2+250	760	Widening and Strengthening	Earthwork in Excavation
12	2+400	2+464	64	2+250	2+300	50	Realignment	Earthwork in Excavation
13	2+464	2+518	54	2+300	2+350	50	Widening and Strengthening	Earthwork in Excavation
14	2+518	2+600	82	2+350	2+420	70	Realignment	Earthwork in Excavation
15	2+600	2+742	142	2+420	2+570	150	Widening and Strengthening	Earthwork in Excavation
16	2+742	2+985	243	2+570	2+780	210	Realignment	Earthwork in Excavation
17	2+985	3+125	140	2+780	2+910	130	Widening and Strengthening	Earthwork in Excavation
18	3+125	3+184	59	2+910	2+970	60	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
19	3+184	3+334	150	2+970	3+120	150	Widening and Strengthening	Earthwork in Excavation
20	3+334	3+400	66	3+120	3+160	40	Realignment	Earthwork in Excavation
21	3+400	3+670	270	3+160	3+430	270	Widening and Strengthening	Earthwork in Excavation
22	3+670	4+118	448	3+430	3+870	440	Widening and Strengthening	No Work done
23	4+118	4+166	48	3+870	3+920	50	Realignment	No Work done
24	4+166	4+223	57	3+920	3+980	60	Widening and Strengthening	No Work done
25	4+223	4+305	82	3+980	4+060	80	Realignment	No Work done
26	4+305	4+461	156	4+060	4+210	150	Widening and Strengthening	No Work done
27	4+461	4+567	106	4+210	4+300	90	Realignment	No Work done
28	4+567	4+683	116	4+300	4+420	120	Widening and Strengthening	No Work done
29	4+683	4+720	37	4+420	4+520	100	Realignment	No Work done
30	4+720	4+800	80	4+520	4+607	87	Widening and Strengthening	No Work done
31	4+800	5+154	354	4+607	4+960	353	Widening and Strengthening	Earthwork in Excavation
32	5+154	5+300	146	4+960	5+060	100	Realignment	Earthwork in Excavation
33	5+300	5+952	652	5+060	5+635	575	Widening and Strengthening	Earthwork in Excavation
34	5+952	6+012	60	5+635	5+675	40	Realignment	Earthwork in Excavation
35	6+012	6+112	100	5+675	5+790	115	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
36	6+112	6+153	41	5+790	5+835	45	Realignment	Earthwork in Excavation
37	6+153	6+265	112	5+835	5+940	105	Widening and Strengthening	Earthwork in Excavation
38	6+265	6+320	55	5+940	5+970	30	Realignment	Earthwork in Excavation
39	6+320	6+646	326	5+970	6+290	320	Widening and Strengthening	Earthwork in Excavation
40	6+646	6+756	110	6+290	6+390	100	Realignment	Earthwork in Excavation
41	6+756	6+783	27	6+390	6+415	25	Widening and Strengthening	Earthwork in Excavation
42	6+783	6+930	147	6+415	6+540	125	Realignment	Earthwork in Excavation
43	6+930	7+026	96	6+540	6+640	100	Widening and Strengthening	Earthwork in Excavation
44	7+026	7+097	71	6+640	6+700	60	Realignment	Earthwork in Excavation
45	7+097	7+208	111	6+700	6+800	100	Widening and Strengthening	Earthwork in Excavation
46	7+208	7+287	79	6+800	6+875	75	Realignment	Earthwork in Excavation
47	7+287	7+510	223	6+875	7+100	225	Widening and Strengthening	Earthwork in Excavation
48	7+510	7+578	68	7+100	7+160	60	Realignment	Earthwork in Excavation
49	7+578	7+626	48	7+160	7+220	60	Widening and Strengthening	Earthwork in Excavation
50	7+626	7+674	48	7+220	7+260	40	Realignment	Earthwork in Excavation
51	7+674	7+887	213	7+260	7+470	210	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
52	7+887	8+071	184	7+470	7+620	150	Realignment	Earthwork in Excavation
53	8+071	8+349	278	7+620	7+890	270	Widening and Strengthening	Earthwork in Excavation
54	8+349	8+434	85	7+890	7+960	70	Realignment	Earthwork in Excavation
55	8+434	9+093	659	7+960	8+580	620	Widening and Strengthening	Earthwork in Excavation
56	9+093	9+284	191	8+580	8+825	245	Realignment	Earthwork in Excavation
57	9+284	10+155	871	8+825	9+690	865	Widening and Strengthening	Earthwork in Excavation
58	10+155	10+160	5	9+690	9+700	10	Realignment	Earthwork in Excavation
59	10+160	10+280	120	9+700	9+760	60	Realignment	Earthwork in Excavation
60	10+280	11+110	830	9+760	10+600	840	Widening and Strengthening	Earthwork in Excavation
61	11+110	11+160	50	10+600	10+645	45	Widening and Strengthening	Earthwork in Excavation
62	11+160	11+165	5	10+645	10+650	5	Widening and Strengthening	No Work done
63	11+165	11+216	51	10+650	10+695	45	Realignment	No Work done
64	11+216	11+220	4	10+695	10+700	5	Widening and Strengthening	No Work done
65	11+220	11+418	198	10+700	10+900	200	Widening and Strengthening	Earthwork in Excavation
66	11+418	11+534	116	10+900	10+980	80	Realignment	Earthwork in Excavation
67	11+534	11+770	236	10+980	11+235	255	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
68	11+770	11+778	8	11+235	11+240	5	Widening and Strengthening	No Work done
69	11+778	11+828	50	11+240	11+280	40	Realignment	No Work done
70	11+828	11+830	2	11+280	11+340	60	Widening and Strengthening	No Work done
71	11+830	11+909	79	11+340	11+365	25	Widening and Strengthening	Earthwork in Excavation
72	11+909	11+961	52	11+365	11+420	55	Realignment	Earthwork in Excavation
73	11+961	12+400	439	11+420	11+850	430	Widening and Strengthening	Earthwork in Excavation
74	12+400	12+430	30	11+850	11+885	35	Widening and Strengthening	No Work done
75	12+430	12+765	335	11+885	12+210	325	Widening and Strengthening	Earthwork in Excavation
76	12+765	12+790	25	12+210	12+230	20	Realignment	Earthwork in Excavation
77	12+790	12+824	34	12+230	12+255	25	Realignment	No Work done
78	12+824	12+850	26	12+255	12+280	25	Widening and Strengthening	No Work done
79	12+850	13+200	350	12+280	12+550	270	Widening and Strengthening	Earthwork in Excavation
80	13+200	13+259	59	12+550	12+610	60	Widening and Strengthening	No Work done
81	13+259	13+298	39	12+610	12+645	35	Realignment	No Work done
82	13+298	13+467	169	12+645	12+820	175	Widening and Strengthening	No Work done
83	13+467	13+570	103	12+820	12+935	115	Realignment	No Work done
84	13+570	13+657	87	12+935	13+010	75	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
85	13+657	13+706	49	13+010	13+050	40	Realignment	No Work done
86	13+706	13+763	57	13+050	13+105	55	Widening and Strengthening	No Work done
87	13+763	13+827	64	13+105	13+165	60	Realignment	No Work done
88	13+827	13+867	40	13+165	13+205	40	Widening and Strengthening	No Work done
89	13+867	13+919	52	13+205	13+250	45	Realignment	No Work done
90	13+919	14+061	142	13+250	13+410	160	Widening and Strengthening	No Work done
91	14+061	14+159	98	13+410	13+540	130	Realignment	No Work done
92	14+159	14+210	51	13+540	13+600	60	Widening and Strengthening	No Work done
93	14+210	14+500	290	13+600	13+885	285	Widening and Strengthening	Earthwork in Excavation
94	14+500	14+620	120	13+885	14+000	115	Widening and Strengthening	No Work done
95	14+620	14+697	77	14+000	14+080	80	Realignment	No Work done
96	14+697	14+970	273	14+080	14+360	280	Widening and Strengthening	No Work done
97	14+970	15+080	110	14+360	14+475	115	Widening and Strengthening	Earthwork in Excavation
98	15+080	15+385	305	14+475	14+785	310	Widening and Strengthening	No Work done
99	15+385	15+530	145	14+785	15+000	215	Realignment	No Work done
100	15+530	16+020	490	15+000	15+430	430	Widening and Strengthening	No Work done
101	16+020	16+370	350	15+430	15+755	325	Widening and Strengthening	Earthwork in Excavation
102	16+370	16+600	230	15+755	15+985	230	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
103	16+600	16+613	13	15+985	16+000	15	Widening and Strengthening	Earthwork in Excavation
104	16+613	16+674	61	16+000	16+060	60	Realignment	Earthwork in Excavation
105	16+674	16+730	56	16+060	16+115	55	Widening and Strengthening	Earthwork in Excavation
106	16+730	17+720	990	16+115	17+090	975	Widening and Strengthening	No Work done
107	17+720	17+792	72	17+090	17+160	70	Realignment	No Work done
108	17+792	17+845	53	17+160	17+200	40	Widening and Strengthening	No Work done
109	17+845	17+961	116	17+200	17+290	90	Realignment	No Work done
110	17+961	18+074	113	17+290	17+400	110	Widening and Strengthening	No Work done
111	18+074	18+235	161	17+400	17+600	200	Realignment	No Work done
112	18+235	18+400	165	17+600	17+795	195	Widening and Strengthening	No Work done
113	18+400	18+527	127	17+795	17+890	95	Realignment	No Work done
114	18+527	18+672	145	17+890	18+000	110	Widening and Strengthening	No Work done
115	18+672	18+870	198	18+000	18+190	190	Realignment	No Work done
116	18+870	19+000	130	18+190	18+325	135	Widening and Strengthening	No Work done
117	19+000	19+154	154	18+325	18+490	165	Realignment	No Work done
118	19+154	19+205	51	18+490	18+545	55	Widening and Strengthening	No Work done
119	19+205	19+252	47	18+545	18+580	35	Realignment	No Work done
120	19+252	19+390	138	18+580	18+710	130	Widening and Strengthening	No Work done
121	19+390	19+619	229	18+710	18+875	165	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
122	19+619	19+800	181	18+875	19+050	175	Widening and Strengthening	No Work done
123	19+800	20+225	425	19+050	19+465	415	Widening and Strengthening	Earthwork in Excavation
124	20+225	20+455	230	19+465	19+700	235	Realignment	Earthwork in Excavation
125	20+455	20+965	510	19+700	20+160	460	Widening and Strengthening	Earthwork in Excavation
126	20+965	21+032	67	20+160	20+240	80	Realignment	Earthwork in Excavation
127	21+032	21+885	853	20+240	21+100	860	Widening and Strengthening	Earthwork in Excavation
128	21+885	21+950	65	21+100	21+220	120	Realignment	Earthwork in Excavation
129	21+950	21+986	36	21+220	21+250	30	Widening and Strengthening	Earthwork in Excavation
130	21+986	22+010	24	21+250	21+290	40	Realignment	Earthwork in Excavation
131	22+010	22+021	11	21+290	21+300	10	Realignment	No Work done
132	22+021	23+100	1079	21+300	22+360	1060	Widening and Strengthening	No Work done
133	23+100	23+170	70	22+360	22+425	65	Widening and Strengthening	Earthwork in Excavation
134	23+170	23+200	30	22+425	22+455	30	Realignment	Earthwork in Excavation
135	23+200	23+415	215	22+455	22+655	200	Widening and Strengthening	Earthwork in Excavation
136	23+415	23+440	25	22+655	22+690	35	Realignment	Earthwork in Excavation
137	23+440	24+180	740	22+690	23+350	660	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
138	24+180	24+565	385	23+350	23+800	450	Widening and Strengthening	No Work done
139	24+565	24+613	48	23+800	23+840	40	Realignment	No Work done
140	24+613	25+000	387	23+840	24+250	410	Widening and Strengthening	No Work done
141	25+000	25+040	40	24+250	24+280	30	Realignment	No Work done
142	25+040	25+339	299	24+280	24+600	320	Widening and Strengthening	No Work done
143	25+339	25+390	51	24+600	24+650	50	Realignment	No Work done
144	25+390	25+970	580	24+650	25+210	560	Widening and Strengthening	No Work done
145	25+970	25+980	10	25+210	25+215	5	Realignment	No Work done
146	25+980	26+010	30	25+215	25+250	35	Realignment	Earthwork in Excavation
147	26+010	26+150	140	25+250	25+400	150	Widening and Strengthening	Earthwork in Excavation
148	26+150	26+223	73	25+400	25+450	50	Realignment	Earthwork in Excavation
149	26+223	26+334	111	25+450	25+555	105	Widening and Strengthening	Earthwork in Excavation
150	26+334	26+539	205	25+555	25+645	90	Realignment	Earthwork in Excavation
151	26+539	26+578	39	25+645	25+685	40	Widening and Strengthening	Earthwork in Excavation
152	26+578	26+652	74	25+685	25+750	65	Realignment	Earthwork in Excavation
153	26+652	26+978	326	25+750	26+050	300	Widening and Strengthening	Earthwork in Excavation
154	26+978	27+108	130	26+050	26+150	100	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
155	27+108	27+420	312	26+150	26+450	300	Widening and Strengthening	Earthwork in Excavation
156	27+420	27+540	120	26+450	26+550	100	Widening and Strengthening	No Work done
157	27+540	27+775	235	26+550	26+780	230	Widening and Strengthening	Earthwork in Excavation
158	27+775	27+818	43	26+780	26+820	40	Realignment	Earthwork in Excavation
159	27+818	28+010	192	26+820	27+000	180	Widening and Strengthening	Earthwork in Excavation
160	28+010	28+267	257	27+000	27+265	265	Widening and Strengthening	No Work done
161	28+267	28+428	161	27+265	27+400	135	Realignment	No Work done
162	28+428	29+110	682	27+400	28+060	660	Widening and Strengthening	No Work done
163	29+110	29+800	690	28+060	28+775	715	Widening and Strengthening	Earthwork in Excavation
164	29+800	29+898	98	28+775	28+830	55	Realignment	Earthwork in Excavation
165	29+898	30+010	112	28+830	28+960	130	Widening and Strengthening	Earthwork in Excavation
166	30+010	30+268	258	28+960	29+200	240	Realignment	Earthwork in Excavation
167	30+268	30+371	103	29+200	29+300	100	Widening and Strengthening	Earthwork in Excavation
168	30+371	30+463	92	29+300	29+380	80	Realignment	Earthwork in Excavation
169	30+463	30+739	276	29+380	29+660	280	Widening and Strengthening	Earthwork in Excavation
170	30+739	30+842	103	29+660	29+720	60	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
171	30+842	31+286	444	29+720	30+150	430	Widening and Strengthening	Earthwork in Excavation
172	31+286	31+390	104	30+150	30+240	90	Realignment	Earthwork in Excavation
173	31+390	31+448	58	30+240	30+300	60	Widening and Strengthening	Earthwork in Excavation
174	31+448	31+549	101	30+300	30+390	90	Realignment	Earthwork in Excavation
175	31+549	31+810	261	30+390	30+650	260	Widening and Strengthening	Earthwork in Excavation
176	31+810	31+900	90	30+650	30+740	90	Widening and Strengthening	No Work done
177	31+900	31+968	68	30+740	30+815	75	Widening and Strengthening	Earthwork in Excavation
178	31+968	32+013	45	30+815	30+840	25	Realignment	Earthwork in Excavation
179	32+013	32+758	745	30+840	31+550	710	Widening and Strengthening	Earthwork in Excavation
180	32+758	32+903	145	31+550	31+620	70	Realignment	Earthwork in Excavation
181	32+903	33+846	943	31+620	32+495	875	Widening and Strengthening	Earthwork in Excavation
182	33+846	34+000	154	32+495	32+640	145	Realignment	Earthwork in Excavation
183	34+000	35+210	1210	32+640	33+820	1180	Widening and Strengthening	Earthwork in Excavation
184	35+210	35+280	70	33+820	33+860	40	Realignment	Earthwork in Excavation
185	35+280	35+660	380	33+860	34+240	380	Widening and Strengthening	Earthwork in Excavation
186	35+660	35+693	33	34+240	34+270	30	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
187	35+693	35+851	158	34+270	34+380	110	Realignment	No Work done
188	35+851	35+900	49	34+380	34+420	40	Widening and Strengthening	No Work done
189	35+900	35+950	50	34+420	34+455	35	Realignment	No Work done
190	35+950	36+005	55	34+455	34+500	45	Realignment	Earthwork in Excavation
191	36+005	36+101	96	34+500	34+600	100	Widening and Strengthening	Earthwork in Excavation
192	36+101	36+276	175	34+600	34+760	160	Realignment	Earthwork in Excavation
193	36+276	36+370	94	34+760	34+850	90	Widening and Strengthening	Earthwork in Excavation
194	36+370	36+427	57	34+850	34+900	50	Realignment	Earthwork in Excavation
195	36+427	36+477	50	34+900	34+950	50	Widening and Strengthening	Earthwork in Excavation
196	36+477	36+622	145	34+950	35+150	200	Realignment	Earthwork in Excavation
197	36+622	36+680	58	35+150	35+210	60	Widening and Strengthening	Earthwork in Excavation
198	36+680	36+722	42	35+210	35+250	40	Realignment	Earthwork in Excavation
199	36+722	36+730	8	35+250	35+240	-10	Widening and Strengthening	Earthwork in Excavation
200	36+730	36+780	50	35+240	35+280	40	Widening and Strengthening	No Work done
201	36+780	36+820	40	35+280	35+320	40	Widening and Strengthening	Earthwork in Excavation
202	36+820	36+920	100	35+320	35+425	105	Widening and Strengthening	No Work done
203	36+920	36+939	19	35+425	35+440	15	Widening and	Earthwork in

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
							Strengthening	Excavation
204	36+939	37+130	191	35+440	35+600	160	Realignment	Earthwork in Excavation
205	37+130	37+240	110	35+600	35+720	120	Widening and Strengthening	Earthwork in Excavation
206	37+240	37+425	185	35+720	35+860	140	Realignment	Earthwork in Excavation
207	37+425	37+750	325	35+860	36+100	240	Widening and Strengthening	Earthwork in Excavation
208	37+750	38+340	590	36+100	36+730	630	Widening and Strengthening	No Work done
209	38+340	38+430	90	36+730	36+805	75	Realignment	No Work done
210	38+430	38+450	20	36+805	36+825	20	Widening and Strengthening	No Work done
211	38+450	38+632	182	36+825	37+000	175	Widening and Strengthening	Earthwork in Excavation
212	38+632	38+705	73	37+000	37+060	60	Realignment	Earthwork in Excavation
213	38+705	39+030	325	37+060	37+390	330	Widening and Strengthening	Earthwork in Excavation
214	39+030	39+068	38	37+390	37+425	35	Realignment	Earthwork in Excavation
215	39+068	39+707	639	37+425	38+050	625	Widening and Strengthening	Earthwork in Excavation
216	39+707	39+825	118	38+050	38+110	60	Realignment	Earthwork in Excavation
217	39+825	40+098	273	38+110	38+380	270	Widening and Strengthening	Earthwork in Excavation
218	40+098	40+120	22	38+380	38+390	10	Realignment	Earthwork in Excavation
219	40+120	40+126	6	38+390	38+420	30	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
220	40+126	40+519	393	38+420	38+820	400	Widening and Strengthening	No Work done
221	40+519	40+600	81	38+820	38+900	80	Realignment	No Work done
222	40+600	41+020	420	38+900	39+320	420	Widening and Strengthening	No Work done
223	41+020	41+055	35	39+320	39+350	30	Realignment	No Work done
224	41+055	41+205	150	39+350	39+490	140	Widening and Strengthening	No Work done
225	41+205	41+260	55	39+490	39+550	60	Realignment	No Work done
226	41+260	41+263	3	39+550	39+550	0	Realignment	Earthwork in Excavation
227	41+263	41+466	203	39+550	39+745	195	Widening and Strengthening	Earthwork in Excavation
228	41+466	41+470	4	39+745	39+750	5	Realignment	Earthwork in Excavation
229	41+470	41+558	88	39+750	39+830	80	Realignment	No Work done
230	41+558	41+831	273	39+830	40+090	260	Widening and Strengthening	No Work done
231	41+831	41+903	72	40+090	40+140	50	Realignment	No Work done
232	41+903	42+020	117	40+140	40+270	130	Widening and Strengthening	No Work done
233	42+020	42+070	50	40+270	40+315	45	Widening and Strengthening	Earthwork in Excavation
234	42+070	42+100	30	40+315	40+370	55	Realignment	Earthwork in Excavation
235	42+100	42+134	34	40+370	40+380	10	Realignment	No Work done
236	42+134	42+200	66	40+380	40+450	70	Widening and Strengthening	No Work done
237	42+200	42+317	117	40+450	40+560	110	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
238	42+317	42+470	153	40+560	40+685	125	Realignment	Earthwork in Excavation
239	42+470	42+745	275	40+685	40+825	140	Realignment	No Work done
240	42+745	42+830	85	40+825	40+950	125	Widening and Strengthening	No Work done
241	42+830	42+870	40	40+950	40+980	30	Widening and Strengthening	Earthwork in Excavation
242	42+870	42+880	10	40+980	40+990	10	Realignment	Earthwork in Excavation
243	42+880	42+925	45	40+990	41+045	55	Realignment	No Work done
244	42+925	43+210	285	41+045	41+360	315	Widening and Strengthening	No Work done
245	43+210	43+780	570	41+360	41+940	580	Widening and Strengthening	Earthwork in Excavation
246	43+780	45+460	1680	41+940	43+580	1640	No Geometric Improvement	No Work done
247	45+460	45+588	128	43+580	43+650	70	Realignment	No Work done
248	45+588	45+970	382	43+650	44+000	350	Widening and Strengthening	No Work done
249	45+970	46+227	257	44+000	44+270	270	Widening and Strengthening	Earthwork in Excavation
250	46+227	46+280	53	44+270	44+300	30	Realignment	Earthwork in Excavation
251	46+280	46+416	136	44+300	44+450	150	Widening and Strengthening	Earthwork in Excavation
252	46+416	46+480	64	44+450	44+510	60	Realignment	Earthwork in Excavation
253	46+480	46+735	255	44+510	44+760	250	Widening and Strengthening	Earthwork in Excavation
254	46+735	46+793	58	44+760	44+820	60	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
255	46+793	46+973	180	44+820	44+990	170	Widening and Strengthening	Earthwork in Excavation
256	46+973	47+269	296	44+990	45+250	260	Realignment	Earthwork in Excavation
257	47+269	47+361	92	45+250	45+340	90	Widening and Strengthening	Earthwork in Excavation
258	47+361	47+437	76	45+340	45+410	70	Realignment	Earthwork in Excavation
259	47+437	47+627	190	45+410	45+590	180	Widening and Strengthening	Earthwork in Excavation
260	47+627	47+703	76	45+590	45+660	70	Realignment	Earthwork in Excavation
261	47+703	47+937	234	45+660	45+890	230	Widening and Strengthening	Earthwork in Excavation
262	47+937	48+051	114	45+890	45+990	100	Realignment	Earthwork in Excavation
263	48+051	48+362	311	45+990	46+315	325	Widening and Strengthening	Earthwork in Excavation
264	48+362	48+422	60	46+315	46+390	75	Realignment	Earthwork in Excavation
265	48+422	48+486	64	46+390	46+450	60	Widening and Strengthening	Earthwork in Excavation
266	48+486	48+549	63	46+450	46+515	65	Realignment	Earthwork in Excavation
267	48+549	48+654	105	46+515	46+620	105	Widening and Strengthening	Earthwork in Excavation
268	48+654	48+838	184	46+620	46+820	200	Realignment	Earthwork in Excavation
269	48+838	48+960	122	46+820	46+950	130	Widening and Strengthening	Earthwork in Excavation
270	48+960	49+200	240	46+950	47+060	110	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
271	49+200	49+610	410	47+060	47+450	390	Widening and Strengthening	Earthwork in Excavation
272	49+610	49+750	140	47+450	47+550	100	Realignment	Earthwork in Excavation
273	49+750	49+990	240	47+550	47+780	230	Widening and Strengthening	Earthwork in Excavation
274	49+990	50+248	258	47+780	47+950	170	Realignment	Earthwork in Excavation
275	50+248	50+300	52	47+950	48+000	50	Widening and Strengthening	Earthwork in Excavation
276	50+300	50+340	40	48+000	48+025	25	Realignment	Earthwork in Excavation
277	50+340	50+375	35	48+025	48+060	35	Realignment	No Work done
278	50+375	50+390	15	48+060	48+075	15	Widening and Strengthening	No Work done
279	50+390	50+490	100	48+075	48+180	105	Widening and Strengthening	Earthwork in Excavation
280	50+490	50+560	70	48+180	48+250	70	Widening and Strengthening	No Work done
281	50+560	50+608	48	48+250	48+300	50	Realignment	Earthwork in Excavation
282	50+608	51+248	640	48+300	48+900	600	Widening and Strengthening	Earthwork in Excavation
283	51+248	51+400	152	48+900	49+040	140	Realignment	Earthwork in Excavation
284	51+400	51+914	514	49+040	49+550	510	Widening and Strengthening	Earthwork in Excavation
285	51+914	52+026	112	49+550	49+655	105	Realignment	Earthwork in Excavation
286	52+026	52+442	416	49+655	50+060	405	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
287	52+442	52+686	244	50+060	50+310	250	Realignment	Earthwork in Excavation
288	52+686	52+710	24	50+310	50+330	20	Widening and Strengthening	Earthwork in Excavation
289	52+710	52+960	250	50+330	50+590	260	Widening and Strengthening	No Work done
290	52+960	52+970	10	50+590	50+600	10	Widening and Strengthening	Earthwork in Excavation
291	52+970	53+102	132	50+600	50+720	120	Realignment	Earthwork in Excavation
292	53+102	53+146	44	50+720	50+760	40	Widening and Strengthening	Earthwork in Excavation
293	53+146	53+235	89	50+760	50+850	90	Realignment	Earthwork in Excavation
294	53+235	53+300	65	50+850	50+940	90	Widening and Strengthening	Earthwork in Excavation
295	53+300	53+480	180	50+940	51+100	160	Widening and Strengthening	No Work done
296	53+480	53+537	57	51+100	51+160	60	Widening and Strengthening	Earthwork in Excavation
297	53+537	53+570	33	51+160	51+190	30	Realignment	Earthwork in Excavation
298	53+570	53+600	30	51+190	51+210	20	Realignment	No Work done
299	53+600	53+650	50	51+210	51+260	50	Widening and Strengthening	No Work done
300	53+650	53+785	135	51+260	51+400	140	Realignment	No Work done
301	53+785	53+892	107	51+400	51+510	110	Widening and Strengthening	No Work done
302	53+892	53+970	78	51+510	51+560	50	Realignment	No Work done
303	53+970	54+650	680	51+560	52+240	680	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
304	54+650	54+764	114	52+240	52+350	110	Widening and Strengthening	Earthwork in Excavation
305	54+764	54+868	104	52+350	52+470	120	Realignment	Earthwork in Excavation
306	54+868	54+957	89	52+470	52+555	85	Widening and Strengthening	Earthwork in Excavation
307	54+957	55+050	93	52+555	52+650	95	Realignment	Earthwork in Excavation
308	55+050	55+106	56	52+650	52+710	60	Widening and Strengthening	Earthwork in Excavation
309	55+106	55+210	104	52+710	52+810	100	Realignment	Earthwork in Excavation
310	55+210	56+120	910	52+810	53+725	915	Widening and Strengthening	Earthwork in Excavation
311	56+120	56+162	42	53+725	53+760	35	Realignment	Earthwork in Excavation
312	56+162	56+440	278	53+760	54+050	290	Widening and Strengthening	Earthwork in Excavation
313	56+440	56+490	50	54+050	54+095	45	Realignment	Earthwork in Excavation
314	56+490	56+723	233	54+095	54+295	200	Widening and Strengthening	Earthwork in Excavation
315	56+723	56+820	97	54+295	54+370	75	Realignment	Earthwork in Excavation
316	56+820	56+891	71	54+370	54+450	80	Realignment	No Work done
317	56+891	57+039	148	54+450	54+595	145	Widening and Strengthening	No Work done
318	57+039	57+092	53	54+595	54+645	50	Realignment	No Work done
319	57+092	57+160	68	54+645	54+670	25	Widening and Strengthening	No Work done
320	57+160	57+180	20	54+670	54+690	20	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
321	57+180	57+232	52	54+690	54+740	50	Realignment	Earthwork in Excavation
322	57+232	57+260	28	54+740	54+770	30	Widening and Strengthening	Earthwork in Excavation
323	57+260	57+330	70	54+770	54+850	80	Widening and Strengthening	No Work done
324	57+330	57+410	80	54+850	54+925	75	Realignment	No Work done
325	57+410	57+430	20	54+925	54+940	15	Realignment	Earthwork in Excavation
326	57+430	57+476	46	54+940	54+985	45	Widening and Strengthening	Earthwork in Excavation
327	57+476	57+671	195	54+985	55+150	165	Realignment	Earthwork in Excavation
328	57+671	58+250	579	55+150	55+650	500	Widening and Strengthening	Earthwork in Excavation
329	58+250	58+320	70	55+650	55+695	45	Realignment	Earthwork in Excavation
330	58+320	58+374	54	55+695	55+740	45	Widening and Strengthening	No Work done
331	58+374	58+550	176	55+740	55+900	160	Realignment	No Work done
332	58+550	58+659	109	55+900	56+000	100	Realignment	Earthwork in Excavation
333	58+659	58+767	108	56+000	56+100	100	Widening and Strengthening	Earthwork in Excavation
334	58+767	59+000	233	56+100	56+265	165	Realignment	Earthwork in Excavation
335	59+000	59+225	225	56+265	56+485	220	Widening and Strengthening	Earthwork in Excavation
336	59+225	59+250	25	56+485	56+500	15	Realignment	Earthwork in Excavation
337	59+250	59+300	50	56+500	56+550	50	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
338	59+300	59+352	52	56+550	56+600	50	Realignment	Earthwork in Excavation
339	59+352	59+715	363	56+600	56+960	360	Widening and Strengthening	Earthwork in Excavation
340	59+715	59+784	69	56+960	57+015	55	Realignment	Earthwork in Excavation
341	59+784	60+005	221	57+015	57+230	215	Widening and Strengthening	Earthwork in Excavation
342	60+005	60+410	405	57+230	57+550	320	Realignment	Earthwork in Excavation
343	60+410	60+460	50	57+550	57+600	50	Widening and Strengthening	Earthwork in Excavation
344	60+460	60+490	30	57+600	57+625	25	Realignment	Earthwork in Excavation
345	60+490	60+552	62	57+625	57+665	40	Realignment	No Work done
346	60+552	60+580	28	57+665	57+695	30	Widening and Strengthening	No Work done
347	60+580	60+752	172	57+695	57+860	165	Widening and Strengthening	Earthwork in Excavation
348	60+752	60+824	72	57+860	57+935	75	Realignment	Earthwork in Excavation
349	60+824	61+043	219	57+935	58+160	225	Widening and Strengthening	Earthwork in Excavation
350	61+043	61+089	46	58+160	58+200	40	Realignment	Earthwork in Excavation
351	61+089	61+650	561	58+200	58+755	555	Widening and Strengthening	Earthwork in Excavation
352	61+650	61+714	64	58+755	58+810	55	Realignment	Earthwork in Excavation
353	61+714	61+750	36	58+810	58+850	40	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
354	61+750	61+962	212	58+850	59+070	220	Widening and Strengthening	No Work done
355	61+962	62+042	80	59+070	59+130	60	Realignment	No Work done
356	62+042	62+156	114	59+130	59+250	120	Widening and Strengthening	No Work done
357	62+156	62+242	86	59+250	59+320	70	Realignment	No Work done
358	62+242	62+412	170	59+320	59+490	170	Widening and Strengthening	No Work done
359	62+412	62+800	388	59+490	59+850	360	Realignment	No Work done
360	62+800	63+095	295	59+850	60+070	220	Widening and Strengthening	No Work done
361	63+095	63+185	90	60+070	60+150	80	Realignment	No Work done
362	63+185	63+442	257	60+150	60+400	250	Widening and Strengthening	No Work done
363	63+442	63+495	53	60+400	60+445	45	Realignment	No Work done
364	63+495	63+545	50	60+445	60+500	55	Widening and Strengthening	No Work done
365	63+545	63+719	174	60+500	60+675	175	Realignment	No Work done
366	63+719	63+790	71	60+675	60+750	75	Widening and Strengthening	No Work done
367	63+790	63+940	150	60+750	60+900	150	Realignment	No Work done
368	63+940	64+148	208	60+900	61+100	200	Widening and Strengthening	No Work done
369	64+148	64+190	42	61+100	61+145	45	Realignment	No Work done
370	64+190	64+281	91	61+145	61+240	95	Widening and Strengthening	No Work done
371	64+281	64+390	109	61+240	61+300	60	Realignment	No Work done
372	64+390	64+491	101	61+300	61+400	100	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
373	64+491	64+576	85	61+400	61+470	70	Realignment	No Work done
374	64+576	64+670	94	61+470	61+550	80	Widening and Strengthening	No Work done
375	64+670	64+762	92	61+550	61+645	95	Realignment	No Work done
376	64+762	65+282	520	61+645	62+200	555	Widening and Strengthening	No Work done
377	65+282	65+332	50	62+200	62+245	45	Realignment	No Work done
378	65+332	65+670	338	62+245	62+575	330	Widening and Strengthening	No Work done
379	65+670	66+092	422	62+575	63+000	425	Widening and Strengthening	Earthwork in Excavation
380	66+092	66+168	76	63+000	63+050	50	Realignment	Earthwork in Excavation
381	66+168	66+215	47	63+050	63+100	50	Widening and Strengthening	Earthwork in Excavation
382	66+215	66+431	216	63+100	63+300	200	Realignment	Earthwork in Excavation
383	66+431	66+504	73	63+300	63+365	65	Widening and Strengthening	Earthwork in Excavation
384	66+504	66+613	109	63+365	63+405	40	Realignment	Earthwork in Excavation
385	66+613	66+975	362	63+405	63+795	390	Widening and Strengthening	Earthwork in Excavation
386	66+975	66+990	15	63+795	63+810	15	Realignment	Earthwork in Excavation
387	66+990	67+070	80	63+810	63+875	65	Realignment	No Work done
388	67+070	67+086	16	63+875	63+890	15	Widening and Strengthening	Earthwork in Excavation
389	67+086	67+140	54	63+890	63+945	55	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
390	67+140	67+166	26	63+945	63+970	25	Realignment	Earthwork in Excavation
391	67+166	67+200	34	63+970	64+005	35	Widening and Strengthening	Earthwork in Excavation
392	67+200	67+250	50	64+005	64+055	50	Realignment	Earthwork in Excavation
393	67+250	67+300	50	64+055	64+100	45	Widening and Strengthening	Earthwork in Excavation
394	67+300	67+350	50	64+100	64+140	40	Realignment	Earthwork in Excavation
395	67+350	67+472	122	64+140	64+245	105	Widening and Strengthening	Earthwork in Excavation
396	67+472	67+510	38	64+245	64+275	30	Realignment	Earthwork in Excavation
397	67+510	67+600	90	64+275	64+360	85	Widening and Strengthening	Earthwork in Excavation
398	67+600	67+875	275	64+360	64+600	240	Realignment	Earthwork in Excavation
399	67+875	68+015	140	64+600	64+700	100	Widening and Strengthening	Earthwork in Excavation
400	68+015	68+036	21	64+700	64+720	20	Realignment	Earthwork in Excavation
401	68+036	68+138	102	64+720	64+820	100	Widening and Strengthening	Earthwork in Excavation
402	68+138	68+185	47	64+820	64+865	45	Realignment	Earthwork in Excavation
403	68+185	68+280	95	64+865	64+950	85	Widening and Strengthening	Earthwork in Excavation
404	68+280	68+480	200	64+950	65+145	195	Realignment	Earthwork in Excavation
405	68+480	68+506	26	65+145	65+160	15	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
406	68+506	68+590	84	65+160	65+240	80	Widening and Strengthening	No Work done
407	68+590	68+650	60	65+240	65+305	65	Realignment	No Work done
408	68+650	68+923	273	65+305	65+520	215	Widening and Strengthening	No Work done
409	68+923	68+960	37	65+520	65+565	45	Realignment	No Work done
410	68+960	69+000	40	65+565	65+605	40	Widening and Strengthening	No Work done
411	69+000	69+033	33	65+605	65+650	45	Widening and Strengthening	Earthwork in Excavation
412	69+033	69+142	109	65+650	65+760	110	Realignment	Earthwork in Excavation
413	69+142	69+394	252	65+760	66+000	240	Widening and Strengthening	Earthwork in Excavation
414	69+394	69+460	66	66+000	66+060	60	Realignment	Earthwork in Excavation
415	69+460	69+570	110	66+060	66+175	115	Widening and Strengthening	Earthwork in Excavation
416	69+570	69+590	20	66+175	66+200	25	Widening and Strengthening	No Work done
417	69+590	69+810	220	66+200	66+380	180	Widening and Strengthening	Earthwork in Excavation
418	69+810	69+882	72	66+380	66+450	70	Realignment	Earthwork in Excavation
419	69+882	69+990	108	66+450	66+550	100	Widening and Strengthening	Earthwork in Excavation
420	69+990	70+010	20	66+550	66+570	20	Widening and Strengthening	No Work done
421	70+010	70+019	9	66+570	66+595	25	Widening and Strengthening	Earthwork in Excavation
422	70+019	70+070	51	66+595	66+645	50	Realignment	Earthwork in

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
								Excavation
423	70+070	70+180	110	66+645	66+740	95	Widening and Strengthening	Earthwork in Excavation
424	70+180	70+205	25	66+740	66+760	20	Realignment	Earthwork in Excavation
425	70+205	70+280	75	66+760	66+850	90	Widening and Strengthening	Earthwork in Excavation
426	70+280	70+300	20	66+850	66+870	20	Widening and Strengthening	No Work done
427	70+300	70+750	450	66+870	67+295	425	Widening and Strengthening	Earthwork in Excavation
428	70+750	70+986	236	67+295	67+505	210	Realignment	Earthwork in Excavation
429	70+986	71+010	24	67+505	67+525	20	Widening and Strengthening	Earthwork in Excavation
430	71+010	71+180	170	67+525	67+700	175	Widening and Strengthening	No Work done
431	71+180	72+490	1310	67+700	68+975	1275	Widening and Strengthening	Earthwork in Excavation
432	72+490	72+530	40	68+975	69+010	35	Widening and Strengthening	No Work done
433	72+530	73+170	640	69+010	69+390	380	Widening and Strengthening	Earthwork in Excavation
434	73+170	73+240	70	69+390	69+450	60	Realignment	Earthwork in Excavation
435	73+240	73+345	105	69+450	69+550	100	Widening and Strengthening	Earthwork in Excavation
436	73+345	73+405	60	69+550	69+605	55	Realignment	Earthwork in Excavation
437	73+405	73+492	87	69+605	69+690	85	Widening and Strengthening	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
438	73+492	73+600	108	69+690	69+800	110	Realignment	Earthwork in Excavation
439	73+600	73+700	100	69+800	69+890	90	Widening and Strengthening	Earthwork in Excavation
440	73+700	73+760	60	69+890	69+925	35	Realignment	Earthwork in Excavation
441	73+760	74+010	250	69+925	70+190	265	Widening and Strengthening	Earthwork in Excavation
442	74+010	74+236	226	70+190	70+400	210	Widening and Strengthening	No Work done
443	74+236	74+290	54	70+400	70+450	50	Realignment	No Work done
444	74+290	74+462	172	70+450	70+600	150	Widening and Strengthening	No Work done
445	74+462	74+563	101	70+600	70+700	100	Realignment	No Work done
446	74+563	74+971	408	70+700	71+100	400	Widening and Strengthening	No Work done
447	74+971	75+059	88	71+100	71+160	60	Realignment	No Work done
448	75+059	75+087	28	71+160	71+200	40	Widening and Strengthening	No Work done
449	75+087	75+144	57	71+200	71+250	50	Realignment	No Work done
450	75+144	75+200	56	71+250	71+300	50	Widening and Strengthening	No Work done
451	75+200	75+248	48	71+300	71+350	50	Realignment	No Work done
452	75+248	75+351	103	71+350	71+440	90	Widening and Strengthening	No Work done
453	75+351	75+420	69	71+440	71+500	60	Realignment	No Work done
454	75+420	75+681	261	71+500	71+760	260	Widening and Strengthening	No Work done
455	75+681	75+733	52	71+760	71+810	50	Realignment	No Work done
456	75+733	76+157	424	71+810	72+240	430	Widening and	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
							Strengthening	
457	76+157	76+210	53	72+240	72+290	50	Realignment	No Work done
458	76+210	76+745	535	72+290	72+800	510	Widening and Strengthening	No Work done
459	76+745	76+877	132	72+800	72+920	120	Realignment	No Work done
460	76+877	77+590	713	72+920	73+610	690	Widening and Strengthening	No Work done
461	77+590	77+849	259	73+610	73+850	240	Realignment	No Work done
462	77+849	77+956	107	73+850	73+920	70	Widening and Strengthening	No Work done
463	77+956	78+000	44	73+920	73+970	50	Realignment	No Work done
464	78+000	78+210	210	73+970	74+175	205	Widening and Strengthening	No Work done
465	78+210	78+590	380	74+175	74+550	375	Widening and Strengthening	Earthwork in Excavation
466	78+590	78+945	355	74+550	74+915	365	Widening and Strengthening	No Work done
467	78+945	79+050	105	74+915	75+020	105	Realignment	No Work done
468	79+050	79+390	340	75+020	75+380	360	Realignment	Earthwork in Excavation
469	79+390	79+410	20	75+380	75+400	20	Realignment	No Work done
470	79+410	79+600	190	75+400	75+500	100	Realignment	Earthwork in Excavation
471	79+600	80+059	459	75+500	75+955	455	Widening and Strengthening	Earthwork in Excavation
472	80+059	80+120	61	75+955	76+010	55	Realignment	Earthwork in Excavation
473	80+120	80+295	175	76+010	76+180	170	Widening and Strengthening	Earthwork in Excavation
474	80+295	80+360	65	76+180	76+240	60	Realignment	Earthwork in

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
								Excavation
475	80+360	80+510	150	76+240	76+400	160	Realignment	No Work done
476	80+510	80+700	190	76+400	76+600	200	Widening and Strengthening	No Work done
477	80+700	81+090	390	76+600	76+990	390	Widening and Strengthening	Earthwork in Excavation
478	81+090	81+125	35	76+990	77+020	30	Realignment	Earthwork in Excavation
479	81+125	81+247	122	77+020	77+150	130	Widening and Strengthening	Earthwork in Excavation
480	81+247	81+305	58	77+150	77+210	60	Realignment	Earthwork in Excavation
481	81+305	81+455	150	77+210	77+350	140	Widening and Strengthening	Earthwork in Excavation
482	81+455	81+510	55	77+350	77+400	50	Realignment	Earthwork in Excavation
483	81+510	82+510	1000	77+400	78+340	940	Widening and Strengthening	Earthwork in Excavation
484	82+510	82+560	50	78+340	78+390	50	Widening and Strengthening	No Work done
485	82+560	82+740	180	78+390	78+570	180	Widening and Strengthening	Earthwork in Excavation
486	82+740	82+760	20	78+570	78+595	25	Widening and Strengthening	No Work done
487	82+760	83+287	527	78+595	79+100	505	Widening and Strengthening	Earthwork in Excavation
488	83+287	83+603	316	79+100	79+400	300	Realignment	Earthwork in Excavation
489	83+603	83+725	122	79+400	79+520	120	Widening and Strengthening	Earthwork in Excavation
490	83+725	83+960	235	79+520	79+750	230	Realignment	Earthwork in

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
								Excavation
491	83+960	84+152	192	79+750	79+880	130	Realignment	No Work done
492	84+152	84+477	325	79+880	80+210	330	Widening and Strengthening	No Work done
493	84+477	84+728	251	80+210	80+405	195	Realignment	No Work done
494	84+728	84+932	204	80+405	80+590	185	Widening and Strengthening	No Work done
495	84+932	84+990	58	80+590	80+650	60	Realignment	No Work done
496	84+990	85+539	549	80+650	81+180	530	Widening and Strengthening	No Work done
497	85+539	85+854	315	81+180	81+450	270	Realignment	No Work done
498	85+854	85+949	95	81+450	81+545	95	Widening and Strengthening	No Work done
499	85+949	86+000	51	81+545	81+595	50	Realignment	No Work done
500	86+000	86+122	122	81+595	81+710	115	Widening and Strengthening	No Work done
501	86+122	86+175	53	81+710	81+765	55	Realignment	No Work done
502	86+175	86+533	358	81+765	82+110	345	Widening and Strengthening	No Work done
503	86+533	86+580	47	82+110	82+155	45	Realignment	No Work done
504	86+580	87+049	469	82+155	82+610	455	Widening and Strengthening	No Work done
505	87+049	87+082	33	82+610	82+645	35	Realignment	No Work done
506	87+082	87+200	118	82+645	82+755	110	Widening and Strengthening	No Work done
507	87+200	87+350	150	82+755	82+895	140	Realignment	No Work done
508	87+350	87+702	352	82+895	83+230	335	Widening and Strengthening	No Work done
509	87+702	87+730	28	83+230	83+265	35	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
510	87+730	88+160	430	83+265	83+680	415	Widening and Strengthening	No Work done
511	88+160	88+225	65	83+680	83+725	45	Realignment	No Work done
512	88+225	88+565	340	83+725	84+060	335	Widening and Strengthening	No Work done
513	88+565	88+649	84	84+060	84+125	65	Realignment	No Work done
514	88+649	88+675	26	84+125	84+160	35	Widening and Strengthening	No Work done
515	88+675	88+771	96	84+160	84+255	95	Realignment	No Work done
516	88+771	88+850	79	84+255	84+320	65	Widening and Strengthening	No Work done
517	88+850	88+910	60	84+320	84+360	40	Realignment	No Work done
518	88+910	89+020	110	84+360	84+450	90	Widening and Strengthening	No Work done
519	89+020	89+100	80	84+450	84+505	55	Realignment	No Work done
520	89+100	89+350	250	84+505	84+740	235	Widening and Strengthening	No Work done
521	89+350	89+390	40	84+740	84+765	25	Realignment	No Work done
522	89+390	89+490	100	84+765	84+855	90	Widening and Strengthening	No Work done
523	89+490	89+545	55	84+855	84+900	45	Realignment	No Work done
524	89+545	89+710	165	84+900	85+050	150	Widening and Strengthening	No Work done
525	89+710	89+950	240	85+050	85+250	200	Realignment	No Work done
526	89+950	90+060	110	85+250	85+350	100	Widening and Strengthening	No Work done
527	90+060	90+260	200	85+350	85+520	170	Realignment	No Work done
528	90+260	90+560	300	85+520	85+800	280	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
529	90+560	90+765	205	85+800	85+970	170	Realignment	No Work done
530	90+765	91+470	705	85+970	86+650	680	Widening and Strengthening	No Work done
531	91+470	91+540	70	86+650	86+700	50	Realignment	No Work done
532	91+540	91+940	400	86+700	87+085	385	Widening and Strengthening	No Work done
533	91+940	92+130	190	87+085	87+250	165	Realignment	No Work done
534	92+130	93+040	910	87+250	88+140	890	Widening and Strengthening	No Work done
535	93+040	93+100	60	88+140	88+170	30	Realignment	No Work done
536	93+100	93+200	100	88+170	88+285	115	Widening and Strengthening	No Work done
537	93+200	93+270	70	88+285	88+340	55	Realignment	No Work done
538	93+270	93+865	595	88+340	88+910	570	Widening and Strengthening	No Work done
539	93+865	93+935	70	88+910	88+960	50	Realignment	No Work done
540	93+935	94+000	65	88+960	89+020	60	Widening and Strengthening	No Work done
541	94+000	94+290	290	89+020	89+305	285	Widening and Strengthening	Earthwork in Excavation
542	94+290	94+420	130	89+305	89+410	105	Realignment	Earthwork in Excavation
543	94+420	94+840	420	89+410	89+810	400	Widening and Strengthening	Earthwork in Excavation
544	94+840	94+940	100	89+810	89+895	85	Realignment	Earthwork in Excavation
545	94+940	95+000	60	89+895	89+950	55	Widening and Strengthening	Earthwork in Excavation
546	95+000	95+060	60	89+950	90+010	60	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
547	95+060	95+263	203	90+010	90+200	190	Widening and Strengthening	Earthwork in Excavation
548	95+263	95+294	31	90+200	90+225	25	Realignment	Earthwork in Excavation
549	95+294	95+600	306	90+225	90+500	275	Widening and Strengthening	Earthwork in Excavation
550	95+600	95+660	60	90+500	90+540	40	Realignment	Earthwork in Excavation
551	95+660	96+010	350	90+540	90+845	305	Widening and Strengthening	Earthwork in Excavation
552	96+010	96+146	136	90+845	90+965	120	Widening and Strengthening	No Work done
553	96+146	96+200	54	90+965	91+005	40	Realignment	No Work done
554	96+200	96+330	130	91+005	91+150	145	Widening and Strengthening	No Work done
555	96+330	96+800	470	91+150	91+600	450	Realignment	No Work done
556	96+800	97+285	485	91+600	92+080	480	Widening and Strengthening	No Work done
557	97+285	97+358	73	92+080	92+135	55	Realignment	No Work done
558	97+358	97+420	62	92+135	92+195	60	Widening and Strengthening	No Work done
559	97+420	97+470	50	92+195	92+235	40	Realignment	No Work done
560	97+470	97+904	434	92+235	92+655	420	Widening and Strengthening	No Work done
561	97+904	97+950	46	92+655	92+700	45	Realignment	No Work done
562	97+950	98+580	630	92+700	93+340	640	Widening and Strengthening	No Work done
563	98+580	98+610	30	93+340	93+360	20	Realignment	No Work done
564	98+610	98+720	110	93+360	93+460	100	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
565	98+720	99+156	436	93+460	93+850	390	Realignment	No Work done
566	99+156	99+471	315	93+850	94+150	300	Widening and Strengthening	No Work done
567	99+471	99+605	134	94+150	94+290	140	Realignment	No Work done
568	99+605	99+660	55	94+290	94+345	55	Widening and Strengthening	No Work done
569	99+660	99+947	287	94+345	94+620	275	Realignment	No Work done
570	99+947	100+119	172	94+620	94+800	180	Widening and Strengthening	No Work done
571	100+119	100+160	41	94+800	94+835	35	Realignment	No Work done
572	100+160	100+280	120	94+835	94+940	105	Widening and Strengthening	No Work done
573	100+280	100+478	198	94+940	95+140	200	Widening and Strengthening	Earthwork in Excavation
574	100+478	100+530	52	95+140	95+190	50	Realignment	Earthwork in Excavation
575	100+530	100+880	350	95+190	95+505	315	Widening and Strengthening	Earthwork in Excavation
576	100+880	100+900	20	95+505	95+530	25	Widening and Strengthening	No Work done
577	100+900	101+042	142	95+530	95+710	180	Widening and Strengthening	Earthwork in Excavation
578	101+042	101+060	18	95+710	95+730	20	Realignment	Earthwork in Excavation
579	101+060	101+103	43	95+730	95+760	30	Realignment	No Work done
580	101+103	101+254	151	95+760	95+890	130	Widening and Strengthening	No Work done
581	101+254	101+361	107	95+890	95+990	100	Realignment	No Work done
582	101+361	101+425	64	95+990	96+060	70	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
583	101+425	101+430	5	96+060	96+065	5	Realignment	No Work done
584	101+430	101+505	75	96+065	96+155	90	Realignment	Earthwork in Excavation
585	101+505	101+630	125	96+155	96+250	95	Widening and Strengthening	Earthwork in Excavation
586	101+630	101+741	111	96+250	96+350	100	Realignment	Earthwork in Excavation
587	101+741	101+900	159	96+350	96+500	150	Widening and Strengthening	Earthwork in Excavation
588	101+900	102+150	250	96+500	96+740	240	Realignment	Earthwork in Excavation
589	102+150	102+296	146	96+740	96+885	145	Widening and Strengthening	Earthwork in Excavation
590	102+296	102+441	145	96+885	97+000	115	Realignment	Earthwork in Excavation
591	102+441	102+490	49	97+000	97+050	50	Widening and Strengthening	Earthwork in Excavation
592	102+490	102+555	65	97+050	97+090	40	Realignment	Earthwork in Excavation
593	102+555	102+710	155	97+090	97+150	60	Widening and Strengthening	Earthwork in Excavation
594	102+710	102+750	40	97+150	97+245	95	Widening and Strengthening	No Work done
595	102+750	102+800	50	97+245	97+270	25	Realignment	No Work done
596	102+800	102+810	10	97+270	97+275	5	Realignment	Earthwork in Excavation
597	102+810	102+940	130	97+275	97+400	125	Widening and Strengthening	Earthwork in Excavation
598	102+940	102+960	20	97+400	97+420	20	Widening and Strengthening	No Work done
599	102+960	102+970	10	97+420	97+430	10	Realignment	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
600	102+970	103+005	35	97+430	97+440	10	Realignment	Earthwork in Excavation
601	103+005	103+010	5	97+440	97+445	5	Widening and Strengthening	Earthwork in Excavation
602	103+010	103+070	60	97+445	97+505	60	Widening and Strengthening	No Work done
603	103+070	103+418	348	97+505	97+855	350	Widening and Strengthening	Earthwork in Excavation
604	103+418	103+717	299	97+855	98+100	245	Realignment	Earthwork in Excavation
605	103+717	103+865	148	98+100	98+245	145	Widening and Strengthening	Earthwork in Excavation
606	103+865	103+870	5	98+245	98+250	5	Realignment	Earthwork in Excavation
607	103+870	104+040	170	98+250	98+400	150	Realignment	No Work done
608	104+040	104+180	140	98+400	98+500	100	Realignment	Earthwork in Excavation
609	104+180	104+210	30	98+500	98+530	30	Widening and Strengthening	Earthwork in Excavation
610	104+210	104+420	210	98+530	98+710	180	Realignment	Earthwork in Excavation
611	104+420	104+440	20	98+710	98+720	10	Realignment	No Work done
612	104+440	104+480	40	98+720	98+750	30	Realignment	Earthwork in Excavation
613	104+480	104+550	70	98+750	98+810	60	Realignment	No Work done
614	104+550	104+700	150	98+810	98+900	90	Realignment	Earthwork in Excavation
615	104+700	104+870	170	98+900	99+070	170	Widening and Strengthening	Earthwork in Excavation
616	104+870	104+930	60	99+070	99+120	50	Widening and Strengthening	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
617	104+930	105+010	80	99+120	99+210	90	Widening and Strengthening	Earthwork in Excavation
618	105+010	105+040	30	99+210	99+250	40	Widening and Strengthening	No Work done
619	105+040	105+482	442	99+250	99+565	315	Realignment	No Work done
620	105+482	106+200	718	99+565	100+200	635	Widening and Strengthening	No Work done
621	106+200	106+390	190	100+200	100+350	150	Realignment	No Work done
622	106+390	106+488	98	100+350	100+440	90	Widening and Strengthening	No Work done
623	106+488	106+638	150	100+440	100+540	100	Realignment	No Work done
624	106+638	106+695	57	100+540	100+600	60	Widening and Strengthening	No Work done
625	106+695	106+860	165	100+600	100+750	150	Realignment	No Work done
626	106+860	107+128	268	100+750	101+000	250	Widening and Strengthening	No Work done
627	107+128	107+228	100	101+000	101+090	90	Realignment	No Work done
628	107+228	108+000	772	101+090	101+835	745	Widening and Strengthening	No Work done
629	108+000	108+822	822	101+835	102+600	765	Widening and Strengthening	Earthwork in Excavation
630	108+822	108+875	53	102+600	102+650	50	Realignment	Earthwork in Excavation
631	108+875	110+600	1725	102+650	104+300	1650	Widening and Strengthening	Earthwork in Excavation
632	110+600	110+660	60	104+300	104+355	55	Realignment	Earthwork in Excavation
633	110+660	110+866	206	104+355	104+510	155	Widening and Strengthening	Earthwork in Excavation
634	110+866	111+000	134	104+510	104+620	110	Realignment	Earthwork in

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
								Excavation
635	111+000	111+010	10	104+620	104+630	10	Widening and Strengthening	Earthwork in Excavation
636	111+010	111+050	40	104+630	104+670	40	Widening and Strengthening	No Work done
637	111+050	111+110	60	104+670	104+730	60	Realignment	No Work done
638	111+110	111+135	25	104+730	104+750	20	Realignment	Earthwork in Excavation
639	111+135	111+620	485	104+750	105+205	455	Widening and Strengthening	Earthwork in Excavation
640	111+620	111+760	140	105+205	105+350	145	Widening and Strengthening	No Work done
641	111+760	111+810	50	105+350	105+390	40	Realignment	No Work done
642	111+810	112+030	220	105+390	105+560	170	Widening and Strengthening	No Work done
643	112+030	112+430	400	105+560	105+955	395	Widening and Strengthening	Earthwork in Excavation
644	112+430	112+450	20	105+955	105+975	20	Widening and Strengthening	No Work done
645	112+450	112+610	160	105+975	106+145	170	Widening and Strengthening	Earthwork in Excavation
646	112+610	112+685	75	106+145	106+200	55	Realignment	Earthwork in Excavation
647	112+685	112+740	55	106+200	106+255	55	Widening and Strengthening	Earthwork in Excavation
648	112+740	112+805	65	106+255	106+310	55	Realignment	Earthwork in Excavation
649	112+805	112+977	172	106+310	106+450	140	Widening and Strengthening	Earthwork in Excavation
650	112+977	113+190	213	106+450	106+600	150	Realignment	Earthwork in Excavation

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
651	113+190	113+250	60	106+600	106+655	55	Widening and Strengthening	Earthwork in Excavation
652	113+250	113+340	90	106+655	106+740	85	Widening and Strengthening	No Work done
653	113+340	113+790	450	106+740	107+140	400	Widening and Strengthening	Earthwork in Excavation
654	113+790	113+820	30	107+140	107+165	25	Realignment	Earthwork in Excavation
655	113+820	113+828	8	107+165	107+170	5	Realignment	No Work done
656	113+828	113+920	92	107+170	107+265	95	Widening and Strengthening	No Work done
657	113+920	114+122	202	107+265	107+475	210	Widening and Strengthening	Earthwork in Excavation
658	114+122	114+223	101	107+475	107+550	75	Realignment	Earthwork in Excavation
659	114+223	114+520	297	107+550	107+845	295	Widening and Strengthening	Earthwork in Excavation
660	114+520	114+642	122	107+845	107+955	110	Widening and Strengthening	No Work done
661	114+642	114+698	56	107+955	108+000	45	Realignment	No Work done
662	114+698	115+335	637	108+000	108+660	660	Widening and Strengthening	No Work done
663	115+335	115+530	195	108+660	108+815	155	Realignment	No Work done
664	115+530	115+770	240	108+815	109+050	235	Widening and Strengthening	No Work done
665	115+770	115+845	75	109+050	109+105	55	Realignment	No Work done
666	115+845	119+750	3905	109+105	112+960	3855	No Geometric Improvement	No Work done
667	119+750	119+820	70	112+960	113+000	40	Realignment	No Work done
668	119+820	119+880	60	113+000	113+050	50	Widening and	No Work done

Sl. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	Improvement Proposal	Details of Work done by Previous Contractor
	From	To		From	To			
							Strengthening	
669	119+880	119+935	55	113+050	113+080	30	Realignment	No Work done
670	119+935	121+080	1145	113+080	114+210	1130	Widening and Strengthening	No Work done
671	121+080	121+238	158	114+210	114+340	130	Realignment	No Work done
672	121+238	121+350	112	114+340	114+450	110	Widening and Strengthening	No Work done
673	121+350	121+415	65	114+450	114+510	60	Realignment	No Work done
674	121+415	122+455	1040	114+510	115+530	1020	Widening and Strengthening	No Work done

The Index Map is appended at the end of this **Schedule-A**.

2. Chainage References (Existing Vs Design)

"Existing Chainage" means distance measured along existing roadway/vehicle pathway on the Project Highway. During topography survey, observations are made to these locations and after finalization of alignment by improving the existing geometry the chainage has been referred to "Design Chainage". The relationship between the "Existing Chainage" and the "Design Chainage" as per field surveys of the location for the "Project Highway" is given below:

Sl. No	Existing Chainage (Km)	Design Chainage (Km)	Remarks
1	100+345	95+000	
2	101+361	95+990	
3	102+441	97+000	
4	103+865	98+245	
5	104+180	98+500	
6	105+482	99+565	
7	106+638	100+540	
8	107+228	101+090	
9	108+822	102+600	
10	109+600	103+370	
11	110+866	104+510	
12	111+810	105+390	
13	112+685	106+200	
14	113+790	107+140	

Sl. No	Existing Chainage (Km)	Design Chainage (Km)	Remarks
15	114+642	107+955	
16	115+770	109+050	
17	115+845	109+105	
18	116+375	109+625	
19	117+400	110+700	
20	118+200	111+500	
21	119+935	113+080	
22	120+600	113+735	
23	121+415	114+510	

3. Land

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

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Length in m (Design)	Existing/ Available ROW (m)	Remarks
	From	To	From	To			
1	100+345	122+250	95+000	115+534	20534	-	No ROW available in realignment stretches of total XXX km. as given in para 2.1.3 of Annexure-1 Schedule-B.

4. Carriageway

The present carriageway of the Project Highway is substandard single lane configuration. The type of the existing pavement is flexible.

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Length in m (Design)	Existing Lane Width* (m)	Remarks
	From	To	From	To			
1	100+345	122+250	95+000	115+534	20534	3.0 to 3.5	Lane width other than realignment portion

5. Major Bridges

The Site includes the following Medium Size Bridge:

Sl. No.	Design Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super structure		

NIL

6. Railway over-bridges (ROB)

The Site includes the following Railway Over Bridges

Sl. No.	Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Superstructure		
NIL						

7. Grade Separators

The Site includes the following Grade separators

Sl. No.	Chainage (km)	Type of Structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super structure		
NIL						

8. Minor Bridges

The Site includes the following minor Bridges:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structures			No. of Spans with Span Length (m)	Total Width (m)
			Foundation	Sub-Structure	Super Structure		
NIL							

9. Railway level crossings / Railway Track

The Site includes the following railway level crossings:

Sl. No.	Road Segment	Existing Chainage (km)	Remarks
Nil			

10. Underpasses (vehicular, Non Vehicular)

The Site includes the following underpasses:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structure	No. of Spans with Span Length (m)	Width (m)
Nil					

11. Culverts

The Site includes 54 Nos. of culverts at the following locations and types:

Sl. No.	Existing Chainage (km)	Type of Structure	Span / Dia. (m)	Width of Structure (m)	Remarks
1	100+590	Pipe	1 x 1.0	7.0	Adequate & in Fair Condition
2	101+678	Slab	1 x 1.5	9.9	Inadequate & in Poor Condition
3	101+875	Slab	not visible	-	Not Visible
4	101+940	Slab	1 x 1.5	7.4	Inadequate & in Poor Condition
5	102+040	Slab	not visible	-	Not Visible
6	102+135	Slab	not visible	-	Not Visible
7	102+235	Slab	not visible	-	Not Visible
8	103+055	Slab	1 x 1.0	12.3	Inadequate & in Poor Condition
9	103+538	Slab	1 x 1.5	7.2	Inadequate & in Poor Condition
10	104+022	Slab	1 x 1.5	7.2	Inadequate & in Poor Condition
11	104+318	Pipe	1 x 1.0	8.8	Inadequate & in Fair Condition
12	108+625	Pipe	1 x 1.0	13.5	Inadequate & in Fair Condition
13	109+190	Pipe (may be)	Not visible (fully buried) and broken	-	Not Visible
14	110+460	Pipe	1 x 0.9	14.0	Inadequate & in Poor Condition
15	110+850	Slab	not visible	-	Not Visible
16	111+150	Pipe	1 x 1.0	10.7	Inadequate & in Fair Condition
17	111+260	Slab	1 x 1.5	7.2	Inadequate & in Fair Condition
18	112+080	Pipe	1 x 1.0	6.3	Inadequate & in Fair Condition
19	112+370	Pipe	1 x 1.0	6.2	Inadequate & in Fair Condition
20	112+703	Slab	1 x 1.5	8.4	Inadequate & in Poor Condition
21	113+140	Slab	1 x 1.5	12.5	Inadequate & in Poor Condition
22	113+250	Slab	1 x 1.5	7.5	Inadequate & in Fair Condition
23	113+838	Slab	1 x 1.5	11.0	Inadequate & in Fair Condition
24	114+690	Pipe	1 x 0.9	8.5	Inadequate & in Poor Condition
25	114+890	Pipe	1 x 0.9	9.0	Inadequate & in Poor Condition
26	114+995	Pipe	1 x 1.0	7.0	Inadequate & in Poor Condition
27	115+255	Pipe	1 x 1.0	6.4	Inadequate & in Fair Condition
28	115+985	Pipe	1 x 1.0	6.6	Inadequate & in Fair Condition
29	116+080	Slab	1 x 1.5	7.2	Inadequate & in Fair Condition
30	116+300	Pipe (may be)	Not visible (fully buried) and broken	-	Not Visible
31	116+502	Pipe	1 x 0.9	6.6	Inadequate & in Poor Condition
32	116+752	Pipe	1 x 1.0	6.2	Inadequate & in Fair Condition
33	116+790	Pipe	1 x 0.9	6.6	Inadequate & in Fair Condition

Sl. No.	Existing Chainage (km)	Type of Structure	Span / Dia. (m)	Width of Structure (m)	Remarks
34	117+005	Slab	1 x 1.5	7.0	Inadequate & in Fair Condition
35	117+185	Slab	1 x 1.0	9.9	Adequate & in Fair Condition
36	117+276	Pipe	1 x 1.0	6.4	Inadequate & in Fair Condition
37	117+743	Slab	1 x 4.5	7.2	Adequate & in Fair Condition
38	118+150	Pipe	1 x 0.6	5.6	Inadequate & in Fair Condition
39	118+215	Slab	1 x 1.0	7.4	Inadequate & in Fair Condition
40	118+345	Pipe	1 x 1.0	8.3	Inadequate & in Fair Condition
41	118+440	Slab	1 x 0.8	6.0	Inadequate & in Poor Condition
42	118+612	Slab	1 x 1.0	7.4	Inadequate & in Fair Condition
43	119+730	Pipe	1 x 1.0	18.0	Inadequate & in Poor Condition
44	120+115	Slab	1 x 0.8	7.0	Inadequate & in Fair Condition
45	120+277	Slab	1 x 1.0	7.0	Inadequate & in Fair Condition
46	120+448	Slab	1 x 1.5	6.0	Inadequate & in Fair Condition
47	120+725	Slab	1 x 1.0	6.2	Inadequate & in Fair Condition
48	120+930	Slab	1 x 1.0	9.3	Inadequate & in Poor Condition
49	121+035	Slab	1 x 1.0	7.0	Inadequate & in Poor Condition
50	121+110	Slab	1 x 1.0	6.7	Adequate & in Fair Condition
51	121+245	Slab	1 x 1.5	6.0	Inadequate & in Fair Condition
52	121+545	Slab	1 x 1.0	6.8	Inadequate & in Fair Condition
53	121+590	Slab	1 x 1.0	8.4	Inadequate & in Fair Condition
54	121+695	Slab	1 x 0.9	5.0	Inadequate & in Fair Condition

12. Bus Bays

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

Sl. No.	Road Segment	Existing Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
NIL					

13. Truck Lay Bye

The details of truck lay byes on the Site are as follows:

Sl. No.	Road Segment	Existing Chainage (km)	Length (m)	Left Hand Side	Right Hand Side
NIL					

14. Road side drains.

The details of the road side drains on the Site are as follows:

Sl. No.	Existing Location		Side	Type	
	From (km)	To (km)		Masonry/CC (Pucca)	Earthen (Kutcha)
1	115+000	116+000	Right		Earthen (Kutcha)

Sl. No.	Existing Location		Side	Type	
	From (km)	To (km)		Masonry/CC (Pucca)	Earthen (Kutcha)
2	116+100	116+200	Right	Masonry	
3	116+200	116+300	Right		Earthen (Kutcha)
4	116+300	116+400	Right	Masonry	
5	116+800	117+019	Right	Masonry	
6	118+400	119+000	Right	Masonry	
7	119+200	119+400	Right	Masonry	
8	119+600	120+000	Right	Masonry	

15. Major Junctions

The details of major junctions are as follows:

Sl. No.	Location		At Grade	Separated	Category of Cross Roads			
	Existing km	Design km			NH	SH	MDR	Others
1	102+600	97+135	At Grade	-			MDR	

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

16. Minor Junctions

The details of minor junctions are as follows:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Type	
			'T' Junction	Cross Road both sides
1	102+612	97+140	T Junction	
2	117+670	110+960	T Junction	
3	117+740	111+010	T Junction	
4	118+005	111+300	T Junction	
5	118+055	111+350	T Junction	
6	118+330	111+650	T Junction	
7	118+825	111+900	T Junction	
8	119+145	112+320	T Junction	
9	119+189	112+360	T Junction	
10	119+190	112+361	T Junction	
11	119+425	112+575	T Junction	
12	119+565	112+725	T Junction	
13	119+722	112+940	T Junction	
14	119+740	112+950	T Junction	
15	120+190	113+290	T Junction	
16	120+225	113+325	T Junction	

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Type	
			'T' Junction	Cross Road both sides
17	121+553	114+650	T Junction	
18	122+250	115+235	T Junction	

17. Bypasses

The details of bypass are as follows:

Sl. No.	Name of Proposed Bypass (Town)	Road Segment	Existing Chainage		Length (km)	Carriageway	
			From (km)	To (km)		Width m)	Type
NIL							

18. Other Structures/Details

The details of other structures are as follows:

Sl. No.	Type	Existing Chainage (km)	Length (m)	Width
Nil				

Annex-II
(Schedule-A)

Details 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:

Sl. No	Design Chainage		Length (Km)	Existing ROW as per Clause 3 of Schedule A	Proposed ROW Width (m)	Date of Providing proposed ROW
	From	To				
i) 90% of ROW (full width)	95+000	115+543	20.534		24 to 50	At Appointed date
ii) Balance Right of way (width)	95+000	115+543	20.534		24 to 50	Within 150 days after the appointed date

Annex-III
(Schedule-A)

Alignment Plans

The existing alignment Plan, Plan & Profile drawing and GAD drawings for bridges of the Project Highway shall be modified in the following sections as per the enclosed alignment plan.

ENCLOSED

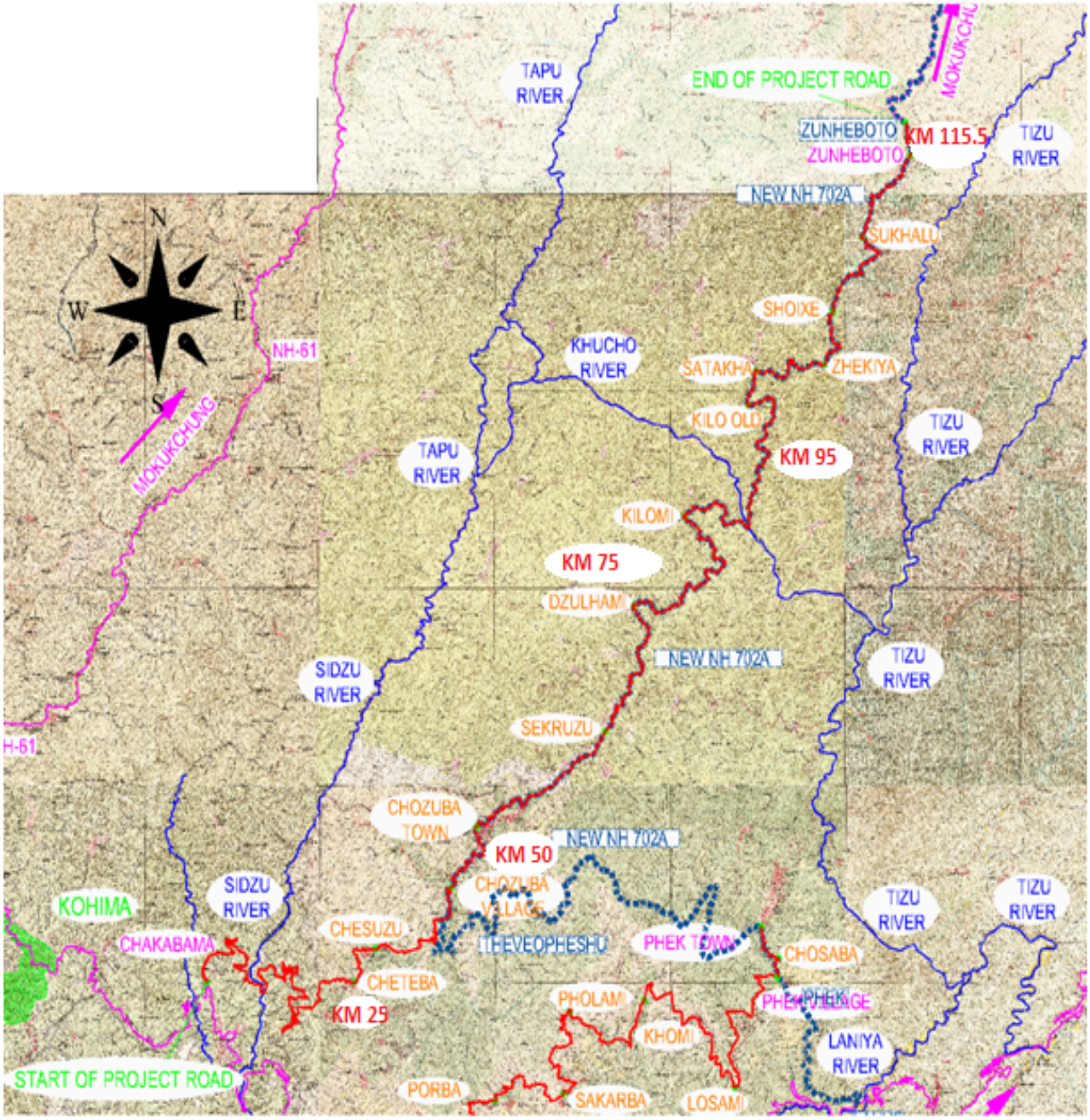
Annex-IV
(Schedule-A)

Environmental Clearances

[The project Highway does not require Environment Clearance as per M o E F corrigendum dated 22.08.2013.

The muck dumping sites in forest area stand identified and freezed by Forest department to be abided by agency during dumping of muck as stated in Schedule 'F']

INDEX MAP OF PROJECT HIGHWAY SECTION



SCHEDULE – B
(See Clause 2.1)

DEVELOPMENT OF THE PROJECT HIGHWAY

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C.

2 Rehabilitation and augmentation

Rehabilitation and augmentation shall include [Two-Laning and strengthening] of the Project Highway as described in Annex-I of this Schedule-B and in Schedule-C.

3 Specifications and Standards

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

Annex I
(Schedule-B)

Description of Two Laning

Project is construction/improvement of the existing single lane road to two lane with hard shoulder in accordance with IRC- SP:73: 2015, IRC-SP: 48: 1998 and other relevant codes including standard good practice of the road construction as per Schedule D.

1.0 SCOPE OF THE PROJECT

1.1 GENERAL

The following sections of this schedule briefly highlight the scope of the work of the 'Project'. The descriptions of the requirements for the various elements of the Project Highway given here in under are the bare minimum requirements for the 'Project'.

In the planning, design and execution of the works and other works in connection with the repair, maintenance or improvement of the Project Highway and functions associated with the construction of the Project Highway and roadside facilities, the Construction Contractor shall take all such actions and do all such things (including, but not limiting to, organizing itself, adopting measures and standards, executing procedures, including inspection procedures and highway patrol, and engaging and managing agents and employees) as will;

a. enable the NHIDCL to provide an acceptably safe highway in respect of its condition (structural safety) and use (road safety);

b. enable the NHIDCL to fulfill its statutory and common law obligations;

c. enable the NHIDCL to provide a congestion free uninterrupted flow of traffic on the Project Highway;

d. enable the NHIDCL to provide a level of highway service to the public not inferior to that provided on the trunk road during construction or improvement works;

e. enable the police, local authorities, and others with statutory duties or functions in relation to the Project Highway or adjoining roads to fulfill those duties and functions;

f. minimize the occurrence and adverse effects of accidents and ensure that all accidents and emergencies are responded to as quickly as possible;

g. minimize the risk of damage, destruction or disturbance to third party property;

h. ensure that members of the public are treated with all due courtesy and consideration;

i. provide a safe, clear and informative system of road signs;

j. comply with any specified programme requirements, including for the completion of the new road;

k. enable standards of reliability, durability, accessibility, maintainability, quality control and assurance, and fitness for purpose appropriate to a highway of the character of the Project Highway to be achieved throughout the Contract Period;

l. ensure adequate off-street parking facilities for both passenger and goods vehicles;

m. provide adequate bus bays for stopping of buses and bus bays for commuters to wait under protection;

n. achieve a high standard in the appearance and aesthetic quality of the Project Highway and achieve integration of the Project Highway with the character of the surrounding landscape through both sensitive design and sensitive management of all visible elements including those on the existing road;

o. Undertake proper safety audit through an appropriate consultant (i.e. apart from the Authority Engineer)

p. Carry out accident recording and reporting (to NHIDCL) by type on regular basis; and

q. Ensure adequate safety of the Project Workers on the work site.

2.0 GEOMETRIC DESIGN AND GENERAL FEATURES

2.1.1 General

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

2.1.2 WIDENING OF THE EXISTING HIGHWAY

Notwithstanding the basic alignment plans enclosed with this document the Construction Contractor shall himself carryout and be responsible for engineering surveys, investigation and detailed engineering designs and prepare the working drawings for all the components relevant for the improvement and up-gradation of the Project Highway to fulfill the scope of the project as envisaged herein under. These shall comply with design specifications and standards given in **Schedule-D.** The designs for different project facilities shall follow the locations and indicative designs given in **Schedule-C** and shall comply with design specifications and standards outlined in **Schedule-D.** All the designs and drawings shall be reviewed by the Authority Engineer prior to execution.

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.

2.1.3 Improvement of the existing road geometries

[Refer to paragraph 2.1 (v) of the Manual and provide details]

The hilly gradients shall be corrected in such a way so as to attain a limiting gradient of 6% in order to achieve longitudinal drainage. Also vertical curves shall be improved / introduced so that the vertical curves meet IRC: SP-73 - 2015 standards.

The horizontal alignment of the Project Highway shall be improved as per the standards set out in **Schedule-D.**

The improvement shall be done in consultation with the Authority Engineer / Project Company ensuring that the proposed improvements are accommodated within the land width available as far as practical otherwise action to acquire more land shall be resorted to through NHIDCL.

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

Improvement due to Realignments:

Sl. No.	Existing Chainage (Km)		Length (m)	Design Chainage (Km)		Length (m)
	From	To		From	To	
1	100+478	100+530	52	95+140	95+190	50
2	101+042	101+103	61	95+710	95+760	50
3	101+254	101+361	107	95+890	95+990	100
4	101+425	101+505	80	96+060	96+155	95
5	101+630	101+741	111	96+250	96+350	100
6	101+900	102+150	250	96+500	96+740	240
7	102+296	102+441	145	96+885	97+000	115
8	102+490	102+555	65	97+050	97+090	40
9	102+750	102+810	60	97+245	97+275	30
10	102+960	103+005	45	97+400	97+440	40
11	103+418	103+717	299	97+855	98+100	245
12	103+865	104+180	315	98+245	98+500	255
13	104+210	104+700	490	98+530	98+900	370

Sl. No.	Existing Chainage (Km)		Length (m)	Design Chainage (Km)		Length (m)
	From	To		From	To	
14	105+040	105+482	442	99+250	99+565	315
15	106+200	106+390	190	100+200	100+350	150
16	106+488	106+638	150	100+440	100+540	100
17	106+695	106+860	165	100+600	100+750	150
18	107+128	107+228	100	101+000	101+090	90
19	108+822	108+875	53	102+600	102+650	50
20	110+600	110+660	60	104+300	104+355	55
21	110+866	111+000	134	104+510	104+620	110
22	111+050	111+135	85	104+670	104+750	80
23	111+760	111+810	50	105+350	105+390	40
24	112+610	112+685	75	106+145	106+200	55
25	112+740	112+805	65	106+255	106+310	55
26	112+977	113+190	213	106+450	106+600	150
27	113+790	113+828	38	107+140	107+170	30
28	114+122	114+223	101	107+475	107+550	75
29	114+642	114+698	56	107+955	108+000	45
30	115+335	115+530	195	108+660	108+815	155
31	115+770	115+845	75	109+050	109+105	55
32	119+750	119+820	70	112+960	113+000	40
33	119+880	119+935	55	113+050	113+080	30
34	121+080	121+238	158	114+210	114+340	130
35	121+350	121+415	65	114+450	114+510	60

Probable location of Sharp Curves having radius less than 40 m:

Sl. No.	Design Chainage(Km)		Side	Remarks
	From	To		
1	95+538.38	95+605.40	Right	Radius<40
2	95+702.07	95+768.77	Left	Radius<40
3	95+864.51	95+933.60	Left	Radius<40
4	95+933.60	96+026.88	Right	Radius<40
5	97+416.09	97+451.87	Right	Radius<40
6	98+487.17	98+566.34	Right	Radius<40
7	101+723.96	101+805.31	Right	Radius<40
8	101+805.31	101+887.12	Left	Radius<40
9	105+841.25	105+887.96	Left	Radius<40
10	106+246.19	106+344.93	Left	Radius<40
11	109+115.86	109+201.12	Right	Radius<40

Sl. No.	Design Chainage(Km)		Side	Remarks
	From	To		
12	109+308.57	109+368.52	Left	Radius<40
13	109+477.91	109+520.56	Right	Radius<40
14	109+535.05	109+568.08	Left	Radius<40
15	109+636.31	109+662.24	Right	Radius<40
16	109+805.72	109+834.92	Right	Radius<40
17	109+938.26	109+987.86	Right	Radius<40
18	110+009.44	110+030.26	Left	Radius<40
19	110+044.64	110+061.66	Left	Radius<40
20	110+082.74	110+098.83	Right	Radius<40
21	110+260.38	110+278.96	Left	Radius<40
22	110+294.43	110+314.40	Right	Radius<40
23	110+323.10	110+339.46	Left	Radius<40
24	110+529.75	110+553.91	Right	Radius<40
25	110+587.29	110+636.20	Left	Radius<40
26	110+676.87	110+748.88	Right	Radius<40
27	110+852.76	110+893.17	Left	Radius<40
28	110+929.45	110+970.61	Right	Radius<40
29	111+005.44	111+035.39	Left	Radius<40
30	111+211.64	111+223.64	Left	Radius<40
31	111+268.74	111+282.14	Left	Radius<40
32	111+895.98	111+942.00	Left	Radius<40
33	111+963.66	111+997.15	Right	Radius<40
34	112+426.37	112+469.78	Right	Radius<40
35	112+632.13	112+667.67	Right	Radius<40

2.2 Design speed

The design speed shall be as per IRC SP 73: 2015 however in exceptional cases the minimum design speed of [30 km per hour for hilly and mountainous terrain and 20 km per hour for hair pin bend locations]. The Location of Hair Pin Bends have been shown in Plan & Profile Drawings.

2.3 Proposed Right of Way

[Refer to paragraph 2.3 of the Manual].

Details of the proposed Right of Way are tabulated below.

Sl. No	Design Chainage		Length (km)	Width (m)
	From	To		
1.	95+000	115+534	20.534	24 – 50 m

2.3.1 The Scheduled date on which the Authority shall provide ROW to the contractor is given in Annexure-II of Schedule A

2.4 Type of Shoulders

Hard Shoulder: Cementitious base for hard shoulder (Total 3 metre wide incluing both sides having thickness 200mm)

[Refer to paragraph 2.6.1 of the Manual and specify]

2.5 Width of Carriageway/Roadway width

2.5.1 Two-Laning with hard shoulders shall be undertaken.

2.5.2 Except as otherwise provided in this Agreement, the width of the hard shoulder carriageway and cross-sectional features shall conform to Para 2.7 of the manual.

2.5.3 On horizontal curves with radius upto 300 metres width of pavement and Roadway shall be increased as follows-

S. No.	Radius of Curve	Extra width of Carriageway
1	21 to 40	1.5
2	41 to 60	1.2
3	61 to 100	0.9
4	101 to 300	0.6

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:

Sl. No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses 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:

Sl No.	Location [Chainage(km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

2.8 Service roads

Service roads shall be constructed at the locations and for the lengths indicated below:[Refer to paragraph 2.13 of the Manual and provide details]

Sl. No.	Location of Service Road (km)		Right Hand Side (RHS) / Left Hand Side (LHS) / Both Sides	Length (km) of Service Road
	From	To		
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:

[Refer to paragraphs 2.14.1 of the Manual and provide details]

Sl. No.	Location of Structure	Length (m)	Number and Length of Spans (m)	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: [Refer to paragraphs 2.14.2 of the Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing level, raised or lowered].

Sl No.	Location	Type of Structure/Length (m)	Cross Road at			Remarks, if any
			Existing Level	Raised Level	Lowered Level	
Nil						

2.9.3 Cattle and pedestrian underpass / Overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows: [Refer to paragraph 2.14.3 of the Manual and specify the requirements of cattle and pedestrian underpass/overpass.

Sl. No.	Location	Type of Crossing
Nil		

2.10 Typical cross-sections of the Project Highway

Typical cross-sections to be followed as per IRC: SP-73-2015 and in addition the proposed cross section for various situations are given in Fig.B-1 to B-6. These illustrate the cross sectional improvement proposals for the project highway. The Project Highway (length 20.534 km) shall be 2-lane carriageway with 1.5m wide Hard shoulders facility.

Following typical cross sections shall be provided for the Project Highway However to be designed as per manual.

TCS I (a): Typical Cross Section for project road sections in Hill / Valley locations
TCS I (b): Typical Cross Section for Project Road Sections requiring Fill on Valley Side
TCS II: Typical Cross Section for project road section on ridge
TCS III: Typical Cross Section for Project Road Sections through Box Cut Locations
TCS IV: Typical Cross Section for Project Road Section through Town with Hill Valley Combination
Type V: Typical Cross Section for Project Road Section through Town on Ridge

The cross section schedule shall be as follows:

Sl. No.	Chainage (Km)		Length (m)	Type	Remarks
	From	To			
1	95+000	95+550	550	I	
2	95+550	95+670	120	III	
3	95+670	95+880	210	I	
4	95+880	95+900	20	III	
5	95+900	97+430	1530	I	
6	97+430	97+700	270	II	
7	97+700	99+350	1650	I	
8	99+350	99+370	20	II	
9	99+370	99+800	430	I	
10	99+800	99+860	60	II	
11	99+860	100+000	140	I	
12	100+000	100+070	70	II	TCS V to be provided in road section through town/ built up area on ridge
13	100+070	100+100	30	I	
14	100+100	100+200	100	II	

Sl. No.	Chainage (Km)		Length (m)	Type	Remarks
	From	To			
15	100+200	100+260	60	I	
16	100+260	100+280	20	II	
17	100+280	102+850	2570	I	
18	102+850	102+950	100	II	
19	102+950	103+050	100	I	
20	103+050	103+080	30	II	
21	103+080	107+500	4420	I	
22	107+500	107+640	140	III	
23	107+640	108+770	1130	I	
24	108+770	108+810	40	III	
25	108+810	109+480	670	I	
26	109+480	111+630	2150	V	
27	111+630	112+700	1070	V	
28	112+700	112+950	250	V	
29	112+950	113+420	470	IV	
30	113+420	113+840	420	IV	
31	113+840	114+250	410	IV	
32	114+250	114+330	80	III	
33	114+330	114+470	140	IV	
34	114+470	115+534	1064.347	IV	

Note: The extent of cross section type is indicative and shall be reviewed in consultation with the Authority Engineer at the time of construction as per the site condition. Type I Cross section consist of two variants as I (a) without retaining wall on valley side and 1(b) with retaining wall on valley side as detailed in figure B1 & B2 respectively. The locations please refer designed cross section @ 50 m interval detailed in Annexure III of Schedule A.

The alternative cross section of the Project Highway at the cross drainage structures shall follow the typical cross section in consultation with the Authority Engineer at the time of construction.

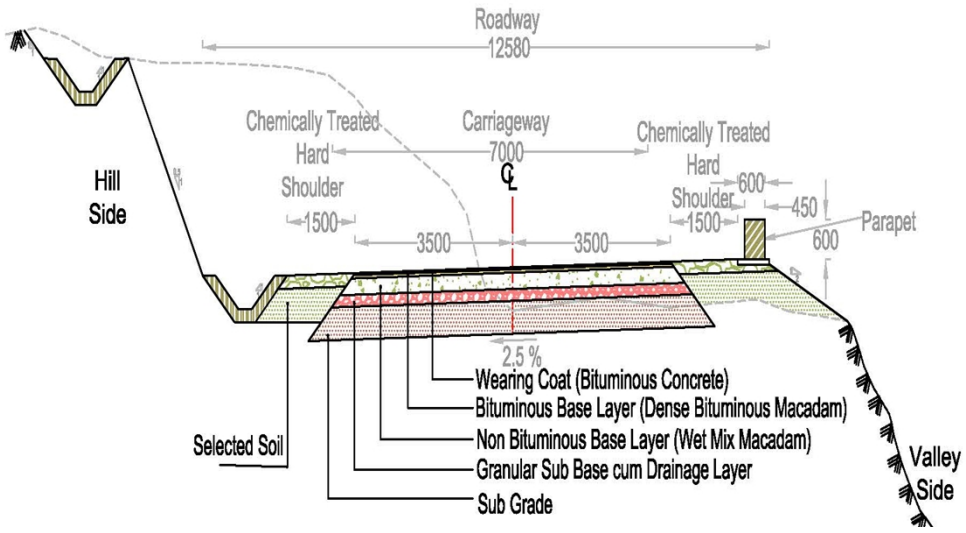


Figure B-1: Typical Cross Section in Hill/Valley Locations, TCS I(a)

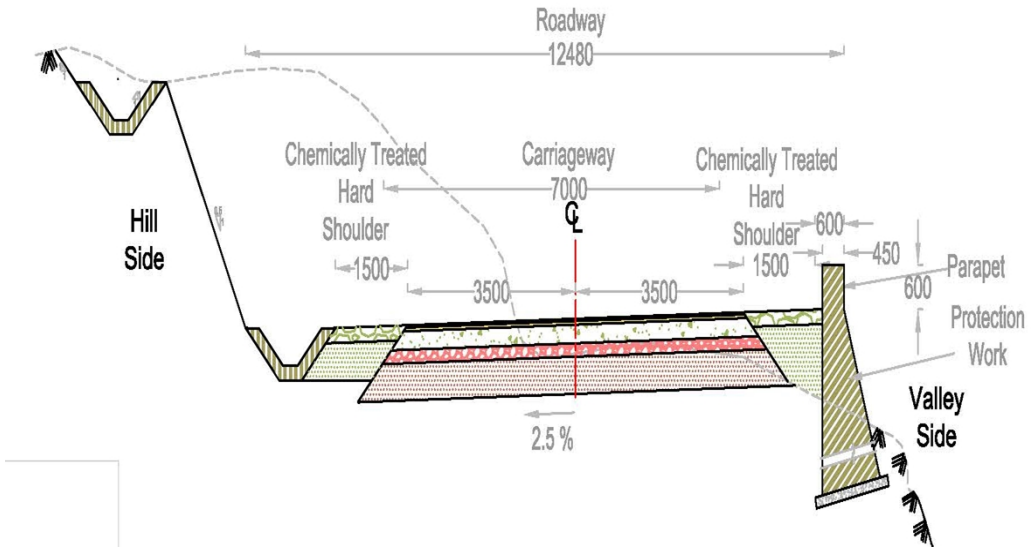


Figure B-2: TCS for Project Road Sections requiring Fill on Valley Side TCS I(b)

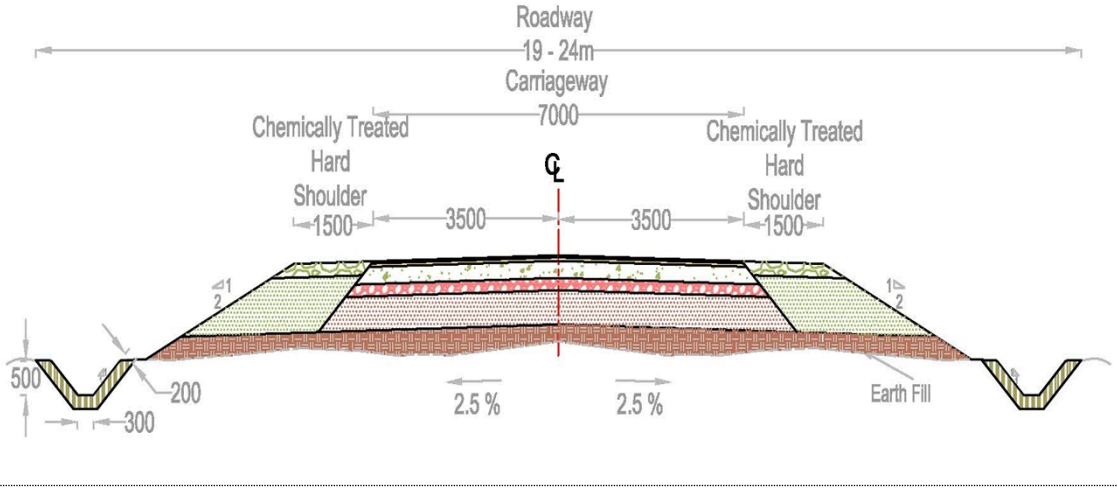


Figure B-3: TCS for Project Road Section on Ridge (TCS II)

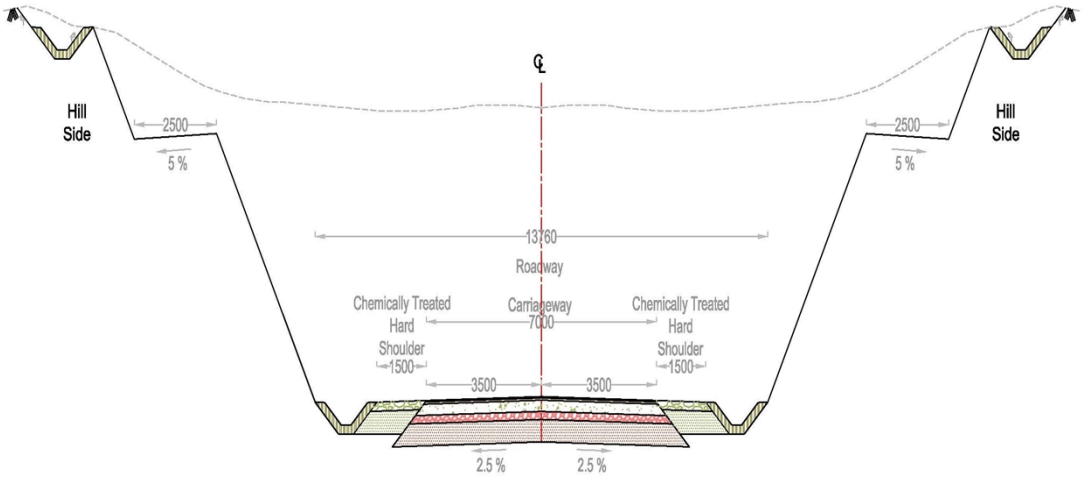


Figure B-4: TCS for Project Road Sections through Box Cut Locations (TCS III)

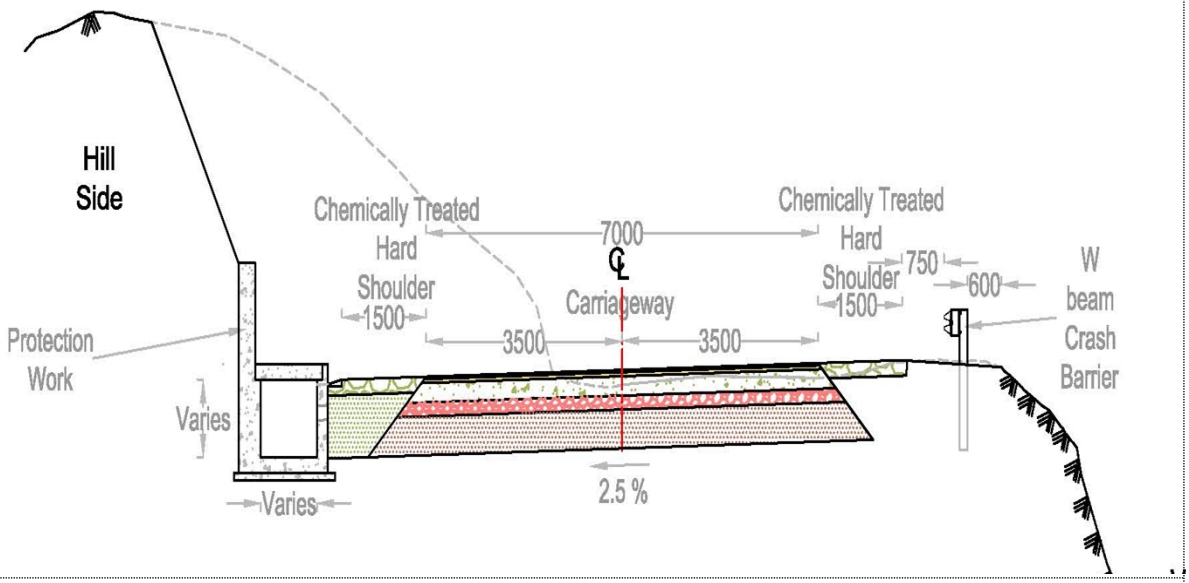


Figure B-5: TCS for Project Road Section through Town with Hill/Valley Combination (TCS IV)

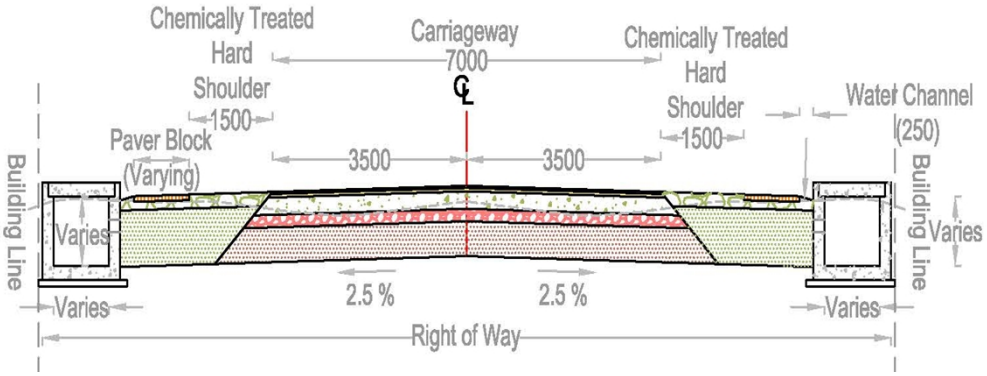


Figure B-6: TCS for Project Road Section through Town on Ridge (TCS V)

2.11 Longitudinal Section

As a minimum, the Construction Contractor shall achieve the proposed finished road level as indicated in the plan and profile drawings for this purpose in FFSR. However, the final finished road levels (FRL) will be finalized as per site conditions in consultation with NHIDCL.

2.12 Built-Up Areas

The alignment passes through Built up areas as tabulated below.

Sl. No.	Existing Chainage (Km)		Design Chainage (Km)		Name of Village/town
	From	To	From	To	
1	103+100	103+200	97+550	97+650	Zhekiye
2	107+200	107+800	101+075	101+625	Shoixe
3	112+000	112+500	105+550	106+025	Sukhalu
4	115+000	115+400	108+350	108+700	Zunheboto Town
5	115+800	116+000	109+060	109+260	Zunheboto Town
6	116+200	122+250	109+450	115+315	Zunheboto Town

3.0 INTERSECTIONS AND GRADE SEPARATORS

3.1 Introduction

All intersections shall be as per Section 3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

[Refer to paragraphs 3.1.1, 3.1.2 and 3.3 of the Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement].

There are no intersections with cross roads having bituminous surfacing. The cross roads fall into the category VRs. The Construction Contractor has to construct the following:

i) Typical junction treatments as specified in Final Project Report shall be applied. Design types of intersections are as given below:

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

3.2 At-grade Intersections

(a) Major Intersections

Sl. No.	Location of Intersection	Intersection Towards	Existing Configurations				Type of Intersection	Figure No.	Other Features
			Location	Type	Width (m)	Surface			
01	102+600	97+135	102+600	T	3.5	BT	T	B 9	As per Figure

Details of junction improvements shall be as per IRC SP: 73-2015.

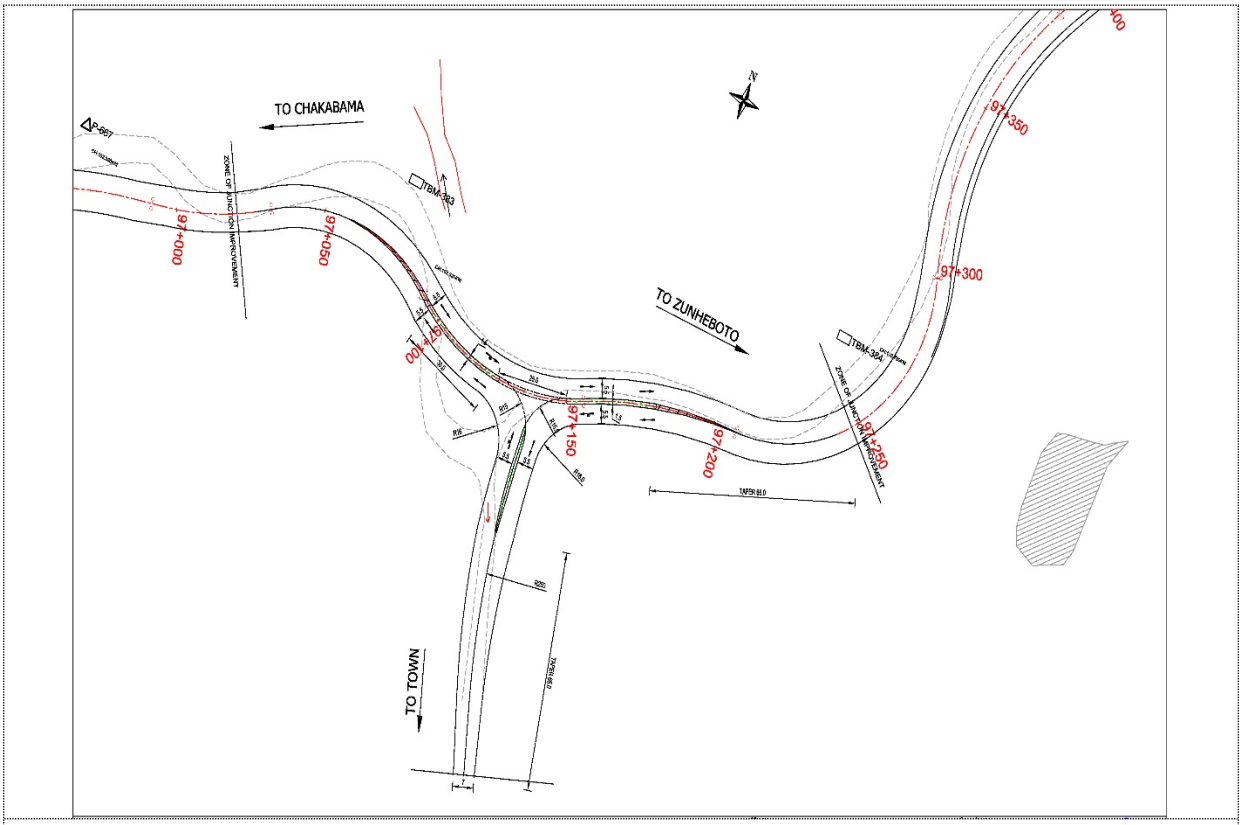


Figure B-9: Junction Improvement at km 97+135 on C Z Road

(b) Minor Intersections

Sl. No.	Location of Intersection (Design Chainage, km)	Type of Intersection	Side
1	97+140	T	Right
2	110+960	T	Left
3	111+010	T	Right
4	111+300	T	Right
5	111+350	T	Right
6	111+650	T	Right
7	111+900	T	Left
8	112+320	T	Left
9	112+360	T	Right
10	112+361	T	Right
11	112+575	T	Left
12	112+725	T	Right
13	112+940	T	Right
14	112+950	T	Right
15	113+290	T	Right
16	113+325	T	Left
17	114+650	T	Right

Sl. No.	Location of Intersection (Design Chainage, km)	Type of Intersection	Side
18	115+235	T	Right

Details of junction improvements shall be as per IRC SP: 73-2015.

3.3 Grade Separated Intersections with/without Ramps

Sl No.	Location (km)	Salient Features	Minimum Length of Viaduct to be Provided (m)	Road to be Carried Over/Under the Structures
Nil				

4.0 ROAD EMBANKMENT AND CUT SECTION

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

4.2 Raising of the existing road [Refer to paragraph 4.2.2 of the Manual and specify sections to be raised].

The existing road shall be raised in the following sections:

Sl No.	Section (km)		Length (km)	Extent of Raising*	Remarks
	From	To			
Nil					

* Difference between levels at proposed c/l and existing road/ground below proposed c/l

5.0 PAVEMENT DESIGN

5.1 General

Pavement design shall be carried out in accordance with section 5 of the Manual. The detailed pavement design including overlay and pavement characteristics requirements of the Project Highway shall be done in accordance with Schedule D. Flexible pavement shall be considered for the project road. Flexible Pavement design shall be carried out in accordance with Section 5 of the Two Lane Manual (IRC: SP 73 -2015).

5.2 Type of pavement

Flexible pavement shall be adopted for Project Highway in accordance with IRC: 37-2012. Clause 2.2 of IRC: 37-2012 identifies five type of flexible pavements. The estimated cost of civil works is based on flexible pavements consisting of Granular base, Sub base, DBM and BC. Since, the successful bidders under EPC mode can use any type of five flexible pavements mentioned Clause2.2 of IRC: 37-2012, they may carry out their own diligence to arrive at project cost before submitting bids. The minimum thickness of wearing coat (BC) shall be 40 mm.

5.3 Design requirements

[Refer to paragraph 5.4, 5.9 and 5.10 of the Manual and specify design requirements and strategy]

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.

5.4 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of 5 million standard axles as follows.

PACKAGE	Design Chainage (km)		Length (km)	15Year MSA*
	From	To		
	95+ 000	115+534	20.534	5

5.5 Design Parameters

The flexible pavement for the main carriageway is a 2-lane carriageway having 1.5 m wide hard shoulder and 1.0 m wide earthen shoulder in some stretches. This shall be designed using the IRC 37: 2012 method for the 5 msa for 15 years and the construction period of 36 months.

5.5.1 The Project highway will be a light-trafficked section connecting the major arterial network of the country. The design exercise should therefore duly take into account the importance of the road, the performance level and the maintenance requirements during the performance period. The provision of Wet Mix Macadam (granular base)/cement-treated base/ sub-base (crushed stone only)/ sub grade layer(s) and the use of VG 30 Bitumen in bituminous base layers and preferably polymer modified bitumen in wearing course shall be considered while deciding about the composition of the pavement structure. The design should also accompany the Quality Assurance Plan (QAP) along with its implementation scheme for the construction of the pavement structure.

5.5.2 However, in case of a change in the pavement design at the detailed engineering stage, the same shall not be considered as a change in scope of work nor shall qualify for a variation order.

5.5.3 Hard shoulders of 3.0 m width including both sides having cementitious base of thickness 200 mm shall be provided.

5.5.4 Contractor shall design the pavement for design traffic of 5 million standard axles corresponding sub grade CBR.

5.5.5 **Rigid Pavement**

No rigid pavement has been considered for the Project Highway.

5.6 Reconstruction / Realignment/ Bypass of sections

[Refer to paragraph 5.9.7 of the Manual and specify the sections, if any, to be reconstructed.]

The following sections of the existing road shall be reconstructed. These shall be designed as new pavement.

Sl. No.	Existing Section (km)		Remarks
	From	To	
1	100+345	122+250	Poor condition of existing pavement and or Realignment Section

6.0 ROAD SIDE DRAINAGE

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

The improvements in the drainage and the slope erosion shall be made as per the following norms:

6.1 Drainage Measures

Following measures shall be adopted:

i) Minimum length of Covered RCC Drain with Kerb Channel on Hill Side= 9444m

ii) Minimum length of Road Side Drains= 11461m

RCC Lined drains have slopes also been proposed in urban/semi urban/intersection stretches. The concrete drains shall be covered in reaches along commercial establishments and intersections. The drains outfall into the natural water courses i.e. either in culverts or bridges. Table below gives the location of lined drains.

These are guidelines for minimum provisions. However, contractor has to design as per requirement of road in accordance with manual.

Details of Drains

Sl. No.	Design Chainage (Km)		Length (M)	Remarks
	From	To		
1	95+000	95+550	550	V-shaped PCC Drain on Hill Side
2	95+550	95+670	120	V-shaped PCC Drain on Both Sides
3	95+670	95+880	210	V-shaped PCC Drain on Hill Side
4	95+880	95+900	20	V-shaped PCC Drain on Both Sides
5	95+900	97+430	1530	V-shaped PCC Drain on Hill Side
6	97+430	97+700	270	V-shaped PCC Drain on Both Sides
7	97+700	99+350	1650	V-shaped PCC Drain on Hill Side
8	99+350	99+370	20	V-shaped PCC Drain on Both Sides
9	99+370	99+800	430	V-shaped PCC Drain on Hill Side
10	99+800	99+860	60	V-shaped PCC Drain on Both Sides
11	99+860	100+000	140	V-shaped PCC Drain on Hill Side
12	100+000	100+070	70	V-shaped PCC Drain on Both Sides
13	100+070	100+100	30	V-shaped PCC Drain on Hill Side
14	100+100	100+200	100	V-shaped PCC Drain on Both Sides
15	100+200	100+260	60	V-shaped PCC Drain on Hill Side
16	100+260	100+280	20	V-shaped PCC Drain on Both Sides
17	100+280	102+850	2570	V-shaped PCC Drain on Hill Side
18	102+850	102+950	100	V-shaped PCC Drain on Both Sides
19	102+950	103+050	100	V-shaped PCC Drain on Hill Side
20	103+050	103+080	30	V-shaped PCC Drain on Both Sides
21	103+080	107+500	4420	V-shaped PCC Drain on Hill Side
22	107+500	107+640	140	V-shaped PCC Drain on Both Sides
23	107+640	108+770	1130	V-shaped PCC Drain on Hill Side
24	108+770	108+810	40	V-shaped PCC Drain on Both Sides
25	108+810	109+480	670	V-shaped PCC Drain on Hill Side
26	109+480	111+630	2150	RCC Covered Drain on Both Sides
27	111+630	112+700	1070	RCC Covered Drain on Both Sides
28	112+700	112+950	250	RCC Covered Drain on Both Sides
29	112+950	113+420	470	RCC Covered Drain on Hill Side
30	113+420	113+840	420	RCC Covered Drain on Hill Side
31	113+840	114+250	410	RCC Covered Drain on Hill Side

Sl. No.	Design Chainage (Km)		Length (M)	Remarks
	From	To		
32	114+250	114+330	80	V-shaped PCC Drain on Both Sides
33	114+330	114+470	140	RCC Covered Drain on Hill Side
34	114+470	115+534	1064.347	RCC Covered Drain on Hill Side

*** Road side drain shall preferably be V-shaped having wetted area of 0.4 sqm**

Note: (The above locations shall be reviewed in consultation with the Authority Engineer at the time of construction as per the site condition).

7.0 DESIGN OF STRUCTURES

7.1 General

The Project road from Km. 95.000 to Km.115.534 (design chainages), includes provision of **101 box culverts.** All culverts and other structures shall be designed and constructed in accordance with section 7 of the Manual/Ministry's Standard Design and shall conform to the cross-sectional features and other details specified therein. New bridges and culverts shall be constructed wide enough to accommodate the adjacent road cross section as given in this Schedule-B. The details of existing culverts are given in Schedule–A.

The details of culverts shall be provided by the EPC Contractor. Minimum compulsory requirement of the culverts are given in Para 7.2.1 herein under.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches. Catch water pit at every culvert location shall be provided as per IRC standard and Breast wall of varying height shall also be provided at the end of catchpit along hill side to protect against hill toe erosion. All box culverts (excluding the box culverts in cushion) shall be provided with approach slabs on both sides. Moreover upstream and downstream protection works, including catch pit connecting stream with the culvert, catch pits; baffle piers/blocks etc. shall be provided which must be ascertained as per the site conditions.

Minimum no. of box culverts with Span arrangement are given herein under:

S. No.	Span (m)	No. of culverts
1	1.5	26
2	2.0	60
3	3.0	14
4	4.0	NIL
5.	5.0	1

7.2.2 **Reconstruction of existing culverts**

Minimum 101 Nos. of box culverts shall be constructed as given above in Para 7.2.1 including new, reconstruction etc.

7.2.3 Additional new culverts shall be constructed as per particulars given in the table below:
NIL

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

[Refer to paragraph 8.2.3 of the Manual and provide details]

Sl. No.	Existing Chainage (km)	Design Chainage (km)	Proposal	Proposed Span
NIL				

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

7.3 Bridges

7.3.1 The existing bridges to be reconstructed/widened

(i) The existing bridges at the following locations shall be reconstructed as new structures (Minor Bridge)

Sl. No.	Existing Chainage (KM)	Design Chainage (KM)	Proposed Span(m)	Proposed Width(m)	Remarks
NIL					

7.3.2 The following structures shall be provided with footpaths:

Sl. No.	Location (km)	Remarks
NIL		

7.3.3 **Additional New Minor Bridges**

New minor bridges at the following locations on the project highways shall be constructed in Package as per manual

Sr. No.	Designed Chainage (km)	River/ Nallah Name	Proposed Span Arrangement (m)
NIL			

7.3.4 **Additional new Major bridges**

[Specify additional new bridges if required, and attach GAD]

Sl. No.	Location Designed (km)	Total Length (m)	Remarks
NIL			

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

[Refer to paragraph 7.18 (iv) of the Manual and provide details]

Sl. No.	Location (km)	Remarks
Nil		

7.3.6 Repairs/replacements of railings/parapets of the existing bridges shall be undertaken as follows:

[Refer to paragraph 7.18 (v) of the Manual and provide details]

Sl. No.	Location (km)	Remarks
Nil		

7.3.7 Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 8.21 of the Manual

7.3.8 Structures in marine environment

[Refer to paragraph 7.22 of the Manual and specify the necessary measures / treatments for protecting structures in marine environment, where applicable]

7.4 Rail-road Bridges

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. [Refer to paragraph 8.19 of the Manual and specify modification,

if any]

7.4.2 Road over-bridges

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

Sl No.	Location of Level Crossing (km)	Length of Bridge (m)
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:

Sl No.	Location of Level Crossing (km)	Number and Length of Span (m)
Nil		

7.5 Grade Separated Structures

[Refer to paragraph 7.20 of the Manual]

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 Underpasses/Overpasses

There is no Underpass/Overpass proposed on the Project Highway.

7.7 Repairs and strengthening of bridges and structures

[Refer to paragraph 8.23 of the Manual and provide details]
The existing bridges and structures to be repaired /strengthened, and the nature and extent of repairs/strengthening required are given below:

A. Bridges

Sl No.	Location of Bridge (km)	Nature and Extent of Repairs/Strengthening to be Carried out
Nil		

B. ROB / RUB

Sl No.	Location of Bridge	Nature and Extent of Repairs/Strengthening to be Carried out

	(km)	
Nil		

C. Overpasses / Underpasses and Other Structures

Sl No.	**Location of Bridge (km)**	**Nature and Extent of Repairs/Strengthening to be Carried out**
Nil		

7.8 List of Major Bridges and Structures

The following is the list of Major Bridges on Package

Sl. No.	**Location Design (km)**	**Total Length (m)**	**Remarks**
NIL			

8.0 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

8.1 General

Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.

Specifications of the reflective sheeting [Refer to paragraph 9.3 of the Manual and specify]

Traffic signs and pavements markings shall include roadside signs, overhead signs, curve amounted signs and road marking along the Project Highway. The design and marking for the project Highway shall be as per design standards indicated in **Schedule-D** and the location for various treatments shall be finalized in consultation with the Authority Engineer and Project Company.

The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, directional arrows, diagonal/chevron markings, and Zebra crossings at parking areas.

PCC kerbs (duly painted) approximately 9628 RM (minimum) shall be provided by EPC Contractor in bus bays and Islands.

8.2 Road/Traffic Signs

(i) A complete range of permanent retro-reflective traffic signs as per the requirements defined in but not limited to the FPR, for the safe and efficient movement of traffic. These sign are to be of regulatory, warning and informatory types and placed on the roadside except at the start and

end of the project road and start and end of two bypasses where overhead directional and lane designation signs shall be mounted on the steels portals.

(ii) Temporary traffic and construction signs are to be provided during construction and maintenance operations for traffic diversion and pedestrian safety.

8.3 Pavement Marking

Retro-reflective thermoplastic paint is proposed for use.
The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, diagonal/chevron markings, Zebra crossings and at parking areas.

i) Delineators' bollards and other safety devices shall be provided on entire project Highway and other locations as directed by NHIDCL.

ii) All signs shall be the reflectorized type with high intensity retro-reflective sheeting conforming to ASTM D 4956-01, type VIII and /or type IX of micro prismatic type. All sign boards of size more than 1.2 m and less than 0.9 m shall be provided at the locations finalized in consultation with NHIDCL.

iii) Cautionary sign boards (900mm Equilateral Triangle), stop sign (900mm Octagonal) mandatory sign boards(600mm dia), Village name boards (600X900mm), Hazard Plate (300X900mm), chevron signboard (600X750mm), Facility information sign (600X800mm), Advance direction sign (1800X1200mm), Place identification sign (1200X900mm) shall be provided by the Construction Contractor with suitable interval in consultation with NHIDCL.

The minimum quantity of Traffic signages and pavement marking are tabulated here for Package

Traffic Signage's, Road Marking and other appurtenances	unit	Quantity
Road Marking on Centre line & Edge	sqm	7,093
Direction & Place Identification up to 0.9 sqm	sqm	78
Direction & Place Identification more than 0.9 sqm	sqm	3
60 cm Equilateral Triangle	Number	311
60 cm Circular	Number	32
60 cm High Octagon	Number	40
60 cm X 45 cm Rectangular	Number	60

Traffic Signage's, Road Marking and other appurtenances	unit	Quantity
60 cm X 50 cm Chevron Sign	Number	724
Hectometer Stone	Number	82
Km stone	Number	16
5th km stone	Number	4
Boundary Stone (as per clause 13 herein under)	Number	204
Road Delineators	Number	1,317
Road Marker/ Road Stud	Number	10,270
Hazard Marker	Number	204
W Type metal Crash Barrier	Rm	4,117

9.0 ROAD SIDE FURNITURE

9.1.1 Roadside furniture shall be provided in accordance with the provisions of Section 11of the Manual IRC: SP: 73-2015.

9.1.2 Overhead traffic signs: location and size

[Refer to paragraph 11.5 of the Manual and provide details]

The overhead signs shall be the reflectorized type with high intensity retro-reflective sheeting conforming to ASTM D 4956-01, type VIII and /or type IX of micro prismatic type. The retro reflected sheets of Engineering Grade and high intensity grade (ordinary) shall not be used. The height, lateral clearance, location and instillation shall be as per relevant clauses of MoRTH specifications. Overhead sign shall be installed ahead of major intersections and urban areas as per detailed design requirements. The minimum number of overhead signs shall be 02 (01 No. of gantry and 01 No. of Cantilever) as per this manual.

10.0 COMPULSORY AFFORESTATION

[Refer to paragraph 11.1 of the Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.]
Minimum 2053 nos. trees are required to be planted.

11.0 HAZARDOUS LOCATIONS

i) Metal Beam crash barrier length of minimum 4117 (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches and high embankments (3.0m and more), at sharp curves on both sides. Heavy duty metal beam crash barriers shall be provided on this project by the Construction Contractor at the locations finalized in consultation with NHIDCL. Typical details of metal crash barrier are given in as per manual.

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

Sl No.	Design Chainage (Km)		Length (m)	Remarks
	From	To		
1	95+538.38	95+605.40	68	Radius<40
2	95+702.07	95+768.77	67	Radius<40
3	95+864.51	95+933.60	70	Radius<40
4	95+933.60	96+026.88	94	Radius<40
5	97+416.09	97+451.87	36	Radius<40
6	98+487.17	98+566.34	80	Radius<40
7	101+723.96	101+805.31	82	Radius<40
8	101+805.31	101+887.12	82	Radius<40
9	105+841.25	105+887.96	47	Radius<40
10	106+246.19	106+344.93	99	Radius<40
11	109+115.86	109+201.12	86	Radius<40
12	109+308.57	109+368.52	60	Radius<40
13	109+477.91	109+520.56	43	Radius<40
14	109+535.05	109+568.08	34	Radius<40
15	109+636.31	109+662.24	26	Radius<40
16	109+805.72	109+834.92	30	Radius<40
17	109+938.26	109+987.86	50	Radius<40
18	110+009.44	110+030.26	21	Radius<40
19	110+044.64	110+061.66	18	Radius<40
20	110+082.74	110+098.83	17	Radius<40
21	110+260.38	110+278.96	19	Radius<40
22	110+294.43	110+314.40	20	Radius<40
23	110+323.10	110+339.46	17	Radius<40
24	110+529.75	110+553.91	25	Radius<40
25	110+587.29	110+636.20	49	Radius<40
26	110+676.87	110+748.88	73	Radius<40
27	110+852.76	110+893.17	41	Radius<40
28	110+929.45	110+970.61	42	Radius<40

Sl No.	Design Chainage (Km)		Length (m)	Remarks
	From	To		
29	111+005.44	111+035.39	30	Radius<40
30	111+211.64	111+223.64	12	Radius<40
31	111+268.74	111+282.14	14	Radius<40
32	111+895.98	111+942.00	47	Radius<40
33	111+963.66	111+997.15	34	Radius<40
34	112+426.37	112+469.78	44	Radius<40
35	112+632.13	112+667.67	36	Radius<40
	Total		1613	

The safety barriers, protective works shall also be provided at the hazardous location/lengths.

12.0 SPECIAL REQUIREMENT FOR HILL ROADS

In accordance with section 13 of the manual (from IRC: SP: 73-2015), IRC: SP 48-1998 and Recommended practices for Treatment of Embankment and Roadside slopes for Erosion control (First Revision), IRC: 56-2011 and relevant IRC codes.

12.1 Slope Protection

As the project involves cutting of existing hill slopes, it is imperative that slopes are stabilized for ensuring longevity of the slope and the road. Slope stability, erosion control and landslide correction shall be accomplished in accordance with IRC: SP: 48-1998. Reference may be drawn from IRC: 56-2011.

(i) The **minimum quantity** of protection work may be taken as below:

Type of Protection Work		
Protection Work	**Unit**	**Quantity**
Parapet Wall	Rm	4,622
Breast wall with PCC	Rm	4,169
Reinforced Earth/Soil Nailing/Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope	Rm	2,440
RE Wall	Rm	-
Sub surface drain with perforated pipe for collection of seepage wter to avoid sinking	Rm	824
Seeding and Mulching with Jute Net	sqm	60,486
Hydro seeding	sqm	1,04,127
Catch Water Drain (Unlined)	Rm	14,290

Note- *The Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & stabilization as per the specifications & standards stipulated in schedule 'D' and submit the same to the AE for review through the proof consultant and implement it accordingly thereafter.*

Any increase in quantity over and above the tentative qty. *as mentioned in above table or through change in specifications will not be considered as change of scope*. *Therefore contractor shall make thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.*

12.2 Rip rap Protection:

The **minimum quantity** of riprap protection or similar work to be provided at valley side shoulder in the following locations as special safety feature on valley side on curves locations detailed in para 11.0

12.3 ROAD LAND BOUNDARY (Clause 12.2 IRC SP: 73 : 2015)

Road land (ROW) boundary shall be demarcated by putting RCC boundary pillars of size 60cm x 15cm x 15 cm embedded in concrete (as per IRC:25) along the Project Highway at 200 m interval on both sides. All the components used in delineating road land boundary shall be aesthetically pleasing, sturdy and vandal proof. The road land boundary shall be demarcated in consultation with NHIDCL.

12.4 Disposal of Debris: - As per Manual

13.0 CHANGE OF SCOPE

The length of Structures, bridges, culverts and slope protection works whatsoever in terms of retaining wall, breast wall, gabion wall, RE wall, chute drain, catch pit, baffle piers/blocks etc. are under special requirement of hill slope specified hereinabove shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths and specifications in this Schedule-B shall not constitute a Change of Scope.

SCHEDULE – C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

This schedule indicates the minimum spatial and functional requirements of the facilities to be provided on the **Project Highway (Total length of 20.534 km)** with an aim to cater to the envisaged demand till the end of the concession period.

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

(a) Roadside furniture

(b) Pedestrian facilities

(c) Tree plantation

(d) Bus bays and Bus Shelters

(e) Passing Places

(f) Truck lay byes and

(g) Others to be specified

2 Description of Project Facilities

Toll Plaza

NIL

Bus Bays Shelters

To ensure orderly movement of the through traffic, bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections. The bus stops have been proposed on one side of the road.

Bus bays shall be provided on the Project Highway at 6 locations as mentioned herein under. Bus bays shall be constructed as per Manual on both sides of the Project Highway. These bus bays will also have passenger bay.

Details of Bus Shelters

Sl. No.	Project Facility (in Pair)	Design Chainage (km)
1	Bus Shelter	95+600
2	Bus Shelter	97+900
3	Bus Shelter	103+100
4	Bus Shelter	107+500
5	Bus Shelter	112+200
6	Bus Shelter	112+900

Pedestrian Facilities

Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL. This should include (a) minimum Zebra Crossing with flashing Beacon or (b) Zebra Crossing with separate pedestrian phase or (c) any other provision as approved by NHIDCL.

Landscaping

Landscape treatment of the Project Highway shall be undertaken through planting of trees and ground cover of appropriate varieties and landscaping on surplus land in the ROW. The Construction Contractor should plant at least 20534 nos. of trees o with tree guard made up of MS sections.

Plantation scheme shall be prepared in consultation with the Forest Department of the Government of Nagaland, and the Independent Consultant/ NHIDCL.

Environment

The Project Highway during design, construction and maintenance during implementation period shall conform to the environmental rules and regulations in force. The Construction Contractor shall be responsible for the same.

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 confirm to design requirements set out in the following documents:

Two Lane Manual (IRC: SP 73 – 2015) of Specifications and Standards for Two Laning published by IRC and Hill Road Manual IRC SP 48:1998

Annex – I
(Schedule – D)

Specifications and Standards for Construction

1 Specifications and Standards

All materials, works and construction operations shall confirm to the Two Lane Manual (IRC: SP 73 – 2015) of Specifications and Standards for Two Laning (IRC: SP: 73 – 2015), referred as the Two Lane Manual (IRC: SP: 73 – 2015), and MORTH Specifications for Road and Bridge Works Works (Fifth Edition) with upto date amendments/modifications/additions, IRC: SP: 48-1998 and IRC 56-2011. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

2.1 The terms 'Concessionaire', 'Independent Engineer' and 'Concession Agreement' used in the Two Lane Manual (IRC: SP 73- 2015) shall be deemed to be substituted by the terms **'Contractor', 'Authority's Engineer' and 'Agreement'** respectively.

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

S. No.	Clause	Provision as per Manual (IRC:SP:73-2015)	Modified Provision
1	2.2	**Design Speed:** Ruling or minimum Design speed shall be followed	Design speed shall be 30 km/h for project highway excepting hair pin bend locations wherein design speed shall be 20 km/h. The same is mentioned in the Plan & Profile drawings given in **Annexure-III** of **Schedule A.**
2	2.7.2	**Roadway Width:** On horizontal curves with radius up to 300 m width of pavement and roadway shall be increased as per Table 2.4	On horizontal Curves with radius up to 300 m width of pavement and roadway shall be increased as per Plan & Profile drawings given in **Annexure – III of Schedule A**
3	2.9.4	**Radius of Horizontal Curves:**	Radius of Horizontal curves shall be as per the alignment plan shown in Plan & Profile drawings given in **Annexure-III**

S. No.	Clause	Provision as per Manual (IRC:SP:73-2015)	Modified Provision
			of **Schedule A.**
4	7.3 (ii)	**New Bridges:**	The minimum width of footpath clear of crash barrier and railings shall be 1.3 m as detailed in GAD drawings for Bridges as per **Annexure-III** of **Schedule A**.

2.3 The section of the road from Design Chainages Km. 109+460 to Km. 112+330 (Design Length-2.870 Km) is a region of no geometric improvement.

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1 **Maintenance Requirements**

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

1.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

1.3 All Materials, works and construction operations shall conform to the 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.

2 **Repair/rectification of Defects and deficiencies**

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annex - I of this Schedule-E within the time limit set forth therein.

3 **Other Defects and deficiencies**

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4 **Extension of time limit**

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in

conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5 **Emergency repairs/restoration**

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project Highway poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

6 **Daily inspection by the Contractor**

The Contractor shall, through its engineer, undertake a daily visual inspection of the Project Highway and maintain a record thereof in a register to be kept in such form and manner as the Authority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP : 35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

Annex - I
(Schedule -E)

Repair/rectification of Defects and deficiencies

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

Nature of Defects or deficiency		Time limit for repair/rectification
Roads		
a	**Carriageway and Hard shoulders**	
I	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
II	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
III	Pot holes	24 hours
IV	Any cracks in road surface	15(fifteen) days
V	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
VI	Bleeding/skidding	7 (seven) days
VII	Any other defect/ distress on the road	15(fifteen) days
VIII	Damage to pavement edges	15(fifteen) days
IX	Removal of debris, dead animals	6 hours

Nature of Defects 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
Nature of defects or deficiency		**Time limit for repair/rectificaation**
II	Edge drop at shoulders exceeding 40mm	7 (seven) days
III	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
IV	Rain cuts/gullies in slope	7 (seven) days
V	Damage to or silting of culverts and side drains	7 (seven) days
VI	Desilting of drains in urban/semi-urban areas	24 hours
VII	Railing, parapets, crash barrier	7 (seven) days (restore immediately if causing safety hazard.
c	**Road side furniture including road sign and pavement marking**	

Nature of Defects or deficiency		Time limit for repair/rectification
I	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
II	Painting of km stone, railing, parapets/crash barrier	As and when required /once every year
III	Damaged/missing road signs 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 hours
II	Faults and minor failures	8 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 hours
II	Removal of fallen trees from carriageway	4 hours
III	Deterioration in health of trees and bushes	Timely watering and treatment
IV	Trees and bushes requiring replacement	30 (thirty) days

Nature of Defects or deficiency		Time limit for repair/rectification
V	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
f	**Rest Area**	
I	Cleaning of toilets	Every 4 hours
II	Defects in electrical, water and sanitary installations	24 hours
g	**Toll Plazas**	
h	**Other project facilities and approach roads**	
I	Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus -bays, 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 crane	4 (Four) hours
BRIDGES		
a	**Superstructures**	
I	Any damage, cracks, spalling/scaling	

Nature of Defects or deficiency		Time limit for repair/rectification
	Temporary measures Permanent measures	within 48 hours within 15 (fifteen) days or as specified by the Authority's Engineer
b	**Foundation**	
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	**Bearing (metallic) of bridges**	
I	Deformation, damages, tilting or shifting of bearings	14 (fifteen) days Greasing of metallic bearings once in a year
e	**Joints**	
I	Malfunctioning of joints	15 (fifteen) days
f	**Other items**	
I	Deforming of pads in elastomeric bearings	7 (seven) days
II	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days

Nature of Defects or deficiency		Time limit for repair/rectification
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 3.1.7(a))

APPLICABLE PERMITS

1 **Applicable Permits**

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

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

2. The agency need to ensure compliance of AIP and FC stated in schedules 'A' Annexure – IV. The necessary certifications need to be obtained from competent local forest department.

3. Muck dumping locations in forest area to be freezed in consultation with the forest department, the necessary certifications from local competent forest department is to be submitted.

SCHEDULE - G

(See Clauses 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I
(See Clause 7.1.1)
[Performance Security/Additional Performance Security]

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

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called the "Contractor") and National Highways and Infrastructure Development Corporation Ltd. , (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the construction of **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"** subject to and in accordance with the provisions of the Agreement

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

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

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first

written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

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

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

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

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

the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

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

8. The Guarantee shall cease to be in force and effect on ……[$]. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

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

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

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

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

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

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below: -

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and 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.

Annex – II
(Schedule - G)
(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") has executed an agreement (hereinafter called the "Agreement") with the National Highways and Infrastructure Development Corporation Ltd., (hereinafter called the "Authority") for the "**Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A**" subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the "Retention Money") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways Authority of India, that the Contractor has committed default in the due and faithful performance of all or any of its obligations

for under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

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

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in

force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

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

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

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

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

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and 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:

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

(iv) 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,
National Highways & Infrastructural Development Corporation Ltd.
PTI Building, 3rd Floor,
4, Parliament Street
New Delhi - 110001

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") has executed an agreement (hereinafter called the "Agreement") with the National Highways and Infrastructure Corporation Ltd., (hereinafter called the "Authority") for the **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"**, subject to and in accordance with the provisions of the Agreement

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

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

(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 General Manager in the National Highways Authority of India, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the

Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

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

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

8. The Guarantee shall cease to be in force and effect on ****.[$] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.

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

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

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to

have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

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

12. This guarantee shall also be operatable at our…….. Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and 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.

SCHEDULE – H

(See Clauses 10.1.4 and 19.3)

Contract Price Weightages

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

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

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE OF PAYMENT	PERCENTAGE WEIGHTAGE	PERCENTAGE WEIGHTAGE vis a vis OVERALL PROJECT
1	2	3	4	5
Road works including Culverts, widening and Repair of Culverts.	**64.02%**	***A- Widening and strengthening of existing road***		
		(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	13.57%	8.69%
		(2) Sub-Base Course.	5.95%	3.81%
		(3) Non Bituminous Base Course.	11.43%	7.32%
		(4) Bituminous Base Course	7.79%	4.99%
		(5) Wearing Coat.	5.01%	3.21%
		(6) Widening and repair of culverts	0.00%	0.00%
		(7) Hard Shoulder	1.08%	0.69%
		B.1- Reconstruction/New 2lane realignment/bypass (Flexible pavement)		
		(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	11.84%	7.58%
		(2) Sub-Base Course.	1.62%	1.04%
		(3) Non Bituminous Base Course.	3.11%	1.99%
		(4) Bituminous Base Course	1.80%	1.15%
		(5) Wearing Coat.	1.16%	0.74%
		(6) Hard Shoulder	0.30%	0.19%
		B.2- Reconstruction/New 2lane realignment/bypass (Rigid pavement)		
		(1) Earthwork upto top of the Sub-	0.00%	0.00%

		grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.		
		(2) Sub-Base Course.	0.00%	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%	0.00%
		C.1-Reconstruction /New Service road (Flexible Pavement)		
		(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	0.00%	0.00%
		(2) Sub-Base Course.	0.00%	0.00%
		(3) Non Bituminous Base Course.	0.00%	0.00%
		(4) Bituminous Base Course	0.00%	0.00%
		(5) Wearing Coat.	0.00%	0.00%
		C.2-Reconstruction /New Service road (Rigid Pavement)		
		(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	0.00%	0.00%
		(2) Sub-Base Course.	0.00%	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%	0.00%
		D-Re-construction and New culverts on existing road, realignment, bypasses.		
		(1) Culverts (Length < 6m)	35.33%	22.62%
Minor Bridges /Underpasses/ Overpasses	**0.00%**	***A.1-Widening and Repair of Minor Bridges (length>6m and <60m)***		
		(1) Minor Bridges	0.00%	0.00%
		A.2-New Minor Bridges (length >6m and <60m)		
		(1) **Foundation + Sub Structure** : On completion of the foundation work including foundation for wing and return walls, abutments, piers up to the abutment/pier cap	0.00%	0.00%

		(2) **Super Structure**: On completion of the super structure in all respects including wearing coat, bearing, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. Complete in all respect.	0.00%	0.00%
		(3) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	0.00%
		(4) **Guide Bunds and River Training Works**: On completion of Guide Bunds and river Training works complete in all respects.	0.00%	0.00%
		B.1-Widening and Repair of underpasses/overpasses		
		(1) Underpasses / Overpasses	0.00%	0.00%
		B.2-New Underpasses / Overpasses		
		(1) **Foundation + Sub Structure** : On completion of the foundation work including foundation for wing and return walls, abutments, piers upto the abutment/pier cap	0.00%	0.00%
		(2) **Super Structure**: On completion of the super structure in all respects including wearing coat, bearing, 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 facility complete in all respects as specified.	0.00%	0.00%
		(3) **Approaches**: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	0.00%
Major Bridge (length >60m works and ROB/RUB/elevated sections	**0.00%**	**A.1-Widening and repairs of Major Bridges**		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%

/flyovers including vaiducts, if any		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion joints	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road marking etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%
		(7) Guide Bunds, River Training works etc	0.00%	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		A.2-New Major Bridges		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion joints	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road marking etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%
		(7) Guide Bunds, River Training works etc	0.00%	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%
		B.1-Widening and Repair of ***(a) ROB*** ***(b) RUB***		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%
		(7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	0.00%

		B.2-New ROB/RUB ***(a) ROB*** ***(b) RUB***		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%
		(7) Approaches (including Retaining walls/Reinforced earth wall, stone pitching and protection works)	0.00%	0.00%
		C.1-Widening and repair of Elevated Section/Flyovers/Grade Separators		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion joints	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	0.00%
		C.2-New Elevated Section/Flyovers/Grade Separators		
		(1) Foundation	0.00%	0.00%
		(2) Sub-structure	0.00%	0.00%
		(3) Super-structure (including bearings)	0.00%	0.00%
		(4) Wearing Coat including expansion joints	0.00%	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	0.00%
		(6) wing walls/return walls	0.00%	0.00%

		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00%	0.00%
Other Works	**35.98%**			
		(i)Toll Plaza	0.00%	0.00%
		(ii)Road side drain	36.85%	13.26%
		(iii) Road signs, marking, Km stones, Safety devices etc.		
		(a) Pavement Marking	3.97%	1.43%
		(b) Crash Barrier/ W metal crash Barrier	2.67%	0.96%
		(c) Traffic Sign	1.28%	0.46%
		(d) Road Boundary stone, km Stone, 5th km stone and hectometre stone	0.08%	0.03%
		(e) Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	4.36%	1.57%
		(f) Traffic impact Attenuators at Abutments and Piers traffic island	0.00%	0.00%
		(g) Road furniture (overhead signboard etc.)	0.11%	0.04%
		(h) Others including construction of median & median kerb with channel, paint, rumble strip, roadside plantation etc.	2.22%	0.80%
		(iv)Project facilities	0.00%	0.00%
		(a)Bus bays & Bus Shelter	1.03%	0.37%
		(b)Truck lay-byes	0.00%	0.00%
		(c,) Rest areas	0.00%	0.00%
		(d) Others	0.00%	0.00%
		(e) Junctions (Major & Minor)	7.89%	2.84%
		(v) Road side Plantation	0.00%	0.00%
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs /RUBs	0.00%	0.00%
		(vii) Safety and traffic management during construction	0.00%	0.00%
		(viii) Slope Protection Works as special requirement for hill road	0.00%	
		(a) Hydro Seeding of Cut Slopes in Soil	0.36%	0.13%
		(b)Seeding and Mulching with Jute net all along the perpetual slide locations	3.78%	1.36%

		(c) Catch water Drain	0.17%	0.06%
		(d) Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope	14.76%	5.31%
		(e) Reinforced earth wall	0.00%	0.00%
		(e) Breast wall	18.87%	6.79%
		(f) Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking of pavement	0.08%	0.03%
		(g) Parapet wall	1.50%	0.54%
		(h) Toe wall	0.00%	0.00%
		Total %		**100.00%**

1.3 Procedure of estimating the value of work done.

1.3.1 Road works

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

TABLE 1.3.1		
STAGE OF PAYMENT	**PERCENTAGE WEIGHTAGE**	**PAYMENT PROCEDURE**
A- Widening and strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length. Further, If existing road length (excluding bypasses, re-alignment, structure) is say 'L' Km and the unencumbered length along the existing road as handed over on the appointed date is 'L1' Km and the balance length i.e. 'L2' Km (L-L1) is to be handed over on a later date as per the memorandum signed under provision of clause 8.2.1 of the contract document, then the stage payment shall be worked out for the 'L1' Km length handed over on the appointed date. The stage payment for the remaining 'L2' Km shall be worked out on prorate basis from the date of handing over of such length.
(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	8.69%	
(2) Sub-Base Course.	3.81%	
(3) Non Bituminous Base Course.	7.32%	
(4) Bituminous Base Course	4.99%	
(5) Wearing Coat.	3.21%	
(6) Widening and repair of culverts	0.00%	Cost of completed culverts shall be determined pro rate basis with respect to the total no. of culverts. The payment shall be made on the completion of at least five culverts.
(7) Hard Shoulder	0.69%	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 10 (ten) percent of the total length. Further, If existing road length (excluding bypasses, re-alignment, structure) is say 'L' Km and the unencumbered length along the existing road as handed over on the

		appointed date is 'L1' Km and the balance length i.e. 'L2' Km (L-L1) is to be handed over on a later date as per the memorandum signed under provision of clause 8.2.1 of the contract document, then the stage payment shall be worked out for the 'L1' Km length handed over on the appointed date. The stage payment for the remaining 'L2' Km shall be worked out on prorate basis from the date of handing over of such length.
B.1- Reconstruction/New 2lane realignment/bypass (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) Km. length, whichever is less. Further, Unit of Measurement is linear length of each Bypass/ realignment (excluding structures) and payment of each stage shall be made on prorate basis on completion of a stage in full length or 5 (Five) Km length of each bypass/ realignment taken separately.
(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	7.58%	
(2) Sub-Base Course.	1.04%	
(3) Non Bituminous Base Course.	1.99%	
(4) Bituminous Base Course	1.15%	
(5) Wearing Coat.	0.74%	
(6) Hard Shoulder	0.19%	
B.2- Reconstruction/New 2lane realignment/bypass (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rate basis on completion of a stage in full length or 5(five) km. length, whichever is less. Further, Unit of Measurement is linear length of each Bypass/ realignment (excluding structures) and payment of each stage shall be made on prorate basis on completion of a stage in full length or 5 (Five) Km length of each bypass/ realignment taken separately.
(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	0.00%	
(2) Sub-Base Course.	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
C.1-Reconstruction /New Service road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rate basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing	0.00%	

with required site clearance etc.		
(2) Sub-Base Course.	0.00%	
(3) Non Bituminous Base Course.	0.00%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat.	0.00%	
C.2-Reconstruction /New Service road (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rate basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork upto top of the Sub-grade including excavation in soil, soft rock and hard rock including clearing & grubbing with required site clearance etc.	0.00%	
(2) Sub-Base Course.	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
D-Re-construction and New culverts on existing road, realignment, bypasses.		Cost of each culvert shall be determined on pro rate basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts.
(1) Culverts (Length < 6m)	22.62%	

@. For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:
Cost per km = P x weightage for road work x weightage for bituminous work x (1/L)

Where P= Contract Price

L = Total length in km

Similarly, the rates per km for stages shall be worked out accordingly.

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

1.3.2 Minor Bridge and Underpasses/Overpasses

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

TABLE 1.3.2		
STAGE OF PAYMENT	**PERCENTAGE WEIGHTAGE**	**PAYMENT PROCEDURE**
A.1-Widening and Repair of Minor Bridges (length>6m and <60m)	0.00%	Cost of each minor bridge shall be determined on pro rate basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
A.2-New Minor Bridges (length >6m and <60m)		
(i) **Foundation + Sub Structure** : On completion of the foundation work including foundation for wing and return walls, abutments, piers upto the abutment/pier cap	0.00%	(i) **Foundation + Sub Structure** : Cost of each minor bridge shall be determined on pro rate basis with respect to the total linear length(m) of the minor bridges. Payment against foundation + sub structure shall be made on pro rate basis on completion of a stage i.e not less than 25% of the scope of foundation + sub structure of each bridge subject to completion of at least two foundations along with sub structure up to abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) **Super Structure** : On completion of the super structures in all respects including wearing coat, bearing, expansion joint, hand rail, crash barriers, road signs & markings, tests on completion etc. Complete in all respect.	0.00%	(ii) **Super Structure**: Payment shall be made on pro rate basis on completion of a stage i.e completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub clause.
(iii) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	(iii) **Approaches**: Payment shall be made on pro rate 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.
(iv) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training works complete in all respects.	0.00%	(iv) **Guide Bunds and River Training Works**: Payment shall be made on pro rate basis on completion of a stage i.e completion of Guide Bunds and River Training Works in all respects as specified.

B.1-Widening and Repair of underpasses/ overpasses	0.00%	Cost of each underpass/overpass shall be determined on pro rate 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 foundation for wing and return walls, abutments, piers up to the abutment/pier cap	0.00%	(i) **Foundation + Sub Structure :** Cost of each Underpass/Overpass shall be determined on pro rate basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation + sub structure shall be made on pro rate basis on completion of a stage i.e not less than 25% of the scope of foundation + sub structure of each underpasses/overpasses subject to completion of at least two foundation along with sub structure up to abutment/pier cap level each underpass/overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) **Super Structure** : On completion of the super structures in all respects including wearing coat, bearing, expansion joint, hand rail, crash barriers, road signs & marking, 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 facility complete in all respects as specified as specified.	0.00%	(ii) **Super Structure:** Payment shall be made on pro rate basis on completion of a stage I,e completion of super structure of at least one span in all respects as specified in the column of " Stage of Payment" in this sub clause.
(iii) **Approaches**: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	(iii) **Approaches**: Payment shall be made on pro rate basis on completion of 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 and Structures shall be as stated in table **1.3.3**:

TABLE 1.3.3		
STAGE OF PAYMENT	**PERCENTAGE WEIGHTAGE**	**PAYMENT PROCEDURE**
A.1-Widening and repairs of Major Bridges		
(i) Foundation	0.00%	(i) **Foundation:** Cost of each Major Bridge shall be determined on pro rate basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro rate basis on completion of a stage i.e not less than 25% of the scope of foundation of the major bridge subject to completion of atleast two foundation of the Major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub Structure** : Payment against Sub Structure shall be made on pro rate 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 structure of abutment/piers upto abutment/pier cap level of the major bridge.
(iii) Super-structure (including bearings)	0.00%	(iii) **Super Structure**: Payment shall be made pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints	0.00%	(iv) **Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joint complete in all respects as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	(v) **Miscellaneous** : Payment shall be made on completion of miscellaneous work like hand rail, crash barriers, road marking etc. complete in all respect as specified.
(vi) wing walls/return walls	0.00%	(vi) **Wing walls/return walls**: Payments shall be made on completion of wing walls/return walls complete in all respects as specified.
(vii) Guide Bunds, River Training works etc	0.00%	(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 (including Retaining walls, stone pitching and protection works)	0.00%	(viii) **Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respect as specified.
A.2-New Major Bridges		
(i) Foundation	0.00%	(i) **Foundation**: Cost of each Major Bridge shall be determined on pro rate basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro rate basis on completion of stage i.e not less than 25% of the scope of foundation of the major bridge subject to completion of at least two foundation of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub Structure**: Payment against Sub-structure shall be made on pro rate basis on completion of a stage i.e not less than 25% of scope of sub structure of the major bridge subject to completion of atlest two sub structure of abutment/piers upto abutment/pier cal level of the major bridge.
(iii) Super-structure (including bearings)	0.00%	(iii) **Sup Structure** : Payment shall be be made on pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	(iv) **Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joint complete in all respects as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	(v) **Miscellaneous** : Payment shall be made on completion of all miscellaneous work like hand rail, crash barriers, road marking etc. Complete in all respects as specified.
(vi) wing walls/return walls	0.00%	(vi) **Wing walls/Return walls :** Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide Bunds, River Training works etc	0.00%	(vii) **Guide Bunds, River Training works** : Payment shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(viii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc complete in all respects as specified.
B.1-Widening and Repair of **(a) ROB** **(b) RUB**		
(i) Foundation	0.00%	(i) **Foundation**: Cost of each ROB/RUB shall be determined on pro rate basis with respect to the total

		liner length (m) of the ROBs/RUBs. Payment foundation shall be made on pro rate 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 at least two foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub Structure**: Payment against sub structure shall be made on pro rate 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 structure of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii) Super-structure (including bearings)	0.00%	(iii) **Super Structure** : Payment shall be made on pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respects as specified.
(iv) Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified as specified	0.00%	(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 including drainage facility complete in all respects as specified as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	(v) **Miscellaneous**: Payment shall be made on completion of all miscellaneous work like hand rail, crash barriers, road marking etc. Complete in all respects as specified.
(vi) wing walls/return walls	0.00%	(vi) **Wing walls/return walls**: Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc complete in all respect as specified.

B.2-New ROB/RUB **(a) ROB** **(b) RUB**		
(i) Foundation	0.00%	(i) **Foundation**: Cost of each ROB/RUB shall be determined on pro rate basis with respect to the total liner length (m) of the ROBs/RUBs. Payment foundation shall be made on pro rate 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 foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub Structure** : Payment against sub structure shall be made on pro rate 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 structure of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii) Super-structure (including bearings)	0.00%	(iii) **Super Structure**: Payment shall be made on pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respects as specified.
(iv) Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified as specified	0.00%	(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 including drainage facility complete in all respects as specified as specified.
(v) Miscellaneous items like hand rails, crash barriers, road marking etc	0.00%	(v) **Miscellaneous** : Payment shall be made on completion of all miscellaneous work like hand rail, crash barriers, road marking etc. Complete in all respects as specified.
(vi) wing wall/return walls	0.00%	(vi) **Wing walls/return walls** : Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection work	0.00%	(vii) **Approaches** : Payment shall be made on completion of both approaches including stone pitching, protection works, etc complete in all respect as specified.

C.1-Widening and repairs of Elevated Section/Flyovers/Grade Separators		
(i) Foundation	0.00%	(i) **Foundation** : Cost of each structure shall be determined on pro rate basis with respect to the total liner length (m) of the structure Payment against foundation shall be made on pro rate 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 foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	0.00%	(ii) **Sub Structure** : Payment against sub structure shall be made on pro rate 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 structure of abutments/piers upto abutment/pier cap level of the structure.
(iii) Super-structure (including bearings)	0.00%	(iii) **Super Structure**: Payment shall be made on pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	(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 marking etc	0.00%	(v) **Miscellaneous**: Payment shall be made on completion of all miscellaneous work like hand rail, crash barriers, road marking etc. Complete in all respects as specified.
(vi) wing wall/return walls	0.00%	(vi) **Wing walls/return walls**: Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection work)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc complete in all respect as specified.
C.2-New Elevated Section/Flyovers/Grade Separators		
(i) Foundation	0.00%	(i) **Foundation**: Cost of each structure shall be determined on pro rate basis with respect to the total liner length (m) of the structure Payment against foundation shall be made on pro rate 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 foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(ii) Sub-structure	0.00%	(ii) **Sub Structure** : Payment against sub structure shall be made on pro rate 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 structure of abutments/piers upto abutment/pier cap level of the structure.
(iii) Super-structure (including bearings)	0.00%	(iii) **Super Structure** : Payment shall be made on pro rate basis on completion of a stage i.e completion of super structure including bearing of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.00%	(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 marking etc	0.00%	(v) **Miscellaneous**: Payment shall be made on completion of all miscellaneous work like hand rail, crash barriers, road marking etc. Complete in all respects as specified.
(vi) wing wall/return walls	0.00%	(vi) **Wing walls/return walls** : Payment shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection work)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc complete in all respect as specified.

Note: (1) In case of innovate Major Bridge projects like cable suspension/cable stayed/Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of DG (RD) & SS, MoRT&H.

Note: (2) The Schedule for exclusive tunnel project may be prepared as per site requirement before bidding with due approval of DG (RD) & SS, MoRT&H

1.3.4 Others works

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

TABLE 1.3.4		
STAGE OF PAYMENT	**PERCENTAGE WEIGHTAGE**	**PAYMENT PROCEDURE**
(i)Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rate basis with respect to the total of all toll plazas.
(ii)Road side drain	13.26%	Unit of measurement is linear length in Km. Payment shall be made on pro rate basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(iii) Road signs, marking, Km stones, Safety devices etc.		
(a) Pavement Marking	1.43%	
(b) Crash Barrier/ W metal crash Barrier	0.96%	
(c) Traffic Sign	0.46%	
(d) Road Boundary stone, km Stone, 5th km stone and hectometre stone	0.03%	
(e) Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	1.57%	
(f) Traffic impact Attenuators at Abutments and Piers traffic island	0.00%	
(g) Road furniture (overhead signboard etc.)	0.04%	
(h) Others including construction of median & median kerb with channel, paint, rumble strip, roadside plantation etc.	0.80%	
(iv)Project facilities	0.00%	Payment shall be made on pro rate basis for completed facilities.
(a)Bus bays & Bus Shelter	0.37%	
(b)Truck lay-byes	0.00%	
(c,) Rest areas	0.00%	
(d) Others	0.00%	
(e) Junctions (Major & Minor)	2.84%	
(v) Road side Plantation	0.00%	Unit of measurement is linear length. Payment shall be made on pro rate basis on completion of a

(vi) Repair of protection works other than approaches to the bridges elevated section/flyovers/grade separators and ROBs/RUBs	0.00%	stage in a length of not less than 10% (ten per cent) of the total length.
(vii) Safety and traffic management during construction	0.00%	Payment shall be made on pro rate basis every six month.
(viii) Slope Protection Works as special requirement for hill road		Unit of measurement is linear length in Km. Payment shall be made on pro rate basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(a)Hydro Seeding of Cut Slopes in Soil	0.13%	
(b)Seeding and Mulching with Jute net all along the perpetual slide locations	1.36%	
(c) Catch water Drain	0.06%	
(d) Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope	5.31%	
(e) Reinforced earth wall	0.00%	
(e) Breast wall	6.79%	
(f) Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking of pavement	0.03%	
(g) Parapet wall	0.54%	
(h) Toe wall	0.00%	

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 installment in accordance with the provisions of Clause 19.7

(See Clause 10.2.4)

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

[Note : The Contractor is required to furnish all the drawings as per the manual and clause 10.2]

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. Further, Ministry circular no. RW/NH-39013/23/2015/NHDP-IVA dated-16.08.2017 shall constitute a part of Contract Agreement.

2 **Project Milestone-I**

2.1 Project Milestone-I shall occur on the date falling on the 180th (one hundred and eightieth) 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 550th (Five hundred and fiftieth) day from the Appointed Date (the "Project Milestone-II").

3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 40% (Fourty per cent) of the Contract Price.

4 **Project Milestone-III**

4.1 Project Milestone-III shall occur on the date falling on the 915th (Nine hundred and fifteenth) day from the Appointed Date (the "Project Milestone- III").

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

5 **Scheduled Completion Date**

5.1 The Scheduled Completion Date shall occur on the 1095th (one thousand ninety fifth) day from the Appointed Date.

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

6 **Extension of time**

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

SCHEDULE – K
(See Clause 12.1.2)
Tests on Completion

1 **Schedule for Tests**

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

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

2 **Tests**

2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include all the tests required for quality control or as decided in consultation with the Authority's Engineer at the time of physical tests as per relevant IRC code Manual .

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

2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on 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) metres or more shall also be subjected to load testing.

2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for

determining the compliance of the Project Highway with Specifications and Standards.

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

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

3 **Agency for conducting Tests**

The Authority's Engineer or such other agency or person shall conduct all Tests set forth in this Schedule-K as it may specify in consultation with the Authority.

4 **Completion Certificate**

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

SCHEDULE - L
(See Clause 12.2 and 12.4)
PROVISIONAL CERTIFICATE

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ……. (the "Agreement"), for **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"** 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 undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

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

3 In view of the foregoing, I am satisfied that the **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"**, can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the …… day of …….. 20…...

ACCEPTED, SIGNED, SEALED	SIGNED, SEALED and
And DELIVERED	DELIVERED
For and on behalf of	For and on behalf of
CONTRACTOR by:	AUTHORITY ENGINEER
by:	

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 **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"** on Engineering, Procurement and Construction (EPC) basis through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE - M
(See Clauses 14.6, 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

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 deductions 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:

Sl No	Item/Defect/Deficiency	Percentage (%)
a	**Carriageway/Pavement**	
I	Potholes, cracks, other surface defects	15
II	Repair of edges, rutting	5
b	**Road, Embankment, Cuttings,Shoulders**	
I	Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions	10
II	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5
c	**Bridges and Culverts**	

Sl No	Item/Defect/Deficiency	Percentage (%)
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

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

R=P/IOO x M x L1/L
Where P = Percentage of particular item/Defect/deficiency for deduction

M = Monthly lump-sum payment in accordance with the Bid

L1 = Non-complying Length

L = Total length of the road

R = Reduction (the amount to be deducted for non-compliance for a particular item/Defect/deficiency)

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

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

SCHEDULE - N
(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 **Selection of Authority's Engineer**

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

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

2 **Terms of Reference**

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

3 **Appointment of Government entity as Authority's Engineer**

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annex – I
(Schedule - N)
TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

1 **Scope**

1.1 These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "Agreement), which has been entered into between the National Highways and Infrastructure Development Corporation Ltd. (the "Authority") and ..... (the "Contractor") for the **"Construction of two-Lane with hard shoulders of Chakabama – Zunheboto Road on EPC basis from existing Km 100.345 to Km 122.250 [Design Km. 95+000 to Km. 115+534] (Design Length –20.534 Km) in the state of Nagaland under SARDP-NE Phase A"**, on Engineering, Procurement, Construction (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 Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

(a) any Time Extension;

(b) any additional cost to be paid by the Authority to the Contractor;

(c) the Termination Payment; or

(d) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

3.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.

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

3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4 **Construction Period**

4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or

otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto.

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

4.5 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

4.7 The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the

Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

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

4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

5.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

5.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

5.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule-E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any

deviation or deterioration beyond the permissible limit.

5.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 **Determination of costs and time**

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

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

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

7. Payments

7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).

7.2 Authority's Engineer shall -

(a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

7.4 The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

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

9 **Miscellaneous**

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

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

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

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

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

SCHEDULE - O

(*See Clauses 19.4.1, 19.6.1, and 19.8.1*)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

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

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

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

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

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

(f) Deductions:

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

except taxes;

(ii) Any amount towards deduction of taxes; and

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

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor up to 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 of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) Insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from 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 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 be not less than the project cost.

3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:

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

(b) Damage which is 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.