

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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 Jalukbari interchange in Guwahati. The total length of the existing road stretch is 215.578 km (As per topographic survey). The PKG-8 of the project road section starts after Paikan junction and ends after end of Dhupdhara Sahar(Ex.Ch.99.930km to Ex.Ch.143.680km).The Design length of the PKG-8 comes out as 43.750 km (Design Ch. 96.000km to Ch. 139.750km).The major length of the package comes under Goalpara district and only 370m length comes under Kamrup Rural district of 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	99.930	100.000	96.000	96.070	13	10	23
3	100.000	100.050	96.070	96.120	14	9	23
4	100.050	100.100	96.120	96.170	14	10	24
5	100.100	100.150	96.170	96.220	17	8	25
6	100.150	100.200	96.220	96.270	10	12	22
7	100.200	100.250	96.270	96.320	12	10	22
8	100.250	100.300	96.320	96.370	12	10	22
9	100.300	100.350	96.370	96.420	13	11	24
10	100.350	100.400	96.420	96.470	10	10	20
11	100.400	100.450	96.470	96.520	12	9	21
12	100.450	100.500	96.520	96.570	8	10	18
13	100.500	100.550	96.570	96.620	11	9	20
14	100.550	100.600	96.620	96.670	10	10	20
15	100.600	100.650	96.670	96.720	12	8	20
16	100.650	100.700	96.720	96.770	11	7	18
17	100.700	100.750	96.770	96.820	13	6	19
18	100.750	100.800	96.820	96.870	13	5	18
19	100.800	100.850	96.870	96.920	15	10	25
20	100.850	100.900	96.920	96.970	15	12	27

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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	
21	100.900	100.950	96.970	97.020	20	15	35
22	100.950	101.000	97.020	97.070	20	14	34
23	101.000	101.050	97.070	97.120	17	15	32
24	101.050	101.100	97.120	97.170	21	14	35
25	101.100	101.150	97.170	97.220	19	14	33
26	101.150	101.200	97.220	97.270	16	14	30
27	101.200	101.250	97.270	97.320	23	10	33
28	101.250	101.300	97.320	97.370	24	10	34
29	101.300	101.350	97.370	97.420	16	11	27
30	101.350	101.400	97.420	97.470	14	12	26
31	101.400	101.450	97.470	97.520	12	13	25
32	101.450	101.500	97.520	97.570	12	14	26
33	101.500	101.550	97.570	97.620	13	14	27
34	101.550	101.600	97.620	97.670	17	15	32
35	101.600	101.650	97.670	97.720	19	16	35
36	101.650	101.700	97.720	97.770	19	17	36
37	101.700	101.750	97.770	97.820	35	15	50
38	101.750	101.800	97.820	97.870	35	16	51
39	101.800	101.850	97.870	97.920	34	15	49
40	101.850	101.900	97.920	97.970	33	17	50
41	101.900	101.950	97.970	98.020	35	15	50
42	101.950	102.000	98.020	98.070	31	18	49
43	102.000	102.050	98.070	98.120	31	19	50
44	102.050	102.100	98.120	98.170	32	18	50
45	102.100	102.150	98.170	98.220	32	20	52
46	102.150	102.200	98.220	98.270	22	18	40
47	102.200	102.250	98.270	98.320	25	18	43
48	102.250	102.300	98.320	98.370	30	15	45
49	102.300	102.350	98.370	98.420	30	12	42
50	102.350	102.400	98.420	98.470	30	13	43
51	102.400	102.450	98.470	98.520			RIVER
52	102.450	102.500	98.520	98.570			RIVER
53	102.500	102.550	98.570	98.620	26	22	48
54	102.550	102.600	98.620	98.670	25	18	43
55	102.600	102.650	98.670	98.720	18	24	42
56	102.650	102.700	98.720	98.770	12	38	50
57	102.700	102.750	98.770	98.820	12	39	51
58	102.750	102.800	98.820	98.870	22	27	49
59	102.800	102.850	98.870	98.920	21	27	48
60	102.850	102.900	98.920	98.970	20	26	46
61	102.900	102.950	98.970	99.020	28	19	47

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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	
62	102.950	103.000	99.020	99.070	29	20	49
63	103.000	103.050	99.070	99.120	17	30	47
64	103.050	103.100	99.120	99.170	19	29	48
65	103.100	103.150	99.170	99.220	21	28	49
66	103.150	103.200	99.220	99.270	23	29	52
67	103.200	103.250	99.270	99.320	35	13	48
68	103.250	103.300	99.320	99.370	25	30	55
69	103.300	103.350	99.370	99.420	22	33	55
70	103.350	103.400	99.420	99.470	12	31	43
71	103.400	103.450	99.470	99.520	24	31	55
72	103.450	103.500	99.520	99.570	20	23	43
73	103.500	103.550	99.570	99.620	21	24	45
74	103.550	103.600	99.620	99.670	20	27	47
75	103.600	103.650	99.670	99.720	17	29	46
76	103.650	103.700	99.720	99.770	12	33	45
77	103.700	103.750	99.770	99.820	16	36	52
78	103.750	103.800	99.820	99.870	23	37	60
79	103.800	103.850	99.870	99.920	21	38	59
80	103.850	103.900	99.920	99.970	24	34	58
81	103.900	103.950	99.970	100.020	27	31	58
82	103.950	104.000	100.020	100.070	27	30	57
83	104.000	104.050	100.070	100.120	29	30	59
84	104.050	104.100	100.120	100.170	30	31	61
85	104.100	104.150	100.170	100.220	23	36	59
86	104.150	104.200	100.220	100.270	28	30	58
87	104.200	104.250	100.270	100.320	27	25	52
88	104.250	104.300	100.320	100.370	25	22	47
89	104.300	104.350	100.370	100.420	28	21	49
90	104.350	104.400	100.420	100.470	27	24	51
91	104.400	104.450	100.470	100.520	27	25	52
92	104.450	104.500	100.520	100.570	33	19	52
93	104.500	104.550	100.570	100.620	25	29	54
94	104.550	104.600	100.620	100.670	26	29	55
95	104.600	104.650	100.670	100.720	29	31	60
96	104.650	104.700	100.720	100.770	30	25	55
97	104.700	104.750	100.770	100.820	28	20	48
98	104.750	104.800	100.820	100.870	10	26	36
99	104.800	104.850	100.870	100.920	9	27	36
100	104.850	104.900	100.920	100.970	9	27	36
101	104.900	104.950	100.970	101.020	10	30	40
102	104.950	105.000	101.020	101.070	9	35	44
103	105.000	105.050	101.070	101.120	16	27	43

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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	
104	105.050	105.100	101.120	101.170	19	23	42
105	105.100	105.150	101.170	101.220	23	21	44
106	105.150	105.200	101.220	101.270	24	18	42
107	105.200	105.250	101.270	101.320	24	19	43
108	105.250	105.300	101.320	101.370	24	21	45
109	105.300	105.350	101.370	101.420	17	24	41
110	105.350	105.400	101.420	101.470	28	23	51
111	105.400	105.450	101.470	101.520	24	24	48
112	105.450	105.500	101.520	101.570	27	23	50
113	105.500	105.550	101.570	101.620	20	23	43
114	105.550	105.600	101.620	101.670	23	21	44
115	105.600	105.650	101.670	101.720	17	24	41
116	105.650	105.700	101.720	101.770	18	21	39
117	105.700	105.750	101.770	101.820	17	23	40
118	105.750	105.800	101.820	101.870	19	20	39
119	105.800	105.850	101.870	101.920	18	23	41
120	105.850	105.900	101.920	101.970	19	24	43
121	105.900	105.950	101.970	102.020	20	24	44
122	105.950	106.000	102.020	102.070	23	20	43
123	106.000	106.050	102.070	102.120	22	23	45
124	106.050	106.100	102.120	102.170	20	22	42
125	106.100	106.150	102.170	102.220	21	19	40
126	106.150	106.200	102.220	102.270	22	21	43
127	106.200	106.250	102.270	102.320	19	20	39
128	106.250	106.300	102.320	102.370	20	20	40
129	106.300	106.350	102.370	102.420	15	24	39
130	106.350	106.400	102.420	102.470	17	25	42
131	106.400	106.450	102.470	102.520	18	23	41
132	106.450	106.500	102.520	102.570	16	23	39
133	106.500	106.550	102.570	102.620	19	21	40
134	106.550	106.600	102.620	102.670	24	17	41
135	106.600	106.650	102.670	102.720	27	15	42
136	106.650	106.700	102.720	102.770	25	14	39
137	106.700	106.750	102.770	102.820	26	14	40
138	106.750	106.800	102.820	102.870	25	15	40
139	106.800	106.850	102.870	102.920	27	14	41
140	106.850	106.900	102.920	102.970	29	13	42
141	106.900	106.950	102.970	103.020	28	16	44
142	106.950	107.000	103.020	103.070	23	19	42
143	107.000	107.050	103.070	103.120	24	17	41
144	107.050	107.100	103.120	103.170	26	15	41

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	From	To	From	To	Right	Left	
145	107.100	107.150	103.170	103.220	25	15	40
146	107.150	107.200	103.220	103.270	22	6	28
147	107.200	107.250	103.270	103.320	23	6	29
148	107.250	107.300	103.320	103.370	25	6	31
149	107.300	107.350	103.370	103.420	5	5	10
150	107.350	107.400	103.420	103.470	5	5	10
151	107.400	107.450	103.470	103.520	5	5	10
152	107.450	107.500	103.520	103.570	5	5	10
153	107.500	107.550	103.570	103.620	5	5	10
154	107.550	107.600	103.620	103.670	5	5	10
155	107.600	107.650	103.670	103.720	5	5	10
156	107.650	107.700	103.720	103.770	5	5	10
157	107.700	107.750	103.770	103.820	5	5	10
158	107.750	107.800	103.820	103.870	5	5	10
159	107.800	107.850	103.870	103.920	5	5	10
160	107.850	107.900	103.920	103.970	5	5	10
161	107.900	107.950	103.970	104.020	5	5	10
162	107.950	108.000	104.020	104.070	5	5	10
163	108.000	108.050	104.070	104.120	5	5	10
164	108.050	108.100	104.120	104.170	5	5	10
165	108.100	108.150	104.170	104.220	5	5	10
166	108.150	108.200	104.220	104.270	5	5	10
167	108.200	108.250	104.270	104.320	5	5	10
168	108.250	108.300	104.320	104.370	5	5	10
169	108.300	108.350	104.370	104.420	5	5	10
170	108.350	108.400	104.420	104.470	5	5	10
171	108.400	108.450	104.470	104.520	5	5	10
172	108.450	108.500	104.520	104.570	5	5	10
173	108.500	108.550	104.570	104.620	5	5	10
174	108.550	108.600	104.620	104.670	5	5	10
175	108.600	108.650	104.670	104.720	5	5	10
176	108.650	108.700	104.720	104.770	5	5	10
177	108.700	108.750	104.770	104.820	5	5	10
178	108.750	108.800	104.820	104.870	5	5	10
179	108.800	108.850	104.870	104.920	5	5	10
180	108.850	108.900	104.920	104.970	5	5	10
181	108.900	108.950	104.970	105.020	5	5	10
182	108.950	109.000	105.020	105.070	5	5	10
183	109.000	109.050	105.070	105.120	5	5	10
184	109.050	109.100	105.120	105.170	14	21	35
185	109.100	109.150	105.170	105.220	16	19	35
186	109.150	109.200	105.220	105.270	9	18	27

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	From	To	From	To	Right	Left	
187	109.200	109.250	105.270	105.320	7	21	28
188	109.250	109.300	105.320	105.370	16	19	35
189	109.300	109.350	105.370	105.420	15	20	35
190	109.350	109.400	105.420	105.470	14	21	35
191	109.400	109.450	105.470	105.520	15	20	35
192	109.450	109.500	105.520	105.570	15	20	35
193	109.500	109.550	105.570	105.620	8	19	27
194	109.550	109.600	105.620	105.670	6	22	28
195	109.600	109.650	105.670	105.720	9	19	28
196	109.650	109.700	105.720	105.770	13	22	35
197	109.700	109.750	105.770	105.820	7	19	26
198	109.750	109.800	105.820	105.870	8	21	29
199	109.800	109.850	105.870	105.920	11	19	30
200	109.850	109.900	105.920	105.970	13	22	35
201	109.900	109.950	105.970	106.020	13	22	35
202	109.950	110.000	106.020	106.070	17	18	35
203	110.000	110.050	106.070	106.120	13	22	35
204	110.050	110.100	106.120	106.170	15	20	35
205	110.100	110.150	106.170	106.220	14	21	35
206	110.150	110.200	106.220	106.270	15	20	35
207	110.200	110.250	106.270	106.320	15	20	35
208	110.250	110.300	106.320	106.370	13	18	31
209	110.300	110.350	106.370	106.420	10	19	29
210	110.350	110.400	106.420	106.470	9	20	29
211	110.400	110.450	106.470	106.520	10	18	28
212	110.450	110.500	106.520	106.570	15	20	35
213	110.500	110.550	106.570	106.620	14	21	35
214	110.550	110.600	106.620	106.670	17	18	35
215	110.600	110.650	106.670	106.720	18	17	35
216	110.650	110.700	106.720	106.770	15	20	35
217	110.700	110.750	106.770	106.820	15	20	35
218	110.750	110.800	106.820	106.870	17	18	35
219	110.800	110.850	106.870	106.920	8	21	29
220	110.850	110.900	106.920	106.970	10	18	28
221	110.900	110.950	106.970	107.020	13	18	31
222	110.950	111.000	107.020	107.070	12	21	33
223	111.000	111.050	107.070	107.120	17	18	35
224	111.050	111.100	107.120	107.170	14	21	35
225	111.100	111.150	107.170	107.220	16	19	35
226	111.150	111.200	107.220	107.270	14	21	35
227	111.200	111.250	107.270	107.320	17	18	35

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	From	To	From	To	Right	Left	
228	111.250	111.300	107.320	107.370	16	19	35
229	111.300	111.350	107.370	107.420	18	17	35
230	111.350	111.400	107.420	107.470	15	20	35
231	111.400	111.450	107.470	107.520	16	19	35
232	111.450	111.500	107.520	107.570	16	19	35
233	111.500	111.550	107.570	107.620	9	20	29
234	111.550	111.600	107.620	107.670	11	18	29
235	111.600	111.650	107.670	107.720	10	18	28
236	111.650	111.700	107.720	107.770	9	18	27
237	111.700	111.750	107.770	107.820	8	18	26
238	111.750	111.800	107.820	107.870	12	18	30
239	111.800	111.850	107.870	107.920	14	18	32
240	111.850	111.900	107.920	107.970	13	18	31
241	111.900	111.950	107.970	108.020	22	20	42
242	111.950	112.000	108.020	108.070	21	21	42
243	112.000	112.050	108.070	108.120	20	22	42
244	112.050	112.100	108.120	108.170	23	20	43
245	112.100	112.150	108.170	108.220	21	22	43
246	112.150	112.200	108.220	108.270	18	25	43
247	112.200	112.250	108.270	108.320	17	26	43
248	112.250	112.300	108.320	108.370	12	20	32
249	112.300	112.350	108.370	108.420	14	23	37
250	112.350	112.400	108.420	108.470	15	22	37
251	112.400	112.450	108.470	108.520	14	21	35
252	112.450	112.500	108.520	108.570	12	23	35
253	112.500	112.550	108.570	108.620	25	22	47
254	112.550	112.600	108.620	108.670	27	20	47
255	112.600	112.650	108.670	108.720	29	17	46
256	112.650	112.700	108.720	108.770	28	21	49
257	112.700	112.750	108.770	108.820	28	21	49
258	112.750	112.800	108.820	108.870	30	19	49
259	112.800	112.850	108.870	108.920	30	15	45
260	112.850	112.900	108.920	108.970	28	12	40
261	112.900	112.950	108.970	109.020	28	16	44
262	112.950	113.000	109.020	109.070	28	15	43
263	113.000	113.050	109.070	109.120	26	16	42
264	113.050	113.100	109.120	109.170	24	17	41
265	113.100	113.150	109.170	109.220	23	20	43
266	113.150	113.200	109.220	109.270	22	20	42
267	113.200	113.250	109.270	109.320	22	22	44
268	113.250	113.300	109.320	109.370	23	19	42
269	113.300	113.350	109.370	109.420	23	15	38

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
270	113.350	113.400	109.420	109.470	26	15	41
271	113.400	113.450	109.470	109.520	18	19	37
272	113.450	113.500	109.520	109.570	16	21	37
273	113.500	113.550	109.570	109.620	24	15	39
274	113.550	113.600	109.620	109.670	25	18	43
275	113.600	113.650	109.670	109.720	30	22	52
276	113.650	113.700	109.720	109.770	29	16	45
277	113.700	113.750	109.770	109.820	25	20	45
278	113.750	113.800	109.820	109.870	25	20	45
279	113.800	113.850	109.870	109.920	26	18	44
280	113.850	113.900	109.920	109.970	26	18	44
281	113.900	113.950	109.970	110.020	22	17	39
282	113.950	114.000	110.020	110.070	19	18	37
283	114.000	114.050	110.070	110.120	22	17	39
284	114.050	114.100	110.120	110.170	16	16	32
285	114.100	114.150	110.170	110.220	16	16	32
286	114.150	114.200	110.220	110.270	13	16	29
287	114.200	114.250	110.270	110.320	12	15	27
288	114.250	114.300	110.320	110.370	11	14	25
289	114.300	114.350	110.370	110.420	13	11	24
290	114.350	114.400	110.420	110.470	10	13	23
291	114.400	114.450	110.470	110.520	9	13	22
292	114.450	114.500	110.520	110.570	12	10	22
293	114.500	114.550	110.570	110.620	10	11	21
294	114.550	114.600	110.620	110.670	14	12	26
295	114.600	114.650	110.670	110.720	13	13	26
296	114.650	114.700	110.720	110.770	13	13	26
297	114.700	114.750	110.770	110.820	15	11	26
298	114.750	114.800	110.820	110.870	16	14	30
299	114.800	114.850	110.870	110.920	7	14	21
300	114.850	114.900	110.920	110.970	10	12	22
301	114.900	114.950	110.970	111.020	11	10	21
302	114.950	115.000	111.020	111.070	12	11	23
303	115.000	115.050	111.070	111.120	12	11	23
304	115.050	115.100	111.120	111.170	13	12	25
305	115.100	115.150	111.170	111.220	12	17	29
306	115.150	115.200	111.220	111.270	14	11	25
307	115.200	115.250	111.270	111.320	13	10	23
308	115.250	115.300	111.320	111.370	12	12	24
309	115.300	115.350	111.370	111.420	12	13	25
310	115.350	115.400	111.420	111.470	11	15	26

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
311	115.400	115.450	111.470	111.520	15	12	27
312	115.450	115.500	111.520	111.570	11	11	22
313	115.500	115.550	111.570	111.620	13	11	24
314	115.550	115.600	111.620	111.670	11	15	26
315	115.600	115.650	111.670	111.720	12	11	23
316	115.650	115.700	111.720	111.770	13	11	24
317	115.700	115.750	111.770	111.820	12	13	25
318	115.750	115.800	111.820	111.870	20	30	50
319	115.800	115.850	111.870	111.920	32	23	55
320	115.850	115.900	111.920	111.970	36	22	58
321	115.900	115.950	111.970	112.020	39	19	58
322	115.950	116.000	112.020	112.070	37	22	59
323	116.000	116.050	112.070	112.120	22	23	45
324	116.050	116.100	112.120	112.170	25	19	44
325	116.100	116.150	112.170	112.220	15	20	35
326	116.150	116.200	112.220	112.270	23	27	50
327	116.200	116.250	112.270	112.320	16	24	40
328	116.250	116.300	112.320	112.370	19	16	35
329	116.300	116.350	112.370	112.420	13	17	30
330	116.350	116.400	112.420	112.470	11	11	22
331	116.400	116.450	112.470	112.520	13	12	25
332	116.450	116.500	112.520	112.570	13	10	23
333	116.500	116.550	112.570	112.620	14	10	24
334	116.550	116.600	112.620	112.670	14	11	25
335	116.600	116.650	112.670	112.720	13	13	26
336	116.650	116.700	112.720	112.770	14	10	24
337	116.700	116.750	112.770	112.820	13	12	25
338	116.750	116.800	112.820	112.870	12	11	23
339	116.800	116.850	112.870	112.920	11	14	25
340	116.850	116.900	112.920	112.970	15	10	25
341	116.900	116.950	112.970	113.020	15	10	25
342	116.950	117.000	113.020	113.070	14	11	25
343	117.000	117.050	113.070	113.120	13	12	25
344	117.050	117.100	113.120	113.170	14	11	25
345	117.100	117.150	113.170	113.220	13	6	19
346	117.150	117.200	113.220	113.270	13	6	19
347	117.200	117.250	113.270	113.320	13	6	19
348	117.250	117.300	113.320	113.370	5	5	10
349	117.300	117.350	113.370	113.420	5	5	10
350	117.350	117.400	113.420	113.470	5	5	10
351	117.400	117.450	113.470	113.520	5	5	10
352	117.450	117.500	113.520	113.570	5	5	10

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
353	117.500	117.550	113.570	113.620	6	12	18
354	117.550	117.600	113.620	113.670	6	12	18
355	117.600	117.650	113.670	113.720	6	13	19
356	117.650	117.700	113.720	113.770	6	13	19
357	117.700	117.750	113.770	113.820	6	13	19
358	117.750	117.800	113.820	113.870	6	13	19
359	117.800	117.850	113.870	113.920	6	12	18
360	117.850	117.900	113.920	113.970	6	12	18
361	117.900	117.950	113.970	114.020	6	11	17
362	117.950	118.000	114.020	114.070	6	11	17
363	118.000	118.050	114.070	114.120	6	11	17
364	118.050	118.100	114.120	114.170	6	11	17
365	118.100	118.150	114.170	114.220	6	12	18
366	118.150	118.200	114.220	114.270	6	13	19
367	118.200	118.250	114.270	114.320	6	13	19
368	118.250	118.300	114.320	114.370	6	14	20
369	118.300	118.350	114.370	114.420	6	12	18
370	118.350	118.400	114.420	114.470	6	10	16
371	118.400	118.450	114.470	114.520	6	11	17
372	118.450	118.500	114.520	114.570	11	14	25
373	118.500	118.550	114.570	114.620	12	13	25
374	118.550	118.600	114.620	114.670	12	28	40
375	118.600	118.650	114.670	114.720	11	16	27
376	118.650	118.700	114.720	114.770	11	16	27
377	118.700	118.750	114.770	114.820	14	15	29
378	118.750	118.800	114.820	114.870	10	18	28
379	118.800	118.850	114.870	114.920	12	18	30
380	118.850	118.900	114.920	114.970	14	21	35
381	118.900	118.950	114.970	115.020	12	19	31
382	118.950	119.000	115.020	115.070	17	15	32
383	119.000	119.050	115.070	115.120	17	19	36
384	119.050	119.100	115.120	115.170	22	28	50
385	119.100	119.150	115.170	115.220	28	27	55
386	119.150	119.200	115.220	115.270	29	35	64
387	119.200	119.250	115.270	115.320	25	28	53
388	119.250	119.300	115.320	115.370	33	22	55
389	119.300	119.350	115.370	115.420	40	24	64
390	119.350	119.400	115.420	115.470	18	27	45
391	119.400	119.450	115.470	115.520	15	27	42
392	119.450	119.500	115.520	115.570	11	25	36
393	119.500	119.550	115.570	115.620	17	22	39

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
394	119.550	119.600	115.620	115.670	16	24	40
395	119.600	119.650	115.670	115.720	19	25	44
396	119.650	119.700	115.720	115.770	16	27	43
397	119.700	119.750	115.770	115.820	18	29	47
398	119.750	119.800	115.820	115.870	19	28	47
399	119.800	119.850	115.870	115.920	17	30	47
400	119.850	119.900	115.920	115.970	20	31	51
401	119.900	119.950	115.970	116.020	19	31	50
402	119.950	120.000	116.020	116.070	19	31	50
403	120.000	120.050	116.070	116.120	16	32	48
404	120.050	120.100	116.120	116.170	15	30	45
405	120.100	120.150	116.170	116.220	26	14	40
406	120.150	120.200	116.220	116.270	28	14	42
407	120.200	120.250	116.270	116.320	25	14	39
408	120.250	120.300	116.320	116.370	27	14	41
409	120.300	120.350	116.370	116.420	27	16	43
410	120.350	120.400	116.420	116.470	30	15	45
411	120.400	120.450	116.470	116.520	27	15	42
412	120.450	120.500	116.520	116.570	30	14	44
413	120.500	120.550	116.570	116.620	30	13	43
414	120.550	120.600	116.620	116.670	29	12	41
415	120.600	120.650	116.670	116.720	12	15	27
416	120.650	120.700	116.720	116.770	35	15	50
417	120.700	120.750	116.770	116.820	33	15	48
418	120.750	120.800	116.820	116.870	33	14	47
419	120.800	120.850	116.870	116.920	33	15	48
420	120.850	120.900	116.920	116.970	31	15	46
421	120.900	120.950	116.970	117.020	34	15	49
422	120.950	121.000	117.020	117.070	31	15	46
423	121.000	121.050	117.070	117.120	34	14	48
424	121.050	121.100	117.120	117.170	31	15	46
425	121.100	121.150	117.170	117.220	34	15	49
426	121.150	121.200	117.220	117.270	33	13	46
427	121.200	121.250	117.270	117.320	30	15	45
428	121.250	121.300	117.320	117.370	33	14	47
429	121.300	121.350	117.370	117.420	33	15	48
430	121.350	121.400	117.420	117.470	31	16	47
431	121.400	121.450	117.470	117.520	33	14	47
432	121.450	121.500	117.520	117.570	33	13	46
433	121.500	121.550	117.570	117.620	32	16	48
12 434	121.550	121.600	117.620	117.670	32	17	49
435	121.600	121.650	117.670	117.720	29	17	46

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
436	121.650	121.700	117.720	117.770	28	17	45
437	121.700	121.750	117.770	117.820	29	16	45
438	121.750	121.800	117.820	117.870	13	13	26
439	121.800	121.850	117.870	117.920	13	13	26
440	121.850	121.900	117.920	117.970	14	12	26
441	121.900	121.950	117.970	118.020	15	16	31
442	121.950	122.000	118.020	118.070	28	23	51
443	122.000	122.050	118.070	118.120	27	23	50
444	122.050	122.100	118.120	118.170	23	22	45
445	122.100	122.150	118.170	118.220	23	21	44
446	122.150	122.200	118.220	118.270	24	21	45
447	122.200	122.250	118.270	118.320	24	20	44
448	122.250	122.300	118.320	118.370	23	20	43
449	122.300	122.350	118.370	118.420	21	21	42
450	122.350	122.400	118.420	118.470	21	19	40
451	122.400	122.450	118.470	118.520	22	21	43
452	122.450	122.500	118.520	118.570	22	21	43
453	122.500	122.550	118.570	118.620	22	21	43
454	122.550	122.600	118.620	118.670	21	22	43
455	122.600	122.650	118.670	118.720	10	19	29
456	122.650	122.700	118.720	118.770	14	15	29
457	122.700	122.750	118.770	118.820	5	5	10
458	122.750	122.800	118.820	118.870	5	5	10
459	122.800	122.850	118.870	118.920	5	5	10
460	122.850	122.900	118.920	118.970	5	5	10
461	122.900	122.950	118.970	119.020	5	5	10
462	122.950	123.000	119.020	119.070	5	5	10
463	123.000	123.050	119.070	119.120	5	5	10
464	123.050	123.100	119.120	119.170	5	5	10
465	123.100	123.150	119.170	119.220	5	5	10
466	123.150	123.200	119.220	119.270	5	5	10
467	123.200	123.250	119.270	119.320	5	5	10
468	123.250	123.300	119.320	119.370	5	5	10
469	123.300	123.350	119.370	119.420	5	5	10
470	123.350	123.400	119.420	119.470	5	5	10
471	123.400	123.450	119.470	119.520	5	5	10
472	123.450	123.500	119.520	119.570	5	5	10
473	123.500	123.550	119.570	119.620	5	5	10
474	123.550	123.600	119.620	119.670	5	5	10
475	123.600	123.650	119.670	119.720	5	5	10
476	123.650	123.700	119.720	119.770	5	5	10

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
477	123.700	123.750	119.770	119.820	5	5	10
478	123.750	123.800	119.820	119.870	5	5	10
479	123.800	123.850	119.870	119.920	5	5	10
480	123.850	123.900	119.920	119.970	5	5	10
481	123.900	123.950	119.970	120.020	5	5	10
482	123.950	124.000	120.020	120.070	5	5	10
483	124.000	124.050	120.070	120.120	6	12	18
484	124.050	124.100	120.120	120.170	17	12	29
485	124.100	124.150	120.170	120.220	18	11	29
486	124.150	124.200	120.220	120.270	17	12	29
487	124.200	124.250	120.270	120.320	17	13	30
488	124.250	124.300	120.320	120.370	17	12	29
489	124.300	124.350	120.370	120.420	18	11	29
490	124.350	124.400	120.420	120.470	17	12	29
491	124.400	124.450	120.470	120.520	18	11	29
492	124.450	124.500	120.520	120.570	19	10	29
493	124.500	124.550	120.570	120.620	19	10	29
494	124.550	124.600	120.620	120.670	19	10	29
495	124.600	124.650	120.670	120.720	18	11	29
496	124.650	124.700	120.720	120.770	15	14	29
497	124.700	124.750	120.770	120.820	16	13	29
498	124.750	124.800	120.820	120.870	17	12	29
499	124.800	124.850	120.870	120.920	18	11	29
500	124.850	124.900	120.920	120.970	18	11	29
501	124.900	124.950	120.970	121.020	16	14	30
502	124.950	125.000	121.020	121.070	17	12	29
503	125.000	125.050	121.070	121.120	17	13	30
504	125.050	125.100	121.120	121.170	15	15	30
505	125.100	125.150	121.170	121.220	17	13	30
506	125.150	125.200	121.220	121.270	16	14	30
507	125.200	125.250	121.270	121.320	18	12	30
508	125.250	125.300	121.320	121.370	16	14	30
509	125.300	125.350	121.370	121.420	17	13	30
510	125.350	125.400	121.420	121.470	15	15	30
511	125.400	125.450	121.470	121.520	17	13	30
512	125.450	125.500	121.520	121.570	17	13	30
513	125.500	125.550	121.570	121.620	23	12	35
514	125.550	125.600	121.620	121.670	24	12	36
515	125.600	125.650	121.670	121.720	23	14	37
516	125.650	125.700	121.720	121.770	20	15	35
517	125.700	125.750	121.770	121.820	24	13	37
518	125.750	125.800	121.820	121.870	18	15	33

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
519	125.800	125.850	121.870	121.920	18	16	34
520	125.850	125.900	121.920	121.970	20	16	36
521	125.900	125.950	121.970	122.020	15	17	32
522	125.950	126.000	122.020	122.070	20	16	36
523	126.000	126.050	122.070	122.120	21	15	36
524	126.050	126.100	122.120	122.170	20	15	35
525	126.100	126.150	122.170	122.220	21	13	34
526	126.150	126.200	122.220	122.270	20	13	33
527	126.200	126.250	122.270	122.320	15	14	29
528	126.250	126.300	122.320	122.370	14	11	25
529	126.300	126.350	122.370	122.420	13	12	25
530	126.350	126.400	122.420	122.470	11	13	24
531	126.400	126.450	122.470	122.520	13	13	26
532	126.450	126.500	122.520	122.570	14	12	26
533	126.500	126.550	122.570	122.620	11	14	25
534	126.550	126.600	122.620	122.670	13	11	24
535	126.600	126.650	122.670	122.720	13	12	25
536	126.650	126.700	122.720	122.770	13	13	26
537	126.700	126.750	122.770	122.820	14	11	25
538	126.750	126.800	122.820	122.870	12	12	24
539	126.800	126.850	122.870	122.920	12	13	25
540	126.850	126.900	122.920	122.970	13	11	24
541	126.900	126.950	122.970	123.020	12	13	25
542	126.950	127.000	123.020	123.070	12	13	25
543	127.000	127.050	123.070	123.120	12	12	24
544	127.050	127.100	123.120	123.170	11	11	22
545	127.100	127.150	123.170	123.220	10	14	24
546	127.150	127.200	123.220	123.270	10	12	22
547	127.200	127.250	123.270	123.320	11	9	20
548	127.250	127.300	123.320	123.370	11	10	21
549	127.300	127.350	123.370	123.420	12	11	23
550	127.350	127.400	123.420	123.470	12	12	24
551	127.400	127.450	123.470	123.520	12	12	24
552	127.450	127.500	123.520	123.570	12	11	23
553	127.500	127.550	123.570	123.620	10	12	22
554	127.550	127.600	123.620	123.670	10	11	21
555	127.600	127.650	123.670	123.720	10	13	23
556	127.650	127.700	123.720	123.770	11	12	23
557	127.700	127.750	123.770	123.820	10	12	22
558	127.750	127.800	123.820	123.870	14	11	25
559	127.800	127.850	123.870	123.920	10	12	22

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
560	127.850	127.900	123.920	123.970	10	12	22
561	127.900	127.950	123.970	124.020	13	10	23
562	127.950	128.000	124.020	124.070	13	12	25
563	128.000	128.050	124.070	124.120	13	13	26
564	128.050	128.100	124.120	124.170	18	12	30
565	128.100	128.150	124.170	124.220	17	12	29
566	128.150	128.200	124.220	124.270	18	12	30
567	128.200	128.250	124.270	124.320	21	11	32
568	128.250	128.300	124.320	124.370	22	12	34
569	128.300	128.350	124.370	124.420	18	12	30
570	128.350	128.400	124.420	124.470	18	11	29
571	128.400	128.450	124.470	124.520	19	12	31
572	128.450	128.500	124.520	124.570	17	10	27
573	128.500	128.550	124.570	124.620	19	10	29
574	128.550	128.600	124.620	124.670	18	11	29
575	128.600	128.650	124.670	124.720	20	6	26
576	128.650	128.700	124.720	124.770	11	14	25
577	128.700	128.750	124.770	124.820	9	11	20
578	128.750	128.800	124.820	124.870	12	16	28
579	128.800	128.850	124.870	124.920	12	18	30
580	128.850	128.900	124.920	124.970	11	16	27
581	128.900	128.950	124.970	125.020	16	19	35
582	128.950	129.000	125.020	125.070	11	18	29
583	129.000	129.050	125.070	125.120	28	21	49
584	129.050	129.100	125.120	125.170	27	20	47
585	129.100	129.150	125.170	125.220	29	21	50
586	129.150	129.200	125.220	125.270	27	22	49
587	129.200	129.250	125.270	125.320	24	21	45
588	129.250	129.300	125.320	125.370	26	23	49
589	129.300	129.350	125.370	125.420	28	27	55
590	129.350	129.400	125.420	125.470	16	31	47
591	129.400	129.450	125.470	125.520	36	18	54
592	129.450	129.500	125.520	125.570	23	16	39
593	129.500	129.550	125.570	125.620	19	21	40
594	129.550	129.600	125.620	125.670	18	17	35
595	129.600	129.650	125.670	125.720	16	19	35
596	129.650	129.700	125.720	125.770	15	19	34
597	129.700	129.750	125.770	125.820	18	18	36
598	129.750	129.800	125.820	125.870	21	18	39
599	129.800	129.850	125.870	125.920	25	17	42
600	129.850	129.900	125.920	125.970	36	20	56
601	129.900	129.950	125.970	126.020	33	17	50

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
602	129.950	130.000	126.020	126.070	28	18	46
603	130.000	130.050	126.070	126.120	19	52	71
604	130.050	130.100	126.120	126.170	18	41	59
605	130.100	130.150	126.170	126.220	18	12	30
606	130.150	130.200	126.220	126.270	14	11	25
607	130.200	130.250	126.270	126.320	11	13	24
608	130.250	130.300	126.320	126.370	11	9	20
609	130.300	130.350	126.370	126.420	11	9	20
610	130.350	130.400	126.420	126.470	10	10	20
611	130.400	130.450	126.470	126.520	10	10	20
612	130.450	130.500	126.520	126.570	11	9	20
613	130.500	130.550	126.570	126.620	11	9	20
614	130.550	130.600	126.620	126.670	11	9	20
615	130.600	130.650	126.670	126.720	10	10	20
616	130.650	130.700	126.720	126.770	10	10	20
617	130.700	130.750	126.770	126.820	10	10	20
618	130.750	130.800	126.820	126.870	10	10	20
619	130.800	130.850	126.870	126.920	11	9	20
620	130.850	130.900	126.920	126.970	11	9	20
621	130.900	130.950	126.970	127.020	12	9	21
622	130.950	131.000	127.020	127.070	13	9	22
623	131.000	131.050	127.070	127.120	13	10	23
624	131.050	131.100	127.120	127.170	9	10	19
625	131.100	131.150	127.170	127.220	7	9	16
626	131.150	131.200	127.220	127.270	10	12	22
627	131.200	131.250	127.270	127.320	11	12	23
628	131.250	131.300	127.320	127.370	15	12	27
629	131.300	131.350	127.370	127.420	15	11	26
630	131.350	131.400	127.420	127.470	16	12	28
631	131.400	131.450	127.470	127.520	17	11	28
632	131.450	131.500	127.520	127.570	16	13	29
633	131.500	131.550	127.570	127.620	16	17	33
634	131.550	131.600	127.620	127.670	12	9	21
635	131.600	131.650	127.670	127.720	12	10	22
636	131.650	131.700	127.720	127.770	11	10	21
637	131.700	131.750	127.770	127.820	10	9	19
638	131.750	131.800	127.820	127.870	11	8	19
639	131.800	131.850	127.870	127.920	6	13	19
640	131.850	131.900	127.920	127.970	6	15	21
641	131.900	131.950	127.970	128.020	6	15	21
642	131.950	132.000	128.020	128.070	6	14	20

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
643	132.000	132.050	128.070	128.120	6	16	22
644	132.050	132.100	128.120	128.170	6	17	23
645	132.100	132.150	128.170	128.220	6	11	17
646	132.150	132.200	128.220	128.270	6	18	24
647	132.200	132.250	128.270	128.320	6	18	24
648	132.250	132.300	128.320	128.370	6	18	24
649	132.300	132.350	128.370	128.420	6	17	23
650	132.350	132.400	128.420	128.470	6	18	24
651	132.400	132.450	128.470	128.520	6	20	26
652	132.450	132.500	128.520	128.570	6	20	26
653	132.500	132.550	128.570	128.620	6	18	24
654	132.550	132.600	128.620	128.670	6	17	23
655	132.600	132.650	128.670	128.720	6	18	24
656	132.650	132.700	128.720	128.770	6	18	24
657	132.700	132.750	128.770	128.820	6	19	25
658	132.750	132.800	128.820	128.870	6	19	25
659	132.800	132.850	128.870	128.920	5	5	10
660	132.850	132.900	128.920	128.970	5	5	10
661	132.900	132.950	128.970	129.020	5	5	10
662	132.950	133.000	129.020	129.070	5	5	10
663	133.000	133.050	129.070	129.120	5	5	10
664	133.050	133.100	129.120	129.170	5	5	10
665	133.100	133.150	129.170	129.220	5	5	10
666	133.150	133.200	129.220	129.270	5	5	10
667	133.200	133.250	129.270	129.320	5	5	10
668	133.250	133.300	129.320	129.370	5	5	10
669	133.300	133.350	129.370	129.420	5	5	10
670	133.350	133.400	129.420	129.470	5	5	10
671	133.400	133.450	129.470	129.520	5	5	10
672	133.450	133.500	129.520	129.570	5	5	10
673	133.500	133.550	129.570	129.620	5	5	10
674	133.550	133.600	129.620	129.670	5	5	10
675	133.600	133.650	129.670	129.720	5	5	10
676	133.650	133.700	129.720	129.770	5	5	10
677	133.700	133.750	129.770	129.820	5	5	10
678	133.750	133.800	129.820	129.870	5	5	10
679	133.800	133.850	129.870	129.920	5	5	10
680	133.850	133.900	129.920	129.970	5	5	10
681	133.900	133.950	129.970	130.020	5	5	10
682	133.950	134.000	130.020	130.070	5	5	10
683	134.000	134.050	130.070	130.120	5	5	10
684	134.050	134.100	130.120	130.170	5	5	10

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
685	134.100	134.150	130.170	130.220	5	5	10
686	134.150	134.200	130.220	130.270	5	5	10
687	134.200	134.250	130.270	130.320	5	5	10
688	134.250	134.300	130.320	130.370	5	5	10
689	134.300	134.350	130.370	130.420	10	14	24
690	134.350	134.400	130.420	130.470	11	13	24
691	134.400	134.450	130.470	130.520	11	13	24
692	134.450	134.500	130.520	130.570	12	14	26
693	134.500	134.550	130.570	130.620	11	14	25
694	134.550	134.600	130.620	130.670	11	11	22
695	134.600	134.650	130.670	130.720	11	14	25
696	134.650	134.700	130.720	130.770	12	14	26
697	134.700	134.750	130.770	130.820	13	14	27
698	134.750	134.800	130.820	130.870	14	15	29
699	134.800	134.850	130.870	130.920	14	18	32
700	134.850	134.900	130.920	130.970	11	11	22
701	134.900	134.950	130.970	131.020	10	10	20
702	134.950	135.000	131.020	131.070	10	11	21
703	135.000	135.050	131.070	131.120	10	10	20
704	135.050	135.100	131.120	131.170	11	9	20
705	135.100	135.150	131.170	131.220	11	10	21
706	135.150	135.200	131.220	131.270	11	10	21
707	135.200	135.250	131.270	131.320	10	11	21
708	135.250	135.300	131.320	131.370	13	13	26
709	135.300	135.350	131.370	131.420	13	10	23
710	135.350	135.400	131.420	131.470	14	12	26
711	135.400	135.450	131.470	131.520	15	10	25
712	135.450	135.500	131.520	131.570	7	12	19
713	135.500	135.550	131.570	131.620	11	10	21
714	135.550	135.600	131.620	131.670	9	12	21
715	135.600	135.650	131.670	131.720	12	10	22
716	135.650	135.700	131.720	131.770	14	8	22
717	135.700	135.750	131.770	131.820	5	5	10
718	135.750	135.800	131.820	131.870	5	5	10
719	135.800	135.850	131.870	131.920	5	5	10
720	135.850	135.900	131.920	131.970	5	5	10
721	135.900	135.950	131.970	132.020	5	5	10
722	135.950	136.000	132.020	132.070	5	5	10
723	136.000	136.050	132.070	132.120	5	5	10
724	136.050	136.100	132.120	132.170	5	5	10
725	136.100	136.150	132.170	132.220	5	5	10

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
726	136.150	136.200	132.220	132.270	5	5	10
727	136.200	136.250	132.270	132.320	5	5	10
728	136.250	136.300	132.320	132.370	5	5	10
729	136.300	136.350	132.370	132.420	5	5	10
730	136.350	136.400	132.420	132.470	5	5	10
731	136.400	136.450	132.470	132.520	13	6	19
732	136.450	136.500	132.520	132.570	15	9	24
733	136.500	136.550	132.570	132.620	12	9	21
734	136.550	136.600	132.620	132.670	9	13	22
735	136.600	136.650	132.670	132.720	12	10	22
736	136.650	136.700	132.720	132.770	12	10	22
737	136.700	136.750	132.770	132.820	12	12	24
738	136.750	136.800	132.820	132.870	12	11	23
739	136.800	136.850	132.870	132.920	15	6	21
740	136.850	136.900	132.920	132.970	10	8	18
741	136.900	136.950	132.970	133.020	5	5	10
742	136.950	137.000	133.020	133.070	5	5	10
743	137.000	137.050	133.070	133.120	5	5	10
744	137.050	137.100	133.120	133.170	5	5	10
745	137.100	137.150	133.170	133.220	5	5	10
746	137.150	137.200	133.220	133.270	5	5	10
747	137.200	137.250	133.270	133.320	5	5	10
748	137.250	137.300	133.320	133.370	5	5	10
749	137.300	137.350	133.370	133.420	5	5	10
750	137.350	137.400	133.420	133.470	5	5	10
751	137.400	137.450	133.470	133.520	5	5	10
752	137.450	137.500	133.520	133.570	5	5	10
753	137.500	137.550	133.570	133.620	5	5	10
754	137.550	137.600	133.620	133.670	5	5	10
755	137.600	137.650	133.670	133.720	5	5	10
756	137.650	137.700	133.720	133.770	5	5	10
757	137.700	137.750	133.770	133.820	5	5	10
758	137.750	137.800	133.820	133.870	5	5	10
759	137.800	137.850	133.870	133.920	5	5	10
760	137.850	137.900	133.920	133.970	5	5	10
761	137.900	137.950	133.970	134.020	5	5	10
762	137.950	138.000	134.020	134.070	5	5	10
763	138.000	138.050	134.070	134.120	5	5	10
764	138.050	138.100	134.120	134.170	5	5	10
765	138.100	138.150	134.170	134.220	5	5	10
766	138.150	138.200	134.220	134.270	5	5	10
767	138.200	138.250	134.270	134.320	5	5	10

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
768	138.250	138.300	134.320	134.370	5	5	10
769	138.300	138.350	134.370	134.420	5	5	10
770	138.350	138.400	134.420	134.470	5	5	10
771	138.400	138.450	134.470	134.520	5	5	10
772	138.450	138.500	134.520	134.570	5	5	10
773	138.500	138.550	134.570	134.620	13	10	23
774	138.550	138.600	134.620	134.670	13	11	24
775	138.600	138.650	134.670	134.720	11	9	20
776	138.650	138.700	134.720	134.770	9	9	18
777	138.700	138.750	134.770	134.820	11	11	22
778	138.750	138.800	134.820	134.870	13	10	23
779	138.800	138.850	134.870	134.920	13	6	19
780	138.850	138.900	134.920	134.970	13	6	19
781	138.900	138.950	134.970	135.020	15	6	21
782	138.950	139.000	135.020	135.070	18	6	24
783	139.000	139.050	135.070	135.120	21	6	27
784	139.050	139.100	135.120	135.170	22	6	28
785	139.100	139.150	135.170	135.220	21	6	27
786	139.150	139.200	135.220	135.270	21	6	27
787	139.200	139.250	135.270	135.320	23	6	29
788	139.250	139.300	135.320	135.370	12	6	18
789	139.300	139.350	135.370	135.420	13	6	19
790	139.350	139.400	135.420	135.470	12	6	18
791	139.400	139.450	135.470	135.520	11	6	17
792	139.450	139.500	135.520	135.570	5	5	10
793	139.500	139.550	135.570	135.620	5	5	10
794	139.550	139.600	135.620	135.670	5	5	10
795	139.600	139.650	135.670	135.720	5	5	10
796	139.650	139.700	135.720	135.770	5	5	10
797	139.700	139.750	135.770	135.820	5	5	10
798	139.750	139.800	135.820	135.870	5	5	10
799	139.800	139.850	135.870	135.920	6	8	14
800	139.850	139.900	135.920	135.970	6	7	13
801	139.900	139.950	135.970	136.020	6	8	14
802	139.950	140.000	136.020	136.070	6	6	12
803	140.000	140.050	136.070	136.120	6	6	12
804	140.050	140.100	136.120	136.170	8	7	15
805	140.100	140.150	136.170	136.220	7	8	15
806	140.150	140.200	136.220	136.270	6	9	15
807	140.200	140.250	136.270	136.320	3	12	15
808	140.250	140.300	136.320	136.370	7	8	15

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
809	140.300	140.350	136.370	136.420	2	9	11
810	140.350	140.400	136.420	136.470	7	8	15
811	140.400	140.450	136.470	136.520	8	7	15
812	140.450	140.500	136.520	136.570	9	6	15
813	140.500	140.550	136.570	136.620	9	6	15
814	140.550	140.600	136.620	136.670	10	4	14
815	140.600	140.650	136.670	136.720	9	6	15
816	140.650	140.700	136.720	136.770	13	2	15
817	140.700	140.750	136.770	136.820	12	1	13
818	140.750	140.800	136.820	136.870	10	4	14
819	140.800	140.850	136.870	136.920	5	9	14
820	140.850	140.900	136.920	136.970	3	13	16
821	140.900	140.950	136.970	137.020	1	14	15
822	140.950	141.000	137.020	137.070	2	14	16
823	141.000	141.050	137.070	137.120	3	15	18
824	141.050	141.100	137.120	137.170	2	14	16
825	141.100	141.150	137.170	137.220	1	12	13
826	141.150	141.200	137.220	137.270	5	10	15
827	141.200	141.250	137.270	137.320	3	12	15
828	141.250	141.300	137.320	137.370	5	5	10
829	141.300	141.350	137.370	137.420	5	5	10
830	141.350	141.400	137.420	137.470	5	5	10
831	141.400	141.450	137.470	137.520	5	5	10
832	141.450	141.500	137.520	137.570	5	5	10
833	141.500	141.550	137.570	137.620	5	5	10
834	141.550	141.600	137.620	137.670	5	5	10
835	141.600	141.650	137.670	137.720	5	5	10
836	141.650	141.700	137.720	137.770	5	5	10
837	141.700	141.750	137.770	137.820	5	5	10
838	141.750	141.800	137.820	137.870	5	5	10
839	141.800	141.850	137.870	137.920	5	5	10
840	141.850	141.900	137.920	137.970	5	5	10
841	141.900	141.950	137.970	138.020	5	5	10
842	141.950	142.000	138.020	138.070	6	14	20
843	142.000	142.050	138.070	138.120	6	14	20
844	142.050	142.100	138.120	138.170	10	10	20
845	142.100	142.150	138.170	138.220	10	10	20
846	142.150	142.200	138.220	138.270	11	9	20
847	142.200	142.250	138.270	138.320	11	9	20
848	142.250	142.300	138.320	138.370	11	9	20
849	142.300	142.350	138.370	138.420	11	9	20
850	142.350	142.400	138.420	138.470	11	9	20

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	
851	142.400	142.450	138.470	138.520	12	8	20
852	142.450	142.500	138.520	138.570	11	9	20
853	142.500	142.550	138.570	138.620	11	9	20
854	142.550	142.600	138.620	138.670	15	8	23
855	142.600	142.650	138.670	138.720	15	8	23
856	142.650	142.700	138.720	138.770	16	7	23
857	142.700	142.750	138.770	138.820	5	18	23
858	142.750	142.800	138.820	138.870	5	18	23
859	142.800	142.850	138.870	138.920	5	18	23
860	142.850	142.900	138.920	138.970	5	17	22
861	142.900	142.950	138.970	139.020	6	17	23
862	142.950	143.000	139.020	139.070	6	17	23
863	143.000	143.050	139.070	139.120	5	18	23
864	143.050	143.100	139.120	139.170	6	17	23
865	143.100	143.150	139.170	139.220	5	18	23
866	143.150	143.200	139.220	139.270	5	17	22
867	143.200	143.250	139.270	139.320	5	17	22
868	143.250	143.300	139.320	139.370	5	18	23
869	143.300	143.350	139.370	139.420	5	17	22
870	143.350	143.400	139.420	139.470	12	18	30
871	143.400	143.450	139.470	139.520	12	17	29
872	143.450	143.500	139.520	139.570	12	17	29
873	143.500	143.550	139.570	139.620	13	19	32
874	143.550	143.600	139.620	139.670	14	19	33
875	143.600	143.650	139.670	139.720	14	20	34
876	143.650	143.680	139.720	139.750	16	22	38

3. Carriageway

The present carriageway of the Project Highway consists two Lane/two lane with paved shoulder and earthen shoulder configuration from Ex. Ch. 99.930km to Ex. Ch. 143.680km. 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	102.420	33.214	98.494	Pile	RCC Wall	PSC Box Bridge	3 x 33.7	10.5

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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		
2	115.745	46.422	111.808	Well	RCC Wall	PSC –Girder Bridge	2 x 40.3	11.1

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.of Spans with span length(m)	Width (m)	ROB/ RUB
			Foundation	Superstructure			
1	113.734	44.400	Pile	Open Web Girder	1X30.5m	25	RUB

6. Grade separators

The Site includes the following grade separators:

S. No.	Chainage (km)	Type of Structure		No.of Spans 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	99.998	30.795	96.070	Pile	RCC Wall	RCC Slab	1 x 8	8.6
2	100.290	31.169	96.360	Pile	RCC Wall	RCC Slab	1 x 8	9.2
3	100.734	31.613	96.807	Pile	RCC Wall	RCC Slab	2 x 6.2	8.6
4	101.100	31.980	97.173	Pile	RCC Wall	RCC Slab	3 x 8.2	8.4
5	102.970	33.766	99.036	Pile	RCC Wall	RCC Slab	1 x 8.2	8.6
6	104.012	34.660	100.077	Pile	RCC Wall	RCC Slab	4 x 8.65	8.3
7	104.619	35.255	100.685	Pile	RCC Wall	RCC Slab	1 x 9	9.2
8	104.953	35.589	101.020	Pile	RCC Wall	RCC Slab	4 x 6.4	9.2
9	105.286	35.924	101.353	Pile	RCC Wall	RCC Slab	3 x 8.5	8.6
10	106.294	36.755	102.361	Pile	RCC Wall	RCC Slab	2 x 8.2	8.7
11	109.440	40.140	105.507	Pile	RCC Wall	RCC Slab	2 x 6.4	8.7
12	110.180	40.884	106.246	Pile	RCC Wall	RCC Slab	1 x 8.2	8.6
13	111.163	41.857	107.230	Pile	RCC Wall	RCC Slab	2 x 5.6	9.2
14	111.946	42.653	108.014	Pile	RCC Wall	RCC Slab	2 x 6.2	8.6
15	112.904	43.612	108.968	Pile	RCC Wall	RCC Slab	2 x 6.5	8.6

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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		
16	113.800	44.464	109.868	Pile	RCC Wall	RCC Slab	2 x 6.4	8.9
17	116.701	47.199	112.769	Open	RCC Wall	RCC Slab	1 x 6	12
18	118.001	48.598	114.069	Open	RCC Wall	RCC Slab	1 x 6	12
19	118.138	48.737	114.206	Open	RCC Wall	RCC Slab	1 x 6	12
20	118.655	49.267	114.723	Open	RCC Wall	RCC Slab	1 x 6	12
21	119.182	49.797	115.250	Open	RCC Wall	RCC Slab	2 x 6	7.9
22	120.836	51.602	116.904	Open	RCC Wall	RCC Slab	2 x 5.8	8.4
23	122.613	53.374	118.681	Open	RCC Wall	RCC Slab	1 x 8	8.4
24	124.098	54.851	120.167	Open	RCC Wall	RCC Slab	2 x 5	8.3
25	124.803	55.558	120.872	Open	RCC Wall	RCC Slab	2 x 5	8.3
26	125.390	56.132	121.458	Open	RCC Wall	RCC Slab	1 x 8	8.3
27	125.973	56.717	122.042	Open	RCC Wall	RCC Slab	2 x 5	8.3
28	127.988	58.738	124.060	Open	RCC Wall	RCC Slab	3 x 6	8.3
29	128.987	59.748	125.056	Open	RCC Wall	RCC Slab	2 x 6	8.3
30	129.827	60.585	125.893	Open	RCC Wall	RCC Slab	2 x 4.9	8.4
31	130.864	61.626	126.932	Open	RCC Wall	RCC Slab	2 x 4.9	8.4
32	131.526	62.269	127.595	Open	RCC Wall	RCC Slab	3 x 6	8.4
33	132.684	63.445	128.752	Open	RCC Wall	RCC Slab	1 x 8	8.3
34	134.572	65.341	130.645	Open	RCC Wall	RCC Slab	2 x 7.9	8.5
35	135.157	65.928	131.230	Open	RCC Wall	RCC T Girder	4 x 13.2	8.5
36	136.525	67.279	132.598	Well	RCC Wall	RCC T Girder	3 x 16.75	13
37	138.600	69.325	134.673	Open	RCC Wall	RCC Slab	1 x 7.9	8.3
38	138.787	69.511	134.860	Open	RCC Wall	RCC Slab	1 x 7.9	8.3
39	139.445	70.228	135.518	Open	RCC Wall	RCC Slab	1 x 7.9	8.4
40	140.209	70.993	136.282	Open	RCC Wall	RCC Slab	3 x 6	8.5
41	140.611	71.439	136.683	Well	RCC Wall	PSC Girder	1 x 40.6	8.2
42	143.059	73.856	139.131	Open	RCC Wall	RCC Slab	2 x 5.8	8.5

8. Railway level crossings

The Site includes the following railway level crossings:

Sl. No.	Chainage (km)	Location	Remarks
Nil			

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

The Site includes the following under-passes:

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	100.569	31.450	96.642	Box	1X1.5 M	10.70
2	100.999	31.879	97.069	Box	1X1.5 M	9.20
3	101.420	32.212	97.492	Pipe	1X1.2 M dia	11.80
4	101.747	32.540	97.819	Box	1X5.0 M	9.20
5	102.069	32.863	98.142	Slab	1X1.5 M	10.00
6	105.901	36.364	101.967	Box	1X1.2 M	9.60
7	107.221	37.940	103.287	Pipe	1X1.2 M dia	11.40
8	107.247	37.965	103.314	Box	1X1.5 M	11.50
9	107.547	38.268	103.613	Box	2X1.2 M	11.60
10	108.232	38.957	104.305	Box	1X1.5 M	10.50
11	108.239	38.964		Box	2X2.0 M	11.60
12	108.780	39.506	104.845	Pipe	1 X 1.2 M dia	10.80
13	109.245	39.973	105.312	Box	1 X 1.5 M	10.80
14	109.612	40.316	105.679	Box	1 X 1.5 M	10.80
15	109.662	40.366	105.729	Box	1 X 2.0 M	11.20
16	109.685	40.391	105.752	Box	1 X 2.0 M	11.60
17	111.614	42.321	107.681	Box	1 X 2.0 M	11.60
18	112.282	42.992	108.349	Box	1 X 2.0 M	11.50
19	112.337	43.043	108.403	Slab	1 X 2.0 M	11.60
20	112.623	43.333	108.690	Slab	1 X 2.0 M	10.90
21	113.121	43.833	109.189	Slab	1 X 2.0 M	10.80
22	113.674	44.337	109.741	Box	1 X 2.0 M	10.70
23	114.477	45.150	110.543	Pipe	1 X 1.2 M dia	12.50
24	115.027	45.704	111.095	Slab	2 X 2.0 M	11.60
25	115.488	46.166	111.555	Slab	1 X 2.5 M	15.50
26	116.258	46.928	112.325	Pipe	1 X 1.2 M	27.20
27	116.442	47.000	112.509	Pipe	3 X 1.7 M dia	23.20
28	116.689	47.187	Minor Bridge Proposed at Nearest Location	Pipe	1 X 1.1 M dia	25.70
29	117.105	47.607	113.173	Pipe	4 X 1.0 M dia	12.00
30	117.120	47.622	113.187	Slab	1 X 4.0 M	12.00
31	117.790	48.393	113.857	Slab	1 X 4.0 M	12.00
32	117.805	48.406	113.872	Slab	1 X 3.8 M	12.00
33	118.323	48.921	114.391	Pipe	1 X 1.1 M dia	22.70
34	118.336	48.937	114.403	Slab	1 X 3.9 M	12.10
35	118.406	49.007	114.473	Slab	1 X 4.0 M	12.00

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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)
36	118.668	49.270	Minor Bridge Proposed near existing pipe culvert	Pipe	1 X 1.0M dia	22.70
37	119.435	50.183	115.500	Pipe	1 X 1.0 M dia	18.60
38	119.968	50.722	116.036	Pipe	1 X 1.0 M dia	23.10
39	120.278	51.031	116.345	Pipe	1 X 1.0 M dia	19.50
40	120.547	51.313	116.614	Pipe	1 X 1.0 M dia	20.10
41	121.025	51.791	117.092	Slab	1 X 4.0 M	16.10
42	121.100	51.866	117.166	Pipe	1 X 1.0 M dia	22.40
43	121.735	52.494	117.804	Box	1 X 1.0 M	14.00
44	121.986	52.745	118.054	Pipe	1 X 1.0 M dia	16.50
45	122.153	52.912	118.221	Box	1 X 1.0 M	13.50
46	122.976	53.740	119.045	Box	1 X 1.0 M	13.00
47	123.350	54.102	119.418	Slab	1 X 1.1 M	14.40
48	123.360	54.112	119.429	Pipe	1 X 1.0 M dia	16.10
49	123.697	54.451	119.766	Box	1 X 1.0 M	15.00
50	123.874	54.628	119.942	Box	1 X 1.0 M	13.90
51	123.885	54.638	119.953	Pipe	2 X 1.0 M dia	13.90
52	124.240	54.996	120.309	Box	1 X 1.0 M	12.00
53	124.261	55.016	120.330	Box	1 X 1.0 M	12.00
54	124.415	55.169	120.483	Box	1 X 1.0 M	12.00
55	124.426	55.180	120.493	Box	1 X 1.0 M	12.00
56	124.610	55.367	120.679	Box	1 X 1.0 M	12.00
57	125.088	55.846	121.157	Box	1 X 1.0 M	14.20
58	125.792	56.537	121.861	Pipe	2 X 1.0 M dia	19.30
59	126.227	56.976	122.296	Slab	1X0.9 M	14.10
60	126.732	57.487	122.800	Box	1 X 1.2 M	14.00
61	126.831	57.588	122.900	Box	1 X 5.0 M	11.80
62	127.440	58.192	123.509	Slab	1 X 1.0 M	10.20
63	127.695	58.448	123.764	Slab	1 X 0.8 M	11.10
64	128.333	59.095	124.402	Slab	1 X 1.0 M	12.00
65	128.623	59.385	124.692	Slab	1 X 1.0 M	10.60
66	128.775	59.537	124.844	Box	1 X 1.0 M	12.70
67	129.172	59.937	125.241	Box	1 X 1.0 M	12.70
68	129.475	60.234	125.545	Box	1 X 2.0 M	11.90
69	130.564	61.329	126.632	Pipe	4 X 1.0 M dia	20.30
70	131.281	62.047	127.350	Box	1 X 1.2 M	11.50
71	132.078	62.825	128.146	Box	1 X 1.0 M	11.80
72	132.090	62.837	128.158	Box	1 X 1.0 M	11.80
73	132.301	63.050	128.369	Slab	1 X 1.5 M	11.80
74	133.362	64.155	129.432	Box	1 X 1.4 M	11.30
75	133.557	64.349	129.669	Box	1 X 1.3 M	11.50
76	133.773	64.568	129.846	Box	1 X 1.4 M	11.50

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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)
77	134.322	64.995	130.395	Box	1 X 1.0 M	11.50
78	135.718	66.473	131.792	Slab	1 X 0.9 M	11.20
79	136.206	66.961	132.279	Box	1 X 1.0 M	11.30
80	136.921	67.679	132.995	Box	1 X 1.0 M	11.30
81	137.278	68.038	133.350	Box	1 X 1.2 M	11.70
82	138.355	69.041	134.428	Box	1 X 1.5 M	11.50
83	139.301	70.029	135.374	Pipe	1 X 1.0 M dia	17.80
84	139.986	70.774	136.058	Pipe	2 X 1.0 M dia	22.50
85	140.847	71.677	136.919	Box	1 X 1.0 M	12.00
86	141.204	72.036	137.277	Slab	1 X 1.0 M	10.30
87	141.305	72.137	137.377	Box	1 X 1.0 M	11.80
88	141.442	72.230	137.514	Box	1 X 1.0 M	11.80
89	141.675	72.464	137.747	Pipe	1 X 1.0 M dia	17.50
90	142.004	72.794	138.076	Slab	1 X 1.0 M	11.50
91	142.097	72.887	138.169	Slab	1 X 1.0 M	11.50
92	142.484	73.258	138.532	Slab	1 X 1.0 M	11.70
93	143.344	74.144	139.416	Pipe	6 x 1.0 M dia	17.50

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 (Kutchra)
1	101.265	101.500	Pucca (Both Side)	-
2	101.500	101.635	Pucca (RHS)	-
3	105.700	106.175	Pucca (Both Side)	-
4	106.543	106.610	Pucca (LHS)	-
5	107.040	107.200	Pucca (Both Side)	-
6	107.300	107.332	Pucca (RHS)	-
7	107.332	107.394	Pucca (Both Side)	-
8	107.394	107.500	Pucca (RHS)	-

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9	113.832	114.041	Pucca (LHS)	-
10	114.041	115.200	Pucca (Both Side)	-
11	123.040	123.329	Pucca (LHS)	-
12	130.000	130.213	Pucca (LHS)	-
13	130.213	130.550	Pucca (Both Side)	-
14	135.313	135.418	Pucca (LHS)	-
15	141.820	141.960	Pucca (RHS)	-
16	142.000	142.060	Pucca (RHS)	-
17	142.100	143.045	Pucca (Both Side)	-

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.				NH	SH	MDR	Others
	From km	to km		From km	To km						
1	101.490		32.281	97.550		✓				✓	
2	114.820		45.495	110.893		✓	✓	✓			

(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.		T-Junction	Cross Road
	From km	To km		From km	To km		
1	99.950		30.746	96.020		3-legged	Towards Paikan Paruth
2	100.075		30.872	96.143		3-legged	Towards Markrishbori
3	100.469		31.347	96.543		3-legged	Towards Arimara
4	100.600		31.480	96.673		3-legged	Towards Arimara
5	100.860		31.740	96.930		4-legged	L.H.S-Towards Garobazar, R.H.S- Khardanga
6	101.281		32.071	97.352		3-legged	Towards Gandhinagar
7	101.310		32.105	97.382		3-legged	Towards Khardanga
8	101.590		32.373	97.650		3-legged	Towards Khardanga
9	101.805		32.596	97.875		3-legged	Towards Karmakar Para
10	101.940		32.731	98.007		3-legged	Towards Krishnai Market
11	102.175		32.968	98.240		4-legged	L.H.S-Towards Mornai, R.H.S- Khoridhora
12	102.550		33.345	98.616		4-legged	L.H.S-Towards Jayanti

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Sl. No.	Location					Type	
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.		T-Junction	Cross Road
	From km	To km		From km	To km		
							Nagar, R.H.S- Khoridhora
13	103.140		33.936	99.206		3-legged	Towards Krishnai Bazar
14	103.535		34.186	99.604		3-legged	Towards Khoridhora
15	103.640		34.287	99.703		3-legged	Towards Malandubi
16	103.770		34.418	99.840		3-legged	Towards Malandubi
17	104.718		35.353	100.780		3-legged	Towards Bekipul
18	104.787		35.422	100.850		3-legged	Towards Village
19	105.032		35.668	101.090		3-legged	Towards Village
20	106.377		37.091	102.440		3-legged	Towards Salmara
21	106.626		37.341	102.685		3-legged	Towards Dirmajakhili
22	106.870		37.586	102.930		3-legged	Towards Sanapathar
23	107.000		37.716	103.060		3-legged	Towards Nepalipara
24	107.300		38.019	103.370		3-legged	Towards Village
25	107.715		38.435	103.780		3-legged	Towards Tarapara
26	108.882		39.605	104.942		3-legged	Towards Leladaali
27	109.080		39.806	105.143		3-legged	Towards Rombudara
28	109.410		40.110	105.474		3-legged	Towards Bormatia
29	109.662		40.364	105.722		3-legged	Towards Tabili
30	109.800		40.503	105.866		3-legged	Towards Dabili
31	110.080		40.783	106.140		3-legged	Towards Rombuk Lethel
32	111.030		41.723	107.090		4-legged	L.H.S-Towards Lela Baniyapara,R.H.S-Towards Lela Damas
33	111.572		42.277	107.632		3-legged	Towards Kadamtala
34	112.134		42.842	108.195		3-legged	Towards Kadamtala
35	112.430		43.143	108.507		3-legged	Towards Rawmari Garopara
36	113.258		43.967	109.325		3-legged	Towards Dudhnoi Station Road
37	113.500		44.152	109.554		3-legged	Towards Dainadubi Road
38	114.075		44.739	110.140		3-legged	Towards Dainadubi Road
39	114.320		44.985	110.385		3-legged	Towards Omaraboti
40	114.360		45.032	110.420		3-legged	Towards Sailmari
41	114.680		45.351	110.750		3-legged	Towards Omaraboti
42	114.740		45.413	110.806		3-legged	Towards Dudhnoi Market
43	114.955		45.630	111.023		3-legged	Towards Dudhnoi Market
44	115.000		45.675	111.070		3-legged	Towards Santipur
45	115.130		45.806	111.205		3-legged	Towards Babupara
46	115.362		46.038	111.430		3-legged	Towards Dudhnoi
47	115.390		46.053	111.460		3-legged	Towards Dudhnoi Bazar
30 48	115.460		46.136	111.520		3-legged	Towards Dudhnoi Hospital
49	115.600		46.277	111.660		3-legged	Towards Babupara

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Sl. No.	Location					Type	
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.		T-Junction	Cross Road
	From km	To km		From km	To km		
50	115.650		46.328	111.720		3-legged	Towards Santinagar
51	115.900		46.579	111.965		3-legged	Towards Santinagar
52	116.090		46.772	112.155		3-legged	Towards Suluk
53	117.500		48.077	113.550		3-legged	Towards Suluk
54	117.600		48.176	113.650		3-legged	Towards Nabagram
55	118.865		49.475	114.930		3-legged	Towards Majipara
56	121.380		52.134	117.444		3-legged	Towards Amjonga
57	121.550		52.305	117.610		3-legged	Towards Ramayawar
58	124.200		54.954	120.270		3-legged	Towards Kacharipara
59	124.440		55.193	120.510		3-legged	Towards Kachadal
60	124.690		55.435	120.746		3-legged	Towards Letkubari
61	125.010		55.765	121.080		3-legged	Towards Chingapangi
62	125.750		56.500	121.825		3-legged	Towards Chingapangi
63	126.130		56.878	122.200		3-legged	Towards Kamarpara
64	126.220		56.965	122.285		3-legged	Towards Tarapara
65	126.250		56.996	122.320		3-legged	Towards Darangiri
66	126.400		57.152	122.470		3-legged	Towards Darangiri
67	126.445		57.198	122.510		3-legged	Towards Tarapara
68	126.645		57.398	122.710		3-legged	Towards Tarapara
69	126.800		57.545	122.850		3-legged	Towards Kharkutta
70	127.400		58.149	123.470		3-legged	Towards Darangiri
71	127.500		58.249	123.570		3-legged	Towards Kharkutta
72	128.620		59.380	124.680		3-legged	Towards Dosimapara
73	129.490		60.248	125.550		4-legged	LHS-Towards Manupara, RHS-Towards Kharkutta
74	130.420		61.182	126.496		3-legged	Towards Banipara
75	130.470		61.230	126.537		3-legged	Towards Ranjoli Police Station
76	130.600		61.361	126.665		3-legged	Towards Sardarpara
77	130.900		61.647	126.954		3-legged	Towards Mohajonpara
78	130.980		61.743	127.040		3-legged	Towards Hadipara
79	131.080		61.843	127.130		3-legged	Towards Rangjuli
80	131.750		62.494	127.810		3-legged	Towards Rangjuli
81	133.133		63.896	129.200		3-legged	Towards Rangjuli
82	134.300		65.090	130.365		3-legged	Towards Pathpara
83	134.800		65.568	130.870		3-legged	Towards Banupara
84	135.427		66.179	131.500		3-legged	Towards Fakirpara
85	135.449		66.202	131.525		3-legged	Towards Dhanu Banga
86	135.850		66.603	131.920		3-legged	Towards Gathiapara
87	136.420		67.175	132.490		3-legged	Towards Madang
88	138.473		69.197	134.540		3-legged	Towards Sundarban Nersury
89	138.641		69.366	134.714		3-legged	Towards Village Rd

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Sl. No.	Location					Type	
	Survey Ch.		Existing Chainage as per NH-37 (km)	Design Ch.		T-Junction	Cross Road
	From km	To km		From km	To km		
90	139.225		69.952	135.300		3-legged	Towards Golagari
91	140.110		70.895	136.180		3-legged	Towards Kuriyamari
92	140.740		71.568	136.810		3-legged	Towards Banavita Village
93	141.000		71.833	137.080		4-legged	LHS-Towards Padu Par, RHS-Akhiyabari
94	142.200		72.988	138.270		3-legged	Towards Choudhuri Para
95	142.317		73.113	138.387		3-legged	Towards Bikali College
96	142.523		73.320	138.595		3-legged	Towards Khekharpara
97	142.640		73.437	138.710		3-legged	Towards College
98	142.670		73.469	138.750		3-legged	Towards Kultepara
99	142.930		73.727	139.010		4-legged	LHS-TowardsHekra RHS-Adhiguri

16. Bypasses

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

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

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

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

S.NO	Chainage		Length			Crossings				Transformers	
			(in Km)								
	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity
1	99.930	100.430	0.500	0.500	0.500						
2	100.280					0.120					
3	100.430	100.930	0.500	0.500	0.500						
4	100.930	101.430	0.500	0.500	0.500						

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

S.NO	Chainage		Length			Crossings				Transformers	
			(in Km)								
	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity
5	101.145							0.015			
6	101.310							0.015			
7	101.360							0.015			
8	101.430	101.930	0.500	0.500	0.500						
9	101.450							0.020			
10	101.465							0.020		1	
11	101.540							0.020			
12	101.560							0.020			
13	102.930	103.430	0.500	0.500	0.500						
14	102.990								0.020	1	
15	103.430	103.930	0.500	0.500	0.500						
16	103.490							0.015			
17	103.510							0.015			
18	103.550							0.015			
19	103.712								0.020		
20	103.43	103.930	0.500	0.500	0.500						
21	103.866								0.020		
22	103.930	104.430	0.500	0.500	0.500						
23	103.940								0.020		
24	104.430	104.930	0.500	0.500	0.500						
25	104.930	105.430	0.500	0.500	0.500						
26	104.950						0.015				
27	105.430	105.930	0.500	0.500	0.500						
28	105.930	106.430	0.500	0.500	0.500						
29	106.430	106.930	0.500	0.500	0.500						
30	106.930	107.430	0.500	0.500	0.500						
31	107.430	107.930	0.500	0.500	0.500						
32	107.930	108.430	0.5	0.5	0.5						
33	108.430	108.930	0.5	0.5	0.5						
34	108.455						0.015				
35	108.590							0.015			
36	108.905								0.015	1	
37	108.930	109.430	0.5	0.5	0.5						
38	109.430	109.930	0.5	0.5	0.5						
39	109.590							0.015			
40	109.930	110.430	0.5	0.5	0.5						
41	110.100							0.015			
42	110.390							0.015			
43	110.430	110.930									
44	121.430							0.015			
45	110.930	111.430	0.5	0.5	0.5						
46	110.940							0.015			
47	111.240							0.015			

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

S.NO	Chainage		Length			Crossings				Transformers	
			(in Km)								
	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity
48	111.430	111.930	0.5	0.5	0.5						
49	111.930	112.430	0.5	0.5	0.5						
50	112.210								0.015		
51	112.386							0.015			
52	112.430	112.930	0.5	0.5	0.5						
53	112.930	113.430	0.5	0.5	0.5						
54	113.055								0.015	1	
55	113.280								0.015		
56	113.330							0.015			
57	113.430	113.930	0.5	0.5	0.5						
58	113.530								0.015		
59	113.560							0.015			
60	113.580							0.015			
61	113.600								0.015		
62	113.770								0.015		
63	113.930	114.430	0.5	0.5	0.5						
64	113.940								0.015		
65	113.980								0.015	1	
66	114.100								0.015		
67	114.160								0.015		
68	114.190								0.015	1	
69	114.340							0.015			
70	114.355							0.015			
71	114.430	114.930	0.5	0.5	0.5						
72	114.500							0.015			
73	114.670								0.015		
74	114.700							0.015			
75	114.785							0.015			
76	114.800								0.015		
77	114.855								0.015	1	
78	114.890								0.015		
79	114.930	115.430	0.5	0.5	0.5						
80	115.100							0.015			
81	115.130								0.015		
82	115.390							0.015			
83	115.400								0.015		
84	115.430	115.930	0.5	0.5	0.5						
85	115.490							0.015			
86	115.550								0.015		
87	115.655								0.015	1	
88	115.930	116.430	0.5	0.5	0.5						
89									0.020		
90									0.020		
91	116.430	116.930	0.5	0.5	0.5						

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S.NO	Chainage		Length			Crossings				Transformers	
			(in Km)								
	From (Km)	To (Km)	33KV	11KV	LT	132KV	33KV	11KV	LT	No	Capacity
92	116.930	117.430	0.5	0.5	0.5						
93	117.090								0.020		
94	117.105							0.015			
95	117.190								0.020		
96	117.430	117.930	0.5	0.5	0.5						
97	117.470								0.020	1	
98	117.585							0.015			
99	117.930	118.430	0.5	0.5	0.5						
100	118.000								0.020		
101	118.110								0.020		
102	118.350								0.020		
103	118.430	118.930	0.5	0.5	0.5						
104	118.930	119.430	0.5	0.5	0.5						
105	119.430	119.930	0.5	0.5	0.5						
106	119.930	120.430	0.5	0.5	0.5						
107	120.430	120.930	0.5	0.5	0.5						
108	120.755								0.015		
109	120.880							0.015			
110	120.930	121.430	0.5	0.5	0.5						
111	121.155							0.015			
112	121.155								0.015		
113	121.180								0.015	1	
114	121.330								0.015		
115	121.380								0.015		
116	121.430	121.930	0.5	0.5	0.5						
117	121.555								0.015		
118	121.605								0.015	1	
119	121.705								0.015		
120	121.930	122.430	0.5	0.5	0.5						
121	122.070							0.015			
122	122.430	122.930	0.5	0.5	0.5						
123	123.330							0.015			
124	122.930	123.430	0.5	0.5	0.5						
125	123.050							0.015			
126	123.430	123.930	0.5	0.5	0.5						
127	123.680							0.015			
128	123.930	124.430	0.5	0.5	0.5						
129									0.015	1	
130	124.430	124.930	0.5	0.5	0.5						
131	124.575							0.015			
132	124.930	125.430	0.5	0.5	0.5						

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

S.NO	Chainage		Length			Crossings				Transformers	
			(in Km)			132KV	33KV	11KV	LT	No	Capacity
	From (Km)	To (Km)	33KV	11KV	LT						
133	125.190							0.015			
134	125.240							0.015			
135	125.430	125.930	0.5	0.5	0.5						
136	125.610								0.015		
137	125.740							0.015			
138	125.790							0.015			
139	125.930	126.430	0.5	0.5	0.5						
140	126.130								0.015		
141	126.210							0.015			
142	126.400								0.015		
143	126.430	126.930	0.5	0.5	0.5						
144	126.930	127.380	0.45	0.45	0.45						
145	127.380	127.830	0.45	0.45	0.45						
146	127.830	128.330	0.5	0.5	0.5						
147	128.330	128.830	0.5	0.5	0.5						
148	128.830	129.33	0.5	0.5	0.5						
149	128.990							0.015			
150	129.005								0.015	1	
151	129.33	129.78	0.45	0.45	0.45						
152	129.35							0.015			
153	129.7								0.015		
154	129.72							0.015			
155	129.78	133.78	4	4	4						
156	133.78	138.43	4.65	4.65	4.65						
157	138.43	143.43	5	5	5						

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

The site includes the following Public Health utilities:-

Sl No	Chainage		Length(in Km)	Crossings(in km)
	From (Km)	To (Km)	Water Supply line	Water Supply line
1	100.33	100.675	0.345	
2	100.84	101.535	0.695	
4	101.535			0.012
5	101.535	102.21	0.675	
6	104.72	106.19	1.47	
7	110.84	111.018	0.178	
8	113.345	113.735	0.39	
9	113.938	114.145	0.207	
10	114.035			0.012
11	114.292	114.415	0.123	
12	117.56	118.24	0.68	

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl No	Chainage		Length(in Km)	Crossings(in km)
	From (Km)	To (Km)	Water Supply line	Water Supply line
13	118.445	119.025	0.58	
14	124.235	124.69	0.455	
15	124.235			0.012
16	125.98	126.285	0.305	
17	126.285			0.012
18	126.285	126.802	0.517	
19	130.132	130.58	0.448	
20	130.580			0.012
21	130.58	131.238	0.658	
22	142.22	142.476	0.256	
23	142.476			0.012
24	142.476	143.08	0.604	
25	143.080			0.012
26	143.08	143.33	0.25	

(iii) Any Other line

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	42.760	Rural Area :35m - 40m Built-up Location :30m- 45m Forest Location-30m	At appointed date
Balance Right of Way (Width)	Bus bays	0.990	45m	Within 150 days of declaration of appointed date

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilaspura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

`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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	<p>Required forest clearance.</p> <p>The proposal is uploaded in the parivesh portal and the Stage II proposal is pending with State Govt.</p> <p>The project stretch passes throughBorjhar Reserved Forest, Boromatia Proposed Reserved Forest, Lunkey Reserved Forest, Baghmara Reserved Forest, Dolongdoba Proposed Reserved Forest, Kachadal Reserved Forest, Madang Reserved Forest, Buraburi Reserved Forest, Dhanubhanga Reserved Forest, Aoimari Reserved Forest, Gathiapara Proposed Reserved Forest, Kurhiamari Reserved Forest, Salpara Reserved Forest, Ambuk Reserved Forest and Kathakuthi Reserved Forest.Details are given below.</p> <table border="1"> <thead> <tr> <th colspan="2">As per Existing NH 37 Chainage (Km)</th> <th colspan="2">Existing Survey chainage (Km)</th> <th rowspan="2">Side</th> <th rowspan="2">Effective Length (Km)</th> <th rowspan="2">Length (Km)</th> <th rowspan="2">Remarks</th> </tr> <tr> <th>From</th> <th>To</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>37.853</td> <td>38.035</td> <td>107.137</td> <td>107.319</td> <td>L.H.S</td> <td>0.182</td> <td>0.182</td> <td>Borjhar R.F</td> </tr> <tr> <td>38.035</td> <td>39.765</td> <td>107.319</td> <td>109.049</td> <td>Both Side</td> <td>3.460</td> <td>1.730</td> <td>Boromatia P.R.F (RHS), Borjhar R.F (LHS)</td> </tr> <tr> <td>47.598</td> <td>47.768</td> <td>117.098</td> <td>117.268</td> <td>LHS</td> <td>0.170</td> <td>0.170</td> <td>Lunkey R.F (LHS)</td> </tr> <tr> <td>47.768</td> <td>47.978</td> <td>117.268</td> <td>117.478</td> <td>Both Side</td> <td>0.420</td> <td>0.210</td> <td>Lunkey R.F (LHS), Baghmara R.F (RHS)</td> </tr> <tr> <td>47.978</td> <td>48.914</td> <td>117.478</td> <td>118.414</td> <td>RHS</td> <td>0.936</td> <td>0.936</td> <td>Baghmara R.F (RHS)</td> </tr> <tr> <td>53.449</td> <td>53.475</td> <td>122.689</td> <td>122.715</td> <td>LHS</td> <td>0.026</td> <td>0.026</td> <td>Dolongdoba P.R.F (LHS)</td> </tr> <tr> <td>53.475</td> <td>53.803</td> <td>122.715</td> <td>123.043</td> <td>Both Side</td> <td>0.656</td> <td>0.328</td> <td>Kachadal R.F (RHS), Dolongdoba P.R.F (LHS)</td> </tr> <tr> <td>53.803</td> <td>54.735</td> <td>123.043</td> <td>123.975</td> <td>Both Side</td> <td>1.864</td> <td>0.932</td> <td>Kachadal R.F (RHS), Dolongdoba P.R.F (LHS)</td> </tr> <tr> <td>54.735</td> <td>54.811</td> <td>123.975</td> <td>124.051</td> <td>RHS</td> <td>0.076</td> <td>0.076</td> <td>Kachadal R.F (RHS)</td> </tr> <tr> <td>62.566</td> <td>63.554</td> <td>131.822</td> <td>132.810</td> <td>RHS</td> <td>0.988</td> <td>0.988</td> <td>Madang R.F (RHS)</td> </tr> <tr> <td>63.554</td> <td>65.064</td> <td>132.810</td> <td>134.320</td> <td>Both Side</td> <td>3.020</td> <td>1.510</td> <td>Madang R.F (RHS), Buraburi R.F (LHS)</td> </tr> </tbody> </table>	As per Existing NH 37 Chainage (Km)		Existing Survey chainage (Km)		Side	Effective Length (Km)	Length (Km)	Remarks	From	To	From	To	37.853	38.035	107.137	107.319	L.H.S	0.182	0.182	Borjhar R.F	38.035	39.765	107.319	109.049	Both Side	3.460	1.730	Boromatia P.R.F (RHS), Borjhar R.F (LHS)	47.598	47.768	117.098	117.268	LHS	0.170	0.170	Lunkey R.F (LHS)	47.768	47.978	117.268	117.478	Both Side	0.420	0.210	Lunkey R.F (LHS), Baghmara R.F (RHS)	47.978	48.914	117.478	118.414	RHS	0.936	0.936	Baghmara R.F (RHS)	53.449	53.475	122.689	122.715	LHS	0.026	0.026	Dolongdoba P.R.F (LHS)	53.475	53.803	122.715	123.043	Both Side	0.656	0.328	Kachadal R.F (RHS), Dolongdoba P.R.F (LHS)	53.803	54.735	123.043	123.975	Both Side	1.864	0.932	Kachadal R.F (RHS), Dolongdoba P.R.F (LHS)	54.735	54.811	123.975	124.051	RHS	0.076	0.076	Kachadal R.F (RHS)	62.566	63.554	131.822	132.810	RHS	0.988	0.988	Madang R.F (RHS)	63.554	65.064	132.810	134.320	Both Side	3.020	1.510	Madang R.F (RHS), Buraburi R.F (LHS)
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Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sr. No.	Clearances	Present Status							
		66.453	67.151	135.700	136.398	Both Side	1.396	0.698	Dhanubhanga R.F (RHS), Aoimari R.F (LHS)
		67.151	67.199	136.398	136.446	LHS	0.048	0.048	Aoimari R.F (LHS)
		67.577	67.635	136.820	136.878	LHS	0.058	0.058	Gathiapara P.R.F (LHS)
		67.635	69.273	136.878	138.516	Both Side	3.276	1.638	Gathiapara P.R.F (LHS), Deoshila R.F (RHS)
		69.273	69.353	138.516	138.596	LHS	0.080	0.080	Gathiapara P.R.F (LHS)
		69.590	70.162	138.865	139.437	LHS	0.572	0.572	Kurhiamari R.F (LHS)
		70.162	70.541	139.437	139.816	Both Side	0.758	0.379	Kurhiamari R.F (LHS) Salpara R.F (RHS)
		70.541	70.784	139.816	140.059	RHS	0.243	0.243	Salpara R.F (RHS)
		72.065	72.797	141.236	141.968	Both Side	1.464	0.732	Ambuk R.F (RHS) Kathakuthi R.F (LHS)
		72.797	72.852	141.968	142.023	RHS	0.055	0.055	Ambuk R.F (RHS)
3	Wildlife Approval	Not Required							

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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.

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	Location	Width (m)	Typical Cross Section	Remarks
	(Township)	(kmt to km)		(Refer to Manual)	
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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

[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 117.117 to km 118.060	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4E
2	Km 122.150 to km 123.770	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4E
3	Km 126.100 to km 127.299	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4E
4	Km 131.444 to km 131.720	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4E
5	Km 138.091 to km 138.380	2 X 2.5 m Paved Shoulder/ 2 X 1.0m width Drain Cum Footpath	TCS-4E

- For width of paved shoulder at flyover 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 EUP approaches refer TCS-6D, TCS-6D1 & TCS-6D2

(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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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
NIL			

- (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 96.842 to km 97.067	Both sides	2X0.225=0.450	Tapered Location	Varying Width
2	Km 97.067 to km 97.283 km	Both sides	2X0.216=0.432	TCS 6E	2x7.5m
3	Km 97.283 to km 97.878	Both sides	2X0.595=1.190	TCS-8	2x7.5m
4	Km 97.878 to km 98.119 km	Both sides	2X0.241=0.482	TCS 6E	2x7.5m
5	Km 98.119 to km 98.345	Both sides	2X0.226=0.452	Tapered Location	Varying Width
6	Km 100.750 to km 101.775 km	Both sides	2X1.025=2.050	TCS 6D1	2x5.5m
7	Km 103.425 to km 104.975	Both sides	2X1.550=3.100	TCS 6D	2x3.5m
8	Km 109.810 to km 110.031 km	Both sides	2X0.221=0.442	Tapered Location	Varying Width

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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
9	Km 110.031 to km 110.212	Both sides	2X0.181=0.362	TCS 6E	2x7.5m
10	Km 110.212 to km 111.227 km	Both sides	2X1.015=2.030	TCS-8	2x7.5m
11	Km 111.227 to km 111.539	Both sides	2X0.312=0.624	TCS 6E	2x7.5m
12	Km 111.539 to km 111.689 km	Both sides	2X0.150=0.300	Tapered Location	Varying Width
13	Km 113.675 to km 114.530	Both sides	2X0.855=1.710	TCS 6D	2x3.5m
14	Km 117.117 to km 118.060 km	Both sides	2X0.943=1.886	TCS 4E	2x5.5m
15	Km 122.150 to km 123.770	Both sides	2X1.620=3.240	TCS 4E	2x5.5m
16	Km 126.100 to km 127.299 km	Both sides	2X1.199=2.398	TCS 4E	2x5.5m
17	Km 129.025 to km 129.925	Both sides	2X0.900=1.800	TCS 6D	2x3.5m
18	Km 131.444 to km 131.720	Both sides	2X0.276=0.552	TCS 4E	2x5.5m
19	Km 133.100 to km 134.050 km	One side	1X0.950=0.950	TCS 6D2	1x3.5m
20	Km 134.665 to km 135.700	One side	1X1.035=1.035	TCS 6D2	1x3.5m
21	Km 138.091 to km 138.380 km	Both sides	2X0.289=0.578	TCS 4E	2x5.5m
22	Km 138.380 to km 138.425	Both sides	2X0.045=0.090	Tapered Location	Varying Width
23	Km 138.425 to km 138.605	Both sides	2X0.180=0.360	TCS 6E	2x7.5m
24	Km 138.605 to km 139.290 km	Both sides	2X0.685=1.370	TCS-8	2x7.5m
25	Km 139.290 to km 139.520	Both sides	2X0.230=0.460	TCS 6E	2x7.5m
26	Km 139.520 to km 139.750	Both sides	2X0.230=0.460	Tapered Location	Varying Width

*The specified length of Service Road indicated in this location is minimum

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

(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 (Flyover)	Length(m)	Number and length of spans (m)	Total Width (m)	Approach gradient	Remarks
1	Krishnai (Km 97.283 to Km 97.878)	595	9 x 35m + 1 x 35m + 7 x 35m	2 x 10.5m(CW) + 2 x 0.5m(Crash Barrier) + 1x 1.0m(median) =23m	2.50%	PSC Box Girder
2	Dudhnoi (Km 110.212 to Km 111.227)	1015	19 x 35m + 1 x 35m + 9 x 35m		2.50%	PSC Box Girder
3	Dhupdhara (Km 138.605 to Km 139.290)	685	11 x 35m + 1 x 40m + 3 x 40m + 4 x 35m		3.3% & 2.5%	PSC Box Girder

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

Location		Length (km)
From(km)	To(km)	
97.067	97.283	0.216
97.878	98.119	0.241
110.031	110.212	0.181
111.227	111.539	0.312
138.425	138.605	0.180
139.290	139.520	0.230
Total length=		1.360

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

(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	Krishnai (Km 97.283 to Km 97.878)	Flyover	-	-	-	-
2	Dudhnoi (Km 110.212 to Km 111.227)	Flyover	-	-	-	-

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Location	Type of structure Length(m)	Cross road at			Remarks. If any
			Existing Level	Raised Level	Lowered Level	
3	Dhupdhara (Km 138.605 to Km 139.290)	Flyover	-	-	-	-

(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
Nil		

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
1	101.312	1 x 21.62m	RCC T Girder	2x9.5m(CW) + 4 x 0.5m(Crash Barrier) + 1x 0.5m(Gap)=21.5m	
2	103.910	1 x 38m	PSC I Girder		
3	104.468	1 x 38m	PSC I Girder		
4	114.114	1 x 17m	Integral Slab		
5	129.488	1 x 21.62m	RCC T Girder		
6	133.600	1 x 38m	PSC I Girder		
7	135.188	1 x 38m	PSC I Girder		

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

Location		Length (km)
From(km)	To(km)	
100.750	101.302	0.552
101.400	101.775	0.375
103.425	103.891	0.466
103.929	104.449	0.520
104.487	104.975	0.488
113.675	114.105	0.430
114.122	114.530	0.408
129.025	129.477	0.452
129.499	129.925	0.426
133.100	133.581	0.481
133.619	134.050	0.431
134.665	135.169	0.504
135.207	135.700	0.493
Total length=		6.026

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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

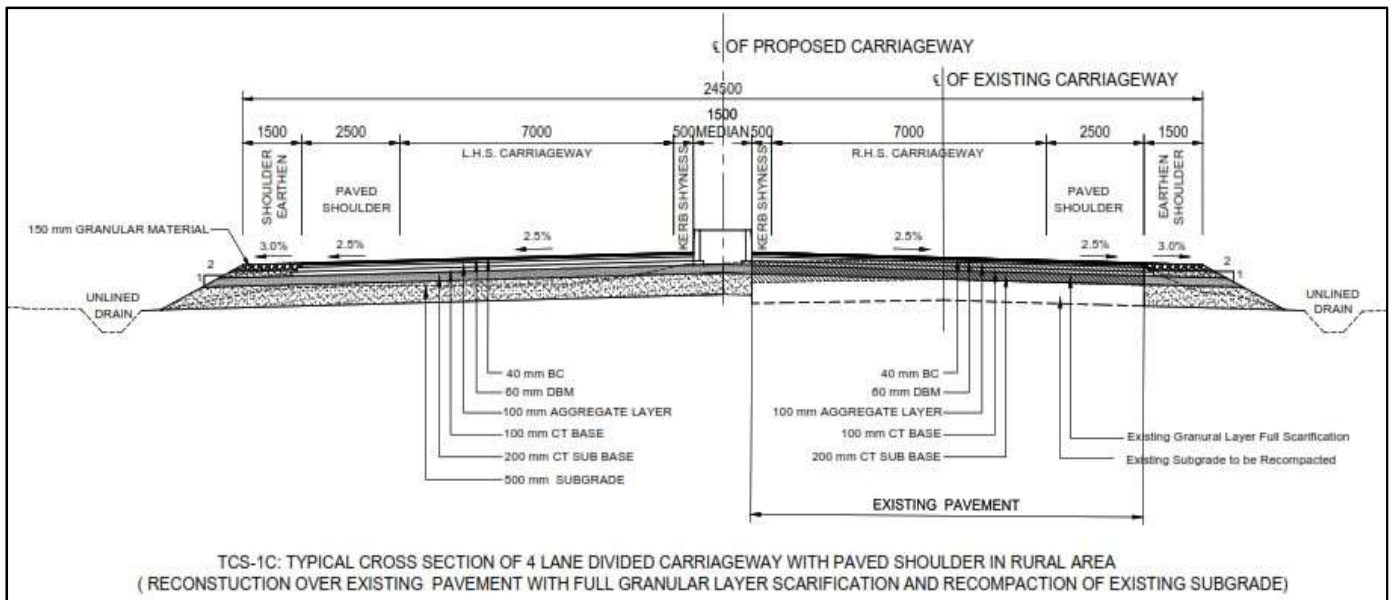
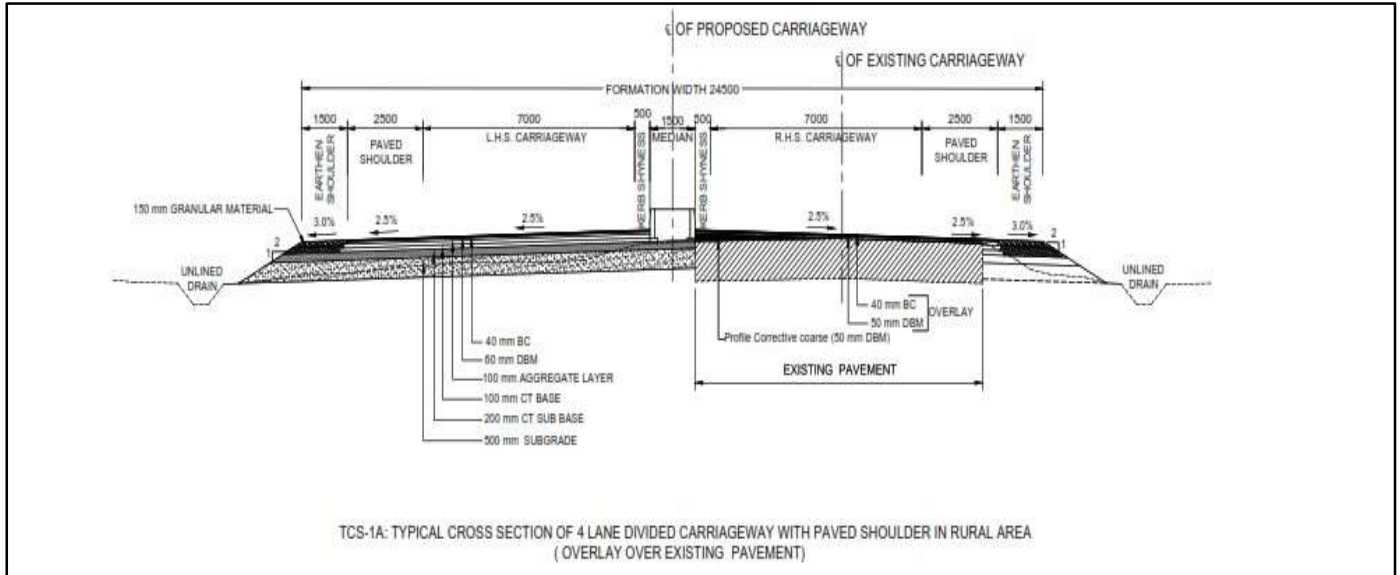
- (xi) Typical cross-sections of the Project Highway
 [Give typical cross-sections of the Project Highway by reference to the Manual]
 As per attached Drawings

Sl. No.	Description	Length (m)
TCS 1A	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA (OVERLAY OVER EXISTING PAVEMENT)	270
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 AND RECOMPACTION OF EXISTING SUBGRADE)	3510
TCS 1D	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA(RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL EXISTING GRANULAR LAYER SCARIFICATION WITH NEW SUBGRADE)	12349
TCS 1E	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA AT BRIDGE APPROACH	3343
TCS 1L	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA (RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL EXISTING GRANULAR LAYER SCRAIFICATION WITH NEW SUBGRADE)	1750
TCS 1M	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA (RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL EXISTING GRANULAR LAYER SCRAIFICATION WITH NEW SUBGRADE)	20
TCS-4E	TYPICAL CROSS SECTION OF 4 LANE CARRIAGEWAY WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA(RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION WITH NEW SUBGRADE)	4327
TCS-5B	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FOREST STRETCH (RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL GRANULAR LAYER SCARIFICATION AND RECOMPACTION OF EXISTING SUBGRADE)	3097
TCS-5C	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FOREST STRETCH (RECONSTRUCTION OVER EXISTING PAVEMENT WITH FULL EXISTING GRANULAR LAYER SCARIFICATION WITH NEW SUBGRADE)	3522
TCS-6D	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN EUP APPROACHES WITH BOTH SIDE SLIP ROAD	3305
TCS-6D1	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN EUP APPROACHES WITH BOTH SERCICE ROAD	1025
TCS-6D2	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN EUP APPROACHES WITH ONE SIDE SLIP ROAD	1985
TCS-6E	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FLYOVER APPROACHES WITH BOTH SIDE SERVICE ROAD	1360
TCS-7	TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH PAVED SHOULDER IN 2-LANE BRIDGE APPROACH FOLLOWS EXISTING PAVEMENT	495

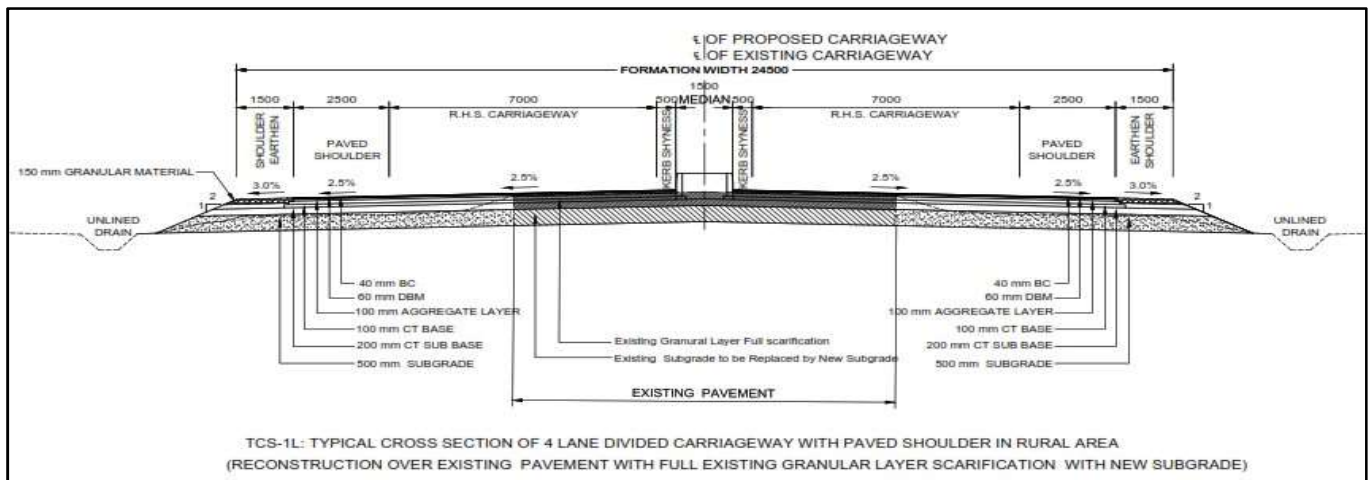
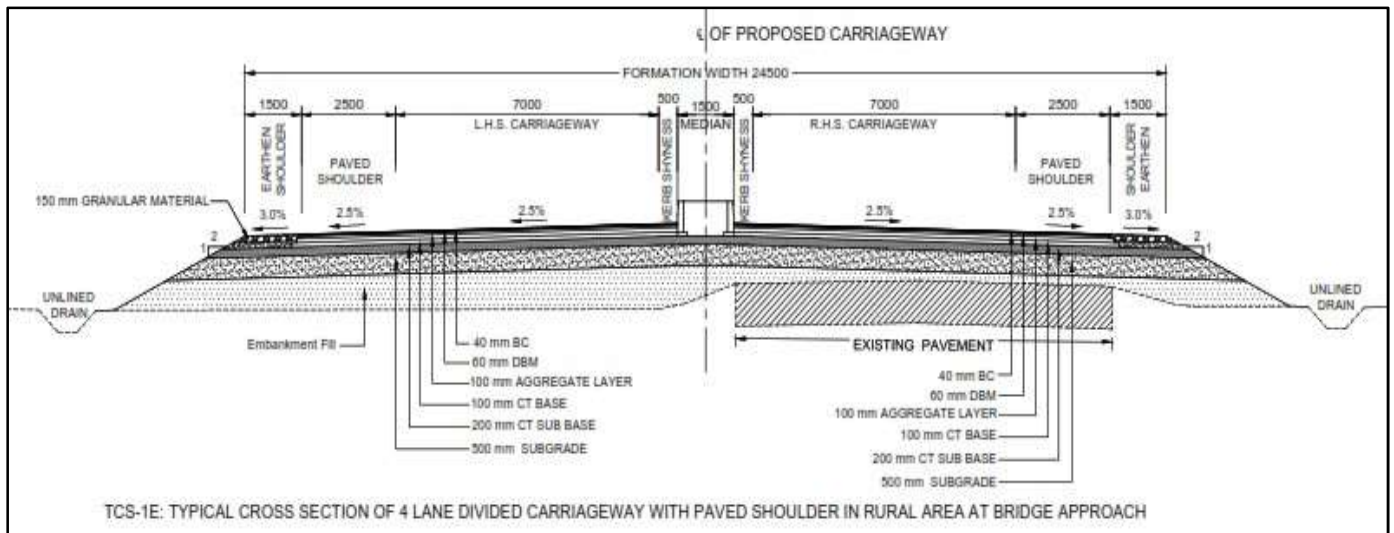
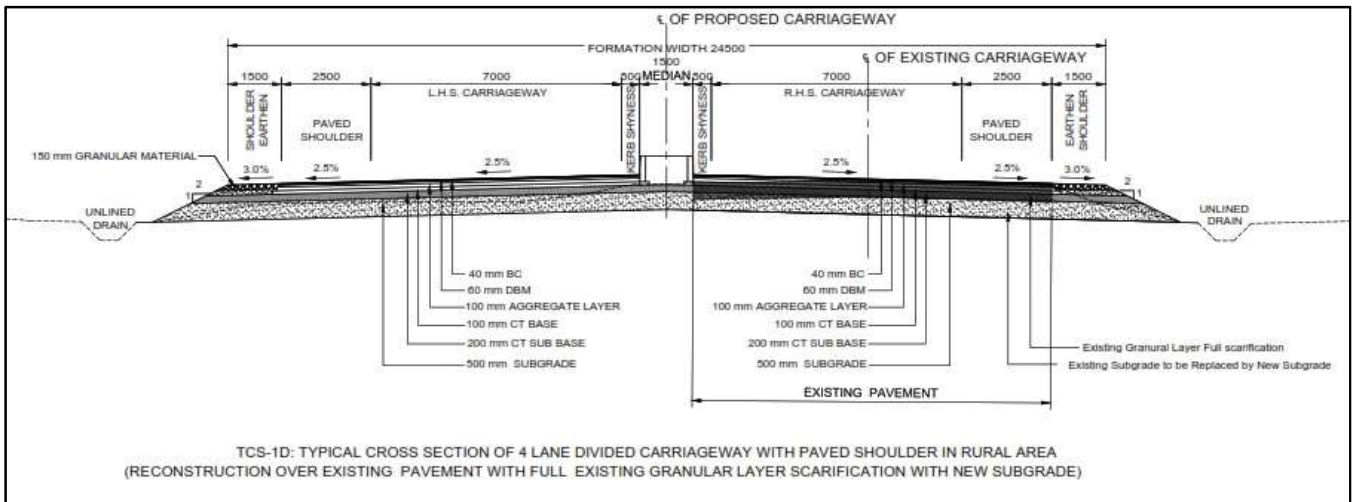
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Description	Length (m)
TCS 8	TYPICAL CROSS SECTION OF 4 LANE DIVIDED CARRIAGEWAY WITH PAVED SHOULDER IN FLYOVER WITH BOTH SIDE SERVICE ROAD IN BUILT-UP AREA	2295
	TAPERED PORTION	1097
	Total Length=	43750

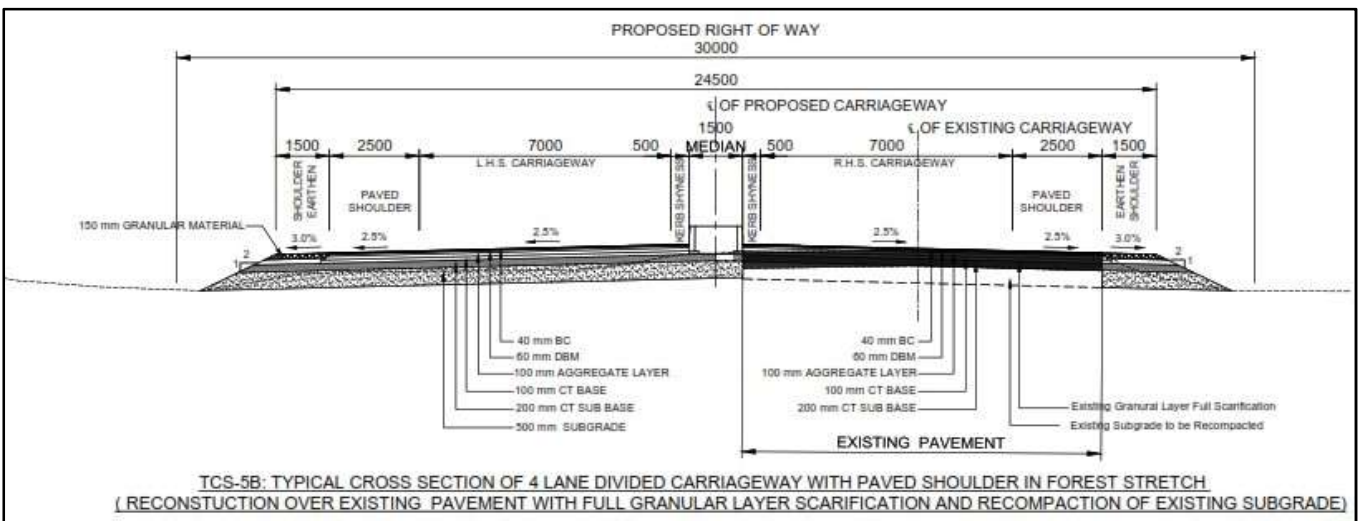
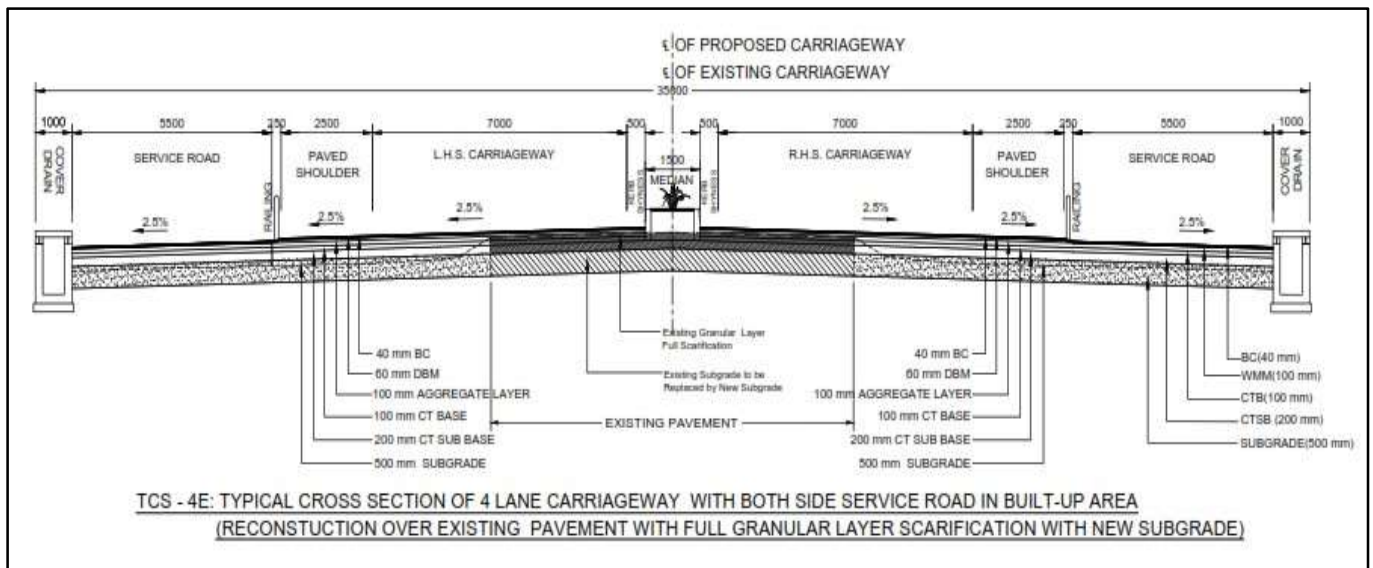
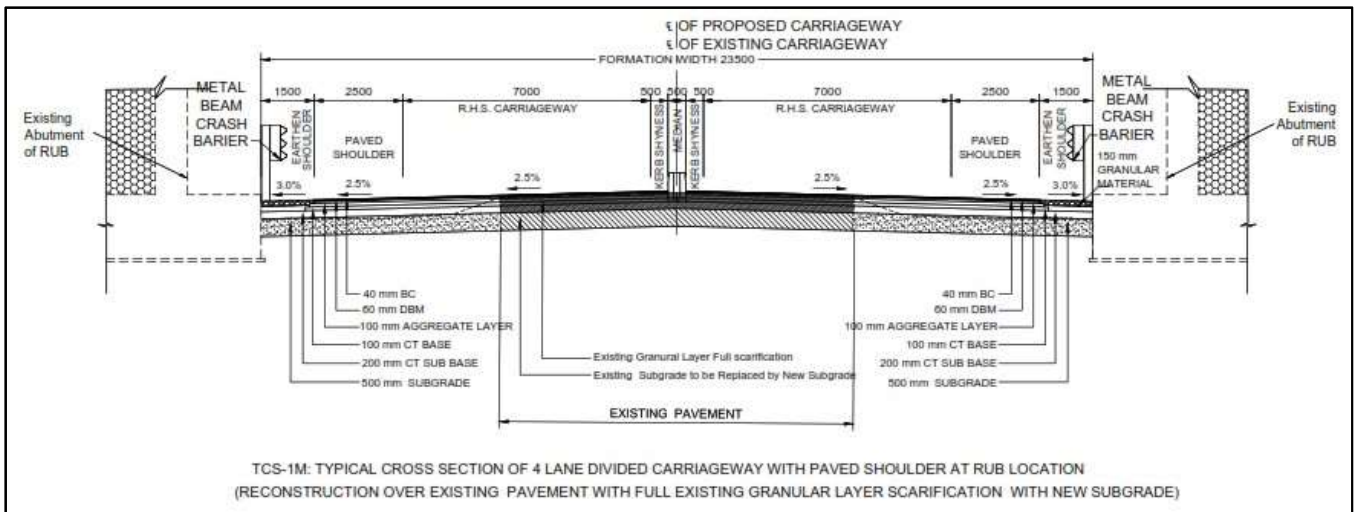
Typical cross-sections (TCS) drawings are given below:



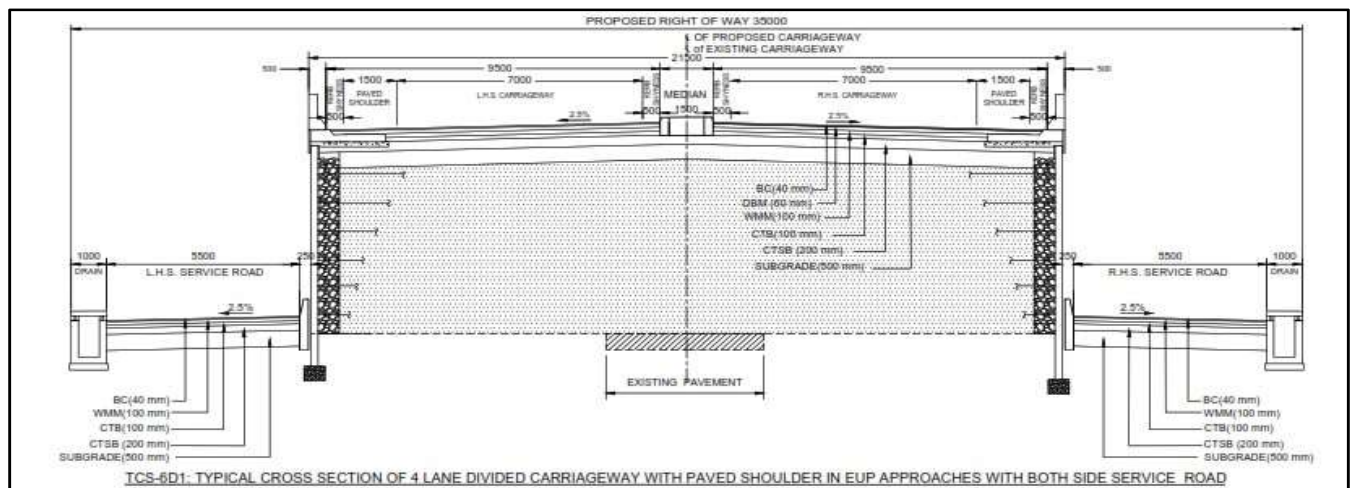
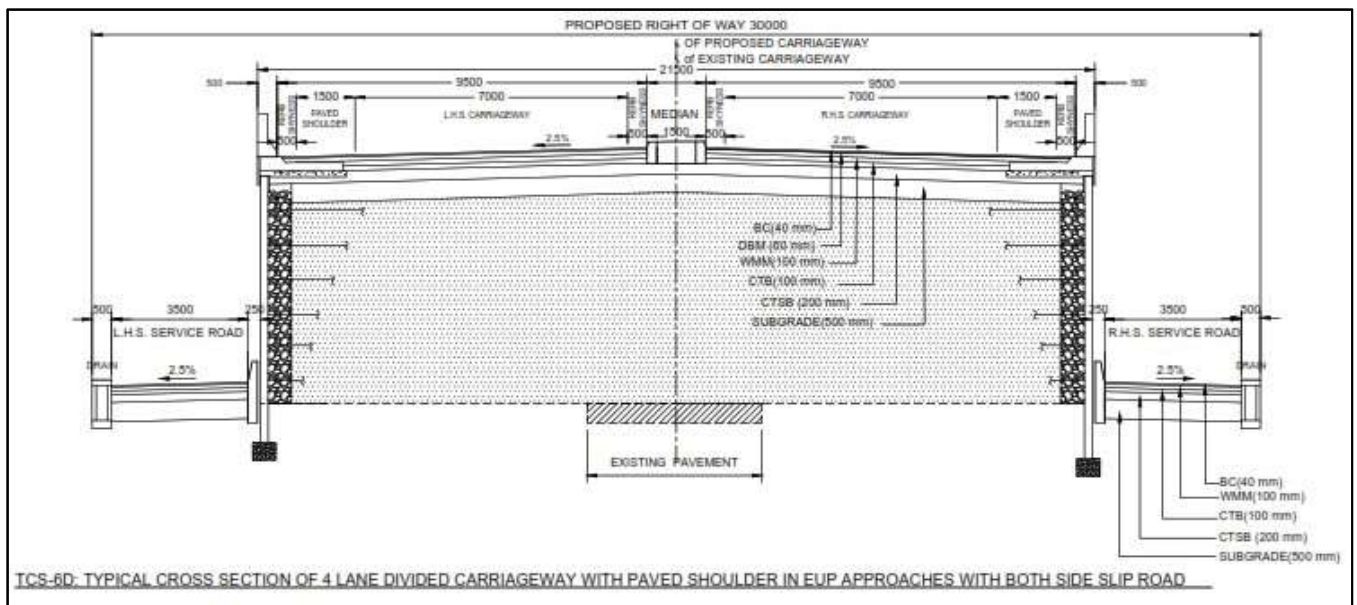
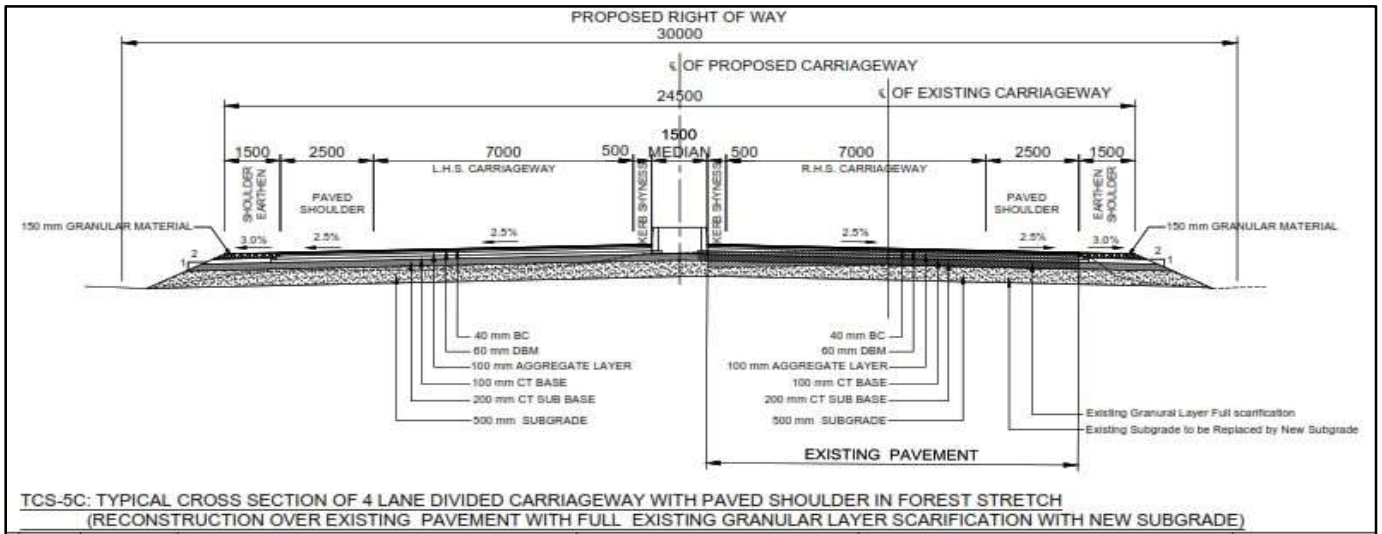
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.



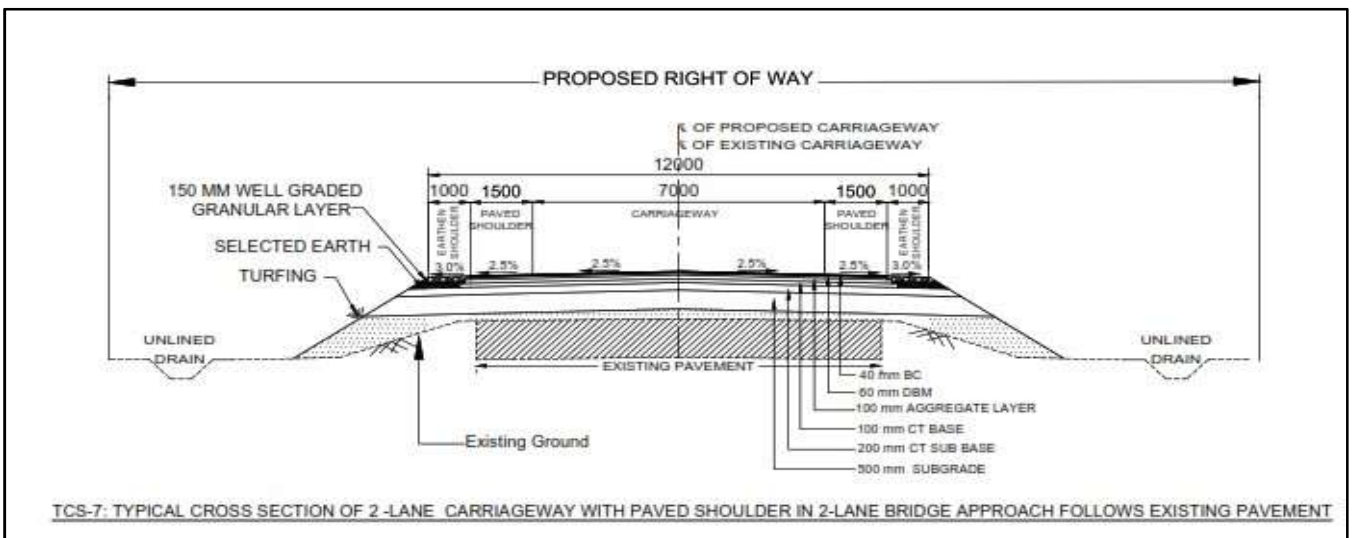
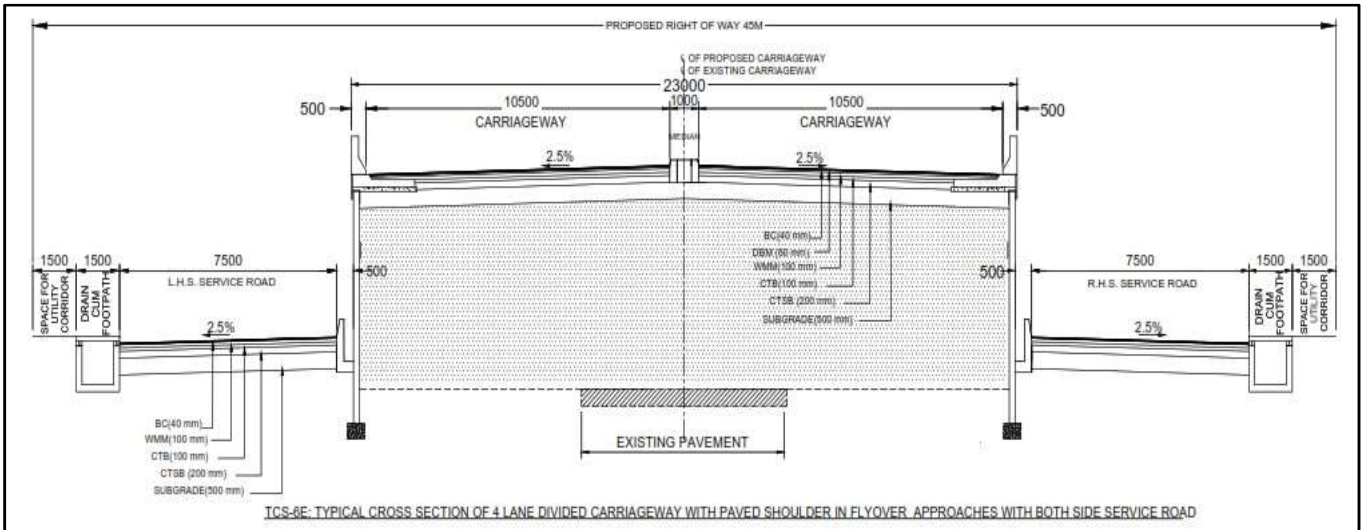
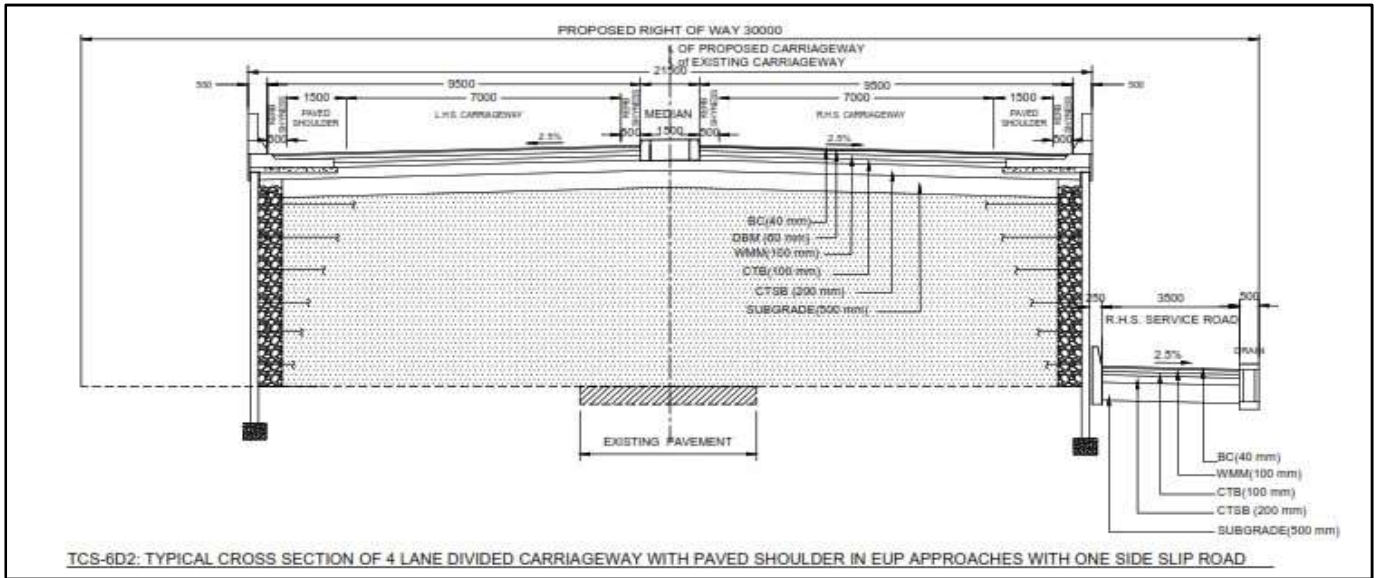
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.



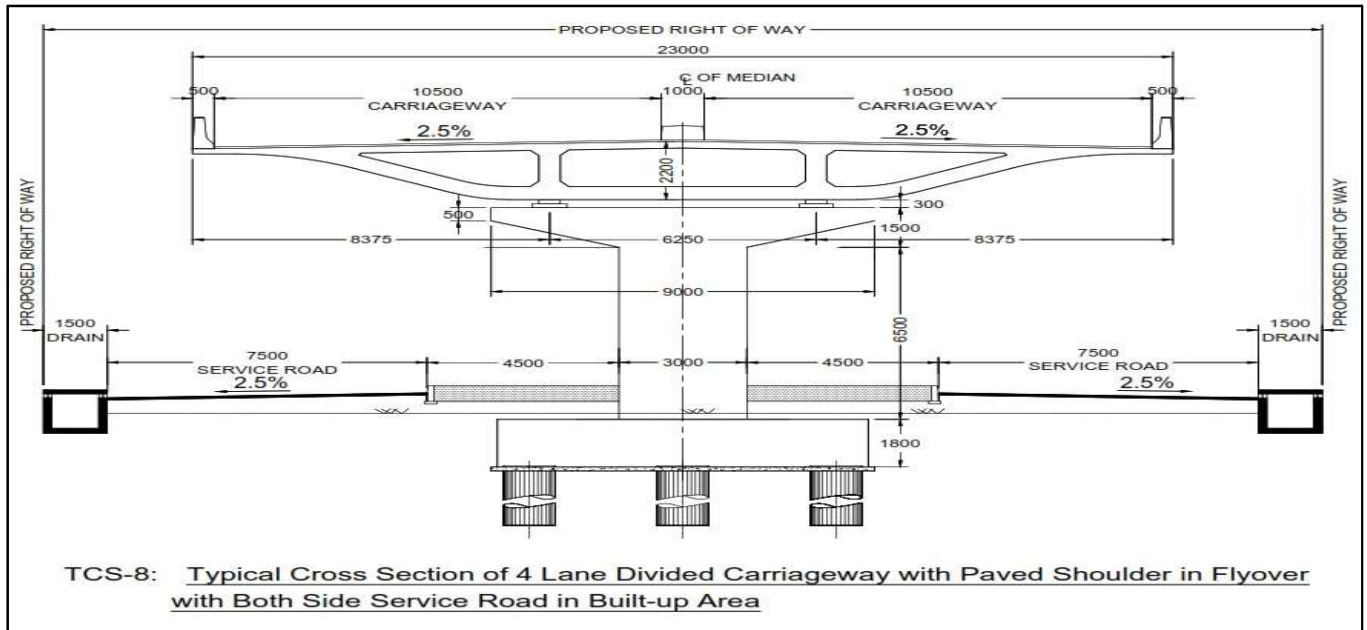
Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.



Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.



Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.



Sl No	Chainage(m)		Length (m)	TCS Type
	From	To		
1	96000	96842	842	TCS 1D
2	96842	97067	225	TAPPERED PORTION(TCS 1D – TCS 6E)
3	97067	97283	216	TCS 6E
4	97283	97878	595	FLYOVER(TCS-8)
5	97878	98119	241	TCS 6E
6	98119	98345	226	TAPPERED PORTION(TCS 6E – TCS 7)
7	98345	98840	495	TCS 7
8	98840	99800	960	TCS 1L
9	99800	100750	950	TCS 1D
10	100750	101775	1025	TCS 6D1
11	101775	102260	485	TCS 1D
12	102260	102485	225	TCS 1E
13	102485	103200	715	TCS 1D
14	103200	103425	225	TCS 5C
15	103425	104975	1550	TCS 6D
16	104975	105112	137	TCS 5B
17	105112	105350	238	TCS 1C
18	105350	105625	275	TCS 1E
19	105625	107075	1450	TCS 1D
20	107075	107480	405	TCS 1E
21	107480	107750	270	TCS 1A
22	107750	109000	1250	TCS 1D
23	109000	109790	790	TCS 1L
24	109790	109810	20	TCS 1M
25	109810	110031	221	TAPPERED PORTION(TCS 1M – TCS 6E)
26	110031	110212	181	TCS 6E
27	110212	111227	1015	FLYOVER(TCS-8)

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

SI No	Chainage(m)		Length (m)	TCS Type
	From	To		
28	111227	111539	312	TCS 6E
29	111539	111689	150	TAPPERED PORTION(TCS 6E – TCS 1E)
30	111689	111970	281	TCS 1E
31	111970	113164	1194	TCS 1D
32	113164	113675	511	TCS 5C
33	113675	114530	855	TCS 6D
34	114530	116890	2360	TCS 1D
35	116890	117117	227	TCS 1C
36	117117	118060	943	TCS 4E
37	118060	118755	695	TCS 1C
38	118755	120117	1362	TCS 5B
39	120117	122150	2033	TCS 1D
40	122150	123770	1620	TCS 4E
41	123770	124044	274	TCS 1D
42	124044	125694	1650	TCS 1C
43	125694	126100	406	TCS 1E
44	126100	127299	1199	TCS 4E
45	127299	127889	590	TCS 1E
46	127889	129025	1136	TCS 5B
47	129025	129925	900	TCS 6D
48	129925	130387	462	TCS 5B
49	130387	130744	357	TCS 1E
50	130744	131444	700	TCS 1C
51	131444	131720	276	TCS 4E
52	131720	131769	49	TCS 1D
53	131769	132515	746	TCS 5C
54	132515	132889	374	TCS 1D
55	132889	133100	211	TCS 5C
56	133100	134050	950	TCS 6D2
57	134050	134665	615	TCS 5C
58	134665	135700	1035	TCS 6D2
59	135700	136127	427	TCS 5C
60	136127	136420	293	TCS 1D
61	136420	137224	804	TCS 1E
62	137224	137304	80	TCS 1D
63	137304	138091	787	TCS 5C
64	138091	138380	289	TCS 4E
65	138380	138425	45	TAPPERED PORTION(TCS 4E – TCS 6E)
66	138425	138605	180	TCS 6E
67	138605	139290	685	FLYOVER(TCS-8)
68	139290	139520	230	TCS 6E
69	139520	139750	230	TAPPERED PORTION(TCS 6E – TCS 1C)
	Total Length		43750.00	

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilaspura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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	Krishnai (Ch. 97.550km)	3-legged	Service road with other road, Towards Krishnai Market
2	Dudhnoi (Ch.110.893km)	4-legged	Service road with SH-46(LHS) & NH-217(RHS), LHS-Towards Goalpara RHS-Towards Damra

Minor Intersections

Sl. No.	Location		Type	
	From km	To km	3/4 Legged	Cross Road
1	96.020		3-legged	Towards Paikan Paruth
2	96.143		3-legged	Towards Markrishbori
3	96.543		3-legged	Towards Arimara
4	96.673		3-legged	Towards Arimara
5	96.930		4-legged	L.H.S-Towards Garobazar, R.H.S- Towards Khardanga
6	97.352		3-legged	Towards Gandhinagar
7	97.382		3-legged	Towards Khardanga
8	97.650		3-legged	Towards Khardanga
9	97.875		3-legged	Towards Karmakar Para
10	98.007		3-legged	Towards Krishnai Market
11	98.240		4-legged	L.H.S-Towards Mornai, R.H.S- Towards Khoridhora
12	98.616		4-legged	L.H.S-Towards Jayanti Nagar, R.H.S- Towards Khoridhora
13	99.206		3-legged	Towards Krishnai Bazar
14	99.604		3-legged	Towards Khoridhora
15	99.703		3-legged	Towards Malandubi
16	99.840		3-legged	Towards Malandubi
17	100.780		3-legged	Towards Bekipul
18	100.850		3-legged	Towards Village

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Location		Type	
	From km	To km	3/4 Legged	Cross Road
19	101.090		3-legged	Towards Village
20	102.440		3-legged	Towards Salmara
21	102.685		3-legged	Towards Dirmajakhili
22	102.930		3-legged	Towards Sanapathar
23	103.060		3-legged	Towards Nepalipara
24	103.370		3-legged	Towards Village
25	103.780		3-legged	Towards Tarapara
26	104.942		3-legged	Towards Leladaali
27	105.143		3-legged	Towards Rombudara
28	105.474		3-legged	Towards Bormatia
29	105.722		3-legged	Towards Tabili
30	105.866		3-legged	Towards Dabili
31	106.140		3-legged	Towards Rombuk Lethel
32	107.090		4-legged	L.H.S-Towards Lela Baniyapara, R.H.S Towards Lela Damas
33	107.632		3-legged	Towards Kadamtala
34	108.195		3-legged	Towards Kadamtala
35	108.507		3-legged	Towards Rawmari Garopara
36	109.325		3-legged	Towards Dudhnoi Station Road
37	109.554		3-legged	Towards Dainadubi Road
38	110.140		3-legged	Towards Dainadubi Road
39	110.385		3-legged	Towards Omaraboti
40	110.420		3-legged	Towards Sailmari
41	110.750		3-legged	Towards Omaraboti
42	110.806		3-legged	Towards Dudhnoi Market
43	111.023		3-legged	Towards Dudhnoi Market
44	111.070		3-legged	Towards Santipur
45	111.205		3-legged	Towards Babupara
46	111.430		3-legged	Towards Dudhnoi
47	111.460		3-legged	Towards Dudhnoi Bazar
48	111.520		3-legged	Towards Dudhnoi Hospital
49	111.660		3-legged	Towards Babupara
50	111.720		3-legged	Towards Santinagar
51	111.965		3-legged	Towards Santinagar
52	112.155		3-legged	Towards Suluk
53	113.550		3-legged	Towards Suluk
54	113.650		3-legged	Towards Nabagram
55	114.930		3-legged	Towards Majipara

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Location		Type	
	From km	To km	3/4 Legged	Cross Road
56	117.444		3-legged	Towards Amjonga
57	117.610		3-legged	Towards Ramayawar
58	120.270		3-legged	Towards Kacharipara
59	120.510		3-legged	Towards Kachadal
60	120.746		3-legged	Towards Letkubari
61	121.080		3-legged	Towards Chingapangi
62	121.825		3-legged	Towards Chingapangi
63	122.200		3-legged	Towards Kamarpara
64	122.285		3-legged	Towards Tarapara
65	122.320		3-legged	Towards Darangiri
66	122.470		3-legged	Towards Darangiri
67	122.510		3-legged	Towards Tarapara
68	122.710		3-legged	Towards Tarapara
69	122.850		3-legged	Towards Kharkutta
70	123.470		3-legged	Towards Darangiri
71	123.570		3-legged	Towards Kharkutta
72	124.680		3-legged	Towards Dosimapara
73	125.550		4-legged	Towards Manupara(LHS), Towards Kharkutta(RHS)
74	126.496		3-legged	Towards Banipara
75	126.537		3-legged	Towards Ranjoli Police Station
76	126.665		3-legged	Towards Sardarpara
77	126.954		3-legged	Towards Mohajonpara
78	127.040		3-legged	Towards Hadipara
79	127.130		3-legged	Towards Rangjuli
80	127.810		3-legged	Towards Rangjuli
81	129.200		3-legged	Towards Rangjuli
82	130.365		3-legged	Towards Pathpara
83	130.870		3-legged	Towards Banupara
84	131.500		3-legged	Towards Fakirpara
85	131.525		3-legged	Towards Dhanu Banga
86	131.920		3-legged	Towards Gathiapara
87	132.490		3-legged	Towards Madang
88	134.540		3-legged	Towards Sundarban Nursery
89	134.714		3-legged	Towards Village Rd
90	135.300		3-legged	Towards Golagari
91	136.180		3-legged	Towards Kuriyamari
92	136.810		3-legged	Towards Banavita Village

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Location		Type	
	From km	To km	3/4 Legged	Cross Road
93	137.080		4-legged	Towards Padu Para(LHS), Towards Akhiyabari(RHS)
94	138.270		3-legged	Towards Choudhuri Para
95	138.387		3-legged	Towards Bikali College
96	138.595		3-legged	Towards Khekharpara
97	138.710		3-legged	Towards College
98	138.750		3-legged	Towards Kultepara
99	139.010		4-legged	Towards Hekra(LHS), Towards Adhiguri(RHS)

*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 provided	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 design traffic of 34 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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Main Carriageway	
For Overlay BC-40mm DBM-50mm DBM(Profile Corrective Course)-50mm Total -140 mm(Minimum)	For Widening/RE Wall portion/ Reconstruction 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

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 34million standard axles.

(iv) 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 (km)	TCS No
	From	To.		
1	96.000	96.842	0.842	TCS 1D
2	98.840	99.800	0.960	TCS 1L
3	99.800	100.750	0.950	TCS 1D
4	101.775	102.260	0.485	TCS 1D
5	102.485	103.200	0.715	TCS 1D
6	103.200	103.425	0.225	TCS 5C
7	104.975	105.112	0.137	TCS 5B

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Sl no	Chainage (km)		Length (km)	TCS No
	From	To.		
8	105.112	105.350	0.238	TCS 1C
9	105.625	107.075	1.450	TCS 1D
10	107.750	109.000	1.250	TCS 1D
11	109.000	109.790	0.790	TCS 1L
12	109.790	109.810	0.020	TCS 1M
13	111.970	113.164	1.194	TCS 1D
14	113.164	113.675	0.511	TCS 5C
15	114.530	116.890	2.360	TCS 1D
16	116.890	117.117	0.227	TCS 1C
17	117.117	118.060	0.943	TCS 4E
18	118.060	118.755	0.695	TCS 1C
19	118.755	120.117	1.362	TCS 5B
20	120.117	122.150	2.033	TCS 1D
21	122.150	123.770	1.620	TCS 4E
22	123.770	124.044	0.274	TCS 1D
23	124.044	125.694	1.650	TCS 1C
24	126.100	127.299	1.199	TCS 4E
25	127.889	129.025	1.136	TCS 5B
26	129.925	130.387	0.462	TCS 5B
27	130.744	131.444	0.700	TCS 1C
28	131.444	131.720	0.276	TCS 4E
29	131.720	131.769	0.049	TCS 1D
30	131.769	132.515	0.746	TCS 5C
31	132.515	132.889	0.374	TCS 1D
32	132.889	133.100	0.211	TCS 5C
33	134.050	134.665	0.615	TCS 5C
34	135.700	136.127	0.427	TCS 5C
35	136.127	136.420	0.293	TCS 1D
36	137.224	137.304	0.080	TCS 1D
37	137.304	138.091	0.787	TCS 5C
38	138.091	138.380	0.289	TCS 4E
Total Length=			28.575	

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, Flyover and EUP locations. The details is given below:

RCC Covered Drain(Service Road)

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Chainage (m)		Side	Length (m)	Remarks
From	To			
97067	97283	Both	2X216=432	TCS-6E(Flyover Approach Location)
97283	97878	Both	2X595=1190	TCS-8(Flyover Location)
97878	98119	Both	2X241=482	TCS-6E(Flyover Approach Location)
110031	110212	Both	2X181=362	TCS-6E(Flyover Approach Location)
110212	111227	Both	2X1015=2030	TCS-8(Flyover Location)
111227	111539	Both	2X312=624	TCS-6E(Flyover Approach Location)
138425	138605	Both	2X180=360	TCS-6E(Flyover Approach Location)
138605	139290	Both	2X685=1370	TCS-8(Flyover Location)
139290	139520	Both	2X230=460	TCS-6E(Flyover Approach Location)
Total Length of 1.5m Width Covered Drain =			7310	
100750	101775	Both	2X1025=2050	TCS-6D1(EUP Approach Location)
117117	118060	Both	2X943=1886	TCS-4E(Built-up Location)
122150	123770	Both	2X1620=3240	TCS-4E(Built-up Location)
126100	127299	Both	2X1199=2398	TCS-4E(Built-up Location)
131444	131720	Both	2X276=552	TCS-4E(Built-up Location)
138091	138380	Both	2X289=578	TCS-4E(Built-up Location)
Total Length of 1.0m Width Covered Drain =			10704	
103425	104975	Both	2X1550=3100	TCS-6D(EUP Approach Location)
113675	114530	Both	2X855=1710	TCS-6D(EUP Approach Location)
129025	129925	Both	2X900=1800	TCS-6D(EUP Approach Location)
133100	134050	Right	1X950=950	TCS-6D2(EUP Approach Location)
134665	135700	Right	1X1035=1035	TCS-6D2(EUP Approach Location)
Total Length of 0.5m Width Covered Drain =			8595	

* 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 from 7.5 (seven point five) meters in the table below.]

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
1	98.494	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.50m • Overall width =12.5 m

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
2	101.362	<ul style="list-style-type: none"> • Carriageway Width = 2x9.5m • Width of Crash Barrier =4x0.5m • Median Width= 1x0.5m • Overall width =21.5 m
3	111.808	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.50m • Overall width =12.5 m

(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	96.070	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
2	96.360	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
3	96.807	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
4	97.173	<ul style="list-style-type: none"> • Carriageway Width = 8.0m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.30m • Overall width of each side bridge =10.8 m (on both side)

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
5	98.494	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.5m • Overall width =12.5 m
6	99.036	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
7	100.077	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
8	100.685	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
9	102.361	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
10	105.507	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
11	106.246	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
12	107.230	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
13	108.014	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
14	108.968	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
15	109.868	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Width of Crash Barrier =2x0.5m+1m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =25m
16	111.808	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.5m • Overall width =12.5 m
17	112.769	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
18	114.723	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
19	115.250	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
20	116.904	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
21	118.681	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
22	120.167	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
23	120.872	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
24	121.458	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
25	122.042	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
26	124.060	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
27	125.056	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
28	125.893	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
29	126.932	<ul style="list-style-type: none"> • Carriageway Width = 2x9.5m (Main bridge carriageway width) + 2x5.5m (service road carriageway width) • Width of Crash Barrier =8x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.30m • Clear Median =2x1m+0.5m • Overall width =40.1 m
30	127.595	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
31	128.752	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
32	130.645	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features*
33	131.230	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.5m • Overall width =12.5 m
34	132.598	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.5m • Overall width =12.5 m
35	136.282	<ul style="list-style-type: none"> • Carriageway Width= 2x9.5m • Median Width= 3m • Width of Crash Barrier =4x0.5m • Footpath Width= 2x1.5m • Kerb Width = 2x0.50m • Overall width =28m
36	136.683	<ul style="list-style-type: none"> • Carriageway Width = 9.5m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.5m • Overall width =12.5 m
37	139.131	<ul style="list-style-type: none"> • Carriageway Width = 8.0m • Width of Crash Barrier =2x0.5m • Footpath Width= 1.5m • Kerb Width = 0.30m • Overall width of each side bridge =10.8 m(on both side)

(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 To be 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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

- (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	96.642	1X1.5m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
2	97.069	1X1.5m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
3	97.492	1X1.2m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
4	97.819	1X5.0m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
5	98.142	1X1.5m	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
6	103.287	1X1.2 dia	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
7	103.314	1X1.5m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
8	103.613	2X1.2m	1 X 2.0m X 2.0m_EC	Reconstruction	Cast-in-situ
9	104.305	1X2.0m	1 X 5.0m X 3.0m	Reconstruction	Cast-in-situ
10	104.845	1X1.2m dia	1 X 4.0m X 3.0m	Reconstruction	Cast-in-situ
11	105.312	1X1.5m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
12	105.679	1X1.5m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
13	105.729	1X2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
14	105.752	1X2m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
15	107.681	1X2m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
16	108.349	1X2.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
17	108.403	1X2.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
18	108.690	1X2.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
19	109.189	1X2.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
20	109.741	1X2.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
21	110.543	1 X 1.2 M dia	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
22	111.095	2X2.0m	1 X 4.0m X 3.0m	Reconstruction	Cast-in-situ
23	111.555	1X2.5m	1 X 2.0m X 3.0m_EC	Reconstruction	Cast-in-situ
24	112.325	1X1.2m dia	1 X 5.0m X 4.0m_EC	Reconstruction	Cast-in-situ
25	112.509	3X1.7m dia	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
26	113.173	4X1.0 m dia	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
27	113.187	1 X 4.0m	1 X 4.0m X 3.0m	Reconstruction	Cast-in-situ
28	113.857	1X1.1 m dia	1 X 4.0m X 3.0m_EC	Reconstruction	Cast-in-situ
29	113.872	1 X 4.0m	1 X 4.0m X 3.0m_EC	Reconstruction	Cast-in-situ
30	114.391	1X1.1 m dia	1 X 4.0m X 3.0m_EC	Reconstruction	Cast-in-situ
31	114.403	1 X 4.0m	1 X 4.0m X 3.0m_EC	Reconstruction	Cast-in-situ
32	114.473	1 X 4.0m	1 X 4.0m X 3.0m_EC	Reconstruction	Cast-in-situ
33	115.500	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
34	116.036	1 X 1.0m dia	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
35	116.345	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
36	116.614	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
37	117.092	1 X 4.0m	1 X 4.0m X 5.0m	Reconstruction	Cast-in-situ

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Sl. No.	Culvert location (Design Ch.) (Km)	Span of existing culvert (m)	Span of proposed culvert (m)	Repairs to be carried out	Remarks
38	117.166	1X1.0 m dia	1 X 2.0m X 2.0m_EC	Reconstruction	Cast-in-situ
39	118.054	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
40	118.221	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
41	119.045	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
42	119.418	1X1.1m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
43	119.429	1 X 1.0m dia	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
44	119.766	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
45	119.942	1 X 1.0m	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
46	119.953	2 X 1.0m dia	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
47	120.309	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
48	120.493	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
49	120.679	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
50	121.157	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
51	121.861	2 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
52	122.296	1X0.9m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
53	122.800	1 X 1.2m	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
54	122.900	1 X 5.0m	1 X 5.0m X 4.0m	Reconstruction	Cast-in-situ
55	123.509	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
56	123.764	1 X 0.8m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
57	124.402	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
58	124.692	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
59	124.844	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
60	125.241	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
61	125.545	1 X 2.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
62	126.632	4 X 1.0m dia	1 X 4.0m X 3.0m	Reconstruction	Cast-in-situ
63	127.350	1 X 1.2m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
64	128.146	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
65	128.158	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
66	128.369	1 X 1.5m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
67	129.432	1 X 1.4m	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
68	129.669	1 X 1.3m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
69	129.846	1 X 1.4m	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
70	130.395	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
71	131.792	1 X 0.9m	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
72	132.279	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
73	132.995	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
74	133.350	1 X 1.2m	1 X 2.0m X 2.0m_EC	Reconstruction	Cast-in-situ
75	134.428	1 X 1.5m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
76	135.374	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	Cast-in-situ
77	136.058	2 X 1.0m dia	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
78	136.919	1 X 1.0m	1 X 2.0m X 2.0m_EC	Reconstruction	RCC segmental box
79	137.277	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
80	137.377	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilaspura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Culvert location (Design Ch.) (Km)	Span of existing culvert (m)	Span of proposed culvert (m)	Repairs to be carried out	Remarks
81	137.514	1 X 1.0m	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
82	137.747	1 X 1.0m dia	1 X 2.0m X 3.0m	Reconstruction	RCC segmental box
83	138.076	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
84	138.169	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	RCC segmental box
85	138.532	1 X 1.0m	1 X 2.0m X 2.0m	Reconstruction	Cast-in-situ
86	139.416	6 x 1.0 m dia	1 X 5.0m X 3.0m	Reconstruction	Cast-in-situ

*[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]
1	101.967	1X1.2m	1 X 2.0m X 1.0m	Left side Widening
2	117.804	1 X 1.0m	1 X 2.0m X 2.1m	Both side Widening
3	120.330	1 X 1.0m	1 X 2.0m X 1.7m	Left side Widening
4	120.483	1 X 1.0m	1 X 2.0m X 1.3m	Left side Widening

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

Sl. No.	Culvert Location	Span /Opening (m)	Remarks*
1	98.800	1 X 2.0m X 2.0m	RCC segmental box
2	102.541	1 X 2.0m X 2.0m	Cast-in-situ
3	103.071	1 X 2.0m X 2.0m	Cast-in-situ
4	104.965	1 X 2.0m X 2.0m	Cast-in-situ
5	106.036	1 X 2.0m X 2.0m	Cast-in-situ
6	107.017	1 X 2.0m X 2.0m	Cast-in-situ
7	108.270	1 X 2.0m X 2.0m	RCC segmental box
8	126.176	1 X 2.0m X 2.0m	Cast-in-situ
9	127.145	1 X 2.0m X 2.0m	Cast-in-situ
10	127.870	1 X 2.0m X 3.0m	RCC segmental box
11	131.059	1 X 2.0m X 2.0m_EC	RCC segmental box
12	132.450	1 X 2.0m X 2.0m	Cast-in-situ
13	133.650	1 X 2.0m X 3.0m	Cast-in-situ
14	135.919	1 X 2.0m X 2.0m	Cast-in-situ
15	139.325	1 X 2.0m X 2.0m	Cast-in-situ

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

*The span and opening of these culverts 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.

- (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 Codes and Specifications.

- (iii) Bridges

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

[(i) The existing bridge at 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	99.998	RCC Slab	1 x 8m	96.070	RCC Box	1 x 8m x 3m	-	28	Reconstruction minor bridge
2	100.290	RCC Slab	1 x 8m	96.360	RCC Box	1 x 8m x 4m	-	28	Reconstruction minor bridge
3	100.734	RCC Slab	2 x 6.2m	96.807	RCC Box	2 x 6m x 3.5m	-	28	Reconstruction minor bridge
4	101.100	RCC Slab	3 x 8.2m	97.173	RCC Box	3 x 8m x 4m	-	21.6	Reconstruction minor bridge (Service road bridge both side at RE wall portion)
5				97.173	PSC I Girder	1 x 30.0m	-	23	Reconstruction minor bridge (Main bridge at RE wall portion)
6	102.420	PSC Box Bridge	3 x 33.7m	98.494	PSC I Girder + RCC T Girder	1 x 21m + 2 x 40m + 1 x 21m	-	12.5	Existing bridge to be dismantled. New 2 lane major Bridge to be reconstructed adjacent to U/c bridge.
7	102.970	RCC Slab	1 x 8.2m	99.036	RCC Box	1 x 8m x 3m	-	28	Reconstruction minor bridge
8	104.012	RCC Slab	4 x 8.65m	100.077	RCC Box	4 x 8.8m x 4m	-	28	Reconstruction minor bridge

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl. No.	Salient details of existing bridge			Salient details of proposed bridge			Adequacy or otherwise of the existing roadway, 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)			
9	104.619	RCC Slab	1 x 9m	100.685	RCC Box	1 x 8m x 4m	-	28	Reconstruction minor bridge
10	104.953	RCC Slab	4 x 6.4m	101.020	RCC Box	4 x 6m x 4.5m	-	34.5	Reconstruction minor bridge EUP Approach
11	105+286	RCC Slab	3 x 8.5	101+362	PSC I Girder	2x 38	-	21.5	Reconstruction major bridge EUP Approach
12				101+349	Integral Voided	1 x 24 (both side SR)	-	13.00	service road bridge
13	106.294	RCC Slab	2 x 8.2m	102.361	RCC Box	2 x 8m x 4.5m	-	28	Reconstruction minor bridge
14	109.440	RCC Slab	2 x 6.4m	105.507	RCC Box	2 x 6m x 5m	-	28	Reconstruction minor bridge
15	110.180	RCC Slab	1 x 8.2	106.246	RCC Box	1 x 8m x 3.5m	-	28	Reconstruction minor bridge
16	111.163	RCC Slab	2 x 5.6m	107.230	RCC Box	2 x 6 x 4	-	28	Reconstruction minor bridge
17	111.946	RCC Slab	2 x 6.2	108.014	RCC Box	2 x 6m x 3.5m	-	28	Reconstruction minor bridge
18	112.904	RCC Slab	2 x 6.5m	108.968	RCC Box	2 x 6m x 3m	-	28	Reconstruction minor bridge
19	113.800	RCC Slab	2 x 6.4m	109.868	RCC Box	2 x 6m x 3m	-	25	Reconstruction minor bridge
20	116.701	RCC Slab	1 x 6m	112.769	RCC Box	1 x 6m x 4m	-	28	Reconstruction minor bridge.
21	118.001	RCC Slab	1 x 6m	114.069	RCC Box with EC_RE Wall	1 x 6m x 4m	-	32	Reconstruction minor bridge at EUP approach
22	118.138	RCC Slab	1 x 6m	114.206	RCC Box with EC_RE Wall	1 x 6m x 4m	-	32	Reconstruction minor bridge at EUP approach
23	118.655	RCC Slab	1 x 6m	114.723	RCC Box	1 x 6m x 3m	-	28	Reconstruction minor bridge
24	119.182	RCC Slab	2 x 6m	115.250	RCC Box	2 x 6m x 4m	-	28	Reconstruction minor bridge
25	120.836	RCC Slab	2 x 5.8m	116.904	RCC Box	2 x 6m x 5m	-	28	Reconstruction minor bridge
26	122.613	RCC Slab	1 x 8	118.681	RCC Slab	1 x 10m	-	28	Reconstruction minor bridge
27	124.098	RCC Slab	2 x 5m	120.167	RCC Box	2 x 6m x 3.5m	-	28	Reconstruction minor bridge
28	124.803	RCC Slab	2 x 5m	120.872	RCC Box	2 x 6m x 3.5m	-	28	Reconstruction minor bridge
29	125.390	RCC Slab	1 x 8m	121.458	RCC Box	1 x 8m x 4m	-	28	Reconstruction minor bridge
30	125.973	RCC Slab	2 x 5m	122.042	Integral Slab	1 x 12m	-	28	Reconstruction minor bridge

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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 and Total Vent way (No. x Length) (m)	Bridge location(km)	Type of Structures	Span Arrangement and Total Vent and Total Vent way (No. x Length) (m)			
31	127.988	RCC Slab	3 x 6m	124.060	RCC Box	3 x 6m x 4m	-	28	Reconstruction minor bridge
32	128.987	RCC Slab	2 x 6m	125.056	RCC Box	2 x 6m x 4m	-	28	Reconstruction minor bridge
33	129.827	RCC Slab	2 x 4.9m	125.893	Integral Slab	1 x 12m	-	28	Reconstruction minor bridge
34	130.864	RCC Slab	2 x 4.9m	126.932	RCC Slab With SR	1 x 10.0m	-	40.1	Reconstruction minor bridge with Service Road
35	131.526	RCC Slab	3 x 6m	127.595	Integral Voided Slab	1 x 24m	-	28	Reconstruction minor bridge
36	132+684	RCC Slab	1 x 8m	128+752	RCC Box	1 x 8m x 3m	-	28	Reconstruction minor bridge
37	134.572	RCC Slab	2 x 7.9m	130.645	RCC Box	2 x 8m x 5m	-	28	Reconstruction minor bridge
38	138.600	RCC Slab	1 x 7.9m	134.673	RCC Box	1 x 8m x 4m	-	26.75	Reconstruction minor bridge at EUP approach one side service road bridge
39	138.787	RCC Slab	1 x 7.9m	134.860	RCC Box with EC_RE Wall	1 x 8m x 4m	-	26.75	Reconstruction minor bridge at EUP approach one side service road bridge
40	139.445	RCC Slab	1 x 7.9m	135.518	RCC Box with EC_RE Wall	1 x 8m x 4m	-	26.75	Reconstruction minor bridge at EUP approach one side service road
41	140.209	RCC Slab	3 x 6m	136.282	RCC Box	3 x 6m x 5m	-	28	Reconstruction minor bridge
42	143.059	RCC Slab	2 x 5.8m	139.131	Integral Slab	1 x 12m	-	21.6	Reconstruction minor bridge (Service road bridge both side at Flyover viaduct portion)

*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

(ii) The following narrow bridges shall be widened:

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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)		
—								

@ Attach cross-section

(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	111.808	2 x 41m	12.5	PSC I Girder in vertical curve, Additional 2 lane major bridge
2	131.230	13m+26m+13m	12.5	Semi Integral, Additional 2 lane minor bridge
3	132.598	3 x 16m	12.5	RCC T Girder, Additional 2 lane minor bridge
4	136.683	1 x 41m	12.5	PSC T Girder, Additional 2 lane minor bridge

(c) The railings of existing bridges shall be replaced by crash barrier sat the following locations:

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

Sl.No.	Location at km	Remarks
Nil		

(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
Nil		

(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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

- (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 bridge (m)
Nil		

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

Sl. No.	Location of Level crossing (Chainage km)	Number and length of span(m)	Remarks
1	109.799	-	Existing RUB is Retained

- (v) 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) and 3 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
NIL		

- (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 and Structures

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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

Sl.No.	Location (km)
List of the Major Bridges	
1	98.494
2	101.362
3	111.808
List of the Flyovers	
4	Km 97.283 to Km 97.878
5	Km 110.212 to Km 111.227
6	Km 138.605 to Km 139.290

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.	15
2	Left Hand Side Curve(900 mm Triangular)	Nos.	17
3	School (900 mm Triangular)	Nos.	14
4	Side road left(900 mm Triangular)	Nos.	94
5	Side road right(900 mm Triangular)	Nos.	92
6	Cross Road(900 mm Triangular)	Nos.	14
7	Petrol pump/ Filling facility(800 mm x 600 mm rectangular)	Nos.	6
8	Bus Stop(800 mm x 600 mm rectangular)	Nos.	6
9	Direction Sign<.0.9 sqm	Nos.	109
10	Direction Sign>0.9 sqm	Nos.	5
11	Stop Sign(900 mm Octagonal)	Nos.	201
12	Horn prohibited(600mm Circular)	Nos.	14
13	Hazard Marker (one way) (900mm x300 mm rectangular)	Nos.	640
14	Object Marker (one way) (900mm x300 mm rectangular)	Nos.	11
15	Object Marker (Two way)(900mm x450 mm rectangular)	No.	1
16	Pedestrian Crossing(900 mm Triangular)	Nos.	215
17	Rumble strip(900 mm Triangular)	Nos.	108
18	Road Stud	Nos.	12,423
19	Built-up area(900 mm Triangular)	Nos.	28
20	T Intersection(900 mm Triangular)	No.	1
21	Speed limit(600mm Circular)	No.	1
22	U-Turn prohibited(600mm Circular)	Nos.	5
23	Delineator	Nos.	224
24	Lane marking, edge marking	Sqm	35100
25	Solar Blinker	Nos	20

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Sl No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity

*All above quantities are minimum to be installed/executed

- (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	96.200(After Paikan junction)	Minimum Clear Span of 24.5m.(Ref TCS-1D)and minimum clear height from road top level shall be 6.0m

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)		
98.900	98.970	LHS	0.070
99.070	99.130	RHS	0.060
99.120	99.190	LHS	0.070
99.390	99.490	RHS	0.100
101.890	102.010	LHS	0.120
122.140	122.160	RHS	0.020
125.150	125.220	LHS	0.070
128.060	128.110	LHS	0.050
128.360	128.440	LHS	0.080
136.880	136.970	LHS	0.090
Total length=			0.730

*The specified length of Toe wall is the minimum requirement

- b) Retaining wall

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Location		Side	Length (km)
From(km)	To(km)		
99.290	99.410	Left Side	0.120

*The specified length of Retaining wall is the minimum requirement

c) Reinforced Earth Wall

Location		Length (km)
From(km)	To(km)	
97.067	97.283	0.216
97.878	98.119	0.241
100.750	101.302	0.552
101.400	101.775	0.375
103.425	103.891	0.466
103.929	104.449	0.52
104.487	104.975	0.488
110.031	110.212	0.181
111.227	111.539	0.312
113.675	114.105	0.430
114.122	114.530	0.408
129.025	129.477	0.452
129.499	129.925	0.426
133.100	133.581	0.481
133.619	134.050	0.431
134.665	135.169	0.504
135.207	135.700	0.493
138.425	138.605	0.180
139.29	139.52	0.230
Total length=		7.386

*The specified length of Reinforcedearth wall is the minimum requirement

d) Turfing

Location		Side	Length (km)
From(km)	To(km)		
96.000	96.842	BOTH	1.684
98.345	98.840	BOTH	0.990
98.840	99.800	BOTH	1.920
99.800	100.750	BOTH	1.900
101.775	102.260	BOTH	0.970
102.260	102.485	BOTH	0.450
102.485	103.200	BOTH	1.430

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Location		Side	Length (km)
From(km)	To(km)		
103.200	103.425	BOTH	0.450
104.975	105.112	BOTH	0.274
105.112	105.350	BOTH	0.476
105.350	105.625	BOTH	0.550
105.625	107.075	BOTH	2.900
107.075	107.480	BOTH	0.810
107.480	107.750	BOTH	0.540
107.750	109.000	BOTH	2.500
109.000	109.790	BOTH	1.580
111.689	111.970	BOTH	0.562
111.970	113.164	BOTH	2.388
113.164	113.675	BOTH	1.022
114.530	116.890	BOTH	4.720
116.890	117.117	BOTH	0.454
118.060	118.755	BOTH	1.390
118.755	120.117	BOTH	2.724
120.117	122.150	BOTH	4.066
123.770	124.044	BOTH	0.548
124.044	125.694	BOTH	3.300
125.694	126.100	BOTH	0.812
127.299	127.889	BOTH	1.180
127.889	129.025	BOTH	2.272
129.925	130.387	BOTH	0.924
130.387	130.744	BOTH	0.714
130.744	131.444	BOTH	1.400
131.720	131.769	BOTH	0.098
131.769	132.515	BOTH	1.492
132.515	132.889	BOTH	0.748
132.889	133.100	BOTH	0.422
134.050	134.665	BOTH	1.230
135.700	136.127	BOTH	0.854
136.127	136.420	BOTH	0.586
136.420	137.224	BOTH	1.608
137.224	137.304	BOTH	0.160
137.304	138.091	BOTH	1.574
Total length=			56.672

*The specified length Seeding and Mulching is the minimum requirement

e) W-Metal Beam Crash Barrier

W-Metal beam crash barrier of 5400m length has been proposed in the project stretch.

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

(Schedule B-1)

1. The shifting of utilities and felling of trees shall be carried out by the Contractor.. 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.	1530
2	33KV	Nos.	1203
3	Transformer	Nos.	55

The details of proposed PHE utility is given below

S.No	Description	Unit	Quantity
1	63mm PVC	Rm	1226
2	110 mm PVC	Rm	1750
3	90 mm PVC	Rm	3250
4	75 mm PVC	Rm	1115

** 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".

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

**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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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
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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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
NIL		

e) Bus Bay with Passenger shelter: -

Sl. No.	Project Facility	Location (km)	Name of the Place
1	Passenger shelter	96.700(Both side)	Paikan
2	Bus Bay with Passenger shelter	106.600(Both side)	Dabli
3	Passenger shelter	108.250(Both side)	Mondal Gram
4	Passenger shelter	112.300(Both side)	Dudhnoi
5	Bus Bay with Passenger shelter	115.550(Both side)	Purani Bhita
6	Passenger shelter	118.200(Both side)	Amjonga
7	Passenger shelter	124.250(Both side)	Patiarpara
8	Bus Bay with Passenger shelter	125.350(Both side)	Baniapara
9	Passenger shelter	127.400(Both side)	Rangjuli
10	Passenger shelter	137.250(Both side)	Kothakuthi

f) Rest Areas

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

g) Roadside Amenities

Nil

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	117.330	Amjonga	FOB shall have minimum clear width of 3.0m with provision of 4 side stairs. Minimum clear height from road top level shall be 6.0m and minimum clear span of 35.0m.
2	122.753	Daranggiri	
3	123.667	Daranggiri	
4	127.190	Rangjuli	
5	131.594	Dhanubhanga	

Street Lighting:

(i) Minimum 518 Nos. 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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

(ii) 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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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 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-Laning 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 from the aforesaid Specifications and Standards shall be listed out here.

Item	Manual Clause Reference	Provision as per Manual	Modified Provision
Entry/Exit arrangement at grade-separated structures	2.13 (Fig. 2.1C)	Tapered location length has been proposed as per IRC:SP: 84-2019 : 225m (55m+95m+75 m)	Tapered location length below 225m has been provided in two locations. The details is given below. 1. From Ch. 109.880Km to Ch. 110.031Km=0.151Km 2. From Ch. 111.539Km to Ch. 111.700Km=0.161Km

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/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approach)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhr.com/pavement/ltp/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 limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1% of area	Daily	Length Measurement Unit like		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					
			Up to 30 cm from the edge					
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM	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	(Sideway-force Coefficient Routine Investigation Machine or equivalent)		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					
Rigid Pavement (Pavement of MCW, Service Road, Grade structure,	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
	Roughness BI	2200m m/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	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					
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	40m	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 prescribed			Daily	7-15 days

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 Specialy 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 Cracks intersecting with any joint	Discrete w = width of crack Not L = length of crack with any d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	Not applicable
			1	$w < 0.2$ mm. hair cracks		
			2	$w = 0.2 - 0.5$ mm, discernible from slow-moving car	Seal without delay	Seal, and stitch if $L > 1m$. Within 7 days
			3	$w = 0.5 - 1.5$ mm, discernible from fast-moving car		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
2	Single Transverse (or Diagonal) Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	4	$w = 1.5 - 3.0$ mm	Seal, and stitch if $L > 1$ m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15 days
			5	$w > 3$ mm.		
			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 15 days
			2	$w = 0.2 - 0.5$ mm, discernible from slow vehicle		
			3	$w = 0.5 - 3.0$ mm, discernible from fast vehicle	Route, seal and stitch, if $L > 1$ m. Within 7 days	

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 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 be full depth	
			0	Nil, not discernible	No Action	
3	Single Longitudinal Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days

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, if L > 1 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	Full Depth Repair and Dismantle and reconstruct affected portion as per norms and specifications -
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		

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	Multiple Cracks intersecting with one or more joints	w = width of crack	0	Nil, not discernible	No Action	See Para 5.6.4 Within 15 days
			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		
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3 pieces	Full depth repair within 15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			5	w > 6 mm and/or panel broken		

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		
			0	Nil, not discernible	No Action	-
			1	$w < 0.5$ mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7 days
			2	$w < 1.5$ mm; $L < 0.6$ m, only one corner broken		
5	Corner Break	w = width of crack L = length of crack	3	$w < 1.5$ mm; $L < 0.6$ m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	$w > 1.5$ mm; $L > 0.6$ m or three corners broken		
			5	three or four corners broken	Reinstate sub-base, and reconstruct the	

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
			0	Nil, not discernible		No Action
			1	$w < 0.5 \text{ mm}; L < 3 \text{ m/m}^2$		Seal with low viscosity epoxy to secure broken parts.
			2	either $w > 0.5 \text{ mm}$ or $L < 3 \text{ m/m}^2$		Within 15days
			3	$w > 1.5 \text{ mm}$ and $L < 3 \text{ m/m}^2$		
			4	$w > 3 \text{ mm}, L < 3 \text{ m/m}^2$ and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within 30days
			5	$w > 3 \text{ mm}, L > 3 \text{ m/m}^2$ and deformation		
	Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)	$w = \text{width of crack}$ $L = \text{length (m/m}^2)$			Not Applicable, as it may be full depth	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action			
					For the case $d < D/2$	For the case $d > D/2$		
Surface Defects								
7	Ravelling or Honeycomb surface type	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	No action.	Short Term	Long Term	
			1	$r < 2\%$				Local repair of areas damaged and liable to be damaged. Within 15 days
			2	$r = 2 - 10\%$	Bonded Inlay, 2 or 3 slabs if affecting.		Not Applicable	
			3	$r = 10-25\%$				
			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 if affecting. Within 30 days	
			0	Nil, not discernible	Short Term	Long Term
		$r = \frac{\text{damaged surface/total surface of slab}}{100} \%$ $h = \frac{\text{maximum depth of damage}}{100} \%$	1	$r < 2\%$	No action.	
8	Scaling		2	$r = 2 - 10\%$	Local repair of areas damaged and liable to be damaged. Within 7 days	Not Applicable

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
9	Polished Surface/Glazing	t = texture depth, sand patchtest	3	r = 10 - 20%	Bonded Inlay within 15 days	Not Applicable
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab within 30 days	
			0		No action.	
			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 affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
			0	$d < 50$ mm; $h < 25$ mm; $n < 1$ per 5 m ²	No action.	
			1	$d=50-100$ mm; $h < 50$ mm; $n < 1$ per 5 m ²		Not Applicable
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number/m ² d = diameter h = maximum depth	2	$d=50-100$ mm; $h > 50$ mm; $n < 1$ per 5 m ²	Partial depth repair 65 mm deep. 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	$d = 100 - 300 \text{ mm}; h < 100 \text{ mm}$ 1 per 5m^2	Partial depth repair 110mm	
			4	$d = 100 - 300 \text{ mm}; h > 100 \text{ mm}; n < 1$ per 5m^2	i.e.10 mm more than the depth of the hole. Within 30 days	
			5	$d > 300 \text{ mm}; h > 100 \text{ mm}; n > 1$ per 5 m^2	Full depth repair. Within 30 days	

Joint Defects						
				Short Term		Long Term
11	Joint Seal Defects	loss or damage L = Length as % total jointlength	0	Difficult to discern.	No action.	
			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 water selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress of water	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 cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair. Within 15 days	
			4	w = 40 - 80 mm, L > 25%	30 - 50 mm deep, h = w . 20% of w, within 30 days	
			5	w > 80 mm, and L > 25%	50 - 100 mm deep repair. H = w . 20% of w. Within 30 days	
13	Faulting (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		
0	Nil, not discernible				Short Term	Long Term
1	h < 6 mm	h = vertical displacement from normalprofile			No Action	
2	h = 6 - 12 mm				Install Signs to Warn Traffic	
14	Blowup or Buckling					

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

					if L < 20 m. Within 30 days			
16	Heave	h = positive vertical displacement from normal profile. L = length	5	h > 100 mm	Short Term	Long Term	scrabble	
			0	Not discernible. h < 5 mm				No action.
			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			

18	Lane Shoulder Dropoff	to f = difference of level	displacement from normal profile	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 30 days
				5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30 days
				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		

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

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:

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards			
Highway	Availability of Safe Sight Distance	As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.	Monthly	Manual Measurements with Odometer along with video/image backup	Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction/improvement of deficiency at the earliest. Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.	within 24 hours	IRC:SP 84-2014			
								Design Speed, kmph	Desirable Minimum Sight Distance (m)	Safe Stopping Sight Distance (m)
								100	360	180
								80	260	130
Pavement Marking	Wear	<70% of marking remaining	Bi-Annually	Visual Assessment as per Annexure-F of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015			

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

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/m ² /lux Minimum Threshold Level: 50 mcd/m ² /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	change of signboard	48 hours in case of Mandatory	RC:67-2012

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				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	<u>Functionality:</u> 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	<u>Functionality:</u> Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2014
	Traffic Safety Barriers	<u>Functionality:</u> 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	<u>Functionality:</u> 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 Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards	
Highway Lighting System	Traffic Barriers			backup			IRC:119-2015	
	Attenuators	<u>Functionality:</u> Functioning of Attenuators asintended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015	
	Guard Posts and Delineators	<u>Functionality:</u> Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981	
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012	
	Traffic Blinkers	<u>Functionality:</u> Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014	
	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
	Toll Canopy Lights		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
		Plaza	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	of 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
Rest Areas	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
	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 barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete more than 0.25 sqm Delamination of concrete not more than 0.25 sq.m. Cracks wider than 0.3 mm not more than 1m aggregate length	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC: SP: 40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800

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

Rusted reinforcement	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Not more than 0.50 sq.m					
	Not more than 0.50 sq.m					
Spalling of concrete						
Delamination						
Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH Specifications 2600 & 2700.
Deflection due to permanent loads and	Within design limits.	Once every 10 years for spans more	Load test method	Carry out major rehabilitation works on bridge to retain original design load capacity	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 structure	super	4 months	AASHTO LRFD specifications			
Leakage in Expansion joints	No damage to elastomeric sealant compound in strip expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper stripjoint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge InspectionUnit	Replace	of expansion 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 joint gapsthoroughly	expansion	3 days	MORTH specifications 2600 and			

	expansion joint	gap.		Mobile 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.	MORTH specification 2700. 3 days
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	IRC SP: 40-1993 and MORTH specification 2800. 30 days

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

		sq.m, damage to solid concrete apron) more than 1 sq.m				weeks before onset of rainy season whichever is earlier.
<p>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.</p>						

Table 4: Maintenance Criteria for Structures and Culverts:

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilaspura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	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) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

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

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

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

- (i) The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:
 - (a) Permission of the State Government for extraction of boulders from quarry;
 - (b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
 - (c) Licence for use of explosives;
 - (d) Permission of the State Government for drawing water from river/reservoir;
 - (e) Licence from inspector of factories or other competent Authority for setting up batching plant;
 - (f) Clearance of Pollution Control Board for setting up batching plant;
 - (g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
 - (h) Permission of Village Panchayats and State Government for borrow earth; and
 - (i) Any other permits or clearances required under Applicable Laws.
- (ii) Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

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SCHEDULE - G

(See Clauses 7.1.and 19.2)

FORM OF BANK GUARANTEE

Annexure-I

(See Clause 7.1)

[Performance Security/Additional Performance Security]

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. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan to Dhupdhara Sahar) in the state of Assam on EPC mode in 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.

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,

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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 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.
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 Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
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 before expiry of the Guarantee, 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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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.

11. This guarantee shall also be operatable at our.....Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
12. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

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 CNRB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001)

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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan to Dhupdhara Sahar) in the state of Assam on EPC mode.

Annexure - II
(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

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) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (**Section: Paikan to Dhupdhara Sahar**) in the state of Assam on EPC mode in the state of Assam subject to and in accordance with the provisions of the Agreement
- (B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest 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,

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Schedule-H

(See Clauses10.1 (iv)and19.3)

Contract Price Weightage

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, widening and repair of culverts	34.08 %	A- Widening and strengthening of existing road	
		(1) Earthwork up to top of the sub- grade	11.28%
		(2) Sub-base Course	24.98%
		(3) Non bituminous Base course	11.85%
		(4) Bituminous Base course	21.05%
		(5) Wearing Coat	9.982%
		(6) Widening and repair of culverts	0.25%
		B.1-Reconstruction/New 2-Lane Realignment /Bypass(Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Non bituminous Base course	[Nil]
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	[Nil]
		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) Dry Lean 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	0.228%
		(2) Sub-base Course	3.65%
		(3) Non bituminous Base course	2.13%
		(4) Bituminous Base course	0.31%
(5) Wearing Coat	1.77%		
C.2- Reconstruction/New Service road(Rigid Pavement)			
(1) Earthwork up to top of the sub- grade	[Nil]		
(2) Sub-base Course	[Nil]		

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) DryLean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction & New Culverts on existing road, realignments, bypasses Culverts (length <6m)	12.52%
Minorbridge/ Underpasses/ Overpasses	14.97 %	A.1-widening and repairing of Minor Bridges (length >6 m<60m)	
		Minor Bridges	[Nil]
		A.2- New Minor bridges (length >6 mand<60m)	
		(1) Foundation : On completion of the foundation work .	22.71%
		(2)Sub-Structure: On completion of the Sub structure work	23.92%
		(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.	20.45%
		(4)Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	5.88%
		(5) Guide Bunds and River Training Works: On completion of Guide Bunds and river 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.	18.54%
		(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.	8.5%
		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.	

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(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/elevated sections/flyovers including viaducts,ifany	28.13 %	A.1- Widening and repairs of Major Bridges	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7)Guide bunds, River Training works etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]
		A.2-New Major Bridges	
		(1)Foundation	4.698%
		(2)Sub-structure	1.6%
		(3)Super-structure(including bearings)	3.36%
		(4)Wearing Coat including expansion joints	0.04%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.175%
		(6) Wing walls/return walls	[Nil]
		(7)Guide bunds, River Training works etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitching and protection works)	0.23%
		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 respects as specified and (b) incase of RUB-rigid pavement under RUB including drainage facility complete in 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	[Nil]		
(2) Sub-Structure	[Nil]		
(3) Super-Structure (Including bearings)	[Nil]		

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(4)Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) incase of RUB-rigid pavement under RUB including drainage facility complete in 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/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)Wearing Coat including expansion 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	44.44%
		(2) Sub-Structure	5.51%
		(3)Super-Structure(Including bearings)	38.767%
		(4)Wearing Coat including expansion joints	0.26%
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	0.92%
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	22.82 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	10.63%
		(iii) Road signs, markings, km stones, safety devices etc	8%
		(iv) Project facilities	
		a) Bus Bays & Bus Shelter	0.7%
		b) Truck Lay-byes	[Nil]
		c) Passenger Shelter	0.13%
		d) Rest Area	[Nil]
		e) Road Side Aminities	[Nil]

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura-Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		f) Street Light	0.674%
		g) Utility Duct	[Nil]
		(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	1.086%
		(x) Retaining Wall	0.24%
		(xi) Boundary wall	[Nil]
		(xii) Site Clearance &Dismantling	3.8%
		(xiii) Reinforced Earth Wall	54.07%
		(xiv) Junction	3.4%
		(xv) Turfing	0.87%
		(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	4.6%
		(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)	11.6%
		d) HT I LT line crossings	
		e) Water Pipe Line	0.2%
		f)Water Pipe Line Crossing	
		g) Sewage Line	[Nil]
		h) Sewage Line Crossing	[Nil]

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1.3 Procedure of estimating the value of work done

1.3.1 Roadworks

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & Strengthening of road		
(1) Earthwork up to top of the sub-grade	11.28%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of A (1) Preparation of Sub-Grade: 60% of Weightage of A (1)
(2) Sub-base Course	24.98%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m.
(3) Non bituminous Base course	11.85%	
(4) Bituminous Base course	21.05%	
(5) Wearing Coat	9.982%	
(6) Widening and repair of culverts	0.25%	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/New 2-Lane Realignment/Bypass(Flexible Pavement)		
(1) Earthwork up to 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 A (1) Preparation of Sub-Grade: 60% of Weightage of A (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) Non bituminous Base course	[Nil]	
(4) Bituminous Base course	[Nil]	
(5) Wearing Coat	[Nil]	
B.2- Reconstruction/New 8-Lane Realignment/Bypass(Rigid Pavement)		
(1) Earthwork upto top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	

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Stage of Payment	Percentage weightage	Payment Procedure
(4) Pavement Quality Control (PQC) Course	[Nil]	
C.1- Reconstruction/New Service Road/ Slip Road(Flexible Pavement)		
(1)Earthwork upto top of the sub-grade	0.228%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 500 m. In case of Hill Cutting, the payment procedure will be as under : Hill Cutting : 40% of Weightage of A (1) Preparation of Sub-Grade: 60% of Weightage of A (1)
(2) Sub-base Course	3.65%	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	2.13%	
(4) Bituminous Basecourse	0.31%	
(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 A (1) Preparation of Sub-Grade: 60% of Weightage of A (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 existing road, realignments, bypasses		
Culverts (length <6m)	12.52%	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

@ 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 otherstages shallbe workedout accordingly.

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

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repairs of Minor Bridges (length>6m&<60m)	[Nil]	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 completion of widening & repair works of a minor bridge.
A.2- New Minor Bridges (length>6m&<60m)		Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges
(1)Foundation : On completion of the foundation work .	22.71%	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	23.92%	Sub Structure: Payment against 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.	20.45%	Super structure: Payment shall be made on pro rata basis on completion of a stage i.e. completion of superstructure of at least one span in all respect as specified in the Colum of "Stage payment in the sub clause.
(3)Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	5.88%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e., Completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.

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Stage of Payment	Weightage	Payment Procedure
1	2	3
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	[Nil]	Guide Bunds and River Training Works: 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- Widening and repairs of underpasses/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- New Underpasses/Overpasses		Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpass/overpass
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	18.54%	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 underpass/overpass
(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.	8.5%	Super structure: Payment shall be made on pro rata basis on completion of a stage i.e. completion of superstructure of at least one span in all respect as specified in the Colum of "Stage payment in the 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]	(iii) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.

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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. In case 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 major bridge.
(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. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: 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.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road marking etc. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Guide bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
A.2-New Major Bridges		

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Stage of Payment	Weightage	Payment Procedure
(1)Foundation	4.698%	(i) Foundation: Payment against foundation shall be made on the pro-rata basis on completion of a stage i.e. not less than 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	1.6%	ii) Sub-structure : Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of a bridge 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 girder deck slab bearings (excluding wearing coat and expansion joints) i. Super Structure :Casting of Girder/Fabrication of Girder ii Super Structure Casting of segment iii Super Structure erection of Girder ,deck slab and bearings	3.36%	i) Super Structure (casting of Girder): 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 (Erection of Girders,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 including expansion joints hand rails ,crash barrier test on completion etc. completion in all respects	0.04%	WearingCoat: 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.	0.175%	Payment shall be made on prorata basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/return walls	[Nil]	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls for a bridge as per Weightage given in this table,complete in all respects as specified.
(7)Guidebunds,RiverTraini ngworks etc.	[Nil]	Guide Bunds, River Training works : Payment shall be made on pro rata basis on completion of all stage in all respect as specified, for each structure.
(8)Approaches(including Retaining walls, stone pitchingand protection works)	0.23%	Approaches: Payments shall be made on pro rata basison completion of 10% of the scope of each stage.
B.1- Widening and repairs of (a)ROB (b)RUB		

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Stage of Payment	Weightage	Payment Procedure
(1) Foundations	[Nil]	Foundation: Foundation cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) ROB/RUB .Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of ROB/RUB, subject to completion of atleast two foundations of the ROB/RUB. 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 shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB 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 respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road marking etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (Including Retaining walls, Stone Pitching and protection works)	[Nil]	Payments shall be made on prorata basis on completion of 20% of the total area.
B.2-New ROB/RUB		
(1) Foundation	[Nil]	(i) 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	[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 a bridge as per Weightage given in this table, subject to completion of atleast two sub structure up to abutment/pier cap level of a ROB/RUB

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Stage of Payment	Weightage	Payment Procedure
(3)Super-structure including girder deck slab bearings (excluding wearing coat and expansion joints) i. Super Structure :Casting of Girder/Fabrication of Girder ii Super Structure Casting of segment iii Super Structure erection of Girder ,deck slab and bearings	[Nil]	i) Super Structure (casting of Girder): 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 (Erection of Girders,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	[Nil]	WearingCoat: 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.	[Nil]	Payment shall be made on prorata basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/Return walls	[Nil]	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls for a bridge as per Weightage given in this table,complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
C.1-Wideningandrepairs of ElevatedSection/ Flyovers/Grade Separators		
(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.

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Stage of Payment	Weightage	Payment Procedure
(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 as specified.In case of structures where pre-cast girders have been proposed by the Contractor,50% ofthe stage payment shall be due and payable 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,road markingsetc. 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		Cost of each structure shall be determined on pro-rata basis in respect to the total linear length (m) of all Payment shall be made on completion of each stage of a structure as per Weightage given in this table.
(1) Foundations	44.44%	(i) Foundation: Foundation: Payment against foundation shall be made on pro rata on completion of a stage i.e. not less than 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	5.51%	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 girder deck slab bearings (excluding wearing coat and expansion joints) i. Super Structure :Casting of Girder/Fabrication of Girder ii Super Structure Casting of segment iii Super Structure erection of Girder ,deck slab and bearings	38.767%) Super Structure (casting of Girder): 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 (Erection of Girders,deck slab and

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Stage of Payment	Weightage	Payment Procedure
		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	0.26%	WearingCoat: WearingCoat: 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.	0.92%	Miscellaneous: Payment shall be made on prorated basis on completion of the stage in all respects as specified for each structure.
(6) Wing walls/Return walls	[Nil]	Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls for a bridge as per Weightage given in this table,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 case of innovative Major Bridge projects like cable suspension/cable stayed/Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of Competent Authority.

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

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
1) Toll Plaza	[Nil]	(i) Rigid Pavement up to DLC(LHS)-12.5%
		(ii) Rigid Pavement up to DLC(RHS)-12.5%
		(iii) PQC (LHS)-25%
		(iv)
		(v) Admin Building, Maintenance Building & Misc. Works-10%
		(vi) Canopy, Toll Booth, Safety Items & Miscellaneous Works-12.5 %
		(vii) Toll Plaza Tunnel-2.5 %

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Stage of Payment	Weightage	Payment Procedure
1	2	3
(2) (2) Roadside drains (RCC, PCC, Sub-Surface & Unlined)	10.63%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 05% (five percent) of the total length
(3) Road signs, markings, km stones, safety devices etc	8%	
(4) Project Facilities		
a) Bus Bays	0.7%	Payment shall be made on pro rata basis for completed facilities.
b) Truck Lay-byes	[Nil]	
c) Passenger Shelter	0.13%	
d) Rest Area	[Nil]	
e) Road Side Aminities	[Nil]	
f) Street Light	0.674%	
g) Utility Duct	[Nil]	
(5) Retaining Wall	0.24%	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 and traffic management during construction	[Nil]	Payment shall be made on prorated 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	1.086%	
(12) Site Clearance & Dismanteling	3.8%	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	54.07%	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	3.4%	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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(15)Turfing	0.87%	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.
(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	4.6%	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
c) HT I LT line (including transformers if any)	11.6%	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)

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilaspura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

Stage of Payment	Weightage	Payment Procedure
1	2	3
d) HT 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	0.2%	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.
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. Procedure for payment for Maintenance

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

2.2 Payment for Maintenance shall be made in quarterly 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.

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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. Project Milestone-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

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

construction in accordance with this Agreement.

6. Extension of time

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

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

- (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 conducting Tests

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

4. Completion Certificate

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

- 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. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan to Dhupdhara Sahar) in the state of Assam on EPC mode in the state of Assam on EPC mode" through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

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

(Signature)

(Name)

(Designation)(Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

- (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/5 th kmstones	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:

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

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 (1))

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's Engineer.
- (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 this Schedule-N.

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

Terms of Reference for Authority’s Engineer

1. Scope

- (i) These Terms of Reference (the “TOR”) for the Authority’s Engineer are being specified pursuant to the EPC Agreement dated (the “**Agreement**”), which has been entered into between the [name and address of the Authority] (the “**Authority**”) and (the “**Contractor**”) # for “**Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan to Dhupdhara Sahar) 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 Project Highway.

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

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 Industry Practice.
- (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 before determining:
- (a) any Time Extension;
- (b) any additional cost to be paid by the Authority to the Contractor;

- (c) the Termination Payment; or
 - (d) issuance of Completion Certificate or
 - (e) Any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.
- (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 Clause 18.2.
- (v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- (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 Clause 10.4.
- (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 such report.
- (vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.
- (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 may require.
- (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 event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- (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 Contractor forthwith.
- (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 Clause 12.2.
- (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) The Authority's Engineer shall determine the period of Time Extension that is required 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 Clause 19.16.

8. Other duties and functions

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

9. Miscellaneous

- (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-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.
- (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) The Authority's Engineers shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - 0

(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) The estimated amount for the Works executed in accordance with Clause 19.3 (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) amounts reflecting adjustment in price, if any, for (c) above in accordance with 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 Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

- (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's Defects Liability

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

3. Insurance against injury to persons and damage to property

- (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. [*****]

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

- (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)

Widening/Improvement to 4 (Four) Lane with Paved Shoulder from Ch. 99.930km to Ch.143.680 km (Design Ch.96.000km to Ch.139.750km) for Package-8 of Bilasipura- Guwahati road(NH 17) (Section: Paikan toDhupdhara Sahar) in the state of Assam on EPC mode.

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