Schedules

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Schedule-A

(See Clauses 2.1and 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 onsite/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 NH-129A commencing from km 125+203 to km 145+393 i.e. Old Jalukie Sec A Village to Jalukie Town in the state of Nagaland.

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

2. Land

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

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
1	125.203	125.290	5.670	20	
2	125.290	125.490	6.350	20	
3	125.490	125.690	7.100	20	
4	125.690	125.890	6.210	24	
5	125.890	126.090	7.020	24	
6	126.090	126.290	6.980	20	
7	126.290	126.490	7.440	24	
8	126.490	126.690	6.770	24	
9	126.690	126.890	5.600	24	
10	126.890	127.090	5.350	24	
11	127.090	127.290	5.720	24	
12	127.290	127.490	6.890	24	
13	127.490	127.690	7.910	24	
14	127.690	127.890	7.150	24	
15	127.890	128.090	6.810	24	
16	128.090	128.290	5.920	24	
17	128.290	128.490	6.380	24	
18	128.490	128.690	7.430	20	
19	128.690	128.890	7.210	20	
20	128.890	129.090	7.310	20	
21	129.090	129.290	7.460	20	
22	129.290	129.490	6.980	20	
23	129.490	129.690	8.230	20	
24	129.690	129.890	7.940	20	
25	129.890	130.090	7.630	20	
26	130.090	130.290	6.790	20	
27	130.290	130.490	7.810	20	
28	130.490	130.690	6.320	24	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
29	130.690	130.890	7.390	24	
30	130.890	131.090	6.840	24	
31	131.090	131.290	8.720	24	
32	131.290	131.490	8.330	24	
33	131.490	131.690	6.860	24	
34	131.690	131.890	6.580	24	
35	131.890	132.090	7.630	24	
36	132.090	132.290	7.210	24	
37	132.290	132.490	6.530	24	
38	132.490	132.690	7.300	24	
39	132.690	132.890	7.240	24	
40	132.890	133.090	6.940	24	
41	133.090	133.290	5.290	24	
42	133.290	133.490	7.190	24	
43	133.490	133.690	7.950	24	
44	133.690	133.890	8.150	24	
45	133.890	134.090	7.630	20	
46	134.090	134.290	8.440	20	
47	134.290	134.490	7.510	20	
48	134.490	134.690	7.340	20	
49	134.690	134.890	8.840	20	
50	134.890	135.090	7.320	20	
51	135.090	135.290	9.550	20	
52	135.290	135.490	6.430	20	
53	135.490	135.690	5.810	20	
54	135.690	135.890	6.300	20	
55	135.890	136.090	7.840	20	
56	136.090	136.290	7.670	20	
57	136.290	136.490	5.650	20	
58	136.490	136.690	7.400	20	
59	136.690	136.890	6.520	24	
60	136.890	137.090	7.840	24	
61	137.090	137.290	7.190	24	
62	137.290	137.490	6.180	20	
63	137.490	137.690	5.780	20	
64	137.690	137.890	7.980	20	
65	137.890	138.090	6.990	20	
66	138.090	138.290	7.320	20	
67	138.290	138.490	6.280	20	
68	138.490	138.690	7.680	20	
69	138.690	138.890	7.930	20	
70	138.890	139.090	5.580	20	
71	139.090	139.290	8.780	20	
72	139.290	139.490	8.230	20	
73	139.490	139.690	7.740	20	
74	139.690	139.890	8.290	20	
75	139.890	140.090	7.750	20	
76	140.090	140.290	8.430	20	
77	140.290	140.490	8.210	20	
78	140.490	140.690	7.610	20	

SL No.	Chainage (Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
79	140.690	140.890	8.170	20	
80	140.890	141.090	8.330	20	
81	141.090	141.290	8.110	20	
82	141.290	141.490	8.290	20	
83	141.490	141.690	8.100	20	
84	141.690	141.890	8.520	20	
85	141.890	142.090	7.790	20	
86	142.090	142.290	8.720	20	
87	142.290	142.490	8.370	20	
88	142.490	142.690	7.490	20	
89	142.690	142.890	7.510	20	
90	142.890	143.090	8.230	20	
91	143.090	143.290	8.780	20	
92	143.290	143.490	9.500	14	
93	143.490	143.690	8.850	14	
94	143.690	143.890	7.960	14	
95	143.890	144.090	7.940	14	
96	144.090	144.290	7.720	14	
97	144.290	144.490	9.640	14	
98	144.490	144.690	9.160	20	
99	144.690	144.890	9.370	20	
100	144.890	145.090	9.090	20	
101	145.090	145.290	8.670	20	
102	145.290	145.393	9.980	20	

3. Carriageway

The present carriage way of the Project Highway is Single/Intermediate Lane from km 125+203 to km 145+393. The type of the existing pavement is [flexible].

4. Major Bridges

The Site includes the following Major Bridges: -

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

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.ofSpanswith spanlength(m)	Width (m)
		Foundation	Superstructure		
Nil					

7. Minor bridges

The Site includes the following minor bridges:

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

8. Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location(km)	Remarks
Nil		

9. Under passes (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:

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
1	126.825	Box Culvert	1 x 2.8	7.5
2	127.240	HP Culvert	1 x 0.6 dia	7.5
3	128.140	HP Culvert	1 x 1.0 dia	12.5
4	128.540	HP Culvert	1 x 0.6 dia	12.5
5	129.051	HP Culvert	1 x 0.6 dia	12.5
6	129.287	HP Culvert	1 x 1.0 dia	12.5
7	130.542	HP Culvert	1 x 0.9 dia	12.5
8	130.661	HP Culvert	1 x 1.0 dia	12.5
9	131.242	HP Culvert	1 x 0.35 dia	10
10	131.586	HP Culvert	1 x 1.0 dia	12.5
11	131.738	HP Culvert	1 x 0.6 dia	7.5
12	131.973	HP Culvert	1 x 1.0 dia	7.5
13	132.153	HP Culvert	1 x 1.0 dia	7.5
14	132.198	HP Culvert	1 x 0.6 dia	7.5

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
15	132.531	HP Culvert	1 x 0.9 dia	7.5
16	132.567	HP Culvert	1 x 1.0 dia	7.5
17	132.772	HP Culvert	1 x 1.0 dia	7.5
18	132.984	HP Culvert	1 x 1.0 dia	7.5
19	133.386	HP Culvert	1 x 1.2 dia	7.5
20	133.427	HP Culvert	1 x 1.2 dia	7.5
21	133.442	HP Culvert	1 x 1.0 dia	7.5
22	135.130	HP Culvert	1 x 0.45 dia	7.5
23	135.364	HP Culvert	1 x 1.0 dia	10
24	135.545	HP Culvert	1 x 1.0 dia	10
25	135.706	HP Culvert	1x 1.0 dia	10
26	135.822	HP Culvert	1 x 1.0 dia	10
27	135.947	HP Culvert	1 x 1.2 dia	10
28	136.162	HP Culvert	1 x 1.0 dia	10
29	136.206	HP Culvert	1 x 1.0 dia	10
30	136.372	HP Culvert	1 x 1.0 dia	10
31	136.519	HP Culvert	1 x 1.0 dia	10
32	136.805	HP Culvert	1 x 1.0 dia	10
33	136.977	HP Culvert	1x 1.0 dia	10
34	137.024	HP Culvert	1 x 1.0 dia	10
35	137.067	HP Culvert	1 x 1.0 dia	10
36	137.879	HP Culvert	1 x 0.6 dia	10
37	138.270	HP Culvert	1 x 1.0 dia	7.5
38	138.407	HP Culvert	1 x 0.6 dia	7.5
39	138.730	HP Culvert	1 x 0.6 dia	7.5
40	139.059	HP Culvert	1 x 0.6 dia	7.5
41	139.338	HP Culvert	1 x 1.2 dia	7.5
42	139.515	HP Culvert	1 x 1.2 dia	7.5
43	139.532	HP Culvert	1 x 1.2 dia	7.5
44	139.753	HP Culvert	1 x 1.2 dia	7.5
45	140.092	HP Culvert	1 x 1.2 dia	7.5
46	140.750	HP Culvert	1 x 0.6 dia	7.5
47	140.989	HP Culvert	1 x 0.6 dia	7.5
48	141.116	HP Culvert	1 x 0.6 dia	7.5
49	142.209	HP Culvert	1 x 0.6 dia	7.5
50	142.813	HP Culvert	1 x 0.6 dia	7.5
51	143.394	HP Culvert	1 x 1.5 dia	7.5
52	143.486	HP Culvert	1 x 1.5 dia	15.5
53	144.418	Slab Culvert	1 x 1.0	7.5
54	145.194	Box Culvert	1 x 0.6	7.5

11. Bus bays

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

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

12. Truck Lay byes

The details of trucklay byes are as follows:

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

Nil

13. Road side drains

The details of the roadside drains are as follows:

Sl. No.	Location		Type	
	From km	To km	Masonry/cc (Pucca)	Earthen (Kutcha)
1	140.810	141.000		Earthen (Hill Side)
2	141.004	141.026		Earthen (Hill Side)
3	141.030	141.127		Earthen (Hill Side)
4	142.828	142.935	Pucca(Single Side)	
5	143.740	143.825		Earthen (Hill Side)

14. Major junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
1	141.200		✓					Other District Road
2	145.393		✓					Other District Road

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

15. Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Location		Type of intersection	
	From Km	To Km	T-Junction	Cross Road
1	127.300		Y-Type	3 Legged
2	127.640		Y-Type	3 Legged
3	134.710		Y-Type	3 Legged
4	135.890		Y-Type	3 Legged
5	140.030		T-Type	3 Legged
6	142.050		Y-Type	3 Legged
7	142.715		X-Type	4 Legged
8	142.990		X-Type	4 Legged
9	143.090		T-Type	3 Legged
10	143.140		Y-Type	3 Legged
11	143.255		T-Type	3 Legged
12	143.384		T-Type	3 Legged
13	143.510		T-Type	3 Legged
14	143.915		T-Type	3 Legged
15	144.200		Y-Type	3 Legged
16	144.440		Y-Type	3 Legged
17	145.000		Y-Type	3 Legged
18	145.110		Y-Type	3 Legged

6. By passes

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

Sl.No.	Name of bypass (town)	Chainage(km)From km tokm	Length (inKm)
Nil			

17. Other structures

[Provide details of other structures, if any.

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	Design Chainage		Length (Km)	Proposed ROW Width (m)	Date of Providing proposed ROW
	From	To			
i) 90% of ROW (full width)	109.494	126.775	17.281	Varying ROW from minimum 15 m to maximum 24 m at different locations	At Appointment Date
ii) Balance Right of way (width)	109.494	126.775	17.281	Varying ROW from minimum 15m to maximum 24 m at different locations	Within 150 days after the Appointed Date

The Construction of Project Highway will be implemented as per Manual, details of which are already given in Article-2 of Annexure – I of Schedule –A.

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 specifications/IRC Codes/Manual.

Annex – IV

(Schedule-A)

Environment Clearances

As per notification of MOEF F.O. 2559(E) dated 22/08/2013, the project will not attract Environmental Clearance

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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

NA

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-Lanning]

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 hilly terrain to the extent land is available.

(ii) Width of Carriageway

(a) Two-Lanning with hard shoulders shall be undertaken. The paved carriageway shall be 7(seven)m wide.

Provided that in the built-up areas: the width of the carriageway shall be as specified in following table:

Sl. No.	Built-up stretch (Township)	Location		Width (m)	Typical Cross Section (Refer to Manual)	Remarks
1	Old Jalukie Sec A	129+075	129+225	7	As per attached TCS drawing	7 m Carriageway
2	Jalukie Town	144+325	145+625	7		7 m Carriageway

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

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 IRC: SP: 73-2018

(ii) Design speed

The design speed shall be as per IRC 73: 2018

(iii) Improvement of the existing road geometrics

In the following sections where improvement of the existing road geometrics to the prescribed

standards is not possible the existing road geometrics shall be improved to the extent possible within the existing right of way and proper road signs and safety Measures shall be provided. The stretches where design speed reduces below 40 kmph are summarized below:

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
1	126+877 to 126+892	Sharp Bend	Design Speed = 20 Kmph
2	126+929 to 126+948	Sharp Bend	Design Speed = 20 Kmph
3	127+056 to 127+062	Sharp Bend	Design Speed = 35 Kmph
4	127+128 to 127+140	Sharp Bend	Design Speed = 25 Kmph
5	127+212 to 127+264	Sharp Bend	Design Speed = 25 Kmph
6	127+377 to 127+390	Sharp Bend	Design Speed = 35 Kmph
7	127+550 to 127+576	Sharp Bend	Design Speed = 35 Kmph
8	127+866 to 127+894	Sharp Bend	Design Speed = 20 Kmph
9	127+939 to 127+952	Sharp Bend	Design Speed = 20 Kmph
10	128+005 to 128+017	Sharp Bend	Design Speed = 20 Kmph
11	128+086 to 128+087	Sharp Bend	Design Speed = 25 Kmph
12	128+146 to 128+168	Sharp Bend	Design Speed = 20 Kmph
13	128+230 to 128+238	Sharp Bend	Design Speed = 25 Kmph
14	128+365 to 128+402	Sharp Bend	Design Speed = 20 Kmph
15	128+617 to 128+626	Sharp Bend	Design Speed = 20 Kmph
16	128+768 to 128+790	Sharp Bend	Design Speed = 20 Kmph
17	129+105 to 129+157	Sharp Bend	Design Speed = 25 Kmph
18	129+202 to 129+219	Sharp Bend	Design Speed = 25 Kmph
19	129+318 to 129+330	Sharp Bend	Design Speed = 25 Kmph
20	129+988 to 130+018	Sharp Bend	Design Speed = 20 Kmph
21	130+256 to 130+346	Sharp Bend	Design Speed = 35 Kmph
22	130+585 to 130+688	Sharp Bend	Design Speed = 25 Kmph
23	130+737 to 130+751	Sharp Bend	Design Speed = 20 Kmph
24	131+032 to 131+061	Sharp Bend	Design Speed = 20 Kmph
25	131+164 to 131+184	Sharp Bend	Design Speed = 35 Kmph
26	131+394 to 131+474	Sharp Bend	Design Speed = 35 Kmph
27	131+654 to 131+670	Sharp Bend	Design Speed = 35 Kmph
28	131+820 to 131+840	Sharp Bend	Design Speed = 20 Kmph
29	131+971 to 131+985	Sharp Bend	Design Speed = 20 Kmph
30	132+074 to 132+084	Sharp Bend	Design Speed = 20 Kmph
31	132+200 to 132+214	Sharp Bend	Design Speed = 35 Kmph
32	132+353 to 132+397	Sharp Bend	Design Speed = 20 Kmph
33	132+568 to 132+658	Sharp Bend	Design Speed = 25 Kmph
34	132+716 to 132+730	Sharp Bend	Design Speed = 25 Kmph
35	132+856 to 132+875	Sharp Bend	Design Speed = 25 Kmph
36	132+946 to 133+020	Sharp Bend	Design Speed = 30 Kmph
37	133+271 to 133+301	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
38	133+347 to 133+383	Sharp Bend	Design Speed = 20 Kmph
39	133+451 to 133+466	Sharp Bend	Design Speed = 20 Kmph
40	133+532 to 133+552	Sharp Bend	Design Speed = 20 Kmph
41	133+608 to 133+625	Sharp Bend	Design Speed = 20 Kmph
42	133+663 to 133+689	Sharp Bend	Design Speed = 20 Kmph
43	133+737 to 133+779	Sharp Bend	Design Speed = 20 Kmph
44	133+898 to 133+955	Sharp Bend	Design Speed = 20 Kmph
45	134+081 to 134+104	Sharp Bend	Design Speed = 20 Kmph
46	134+211 to 134+219	Sharp Bend	Design Speed = 20 Kmph
47	134+277 to 134+314	Sharp Bend	Design Speed = 30 Kmph
48	134+370 to 134+385	Sharp Bend	Design Speed = 30 Kmph
49	134+521 to 134+523	Sharp Bend	Design Speed = 25 Kmph
50	134+667 to 134+675	Sharp Bend	Design Speed = 25 Kmph
51	134+760 to 134+774	Sharp Bend	Design Speed = 20 Kmph
52	134+812 to 134+829	Sharp Bend	Design Speed = 20 Kmph
53	134+897 to 134+911	Sharp Bend	Design Speed = 20 Kmph
54	135+051 to 135+068	Sharp Bend	Design Speed = 30 Kmph
55	136+114 to 136+143	Sharp Bend	Design Speed = 25 Kmph
56	136+206 to 136+234	Sharp Bend	Design Speed = 25 Kmph
57	136+571 to 136+577	Sharp Bend	Design Speed = 35 Kmph
58	136+634 to 136+665	Sharp Bend	Design Speed = 25 Kmph
59	136+724 to 136+731	Sharp Bend	Design Speed = 25 Kmph
60	136+782 to 136+817	Sharp Bend	Design Speed = 20 Kmph
61	136+893 to 136+913	Sharp Bend	Design Speed = 20 Kmph
62	137+116 to 137+127	Sharp Bend	Design Speed = 20 Kmph
63	137+285 to 137+301	Sharp Bend	Design Speed = 20 Kmph
64	137+339 to 137+342	Sharp Bend	Design Speed = 20 Kmph
65	137+413 to 137+437	Sharp Bend	Design Speed = 20 Kmph
66	137+492 to 137+514	Sharp Bend	Design Speed = 20 Kmph
67	137+603 to 137+625	Sharp Bend	Design Speed = 20 Kmph
68	137+680 to 137+688	Sharp Bend	Design Speed = 25 Kmph
69	138+284 to 138+306	Sharp Bend	Design Speed = 25 Kmph
70	138+386 to 138+396	Sharp Bend	Design Speed = 25 Kmph
71	138+499 to 138+502	Sharp Bend	Design Speed = 30 Kmph
72	138+563 to 138+570	Sharp Bend	Design Speed = 30 Kmph
73	138+889 to 138+903	Sharp Bend	Design Speed = 35 Kmph
74	138+949 to 139+020	Sharp Bend	Design Speed = 35 Kmph
75	139+322 to 139+358	Sharp Bend	Design Speed = 20 Kmph
76	139+425 to 139+441	Sharp Bend	Design Speed = 20 Kmph
77	139+514 to 139+527	Sharp Bend	Design Speed = 25 Kmph
78	139+610 to 139+652	Sharp Bend	Design Speed = 25 Kmph
79	139+729 to 139+741	Sharp Bend	Design Speed = 25 Kmph

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Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
80	139+802 to 139+803	Sharp Bend	Design Speed = 35 Kmph
81	139+897 to 139+917	Sharp Bend	Design Speed = 20 Kmph
82	139+963 to 140+028	Sharp Bend	Design Speed = 20 Kmph
83	140+089 to 140+122	Sharp Bend	Design Speed = 20 Kmph
84	140+168 to 140+198	Sharp Bend	Design Speed = 20 Kmph
85	140+262 to 140+272	Sharp Bend	Design Speed = 20 Kmph
86	140+313 to 140+316	Sharp Bend	Design Speed = 25 Kmph
87	140+409 to 140+424	Sharp Bend	Design Speed = 25 Kmph
88	140+538 to 140+558	Sharp Bend	Design Speed = 25 Kmph
89	140+633 to 140+663	Sharp Bend	Design Speed = 20 Kmph
90	140+724 to 140+772	Sharp Bend	Design Speed = 25 Kmph
91	140+873 to 141+054	Sharp Bend	Design Speed = 35 Kmph
92	141+160 to 141+179	Sharp Bend	Design Speed = 20 Kmph
93	141+220 to 141+255	Sharp Bend	Design Speed = 25 Kmph
94	141+452 to 141+464	Sharp Bend	Design Speed = 25 Kmph
95	141+522 to 141+540	Sharp Bend	Design Speed = 25 Kmph
96	141+614 to 141+634	Sharp Bend	Design Speed = 25 Kmph
97	141+716 to 141+754	Sharp Bend	Design Speed = 25 Kmph
98	141+807 to 141+839	Sharp Bend	Design Speed = 20 Kmph
99	141+903 to 141+939	Sharp Bend	Design Speed = 35 Kmph
100	142+006 to 142+018	Sharp Bend	Design Speed = 25 Kmph
101	142+067 to 142+100	Sharp Bend	Design Speed = 25 Kmph

(iv) Right of Way

Details of the Right of Way have been given in Annex II of Schedule A

(v) Type of shoulders

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

Sl. No.	Stretch (from Km to Km)	Fully Paved shoulders/footpaths	Reference to cross section
1	129+075 to 129+225, 144+325 to 145+625	2 X 1.0 m width Footpath	TCS-12

(b) Hard shoulders of 1.5 m width shall be provided with selected earth wherever applicable as per TCS drawing.

(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 para. 2.10 of the IRC: SP: 73-2018.

(b) Lateral clearance: The width of the opening at the under passes 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 per para 2.11 of the 2- lanning Manual, however no overpass has been proposed**.

(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 paragraph 2.12 of IRC: SP: 73-2018]

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
Nil			

(ix) Grade separated structures

(a) **Grade separated structures shall be provided as per paragraph 2.13 of the IRC: SP: 73-2018. The requisite particulars are given below**:

Sl. No.	Location of Structure (VUP)	Length (m)	Number andlengthofspans	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 crossroads shall be as follows:

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

(x) Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows: [as per IRC SP: 73:2018]

Sl.No.	Location	Type of crossing
Nil		

(xi) Typical cross-sections of the Project Highway

Indicative typical cross section of the Project highway has been provided as per para 14 of Annexure-I (Schedule B).

TCS TYPE	DESCRIPTION	Length (m)
TCS-5	Reconstruction Of Two Lane Carriageway In Rural Area With RR Masonry Trapezoidal Open Drain On Hill Side And Earthen Shoulder On Valley Side	4500
TCS-6	Reconstruction Of Two Lane Carriageway In Rural Area With Both Side RR Masonry Trapezoidal Open Drain On Hill Section	1000
TCS-7	Reconstruction Of Two Lane Carriageway At Reconstruction Stretch In Rural Area With Retaining Wall On Valley Side And RR Masonry Trapezoidal Open Drain On Hill Side	3200
TCS-8	Reconstruction Of Two Lane Carriageway In Rural Area With Breast Wall On Hill Side And Earthen Shoulder On Valley Side	1150
TCS-9	Reconstruction Of Two Lane Carriageway In Rural Area With Breast Wall On Hill Side And RR Masonry Trapezoidal Open Drain On Valley Side	1400
TCS-10	Reconstruction of Two Lane Carriageway in Rural Area With Retaining Wall On Valley Side And Breast Wall On Hill Side	300
TCS-11	Reconstruction Of Two Lane Carriageway In Rural Area	3275
TCS-12	Reconstruction Of Two Lane Carriageway In Built Up Area With Both Side Footpath Cum RCC Rectangular Drain	1450
TCS-16	Reconstruction Of Two Lane Carriageway Stretch In Rural Area With both side Breast Wall On Hill Side	3000
TCS-17	Reconstruction of Two Lane Carriageway In Rural Area With Retaining Wall On valley Side And Earthen Shoulder on other side	150
TCS-18	Reconstruction of Two Lane Carriageway In Rural Area With Both side Retaining Wall On valley Side	250
	Total length =	**19675**

TCS TYPE	DESCRIPTION	Length (m)
TCS-22	New construction of Two Lane Carriageway Stretch In Rural Area With bothside Breast Wall On Hill Side	250
TCS-23	New construction of Two Lane Carriageway In Rural Area With Bothside Retaining Wall On valley Side	350
TCS-24	New construction of Two Lane Carriageway At Realignment Stretch with One side Composite RE Wall In Rural Area	250
	Total length =	**17281**

Chainage (Km)		Net Length (m)	TCS No.
From	To		
126775	126875	100	TCS-6
126875	126925	50	TCS-5
126925	127075	150	TCS-8
127075	127125	50	TCS-5
127125	127325	200	TCS-7
127325	127375	50	TCS-8
127375	127475	100	TCS-9
127475	127575	100	TCS-8
127575	127825	250	TCS-7
127825	127975	150	TCS-8
127975	128075	100	TCS-7
128075	128125	50	TCS-10
128125	128225	100	TCS-8
128225	128475	250	TCS-7
128475	128525	50	TCS-9
128525	128625	100	TCS-8
128625	128825	200	TCS-7
128825	128875	50	TCS-6
128875	129075	200	TCS-7
129075	129225	150	TCS-12
129225	129375	150	TCS-8
129375	129525	150	TCS-9
129525	129675	150	TCS-8
129675	129925	250	TCS-9
129925	130275	350	TCS-7
130275	130375	100	TCS-17
130375	130425	50	TCS-11
130425	130475	50	TCS-17
130475	130625	150	TCS-6
130625	130725	100	TCS-5

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Chainage (Km)		Net Length (m)	TCS No.
From	To		
130725	130875	150	TCS-7
130875	130925	50	TCS-5
130925	131025	100	TCS-7
131025	131075	50	TCS-5
131075	131175	100	TCS-7
131175	131275	100	TCS-8
131275	131375	100	TCS-10
131375	131425	50	TCS-5
131425	131475	50	TCS-7
131475	131525	50	TCS-8
131525	131675	150	TCS-10
131675	131725	50	TCS-5
131725	131875	150	TCS-7
131875	131925	50	TCS-5
131925	131975	50	TCS-8
131975	134825	2850	TCS-16
134825	135125	300	TCS-9
135125	135325	200	TCS-5
135325	135425	100	TCS-7
135425	135675	250	TCS-18
135675	135725	50	TCS-7
135725	136025	300	TCS-5
136025	136075	50	TCS-6
136075	136225	150	TCS-7
136225	136425	200	TCS-5
136425	136475	50	TCS-7
136475	136575	100	TCS-5
136575	136625	50	TCS-7
136625	136925	300	TCS-5
136925	136975	50	TCS-7
136975	137025	50	TCS-5
137025	137075	50	TCS-7
137075	137175	100	TCS-5
137175	137225	50	TCS-7
137225	137375	150	TCS-5
137375	137475	100	TCS-7
137475	137725	250	TCS-5
137725	137775	50	TCS-7
137775	137875	100	TCS-6
137875	137925	50	TCS-9

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Chainage (Km)		Net Length (m)	TCS No.
From	To		
137925	138075	150	TCS-16
138075	138425	350	TCS-9
138425	138475	50	TCS-6
138475	138575	100	TCS-5
138575	138625	50	TCS-7
138625	138775	150	TCS-6
138775	138825	50	TCS-5
138825	138875	50	TCS-6
138875	139025	150	TCS-9
139025	139225	200	TCS-5
139225	139325	100	TCS-6
139325	139425	100	TCS-5
139425	139525	100	TCS-7
139525	139625	100	TCS-5
139625	139875	250	TCS-7
139875	140325	450	TCS-5
140325	140425	100	TCS-6
140425	140925	500	TCS-5
140925	141025	100	TCS-11
141025	141175	150	TCS-5
141175	141275	100	TCS-6
141275	141675	400	TCS-5
141675	141925	250	TCS-11
141925	142275	350	TCS-5
142275	144325	2050	TCS-11
144325	145625	1300	TCS-12
145625	146450	825	TCS-11
Total Length		**19675**	**m**

3. Intersections and Grade Separators

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

There are no intersections with cross roads having bituminous surfacing. The cross roads fall into the category of VRs. The Contractor has to construct the following:

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

(i) At-grade intersections

Major Intersections:

Sl. No.	Location of intersection (Km)	Type of intersection	Other features	Remarks
1	142+250	3-Legged	LHS - Towards New Peren District HQ	At-grade improvement proposed
2	146+450	3-Legged	LHS - Towards Saijang	At-grade improvement proposed

Minor Intersections

Sl. No.	Location of intersection (Km)	Type of intersection	Other features
1	128+820	Y-Type	3 Legged
2	129+120	Y-Type	3 Legged
3	136+000	Y-Type	3 Legged
4	137+125	Y-Type	3 Legged
5	141+000	T-Type	3 Legged
6	143+110	Y-Type	3 Legged
7	143+770	X-Type	4 Legged
8	144+050	X-Type	4 Legged
9	144+150	T-Type	3 Legged
10	144+200	Y-Type	3 Legged
11	144+310	T-Type	3 Legged
12	144+440	T-Type	3 Legged
13	144+560	T-Type	3 Legged
14	144+970	T-Type	3 Legged
15	145+260	Y-Type	3 Legged
16	145+500	Y-Type	3 Legged
17	146+050	Y-Type	3 Legged
18	146+160	Y-Type	3 Legged

(ii) Grade separated intersection with/without ramps

Sl. No.	Location	Salient features	Minimum length of viaduct to be provided	Roadtobecarried over/underthe structures
Nil				

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

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 IRC: SP: 73-2018 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

The existing road shall be raised in the following sections:

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

5. Pavement Design

5.1 Pavement design shall be carried out in accordance with section 5 of the Manual.

5.2 Type of pavement

Flexible pavement shall be adopted for Project Highway. Notwithstanding anything contrary contained in this Agreement or the Manual, the pavement shall be designed as given below.

5.3 Design requirements

Notwithstanding anything to the contrary contained in this agreement or the manual, the contractor shall design the pavement of main carriageway for design traffic of 20 MSA with a minimum design period of 20 years. CBR value as obtained at site shall be taken for design if less than 10%. Maximum value of CBR to be taken for design shall not exceed 10%.
Bituminous Grade VG 30 or VG 40 shall be used for BC.

5.4 Reconstruction of stretches

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

SL NO.	Stretch from Km to Km	Remarks	TCS Type
1	126+775 Km to 126+875 Km	Reconstruction	TCS-6
2	126+875 Km to 126+925 Km	Reconstruction	TCS-5
3	126+925 Km to 127+075 Km	Reconstruction	TCS-8

SL NO.	Stretch from Km to Km	Remarks	TCS Type
4	127+075 Km to 127+125 Km	Reconstruction	TCS-5
5	127+125 Km to 127+325 Km	Reconstruction	TCS-7
6	127+325 Km to 127+375 Km	Reconstruction	TCS-8
7	127+375 Km to 127+475 Km	Reconstruction	TCS-9
8	127+475 Km to 127+575 Km	Reconstruction	TCS-8
9	127+575 Km to 127+825 Km	Reconstruction	TCS-7
10	127+825 Km to 127+975 Km	Reconstruction	TCS-8
11	127+975 Km to 128+075 Km	Reconstruction	TCS-7
12	128+075 Km to 128+125 Km	Reconstruction	TCS-10
13	128+125 Km to 128+225 Km	Reconstruction	TCS-8
14	128+225 Km to 128+475 Km	Reconstruction	TCS-7
15	128+475 Km to 128+525 Km	Reconstruction	TCS-9
16	128+525 Km to 128+625 Km	Reconstruction	TCS-8
17	128+625 Km to 128+825 Km	Reconstruction	TCS-7
18	128+825 Km to 128+875 Km	Reconstruction	TCS-6
19	128+875 Km to 129+075 Km	Reconstruction	TCS-7
20	129+075 Km to 129+225 Km	Reconstruction	TCS-12
21	129+225 Km to 129+375 Km	Reconstruction	TCS-8
22	129+375 Km to 129+525 Km	Reconstruction	TCS-9
23	129+525 Km to 129+675 Km	Reconstruction	TCS-8
24	129+675 Km to 129+925 Km	Reconstruction	TCS-9
25	129+925 Km to 130+275 Km	Reconstruction	TCS-7
26	130+275 Km to 130+375 Km	Reconstruction	TCS-17
27	130+375 Km to 130+425 Km	Reconstruction	TCS-11
28	130+425 Km to 130+475 Km	Reconstruction	TCS-17
29	130+475 Km to 130+625 Km	Reconstruction	TCS-6
30	130+625 Km to 130+725 Km	Reconstruction	TCS-5
31	130+725 Km to 130+875 Km	Reconstruction	TCS-7
32	130+875 Km to 130+925 Km	Reconstruction	TCS-5
33	130+925 Km to 131+025 Km	Reconstruction	TCS-7
34	131+025 Km to 131+075 Km	Reconstruction	TCS-5
35	131+075 Km to 131+175 Km	Reconstruction	TCS-7
36	131+175 Km to 131+275 Km	Reconstruction	TCS-8
37	130+275 Km to 131+375 Km	Reconstruction	TCS-10
38	131+375 Km to 131+425 Km	Reconstruction	TCS-5
39	131+425 Km to 131+475 Km	Reconstruction	TCS-7
40	131+475 Km to 131+525 Km	Reconstruction	TCS-8
41	131+525 Km to 131+675 Km	Reconstruction	TCS-10
42	131+675 Km to 131+725 Km	Reconstruction	TCS-5
43	131+725 Km to 131+875 Km	Reconstruction	TCS-7
44	131+875 Km to 131+925 Km	Reconstruction	TCS-5
45	131+925 Km to 131+975 Km	Reconstruction	TCS-8
46	131+975 Km to 134+825 Km	Reconstruction	TCS-16

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

SL NO.	Stretch from Km to Km	Remarks	TCS Type
47	134+825 Km to 135+125 Km	Reconstruction	TCS-9
48	135+125 Km to 135+325 Km	Reconstruction	TCS-5
49	135+325 Km to 135+425 Km	Reconstruction	TCS-7
50	135+425 Km to 135+675 Km	Reconstruction	TCS-18
51	135+675 Km to 135+725 Km	Reconstruction	TCS-7
52	135+725 Km to 136+025 Km	Reconstruction	TCS-5
53	136+025 Km to 136+075 Km	Reconstruction	TCS-6
54	136+075 Km to 136+225 Km	Reconstruction	TCS-7
55	136+225 Km to 136+425 Km	Reconstruction	TCS-5
56	136+425 Km to 136+475 Km	Reconstruction	TCS-7
57	136+475 Km to 136+575 Km	Reconstruction	TCS-5
58	136+575 Km to 136+625 Km	Reconstruction	TCS-7
59	136+625 Km to 136+925 Km	Reconstruction	TCS-5
60	136+925 Km to 136+975 Km	Reconstruction	TCS-7
61	136+975 Km to 137+025 Km	Reconstruction	TCS-5
62	137+025 Km to 137+075 Km	Reconstruction	TCS-7
63	137+075 Km to 137+175 Km	Reconstruction	TCS-5
64	137+175 Km to 137+225 Km	Reconstruction	TCS-7
65	137+225 Km to 137+375 Km	Reconstruction	TCS-5
66	137+375 Km to 137+475 Km	Reconstruction	TCS-7
67	137+475 Km to 137+725 Km	Reconstruction	TCS-5
68	137+725 Km to 137+775 Km	Reconstruction	TCS-7
69	137+775 Km to 137+875 Km	Reconstruction	TCS-6
70	137+875 Km to 137+925 Km	Reconstruction	TCS-9
71	137+925 Km to 138+075 Km	Reconstruction	TCS-16
72	138+075 Km to 138+425 Km	Reconstruction	TCS-9
73	138+425 Km to 138+475 Km	Reconstruction	TCS-6
74	138+475 Km to 138+575 Km	Reconstruction	TCS-5
75	138+575 Km to 138+625 Km	Reconstruction	TCS-7
76	138+625 Km to 138+775 Km	Reconstruction	TCS-6
77	138+775 Km to 138+825 Km	Reconstruction	TCS-5
78	138+825 Km to 138+875 Km	Reconstruction	TCS-6
79	138+875 Km to 139+025 Km	Reconstruction	TCS-9
80	139+025 Km to 139+225 Km	Reconstruction	TCS-5
81	139+225 Km to 139+325 Km	Reconstruction	TCS-6
82	139+325 Km to 139+425 Km	Reconstruction	TCS-5
83	139+425 Km to 139+525 Km	Reconstruction	TCS-7
84	139+525 Km to 139+625 Km	Reconstruction	TCS-5
85	139+625 Km to 139+875 Km	Reconstruction	TCS-7
86	139+875 Km to 140+325 Km	Reconstruction	TCS-5
87	140+325 Km to 140+425 Km	Reconstruction	TCS-6

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

SL NO.	Stretch from Km to Km	Remarks	TCS Type
88	140+425 Km to 140+925 Km	Reconstruction	TCS-5
89	140+925 Km to 141+025 Km	Reconstruction	TCS-11
90	141+025 Km to 141+175 Km	Reconstruction	TCS-5
91	141+175 Km to 141+275 Km	Reconstruction	TCS-6
92	141+275 Km to 141+675 Km	Reconstruction	TCS-5
93	141+675 Km to 141+925 Km	Reconstruction	TCS-11
94	141+925 Km to 142+275 Km	Reconstruction	TCS-5
95	142+275 Km to 144+325 Km	Reconstruction	TCS-11
96	144+325 Km to 145+625 Km	Reconstruction	TCS-12
97	145+625 Km to 146+450 Km	Reconstruction	TCS-11

6. Road side Drainage-

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual (IRC: SP: 73-2018).
Lined drain of following length shall be provided:

RCC Covered Drain

Chainage		Side	Net Length (m)
From(m)	To(m)		
129075	129225	Both	297
144325	145625	Both	2592
		Total Length=	2889 m

RR Masonry Trapezoidal Drain

Chainage		Side	Net Length (m)
From(m)	To(m)		
126775	126875	both	200
126875	126925	one	50
127075	127125	one	50
127125	127325	one	200
127375	127475	one	100
127575	127825	one	250
127975	128075	one	100
128225	128475	one	250
128475	128525	one	50
128625	128825	one	197.3
128825	128875	both	100

Chainage		Side	Net Length (m)
From(m)	To(m)		
128875	129075	one	200
129375	129525	one	150
129675	129925	one	250
129925	130275	one	350
130475	130625	both	297.4
130625	130725	one	100
130725	130875	one	150
130875	130925	one	50
130925	131025	one	100
131025	131075	one	50
131075	131175	one	97.4
131375	131425	one	50
131425	131475	one	50
131675	131725	one	47.4
131725	131875	one	150
131875	131925	one	50
134825	135125	one	300
135125	135325	one	200
135325	135425	one	100
135675	135725	one	50
135725	136025	one	300
136025	136075	both	100
136075	136225	one	150
136225	136425	one	197.4
136425	136475	one	50
136475	136575	one	100
136575	136625	one	50
136625	136925	one	300
136925	136975	one	47.3
136975	137025	one	50
137025	137075	one	47.3
137075	137175	one	100
137175	137225	one	47.3
137225	137375	one	150
137375	137475	one	94.7
137475	137725	one	247.3
137725	137775	one	47.4
137775	137875	both	200
137875	137925	one	50
138075	138425	one	350

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Chainage		Side	Net Length (m)
From(m)	To(m)		
138425	138475	both	100
138475	138575	one	100
138575	138625	one	50
138625	138775	both	300
138775	138825	one	50
138825	138875	both	100
138875	139025	one	150
139025	139225	one	200
139225	139325	both	200
139325	139425	one	100
139425	139525	one	100
139525	139625	one	97.4
139625	139875	one	244.7
139875	140325	one	447.3
140325	140425	both	200
140425	140925	one	489.3
141025	141175	one	147.4
141175	141275	both	200
141275	141675	one	397.4
141925	142275	one	347.3
Length =			**11039**

The length of side drains given above are minimum and it may vary as per site condition. In case of increase of length, no positive change of scope will be payable

7. Design of Structures

(i) General

(a) All bridges, culverts and structures shall be designed and constructed in accordance with section 7 of IRC: SP: 73-2018 and referred other codes therein 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:

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
Nil		

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

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
Nil		

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

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

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

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

(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:

Sl. No.	Culvert Location(km)	Span/Opening (m)	Remarks*
1	127.315	2.0 X 3.0	Box/Slab
2	128.782	2.0 X 3.0	Box/Slab
3	130.030	2.0 X 3.0	Box/Slab
4	130.525	2.0 X 2.0	Box/Slab
5	130.745	2.0 X 2.0	Box/Slab
6	131.082	2.0 X 2.0	Box/Slab
7	136.385	2.0 X 2.0	Box/Slab
8	136.615	2.0 X 2.0	Box/Slab
9	136.797	2.0 X 2.0	Box/Slab
10	136.960	2.0 X 3.0	Box/Slab
11	137.075	2.0 X 3.0	Box/Slab
12	137.199	2.0 X 3.0	Box/Slab
13	137.401	2.0 X 3.0	Box/Slab
14	137.448	2.0 X 2.0	Box/Slab
15	137.612	2.0 X 3.0	Box/Slab

Sl. No.	Culvert Location(km)	Span/Opening (m)	Remarks*
16	137.758	2.0 X 2.0	Box/Slab
17	139.430	2.0 X 3.0	Box/Slab
18	139.565	2.0 X 2.0	Box/Slab
19	139.855	2.0 X 2.0	Box/Slab
20	140.185	2.0 X 3.0	Box/Slab
21	140.558	2.0 X 2.0	Box/Slab
22	140.625	2.0 X 3.0	Box/Slab
23	140.634	2.0 X 3.0	Box/Slab
24	140.838	2.0 X 3.0	Box/Slab
25	141.170	2.0 X 2.0	Box/Slab
26	141.819	2.0 X 2.0	Box/Slab
27	142.188	2.0 X 3.0	Box/Slab
28	143.280	2.0 X 3.0	Box/Slab
29	143.883	2.0 X 2.0	Box/Slab
30	144.445	2.0 X 3.0	Box/Slab
31	144.465	2.0 X 3.0	Box/Slab
32	144.557	2.0 X 2.0	Box/Slab
33	145.493	2.0 X 3.0	Box/Slab
34	146.253	2.0 X 2.0	Box/Slab

(c) Widening of existing culverts:

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

Sl. No.	Culvert location	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)	Remarks*
1	127.630	2.0 X 3.0	Box/Slab
2	127.800	2.0 X 3.0	Box/Slab
3	128.315	2.0 X 3.0	Box/Slab

Sl. No.	Culvert Location(km)	Span/Opening (m)	Remarks*
4	128.682	2.0 X 3.0	Box/Slab
5	129.275	2.0 X 3.0	Box/Slab
6	129.750	2.0 X 3.0	Box/Slab
7	130.230	2.0 X 3.0	Box/Slab
8	130.945	2.0 X 2.0	Box/Slab
9	131.340	2.0 X 3.0	Box/Slab
10	131.880	2.0 X 3.0	Box/Slab
11	132.128	2.0 X 3.0	Box/Slab
12	132.480	2.0 X 3.0	Box/Slab
13	132.850	2.0 X 3.0	Box/Slab
14	133.570	2.0 X 3.0	Box/Slab
15	133.960	2.0 X 3.0	Box/Slab
16	134.250	2.0 X 3.0	Box/Slab
17	134.425	2.0 X 3.0	Box/Slab
18	134.835	2.0 X 3.0	Box/Slab
19	135.080	2.0 X 3.0	Box/Slab
20	135.545	2.0 X 3.0	Box/Slab
21	135.750	2.0 X 3.0	Box/Slab
22	136.175	2.0 X 3.0	Box/Slab
23	136.485	2.0 X 2.0	Box/Slab
24	136.960	2.0 X 3.0	Box/Slab
25	137.175	2.0 X 3.0	Box/Slab
26	137.299	2.0 X 3.0	Box/Slab
27	137.501	2.0 X 3.0	Box/Slab
28	137.648	2.0 X 2.0	Box/Slab
29	137.712	2.0 X 3.0	Box/Slab
30	137.858	2.0 X 2.0	Box/Slab
31	139.530	2.0 X 3.0	Box/Slab
32	139.665	2.0 X 2.0	Box/Slab
33	139.955	2.0 X 2.0	Box/Slab
34	140.385	2.0 X 3.0	Box/Slab
35	140.558	2.0 X 2.0	Box/Slab
36	140.825	2.0 X 3.0	Box/Slab
37	140.934	2.0 X 3.0	Box/Slab
38	141.038	2.0 X 3.0	Box/Slab
39	141.370	2.0 X 2.0	Box/Slab
40	141.580	2.0 X 3.0	Box/Slab

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Sl. No.	Culvert Location(km)	Span/Opening (m)	Remarks*
41	141.919	2.0 X 2.0	Box/Slab
42	142.288	2.0 X 3.0	Box/Slab
43	143.480	2.0 X 3.0	Box/Slab
44	143.883	2.0 X 2.0	Box/Slab
45	144.245	2.0 X 3.0	Box/Slab
46	145.180	2.0 X 3.0	Box/Slab
47	145.539	2.0 X 3.0	Box/Slab
48	145.810	2.0 X 3.0	Box/Slab
49	146.280	2.0 X 3.0	Box/Slab
50	146.400	2.0 X 2.0	Box/Slab

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

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.

The numbers of culvert above are minimum, to be provided and it may increase as per site condition. In case of increase in numbers of culvert, no positive change of scope will be payable

(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]

Sl. No.	Bridge location	Salient details of existing bridge		Adequacy or otherwise of the existing	Remarks
	(km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)	waterway, vertical clearance etc.*	
Nil					

(ii) The following narrow bridges shall be widened:

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

(b) Additional new bridges

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
Nil			

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

Sl. No.	Location at km	Remarks
Nil		

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

Sl.No.	Location at km	Remarks
Nil		

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.20 of IRC: SP: 73-2018

(f) Structures in marine environment

Refer to paragraph 7.21 of The Manual and specify the necessary measures / treatments for protecting structures in marine environment, where applicable

(i) Rail-road bridges

(a) Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual

(b) Road over-bridges

Road over-bridges (road over railway line) shall be provided at the following level crossings, as per manual:

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

(c)Road under-bridges

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

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

(v) Grade separated structures

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

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

(vi) Repairs and strengthening of bridges and structures

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

(a) Bridges

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

(b)ROB / RUB

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

(c) Overpasses/Underpasses and other structures

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

(vii) List of Major Bridges and Structures

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

Sl. No.	Location (Km)
Nil	

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

8. Traffic Control Devices and Road Safety Works

8.1 Traffic control devices and road safety works shall be provided in accordance with Section 9 of IRC: SP:73-2018.

(a) Traffic Signs: Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire Project Highway shall be provided conforming to IRC 67 and section 800 of MoRTH specification.

(b) Pavement Marking: Pavement markings shall cover road marking for the entire Project Highway and shall be provided conforming to IRC 35-2015.

8.2 Specifications of the reflective sheeting.

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04 shall be provided conforming to section 800 of MoRTH specification

9. Roadside Furniture

i. Roadside furniture shall be provided in accordance with the provisions of IRC: SP:73-2018.

(a) Road Boundary Stone: For the entire Project Highway.

(b) Pedestrian: The pedestrian facilities shall include the provision of the;

(i) Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location.

(ii) Pedestrian Crossings: Provide pedestrian crossing facilities on Junctions.

ii. Overhead traffic signs: location and size

(a) Full width Overhead signs: Full width Overhead signs shall be provided as below

Sl. No.	Location (Km)	Size
1	At Peren (Ch. 126+775 km)	16 m X 1.2 m (Double Pole)

(b) Cantilever Overhead signs: Overhead signs shall be provided as below:

Sl. No.	Design Chainage	Remarks
1	131.000	
2	140.770	

(c) Delineators: Delineators for the entire Project Highway shall be provided at the

locations as per section 9.4 of IRC SP 73:2018

The minimum quantities of Traffic control device and road safety works and Roadside furniture which are to be provided at site are tabulated below:

Sl. No	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
1	Total No of Street Light	Nos	118
2	Kilometre stones	Nos	17
3	5th Kilometre stones	Nos	4
4	Boundary Stones	Nos	198
5	Delineators (100 cm long and circular shaped)	Nos	1436
6	Road Stud	Nos	8790
7	900 mm Octagonal	Nos	21
8	600 mm circular	Nos	88
9	900 mm Triangular	Nos	309
10	500x600 Rectangular (Chevron)	Nos	638
11	2300x600 Rectangular (Chevron)	Nos	66
12	450 mm x 600 mm rectangular	Nos	85
13	Direction Sign < 0.9 sqm	sqm	40
14	Direction Sign > 0.9 sqm	sqm	4
15	Convex Mirror for Blind Curve	Nos	22
16	Object Hazard 900 mm x 300 mm rectangular	Nos	166
17	Rumble Strip	Nos	14

10. Compulsory Afforestation

Minimum 1970 nos. trees are required to be planted as compensatory afforestation

11. Hazardous Locations

Metal Beam crash barrier of minimum length of 2273 m (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches and high embankments (3.0m and more), at sharp curves on both sides on the project by the Contractor at the locations finalized in consultation with AE. Typical details of metal crash barrier are given in as per manual. Increase in length if any as per site requirement will not constitute change of scope

The safety barriers shall provided at the following hazardous locations:

Metal Beam Crash Barrier

Chainage		Side	Length (m)
From (m)	To (m)		
126894	126983	RHS	89
127172	127304	RHS	132
127831	127929	RHS	98
128330	128437	RHS	107
128582	128661	RHS	79
128733	128825	RHS	92
129065	129197	RHS	132
129953	130053	RHS	100
130550	130786	RHS	236
131268	131378	RHS	110
131936	132020	RHS	84
133236	133336	RHS	100
133416	133501	RHS	85
133628	133724	RHS	96
134725	134809	RHS	84
136689	136766	LHS	77
137081	137162	RHS	81
137568	137660	RHS	92
139287	139393	RHS	106
139862	139952	RHS	90
140054	140157	RHS	103
140598	140698	RHS	100
Total Length =			**2273**

12. Special Requirement for Hill Roads

Refer to section 13 of IRC: SP: 73-2018.

The following minimum length shall be provided:

Sr. No.	Items	Length (m)
1	Retaining wall (5 m high)	4150
2	Breast Wall (upto 3 m high)	8850
3	Hydroseeding	50800 sqm
4	Seeding and Mulching with Jute net	10000 sqm
5	Seeding and Mulching with coir	10000 sqm

Note- (i) *The Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & stabilization as per the specifications & standards stipulated in schedule 'D' and submit the same to the AE for review through the proof consultant and implement it accordingly thereafter.*

(ii) Any increase in quantity over and above the minimum qty. *as mentioned in above table or through change in specifications will not be considered as change of scope.* ***Therefore contractor shall make thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid***

(iii) The length of Retaining Wall shown above is minimum, to be constructed at site for proper geometrics and will not be converted to Breast Wall. Any reduction in the total length of Retaining Wall constructed at site shall constitute of negative change of scope.

(iv) Entire slope/formation which has been cut apart from the above tabulated lengths shall have to be stabilized by the Contractor using techniques approved by AE.

The details of Slope protection work chainage wise is tabulated below:

a) Breast Wall

Chainage		Side	Length (m)
From (m)	To (m)		
126925	127075	one side	150
127325	127375	one side	50
127375	127475	one side	100
127475	127575	one side	100
127825	127975	one side	150
128075	128125	one side	50
128125	128225	one side	100
128475	128525	one side	50
128525	128625	one side	100
129225	129375	one side	150
129375	129525	one side	150
129525	129675	one side	150
129675	129925	one side	250
131175	131275	one side	100
131275	131375	one side	100
131475	131525	one side	50
131525	131675	one side	150
131925	131975	one side	50

Chainage		Side	Length (m)
From (m)	To (m)		
131975	134825	both side	5700
134825	135125	one side	300
137875	137925	one side	50
137925	138075	both side	300
138075	138425	one side	350
138875	139025	one side	150
Total =			**8850 m**

b) Retaining Wall

Chainage		Side	Length (m)
From (m)	To (m)		
127125	127325	one side	200
127575	127825	one side	250
127975	128075	one side	100
128075	128125	one side	50
128225	128475	one side	250
128625	128825	one side	200
128875	129075	one side	200
129925	130275	one side	350
130275	130375	one side	100
130425	130475	one side	50
130725	130875	one side	150
130925	131025	one side	100
131075	131175	one side	100
131275	131375	one side	100
131425	131475	one side	50
131525	131675	one side	150
131725	131875	one side	150
135325	135425	one side	100
135425	135675	both side	500
135675	135725	one side	50
136075	136225	one side	150
136425	136475	one side	50
136575	136625	one side	50
136925	136975	one side	50
137025	137075	one side	50
137175	137225	one side	50
137375	137475	one side	100
137725	137775	one side	50

Chainage		Side	Length (m)
From (m)	To (m)		
138575	138625	one side	50
139425	139525	one side	100
139625	139875	one side	250
Total Length =			**4150 m**

13. Change of Scope

The length of Structures and bridges specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule- B shall not constitute a Change of Scope save and except any variations in the length arising out of a Change of Scope expressly under taken in accordance with the provisions of Article 13.

SCHEDULE – C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

(a) Roadside furniture

(b) Pedestrian facilities

(c) Tree plantation

(d) Bus shelters

(e) Passing Places

(f) Truck lay byes and

(g) Others to be specified

2 Description of Project Facilities

Toll Plaza

NIL

Bus Shelters

To ensure orderly movement of the through traffic, bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections. The bus stops have been proposed on one side of the road.

Bus shelters 6 Nos shall be provided on the Project Highway at 3 locations as mentioned herein under. Bus shelters shall be constructed as per Manual on both sides of the Project Highway. These bus shelters will also have passenger shelter.

Details of Bus shelters

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

Sl. No.	Project Facility	Location (km)	Design Requirements	Other Essential Details
1	Bus Bay & Passenger shelter	138+45 (Both side)	Bus Bays & Passenger shelter have been placed on both side of proposed roadway	Dimension of Bus Bay (L X B = 59.0 m X 3.0 m) Dimension of Passenger Shelter (L X B = 6.0 m X 2.0 m) (Refer Passenger Shelter Drawing)
2	Bus Bay & Passenger shelter	142+21 (Both side)		
3	Bus Bay & Passenger shelter	146+33 (Both side)		

Truck lay byes

It shall be provided at the following locations for a capacity of minimum 10 trucks at each location.

Sl. No.	Truck lay bye Chainage(Both Side)	Name of the Place
Nil		

Pedestrian Facilities

Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with AE. This should include

(a) minimum Zebra Crossing with flashing Beacon or

(b) (b) Zebra Crossing with separate pedestrian phase or (c) any other provision as approved by AE.

Landscaping

Landscape treatment of the Project Highway shall be undertaken through planting of trees and ground cover of appropriate varieties and landscaping on surplus land in the ROW. The Construction Contractor should plant at least 1970 nos. of trees of minimum 6 ft. height with tree guard made up of MS sections.

Plantation scheme shall be prepared in consultation with the Forest Department of the Government of Nagaland, and AE.

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 confirm to design requirements set out in the following documents:

Manual of specification and standards for two laning of Highways with paved shoulder (Second revision) IRC:SP:73-2018, Hill road manual IRC:SP:48-1998 and Specification of roads and bridges work (fifth revision), MoRTH.

Annex – I

(Schedule – D)

Annex – I
(Schedule – D)

Specifications and Standards for Construction

1 Specifications and Standards

All materials, works and construction operations shall confirm to the Manual of Specifications and Standards for Two Laning of Highways (IRC: SP: 73 – 2018), referred as the Manual, MORTH Specifications for Road and Bridge Works, and IRC: SP: 48-1998. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

2 Deviations from the Specifications and Standards

2.1 The terms 'Concessionaire', 'Independent Engineer' and 'Concession Agreement' used in the Manual (IRC: SP 73- 2018) shall be deemed to be substituted by the terms **'Contractor', 'Authority's Engineer' and 'Agreement'** respectively.

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

S. No.	Clause	Provision as per Manual (IRC:SP:73-2018)	Modified Provision
1	2.2	**Design Speed:** Ruling or minimum Design speed shall be followed	Design speed shall be 30 km/h for project highway excepting hair pin bend locations wherein design speed shall be 20 km/h. The same is mentioned in the Plan &Profile drawings given in **Annexure-III** of **Schedule A.**

S. No.	Clause	Provision as per Manual (IRC:SP:73-2018)	Modified Provision
2	2.7.2	**Roadway Width:** On horizontal curves with radius up to 300 m width of pavement and roadway shall be increased as per Table 2.4	On horizontal Curves with radius up to 300 m width of pavement and roadway shall be increased as per Plan & Profile drawings given in Annexure – III of Schedule A
3	2.9.4	**Radius of Horizontal Curves:**	Radius of Horizontal curves shall be as per the alignment plan shown in Plan & Profile drawings given in **Annexure-III** of **Schedule A.**

SCHEDULE - E

(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements

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

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

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

2.Repair/Rectification of Defects and Deficiencies

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

3. Other Defects and Deficiencies

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

4. Extension of Time Limit

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

5. Emergency Repairs/Restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon Inspection / Post-monsoon Inspection

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

8. Repairs on account of natural calamities

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

Annex - I

(Schedule-E)

Repair/rectification of Defects and Deficiencies

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

Nature of Defect or deficiency		Time limit for repair/rectification
ROADS		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibrated bump integrator)	120 (one hundred and twenty) days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(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 hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c)	**Road side furniture including road sign and**	

Nature of Defect or deficiency		Time limit for repair/rectification
	pavement marking	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Damaged/missing road signs 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 hours
(ii)	Faults and minor failures	8 hours
(e)	**Trees and Plantation**	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 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 hours
(ii)	Defects in electrical, water and sanitary installations	24 hours
(g)	**Toll Plazas**	
(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 hours within 15 (fifteen) days or as specified by the Authority's Engineer
(b)	**Foundations**	
(i)	Scouring and/or cavitation	15 (fifteen) days
(c)	**Piers, abutments, return walls and wing walls**	

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

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

SCHEDULE - F
(See Clause 3.1.7(a))

APPLICABLE PERMITS

1 Applicable Permits

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

a) Permission of the State Government for extraction of boulders from quarry;
b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
c) License for use of explosives;
d) Permission of the State Government for drawing water from river/reservoir;
e) License from inspector of factories or other competent Authority for setting up batching plant;
f) Clearance of Pollution Control Board for setting up batching plant;
g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
h) Permission of Village Panchayats and State Government for borrow earth; and
i) Any other permits or clearances required under Applicable Laws.

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

1.3 The agency need to ensure compliance of AIP and FC stated in schedules 'A', Annexure – IV. The necessary certifications need to be obtained from competent local forest department.

1.4 Muck dumping locations in forest area to be freezed in consultation with the forest department, the necessary certfications from local competent forest department is to be submitted.

SCHEDULE - G
(See Clauses 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annex-I
(See Clause 7.1.1)
Performance Security

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

WHEREAS:

_____[name and address of contractor] (hereinafter called the "**Contractor**") and Managing Director, NHIDCL, PTI Building, 3rd Floor, 4, Parliament Street, New Delhi-110001(hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "Agreement") for the ***Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP***

, subject to and in accordance with the provisions of the Agreement

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

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment 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 fulfilment, 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.

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

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

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

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

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

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	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank, Transport Bhawan, 1st Parliament street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Annex – II
(Schedule - G)
(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "Agreement") with the and The Managing Director , NHIDCL, PTI Building, New Delhi (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "Agreement") for the ***Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP*** , subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

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

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

1. The Bank hereby unconditionally and irrevocably 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 & Infrastructural Development Corporation Ltd, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for 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 Retention Money and 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 Retention Money.

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 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

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

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

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect 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 shall also be operable at our..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

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	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank, Transport Bhawan, 1st Parliament street, New Delhi-110001

Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP

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.

Annex – III
(Schedule - G)
(See Clause 19.2)

Form for Guarantee for Advance Payment

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") has executed an agreement (hereinafter called the "Agreement") with the Managing Director, Head Office New Delhi (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the ***Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP*** subject to and in accordance with the provisions of the Agreement.

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

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

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

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 Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

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, 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.

[$] 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).

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

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

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	IFSC SYNB0009062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Syndicate Bank, Transport Bhawan, 1st Parliament street, New Delhi-110001

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Schedule - H

(See Clauses 10.1 (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 % of CP	Stage for Payment	Percentage
1	2	3	4
Road Works including Culverts, widening and repair of culverts	63.18 %	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub- grade	47.48%
		(2) Sub-base Course	13.80%
		(3) Non bituminous Base course	13.59%
		(4) Bituminous Basecourse	10.65 %
		(5) Wearing Coat	6.28 %
		(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	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Non bituminous Base course	[Nil]
		(4) Bituminous Basecourse	[Nil]
		(5) Wearing Coat	[Nil]
		B.2-Reconstruction/New 8-Lane Realignment/ Bypass(Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		C.1-Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-base Course	[Nil]
		(3) Non bituminous Base course	[Nil]
		(4) Bituminous Basecourse	[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) DryLean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction & New Culverts on existing road, realignments, bypasses Culverts (length <6m)	8.22 %

Item	Weightage in % of CP	Stage for Payment	Percentage
Minor bridge/ Underpasses/ Overpasses	0.00 %	**A.1-widening and repairing of Minor Bridges (length >6 m&<60m)**	
		Minor Bridges	[Nil]
		A.2- New Minor bridges (length >6 mand<60m)	
		(1)Foundation + 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.	[Nil]
		(3)Approaches:On completionof approaches includingRetainingwalls, stonepitching, protection works complete in all and fit for use	[Nil]
		(4) GuideBundsand River Training Works:On completion of GuideBunds andriver training works complete in all respects	[Nil]
		B.1- Widening and repairs of underpasses/overpasses	
		Underpasses/ Overpasses	[Nil]
		B.2-NewUnderpasses/Overpasses	
		(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[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	0.000 %	**A.1- Widening and repairs of Major Bridges**	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		(7)Guidebunds,RiverTrainingworks etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitchingandprotection works)	[Nil]
		A.2-NewMajorBridges	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]
		(3)Super-structure(including bearings)	[Nil]
		(4)WearingCoatincludingexpansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7)Guidebunds,RiverTrainingworks etc.	[Nil]
		(8)Approaches(including Retaining walls, stone pitchingand protection works)	[Nil]
		B.1-Wideningandrepairsof (a) ROB (b) RUB	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-Structure (Including bearings)	[Nil]
		(4)Wearing Coat(a)in case of ROB- wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainagefacility completein all respects as specified	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7) Approaches (Including Retaining walls,Stone Pitching and protection works)	[Nil]
		B.2-NewROB/RUB	
		(1)Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3) Super-Structure (Including bearings)	[Nil]
		(4)Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respectsas specified and (b) incase of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	36.82 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	12.61%
		(iii) Road signs, Road furniture, km stones, safety devices etc.	5.99%
		(iv) Road marking & studs	2.43%
		(v) Project facilities	
		a) Bus Bays & Passenger Shelter	1.77 %
		b) Truck Lay-byes	[Nil]
		c) Hydro seeding	3.26 %
		d) Junction	1.49%
		(vi) Road side Plantation	[Nil]
		(vii) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]
		(viii) Safety &Traffic Management during const.	[Nil]
		(ix) Breast Wall	37.10%
		(x) Toe Wall	[Nil]
		(xi) Retaining Wall	31.32 %
		(xii) Boundary wall	[Nil]
		(xiii) Site Clearance & Dismantling	4.04 %
		(xiv) Rain water harvesting	[Nil]
		(xv) Composite RE Wall	[Nil]

Procedure of estimating the value of work done

1.2.1 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 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 5(five) percent of the total length.
(1)Earthwork up to top of the sub-grade	47.48%	
(3) Sub-base Course	13.80%	
(4) Non bituminous Base course	13.59%	
(5) Bituminous Base course	10.65%	
(6) Wearing Coat	6.28%	
(7) Widening and repair of culverts	[Nil]	Cost of ten completed culverts shall be determined on pro rata basis with respect to the total number of culverts.
B.1- Reconstruction/New2-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 a length of not less than 5(five) percent of the total length.
(1)Earthwork up to top of the sub-grade	[Nil]	
(3) Sub-base Course	[Nil]	
(4) Non bituminous Base course	[Nil]	
(5) Bituminous Base course	[Nil]	
(6) Wearing Coat	[Nil]	
(7) Widening and repair of culverts		
B.2- Reconstruction/New 8-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 a length of not less than 5(five) percent of the total length.
(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/ Slip 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 a length of not less than 5(five) 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 Basecourse	[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 a length of not less than 5(five) percent of the total length.
(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 &New Culverts on existingroad, realignments, bypasses		Cost of each culverts shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least three culverts
Culverts (length <6m)	8.22 %	

@ 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.

1.2.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repairs of Minor Bridges(length>6m&<60m)	[Nil]	Cost of each minor bridge shall be determined on pro-rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge
A.2- New Minor Bridges (length > 6m & < 60m)		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	[Nil]	Foundation: 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 shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(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.	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above

Stage of Payment	Weightage	Payment Procedure
(3)Approaches :On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	[Nil]	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.
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	[Nil]	Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bund sand River training Works in all respects as specified
B.1- Widening and repairs of underpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro-rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/Overpasses		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	[Nil]	Foundation: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. 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 each Underpasses/ Overpasses. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

(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]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

1.2.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
A.1- Widening and repairs of Major Bridges		
(1) Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge.

(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Guide Bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
A.2-NewMajorBridges		
(1)Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not lessthan25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

(7)Guide bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
B.1- Widening and repairs of (a)ROB (b)RUB		
(1) Foundations	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-Structure (Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50%ofthe stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on

Stage of Payment	Weightage	Payment Procedure
		completion of stage specified as above
(4) Wearing Coat(a)in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (Including Retaining walls, Stone Pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.
B.2-NewROB/RUB		
(1) Foundation	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-structure (including bearing)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) In case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all

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

Stage of Payment	Weightage	Payment Procedure
		specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3)Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders foreach span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.

Note: (1) In case of 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.

1.2.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
(1) Toll Plaza	[Nil]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro-rata basis with respect to the total of all toll plaza.
(2) Roadside drains	12.61%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (five per cent) of the total length.
(3) Road signs, markings, km stones, safety devices etc.	8.42%	

Stage of Payment	Weightage	Payment Procedure
(4) Project Facilities		Payment shall be made on pro rata basis for two completed facilities
a) Bus Bays & Passenger Shelter	1.77 %	
b) Truck Lay-byes	[Nil]	
c) Junction	1.39%	
d) Rest Area	[Nil]	
(5) Road side Plantation including Horticulture in Wayside Amenities	0.10	Unit of measurement is minimum 100 trees
(6) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten percent)of the total length.
(7) Safety and traffic management during construction	[Nil]	Payment shall be made on prorate basis every six months.
(8) Protection Works		Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5% (Five per cent) of the total length
(a) Retaining Wall	31.32%	
(b) Breast Wall	37.10%	
(10) Hydro seeding and mulching	4.04%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in area of not less than 10% of the area for seeding and mulching

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 10.2.4)

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.]

1. A minimum list of the drawings of the various components/elements of the project highway and project facility required to be submitted by the Contractor is given below:

   (a) Drawing of plan, profile and cross sections

   (b) Drawings of cross drainage works

   (c) Drawings of junctions

   (d) Drawing of typical cross sections

   (e) Drawings of bus-bay and bus shelters with furniture and drainage system

   (f) Drawing of a truck parking lay bye with furniture and drainage system

   (g) Drawings of road furniture items including traffic signage, marking, safety barriers, etc.

   (h) Drawings of traffic diversions plans and traffic control measures

   (i) Drawings of road drainage measures

   (j) Drawings of typical details slope protection measures

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 ofeach 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 **[192th]** 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 anamount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **[329th]** day from the Appointed Date (the "**Project Milestone- II**").

(ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for anamount 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 **[467 st]** 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 anamount 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 [549th] 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 12.1.2)

TESTS ON COMPLETION

1 Schedule for Tests

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

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

2 Tests

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

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

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

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

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

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

3 Agency for conducting Tests

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

4 Completion Certificate

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

SCHEDULE - L

(See Clause 12.2 and 12.4)

PROVISIONAL CERTIFICATE

I, ... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ..... (the "Agreement"), for **Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP**

1 (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 undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.

In view of the foregoing, I am satisfied that the Project Road *of* **Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP** can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the .....day of …….. 20…...

ACCEPTED, SIGNED, SEALED	SIGNED, SEALED AND
AND DELIVERED	DELIVERED
For and on behalf of	for and on behalf of
CONTRACTOR by:	AUTHORITY's ENGINEER by:
(Signature)	(Signature)

COMPLETION CERTIFICATE

1 I, ...(Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …….. (the "Agreement"), for **Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP** (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…..

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

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

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

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

2. Percentage reductions in lump sum payments

2.1 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 crossfall, 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%
S. No.	**Item/Defect/Deficiency**	**Percentage**
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(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/accidental 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%

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

R=P/IOO x M x L1/L

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

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

L1 = Non-complying length

L = Total length of the road,

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

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

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

SCHEDULE - N
(See Clause 18.1.1)

SELECTION OF AUTHORITY'S ENGINEER

1 Selection of Authority's Engineer

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

1.2 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

1.1 These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "Agreement), which has been entered into between the National Highways and Infrastructure Development Corporation Ltd, 3rd Floor, PTI Building, 4, Parliament Street, New Delhi – 110001the "Authority") and (the "Contractor") **Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP** and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

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

2 Definitions and interpretation

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

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

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

3. General

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

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

(a) any Time Extension;

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

(c) the Termination Payment; or

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

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

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

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

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

4 Construction Period

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

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

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

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

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

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

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

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

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4.9, 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.

4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.

4.11 The timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the 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.

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

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

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

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

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

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

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

5. Maintenance Period

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

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

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

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

5.5 The Authority's Engineer shall examine the request of the Contractor 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

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

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

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

7. Payments

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

7.2 Authority's Engineer shall -

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

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

7.3 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.

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

8. Other duties and functions

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

9 Miscellaneous

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

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

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

9.4 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.

9.5 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 19.4.1, 19.6.1, and 19.8.1)

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

a. the estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;
b. amounts reflecting adjustments in price for the aforesaid claim;
c. the estimated amount of each Change of Scope Order executed subsequent to the last claim;
d. amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3 (a);
e. total of (a), (b), (c) and (d) above;
f. Deductions:
    i. Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
    ii. Any amount towards deduction of taxes; and
    iii. Total of (i) and (ii) above.
g. Net claim: (e) – (f) (iii);
h. The amounts received by the Contractor upto the last claim:
    i. For the Works executed (excluding Change of Scope orders);
    ii. For Change of Scope Orders, and
    iii. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

SCHEDULE - P

(See Clause 20.1)

INSURANCE

1. Insurance during Construction Period

1.1 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.

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

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to

any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

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

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

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

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

4. Insurance to be in joint names

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

Schedule-Q

(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 **"Construction of 2 Laning with Hard Shoulder of Peren – Dimapur section on NH – 129A from Design Km 126.775 to Km 146.450 (Length – 19.675 Km) in the state of Nagaland on EPC mode (Pkg – II) under Bharatmala NH(O) - TSP** 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 ANDDELIVERED

(Signature)

(Name and designation of Authority's

Representative)

(Address)