Schedules

Construction of *2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP*

Schedule-A

(See Clauses 2.1and 8.1)

Site of the Project

1 The Site

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

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

(iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause8.2 (i) of this Agreement.

(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 Project Highway comprises the section of NH-129A commencing from km 109+767 to km 125+203 i.e. Peren 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	109.767	109.967	9.500	20	
2	109.967	110.167	10.100	20	
3	110.167	110.290	8.500	24	
4	110.290	110.490	11.240	20	
5	110.490	110.690	8.550	20	
6	110.690	110.890	11.060	20	
7	110.890	111.090	13.530	20	
8	111.090	111.290	8.660	24	
9	111.290	111.490	11.540	24	
10	111.490	111.690	11.460	20	
11	111.690	111.890	10.780	20	
12	111.890	112.090	10.980	24	
13	112.090	112.290	10.360	24	
14	112.290	112.490	10.050	24	
15	112.490	112.690	9.200	20	
16	112.690	112.890	12.820	20	
17	112.890	113.090	11.570	20	
18	113.090	113.290	11.770	20	
19	113.290	113.490	8.170	24	
20	113.490	113.690	8.710	24	
21	113.690	113.890	9.090	24	
22	113.890	114.090	8.780	24	
23	114.090	114.290	7.950	24	
24	114.290	114.490	8.890	24	

SL No.	Chainage(Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
25	114.490	114.690	7.830	24	
26	114.690	114.890	8.160	24	
27	114.890	115.090	9.810	24	
28	115.090	115.290	9.000	24	
29	115.290	115.490	9.720	24	
30	115.490	115.690	10.020	24	
31	115.690	115.890	10.970	24	
32	115.890	116.090	7.860	24	
33	116.090	116.290	8.720	24	
34	116.290	116.490	10.180	20	
35	116.490	116.690	8.250	20	
36	116.690	116.890	10.470	20	
37	116.890	117.090	11.770	20	
38	117.090	117.290	12.370	20	
39	117.290	117.490	9.440	24	
40	117.490	117.690	8.990	20	
41	117.690	117.890	9.800	20	
42	117.890	118.090	9.570	24	
43	118.090	118.290	8.840	24	
44	118.290	118.490	9.260	20	
45	118.490	118.690	8.420	20	
46	118.690	118.890	10.620	20	
47	118.890	119.090	11.860	20	
48	119.090	119.290	10.390	24	
49	119.290	119.490	7.300	24	
50	119.490	119.690	5.560	20	
51	119.690	119.890	5.290	24	
52	119.890	120.090	11.130	20	
53	120.090	120.290	6.260	20	
54	120.290	120.490	5.390	20	
55	120.490	120.690	6.680	20	
56	120.690	120.890	6.810	20	
57	120.890	121.090	6.100	15	
58	121.090	121.290	7.380	15	
59	121.290	121.490	6.900	15	
60	121.490	121.690	8.320	15	
61	121.690	121.890	7.740	20	
62	121.890	122.090	6.710	20	
63	122.090	122.290	8.010	20	
64	122.290	122.490	9.290	20	
65	122.490	122.690	8.100	20	
66	122.690	122.890	8.320	20	
67	122.890	123.090	7.740	20	
68	123.090	123.290	9.830	20	

SL No.	Chainage(Km)		Existing Right of Way (m)	Proposed Right of Way (m)	Remarks
	From	To			
69	123.290	123.490	8.440	20	
70	123.490	123.690	9.900	24	
71	123.690	123.890	8.080	20	
72	123.890	124.090	8.530	20	
73	124.090	124.290	8.920	20	
74	124.290	124.490	7.420	24	
75	124.490	124.690	9.590	20	
76	124.690	124.890	6.640	24	
77	124.890	125.090	7.450	24	
78	125.090	125.203	5.670	20	

3. Carriageway

The present carriage way of the Project Highway is Single/Intermediate Lane from km 109+767 to km 125+203. 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	110.140	Slab Culvert	1 x 3.5m	11.3
2	111.547	Slab Culvert	1 x 3.2m	11.3
3	112.183	HP Culvert	2 x 1.2m	10
4	112.727	HP Culvert	2 x 1.0m	10
5	113.180	HP Culvert	2 x 1.0m	10
6	113.687	HP Culvert	2 x 1.0m	10
7	113.729	Slab Culvert	1 x 1.5m	11
8	113.885	HP Culvert	1 x 1.2 m	11
9	113.974	Slab Culvert	1 x 1.0m	11
10	114.662	HP Culvert	2 x 1.2m	11
11	114.817	HP Culvert	2 x 1.2m	11
12	115.130	HP Culvert	2 x 1.2m	11
13	115.310	HP Culvert	2 x 1.2m	11
14	115.671	Slab Culvert	1 x 3.5m	11
15	115.911	Slab Culvert	1 x 3.5m	11
16	116.098	HP Culvert	2 x 1.0m	11
17	116.200	Slab Culvert	1X3.5m	11
18	116.336	HP Culvert	2 x 0.9m	11
19	116.552	HP Culvert	2 x 0.9m	11

Sl. No.	Chainage (km)	Type of Culvert	Span/Opening with Span Length	Width of Culvert (m)
20	116.935	HP Culvert	2 x 1.0m	11
21	117.027	HP Culvert	2 x 1.0m	11
22	117.065	HP Culvert	2 x 1.0m	10
23	118.207	HP Culvert	2 x 1.0m	10
24	117.322	HP Culvert	2 x 1.0m	10
25	117.471	HP Culvert	2 x 1.0m	10
26	117.768	HP Culvert	1 x 0.6m	10
27	117.869	HP Culvert	2 x 1.0m	10
28	118.341	HP Culvert	2 x 1.0m	10
29	118.603	HP Culvert	1 x 1.0m	10
30	118.705	HP Culvert	1 x 1.0m	10
31	119.339	HP Culvert	1 x 0.9m	7.5
32	119.668	HP Culvert	2 x 1.0m	7.5
33	120.070	HP Culvert	1 x 1.0m	7.5
34	120.615	HP Culvert	1 x 0.9m	7.5
35	121.375	HP Culvert	1 x 1.0m	12.5
36	121.475	HP Culvert	1 x 1.2 m	12.5
37	121.520	HP Culvert	1 x 1.2 m	12.5
38	121.691	HP Culvert	1 x 1.2 m	12.5
39	121.885	HP Culvert	1 x 1.0 m	12.5
40	122.155	HP Culvert	1 x 1.0 m	12.5
41	122.338	HP Culvert	1 x 1.0 m	12.5
42	122.675	HP Culvert	1 x 1.0 m	12.5
43	122.807	HP Culvert	1 x 1.0 m	12.5
44	123.255	HP Culvert	1 x 1.0 m	12.5
45	123.388	HP Culvert	1 x 1.0 m	10
46	123.574	HP Culvert	1 x 1.0 m	7.5
47	123.702	HP Culvert	1 x 1.0 m	7.5
48	124.892	HP Culvert	1 x 1.0 m	8.5
49	125.027	HP Culvert	1 x 0.6 m	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		
	From km	To km	Earthen (Kutcha)
1	116.224	116.335	Earthen (Hill Side)
2	116.340	116.550	Earthen (Hill Side)
3	116.555	116.760	Earthen (Hill Side)
4	116.825	117.028	Earthen (Hill Side)
5	117.130	117.485	Earthen (Hill Side)
6	117.493	117.735	Earthen (Hill Side)
7	117.782	118.164	Earthen (Hill Side)
8	118.380	118.610	Earthen (Hill Side)
9	118.615	118.717	Earthen (Hill Side)
10	118.767	118.960	Earthen (Hill Side)
11	119.265	119.540	Pucca(Single Side)
12	119.300	119.355	Pucca(Single Side)
13	119.572	119.620	Pucca(Single Side)
14	119.620	119.680	Pucca(Single Side)
15	119.702	119.815	Pucca(Single Side)
16	119.824	120.020	Pucca(Single Side)
17	120.045	120.055	Pucca(Single Side)
18	120.125	120.212	Earthen (Hill Side)
19	120.275	120.300	Pucca(Single Side)
20	120.307	120.385	Earthen (Hill Side)
21	120.400	120.628	Earthen (Hill Side)
22	120.938	120.971	Earthen (Hill Side)
23	120.971	120.979	Pucca(Single Side)
24	120.979	121.070	Earthen (Hill Side)

14. Major junctions

The details of major junctions are as follows:

S. No.	Location	
	km	Remark
1	119.000	**At grade**
2	119.560	**At grade**
3	124.250	**At grade**

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

15. Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Km	Type of intersection	
1	116.185	Y	3-legged
2	117.780	Y	3-legged
3	119.000	Y	3-legged

Sl. No.	Km	Type of intersection	
4	120.025	Y	3-legged
5	120.340	T	3-legged
6	120.650	Y	3-legged
7	120.980	Y	3-legged
8	121.200	Y	3-legged
9	122.690	Y	3-legged
10	123.000	Y	3-legged
11	124.270	Y	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

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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

the following table:

Sl. No.	Built-up stretch (Township)	Location		Width (m)	Typical Cross Section (Refer to Manual)	Remarks
1	Peren Town	120+425	120+625	7	As per attached TCS drawing	7 m Carriageway
2	Peren Town	121+125	123+225	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	109+834 to 109+873	Sharp Bend	Design Speed = 20 Kmph
2	110+024 to 110+042	Sharp Bend	Design Speed = 25 Kmph
3	110+093 to 110+107	Sharp Bend	Design Speed = 20 Kmph
4	110+165 to 110+188	Sharp Bend	Design Speed = 25 Kmph
5	110+225 to 110+251	Sharp Bend	Design Speed = 25 Kmph
6	110+433 to 110+473	Sharp Bend	Design Speed = 20 Kmph
7	110+522 to 110+538	Sharp Bend	Design Speed = 25 Kmph
8	110+601 to 110+626	Sharp Bend	Design Speed = 30 Kmph
9	110+871 to 110+909	Sharp Bend	Design Speed = 20 Kmph
10	110+976 to 110+978	Sharp Bend	Design Speed = 30 Kmph
11	111+017 to 111+040	Sharp Bend	Design Speed = 30 Kmph
12	111+118 to 111+126	Sharp Bend	Design Speed = 35 Kmph
13	111+189 to 111+219	Sharp Bend	Design Speed = 35 Kmph
14	111+279 to 111+311	Sharp Bend	Design Speed = 20 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
15	111+748 to 111+793	Sharp Bend	Design Speed = 20 Kmph
16	111+856 to 111+857	Sharp Bend	Design Speed = 35 Kmph
17	112+141 to 112+185	Sharp Bend	Design Speed = 20 Kmph
18	112+253 to 112+257	Sharp Bend	Design Speed = 35 Kmph
19	112+304 to 112+325	Sharp Bend	Design Speed = 35 Kmph
20	112+374 to 112+388	Sharp Bend	Design Speed = 35 Kmph
21	112+643 to 112+666	Sharp Bend	Design Speed = 20 Kmph
22	112+737 to 112+770	Sharp Bend	Design Speed = 20 Kmph
23	112+833 to 112+840	Sharp Bend	Design Speed = 35 Kmph
24	112+950 to 112+953	Sharp Bend	Design Speed = 35 Kmph
25	113+015 to 113+053	Sharp Bend	Design Speed = 20 Kmph
26	113+290 to 113+331	Sharp Bend	Design Speed = 20 Kmph
27	113+404 to 113+416	Sharp Bend	Design Speed = 30 Kmph
28	113+485 to 113+486	Sharp Bend	Design Speed = 30 Kmph
29	113+587 to 113+622	Sharp Bend	Design Speed = 20 Kmph
30	113+671 to 113+703	Sharp Bend	Design Speed = 25 Kmph
31	113+818 to 113+854	Sharp Bend	Design Speed = 20 Kmph
32	113+915 to 113+942	Sharp Bend	Design Speed = 35 Kmph
33	114+045 to 114+054	Sharp Bend	Design Speed = 35 Kmph
34	114+233 to 114+263	Sharp Bend	Design Speed = 30 Kmph
35	114+383 to 114+423	Sharp Bend	Design Speed = 20 Kmph
36	114+550 to 114+565	Sharp Bend	Design Speed = 20 Kmph
37	114+665 to 114+671	Sharp Bend	Design Speed = 30 Kmph
38	114+740 to 114+769	Sharp Bend	Design Speed = 30 Kmph
39	114+824 to 114+828	Sharp Bend	Design Speed = 30 Kmph
40	114+909 to 114+953	Sharp Bend	Design Speed = 20 Kmph
41	115+065 to 115+111	Sharp Bend	Design Speed = 20 Kmph
42	115+357 to 115+358	Sharp Bend	Design Speed = 30 Kmph
43	115+398 to 115+444	Sharp Bend	Design Speed = 35 Kmph
44	115+497 to 115+504	Sharp Bend	Design Speed = 30 Kmph
45	115+583 to 115+590	Sharp Bend	Design Speed = 20 Kmph
46	115+636 to 115+651	Sharp Bend	Design Speed = 20 Kmph
47	115+740 to 115+745	Sharp Bend	Design Speed = 30 Kmph
48	115+837 to 115+848	Sharp Bend	Design Speed = 25 Kmph
49	115+905 to 115+922	Sharp Bend	Design Speed = 25 Kmph
50	115+961 to 115+988	Sharp Bend	Design Speed = 25 Kmph
51	116+068 to 116+107	Sharp Bend	Design Speed = 20 Kmph
52	116+154 to 116+176	Sharp Bend	Design Speed = 20 Kmph
53	116+262 to 116+287	Sharp Bend	Design Speed = 35 Kmph

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
54	116+339 to 116+383	Sharp Bend	Design Speed = 20 Kmph
55	116+477 to 116+493	Sharp Bend	Design Speed = 25 Kmph
56	116+548 to 116+571	Sharp Bend	Design Speed = 25 Kmph
57	116+612 to 116+646	Sharp Bend	Design Speed = 20 Kmph
58	117+187 to 117+211	Sharp Bend	Design Speed = 20 Kmph
59	117+307 to 117+346	Sharp Bend	Design Speed = 20 Kmph
60	117+403 to 117+415	Sharp Bend	Design Speed = 25 Kmph
61	117+530 to 117+565	Sharp Bend	Design Speed = 20 Kmph
62	117+623 to 117+643	Sharp Bend	Design Speed = 20 Kmph
63	117+679 to 117+700	Sharp Bend	Design Speed = 20 Kmph
64	117+774 to 117+806	Sharp Bend	Design Speed = 20 Kmph
65	117+917 to 117+935	Sharp Bend	Design Speed = 30 Kmph
66	118+009 to 118+015	Sharp Bend	Design Speed = 35 Kmph
67	118+087 to 118+130	Sharp Bend	Design Speed = 20 Kmph
68	118+350 to 118+364	Sharp Bend	Design Speed = 35 Kmph
69	118+502 to 118+525	Sharp Bend	Design Speed = 20 Kmph
70	118+571 to 118+605	Sharp Bend	Design Speed = 25 Kmph
71	118+657 to 118+698	Sharp Bend	Design Speed = 20 Kmph
72	118+974 to 119+019	Sharp Bend	Design Speed = 35 Kmph
73	119+150 to 119+177	Sharp Bend	Design Speed = 25 Kmph
74	119+274 to 119+309	Sharp Bend	Design Speed = 25 Kmph
75	119+369 to 119+376	Sharp Bend	Design Speed = 25 Kmph
76	119+493 to 119+538	Sharp Bend	Design Speed = 30 Kmph
77	119+583 to 119+608	Sharp Bend	Design Speed = 20 Kmph
78	119+896 to 119+983	Sharp Bend	Design Speed = 25 Kmph
79	120+031 to 120+044	Sharp Bend	Design Speed = 20 Kmph
80	120+080 to 120+114	Sharp Bend	Design Speed = 20 Kmph
81	120+276 to 120+276	Sharp Bend	Design Speed = 30 Kmph
82	120+380 to 120+380	Sharp Bend	Design Speed = 25 Kmph
83	120+431 to 120+446	Sharp Bend	Design Speed = 20 Kmph
84	120+487 to 120+493	Sharp Bend	Design Speed = 20 Kmph
85	120+614 to 120+649	Sharp Bend	Design Speed = 30 Kmph
86	120+689 to 120+714	Sharp Bend	Design Speed = 20 Kmph
87	120+893 to 120+910	Sharp Bend	Design Speed = 35 Kmph
88	120+981 to 121+017	Sharp Bend	Design Speed = 35 Kmph
89	121+103 to 121+122	Sharp Bend	Design Speed = 20 Kmph
90	121+176 to 121+178	Sharp Bend	Design Speed = 25 Kmph
91	121+227 to 121+236	Sharp Bend	Design Speed = 25 Kmph
92	121+383 to 121+394	Sharp Bend	Design Speed = 30 Kmph

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
93	121+451 to 121+460	Sharp Bend	Design Speed = 30 Kmph
94	121+523 to 121+540	Sharp Bend	Design Speed = 20 Kmph
95	121+600 to 121+604	Sharp Bend	Design Speed = 25 Kmph
96	121+697 to 121+699	Sharp Bend	Design Speed = 35 Kmph
97	121+755 to 121+757	Sharp Bend	Design Speed = 35 Kmph
98	121+807 to 121+812	Sharp Bend	Design Speed = 20 Kmph
99	121+915 to 121+920	Sharp Bend	Design Speed = 20 Kmph
100	121+969 to 121+975	Sharp Bend	Design Speed = 20 Kmph
101	122+043 to 122+048	Sharp Bend	Design Speed = 30 Kmph
102	122+130 to 122+160	Sharp Bend	Design Speed = 20 Kmph
103	122+216 to 122+221	Sharp Bend	Design Speed = 30 Kmph
104	122+551 to 122+552	Sharp Bend	Design Speed = 35 Kmph
105	122+662 to 122+679	Sharp Bend	Design Speed = 20 Kmph
106	122+712 to 122+732	Sharp Bend	Design Speed = 20 Kmph
107	122+770 to 122+773	Sharp Bend	Design Speed = 20 Kmph
108	122+857 to 122+858	Sharp Bend	Design Speed = 25 Kmph
109	122+933 to 122+946	Sharp Bend	Design Speed = 35 Kmph
110	123+016 to 123+031	Sharp Bend	Design Speed = 20 Kmph
111	123+065 to 123+077	Sharp Bend	Design Speed = 20 Kmph
112	123+311 to 123+331	Sharp Bend	Design Speed = 20 Kmph
113	123+410 to 123+429	Sharp Bend	Design Speed = 20 Kmph
114	123+482 to 123+514	Sharp Bend	Design Speed = 20 Kmph
115	123+583 to 123+587	Sharp Bend	Design Speed = 35 Kmph
116	123+681 to 123+696	Sharp Bend	Design Speed = 20 Kmph
117	123+729 to 123+783	Sharp Bend	Design Speed = 25 Kmph
118	123+870 to 123+877	Sharp Bend	Design Speed = 20 Kmph
119	123+938 to 123+951	Sharp Bend	Design Speed = 20 Kmph
120	124+016 to 124+035	Sharp Bend	Design Speed = 25 Kmph
121	124+096 to 124+119	Sharp Bend	Design Speed = 25 Kmph
122	124+251 to 124+305	Sharp Bend	Design Speed = 25 Kmph
123	124+362 to 124+380	Sharp Bend	Design Speed = 20 Kmph
124	124+436 to 124+455	Sharp Bend	Design Speed = 20 Kmph
125	124+708 to 124+738	Sharp Bend	Design Speed = 30 Kmph
126	124+816 to 124+870	Sharp Bend	Design Speed = 30 Kmph
127	124+921 to 124+939	Sharp Bend	Design Speed = 20 Kmph
128	125+190 to 125+207	Sharp Bend	Design Speed = 20 Kmph
129	125+278 to 125+293	Sharp Bend	Design Speed = 30 Kmph
130	125+449 to 125+475	Sharp Bend	Design Speed = 20 Kmph
131	125+590 to 125+631	Sharp Bend	Design Speed = 25 Kmph
132	125+700 to 125+724	Sharp Bend	Design Speed = 25 Kmph

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Sl. No.	Stretch (from km to km)	Type of Deficiency	Remarks
133	125+862 to 125+898	Sharp Bend	Design Speed = 20 Kmph
134	125+984 to 126+003	Sharp Bend	Design Speed = 20 Kmph
135	126+260 to 126+267	Sharp Bend	Design Speed = 20 Kmph
136	126+302 to 126+318	Sharp Bend	Design Speed = 20 Kmph
137	126+354 to 126+377	Sharp Bend	Design Speed = 25 Kmph
138	126+457 to 126+488	Sharp Bend	Design Speed = 20 Kmph
139	126+520 to 126+540	Sharp Bend	Design Speed = 20 Kmph
140	126+599 to 126+616	Sharp Bend	Design Speed = 20 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	120+425 to 120+625, 121+125 to 123+225	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-1	New Construction of two lane carriageway in rural area with one side retaining wall on Valley side And RR Masonry Trapezoidal Open Drain On Hill Side	1950
TCS-2	New Construction of two lane carriageway in rural area with Both Side RR Masonry Trapezoidal Open Drain On Hill Section	1231
TCS-3	New Construction of two lane carriageway in rural area With Breast Wall On Hill Side And RR Masonry Trapezoidal Open Drain On Valley Side	1175
TCS-4	New Construction of two lane carriageway in rural area With Breast Wall On Hill Side And Earthen Shoulder On Valley Side	250
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	1700
TCS-6	Reconstruction Of Two Lane Carriageway In Rural Area With Both Side RR Masonry Trapezoidal Open Drain On Hill Section	1400
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	1950
TCS-8	Reconstruction Of Two Lane Carriageway In Rural Area With Breast Wall On Hill Side And Earthen Shoulder On Valley Side	100
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	1375
TCS-10	Reconstruction of Two Lane Carriageway in Rural Area With Retaining Wall On Valley Side And Breast Wall On Hill Side	50
TCS-11	Reconstruction Of Two Lane Carriageway In Rural Area	100
TCS-12	Reconstruction Of Two Lane Carriageway In Built Up Area With Both Side Footpath Cum RCC Rectangular Drain	2300
TCS-16	Reconstruction Of Two Lane Carriageway Stretch In Rural Area With both side Breast Wall On Hill Side	1600
TCS-17	Reconstruction of Two Lane Carriageway In Rural Area With Retaining Wall On valley Side And Earthen Shoulder on other side	150
TCS-19	New construction of Two Lane Carriageway At Reconstruction Stretch In Rural Area With Retaining Wall on Valley Side And Breast Wall On Hill Side	200
TCS-20	New construction of Two Lane Carriageway In Rural Area With RR Masonry Trapezoidal Open Drain On Hill Side And Earthen Shoulder On Valley Side	400
TCS-21	New construction of Two Lane Carriageway In Rural Area With Retaining Wall On valley Side And Earthen Shoulder On other side	500

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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		
109494	109775	281	TCS-2
109775	109875	100	TCS-21
109875	109925	50	TCS-3
109925	109975	50	TCS-19
109975	110075	100	TCS-20
110075	110125	50	TCS-1
110125	110225	100	TCS-4
110225	110575	350	TCS-2
110575	110875	300	TCS-1
110875	111025	150	TCS-2
111025	111175	150	TCS-1
111175	111275	100	TCS-20
111275	111375	100	TCS-2
111375	111775	400	TCS-1
111775	111875	100	TCS-2
111875	112025	150	TCS-19
112025	112175	150	TCS-1
112175	112375	200	TCS-3
112375	112475	100	TCS-4
112475	112625	150	TCS-1
112625	112675	50	TCS-2
112675	113025	350	TCS-1
113025	113075	50	TCS-3
113075	113175	100	TCS-22
113175	113275	100	TCS-3
113275	113325	50	TCS-20
113325	113575	250	TCS-3
113575	113625	50	TCS-20
113625	113775	150	TCS-22
113775	113825	50	TCS-2
113825	113975	150	TCS-3

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Chainage (Km)		Net Length (m)	TCS No.
From	To		
113975	114025	50	TCS-2
114025	114075	50	TCS-1
114075	114225	150	TCS-23
114225	114275	50	TCS-1
114275	114375	100	TCS-23
114375	114425	50	TCS-2
114425	114525	100	TCS-1
114525	114625	100	TCS-23
114625	114925	300	TCS-21
114925	114975	50	TCS-4
114975	115025	50	TCS-3
115025	115125	100	TCS-1
115125	115175	50	TCS-2
115175	115350	175	TCS-3
115350	115975	625	TCS-9
115975	116225	250	TCS-16
116225	116275	50	TCS-9
116275	117625	1350	TCS-16
117625	118025	400	TCS-9
118025	118075	50	TCS-10
118075	118225	150	TCS-3
118225	118275	50	TCS-5
118275	118325	50	TCS-6
118325	118475	150	TCS-5
118475	118525	50	TCS-1
118525	118775	250	TCS-24
118775	118875	100	TCS-20
118875	118975	100	TCS-6
118975	119125	150	TCS-7
119125	119225	100	TCS-8
119225	119275	50	TCS-7
119275	119575	300	TCS-5
119575	119975	400	TCS-6
119975	120125	150	TCS-9
120125	120225	100	TCS-6
120225	120325	100	TCS-5
120325	120375	50	TCS-7
120375	120425	50	TCS-6
120425	120625	200	TCS-12
120625	120725	100	TCS-6

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Chainage (Km)		Net Length (m)	TCS No.
From	To		
120725	120775	50	TCS-1
120775	120875	100	TCS-21
120875	120925	50	TCS-11
120925	120975	50	TCS-5
120975	121125	150	TCS-6
121125	123225	2100	TCS-12
123225	123475	250	TCS-7
123475	123725	250	TCS-5
123725	123975	250	TCS-7
123975	124025	50	TCS-5
124025	124225	200	TCS-7
124225	124375	150	TCS-6
124375	124425	50	TCS-7
124425	124475	50	TCS-17
124475	124675	200	TCS-7
124675	124725	50	TCS-5
124725	124775	50	TCS-7
124775	125225	450	TCS-5
125225	125275	50	TCS-7
125275	125325	50	TCS-5
125325	125475	150	TCS-7
125475	125525	50	TCS-5
125525	125725	200	TCS-7
125725	125775	50	TCS-11
125775	125875	100	TCS-17
125875	125925	50	TCS-5
125925	126025	100	TCS-9
126025	126325	300	TCS-6
126325	126375	50	TCS-7
126375	126425	50	TCS-9
126425	126475	50	TCS-7
126475	126525	50	TCS-5
126525	126725	200	TCS-7
126725	126775	50	TCS-5
Total Length		**17281**	**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.

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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	120+900	3-Legged	LHS - Towards Tenning	At-grade improvement proposed
2	121+400	3-Legged	LHS - Towards Peren Town	At-grade improvement proposed
3	125+870	3-Legged	RHS - Towards Kohima	At-grade improvement proposed

Minor Intersections

Sl. No.	Location of intersection (Km)	Type of intersection	Other features
1	118+070	Y-Type	3-legged
2	119+650	Y-Type	3-legged
3	120+850	Y-Type	3-legged
4	121+710	Y-Type	3-legged
5	121+850	Y-Type	3-legged
6	122+040	T-Type	3-legged
7	122+325	Y-Type	3-legged
8	122+640	Y-Type	3-legged
9	122+840	Y-Type	3-legged
10	124+300	Y-Type	3-legged
11	124+625	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				

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	115+350 Km to 115+975 Km	Reconstruction	TCS-9
2	115+975 Km to 116+225 Km	Reconstruction	TCS-16
3	116+225 Km to 116+275 Km	Reconstruction	TCS-9
4	116+275 Km to 117+625 Km	Reconstruction	TCS-16
5	117+625 Km to 118+025 Km	Reconstruction	TCS-9
6	118+025 Km to 118+075 Km	Reconstruction	TCS-10
7	118+225 Km to 118+275 Km	Reconstruction	TCS-5
8	118+275 Km to 118+325 Km	Reconstruction	TCS-6
9	118+325 Km to 118+475 Km	Reconstruction	TCS-5
10	118+875 Km to 118+975 Km	Reconstruction	TCS-6
11	118+975 Km to 119+125 Km	Reconstruction	TCS-7
12	119+125 Km to 119+225 Km	Reconstruction	TCS-8
13	119+225 Km to 119+275 Km	Reconstruction	TCS-7
14	119+275 Km to 119+575 Km	Reconstruction	TCS-5
15	119+575 Km to 119+975 Km	Reconstruction	TCS-6
16	119+975 Km to 120+125 Km	Reconstruction	TCS-9
17	120+125 Km to 120+225 Km	Reconstruction	TCS-6
18	120+225 Km to 120+325 Km	Reconstruction	TCS-5
19	120+325 Km to 120+375 Km	Reconstruction	TCS-7
20	120+375 Km to 120+425 Km	Reconstruction	TCS-6
21	120+425 Km to 120+625 Km	Reconstruction	TCS-12
22	120+625 Km to 120+725 Km	Reconstruction	TCS-6
23	120+875 Km to 120+925 Km	Reconstruction	TCS-11
24	120+925 Km to 120+975 Km	Reconstruction	TCS-5
25	120+975 Km to 121+125 Km	Reconstruction	TCS-6
26	121+125 Km to 123+225 Km	Reconstruction	TCS-12
27	123+225 Km to 123+475 Km	Reconstruction	TCS-7
28	123+475 Km to 123+725 Km	Reconstruction	TCS-5
29	123+725 Km to 123+975 Km	Reconstruction	TCS-7
30	123+975 Km to 124+025 Km	Reconstruction	TCS-5
31	124+025 Km to 124+225 Km	Reconstruction	TCS-7
32	124+225 Km to 124+375 Km	Reconstruction	TCS-6
33	124+375 Km to 124+425 Km	Reconstruction	TCS-7
34	124+425 Km to 124+475 Km	Reconstruction	TCS-17
35	124+475 Km to 124+675 Km	Reconstruction	TCS-7
36	124+675 Km to 124+725 Km	Reconstruction	TCS-5

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

SL NO.	Stretch from Km to Km	Remarks	TCS Type
37	124+725 Km to 124+775 Km	Reconstruction	TCS-7
38	124+775 Km to 125+225 Km	Reconstruction	TCS-5
39	125+225 Km to 125+275 Km	Reconstruction	TCS-7
40	125+275 Km to 125+325 Km	Reconstruction	TCS-5
41	125+325 Km to 125+475 Km	Reconstruction	TCS-7
42	125+475 Km to 125+525 Km	Reconstruction	TCS-5
43	125+525 Km to 125+725 Km	Reconstruction	TCS-7
44	125+725 Km to 125+775 Km	Reconstruction	TCS-11
45	125+775 Km to 125+875 Km	Reconstruction	TCS-17
46	125+875 Km to 125+925 Km	Reconstruction	TCS-5
47	125+925 Km to 126+025 Km	Reconstruction	TCS-9
48	126+025 Km to 126+325 Km	Reconstruction	TCS-6
49	126+325 Km to 126+375 Km	Reconstruction	TCS-7
50	126+375 Km to 126+425 Km	Reconstruction	TCS-9
51	126+425 Km to 126+475 Km	Reconstruction	TCS-7
52	126+475 Km to 126+525 Km	Reconstruction	TCS-5
53	126+525 Km to 126+725 Km	Reconstruction	TCS-7
54	126+725 Km to 126+775 Km	Reconstruction	TCS-5

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)		
120425	120625	Both	397
121125	123225	Both	4187
		Total Length=	4584 m

RR Masonry Trapezoidal Drain

Chainage		Side	Net Length (m)
From(m)	To(m)		
109494	109775	both	562
109875	109925	one	50
109975	110075	one	100

Chainage		Side	Net Length (m)
From(m)	To(m)		
110075	110125	one	50
110225	110575	both	700
110575	110875	one	300
110875	111025	both	300
111025	111175	one	150
111175	111275	one	100
111275	111375	both	200
111375	111775	one	400
111775	111875	both	200
112025	112175	one	150
112175	112375	one	200
112475	112625	one	150
112625	112675	both	100
112675	113025	one	350
113025	113075	one	50
113175	113275	one	100
113275	113325	one	50
113325	113575	one	250
113575	113625	one	50
113775	113825	both	100
113825	113975	one	150
113975	114025	both	100
114025	114075	one	50
114225	114275	one	50
114375	114425	both	100
114425	114525	one	100
114975	115025	one	50
115025	115125	one	100
115125	115175	both	100
115175	115350	one	175
115350	115975	one	625
116225	116275	one	50
117625	118025	one	400
118075	118225	one	150
118225	118275	one	50
118275	118325	both	100
118325	118475	one	150
118475	118525	one	50
118775	118875	one	100
118875	118975	both	200

Chainage		Side	Net Length (m)
From(m)	To(m)		
118975	119125	one	150
119225	119275	one	50
119275	119575	one	300
119575	119975	both	800
119975	120125	one	150
120125	120225	both	200
120225	120325	one	100
120325	120375	one	50
120375	120425	both	100
120625	120725	both	200
120725	120775	one	50
120925	120975	one	50
120975	121125	both	300
123225	123475	one	250
123475	123725	one	250
123725	123975	one	250
123975	124025	one	50
124025	124225	one	200
124225	124375	both	300
124375	124425	one	50
124475	124675	one	200
124675	124725	one	50
124725	124775	one	50
124775	125225	one	500
125225	125275	one	50
125275	125325	one	50
125325	125475	one	150
125475	125525	one	50
125525	125725	one	200
125875	125925	one	50
125925	126025	one	100
126025	126325	both	600
126325	126375	one	50
126375	126425	one	50
126425	126475	one	50
126475	126525	one	50
126525	126725	one	200
126725	126775	one	50
Length =			**14000**

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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:

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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

Sl. No.	Culvert Location(km)	Span /Opening (m)	Remarks*
1	110.09	3.0 X 3.0	Box / Slab
2	112.64	3.0 X 3.0	Box / Slab
3	114.095	2.0 X 2.0	Box / Slab
4	114.67	3.0 X 4.0	Box / Slab
5	118.504	2.0 X 3.0	Box / Slab
6	118.85	2.0 X 2.0	Box / Slab
7	118.941	2.0 X 2.0	Box / Slab
8	118.985	2.0 X 2.0	Box / Slab
9	119.092	2.0 X 3.0	Box / Slab
10	119.225	2.0 X 2.0	Box / Slab
11	119.365	2.0 X 2.0	Box / Slab
12	120.475	2.0 X 2.0	Box / Slab
13	120.575	2.0 X 3.0	Box / Slab
14	121.202	2.0 X 2.0	Box / Slab
15	122.31	2.0 X 2.0	Box / Slab
16	123.015	2.0 X 2.0	Box / Slab
17	123.07	2.0 X 2.0	Box / Slab
18	123.115	2.0 X 2.0	Box / Slab
19	123.162	2.0 X 2.0	Box / Slab
20	123.315	2.0 X 2.0	Box / Slab
21	123.504	2.0 X 2.0	Box / Slab
22	123.768	2.0 X 3.0	Box / Slab
23	123.952	2.0 X 2.0	Box / Slab
24	123.99	2.0 X 2.0	Box / Slab

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Sl. No.	Culvert Location(km)	Span /Opening (m)	Remarks*
25	124.33	2.0 X 2.0	Box / Slab
26	124.438	2.0 X 3.0	Box / Slab
27	124.88	2.0 X 2.0	Box / Slab
28	125.015	2.0 X 2.0	Box / Slab
29	125.19	2.0 X 2.0	Box / Slab
30	125.325	2.0 X 2.0	Box / Slab
31	126.482	2.0 X 2.0	Box / Slab
32	126.612	2.0 X 3.0	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	110.857	2.0 X 2.0	Box / Slab
2	111.038	2.0 X 3.0	Box / Slab
3	111.39	2.0 X 3.0	Box / Slab
4	111.74	2.0 X 2.0	Box / Slab
5	111.98	2.0 X 2.0	Box / Slab
6	112.08	2.0 X 2.0	Box / Slab
7	112.118	2.0 X 2.0	Box / Slab
8	112.256	2.0 X 2.0	Box / Slab

Sl. No.	Culvert Location(km)	Span /Opening (m)	Remarks*
9	112.398	2.0 X 2.0	Box / Slab
10	112.78	2.0 X 2.0	Box / Slab
11	112.98	2.0 X 2.0	Box / Slab
12	113.338	2.0 X 2.0	Box / Slab
13	113.490	2.0 X 2.0	Box / Slab
14	113.679	2.0 X 2.0	Box / Slab
15	113.890	2.0 X 2.0	Box / Slab
16	114.560	2.0 X 2.0	Box / Slab
17	114.779	2.0 X 2.0	Box / Slab
18	115.064	2.0 X 3.0	Box / Slab
19	124.61	2.0 X 2.0	Box / Slab
20	125.855	2.0 X 3.0	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	

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. 109+494 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	115.000	
2	120.770	

(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	160
2	Kilometre stones	Nos	15
3	5th Kilometre stones	Nos	4
4	Boundary Stones	Nos	174
5	Delineators (100 cm long and circular shaped)	Nos	1735
6	Road Stud	Nos	10446
7	900 mm Octagonal	Nos	34
8	600 mm circular	Nos	86
9	900 mm Triangular	Nos	423
10	500x600 Rectangular (Chevron)	Nos	363
11	2300x600 Rectangular (Chevron)	Nos	120
12	450 mm x 600 mm rectangular	Nos	87
13	Direction Sign < 0.9 sqm	sqm	28
14	Direction Sign > 0.9 sqm	sqm	4
15	Convex Mirror for Blind Curve	Nos	42
16	Object Hazard 900 mm x 300 mm rectangular	Nos	78
17	Rumble Strip	Nos	6

10. Compulsory Afforestation

Minimum 1729 nos. trees are required to be planted as compensatory afforestation

11. Hazardous Locations

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Metal Beam crash barrier of minimum length of 2888 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)		
109799	109908	RHS	108
110398	110508	RHS	110
110836	110944	RHS	108
111244	111346	RHS	102
111713	111828	RHS	114
112106	112220	RHS	114
112608	112701	RHS	93
112702	112805	RHS	103
112980	113088	RHS	108
114348	114458	RHS	110
114874	114988	RHS	114
115030	115146	RHS	116
116033	116142	RHS	109
116304	116418	RHS	115
116572	116686	RHS	113
117272	117381	RHS	109
117495	117600	RHS	106
117739	117841	RHS	103
118052	118165	RHS	113
118622	118733	RHS	111
119453	119578	RHS	124
119548	119643	RHS	95
123276	123366	RHS	90
123375	123464	RHS	89
124776	124910	RHS	134
125155	125242	RHS	88
125949	126038	RHS	89

Chainage		Side	Length (m)
From (m)	To (m)		
Total Length =			**2888**

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)	5500
2	Breast Wall (upto 3 m high)	6850
3	Hydroseeding and Seeding & mulching	50800 sqm
4	Composite RE Wall	250

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.

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

a) Breast Wall

Chainage		Side	Length (m)
From (m)	To (m)		
109875	109925	one side	50
109925	109975	one side	50

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Chainage		Side	Length (m)
From (m)	To (m)		
110125	110225	one side	100
111875	112025	one side	150
112175	112375	one side	200
112375	112475	one side	100
113025	113075	one side	50
113075	113175	both side	200
113175	113275	one side	100
113325	113575	one side	250
113625	113775	both side	300
113825	113975	one side	150
114925	114975	one side	50
114975	115025	one side	50
115175	115350	one side	175
115350	115975	one side	625
115975	116225	both side	500
116225	116275	one side	50
116275	117625	both side	2700
117625	118025	one side	400
118025	118075	one side	50
118075	118225	one side	150
119125	119225	one side	100
119975	120125	one side	150
125925	126025	one side	100
126375	126425	one side	50
Total =			**6850 m**

b) Retaining Wall

Chainage		Side	Length (m)
From (m)	To (m)		
109775	109875	one side	100
109925	109975	one side	50
110075	110125	one side	50
110575	110875	one side	300
111025	111175	one side	150
111375	111775	one side	400
111875	112025	one side	150
112025	112175	one side	150
112475	112625	one side	150
112675	113025	one side	350

Chainage		Side	Length (m)
From (m)	To (m)		
114025	114075	one side	50
114075	114225	both side	300
114225	114275	one side	50
114275	114375	both side	200
114425	114525	one side	100
114525	114625	both side	200
114625	114925	one side	300
115025	115125	one side	100
118025	118075	one side	50
118475	118525	one side	50
118975	119125	one side	150
119225	119275	one side	50
120325	120375	one side	50
120725	120775	one side	50
120775	120875	one side	100
123225	123475	one side	250
123725	123975	one side	250
124025	124225	one side	200
124375	124425	one side	50
124425	124475	one side	50
124475	124675	one side	200
124725	124775	one side	50
125225	125275	one side	50
125325	125475	one side	150
125525	125725	one side	200
125775	125875	one side	100
126325	126375	one side	50
126425	126475	one side	50
126525	126725	one side	200
Total Length =			**5500 m**

c) Composite RE Wall

Chainage		Length (m)
From (m)	To (m)	
118525	118775	250
Total Length =		**250 m**

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

Sl. No.	Project Facility	Location (km)	Design Requirements	Other Essential Details
1	Bus Bay & Passenger shelter	114+15 (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	121+29 (Both side)		
3	Bus Bay & Passenger shelter	124+54 (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) 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 1729 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.

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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:

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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)

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

(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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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.

Construction of 2 laning with Hard shoulder of Peren- Dimapur section on NH 129A from Design Km 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under NH(O)- TSP

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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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	61.75 %	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub- grade	36.82%
		(2) Sub-base Course	8.09%
		(3) Non bituminous Base course	8.30%
		(4) Bituminous Basecourse	6.52 %
		(5) Wearing Coat	3.84 %
		(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	15.58%
		(2) Sub-base Course	4.76%
		(3) Non bituminous Base course	4.19%
		(4) Bituminous Basecourse	3.28%
		(5) Wearing Coat	1.94%
		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) DryLean 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)	6.69%
Minor bridge/	0.00 %	**A.1-widening and repairing of Minor Bridges**	

Item	Weightage in % of CP	Stage for Payment	Percentage
Underpasses/ Overpasses		**(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	0.000 %	**A.1- Widening and repairs of Major Bridges**	
		(1)Foundation	[Nil]
		(2)Sub-structure	[Nil]

Item	Weightage in % of CP	Stage for Payment	Percentage
sections/flyovers including viaducts, if any		(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)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	

Item	Weightage in % of CP	Stage for Payment	Percentage
		(1) Foundations	[Nil]
		(2) Sub-Structure	[Nil]
		(3)Super-Structure(Including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]
		(6) Wing walls/Return walls	[Nil]
		(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundations	[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	38.25 %	(i) Toll Plaza	[Nil]
		(ii) Road side drains	16.33%
		(iii) Road signs, markings, km stones, safety devices etc.	9.07 %
		(iv) Project facilities	
		a) Bus Bays & Passenger Shelter	0.34 %
		b) Truck Lay-byes	[Nil]
		c) Hydro seeding and mulching	3.24 %
		d) Junction	0.87%
		(v) Road side Plantation	[Nil]
		(vi) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]
		(vii) Safety &Traffic Management during const.	[Nil]
		(viii) Breast Wall	28.50%
		(ix) Toe Wall	[Nil]
		(x) Retaining Wall	35.76 %
		(xi) Boundary wall	[Nil]
		(xii) Protection Works	[Nil]
		(xiii) Composite RE Wall	5.89 %

1.3 Procedure of estimating the value of work done

1.3.1 Road works

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & Strengthening of 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	36.82%	
(3) Sub-base Course	8.09%	
(4) Non bituminous Base course	8.30%	
(5) Bituminous Base course	6.52 %	
(6) Wearing Coat	3.84 %	
(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	15.58%	
(3) Sub-base Course	4.76%	
(4) Non bituminous Base course	4.19%	
(5) Bituminous Base course	3.28%	
(6) Wearing Coat	1.94%	
(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)	6.69 %	

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

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

Where,

P = Contract Price

L = Total length in km

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

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

1.3.2 Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and 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

1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
A.1- Widening and repairs of Major Bridges		
(1) Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road 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.

Stage of Payment	Weightage	Payment Procedure
		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.

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
(1) Toll Plaza	[Nil]	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	16.33%	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.	9.07%	

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	0.24 %	
b) Truck Lay-byes	[Nil]	
c) Junction	0.87%	
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	35.76%	
(b) Breast Wall	28.50%	
(c) Composite RE Wall	5.89%	
(10) Hydro seeding and mulching	3.24%	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 of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **[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 an amount not less than 10% (ten per cent) of the Contract Price.

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **[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 an amount not less than 35% (thirty five per cent) of the Contract Price **and should have started construction of all bridges**

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **[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 an amount not less than 70% (seventy per cent) of the Contract Price and **should have** started construction of all project facilities.

5. Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the [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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 109.494 to Km 126.775 (Length – 17.281 Km) in the state of Nagaland on EPC mode (Package I) under 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 AND DELIVERED

(Signature)

(Name and designation of Authority's

Representative)

(Address)