Schedules

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 TheSite

(i) Site of the [Two-Lane] Project Highway shall include the land, buildings, structures and road works as described in Annex-I of thisSchedule-A.

(ii) Thedatesof handing over the Right ofWay to theContractorare specified in Annex-II of thisSchedule-A.

(i) AninventoryoftheSiteincludingtheland,buildings,structures,roadworks, trees andanyotherimmovablepropertyon, orattachedto, theSiteshallbeprepared jointlybytheAuthorityRepresentativeandtheContractor,andsuchinventoryshall form partof the memorandum referredto in Clause8.2 (i) of this Agreement.

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

(v) The status of the environment clearances obtained orawaitedisgiven in Annex-IV.

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

(ii) Site of the [Two-Lane] Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

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

(iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor,and such inventory shall form part of the memorandum referred to in Clause8.2 (i) of this Agreement.

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

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

Annex –I

(Schedule-A)

Site

[Note: Through suitable drawings and description in wards, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-I. All the chainages/location referred to in Annex-I to Schedule-A shall be existing chainages.]

1. Site

The project road starts at Beltoli (junction with SH-5) near Bilasipura and ends at Airport Junction (VIP Chowk) in Guwahati. The total length of the existing road stretch is 215.578 km (As per topographic survey). The PKG-10 of the project road section starts afterMilmilaR.F(before Chayagaon Market) and ends at approach of Airport Junction (VIP Chowk)(Ex.Ch. 177.372km to Ex.Ch.203.783km).The Design length of the PKG-10 comes out as 27.316 km (Design Ch. 173.434km to Ch. 200.750km).The package comes under Kamrup Rural &Kamrup Metrodistrictsof Assam.

The land, carriageway and structures comprising the Site are described below.

2. Land

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

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
1	177.372	177.450	173.434	173.522	6	6	12
2	177.450	177.500	173.522	173.572	6	7	13
3	177.500	177.550	173.572	173.622	6	6	12
4	177.550	177.600	173.622	173.672	6	6	12
5	177.600	177.650	173.672	173.722	6	6	12
6	177.650	177.700	173.722	173.772	6	6	12
7	177.700	177.750	173.772	173.822	6	6	12
8	177.750	177.800	173.822	173.872	5	5	10
9	177.800	177.850	173.872	173.922	5	6	11
10	177.850	177.900	173.922	173.972	6	6	12
11	177.900	177.950	173.972	174.022	6	6	12
12	177.950	178.000	174.022	174.072	6	7	13
13	178.000	178.050	174.072	174.122	6	7	13
14	178.050	178.100	174.122	174.172	6	7	13
15	178.100	178.150	174.172	174.222	6	7	13
16	178.150	178.200	174.222	174.272	6	7	13
17	178.200	178.250	174.272	174.322	6	7	13
18	178.250	178.300	174.322	174.372	6	7	13
19	178.300	178.350	174.372	174.422	6	7	13
20	178.350	178.400	174.422	174.472	6	7	13
21	178.400	178.450	174.472	174.522	7	7	14

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
22	178.450	178.500	174.522	174.572	7	6	13
23	178.500	178.550	174.572	174.622	6	6	12
24	178.550	178.600	174.622	174.672	6	6	12
25	178.600	178.650	174.672	174.722	6	6	12
26	178.650	178.700	174.722	174.772	6	6	12
27	178.700	178.750	174.772	174.822	6	6	12
28	178.750	178.800	174.822	174.872	7	6	13
29	178.800	178.850	174.872	174.922	7	8	15
30	178.850	178.900	174.922	174.972	7	8	15
31	178.900	178.950	174.972	175.022	7	8	15
32	178.950	179.000	175.022	175.072	7	7	14
33	179.000	179.050	175.072	175.122	7	7	14
34	179.050	179.100	175.122	175.172	7	7	14
35	179.100	179.150	175.172	175.222	7	7	14
36	179.150	179.200	175.222	175.272	7	6	13
37	179.200	179.250	175.272	175.322	7	7	14
38	179.250	179.300	175.322	175.372	7	7	14
39	179.300	179.350	175.372	175.422	7	7	14
40	179.350	179.400	175.422	175.472	7	6	13
41	179.400	179.450	175.472	175.522	7	7	14
42	179.450	179.500	175.522	175.572	7	7	14
43	179.500	179.550	175.572	175.622	8	7	15
44	179.550	179.600	175.622	175.672	7	7	14
45	179.600	179.650	175.672	175.722	8	7	15
46	179.650	179.700	175.722	175.772	12	10	22
47	179.700	179.750	175.772	175.822	13	19	32
48	179.750	179.800	175.822	175.872	15	18	33
49	179.800	179.850	175.872	175.922	16	19	35
50	179.850	179.900	175.922	175.972	16	20	36
51	179.900	179.950	175.972	176.022	16	20	36
52	179.950	180.000	176.022	176.072	16	19	35
53	180.000	180.050	176.072	176.122	14	23	37
54	180.050	180.100	176.122	176.172	12	23	35
55	180.100	180.150	176.172	176.222	14	22	36
56	180.150	180.200	176.222	176.272	15	21	36
57	180.200	180.250	176.272	176.322	16	20	36
58	180.250	180.300	176.322	176.372	19	19	38
59	180.300	180.350	176.372	176.422	20	19	39
60	180.350	180.400	176.422	176.472	18	18	36
61	180.400	180.450	176.472	176.522	16	19	35
62	180.450	180.500	176.522	176.572	17	19	36
63	180.500	180.550	176.572	176.622	18	18	36
64	180.550	180.600	176.622	176.672	19	18	37

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
65	180.600	180.650	176.672	176.722	19	19	38
66	180.650	180.700	176.722	176.772	19	17	36
67	180.700	180.750	176.772	176.822	21	16	37
68	180.750	180.800	176.822	176.872	20	14	34
69	180.800	180.850	176.872	176.922	19	15	34
70	180.850	180.900	176.922	176.972	19	16	35
71	180.900	180.950	176.972	177.022	20	17	37
72	180.950	181.000	177.022	177.072	20	18	38
73	181.000	181.050	177.072	177.122	17	20	37
74	181.050	181.100	177.122	177.172	18	17	35
75	181.100	181.150	177.172	177.222	20	20	40
76	181.150	181.200	177.222	177.272	19	20	39
77	181.200	181.250	177.272	177.322	19	20	39
78	181.250	181.300	177.322	177.372	19	19	38
79	181.300	181.350	177.372	177.422	19	19	38
80	181.350	181.400	177.422	177.472	20	18	38
81	181.400	181.450	177.472	177.522	21	18	39
82	181.450	181.500	177.522	177.572	20	19	39
83	181.500	181.550	177.572	177.622	20	18	38
84	181.550	181.600	177.622	177.672	19	17	36
85	181.600	181.650	177.672	177.722	20	18	38
86	181.650	181.700	177.722	177.772	19	19	38
87	181.700	181.750	177.772	177.822	19	20	39
88	181.750	181.800	177.822	177.872	18	20	38
89	181.800	181.850	177.872	177.922	19	19	38
90	181.850	181.900	177.922	177.972	18	20	38
91	181.900	181.950	177.972	178.022	17	22	39
92	181.950	182.000	178.022	178.072	16	22	38
93	182.000	182.050	178.072	178.122	15	21	36
94	182.050	182.100	178.122	178.172	18	16	34
95	182.100	182.150	178.172	178.222	23	16	39
96	182.150	182.200	178.222	178.272	22	13	35
97	182.200	182.250	178.272	178.322	20	18	38
98	182.250	182.300	178.322	178.372	18	17	35
99	182.300	182.350	178.372	178.422	20	17	37
100	182.350	182.400	178.422	178.472	19	18	37
101	182.400	182.450	178.472	178.522	18	18	36
102	182.450	182.500	178.522	178.572	17	21	38
103	182.500	182.550	178.572	178.622	16	21	37
104	182.550	182.600	178.622	178.672	18	15	33
105	182.600	182.650	178.672	178.722	18	15	33
106	182.650	182.700	178.722	178.772	18	12	30
107	182.700	182.750	178.772	178.822	19	14	33
108	182.750	182.800	178.822	178.872	20	15	35

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
109	182.800	182.850	178.872	178.922	19	16	35
110	182.850	182.900	178.922	178.972	21	17	38
111	182.900	182.950	178.972	179.022	19	20	39
112	182.950	183.000	179.022	179.072	18	20	38
113	183.000	183.050	179.072	179.122	18	21	39
114	183.050	183.100	179.122	179.172	16	15	31
115	183.100	183.150	179.172	179.222	16	16	32
116	183.150	183.200	179.222	179.272	15	16	31
117	183.200	183.250	179.272	179.322	14	16	30
118	183.250	183.300	179.322	179.372	13	15	28
119	183.300	183.350	179.372	179.422	14	15	29
120	183.350	183.400	179.422	179.472	16	14	30
121	183.400	183.450	179.472	179.522	17	13	30
122	183.450	183.500	179.522	179.572	17	11	28
123	183.500	183.550	179.572	179.622	18	17	35
124	183.550	183.600	179.622	179.672	19	14	33
125	183.600	183.650	179.672	179.722	17	14	31
126	183.650	183.700	179.722	179.772	12	10	22
127	183.700	183.750	179.772	179.822	16	2	18
128	183.750	183.800	179.822	179.872	14	4	18
129	183.800	183.850	179.872	179.922	13	6	19
130	183.850	183.900	179.922	179.972	14	5	19
131	183.900	183.950	179.972	180.022	14	5	19
132	183.950	184.000	180.022	180.072	14	6	20
133	184.000	184.050	180.072	180.122	16	7	23
134	184.050	184.100	180.122	180.172	18	7	25
135	184.100	184.150	180.172	180.222	21	7	28
136	184.150	184.200	180.222	180.272	21	7	28
137	184.200	184.250	180.272	180.322	21	6	27
138	184.250	184.300	180.322	180.372	21	6	27
139	184.300	184.350	180.372	180.422	21	8	29
140	184.350	184.400	180.422	180.472	15	8	23
141	184.400	184.450	180.472	180.522	11	7	18
142	184.450	184.500	180.522	180.572	6	7	13
143	184.500	184.550	180.572	180.622	6	4	10
144	184.550	184.600	180.622	180.672	5	5	10
145	184.600	184.650	180.672	180.722	5	5	10
146	184.650	184.700	180.722	180.772	5	5	10
147	184.700	184.750	180.772	180.822	6	6	12
148	184.750	184.800	180.822	180.872	6	5	11
149	184.800	184.850	180.872	180.922	5	5	10
150	184.850	184.900	180.922	180.972	5	5	10
151	184.900	184.950	180.972	181.022	5	5	10

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
152	184.950	185.000	181.022	181.072	5	5	10
153	185.000	185.050	181.072	181.122	5	6	11
154	185.050	185.100	181.122	181.172	6	5	11
155	185.100	185.150	181.172	181.222	6	6	12
156	185.150	185.200	181.222	181.272	6	6	12
157	185.200	185.250	181.272	181.322	6	6	12
158	185.250	185.300	181.322	181.372	6	6	12
159	185.300	185.350	181.372	181.422	6	6	12
160	185.350	185.400	181.422	181.472	6	6	12
161	185.400	185.450	181.472	181.522	6	7	13
162	185.450	185.500	181.522	181.572	6	7	13
163	185.500	185.550	181.572	181.622	6	6	12
164	185.550	185.600	181.622	181.672	6	6	12
165	185.600	185.650	181.672	181.722	6	7	13
166	185.650	185.700	181.722	181.772	6	6	12
167	185.700	185.750	181.772	181.822	6	7	13
168	185.750	185.800	181.822	181.872	6	6	12
169	185.800	185.850	181.872	181.922	7	6	13
170	185.850	185.900	181.922	181.972	6	6	12
171	185.900	185.950	181.972	182.022	6	6	12
172	185.950	186.000	182.022	182.072	6	6	12
173	186.000	186.050	182.072	182.122	6	6	12
174	186.050	186.100	182.122	182.172	6	6	12
175	186.100	186.150	182.172	182.222	6	6	12
176	186.150	186.200	182.222	182.272	6	6	12
177	186.200	186.250	182.272	182.322	7	6	13
178	186.250	186.300	182.322	182.372	6	6	12
179	186.300	186.350	182.372	182.422	6	6	12
180	186.350	186.400	182.422	182.472	6	6	12
181	186.400	186.450	182.472	182.522	7	6	13
182	186.450	186.500	182.522	182.572	6	8	14
183	186.500	186.550	182.572	182.622	6	8	14
184	186.550	186.600	182.622	182.672	5	9	14
185	186.600	186.650	182.672	182.722	5	8	13
186	186.650	186.700	182.722	182.772	5	8	13
187	186.700	186.750	182.772	182.822	5	9	14
188	186.750	186.800	182.822	182.872	5	9	14
189	186.800	186.850	182.872	182.922	4	8	12
190	186.850	186.900	182.922	182.972	4	9	13
191	186.900	186.950	182.972	183.022	4	10	14
192	186.950	187.000	183.022	183.072	3	10	13
193	187.000	187.045	183.072	183.100	3	11	14
194	Bijoynagar and Mirza Bypass, From Survey Ch. 187.045km to Survey Ch. 202.130km(Design Ch. 183.100km to Ch. 199.100km)						
195	202.130	202.150	199.100	199.125	18	19	37

Sl. No.	Survey Chainage(Km) Starting Chainage of Bilasipura KM 0.000		Design Ch. (Km)		Existing Right of Way (m)		Total EROW Width (m)
	From	To	From	To	Right	Left	
196	202.150	202.200	199.125	199.175	20	21	41
197	202.200	202.250	199.175	199.225	19	20	39
198	202.250	202.300	199.225	199.275	22	19	41
199	202.300	202.350	199.275	199.325	22	19	41
200	202.350	202.400	199.325	199.375	18	20	38
201	202.400	202.450	199.375	199.425	21	22	43
202	202.450	202.500	199.425	199.475	21	23	44
203	202.500	202.550	199.475	199.525	23	20	43
204	202.550	202.600	199.525	199.575	20	18	38
205	202.600	202.650	199.575	199.625	18	20	38
206	202.650	202.700	199.625	199.675	19	20	39
207	202.700	202.750	199.675	199.725	22	22	44
208	202.750	202.800	199.725	199.775	23	17	40
209	202.800	202.850	199.775	199.825	21	21	42
210	202.850	202.900	199.825	199.875	21	22	43
211	202.900	202.950	199.875	199.925	19	20	39
212	202.950	203.000	199.925	199.975	19	21	40
213	203.000	203.050	199.975	200.025	21	22	43
214	203.050	203.100	200.025	200.075	22	21	43
215	203.100	203.150	200.075	200.125	22	21	43
216	203.150	203.200	200.125	200.175	24	21	45
217	203.200	203.250	200.175	200.225	21	19	40
218	203.250	203.300	200.225	200.275	22	19	41
219	203.300	203.350	200.275	200.325	21	19	40
220	203.350	203.400	200.325	200.375	21	20	41
221	203.400	203.450	200.375	200.425	20	21	41
222	203.450	203.500	200.425	200.475	23	19	42
223	203.500	203.550	200.475	200.525	19	13	32
224	203.550	203.600	200.525	200.575	21	14	35
225	203.600	203.650	200.575	200.625	20	16	36
226	203.650	203.700	200.625	200.675	20	12	32
227	203.700	203.750	200.675	200.725	22	11	33
228	203.750	203.783	200.725	200.750	21	14	35

3. Carriageway

The present carriageway of the Project Highway consists two/two lane with paved shoulder and earthen shoulder configuration. The type of the existing pavement of the section is flexible.

4. Major Bridges

The Site includes the following Major Bridge: -

SL. No.	Survey Chainage (km)	Existing Chainage as per NH-37 (km)	Design Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
				Foundation	Sub-structure	Super-structure		
1	184.719	115.170	180.775	Well	RCC Wall	PSC Girder	3 x 42m	11.30

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

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

S. No.	Survey Chainage (km)	Existing Chainage as per NH-37 (km)	Type of Structure		No.ofSpans with span length(m)	Width (m)	ROB/ RUB
			Foundation	Superstructure			
Nil							

6. Grade separators

The Site includes the following grade separators:

S. No.	Chainage (km)	Existing Chainage as per NH-37 (km)	Design Chainage (km)	Type of Structure		No.ofSpans with span length(m)	Width (m)
				Foundation	Superstructure		
Nil							

7. Minor bridges

The Site includes the following minor bridges:

SL. No.	Survey Chainage (km)	Existing Chainage as per NH-37 (km)	Design Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
				Foundation	Sub-structure	Super-structure		
1	177.756	108.205	173.820	-	RCC Wall	RCC Slab	4 x 8.3m	8.5
2	178.653	109.135	174.716	-	RCC Wall	RCC Slab	3 x 8.2m	8.5
3	179.688	110.139	175.750	Well	RCC Wall	RCC T Girder	2 x 21m	10.5
4	183.664	114.130	179.725	-	RCC Wall	RCC T Girder	3 x 16m	8.5
5	202.792	133.195	199.759	-	RCC Wall	RCC Slab	1 x 6.5m	12
6	203.614	134.014	200.583	-	RCC Wall	RCC Slab	2 x 8m	8.5
*Since from from Survey Ch. 187.045km to Survey Ch. 202.130km bypass has been proposed, details of existing bridge/structure in this section are not included in this list.								

8. Railway level crossings

The Site includes the following railway level crossings:

Sl. No.	Chainage (km)	Location	Remarks
Nil			

1. Under-passes (vehicular, on-vehicular)

The Site includes the following under-passes:

S. No.	Chainage (km)	Type of Structure	No. of Spans with span length (m)	Width(m)
Nil				

10. Culverts

The Site has the following culverts:

Sl No	Survey Chainage (km)	Existing Chainage as per NH-37 (km)	Design Chainage (km)	Type of Structures (Pipe/Slab/ Box/Arch)	Span Arrangement (no x length) (m)	Width of culvert (m)
1	180.765	111.215	176.829	SLAB	1 X 3m	11.7
2	181.315	111.765	177.378	BOX	1.2m X 1.2m	13
3	181.662	112.112	177.725	BOX	1.2m X 1.2m	13
4	182.442	112.892	178.506	BOX	1.2m X 1.2m	13
5	182.594	113.044	178.658	HUME PIPE	4 X 1m	8.5
6	182.895	113.345	178.959	BOX	1.2m X 1.2m	13
7	183.065	113.515	179.129	BOX	1.2m X 1.2m	13
8	183.257	113.707	179.321	BOX	1.2m X 1.2m	13
9	183.898	114.348	179.960	BOX	1.2m X 1.2m	13
10	184.074	114.524	180.138	BOX	1.2m X 1.2m	13
11	184.143	114.593	180.207	BOX	1.2m X 1.2m	13
12	185.627	116.077	181.684	SLAB	1 X 1.1m	22
13	185.808	116.258	181.865	BOX	1.2m X 1.2m	13
14	185.906	116.356	181.963	SLAB	1 X 0.9m	22
15	186.244	116.694	182.300	SLAB	1 X 1.9m	12
16	186.428	116.878	182.485	BOX	1.2m X 1.2m	13
17	186.645	117.095	182.702	BOX	1.2m X 1.2m	12
18	186.883	117.333	182.939	BOX	1.2m X 1.2m	12
19	187.060	117.510	183.117	BOX	2x1.2m X 1.21m	12
*Since from from Survey Ch. 187.045km to Survey Ch. 202.130km bypass has been proposed, details of existing culvert in this section are not included in this list.						

11. Bus bays

The details of bus bays onthe Site are as follows:

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road-side drains

The details of the roadside drains are as follows:

Sl. No.	Location		Type	
	From km	To km	Masonry/cc (Pucca)	Earthen (Kutcha)
1	203.708	203.783	Pucca (LHS)	-

14. Major junctions

The details of major junctions are as follows:

S. No.	Location					At grade	Separated	Category of Cross Road			
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.							
	From km	to km		From km	To km			NH	SH	MDR	Others
Nil											

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

15. Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Location					Type	
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.			
	From km	To km		From km	To km	T-Junction	Cross Road
1	177.720		108.165	173.780		3-legged	Towards Ratanpur No1
2	177.815		108.260	173.875		3-legged	Towards ChhaygaonCllony
3	177.960		108.405	174.020		3-legged	Towards Dhekena Bari
4	178.110		108.550	174.170		3-legged	Towards Village
5	179.205		109.685	175.265		3-legged	Towards Rampur Santipur Road
6	179.240		109.720	175.300		3-legged	Towards Chhayagaon Rail Way Station
7	179.305		109.785	175.365		3-legged	Towards Maishpara
8	179.555		110.010	175.615		3-legged	Towards Goroimari Rd
9	179.770		110.220	175.830		3-legged	Towards Village
10	179.820		110.270	175.880		3-legged	Towards Panthar Village

Sl. No.	Location					Type	
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.			
	From km	To km		From km	To km	T-Junction	Cross Road
11	179.930		110.380	175.990		3-legged	Towards Village
12	180.080		110.530	176.140		3-legged	Towards Kaladia Village
13	180.100		110.550	176.160		3-legged	Towards Bramba Kumari Village
14	180.430		110.875	176.490		3-legged	Towards Arunipara Village
15	180.620		111.070	176.680		3-legged	Towards Alokjari Village
16	180.900		111.350	176.960		3-legged	Towards Ahika Village
17	181.375		111.825	177.435		4-legged	Towards Village
18	181.890		112.340	177.950		3-legged	Towards Village
19	183.535		113.985	179.595		3-legged	Towards Village
20	184.065		114.515	180.125		3-legged	Towards Kukurmara
21	184.400		114.850	180.460		3-legged	Towards Village
22	184.420		114.870	180.480		3-legged	Towards Village
23	184.490		114.940	180.550		3-legged	Towards Village
24	185.010		115.460	181.060		4-legged	Towards Village
25	185.230		115.680	181.285		3-legged	Towards Village
26	185.430		115.880	181.485		3-legged	Towards Village
27	185.770		116.210	181.820		3-legged	Towards Village
28	186.560		117.010	182.615		3-legged	Towards Village
29	202.150		132.570	199.110		3-legged	Towards Village
30	202.410		132.840	199.375		3-legged	Towards Village
31	202.550		132.970	199.520		3-legged	Towards Village
32	202.815		133.215	199.780		3-legged	Towards Village
33	203.530		133.930	200.500		3-legged	Towards Village

16. Bypasses

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

S.No.	Name of bypass	Survey Chainage(km)			Design Chainage (km)		
	(town)	From (km)	to (km)	Length (in Km)	From(km)	To(km)	Length (km)
1	Bijoynagar& Mirza	187.045	202.130	15.085	183.100	199.100	16.000

17. Other structures

[Provide details of other structures, if any.]

Nil

18. Existing utilities

(i) Electrical utilities

The site includes the following electrical utilities:-

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

SL.	Design Chainage		Length (in Km)				Crossings				Remarks
NO	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV	
1	183.722						0.045				Bypass
2	186.135						0.045				Bypass
3	183.390						0.045				

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

S.NO	Design Ch.		Survey Chainage		Length (in Km)			Crossings				Transformers		Remarks
	From (Km)	To (Km)	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity	
1			177.439	177.939	0.500	0.500	0.500							
2			177.469								0.01			
3			177.529								0.01			
4			177.499								0.012			
5			177.564								0.01			
6			177.664								0.011			
7			177.714								0.01			
8			177.889	178.389	0.500	0.500	0.500							
9			178.389	178.889	0.500	0.500	0.500							
10			178.534								0.01			
11			178.719								0.01			
12			178.799								0.01			
13			178.889	179.389	0.500	0.500	0.500							
14			178.899						0.013					
15			178.964								0.01			
16			179.079								0.011			
17			179.319								0.01			
18			179.389	179.889	0.500	0.500	0.500							
19												1	250KV	
20			179.709							0.013				
21			179.889	180.389	0.500	0.500	0.500							
22			179.899							0.012		1	100KV	
23			179.939								0.01			
24			180.039									2	315KV & 250KV	
25			180.129								0.01			
26			180.164								0.01			
27			180.249								0.01			
28			180.329									1	25KV	
29			180.389							0.013				
30			180.389	180.889	0.500	0.500	0.500							
31			180.589								0.012			
32			180.789									1	315KV	
33			180.889								0.01			
34			180.889	181.389	0.500	0.500	0.500							
35			181.169									1	250KV	
36			181.309						0.014					
37			181.329									1	250KV	

S.NO	Design Ch.		Survey Chainage		Length (in Km)			Crossings				Transformers		Remarks
	From (Km)	To (Km)	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity	
38			181.389	181.889	0.500	0.500	0.500							
39			181.479								0.01			
40			181.889	182.389	0.500	0.500	0.500							
41			182.089									1	25KV	
42			182.264								0.01			
43			182.389	182.889	0.500	0.500	0.500							
44			182.599									1	100KV	
45			182.889	183.389	0.500	0.500	0.500							
46			183.000					0.012						
47			183.049									1	16KV	
48			183.179								0.012			
49			183.389	183.889	0.500	0.500	0.500							
50			183.396								0.01			
51			183.569								0.01			
52			183.639									1	63KV	
53			183.889	184.389	0.500	0.500	0.500							
54			183.989								0.012			
55			184.389	184.889	0.500	0.500	0.500							
56			184.399						0.013					
57			184.889	185.389	0.500	0.500	0.500							
58			185.389	185.889	0.500	0.500	0.500							
59			185.889	186.389	0.500	0.500	0.500							
60			186.181								0.012			
61			186.389	186.889	0.500	0.500	0.500							
62			186.889	187.039	0.150	0.150	0.150							
63	183.100	183.600			0.500	0.500	0.500							BYPASS
64	183.600	184.100			0.500	0.500	0.500							
65	184.100	184.600			0.500	0.500	0.500							
66	184.600	185.100			0.500	0.500	0.500							
67	185.100	185.600			0.500	0.500	0.500							
68	185.600	190.000			4.4	4.4	4.4							
69	190.000	193.000			3	3	3							
70	192.430											1	63KV	
71	193.000	197.500			4.5	4.5	4.5							
72	193.000							0.045						
73	193.200							0.045						
74	196.100							0.045						
75	197.500	199.100			1.6	1.6	1.6							
76	198.500								0.045					
77	198.800											1	100KV	
78	198.840										0.045			
79	199.010										0.045			
80			202.132	202.632	0.5	0.5	0.5							

S.NO	Design Ch.		Survey Chainage		Length (in Km)			Crossings				Transformers		Remarks
	From (Km)	To (Km)	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity	
81			202.132									1	63KV	
82			202.182									1	250KV	
83			202.187							0.013				
84			202.392								0.012			
85			202.507								0.012			
86			202.557								0.01			
87			202.632	203.132	0.5	0.5	0.5							
88			202.662								0.012			
89			202.707								0.01			
90			202.800								0.011			
91			202.857								0.01			
92			202.911								0.012			
93			202.957								0.01			
94			203.002								0.01			
95			203.057								0.01			
96			203.062								0.01			
97			203.112								0.012			
98			203.132	203.632	0.5	0.5	0.5							
99			203.157								0.011			
100			203.202							0.013				
101			203.207						0.015					
102			203.257								0.01			
103			203.282								0.01			
104			203.307								0.01			
105			203.312							0.013				
106			203.357								0.01			
107			203.412								0.01			
108			203.457								0.012			
109			203.632	204.132	0.5	0.5	0.5							
110			203.684								0.012			

(ii) Public Health utilities (Water/Sewage Pipe Lines)*

The site includes the following Public Health utilities:-

Sl No	Design ch.		Survey Chainage		Length(in Km)	Crossings(in km)	Remarks
	From (Km)	To (Km)	From (Km)	To (Km)	Water Supply line	Water Supply line	
1			177.390	178.51	1.116		

2			177.766			0.012	
3			180.106	181.11	1		
4			180.806			0.012	
5			181.106	183.06	1.95		
6			181.316			0.012	
7			181.886	182.56	0.67		
8			184.016	184.42	0.4		
9			186.486	187.02	0.532		
10			186.906			0.012	
11	187.300	187.350			0.05		
12	187.550					0.012	
13	187.600					0.012	
14	188.950					0.013	
15	189.950					0.012	
16	190.000					0.012	
17	190.150					0.012	
18	190.200					0.012	BYPASS
19	190.250					0.012	
20	191.150					0.013	
21	193.400					0.013	
22	193.425					0.012	
23	193.675					0.012	
24	193.720					0.013	
25	199.200	199.850			0.65		
27			203.500	203.783	0.283		

(iii) Any Other line

(* This illustrative and may change as per features of existing utilities.)

Annex – II

(As per Clause 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sr. No.	From km To km	Length (Km)	Proposed ROW (m)	Date of providing ROW*
1	2	3	4	5
Full Right of Way (full width)	Excluding Bus bays&Truck lay bye	26.596	Rural Area :35m - 40m Built-up Location :30m- 45m Bypass Location: 45m	At appointed date
Balance Right of Way (Width)	Bus bays	0.345	47m	Within 150 days of declaration of appointed date
	Truck lay bye	0.375	48m	

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

`Annex-III

(Schedule-A)

Alignment Plans

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

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

(iii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however,

(iv) Improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.

Annex – IV

(Schedule-A)

Environment Clearances

The following environment clearances have been obtained:

[***] The following environment clearances are awaited:[***]

Sr. No.	Clearances	Present Status
1	Environment clearance	Not Required
2	Forest Clearance	Not Required
3	Wildlife Approval	Not Required

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 [Four-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 [Four-Laning]

[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Specifications and Standards for [Four Laning of Highways (IRC: SP: 84-2014 & 2019)], referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.]

1. Widening of the Existing Highway

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

(ii) Width of Carriageway

(a) Four-Lanning [with] paved shoulders shall be undertaken. The paved carriageway shall be [7(seven)m x2] wide in accordance with the typical cross sections drawings in the Manual.

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

Provided that in the built-up areas [refer to paragraphs 2.1 (ii) (a) of the Manual and provide necessary details]: the width of the carriageway shall be as specified in the following table:

Sl. No.	Built-up stretch (Township)	Location (kmto km)	Width (m)	Typical Cross Section (Refer to Manual)	Remarks
Nil					

(b) Except as otherwise provided in this Agreement the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.1 above.

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be 80-100 km per hr. for plain/rolling terrain.

(iii) Improvement of the existing road geometrics

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

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:

Sl. No.	Stretch (from km to km)	Type of deficiency	Remarks
Nil			

(iv) Right of Way
[Refer to provision of relevant Manual].Details of the Right of Way are given in Annex-II of Schedule-A.

v) Type of shoulders

[Refer to paragraph 2.5.2 of the Manual and specify]

(a) In built-up locations,Drain cum footpaths/fully paved shoulders shall be provided in the following stretches:

Sl. No.	Stretch (from Km to Km)	Fully Paved shoulders/ footpaths	Reference to TCS
1	Km 179.900 to km 180.530	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4B2
2	Km 181.550 to km 182.850	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4B

- For width of paved shoulder at flyover and VUP approaches refer , TCS-6E

(b) In open country, [paved shoulders of 2.5 m width and balance 1.5m width shall be covered with 150 mm thick compacted layer of granular material].

- For width of paved shoulder at VUP and LVUP/ROB approaches refer TCS-6A, TCS-6A1,TCS-6B and TCS-6B1

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

Design and specifications of paved shoulders and granular material shall conform to the requirements specified in the relevant Manual.

(vi) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearance at underpasses and provision of guardrails/crash barriers shall be as per requirements specified in the relevant Manual.

(b) Lateral clearance: The width of the opening at the underpasses shall be as

follows:

Sl. No.	Location (Chainage)	Span/opening(m)	Remarks
1	187.443	1 x 15m	Haropara-Bhagawotipara Road, LVUP(Staggered)
2	188.595	1 x 24m	Lonarghat-Mati Road, VUP
3	189.795	1 x 15m	Parakushi-Rangamati, LVUP(Staggered)
4	191.405	1 x 30m	Palashbari-Mirza-ChandubiRoad,VUP (Staggered)
5	193.576	1 x 24m	Rani-Tiniali Road, LVUP(Staggered)
6	197.792	1 x 24m	Bongra-Rani Road, VUP
7	198.674	1 x 15m	Bongra Road, LVUP

*Vertical clearance shall be 5.5m(minimum) for VUP and 4.0m(minimum) for LVUP.

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per requirements specified in the relevant Manual.

(b) Lateral clearance: The width of the opening at the overpasses shall be as follows:

Sl. No.	Location (Chainage) (from km to km)	Span/Opening (m)	Remarks
Nil			

(viii) Service roads

Service roads shall be constructed at the locations and for the lengths indicated below:
[Refer requirements specified in the relevant Manual]

Sl. No.	Location of service road(from km to km)	Right hand side(RHS)/Left hand side(LHS)/or Both sides	Length (km)of service road	Reference to TCS	Remarks
1	Km 174.925 to km 175.150	Both sides	2X0.225=0.450	Tapered	Varying Width
2	Km 175.150 to km 175.415	Both sides	2X0.265=0.530	TCS 6E	2x7.5m
3	Km 175.415 to km 176.645	Both sides	2X1.230=2.460	TCS 8	2x7.5m
4	Km 176.645 to km 176.825 km	Both sides	2X0.180=0.360	TCS 6E	2x7.5m
5	Km 176.825 to km 177.050	Both sides	2X0.225=0.450	Tapered	Varying Width
6	Km 179.900 to km 180.530	Both sides	2X0.630=1.260	TCS 4B2	2x5.5m

Sl. No.	Location of service road(from km to km)	Right hand side(RHS)/Left hand side(LHS)/or Both sides	Length (km)of service road	Reference to TCS	Remarks
7	Km 181.550 to km 182.850 km	Both sides	2X1.300=2.600	TCS-4B	2x5.5m
8	Km 185.700 to km 185.928 km	One side	1X0.228=0.228	with one side service road	1x3.5m
9	Km 187.100 to km 187.225	One side	1X0.125=0.125	with one side service road	1x7.5m
10	Km 187.225 to km 187.660	One side	1X0.435=0.435	TCS 6B1 (with one side service road)	1x7.5m
11	Km 187.660 to km 187.995	One side	1X0.335=0.335	with one side service road	1x7.5m
12	Km 187.995 to km 188.220	One side	2X0.225=0.450	Tapered	Varying Width
13	Km 188.220 to km 188.820	Both sides	2X0.600=1.200	TCS 6A1	2x7.5m
14	Km 188.820 to km 189.045	Both sides	2X0.225=0.450	Tapered	Varying Width
15	Km 190.775 to km 191.000	Both sides	2X0.225=0.450	Tapered	Varying Width
16	Km 191.000 to km 191.825 km	Both sides	2X0.825=1.650	TCS 6A	2x7.5m
17	Km 191.825 to km 192.050	Both sides	2X0.225=0.450	Tapered	Varying Width
18	Km 197.190 to km 197.415	Both sides	2X0.225=0.450	Tapered	Varying Width
19	Km 197.415 to km 198.670	Both sides	2X1.255=2.510	TCS 6A1	2x7.5m

*The specified length of Service Road indicated in this location is minimum. Length of service road can increase beyond minimum length specified above based on site requirement/ conditions without attributing Change of Scope.

(ix) Grade separated structures

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

[Refer to requirements specified in the relevant Manual]

Sl. No.	Location of Structure	Length(m)	Number and length of spans (m)	Total Width (m)	Approach gradient	Remarks
1	Chayagaon(Km175.415 to Km 176.645)	1230	34x35m+1x40m	2 x 10.5m(CW) + 2 x 0.5m(Crash Barrier) + 1x 1.0m(median)=23m	2.50%	PSC Box Girder(Flyover)
2	Ch. 187.443Km	16	1 x 15m	2x9.5m(CW) + 4 x 0.5m(Crash Barrier) + 3m(median		Integral Slab, LVUP (Staggered)
3	Ch. 188.595Km	25.35	1 x 24m			Integral Voided

Sl. No.	Location of Structure	Length(m)	Number and length of spans (m)	Total Width (m)	Approach gradient	Remarks
				gap)=24m		Slab, VUP
4	Ch. 189.795 Km	16	1 x 15m			Integral Slab, LVUP (Staggered)
5	Ch. 191.405 Km	30	1 x 30m			PSC T Girder, VUP(Staggered)
6	Ch. 193.576Km	25.35	1 x 24m			Integral Voided Slab, LVUP(Staggered)
7	Ch. 197.792Km	25.35	1 x 24m			Integral Voided Slab(VUP)
8	Ch. 198.674Km	16	1 x 15m			Integral Slab(LVUP)

InVUP, LVUP&Flyoverapproach locations, Reinforced Earth Wall shall be provided in the following stretches:

Location		Length (km)
From(km)	To(km)	
175.150	175.415	0.265
176.645	176.825	0.180
187.225	187.435	0.210
187.451	187.660	0.209
188.220	188.582	0.362
188.607	188.820	0.213
189.450	189.787	0.337
189.803	190.150	0.347
191.000	191.390	0.390
191.420	191.825	0.405
193.325	193.564	0.239
193.589	193.825	0.236
195.725	196.170	0.445
196.343	196.775	0.432
197.415	197.779	0.364
197.804	198.666	0.862
198.682	198.880	0.198
Total length=		**5.694**

**The specified length of Reinforced earth wall is the minimum requirement. Length of Reinforced earth wall can increase beyond minimum length specified above based on site requirement/ conditions without attributing Change of Scope.

(b) In the case of grade separated structures the type of structure and the level of the Project Highway and the crossroads shall be as follows: [Refer to provision of the Manual and specify the type of vehicular underpass/ overpass structure and whether the crossroad 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	
1	Chayagaon(Km175.415 to Km 176.645)	Flyover, 34x35m+1x40m	-	-	-	-
2	Ch. 187.443Km	LVUP(Staggered), 1 x 15m	-	-	-	-
3	Ch. 188.595Km	VUP, 1 x 24m	-	-	-	-
4	Ch. 189.795 Km	LVUP(Staggered), 1 x 15m	-	-	-	-
5	Ch. 191.405Km	VUP(Staggered), 1 x 30m	-	-	-	-
6	Ch. 193.576Km	LVUP(Staggered), 1 x 24m	-	-	-	-
7	Ch. 197.792Km	VUP, 1 x 24m	-	-	-	-
8	Ch. 198.674Km	LVUP, 1 x 15m	-	-	-	-

(x) Cattle and pedestrian underpass/overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows: [Refer to provision of the relevant Manual and specify the requirements of cattle and pedestrian underpass/overpass]

Sl.No.	Location	Type of crossing
1	184.357	1 X 5.0m X 5.0m(Pedestrian Underpass(PUP))
2	184.620	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
3	185.695	1 X 5.0m X 5.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
4	185.930	1 X 5.0m X 5.0m(Pedestrian Underpass(PUP)), Two separate structures for LHS and RHS carriageway
5	186.150	1 X 5.0m X 5.0m(Pedestrian Underpass(PUP)), (Skew Crossing) Two separate structures for LHS and RHS carriageway
6	187.227	1 X 5.0m X 5.0m(Pedestrian Underpass(PUP))
7	188.836	1 X 3.0m X 3.0m_EC(Pedestrian Underpass(PUP))
8	189.962	1 X 5.0m X 5.0m_EC(Pedestrian Underpass(PUP)) (Skew Crossing)
9	190.105	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
10	191.035	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
11	191.716	1 X 4.0m X 4.0m_EC(Pedestrian Underpass(PUP))
12	192.388	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
13	193.253	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
14	194.617	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
15	194.818	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)
16	195.138	1 X 4.0m X 4.0m(Pedestrian Underpass(PUP)) (Skew Crossing)

*Drainage and lighting arrangement shall be made at PUP locations.

The details of Elephant Under passes is given below.

Sl.No.	Location(km)	Span Arrangement (No. x Span in m)	Type of Structure	Total Width (m)	Remarks
Nil					

In EUP approach locations, Reinforced Earth Wall shall be provided in the following stretches:

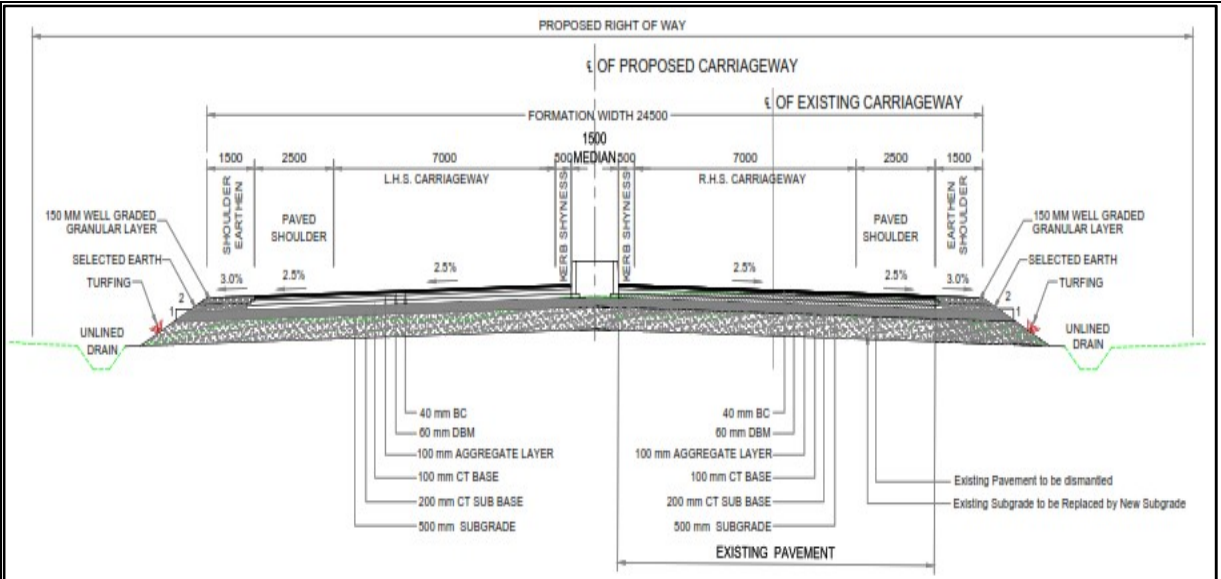
Location		Length (km)
From(km)	To(km)	
Nil		

*The specified length of Reinforced earth wall is the minimum requirement

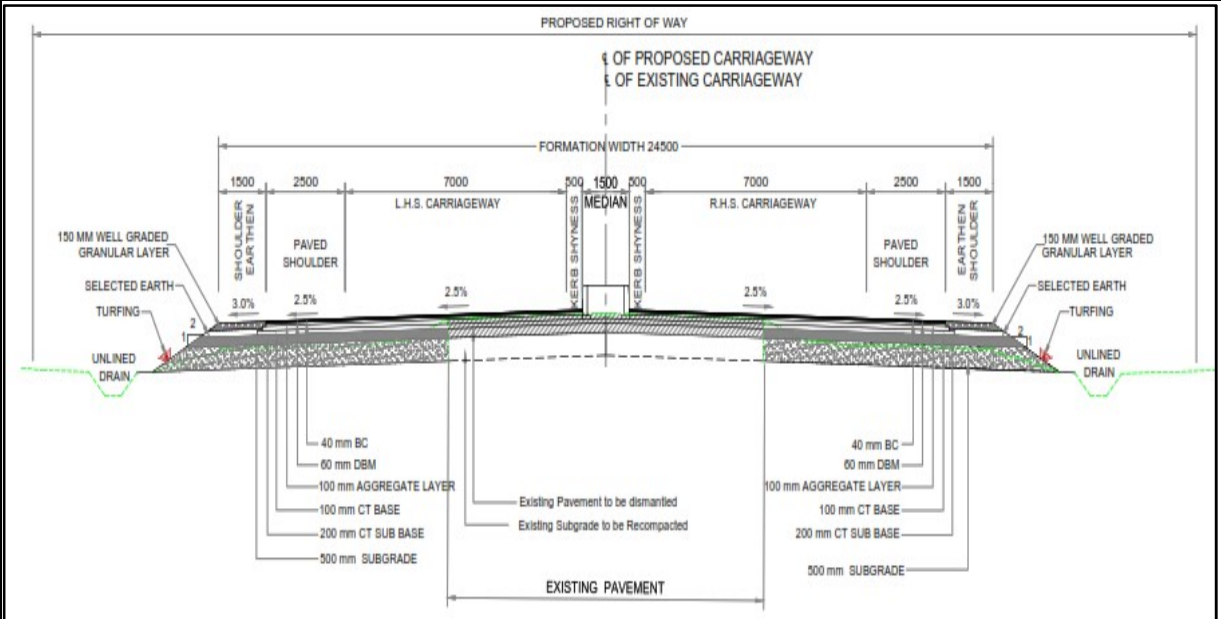
(xi) Typical cross-sections of the Project Highway
[Give typical cross-sections of the Project Highway by reference to the Manual]
As per attached Drawings

Sl. No.	Description	Length (m)
TCS 1C	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA (RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION WITH NEW SUBGRADE)	6461
TCS 1C2	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA(RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)	800
TCS 2	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH	7850
TCS 3	TYPICAL CROSS SECTION OF 2x2 LANE CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH	872
TCS 3A	TYPICAL CROSS SECTION OF 2x2-LANE CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH	178
TCS-4B	TYPICAL CROSS SECTION OF 4 LANE CARRIAGEWAY WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)	1300
TCS-4B2	TYPICAL CROSS SECTION OF 4 LANE CARRIAGEWAY WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)	630
TCS-6A	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN VUP APPROACHES WITH BOTH SIDE SERVICE ROAD	825
TCS-6A1	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN VUP APPROACHES WITH BOTH SIDE SERVICE ROAD	1855
TCS-6B	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN LVUP/ROB APPROACHES WITHOUT BOTH SIDE SERVICE ROAD	2460
TCS-6B1	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN LVUP APPROACHES WITH ONE SIDE SERVICE ROAD	435
TCS-6E	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FLYOVER APPROACHES WITH BOTH SIDE SERVICE ROAD	445
TCS 8	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FLYOVER WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA	1230
	TAPPERED PORTION	1975
	Total Length=	**27316**

Typical cross-sections (TCS) drawings are given below:

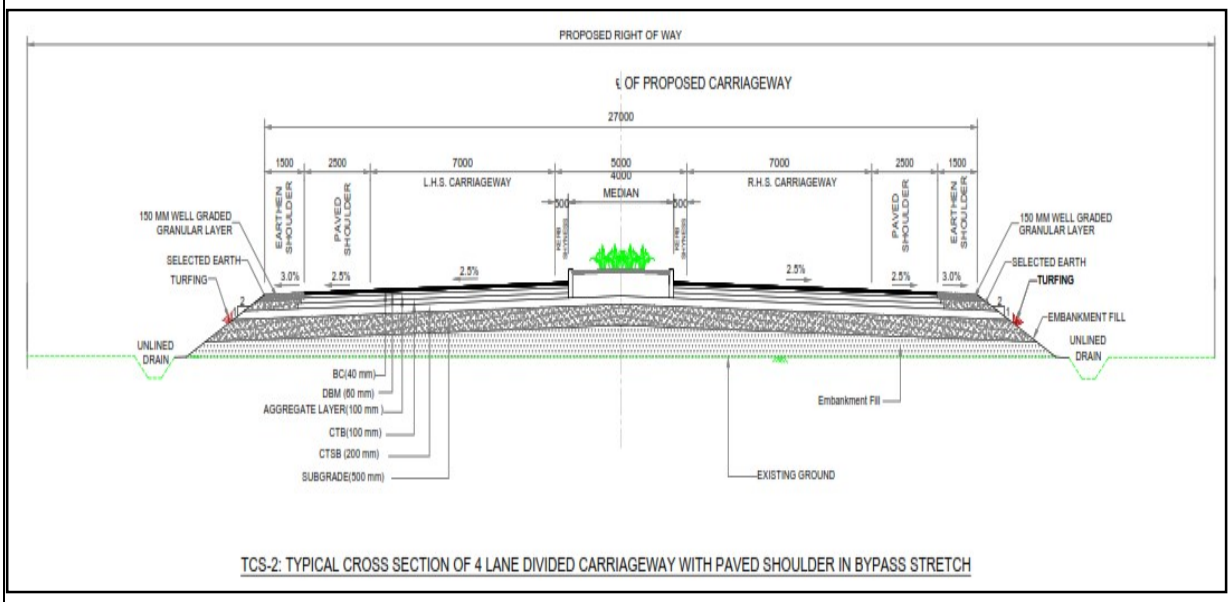


TCS-1C: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA
(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION WITH NEW SUBGRADE)

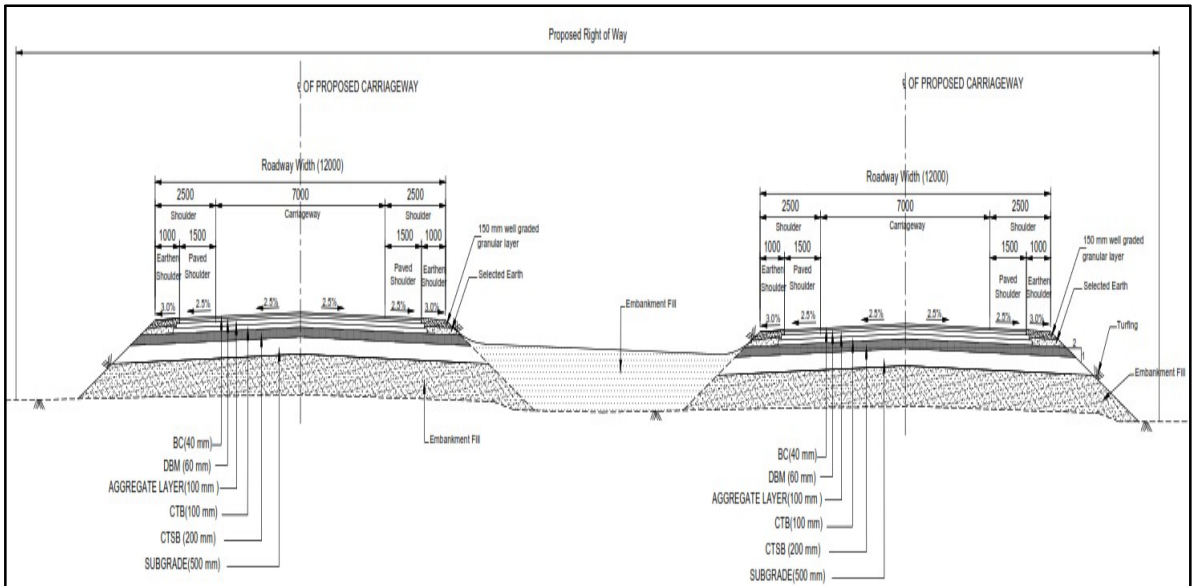


TCS-1C2: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA
(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)

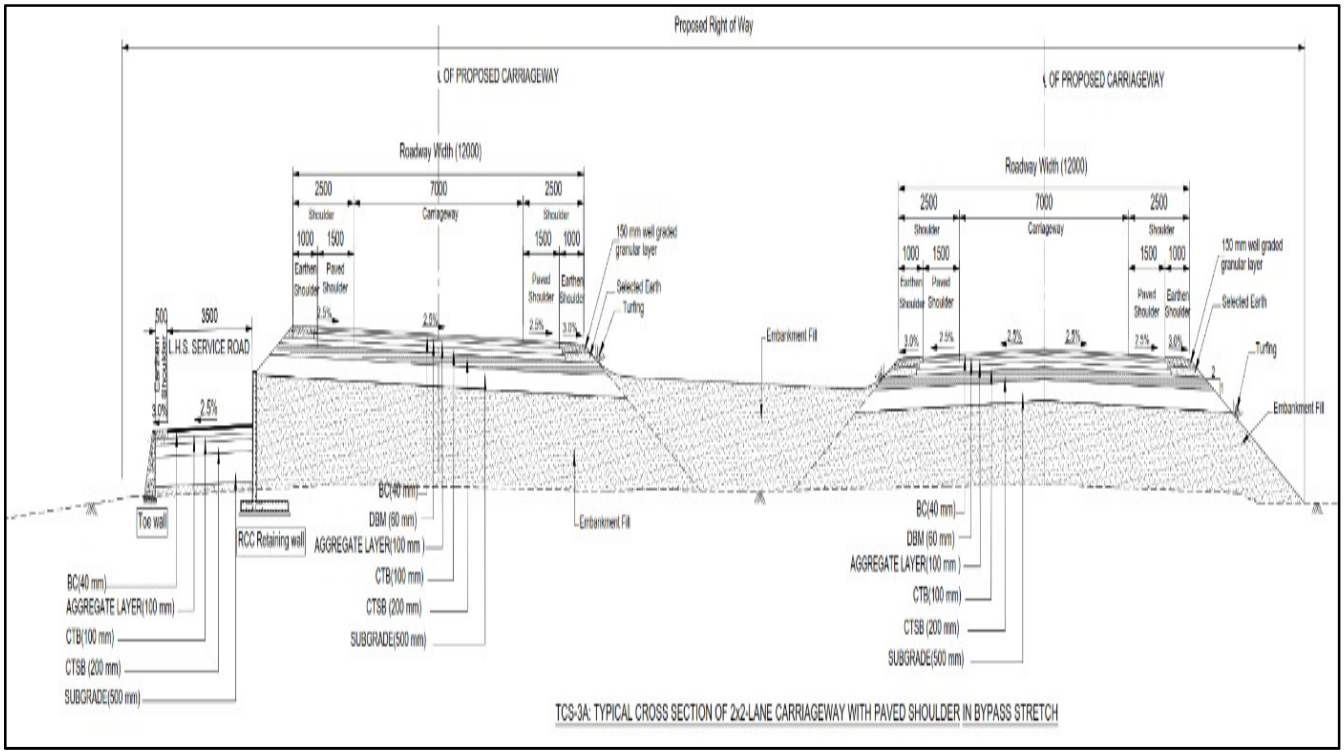
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km) for Package-10 of Bilasipura-Guwahati road(NH 17) (Section: Milmila R.F(before Chayagaon Market) to approach of Airport Junction (VIP Chowk) in the state of Assam on EPC mode.

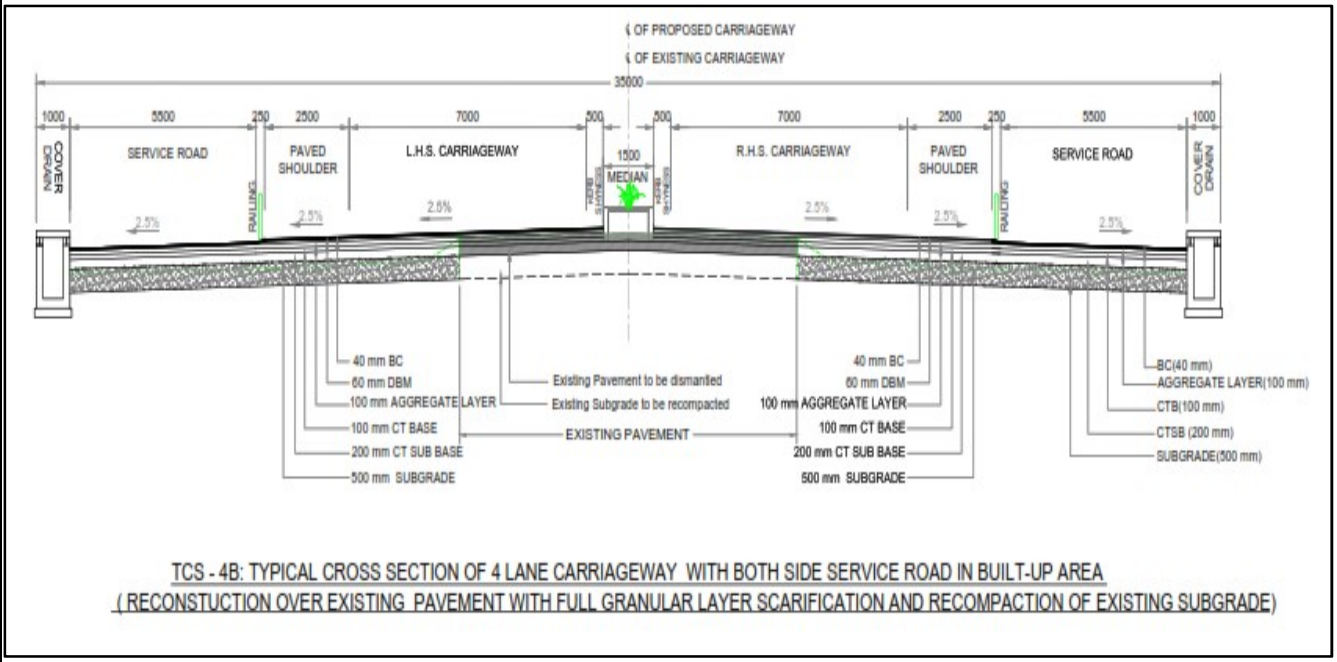


TCS-2: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH

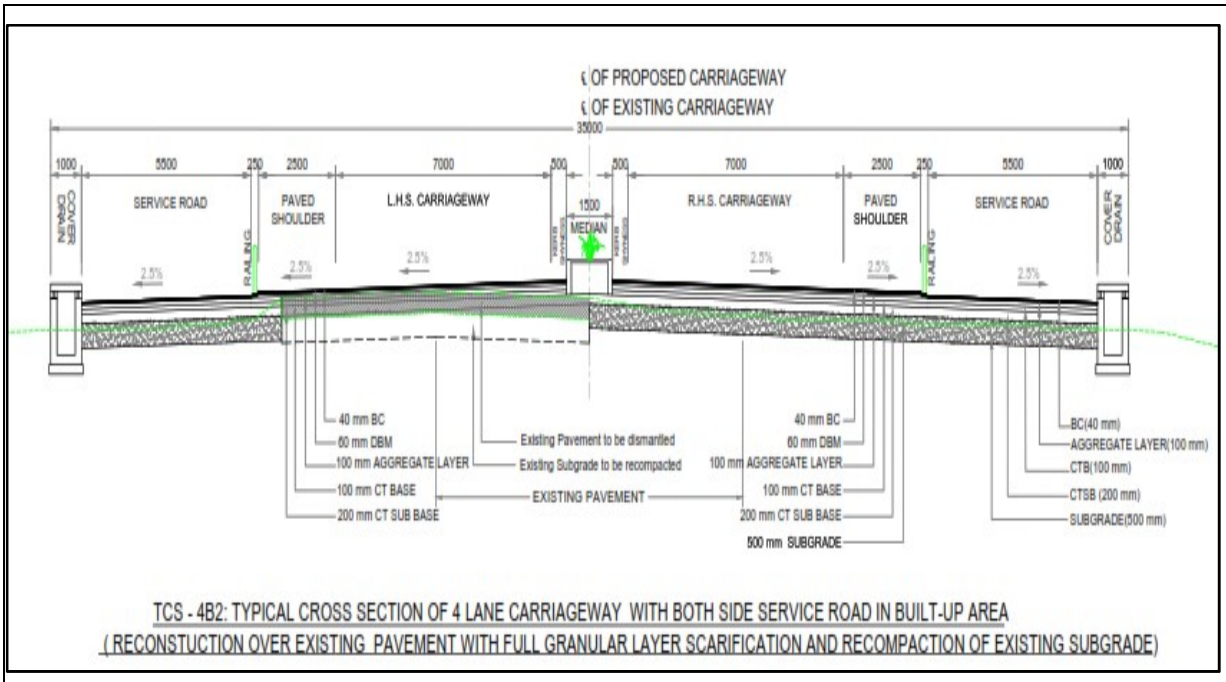


TCS-03: TYPICAL CROSS SECTION OF 2x2-LANE CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH

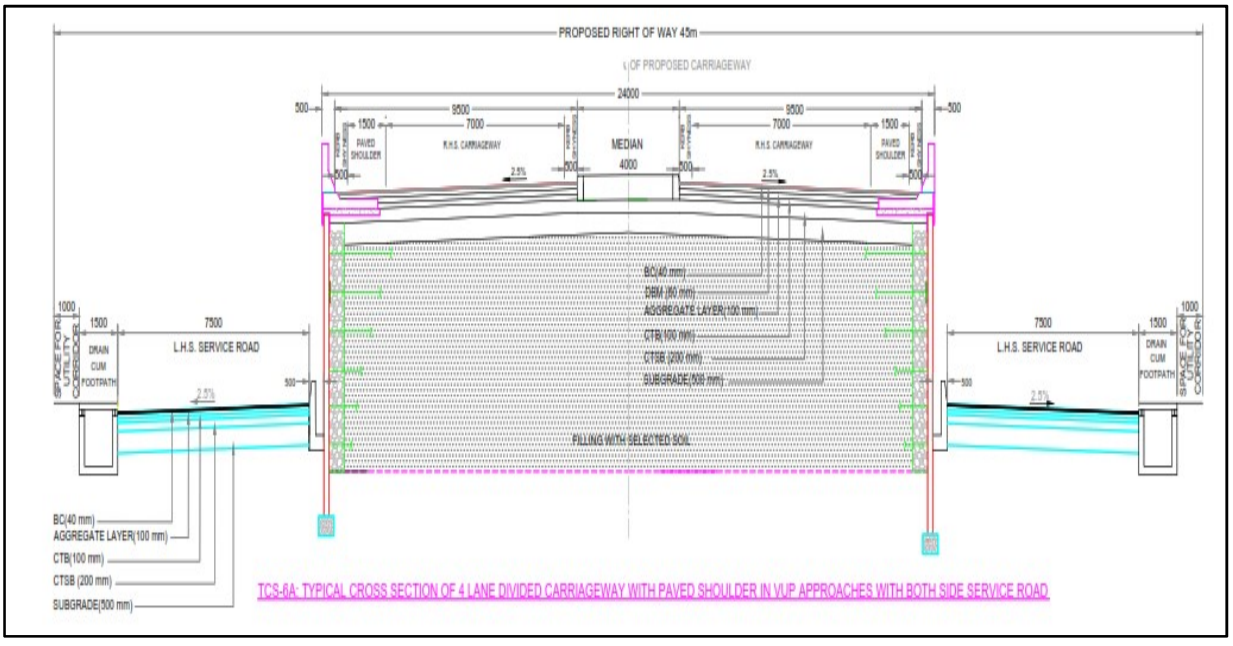

Proposed Right of Way
℄ OF PROPOSED CARRIAGEWAY
℄ OF PROPOSED CARRIAGEWAY
Roadway Width (12000)
Roadway Width (12000)
2500
7000
2500
Shoulder
Carriageway
Shoulder
1000
1500
Earthen Shoulder
Paved Shoulder
1500
1000
Paved Shoulder
Earthen Shoulder
150 mm well graded granular layer
Selected Earth
Turfing
Embankment Fill
500
900
L.H.S. SERVICE ROAD
2.5%
Toe wall
RCC Retaining wall
BC(40 mm)
DBM (60 mm)
AGGREGATE LAYER(100 mm)
CTB(100 mm)
CTSB (200 mm)
SUBGRADE(500 mm)
TCS-3A: TYPICAL CROSS SECTION OF 2x2-LANE CARRIAGEWAY WITH PAVED SHOULDER IN BYPASS STRETCH


℄ OF PROPOSED CARRIAGEWAY
℄ OF EXISTING CARRIAGEWAY
35000
1000
5500
250
2500
7000
500
1500
MEDIAN
SERVICE ROAD
PAVED SHOULDER
L.H.S. CARRIAGEWAY
R.H.S. CARRIAGEWAY
COVER DRAIN
RAILING
2.5%
2.5%
40 mm BC
60 mm DBM
100 mm AGGREGATE LAYER
100 mm CT BASE
200 mm CT SUB BASE
500 mm SUBGRADE
Existing Pavement to be dismantled
Existing Subgrade to be recompacted
EXISTING PAVEMENT
BC(40 mm)
AGGREGATE LAYER(100 mm)
CTB(100 mm)
CTSB (200 mm)
SUBGRADE(500 mm)
TCS - 4B: TYPICAL CROSS SECTION OF 4 LANE CARRIAGEWAY WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA
(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)

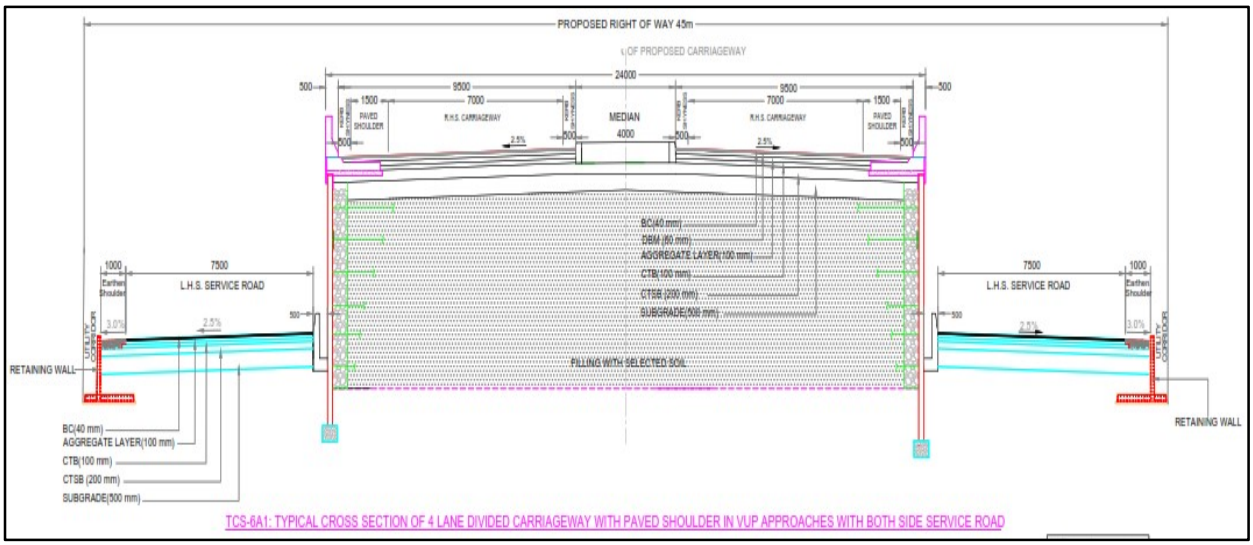
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km) for Package-10 of Bilasipura-Guwahati road(NH 17) (Section: Milmila R.F(before Chayagaon Market) to approach of Airport Junction (VIP Chowk) in the state of Assam on EPC mode.



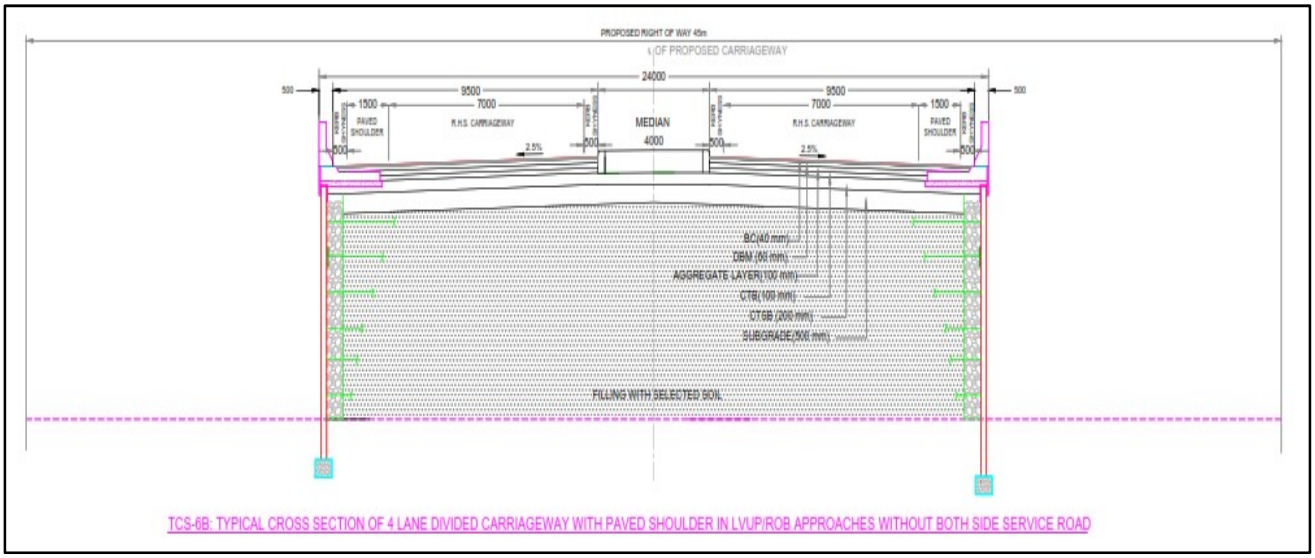
TCS - 4B2: TYPICAL CROSS SECTION OF 4 LANE CARRIAGEWAY WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA
(RECONSTUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)



TCS-6A: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN VUP APPROACHES WITH BOTH SIDE SERVICE ROAD

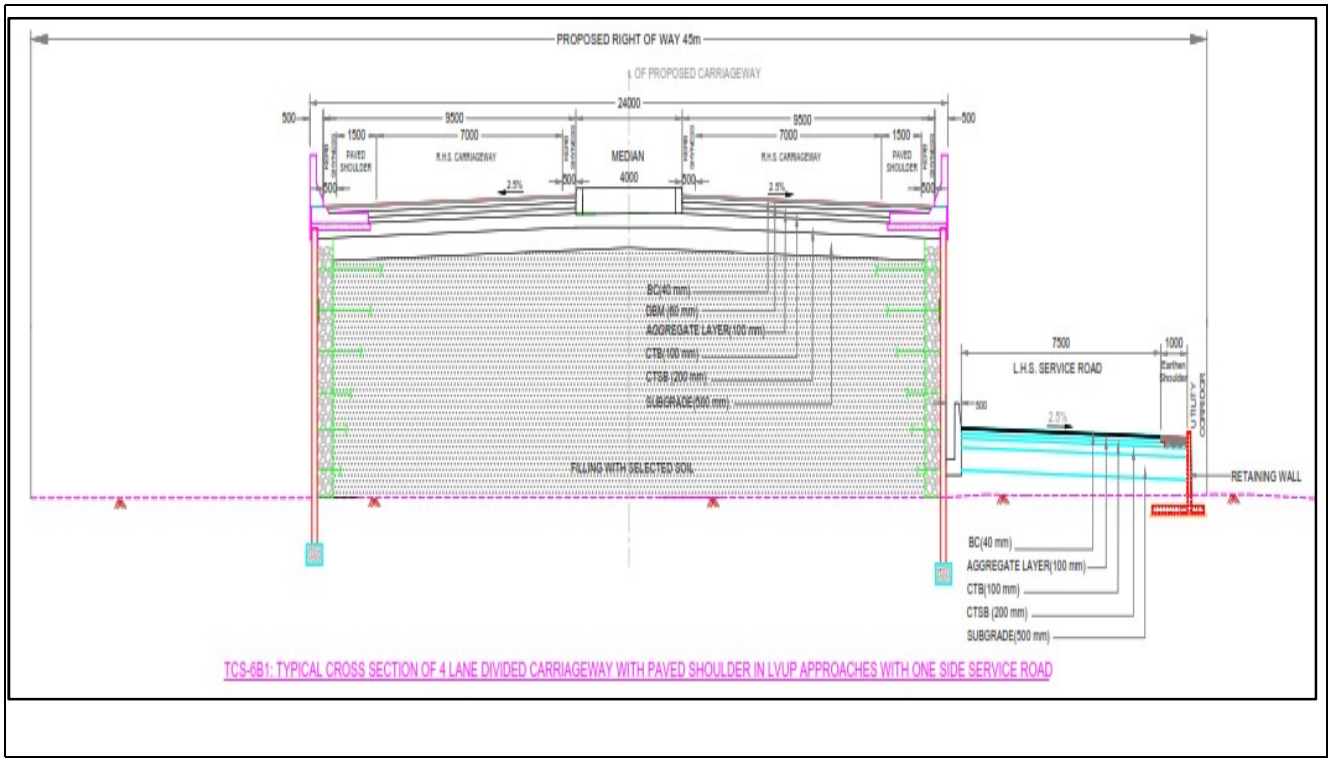


TCS-6A1: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN VUP APPROACHES WITH BOTH SIDE SERVICE ROAD

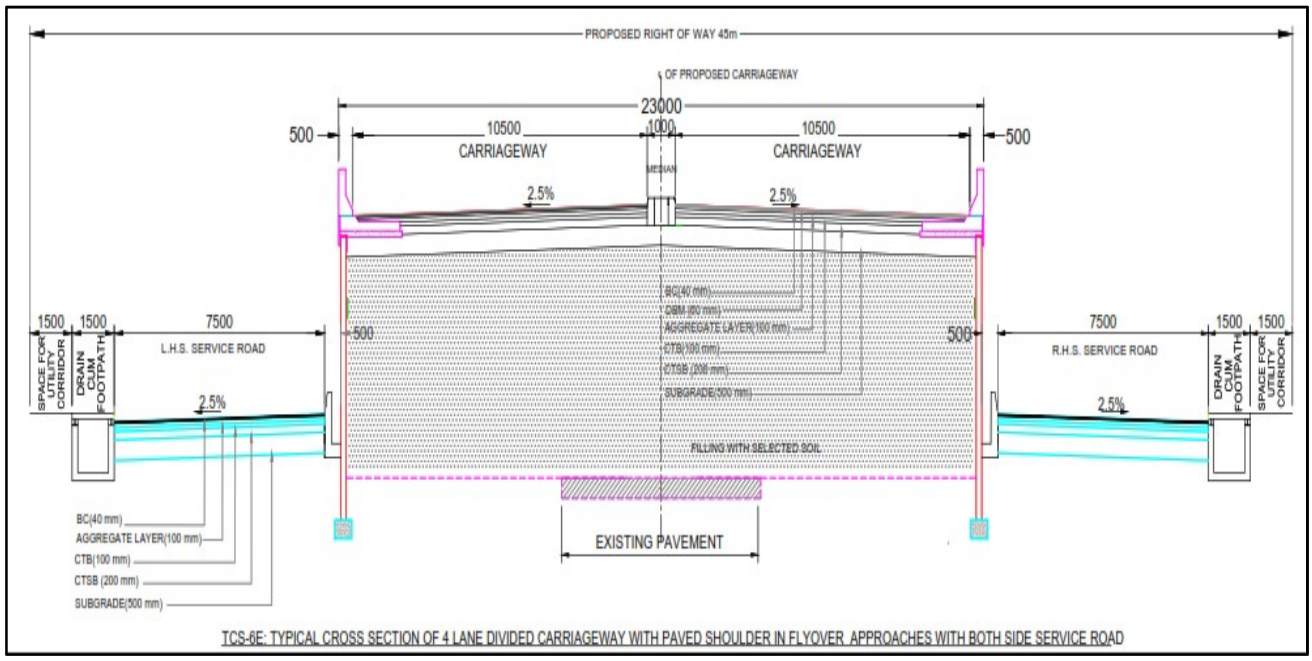


TCS-6B: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN LVUP/ROB APPROACHES WITHOUT BOTH SIDE SERVICE ROAD

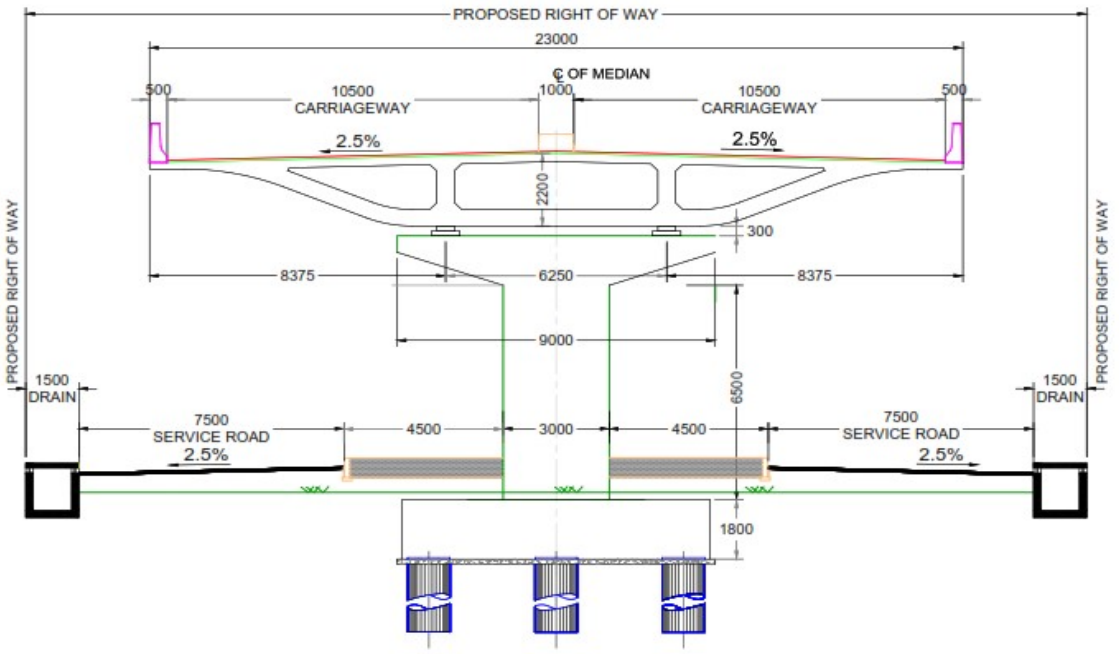
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km) for Package-10 of Bilasipura-Guwahati road(NH 17) (Section: Milmila R.F(before Chayagaon Market) to approach of Airport Junction (VIP Chowk) in the state of Assam on EPC mode.



TCS-6B1: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN LVUP APPROACHES WITH ONE SIDE SERVICE ROAD



TCS-6E: TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FLYOVER APPROACHES WITH BOTH SIDE SERVICE ROAD



TCS-8: Typical Cross Section of 4 Lane Divided Carriageway with Paved Shoulder in Flyover with Both Side Service Road in Built-up Area

Sl No	Chainage(m)		Length	TCS Type
	From	To	(m)	
1	173434	174925	1491	TCS 1C
2	174925	175150	225	Tapered(TCS 1C – TCS 6E)
3	175150	175415	265	TCS 6E
4	175415	176645	1230	TCS 8
5	176645	176825	180	TCS 6E
6	176825	177050	225	Tapered(TCS 6E – TCS 1C)
7	177050	178300	1250	TCS 1C
8	178300	178650	350	TCS 1C2
9	178650	179900	1250	TCS 1C
10	179900	180530	630	TCS 4B2
11	180530	181100	570	TCS 1C
12	181100	181550	450	TCS 1C2
13	181550	182850	1300	TCS-4B
14	182850	183100	250	TCS 1C
15	183100	185600	2500	TCS 2
16	185600	185750	150	Tapered (4lane to 2x2 lane)
17	185750	185928	178	TCS 3A
18	185928	186800	872	TCS 3
19	186800	187050	250	Tapered (2x2 lane to 4lane)
20	187050	187225	175	TCS 2
21	187225	187660	435	TCS 6B1
22	187660	187995	335	TCS 2
23	187995	188220	225	Tapered(TCS 2 – TCS 6A)

Sl No	Chainage(m)		Length	TCS Type
	From	To	(m)	
24	188220	188820	600	TCS 6A1
25	188820	189045	225	Tapered(TCS 6A – TCS 2)
26	189045	189450	405	TCS 2
27	189450	190150	700	TCS 6B
28	190150	190775	625	TCS 2
29	190775	191000	225	Tapered(TCS 2 – TCS 6A)
30	191000	191825	825	TCS 6A
31	191825	192050	225	Tapered(TCS 6A – TCS 2)
32	192050	193325	1275	TCS 2
33	193325	193825	500	TCS 6B
34	193825	195725	1900	TCS 2
35	195725	196775	1050	TCS 6B
36	196775	197190	415	TCS 2
37	197190	197415	225	Tapered(TCS 2 – TCS 6A)
38	197415	198670	1255	TCS 6A1
39	198670	198880	210	TCS 6B
40	198880	199100	220	TCS 2
41	199100	200750	1650	TCS 1C
	Total Length		**27316**	

3. Intersections and Grade Separators

All intersections and grade separators shall be as per Section3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.

[Refer to provision of the relevant Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement].
Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

(i) At-grade intersections -

Major Intersections

Sl. No.	Location of intersection (Km)	Type of intersection	Other features
1	Satpakhali (Ch.183.100km)	3-legged	Junction is provided at the start point of Bijoynagar& Mirza Bypass at Satpakhali
2	Bongra (Ch.199.100km)	3-legged	Junction is provided at the end point of Bijoynagar& Mirza Bypass at Bongra

Minor Intersections

Sl. No.	Location		Type	
	From km	To km	3/4 Legged	Cross Road
1	173.780		3-legged	Towards Ratanpur No1
2	173.875		3-legged	Towards ChhaygaonCllony
3	174.020		3-legged	Towards Dhekena Bari
4	174.170		3-legged	Towards Village
5	175.265		3-legged	Towards Rampur Santipur Road
6	175.300		3-legged	Towards Chhayagaon Rail Way Station
7	175.365		3-legged	Towards Maishpara
8	175.615		3-legged	Towards Goroimari Rd
9	175.830		3-legged	Towards Village
10	175.880		3-legged	Towards Panthar Village
11	175.990		3-legged	Towards Village
12	176.140		3-legged	Towards Kaladia Village
13	176.160		3-legged	Towards Bramba Kumari Village
14	176.490		3-legged	Towards Arunipara Village
15	176.680		3-legged	Towards Alokjari Village
16	176.960		3-legged	Towards Ahika Village
17	177.435		4-legged	Towards Village
18	177.950		3-legged	Towards Village
19	179.595		3-legged	Towards Village
20	180.125		3-legged	Towards Kukurmara
21	180.460		3-legged	Towards Village
22	180.480		3-legged	Towards Village
23	180.550		3-legged	Towards Village
24	181.060		4-legged	Towards Village
25	181.285		3-legged	Towards Village
26	181.485		3-legged	Towards Village
27	181.820		3-legged	Towards Village
28	182.615		3-legged	Towards Village
29	199.110		3-legged	Towards Village
30	199.375		3-legged	Towards Village
31	199.520		3-legged	Towards Village
32	199.780		3-legged	Towards Village
33	200.500		3-legged	Towards Village

*In case any other deficient junction with cross roads is identified during the Construction Period in addition to those mentioned above, shall be improved as per Manual and will not qualify for Change of Scope

(ii) Grade separated intersection with/without ramps

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

4. Road Embankment and Cut Section

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/cuttings shall conform to the Specifications and Standards given in Section4 of the Manual and the specified cross-sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

(iii) Raising of the existing road [Refer to provision of the relevant Manual and specify sections to be raised]

The existing road shall be raised in the following sections:

Sl. No.	Section (from km to km)	Length (km)	Extent of raising [Top of finished road level]
Nil			

5. Pavement Design

(i) Pavement design shall be carried out for a design life of 20 years considering minimum 84 MSA

(ii) Type of pavement

[Refer to the provision of relevant Manual and state specific requirement, if any, of providing cement concrete pavement.]

Flexible pavement shall be designed as per IRC: 37-2018(Fourth Revision) and the details given below

Main Carriageway
<u>For Widening/RE Wall portion/ Reconstruction/Bypass</u> BC -40 mm DBM -60 mm Aggregate Layer- 100 mm CT Base-100 mm CT Sub-Base- 200 mm Total -500 mm
Service Road
BC -40 mm Aggregate Layer- 100 mm CT Base-100 mm CT Sub-Base- 200 mm Total -440 mm

*The above details are minimum stipulations to be followed

(iii) Design requirements

[Refer to the provision of relevant Manual and specify design requirements and strategy]

(a) 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 20 years.

(b) Design Traffic

(iv) Not with standing anything to the contrary contained in this Agreement or the Manual. The Contractor shall design the pavement for a minimum design traffic of minimum 84 million standard axles.

(v) Reconstruction of stretches

[Refer to the provision of relevant Manual and specify the stretches, if any, to be reconstructed.]

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

Sl no	Chainage (km)		Length	TCS No
	From	To.	(km)	
1	173.434	174.925	1.491	TCS 1C
2	177.050	178.300	1.25	TCS 1C
3	178.300	178.650	0.35	TCS 1C2
4	178.650	179.900	1.25	TCS 1C
5	179.900	180.530	0.63	TCS 4B2
6	180.530	181.100	0.57	TCS 1C
7	181.100	181.550	0.45	TCS 1C2
8	181.550	182.850	1.3	TCS 4B
9	182.850	183.100	0.25	TCS 1C
10	199.100	200.750	1.65	TCS 1C
Total Length=			**9.191**	

6. Roadside Drainage

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

RCC Cover drain has been proposed in Built-up and Flyover and VUP locations. The details is given below:

RCC Covered Drain(Service Road)

Chainage (m)		Side	Length (m)	Remarks
From	To			
175150	175415	Both	2X265=530	TCS 6E(Flyover Approach Location)
175415	176645	Both	2X1230=2460	TCS 8(Flyover Location)

Chainage (m)		Side	Length (m)	Remarks
From	To			
176645	176825	Both	2X180=360	TCS 6E(Flyover Approach Location)
191000	191825	Both	2X825=1650	TCS 6A(VUP Approach Location)
Total Length of 1.5m Width Covered Drain =			**5000**	
179900	180530	Both	2X630=1260	TCS-4B2(Built-up Location)
181550	182850	Both	2X1300=2600	TCS-4B(Built-up Location)
Total Length of 1.0m Width Covered Drain =			**3860**	

* The EPC Contractor shall ensure proper functioning of the road side drains by designing them as per site conditions and considering the outfall locations."

7. Design of Structures

(i)General

(a) All bridges culverts and structures shall be designed and constructed in accordance with provision of the relevant Manual and shall conform to the cross- sectional features and other details specified there in.

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

[Refer to provision of the relevant Manual and specify the width of carriageway of new bridges and structures of more than 60(sixty) meter length. If the carriageway width is different from7.5 (seven point five) meters in the table below.]

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features	
1	180.775	• Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb with Railing Width = 0.50m • Overall Width =12.5 m	
2	184.012	**PSC Girder** • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m	**Bowstring Girder** • Carriageway Width= 2x9.5m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Steel Railing Width = 2x0.15m • Median Gap= 1.072m • Steel Hanger= 4x0.814m • Gap = 2x0.15m + 2x0.2m = 0.7m • Overall width =29.328m

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

[Refer to provision of the relevant Manual and provide details of new Structures with footpath]

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
1	173.820	• Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb with Railing Width = 0.50m • Overall width =12.5 m
2	174.716	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
3	175.750	• Carriageway Width = 8.0m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb with Railing Width = 0.30m • Overall width =10.8 m(one side)
4	179.725	• Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb with Railing Width = 0.50m • Overall width =12.5 m
5	180.775	• Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb with Railing Width = 0.50m • Overall width =12.5 m
6	184.012	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
7	185.385	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
8	193.094	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
9	196.257	ROB (Main Portion): • Carriageway Width= 2x9.5m

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
		• Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.30m • Overall width =27.6m
10	197.115	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
11	199.759	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m
12	200.583	• Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb with Railing Width = 2x0.50m • Overall width =28m

(d) All bridges shall be high-level bridges.

[Refer to provision of the relevant Manual and state if there is any exception]

(e) The following structures shall be designed to carry utility services specified in Table below:

[Refer to provision of the relevant Manual and provide details]

Sl.No.	Bridge at km	Utility service Tobe carried	Remarks
Nil			

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

(iv) Culverts

(a) Overall width of all culverts shall be equal to the roadway width of the approaches.

(b) Reconstruction of existing culverts:

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

[Refer to provision of the relevant Manual and provide details]

Sl. No.	Culvert location (Design Ch.) (Km)	Span of existing culvert (m)	Span of proposed culvert (m)	Repairs to be carried out	Remarks
1	176.829	1 X 3m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
2	177.378	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
3	177.725	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
4	178.506	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
5	178.658	4 X 1m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
6	178.959	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
7	179.129	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
8	179.321	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
9	179.960	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
10	180.138	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
11	180.207	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
12	181.684	1 X 1.1m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
13	181.865	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
14	181.963	1 X 0.9m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
15	182.300	1 X 1.9m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
16	182.485	1.2m X 1.2m	1 X 3.0m X 3.0m	Reconstruction	Cast-in-situ
17	182.702	1.2m X 1.2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
18	182.939	1.2m X 1.2m	1 X 3.0m X 4.0m	Reconstruction	Cast-in-situ
19	183.117	2 X 1.2m X 1.21m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box

*[Specify modifications, if any, required in the road level, etc.]

(c) Widening of existing culverts:

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

Sl. No.	Culvert location (Design Ch.) (Km)	Span of existing culvert (m)	Span of proposed culvert (m)	Repairs to be carried out [specify]
Nil				

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

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
1	174.148	1 X 2.0m X 3.0m	RCC segmental box
2	174.336	1 X 3.0m X 4.0m	Cast-in-situ
3	174.945	1 X 3.0m X 4.0m	Cast-in-situ
4	178.080	1 X 2.0m X 3.0m	RCC segmental box
5	183.408	1 X 2.0m X 3.0m	RCC segmental box

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
6	183.561	1 X 2.0m X 3.0m	RCC segmental box
7	183.769	1 X 3.0m X 4.0m	Cast-in-situ
8	184.484	1 X 2.0m X 3.0m	RCC segmental box
9	184.673	1 X 3.0m X 4.0m	Cast-in-situ
10	184.874	1 X 3.0m X 4.0m	Cast-in-situ
11	185.073	1 X 2.0m X 2.0m_EC	RCC segmental box
12	186.125	1 X 5.0m X 4.0m	Cast-in-situ_Skew (Two separate structures for LHS and RHS carriageway)
13	186.228	1 X 2.0m X 3.0m	RCC segmental box (Two separate structures for LHS and RHS carriageway)
14	186.465	1 X 3.0m X 4.0m	Cast-in-situ (Two separate structures for LHS and RHS carriageway)
15	186.850	1 X 2.0m X 3.0m_EC	RCC segmental box
16	186.916	1 X 2.0m X 3.0m_EC	RCC segmental box
17	187.065	1 X 3.0m X 4.0m	Cast-in-situ
18	187.249	1 X 3.0m X 4.0m	Cast-in-situ
19	187.334	1 X 2.0m X 2.0m	RCC segmental box
20	187.671	1 X 2.0m X 3.0m	RCC segmental box
21	188.013	1 X 2.0m X 3.0m	RCC segmental box
22	188.284	1 X 2.0m X 3.0m	RCC segmental box
23	188.499	1 X 2.0m X 2.0m	RCC segmental box
24	189.241	1 X 3.0m X 4.0m	Cast-in-situ
25	189.515	1 X 2.0m X 2.0m	RCC segmental box
26	189.853	1 X 3.0m X 3.0m_EC	Cast-in-situ
27	190.059	1 X 3.0m X 4.0m	Cast-in-situ
28	190.243	1 X 3.0m X 4.0m	Cast-in-situ
29	190.429	1 X 3.0m X 4.0m	Cast-in-situ
30	190.674	1 X 3.0m X 4.0m	Cast-in-situ
31	190.774	1 X 3.0m X 4.0m	Cast-in-situ
32	190.923	1 X 2.0m X 3.0m	RCC segmental box
33	191.064	1 X 3.0m X 4.0m	Cast-in-situ
34	191.924	1 X 3.0m X 4.0m	Cast-in-situ
35	192.224	1 X 4.0m X 5.0m_EC	Cast-in-situ
36	192.590	1 X 3.0m X 4.0m	Cast-in-situ
37	192.874	1 X 2.0m X 3.0m	RCC segmental box
38	193.362	1 X 2.0m X 3.0m	RCC segmental box
39	193.611	1 X 2.0m X 2.0m	RCC segmental box
40	193.824	1 X 3.0m X 4.0m	Cast-in-situ
41	194.054	1 X 3.0m X 4.0m	Cast-in-situ
42	194.374	1 X 3.0m X 4.0m_EC	Cast-in-situ
43	194.785	1 X 3.0m X 4.0m	Cast-in-situ
44	195.024	1 X 3.0m X 4.0m	Cast-in-situ
45	195.174	1 X 2.0m X 3.0m_EC	RCC segmental box

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
46	195.558	1 X 2.0m X 3.0m	RCC segmental box
47	196.740	1 X 5.0m X 3.0m	Cast-in-situ
48	196.900	1 X 2.0m X 3.0m	RCC segmental box
49	197.050	1 X 2.0m X 3.0m	RCC segmental box
50	197.250	1 X 2.0m X 3.0m	RCC segmental box
51	197.585	1 X 2.0m X 3.0m	RCC segmental box
52	198.962	1 X 2.0m X 2.0m	RCC segmental box

*The span and opening of these culverts as specified are indicative and minimum. The design of waterway has to be done as per site requirement, considering the site requirements. Any change in this configuration shall not attract provisions of Article 13 of this Agreement.

(e) Repairs/replacement so railing/parapets, flooring and protection work of the existing culverts shall be undertaken as follows:
[Refer provision of the relevant Manual and provide details]

Sl.No.	Location at km	Type of repair required
Nil		

(e) Floor protection works shall be as specified in the relevant IRC Codesand Specifications.

(iii) Bridges

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

[(i) The existing bridgesat the following locations shall be re-constructed as new Structures]

[Refer provision of the relevant Manual and provide details]

Sl. No.	Salient details of existing bridge			Salient details of proposed bridge			Adequacy or otherwise of the existing waterway, vertical clearance etc.*	Total Width (m)	Remarks
	Bridge location(km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)	Bridge location(km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)			
1	178.653	RCC Slab	3 x 8.2m	174.716	RCC Box	3 x 8m x 5m	-	28	Reconstruction Minor Bridge
2	202.792	RCC Slab	1 x 6.5m	199.759	RCC Box	1 x 8m x 3m	-	28	Reconstruction Minor Bridge
3	203.614	RCC Slab	2x8m	200.583	RCC Box	2 x 8m x 4m	-	28	Reconstruction Minor Bridge

*Attach GAD

* The span and opening of these bridges as specified are indicative. The design of waterway has to

be done as per site requirement, considering the site requirements. Any change in this configuration shall not attract provisions of Article 13 of this Agreement

* The Project Highway Alignment is being modified at these Minor Bridge locations. The contractor shall maintain this existing bridge in Traffic worthiness during construction.

(ii) The following narrow bridges shall be widened:

Sl. No.	Salient details of existing bridge			Salient details of proposed bridge			Adequacy or otherwise of the existing waterway, vertical clearance etc.*	Remarks
	Bridge location (km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)	Bridge location (km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
1	177.756	RCC Slab	4 x 8.3m	173.820	RCC Slab	4 x 8.3m	-	Existing bridge to be widened to achieve total width of 12.5m[9.5m(CW) +2x0.5m(Crash Barrier)+1.5m(Footpath)+0.5(kerb with railing)]

@ Attach cross-section

* The Project Highway Alignment is being modified at these Minor Bridge locations. The contractor shall maintain this existing bridge in Traffic worthiness during construction.

(b) Additional new bridges

[Specify additional new bridges if required. And attach GAD]

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

Sl. No.	Location (km)	Total Length (m)	Total Width (m)	Remarks. If any
1	173.820	2 x 17m	12.5	Integral Slab, Additional Two lane minor bridge
2	175.750	2 x 21m	10.8	RCC T Girder, Existing Bridge Retained as service road bridge with an additional service road bridge at left side
3	179.725	3 x 16m	12.5	RCC T Girder, Additional two lane minor bridge
4	180.775	3 x 42m	12.5	PSC T Girder, Additional two lane major bridge
5	184.012	1 x 25m + 1 x 72m + 1 x 25m	28	PSC T Girder+bowstring,New construction major Bridge
6	185.385	1 x 40m	28	PSC T Girder_Skew,New construction minor Bridge
7	193.094	2 x 6m x 5m	28	RCC Box,New construction minor Bridge
8	197.115	3 x 6m x 4m	28	RCC Box_Skew,New construction minor Bridge

(b) The railings of existing bridges shall be replaced by crash barriersatthe following locations:

"Contractor has the liberty to use alternate Bridge construction technologies such as UHPC girders or modular Bridges in order to reduce time required for bridge construction. Any increase in length /span/height/quantities due to use of alternative bridge construction technologies in the project shall not account for change of scope"

[Refer provision of the relevant Manual and provide details:]

Sl.No.	Location at km	Remarks
1	173.820	**-**

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

[Refer to provision of the relevant Manual and provide details]

Sl.No.	Location at km	Remarks
1	175.750	

(e) Drainage system for bridge decks

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

(f) Structures in marine environment

[Refer to provision of the relevant Manual and specify the necessary measures/ treatments for protecting structures in marine environment. Where applicable]

(iv) Rail-road bridges

(a) Design construction and detailing of ROB/RUB shall be as specified in provision of the relevant Manual [Refer to provision of the relevant Manual and specify modification, if any]

(b) Road over-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Length of ROB (m)	Width of the ROB
1	196.257	1 x 24.0m+(3 x 36m)+1 x 24.0m	**ROB (MAIN PORTION), Composite Girder:** 2x9.5m(CW) + 4 x 0.5m(Crash Barrier) + 3m(median)+2x1.5m(Footpath Width)+2x0.3m(Kerb with Railing)=27.6m **ROB (VIADUCT PORTION), T-Beam:** 2x9.5m(CW) + 4 x 0.5m(Crash Barrier) + 3m(median)=24m

(c) Road under-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Number and length of span(m)	Remarks
Nil			

(vi) Grade separated structures

[Refer provision of the relevant Manual]

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2(ix) and3 of this Annex-I.

(vi) Repairs and strengthening of bridges and structures

[Refer to provision of the relevant 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
1	173.820	Patching of Concrete Surface, Dismantling of concrete, Cleaning of the concrete surface, Dismantling of existing wearing coat
2	175.750	Patching of Concrete Surface, Laying of wearing Course (Bituminous Concrete), Laying of wearing Course (Mastic Asphalt), Laying of wearing Course (Tack Coat), Cleaning of the concrete surface, Repairing of damaged RCC railing, Painting on concrete surface, Dismanteling of existing wearing coat
3	179.725	Painting on concrete surface
4	180.775	Patching of Concrete Surface, Laying of wearing Course (Bituminous Concrete), Laying of wearing Course (Mastic Asphalt), Laying of wearing Course (Tack Coat), Cleaning of the concrete surface, Painting on concrete surface, Dismanteling of existing wearing coat

(b) ROB / RUB

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

(c) Overpasses/Underpasses and other structures

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

Nil

(vii) List of Major Bridges andStructures

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

Sl.No.	Location (km)
Major Bridge	
1	180.775
2	184.012
Flyover	
3	175.415 to 176.645
ROB	
7	196.257

8. Traffic Control Devices and Road Safety Works

(i) Traffic control devices and road safety works shall be provided in accordance with provisions of relevant Manual.

Sl No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
1	Right Hand Side Curve(900 mm Triangular)	Nos.	32
2	Left Hand Side Curve(900 mm Triangular)	Nos.	30
3	School (900 mm Triangular)	Nos.	6
4	Side road left(900 mm Triangular)	Nos.	34
5	Side road right(900 mm Triangular)	Nos.	32
6	Cross Road(900 mm Triangular)	Nos.	6
7	Bus Stop(800 mm x 600 mm rectangular)	Nos.	2
8	Direction Sign<.0.9 sqm	Nos.	47
9	Direction Sign>0.9 sqm	Nos.	14
10	Stop Sign(900 mm Octagonal)	Nos.	86
11	Horn prohibited(600mm Circular)	Nos.	6
12	Hazard Marker (one way) (900mm x300 mm rectangular)	Nos.	384
13	Object Marker (one way) (900mm x300 mm rectangular)	Nos.	33
14	Object Marker (Two way)(900mm x450 mm rectangular)	No.	7
15	Pedestrian Crossing(900 mm Triangular)	Nos.	43
16	Rumble strip(Plastic)	Nos.	64
17	Road Stud	Nos.	4204
18	Built-up area(900 mm Triangular)	Nos.	44
19	T Intersection(900 mm Triangular)	No.	7
20	Speed limit(600mm Circular)	No.	6
21	U-Turn prohibited(600mm Circular)	Nos.	26
22	Delineator	Nos.	578
23	Lane marking, edge marking	Sqm	21800

Sl No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
24	Petrol pump/ Filling facility (800x600 rectangular)	No.	6
25	Cats Eye	Nos.	5332
26	Solar Blinker	Nos.	20
27	Hexagonal woven mesh fencing	Rm	20850

*All above quantities are minimum to be installed/executed. Additional quantity shall not attract Change of Scope.

(ii) Specifications of the reflective sheeting. [Refer to provision of relevant Manual and specify]

9. Road side Furniture

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

(ii) Overhead traffic signs: location and size

[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location (Km)	Size
1	183.050	Minimum Clear Span of 24.5m.(Ref TCS-1C)and minimum clear height from road top level shall be 6.0m
2	199.150	

10. Compulsory Afforestation

[Refer to provision of relevant Manual and specify the number of trees which are required to be planted by the concerned department as compensatory afforestation.]

11. Hazard Location

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

a) Toe wall

Location		Side	Length (km)
From(km)	To(km)		
185.700	185.928	LHS	0.228
Total length=			0.228

*The specified length of Toe wall is the minimum requirement

b) Retaining wall

Location		Side	Length (km)	Remarks
From(km)	To(km)			
183.700	183.930	Both	0.460	
183.710	183.740	LHS	0.030	RCC Retaining cum boundary wall of min 6 m height
184.050	184.320	Both	0.540	
185.200	185.330	Both	0.260	
185.430	185.500	Both	0.140	

Location		Side	Length (km)	Remarks
From(km)	To(km)			
185.700	185.928	LHS	0.228	Left 2 lane carriageway of split 4 lane section
185.928	186.110	LHS	0.182	
185.700	186.150	RHS	0.450	Right 2 lane carriageway of split 4 lane section
186.120	186.150	BHS	0.060	RCC Retaining cum boundary wall of min 6 m height
187.225	187.660	One	0.435	
187.660	187.995	One	0.335	
188.220	188.820	Both	1.200	
197.415	198.670	Both	2.510	
Total length=			**6.830**	

*The specified length of Retaining wall is the minimum requirement

c) Reinforced Earth Wall

Location		Length (km)
From(km)	To(km)	
175.150	175.415	0.265
176.645	176.825	0.180
187.225	187.435	0.210
187.451	187.660	0.209
188.220	188.582	0.362
188.607	188.820	0.213
189.450	189.787	0.337
189.803	190.150	0.347
191.000	191.390	0.390
191.420	191.825	0.405
193.325	193.564	0.239
193.589	193.825	0.236
195.725	196.170	0.445
196.343	196.775	0.432
197.415	197.779	0.364
197.804	198.666	0.862
198.682	198.880	0.198
Total length=		**5.694**

*The specified length of Reinforcedearthwall is the minimum requirement

d) Turfing

Location		Side	Length (km)
From(km)	To(km)		
173.434	174.925	BOTH	2.982
174.925	175.150	BOTH	0.450
176.825	177.050	BOTH	0.450

Location		Side	Length (km)
From(km)	To(km)		
177.050	178.300	BOTH	2.500
178.300	178.650	BOTH	0.700
178.650	179.900	BOTH	2.500
180.530	181.100	BOTH	1.140
181.100	181.550	BOTH	0.900
182.850	183.100	BOTH	0.500
183.100	185.600	BOTH	5.000
185.600	185.750	BOTH	0.300
185.750	186.800	BOTH SIDE OF CARRIAGEWAYFOR LHS AND RHS CARRIAGEWAY	4.200
186.800	187.050	BOTH	0.500
187.050	187.225	BOTH	0.350
187.660	187.995	BOTH	0.670
187.995	188.220	BOTH	0.450
188.820	189.045	BOTH	0.450
189.045	189.450	BOTH	0.810
190.150	190.775	BOTH	1.250
190.775	191.000	BOTH	0.450
191.825	192.050	BOTH	0.450
192.050	193.325	BOTH	2.550
193.825	195.725	BOTH	3.800
196.775	197.190	BOTH	0.830
197.190	197.415	BOTH	0.450
198.880	199.100	BOTH	0.440
199.100	200.750	BOTH	3.300
Total length=			**38.372**

*The specified length of Turfingis the minimum requirement

e) Thrie-Metal Beam Crash Barrier

Thrie-Metal beam crash barrier of 15380m length has been proposed in the project stretch.

*The specified length Thrie-Metal Beam Crash Barrier is the minimum requirement

12. Special Requirement for Hill Roads

Not applicable.

13. Change of Scope

The length of Structures and bridges specified here in above 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 specified in this Schedule- B

shall not constitute Change of Scope save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

(Schedule B-1)

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

The details of proposed electrical utility is given below.

S.No	Description	Unit	Quantity
1	11KV	Nos.	1035
2	33KV	Nos.	691
3	Transformer	Nos.	44

The details of proposed PHE utility is given below

S.No	Description	Unit	Quantity
1	63mm PVC	Rm	805
2	100 mm	Rm	150
3	200 mm	Rm	550
4	250 mm	Rm	120
5	110 mm PVC	Rm	2800
6	90 mm PVC	Rm	2488
7	75 mm PVC	Rm	3360

** The quantity given above is indicative, the contractor has to finalize the actual requirement of shifting of various utilities in due consultation with Authority's Engineer and Authority, duly verified by the concerned utility authorities and approved by authority".

APPENDIX B – I of Annexure – I
(Schedule B-2)

The Plan & Profile & General Arrangement Drawing(GAD) of structures of the project Highway are given in soft copy.

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

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

(a) Toll plaza[s]

(b) Road side furniture;

(c) Pedestrian facilities;

(d) Tree plantation;

(e) Truck Lay byes;

(f) Bus-bays and passenger shelters;

(g) Rest areas; and

(h) Others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Toll Plaza :-

Sl. No.	Design Chainage (km)	Name of the Place	Remarks
Nil			

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

b) Road side furniture:-

Sl. No.	Description	Location	Design Standard
1	Traffic sign & pavement marking	Entire Length (As per Schedule B)	As per Manual
2	Km Stone, 5th kilometre stone	Entire Length	As per Manual
3	Boundary Stone	Entire Length	As per Manual
4	Road side Delineator, marker & Road Stud	As per Schedule B	As per Manual
5	Metal beam crash barrier	As per Schedule B	As per Manual

C) Pedestrian Facility:-

Pedestrian facilities in the form of covered drain cum foot path shall be provided in the built up area (refer typical cross – section drawing). Pedestrian facilities shall be

provided at the locations of Built up sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL.

d) Truck Lay bye: -

Sl. No.	Truck lay bye Chainage (Both Side)	Name of the Place
1	178.900(Both side)	Bathipara

e) Bus Bay with Passenger shelter: -

Sl. No.	Project Facility	Location (km)	Name of the Place
1	Bus Bay with Passenger shelter	177.700 (Both side)	Bathipara

f) Rest Areas

Sl. No.	Rest Area Chainage	Name of the Place
Nil		

g) Roadside Amenities

Area in between spilt 2 x 2 lane section(design Ch.185.750km to Ch.186.790km) shall be filled and developed with necessary drainage provision for landscaping(As per Manual) and future road side amenities.

h) Others to be specified

Foot Over Bridge:

Foot over bridge has been proposed at market location. The details is given below.

Sl.No	Design Ch.(km)	Location	Remarks
1	174.250	Chhaygaon	Foot Over Bridge (FOB) shall have minimum clear width of 3.0m with provision of 4 sided stairs. Minimum clear height from road top level shall be 6.0m and minimum clear span shall be as per proposed road TCS at FOB locations. Foot Over Bridge (FOB) shall be aesthetically pleasant and shall reflect cultural heritage of Assam.
2	174.925	Chhaygaon	
3	178.450	Bhathipara	
4	179.882	Kukurmara	
5	181.100	Kukurmara	

Street Lighting:

(i) Minimum 561 Nos. Solar Street lights shall be provided in Built up, Flyover,Bus bay, Passenger Shelter &Major Junction locations or any other location as per the satisfaction of Authority's Engineer. Additional requirement of street light by Authority shall not attract Change of Scope.

(iii) The EPC Contractor will obtain all permissions/load sanctions/power supply, etc. from the Electricity Authorities. The Contractor shall be solely responsible for submission of application along with all necessary documents to supply authority. Further the Contractor shall be responsible for follow up of the application and getting the release of the supply to lighting. All statutory approvals/permissions have to be obtained by the Contractor for energizing/operating the lights

Utility Duct:

Nil

Note: Provide adequate details of each Project Facility to ensure their design and completion in accordance with the project-specific requirements and the provisions of the Manual.

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

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

[Manual of Specifications and Standards for Four Lanning of Highways (IRC: SP: 84-2014 (For Minor Bridge) and IRC: SP: 84-2019), referred to herein as the Manual]

[Note: Specify the relevant Manual, Specifications and Standards]

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for [Four-Lanning of Highways (IRC:SP:84-2014 and IRC: SP: 84-2019)], referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

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

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

Deviations fromtheaforesaidSpecificationsand Standards shallbe listedout here.

Item	Manual Clause Reference	ProvisionasperManual	Modified Provision
Radii of Horizontal Curve	2.9 (Table-2.6)	Desirable Minimum Radius: 400 m Absolute Minimum Radius: 250 m	230mat approachof Kukurmar bridge(Design Ch. 180.775km)

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: SP35. 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.

Table -1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equip ment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approache	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measuremen t Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
s of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Cracking	Nil	< 5 % subject to limitof 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1% ofarea	Daily	Length Measurement Unit like		2-7 days	IRC:82- 2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
	Bleeding	Nil	< 1 % of area	Daily	Scale, Tape, odometer etc.		3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricte	Daily			7- 15 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
			d to 30 cm from the edge					
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	Class I Profilometer : ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2015
	Deflection/ Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure,	Roughness BI	2200mm/km	2400mm/km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 - 94: 2000	180 days	IRC:SP:83-2008
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force	IRC:SP:83-2008	180 days	IRC:SP:83-2008

AssetType	PerformancePara meter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	MaintenanceSpecifications
		Desirable	Acceptable					
approaches of connecting roads, slip roads, lay byes etc. as applicable)		Minimum SN	Traffic Speed (Km/h)		Coefficient Routine Investigation Machine or equivalent)			
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
Embankment/ Slope	Edge drop at shoulders	Nil	40mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<2% variation in prescribed slope of camber /cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribe	Daily			7-15 days	MORT&H Specification 408.4

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
			side slope					
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification
	Rain Cuts/ Gullies in slope	Nil	Nil	Daily Specially During Rainy Season	NA		7-15 days	MORT&H Specification

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

Table -2: **Maintenance Criteria for Rigid Pavements:**

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
CRACKING						
1	**Single Discrete Cracks Not intersecting with any joint**	w = width of crack L = length of crack d = depth of crack D = depth ofslab	0	Nil, not discernible	No Action	Not applicable
			1	w < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-movingcar	Seal without delay	Seal, and stitch if L >lm.
			3	w = 0.5 - 1.5 mm, discernible from fast-movingcar		Within 7days

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	**Single Transverse (or Diagonal) Crack intersecting with one or morejoints**	w = width of crack L = length of crack d = depth of crack D = depth ofslab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy.Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1m.Within 7 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstructaffected. Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
			5	w > 6 mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may befulldepth	
3	**Single Longitudinal Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth ofslab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow movingvehicle	Seal with epoxy, if L > 1 m.Within 7 days	Staple or dowel bar retrofit. Within 15days

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, ifL > l m.Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair withstapling. Within 15 days
			4	w = 6.0 - 12.0 mm, usually associated withspalling	Not Applicable, as it may befulldepth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full Depth Repair Dismantle and reconstruct affected portion as pernorms and specifications -

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						See Para 5.6.4 Within 15 days
4	**Multiple Cracks intersecting with one or morejoints**	**w = width of crack**	0	Nil, not discernible	No Action	-
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > l m. Within 15 days	
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3pieces		
			5	w > 6 mm and/or panelbroken		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
				into more than 4 pieces		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy tosecure broken parts Within 7 days	Seal with epoxy seal withepoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one cornerbroken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 ofIRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	ree or four corners broken		Reinstate sub-base, and reconstructthe

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length(m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be fulldepth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within30days
			5	w > 3 mm, L > 3 m/m^2 and deformation		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Surface Defects						
7	**RavellingorHoneycomb type surface**	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term** No action.	**Long Term** Not Applicable
			1	r < 2 %	Local repair of areas damaged and liable to be damaged. Within 15 days	
			2	r = 2 - 10 %		
			3	r = 10-25%	Bonded Inlay, 2 or 3 slabs ifaffecting.	
			4	r = 25 - 50 %		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
					Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4 or more slabs ifaffecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r <**2 %**	Local repair of areas damaged and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	r = 10 - 20%	Bonded Inlay within 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab within 30 days	
9	**Polished Surface/Glazing**	t = texture depth, sand patchtest	0		No action.	Not Applicable
			1	t > 1 mm		
			2 '	t = 1 - 0.6 mm	Monitor rate of deterioration	
			3	t = 0.6 - 0.3 mm		
			4	t = 0.3 - 0.1 mm		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
			5	t < 0.1 mm	Diamond Grinding if affecting50% or more slabs inacontinuou stretch of minimum5 km. Within 30 days	
10	**Popout (Small Hole), Pothole Refer Para 8.4**	n = number/m^2 d = diameter h = maximumdepth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m^2	No action.	Not Applicable
			1	d=50-100mm;h<50mm;n<1 per 5 m^2	Partial depth repair 65 mm deep.	
			2	d=50-100mm;h>50mm;n<1 per 5 m^2	Within 15 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	d = 100 - 300 mm; h < 100 mm n < 1 per 5m^2	Partial depth repair 110mm i.e.10 mm more than the depthof the hole. Within 30 days	
			4	d = 100 - 300 mm; h > 100 mm; n < 1 per 5m^2		
			5	d > 300 mm; h > 100 mm: n > 1 per 5 m^2	Full depth repair. Within 30 days	

Joint Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total jointlength	0	Difficult to discern.	**Short Term** No action.	**Long Term** Not Applicable
			1	Discernible, L< 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress ofwater	Clean, widen and reseal the joint. Within 7 days	

				and trapping Incompressible material.		
12	**Spalling of Joints**	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	Not Applicable
			1	w < 10 mm	Apply low viscosity epoxy resin/ mortar in crackedportion.	
			2	w = 10 - 20 mm, L < 25%	Within 7 days	
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair. Within 15 days	
			4	w = 40 - 80 mm, L > 25%	30 - 50 mm deep, h = w . 20% of w, within 30 days	
			5	w > 80 mm, and L > 25%	50 - 100 mm deep repair. H = w . 20% of w. Within 30 days	
13	**Faulting (orStepping)**	f = difference of level	0	not discernible, < 1 mm	No action.	No action.

	in Cracks or Joints		1	f < 3 mm		
			2	f = 3 - 6 mm	Determine cause and observe, take action for diamondgrinding	Replace the slab as appropriate. Within 30days
			3	f = 6 - 12 mm	Diamond Grinding	
			4	f= 12 - 18 mm	Raise sunken slab.	Replace the slab as appropriate. Within 30days
			5	f> 18 mm	Strengthen subgrade and sub-base by groutingand raising sunken slab	
14	**Blowup or Buckling**	h = vertical displacement from normalprofile	0	Nil, not discernible	**Short Term**	**Long Term**
			1	h < 6 mm	No Action	
			2	h = 6 - 12 mm	Install Signs to Warn Traffic	

			3	h = 12 - 25 mm	within 7 days	
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or morepieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertical displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	Not Applicable
			1	h = 5 - 15 mm		
			2	h = 15-30 mm, Nos<20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Strengthen subgrade. Reinstate pavement at normal level	

			5	h > 100 mm	if L < 20 m. Within 30 days	
16	**Heave**	h = positive vertical displacement from normal profile. L = length	0	Not discernible. h < 5 mm	**Short Term**	**Long Term**
					No action.	scrabble
			1	h = 5 - 15 mm	Follow up.	
			2	h = 15 - 30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days	
			5	h > 100 mm		
17	**Bump**	h = vertical	0	h < 4 mm	No action	

		displacement from normalprofile	1	h = 4 - 7 mm	Grind, in case of new construction within 7 days	Construction Limit for New Construction.
			3	h = 7 - 15 mm	Grind, in case of ongoing Maintenance within 15 days	Replace in case of new construction. Within 30days
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	**Lane to Shoulder Dropoff**	f = difference of level	0	Nil, not discernible < 3mm	**Short Term** No action.	**Long Term**
			1	f = 3 - 10 mm	Spot repair of shoulder within 7 days	
			2	f = 10 - 25 mm		
			3	f = 25 - 50 mm	Fill up shoulder	

			4	f = 50 - 75 mm	within 7 dayss	For any 100 m stretch Reconstruct shoulder, if affecting 25% or more ofstretch. Within 30days
			5	f > 75 mm		
Drainage						
19	**Pumping**	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints Without delay.	Inspect and repair sub-drainage at distressed sections and upstream.
			3 to 4	appreciable/ Frequent 10 -25%	Lift or jack slab within 30 days.	
		Nos/100 m stretch	5	abundant, crack development >25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	

20	**Ponding**	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	
			3 to 4	Blockages observed in drains, but water flowing	Clean drains etc within 7 days, Follow up	Action required to stop water damaging foundation within 30 days.
			5	Ponding, accumulation of water observed	-do-	

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="3">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="5">Highway</td><td rowspan="5">Availability of Safe Sight Distance</td><td colspan="3">As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.</td><td rowspan="5">Monthly</td><td rowspan="5">Manual Measurements with Odometer along with video/ image backup</td><td rowspan="5" colspan="2">Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.

In case of permanent structure or design deficiency: Removal of obstruction/improvementofdeficiency at theearliestSpeed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td rowspan="5">IRC:SP 84-2014</td></tr>
<tr><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance (m)</td><td>Safe Stopping Sight Distance (m)</td></tr>
<tr><td>100</td><td>360</td><td>180</td></tr>
<tr><td>80</td><td>260</td><td>130</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>Pavement Marking</td><td>Wear</td><td colspan="3"><70% of marking remaining</td><td>Bi-Annually</td><td>Visual Assessment as per Annexure-F of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2months</td><td>IRC:35-2015</td></tr>
</table>

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td></td><td>Day time Visibility</td><td>During expected life Service Time
Cement Road - 130mcd/m²/lux
Bituminous Road - 100mcd/m²/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td></td><td>Night Time Visibility</td><td><u>Initial and Minimum Performancefor Dry Retro reflectivity during night time:</u>
<table>
<tr><td>Design Speed</td><td colspan="2">(RL) Retro Reflectivity (mcd/m²/lux)</td></tr>
<tr><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr>
<tr><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td>65 - 100</td><td>250</td><td>120</td></tr>
<tr><td>Above 100</td><td>350</td><td>150</td></tr>
</table>
<u>Initial and Minimum Performance for Night Visibility under wet condition(Retro reflectivity):</u></td><td>Bi-Annually</td><td>As per Annexure-E Of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
</table>

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		Initial 7 days Retro reflectivity: 100 mcd/m²/lux Minimum Threshold Level: 50 mcd/m²/lux					
	Skid Resistance	Initial and Minimum performance for SkidResistance: Initial (7days): 55BPN Min. Threshold: 44BPN *Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
Road Signs	Shape and Position	Shape and Position as per IRC:67-2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each	hange of ignboard	48 hours in case of Mandatory	RC:67-2012

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measuremen t	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	Traffic Safety Barriers			backup			IRC:119-2015
	Attenuators	Functionality: Functioning of Attenuators asintended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectificatio n	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction byvegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	

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

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

	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons andpitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansionjoint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier andguard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.

	Rusted reinforcement	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portionwith epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					
	Delamination	Not more than 0.50 sq.m					
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	Grouting with epoxy mortar, investigating causes for cracks development and carry outnecessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH Specifications 2600 & 2700.
	Deflection due to permanent loads and	Within design limits.	Once in every 10 years for spans more	Load test method	Carry out major rehabilitation works on bridge to retain original design loadscapacity	6 months	IRC SP: 51-1999.

	live loads		than 40 m					
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15mto 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of structure	super	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper stripjoint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge InspectionUnit	Replace	seal in	15 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal	No dust or debris in expansion joint	Monthly	Detailed condition survey as per IRC SP:35-1990 using	Cleaning of expansion joint gapsthoroughly		3 days	MORTH specifications 2600 and

	expansion joint	gap.		Mobile Bridge InspectionUnit			IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainagespout if any leakages observed.	3 days	MORTH specification 2700.
Bridge-substructure	Cracks/spalling of concrete/ rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.

	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture ofreinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge InspectionUnit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on tobearings.	3 months	MORTH specification 2810and IRC SP: 40-199.
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells inmajor Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons andpitching.	30 days after defect observation or 2	IRC: SP 40-1993 and IRC:SP:13-2004.

		sq.m, damage to solid apron (concrete apron) not more than 1 sq.m				weeks before onset of rainy season whichever is earlier.	
Note: Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of thecontractor.							

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. FlexiblePavement

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

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four)hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiringreplacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g) [TollPlaza]		
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobilecrane	4 (four) hours
Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporarymeasures Permanentmeasures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b) Foundations		

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

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

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

Schedule - F

(See Clause 4.1 (vii)(a))

ApplicablePermits

1. Applicable Permits

(i) The Contractor shall obtain, as required under the Applicable Laws, the following ApplicablePermits:

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

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

(c) Licence for use ofexplosives;

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

(e) Licence from inspector of factories or other competent Authority for setting up batchingplant;

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

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

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

(i) Any other permits or clearances required under ApplicableLaws.

(ii) Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of thisAgreement.

SCHEDULE - G

(See Clauses 7.1.and 19.2)

FORM OF BANK GUARANTEE

Annexure-I

(See Clause 7.1)

[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 "Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km)for Package-10 of Bilasipura- Guwahati road(NH 17) ((Section: Milmila R.F(before Chayagaon Market) to Approach of Airport Junction (VIP Chowk)))in the state of Assam on EPC modein the state of Assam " 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& Infrastructure Development Corporation Limited, 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.

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

Sl.	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.

Annexure – II

(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 **"**Widening/Improvement to 4 (Four) Lanewith Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km)for Package-10 of Bilasipura- Guwahati road(NH 17) ((Section: Milmila R.F(before Chayagaon Market) to Approach of Airport Junction (VIP Chowk))**) in the state of Assam on EPC mode** in the state of asamsubject 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 free 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 three 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/third} installment of the Advance Payment is Rs. --- --- cr. (Rupees ------ crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the "**Guarantee Amount**")[$] .

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

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

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

   A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways& Infrastructure Development Corporation Limited], 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.

2. 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.

3 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.

4 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.

5 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.

6 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.

7 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.

8. 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.

9. 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.

10. 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.

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

(SeeClauses10.1(iv)and19.3)

Contract PriceWeightages

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 for Payment	Percentage weightage
1	2	3	4
Road Works including Culverts, wideningand repair ofculverts	36.21 %	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub- grade	5.94%
		(2) Sub-base Course	7.78%
		(3) Non bituminous Base course	4.39%
		(4) Bituminous Basecourse	6.43%
		(5) Wearing Coat	3.05%
		(6) Widening and repair of culverts	[Nil]
		B.1-Reconstruction/New 2-Lane Realignment /Bypass(Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	14.45%
		(2) Sub-base Course	11.2%
		(3) Non bituminous Base course	5.89%
		(4) Bituminous Basecourse	9.51%
		(5) Wearing Coat	4.5%
		B.2-Reconstruction/New 8-Lane Realignment/ Bypass(Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) DryLean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		C.1-Reconstruction/ New Service Road(Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	1.32%
		(2) Sub-base Course	3.92%
		(3) Non bituminous Base course	3.5%
		(4) Bituminous Basecourse	1.87%
		(5) Wearing Coat	1.77%
		C.2- Reconstruction/New Service road(Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(2) Sub-base Course	[Nil]
		(3) DryLean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction &New Culverts onexisting road, realignments, bypasses Culverts (length <6m)	14.48%
Minorbridge/ Underpasses/ Overpasses	10.11 %	**A.1-widening and repairing of Minor Bridges (length >6 m&<60m)**	
		Minor Bridges	1.75%
		A.2- New Minor bridges (length >6 mand<60m)	
		(1) Foundation : On completion of the foundation work .	15.96%
		(2)Sub-Structure: On completion of the Sub structure work	11.52%
		(3) Super-structure:On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road,signs& markings, tests on completion etc. complete in all respect.	10.75%
		(4)Approaches:Oncompletionof approaches includingRetainingwalls, stonepitching, protection works complete in all and fit for use	2.56%
		(5) GuideBundsand River Training Works:On completion of GuideBundsandriver training works complete in all respects	[Nil]
		B.1- Widening and repairs of underpasses/overpasses	
		Underpasses/ Overpasses	[Nil]
		B.2-New Underpasses/Overpasses	
		(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	40.78%
		(2)Super-structure:On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails,crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified.	16.68%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]
Major bridge(length>60 m)worksand ROB/RUB/elevatedsections/flyovers including viaducts,ifany	27.90 %	**A.1- Wideningand repairs of Major Bridges**	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)WearingCoatincludingexpansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.069%
		(6) Wing walls/return walls	[Nil]
		(7)Guidebunds,RiverTrainingworks etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitchingandprotection works)	[Nil]
		A.2-New Major Bridges	
		(1)Foundation	6.911%
		(2)Sub-structure	1.88%
		(3)Super-structure(including bearings)	11.22%
		(4)WearingCoatincludingexpansion joints	0.04%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.037%
		(6) Wing walls/return walls	[Nil]
		(7)Guidebunds,RiverTrainingworks etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitchingand protection works)	0.45%
		B.1-Wideningandrepairsof (a) ROB (b) RUB	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-Structure (Including bearings)	[Nil]
		(4)Wearing Coat(a)in case of ROB- wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainagefacilitycompletein all respects as specified	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7) Approaches (Including Retaining walls,Stone Pitching and protection works)	[Nil]
		B.2-New ROB/RUB	
		(1)Foundations	6.37%
		(2) Sub-Structure	1.27%
		(3) Super-Structure (Including bearings)	7.21%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(4)Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.03%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.78%
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)WearingCoatincludingexpansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	30.92%
		(2) Sub-Structure	3.09%
		(3)Super-Structure(Including bearings)	29.473%
		(4)WearingCoatincludingexpansion joints	0.2%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.05%
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	25.78 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	5.249%
		(iii) Road signs,markings,kmstones,safety devices etc	7%
		(iv) Project facilities	
		a) Bus Bays	0.4%
		b) Truck Lay-byes	0.63%
		c) Passenger Shelter	0.02%
		d) Rest Area	[Nil]
		e) Road Side Aminities	[Nil]
		f) Street Light	0.86%
		g) Utility Duct	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(v) Road side Plantation	[Nil]
		(vi)Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]
		(vii) Safety &Traffic Management during const.	[Nil]
		(viii) Junction	
		(ix) Toe Wall	0.201%
		(x) Retaining Wall	14.76%
		(xi) Boundarywall	[Nil]
		(xii) Site Clearance &Dismanteling	1.4%
		(xiii) Reinforced Earth Wall	47.4%
		(xiv) Junction	1.8%
		(xv) Turfing	0.66%
		(xvi) Breast Wall	[Nil]
		(xvii) Chute Drain	[Nil]
		(xvii) Ground Improvement Works (Sand Pile)	[Nil]
		(xvii) Protection Work (Stone Pitching)	[Nil]
		(xviii) Foot Over Bridge	5.74%
		(xvix) Electrical Utilities & Public Health Utilities(Water Pipe Line & Sewage Line)	[Nil]
		a) EHT line	[Nil]
		b) EHT Crossing	[Nil]
		c) HT I LT line (including transformers if any)	12.18%
		d) HT I LT line crossings	
		e) Water Pipe Line	1.7%
		f)Water Pipe Line Crossing	
		g) Sewage Line	[Nil]
		h) Sewage Line Crossing	[Nil]

1.3 Procedure of estimating the value of work done

1.3.1 Roadworks

Procedure for estimatingthe value ofroad work done shall be as follows:

Table1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening&Strengtheningofroad		

Stage of Payment	Percentage weightage	Payment Procedure
(1)Earthwork up to top of the sub-grade	5.94%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of (1) Preparation of Sub-Grade: 60% of Weightage of (1
(2) Sub-base Course	7.78%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m
(3) Non bituminous Base course	4.39%	
(4) Bituminous Base course	6.43%	
(5) Wearing Coat	3.05%	
(6) Widening and repair of culverts	[Nil]	Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least five culverts
B.1- Reconstruction/New2-Lane Realignment/Bypass(FlexiblePavement)		
(1) Earthwork up to top of the sub-grade	14.45%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of (1) Preparation of Sub-Grade: 60% of Weightage of (1
(2) Sub-base Course	11.2%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m
(3) Non bituminous Base course	5.89%	
(4) Bituminous Base course	9.51%	
(5) Wearing Coat	4.5%	
B.2- Reconstruction/New 8-Lane Realignment/Bypass(Rigid Pavement)		
(1)Earthworkupto top of the sub-grade	[Nil]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of (1) Preparation of Sub-Grade: 60% of Weightage of (1
(2) Sub-base Course	[Nil]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
C.1- Reconstruction/New Service Road/ Slip Road(Flexible Pavement)		

Stage of Payment	Percentage weightage	Payment Procedure
(1)Earthworkupto top of the sub-grade	1.32%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of (1) Preparation of Sub-Grade: 60% of Weightage of (1
(2) Sub-base Course	3.92%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m
(3) Non bituminous Base course	3.5%	
(4) Bituminous Basecourse	1.87%	
(5) Wearing Coat	1.77%	
C.2- Reconstruction/New Service road (Rigid Pavement)		
(1)Earthworkuptotopofthe sub-grade	[Nil]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of (1) Preparation of Sub-Grade: 60% of Weightage of (1
(2) Sub-base Course	[Nil]	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m
(3) DryLean Concrete (DLC)Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
D- Reconstruction& New Culverts on existingroad,realignments,bypasses		Cost of each culverts shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least one culvert.
Culverts (length <6m)	14.48%	

@ 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 xweightage for road work xweightage for bituminous workx (1/L)

Where,

P = Contract Price

L = Total length in km

Similarly, the rates perkm for otherstagesshallbeworkedout accordingly.

Note: The length affected due tolaw-and-orderproblemsor litigationduring execution due to which the Contractor is unable to execute the work, maybedeductedfromthetotalprojectlengthforpaymentpurposes. Thetotallengthcalculatedhereisonlyforpaymentpurposesandwillnotaffect

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repairs of Minor Bridges (length>6m&<60m)	1.75%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges.Payment shall be made on the completion of widening & repair works of a minor bridge
A.2- New Minor Bridges (length>6m& <60m)		
(1)Foundation : On completion of the foundation work .	15.96%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of at least two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Sub-Structure: On completion of the Sub structure work	11.52%	Sub Structure: Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment/pier cap level of each bridge.
(2)Super-structure:On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road,signs& markings, tests on completion etc. complete in all respect.	10.75%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of superstructure of at least one span specified in the Colum of "Stage payment in the sub clause.
(3)Approaches:Oncompletionof approaches includingRetainingwalls, stonepitching, protection works	2.56%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e.completion of approaches in all respect as specified in the column of

Stage of Payment	Weightage	Payment Procedure
complete in all and fit for use		"Stage of Payment" in this sub-clause.
(4) GuideBundsand River Training Works:On completion of GuideBundsandriver training works complete in all respects	[Nil]	Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bund sand River training Works in all respects as specified
B.1- Wideningand repairs ofunderpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening &repairworks of a underpass/overpass.
B.2- NewUnderpasses/Overpasses		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	40.78%	Foundation: Payment against foundation shall be made on pro-rata basis on completion of at least two foundations. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified Sub Structure :Payment sub structure shall be made on pro-rata basis on completion of at least two substructure upto abutment/pier cap level of each bridge.
(2)Super-structure:On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails,crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified.	16.68%	Super-structure:Payment shall be made on pro-rata basis on completion ofa stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "StageofPayment"in this sub-clause.
(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects 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	Weightage	Payment Procedure
A.1- Widening and repairs of Major Bridges		
(1)Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. Incase where load testing is required for foundation,the trigger of first payment shall include loadtesting also where specified.
(2)Sub-structure	[Nil]	Sub-structure:Payment against sub-structure shall bemade on pro-rata basis on completion of a stagei.e. not less than 25% of the scope of sub- structure of majorbridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e.completion of super- structure including bearings of atleast one span inall respects asspecified.In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)WearingCoatincludingexpansion joints	[Nil]	WearingCoat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.069%	Miscellaneous: Payments shall be made on completion of all miscellaneousworkslike handrails, crashbarriers,roadmarkingsetc. completein all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls:Payments shall be made on completion of all wing walls/returnwalls complete in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
(7)Guidebunds,RiverTrainingworks etc.	[Nil]	Guide Bunds, River Trainingworks: Payments shall be made on completion ofallguidebunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitchingandprotection works)	[Nil]	Approaches: Payments shallbe made on pro rata basis on completion of 10% of the scope of each stage.
A.2-New MajorBridges		
(1)Foundation	6.911%	Foundation: Payment against foundation shall be made on the pro-rata basis on completion of a stage i.e. 25% of the scope of foundation of a bridge as per Weightage given in this table, subject to completion of atleast two foundations in all respect. In case load testing is required for foundation, the trigger for first payment shall include load testing also where specified
(2)Sub-structure	1.88%	Sub-structure:Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e.not lessthan25% ofthe scope of sub- structure of majorbridge as per Weightage given in this table, subject to completion of atleast two sub structure up to abutment/pier cap level of a bridge
(3)Super-structure(including bearings)	11.22%	) Super Structure (casting of irder): Unit of measurement is numbers. Payment against casting of girder shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast five girders of the structures ii) Super Structure (casting of Segment): Unit of measurement is numbers. Payment against casting of segment shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast 10 segments of the structures iii) Super Structure (rection of irders,deck slab and bearing): Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respects as specified
(4)WearingCoatincludingexpansion joints	0.04%	Wearing oat: Payment shall be made on pro rata basis on completion of a stage i. in all respects as

Stage of Payment	Weightage	Payment Procedure
		specified
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.037%	Payment shall be made on prorate basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls:Payments shall bemade on completion of all wing walls/returnwalls complete in all respects as specified.
(7)Guidebunds,RiverTrainingworks etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion ofall guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitchingand protection works)	0.45%	Approaches: Payments shall be made on pro ratabasison completion of 10% of the scope of each stage.
B.1- Widening and repairs of (a)ROB (b)RUB		
(1) Foundations	[Nil]	Foundation: Payment against foundation shall be made on pro rata on completion of a stage i.e. 25% of the scope of foundation of ROB/RUB as per Weightage given in this table, subject to completion of atleast two foundations in all respect. In case load testing is required for foundation, the trigger for first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub-structure shallbe made on pro-rata basis on completion of a stage i.e.notlessthan 25% of the scope of sub- structure of RO /RU subject to completion of at least two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB...
(3) Super-Structure (Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e.completion of super- structure including bearings of at least one span in all respects as specified.
(4)Wearing Coat(a)in case of ROB- wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainagefacilitycompletein all respects as specified	[Nil]	WearingCoat: Payment shall be made on completion (a) in caseof ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement underRUB including drainage facility

Stage of Payment	Weightage	Payment Procedure
		completein all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crashbarriers,roadmarkingsetc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls:Payments shall be made on completion of all wing walls/returnwallscompleteinall respects as specified.
(7) Approaches (Including Retaining walls,Stone Pitching and protection works)	[Nil]	Payments shall be made on prorata basis on completion of 20% of the total area.
B.2-NewROB/RUB		
(1) Foundation	6.37%	Foundation: Payment against foundation shall be made on the pro-rata basis on completion of a stage i.e. 25% of the scope of foundation of a bridge as per Weightage given in this table, subject to completion of atleast two foundations in all respect. In case load testing is required for foundation, the trigger for first payment shall include load testing also where specified
(2) Sub-structure	1.27%	Sub-structure : Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of a bridge as per Weightage given in this table, subject to completion of atleasttwo sub structure up to abutment/pier cap level of a ROB/RUB

Stage of Payment	Weightage	Payment Procedure
(3) Super-structure (includingbearing)	7.21%	i) Super Structure (casting of irder): Unit of measurement is numbers. Payment against casting of girder shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast five girders of the structures ii) Super Structure (casting of Segment): Unit of measurement is numbers. Payment against casting of segment shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast 10 segments of the structures iii) Super Structure (rection of irders,deck slab and bearing): Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respects as specified
(4)Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	0.03%	WWearing oat: Payment shall be made on pro rata basis on completion of a stage i. in all respects as specified
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.78%	Payment shall be made on prorate basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls:Payments shall be made on completion of all wing walls/returnwalls complete in all respects asspecified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.1-Wideningandrepairs of ElevatedSection/ Flyovers/Grade Separators		

Stage of Payment	Weightage	Payment Procedure
(1) Foundations	[Nil]	Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m)of the structure.Payment against foundation shall be made on pro-rata basis on completion of a stage i.e.not less than 25% of the scope of foundation of the structure. Incase where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure:Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3)Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e.completion of super- structure including bearings of atleast one span in all respects a sspecified.In case of structures where pre-cast girders have been proposed by the Contractor,50% ofthe stage payment shall be due and payable oncasting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)WearingCoatincludingexpansion joints	[Nil]	WearingCoat: Payment shall be made on completion of wearingcoat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crashbarriers,roadmarkingsetc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls:Payments shall be made on completion of all wing walls/returnwalls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.2- New Elevated Section/ Flyovers/Grade Separators		

Stage of Payment	Weightage	Payment Procedure
(1) Foundations	30.92%	(i) Foundation: Foundation: Payment against foundation shall be made on prorata on completion of a stage i.e. 25% of the scope of foundation of ROB/RUB as per Weightage given in this table, subject to completion of atleast two foundations in all respect. In case load testing is required for foundation, the trigger for first payment shall include load testing also where specified
(2) Sub-Structure	3.09%	Sub-structure : Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of a bridge as per Weightage given in this table, subject to completion of atleast two sub structure up to abutment/pier cap level of each structure
(3)Super-Structure(Including bearings)	29.473%	) Super Structure (casting of irder): Unit of measurement is numbers. Payment against casting of girder shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast five girders of the structures ii) Super Structure (casting of Segment): Unit of measurement is numbers. Payment against casting of segment shall be made on pro rata basis with respect to total number of girders required in the structure on completion of a stage i.e. not less than completion of casting of atleast 10 segments of the structures iii) Super Structure (rection of irders,deck slab and bearing): Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearing of at least one span in all respects as specified

Stage of Payment	Weightage	Payment Procedure
(4)WearingCoatincludingexpansion joints	0.2%	Wearing oat: Wearing oat: Payment shall be made on pro rata basis on completion of a stage i. in all respects as specified
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.05%	Miscellaneous: Payment shall be made on prorate basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls:Payments shall be made on completion of all wing walls/returnwalls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payments shall be made on pro rata basis on completion of 20% of the total area.

Note: (1) In caseofinnovateMajor Bridge projects like cablesuspension/cable stayed/Extra Dozedandexceptionallylongspanbridges, theschedulemaybemodifiedasper site requirements before biddingwithdue approval ofCompetentAuthority.

(2) The Schedule for exclusive tunnel projects may be prepared as per site requirements beforebiddingwithdueapproval of CompetentAuthority.

1.3.4 Other works.

Procedureforestimatingthevalueofotherworksdoneshallbeasstatedin table 1.3.4.

Table1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
(1) Toll Plaza	[Nil]	Unit of measurement is each completed toll plaza.Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plaza.
(2) Road side drains	5.249%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5 % (five percent) of the total length.
(3) Road signs,markings,kmstones,safety devices etc	7%	
(4) Project Facilities		Payment shall be made on pro rata basis for completed facilities.
a) Bus Bays	0.4%	

Stage of Payment	Weightage	Payment Procedure
b) Truck Lay-byes	0.63%	
c) Passenger Shelter	0.02%	
d) Rest Area	[Nil]	
e) Road Side Aminities	[Nil]	
f) Street Light	0.86%	
g) Utility Duct	[Nil]	
(5) Retaining Wall	14.76%	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)ofthe total length.
(6) Road side Plantation including Horticulturein Wayside Amenities	[Nil]	
(7) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]	
(8) Boundary wall	[Nil]	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length
(9) Safety andtraffic management during construction	[Nil]	Payment shall be made on prorate basis every six months.
(10) Breast Wall	[Nil]	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.
(11) Toe Wall	0.201%	
(12) Site Clearance &Dismanteling	1.4%	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.
(13) Reinforced Earth Wall	47.4%	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.
(14) Junction	1.8%	Cost of each Junction shall be determined on pro rata basis with respect to the total number of junctions. Payment shall be made on the completion of at least five junctions.
(15)Turfing	0.66%	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.

Stage of Payment	Weightage	Payment Procedure
(16) Ground Improvement Works (Sand Pile)	[Nil]	Unit of measurement is linear length.Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five percent)of the total length.
(17) Protection Work (Stone Pitching)	[Nil]	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5 % (five percent) of the total length.
(18) Foot Over Bridge	5.74%	Payment shall be made on the completion of at least one Foot Over Bridge.
(19) Electrical Utilities & Public Health Utilities(Water Pipe Line & Sewage Line)		
a) EHT line		Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rate basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20, (ii) Conductor stringing including laying of cable-30, (iii) DTR erection (if involved)-15 and (iv) Charging of line including dismantling and site clearance-35 (with DTR) and 50 (without DTR)
b) EHT Crossing		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25 of the crossings subject to a minimum of 4 crossings.

Stage of Payment	Weightage	Payment Procedure
c) HT I LT line (including transformers if any)	12.18%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT I HT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20 (ii) Conductor stringing including laying of cable-30, (iii) DTR erection (if involved)-10 and (iv) Charging of line including dismantling and site clearance-40 (with DTR) and 50 without DTR)
d) HT I LT line crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25 of the crossings subject to a minimum of 10 crossings.
e) Water Pipe Line	1.7%	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50, Charging of line including all miscellaneous works and dismantling and site clearance-50)
f)Water Pipe Line Crossing		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25 of the crossings subject to a minimum of 8 crossings.

Stage of Payment	Weightage	Payment Procedure
g) Sewage Line	[Nil]	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)
h) Sewage Line Crossing	[Nil]	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)

2. ProcedureforpaymentforMaintenance

2.1 The cost formaintenanceshall be as stated inClause14.1.1.

2.2 PaymentforMaintenanceshallbemadein quarterly installments in accordance with the provisions of Clause 19.7.

Schedule - I

(See Clause 10.2 (iv))

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

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. ProjectMilestone-I

(i) Project Milestone-I shall occur on the date falling on the **319th**day from the Appointed Date (the "**Project Milestone-I**").

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

3. ProjectMilestone-II

(i) Project Milestone-II shall occur on the date falling on the **548th**day from the Appointed Date (the "**Project Milestone-II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty five per cent) of the Contract Price and should have started construction of all bridges

4. ProjectMilestone-III

(i) Project Milestone-III shall occur on the date falling on the **776th**day from the Appointed Date (the "**Project Milestone-III**").

(ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price and should have started construction of all project facilities.

5. Scheduled CompletionDate

(i) The Scheduled Completion Date shall occur on the **913th** day from the Appointed Date.

(ii) On or before the Scheduled Completion Date, the Contractor shall have completed

construction in accordance with thisAgreement.

6. Extension oftime

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 (ii))

Tests on Completion

1. Schedule forTests

(i) 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.

(ii) 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

(i) 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 [***].

(ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipment's and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer.

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

(iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.

(v) 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.

(vi) 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 conductingTests

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

4. CompletionCertificate

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

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

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

The first testing with the help of NSV shall be conducted at the time of issue of Completion Certificate.

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated..... (the "**Agreement**"), for "Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km)for Package-10 of Bilasipura- Guwahati road(NH 17) ((Section: Milmila R.F(before Chayagaon Market) to Approach of Airport Junction (VIP Chowk)) in the state of Assam on EPC modein the state of Assam on EPC mode"through(Name of Contractor),herebycertify 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 forentryintooperationonthisthe…….dayof……20…,ScheduledCompleted Date for which was the ……. day of ……20…..

SIGNED, SEALED ANDDELIVERED

For and on behalf of the Authority's Engineerby:

(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

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

(ii) 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.

(iii) 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 Paragraph2.

2. Percentage reductions in lump sum payments on monthly basis

(i) The following percentages shall govern the payment reduction:

S. No.	Item/Defect/Deficiency	Percentage
(a)	**Carriageway/Pavement**	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	**Road, Embankment, Cuttings, Shoulders**	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	**Bridges and Culverts**	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%

S. No.	Item/Defect/Deficiency	Percentage
(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/5thkmstones	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%

(ii) The amount to be deducted from monthly lump-sum payment for non- compliance of particular item shall be calculated asunder:

$$R = {}^{P}/_{100} \times (M1 \text{ or } M2) \times {}^{L1}/_{L}$$

Where,

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

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

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

L1= Non-complying length L = Total length of the road,

R= Reduction (the amount to be deducted for 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 kilometer, the non-conforming length shall be taken as one kilometer.

Schedule - N

(See Clause 18.1 (I))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

(i) 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'sEngineer.

(ii) 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 thisSchedule-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

(i) TheseTermsofReference(the"**TOR**")for the Authority'sEngineerarebeingspecified pursuant to the EPC Agreement dated ..... (the "**Agreement**), which has been enteredintobetweenthe[nameandaddressoftheAuthority](the"**Authority**")and ..... (the**"Contractor")**[#] **for "Widening/Improvement to 4 (Four) Lane with Paved Shoulder** from Ch. 177.372km to Ch.203.783 km (Design Ch.173.434km to Ch.200.750km)for Package-10 of Bilasipura- Guwahati road(NH 17) ((Section: Milmila R.F(before Chayagaon Market) to Approach of Airport Junction (VIP Chowk)) in the state of Assam **on EPC mode in the state of Assam on EPC mode**"and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

- In case the bid of Authority's Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

(ii) The TOR shall apply to construction and maintenance of the ProjectHighway.

2. Definitions and interpretation

(i) 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 theAgreement.

(ii) 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 thisTOR.

(iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to thisTOR.

3. General

(i) 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 IndustryPractice.

(ii) 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 beforedetermining:

(a) any Time Extension;

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

(c) the Termination Payment; or

(d) issuance of Completion Certificate or

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

(iii) 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.

(iv) 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 Clause18.2.

(v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article13.

(vi) 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

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (VI). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended up to 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.

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

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

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

(v) 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 Clause10.4.

(vi) 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 suchreport.

(vii) TheAuthority'sEngineershallinspecttheConstructionWorksandtheProjectHighway 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 SafetyConsultant.

(viii) 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 mayrequire.

(ix) 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 (ix), 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.

(x) The Authority's Engineer shall test check at least 50 (fifty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

(xi) The timing of tests referred to in Paragraph 4 (ix), 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.

(xii) 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.

(xiii) 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 eventorotherwise;providedthatincaseofanywork required on account of a Force Majeure Event, the provisions of Clause 21.6 shallapply.

(xiv) 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 Contractororthwith.

(xv) 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 Clause12.2.

(xvi) 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.

(xvii) 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.

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) 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

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

(ii) 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.

(iii) 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.

(iv) 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.

(v) 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 Clause14.5.

6. Determination of costs and time

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

(ii) TheAuthority'sEngineershalldeterminetheperiodofTimeExtensionthatisrequired to be determined by it under the Agreement.

(iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause18.5.

7. Payments

(i) 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 (IV) (d).

(ii) 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 title

Contractor , after adjustments in accordance with the provisions of Clause 19.10.

(iii) 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.

(iv) 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 Clause19.16.

8. Other duties and functions

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

9. Miscellaneous

(i) 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.

(ii) 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.

(iii) 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-builtsurveyillustratingthelayoutoftheProjectHighwayandsetbacklines,ifany,ofthe buildingsandstructures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

(iv) 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.

(v) TheAuthority'sEngineershallinformtheAuthorityandtheContractorofanyeventof Contractor's Default within one week of its occurrence.

Schedule - O

(See Clauses 19.4 (i), 19.6 (i), and 19.8 (i))

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) TheestimatedamountfortheWorksexecutedinaccordancewithClause19.3 (i) 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) amountsreflectingadjustmentinprice,ifany,for(c)aboveinaccordancewith the provisions of Clause 13.2 (iii)(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 MaintenancePayment 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

(i) 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.

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) 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'sDefects Liability

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

3. Insurance against injury to personsanddamageto property

(i) 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: Rs. [*****]

(ii) 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.

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. RidingQuality test:

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

2. Visual and physical test:

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

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, …….. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated …… (The "**Agreement**"), for [construction of the ****section (km ** to km **) of

****] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through..... (NameofContractor), hereby certify that theTestsoncompletionof Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED ANDDELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

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