Schedules

SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

1.1 Site of the Project Shall include the land, Buildings, Structures and road works as described in Annex-1 of the Schedule-A

1.2 The dates of providing 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 and road works, Tree 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 are specified in Annex-III. In the case of section where no Modification in the alignment of the project is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be modified.

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

Annex - I

(Schedule - A)

Site

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

1. Site

- The Project Site falls at different chainages between Agartala to Sabroom.
- The design length of project road is 72.472 km.

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

The Site of the Project highway comprises the land as described below –

Si. No.	Chainage (km)		Length (Km)	Existing Right of way (m)	Remarks
	From	To			
1	46+980	47+940	0.960	20 m (minimum)	Land details are given in Annexure-II of Schedule A
2	55+000	72+900	17.900	20 m	
3	72+960	77+900	4.940	20 m	
4	77+930	88+700	10.770	20 m	
5	88+700	88+790	0.090	20 m	
6	88+790	88+900	0.110	20 m	
7	88+900	89+200	0.300	24 m	
8	89+200	95+050	5.850	20 m	
9	95+050	95+930	0.880	20 m (minimum)	
10	95+930	96+150	0.220	24 m	
11	96+500	99+700	3.200	20 m	
12	99+760	100+100	0.340	20 m	
13	100+160	100+200	0.040	20 m	
14	100+260	103+190	2.930	20 m	
15	103+310	104+300	0.990	20 m	
16	104+340	107+960	3.620	20 m	
17	108+000	113+500	5.500	20 m	
18	113+540	114+680	1.140	20 m	
19	114+680	114+930	0.250	24 m	
20	114+930	127+372	12.442	20 m	
	Total		**72.472**		

1. *Carriageway*

The present carriageway of the Project Highway is two Lane with paved shoulders. The type of the existing pavement is flexible.

2. *Major Bridges*

The Site includes the following Major Bridge

Sr No.	Chainage	Span Arrangement/ Length	Total Width	Type of Structure
1	82+825	3 X 22.0 = 66.00	12.00	RCC T Beam
2	96+835	3 X 25.60 = 76.80	8.00	RCC Box Girder
3	113+045	3 X 35.0 = 105.00	12.00	PSC Box Girder
4	120+700	2 x 43.0 = 86.00	12.00	PSC Box Girder

5 Road over-Bridge (ROB)/ Road Under-Bridge (RUB)

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

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with Span length (m)	Width (m)	ROB/ RUB
		Foundation	Super Structure			
Nil						

6 Grade separators

The Site includes the following grade separators:

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with Span length (m)	Width (m)
		Foundation	Super Structure		
Nil					

7 Minor Bridge

The Site includes the following minor Bridge:

Sr No.	Chainage	Span Arrangement (m)	Total Width (m)
1	56+300	1 x 9.30	12.00
2	57+160	6.70+6.70+7.00 = 20.40	12.00
3	58+120	1 x 7.10	8.50
4	59+855	1 x 16.50	8.40
5	61+740	1x 21.30	8.50
6	65+045	6.80+6.80= 13.60	12.00
7	71+155	6.60+6.70=13.30	11.90

8	74+235	16.30+16.4+16.30=49.0	8.60
9	75+875	1 x 21.60	8.40
10	77+650	1x20.50	8.40
11	80+583	1x 15.0	12.00
12	81+985	6.70+6.50+6.80=20.40	12.00
13	86+285	1x 30.90	13.00
14	86+550	6.80+6.50+7.00=20.30	12.00
15	86+920	6.90+6.30+6.60=19.80	12.00
16	88+810	1x31.10	13.00
17	95+065	2x6.8=13.6	12.00
18	96+730	1x31.00	12.20
19	97+292	1x36	13.00
20	98+296	1x21.50	12.00
21	99+255	1x35.0	12.00
22	105+020	1x6.3	12.00
23	106+700	1x7.3	12.00
24	107+250	1x6.8	12.00
25	110+130	1x6.90	12.00
26	112+660	1x7.20	11.00
27	114+300	1x36.00	12.90
28	118+335	1x36.00	12.90
29	120+095	1x7.1	12.00
30	122+410	1x36.00	12.9
31	122+630	11.10+11.10+11.10=33.30	12
32	123+510	1 x 6.1	11.8
33	124+250	1 x 6.8	11.9

8 Railway level crossings

The Site includes the following railway level crossings:

Sl. No.	Location (km)	Remarks
Nil		

9 Underpasses (vehicular, Non-vehicular)

The Site includes the following underpasses:

Sl. No.	Chainage (km)	Type of Structure	No. of Spans with Span length (m)	Width (m) / Remarks

Nil

10 Culverts:

The Site has the following culverts:

Sr No.	Chainage	Type of structure	Span Arrangement Nos X (Length/No. of pipes)		
			No	Vent Width (m) (Clear)	Total Width (m)
1	55+117	SLAB	1	3.9	12
2	55+820	SLAB	1	1.98	12
3	56+995	SLAB	1	3.85	12
4	57+300	SLAB	1	2	12
5	57+505	BOX	1	1.5	12
6	57+650	SLAB	1	4.77	12
7	58+065	BOX	1	1.5	12
8	60+460	BOX	1	2	12
9	60+812	PIPE	7	1.2	12
10	60+888	BOX	1	1.5	12
11	61+840	BOX	1	1.9	12
12	61+977	SLAB	1	4.1	12
13	62+100	BOX	1	1.5	12
14	62+223	BOX	1	1.5	12
15	62+365	BOX	1	1.5	12
16	63+670	SLAB	1	4.04	12
17	63+967	BOX	1	3.8	12
18	64+104	BOX	1	3	12
19	64+830	BOX	1	4.5	12
20	65+370	PIPE	6	1.2	12
21	65+445	PIPE	3	1.2	12
22	66+850	BOX	1	5	12
23	67+640	PIPE	2	1.2	12
24	68+492	BOX	1	2.5	12
25	70+207	SLAB	1	3.4	12
26	72+320	PIPE	2	1.2	12
27	72+760	PIPE	2	1.2	12
28	73+060	PIPE	2	1.2	12
29	73+920	SLAB	1	4.8	12
30	81+060	PIPE	2	1.2	12

31	81+325	BOX	1	1.5	12
32	81+610	SLAB	1	1.8	12
33	81+805	SLAB	1	2.1	12
34	82+113	PIPE	7	1.2	12
35	83+820	PIPE	2	1.2	12
36	84+480	PIPE	2	1.2	12
37	88+405	PIPE	9	1.2	12
38	90+180	PIPE	2	1.2	12
39	91+620	BOX	1	4.4	12
40	92+287	BOX	1	1.5	12
41	93+060	BOX	1	5	12
42	94+800	PIPE	2	1.2	12
43	97+510	SLAB	1	4.35	12
44	97+780	PIPE	2	1.2	12
45	101+100	PIPE	2	1.2	12
46	102+210	BOX	1	1.5	12
47	102+380	PIPE	2	1.2	12
48	103+200	BOX	1	1.5	12
49	103+250	PIPE	4	1.2	12
50	104+750	BOX	1	4	12
51	105+340	BOX	1	1.5	12
52	106+528	BOX	1	1.5	12
53	106+650	BOX	1	1.5	12
54	107+430	BOX	1	1.5	12
55	108+280	BOX	1	1.5	12
56	108+540	PIPE	2	1.2	12
57	109+505	BOX	1	1.5	12
58	109+600	BOX	1	1.5	12
59	109+850	PIPE	4	1.2	12
60	110+235	BOX	1	1.5	12
61	110+800	SLAB	1	1.35	12
62	111+035	SLAB	1	1.3	12
63	111+285	SLAB	1	1.3	12
64	112+275	SLAB	1	1.3	12
65	112+830	SLAB	1	1.3	12
66	113+660	PIPE	2	1.2	12
67	114+145	SLAB	1	5.3	12
68	114+565	SLAB	1	1.25	12
69	115+700	PIPE	2	1.2	12
70	116+800	PIPE	2	1.2	12

71	117+000	PIPE	2	1.2	12
72	117+410	PIPE	2	1.2	12
73	117+700	PIPE	2	1.2	12
74	117+810	PIPE	2	1.2	12
75	118+196	BOX	1	2	12
76	118+720	PIPE	3	0.9	12
77	118+830	SLAB	1	1.3	12
78	118+910	SLAB	1	4.25	12
79	118+996	SLAB	1	1.4	12
80	119+135	BOX	1	1.5	12
81	119+325	BOX	1	6	12
82	119+430	BOX	1	1.3	12
83	119+505	SLAB	1	1.8	12
84	119+580	SLAB	1	3.6	12
85	119+795	SLAB	1	1.4	12
86	121+300	PIPE	2	1.2	12
87	121+700	SLAB	1	1.4	12
88	121+930	PIPE	2	1.2	12
89	122+300	PIPE	2	1.2	12
90	122+535	SLAB	1	1.4	12
91	123+000	SLAB	1	1.5	12
92	123+060	BOX	1	1.5	12
93	123+290	BOX	1	1.9	12
94	123+385	BOX	1	1.4	12
95	123+657	SLAB	1	1.4	12
96	124+125	SLAB	1	1.4	12
97	125+170	SLAB	1	1.4	12
98	125+480	PIPE	2	1.2	12

11 Bus Bays

The details of bus bays at site are as follows:

SL.NO	Ex. Chainage	LHS	RHS	Remark
Nil				

12 Truck Lay byes

The details of truck lay byes are as follows:

Sl. No.	Chainage (Km)	Length (m)	Left Hand Side	Right Hand Side

Nil

13 Road side drains

The details of the roadside drains are as follows:

Sl. No.	Location (km)		Type	
	From	To	Masonry/cc (Pucca)	Earthen (Kutcha)
250m lined drain and 25347m V-type drain				

14 Major junctions

The detail of major junction are as follows:

Sl. No.	Location (Km)		At grade	Type of intersection	Cross Road		
	From	To			Side	Leading to	Width
1	72.535		At Grade	3 legged	RHS	Belonia	7
2	83.010		At Grade	3 legged	RHS	Belonia	7

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

15 Minor junctions

The details of the minor junctions are as follows:-

Sl. No.	Design Chainage (Km)	Side	Leading to
1	47+450	RHS	Dwajanagar Police Line
2	55+000	LHS	
3	55+240	LHS	
4	55+590	RHS	
5	55+875	LHS	
6	55+980	RHS	
7	50+360	RHS	
8	57+345	LHS	Nathapara Village
9	57+435	LHS	Chandrapur Village
10	57+580	LHS	
11	57+770	BHS	
12	57+960	LHS	
13	58+000	LHS	
14	58+435	RHS	
15	58+970	RHS	Holakhat
16	60+075	RHS	
17	60+225	LHS	Dataram Village
18	60+845	RHS	Gangachhera Village
19	61+665	LHS	
20	61+700	RHS	Nintilla
21	63+215	LHS	Sukanchari

Sl. No.	Design Chainage (Km)	Side	Leading to
22	63+650	RHS	Kalabandha
23	63+800	RHS	
24	66+285	LHS	
25	68+700	LHS	
26	69+025	RHS	Southern Bagadad
27	69+280	RHS	Garo Colony
28	69+410	LHS	Takama Village
29	70+500	RHS	
30	71+000	LHS	
31	71+675	RHS	Belonia
32	72+300	RHS	
33	72+535	RHS	
34	74+275	LHS	Suntampara Village
35	76+100	LHS	
36	77+180	LHS	
37	78+075	RHS	
38	81+770	RHS	
39	81+890	RHS	
40	83+010	LHS	
41	85+700	RHS	
42	86+485	RHS	
43	87+540	RHS	
44	87+680	LHS	Laxmisara
45	87+840	RHS	Jangannathpada
46	89+225	RHS	Latuatila Village
47	89+800	LHS	
48	90+815	RHS	Magpara Village
49	90+930	LHS	Kalishimukha Village
50	91+220	RHS	
51	92+425	RHS	
52	97+125	RHS	Pilak
53	97+385	RHS	Shyam Sundapara
54	97+450	LHS	Debdaru Village
55	97+840	LHS	
56	104+980	RHS	Subho sadbari Village
57	106+720	LHS	High School
58	107+655	RHS	Kalachara Village
59	108+590	LHS	Maira Village
60	108+925	RHS	Kali Mandir
61	109+100	LHS	Kalacharra Village
62	109+335	LHS	
63	114+385	RHS	
64	114+820	RHS	
65	115+235	LHS	
66	115+300	RHS	
67	115+660	RHS	
68	116+090	RHS	Manu Ghat
69	116+910	LHS	Magurcherra

Sl. No.	Design Chainage (Km)	Side	Leading to
70	117+870	LHS	Banikpara
71	121+650	LHS	
72	124+790	BHS	
73	125+865	RHS	

16 Bypasses

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

Sl. No.	Name of Bypass (town)	Chainage (Km)		Bypass Length (Km)
		From	To	
Nil				

17 Other structures - Nil

Annex - II
(Schedule-A)

Dates for providing Right of Way of construction Zone

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

Sl. No.	Chainage (km)		Length (Km)	Proposed Right of way (m)	Date of providing RoW
	From	To			
1	46+980	47+940	0.960	20 m	On Appointed Date.
2	55+000	72+900	17.900	20 m	
3	72+960	77+900	4.940	20 m	
4	77+930	88+700	10.770	20 m	
5	88+700	88+790	0.090	20 m	
6	88+790	88+900	0.110	20 m	
7	88+900	89+200	0.300	24 m	
8	89+200	95+050	5.850	20 m	
9	95+050	95+930	0.880	20 m	
10	95+930	96+150	0.220	24 m	
11	96+500	99+700	3.200	20 m	
12	99+760	100+100	0.340	20 m	
13	100+160	100+200	0.040	20 m	
14	100+260	103+190	2.930	20 m	
15	103+310	104+300	0.990	20 m	
16	104+340	107+960	3.620	20 m	
17	108+000	113+500	5.500	20 m	
18	113+540	114+680	1.140	20 m	
19	114+680	114+930	0.250	24 m	
20	114+930	127+372	12.442	20 m	
	Total		**72.472**		

Annex - III
(Schedule-A)

Alignment Plans

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

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

Annex - IV
(Schedule-A)

Environment Clearances

Not Applicable

Schedules-B

SCHEDULE - B
(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

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

2 Rehabilitation and Augmentation

[Rehabilitation and Augmentation] shall include (Two laning / Four laning and strengthening of existing pavement) of the Project highway as described in Annexure I of this schedule-B & in schedule-C.

3 Specifications and Standards

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

Annex-I
(Schedule-B)

1. Description of project highway

(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura on EPC mode.

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

(ii) **Width of Carriageway**

(a) The paved carriageway shall be 7m (seven) wide with 1.5 m wide paved shoulder on either side of carriage way in accordance with the typical cross section's drawings in the Manual (refer MoRT&H circular dated 17th July 2020).

2. Geometric design and general features

(i) General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the two-lane manual.

(ii) Design speed

The design speed shall be 100kmph (Ruling) /80kmph (minimum) for Plain/Rolling terrain & 60kmph (Ruling) /40kmph (minimum) for Mountainous/steep terrain as per the section 2 of two-lane manual IRC - SP: 73:2018.

(iii) Improvement of the existing road geometrics

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

Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for Plain / Rolling terrain to the extent land is available

(iv) Right of way

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

(v) Type of shoulders

Earthen shoulders of 1m width shall be provided on either side of the pavement in entire project stretch excluding structures in accordance with typical cross section referred in manual and earthen shoulders shall be covered with 150 mm thick compacted layer of granular material of CBR not less than 30%.

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

Clearing and Grubbing of road land shall be executed as per the provision of relevant manual.
Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the provision of two-lane manual / four lane manual.

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			

(vi) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as the provision of relevant Manual.
(b) Lateral clearance: The width of the opening at the overpasses shall be as follows:

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

(vii) Service roads

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

Sl. No.	Location of Service Road (from km to km)		Right hand side (RHS)/Left hand side (LHS)/ or Both sides	Length (km) of Service Road
	From	To		
Nil				

(IX) Grade separated structures

(a) Grade separated structures shall be provided as per provision of the relevant Manual. The requisite particulars are given below:
[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach Gradient	Remarks, If any
Nil					

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows: [Refer to the provision of relevant Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing level, raised or lowered]

Sl. No.	Location	Type of structure Length (m)	Cross road at			Remarks, If any
			Existing level	Raised Level	Lowered Level	
Nil						

(X) Cattle and pedestrian underpass /overpass

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

[Refer to the provision of relevant Manual and specify the requirements of Cattle and pedestrian underpass/ overpass]

Sl. No.	Location	Type of Crossing

Nil

(xi) Typical cross section of project highway.

TCS Type	Description
TCS-1	TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY WITH PAVED SHOULDER IN RURAL AREA APPLICABLE FOR PLAIN/ROLLING TERRAIN (OVERLAY WITH DBM 60 MM AND BC 40 MM)
TCS-2	TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY AT OVER TOPPED LOCATION IN BUILTUP AREA.
TCS-2 A	TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY WITH PAVED SHOULDER AT OVER TOPPED LOCATION IN RURAL AREA
TCS-3	TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY WITH PAVED SHOULDER at the damaged stretch.
TCS-4	TYPICAL CROSS SECTION OF 2-LANE CARRIAGEWAY & 7.0 m slip road both side (7m+7m= 14m) in RURAL AREA APPLICABLE FOR PLAIN/ROLLING TERRAIN (OVERLAY WITH DBM 60MM AND BC 40MM)

Design Chainage (km)		Length (km)	TCS Type
From	To		
46+980	47+940	0.960	TCS-2A
55+000	72+900	17.900	TCS-1
72+960	77+900	4.940	TCS-1
77+930	88+700	10.770	TCS-1
88+700	88+790	0.090	TCS-3/3A
88+790	88+900	0.110	TCS-1
88+900	89+200	0.300	TCS-4
89+200	95+050	5.850	TCS-1
95+050	95+930	0.880	TCS-2A
95+930	96+150	0.220	TCS-1
96+500	99+700	3.200	TCS-1
99+760	100+100	0.340	TCS-1
100+160	100+200	0.040	TCS-1
100+260	103+190	2.930	TCS-1
103+310	104+300	0.990	TCS-1
104+340	107+960	3.620	TCS-1
108+000	113+500	5.500	TCS-1
113+540	114+680	1.140	TCS-1
114+680	114+930	0.250	TCS-4
114+930	127+372	12.442	TCS-1

3. Intersection and grade Separators

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

[Refer to the provision of relevant Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement]

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

(i) At-Grade Intersections:

Sl. No.	Design Chainage (Km)	Side	Type of Junction
1	55+000	LHS	3 legged
2	55+240	LHS	3 legged
3	55+590	RHS	3 legged
4	55+875	LHS	3 legged
5	55+980	RHS	3 legged
6	50+360	RHS	3 legged
7	57+345	LHS	3 legged
8	57+435	LHS	3 legged
9	57+580	LHS	3 legged
10	57+770	BHS	3 legged
11	57+960	LHS	3 legged
12	58+000	LHS	3 legged
13	58+435	RHS	3 legged
14	58+970	RHS	3 legged
15	60+075	RHS	3 legged
16	60+225	LHS	3 legged
17	60+845	RHS	3 legged
18	61+665	LHS	3 legged
19	61+700	RHS	3 legged
20	63+215	LHS	3 legged
21	63+650	RHS	3 legged
22	63+800	RHS	3 legged
23	66+285	LHS	3 legged
24	68+700	LHS	3 legged
25	69+025	RHS	3 legged
26	69+280	RHS	3 legged
27	69+410	LHS	3 legged
28	70+500	RHS	3 legged
29	71+000	LHS	3 legged
30	71+675	RHS	3 legged
31	72+300	RHS	3 legged
32	72+535	RHS	3 legged
33	74+275	LHS	3 legged
34	76+100	LHS	3 legged
35	77+180	LHS	3 legged
36	78+075	RHS	3 legged
37	81+770	RHS	3 legged
38	81+890	RHS	3 legged
39	83+010	LHS	3 legged
40	85+700	RHS	3 legged
41	86+485	RHS	3 legged
42	87+540	RHS	3 legged
43	87+680	LHS	3 legged
44	87+840	RHS	3 legged
45	89+225	RHS	3 legged
46	89+800	LHS	3 legged
47	90+815	RHS	3 legged
48	90+930	LHS	3 legged
49	91+220	RHS	3 legged
50	92+425	RHS	3 legged
51	97+125	RHS	3 legged
52	97+385	RHS	3 legged
53	97+450	LHS	3 legged

Sl. No.	Design Chainage (Km)	Side	Type of Junction
54	97+840	LHS	3 legged
55	104+980	RHS	3 legged
56	106+720	LHS	3 legged
57	107+655	RHS	3 legged
58	108+590	LHS	3 legged
59	108+925	RHS	3 legged
60	109+100	LHS	3 legged
61	109+335	LHS	3 legged
62	114+385	RHS	3 legged
63	114+820	RHS	3 legged
64	115+235	LHS	3 legged
65	115+300	RHS	3 legged
66	115+660	RHS	3 legged
67	116+090	RHS	3 legged
68	116+910	LHS	3 legged
69	117+870	LHS	3 legged
70	121+650	LHS	3 legged
71	124+790	BHS	3 legged
72	125+865	RHS	3 legged

Note: All the major and minor intersections (not limited to above) shall be developed monolithically with the main highway, to a minimum length of 30 m on the side road or to maintain the tapered length whichever is higher. All the pavement layers as required to maintain the profile of the side road as per the relevant IRC Codes, meeting the FRL of main highway shall be executed. The contractor shall submit a detailed plan & profile for each intersection, for the approval of the Authority's Engineer.

Notwithstanding anything contrary contained in this agreement or the Manual, all the intersections shall be overlaid with the DBM 60 mm & BC 40 mm, maintaining the profile of the side road with the FRL of the main highway.

*(ii) **Grade separated intersection with/without ramps***

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

4. Road Embankment and cut section

(i) 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.

(ii) Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]
The existing road shall be raised in the following sections:

Sl. No.	Chainage (From Km)	Chainage (To Km)	Length (Km) (min)	Extent of raising [Top of finished road level]	Remarks
1	46+980	47+940	0.960	Minimum FRL indicated in the drawings shall be maintained.	Overtopped stretch
2	95+050	95+930	0.880	Minimum FRL indicated in the drawings shall be maintained.	
3.	87+700	87+790	0.090	Minimum FRL indicated in the drawings shall be maintained.	Damaged stretch.

5. Pavement Design

(i) Pavement design shall be carried out in accordance with the provision of relevant Manual.

(ii) Type of pavement: The pavement shall be flexible type for entire length of the project highway including paved shoulders.

(iii) Design requirements [Reconstruction stretches - overtopped stretch (1.840 Km) & damaged stretches (0.090 km)]

a) Design Period and strategy

Flexible pavement for the overtopped stretches and the damaged stretch shall be designed for a minimum design period of 15 years. Stage construction shall not be permitted.

Design Traffic: Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of minimum 20 million standard axles.

#Note: The length indicated for overtopped stretch is the minimum length. Any increase in length up to 10% of the minimum length indicated would not constitute any change in scope.

However, in any case, the proposed pavement design/provisions at main carriageway shall not be less than that given below:

Main new Carriageway (flexible): -

The provisions and minimum thickness of various layers shall be given as:

BC = 40 mm, DBM = 80 mm, WMM =250 mm, GSB = 200 mm. Subgrade = 500 mm

(iv) Strengthening of existing pavement (70.542 Km)

Overlay in total length of 70.542 Km (including structures) over entire existing carriageway and service roads/slip roads over entire width with following provisions shall be adhered with:

Crust Layer	Thickness (min)
Bituminous Concrete (BC)	40 mm
Dense Bituminous Macadam (DBM)	60 mm

Note#: - Before overlaying with DBM & BC, the contractor shall do the profile correction wherever required as per site requirement. First pothole needs to rectified as per IRC Standard except for specified portion.

6 Road Side Drainage

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

a. Open PCC Drain – U Shape

(i) Agartala-Udaipur

Chainage		Length (mtr)	Side
From	To		
26+600	27+100	500	BHS
	Total linear length	500 m	
Total length of drain on both hand sides		**1000 m**	

(ii) Udaipur-Sabroom

Chainage		Length (mtr)	Side
From	To		
55+600	55+900	300	BHS
56+200	56+500	300	BHS
56+500	58+000	1500	BHS
64+200	64+600	400	BHS
74+100	74+375	275	BHS
83+100	83+500	400	BHS
108+700	110+000	1300	BHS
114+400	116+400	2000	BHS
117+100	117+500	400	BHS
95+050	95+930	880	BHS
Total length of drain on both hand sides		**15510 m**	

*Note: Wherever access is required for pedestrians/local residents, suitable RCC slabs shall be provided over the PCC drains to ensure safe and uninterrupted access and this shall not be considered as COS.

b. RCC Cover Drain

(i) Agartala-Udaipur:

Chainage		Length (mtr)	Side
From	To		
20+820	21+620	800.00	LHS
29+750	30+250	500.00	BHS
31+060	31+300	240.00	RHS
31+330	31+830	500.00	BHS
46+980	47+940	960.00	BHS
52+800	54+300	1500.00	BHS
	Total linear length	4500 m	BHS
Total length of drain on both hand sides		**7960 m**	

(ii) Udaipur-Sabroom:

Chainage		Length (mtr)	Side
From	To		
64+800	65+050	250.00	BHS
74+450	75+000	550.00	BHS
82+090	82+840	750.00	BHS
87+300	87+800	500.00	BHS
108+000	108+525	525.00	BHS
123+300	123+450	150.00	RHS
	Total linear length	2725 m	

Total length of drain on both hand sides	**5300 m**	

Note: The above locations/length of roadside drain indicated are minimum. Exact location of drain may be decided in consultation with Authority's Engineer. Any increase in length/qty of roadside drain for each category of drain as per site condition, shall not constitute any positive change in scope up to 10% of the minimum length indicated.

The actual section of the drain shall be designed by the Contractor after carrying out a detailed survey for Plan & Profile as per site conditions or design requirements in accordance with discharge calculated based on the hydrological calculations. The same shall not constitute a Change of Scope, save and except any variations arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

7 Design of structures

(i) General

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

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

[Refer to the provision of relevant Manual and specify the width of carriageway of new bridges and structures of more than 60 (sixty) meter length, if the carriageway width is different from 7.5 (seven point five) meters in the table below.]

Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges

Sl. No.	Bridge (km)	Width of carriage way (m) and Cross – Sectional feature
Nil		

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

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

Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges

Sl. No.	Location (m)	Remarks
Nil		

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

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

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

Sl. No.	Location (m)	Remarks
Nil		

(f) Cross–section of the new culverts and bridges at deck level for the project highway shall confirm to the typical cross- sections given in the provision of manual.

(ii) Culverts:

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

(b) **Reconstruction of Existing Culverts:**

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

l. No.	Culvert location (Chainage Km)	Size/Opening (m)	Remarks
Nil			

(c) Widening of existing culverts

All existing culverts which are not to be reconstructed shall be widened to the road way width of the Project Highway as per the typical cross section given in section 7 of the 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			

(d) Additional new Box culvert 01 No. of size 2m x 2m (Single cell) shall be constructed in between Km 46.980 to Km 47.940 as per location specified by the Authority's Engineer as per site condition.

(e) Repairs/ Replacement of Railing/Crash Barrier, flooring and protection works of the existing culverts shall be undertaken. Any damaged crash barrier/parapet wall/railing need to be rectified.

Painting for all existing crash barrier & railing to be carried out as per relevant manual & specification.

(d) Floor Protection works shall be as specified in the relevant IRC codes and specifications.

(iii) Bridges

(a) Existing Bridges to be re-constructed / Widened

(i) The existing major/minor bridges at the following locations shall be reconstructed as new structures:

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

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

(ii) The following narrow bridges shall be widened:

Sl. No.	Location (km)	Existing Width (m)	Extent of Widening (m)	Cross-section at deck level for widening @
Nil				

(b) Additional New Bridges

(i) Major Bridges: - New major bridge at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Span Arrangement (m)	Total proposed length(m)	Remarks
Nil				

(ii) **Minor Bridges: -** New minor bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Total Length (m)	Remarks
Nil			

(c) The railings of existing bridges shall be Reconstruction by crash barriers at the following locations:

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

Sl. No.	Location at km	Remarks
Nil		

(d) Repairs/ replacements of railing/Crash Barrier of the existing bridges shall be under taken as follows:

Painting for all existing crash barrier, railing & truss to be carried out as per relevant manual & specification. Any damaged crash barrier/parapet wall/railing need to be rectified.

(e) Drainage system for bridge decks

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

(f) Structures in marine environment

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

(iv) Rail- Road Bridges

Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. (Refer to the provision of relevant Manual and specify modification, if any)

(a) Road Over-Bridges

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

Sl. No.	Location of Level crossing (km)	Length of RoB (m) except approach length	Type of structure	Remarks
Nil				

(b) 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 crossings (km)	Number and length of Span (m)
Nil		

(v) Grade separated structures

[Refer to the provision of relevant Manual]

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

(vi) Repairs and strengthening of bridges and structures

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

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

A. Bridges

Sl. No.	Location of bridge (km)	Nature and extent of Repairs / strengthening to be carried out
Nil		

B. ROB / RUB

Sl. No.	Location of ROB/RUB (km)	Nature and Extent of Repairs / Strengthening to be carried out
Nil		

C. Overpass / Underpass and Other structures

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

(vii) List of Major Bridges and Structures

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

Sl. No.	Location (Design Chainage km)
Nil	

(viii) Gabion wall 90m x 3m (Length x Height) with mattress, prefabricated vertical ties and high abrasion resistant polymer coated, strong facia gabion unit, non-woven geotextile etc. shall be provided at Ch. 88+700 to Ch. 88+790. The length & height indicated is minimum (TCS Drawings attached).

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

(i) Traffic control devices like **markers, signs and signal devices used to inform, guide and control traffic** and road safety work like rumble strips, Zebra Crossings etc. shall be provided in accordance with the provision of relevant manual adjacent to built-up areas, junctions and as per site requirements. The minimum quantity for under-mentioned traffic control devices and road safety works is given below:

(a) Transverse Road marking of specified shade/colour- 26796 sqm (Project Length 72.472 Km and all major and minor intersections as per the site condition)

(b) Transverse Rumble Strip (TRA/Thermoplastic) - 17280 sqm (04 sets of road marking strips @ 06 strips/set at both directions of each identified location. Minimum 120 No locations to be provided with rumble strips)

(c) Zebra Crossings - 1050 Sqm (01 set of road marking strips @ 10 strips, each strip 3.00m long and 0.50m wide at each identified location. Minimum 70 No locations to be provided with Zebra Crossings)

(ii) Specification of the reflective sheeting. [Refer to the provision of relevant manual]

9. ROADSIDE FURNITURE

(i) Roadside furniture like Studs and Raised Pavement Markers, Km stones etc shall be provided in accordance with the provisions of Two-lane manual IRC: SP: 73-2018 throughout the stretch and site requirements as detailed out in Schedule-C.

10. Street Lights

Street light at the built-up stretches mentioned below, shall be erected mounted on a steel circular hollow pole of standard specifications for street lighting, 9 m high spaced 40 m apart, 1.8 m overhang on both sides if fixed in the median and on one side if fixed on the footpath, fitted with sodium vapour lamp and fixed firmly in concrete foundation.

S/ No	Chainage (Km)		Length (mtr)	Spacing of poles (mtr)	No. of street lights on one side	No. of street lights on both side	Remarks
	From	To					
1	20+820	21+620	800.00	40.00	21	42	Bishalgarh
2	29+750	30+250	500.00	40.00	14	28	Sepahijala
3	31+060	31+300	240.00	40.00	7	14	Bishramganj
4	31+330	31+830	500.00	40.00	14	28	Bishramganj
5	52+800	53+800	1000.00	40.00	26	52	Matabari
6	64+800	65+050	250.00	40.00	7	14	Garjee

7	74+450	75+000	550.00	40.00	15	30	Manu bazar
8	82+090	82+840	750.00	40.00	20	40	Santirbazar
9	108+000	108+525	525.00	40.00	14	28	Kalacharra
10	123+300	123+450	150.00	40.00	5	10	Jalefa
					Total	**286**	

Note: The above-mentioned chainages & quantity of Street Lights indicated is indicative & minimum. Exact location for erecting the Street Lights may be decided in consultation with Authority's Engineer. Any increase in quantity of Street Lights as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated. All necessary arrangement regarding electrical connection to be done by the Contractor.

11. Compulsory Afforestation

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

12. Hazardous Locations

W-Metal Beam Crash Barriers shall be provided for minimum length of 700 meter. The locations shall be decided by the contractor with the approval of the Authority's Engineer.

Note: The above length of W-type indicated are minimum. Exact location for installing W-type MBCB may be decided in consultation with Authority's Engineer. Any increase in length/qty of W-type MBCB as per site condition, shall not constitute any positive change in scope up to 10% of the minimum length indicated.

13. Overhead Gantries in full width shall be provided at minimum 02 No. locations. The locations shall be decided by the contractor with the approval of the Authority's Engineer.

14. *Change of Scope*

The length of Structures and bridges specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article13.

SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

(a) Roadside furniture;

(b) Pedestrian facilities;

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

(a) Toll Plaza

Toll plaza shall be designed as per the guidelines of manual and it is provided at following locations:

S. No.	Toll Plaza Location (Design Chainage in Km)
Nil	

(b) Road side Furniture

i) Pavement Markings:
Pavement markings include road marking, zebra crossing, etc. along the Project Road.

Markings:

Longitudinal markings
: Centre lines
: Edge lines
: Width transition
: obstructions ahead

Intersections.
: Pedestrian crossings
: Approach to intersection.
: Direction arrows.
: Continuity lines

- Road markings (Centre lines & edge line) shall be provided in entire Project length & at junction locations mentioned in Schedule-B in accordance with the relevant IRC manual.
- Zebra crossings shall be provided at minimum 70 locations in accordance with the relevant IRC manual & in consultation with Authority's Engineer.
- Transverse Road Markings shall be provided at minimum 120

locations in accordance with the relevant IRC manual & in consultation with Authority's Engineer.

ii) **Delineators and Studs:** Delineators, solar powered studs & Road studs with lense reflector on highway shall be provided in accordance with relevant manual.

- Minimum 1400 Nos Road Delineators (road way indicators, hazard markers, object markers) shall be installed at the locations specified by Authority's Engineer,
- Minimum 8000 Nos. Road studs with lense reflector shall be provisioned in the entire Project length.
- Minimum 1500 Nos. solar powered studs shall be provisioned at warning/junction/accident prone locations etc. as per directions of Authority's Engineer.

Note: The above mentioned indicated quantities are minimum. Any increase in the respective quantity of above items as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated.

iii) **Km Stones:** All the damaged Km Stones shall be replaced with the new Km stones meeting the Standards & Specifications in accordance to the relevant manual. However, Minimum 7 Nos. of 5th Km stone, minimum 35 Nos. of ordinary km stone & minimum 180 nos. Hectometer stone shall be newly provided in the Project length in accordance with the relevant IRC manual & in consultation with Authority's Engineer.

Note: The above mentioned indicated quantities of new Km stones are minimum. Any increase in the respective quantity of Km Stones as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated.

iv) **Retro- reflectorized Traffic signs:** Minimum 140 Nos. of 900 mm equilateral triangle sign boards, minimum 140 Nos. of 600 mm circular sign boards & minimum 700 Nos. of 800 x 600 mm rectangular sign boards/Emergency number board shall be provided in accordance with the relevant IRC manual & in consultation with Authority's Engineer.

Note: The above mentioned indicated quantities of Retro-reflective Traffic Signs are minimum. Any increase in the respective quantity of Retro-reflective Traffic Signs as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated.

v) **Retro Reflective Tapes:** Minimum 2000 m of Retro-reflective tapes at the specified locations by the Authority's Engineer shall be provided in accordance with the relevant IRC manual & in consultation with Authority's Engineer.

Note: The above mentioned indicated quantities of Retro-reflective Tapes are minimum. Any increase in the respective quantity of Retro-reflective Tapes as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated.

(c) Truck Lay-byes

Truck lay byes shall be provided at the following locations.

Sl. No.	Proposed Chainage (Km)
Nil	

(d) Bus Bays

Bus lay byes shall be provided at the following locations.

Sl. No.	Design Chainage (Km)		Remarks
	LHS	RHS	
NIL			

(e) Rest Areas,

Nil.

(f) Others

1. Highway Lighting

Minimum 286 No. Street Lights at the locations indicated in the Schedule-B shall be installed.

Note: The above mentioned indicated quantity of Street Lights is minimum. Any increase in the quantity of Street Lights as per site condition, shall not constitute any positive change in scope up to 10% of the minimum quantity indicated.

SCHEDULE - D
(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 Construction

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

2 Design Standards

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

[Manual of Specifications and Standards for Two Lanning of Highways (latest revision of IRC: SP: 73), referred to herein as the Manual.]

[Note: Specify the relevant manual, specification and standards]

Annex - I
(Schedule-D)

Specifications and Standards for Construction

1 Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Lanning of Highways (IRC:SP:73 latest revision), referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

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

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

(iii) [Note 1: Deviations from the aforesaid specification and standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project – specify requirements.]

Schedule – E

Schedule – E

(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

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

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

1.3 All Materials, works and construction operations shall conform to the MoRT&H Specifications for Road and Bridge Works, and the relevant IRC publications.

Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof;

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

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

8. Repairs on account of natural calamities

All damages occurring to the Project Highway on account of a Force Majeure Event of 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, approaches	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 SP 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
S of Grade structure,	Cracking	Nil	< 5 % subject to limit of 0.5 sqm	Daily			7-15 days	MORT&H Specification 3004.3

approaches of connecting roads, slip roads, lay byes etc. as applicable)			for any 50m length					
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15-30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2015

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
S of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Bleeding	Nil	< 1 % area	Daily	Scale, Tape odometer etc.		3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation /	Nil	< 1 m for any 100m	Daily			7-15 days	IRC:82-2015

	Breaking		section and width < 0.1m at any location, restricted to 30cm from the edge					

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					
	Roughness	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway force Coefficient Routine Investigation Machine or equipment)	Class I Profilometer: ASTM E950 (98): 2004 – Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656-94:2000- Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually			180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2015

	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2015
	Deflection /Remaining Life			Annually	Falling W eight 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	ASTME950(98) :2004 and ASTM E1656-94:2000	180 days	IRC:SP:83-2008
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					
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force	IRC: SP:83-2008	180 days	IRC: SP:83-2008

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					
	Edge drop at shoulders	Nil	40mm	Daily			7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<20% variation in prescribed slope camber / cross fall	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
Embankment / Slopes	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 of slab	0	Nil, not discernible	No Action	Not applicable
			1	w< 0. 2mm.hair cracks		
			2	w= 0.2 -0.5 mm, discernible from slow-moving car	Seal without delay	Seal, and stitch if L >1m. Within 7 days
			3	w= 0.5 -1.5 mm, discernible from fast-moving car		
			4	w= 1.5-3.0 mm	Seal, and stitch if L > 1m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15 days
			5	w > 3 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
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. 2mm.hair cracks	Route and seal with epoxy Within 7 days	Staple or Dowel Bar Retrofit. Within 15 days
			2	w= 0.2 -0.5 mm, discernible from slow-moving car		
			3	w= 0.5 - 3.0 mm, discernible from fast-moving car	Route and seal and stitch, if L >1m. Within 7 days	
			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 15 days
			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	w= width of crack	0	Nil, not discernible	No, Action	

	intersecting with one or more joints	L= length of crack d= depth of crack D= depth of slab	1	w= 0.5 mm, discernible from slow-moving vehicle	Seal with epoxy, if L > 1m. Within 7 days	Staple or Dowel Bar Retrofit. Within 15 days
			2	w= 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L > 1m. Within 15 days	-

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			3	w= 3.0 - 6.0 mm	Staple, if L> 1m. Within 15 days	Partial Depth Repair with stapling. Within15 days
			4	w= 6.0 - 12.0 mm, usually associated with spalling	Not Applicable, as it may be full depth	
			5	w > 12 mm, usually associated with spalling, and/or slab rocking under traffic		Full depth Repair Dismantle and reconstruct affected portion as per norms and specifications See Para 5.6.4

						Within 15 days
4	Multiple Crack intersecting with one or more joints	w= width of crack	0	Nil, not discernible	No, Action	-
			1	w < 0.2 mm, hair cracks	Seal and stitch if L > 1m. 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 3 pieces		
			5	w > 6 mm and /or panel broken into more than 4 pieces		

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	Corner Break	w= width of crack L= length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5mm, only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7 days
			2	w < 1.5mm, L < 0.6m, only one corner broken		
			3	w < 1.5mm, L < 0.6m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:83-2008) Within 15 days	Full depth repair
			4	w > 1.5mm, L > 0.6m or three corners broken		
			5	Three or four corners broken		Reinstate sub-base and reconstruct the slab as per norms and specifications Within 30 days

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< 3m / m2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts.
			2	either w > 0.5 mm or L < 3m /m2		
			3	w > 1.5mm and L < 3m /m2		
			4	w > 3mm, L < 3m /m2 and deformation		Full depth repair Cutout and replace damaged area taking care not to damage reinforcement. Within 30 days
			5	w > 3mm, L < 3m /m2 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	Raveling or Honeycomb type surface	r= area damaged surface / total surface of slab (%)	0	Nil, not discernible	Short Term No action.	Long Term Not Applicable

S.No.	Type of Distress	Measured Parameter h = maximum depth of damage	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			1	r < 2 %	Local repair of area damaged and liable to be damaged.	
			2	r = 2 - 10 %		
			3	r = 10 - 25 %	Bonded Inlay, 2 or 3 slabs if affecting. Within 30 days	
			4	r = 25 - 50 %		
			5	r > 50% and h > 25mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	

<table>
<tr><td rowspan="2">S.No.</td><td rowspan="2">Type of Distress</td><td rowspan="2">Measured
Parameter</td><td rowspan="2">Degree of Severity</td><td rowspan="2">Assessment Rating</td><td colspan="2">Repair Action</td></tr>
<tr><td>For the case d < D/2</td><td>For the case d > D/2</td></tr>
<tr><td colspan="7">Surface Defects</td></tr>
<tr><td rowspan="7">8</td><td rowspan="7">Scaling</td><td rowspan="7">r= damaged surface / total
surface of slab (%)
h = maximum depth of damage</td><td>0</td><td>Nil, not discernible</td><td>Short Term
No action.</td><td>Long Term
Not Applicable</td></tr>
<tr><td>1</td><td>r < 2 %</td><td rowspan="2">Local repair of area damaged
and liable to be damaged.</td></tr>
<tr><td>2</td><td>r = 2 - 10 %</td></tr>
<tr><td>3</td><td>r = 10 - 20 %</td><td rowspan="2">Bonded Inlay
Within 15 days</td></tr>
<tr><td>4</td><td>r = 20 - 30 %</td></tr>
<tr><td>5</td><td>r > 30% and h > 25mm</td><td>Reconstruct slabs Within 30 days</td></tr>
</table>

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
9	Polished Surface /Glazing	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	t >1 mm		
			2	t = 1 - 0.6 mm	Monitor rate of deterioration Diamond Grinding if affecting 50% or more slabs in a continuous stretch of minimum 5 km. Within 30 days	
			3	t = 0.6 - 0.3 mm		
			4	t = 0.3 - 0.1 mm		
			5	t < 0.1 mm		
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number/m2 d = diameter	0	d < 50 mm; h < 25 mm; n < 1 per 5 m2	No action	

		h = maximum depth				
			1	d = 50 – 100 mm; h < 50 mm; n < 1 per 5 m2	Partial depth repair 65 mm deep. Within 15 days	Not Applicable
			2	d = 50 – 100 mm; h > 50 mm; n < 1 per 5 m2		
			3	d = 100 – 300 mm; h < 100 mm; n < 1 per 5 m2	Partial depth repair 110 mm i.e. 10mm more that the depth of the hole. Within 30 days	
			4	d = 10 – 300 mm; h > 100 mm; n < 1 per 5 m2		
			5	d > 300 mm; h > 100 mm; n > 1 per 5 m2	Full depth repair. Within 30 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
Joints Defects						
					Short Term	Long Term
			0	Difficult to discern	No action	
			1	Discernible, L < 25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	
11	Joint Seal Defects	loss or damage L = Length as % total joint length	3	Notable. L > 25%insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	Not Applicable
			5	Severe; w > 3 mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	Spalling of Joints	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	
			1	w < 10 mm	Apply low viscosity epoxy resin / mortar in cracked portion.	

			2	w = 10 - 20 mm, L < 25%	Within 7 days	Not Applicable

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
Joints Defects						
			3	w = 20 – 40 mm, L > 25%	Partial Depth Repair. Within 15 days	Not Applicable
			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	
			0	not discernible, < 1 mm		

13	Faulting (or stepping) in Cracks or Joints	f = difference of level	1	f < 3 mm	No action.	No action
			2	f = 3 – 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate.
			3	f = 6 – 12 mm	Diamond Grinding	Within 30 days
			4	f = 12 – 18 mm	Raise sunken slab	Replace the slab as appropriate.
			5	f > 18 mm	Strengthen subgrade and sub – base by grouting and raising sunken slab	Within 30 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
Joints Defects						
					Short Term	Long Term

14	Blowup or buckling	h = vertical displacement from normal profile	0	Nil, not discernible	No action	
			1	h < 6 mm		
			2	h = 6 – 12 mm	Install Signs to Warn Traffic Within 7 days	
			3	h = 12 – 25 mm		
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slab, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	Depression	h = negative vertical displacement from normal profile L = length	0	Not discernible, h < 5 mm		Not applicable
			1	h = 5 – 15 mm	No action.	
			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.	

			5	h > 100 mm	Reinstate pavement at normal level if L < 20 m. Within 30 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
Joints Defects						
					Short Term	Long Term
16	Heave	h = positive vertical displacement from normal profile. L = length	0	Not discernible, h < 5 mm	No action	
			1	h = 5 – 15 mm	Follow up	scrabble
			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	
			5	h > 100 mm		

					m. Within 30 days	
			5	f > 18 mm	Strengthen subgrade and sub – base by grouting and raising sunken slab	
17	Bump	h = vertical displacement from normal profile.	0	h < 4 mm	No action	
			1	h = 4 – 7 mm	Grind, in case of new construction Within 7 days	Construction Limit for new Construction
			3	h = 7 – 15 mm	Grind, in case of ongoing maintenance Within 15 days	Replace in case of new construction. Within 30 days.
			5	h > 15 mm	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30 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
Joints Defects						
					Short Term	Long Term
18	Lane to Shoulder Dropoff	f = difference of level	0	Nil, Not discernible, < 3 mm	No action	
			1	f = 3 – 10 mm	Spot repair of shoulder	
			2	f = 10 – 25 mm	Within 7 days	
			3	f = 25 – 50 mm	Fill up shoulder	
			4	f = 50 – 75 mm		For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch.
			5	f > 75 mm	Within 7 days	Within 30 days
Drainage						
			0	not discernible	No Action	
		quantity of fines and water expelled	1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints without delay.	Inspect and repair sub-drainage at

19	Pumping	through open joints and cracks Nos	3 to 4	Appreciable/ Frequent 10-25%	Lift or jack slab within 30 days	distressed sections and upstream.
		Nos/100m stretch	5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 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
			0-2	not discernible problem	No Action	
			3 to 4	Blockage observed in drains, but water flowing	Clean drains etc within 7days follow up	Action required to stop water

20	Ponding	Ponding on slabs due to blockage of drains	5	Ponding, accumulation of water observed	-do-	damaging foundation within 30 days

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

<table>
<tr><th>Asset</th><th>Performance</th><th colspan="3"></th><th>Frequency of Measurement</th><th></th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specification s and Standards</th></tr>
<tr><td rowspan="5"></td><td rowspan="5"></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"></td><td rowspan="5">Manual Measurement s 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</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>
</table>

Pavemen t Marking	Wear		Bi- Annually	Visual Assessment as per Annexure-F of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect -	IRC:35-2015

Asset	Performance		Frequency of Measurement		Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	Day time Visibility	During expected life Service Time Cement Road - 130mcd/m2/lux Bituminous Road -		As per Annexure-D of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015
		Initial and Minimum Performance for Dry Retro reflectivity during night time:		As per Annexure-E of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015
		Design Speed / (RL) Retro Reflectivity (mcd/m2/lux)					
		Initial (7 days)	Minimum Threshold level (TL) & warranty period required up to 2 years				

		Up to 65	200	80					
		65 - 100	250	120					
		Above	350	150					
		Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):							
Asset	Performance				Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for	Specification s and Standards
		Initial 7 days Retro reflectivity: 100 mcd/m2/lux Minimum Threshold Level: 50							
		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				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 r Sign boards	IRC:67-2012

Asset	Performance		Frequency of Measurement		Recommended Remedial measures	Time limit for Rectification	Specification s and Standards

	Retro reflectivity	As per specification in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever er Sign boards	IRC:67-2012
Kerb		As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance R	Raising Kerb eight		
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image K backup	Kerb Repainting	Within 7-days	RC 35:2015
	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC: SP:84-2019 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC: SP:84-2019, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: SP:84-2019
	Traffic Safety	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup		Within 7 days	IRC: SP:84-2019, IRC:119-

Asset	Performance		Frequency of Measurement		Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC: SP:84-2019
	Traffic Safety			backup			IRC:119-
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC: SP-2014, IRC:119-
	Guard Posts and	Functionality: Functioning of Guard	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 -
	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:84-2019
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:84-2019
		No major failure in the lighting system		-	Rectification of failure	24 hours	IRC:SP:84-
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2019

Asset	Performance		Frequency of Measurement		Recommended Remedial	Time limit for	Specification s and Standards
		Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with	Improvement in Lighting System	24 hours	IRC:SP:84-2019
		No major/minor failure in the lighting system	Daily	-	Rectification failure	8 hours	IRC:SP:84-
Trees and Plantation including median	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road			Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2019
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from		Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2019
	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 84-2019

Asset	Performance		Frequency of Measurement		Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay- bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15days	IRC: SP 84-2019

Asset	Performance		Frequency of Measurement		Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	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
		Spalling of concrete not more than 0.25 sqm		Detailed inspection of all components			IRC SP:40-

	Structurally sound	Delamination of concrete not more than 0.25	Bi-Annually	of culvert as per IRC SP:35-1990 and recording the	Repairs to spalling, cracking, delamination, rusting shall be followed as per	15 days	1993 and MORTH Specifications
		Cracks wider than 0.3 mm not more than 1m					
Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	Protection work 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	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspections per IRCSP:35-1990	Repairs to BC or wearing coat	15 days	MORTH Specification 2811

applicable							
Bridge – Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspections per IRCSP:35-1990	Repairs to BC or either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORTH 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 inspections and detailed condition survey as per IRC SP:35-1990	Repairs and replacement of safety barriers as the case may be	3 days	IRC: 5-1998 IRC:SP: 84-2009. And IRC SP: 40-1993

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	Rusted reinforcement	Not more than 0.25 sq.m.			All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti- corrosive coating	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.	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	before carrying out the repair to affected concrete portion with epoxy mortar / concrete.		
	Cracks wider than 0.30 mm	Not more than 1m total length.	Bi- Annually	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigation causes for cracks development and carry out necessary rehabilitation.	48 hours	IRC:SP: 40-1993. And MORTH Specification 2800.
	Rain seepage through deck slab	Leakage- nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Grouting with slab at leakage areas, waterproofing, repairs to drainage spouts.	1months	MORTH Specification 2600 & 2700.
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity.	6months	IRC:SP: 51-1999.

Asset Type	Performance Parameter	Level of Service	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards

		(LOS)					
	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 30m.	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTOLRFD Specification
	Leakage in Expansion Joints	No damage to elastomeric sealant compound in strip expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper 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 Specification 2600 and IRC SP: 40-1993.
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH Specification 2600 and IRC SP: 40-1993.

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 Using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH Specification 2700
	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	30 days	IRC:SP: 40-1993. And MORTH Specification 2800.

					type of defect noticed.		
Bridge sub structure	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/ abutment, all the bearings on that pier/ abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH Specification 2810 and IRC SP: 40-199.
Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification s and Standards
		than 2 locations per side, no rupture of reinforcement or rubber.					
Bridge Foundation	Scouring around	Scouring shall not be lower than maximum	Bi-Annually	Condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater	Suitable protection works	1 months	IRC: SP: 40-1993.

s	foundations	scour level form the bridge		camera for inspection of deep wells in major Rivers.	around pier/ abutment		IRC: 83-2014 MORTH Specification 2500.
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m. damage to apron (concrete apron) not more than 1 sq.m.	2 times in a year (before and after rainy season)	Condition survey as per IRC SP: 35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier	MORTH Specification 2810 and IRC SP: 40-199.

Note: Any Structure during the entire contract period which is found that does not comply with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads In addition to above, for hill roads the following provisions for maintenance is also to done.

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

Note: For all tables 1 to 5 above, latest BIS & IRC standard (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, sides lopes, drains and culvert		
(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) days
(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)	Damaged to road mark ups	7 (Seven) days
(d) Road lighting		
(i)	Any major failure of the system	24 (Twenty-Four) days
(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) days
(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) days
(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 crossing,[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) Pipers, abutment, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(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)	Damaged 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

Schedule-F

(See Clause 4.1 (vii)(a))

APPLICABLE PERMITS

1. **Applicable Permits**

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

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

Schedule – G

Schedule-G

(See Clauses 7.1, and 19.2)

FORM OF BANK GUARANTEE

Annex-1

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

To,

_____ [Name of Authority]

_____ [Address of Authority]

(A) WHEREAS _____[name and address of contractor] (hereinafter called "the **Contractor"**) has undertaken, in pursuance of Letter of Acceptance (LOA) No._____ dated___ for "(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura" (hereinafter called the "Contract")

(B) AND WHEREAS, 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. …. Crore (Rupees …. Crore) (the **"Guarantee Amount"**).

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

(D) 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 Government of West Bengal Public Works (Roads) Directorate, that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

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

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
8. The Guarantee shall cease to be in force and effect on ****$ unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.
9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or unit it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This **Guarantee** subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

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

NOTES:

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

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

Annex - II

(Schedule-G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the Managing Director NHIDCL, Government of India (hereinafter called the **"Authority"**) for the **""**"(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura" **(** on Engineering Procurement and Construction (the "EPC") basis, subject to and in accordance with the provisions of the Agreement.

(B) in accordance with the Clause 19.2 of the Agreement the Authority shall make to the Contractor an interest free advance payment (hereinafter called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the advance payment shall be made in three installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equal to 110% (One hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second/third} installment of the Advance Payment is Rs. ……. cr. (Rupees …….. crore) (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 NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

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 discharges 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 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:

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

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

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

Annex-III

(See Clause 7.1)

Form of Surety Bond

[Performance Security/Additional Performance Security]

To,

_____ [Name of Authority]

_____ [Address of Authority]

(E) WHEREAS _____[name and address of contractor] (hereinafter called "the **Contractor"**) has undertaken, in pursuance of Letter of Acceptance (LOA) No._____ dated___ for ""(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura." (hereinafter called the "Contract")

(F) AND WHEREAS, 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. …. Crore (Rupees …. Crore) (the **"Surety Bond Amount"**).

(G) We, ……..through our branch at ……. (the**"Surety Insurer"**) have agreed to furnish this bank guarantee (*hereinafter called the* **"Surety Bond"**) by way of Performance Security.

(H) NOW, THEREFORE, the **Surety Insurer** hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The **Surety Insurer** 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 **Surety Bond** Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

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

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the **Surety Insurer** under this **Surety Bond**, to vary at any time, the terms and conditions of the 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 **Surety Insurer** shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the **Surety Insurer** from its liability and obligation under this **Surety Bond** and the **Surety Insurer** hereby waives all of its rights under any such law.

6. This **Surety Bond** is in addition to and not in substitution of any other **Surety Bond** or security now or which may hereafter be held by the Authority in respect of or relating to the 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 **Surety Insurer** under this **Surety Bond** is restricted to the **Surety Bond** amount and this **Surety Bond** will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the **Surety Insurer** under this **Surety Bond** all rights of the Authority under this **Surety Bond** shall be forfeited and the **Surety Insurer** shall be relieved from its liabilities hereunder.
8. The **Surety Bond** shall cease to be in force and effect on ****$ unless a demand or claim under this Guarantee is made in writing before expiry of the **Surety Bond**, the **Surety Insurer** shall be discharged from its liabilities hereunder.
9. The **Surety Insurer** undertakes not to revoke this **Surety Bond** during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this **Surety Bond** and the undersigned has full powers to do so on behalf of the **Surety Insurer**.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the **Surety Insurer** at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall 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 **Surety Bond** shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or unit it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This **Surety Bond** is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

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

NOTES:

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

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

SCHEDULE – H

See Clauses 10.1 (iv) and 19.3

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. 157.81 Crore

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
I. Road works including culverts, widening and repair of culverts.	84.32 %	**A- strengthening of existing road**	
		(1) Earthwork up to top of the embankment	0.00
		(2) Cleaning and Grubbing	0.04%
		(3) Earthen Shoulder	0.32%
		(2) Earthwork up to top of the sub-grade	0.00%
		(3) Sub-Base Course	0.00%
		(4) Non-Bituminous Base Course	0.00%
		(5) Bituminous Base Course	50.18%
		(6) Wearing Coat	38.78%
		(7) Widening and repair of culverts	0.00
		B.1- Reconstruction/ Raising (Flexible pavement)	
		(1) Earthwork up to top of the embankment	0.00
		(2) Sub-Grade	2.51%
		(3) Sub Base Course	2.07%
		(4) Non-Bituminous Base Course*	2.20%
		(5) Bituminous Base Course	2.10%
		(6) Wearing Coat	1.62%
		B.2- Reconstruction/ New realignment/ bypass (Rigid Pavement)	
		(1) Earthwork up to top of the embankment	0.00
		(2) Sub-Grade	0.00
		(3) Sub Base Course	0.00
		(4) Dry Lean Concrete (DLC) Course	0.00
		(5) Pavement Quality Control (PQC) Course	0.00
		C.1- Reconstruction/ New service road (Flexible pavement)	
		(1) Earthwork up to top of the embankment	0.00
		(2) Sub-Grade	0.00
		(3) Sub Base Course	0.00
		(4) Non-Bituminous Base Course*	0.00
		(5) Bituminous Base Course	0.00
		(6) Wearing Coat	0.00
		C.2- Reconstruction/ New Service Road (Rigid Pavement)	
		(1) Earthwork up to top of the embankment	0.00
		(2) Sub-Grade	0.00
		(3) Sub Base Course	0.00
		(4) Dry Lean Concrete (DLC) Course	0.00

		(5) Pavement Quality Control (PQC) Course	0.00
		D- Re-Construction and New culverts on existing road, realignments, bypasses:	
		Culverts (length < 6 m)	0.18%
II. Minor Bridges/ Underpasses / Overpasses	0.00	**A.1- Widening and Repair of Minor bridges (length > 6 m and < 60 m)**	
		Minor bridges	
		(1) **Foundation:** On completion of the foundation work of abutments and piers	0.00
		(2) **Sub-structure**: On completion of abutments and piers with abutment/ pier cap.	0.00
		(3) **Super-structure:** On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, handrails, crash barriers, road signs and markings, tests on completion etc. complete in all respect.	0.00
		(4) **Approaches**: On completion of approaches including wing walls/ return walls, retaining walls, stone pitching, protection works for floor, embankment slope, etc. complete in all respect and fit for use.	0.00
		A.2- New Minor bridges (length >6 and <60 m.)	
		(1) **Foundation:** On completion of the foundation work of abutments and piers	0.00
		(2) **Sub–structure**: On completion of abutments and piers with abutment/ pier cap.	0.00
		(3) **Super-structure:** On completion of the super-structure upto deck slab including bearings.	0.00
		(4) **Miscellaneous Works:** On completion of wearing coat, expansion joint, crash barrier, railings, protection works and any remaining work associated to bridge including tests on bridge.	0.00
		(5) **Approaches**: On completion of approaches including wing walls/ return walls, retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	0.00
		(6) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects	0.00
		B.1- Widening and Repair of underpasses/ overpasses	
		Underpasses/ Overpasses	0.00

		B.2- New underpasses/ overpasses	
		(1) Foundation: On completion of the foundation work of abutments and piers	0.00
		(2) **Sub–structure:** On completion of abutments and piers with abutment/ pier cap.	
		(3) **Super-structure:** On completion of the super-structure up to deck slab including bearing.	0.00
		(4) **Miscellaneous Works:** On completion of wearing coat, expansion joint, crash barrier, railings and any remaining work associated to bridge including tests on bridge	
		(5) **Approaches**: On completion of approaches including Wing walls/ Return walls, retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	0.00
Item	**Weightage in percentage to the Contract Price**	**Stage for Payment**	**Percentage weightage**
1	**2**	**3**	**4**
III. Major Bridge (length h > 60 m.) works and ROB/RUB/ elevated sections/flyovers including viaducts, if any	0.00%	**A.1- Widening and repairs of Major Bridges**	
		(1) Foundation	0.00
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0.00
		(3) Super-structure (including bearings)	0.00
		(4) Wearing Coat including expansion joints	0.00
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0.00
		(6) Wing walls/return walls	0.00
		(7) Guide Bunds, River Training works etc.	0.00
		(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	0.00
		A.2- New Major Bridges	
		(1) Foundation	
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	

		(3) Super-structure (including bearings)	
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items (like hand rails, crash barriers, road markings etc.)	
		(6) Wing walls/return walls	
		(7) Guide Bunds, River Training works etc.	
		(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope, etc.)	
		B.1- Widening and repair of **(a) ROB** **(b) RUB**	
		(1) Foundation	0.00
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0.00
		(3) Super-structure (including bearings)	0.00
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified.	0.00
		(5) Miscellaneous Items (like hand rails, crash barriers, road markings etc.)	0.00
		(6) Wing walls/return walls	0.00
		(7) Approaches (including Retaining walls, stone pitching and protection works)	0.00
		B.2- New ROB/RUB	
		(a)ROB	
		(b) RUB	
		(1) Foundation	0.00
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	0.00
		(3) Super-structure (including bearings)	0.00
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified.	0.00
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0.00
		(6) Wing walls/return walls	0.00

		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00
		C.1- Widening and repair of Elevated Section/Flyovers/ Grade Separators	
		(1) Foundation	0.00
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0.00
		(3) Super-structure (including bearings)	0.00
		(4) Wearing Coat including expansion joints	0.00
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0.00
		(6) Wing walls/return walls	0.00
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00
		C.2-New Elevated Section/Flyovers/ Grade Separators	
		(1) Foundation	0.00
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	0.00
		(3) Super-structure (including bearings)	0.00
		(4) Wearing Coat including expansion joints	0.00
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0.00
		(6) Wing walls/return walls	0.00
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0.00
IV. Other works	15.68 %	(i) Toll Plaza	0.00
		(ii) Road side drains	
		(a) PCC Drain	28.06%
		(b) RCC Drain	47.70%
		(iii) Road signs, markings, km stones, Painting, safety devices, painting on railing crash barrier, etc.	19.97%
		(iv) Street Lights	0.73%
		(v) Overhead gantry mounted signs	0.19%

		(vi) Project facilities (a) Bus Bays (b) Truck lay-byes (c) Rest areas (d) others	0
		(vii) Road Side Plantation	0.00
		(viii) Protection works# other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs.	
		(a) W Metal beam Crash Barrier	2.51%
		(b) Retaining Wall	0.00
		(c) Breast Wall	0.00
		(d) Gabion Wall	0.84%
		(ix) Safety and traffic management during construction	0.00

*Note- In case of CTB and AIL layer, this stage may be modified suitably to permit separate weightages for each of these layers.

#Note - For specific type of protection work detailed stages can be included

1.3 Procedure of estimating the value of work done

1.3.1 Road works.

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- strengthening of existing road (1) Earthwork up to top of the embankment	0.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length or 500 m whichever is less including improvement of all junctions in the length.
(2) Cleaning and Grubbing	0.04%	
(3) Earthen Shoulder	0.32%	
(4) Sub-Grade	0.00%	
(5) Sub-Base Course	0.00%	
(6) Non-Bituminous Base Course*	0.00%	
(7) Bituminous Base Course	50.18%	
(8) Wearing Coat	38.78%	
(9) Widening and repair of culverts	0.00	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the

		completion of at least one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/ wing walls and any other work associated with culverts.
B.1- Reconstruction/Raising (Flexible pavement) (1) Earthwork up to top of the embankment	0.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less including improvement of all junction in the length.
(2) Sub-Grade	2.51%	
(3) Sub Base Course	2.07%	
(4) Non-Bituminous Base Course*	2.20%	
(5) Bituminous Base Course	2.10%	
(6) Wearing Coat	1.62%	
B.2- Reconstruction/New realignment/bypass (Rigid pavement) (1) Earthwork up to top of the embankment	0.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
(2) Sub-Grade	0.00	
(3) Sub Base Course	0.00	
(4) Dry Lean Concrete (DLC) Course	0.00	
(5) Pavement Quality Control (PQC) Course	0.00	
C.1- Reconstruction/ New service road (Flexible pavement) (1) Earthwork up to top of the embankment	0.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
(2) Sub-Grade	0.00	
(3) Sub Base Course	0.00	
(4) Non-Bituminous Base Course*	0.00	
(5) Bituminous Base Course	0.00	
(6) Wearing Coat		
C.2- Reconstruction/ New service road (Rigid pavement) (1) Earthwork up to top of	0.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m
the embankment		length, whichever is less.
(2) Sub-Grade	0.00	
(3) Sub Base Course	0.00	

(4) Dry Lean Concrete (DLC) Course	0.00	
(5) Pavement Quality Control (PQC) Course	0.00	
D- Re-Construction and New culverts on existing road, realignments, bypasses: (1) Culverts (length < 6m)	0.18%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/wing walls and any other work associated with culverts.

*Note- In case of CTB and AIL layer, this stage may be modified suitably to permit separate weightages for each of these layers.

@. For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

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

Where P= Contract Price

L = Total length in km

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

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

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repair of minor bridges (length > 6m and < 60m)	**0.00**	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges.
(i) **Foundation:** On completion of the foundation work of abutments and piers	**0.00**	(i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(ii) Sub – structure:	**0.00**	**(ii) Sub - structure** – Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/ pier cap level of each bridge.
(iii) **Super-structure:** On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	**0.00**	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iv) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	**0.00**	(iv) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing walls/ return walls, retaining walls, stone pitching in all respect as specified in the column of "Stage of Payment" in this sub-clause for each bridge.
A.2- New minor bridges (i) **Foundation:** On completion of the foundation work of abutments and piers.	**0.00**	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. (i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage completion of at least two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.

(ii) Sub – structure:	**0.00**	(ii) Sub - structure – Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/ pier cap level of each bridge.
(iii) **Super-structure:** On completion of the super-structure up to deck slab including bearings.	**0.00**	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e., completion of super-structure of at least one span upto deck slab including bearing as specified in the column of "Stage of Payment" in this sub-clause. If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(iv) **Miscellaneous Works:**	**0.00**	(iv) **Miscellaneous Works**: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of wearing coat, expansion joint, crash barrier, railing, protection works, drainage and any other remaining work associated to bridge including tests on bridge for each bridge
v) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	**0.00**	(v) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing walls/ return walls, retaining walls, stone pitching in all respect as specified in the column of "Stage of Payment" in this sub-clause for each bridge.
(vi) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects	**0.00**	(vi) **Guide Bunds and River Training Works:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified for each bridge.
B.1-Widening and repair of underpasses/ overpasses	**0.00**	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/ Overpasses: **(i) Foundation** On completion of the foundation work including	**0.00**	Cost of each Underpass/Overpass shall be determined on pro rata basis with respect to the total linear length (m) of the Underpasses/Overpasses.

foundations, of abutments and piers		(i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of foundation(s) of each underpass/overpass. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(ii) Sub-structure:	**0.00**	(ii) Sub-structure: Payment shall be made on pro-rata basis on completion of stage i.e. completion of at least one sub-structure up to abutment/ pier cap level of each bridge.
(iii) **Super-structure:** On completion of the super-structure up to deck slab,	**0.00**	(iii) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage 'i.e. completion of super-structure of at least one span upto deck slab including bearing as specified in the column of "Stage of Payment" in this sub-clause: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(iv) Miscellaneous Works:	**0.00**	(iv) Miscellaneous Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of wearing coat, expansion joint, crash barrier, railing, protection works and any other remaining work associated to bridge including tests on bridge for each bridge.
v) **Approaches**: On completion of approaches including wing wall/ return wall, retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	**0.00**	(v) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing wall/ return wall, retaining walls, Reinforced Earth walls, stone pitching, protection works complete in all respect for each bridge.

1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1- Widening and repairs of Major Bridges (1) Foundation	**0.00**	Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the major Bridge as specified hereinunder.
(i) Pile Foundation (a) Piling – On completion of pile up to bottom of pile cap (b) Pile Cap : On completion of pile cap	0.00	(i) Pile Foundation (a) Piling: Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorate basis. (b) Pile Cap: Payment of 30% on pro-rata basis shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Open Foundation	0.00	(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	**0.00**	**(2) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of at least one sub-structure of abutments/piers upto abutment/pier cap level of each of

		the major bridge.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under:
		If pre-cast RCC/PSC/Steel girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each major bridge.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**0.00**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each major bridge.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each major bridge.
(7) Guide Bunds, River Training works etc.	**0.00**	(7) **Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified for each major bridge.

(8) Approaches (including Retaining walls, stone pitching and protection works)	**0.00**	**(8) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each major bridge.
A.2- New Major Bridges (1) Foundation	**0.00**	Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the major Bridge as specified here in under:
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining: On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well, steining: Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation		(ii) Pile Foundation
(a) Piling – On completion of pile upto bottom of pile cap		(a) Piling: Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorata basis.
(b) Pile Cap : On completion of pile cap		(b) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing

		also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	**0.00**	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of at least one sub-structure of abutments/piers upto abutment/pier cap level of each of the major bridge.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under:
		If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
		(For cable stayed bridge and suspension cable bridge, detailed payment stage may be included on case-to-case basis)
(4) Wearing Coat including expansion joints	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each major bridge.
(5) Miscellaneous Items like	**0.00**	(5) **Miscellaneous:** Payments shall be
hand rails, crash barriers,		made on completion of all
road markings etc.		miscellaneous works like hand rails,
		crash barriers, road markings etc.
		complete in all respects as specified

		for each major bridge.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each major bridge.
(7) Guide Bunds, River Training works etc.	**0.00**	(7) **Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified for each major bridge.
(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	**0.00**	**(8) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each major bridge.
B.1 -Widening and repairs of **(a) ROB** **(b) RUB**		Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs.
(1) Foundation	**0.00**	(1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the ROB/RUB as specified here in under.
(i) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap		(i) Pile Foundation (a) Piling: Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorata basis.
(b) Pile Cap : On completion of pile cap		(b) Pile Cap: Payment of 30% on pro-rata basis shall be made on completion of pile cap.
		In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(ii) Open Foundation		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
(2) Sub-structure	**0.00**	**(2) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of at least one sub-structure of abutments/piers upto abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under:
		If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of (a) in case of
ROB. In case of RUB, rigid		ROB- wearing coat including
pavement under RUB		expansion joints complete in all
including drainage facility		respects as specified for each of the
as specified.		ROB and (b) in case of RUB- rigid
		pavement under RUB including
		drainage facility complete in all
		respects as specified for each of the
		RUB.
(5) Miscellaneous Items like hand rails, crash barriers,	**0.00**	(5) **Miscellaneous:** Payments shall be made on completion of all
road markings etc.		miscellaneous works like hand rails, crash barriers, road markings etc.
		complete in all respects as specified
		for each of the ROB/ RUB.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as

		specified for each of the ROB/ RUB.
(7) Approaches (including Retaining walls, stone pitching and protection works)	**0.00**	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each of the ROB/ RUB.
B.2- New **(a) ROB** **(b) RUB** (1) Foundation	**0.00**	Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the ROB/RUB as specified here in under:
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining : On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well, steining: Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap		(ii) Pile Foundation (a) Piling: Payment of 70% shall be made on completion of piling up to bottom of pile cap for each pile on prorota basis.

(b) Pile Cap : On completion of pile cap		(b) Pile Cap: Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of at least one foundation.
2) Sub-structure	**0.00**	**(2) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of at least one sub-structure of abutments/piers upto abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under:
		If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified for each of the
as specified.		ROB and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified for each of the RUB.
(5) Miscellaneous Items like hand rails, crash barriers,	**0.00**	(5) **Miscellaneous:** Payments shall be made on completion of all
road markings etc.		miscellaneous works like hand rails, crash barriers, road markings etc.
		complete in all respects as specified

		for each of the ROB/RUB.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the ROB/RUB.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	**0.00**	**(7) Approaches**: Payments shall be made on completion of both approaches of each ROB including stone pitching, protection works, etc. complete in all respects as specified here in under: If reinforced soil wall is used with facia panel/blocks, interim payment shall be made @75% of the Cost of that element as derived from MoRTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
C.1- Widening and repairs of Elevated Section/Flyovers/ Grade Separators		Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures.
(i) Foundation		(1) Foundation: Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of at least one foundation of each of the structure as specified here in under :
(i) Pile Foundation		(i) Pile Foundation
(a) Piling – On completion of pile upto bottom of pile cap		(a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorate basis.
(b) Pile Cap : On completion of pile cap		(b) Pile Cap : Payment of 30% on pro-rata basis shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(ii) Open Foundation		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**0.00**	**(2) Sub-Structure:**. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the structure.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure upto deck slab including bearings of at least one span as specified here in under : If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**0.00**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the structure.

(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	**0.00**	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects of each structure.
C.2 -New Elevated Section/Flyovers/ Grade Separators (1) Foundation	**0.00**	Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the structure as specified here in under :
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining : On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining : Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation		(ii) Pile Foundation

(a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap : On completion of pile cap		(a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on pro-rata basis. (b) Pile Cap : Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**0.00**	**(2) Sub-Structure:**. Payment against Sub- structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the structure.
(3) Super-structure (including bearings)	**0.00**	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	**0.00**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.

(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**0.00**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.
(6) Wing walls/return walls	**0.00**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the structure.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	**0.00**	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified here in under : If reinforced soil wall is used with facia panel/blocks, interim payment shall be made @75% of the Cost of that element as derived from MoRTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	**Weightage**	**Payment Procedure**
1	**2**	**3**
(i) Toll plaza	0.00	Unit of measurement is each completed toll plaza. Payment for each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas as specified here in under :

(a) DLC(LHS)		(a) DLC (LHS) : Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(b) DLC (RHS)		(b) DLC (RHS) : Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(c) PQC(LHS)		(c) PQC(LHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on LHS.
(d) PQC(RHS)		(d) PQC(RHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on RHS.
(e) Admin Building		(e) Admin Building: Payment of 10% on pro-rata basis shall be made on completion of a stage i.e. completion of Admin Building and miscellaneous works.
(f) Toll Booth, canopy, safety items and all other associated works		(f) Toll Booth, canopy, safety items and all other associated works: Payment of 15% on pro-rata basis shall be made on completion of a stage i.e. completion of Toll Booth, canopy, safety items and all other associated works.
(ii) Road side drains		
(a) PCC Drains	28.06%	a) Drains: Unit of measurement is linear length in metre . Payment shall be made on pro rata basis on completion of a stage in a length of not less than 100 m on one side.
(b) RCC Drains	47.70%	(b) Cover slabs: Unit of measurement is linear length in metre. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 100 m on one side.

(iii) Road signs, markings, km stones, Painting safety devices, …	19.97%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than one Km on both sides.
(iv) **Overhead gantry mounted signs**	0.19%	Unit of measurement is each number. Payment shall be made on pro-rata basis on completion of each overhead gantry mounted sign
(v) Street Lights	0.73%	Cost of each street light shall be determined on pro rata basis with respect to the total number of street lights. Payment shall be made on the completion of at least 20% of total quantity in all respects
(vi) Project Facilities (a) Bus bays (b) Truck lay-byes (c) Rest areas (d) others	 0.00 0.00 0.00 0.00	Unit of measurement is each number. Payment shall be made on pro rata basis for completed facilities.
(vii) Roadside plantation	0.00	Unit of measurement is linear length in Km. Payment shall be made on pro rata basis on completion of one Km.
(vii) Protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/ RUBs (a) W Metal beam Crash-Barrier (b) Retaining wall (c) Breast wall (d) Gabion Wall	 2.51% 0.00 0.00 0.84%	Unit of measurement is linear length. Payment against items (a), (b) & (c) shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length and 100 m whichever is less.
(viii) Safety and traffic management during construction	**0.00**	Payment shall be made on prorata basis every six months.

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

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

(3) (a) In order to maintain cash flow in the project, the Authority shall also make interim monthly payments to the Contractor for the work done during the month for which the corresponding stage, as mentioned in Schedule-H, has not been achieved. Such work shall be measured, in a length, number or area as specified in corresponding stage of Schedule-H and valued in accordance with the proportion of the weightage of Contract Price assigned to that stage in Schedule-H. '90% of value of such work shall be paid as an 'Interim Monthly Payment' under clause 19.3 (i) of Contract Agreement.

(b) For Pre cast/ pre-fabricated elements to be used in permanent works, interim payments to be made @ 75% of cost of that element (to be derived from MoRT&H data book) as per schedule H.

(C) Upon completion of the defined 'stage', a reconciliation of the interim payments shall be carried out, and any balance amount shall be paid. For the avoidance of doubt, it is clarified that the interim monthly payments are made solely to maintain cash flow in the project. In the event of termination of the project, under Clause23.1, 23.2 or 23.3, as the case may be, such interim payments shall be dealt with as per Clause 23.5 (i) (b) of the Contract Agreement.

Schedule – I

Schedule-I

(See Clause 10.2)

DRAWINGS

1. Drawings

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

2. Additional Drawings

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

Annex-I

(Schedule-I)

List of Drawings

[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 EPC Agent is given below:

a) Drawings of horizontal alignment, vertical profile and detailed cross sections.
b) Drawings of cross-drainage works.
c) Drawings of Minor intersections.
d) Drawing of road furniture including traffic signage, marking, safety barriers etc.
e) Drawing of traffic diversion plan.
f) Drawings of street lighting.
g) Drawing as per instruction of Authority's Engineer

Schedule – J

Schedule-J

(See Clause 10.3.2)

PROJECT COMPLETION SCHEDULE

1. Project Completion Schedule

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

2. Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the 190th (One hundred & ninety) day from the Appointed Date (the "**Project Milestone-I"**).

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

3. Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 328th (Three hundred & twenty eight) day from the Appointment Date (the **"Project Milestone-II**").

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

4. Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 465th (Four hundred and sixty five) day from the Appointed Date (the "**Project Milestone-III"**).

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

5. Schedule Completion Date

5.1 The Schedule Completion Date shall occur on the 548th (Five hundred and forty) day from the Appointed Date.

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

6. Extension of Time

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

Schedule – K

Schedule-K

(See Clause 12.1.2)

Tests on Completion

1. **Schedule for Tests**

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

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

2. Tests

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

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

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

2.4 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

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

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

3. Agency for conducting Tests

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

4. Completion Certificate

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

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

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

Schedule – L

Schedule-L

(See Clause 12.2)

COMPLETION CERTIFICATE

1. I, …….. (Name of the Authority's Engineer), acting as Authority's Engineer, under and in accordance with the Agreement dated …….. (the "**Agreement**"), for the **"**"(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura**."** (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 safety and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of

Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

Schedule – M

Schedule-M

(See Clauses 14.6, 15.2 and 19.7)

PAYMENT REDUCTION FOR NON-COMPLIANCE

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

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

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

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

2 Percentage reductions in lump sum payments

2.2 The following percentages shall govern the payment reduction:

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

	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers.	5%
	Roadside Drains	
	Cleaning and repair of drains	5%
	Road Furniture	
	Cleaning, painting, replacement of road signs, delineators, road Markings, 200 m/km/5th km stones.	5%
	Miscellaneous Items	
	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane.	10%
	Any other Defects in accordance with paragraph 1.	5%
	Defects in Other Project Facilities	5%

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

$R=P/100 \times M \times L1/L$

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

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

L1 = non-complying length

L = Total length of the road,

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

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

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

Schedule – N

SCHEDULE – N

(See Clause 18.1.(i))

SELECTION OF AUTHORITY'S ENGINEER

1. Selection of Authority's Engineer

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

1.2 Deleted.

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

TERMS OF REFERENCE FOR AUTHORITY'S ENGINEER

1. Scope

1.1 These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "**Agreement**), which has been entered into between the National Highways Authority of India (the "**Authority**") and .....(the "**Contractor**") for **"**"(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura**"**on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2. Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3. General

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

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

(a) Anytime extension;

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

(c) The Termination Payment; or

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

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

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

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

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

4. **Construction Period**

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

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

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

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

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

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

4.7 The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial

action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

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

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality management. For purposes of this Paragraph 4.9, the tests specified in the MoRTH Specifications for Roaf and Bridge Works and respective Indian Roads Congress Standards/Guidelines/Manuals, together with any other Indian/Internation Standards mentioned therein including any modifications/substitutions thereof shall be deemed to be tests conforming to Good Industry Practice for quality management.

4.10 The Authority's Engineer shall witness all the quality control tests carried out by the Contractor at its site laboratory/main laboratory/field/plants. These include tests for all materials, mixes, products, etc. Authority's Engineer shall also witness all tests of finished products like bearing in the manufacturer's laboratory as mandated in respective standards. Authority's Engineer will also conduct review of quality control documents in respect of factory manufactured materials/finished products etc, as per IRC: SP: 112.

4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the MoRTH Specifications for Roaf and Bridge Works and respective Indian Roads Congress Standards/Guidelines/Manuals, together with any other Indian/Internation Standards referred thereto. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

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

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

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

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

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

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

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

4.19 To conduct road inventory and road condition survey by NSV vehicle as per Ministry's extant guidelines.

5. Maintenance Period

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

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

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

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

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

6. Determination of costs and time

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

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

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

7. Payments

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

7.2 Authority's Engineer shall -

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

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause19.10.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

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

8. Other duties and functions

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

9. Miscellaneous

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

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

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

9.3 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

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 19.3.1 subsequent to the last claim;

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

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

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

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

(f) Deductions:

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

  (ii) Any amount towards deduction of taxes; and

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

(g) Net claim: (e) – (f) (iii);

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

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

  (ii) For Change of Scope Orders, and

  (iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule – P

Schedule-P

(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

1.1 The Contractor shall affect and maintain at its own cost, from the Appointed Date till the date of issue of the last Completion Certificate, the following insurances for any loss or damage occurring on account of Non-Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(a) Insurance of Works, Plant and Materials and an additional sum of 15 (fifteen) per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

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

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from whatsoever 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 affect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

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

The insurance cover shall be not less than the value of the Contract Price.

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

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

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

4**. Insurance to be in joint names**

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

Schedule – Q

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

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 kilometer.

Visual and physical test:

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

Schedule – R

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 the """(i) Strengthening of Udaipur–Sabroom section from km 55.000 to km 127.372 of NH-08 and (ii) Raising and drainage provision in selected stretches of Agartala-Udaipur section of NH-08 in the State of Tripura") 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)