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Schedules

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"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

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SCHEDULE-A

(SeeClauses2.1and8.1)

SITE OF THE PROJECT

1. THE SITE

1.1 Site of the four-lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

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

1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause8.2.1 of this Agreement.

1.4 The alignment plans of the Project Highway are specified in Annex-III.

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

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Annex– I

(Schedule-A)

Site

1. Site

The site of the 4 laning of NH 52 from Biswanath Chariali by-pass (Km 208.00) to Gohpur (Km 265.50) (Total length = 57.50 km) in Biswanath district in the state of Assam. The land, carriageway and structures comprising the site are described below.

2. Land

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

S. No	Chainage (km)		ROW (m)	Remarks
	From	To		
1	208.000	265.500	45-60	45-60 m ROW to be provided

3. Carriageway

The existing carriageway consists of the following which are incomplete and tobe completed in all respect.

Existing Carriageway width

Sr No	Chainage		Remarks
	From	To	
1	208000	265500	Carriageway has been constructed partly as a Four Lane Divided Carriageway in some stretches, Two Lane Newly Constructed Carriageway and 2 lane existing carriageway in some stretches

4. Major Bridges

The Site includes the following Major Bridges which are incomplete and to be completed in all respect.

(a) Existing Major Bridges yet to be taken up

Sl. No.	Chainage (Km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super Structure		
1	208+415	Well Foundation	C.C. Solid Type	RCC	2 x 39.00	8.45

2	225+438	Well Foundation	C.C. Solid Type	RCC	6 x 43.00	8.45
3	231+219	Open	RCC	RCC	1 x 45.00	8.45
4	240+241	Well foundation	C.C. Solid Type	RCC	10 x 31.60	8.45

(b) **New 2 lane Major Bridges**

Sr No	Chainage(km)	No of spans with span length (in m)	Width (in m)	Type of Structure		
				Foundation	Substructure	Superstructure
1	208+415	2x40	12.5	Well	RCC Solid Shaft	01 No longitudinal girder concreting done and other works remaining
2	225+438	6x41.4+2x11.20	12.5	Well	RCC Solid Shaft	03 Nos longitudinal girders concreting done and other works remaining
3	231+219	1x44.40	12.5	Well	RCC Solid Shaft	02 Nos longitudinal girders concreting done and other works remaining
4	240+241	10x30.70	12.5	Well	RCC Solid Shaft	10 Nos longitudinal girders concreting done and other works remaining

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

(a) The Site includes the following ROB (road over railway line) completed in 2 lane portion by Railways:

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with span length	Width (m)	ROB/RUB
		Foundation	Superstructure			
1	221.175	Pile	RCC	1 x 28.34	12.5	ROB
2	226.396	Pile	RCC	1 x 28.34	12.5	ROB

3	237.637	Pile	RCC	1 x 31.34	12.5	ROB
4	242.425	Pile	RCC	1 x 31.34	12.5	ROB

(b) Balance 2 lane portion of ROB:

Sr No	Chainage (km)	No of spans with span length (in m)	Width (in m)	Type of Structure		
				Foundation	Sub structure	Super structure
1	221.175	1 x 28.34	12.5	RCC Pile (Abutment Piles Completed and 24 nos. of pile for Return wall completed	RCC Solid shaft (Only for Abutment)	
2	226.396	1 x 28.34	12.5	RCC Pile(Abutment Piles Completed and 16 nos. of pile for Return wall completed	RCC Solid shaft (Only for Abutment)	
3	237.637	1 x 31.34	12.5	RCC Pile(Abutment Piles Completed and 32 nos. of pile for Return wall completed	RCC Solid shaft (Only for Abutment)	
4	242.425	1 x 31.34	12.5	RCC Pile(Abutment Piles Completed and 4 nos. of pile for Return wall completed	RCC Solid shaft (Only for Abutment)	

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					

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

7. Minor bridges

The Site includes the following minor bridges which are incomplete and to be completed in all respect.

a) Existing Minor Bridges yet to be taken up

Sl. No.	Chainage (Km)	Type of Structure			Nos. of Spans with Lengths (m)	Width
		Foundation	Sub Structures	Super Structures		
1.	212+964	Open	RCC	RCC	1x9.00	8.45
2.	222+578	Open	RCC	RCC	2x9.00	8.45
3.	227+448	Open	RCC	RCC	2x7.00	8.45
4.	228+069	Open	RCC	RCC	2x7.00	8.45
5.	233+200	Open	RCC	RCC	1x10.00	8.45
6.	234+851	Open	RCC	RCC	2x9.00	8.45
7.	236+256	Open	RCC	RCC	1x7.00	8.45
8.	239+266	Open	RCC	RCC	1x9.00	8.45
9.	244+738	Open	RCC	RCC	1x10.00	8.45
10.	249+960	Open	RCC	RCC	1x10.00	8.45
11.	250+320	Open	RCC	RCC	2x7.00	8.45
12.	251+615	Open	RCC	RCC	1x9.00	8.45
13.	253+977	Open	RCC	RCC	1x9.00	8.45
14.	254+725	Open	RCC	RCC	2x7.00	8.45
15.	258+129	Open	RCC	RCC	1x9.00	8.45
16.	258+347	Open	RCC	RCC	1x9.00	8.45
17	258+551	Open	RCC	RCC	3x9.00	8.45
18	258+975	Open	RCC	RCC	2x10.00	8.45
19	259+194	Open	RCC	RCC	2x7.00	8.45
20	259+546	Open	RCC	RCC	2x7.00	8.45
21	259+651	Open	RCC	RCC	2x7.00	8.45
22	259+870	Open	RCC	RCC	1x10.00	8.45

23	263+544	Open	RCC	RCC	1x9.00	8.45
24	263+955	Open	RCC	RCC	1x9.00	8.45
25	264+846	Open	RCC	RCC	1x9.00	8.45
26	265+278	Open	RCC	RCC	2x7.00	8.45

b) New 2 lane Minor Bridges

Sr No	Chainage (km)	No of spans with span length (in m)	Width (in m)	Type of Structure		
				Foundation	Substructure	Superstructure
1.	212+964	1x9.00	12.5	Open	RCC	RCC
2.	222+578	2x9.00	12.5	Open	RCC	RCC
3.	227+448	1x14.00	12.5	Open	RCC	RCC
4.	228+069	1x14.00	12.5	Open	RCC	RCC
5.	233+200	1x10.00	12.5	Open	RCC	RCC
6.	234+851	2x9.00	12.5	Open	RCC	RCC
7.	236+256	1x7.00	12.5	Open	RCC	RCC
8.	239+266	1x9.00	12.5	Open	RCC	RCC
9.	244+738	1x10.00	12.5	Open	RCC	RCC
10.	249+960	1x10.00	12.5	Open	RCC	RCC
11.	250+320	1x14.00	12.5	Open	RCC	RCC
12.	251+615	1x9.00	12.5	Open	RCC	RCC
13.	253+977	1x9.00	12.5	Open	RCC	RCC
14.	258+129	1x9.00	12.5	Open	RCC	RCC
15.	258+347	1x9.00	12.5	Open	RCC	RCC
16	258+551	3x9.00	12.5	Open	RCC	
17	258+975	2x10.00	12.5	Open	RCC	RCC
18	259+194	1x14.00	12.5	Open		
19	259+546	1x14.00	12.5	Open	RCC	RCC
20	259+651	1x14.00	12.5	Open	RCC	RCC
21	259+870	1x10.00	12.5	Open	RCC	RCC
22	263+544	1x9.00	12.5	Open	RCC	RCC
23	263+955	1x9.00	12.5	Open	RCC	RCC
24	264+846	1x9.00	12.5	Open	RCC	RCC
25	265+278	1x14.00	12.5	Open	RCC	RCC

8. Railway level crossings

The Site includes the following railway level crossings:

S.No.	Location (km)	Remarks
NIL		

9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts which are incomplete and to be completed in all respect.

S. No	Chainage (Km)	Type of Culvert	Span/Opening with span length (m)	Width (m)
1	209+020	Box Culvert	1/3.0/1.5	26.15
2	209+860	Box Culvert	1/3.0/1.5	26
3	210+272	Box Culvert	1/2.0/2.0	26
4	210+881	Box Culvert	1/2.0/2.0	26
5	213+754	Box Culvert	1/3.0/1.5	26
6	215+207	Box Culvert	1/3.0/3.0	29.2
7	216+051	Box Culvert	1/2.0/2.0	26
8	216+690	Box Culvert	1/2.0/2.0	26
9	217+260	Box Culvert	1/2.0/2.0	28.15
10	217+440	Box Culvert	1/2.0/2.0	26
11	218+590	Box Culvert	1/2.0/2.0	26
12	219+067	Box Culvert	1/3.0/1.5	26
13	220+001	Box Culvert	1/2.0/2.0	26
14	221+704	Box Culvert	1/2.0/2.0	12
15	222+120	Box Culvert	1/2.0/2.0	11.85

16	222+253	Box Culvert	1/3.0/3.0	28.8
17	222+448	Box Culvert	1/5.0/3/0	22.88
18	222+808	Box Culvert	1/2.0/2.0	28.5
19	223+264	Box Culvert	1/5.0/3/0	9.2
20	223+463	Box Culvert	1/2.0/2.0	26
21	223+611	Box Culvert	1/2.0/2.0	23
22	224+300	Box Culvert	1/2.0/2.0	26
23	224+724	Box Culvert	1/2.0/2.0	26
24	227+644	Box Culvert	1/2.0/2.0	24
25	228+269	Box Culvert	1/2.0/2.0	39.8
26	228+473	Box Culvert	1/2.0/2.0	40.2
27	228+770	Box Culvert	1/2.0/2.0	39.4
28	229+294	Box Culvert	1/6.0/3.0	26
29	229+511	Box Culvert	1/2.0/2.0	26
30	229+656	Box Culvert	1/6.0/4.0	21.4
31	229+992	Box Culvert	1/2.0/2.0	26
32	230+157	Box Culvert	1/2.0/2.0	26
33	230+505	Box Culvert	1/3.0/3.0	26
34	230+862	Box Culvert	1/3.0/3.0	26
35	231+430	Box Culvert	1/2.0/2.0	26
36	231+604	Box Culvert	1/2.0/2.0	28.5
37	231+879	Box Culvert	1/6.0/4.0	21.3
38	232+566	Box Culvert	1/2.0/2.0	26
39	232+781	Box Culvert	1/2.0/2.0	29.1
40	234+017	Box Culvert	1/3.0/3.0	26
41	234+283	Box Culvert	1/5.0/4.0	22.1
42	235+298	Box Culvert	1/2.0/2.0	26
43	235+716	Box Culvert	1/2.0/2.0	25.6
44	235+894	Box Culvert	1/2.0/2.0	26
45	236+482	Box Culvert	1/2.0/2.0	26

46	237+390	Box Culvert	3/3.0/3.0	32
47	238+023	Box Culvert	1/2.0/2.0	26
48	241+231	Box Culvert	1/2.0/2.0	26
49	243+527	Box Culvert	1/2.0/2.0	26
50	244+176	Box Culvert	1/2.0/2.0	21.5
51	244+369	Box Culvert	1/3.0/3.0	21.4
52	245+235	Box Culvert	1/3.0/3.0	22.9
53	246+091	Box Culvert	1/6.0/4.0	21.2
54	246+899	Box Culvert	1/6.0/3.0	12
55	247+854	Box Culvert	1/3.0/3.0	22.4
56	249+114	Box Culvert	1/6.0/4.0	26
57	249+591	Box Culvert	1/5.0/3.0	22.1
58	249+705	Box Culvert	1/3.0/3.0	23
59	250+628	Box Culvert	1/3.0/3.0	12
60	251+871	Box Culvert	1/2.0/2.0	23.1
61	252+917	Box Culvert	1/2.0/2.0	23.6
62	253+531	Box Culvert	1/3.0/3.0	23.6
63	254+977	Box Culvert	1/6.0/3.0	12
64	255+096	Box Culvert	1/6.0/3.0	23.2
65	255+219	Box Culvert	1/3.0/3.0	23.4
66	256+030	Box Culvert	1/3.0/3.0	23.6
67	256+090	Box Culvert	1/2.0/2.0	23.2
68	257+201	Box Culvert	1/6.0/3.0	12
69	257+929	Box Culvert	1/2.0/2.0	12
70	259+477	Box Culvert	1/2.0/2.0	23.4
71	260+138	Box Culvert	1/2.0/2.0	23.2
72	260+341	Box Culvert	1/3.0/3.0	23.2
73	261+035	Box Culvert	1/2.0/2.0	26
74	261+310	Box Culvert	1/3.0/3.0	26
75	261+554	Box Culvert	1/3.0/3.0	26

76	262+685	Box Culvert	1/3.0/3.0	23.2
77	262+902	Box Culvert	1/3.0/3.0	20.2

11. Busbays

The details of Bus Bays are as follows:

From	To	Side	Total Nos.
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. Roadside drains

The details of the roadside drains are as follows:

From	To	Side	Length (in m)
228+090	228+140	LHS	50
228+150	228+190	LHS	40
228+200	228+240	LHS	40
228+300	228+310	LHS	10
228+840	228+850	RHS	10
228+850	228+910	RHS	60
228+940	228+950	RHS	10
228+960	229+023	RHS	63
229+023	229+080	RHS	57
229+090	229+150	RHS	60
248+550	248+580	LHS	30
248+580	248+600	LHS	20
248+600	248+670	LHS	70
248+680	248+950	LHS	270
248+960	249+050	LHS	90
249+060	249+070	LHS	10
248+670	248+780	RHS	110
Total			**1000**

14. **Major Intersections along project:**

The details of major intersection are as follows:

Sl.No.	Location	At Grade	Category of Cross Road			
			NH	SH	MDR	Others
NIL						

15. Minor Intersections along project:

The details of the minor intersections with NH/SH/MDR/ODR/Village road are as follows:

Sl. No.	Location of Intersections	Type
1	208+160	T
2	208+210	T
3	208+700	Cross
4	209+145	T
5	209+340	T
6	209+580	T
7	209+600	T
8	209+750	T
9	209+755	T
10	210+105	T
11	210+560	T
12	210+640	T
13	210+710	T
14	211+000	Cross
15	211+670	T
16	211+970	T
17	213+138	T
18	214+310	T
19	214+330	Y
20	214+480	T
21	214+700	T
22	214+970	Y
23	215+280	T
24	216+230	Y
25	216+250	T
26	216+895	T
27	216+905	T
28	217+410	T
29	217+557	T
30	217+590	T
31	217+840	T
32	218+090	Cross
33	218+780	Y
34	219+820	T

35	220+260	T
36	220+630	Cross
37	221+300	Y
38	222+050	Y
39	222+430	T
40	222+465	Y
41	223+130	T
42	223+595	Cross
43	223+690	T
44	224+780	Y
45	224+790	Y
46	225+700	T
47	226+628	Y
48	226+630	Y
49	227+180	T
50	227+600	Y
51	230+080	T
52	230+350	T
53	230+930	Y
54	231+350	T
55	231+575	T
56	232+050	T
57	232+060	T
58	232+827	T
59	233+390	T
60	234+030	T
61	234+910	Y
62	235+850	Y
63	236+970	T
64	236+980	T
65	238+620	T
66	238+620	T
67	239+375	Y
68	239+860	T
69	240+660	Cross
70	241+005	Y
71	242+690	T
72	243+270	T
73	243+200	Y
74	245+500	Cross
75	246+610	T
76	246+970	T
77	246+924	T
78	247+310	T
79	247+933	T
80	248+340	Y
81	248+360	Y
82	249+077	Y
83	249+973	T
84	250+550	T

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85	250+600	T
86	251+150	Y
87	251+718	T
88	252+440	T
89	252+620	Y
90	253+078	T
91	253+393	T
92	253+540	T
93	254+190	T
94	254+698	T
95	255+430	T
96	255+400	T
97	255+600	T
98	256+140	T
99	256+320	T
100	256+790	T
101	256+850	T
102	257+000	T
103	257+100	T
104	257+590	T
105	258+110	T
106	258+650	T
107	259+420	T
108	259+944	Y
109	260+700	T
110	260+920	T
111	261+762	T
112	262+022	T
113	262+307	T
114	262+600	Y
115	262+870	T
116	263+180	T
117	263+200	T
118	263+625	T
119	263+910	T
120	264+210	T
121	264+350	T
122	264+700	T
123	265+277	T

16. Bypasses

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

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

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17. Other structures:

[NIL]

18. All detail shown above are indicative and shall be verified by joint survey of existing inventories with the Authority at the time of Appointed date.

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Annex– II

(AsperClause8.3(i))

(Schedule-A)

Dates for providing Right of Way

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

Sl.No.	**From Km to Km**	**Length (Km)**	**Width (m)**	**Date of Providing ROW**
Full Right of Way for full width a) Full Stretch	(Ch. 208.000 Km to Ch. 265.500 Km of NH-52)	57.500 Km	45-60m	On Appointed date

Annex-III

(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway may be maintained as it is so far as possible however may be modified in certain condition as stated below:

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level as indicated in the alignment plan shall be considered as minimum FRL and in any case, the finished road level of the project highway should 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.

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Annex– IV

(Schedule-A)

Environment Clearances

The following environment clearance have been obtained: NA

The following environment clearance are awaited: NA

Schedule-B

(SeeClause2.1)

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 completed by the Contractor in conformity with the Specifications and Standards specified in Annex-I of Schedule-D.

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Annex– I

(Schedule-B)

Description of Four-Laning and strengthening

1. Widening of the Existing Highway

1.1 The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex-III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per Section 2 of IRC:SP:84-2019 for plain/rolling terrain to the extent land is available.

1.2 Width of Carriageway

1.2.1 The carriageway with 1.50 m Paved Shoulder shall be 18(Eighteen) meter wide excluding the median as per IRC: SP: 84-2019.

1.2.2 Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1.1 above and/or in conformity with approved Drawings as per site requirements.

2. Geometric Design and General Features

2.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual IRC SP 84-2019.

2.2 Design speed

The design speed shall be as per clause 2.2 of IRC: SP: 84-2019.

2.3 Improvement of the existing road geometrics

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)	Length in Mtr	Type of deficiency	Remarks
NIL				

2.4 Right of Way

Details of the Right of Way are given in Annex-II of Schedule-A

2.5 Type of shoulders

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

Sl. No.	Stretch (from km to km)	Fully paved shoulders/footpath	Reference to cross section
As per TCS approved by Engineer in conformity with the Manual			

(b) In open country, Paved Shoulders of 1.50m width and Earthen Shoulders for a width of 2.00 m will be provided.

(c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.10, 5.11 and 5.12 of the manual.

2.6 Lateral and vertical clearances at underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the paragraph 2.10 of the Manual.

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

Sl. No.	Location (Chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

2.7 Lateral and vertical clearances at overpasses

2.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.

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

Sl. No.	Location (Chainage) (from km tokm)	Span/opening (m)	Remarks
NIL			

2.8 Service roads / Slip roads

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

Sr. No.	Design Chainages		Width (m)	LHS/RHS/Both	Length (m)
	From	To			
1	216+270	216+470	7.5	RHS	200
2	226+987	227+238	7.5	Both	502
3	228+300	229+000	7.5	Both	1400

4	236+680	236+740	7.5	RHS	60
5	237+050	237+150	7.5	Both	200
6	246+303	246+901	7.5	Both	1196
7	248+210	248+800	7.5	Both	1180
8	250+850	251+120	7.5	RHS	270
9	262+850	263+370	7.5	Both	1040
10	264+130	264+676	7.5	Both	1092
				Total (in m)	**7140**

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.13 of the manual. The requisite particulars are given below:

Sl. No.	**Location of structure**	**length (m)**	**Number and length of spans (m)**	**Approach gradient**	**Remarks, if any**
NIL					

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

Sl. No.	**Location**	**Type of structure Length(m)**	**Cross road at**			**Remarks,if any**
			Existing Level	**Raised Level**	**Lowered Level**	
NIL						

2.10 Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows:

Sl.No.	**Location**	**Type of crossing**
NIL		

2.11 Typical cross-sections of the Project Highway

Typical cross sections of the project highways are enclosed in the alignment plan. Modification of Cross sections in any segments of four lane stretch shall only be developed in case of necessity following the “Manual of Specifications and Standard for four laning of Highways through Public Private Partnership (IRC: SP: 84-2019) referred in Schedule – D.

2.12 Status of balance work (Highway):

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

2.12.1 Reconstruction/rectification of lower layers/already executed work including shoulder, embankment slope etc. complete in all respect to be carried out wherever required and the same shall not qualify for any Change of Scope.
2.12.2 The existing road works to be rectified/maintained during construction as per Technical Specification.

2.12.3 The items mentioned below are inclusive of Shoulders to be constructed as per Manual.

A. New Lane

a) Construction of Subgrade

Chainage		Length (In km)
From	To	
208+200	208+700	0.500
220+550	220+610	0.060
221+080	221+600	0.520
221+700	221+730	0.030
222+050	222+140	0.090
222+250	222+270	0.020
223+250	223+270	0.020
225+250	225+840	0.590
226+300	226+460	0.160
226+700	226+840	0.140
227+350	227+890	0.540
231+140	231+250	0.110
235+700	235+720	0.020
236+820	238+010	1.190
239+800	240+680	0.880
242+200	242+760	0.560
244+350	244+390	0.040
245+400	245+600	0.200
246+060	246+110	0.050
247+840	247+870	0.030
249+560	249+600	0.040
249+990	250+200	0.210
250+400	250+500	0.100
255+210	255+680	0.470
255+980	256+000	0.020
256+000	256+050	0.050
256+270	256+780	0.510
257+170	257+210	0.040
257+880	258+120	0.240
258+120	258+160	0.040
258+500	258+600	0.100

259+140	259+320	0.180
262+600	262+720	0.120
264+630	264+750	0.120
264+850	264+920	0.070
265+260	265+360	0.100
	Total	**8.160 km**

b) Completion of Incomplete Subgrade

Chainage		**Length (In km)**
From	**To**	
208+000	208+200	0.200
220+830	221+080	0.250
221+600	221+700	0.100
222+270	222+630	0.360
225+150	225+250	0.100
226+050	226+300	0.250
226+460	226+700	0.240
228+180	228+210	0.030
231+250	231+380	0.130
231+850	231+960	0.110
235+720	235+930	0.210
241+700	241+900	0.200
245+250	245+400	0.150
246+110	246+890	0.780
247+800	247+840	0.040
250+500	251+150	0.650
253+110	253+135	0.025
254+650	255+210	0.560
255+680	255+980	0.300
256+050	256+270	0.220
256+780	257+170	0.390
257+210	257+240	0.030
258+600	258+630	0.030
261+300	261+590	0.290
263+180	264+000	0.820
	Total	**6.465 km**

c) Construction of GSB

Chainage		**Length (In km)**
From	**To**	
208+000	208+200	0.200

208+200	208+700	0.500
208+700	208+750	0.050
220+460	220+550	0.090
220+550	220+610	0.060
220+830	221+080	0.250
221+080	221+600	0.520
221+600	221+700	0.100
221+700	221+730	0.030
221+730	221+800	0.070
222+040	222+050	0.010
222+050	222+140	0.090
222+250	222+270	0.020
222+270	222+630	0.360
222+630	222+640	0.010
223+250	223+270	0.020
223+270	223+310	0.040
225+150	225+250	0.100
225+250	225+840	0.590
226+050	226+300	0.250
226+300	226+460	0.160
226+460	226+700	0.240
226+700	226+840	0.140
227+350	227+890	0.540
228+180	228+210	0.030
231+140	231+250	0.110
231+250	231+380	0.130
231+850	231+960	0.110
235+700	235+720	0.020
235+720	235+930	0.210
236+820	238+010	1.190
239+800	240+680	0.880
241+700	241+900	0.200
242+020	242+200	0.180
242+200	242+760	0.560
244+350	244+390	0.040
245+250	245+400	0.150
245+400	245+600	0.200
246+060	246+110	0.050
246+110	246+890	0.780
247+800	247+840	0.040
247+840	247+870	0.030
247+870	248+620	0.750
249+560	249+600	0.040
249+990	250+200	0.210

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

250+200	250+400	0.200
250+400	250+500	0.100
250+500	251+150	0.650
253+110	253+135	0.025
254+650	255+210	0.560
255+210	255+680	0.470
255+680	255+980	0.300
255+980	256+000	0.020
256+000	256+050	0.050
256+050	256+270	0.220
256+270	256+780	0.510
256+780	257+170	0.390
257+170	257+210	0.040
257+210	257+240	0.030
257+870	257+880	0.010
257+880	258+120	0.240
258+120	258+160	0.040
258+500	258+600	0.100
258+600	258+630	0.030
259+140	259+320	0.180
261+300	261+590	0.290
262+590	262+600	0.010
262+600	262+720	0.120
262+720	262+730	0.010
263+180	264+000	0.820
264+570	264+630	0.060
264+630	264+750	0.120
264+750	264+850	0.100
264+850	264+920	0.070
265+260	265+360	0.100
	Total	**16.215 km**

d) Completion of Incomplete GSB

Chainage		**Length (In km)**
From	**To**	
225+000	225+150	0.150
227+160	227+350	0.190
227+890	228+080	0.190
228+210	228+680	0.470
231+000	231+140	0.140
240+680	240+950	0.270
243+050	243+110	0.060
245+150	245+250	0.100

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

249+600	249+720	0.120
	Total	**1.690 km**

e) Construction of WMM

Chainage		Length (In km)
From	**To**	
208+000	208+200	0.200
208+200	208+700	0.500
208+700	208+750	0.050
220+460	220+550	0.090
220+550	220+610	0.060
220+830	221+080	0.250
221+080	221+600	0.520
221+600	221+700	0.100
221+700	221+730	0.030
221+730	221+800	0.070
222+040	222+050	0.010
222+050	222+140	0.090
222+250	222+270	0.020
222+270	222+630	0.360
222+630	222+640	0.010
223+250	223+270	0.020
223+270	223+310	0.040
223+608	224+150	0.542
225+000	225+150	0.150
225+150	225+250	0.100
225+250	225+840	0.590
226+050	226+300	0.250
226+300	226+460	0.160
226+460	226+700	0.240
226+700	226+840	0.140
226+840	226+880	0.040
227+160	227+350	0.190
227+350	227+890	0.540
227+890	228+080	0.190
228+180	228+210	0.030
228+210	228+680	0.470
231+000	231+140	0.140
231+140	231+250	0.110
231+250	231+380	0.130
231+850	231+960	0.110
235+700	235+720	0.020
235+720	235+930	0.210

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

236+820	238+010	1.190
239+800	240+680	0.880
240+680	240+950	0.270
241+700	241+900	0.200
242+020	242+200	0.180
242+200	242+760	0.560
243+050	243+110	0.060
244+350	244+390	0.040
245+150	245+250	0.100
245+250	245+400	0.150
245+400	245+600	0.200
246+060	246+110	0.050
246+110	246+890	0.780
247+800	247+840	0.040
247+840	247+870	0.030
247+870	248+620	0.750
249+560	249+600	0.040
249+600	249+720	0.120
249+990	250+200	0.210
250+200	250+400	0.200
250+400	250+500	0.100
250+500	251+150	0.650
251+150	251+200	0.050
253+110	253+135	0.025
254+650	255+210	0.560
255+210	255+680	0.470
255+680	255+980	0.300
255+980	256+000	0.020
256+000	256+050	0.050
256+050	256+270	0.220
256+270	256+780	0.510
256+780	257+170	0.390
257+170	257+210	0.040
257+210	257+240	0.030
257+870	257+880	0.010
257+880	258+120	0.240
258+120	258+160	0.040
258+500	258+600	0.100
258+600	258+630	0.030
259+140	259+320	0.180
261+300	261+590	0.290
262+590	262+600	0.010
262+600	262+720	0.120

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

262+720	262+730	0.010
263+180	264+000	0.820
264+000	264+120	0.120
264+570	264+630	0.060
264+630	264+750	0.120
264+750	264+850	0.100
264+850	264+920	0.070
265+260	265+360	0.100
	Total	**18.657 km**

f) Completion of Incomplete WMM

Chainage		**Length (In km)**
From	**To**	
222+140	222+170	0.030
224+985	225+000	0.015
228+680	228+780	0.100
229+270	229+340	0.070
229+620	229+710	0.090
230+770	231+000	0.230
236+800	236+820	0.020
238+010	238+070	0.060
239+760	239+800	0.040
241+900	241+920	0.020
247+780	247+800	0.020
249+720	249+990	0.270
259+800	259+930	0.130
	Total	**1.095 km**

g) Construction of DBM

Chainage		**Length (In km)**
From	**To**	
208+000	208+200	0.200
208+200	208+700	0.500
208+700	208+750	0.050
209+008	209+036	0.028 (Only Top layer to be laid)
220+460	220+550	0.090
220+550	220+610	0.060
220+810	220+830	0.020

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

220+830	221+080	0.250
221+080	221+600	0.520
221+600	221+700	0.100
221+700	221+730	0.030
221+730	221+800	0.070
222+040	222+050	0.010
222+050	222+140	0.090
222+140	222+170	0.030
222+250	222+270	0.020
222+270	222+630	0.360
222+630	222+640	0.010
222+640	222+650	0.010
223+240	223+250	0.010
223+250	223+270	0.020
223+270	223+310	0.040
223+608	224+150	0.542
224+985	225+000	0.015
225+000	225+150	0.150
225+150	225+250	0.100
225+250	225+840	0.590
226+050	226+300	0.250
226+300	226+460	0.160
226+460	226+700	0.240
226+700	226+840	0.140
226+840	226+880	0.040
227+160	227+350	0.190
227+350	227+890	0.540
227+890	228+080	0.190
228+180	228+210	0.030
228+210	228+680	0.470
228+680	228+780	0.100
229+270	229+340	0.070
229+620	229+710	0.090
230+770	231+000	0.230
231+000	231+140	0.140
231+140	231+250	0.110
231+250	231+380	0.130
231+800	231+850	0.050
231+850	231+960	0.110
235+650	235+700	0.050
235+700	235+720	0.020
235+720	235+930	0.210
236+800	236+820	0.020

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

236+820	238+010	1.190
238+010	238+070	0.060
239+260	239+310	0.050 (Only Top layer to be laid)
239+760	239+800	0.040
239+800	240+680	0.880
240+680	240+950	0.270
240+950	240+960	0.010
241+700	241+900	0.200
241+900	241+920	0.020
242+020	242+200	0.180
242+200	242+760	0.560
243+030	243+050	0.020
243+050	243+110	0.060
244+130	244+200	0.070
244+350	244+390	0.040
244+390	244+400	0.010
244+710	244+790	0.080
245+150	245+250	0.100
245+250	245+400	0.150
245+400	245+600	0.200
246+060	246+110	0.050
246+110	246+890	0.780
246+890	246+910	0.020
247+780	247+800	0.020
247+800	247+840	0.040
247+840	247+870	0.030
247+870	248+620	0.750
249+090	249+150	0.060
249+540	249+560	0.020
249+560	249+600	0.040
249+600	249+720	0.120
249+720	249+990	0.270
249+990	250+200	0.210
250+200	250+400	0.200
250+400	250+500	0.100
250+500	251+150	0.650
251+150	251+200	0.050
251+200	251+470	0.270
253+110	253+135	0.025
254+650	255+210	0.560
255+210	255+680	0.470
255+680	255+980	0.300
255+980	256+000	0.020

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

256+000	256+050	0.050
256+050	256+270	0.220
256+270	256+780	0.510
256+780	257+170	0.390
257+170	257+210	0.040
257+210	257+240	0.030
257+870	257+880	0.010
257+880	258+120	0.240
258+120	258+160	0.040
258+480	258+500	0.020
258+500	258+600	0.100
258+600	258+630	0.030
259+140	259+320	0.180
259+320	259+340	0.020
259+800	259+930	0.130
261+300	261+590	0.290
261+590	261+705	0.115
262+590	262+600	0.010
262+600	262+720	0.120
262+720	262+730	0.010
263+180	264+000	0.820
264+000	264+120	0.120
264+120	264+150	0.030
264+570	264+630	0.060
264+630	264+750	0.120
264+750	264+850	0.100
264+850	264+920	0.070
264+920	264+930	0.010
265+100	265+130	0.030 (Only Top layer to be laid)
265+260	265+360	0.100
265+360	265+480	0.120 (Only Top layer to be laid)
265+480	265+500	0.020
	Total	**20.895 km**

B. Widening Part of Existing Carriageway

a) Construction of Subgrade

Chainage		**Length (In km)**
From	**To**	
208+000	208+700	0.700
220+610	221+720	1.110
222+040	222+650	0.610
223+250	223+280	0.030

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

223+460	224+140	0.680
224+290	224+310	0.020
224+714	224+734	0.020
224+980	225+750	0.770
225+840	226+700	0.860
226+700	226+800	0.100
226+840	226+880	0.040
227+150	228+100	0.950
229+270	229+340	0.070
230+830	230+870	0.040
231+010	231+250	0.240
231+350	232+350	1.000
232+470	232+590	0.120
233+990	234+010	0.020
234+260	234+270	0.010
235+490	235+960	0.470
236+800	238+020	1.220
239+800	240+950	1.150
242+150	243+120	0.970
244+360	244+420	0.060
245+190	245+290	0.100
246+070	246+900	0.830
247+770	247+910	0.140
248+280	248+460	0.180
249+120	249+160	0.040
249+550	250+350	0.800
250+600	252+660	2.060
252+760	254+250	1.490
254+660	258+160	3.500
258+480	258+640	0.160
259+070	259+320	0.250
259+465	259+475	0.010
259+850	260+520	0.670
262+590	262+710	0.120
262+890	262+930	0.040
263+180	263+970	0.790
264+350	265+500	1.150
	Total	**23.590 km**

b) Completion of incomplete Subgrade

Chainage		**Length (In km)**
From	**To**	
224+140	224+290	0.150

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

229+600	229+720	0.120
231+250	231+350	0.100
247+910	248+280	0.370
248+460	248+650	0.190
250+350	250+600	0.250
252+660	252+760	0.100
254+250	254+660	0.410
260+520	260+650	0.130
262+710	262+800	0.090
	Total	**1.910 km**

c) Construction of GSB

Chainage		**Length (In km)**
From	**To**	
208+000	208+700	0.700
220+610	221+720	1.110
221+720	221+760	0.040
222+040	222+650	0.610
223+250	223+280	0.030
223+460	224+140	0.680
224+140	224+290	0.150
224+290	224+310	0.020
224+310	224+714	0.404
224+714	224+734	0.020
224+734	224+980	0.246
224+980	225+750	0.770
225+750	225+810	0.060
225+840	226+700	0.860
226+700	226+800	0.100
226+840	226+880	0.040
226+880	227+150	0.270
227+150	228+100	0.950
228+100	229+200	1.100
229+270	229+340	0.070
229+600	229+720	0.120
230+830	230+870	0.040
231+010	231+250	0.240
231+250	231+350	0.100
231+350	232+350	1.000
232+470	232+590	0.120
233+990	234+010	0.020
234+260	234+270	0.010
234+270	234+340	0.070

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

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235+490	235+960	0.470
236+800	238+020	1.220
239+800	240+950	1.150
242+000	242+150	0.150
242+150	243+120	0.970
244+360	244+420	0.060
245+190	245+290	0.100
245+290	245+480	0.190
246+070	246+900	0.830
247+770	247+910	0.140
247+910	248+280	0.370
248+280	248+460	0.180
248+460	248+650	0.190
249+120	249+160	0.040
249+160	249+200	0.040
249+520	249+550	0.030
249+550	250+350	0.800
250+350	250+600	0.250
250+600	252+660	2.060
252+660	252+760	0.100
252+760	254+250	1.490
254+250	254+660	0.410
254+660	258+160	3.500
258+480	258+640	0.160
258+640	258+870	0.230
259+070	259+320	0.250
259+450	259+465	0.015
259+465	259+475	0.010
259+475	259+535	0.060
259+790	259+850	0.060
259+850	260+520	0.670
260+520	260+650	0.130
260+650	261+060	0.410
261+590	261+630	0.040
262+590	262+710	0.120
262+710	262+800	0.090
262+890	262+930	0.040
262+930	263+180	0.250
263+180	263+970	0.790
263+970	263+990	0.020
264+350	265+500	1.150
	Total	**29.185 km**

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

d) Completion of Incomplete GSB

Chainage		Length (In km)
From	To	
230+870	231+010	0.140
258+870	259+070	0.200
	Total	**0.340 km**

e) Construction of WMM

Chainage		Length (In km)
From	To	
208+000	208+700	0.700
220+610	221+720	1.110
221+720	221+760	0.040
222+040	222+650	0.610
223+250	223+280	0.030
223+460	224+140	0.680
224+140	224+290	0.150
224+290	224+310	0.020
224+310	224+714	0.404
224+714	224+734	0.020
224+734	224+980	0.246
224+980	225+750	0.770
225+750	225+810	0.060
225+840	226+700	0.860
226+700	226+800	0.100
226+800	226+840	0.040
226+840	226+880	0.040
226+880	227+150	0.270
227+150	228+100	0.950
228+100	229+200	1.100
229+200	229+270	0.070
229+270	229+340	0.070
229+600	229+720	0.120
230+810	230+830	0.020
230+830	230+870	0.040
230+870	231+010	0.140
231+010	231+250	0.240
231+250	231+350	0.100
231+350	232+350	1.000
232+470	232+590	0.120
233+990	234+010	0.020
234+260	234+270	0.010

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

234+270	234+340	0.070
234+340	234+360	0.020
235+460	235+490	0.030
235+490	235+960	0.470
236+800	238+020	1.220
238+020	238+070	0.050
239+800	240+950	1.150
240+950	241+260	0.310
241+570	241+700	0.130
242+000	242+150	0.150
242+150	243+120	0.970
244+320	244+360	0.040
244+360	244+420	0.060
245+190	245+290	0.100
245+290	245+480	0.190
246+070	246+900	0.830
247+770	247+910	0.140
247+910	248+280	0.370
248+280	248+460	0.180
248+460	248+650	0.190
248+650	248+660	0.010
249+070	249+120	0.050
249+120	249+160	0.040
249+160	249+200	0.040
249+520	249+550	0.030
249+550	250+350	0.800
250+350	250+600	0.250
250+600	252+660	2.060
252+660	252+760	0.100
252+760	254+250	1.490
254+250	254+660	0.410
254+660	258+160	3.500
258+480	258+640	0.160
258+640	258+870	0.230
258+870	259+070	0.200
259+070	259+320	0.250
259+320	259+330	0.010
259+450	259+465	0.015
259+465	259+475	0.010
259+475	259+535	0.060
259+790	259+850	0.060
259+850	260+520	0.670
260+520	260+650	0.130

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

260+650	261+060	0.410
261+590	261+630	0.040
262+480	262+590	0.110
262+590	262+710	0.120
262+710	262+800	0.090
262+800	262+890	0.090
262+890	262+930	0.040
262+930	263+180	0.250
263+180	263+970	0.790
263+970	263+990	0.020
264+350	265+500	1.150
	Total	**30.505 km**

f) Completion of Incomplete WMM

Chainage		**Length (In km)**
From	**To**	
221+760	222+040	0.280
232+350	232+470	0.120
	Total	**0.400 km**

g) Construction of DBM layer

Chainage		**Length (In km)**
From	**To**	
208+000	208+700	0.700
208+700	208+920	0.220
208+920	208+940	0.020
220+610	221+720	1.110
221+720	221+760	0.040
221+760	222+040	0.280
222+040	222+650	0.610
222+650	222+660	0.010
223+250	223+280	0.030
223+455	223+460	0.005
223+460	224+140	0.680
224+140	224+290	0.150
224+290	224+310	0.020
224+310	224+714	0.404
224+714	224+734	0.020
224+734	224+980	0.246
224+980	225+750	0.770
225+750	225+810	0.060
225+810	225+820	0.010

225+840	226+700	0.860
226+700	226+800	0.100
226+800	226+840	0.040
226+840	226+880	0.040
226+880	227+150	0.270
227+150	228+100	0.950
228+100	229+200	1.100
229+200	229+270	0.070
229+270	229+340	0.070
229+340	229+360	0.020
229+600	229+720	0.120
230+490	230+515	0.025
230+810	230+830	0.020
230+830	230+870	0.040
230+870	231+010	0.140
231+010	231+250	0.240
231+250	231+350	0.100
231+350	232+350	1.000
232+350	232+470	0.120
232+470	232+590	0.120
232+590	232+700	0.110
233+990	234+010	0.020
234+250	234+260	0.010
234+260	234+270	0.010
234+270	234+340	0.070
234+340	234+360	0.020
235+460	235+490	0.030
235+490	235+960	0.470
235+960	235+970	0.010
236+800	238+020	1.220
238+020	238+070	0.050
238+070	238+080	0.010
239+240	239+300	0.060
239+800	240+950	1.150
240+950	241+260	0.310
241+260	241+570	0.310
241+570	241+700	0.130
242+000	242+150	0.150
242+150	243+120	0.970
244+164	244+190	0.026
244+320	244+360	0.040
244+360	244+420	0.060
244+730	244+750	0.020

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

245+090	245+190	0.100
245+190	245+290	0.100
245+290	245+480	0.190
245+505	245+510	0.005
245+890	246+070	0.180
246+070	246+900	0.830
246+900	246+910	0.010
247+765	247+770	0.005
247+770	247+910	0.140
247+910	248+280	0.370
248+280	248+460	0.180
248+460	248+650	0.190
248+650	248+660	0.010
249+070	249+120	0.050
249+120	249+160	0.040
249+160	249+200	0.040
249+200	249+520	0.320
249+520	249+550	0.030
249+550	250+350	0.800
250+350	250+600	0.250
250+600	252+660	2.060
252+660	252+760	0.100
252+760	254+250	1.490
254+250	254+660	0.410
254+660	258+160	3.500
258+330	258+360	0.030
258+480	258+640	0.160
258+640	258+870	0.230
258+870	259+070	0.200
259+070	259+320	0.250
259+320	259+330	0.010
259+450	259+465	0.015
259+465	259+475	0.010
259+475	259+535	0.060
259+790	259+850	0.060
259+850	260+520	0.670
260+520	260+650	0.130
260+650	261+060	0.410
261+060	261+080	0.020
261+290	261+590	0.300
261+590	261+630	0.040
262+350	262+480	0.130
262+480	262+590	0.110

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

262+590	262+710	0.120
262+710	262+800	0.090
262+800	262+890	0.090
262+890	262+930	0.040
262+930	263+180	0.250
263+180	263+970	0.790
263+970	263+990	0.020
263+990	264+000	0.010
264+330	264+350	0.020
264+350	265+500	1.150
	Total	**32.901 km**

h) Construction of BC

Chainage		**Length (In Km)**
From	**To**	
208+000	265+500	57.5 km

i) Earthen Shoulder

Start	**End**	**Length(km)**	**Remark**
208+000	265+500	57.5	Earthen shoulder shall be provided throughout the project stretch wherever required as per Manual.

j) Median Kerb/Channel Kerb and Median Filling

Start	**End**	**Length(km)**	**Remark**
208+000	265+500	57.5	Median Kerb/Channel Kerb and Median Filling shall be provided throughout the project stretch wherever required as per Manual

k) Median and Avenue Plantation

Start	**End**	**Length(km)**	**Remark**
208+000	265+500	57.5	Median and Avenue Plantation shall be provided throughout the project stretch as per Manual

3. Intersections and Grade Separators

All intersections and grade separators shall be as per the provision of Section–3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards to the extent of land availability.

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

(a) At-grade intersections

Major Intersections with NH/SH/MDR/ODR/Village road:

Sl. No.	Location (Km)	Type
1	216+230	Y
2	221+300	Y
3	236+980	T
4	251+150	Y
5	264+210	T

Minor Intersection with NH/SH/MDR/ODR/Village road:

Sl. No.	Location of Intersections	Type
1	208+160	T
2	208+210	T
3	208+700	Cross
4	209+145	T
5	209+340	T
6	209+580	T
7	209+600	T
8	209+750	T
9	209+755	T
10	210+105	T
11	210+560	T
12	210+640	T
13	210+710	T
14	211+000	Cross
15	211+670	T
16	211+970	T
17	213+138	T
18	214+310	T
19	214+330	Y
20	214+480	T
21	214+700	T
22	214+970	Y
23	215+280	T
24	216+250	T
25	216+895	T

26	216+905	T
27	217+410	T
28	217+557	T
29	217+590	T
30	217+840	T
31	218+090	Cross
32	218+780	Y
33	219+820	T
34	220+260	T
35	220+630	Cross
36	222+050	Y
37	222+430	T
38	222+465	Y
39	223+130	T
40	223+595	Cross
41	223+690	T
42	224+780	Y
43	224+790	Y
44	225+700	T
45	226+628	Y
46	226+630	Y
47	227+180	T
48	227+600	Y
49	230+080	T
50	230+350	T
51	230+930	Y
52	231+350	T
53	231+575	T
54	232+050	T
55	232+060	T
56	232+827	T
57	233+390	T
58	234+030	T
59	234+910	Y
60	235+850	Y
61	236+970	T
62	238+620	T
63	238+620	T
64	239+375	Y
65	239+860	T
66	240+660	Cross
67	241+005	Y
68	242+690	T
69	243+270	T

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

70	243+200	Y
71	245+500	Cross
72	246+610	T
73	246+970	T
74	246+924	T
75	247+310	T
76	247+933	T
77	248+340	Y
78	248+360	Y
79	249+077	Y
81	249+973	T
80	250+550	T
82	250+600	T
84	251+718	T
85	252+440	T
86	252+620	Y
87	253+078	T
83	253+393	T
88	253+540	T
89	254+190	T
90	254+698	T
91	255+430	T
92	255+400	T
93	255+600	T
94	256+140	T
95	256+320	T
96	256+790	T
97	256+850	T
98	257+000	T
99	257+100	T
100	257+590	T
101	258+110	T
102	258+650	T
103	259+420	T
104	259+944	Y
105	260+700	T
106	260+920	T
107	261+762	T
108	262+022	T
109	262+307	T
110	262+600	Y
111	262+870	T
112	263+180	T
113	263+200	T

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

114	263+625	T
115	263+910	T
116	264+350	T
117	264+700	T
118	265+277	T

(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

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

4.2 Raising of the existing road will be done as per finished road level mentioned in plan & profile of approved drawing and relevant sections of Manual.

5. Pavement Design

5.1 Pavement design shall be carried out in accordance with the section 5 of the Manual however not inferior to the existing crust combination as enclosed in the typical cross section in the current approved Plan and Profile.

5.2 **Type of pavement**

Flexible pavement shall be adopted.

5.3 **Design requirements**

5.3.1 Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 15 years. Stage construction shall not be permitted.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic not less than 80 million standard axles.

5.4 Reconstruction of stretches

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

Sl.No.	Stretch From km to km	Remarks
NIL		

6. Road side Drainage

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

6.1 Location of RCC covered side drain:

Chainage		Length (m)	Sides
From	To		
216+270	216+470	400	BHS
226+987	227+238	502	BHS
228+090	228+140	50	RHS
228+140	228+150	20	BHS
228+150	228+190	40	RHS
228+190	228+200	20	BHS
228+200	228+240	40	RHS
228+240	228+269	58	BHS
228+300	228+310	10	RHS
228+310	228+472	324	BHS
228+474	228+771	594	BHS
228+773	228+840	134	BHS
228+840	228+910	70	LHS
228+910	228+940	60	BHS
228+940	228+950	10	LHS
228+950	228+960	20	BHS
228+960	229+080	120	LHS
229+080	229+090	20	BHS
229+090	229+150	60	LHS
229+150	229+293	286	BHS
236+680	236+740	60	RHS
237+050	237+150	100	BHS
246+300	246+522	444	BHS
246+906	247+100	388	BHS
248+200	248+550	700	BHS
248+550	248+670	120	RHS
248+670	248+680	10	LHS

248+780	248+950	170	RHS
248+950	248+960	20	BHS
248+960	249+050	90	RHS
249+050	249+060	20	BHS
249+060	249+070	10	RHS
249+070	249+112	84	BHS
250+630	251+120	980	BHS
256+750	257+200	450	LHS
262+430	262+651	221	LHS
262+652	262+898	492	BHS
262+902	263+535	1266	BHS
263+553	263+914	361	RHS
263+974	264+200	452	BHS
264+130	264+837	1414	BHS
	Total	**10690**	

The locations on above are tentative and shall be finalised as per site condition

6.2 Unlined Drain is to be constructed at all other locations as per Manual.

6.3 Median Drain is also to be provided as per Manual and Site Requirement.

7. Design of Structures

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of the manual and the existing design of partially completed structures. These together shall conform to the cross-sectional features and other details.

7.1.2 Width of the carriageway and cross-sectional features of new bridges and structures shall be as follows:

Sl.No.	**Location**	**Deck Width**	**Carriage way**	**Span Arrangement**
All new structures/Bridges proposed to be widened shall have carriageway as per Manual				

7.1.3 The following structures shall be provided with footpaths:

Sl. No.	**Location at km**	**Remarks**
All new bridges/Bridges proposed to be widened shall have provisions for footpath		

7.1.4 All bridges shall be high-level bridges.

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

Sl. No.	Bridge at km	Utility service to be carried	Remarks
All new bridges/Bridges proposed to be widened shall have provisions for utility services to be carried over			

7.1.6 Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in the Section 7 of the Manual.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches.

7.2.2 Reconstruction of existing culverts:

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

S. No	Chainage (Km)	Type of Culvert	Span/Opening with span length (m)	Remarks
1	209+020	Box Culvert	1/3.0/1.5	The width of Culvert constructed are mentioned in Sch-A. Balance work include rectification of the already completed works if any and the construction of Culvert in complete 4 lane width including 2 lane on Service Road (Wherever applicable) complete in all respects.
2	209+860	Box Culvert	1/3.0/1.5	
3	210+272	Box Culvert	1/2.0/2.0	
4	210+881	Box Culvert	1/2.0/2.0	
5	213+754	Box Culvert	1/3.0/1.5	
6	215+207	Box Culvert	1/3.0/3.0	
7	216+051	Box Culvert	1/2.0/2.0	
8	216+690	Box Culvert	1/2.0/2.0	
9	217+260	Box Culvert	1/2.0/2.0	
10	217+440	Box Culvert	1/2.0/2.0	
11	218+590	Box Culvert	1/2.0/2.0	
12	219+067	Box Culvert	1/3.0/1.5	
13	220+001	Box Culvert	1/2.0/2.0	
14	221+704	Box Culvert	1/2.0/2.0	
15	222+120	Box Culvert	1/2.0/2.0	
16	222+253	Box Culvert	1/3.0/3.0	
17	222+448	Box Culvert	1/5.0/3/0	

18	222+808	Box Culvert	1/2.0/2.0
19	223+264	Box Culvert	1/5.0/3/0
20	223+463	Box Culvert	1/2.0/2.0
21	223+611	Box Culvert	1/2.0/2.0
22	224+300	Box Culvert	1/2.0/2.0
23	224+724	Box Culvert	1/2.0/2.0
24	227+644	Box Culvert	1/2.0/2.0
25	228+269	Box Culvert	1/2.0/2.0
26	228+473	Box Culvert	1/2.0/2.0
27	228+770	Box Culvert	1/2.0/2.0
28	229+294	Box Culvert	1/6.0/3.0
29	229+511	Box Culvert	1/2.0/2.0
30	229+656	Box Culvert	1/6.0/4.0
31	229+992	Box Culvert	1/2.0/2.0
32	230+157	Box Culvert	1/2.0/2.0
33	230+505	Box Culvert	1/3.0/3.0
34	230+862	Box Culvert	1/3.0/3.0
35	231+430	Box Culvert	1/2.0/2.0
36	231+604	Box Culvert	1/2.0/2.0
37	231+879	Box Culvert	1/6.0/4.0
38	232+566	Box Culvert	1/2.0/2.0
39	232+781	Box Culvert	1/2.0/2.0
40	234+017	Box Culvert	1/3.0/3.0
41	234+283	Box Culvert	1/5.0/4.0
42	235+298	Box Culvert	1/2.0/2.0
43	235+716	Box Culvert	1/2.0/2.0
44	235+894	Box Culvert	1/2.0/2.0
45	236+482	Box Culvert	1/2.0/2.0
46	237+390	Box Culvert	3/3.0/3.0
47	238+023	Box Culvert	1/2.0/2.0

48	241+231	Box Culvert	1/2.0/2.0	
49	243+527	Box Culvert	1/2.0/2.0	
50	244+176	Box Culvert	1/2.0/2.0	
51	244+369	Box Culvert	1/3.0/3.0	
52	245+235	Box Culvert	1/3.0/3.0	
53	246+091	Box Culvert	1/6.0/4.0	
54	246+899	Box Culvert	1/6.0/3.0	
55	247+854	Box Culvert	1/3.0/3.0	
56	249+114	Box Culvert	1/6.0/4.0	
57	249+591	Box Culvert	1/5.0/3.0	
58	249+705	Box Culvert	1/3.0/3.0	
59	250+628	Box Culvert	1/3.0/3.0	
60	251+871	Box Culvert	1/2.0/2.0	
61	252+917	Box Culvert	1/2.0/2.0	
62	253+531	Box Culvert	1/3.0/3.0	
63	254+977	Box Culvert	1/6.0/3.0	
64	255+096	Box Culvert	1/6.0/3.0	
65	255+219	Box Culvert	1/3.0/3.0	
66	256+030	Box Culvert	1/3.0/3.0	
67	256+090	Box Culvert	1/2.0/2.0	
68	257+201	Box Culvert	1/6.0/3.0	
69	257+929	Box Culvert	1/2.0/2.0	
70	259+477	Box Culvert	1/2.0/2.0	
71	260+138	Box Culvert	1/2.0/2.0	
72	260+341	Box Culvert	1/3.0/3.0	
73	261+035	Box Culvert	1/2.0/2.0	
74	261+310	Box Culvert	1/3.0/3.0	
75	261+554	Box Culvert	1/3.0/3.0	
76	262+685	Box Culvert	1/3.0/3.0	
77	262+902	Box Culvert	1/3.0/3.0	

7.2.3 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 the provision of relevant Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Culvert location	Type, span, height and width of existing culvert (m)	Repairs to be carried out [specify]
NIL			

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

Sl.No.	New Location as per Drawing	Type of Culvert	Proposed Size (mm)	Remarks
1	250+080	Box Culvert	1/2.0/2.0	Complete Culvert to be constructed in 4 lane as per Manual

7.2.5 Repairs/replacements of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as per site condition.

7.2.6 Floor protection works shall be as specified in the relevant IRC Codes and MoRT&H Specifications.

7.3 Bridges

7.3.1 The new bridges adjacent to the existing bridges at the following locations shall be constructed as new Structures.

(a) **Major Bridges**

Sr No	Chainage	Span	Remarks
1	208+415	2x40	The work already constructed is shown in Sch-A. Balance activities include requisite rectification of the completed works and all the balance works required to complete the New 2 lane Major Bridge in all aspects including River Training works if required as per site
2	225+438	6x41.4 + 2x11.20	
3	231+219	1x44.40	
4	240+241	10x30.70	

(b) **Minor Bridges**

Sr No	Chainage	Span	Remarks
1	212+964	1x9	The work already constructed is

2	222+578	2x9	shown in Sch-A. Balance activities include requisite rectification of the completed works and all the balance works required to complete the New 2 lane Major Bridge in all aspects
3	227+448	1x14	
4	228+069	1x14	
5	233+200	1x10	
6	234+851	2x9	
7	236+256	1x7	
8	239+266	1x9	
9	244+738	1x10	
10	249+960	1x10	
11	250+320	1x14	
12	251+615	1x9	
13	253+977	1x9	
14	254+725	1x14	
15	258+129	1x9	
16	258+347	1x9	
17	258+551	3x9	
18	258+975	2x10	
19	259+194	1x14	
20	259+546	1x14	
21	259+651	1x14	
22	259+870	1x10	
23	263+544	1x9	
24	263+955	1x9	
25	264+846	1x9	
26	265+278	1x14	

7.3.2 The existing Minor bridges at the following locations shall be dismantled and reconstructed:

Sr No	Chainage	Span	Remarks
1	259+194	1x14	To be raised and reconstructed as New 2 lane Bridge as per Manual
2	263+544	1x9	
3	263+955	1x9	

7.3.3 The following narrow bridges shall be widened, repaired/rehabilitated and strengthened as per Manual:

a) Major Bridge

Sl. No.	Chainage (Km)	Width of existing bridge	Type of Strucutre			No. of span with span length (m)	Remarks
			Foundation	Sub-structure	Super-strucutre		
1.	208+415	8.45	Well Foundation	CC Solid type	RCC	2 X40.00	Shall be repaired/ rehabilitated

Sl.	Chainage	Width of	Type of Strucutre			No. of span with span	Remarks
2.	225+438	8.45	Well Foundation	CC Solid type	RCC	6 X40.00	and strengthened including River Training work as per requirement
3.	231+219	8.45	Well Foundation	RCC	RCC	1 X45.00	
4.	240+241	8.45	Well Foundation	CC Solid type	RCC	10 X30.00	

Note: Widening of major bridges is not applicable, however repair and strengthening work shall be carried out

b) Minor Bridge

Sl. No.	Chainage (Km)	Width of existing bridge	Type of Strucutre			No. of span with span length (m)	Remarks
			Foundation	Sub-structure	Super-strucutre		
1.	212+964	8.45	Open	RCC	RCC	1 x 9.0	Widened to the required overall width of 12.5 m. Also Shall be repaired/ rehabilitated and strengthened
2.	222+578	8.45	Open	RCC	RCC	2 x 9.0	
3.	227+448	8.45	Open	RCC	RCC	1 x 14.0	
4.	228+069	8.45	Open	RCC	RCC	1 x 14.0	
5.	233+200	8.45	Open	RCC	RCC	1 x 10.0	
6.	234+851	8.45	Open	RCC	RCC	2 x 9x.0	
7.	236+256	8.45	Open	RCC	RCC	1 x 7.00	
8.	239+266	8.45	Open	RCC	RCC	1 x 9.00	
9.	244+738	8.45	Open	RCC	RCC	1 x 10.00	
10.	249+960	8.45	Open	RCC	RCC	1 x 10.00	
11.	250+320	8.45	Open	RCC	RCC	1 x 14.00	
12.	251+615	8.45	Open	RCC	RCC	1 x 9.00	
13.	253+977	8.45	Open	RCC	RCC	1 x 9.00	
14.	254+725	8.45	Open	RCC	RCC	1 x 14.00	
15.	258+129	8.45	Open	RCC	RCC	1 x 9.00	
16.	258+347	8.45	Open	RCC	RCC	1 x 9.00	
17.	258+551	8.45	Open	RCC	RCC	3 x 9.00	

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

Sl.	Chainage	Width of	Type of Strucutre			No. of span with span	Remarks
18.	258+975	8.45	Open	RCC	RCC	2 x 10.00	
19.	259+546	8.45	Open	RCC	RCC	1 x 14.00	
20.	259+651	8.45	Open	RCC	RCC	1 x 14.00	
21.	259+870	8.45	Open	RCC	RCC	1 x 10.00	
22.	264+846	8.45	Open	RCC	RCC	1 x 9.00	
23.	265+278	8.45	Open	RCC	RCC	1 x 14.00	

7.3.4 **Additional new bridges**

New bridges at the following locations on the Project Highway shall be constructed.

Sl. No.	Location (km)	Total length(m)	Remarks, if any
NIL			

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

Sl. No.	Location at Km	Type of Bridge
As per Site Condition wherever technically feasible		

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

Sl. No.	Location at Km	Type of Bridge
As per Site Condition wherever technically feasible		

7.3.7 **Drainage system for bridge decks**

An effective drainage system for bridge decks shall be provided as specified in Paragraph 7.2 of the Manual

7.3.8 **Structures in marine environment**

NIL

7.4 **Rail-road bridges**

7.4.1 Design, construction and detailing of ROB/RUB shall be as specified in Section7 of the Manual.

7.4.2 Road over-bridges

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

GAD drawings attached:

Sl. No.	Design Chainage (Km)	Span arrangment	Length of Span (in m)	Remarks
1.	221+175	1x27.0	28.34	The status of Balance 2 lane portion is given in Sch-A. Balance Scope includes design approval from Competent Authority , the completion of Bearings, Superstructure, Retaining wall and other miscellaneous works for the completion of ROB in 2 lane in all respects
2.	226+396	1x27.0	28.34	
3.	237+637	1x30.0	31.34	
4.	242+425	1x30.0	31.34	

7.4.3 **Road under-bridges**

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

Sl. No.	**Location of Level crossing (Chainage km)**	**Length of bridge (m)**
NIL		

7.5 Grade separated structures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2(ix)and 3 of this Annex-I of Schedule - B.

7.6 Repairs and strengthening of bridges and structures (Copy)

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.	LocationAt Km	Remarks
1.	208.415	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual

Sl.No.	LocationAt Km	Remarks
2.	212+964	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
3.	222+578	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
4.	225+438	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
5.	227+448	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
6.	228+069	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
7.	231+219	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
8.	233+200	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
9.	234+851	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
10.	236+256	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing

Sl.No.	LocationAt Km	Remarks
		coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
11.	239+266	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
12.	240+241	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
13.	244+738	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
14.	249+960	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
15.	250+320	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
16.	251+615	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
17.	253+977	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
18.	254+725	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and

Sl.No.	LocationAt Km	Remarks
		Manual
19.	258+129	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
20.	258+347	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
21.	258+551	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
22.	258+975	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
23.	259+546	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
24.	259+651	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
25.	259+870	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
26.	264+846	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

Sl.No.	LocationAt Km	Remarks
27.	265+278	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual

(b) **ROB / RUB**

Sl. No.	Design Chainage (Km)	Span arrangment	Length of Span (in m)	Remarks
1.	221+175	1x27.0	28.34	Repair and Sealing of cracks in foundation, Sub structure, Super Structure etc. Bridge painting. Repair/Replacement of Wearing coat, approach slab, bearings, expansion joints, railings, drainage spouts, waterway and all other works as per site requirement and Manual
2.	226+396	1x27.0	28.34	
3.	237+637	1x30.0	31.34	
4.	242+425	1x30.0	31.34	

(c) **Overpasses/Underpasses and other structures**

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

7.7 Protection work-

Protection work for the project Highway shall be provided as detailed below:-

7.7.1 Details of retaining wall- Retaining wall wherever required shall be provided as per site requirement.

7.7.2 Details of Toe Wall- Toe wall wherever required shall be provided as per site requirement.

7.7.3 Any other Protection work for the embankment as per the Manual and relevant IRCs is to be executed at site.

8. Traffic Control Devices and Road Safety Works

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

8.2 Specifications of the reflective sheeting shall be provided as per Section 9 of Manual IRC: 84-2019.

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM standard D 4956-04.

9. Road side Furniture

9.1 Road side furniture shall be provided in accordance with the provision of Section – 09 of the Manual.

9.2 Overhead traffic signs: location and size

Overhead Signs shall be provided in accordance with the provisions of the Manual at minimum 06 locations.

10. COMPULSORY AFFORESTATION

Compulsory / Compensatory afforestation to be carried out at locations as directed by the Authority

11. HAZARDOUS LOCATIONS

Safety barrier / W-Beam Crash Barrier to be provided as per provisions provided in manual recommended in Schedule D

12. SPECIAL REQUIREMENTS FOR HILL ROADS

Special requirement for hill roads shall be as per Section 13 of the Manual

13. Change of Scope

The length of structures and bridges specified herein 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 a Change of Scope, save and except any variation in the length arising out of a Change of Scope expressly undertaken in accordance with provision of Article 13.

14. DISCLAIMER

Any other rectification/repair work not mentioned herein and required at site in the already executed work shall be assessed and carried out as per specification and standards and shall not constitute a Change of Scope or deviation or be payable.

Being balance work, there may be some variation in the above said work. Hence the corrected Balance work will be determined at the time of preparation of joint inventory on appointed date. This modification will be dealt according to Article 13 of the Contract Agreement after exclusion of clause 13.4 (ii).

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(ScheduleB-1)

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

Sr. No	Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A	Electrical Utilities			
A1	Electrical Poles	Nos.		
A2	Electrical cables	meters		
A3	Transformers	Nos.		
-	------	--		
-	-------	--		
B	Water/Sewage pipeline			
B1	Sewage	meters		
B2	Water supply	meters		
-	-------	--		
-	-------	--		
C	Felling of Tress	Nos.		

Schedule-C

(SeeClause2.1)

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;

(b) Road side furniture;

(c) Pedestrian facilities;

(d) Tree plantation;

(e) Truck lay-byes;

(f) Bus-bays and bus shelters;

(g) Rest areas; and

(h) Others to be specified

i. Highway Lighting at Fly over and Major Junction,
ii. Highway Patrol,
iii. Medical Aid Post,
iv. Cranes,
v. Traffic Aid Post,
vi. ECBs (Emergency Call Boxes)

1. Description of Project Facilities

Each of the Project Facilities is described below:

a) Toll plaza:

Toll Plaza is to be constructed as per Section 10 of the Manual complete in all respects and equipped with all requisite facilities as mentioned in the Manual.

b) **Road side Furniture**: This include

i. Traffic Signs and Pavement Markings
ii. Concrete Crash Barrier, Metal beam crash barrier, Separators (MS railings) wherever required as per manual.
iii. Traffic Safety Devices wherever required
iv. Boundary Stones, Hectometre / Kilometre stones
v. Traffic Blinker Signal (L.E.D) shall be provided at all At-grade junctions, median opening, schools, hospitals, police station, places of worship and institutional buildings etc.
vi. Overhead signs: As per site
vii. Delineators and Studs: Studs (l00mm x l00mm) with reflective panels of dual prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators for night time visibility shall be provided for the entire project Highway.
viii. Pavement marker and tree reflector

(b) Pedestrian Facilities

The additional pedestrian facilities in the form of guard rails, footpath, etc. shall be provided as per Manual.

(c) Landscaping and Tree Plantation

This includes Road side plantation, median plantation and landscaping below Viaduct & Junctions etc. This shall be carried out in accordance with IRC SP 21 and section 11 of the manual.

(d) Bus-bays and Bus Shelter,

Bus-bays and Bus Shelters shall be provided at 13 locations. Locations shall be finalized by Authority Engineer in consultation with Authority.

(e) Truck Lay Bye

Truck Lay Bye shall be provided at 02 locations on Both sides. Locations shall be finalized by Authority Engineer in consultation with Authority.

(f) Rest areas;

Design Chainage	Side	Remarks
NIL		

(g) Others:

1. **Highway Lighting**
Lighting shall be provided as per clause 12.5 of the Manual. However, the lighting in built up areas shall be provided in consultation with Authority Engineer.

2. **Highway Patrol**
The Concessionaire shall provide Highway Patrol vehicles in adequate number as per manual and this agreement.

3. **Medical Aid Post:**
The Concessionaire shall provide Highway Patrol vehicles in adequate number as per manual and this agreement.

4. Cranes

The Concessionaire shall provide one mobile Cranes having the capacity to lift a truck with a gross vehicle weight of 30,000 (thirty thousand) kilogram and such posts shall be located at the toll plaza location in consultation with the IC/Authority.

5. **ECBs (Emergency Call Boxes)**

ECBs (Emergency Call Boxes)_with loud speaker, micro phone, activation button with LED indicating conversation, shall be housed in a vandal proof casing and operate in full to play mode in noise level of up to 95 decibels within built diagnostic features for automatic detection in case of damage by any object. Mobile communication system shall comprise the mobile radio base stations and

control centre equipments. It shall have provision for mounted mobile set on ambulances, trains & patrolling vehicles. The system shall have the facility to connect mobile to mobile, mobile to controller, and controller to mobile along with the systems for waiting, holding and transfer of calls. The system shall use pair frequencies to be allotted to the concessionaire with the approval of wireless planning & coordination (WPC), Department of Telecommunications and shall operate for full duplex mode.

Schedule-D

(SeeClause2.1)

Specifications and Standards for Construction

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 for Specifications & Standards for Four Lanning of Highways Through Public Private Partnership (IRC : SP-84-2019)

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-Lane Highways (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

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

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

Sl. No.	Item	Clause referred in Manual	Provision as per Manual	Modified Provision
1	Typical Cross section	IRC: SP: 84-2019	Typical Cross Section	Typical Cross section shall be as per Manual

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

(ii) 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.

(iii) 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 wilful 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, approache	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhrc.com/pavement/lttp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2

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

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

	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricte	Daily			7- 15 days	IRC:82-2015

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

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

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

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

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

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

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

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

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected. 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	
3	**Single Longitudinal Crack intersecting with one or more joints**	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.5 mm, discernable from slow moving vehicle	Seal with epoxy, if L > 1 m. Within 7 days	Staple or dowel bar retrofit. Within 15days

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 > l m. Within 15 days	-
			3	w = 3.0 - 6.0 mm	Staple, if L > 1 m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	w = 6.0 - 12.0 mm, usually associated with spalling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications -

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						See Para 5.6.4 Within 15 days
4	**Multiple Cracks intersecting with one or morejoints**	**w = width of crack**	0	Nil, not discernible	No Action	-
			1	w < 0.2 mm, hair cracks	Seal, and stitch if L > l m. Within 15 days	
			2	w = 0.2 - 0.5 mm. discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Full depth repair within 15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			4	w = 3.0 - 6.0 mm panel broken into 2 or 3pieces		
			5	w > 6 mm and/or 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		
5	**Corner Break**	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	w < 1.5 mm; L < 0.6 m, only one corner broken		
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008) Within 15 days	Full depth repair
			4	w > 1.5 mm; L > 0.6 m or three corners broken		
			5	ree 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
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length(m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within30days
			5	w > 3 mm, L > 3 m/m^2 and deformation		

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

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

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	
10	**Popout (Small Hole), Pothole Refer Para 8.4**	n = number/m^2 d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m^2	No action.	Not Applicable
			1	d=50-100mm;h<50mm;n<1 per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	
			2	d=50-100mm;h>50mm;n<1 per 5 m^2		

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

Joint Defects						
11	**Joint Seal Defects**	loss or damage L = Length as % total joint length	0	Difficult to discern.	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	Discernible, L< 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
			3	Notable. L > 25% insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	
			5	Severe; w > 3 mm negligible protection against ingress of water	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 (or Stepping)**	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 diamond grinding	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 grouting and raising sunken slab	
14	**Blowup or Buckling**	h = vertical displacement from normal profile	0	Nil, not discernible	**Short Term**	**Long Term**
			1	h < 6 mm	No Action	
			2	h = 6 - 12 mm	Install Signs to Warn Traffic	

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

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

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

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

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

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

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

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

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

		Initial and Minimum Performance for Night Visibility under wet condition(Retro reflectivity):					

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		Initial 7 days Retro reflectivity: 100 mcd/m²/lux Minimum Threshold Level: 50 mcd/m²/lux					
	Skid Resistance	Initial and Minimum performance for Skid Resistance: Initial (7days): 55BPN Min. Threshold: 44BPN *Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
Road Signs	Shape and Position	Shape and Position as per IRC:67- 2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each	hange of ignboard	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 postsigns) 1 Month in case of Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014,IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail asintended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84 - 2014

Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84 - 2014, IRC:119-2015
End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC:SP:84 - 2014,

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

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

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

Table 4: Maintenance Criteria for Structures and Culverts:

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

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

	Rusted reinforcement	Not more than 0.25 sq.m	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sq.m					
	Delamination	Not more than 0.50 sq.m					
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, 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 in every 10 years for spans more	Load test method	Carry out major rehabilitation works on bridge to retain original design loads 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 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal	No dust or debris in expansion joint	Monthly	Detailed condition survey as per IRC SP:35-1990 using	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specification s 2600 and

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

	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810and IRC SP: 40-199.
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3	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 or2	IRC: SP 40-1993 and IRC:SP:13-2004.

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

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

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

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 requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g) [Toll Plaza]		
(h)	**Other Project Facilities and Approach roads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty eight) hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b) Foundations		

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

(ii)	Landslides requiring clearance	12 (twelve) hours

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

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

Schedule - F

(See Clause 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) License for use of explosives;

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

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

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

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

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

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

(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)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

[Managing Director,

National Highway & Infrastructure Development Corporation Ltd,

New Delhi]

WHEREAS:

(A) _____ [name and address of contractor] (hereinafter called the "Contractor") and [name and address of the authority], (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "EPC") basis, subject to and in accordance with the provisions of the Agreement

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

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of

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

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

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

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

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

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

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

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

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

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

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

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.

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Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

[Managing Director,

National Highway & Infrastructure Development Corporation Ltd,
New Delhi]

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing *@Bank Rate + 3%* advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. cr. (Rupees ---------- crore) and the amount of this Guarantee is Rs. ---------- cr. (Rupees --------- crore) (the **"Guarantee Amount")$.**

(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 Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be

the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any 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 authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be

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

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

Signed and sealed this ..... day of..... , 20..... at .....
SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by: (Signature)

(Name) (Designation)

(Code Number)

(Address)

NOTES:

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

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

SCHEDULE -H

See Clauses10.1 (iv) and 19.3

Contract Price Weightages

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

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

SL. No	Item	Weightage in % to the contract price	Stage for payment	% weightage to particular Item
1	Road Works including culverts, Minor Bridges, Underpasses, approaches to ROB/RUB/Major Bridges, / Structures but excluding service Road	65.31%	**A. New 2 Lane realignment/bypass**	
			1) Earthwork up to top of subgrade	
			a) Balance Subgrade including shoulders	7.56%
			2) Granular Work (sub-base, base, shoulder)	
			a) Balance GSB & Shoulder	3.54%
			c) Balance WMM & Shoulder	4.73%
			3) Bituminous Work	
			a) DBM Layer with shoulders	8.21%
			b) BC Layer with shoulders	15.14%
			B. Widening of existing 2 lane alignment	
			1) Earthwork up to top of subgrade	
			a) Balance Subgrade including shoulders	3.98%
			2) Granular Work(sub-base, base, shoulder)	
			a) Balance GSB & Shoulder	4.06%
			c) Balance WMM & Shoulder	5.19%
			3) Bituminous Work	
			a) DBM Layer with shoulders	13.00%
			b) BC Layer with shoulders	15.14%
			4) Rectification of Existing work and Other Works	2.28%
			5) Widening & repair of minor bridges	2.96%

			C. New Culverts, Minor Bridges, underpasses, Overpasses on existing road, realignments, bypasses	
			1) Culverts	
			(a) Culvert Balance work (Box Part)	3.50%
			(b) Culvert Balance work (Protection Work)	2.96%
			2) Minor Bridges	
			(a) Re-construction/New Construction of Minor Bridge excluding Protection works	2.80%
			(b) Construction of Protection work of New Minor Bridges	4.10%
			(c) Raising of Existing Minor Bridges by Reconstruction excluding Protection works	0.68%
			(d) Construction of Protection works of Reconstructed/Raised Existing Minor Bridges	0.17%
2	Major Bridge Works	9.56%	A. Repair/Rehabilitation of Major Bridge	2.63%
			B. Construction of New Major Bridge	
			1) Foundation	0.00%
			2) Sub Structure	0.00%
			3) Superstructure.	67.94%
			D. Construction of new ROB	
			1) Foundation of Protection works	8.44%
			2) Sub Structure of Protection works	4.27%
			3) Superstructure	16.72%
3	Other Works	25.13%	1) Construction of Service Road complete in all respects	22.86%
			2) Toll Plaza	16.36%
			3) Road Side Drain	15.74%
			4) Road and Traffic Sign, Markings, Traffic Blinkers LED, Delineators, Stud, KM Stones, Boundary Stones, safety Devices, Crash Barriers, Bus and Truck Lay Bye etc.	39.64%
			5) Others (footpath& Separators, Median Kerb, Channel Kerb, Median Filling, Traffic Island)	1.43%
			6) Median and Road Side Plantation	0.71%
			7) Protection Works	0.21%

			8) Site Clearance	1.19%
			9)Major Junctions	0.18%
			10) Minor Junctions	1.68%

1.3 Procedure of estimating the value of work done

1.3.1 Road works.

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

Table 1.3.1

Stage for payment	Percentage weightage to Particular Item	Payment Procedure
A. New 2 Lane re-alignment/bypass		Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in complete length or minimum 1 (One) Km length
1. Earthwork up to top of the subgrade i/c construction of new subgrade and completion of incomplete subgrade	7.56%	
2. Granular Sub Base layer i/c construction of new GSB layer and completion of incomplete GSB with shoulders	3.54%	
3. Wet Mix Macadam i/c construction of new WMM layer and completion of incomplete WMM with shoulders	4.73%	
4. Construction of Dense Bituminous Macadam (DBM) Layer with shoulders	8.21%	
5. Construction of Bituminous Concrete (BC) Layer with shoulders	15.14%	
B. Widening of existing 2 lane alignment		
1. Earthwork up to top of the subgrade i/c construction of new subgrade and completion of incomplete subgrade	3.98%	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in complete length or minimum 1 (One) Km length
2. Granular Sub Base layer i/c construction of new GSB layer and completion of incomplete GSB with shoulders	4.06%	
3. Wet Mix Macadam i/c construction of new WMM layer and completion of incomplete WMM with shoulders	5.19%	
4. Construction of Dense Bituminous Macadam (DBM) Layer with shoulders	13.00%	
5. Construction of Bituminous Concrete (BC) Layer with shoulders	15.14%	
B.1 Rectification of already executed Road works including maintenance of side slopes and turfing; completion of balance median kerb, channel kerb, median filling and providing granular shoulders for the entire stretch	2.28%	Unit of measurement is linear length. Payment of each stage shall be made on pro-rata basis on completion of a stage in complete length or minimum 1 (One) Km length
B.2 Widening & repair of Existing minor bridges	2.96%	Upon completion of repair work of individual minor bridges Payment shall be on

		pro-rata basis based on total linear length of bridge
C) Reconstruction and New Culverts on existing road, realignment		
1. Construction of the Balance Box Part of the Culvert to complete the 4 lane culvert in all respects	3.50%	Cost of each culvert shall be determined on pro-rata basis with respect to the total width of Balance culvert. Payment shall be made on the completion of minimum 01 culvert in 4 lane width
2. Construction of Balance Protection works of the Culvert in all respects	2.96%	Cost of each culvert shall be determined on pro-rata basis with respect to the total nos. of Balance Protection works. Payment shall be made on the completion of Protection work of minimum 01 culvert in 4 lane width
D) New Minor bridges		
1. Re Construction/New Construction of Minor Bridges in all respects excluding Protection Works	2.80%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of the minor bridge except Protection works
2. Construction of Protection works of New Minor Bridges complete in all respects	4.10%	Cost of each Protection work shall be determined on pro-rata basis with respect to the total nos. of Balance Protection works. Payment shall be made on the completion of Protection work of minimum 01 Bridge
E) Raising of Existing minor bridges by Reconstruction		
1. Raising of Existing Minor Bridges by Reconstruction complete in all respects excluding Protection Works	0.68%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of the minor bridge except Protection works
2. Construction of Protection works of Reconstructed/Raised Existing Minor Bridges complete in all respects	0.17%	Cost of each Protection work shall be determined on pro-rata basis with respect to the total nos. of Balance Protection works. Payment shall be made on the completion of Protection work of minimum 01 Bridge

@.Forexample,ifthetotallengthofbituminousworktobedoneis100km, the cost per km of bituminous work shall be determined as follows:

Cost per km=P x weightage for road work x weightage for bituminous works (1/L)

Where P= Contract Price

L = Total length in km

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

1.3.2 Major Bridge

Procedure for estimating the value of Major Bridges shall be done as stated in Table 1.3.2

Stage for payment	**Percentage weightage to Particular Item**	**Payment Procedure**
A. Repair/Rehabilitation of Existing Major Bridge	2.63%	Up on completion of repair work of individual bridges. Payment shall be on pro-rata basis based on total linear length of bridge.
B. Construction of New Major Bridge		
1. Foundation	0.00%	Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures and unit of measurement is individual span. 80% Payment shall be made on completion of structure part of a span and 20% shall be paid on the completion of all other miscellaneous and finishing works.
2. Sub structure	0.00%	
3. Super Structure	67.94%	
C. Construction of ROB		
1. Foundation of Retaining wall complete in all respects	8.44%	Cost of each structure shall be determined on pro rata basis in respect to the total linear length (m) of all the structures. Payment shall be made on completion of each stage of the structure as per the weightage given in this table.
2. Sub Structure of Retaining wall complete in all respects	4.27%	
3. Super Structure of ROB and all other miscellaneous works complete in all respects	16.72%	

1.3.3 Other works.

Procedure for estimating the value of other works done shall be as stated in table 1.3.3.

Table1.3.2

Stage for payment	Percentage weightage to Particular Item	Payment Procedure
1) Construction of Service Road complete in all respects	22.86%	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 than10 % (ten per cent) of the total length.
2) Toll Plaza	16.36%	Payment shall be made for completed Items.
3) Road Side Drain	15.74%	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 than10 % (ten per cent) of the total length.
4) Road and Traffic Sign, Markings, Traffic Blinkers LED, Delineators, Stud, KM Stones, Boundary Stones, safety Devices, Crash Barriers, Bus and Truck Lay Bye etc.	39.64%	Payment shall be made for for completion of 10% of the scope
5) Others (footpath& Separators, Traffic Island)	1.43%	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 than10 % (ten per cent) of the total length.
6) Median and Road Side Plantation	0.71%	
7) Protection Works	0.21%	Payment shall be made for completed Items.
8) Site Clearance	1.19%	
9)Major Junctions	0.18%	Unit of measurement is number. Payment shall be made on pro rata basis on completion of a stage in a length of not less than10 % (ten per cent) of the total number of Junctions.
10) Minor Junctions	1.68%	

2. Procedure for payment for Maintenance

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

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

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"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".

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.

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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.]

A minimum list of the drawings of the various components / elements of the Project

Highway and project facilities required to be submitted by the Contractors given below:

a) Drawings of horizontal alignment, vertical profile and detailed cross sections.

b) Drawings of all Major and Minor Bridges.

c) Drawings of cross-drainage works.

d) Drawings of Major intersections.

e) Drawing of Toll Plaza layout and building.

f) Drawing of bus-bay and bus shelters.

g) Drawing of road furniture including traffic signage, marking, safety barriers etc.

h) Drawing of traffic diversion plan.

i) Drawing as per instruction of Authority's Engineer.

j) General arrangement showing area of base camp and administrative block

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. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **190th** 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 **325th** 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. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **465th** 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 Completion Date

(i) The Scheduled Completion Date shall occur on the **550th** day from the Appointed Date.

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

6. Extension of time

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

Schedule - K

(See Clause 12.1 (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 equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.

(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.

The Contractor will carry out tests with following equipment in the presence of Authority's Engineer.

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.

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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 [construction of the ****section (km ** to km **) of National Highway No. ***] (the "Project Highway") on Engineering,..... Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of 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 Paragraph 2.

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/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

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

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

Where,

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

M1= Monthly lump-sum payment in accordance para 1.2 above of this Schedule M2= Monthly lump-sum payment in accordance para 1.2 above of this Schedule L1= Non-complying length L = Total length of the road,

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

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

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

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

(i) The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority'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 [Two-Laning] of the **** section (km ** to km **) of National Highway No. ** in the State of *** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

- 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 upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

(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 Programme 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 Clause 14.5.

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 Clause 18.5.

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 to the

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.

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

Schedule - O

(See Clauses 19.4 (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 upto the last claim:

i. For the Works executed (excluding Change of Scope orders);

ii. For Change of Scope Orders, and

iii. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

(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 A

greement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be not less than: Rs. [*****]

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

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

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

4. Insurance to be in joint names

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

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

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

2. Visual and physical test:

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

DRAFT

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 (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

"Four Laning of NH-52 (New-NH 15) from end of Biswanath Chariali by-pass (Km. 208.000) to Gohpur (Km. 265.500) (Total Length =57.5 Km) in the state of Asaam on EPC mode".