Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1. The Site

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

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

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

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

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

Annex – I

(Schedule-A)

Site

[Note: Through suitable drawings and description in 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 Site of the [Two-Lane] Project Highway comprises the section of [National Highway- 208] commencing from km 111.288 to km 139.453 i.e. the Khowai - Teliamura section in the state of Tripura. The land, carriageway and structures comprising the Site are described below.

2. Land

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

S. No.	Existing Chainage (km)		Design Chainage (km)		Existing Right of Way	Remarks
	From	To	From	To	(m)	
1	111.288	111.6	101.300	101.612	15	Existing Alignment Followed
2	111.6	112.1	101.612	102.112	14	Existing Alignment Followed
3	112.1	112.6	102.112	102.612	19	Existing Alignment Followed
4	112.6	113.1	102.612	103.112	17	Existing Alignment Followed
5	113.1	113.6	103.112	103.612	17	Existing Alignment Followed
6	113.6	114.1	103.612	104.100	17	Minor Realignment Proposed
7	114.1	114.6	104.100	104.594	12	Existing Alignment Followed
8	114.6	115.1	104.594	105.084	15	Minor Realignment Proposed
9	115.1	115.6	105.084	105.58	18	Existing Alignment Followed
10	115.6	116.1	105.58	106.100	17	Realignment at Chebri Market
11	116.1	116.6	-	-	16	Major Realignment Proposed
12	116.6	117.1	-	-	20	Major Realignment Proposed
13	117.1	117.6	-	-	15	Major Realignment Proposed
14	117.6	118.1	106.800	107.260	12	Minor Realignment Proposed
15	118.1	118.6	107.260	107.755	15	Existing Alignment Followed
16	118.6	119.1	107.755	108.250	22	Existing Alignment Followed
17	119.1	119.6	108.250	108.760	16	Existing Alignment Followed
18	119.6	120.1	108.760	109.258	14	Existing Alignment Followed
19	120.1	120.6	109.258	109.758	14	Existing Alignment Followed
20	120.6	121.1	109.758	110.250	14	Existing Alignment Followed

S. No.	Existing Chainage (km)		Design Chainage (km)		Existing Right of Way	Remarks
	From	To	From	To	(m)	
21	121.1	121.6	-	-	18	Major Realignment Proposed
22	121.6	122.1	-	-	18	Major Realignment Proposed
23	122.1	122.6	-	-	17	Major Realignment Proposed
24	122.6	123.1	111.500	111.976	17	Minor Realignment Proposed
25	123.1	123.6	111.976	112.480	15	Existing Alignment Followed
26	123.6	124.1	112.480	112.966	16	Minor Realignment Proposed
27	124.1	124.6	112.966	113.464	16	Minor Realignment Proposed
28	124.6	125.1	113.464	113.964	15	Existing Alignment Followed
29	125.1	125.6	113.964	114.464	15	Existing Alignment Followed
30	125.6	126.1	114.464	114.964	15	Existing Alignment Followed
31	126.1	126.6	114.964	115.450	18	Existing Alignment Followed
32	126.6	127.1	115.450	115.750	15	Major Realignment Proposed
33	127.1	127.6	115.750	116.206	15	Minor Realignment Proposed
34	127.6	128.1	116.206	116.700	15	Existing Alignment Followed
35	128.1	128.6	116.700	117.120	20	Minor Realignment Proposed
36	128.6	129.1	117.120	117.608	15	Minor Realignment Proposed
37	129.1	129.6	117.608	118.060	16	Minor Realignment Proposed
38	129.6	130.1	-	-	17	Major Realignment Proposed
39	130.1	130.6	-	-	17	Major Realignment Proposed
40	130.6	131.1	118.840	119.340	15	Existing Alignment Followed
41	131.1	131.6	119.340	119.760	15	Minor Realignment Proposed
42	131.6	132.1	119.760	120.214	14	Minor Realignment Proposed
43	132.1	132.6	120.214	120.610	18	Existing Alignment Followed
44	132.6	133.1	120.610	121.100	18	Minor Realignment Proposed
45	133.1	133.6	121.100	121.586	18	Minor Realignment Proposed
46	133.6	134.1	121.586	122.086	16	Existing Alignment Followed
47	134.1	134.6	122.086	122.576	15	Minor Realignment Proposed
48	134.6	135.1	122.576	123.076	16	Existing Alignment Followed
49	135.1	135.6	123.076	123.573	16	Existing Alignment Followed
50	135.6	136.1	123.573	124.073	15	Existing Alignment Followed
51	136.1	136.6	124.073	124.566	17	Existing Alignment Followed
52	136.6	137.1	124.566	125.060	18	Existing Alignment Followed
53	137.1	137.6	125.060	125.55	16	Existing Alignment Followed
54	137.6	138.1	125.55	126.000	16	Minor Realignment Proposed
55	138.1	138.6	126.000	126.496	17	Existing Alignment Followed
56	138.6	139.1	126.496	126.992	17	Existing Alignment Followed
57	139.1	139.453	126.992	127.319	17	Existing Alignment Followed

3. Carriageway

The present carriageway of the Project Highway is [Single/Intermediate Lane]. The type of the existing pavement is [flexible].

4. Major Bridges

The Site includes the following Major Bridges:

S. No.	Existing Chainage (km)	Design Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
			Foundation	Sub-structure	Super-structure		
1	116.712	106.595	Well	RCC Wall Type	RCC T-Girder	2 X 27.0 + 1 X 33.0 (Additional 60 ft. Bailey Bridge erected at Teliamura End)	8.5

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

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

S. No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	ROB/ RUB
		Foundation	Superstructure			
Nil						

6. Grade separators

The Site includes the following grade separators:

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

7. Minor bridges

The Site includes the following minor bridges:

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

S. No.	Existing Chainage (km)	Design Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
			Foundation	Sub- structure	Super-structure		
1	111.698	101.710	Open	RCC	RCC Slab	1 X 8.5	8.3
2	113.846	103.831	Open	RCC	RCC Slab	1 X 9.0	8.5
3	114.984	104.970	Open	RCC	RCC Slab	1 X 7.0	8.2
4	117.650	-	Open	RCC	RCC Box	2 X 8.5	8.5
5	117.879	107.042	Open	RCC	RCC Box	3 X 8.0	8.2
6	121.256	110.507	Open	RCC	RCC Slab	1 X 7.7	8.5
7	122.887	111.765	Open	RCC	RCC Box	3 X 8.0	8.5
8	124.463	113.327	Open	RCC	RCC Box	3 X 8.0	8.3
9	126.418	115.288	Open	RCC	RCC Box	3 X 8.0	8.3
10	127.852	116.458	Open	RCC	RCC Slab	1 x 8.2	8.4
11	131.060	119.300	Open	RCC	RCC Slab	1 x 7.5	8.0
12	133.852	121.817	Open	RCC	RCC Slab	1 X 8.0	8.3
13	134.370	122.363	Open	RCC	RCC Box	3 X 8.0	8.5
14	137.477	125.436	Open	RCC	RCC Slab	1 X 8.7	8.5
15	139.337	127.235	Pile	RCC	RCC T-Girder	2 X 21.5	11.8

8. Railway level crossings

The Site includes the following railway level crossings:

S. No.	Existing Location (km)	Design Location (km)	Remarks
1	Ch. 136.350 Km	Ch. 124.311 Km	At Trishabari (Near Teliamura Railway Station)

9. Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

S. No.	Existing Chainage	Design Chainage	Type of Culvert	Span /Opening with span length (m)	Width
	(km)	(km)			(m)
1	111.878	101.900	Slab	1 X 1.5	19.5
2	112.875	102.890	HP	1 X 1.0	15.3
3	113.291	103.305	Slab	1 X 1.0	10.2
4	114.221	104.218	Slab	1 X 1.0	5.7
5	114.747	104.736	Slab	1 X 1.0	7.5
6	116.906	-	HP	1 X 0.9	7.8
7	117.120	-	Slab	1 X 1.2	10
8	118.082	107.243	HP	1 X 0.9	8.7
9	118.329	107.474	Slab	1 X 0.8	22
10	119.975	109.133	Slab	1 X 1.0	8
11	120.482	109.643	Slab	1 X 0.8	8.5
12	120.973	110.130	Slab	1 X 1.0	9.5
13	121.649	-	Slab	1 X 1.0	10
14	122.050	-	HP	1 X 0.9	9.3
15	123.100	-	Culvert	Not Visible	-
16	124.037	112.903	HP	1 X 0.6	8.3
17	125.653	114.518	Slab	1 X 2.0	9.9
18	126.635	-	HP	1 X 1.2	-
19	126.818	-	Slab	1 X 1.0	-
20	127.121	-	HP	2 X 1.0	9.3
21	127.665	116.273	Slab	1 X 5.7	8.3
22	128.075	116.675	HP	1 X 1.5	11.3
23	129.083	117.580	HP	1 X 0.6	13.2
24	129.336	117.805	Slab	1 X 1.0	-
25	129.589	118.025	HP	1 X 0.9	9.7
26	129.663	118.120	HP	1 X 0.6	9.2
27	129.84	118.295	HP	4 X 1.2	8.7
28	130.187	-	Slab	1 X 1.0	9.2
29	130.710	118.952	Slab	1 X 0.8	9.1
30	131.599	119.758	Slab	1 X 1.0	-
31	131.733	119.880	HP	1 X 1.0	10
32	131.936	-	HP	1 X 1.0	10
33	132.037	-	HP	1 x 1.0	10
34	132.055	-	HP	1 X 1.2	-
35	132.207	120.222	HP	1 X 1.0	10.1
36	132.377	120.390	HP	1 X 1.0	8.8

S. No.	Existing Chainage	Design Chainage	Type of Culvert	Span /Opening with span length (m)	Width
	(km)	(km)			(m)
37	132.585	120.597	HP	2 X 0.9	9.1
38	133.292	121.278	Slab	1 X 0.8	8.7
39	133.533	121.520	Slab	1 X 3.0	9.5
40	133.541	-	Slab	1 X 1.8	9.5
41	134.008	121.995	HP	1 X 1.0	11.4
42	134.227	122.200	HP	2 X 0.6	11.2
43	134.872	122.850	Slab	1 X 1.2	8.8
44	135.312	123.286	Slab	1 X 1.0	7.8
45	136.413	124.380	HP	1 X 1.2	9.5
46	136.621	124.588	HP	2 X 0.6	-
47	138.035	125.935	Slab	1 X 0.9	10.6
48	138.59	126.487	Slab	1 X 0.8	7.3
49	139.010	126.903	Slab	1 X 1.5	10.2

11. Bus bays

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

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca)	Earthen (Kutcha)
1	113.350	113.450	Lined	
2	113.350	113.525	Lined	
3	116.210	116.300	Lined	
4	116.300	116.450	Lined	

S. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca)	Earthen (Kutcha)
5	122.060	122.340	Lined	
6	123.800	123.925	Lined	
7	126.100	126.450	Lined	
8	126.100	126.580	Lined	
9	126.850	126.950	Lined	
10	126.850	127.050	Lined	
11	127.700	127.750	Lined	
12	128.700	128.790	Lined	
13	131.310	131.500	Lined	
14	133.040	133.300	Lined	
15	134.000	134.287	Lined	
16	134.463	134.525	Lined	
17	134.520	134.685	Lined	
18	134.685	134.830	Lined	
19	134.830	135.350	Lined	
20	134.830	135.400	Lined	
21	135.500	135.650	Lined	
22	135.500	135.770	Lined	
23	139.060	139.100	Lined	
24	139.100	139.740	Lined	

14. Major junctions

The details of major junctions are as follows:

S. No.	Existing Location		Design Location	At grade	Separated	Category of Cross Road			
	From km	to km				NH	SH	MDR	Others
1	117.800		106.970	√				√	
2	139.425		127.319	√		√			

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

15. Minor junctions

The details of the minor junctions are as follows:

S. No.	Existing Location		Design Location	Type	
	From km	To km		T -junction	Cross road
1	111.390		101.400	√	
2	111.810		101.820	√	
3	112.870		102.880	√	
4	113.110		103.120	√	
5	114.185		104.180	√	
6	115.305		105.295	√	
7	116.345		106.300	√	
8	119.875		109.030	√	
9	120.300		109.450	√	
10	120.960		110.120	√	
11	121.025		110.170	√	
12	122.800		111.660	√	
13	123.435		112.310	√	
14	125.640		114.500	√	
15	126.485		115.345		√
16	127.025		115.700	√	
17	127.300		115.930	√	
18	128.115		116.710	√	
19	128.270		116.870	√	
20	128.850		117.360	√	
21	129.100		117.600	√	
22	129.920		118.380	√	
23	130.520		118.750	√	
24	130.700		118.940	√	
25	131.115		119.350	√	
26	131.250		119.430	√	
27	132.125		120.135	√	
28	132.525		120.540	√	
29	133.330		121.320	√	
30	133.750		121.730	√	
31	135.445		123.420	√	
32	136.760		124.725	√	
33	138.295		126.185	√	
34	138.890		126.785		√

16. Bypasses

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

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

17. Existing utilities

(i) Electrical utilities

The site includes the following electrical utilities:-

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

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

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

S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
1	101.300	102.000	-	1.200	1.850	-	2	14	1	100
2	102.000	103.000	-	1.200	0.800	-	4	22	2	100
3	103.000	104.000	-	0.800	1.700	-	2	26	2	25
4	104.000	105.000	-	-	1.800	-	4	11	2	100
5	105.000	106.000	-	0.900	1.400	-	1	10	2	100
6	106.000	107.000	-	0.400	1.200	-	2	8	2	100
7	107.000	108.000	-	1.200	1.900	-	3	21	1	100
8	108.000	109.000	-	0.200	0.900	-	1	19	2	63
9	109.000	110.000	-	-	1.200	-	2	5	1	100
10	110.000	111.000	-	0.200	0.300	-	0	7	1	16
11	111.000	112.000	-	0.300	0.900	-	0	24	2	16
12	112.000	113.000	-	0.400	1.800	-	4	18	2	100
13	113.000	114.000	-	0.600	1.800	-	3	6	2	63

S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
14	114.000	115.000	-	1.200	1.800	-	1	8	1	100
15	115.000	116.000	-	1.000	1.600	-	2	7	1	100
16	116.000	117.000	1.800	2.400	2.500	2	6	25	2	100
17	117.000	118.000	0.200	1.400	2.100	1	0	4	1	16
18	118.000	119.000	-	0.950	1.800	-	2	9	3	63
19	119.000	120.000	-	0.600	1.900	-	1	3	2	63=1, 16=1
20	120.000	121.000	-	1.000	1.500	-	0	13	2	25=1, 63=1
21	121.000	122.000	-	1.200	2.400	-	7	21	3	200=2, 25=1
22	122.000	123.000	-	1.400	1.900	-	2	43	2	100=1, 63=1
23	123.000	124.000	-	1.200	1.700	-	2	14	3	100=2, 63=1
24	124.000	125.000	-	0.600	1.400	-	2	13	2	100=1, 16=1
25	125.000	126.000	-	0.500	2.400	-	1	9	1	100
26	126.000	127.319	-	0.400	3.600	-	3	14	5	100=4, 315=1

* 6.200 Km length of UGC & ABC (11 KV & LT) also present at the end stretch.

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

The site includes the following Public Health utilities:-

S. No	**Chainage**		**Length(in Km)**		**Crossings**	
	From (Km)	**To (Km)**	**Water Supply line**		**Water Supply line**	
			With Pumping	**With Gravity flow**	**With Pumping**	**With Gravity flow**
1	102.250	102.450	0.200	-	-	-
2	102.450	106.450	8.000	-	-	-
3	106.450	108.200	3.500	-	-	-
4	108.200	109.950	3.500	-	-	-
5	109.950	110.200	0.500	-	-	-
6	110.200	110.250	0.050	-	-	-
7	110.600	110.650	0.000	-	0.022	

S. No	Chainage		Length(in Km)		Crossings	
	From (Km)	To (Km)	Water Supply line		Water Supply line	
			With Pumping	With Gravity flow	With Pumping	With Gravity flow
8	111.500	111.650	0.150	-	-	-
9	111.650	112.650	1.000	-	-	-
10	112.650	112.850	0.200	-	-	-
11	112.850	113.350	0.500	-	-	-
12	113.350	-	0.150	-	-	-
13	113.350	114.350	1.000	-	-	-
14	114.350	114.600	0.250	-	-	-
15	114.600	115.300	0.700	-	-	-
16	115.350	-	0.000	-	0.05	
17	115.350	115.550	0.200	-	-	-
18	115.950	116.100	0.150	-	-	-
19	116.100	116.250	0.150	-	-	-
20	116.450	116.650	0.200	-	-	-
21	116.650	116.950	0.300	-	-	-
22	116.950	117.200	0.250	-	-	-
23	117.200	117.550	0.545	-	-	-
24	118.100	118.400	0.300	-	-	-
25	118.400	118.700	0.300	-	-	-
26	118.700	118.800	0.100	-	-	-
27	118.800	118.900	0.100	-	-	-
28	118.900	119.300	0.400	-	-	-
29	119.300	119.650	0.350	-	-	-
30	118.900	119.200	0.300	-	-	-
31	119.200	119.400	0.200	-	-	-
32	119.400	119.650	0.250	-	-	-
33	119.650	119.750	0.100	-	-	-
34	119.750	120.300	0.550	-	-	-
35	120.300	120.500	0.200	-	-	-
36	120.500	120.750	0.250	-	-	-
37	120.750	120.850	0.100	-	-	-
38	120.850	121.450	0.600	-	-	-
39	121.450	121.650	0.200	-	-	-
40	121.800	121.850	0.050	-	-	-
41	121.850	122.200	0.350	-	-	-
42	122.200	122.250	0.050	-	-	-
43	122.250	122.400	0.150	-	-	-
44	122.400	123.400	1.000	-	-	-
45	123.400	123.700	0.300	-	-	-
46	123.700	123.800	0.100	-	-	-
47	123.800	124.350	0.550	-	-	-

S. No	Chainage		Length(in Km)		Crossings	
	From (Km)	To (Km)	Water Supply line		Water Supply line	
			With Pumping	With Gravity flow	With Pumping	With Gravity flow
48	124.350	125.450	1.100	-	-	-
49	125.450	126.150	0.650	-	-	-
50	126.150	126.650	0.500	-	-	-
51	126.650	127.200	0.550	-	-	-
52	126.000	126.400	0.400	-	-	-
53	126.400	126.750	0.350	-	-	-
54	126.750	126.800	0.050	-	-	-
55	126.800	127.050	0.250	-	-	-
56	127.050	127.300	0.250	-	-	-

*No Sewage line has been found in the project corridor.

(iii) Any Other line

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

18. Proposed Right of Way (ROW)

The Proposed Right of Way and co-relation between existing and design chainage is given below:

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
111.288	101.300	7.8	12.2	**20.0**	10.0	10.0	
111.389	101.400	12.0	8.1	**20.0**	10.0	10.0	
111.489	101.500	9.4	10.7	**20.0**	10.0	10.0	
111.589	101.600	11.5	8.5	**20.0**	10.0	10.0	
111.689	101.700	9.9	10.1	**20.0**	10.0	10.0	
111.789	101.800	3.1	16.9	**20.0**	10.0	10.0	
111.888	101.900	-1.2	21.2	**20.0**	10.0	10.0	
111.988	102.000	5.8	14.2	**20.0**	10.0	10.0	
112.086	102.100	10.7	9.3	**20.0**	10.0	10.0	
112.188	102.200	7.2	12.8	**20.0**	10.0	10.0	
112.288	102.300	9.4	10.7	**20.0**	10.0	10.0	
112.388	102.400	10.7	9.3	**20.0**	10.0	10.0	
112.488	102.500	9.9	10.1	**20.0**	10.0	10.0	
112.588	102.600	10.5	9.5	**20.0**	10.0	10.0	
112.688	102.700	9.1	11.0	**20.0**	10.0	10.0	
112.788	102.800	9.0	11.0	**20.0**	10.0	10.0	
112.888	102.900	10.4	9.6	**20.0**	10.0	10.0	
112.988	103.000	8.5	11.5	**20.0**	10.0	10.0	

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
113.088	103.100	8.5	11.5	**20.0**	10.0	10.0	
113.188	103.200	10.1	9.9	**20.0**	10.0	10.0	
113.288	103.300	11.3	8.8	**20.0**	10.0	10.0	
113.389	103.400	15.7	4.3	**20.0**	10.0	10.0	
113.490	103.500	16.4	13.6	**30.0**	15.0	15.0	
113.590	103.600	16.3	13.7	**30.0**	15.0	15.0	
113.689	103.700	26.1	3.9	**30.0**	15.0	15.0	
113.800	103.800	-6.8	36.8	**30.0**	15.0	15.0	
113.900	103.900	3.0	27.0	**30.0**	15.0	15.0	
114.000	104.000	15.7	14.4	**30.0**	15.0	15.0	
114.100	104.100	19.3	10.7	**30.0**	15.0	15.0	
114.200	104.200	11.0	19.0	**30.0**	15.0	15.0	
114.306	104.300	7.8	12.2	**20.0**	10.0	10.0	
114.406	104.400	7.6	12.4	**20.0**	10.0	10.0	
114.505	104.500	7.8	12.3	**20.0**	10.0	10.0	
114.606	104.600	10.4	9.6	**20.0**	10.0	10.0	
114.710	104.700	7.0	13.0	**20.0**	10.0	10.0	
114.811	104.800	5.1	15.0	**20.0**	10.0	10.0	
114.908	104.900	2.7	17.3	**20.0**	10.0	10.0	
115.008	105.000	-10.6	30.6	**20.0**	10.0	10.0	
115.115	105.100	5.8	14.2	**20.0**	10.0	10.0	
115.217	105.200	15.3	14.7	**30.0**	15.0	15.0	
115.317	105.300	15.5	14.5	**30.0**	15.0	15.0	
115.417	105.400	15.9	14.1	**30.0**	15.0	15.0	
115.517	105.500	15.5	14.5	**30.0**	15.0	15.0	
115.617	105.600	15.2	14.8	**30.0**	15.0	15.0	
115.717	105.700	14.4	15.6	**30.0**	15.0	15.0	
115.817	105.800	12.0	18.0	**30.0**	15.0	15.0	
115.900	105.900	-28.3	58.3	**30.0**	15.0	15.0	Minor Realignment
116.000	106.000	-70.3	100.3	**30.0**	15.0	15.0	Minor Realignment
116.150	106.100	-16.9	46.9	**30.0**	15.0	15.0	Minor Realignment
116.258	106.200	12.4	17.6	**30.0**	15.0	15.0	
116.350	106.300	36.8	3.2	**40.0**	20.0	20.0	Major Realignment
-	106.400	514.0	-474.0	**40.0**	20.0	20.0	Major Realignment
-	106.500	581.4	-541.4	**40.0**	20.0	20.0	Major Realignment
-	106.600	453.0	-413.0	**40.0**	20.0	20.0	Major Realignment
-	106.700	342.3	-302.3	**40.0**	20.0	20.0	Major Realignment
-	106.800	180.9	-140.9	**40.0**	20.0	20.0	Major Realignment
-	106.900	94.4	-54.4	**40.0**	20.0	20.0	Major Realignment
117.844	107.000	29.8	0.2	**30.0**	15.0	15.0	
117.944	107.100	26.5	3.5	**30.0**	15.0	15.0	

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
118.040	107.200	21.7	8.3	**30.0**	15.0	15.0	
118.140	107.300	12.4	17.6	**30.0**	15.0	15.0	
118.240	107.400	4.1	25.9	**30.0**	15.0	15.0	
118.340	107.500	-1.9	31.9	**30.0**	15.0	15.0	
118.445	107.600	-0.9	30.9	**30.0**	15.0	15.0	
118.545	107.700	2.2	27.8	**30.0**	15.0	15.0	
118.644	107.800	11.5	18.5	**30.0**	15.0	15.0	
118.745	107.900	11.2	18.8	**30.0**	15.0	15.0	
118.850	108.000	13.7	16.3	**30.0**	15.0	15.0	
118.950	108.100	15.3	14.7	**30.0**	15.0	15.0	
119.050	108.200	6.7	23.3	**30.0**	15.0	15.0	
119.145	108.300	2.9	27.1	**30.0**	15.0	15.0	
119.244	108.400	12.6	17.5	**30.0**	15.0	15.0	
119.345	108.500	14.5	15.5	**30.0**	15.0	15.0	
119.444	108.600	22.0	8.0	**30.0**	15.0	15.0	
119.541	108.700	16.9	3.1	**20.0**	10.0	10.0	
119.641	108.800	6.4	13.6	**20.0**	10.0	10.0	
119.742	108.900	8.6	11.5	**20.0**	10.0	10.0	
119.842	109.000	8.5	11.5	**20.0**	10.0	10.0	
119.942	109.100	9.7	10.3	**20.0**	10.0	10.0	
120.042	109.200	9.9	10.1	**20.0**	10.0	10.0	
120.142	109.300	9.4	10.6	**20.0**	10.0	10.0	
120.242	109.400	14.0	16.0	**30.0**	15.0	15.0	
120.342	109.500	16.5	13.6	**30.0**	15.0	15.0	
120.442	109.600	15.3	14.7	**30.0**	15.0	15.0	
120.542	109.700	12.8	17.3	**30.0**	15.0	15.0	
120.642	109.800	18.7	11.3	**30.0**	15.0	15.0	
120.742	109.900	15.4	14.6	**30.0**	15.0	15.0	
120.842	110.000	14.4	15.6	**30.0**	15.0	15.0	
120.942	110.100	15.6	14.4	**30.0**	15.0	15.0	
-	110.200	-6.1	36.1	**30.0**	15.0	15.0	Major Realignment
-	110.300	-128.3	158.3	**30.0**	15.0	15.0	Major Realignment
-	110.400	-178.6	208.6	**30.0**	15.0	15.0	Major Realignment
-	110.500	-208.6	238.6	**30.0**	15.0	15.0	Major Realignment
-	110.600	-266.2	298.2	**32.0**	15.0	17.0	Major Realignment
-	110.700	-333.6	363.6	**30.0**	15.0	15.0	Major Realignment
-	110.800	-366.8	396.8	**30.0**	15.0	15.0	Major Realignment
-	110.900	-390.6	420.6	**30.0**	15.0	15.0	Major Realignment
-	111.000	-411.3	441.3	**30.0**	15.0	15.0	Major Realignment
-	111.100	-439.9	469.9	**30.0**	15.0	15.0	Major Realignment
-	111.200	-429.1	459.1	**30.0**	15.0	15.0	Major Realignment
-	111.300	-380.3	410.3	**30.0**	15.0	15.0	Major Realignment

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
-	111.400	-315.9	345.9	**30.0**	15.0	15.0	Major Realignment
-	111.500	-196.6	230.6	**34.0**	17.0	17.0	Major Realignment
-	111.600	-44.8	74.8	**30.0**	15.0	15.0	Major Realignment
122.823	111.700	14.5	15.5	**30.0**	15.0	15.0	
112.920	111.800	16.8	13.2	**30.0**	15.0	15.0	
123.023	111.900	12.0	18.0	**30.0**	15.0	15.0	
123.123	112.000	18.6	11.4	**30.0**	15.0	15.0	
123.223	112.100	10.5	9.5	**20.0**	10.0	10.0	
123.323	112.200	9.5	10.5	**20.0**	10.0	10.0	
123.423	112.300	5.6	14.4	**20.0**	10.0	10.0	
123.523	112.400	0.7	19.3	**20.0**	10.0	10.0	
123.623	112.500	-9.3	29.3	**20.0**	10.0	10.0	
123.724	112.600	-21.0	41.0	**20.0**	10.0	10.0	
123.826	112.700	10.6	9.4	**20.0**	10.0	10.0	
123.932	112.800	13.7	6.3	**20.0**	10.0	10.0	
124.033	112.900	4.3	15.7	**20.0**	10.0	10.0	
124.134	113.000	10.4	9.6	**20.0**	10.0	10.0	
124.237	113.100	15.3	4.7	**20.0**	10.0	10.0	
124.334	113.200	20.8	-0.8	**20.0**	10.0	10.0	
124.434	113.300	26.5	-6.5	**20.0**	10.0	10.0	
124.542	113.400	-10.8	30.8	**20.0**	10.0	10.0	
124.635	113.500	-9.1	39.1	**30.0**	15.0	15.0	
124.735	113.600	1.6	28.5	**30.0**	15.0	15.0	
124.835	113.700	11.4	18.6	**30.0**	15.0	15.0	
124.935	113.800	15.3	14.7	**30.0**	15.0	15.0	
125.035	113.900	16.4	13.6	**30.0**	15.0	15.0	
125.136	114.000	15.6	14.4	**30.0**	15.0	15.0	
125.236	114.100	14.7	15.3	**30.0**	15.0	15.0	
125.336	114.200	9.8	10.2	**20.0**	10.0	10.0	
125.436	114.300	10.2	9.8	**20.0**	10.0	10.0	
125.536	114.400	9.9	10.1	**20.0**	10.0	10.0	
125.636	114.500	10.0	10.0	**20.0**	10.0	10.0	
125.736	114.600	9.3	10.7	**20.0**	10.0	10.0	
125.837	114.700	9.3	10.7	**20.0**	10.0	10.0	
125.936	114.800	8.5	11.5	**20.0**	10.0	10.0	
126.037	114.900	8.5	11.5	**20.0**	10.0	10.0	
126.137	115.000	8.3	11.7	**20.0**	10.0	10.0	
126.236	115.100	8.6	11.4	**20.0**	10.0	10.0	
126.337	115.200	10.1	9.9	**20.0**	10.0	10.0	
126.437	115.300	2.0	22.0	**24.0**	12.0	12.0	
-	115.400	32.0	-8.0	**24.0**	12.0	12.0	
-	115.500	-18.8	42.8	**24.0**	12.0	12.0	Minor Realignment

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
-	115.600	-75.8	99.8	**24.0**	12.0	12.0	Minor Realignment
-	115.700	-85.1	115.1	**30.0**	15.0	15.0	Minor Realignment
-	115.800	-78.6	108.6	**30.0**	15.0	15.0	Minor Realignment
-	115.900	-20.2	50.2	**30.0**	15.0	15.0	Minor Realignment
-	116.000	-11.9	41.9	**30.0**	15.0	15.0	
127.495	116.100	9.5	20.5	**30.0**	15.0	15.0	
127.594	116.200	8.3	21.7	**30.0**	15.0	15.0	
127.695	116.300	4.9	25.1	**30.0**	15.0	15.0	
127.795	116.400	11.3	18.7	**30.0**	15.0	15.0	
127.895	116.500	17.3	12.7	**30.0**	15.0	15.0	
127.995	116.600	16.0	14.0	**30.0**	15.0	15.0	
128.100	116.700	18.3	11.7	**30.0**	15.0	15.0	
-	116.800	37.1	-7.1	**30.0**	15.0	15.0	
128.324	116.900	25.4	4.6	**30.0**	15.0	15.0	
128.425	117.000	6.9	23.1	**30.0**	15.0	15.0	
-	117.100	-27.6	57.6	**30.0**	15.0	15.0	
-	117.200	34.5	-4.5	**30.0**	15.0	15.0	
128.789	117.300	16.9	13.1	**30.0**	15.0	15.0	
128.894	117.400	15.1	9.0	**24.0**	12.0	12.0	
-	117.500	-20.3	44.3	**24.0**	12.0	12.0	
129.097	117.600	-2.2	26.2	**24.0**	12.0	12.0	
129.196	117.700	13.9	16.1	**30.0**	15.0	15.0	
-	117.800	30.8	-0.8	**30.0**	15.0	15.0	
-	117.900	54.3	-24.3	**30.0**	15.0	15.0	
-	118.000	-20.6	50.6	**30.0**	15.0	15.0	
-	118.100	-14.6	44.6	**30.0**	15.0	15.0	
129.743	118.200	20.4	9.6	**30.0**	15.0	15.0	
129.845	118.300	16.5	13.5	**30.0**	15.0	15.0	
-	118.400	-18.4	48.4	**30.0**	15.0	15.0	Minor Realignment
-	118.500	-102.0	132.0	**30.0**	15.0	15.0	Minor Realignment
-	118.600	-78.5	108.5	**30.0**	15.0	15.0	Minor Realignment
-	118.700	-30.7	60.7	**30.0**	15.0	15.0	Minor Realignment
130.561	118.800	14.6	15.4	**30.0**	15.0	15.0	
130.661	118.900	13.5	16.5	**30.0**	15.0	15.0	
130.761	119.000	14.7	15.3	**30.0**	15.0	15.0	
130.860	119.100	11.5	12.5	**24.0**	12.0	12.0	
130.961	119.200	19.1	4.9	**24.0**	12.0	12.0	
131.061	119.300	25.5	-1.5	**24.0**	12.0	12.0	
-	119.400	-39.0	63.0	**24.0**	12.0	12.0	
131.326	119.500	28.5	-4.5	**24.0**	12.0	12.0	
131.425	119.600	12.4	11.6	**24.0**	12.0	12.0	
-	119.700	47.8	-23.8	**24.0**	12.0	12.0	Minor Realignment

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
131.654	119.800	19.7	4.3	**24.0**	12.0	12.0	
131.754	119.900	14.4	9.6	**24.0**	12.0	12.0	
-	120.000	27.4	-3.4	**24.0**	12.0	12.0	
-	120.100	103.7	-79.7	**24.0**	12.0	12.0	Minor Realignment
132.186	120.200	10.4	13.6	**24.0**	12.0	12.0	
132.288	120.300	14.2	9.8	**24.0**	12.0	12.0	
-	120.400	7.1	16.9	**24.0**	12.0	12.0	
132.490	120.500	8.2	15.8	**24.0**	12.0	12.0	
132.589	120.600	13.2	10.8	**24.0**	12.0	12.0	
132.690	120.700	11.9	12.1	**24.0**	12.0	12.0	
132.790	120.800	14.2	9.9	**24.0**	12.0	12.0	
-	120.900	33.1	-9.1	**24.0**	12.0	12.0	Minor Realignment
132.995	121.000	44.8	-20.8	**24.0**	12.0	12.0	Minor Realignment
133.100	121.100	7.8	16.2	**24.0**	12.0	12.0	Minor Realignment
-	121.200	-17.0	41.0	**24.0**	12.0	12.0	Minor Realignment
-	121.300	-10.8	34.8	**24.0**	12.0	12.0	Minor Realignment
133.414	121.400	14.6	9.4	**24.0**	12.0	12.0	
133.514	121.500	11.2	12.8	**24.0**	12.0	12.0	
134.614	121.600	12.2	11.8	**24.0**	12.0	12.0	
134.715	121.700	13.0	11.0	**24.0**	12.0	12.0	
134.815	121.800	12.1	11.9	**24.0**	12.0	12.0	
134.915	121.900	11.3	12.7	**24.0**	12.0	12.0	
134.015	122.000	9.2	14.8	**24.0**	12.0	12.0	
134.115	122.100	1.4	22.6	**24.0**	12.0	12.0	
134.219	122.200	-14.7	38.7	**24.0**	12.0	12.0	Minor Realignment
134.321	122.300	-1.3	25.3	**24.0**	12.0	12.0	
134.421	122.400	1.4	22.6	**24.0**	12.0	12.0	
134.523	122.500	13.9	10.1	**24.0**	12.0	12.0	
134.623	122.600	13.2	10.8	**24.0**	12.0	12.0	
134.723	122.700	12.4	11.6	**24.0**	12.0	12.0	
134.824	122.800	11.8	12.3	**24.0**	12.0	12.0	
134.924	122.900	8.2	15.8	**24.0**	12.0	12.0	
135.025	123.000	14.5	9.5	**24.0**	12.0	12.0	
135.125	123.100	11.4	12.6	**24.0**	12.0	12.0	
135.225	123.200	11.4	12.6	**24.0**	12.0	12.0	
135.327	123.300	8.0	16.0	**24.0**	12.0	12.0	
135.427	123.400	13.5	10.5	**24.0**	12.0	12.0	
135.527	123.500	12.5	11.5	**24.0**	12.0	12.0	
135.627	123.600	12.0	12.0	**24.0**	12.0	12.0	
135.727	123.700	11.2	12.8	**24.0**	12.0	12.0	
135.827	123.800	10.4	13.6	**24.0**	12.0	12.0	
135.927	123.900	14.4	25.6	**40.0**	20.0	20.0	

Existing Chainage (km)	Design Chainage (km)	From Existing Road Center Line		Total Proposed ROW (m)	From Proposed Road Center Line		Remarks
		Proposed ROW_Left (m)	Proposed ROW_Right (m)		PROW_ Left (m)	PROW_ Right (m)	
136.027	124.000	10.4	29.6	**40.0**	20.0	20.0	
136.128	124.100	18.8	21.2	**40.0**	20.0	20.0	
136.231	124.200	35.0	5.0	**40.0**	20.0	20.0	
136.332	124.300	29.3	10.7	**40.0**	20.0	20.0	
136.434	124.400	17.5	22.5	**40.0**	20.0	20.0	
136.534	124.500	21.0	19.0	**40.0**	20.0	20.0	
136.634	124.600	22.8	17.2	**40.0**	20.0	20.0	
136.737	124.700	33.1	6.9	**40.0**	20.0	20.0	
136.837	124.800	13.0	27.0	**40.0**	20.0	20.0	
136.940	124.900	19.1	20.9	**40.0**	20.0	20.0	
137.040	125.000	19.4	20.6	**40.0**	20.0	20.0	
137.140	125.100	20.2	19.9	**40.0**	20.0	20.0	
137.240	125.200	24.4	15.6	**40.0**	20.0	20.0	
137.342	125.300	6.3	13.7	**20.0**	10.0	10.0	
137.442	125.400	10.9	9.1	**20.0**	10.0	10.0	
137.543	125.500	15.4	4.6	**20.0**	10.0	10.0	
-	125.600	-37.3	57.3	**20.0**	10.0	10.0	Minor Realignment
-	125.700	-62.4	82.4	**20.0**	10.0	10.0	Minor Realignment
137.890	125.800	-2.6	22.6	**20.0**	10.0	10.0	Minor Realignment
137.997	125.900	-3.9	23.9	**20.0**	10.0	10.0	Minor Realignment
138.102	126.000	24.9	0.1	**25.0**	15.0	10.0	Minor Realignment
138.202	126.100	14.2	10.8	**25.0**	15.0	10.0	
138.304	126.200	12.5	7.5	**20.0**	10.0	10.0	
138.404	126.300	6.7	13.4	**20.0**	10.0	10.0	
138.504	126.400	10.0	10.0	**20.0**	10.0	10.0	
138.604	126.500	10.3	9.7	**20.0**	10.0	10.0	
138.704	126.600	14.8	15.3	**30.0**	15.0	15.0	
138.804	126.700	9.6	10.4	**20.0**	10.0	10.0	
138.905	126.800	15.9	4.1	**20.0**	10.0	10.0	
139.008	126.900	15.0	10.0	**25.0**	15.0	10.0	
139.108	127.000	10.8	9.2	**20.0**	10.0	10.0	
139.208	127.100	4.1	15.9	**20.0**	10.0	10.0	
139.306	127.200	10.0	10.1	**20.0**	10.0	10.0	
139.406	127.300	-	-	**-**	-	-	Major Junction
139.453	127.319		-	**-**	-	-	End Point Junction with NH-8

Annex – II

(As per Clause 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sl. No	From km	to km	Length (km)	Width (m)	Date of providing Right of Way*
(1)	(2)		(3)	(4)	(5)
(i) Full Right of Way (full width)					
1	101.300	103.450	2.150	20	On Appointed date
2	103.450	104.200	0.750	30	
3	104.200	105.150	0.950	20	
4	105.150	106.300	1.150	30	
5	106.300	106.900	0.600	40	
6	106.900	108.680	1.780	30	
7	108.680	109.400	0.720	20	
8	109.400	110.600	1.200	30	
9	110.600	110.690	0.090	32	
10	110.690	111.460	0.770	30	
11	111.460	111.530	0.070	34	
12	111.530	112.000	0.470	30	
13	112.000	113.500	1.500	20	
14	113.500	114.100	0.600	30	
15	114.100	115.300	1.200	20	
16	115.300	115.700	0.400	24	
17	115.700	117.300	1.600	30	
18	117.300	117.650	0.350	24	
19	117.650	119.000	1.350	30	
20	119.000	123.850	4.850	24	
21	123.850	125.250	1.400	40	
22	125.250	125.930	0.680	20	
23	125.930	126.160	0.230	25	
24	126.160	126.570	0.410	20	
25	126.570	126.600	0.030	25	
26	126.600	126.630	0.030	30	
27	126.630	126.690	0.060	25	
28	126.690	126.860	0.170	20	
29	126.860	126.980	0.120	25	
30	126.980	127.260	0.280	20	
31	127.260	127.319	0.059	20-30	

Sl. No	**From km to km**	**Length (km)**	**Width (m)**	**Date of providing Right of Way***
(1)	**(2)**	**(3)**	**(4)**	**(5)**
(ii) Part Right of Way (full width) (a) Stretch (b) Stretch (c) Stretch				
(iii) Balance Right of Way (full width) (a) Stretch (b) Stretch (c) Stretch				

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

Annex - III

(Schedule-A)

Alignment Plans

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

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, 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.

(ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specification/IRC Codes/Manual.

Annex – IV

(Schedule-A)

Environment Clearances

No Environment Clearance is required for the project.

Schedule - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. [Rehabilitation and augmentation]

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

3. Specifications and Standards

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

Annex – I

(Schedule-B)

Description of [Two-Laning]

[Note: Description of the Project Highway shall be given by the Authority in detail together with explanatory drawings (where necessary) to explain the Authority's requirements precisely in order to avoid subsequent changes in the Scope of the Project. The particulars that must be specified in this Schedule-B are listed below as per the requirements of the Manual of Specifications and Standards for [Two Laning of Highways (IRC:SP:73-2018)], referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements shall be specified in this Schedule. In addition to these particulars, all other essential project specific details, as required, should be provided in order to define the Scope of the Project clearly and precisely.]

1. Widening of the Existing Highway

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

(ii) Width of Carriageway

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

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

Sl. No.	Built-up stretch (Township)	Location (km to km)		Width (m)	Typical cross section (Ref. to Manual)
1	Moharcherra Market	121.500	121.800	12m	TCS-4
2	Karailong Market	126.500	127.130	12m	TCS-4

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

[$] The contents of this Annex-I may be modified in accordance with the structure of the Project.

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be the minimum design speed of [80 km per hr for plain/rolling terrain].

(iii) Improvement of the existing road geometrics

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

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

Sl. No.	Stretch (from km to km)		Type of deficiency	Remarks
1	101.531	101.563	R= 200m	Plain & Rolling Terrain
2	103.722	103.763	R= 100m	
3	103.968	104.005	R= 200m	
4	104.487	104.525	R= 150m	
5	104.657	104.681	R= 100m	
6	104.860	104.895	R= 150m	
7	105.070	105.091	R= 100m	
8	107.151	107.166	R= 200m	
9	113.404	113.415	R= 120m	
10	117.306	117.500	R= 200m	
11	119.380	119.532	R= 200m	
12	120.102	120.126	R= 100m	
13	120.245	120.284	R= 150m	
14	120.512	120.619	R= 200m	
15	125.792	125.910	R= 155m	
16	126.151	126.223	R= 155m	
17	126.783	126.858	R= 200m	
18	127.110	127.206	R= 80m	

(iv) Right of Way

[Refer to paragraph 2.3 of the Manual]. Details of the Right of Way are given in Annex II of Schedule-A.

(v) Type of shoulders

[Refer to paragraph 2.5.2 of the Manual and specify]

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

Sl. No.	Stretch (from km to km)		Fully paved shoulders/ footpaths	Reference to cross section
1	121.500	121.800	Yes	TCS-4
2	126.500	127.130	Yes	TCS-4

(b) In open country, [paved shoulders of 1.5 m width shall be provided and balance 1.0m width shall be covered with 150 mm thick compacted layer of granular material].

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

(vi) Lateral and vertical clearances at underpasses

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

(b) 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			

(vii) 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			

(viii) 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
1	123.700	124.950	Both sides	2.500

(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 provision of relevant Manual and specify the requirements of cattle and pedestrian underpass/overpass]

Sl. No.	Location	Type of crossing
Nil		

(xi) Typical cross-sections of the Project Highway

[Give typical cross-sections of the Project Highway by reference to the Manual]

As per attached Drawings

TCS TYPE	**DESCRIPTION**
TCS-1	Typical Cross Section Of 2-Lane Carriageway With Paved Shoulder In Rural Area (Reconstruction) Applicable For Plain/Rolling Terrain
TCS-2	Typical Cross Section Of 2-Lane Carriageway With Paved Shoulder In Bypass And Realignment Stretch (New construction) Applicable For Plain/Rolling Terrain
TCS-3	Typical Cross Section Of 2-Lane Carriageway With Paved Shoulder In Bypass And Realignment Stretch Applicable For Plain/Rolling Terrain In Cutting Section (New construction)
TCS-4	Typical Cross Section Of 2-Lane Carriageway With Paved Shoulder And Both Side RCC Cover Drain In Builtup Area Applicable For Plain/Rolling Terrain (Reconstruction)
TCS-17	Typical Cross Section Of 2 Lane Carriageway In RoB Approaches With Both Side Service Road (New Construction)

Design Chainage (m)		**Length (m)**	**TCS Type**
From	**To**		
101300	102200	900	TCS –2
102200	105800	3600	TCS –1
105800	107000	1200	TCS –2
107000	110200	3200	TCS –1
110200	110500	300	TCS –2
110500	110775	275	TCS –3
110775	110800	25	TCS –2
110800	111150	350	TCS –3
111150	111275	125	TCS –2
111275	111350	75	TCS –3
111350	111450	100	TCS –2
111450	111525	75	TCS –3
111525	111600	75	TCS –2
111600	111700	100	TCS –3
111700	115300	3600	TCS –1
115300	115450	150	TCS–3
115450	115925	475	TCS –2
115925	116000	75	TCS –3
116000	116500	500	TCS –1

Design Chainage (m)		Length (m)	TCS Type
From	To		
116500	116625	125	TCS –3
116625	117000	375	TCS –1
117000	117300	300	TCS –2
117300	117475	175	TCS –3
117475	117650	175	TCS –2
117650	117750	100	TCS –1
117750	118200	450	TCS –2
118200	118400	200	TCS –1
118400	118450	50	TCS –2
118450	118525	75	TCS –3
118525	118800	275	TCS –2
118800	119000	200	TCS –1
119000	119225	225	TCS –3
119225	119350	125	TCS –2
119350	119525	175	TCS –3
119525	120325	800	TCS –1
120325	120525	200	TCS –3
120525	121075	550	TCS –1
121075	121225	150	TCS-3
121225	121300	75	TCS-1
121300	121450	150	TCS-3
121450	121500	50	TCS-1
121500	121800	300	TCS-4
121800	123700	1900	TCS-1
123700	124950	1250	TCS-17
124950	125900	950	TCS-2
125900	126500	600	TCS-1
126500	127130	630	TCS-4
127130	127319	189	TCS-1
Total length =		**26019 m**	

3. Intersections 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

Major Intersections

Sl. No.	Intersection at km	Type of intersection	Other features
1	106.970	3-Legged	
2	127.319	3-Legged	

Minor Intersections

Sl. No.	Intersection at km	Type of intersection	Other features
1	101.400	3 legged	
2	101.820	3 legged	
3	102.880	3 legged	
4	103.120	3 legged	
5	104.180	3 legged	
6	105.295	3 legged	
7	106.300	3 legged	
8	109.030	3 legged	
9	109.450	3 legged	
10	110.120	3 legged	
11	110.170	3 legged	
12	111.660	3 legged	
13	112.310	3 legged	
14	114.500	3 legged	
15	115.345	4 legged	
16	115.700	3 legged	
17	115.930	3 legged	
18	116.710	3 legged	
19	116.870	3 legged	
20	117.360	3 legged	
21	117.600	3 legged	
22	118.380	3 legged	

Sl. No.	Intersection at km	Type of intersection	Other features
23	118.750	3 legged	
24	118.940	3 legged	
25	119.350	3 legged	
26	119.430	3 legged	
27	120.135	3 legged	
28	120.540	3 legged	
29	121.320	3 legged	
30	121.730	3 legged	
31	123.420	3 legged	
32	124.725	3 legged	
33	126.185	3 legged	
34	126.785	4 legged	

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

(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.	Section (from km to km)	Length	Extent of raising [Top of finished road level]
Nil			

5. Pavement Design

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

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design CBR of not exceeding 8%.

Wherever existing soil is to be used as subgrade and found in poor condition, soil stabilization shall be done to achieve minimum design CBR of 8%.

(ii) Type of pavement

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

(iii) Design requirements

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

a) Design Period and strategy

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

b) Design Traffic

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

(iv) Reconstruction of stretches

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

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

Sl. No.	Stretch From km to km		Remarks
1	102.200	105.800	TCS –1
2	107.000	110.200	TCS –1
3	111.700	115.300	TCS –1
4	116.000	116.500	TCS –1
5	116.625	117.000	TCS –1
6	117.650	117.750	TCS –1
7	118.200	118.400	TCS –1
8	118.800	119.000	TCS –1
9	119.525	120.325	TCS –1
10	120.525	121.075	TCS –1
11	121.225	121.300	TCS –1

Sl. No.	Stretch From km to km		Remarks
12	121450	121500	TCS-1
13	121500	121800	TCS-4
14	121800	123700	TCS-1
15	125900	126500	TCS-1
16	126500	127130	TCS-4
17	127130	127319	TCS-1

6. Roadside Drainage

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

List of RCC Cover Drain for Main Road

Chainage (m)		Side	Net Length (m)
From	To		
121500	121800	Both	592.00
126500	127130	Both	1255.00
Total=			**1,847 m**

List of RCC Cover Drain for Service Road

Chainage (m)		Side	Net Length (m)
From	To		
123700	124950	Both	2154.00
Total=			**2,154 m**

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) metre length, if the carriageway width is different from 7.5 (seven point five) metres in the table below.]

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features*
1	101.710	**Carriageway Width = 11.0 m**

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features*
2	103.831	Footpath width= 3.0m (2x1.5m) Width of Crash Barrier = 1.0m (2x0.5m) Width of Railings = 1.0m (2x0.50m) Overall width = 16 m
3	104.970	
4	106.595	
5	107.042	
6	110.507	
7	111.765	
8	113.327	
9	115.288	
10	116.458	
11	119.300	
12	121.817	
13	122.363	
14	125.436	

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

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

Sl. No.	Location at km	Remarks
1	101.710	1.5 m wide Footpath on Both Side
2	103.831	
3	104.970	
4	106.595	
5	107.042	
6	110.507	
7	111.765	
8	113.327	
9	115.288	
10	116.458	
11	119.300	
12	121.817	
13	122.363	

14	125.436	

(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:

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

Sl. No.	**Bridge at km**	**Utility service to be carried**	**Remarks**
Nil			

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

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

Sl. No.	**Culvert location (km)**	**Span/Opening (m)**	**Remarks, if any***
1	101.900	2.0 X 3.0 X (Single Cell)	
2	102.890	2.0 X 3.0 X (Single Cell)	
3	103.305	2.0 X 3.0 X (Single Cell)	
4	104.218	2.0 X 3.0 X (Single Cell)	
5	104.736	2.0 X 3.0 X (Single Cell)	
6	107.243	2.0 X 3.0 X (Single Cell)	
7	107.474	2.0 X 2.0 X (Single Cell)	
8	109.133	2.0 X 3.0 X (Single Cell)	
9	109.643	2.0 X 2.0 X (Single Cell)	
10	110.130	3.0 X 4.0 X (Single Cell)	
11	112.903	2.0 X 2.0 X (Single Cell)	

Sl. No.	Culvert location (km)	Span/Opening (m)	Remarks, if any*
12	114.518	3.0 X 4.0 X (Single Cell)	
13	116.273	3.0 X 3.0 X (Single Cell)	
14	116.675	2.0 X 2.0 X (Single Cell)	
15	117.580	2.0 X 2.0 X (Single Cell) with EC	
16	117.805	2.0 X 3.0 X (Single Cell)	
17	118.025	2.0 X 2.0 X (Single Cell) with EC	
18	118.120	2.0 X 2.0 X (Single Cell) with EC	
19	118.295	3.0 X 3.0 X (Single Cell) with EC	
20	118.952	2.0 X 2.0 X (Single Cell) with EC	
21	119.758	2.0 X 3.0 X (Single Cell)	
22	119.880	2.0 X 2.0 X (Single Cell) with EC	
23	120.222	2.0 X 3.0 X (Single Cell)	
24	120.390	2.0 X 3.0 X (Single Cell)	
25	120.597	2.0 X 3.0 X (Single Cell)	
26	121.278	2.0 X 3.0 X (Single Cell)	
27	121.520	3.0 X 4.0 X (Single Cell)	
28	121.995	3.0 X 4.0 X (Single Cell)	
29	122.200	2.0 X 3.0 X (Single Cell)	
30	122.850	2.0 X 3.0 X (Single Cell)	
31	123.286	2.0 X 2.0 X (Single Cell)	
32	124.380	2.0 X 3.0 X (Single Cell)	
33	124.588	2.0 x 2.0 X (Single Cell)	
34	125.935	2.0 X 3.0 X (Single Cell)	
35	126.487	2.0 X 2.0 X (Single Cell)	
36	126.903	2.0 X 3.0 X (Single Cell)	

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

(c) Widening of existing culverts:

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

out.

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

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

Sl No.	Culvert location (km)	Span/Opening (m)
1	102.121	2.0 X 2.0 X (Single Cell)
2	102.300	2.0 X 2.0 X (Single Cell)
3	105.331	2.0 X 2.0 X (Single Cell)
4	107.718	2.0 X 3.0 X (Single Cell)
5	108.600	2.0 X 3.0 X (Single Cell)
6	111.400	2.0 X 3.0 X (Single Cell)
7	112.090	2.0 X 2.0 X (Single Cell)
8	112.414	2.0 X 2.0 X (Single Cell)
9	113.620	2.0 X 2.0 X (Single Cell)
10	114.180	2.0 X 2.0 X (Single Cell)
11	115.600	2.0 X 3.0 X (Single Cell)
12	115.750	3.0 X 3.0 X (Single Cell) with EC
13	118.575	2.0 X 3.0 X (Single Cell) with EC
14	120.112	2.0 X 3.0 X (Single Cell)
15	122.550	2.0 X 2.0 X (Single Cell)
16	125.700	2.0 X 2.0 X (Single Cell)

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

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

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

(f) 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 bridges at the following locations shall be re-constructed as new Structures]

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

Sl. No.	Bridge location (km)	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Proposed Span Arrangement (m)
		Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
1	101.710	RCC Slab	1 X 8.5	Insufficient width and not conform to IRC Loadings.	2 x 6.0
2	103.831	RCC Slab	1 X 9.0		2 x 5.0
3	104.970	RCC Slab	1 X 7.0		2 x 5.0
4	107.042	RCC Box	3 X 8.0		4 x 6.0
5	110.507	RCC Slab	1 X 7.7		1 x 6.0
6	111.765	RCC Box	3 X 8.0		4 x 6.0
7	113.327	RCC Box	3 X 8.0		4 x 6.0
8	115.288	RCC Box	3 X 8.0		4 x 6.0
9	116.458	RCC Slab	1 x 8.2		2 x 5.0
10	119.300	RCC Slab	1 x 7.5		2 x 5.0
11	121.817	RCC Slab	1 X 8.0		2 x 5.0
12	122.363	RCC Box	3 X 8.0		4 x 6.0
13	125.436	RCC Slab	1 X 8.7		2 x 6.0

*Attach GAD

(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				

@ Attach cross-section

(b) Additional new bridges

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

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

Sl. No.	Location (km)	Total length (m)	Remarks, if any
1	106.595	4X40	2 X 27.0 + 1 X 33.0 (RCC T-Girder RCC) 1 X 18.288 (Bailey Bridge)

(c) The railings of existing bridges shall be replaced 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/parapets of the existing bridges shall be undertaken as follows:

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

Sl. No.	Location at km	Remarks
1	127.235	Repairs of Railings as per actual requirement.

(e) Drainage system for bridge decks

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

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

(b) Road over-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Length of bridge (m)
1	124.311	(1X24)m+(3X36)m+(1X24)m

(c) Road under-bridges

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

Sl. No.	Location of Level crossing (Chainage km)	Number and length of span (m)
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
1	127.235	Rectification of bearings, removal of existing wearing coat and laying fresh wearing coat etc.

(b) ROB / RUB

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

(c) Overpasses/Underpasses and other structures

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

(vii) List of Major Bridges and Structures

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

Sl. No.	Location (Km)
1	106.595 (Major Bridge over river Khowai)

2	124.311 (ROB at LC near Teliamura Rly Station)

8. Traffic Control Devices and Road Safety Works

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

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

9. Roadside Furniture

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

(ii) Overhead traffic signs: location and size

Sl. No.	Location (km)	Size	Remarks
1	123.700	Overhead Gantry	Start of ROB
2	124.950	Overhead Gantry	End of ROB
3	127.319	Overhead Gantry	End of Project Road

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

10. 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.]

11. Hazardous Locations

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

Built up area

Sl. No.	Location stretch from (km) to (km)		LHS/RHS
	From	To	
1	121.500	121.800	Both side
2	126.500	127.130	Both side

12. Special Requirement for Hill Roads

Not applicable.

13. Change of Scope

The length of Structures and bridges specified hereinabove shall be treated as an

approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths 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 Article 13.

14. Utility Shifting

Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specification of concerned Utility Owning Department is part of the scope of work of the Contractor/Concessionaire*. The bidders may visit the site and assess the quantum of shifting of utilities for the projects before submission of their bid. Copy of utility relocation plan is enclosed. The specification of concerned Utility Owning Department shall be applicable and followed.

Notes:

a) The type/spacing/size/specifications of poles/towers/lines/cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the contractor/Concessionaire* and the utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/spacing/size/specifications in shifted work in comparison to those in the existing work or for making any overhead crossing to underground as per requirement of utility owning department and/or construction of project highway. The contractor/concessionaire* shall carry out joint inspection with utility owning department and get the estimates from the utility owning department. The assistance of the Authority is limited to giving forwarding letter on the proposal of contractor/concessionaire* to utility owning department whenever asked by the contractor/concessionaire*. The decision/ approval of utility owning department shall be on the contractor/concessionaire*.

b) The supervision charges at the rates/charges applicable of the utility owning department shall be paid directly by the Authority to the utility Owning department as and when contractor/concessionaire*furnishes demand of utility Owning Department along with a copy of estimated cost given by later.

c) The dismantled material/scrap of existing Utility to be shifted/Dismantled shall belong to the contractor/concessionaire* who would be free to dispose-off the dismantled material as deemed fit by them unless the contractor/concessionaire* is required to deposit the dismantled material may be availed by the contractor/concessionaire* as per estimate agreed between them.

d) The utilities shall be handed over after shifting work is completed to utility Owning Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owning Department after Handing over Process is complete as far as utility shifting works are concerned.

Schedule B-1

A. Electrical Utilities

A1. High Tension/Low Tension Lines (HT/LT Lines)

S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
1	101.300	102.000	-	1.200	1.850	-	2	14	1	100
2	102.000	103.000	-	1.200	0.800	-	4	22	2	100
3	103.000	104.000	-	0.800	1.700	-	2	26	2	25
4	104.000	105.000	-	-	1.800	-	4	11	2	100
5	105.000	106.000	-	0.900	1.400	-	1	10	2	100
6	106.000	107.000	-	0.400	1.200	-	2	8	2	100
7	107.000	108.000	-	1.200	1.900	-	3	21	1	100
8	108.000	109.000	-	0.200	0.900	-	1	19	2	63
9	109.000	110.000	-	-	1.200	-	2	5	1	100
10	110.000	111.000	-	0.200	0.300	-	0	7	1	16
11	111.000	112.000	-	0.300	0.900	-	0	24	2	16
12	112.000	113.000	-	0.400	1.800	-	4	18	2	100
13	113.000	114.000	-	0.600	1.800	-	3	6	2	63
14	114.000	115.000	-	1.200	1.800	-	1	8	1	100
15	115.000	116.000	-	1.000	1.600	-	2	7	1	100
16	116.000	117.000	1.800	2.400	2.500	2	6	25	2	100
17	117.000	118.000	0.200	1.400	2.100	1	0	4	1	16
18	118.000	119.000	-	0.950	1.800	-	2	9	3	63
19	119.000	120.000	-	0.600	1.900	-	1	3	2	63=1, 16=1
20	120.000	121.000	-	1.000	1.500	-	0	13	2	25=1, 63=1
21	121.000	122.000	-	1.200	2.400	-	7	21	3	200=2, 25=1
22	122.000	123.000	-	1.400	1.900	-	2	43	2	100=1, 63=1
23	123.000	124.000	-	1.200	1.700	-	2	14	3	100=2, 63=1
24	124.000	125.000	-	0.600	1.400	-	2	13	2	100=1, 16=1
25	125.000	126.000	-	0.500	2.400	-	1	9	1	100
26	126.000	127.319	-	0.400	3.600	-	3	14	5	100=4, 315=1

A2. UGC and ABC (11KV/LT Lines)

5.4 Km 11 KV line and 0.8 Km LT line at Teliamura.

B. Public Health utilities (Water/Sewage Pipe Lines)

S. No	Chainage		Length(in Km)		Crossings	
	From (Km)	To (Km)	Water Supply line		Water Supply line	
			With Pumping	With Gravity flow	With Pumping	With Gravity flow
1	102.250	102.450	0.200	-	-	-
2	102.450	106.450	8.000	-	-	-
3	106.450	108.200	3.500	-	-	-
4	108.200	109.950	3.500	-	-	-
5	109.950	110.200	0.500	-	-	-
6	110.200	110.250	0.050	-	-	-
7	110.600	110.650	0.000	-	0.022	
8	111.500	111.650	0.150	-	-	-
9	111.650	112.650	1.000	-	-	-
10	112.650	112.850	0.200	-	-	-
11	112.850	113.350	0.500	-	-	-
12	113.350	-	0.150	-	-	-
13	113.350	114.350	1.000	-	-	-
14	114.350	114.600	0.250	-	-	-
15	114.600	115.300	0.700	-	-	-
16	115.350	-	0.000	-	0.05	
17	115.350	115.550	0.200	-	-	-
18	115.950	116.100	0.150	-	-	-
19	116.100	116.250	0.150	-	-	-
20	116.450	116.650	0.200	-	-	-
21	116.650	116.950	0.300	-	-	-
22	116.950	117.200	0.250	-	-	-
23	117.200	117.550	0.545	-	-	-
24	118.100	118.400	0.300	-	-	-
25	118.400	118.700	0.300	-	-	-
26	118.700	118.800	0.100	-	-	-
27	118.800	118.900	0.100	-	-	-
28	118.900	119.300	0.400	-	-	-
29	119.300	119.650	0.350	-	-	-

S. No	Chainage		Length(in Km)		Crossings	
	From (Km)	To (Km)	Water Supply line		Water Supply line	
			With Pumping	With Gravity flow	With Pumping	With Gravity flow
30	118.900	119.200	0.300	-	-	-
31	119.200	119.400	0.200	-	-	-
32	119.400	119.650	0.250	-	-	-
33	119.650	119.750	0.100	-	-	-
34	119.750	120.300	0.550	-	-	-
35	120.300	120.500	0.200	-	-	-
36	120.500	120.750	0.250	-	-	-
37	120.750	120.850	0.100	-	-	-
38	120.850	121.450	0.600	-	-	-
39	121.450	121.650	0.200	-	-	-
40	121.800	121.850	0.050	-	-	-
41	121.850	122.200	0.350	-	-	-
42	122.200	122.250	0.050	-	-	-
43	122.250	122.400	0.150	-	-	-
44	122.400	123.400	1.000	-	-	-
45	123.400	123.700	0.300	-	-	-
46	123.700	123.800	0.100	-	-	-
47	123.800	124.350	0.550	-	-	-
48	124.350	125.450	1.100	-	-	-
49	125.450	126.150	0.650	-	-	-
50	126.150	126.650	0.500	-	-	-
51	126.650	127.200	0.550	-	-	-
52	126.000	126.400	0.400	-	-	-
53	126.400	126.750	0.350	-	-	-
54	126.750	126.800	0.050	-	-	-
55	126.800	127.050	0.250	-	-	-
56	127.050	127.300	0.250	-	-	-

Note: The details of items/quantities/works to be executed for shifting of utilities are tentative. All works/quantities/ miscellaneous items to be executed at site as per detailed estimate of utility owning department, without any additional claim/Change of scope.

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

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

(a) toll plaza[s];

(b) roadside furniture;

(c) pedestrian facilities;

(d) tree plantation;

(e) truck lay-byes;

(f) bus-bays and bus shelters;

(g) rest areas; and

(h) others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

(a) Toll Plaza: Nil

(b) Roadside Furniture:

Sl. No.	Project Facility	Location	Design Requirements	Other essential details
1	Traffic Sign & Pavement marking	Entire Length	As per Schedule D	
2	Km stone, Hectometer Stone, 5th kilometre stone	Entire Length	As per Schedule D	
3	Boundary Stone	Entire Length	As per Schedule D	
4	Roadside Delineator, marker & Road Stud	As per manual	As per Schedule D	
5	Metal beam crash barrier	Both approaches of bridge and ROB locations	As per Schedule D	

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

(c) Pedestrian Facilities:

Pedestrian facilities in the form of footpath cum drain shall be provided in the built up area (refer typical cross-section drawing). Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with Authority.

(d) Tree Plantation: To be carried out by Khowai District Forest Department.

(e) Truck Lay Byes:

Sl. No.	Project Facility	Location (km)	Design Requirements	Other Essential Details
Nil				

(f) Busbays and Bus shelters:

Sl. No.	Project Facility	Location (km)	Design Requirements	Other Essential Details
1	Bus Bay	102.025	Separation from main carriageway	Start Taper-100 m, Straight-30 m, End Taper-100 m
2	Bus Bay	107.380	Separation from main carriageway	Start Taper-100 m, Straight-30 m, End Taper-100 m
3	Bus Bay	113.875	Separation from main carriageway	Start Taper-100 m, Straight-30 m, End Taper-100 m
4	Bus Bay	126.565	Separation from main carriageway	Start Taper-100 m, Straight-30 m, End Taper-100 m

(g) Rest areas: Nil

(h) Others:

Street Lighting

Street lighting shall be provided in the built up area, bus bay and junction location.

Environment

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

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

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

[Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73-2018), referred to herein as the Manual]

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

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for [Two-Laning of Highways (IRC:SP:73-2018)], referred to as the Manual, and MORTH Specifications for Road and Bridge Works. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2. Deviations from the Specifications and Standards

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

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

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

Locations where Radii of Horizontal Curve is less then Absolute minimum radius of 250m for plain and rolling terrain.

HIP/CURVE NO.	HIP		Radius
	EASTING	NORTHING	(m)
237	358827.695	2660099.655	200
245	360050.463	2658385.059	100
246	360101.971	2658147.013	200
248	360259.270	2657666.031	150
249	360337.175	2657523.985	100
250	360286.168	2657322.674	150
251	360310.609	2657122.548	100
257	359347.223	2655351.564	200
274	358152.335	2649420.409	120
282	358373.676	2645537.931	200

HIP/CURVE NO.	HIP		Radius
	EASTING	NORTHING	(m)
288	359635.059	2644178.005	200
289	359297.008	2643612.111	100
290	359333.073	2643466.559	150
291	359289.460	2643167.979	200
306	359880.260	2638144.677	155
307	359655.593	2637893.063	155
308	359733.200	2637265.360	200
310	359986.006	2637032.970	80

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

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

(iii) All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

[Specify all the relevant documents]

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, theAuthority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

4. Extension of time limit

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

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and drainage system before [1st June] every year in accordance with the guidelines contained in IRC: SP35. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before the onset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities

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

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Table -1: Maintenance Criteria for Pavements:

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

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

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

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

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

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**					
approaches of connecting roads, slip roads, lay byes etc. as applicable)		**Minimum SN**	**Traffic Speed (Km/h)**		Coefficient Routine Investigation Machine or equivalent)			
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					

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

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

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

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

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

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

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

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

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

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

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

<table>
<tr><th rowspan="2">S.No.</th><th rowspan="2">Type of Distress</th><th rowspan="2">Measured Parameter</th><th rowspan="2">Degree of Severity</th><th rowspan="2">Assessment Rating</th><th colspan="2">Repair Action</th></tr>
<tr><th>For the case d < D/2</th><th>For the case d > D/2</th></tr>
<tr><td colspan="7">Surface Defects</td></tr>
<tr><td rowspan="5">7</td><td rowspan="5">Ravelling or Honeycomb type surface</td><td rowspan="5">r = area 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<br rowspan="5">Not Applicable</td></tr>
<tr><td>1</td><td>r < 2 %</td><td rowspan="3">Local repair of areas damaged and liable to be damaged.
Within 15 days</td></tr>
<tr><td>2</td><td>r = 2 - 10 %</td></tr>
<tr><td>3</td><td>r = 10-25%</td><td rowspan="2">Bonded Inlay, 2 or 3 slabs if affecting.</td></tr>
<tr><td>4</td><td>r = 25 - 50 %</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**
					Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term**	**Long Term**
					No action.	Not Applicable
			1	r < **2 %**	Local repair of areas damaged and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		

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

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

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

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

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

	in Cracks or Joints		1	f < 3 mm		
			2	f = 3 - 6 mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate.
			3	f = 6 - 12 mm	Diamond Grinding	Within 30days
			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 30days
14	**Blowup or Buckling**	h = vertical displacement from normal profile	0	Nil, not discernible	**Short Term**	**Long Term**
			1	h < 6 mm	No Action	
			2	h = 6 - 12 mm	Install Signs to Warn Traffic	

			3	h = 12 - 25 mm	within 7 days	
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, 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	No action.	Not Applicable
			1	h = 5 - 15 mm		
			2	h = 15-30 mm, Nos <20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or > 20% joints	Strengthen subgrade. Reinstate pavement at normal level	

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

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

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

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

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

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

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="4">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="15"></td><td>Day time Visibility</td><td colspan="4">During expected life Service Time
Cement Road - 130mcd/m^2/lux
Bituminous Road - 100mcd/m^2/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td rowspan="14"></td><td colspan="4"><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u></td><td rowspan="14">Bi-Annually</td><td rowspan="14">As per Annexure-E of IRC:35-2015</td><td rowspan="14">Re - painting</td><td rowspan="14">Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td rowspan="14">IRC:35-2015</td></tr>
<tr><td>Design Speed</td><td colspan="3">(RL) Retro Reflectivity (mcd/m^2/lux)</td></tr>
<tr><td>Night Time Visibility</td><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr>
<tr><td></td><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td></td><td>65 - 100</td><td>250</td><td>120</td></tr>
<tr><td></td><td>Above 100</td><td>350</td><td>150</td></tr>
<tr><td></td><td colspan="4"><u>Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):</u></td></tr>
</table>

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

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

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

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

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

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

		Cracks wider than 0.3 mm not more than 1m aggregate length		defects			2800

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

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

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

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

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

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

A. Flexible Pavement

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

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

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

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

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

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

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

(c) Licence for use of explosives;

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

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

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

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

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

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

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

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

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

WHEREAS:

_____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "**Agreement**") for the **Improvement and Widening to Two Lane with paved shoulder of road from Km 101.300 to km 127.319 (Total Length 26.019 Km) i.e. the Khowai –Teliamura section of NH 208 (Package I) in the state of Tripura on EPC under JICA ODA Loan Phase –VI"**

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

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

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an

aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

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

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

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

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

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

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

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

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

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

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

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

12. 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.

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

14. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No	90621010002659
3	Beneficiary Bank Branch	CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi

5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001

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

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

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

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

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for **Improvement and Widening to Two Lane with paved shoulder of road from Km 101.300 to km 127.319 (Total Length 26.019 Km) i.e. the Khowai –Teliamura section of NH 208 (Package I) in the state of Tripura on EPC under JICA ODA Loan Phase –VI**, subject to and in accordance with the provisions of the Agreement

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

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

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the

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

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

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

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body orcorporation 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 ofthe 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 exerciseby 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 orthing 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 underany such law.

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

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

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

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

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

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

12. This Guarantee 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.

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

14. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

S.No.	**Particulars**	**Details**
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate

		Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this ……. day of ……., 2023 at …….

SIGNED, SEALED AND DELIVERED

For and on behalf of theBank

by:(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

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

Schedule - H

(See Clauses10.1 (iv) and 19.3)

Contract Price Weightages

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

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road Works including Culverts, widening and repair of culverts.	47.97	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-Base Course	[Nil]
		(3) Non Bituminous Base course	[Nil]
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	[Nil]
		(6) Widening and repair of culverts	[Nil]
		B.1-Reconstruction/New 2-Lane Realignment /Bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	10.87
		(2) Sub Base Course	24.37
		(3) Non Bituminous Base course	17.81
		(4) Bituminous Base course	11.87
		(5) Wearing Coat	15.71
		B.2-Reconstruction/New 2-Lane Realignment/ Bypass (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub Base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		C.1-Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(2) Sub Base Course	[Nil]
		(3) Non Bituminous Base course	[Nil]
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	[Nil]
		C.2- Reconstruction/New Service Road (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub Base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction and New culverts on existing road, realignments, bypasses: Culverts (length <6m)	19.37
Minor Bridges/ Underpasses/ Overpasses	11.60	**A.1-Widening and Repair of Minor bridges (length >6 m and<60m).**	
		Minor Bridges	0.24
		A.2- New Minor bridges (length >6 m and<60m)	
		(1) Foundation + Sub Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	65.03
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joint, hand rails, crash barrier, road signs & markings, tests on completion etc. complete in all respect.	20.70
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	14.03
		(4) Guide Bunds & River Training Works: On completion of Guide Bunds and river Training Works complete in all respects	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.1- Widening and Repair of underpasses/overpasses	
		Underpasses/ Overpasses	[Nil]
		B.2-New underpasses/overpasses	
		(1) Foundation + Sub Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[Nil]
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified.	[Nil]
		(3) Approaches: On completion of approaches including Retaining walls/Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]
Major bridge (length>60 m) works and ROB/RUB/ elevated sections/ flyovers including viaducts ,if any	22.47	**A.1- Widening and repairs of Major Bridges**	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4) Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Guide Bunds, River Training works etc.	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(8) Approaches(including Retaining walls, stone pitching and protection works)	[Nil]
		A.2-New Major Bridges	
		(1) Foundation	8.12
		(2) Sub-structure	3.01
		(3) Super-structure (including bearings)	12.23
		(4) Wearing Coat including expansion joints	0.71
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0.63
		(6) Wing walls/return walls	[Nil]
		(7) Guide Bunds, River Training works etc.	[Nil]
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.87
		B.1-Widening and repair of **(a) ROB** **(b) RUB**	
		(1) Foundation	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4) Wearing Coat: (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		B.2-New ROB/RUB (a) ROB (b) RUB	
		(1) Foundation	8.45
		(2) Sub-Structure	3.47
		(3) Super-structure (including bearings)	24.09
		(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	0.97
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	1.07
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	36.38
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) Super-structure (including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	17.96	(i) Toll Plaza	[Nil]
		(ii) Road side drains	32.40
		(iii) Road signs, marking, km stones, safety devices, ...	7.04
		(iv) Project facilities	
		(a) Bus Bays	5.93
		(b) Truck lay-byes	[Nil]
		(c) Rest areas	[Nil]
		(d) Others	2.08
		(v) Road side plantation	[Nil]
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/ grade separators and ROBs/ RUBs	[Nil]
		(vii) Safety and traffic management during construction	[Nil]
		(viii) Protection Works	
		(a) Retaining wall	[Nil]
		(b) Breast wall	[Nil]
		(c) Turfing, hydro seeding, grassing	1.18
		(ix)Site clearance & Dismantling	3.89
		(x) Utility shifting	
		a) EHT line	[Nil]
		b) EHT Crossing	[Nil]
		c) HT / LT line	32.83
		d) HT / LT line crossings	
		(e) Water pipeline	14.65
		(f) Water pipeline crossings	

1.3 Procedure of estimating the value of work done

1.3.1 Road works

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
(1) Earthwork up to top of the sub- grade	[Nil]	
(2) Sub-Base Course	[Nil]	
(3) Non Bituminous Base Course	[Nil]	
(4) Bituminous Base Course	[Nil]	
(5) Wearing Coat	[Nil]	
(6) Widening and repair of culverts	[Nil]	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 atleast five culverts.
B.1- Reconstruction/New 2-lane realignment/ bypass (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 3 (three) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	10.87	
(2) Sub Base Course	24.37	
(3) Non-Bituminous Base Course	17.81	
(4) Bituminous Base Course	11.87	
(5) Wearing Coat	15.71	
B.2- Reconstruction/New 2-Lane realignment / bypass (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub- grade	[Nil]	
(2) Sub Base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	

Stage of Payment	Percentage weightage	Payment Procedure
C.1- Reconstruction/ New service road (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	[Nil]	
(2) Sub Base Course	[Nil]	
(3) Non-Bituminous Base Course	[Nil]	
(4) Bituminous Base Course	[Nil]	
(5) Wearing Coat	[Nil]	
C.2- Reconstruction/ New service road (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 3 (three) km length, whichever is less.
(1) Earthwork up to top of the sub- grade	[Nil]	
(2) Sub Base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
D- Re-Construction and New culverts on existing road, realignments, bypasses		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 five culverts.
(1) Culverts (length <6m)	19.37	

@ 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)**	0.24	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge.
A.2- New minor bridges **(i) Foundation +Sub-Structure:** On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	65.03	(i) Foundation +Sub-Structure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +sub- structure of each bridge subject to completion of atleast two foundations along with sub-structure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified

1	2	3
(ii) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	20.70	**(ii) Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	14.03	**(iii) Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(iv) Guide Bunds and River Training Works: On completion of Guide Bunds and river Training Works complete in all respects	[Nil]	**(iv) 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.
B.1-Widening and repair of underpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses. Payment shall be made on the completion of widening & repair works of a underpass/ overpass.

1	2	3
B.2- New Underpasses/ Overpasses: **(i) Foundation +Sub-Structure:** On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[Nil]	**(i) Foundation +Sub-Structure:** Cost of each Underpass/Overpass shall be determined on pro rata basis with respect to the total linear length (m) of the Underpasses/Overpasse s. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +sub-structure of each Underpasses/Overpasse s subject to completion of atleast two foundations along with sub-structure upto abutment/pier cap level each underpass/overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs &markings, tests on completion etc.	[Nil]	**(ii) Super-structure:** Payment shall be made on pro-rata basis on

1	2	3
complete in all respect. Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified as specified.		completion of a stage i.e. completion of super-structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use	[Nil]	**(iii) Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified.

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		
(i) Foundation	[Nil]	**(i) Foundation:** Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major Bridge . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the major bridge subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge.
(iii)Super-structure (including bearings)	[Nil]	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc	[Nil]	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide Bunds, River Training works etc.	[Nil]	**(vii) Guide Bunds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	**(viii) Approaches:** Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A.2- New Major Bridges		
(i) Foundation	8.12	**(i) Foundation:** Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major Bridge . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	3.01	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the major bridge subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
(iii)Super-structure (including bearings)	12.23	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	0.71	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc	0.63	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi)Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide Bunds, River Training works etc.	[Nil]	**(vii) Guide Bunds, River Training works**: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)	0.87	**(viii) Approaches:** Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.1 -Widening and repairs of **(a) ROB** **(b) RUB**		
(i) Foundation	[Nil]	**i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of atleast two foundations of the ROB/RUB.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
		In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii)Super-structure (including bearings)	[Nil]	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[Nil]	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	**(vii) Approaches:** Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
B.2 -New **(a) ROB** **(b) RUB**		
(i) Foundation	8.45	**i) Foundation**: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	3.47	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the ROB/RUB.
(iii)Super-structure (including bearings)	24.09	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	0.97	**(iv) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	1.07	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	36.38	**(vii) Approaches:** Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C.1- Widening and repairs of Elevated Section/Flyovers/ Grade Separators		
(i) Foundation	[Nil]	**(i) Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the structure subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
(iii)Super-structure (including bearings)	[Nil]	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	**(vii) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C.2- New Elevated Section/Flyovers/ Grade Separators		
(i) Foundation	[Nil]	**(i) Foundation:** Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

Stage of Payment	Weightage	Payment Procedure
1	**2**	**3**
(ii) Sub-structure	[Nil]	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of the structure subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
(iii)Super-structure (including bearings)	[Nil]	**(iii)Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	**(iv) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	**(v) 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.
(vi) Wing walls/return walls	[Nil]	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	**(vii) Approaches:** Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

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

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

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	**Weightage**	**Payment Procedure**
(i) Toll plaza	[Nil]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side drains	32.40	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 10 % (ten per cent) of the total length.
(iii) Road signs, markings, km stones, safety devices, …	7.04	
(iv) Project Facilities a) Bus bays b) Truck lay-byes c) Rest areas d) others	 5.93 [Nil] [Nil] 2.08	Payment shall be made on pro rata basis for completed facilities.
(v) Roadside plantation	[Nil]	Unit of measurement is linear length.

Stage of Payment	**Weightage**	**Payment Procedure**
(vi) Repair ofprotection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs.	[Nil]	Payment 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.
(vii) Safety and traffic management during construction	[Nil]	Payment shall be made on pro rata basis every six months.
(viii) Protection Works a) Retaining wall b) Breast wall c) Turfing, hydro seeding, grassing	[Nil] [Nil] 1.18	Payment 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.
(ix)Site clearance & Dismantling	3.89	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.
(x) Utility Shifting i) EHT line	[Nil]	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rate basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20%, (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-15% and (iv) Charging of line including dismantling and site clearance-35% (with DTR) and 50% (without DTR)

Stage of Payment	**Weightage**	**Payment Procedure**
ii) EHT Crossing	[Nil]	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 4 crossings.
iii) HT / LT line (including transformers if any)	32.83	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT I HT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-10% and (iv) Charging ofline including dismantling and site clearance-40% (with DTR) and 50% without DTR)
iv) HT / LT line crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings.
(v) Water pipeline	14.65	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50%, Charging of line including all miscellaneous works and dismantling and site clearance-50%)

Stage of Payment	Weightage	Payment Procedure
(vi) Water pipeline crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 8 crossings.

2. Procedure for payment for Maintenance

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

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

Schedule - I

(See Clause 10.2 (iv))

Drawings

1. Drawings

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

2. Additional Drawings

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

Annex – I

(Schedule - I)

List of Drawings

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

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **256th day from the Appointed Date (the "Project Milestone- I")**.

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

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **438th day from the Appointed Date (the "Project Milestone- II")** (the "**Project Milestone- II**").

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

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **621st day from the Appointed Date (the "Project Milestone- III").**

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

5. Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the 730th day from the Appointed Date.

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

6. Extension of time

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

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

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

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

2. Tests

(i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].

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

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

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

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

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

3. Agency for conducting Tests

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

4. Completion Certificate

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

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

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

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

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I, …….. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated…… (the "**Agreement**"), for **Improvement and Widening to Two Lane with paved shoulder of road from Km 101.300 to km 127.319 (Total Length 26.019 Km) i.e. the Khowai –Teliamura section of NH 208 (Package I) in the state of Tripura on EPC under JICA ODA Loan Phase –VI** (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through(Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

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

(Signature)

(Name)

(Designation) (Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

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

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

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

2. Percentage reductions in lump sum payments on monthly basis

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

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

S. No.	Item/Defect/Deficiency	Percentage
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/accidented vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	**Defects in Other Project Facilities**	5%

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

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

Where,

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

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

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

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

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

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

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

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

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

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

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

(i) These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "**Agreement**), which has been entered into between the **National Highways & Infrastructure Development Corporation Ltd. , Third Floor, PTI Building, 4 Sansad Marg, New Delhi-110001** (the "**Authority**") and (the "**Contractor**") for **Improvement and Widening to Two Lane with paved shoulder of road from Km 101.300 to km 127.319 (Total Length 26.019 Km) i.e. the Khowai –Teliamura section of NH 208 (Package I) in the state of Tripura on EPC under JICA ODA Loan Phase –VI** , and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

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

2. Definitions and interpretation

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

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

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

3. General

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

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

(a) any Time Extension;

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

(c) the Termination Payment; or

(d) issuance of Completion Certificate or

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

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

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

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

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

4. Construction Period

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

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

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

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

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

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

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

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

(ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.

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

(xi) The timing of tests referred to in Paragraph 4 (ix), and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

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

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

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

(xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

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

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

(xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

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

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

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

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

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

6. Determination of costs and time

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

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

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

7. Payments

(i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2 (iv) (d).

(ii) Authority's Engineer shall -

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

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

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

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

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

8. Other duties and functions

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

9. Miscellaneous

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

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

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

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

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

Schedule - O

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

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) the estimated amount for the Works executed in accordance with Clause 19.3 (i) subsequent to the last claim;

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

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

(d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2 (iii) (a);

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

(f) Deductions:

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

ii. Any amount towards deduction of taxes; and

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

(g) Net claim: (e) – (f) (iii);

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

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

ii. For Change of Scope Orders, and

iii. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

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

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

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

(ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising underparagraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

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

The insurance cover shall be not less than the value of the contract price

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

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

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

4. Insurance to be in joint names

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

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

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

2. Visual and physical test:

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

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 " **Improvement and Widening to Two Lane with paved shoulder of road from Km 101.300 to km 127.319 (Total Length 26.019 Km) i.e. the Khowai –Teliamura section of NH 208 (Package I) in the state of Tripura on EPC under JICA ODA Loan Phase –VI"** the "**Project Highway**" on Engineering, Procurement and Construction (EPC) basis through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

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