

राष्ट्रीय राजमार्ग एवं अवसंरचना विकास निगम लिमिटेड

सड़क परिवहन और राजमार्ग मंत्रालय, भारत सरकार
तीसरी मंजिल, पीटीआई बिल्डिंग, 4-संसद मार्ग, नई दिल्ली-110001

National Highways & Infrastructure Development Corporation Limited

Ministry of Road Transport & Highways, Govt. of India

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BHARATMALA
ROAD TO PROSPERITY



NHIDCL
BUILDING INFRASTRUCTURE - BUILDING THE NATION

CIN: U45400DL2014GOI269062

(भारत सरकार का उद्यम)

Corrigendum-I

(A Government of India Enterprise)

NHIDCL/Nagaland/NH-202/JA/PKG-1

Date: 27.09.2021

To

All Respective Bidders,

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I) – Corrigendum 1 -reg.

Sir,

Following amendments are being carried out:

Sr. No.	Reference/ Existing Provision	Amended Provision
1	-	Schedule A-R of the DCA as per Annexure -II
2	DCA, clause 7.1(i) of Article-7 (A) Within 30 (thirty) days of receipt of Letter of Acceptance, the selected Bidder shall furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the form set forth in Annex-I of Schedule-G (the “ Performance Security ”) for an amount equal to 3% (three percent) of its Bid Price. In case of bids mentioned below, the Selected Bidder, along with the Performance Security, shall also furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the same form given at Annex-I of Schedule-G towards an Additional Performance Security (the “ Additional Performance Security ”) for an amount calculated as under:	DCA, clause 7.1(i) of Article-7 (A) Within 45 (Forty Five) days of receipt of Letter of Acceptance, the selected Bidder shall furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the form set forth in Annex-I of Schedule-G (the “ Performance Security ”) for an amount equal to 3% (three percent) of its Bid Price. In case of bids mentioned below, the Selected Bidder, along with the Performance Security, shall also furnish to the Authority an irrevocable and unconditional guarantee from a Bank in the same form given at Annex-I of Schedule-G towards an Additional Performance Security (the “ Additional Performance Security ”) for an amount calculated as under:
3	DCA, clause 7.1(ii) of Article-7 & RFP, clause 2.21.3 The Selected Bidder has the option to provide 50% of the Performance Security and 50% of the Additional Performance Security, if any, within 30 (thirty) days of receipt of Letter of Acceptance, in any case	DCA, clause 7.1(ii) of Article-7 & RFP, clause 2.21.3 The Selected Bidder has the option to provide 50% of the Performance Security and 50% of the Additional Performance Security, if any, within 45 (Forty Five) days of receipt of Letter of Acceptance,

	before signing of the Contract Agreement and the remaining Performance Security and Additional Performance Security, if any, shall be submitted within 30 days of signing of this agreement.	in any case before signing of the Contract Agreement and the remaining Performance Security and Additional Performance Security, if any, shall be submitted within 30 days of signing of this agreement.
4	RFP, clause 2.21.1.a (a) Within 30 (thirty) days of receipt of Letter of Acceptance, the selected Bidder shall furnish to the Authority an irrevocable and unconditional guarantee issued by the Public Sector Banks or Scheduled Private Banks having the Net Worth of Rs 1,000/- crores or more as per the latest annual report of the bank, in favour of the Authority. The list of such banks is mentioned below. The Authority reserves the right to add or remove any of names bank on which BG shall be accepted based on advisories from the Govt./RBI. The BGs issued by 'Foreign Banks' and Banks not mentioned in the given list shall not be accepted.	RFP, clause 2.21.1.a (a) Within 45 (Forty Five) days of receipt of Letter of Acceptance, the selected Bidder shall furnish to the Authority an irrevocable and unconditional guarantee issued by the Public Sector Banks or Scheduled Private Banks having the Net Worth of Rs 1,000/- crores or more as per the latest annual report of the bank, in favour of the Authority. The list of such banks is mentioned below. The Authority reserves the right to add or remove any of names bank on which BG shall be accepted based on advisories from the Govt./RBI. The BGs issued by 'Foreign Banks' and Banks not mentioned in the given list shall not be accepted.
5	RFP, Section-7, Data sheet-1.14 Submission of Performance Security(PS) and Additional Performance Security (APS), if any	RFP, Section-7, Data sheet-1.14 Submission of Performance Security(PS) and Additional Performance Security (APS), if any
	Within 30 days of receipt of LOA. (The bidder has the option to provide 50% of PS and APS, if any within 30 days of receipt of LOA and the remaining PS and APS, if any to be provided within 30 days of signing of agreement).	Within 45 (Forty Five) days of receipt of LOA. (The bidder has the option to provide 50% of PS and APS, if any within 30 days of receipt of LOA and the remaining PS and APS, if any to be provided within 30 days of signing of agreement).
6	RFP, Appendix-VIII (Format of LOA)	RFP, Modified-Appendix-VIII (Format of LOA) (as per enclosure)
7	Bid due date:04.10.2021 (1100 Hours) Opening of Technical BIDs: 05.10.2021 (1130 Hours)	Bid due date:20.10.2021 (1100 Hours) Opening of Technical BIDs: 21.10.2021 (1130 Hours)

Yours faithfully,


(A.K. Jha)

General Manager(T)

SAMPLE

Original/Duplicate

No.

Dated

To,

M/s

.....,

.....,

.....,

.....,

Email:-

(Kind Attention : Mr., Authorized Signatory)

Subject:(Name of Work).....- Letter of Acceptance
(LOA)-Reg.

Reference: Your bid for the subject work dated

Sir,

This is to notify you that your Bid dated for execution of the work of
“.....(Name of Work).....”, at your quoted bid price
amounting to Rs /- (Rupees Only) (Excluding GST) has been
determined to be the lowest evaluated bid and is substantially responsive and has
been accepted.

2. You are requested to return a duplicate of the LOA as an acknowledgement and sign
the Contract Agreement within the period prescribed in Section-7 the RFP.

3. You are also requested to furnish Performance Security for an amount of Rs.
...../- (Rupees Only) and Additional Performance Bank Guarantee of
Rs. /- (Rupees Only) as per Clause 2.21.1 of the RFP within
45 (forty five) days of receipt of this Letter of Acceptance (LOA).

4. You have option to provide 50% of the Performance Security and 50% of the Additional Performance Security, within 45 (forty five) days of receipt of Letter of Acceptance and sign the Contract Agreement. The remaining Performance Security and Additional Performance Security can be submitted within 30 days of signing of the agreement. For the remaining Performance Security and Additional Performance Security, you may seek extension of time for a further period upto 60 days by paying the Damages upfront along with the request letter seeking the extension in accordance with Clause 2.21.4 of RFP.

5. In case of failure of submission of Performance Security, Additional Performance Security and Damages (if applicable) as brought out above, the award shall be deemed to be cancelled and/or you will be debarred from participating in the future projects of NHIDCL, for a period of one year.

6. It may also be noted that, in case of failure to submit atleast 50% of the Performance Security and 50% of the Additional Performance Security, within 45 (forty five) days of Letter of Acceptance, the LOA shall be withdrawn and action shall be taken as per RFP.

Yours faithfully,

(.....)
Executive Director (T)

Copy to :

(i) ED(P)-..... : For information

Accepted by

Name of the Authorized

Person: _____

(For and on behalf of M/s.....)



Ministry of Road Transport & Highways,
(Govt. of India)

SCHEDULES

For

“Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)”

Aug , 2021

National Highways & Infrastructure Development Corporation Ltd
3rd floor, PTI Building, 4-Parliament Street,
New Delhi – 110001

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Site of the Project

1. The Site

- (i) Site of the **“Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)”** Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.
- (ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- (iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.
- (iv) The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan. The Contractor, however, improve/upgrade the Road Profile as indicated in Annex-III based on site/design requirement.
- (v) The status of the environment clearances obtained or awaited is given in Annex-IV.

**Annex –
I
(Schedule-A)**

Site

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

1. Site

The Site of the “Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)” Project Highway comprises the section of NH-202 commencing from km 283+000 to km 326+018 i.e. Akash Bridge 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:

S. No.	Chainage (km)		Existing Right of Way (m)	Proposed Right of Way (m)
	From	To		
1	283.000	283.265	6	16-41
2	283.265	307.565	6	24
3	307.565	308.500	6	16
4	308.500	308.770	6	24-45
5	308.770	309.890	6	16
6	309.890	309.950	6	16-21
7	309.950	310.627	6	16
8	310.627	311.049	6	24
9	311.049	311.456	6	16
10	311.456	312.846	6	22-46
11	312.846	314.864	6	24
12	314.864	316.030	6	22-42
13	316.030	316.360	6	24
14	316.360	316.875	6	20-41
15	316.875	319.825	6	24
16	319.825	320.200	6	27-36
17	320.200	321.650	6	24
18	321.650	322.450	6	21-35
19	322.450	326.018	6	24

3. Carriageway

The present carriageway of the Project Highway is Single/Intermediate Lane of width 3.5 m to 4.5 m from km 283+000 to km 326+018. 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. of Spans with span length (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		
1	289.540	Open	Stone	Steel	1 x 19.2	5.0

S. No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub- structure	Super-structure		
2	294.178	Open	Stone	RCC Slab	1 x 24.2	5.0
3	302.335	Open	Stone	RCC Slab	1 x 15.1	4.7

8. Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location (km)	Remarks
Nil		

9. Underpasses (vehicular, non vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
1	283.168	SLAB	1X1.60	6
2	283.259	SLAB	1X1.60	6
3	283.769	SLAB	1X1.80	6
4	284.023	SLAB	1X1.50	6
5	284.265	SLAB	1X1.20	6.1
6	284.361	SLAB	1X1.20	6.5
7	284.532	SLAB	1X1.20	6
8	284.619	SLAB	1X1.20	6
9	284.923	SLAB	1X1.50	6.1
10	285.232	SLAB	1X1.50	6
11	285.477	SLAB	1X1.20	6.2
12	285.628	SLAB	1X1.50	6.5
13	285.758	SLAB	1X1.40	6
14	286.038	SLAB	1X1.20	6.5
15	286.182	SLAB	1X1.50	6.5
16	286.302	SLAB	1X3.5	7.2
17	286.656	HUME PIPE	1X1.200	7.6
18	287.082	SLAB	1X1.00	5.3

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
19	287.254	SLAB	1X1.30	5.7
20	287.368	HUME PIPE	1X0.900	7.5
21	287.468	SLAB	1X1.20	6.5
22	287.583	SLAB	1X1.30	6
23	287.702	SLAB	1X1.50	5.8
24	287.903	SLAB	1X1.90	7
25	288.013	SLAB	1X1.90	5.8
26	288.144	SLAB	1X1.70	6
27	288.271	SLAB	1X1.20	6.1
28	288.511	SLAB	1X1.20	6.1
29	288.773	SLAB	1X1.20	6.3
30	289.110	SLAB	1X1.20	6
31	289.302	SLAB	1X1.70	6.2
32	289.436	SLAB	1 x 3.8	7
33	289.819	SLAB	1X1.40	7
34	290.238	SLAB	1X2.00	6
35	290.414	SLAB	1X1.70	6.7
36	291.039	SLAB	1X1.00	6
37	291.145	SLAB	1X1.80	6
38	291.286	SLAB	1X1.20	6
39	291.466	SLAB	1X1.30	6.1
40	291.762	SLAB	1X1.00	6.1
41	291.893	SLAB	1X2.20	6.1
42	292.097	SLAB	1X1.40	6.9
43	292.303	SLAB	1X1.80	6.2
44	292.492	SLAB	1X1.20	6.8
45	292.727	SLAB	1X1.60	6.1
46	293.137	SLAB	1 x 5.40	7
47	293.261	SLAB	1X1.30	5.9
48	293.792	SLAB	1X1.60	7.1
49	294.535	SLAB	1X1.20	6
50	294.808	SLAB	1X1.30	7.5
51	295.059	SLAB	1X1.40	6
52	295.306	SLAB	1X1.70	5.5
53	295.591	SLAB	1X1.70	6
54	296.055	SLAB	1X3.60	6.1
55	296.286	SLAB	1X1.60	6.5
56	296.747	SLAB	1X1.70	6.7
57	296.889	SLAB	1X1.00	6.2
58	297.292	SLAB	1X1.00	7
59	297.527	SLAB	1X1.30	6.1
60	297.648	SLAB	1X1.40	6
61	297.841	SLAB	1X1.00	7
62	298.055	SLAB	1X1.20	6.1
63	298.272	SLAB	1X1.70	6.1
64	298.423	SLAB	1X1.50	8.8
65	298.685	SLAB	1X1.20	5.6
66	298.999	SLAB	1X1.30	6.2

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
67	299.148	SLAB	1X1.90	6
68	299.235	SLAB	1X1.80	6.2
69	299.420	SLAB	1X1.40	6.3
70	299.729	SLAB	1X1.60	6
71	299.833	SLAB	1X1.60	6.2
72	300.283	SLAB	1X1.90	6.2
73	300.495	SLAB	1X1.90	6.2
74	300.748	SLAB	1X2.10	6.3
75	300.881	SLAB	1X1.20	5.8
76	300.962	HUME PIPE	1X1.00	6.5
77	301.111	SLAB	1X1.30	6.5
78	301.230	SLAB	1X1.20	7.4
79	301.362	HUME PIPE	1X1.20	6
80	301.642	SLAB	1X2.00	6.2
81	301.999	SLAB	1X4.00	7.7
82	302.638	SLAB	1X1.80	7.2
83	302.966	SLAB	1X1.90	7.2
84	303.202	SLAB	1X1.80	6
85	303.514	SLAB	1X1.50	7.2
86	303.737	SLAB	1X3.80	6.2
87	303.960	SLAB	1X1.40	6
88	304.042	HUME PIPE	1X1.2	7
89	304.436	SLAB	1X1.80	7.4
90	304.568	SLAB	1X1.50	6
91	304.812	SLAB	1X1.80	6.1
92	305.187	SLAB	1X1.50	6.1
93	305.519	SLAB	1X2.00	7.1
94	305.793	SLAB	1X1.40	7.2
95	306.050	HUME PIPE	1X0.60	7.1
96	306.148	SLAB	1X1.90	6
97	306.469	SLAB	1X2.00	8.3
98	306.544	SLAB	1X1.30	6.8
99	306.846	SLAB	1X1.20	6.3
100	307.041	HUME PIPE	1X1.00	6
101	307.127	HUME PIPE	1X1.00	5.9
102	307.423	SLAB	1X2.00	9.3
103	308.032	SLAB	1X1.70	14.8
104	308.258	SLAB	1X1.60	6
105	308.705	SLAB	1X1.60	7.1
106	308.916	SLAB	1X2.20	6.1
107	309.194	HUME PIPE	1X1.20	6
108	309.290	SLAB	1X2.00	5.6
109	309.659	SLAB	1X1.60	10.8
110	309.874	HUME PIPE	1X1.20	6.3
111	310.252	SLAB	1X1..70	12.5
112	310.503	HUME PIPE	1X0.600	8.1
113	310.825	HUME PIPE	1X1.000	7
114	311.111	HUME PIPE	1X1.00	6.5

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
115	311.352	HUME PIPE	1X1.00	7
116	311.475	HUME PIPE	1X0.300	8
117	311.579	HUME PIPE	1X1.00	7
118	311.780	HUME PIPE	1X0.600	6.5
119	311.957	HUME PIPE	1X0.900	6.3
120	312.280	HUME PIPE	1X0.900	7.6
121	312.735	HUME PIPE	1X0.900	6.7
122	312.909	HUME PIPE	1X0.900	6.7
123	313.312	HUME PIPE	1X0.900	6.5
124	313.728	HUME PIPE	1X0.900	6.2
125	314.011	HUME PIPE	1X0.600	6.5
126	314.247	HUME PIPE	1X0.600	7.5
127	314.693	HUME PIPE	1X0.600	6.7
128	314.869	HUME PIPE	1X0.600	6.5
129	315.209	HUME PIPE		8
130	315.429	HUME PIPE	1X0.600	7
131	315.793	HUME PIPE	1X0.600	7
132	315.892	HUME PIPE	1X0.900	7
133	316.035	HUME PIPE	1X0.600	7
134	316.465	HUME PIPE	1X0.600	7.5
135	316.521	HUME PIPE	1X0.900	7.5
136	316.835	HUME PIPE	1X0.600	8
137	316.874	HUME PIPE	1X0.600	8.5
138	317.128	HUME PIPE	1X0.600	6.5
139	317.391	HUME PIPE	1X0.600	6.5
140	317.568	HUME PIPE	1X0.600	8.5
141	317.982	HUME PIPE	1X0.900	7.5
142	318.261	HUME PIPE	1X0.600	7.5
143	318.342	HUME PIPE	1X0.900	8
144	318.472	HUME PIPE	1X0.600	8.5
145	318.811	HUME PIPE	1X0.900	7.5
146	318.944	HUME PIPE	1X0.900	8
147	319.121	HUME PIPE	1X0.600	8
148	319.223	HUME PIPE	1X0.600	8.5
149	319.329	HUME PIPE	1X0.900	7.5
150	319.602	HUME PIPE	1X0.900	8
151	319.772	HUME PIPE	1X0.900	7
152	320.046	HUME PIPE	1X0.900	8
153	320.236	HUME PIPE	1X0.900	7
154	320.413	HUME PIPE	1X0.900	8.5
155	320.634	HUME PIPE	1X0.900	8
156	320.817	HUME PIPE	1X0.900	8
157	321.000	HUME PIPE	1X0.900	7.5
158	321.380	HUME PIPE	1X0.600	8.5
159	321.785	HUME PIPE	1X0.900	8.5
160	322.335	HUME PIPE	1X0.900	6.5
161	322.555	HUME PIPE	1X0.900	7.5
162	322.936	HUME PIPE	1X0.600	7.5

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
163	323.198	HUME PIPE	1X0.900	8.5
164	323.293	HUME PIPE	2X0.900	6.5
165	323.339	HUME PIPE	1X0.900	6.5
166	323.415	HUME PIPE	1X0.900	8.5
167	323.603	HUME PIPE	1X0.900	6.5
168	323.714	HUME PIPE	1X0.600	7.5
169	323.960	HUME PIPE	1X0.900	7.5
170	324.206	HUME PIPE	1X0.600	8
171	324.442	HUME PIPE	1X0.601	6.8
172	324.571	HUME PIPE	1X1.200	7.1
173	324.633	HUME PIPE	1X0.600	6.3
174	324.711	HUME PIPE	1X0.600	8
175	324.791	HUME PIPE	1X0.600	7
176	325.097	HUME PIPE	1X0.900	8
177	325.611	HUME PIPE	1X0.600	7

11. Bus bays

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

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Road side drains

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca)	Earthen (Kutcha)
Nil				

14. Major junctions

The details of major junctions are as follows:

S. No.	Location	At grade	Separated	Category of Cross Road
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				NH	SH	MDR	Others
1	283.000	5-legged					
2	309.133	3-legged					

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

15. Minor junctions

The details of the minor junctions are as follows:

S. No.	Location	Type	
		T -junction	Cross road
1	283.150	Y	
2	284.975	Y	
3	305.047	Y	
4	305.230	Y	
5	307.450	Y	
6	308.104	Y	
7	308.736	Y	
8	308.950	T	
9	309.146	Y	
10	309.392	Y	
11	309.409	Y	
12	309.810	Y	
13	309.828	Y	
14	311.118	T	
15	311.216	Y	
16	314.730	Y	

16. Bypasses

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

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

17. Existing utilities

(i) Electrical utilities

The site includes the following electrical utilities:-

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

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

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

S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
1	283.636	285.550	1.914							
2	306.117	307.772	1.655							
3	308.05	309.180		1.13						
4	309.180	309.240					0.060			
5	309.240	309.413		0.173						
6	309.413	309.501					0.088			
7	309.501	310.700		1.199						
8	307.118	308.929			1.811					
9	308.929	309.061						0.132		
10	308.880	309.050			0.170					
11	309.050	309.240						0.190		
12	309.800	310.500			0.700					
13	309.240								1	

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

The site includes the following Public Health utilities:-

S. No	Chainage		Length(in Km)	Crossings
	From (Km)	To (Km)	Water Supply line	Water Supply line
1	283.000	304.500	1.100	
2	304.500	325.440	8.430	

(iii) Any Other line

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

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	Existing Chainage(km)		Length in km	Existing ROW	Proposed ROW Width (m)	Date of Providing proposed ROW
	From	To				
(i) 90% Right of Way (full width)	283.000	326.018	43.018	6 m	16.0 m to 46.0 m	on Appointed Date
(ii) Balance Right of Way (width)	283.000	326.018	43.018	6 m	16.0 m to 46.0 m	Within 150 days after the Appointed Date

Annex - III

(Schedule-A)

Alignment Plans

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

- (i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement.
- (ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specification/IRC Codes/Manual.

Annex - IV

(Schedule-A)

Environment Clearances

No Environment Clearance is required for the project.

Schedule - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. [Rehabilitation and augmentation]

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

3. Specifications and Standards

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

Annex - I

(Schedule-B)

Description of Two-Laning with Paved/Hard Shoulder

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

1. Widening of the Existing Highway

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

(ii) Width of Carriageway

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

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

Sl. No.	Built-up stretch (Township)	Location (km to km)		Width (m)	Typical cross section (Ref. to Manual)	Remarks
1	Old Akhegwo Village	283.000	283.265	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing	7 m Carriageway+2x1.5m Paved shoulder
2	Meluri Town	307.045	310.180	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing	7 m Carriageway+2x1.5m Paved shoulder

3	Meluri Town	310.510	310.690	10m	Fig- 2.10 & Table 2.3 of manual (TCS drawing	7 m Carriageway+2x1.5m Paved shoulder+2x1.0 m Footpath of covered RCC drain+2x2m utility corridor
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- (b) Except as otherwise provided in this Agreement, the width of the paved carriageway and cross-sectional features shall conform to paragraph 1(i) above

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

The design speed shall be as per section 2.2 of IRC 73: 2018 for Mountainous and Steep terrain. However, in exceptional cases the minimum design speed of 30 km per hour may be adopted and 20 km per hour for hair pin bend locations shall be adopted in accordance with IRC 52:2019.

(iii) Improvement of the existing road geometrics

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

(iv) Right of Way

Details of the Right of Way are 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
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1	283.000	283.045	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
2	283.045	283.265	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
3	307.045	307.145	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
4	307.145	307.230	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
5	307.230	307.450	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
6	307.450	307.580	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
7	307.580	307.620	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
8	307.620	307.760	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-7
9	307.760	307.845	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
10	307.845	307.890	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
11	307.890	307.930	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
12	307.930	307.970	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
13	307.970	308.110	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
14	308.110	308.330	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-7
15	308.330	308.410	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6

16	308.410	308.465	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
17	308.465	308.510	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
18	308.510	309.105	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
19	309.105	309.240	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
20	309.240	309.495	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
21	309.495	309.540	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6A
22	309.540	309.710	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
23	309.710	310.010	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
24	310.010	310.180	2x1.5m Paved shoulder+2x1.5m Paved shoulder+1x 2.0m width Footpath	TCS-6
25	310.510	310.570	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5
26	310.570	310.690	2x1.5m Paved shoulder +2x 1.0m width Footpath cum Drain	TCS-5A

(b) Width of Shoulder in open country shall be mentioned in the following Table:

Type of Section		Width of Shoulder (m)		
		Hard	Earthen	Total
Open Country with isolated built-up area	Hill Side	1.5	-	1.5
	Valley Side	1.5	1.0	2.5

[Hard shoulders of 1.5m width with compacted layer of granular material shall be provided].

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

(vi) Lateral and vertical clearances at underpasses

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

Nil

(b) Lateral clearance: The width of the opening at the underpasses shall be as follows:

Nil

(vii) Lateral and vertical clearances at overpasses

Nil

(viii) Service roads

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

Nil

(ix) Grade separated structures

Nil

(x) Cattle and pedestrian underpass /overpass

Nil

(xi) Typical cross-sections of the Project Highway is as per attached Drawings

TCS TYPE	DESCRIPTION
TCS-1	Typical cross section of Two Lane carriageway with hard shoulder in rural area with R. R. Masonry open Triangular drain on hill side (New Construction)
TCS-1A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with R. R. Masonry open Triangular drain on hill side (Reconstruction)
TCS-2	Typical cross section of Two Lane carriageway with hard shoulder in rural area with breast wall on hill side (New Construction)
TCS-2A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with breast wall on hill side (Reconstruction)
TCS-3	Typical cross section of Two Lane carriageway with paved shoulder in rural area with both side R. R. Masonry open Triangular drain (New Construction)

TCS	DESCRIPTION
TCS-3A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with both side R. R. Masonry open Triangular drain (Reonstruction)
TCS-4	Typical cross section of Two Lane carriageway with hard shoulder in rural area with retaining wall on valley side and R. R. Masonry open Triangular drain on hill side (New Construction)
TCS-4A	Typical cross section of Two Lane carriageway with hard shoulder in rural area with retaining wall on valley side and R. R. Masonry open Triangular drain on hill side (Reonstruction)
TCS-5	Typical cross section of Two Lane carriageway with earthen shoulder in built-up area with both side footpath cum RCC cover drain (Reconstruction)
TCS-5A	Typical cross section of Two Lane carriageway with earthen shoulder in built-up area with both side footpath cum RCC cover drain (New Construction)
TCS-6	Typical cross section of Two Lane carriageway in built-up area with one side footpath and breast wall on hill side (Reconstruction)
TCS-6A	Typical cross section of Two Lane carriageway in built-up area with one side footpath and breast wall on hill side (New Construction)
TCS-7	Typical cross section of Two Lane carriageway in built-up area with breast wall on hill side and retaining wall on valley side(Reconstruction)

Chainage (m)		Length (m)	TCS No.
From	To		
283000	283045	45.0	TCS-5
283045	283265	220.0	TCS-6
283265	283340	75.0	TCS-1
283340	283440	100.0	TCS-1A
283440	283490	50.0	TCS-1
283490	283530	40.0	TCS-1A
283530	283640	110.0	TCS-1
283640	283680	40.0	TCS-2A
283680	283730	50.0	TCS-2
283730	283770	40.0	TCS-1A
283770	283840	70.0	TCS-1
283840	283890	50.0	TCS-1A
283890	283990	100.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
283990	284090	100.0	TCS-2A
284090	284150	60.0	TCS-1
284150	284220	70.0	TCS-1A
284220	284310	90.0	TCS-2A
284310	284350	40.0	TCS-1
284350	284490	140.0	TCS-2A
284490	284580	90.0	TCS-1
284580	284620	40.0	TCS-1A
284620	284670	50.0	TCS-1
284670	284720	50.0	TCS-2A
284720	284760	40.0	TCS-1A
284760	284880	120.0	TCS-2A
284880	284955	75.0	TCS-1A
284955	285000	45.0	TCS-2
285000	285070	70.0	TCS-2A
285070	285230	160.0	TCS-1A
285230	285290	60.0	TCS-2A
285290	285430	140.0	TCS-1A
285430	285500	70.0	TCS-2
285500	285710	210.0	TCS-2A
285710	285770	60.0	TCS-1A
285770	285815	45.0	TCS-1
285815	285900	85.0	TCS-1A
285900	285950	50.0	TCS-1
285950	286020	70.0	TCS-2A
286020	286070	50.0	TCS-1A
286070	286155	85.0	TCS-1
286155	286205	50.0	TCS-3A
286205	286250	45.0	TCS-1A
286250	286290	40.0	TCS-1
286290	286345	55.0	TCS-3
286345	286410	65.0	TCS-2A
286410	286490	80.0	TCS-1A
286490	286690	200.0	TCS-1
286690	286730	40.0	TCS-1A
286730	286770	40.0	TCS-2
286770	286865	95.0	TCS-2A
286865	286905	40.0	TCS-1
286905	286970	65.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
286970	287020	50.0	TCS-1A
287020	287060	40.0	TCS-1
287060	287120	60.0	TCS-1A
287120	287165	45.0	TCS-1
287165	287310	145.0	TCS-1A
287310	287355	45.0	TCS-2
287355	287410	55.0	TCS-1A
287410	287455	45.0	TCS-2
287455	287710	255.0	TCS-2A
287710	287905	195.0	TCS-1
287905	287980	75.0	TCS-2A
287980	288060	80.0	TCS-1A
288060	288120	60.0	TCS-3
288120	288160	40.0	TCS-2A
288160	288240	80.0	TCS-2
288240	288410	170.0	TCS-1A
288410	288465	55.0	TCS-1
288465	288510	45.0	TCS-2A
288510	288570	60.0	TCS-1
288570	288670	100.0	TCS-3A
288670	288735	65.0	TCS-1
288735	288810	75.0	TCS-2A
288810	288870	60.0	TCS-4A
288870	289030	160.0	TCS-1A
289030	289110	80.0	TCS-2A
289110	289190	80.0	TCS-1A
289190	289280	90.0	TCS-1
289280	289320	40.0	TCS-4A
289320	289405	85.0	TCS-3
289405	289530	125.0	TCS-2
289530	289710	180.0	TCS-1A
289710	289780	70.0	TCS-4A
289780	289910	130.0	TCS-2A
289910	289960	50.0	TCS-2
289960	290020	60.0	TCS-2A
290020	290070	50.0	TCS-2
290070	290120	50.0	TCS-1A
290120	290165	45.0	TCS-1
290165	290310	145.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
290310	290390	80.0	TCS-1A
290390	290465	75.0	TCS-2
290465	290505	40.0	TCS-2A
290505	290670	165.0	TCS-1
290670	290770	100.0	TCS-2
290770	290820	50.0	TCS-4A
290820	290885	65.0	TCS-2
290885	291010	125.0	TCS-1A
291010	291090	80.0	TCS-2A
291090	291130	40.0	TCS-2
291130	291190	60.0	TCS-1A
291190	291235	45.0	TCS-2
291235	291310	75.0	TCS-2A
291310	291455	145.0	TCS-1A
291455	291495	40.0	TCS-3
291495	291610	115.0	TCS-1A
291610	291720	110.0	TCS-2A
291720	291790	70.0	TCS-2
291790	292005	215.0	TCS-2A
292005	292060	55.0	TCS-1A
292060	292115	55.0	TCS-1
292115	292155	40.0	TCS-1A
292155	292195	40.0	TCS-3
292195	292250	55.0	TCS-2A
292250	292290	40.0	TCS-3
292290	292460	170.0	TCS-1A
292460	292560	100.0	TCS-1
292560	292605	45.0	TCS-3
292605	292645	40.0	TCS-2
292645	292705	60.0	TCS-1A
292705	292745	40.0	TCS-4
292745	292810	65.0	TCS-1A
292810	292910	100.0	TCS-1
292910	292960	50.0	TCS-1A
292960	293035	75.0	TCS-1
293035	293090	55.0	TCS-2A
293090	293170	80.0	TCS-4A
293170	293220	50.0	TCS-4
293220	293260	40.0	TCS-4A

Chainage (m)		Length (m)	TCS No.
From	To		
293260	293310	50.0	TCS-2
293310	293355	45.0	TCS-1
293355	293460	105.0	TCS-1A
293460	293530	70.0	TCS-2A
293530	293590	60.0	TCS-1A
293590	293660	70.0	TCS-1
293660	293720	60.0	TCS-4A
293720	293850	130.0	TCS-1A
293850	294050	200.0	TCS-1
294050	294110	60.0	TCS-2A
294110	294310	200.0	TCS-1A
294310	294355	45.0	TCS-1
294355	294570	215.0	TCS-1A
294570	294620	50.0	TCS-1
294620	294690	70.0	TCS-4A
294690	294740	50.0	TCS-1A
294740	294780	40.0	TCS-4A
294780	294820	40.0	TCS-1A
294820	294880	60.0	TCS-1
294880	294940	60.0	TCS-1A
294940	295000	60.0	TCS-1
295000	295040	40.0	TCS-1A
295040	295160	120.0	TCS-3
295160	295240	80.0	TCS-1A
295240	295310	70.0	TCS-2A
295310	295470	160.0	TCS-1A
295470	295515	45.0	TCS-1
295515	295575	60.0	TCS-1A
295575	295620	45.0	TCS-1
295620	295660	40.0	TCS-1A
295660	295720	60.0	TCS-1
295720	295820	100.0	TCS-1A
295820	295880	60.0	TCS-2
295880	295920	40.0	TCS-1
295920	295960	40.0	TCS-2A
295960	296040	80.0	TCS-4A
296040	296110	70.0	TCS-2A
296110	296155	45.0	TCS-1A
296155	296195	40.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
296195	296260	65.0	TCS-1A
296260	296320	60.0	TCS-1
296320	296360	40.0	TCS-1A
296360	296430	70.0	TCS-1
296430	296520	90.0	TCS-1A
296520	296680	160.0	TCS-1
296680	296730	50.0	TCS-2
296730	296805	75.0	TCS-1A
296805	296845	40.0	TCS-1
296845	296890	45.0	TCS-2
296890	297055	165.0	TCS-1A
297055	297100	45.0	TCS-1
297100	297140	40.0	TCS-1A
297140	297180	40.0	TCS-2A
297180	297270	90.0	TCS-1A
297270	297310	40.0	TCS-2A
297310	297350	40.0	TCS-2
297350	297440	90.0	TCS-1A
297440	297530	90.0	TCS-4A
297530	297660	130.0	TCS-2A
297660	297740	80.0	TCS-1A
297740	297845	105.0	TCS-1
297845	297890	45.0	TCS-1A
297890	297935	45.0	TCS-4A
297935	297980	45.0	TCS-1A
297980	298040	60.0	TCS-2A
298040	298390	350.0	TCS-1A
298390	298440	50.0	TCS-4A
298440	298580	140.0	TCS-1A
298580	298630	50.0	TCS-1
298630	298715	85.0	TCS-1A
298715	298800	85.0	TCS-1
298800	298855	55.0	TCS-2A
298855	298895	40.0	TCS-4A
298895	298935	40.0	TCS-2A
298935	299160	225.0	TCS-1A
299160	299280	120.0	TCS-2A
299280	299395	115.0	TCS-1
299395	299440	45.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
299440	299490	50.0	TCS-2A
299490	299590	100.0	TCS-4A
299590	299630	40.0	TCS-2A
299630	299680	50.0	TCS-4A
299680	299720	40.0	TCS-1
299720	299770	50.0	TCS-1A
299770	299840	70.0	TCS-1
299840	299910	70.0	TCS-2A
299910	300040	130.0	TCS-1
300040	300090	50.0	TCS-1A
300090	300140	50.0	TCS-4A
300140	300180	40.0	TCS-2
300180	300235	55.0	TCS-1A
300235	300290	55.0	TCS-1
300290	300370	80.0	TCS-1A
300370	300480	110.0	TCS-2
300480	300550	70.0	TCS-1A
300550	300615	65.0	TCS-1
300615	300665	50.0	TCS-1A
300665	300740	75.0	TCS-1
300740	300785	45.0	TCS-1A
300785	300830	45.0	TCS-1
300830	300945	115.0	TCS-1A
300945	300985	40.0	TCS-1
300985	301100	115.0	TCS-1A
301100	301150	50.0	TCS-1
301150	301190	40.0	TCS-1A
301190	301240	50.0	TCS-1
301240	301340	100.0	TCS-1A
301340	301455	115.0	TCS-2A
301455	301500	45.0	TCS-1
301500	301545	45.0	TCS-1A
301545	301605	60.0	TCS-1
301605	301750	145.0	TCS-2A
301750	301980	230.0	TCS-2
301980	302130	150.0	TCS-1A
302130	302180	50.0	TCS-2A
302180	302270	90.0	TCS-1A
302270	302310	40.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
302310	302370	60.0	TCS-1A
302370	302610	240.0	TCS-1
302610	302820	210.0	TCS-1A
302820	302910	90.0	TCS-2A
302910	302980	70.0	TCS-4A
302980	303170	190.0	TCS-1A
303170	303240	70.0	TCS-1
303240	303280	40.0	TCS-1A
303280	303340	60.0	TCS-1
303340	303420	80.0	TCS-2A
303420	303670	250.0	TCS-1A
303670	303760	90.0	TCS-1
303760	304260	500.0	TCS-1A
304260	304340	80.0	TCS-2A
304340	304390	50.0	TCS-1A
304390	304440	50.0	TCS-2A
304440	304485	45.0	TCS-2
304485	304720	235.0	TCS-1A
304720	304795	75.0	TCS-1
304795	304850	55.0	TCS-1A
304850	304890	40.0	TCS-2
304890	304930	40.0	TCS-2A
304930	305010	80.0	TCS-1
305010	305055	45.0	TCS-2A
305055	305115	60.0	TCS-1
305115	305210	95.0	TCS-1A
305210	305260	50.0	TCS-4A
305260	305310	50.0	TCS-2A
305310	305360	50.0	TCS-1A
305360	305440	80.0	TCS-2A
305440	305555	115.0	TCS-1A
305555	305630	75.0	TCS-1
305630	305670	40.0	TCS-1A
305670	305710	40.0	TCS-1
305710	305780	70.0	TCS-2A
305780	306045	265.0	TCS-1A
306045	306100	55.0	TCS-1
306100	306140	40.0	TCS-4A
306140	306260	120.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
306260	306310	50.0	TCS-4A
306310	306410	100.0	TCS-1A
306410	306490	80.0	TCS-4A
306490	306660	170.0	TCS-1A
306660	306720	60.0	TCS-2A
306720	306820	100.0	TCS-1A
306820	306870	50.0	TCS-4A
306870	306910	40.0	TCS-2A
306910	307045	135.0	TCS-1A
307045	307145	100.0	TCS-6
307145	307230	85.0	TCS-6A
307230	307450	220.0	TCS-6
307450	307580	130.0	TCS-6A
307580	307620	40.0	TCS-6
307620	307760	140.0	TCS-7
307760	307845	85.0	TCS-6
307845	307890	45.0	TCS-6A
307890	307930	40.0	TCS-6
307930	307970	40.0	TCS-6A
307970	308110	140.0	TCS-6
308110	308330	220.0	TCS-7
308330	308410	80.0	TCS-6
308410	308465	55.0	TCS-6A
308465	308510	45.0	TCS-6
308510	309105	595.0	TCS-5
309105	309240	135.0	TCS-5
309240	309495	255.0	TCS-5
309495	309540	45.0	TCS-6A
309540	309710	170.0	TCS-6
309710	310010	300.0	TCS-5
310010	310180	170.0	TCS-6
310180	310255	75.0	TCS-4A
310255	310295	40.0	TCS-4
310295	310360	65.0	TCS-1
310360	310430	70.0	TCS-2A
310430	310510	80.0	TCS-4A
310510	310570	60.0	TCS-5
310570	310690	120.0	TCS-5A
310690	310730	40.0	TCS-4A

Chainage (m)		Length (m)	TCS No.
From	To		
310730	310910	180.0	TCS-4
310910	311000	90.0	TCS-1
311000	311080	80.0	TCS-2A
311080	311120	40.0	TCS-1
311120	311205	85.0	TCS-4A
311205	311255	50.0	TCS-2
311255	311300	45.0	TCS-4A
311300	311370	70.0	TCS-1A
311370	311420	50.0	TCS-2
311420	311460	40.0	TCS-2A
311460	311530	70.0	TCS-1
311530	311635	105.0	TCS-3
311635	311760	125.0	TCS-1A
311760	311800	40.0	TCS-1
311800	311930	130.0	TCS-2A
311930	312070	140.0	TCS-1A
312070	312110	40.0	TCS-2A
312110	312220	110.0	TCS-1A
312220	312260	40.0	TCS-2A
312260	312310	50.0	TCS-1
312310	312355	45.0	TCS-1A
312355	312520	165.0	TCS-1
312520	312680	160.0	TCS-1A
312680	312860	180.0	TCS-3
312860	312930	70.0	TCS-1A
312930	312990	60.0	TCS-4A
312990	313110	120.0	TCS-1A
313110	313190	80.0	TCS-2A
313190	313235	45.0	TCS-1A
313235	313285	50.0	TCS-1
313285	313405	120.0	TCS-1A
313405	313535	130.0	TCS-1
313535	313630	95.0	TCS-2A
313630	313730	100.0	TCS-1A
313730	313785	55.0	TCS-1
313785	313870	85.0	TCS-1A
313870	313920	50.0	TCS-1
313920	314040	120.0	TCS-1A
314040	314090	50.0	TCS-2A

Chainage (m)		Length (m)	TCS No.
From	To		
314090	314305	215.0	TCS-1A
314305	314360	55.0	TCS-1
314360	314405	45.0	TCS-2A
314405	314460	55.0	TCS-1
314460	314520	60.0	TCS-3
314520	314600	80.0	TCS-1
314600	314815	215.0	TCS-1A
314815	314855	40.0	TCS-2
314855	314900	45.0	TCS-1A
314900	314950	50.0	TCS-1
314950	314990	40.0	TCS-1A
314990	315040	50.0	TCS-2
315040	315090	50.0	TCS-3
315090	315135	45.0	TCS-1
315135	315190	55.0	TCS-4A
315190	315370	180.0	TCS-1A
315370	315420	50.0	TCS-1
315420	315540	120.0	TCS-1A
315540	315590	50.0	TCS-1
315590	316020	430.0	TCS-1A
316020	316155	135.0	TCS-3
316155	316195	40.0	TCS-1A
316195	316240	45.0	TCS-4A
316240	316330	90.0	TCS-2A
316330	316510	180.0	TCS-1A
316510	316555	45.0	TCS-2A
316555	316595	40.0	TCS-2
316595	316745	150.0	TCS-1A
316745	316805	60.0	TCS-1
316805	316965	160.0	TCS-1A
316965	317090	125.0	TCS-1
317090	317130	40.0	TCS-1A
317130	317170	40.0	TCS-1
317170	317320	150.0	TCS-1A
317320	317380	60.0	TCS-4A
317380	317420	40.0	TCS-1
317420	317460	40.0	TCS-1A
317460	317580	120.0	TCS-2
317580	317770	190.0	TCS-1A

Chainage (m)		Length (m)	TCS No.
From	To		
317770	317860	90.0	TCS-2A
317860	317980	120.0	TCS-1A
317980	318080	100.0	TCS-4A
318080	318155	75.0	TCS-1A
318155	318210	55.0	TCS-1
318210	318280	70.0	TCS-2
318280	318325	45.0	TCS-1
318325	318390	65.0	TCS-1A
318390	318470	80.0	TCS-2A
318470	318575	105.0	TCS-1A
318575	318645	70.0	TCS-2
318645	318705	60.0	TCS-2A
318705	318755	50.0	TCS-1
318755	318840	85.0	TCS-1A
318840	318910	70.0	TCS-2A
318910	318980	70.0	TCS-1A
318980	319035	55.0	TCS-1
319035	319230	195.0	TCS-1A
319230	319320	90.0	TCS-2A
319320	319360	40.0	TCS-2
319360	319505	145.0	TCS-1
319505	319545	40.0	TCS-1A
319545	319590	45.0	TCS-4A
319590	319660	70.0	TCS-2A
319660	319855	195.0	TCS-1A
319855	319895	40.0	TCS-1
319895	319945	50.0	TCS-3
319945	319990	45.0	TCS-2A
319990	320045	55.0	TCS-1
320045	320120	75.0	TCS-1A
320120	320195	75.0	TCS-2A
320195	320245	50.0	TCS-1
320245	320285	40.0	TCS-1A
320285	320330	45.0	TCS-2
320330	320495	165.0	TCS-1
320495	320560	65.0	TCS-1A
320560	320620	60.0	TCS-1
320620	320670	50.0	TCS-1A
320670	320715	45.0	TCS-1

Chainage (m)		Length (m)	TCS No.
From	To		
320715	320820	105.0	TCS-2A
320820	320870	50.0	TCS-1
320870	320980	110.0	TCS-1A
320980	321060	80.0	TCS-2A
321060	321255	195.0	TCS-4A
321255	321300	45.0	TCS-1
321300	321350	50.0	TCS-1A
321350	321510	160.0	TCS-3
321510	321610	100.0	TCS-1A
321610	321660	50.0	TCS-2A
321660	322320	660.0	TCS-1A
322320	322370	50.0	TCS-1
322370	322470	100.0	TCS-1A
322470	322610	140.0	TCS-2A
322610	322655	45.0	TCS-1A
322655	322720	65.0	TCS-3
322720	322845	125.0	TCS-1
322845	323070	225.0	TCS-1A
323070	323130	60.0	TCS-2
323130	323280	150.0	TCS-1A
323280	323380	100.0	TCS-2A
323380	323660	280.0	TCS-1A
323660	323730	70.0	TCS-1
323730	323820	90.0	TCS-1A
323820	323870	50.0	TCS-1
323870	323920	50.0	TCS-4A
323920	323970	50.0	TCS-1
323970	324010	40.0	TCS-1A
324010	324050	40.0	TCS-1
324050	324365	315.0	TCS-1A
324365	324405	40.0	TCS-1
324405	324445	40.0	TCS-1A
324445	324505	60.0	TCS-1
324505	324590	85.0	TCS-1A
324590	324660	70.0	TCS-2A
324660	325330	670.0	TCS-1A
325330	325420	90.0	TCS-2
325420	325440	20.0	TCS-2A

3. Intersections and Grade Separators

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

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	283.000	Y-Type	5-Legged	
2	308.605	Y-Type	3-Legged	

Minor Intersections

Sl. No.	Location of Intersection (km)	Type of intersection	Other features
1	283.150	Y-Type	3-Legged
2	284.934	Y-Type	3-Legged
3	304.570	Y-Type	3-Legged
4	304.784	Y-Type	3-Legged
5	306.938	Y-Type	3-Legged
6	307.595	Y-Type	3-Legged
7	308.218	Y-Type	3-Legged
8	308.430	T-Type	3-Legged
9	308.614	Y-Type	3-Legged
10	308.871	Y-Type	3-Legged
11	308.890	Y-Type	3-Legged
12	309.275	Y-Type	3-Legged
13	309.310	Y-Type	3-Legged
14	310.566	T-Type	3-Legged
15	310.672	Y-Type	3-Legged
16	314.166	Y-Type	3-Legged

- (ii) Grade separated intersection with/without ramps

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

4. Road Embankment and Cut Section

- (i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in Section 4 of the Manual IRC: S: 73-2018 and the specified typical cross section. Deficiencies in the plan and profile of the existing road shall be corrected.
- (ii) Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]

The existing road shall be raised in the following sections:

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

5. Pavement Design

- (i) Pavement design shall be carried out in accordance with section 5 of the IRC:SP:73-2018 and IRC 37-2018.
- (ii) Type of pavement
- Flexible Pavement
- (iii) 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%.

(iv) 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	283.000	283.045	Reconstruction	TCS-5
2	283.045	283.265	Reconstruction	TCS-6
3	283.340	283.440	Reconstruction	TCS-1A
4	283.490	283.530	Reconstruction	TCS-1A
5	283.640	283.680	Reconstruction	TCS-2A
6	283.730	283.770	Reconstruction	TCS-1A
7	283.840	283.890	Reconstruction	TCS-1A
8	283.990	284.090	Reconstruction	TCS-2A
9	284.150	284.220	Reconstruction	TCS-1A
10	284.220	284.310	Reconstruction	TCS-2A
11	284.350	284.490	Reconstruction	TCS-2A
12	284.580	284.620	Reconstruction	TCS-1A
13	284.670	284.720	Reconstruction	TCS-2A
14	284.720	284.760	Reconstruction	TCS-1A
15	284.760	284.880	Reconstruction	TCS-2A
16	284.880	284.955	Reconstruction	TCS-1A
17	285.000	285.070	Reconstruction	TCS-2A
18	285.070	285.230	Reconstruction	TCS-1A
19	285.230	285.290	Reconstruction	TCS-2A
20	285.290	285.430	Reconstruction	TCS-1A
21	285.500	285.710	Reconstruction	TCS-2A
22	285.710	285.770	Reconstruction	TCS-1A
23	285.815	285.900	Reconstruction	TCS-1A
24	285.950	286.020	Reconstruction	TCS-2A
25	286.020	286.070	Reconstruction	TCS-1A
26	286.155	286.205	Reconstruction	TCS-3A
27	286.205	286.250	Reconstruction	TCS-1A
28	286.345	286.410	Reconstruction	TCS-2A
29	286.410	286.490	Reconstruction	TCS-1A
30	286.690	286.730	Reconstruction	TCS-1A
31	286.770	286.865	Reconstruction	TCS-2A
32	286.905	286.970	Reconstruction	TCS-2A
33	286.970	287.020	Reconstruction	TCS-1A
34	287.060	287.120	Reconstruction	TCS-1A
35	287.165	287.310	Reconstruction	TCS-1A
36	287.355	287.410	Reconstruction	TCS-1A
37	287.455	287.710	Reconstruction	TCS-2A
38	287.710	287.710	Reconstruction	TCS-1A

Sl. No.	Stretch From km to km		Remarks	TCS Type
39	287.905	287.980	Reconstruction	TCS-2A
40	287.980	288.060	Reconstruction	TCS-1A
41	288.120	288.160	Reconstruction	TCS-2A
42	288.240	288.410	Reconstruction	TCS-1A
43	288.465	288.510	Reconstruction	TCS-2A
44	288.570	288.670	Reconstruction	TCS-3A
45	288.735	288.810	Reconstruction	TCS-2A
46	288.810	288.870	Reconstruction	TCS-4A
47	288.870	289.030	Reconstruction	TCS-1A
48	289.030	289.110	Reconstruction	TCS-2A
49	289.110	289.190	Reconstruction	TCS-1A
50	289.280	289.320	Reconstruction	TCS-4A
51	289.530	289.710	Reconstruction	TCS-1A
52	289.710	289.780	Reconstruction	TCS-4A
53	289.780	289.910	Reconstruction	TCS-2A
54	289.960	290.020	Reconstruction	TCS-2A
55	290.070	290.120	Reconstruction	TCS-1A
56	290.165	290.310	Reconstruction	TCS-2A
57	290.310	290.390	Reconstruction	TCS-1A
58	290.465	290.505	Reconstruction	TCS-2A
59	290.770	290.820	Reconstruction	TCS-4A
60	290.885	291.010	Reconstruction	TCS-1A
61	291.010	291.090	Reconstruction	TCS-2A
62	291.130	291.190	Reconstruction	TCS-1A
63	291.235	291.310	Reconstruction	TCS-2A
64	291.310	291.455	Reconstruction	TCS-1A
65	291.495	291.610	Reconstruction	TCS-1A
66	291.610	291.720	Reconstruction	TCS-2A
67	291.790	292.005	Reconstruction	TCS-2A
68	292.005	292.060	Reconstruction	TCS-1A
69	292.115	292.155	Reconstruction	TCS-1A
70	292.195	292.250	Reconstruction	TCS-2A
71	292.290	292.460	Reconstruction	TCS-1A
72	292.645	292.705	Reconstruction	TCS-1A
73	292.745	292.810	Reconstruction	TCS-1A
74	292.910	292.960	Reconstruction	TCS-1A
75	293.035	293.090	Reconstruction	TCS-2A
76	293.090	293.170	Reconstruction	TCS-4A
77	293.220	293.260	Reconstruction	TCS-4A
78	293.355	293.460	Reconstruction	TCS-1A
79	293.460	293.530	Reconstruction	TCS-2A
80	293.530	293.590	Reconstruction	TCS-1A
81	293.660	293.720	Reconstruction	TCS-4A
82	293.720	293.850	Reconstruction	TCS-1A
83	294.050	294.110	Reconstruction	TCS-2A

Sl. No.	Stretch From km to km		Remarks	TCS Type
84	294.110	294.310	Reconstruction	TCS-1A
85	294.355	294.570	Reconstruction	TCS-1A
86	294.620	294.690	Reconstruction	TCS-4A
87	294.690	294.740	Reconstruction	TCS-1A
88	294.740	294.780	Reconstruction	TCS-4A
89	294.780	294.820	Reconstruction	TCS-1A
90	294.880	294.940	Reconstruction	TCS-1A
91	295.000	295.040	Reconstruction	TCS-1A
92	295.160	295.240	Reconstruction	TCS-1A
93	295.240	295.310	Reconstruction	TCS-2A
94	295.310	295.470	Reconstruction	TCS-1A
95	295.515	295.575	Reconstruction	TCS-1A
96	295.620	295.660	Reconstruction	TCS-1A
97	295.720	295.820	Reconstruction	TCS-1A
98	295.920	295.960	Reconstruction	TCS-2A
99	295.960	296.040	Reconstruction	TCS-4A
100	296.040	296.110	Reconstruction	TCS-2A
101	296.110	296.155	Reconstruction	TCS-1A
102	296.195	296.260	Reconstruction	TCS-1A
103	296.320	296.360	Reconstruction	TCS-1A
104	296.430	296.520	Reconstruction	TCS-1A
105	296.730	296.805	Reconstruction	TCS-1A
106	296.890	297.055	Reconstruction	TCS-1A
107	297.100	297.140	Reconstruction	TCS-1A
108	297.140	297.180	Reconstruction	TCS-2A
109	297.180	297.270	Reconstruction	TCS-1A
110	297.270	297.310	Reconstruction	TCS-2A
111	297.350	297.440	Reconstruction	TCS-1A
112	297.440	297.530	Reconstruction	TCS-4A
113	297.530	297.660	Reconstruction	TCS-2A
114	297.660	297.740	Reconstruction	TCS-1A
115	297.845	297.890	Reconstruction	TCS-1A
116	297.890	297.935	Reconstruction	TCS-4A
117	297.935	297.980	Reconstruction	TCS-1A
118	297.980	298.040	Reconstruction	TCS-2A
119	298.040	298.390	Reconstruction	TCS-1A
120	298.390	298.440	Reconstruction	TCS-4A
121	298.440	298.580	Reconstruction	TCS-1A
122	298.630	298.715	Reconstruction	TCS-1A
123	298.800	298.855	Reconstruction	TCS-2A
124	298.855	298.895	Reconstruction	TCS-4A
125	298.895	298.935	Reconstruction	TCS-2A
126	298.935	299.160	Reconstruction	TCS-1A
127	299.160	299.280	Reconstruction	TCS-2A
128	299.395	299.440	Reconstruction	TCS-1A

Sl. No.	Stretch From km to km		Remarks	TCS Type
129	299.440	299.490	Reconstruction	TCS-2A
130	299.490	299.590	Reconstruction	TCS-4A
131	299.590	299.630	Reconstruction	TCS-2A
132	299.630	299.680	Reconstruction	TCS-4A
133	299.720	299.770	Reconstruction	TCS-1A
134	299.840	299.910	Reconstruction	TCS-2A
135	300.040	300.090	Reconstruction	TCS-1A
136	300.090	300.140	Reconstruction	TCS-4A
137	300.180	300.235	Reconstruction	TCS-1A
138	300.290	300.370	Reconstruction	TCS-1A
139	300.480	300.550	Reconstruction	TCS-1A
140	300.615	300.665	Reconstruction	TCS-1A
141	300.740	300.785	Reconstruction	TCS-1A
142	300.830	300.945	Reconstruction	TCS-1A
143	300.985	301.100	Reconstruction	TCS-1A
144	301.150	301.190	Reconstruction	TCS-1A
145	301.240	301.340	Reconstruction	TCS-1A
146	301.340	301.455	Reconstruction	TCS-2A
147	301.500	301.545	Reconstruction	TCS-1A
148	301.605	301.750	Reconstruction	TCS-2A
149	301.980	302.130	Reconstruction	TCS-1A
150	302.130	302.180	Reconstruction	TCS-2A
151	302.180	302.270	Reconstruction	TCS-1A
152	302.310	302.370	Reconstruction	TCS-1A
153	302.610	302.820	Reconstruction	TCS-1A
154	302.820	302.910	Reconstruction	TCS-2A
155	302.910	302.980	Reconstruction	TCS-4A
156	302.980	303.170	Reconstruction	TCS-1A
157	303.240	303.280	Reconstruction	TCS-1A
158	303.340	303.420	Reconstruction	TCS-2A
159	303.420	303.670	Reconstruction	TCS-1A
160	303.760	304.260	Reconstruction	TCS-1A
161	304.260	304.340	Reconstruction	TCS-2A
162	304.340	304.390	Reconstruction	TCS-1A
163	304.390	304.440	Reconstruction	TCS-2A
164	304.485	304.720	Reconstruction	TCS-1A
165	304.795	304.850	Reconstruction	TCS-1A
166	304.890	304.930	Reconstruction	TCS-2A
167	305.010	305.055	Reconstruction	TCS-2A
168	305.115	305.210	Reconstruction	TCS-1A
169	305.210	305.260	Reconstruction	TCS-4A
170	305.260	305.310	Reconstruction	TCS-2A
171	305.310	305.360	Reconstruction	TCS-1A
172	305.360	305.440	Reconstruction	TCS-2A
173	305.440	305.555	Reconstruction	TCS-1A

Sl. No.	Stretch From km to km		Remarks	TCS Type
174	305.630	305.670	Reconstruction	TCS-1A
175	305.710	305.780	Reconstruction	TCS-2A
176	305.780	306.045	Reconstruction	TCS-1A
177	306.100	306.140	Reconstruction	TCS-4A
178	306.140	306.260	Reconstruction	TCS-1A
179	306.260	306.310	Reconstruction	TCS-4A
180	306.310	306.410	Reconstruction	TCS-1A
181	306.410	306.490	Reconstruction	TCS-4A
182	306.490	306.660	Reconstruction	TCS-1A
183	306.660	306.720	Reconstruction	TCS-2A
184	306.720	306.820	Reconstruction	TCS-1A
185	306.820	306.870	Reconstruction	TCS-4A
186	306.870	306.910	Reconstruction	TCS-2A
187	306.910	307.045	Reconstruction	TCS-1A
188	307.045	307.145	Reconstruction	TCS-6
189	307.230	307.450	Reconstruction	TCS-6
190	307.580	307.620	Reconstruction	TCS-6
191	307.620	307.760	Reconstruction	TCS-7
192	307.760	307.845	Reconstruction	TCS-6
193	307.890	307.930	Reconstruction	TCS-6
194	307.970	308.110	Reconstruction	TCS-6
195	308.110	308.330	Reconstruction	TCS-7
196	308.330	308.410	Reconstruction	TCS-6
197	308.465	308.510	Reconstruction	TCS-6
198	308.510	309.105	Reconstruction	TCS-5
199	309.105	309.240	Reconstruction	TCS-5
200	309.240	309.495	Reconstruction	TCS-5
201	309.540	309.710	Reconstruction	TCS-6
202	309.710	310.010	Reconstruction	TCS-5
203	310.010	310.180	Reconstruction	TCS-6
204	310.180	310.255	Reconstruction	TCS-4A
205	310.360	310.430	Reconstruction	TCS-2A
206	310.430	310.510	Reconstruction	TCS-4A
207	310.510	310.570	Reconstruction	TCS-5
208	310.690	310.730	Reconstruction	TCS-4A
209	311.000	311.080	Reconstruction	TCS-2A
210	311.120	311.205	Reconstruction	TCS-4A
211	311.255	311.300	Reconstruction	TCS-4A
212	311.300	311.370	Reconstruction	TCS-1A
213	311.420	311.460	Reconstruction	TCS-2A
214	311.635	311.760	Reconstruction	TCS-1A
215	311.800	311.930	Reconstruction	TCS-2A
216	311.930	312.070	Reconstruction	TCS-1A
217	312.070	312.110	Reconstruction	TCS-2A
218	312.110	312.220	Reconstruction	TCS-1A

Sl. No.	Stretch From km to km		Remarks	TCS Type
219	312.220	312.260	Reconstruction	TCS-2A
220	312.310	312.355	Reconstruction	TCS-1A
221	312.520	312.680	Reconstruction	TCS-1A
222	312.860	312.930	Reconstruction	TCS-1A
223	312.930	312.990	Reconstruction	TCS-4A
224	312.990	313.110	Reconstruction	TCS-1A
225	313.110	313.190	Reconstruction	TCS-2A
226	313.190	313.235	Reconstruction	TCS-1A
227	313.285	313.405	Reconstruction	TCS-1A
228	313.535	313.630	Reconstruction	TCS-2A
229	313.630	313.730	Reconstruction	TCS-1A
230	313.785	313.870	Reconstruction	TCS-1A
231	313.920	314.040	Reconstruction	TCS-1A
232	314.040	314.090	Reconstruction	TCS-2A
233	314.090	314.305	Reconstruction	TCS-1A
234	314.360	314.405	Reconstruction	TCS-2A
235	314.600	314.815	Reconstruction	TCS-1A
236	314.855	314.900	Reconstruction	TCS-1A
237	314.950	314.990	Reconstruction	TCS-1A
238	315.135	315.190	Reconstruction	TCS-4A
239	315.190	315.370	Reconstruction	TCS-1A
240	315.420	315.540	Reconstruction	TCS-1A
241	315.590	316.020	Reconstruction	TCS-1A
242	316.155	316.195	Reconstruction	TCS-1A
243	316.195	316.240	Reconstruction	TCS-4A
244	316.240	316.330	Reconstruction	TCS-2A
245	316.330	316.510	Reconstruction	TCS-1A
246	316.510	316.555	Reconstruction	TCS-2A
247	316.595	316.745	Reconstruction	TCS-1A
248	316.805	316.965	Reconstruction	TCS-1A
249	317.090	317.130	Reconstruction	TCS-1A
250	317.170	317.320	Reconstruction	TCS-1A
251	317.320	317.380	Reconstruction	TCS-4A
252	317.420	317.460	Reconstruction	TCS-1A
253	317.580	317.770	Reconstruction	TCS-1A
254	317.770	317.860	Reconstruction	TCS-2A
255	317.860	317.980	Reconstruction	TCS-1A
256	317.980	318.080	Reconstruction	TCS-4A
257	318.080	318.155	Reconstruction	TCS-1A
258	318.325	318.390	Reconstruction	TCS-1A
259	318.390	318.470	Reconstruction	TCS-2A
260	318.470	318.575	Reconstruction	TCS-1A
261	318.645	318.705	Reconstruction	TCS-2A
262	318.755	318.840	Reconstruction	TCS-1A
263	318.840	318.910	Reconstruction	TCS-2A

Sl. No.	Stretch From km to km		Remarks	TCS Type
264	318.910	318.980	Reconstruction	TCS-1A
265	319.035	319.230	Reconstruction	TCS-1A
266	319.230	319.320	Reconstruction	TCS-2A
267	319.505	319.545	Reconstruction	TCS-1A
268	319.545	319.590	Reconstruction	TCS-4A
269	319.590	319.660	Reconstruction	TCS-2A
270	319.660	319.855	Reconstruction	TCS-1A
271	319.945	319.990	Reconstruction	TCS-2A
272	320.045	320.120	Reconstruction	TCS-1A
273	320.120	320.195	Reconstruction	TCS-2A
274	320.245	320.285	Reconstruction	TCS-1A
275	320.495	320.560	Reconstruction	TCS-1A
276	320.620	320.670	Reconstruction	TCS-1A
277	320.715	320.820	Reconstruction	TCS-2A
278	320.870	320.980	Reconstruction	TCS-1A
279	320.980	321.060	Reconstruction	TCS-2A
280	321.060	321.255	Reconstruction	TCS-4A
281	321.300	321.350	Reconstruction	TCS-1A
282	321.510	321.610	Reconstruction	TCS-1A
283	321.610	321.660	Reconstruction	TCS-2A
284	321.660	322.320	Reconstruction	TCS-1A
285	322.370	322.470	Reconstruction	TCS-1A
286	322.470	322.610	Reconstruction	TCS-2A
287	322.610	322.655	Reconstruction	TCS-1A
288	322.845	323.070	Reconstruction	TCS-1A
289	323.130	323.280	Reconstruction	TCS-1A
290	323.280	323.380	Reconstruction	TCS-2A
291	323.380	323.660	Reconstruction	TCS-1A
292	323.730	323.820	Reconstruction	TCS-1A
293	323.870	323.920	Reconstruction	TCS-4A
294	323.970	324.010	Reconstruction	TCS-1A
295	324.050	324.365	Reconstruction	TCS-1A
296	324.405	324.445	Reconstruction	TCS-1A
297	324.505	324.590	Reconstruction	TCS-1A
298	324.590	324.660	Reconstruction	TCS-2A
299	324.660	325.330	Reconstruction	TCS-1A
300	325.420	325.440	Reconstruction	TCS-2A

*- Annexure-II of Schedule-B

6. Roadside 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).

Drain Type	Side	Net Length (m)
RCC Covered Drain	Both side	2981
R. R. Masonry Triangular Drain	Both/One side	41660.5
Total=		44641.50 m



Note 1: 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.

Note 2: Box cut sections will have drains on both sides.

7. Design of Structures

(i) General

- All bridges, culverts and structures shall be designed and constructed in accordance with the provision of relevant Manual and shall conform to the cross- sectional features and other details specified therein.
- Width of the carriageway of new bridges and structures shall be as follows:

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features*
1	289.303	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
2	289.416	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
3	292.936	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
4	293.958	Carriageway Width = 11.0 m

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features *
		Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m
5	301.881	Carriageway Width = 11.0 m Width of Crash Barrier = 1.0m (2x0.5m) Overall width = 12m

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

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

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

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

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

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

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

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

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

(ii) Culverts

- Overall width of all culverts shall be equal to the roadway width of the approaches.
- Distance between any two culverts shall not be more than 200 m.
- Minimum of five culverts per Km shall be provided.
- Reconstruction of existing culverts:

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

Sl. No.	Design Chainage (km)	Size (m)
1	283.167	1X2.0X2.0
2	283.258	1X2.0X2.0
3	283.748	1X2.0X3.0
4	284.001	1X2.0X2.0
5	284.229	1X2.0X2.0
6	284.324	1X2.0X2.0
7	284.494	1X2.0X2.0
8	284.581	1X2.0X2.0
9	284.882	1X2.0X2.0
10	285.181	1X2.0X2.0
11	285.427	1X2.0X2.0
12	285.569	1X2.0X2.0
13	285.698	1X2.0X2.0
14	285.971	1X2.0X2.0
15	286.113	1X2.0X2.0
16	286.237	1X4.0X4.0
17	286.590	1X2.0X3.0
18	287.008	1X2.0X2.0
19	287.173	1X2.0X2.0
20	287.286	1X2.0X3.0
21	287.383	1X2.0X2.0
22	287.497	1X2.0X2.0
23	287.608	1X2.0X2.0
24	287.809	1X3.0X4.0
25	287.928	1X2.0X2.0
26	288.059	1X2.0X2.0
27	288.174	1X2.0X2.0
28	288.408	1X2.0X2.0
29	288.657	1X2.0X2.0
30	288.988	1X2.0X2.0
31	289.177	1X2.0X2.0
32	289.702	1X2.0X2.0
33	290.132	1X3.0X4.0
34	290.288	1X2.0X2.0
35	290.894	1X2.0X2.0
36	291.001	1X2.0X2.0
37	291.159	1X2.0X2.0
38	291.311	1X2.0X2.0
39	291.594	1X2.0X2.0
40	291.717	1X2.0X2.0
41	291.920	1X2.0X2.0

Sl. No.	Design Chainage (km)	Size (m)
42	292.123	1X2.0X2.0
43	292.296	1X2.0X2.0
44	292.533	1X2.0X3.0
45	293.066	1X2.0X2.0
46	293.578	1X2.0X3.0
47	294.287	1X3.0X4.0
48	294.566	1X2.0X2.0
49	294.815	1X3.0X4.0
50	295.040	1X2.0X2.0
51	295.173	1X2.0X2.0
52	295.641	1X4.0X4.0
53	295.875	1X2.0X2.0
54	296.336	1X3.0X4.0
55	296.469	1X2.0X2.0
56	296.877	1X2.0X2.0
57	297.114	1X2.0X2.0
58	297.234	1X2.0X2.0
59	297.416	1X2.0X2.0
60	297.628	1X2.0X2.0
61	297.848	1X2.0X2.0
62	298.001	1X2.0X2.0
63	298.254	1X2.0X2.0
64	298.568	1X2.0X2.0
65	298.718	1X2.0X2.0
66	298.804	1X2.0X2.0
67	298.990	1X2.0X2.0
68	299.303	1X2.0X2.0
69	299.401	1X2.0X2.0
70	299.840	1X2.0X2.0
71	300.053	1X2.0X2.0
72	300.300	1X2.0X2.0
73	300.428	1X2.0X3.0
74	300.509	1X2.0X3.0
75	300.652	1X2.0X2.0
76	300.775	1X2.0X2.0
77	300.899	1X2.0X3.0
78	301.176	1X2.0X3.0
79	301.533	1X4.0X4.0
80	302.171	1X2.0X2.0
81	302.504	1X4.0X5.0
82	302.735	1X2.0X2.0
83	303.042	1X2.0X2.0
84	303.267	1X4.0X4.0
85	303.493	1X2.0X2.0
86	303.575	1X2.0X3.0

Sl. No.	Design Chainage (km)	Size (m)
87	303.962	1X2.0X2.0
88	304.093	1X2.0X2.0
89	304.337	1X3.0X4.0
90	304.710	1X2.0X2.0
91	305.036	1X2.0X2.0
92	305.298	1X2.0X2.0
93	305.548	1X2.0X3.0
94	305.649	1X2.0X2.0
95	305.966	1X2.0X2.0
96	306.044	1X2.0X2.0
97	306.337	1X2.0X2.0
98	306.531	1X2.0X2.0
99	306.616	1X2.0X3.0
100	306.912	1X2.0X2.0
101	307.518	1X3.0X4.0
102	307.747	1X2.0X2.0
103	308.189	1X2.0X2.0
104	308.398	1X2.0X3.0
105	308.670	1X2.0X2.0
106	308.769	1X2.0X2.0
107	309.135	1X3.0X4.0
108	309.354	1X2.0X3.0
109	309.728	1X2.0X2.0
110	309.979	1X2.0X2.0
111	310.285	1X3.0X4.0
112	310.562	1X2.0X2.0
113	310.800	1X2.0X2.0
114	310.915	1X2.0X2.0
115	311.005	1X2.0X2.0
116	311.190	1X2.0X2.0
117	311.375	1X2.0X2.0
118	311.698	1X2.0X2.0
119	312.150	1X2.0X3.0
120	312.325	1X2.0X3.0
121	312.732	1X3.0X4.0
122	313.195	1X2.0X3.0
123	313.471	1X2.0X3.0
124	313.702	1X2.0X3.0
125	314.130	1X2.0X2.0
126	314.303	1X2.0X2.0
127	314.656	1X2.0X2.0
128	314.871	1X2.0X3.0
129	315.268	1X3.0X4.0
130	315.367	1X3.0X4.0
131	315.507	1X2.0X3.0

Sl. No.	Design Chainage (km)	Size (m)
132	315.938	1X2.0X3.0
133	315.997	1X2.0X3.0
134	316.322	1X3.0X4.0
135	316.362	1X3.0X4.0
136	316.611	1X2.0X3.0
137	316.864	1X2.0X3.0
138	317.035	1X2.0X3.0
139	317.447	1X4.0X5.0
140	317.715	1X2.0X3.0
141	317.795	1X2.0X3.0
142	317.928	1X2.0X3.0
143	318.262	1X3.0X4.0
144	318.394	1X3.0X4.0
145	318.571	1X2.0X3.0
146	318.668	1X2.0X3.0
147	318.774	1X2.0X3.0
148	319.046	1X2.0X3.0
149	319.216	1X2.0X3.0
150	319.500	1X2.0X3.0
151	319.684	1X2.0X2.0
152	319.862	1X2.0X3.0
153	320.073	1X2.0X2.0
154	320.258	1X3.0X4.0
155	320.444	1X2.0X2.0
156	320.812	1X2.0X2.0
157	321.207	1X2.0X3.0
158	321.786	1X2.0X3.0
159	322.004	1X2.0X2.0
160	322.380	1X2.0X2.0
161	322.644	1X2.0X2.0
162	322.736	1X2.0X3.0
163	322.780	1X2.0X2.0
164	322.856	1X2.0X2.0
165	323.043	1X2.0X2.0
166	323.154	1X2.0X2.0
167	323.399	1X2.0X3.0
168	323.645	1X2.0X2.0
169	323.867	1X2.0X2.0
170	323.995	1X2.0X3.0
171	324.054	1X3.0X4.0
172	324.130	1X2.0X2.0
173	324.210	1X2.0X2.0
174	324.513	1X2.0X2.0
175	325.023	1X2.0X3.0

Note : The above Design Chainages are indicative and may vary as per site requirement to be approved by Authority's Engineer.

(c) Widening of existing culverts:

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

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

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

Sl. No.	Design	Size
1	283.400	1X2.0X2.0
2	283.550	1X2.0X3.0
3	284.764	1X2.0X2.0
4	286.463	1X2.0X2.0
5	286.850	1X2.0X2.0
6	289.573	1X2.0X2.0
7	290.490	1X2.0X2.0
8	290.700	1X2.0X2.0
9	292.675	1X2.0X2.0
10	293.483	1X2.0X2.0
11	294.170	1X2.0X2.0
12	295.440	1X2.0X2.0
13	296.090	1X2.0X2.0
14	296.750	1X2.0X2.0
15	299.135	1X2.0X2.0
16	299.621	1X2.0X2.0
17	301.025	1X2.0X2.0
18	301.355	1X2.0X2.0
19	307.130	1X2.0X2.0
20	309.544	1X2.0X2.0
21	310.380	1X2.0X2.0
22	311.730	1X2.0X2.0
23	312.537	1X2.0X2.0

24	320.650	1X2.0X2.0
25	321.025	1X2.0X2.0
26	321.555	1X4.0X5.0
27	322.125	1X2.0X2.0
28	323.270	1X2.0X2.0
29	324.400	1X2.0X3.0
30	324.850	1X2.0X2.0
31	325.320	1X2.0X2.0

Note : The above Design Chainages are indicative and may vary as per site requirement to be approved by Authority's Engineer.

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

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

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

- (f) Floor protection works shall be as specified in the relevant IRC Codes and Specifications

(iii) Bridges

- (a) Existing bridges to be re- constructed/widened

- (i) The existing bridges at the following locations shall be re-constructed as new Structures.

Sl. No.	Bridge location (km)	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance, etc*	Remarks
		Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
1	289.540	Steel bridge	1 x 19.25	Insufficient width and not conform to IRC Loadings.	1 x 24 (RCC T Girder)
2	294.178	RCC Slab	1 x 24.2		1 x 30 (PSC I Girder)
3	302.335	RCC Slab	1 x 15.1		1 x 30 (PSC I Girder)

(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
1	289.303	1 x 10	RCC Solid Slab
2	292.936	1 x 10	RCC Solid Slab

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

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

Sl. No.	Location at km	Remarks
Nil		

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

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

Sl. No.	Location at km	Remarks
Nil		

(e) Drainage system for bridge decks

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

(f) Structures in marine environment

[Refer to the provision of relevant Manual and specify the necessary measures]

/ treatments for protecting structures in marine environment, where applicable]

(iv) Rail-road bridges

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

(b) Road over-bridges

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

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

[Refer to the provision of relevant Manual]

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

(vi) Repairs and strengthening of bridges and structures

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

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

Sl. No.	Traffic Signage, Road Marking and other appurtenances	Quantity	Unit
1	90 cm equilateral triangle	985	nos
2	Stop Sign (90 cm high octagon)	23	nos
3	60 cm circular	20	nos
4	Direction Sign <.0.9 sqm	32	nos
5	Direction Sign >0.9 sqm	15	nos
6	Delineator/Object /Hazard Marker	4667	nos
7	Rumble Strip	21	nos
8	Road stud	25308	nos
9	Painting	14276	sqm

- (ii) Specifications of the reflective sheeting.

9. Roadside Furniture

- (i) Roadside furniture shall be provided in accordance with the provisions of the

relevant Manual.

- (ii) Overhead traffic signs: location and size

Sl No.	Location (km)	Remarks
1	283.00	Full Width
2	325.440	Full Width

10. Compulsory Afforestation

Compensatory afforestation shall be in accordance with section 11 of the relevant Manual.

11. Hazardous Locations

11.1 "W" Metal Beam crash barrier of minimum length of 3983 m and Wire rope Crash Barrier of minimum length of 2762m shall be provided at the locations of bridge approaches, high embankment (3.0m and more) ,at sharp curves and valley sides of the road. Typical details of crash barrier are given in manual. Increase in length if any as per site requirement will not constitute change of scope.

11.2 Rest of the complete length of the project highway shall have parapet wall as per IRC SP 48:1998.

12. Special Requirement for Hill Roads

Refer to section 13 of IRC: SP: 73-2018. The minimum quantity of protection work may be taken as below:

Type of Protection Work		
Protection Work	Unit	Quantity
Breast wall, 1.5m high	Rm	10945.00
Retaining wall, 2m high	Rm	2439.50
Retaining wall, 3m high	Rm	463.56
Retaining wall, 5m high	Rm	21.84
Seeding & Mulching with Jute Net	Sqm	306612

Note:

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

in above table or through change in specifications will not be considered as change of scope. Therefore contractor shall make thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.

- (iii) The length of Retaining Wall shown above is minimum, to be constructed at site for proper geometrics and will not be converted to Breast Wall. Any reduction in the total length of Retaining Wall constructed at site shall constitute of negative change of scope.
- (iv) Entire slope/formation which has been cut, apart from the above tabulated lengths/area shall have to be stabilized by the Contractor using techniques approved by AE.

13. Change of Scope

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

14. Utility Shifting

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

Note-I:

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

utility owning department shall be on the contractor/concessionaire*.

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

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

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

Note-II:

Utility Shifting/Relocation Plan and drawings incorporating the details, such as the length and category of lines, types of circuits, type and number of poles, size and type of conductor/cable, the number and type of crossings and the capacity and the number of transformer, the length and category of pipes etc., shall be prepared by the Contractor in consultation with Utility Owning Department and the Authority's Engineer as per the site requirement.

(Schedule-B1)

1.The shifting of utilities

(iv) Electrical utilities

The site includes the following electrical utilities:-

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

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

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

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

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S. No	Chainage		Length (in Km)			Crossings			Transformers	
	From (Km)	To (Km)	33KV	11KV	LT	33KV	11KV	LT	No	Capacity
1	283.636	285.550	1.914							
2	306.117	307.772	1.655							
3	308.05	309.180		1.13						
4	309.180	309.240					0.060			
5	309.240	309.413		0.173						
6	309.413	309.501					0.088			
7	309.501	310.700		1.199						
8	307.118	308.929			1.811					
9	308.929	309.061						0.132		
10	308.880	309.050			0.170					
11	309.050	309.240						0.190		
12	309.800	310.500			0.700					
13	309.240								1	

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

The site includes the following Public Health utilities:-

S. No	Chainage		Length(in Km)	Crossings
	From (Km)	To (Km)	Water Supply line	Water Supply line
1	283.000	304.500	1.100	
2	304.500	325.440	8.430	

(vi) Any Other line

Note: Variation upto 10% in quantities of Utilities to be shifted will not constitute Change of Scope.

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

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

- (a) toll plaza[s];
- (b) roadside furniture;
- (c) pedestrian facilities;
- (d) truck lay-byes;
- (e) bus-bays and bus shelters;
- (f) rest areas; and
- (g) others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

(a) **Toll Plaza:** Nil

(b) **Roadside Furniture:**

The roadside furniture shall be provided in accordance with section 9.0 of the Manual of the standards and Specifications.

Sl. No.	Project Facility	Location	Design Standard	Other essential details
1	Traffic Sign & Pavement marking	Entire Length(As per Schedule B)	As per manual	
2	Km stone, Hectometer Stone, 5 th kilometre stone	Entire Length	As per manual	
3	Roadside Delineator, marker & Road Stud	As per Schedule B	As per manual	
4	Metal beam crash barrier	As per Schedule B	As per manual	

(c) Pedestrian Facilities:

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

(d) Truck Lay Bys:

Sl. No.	Proposed Chainage (km)
	Nil

(e) Busbays and Bus shelters:

Sl. No.	Proposed Chainage (km)	Remarks
1	283.300 (Bothside)	Fig. 12.3 of Manual
2	308.350 (Bothside)	Fig. 12.3 of Manual
3	309.400 (Bothside)	Fig. 12.3 of Manual
4	310.450 (Bothside)	Fig. 12.3 of Manual

(f) Rest areas: Nil

(g) Others:

Street Lighting

Street lighting shall be provides in the built up area.

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.

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

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

The Project Highway including Project Facilities shall conform to design requirements set out in the Manual of Specifications and Standards for Two-Laning of Highways (IRC: SP: 73-2018) referred to as the Manual, and MORTH Specifications for Road and Bridge Works 5th Revision 2013 or latest version. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer. The Hill Road Manual IRC SP 48 -1998 and IRC:52-2019 should also be referred.

THE NATIONAL GREEN TRIBUNAL PRINCIPAL BENCH, NEW DELHI on 01th Nov, 2018

Following recommendations and suggestions have been made for dumping muck & dumping yard:-

- a. Before dumping muck at the dumping yard first of all retaining/ gabion walls of specified capacity and suitable design should be constructed.
- b. All the dumping sites should be properly designed with retaining wall/gabion structures and should be maintained regularly in order to check the spillage of the muck down the slope and into the rivers and other places.
- c. Wherever boulders are rolling down along with much, gabion structures/retaining wall should have sufficient foundation and bottom width should be 4-5 m. Length of one gabion structure should not be more than 6-8 m. Wherever more length of gabion structure is required one gabion structure should be bound with another.
- d. If any new dumping sites are identified in future, then the retaining / gabion structures should be constructed at suitable vertical interval of 5-6 m so that entire disposed muck may not exert pressure only at one wall/ toe wall rather the load of muck should be distributed on different walls.
- e. Angle of repose of muck should be maintained between 30 to 45°. Long slopes should be intercepted to several short ones with the help of 1.5 to 2.0 m wide berms / terraces/ benches in between in order to maintain less than critical velocity for runoff water and simultaneously mass erosion with be controlled.

- f. The capacity/ volume of muck disposal site should be more than volume of muck to be disposed.
- g. Proper sign boards indicating the name, number, location, dumping capacity, etc. should be installed at all the dumping sites.
- h. Dumping sites which are full of their capacity they should be rehabilitated with local grass or shrubs. Jute geo textile (JGT) may also be used for establishment of vegetation at vulnerable sites.
- i. Gabion walls should be constructed above HFL of River. If slope is very high to construct a gabion wall then a RCC/stone masonry retaining wall should be given at bank of River after proper design including foundation. Height of this wall should be well above the HFL of River.
- j. All construction sites should follow and comply with the provisions of the Construction and Demolition Waste Management Rules, 2016".

Annex - I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

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

2. Deviations from the Specifications and Standards

- (i) The terms "Concessionaire", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.
- (ii) [Notwithstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:]
- (iii) [Note 1: Deviations from the aforesaid Specifications and Standards shall be listed out here. Such deviations shall be specified only if they are considered essential in view of project-specific requirements.]

Item	Manu Claus Refere	Provision as per Manual	Modified Provision
Design Speed	2.2	Mountainous or Steep Terrain: As per IRC SP 73: 2018 Ruling: 60 km/ hr Minimum: 40 km/ hr As per IRC SP 48: 1998/IRC 52: 2019 Ruling: 40 km/ hr Minimum: 30 km/ hr	Mountainous or Steep Terrain: Minimum design speed of 30 km/hr has been taken as per IRC SP 48: 1998/IRC 52: 2019 in steep terrain and at some locations, design speed has been reduced to 20 km/ hr at hair pin bend. (Refer Horizontal Alignment Drawing and Table 2.1 below)
Extra Widening	2.7	Extra Widening has been proposed as per IRC: SP: 73-2018	Extra Widening has been proposed as per IRC:52: 2019 (Table 6.10) of Hill Road Manual.

		Radius (in)	Extra Widening (in)	Radius (in m)	Extra (in)
		75-100	0.9	21-40	1.5
		101-300	0.6	41-60	1.2
				61-100	0.9
				75-100	0.9
				101-300	0.6
				Above 300	NIL
Radii of Horizontal Curve	2.9.4	Mountainous Terrain: Desirable Minimum Radius: 150 m Absolute Minimum Radius: 75 m		Radius below 75 m has been provided in the location listed in table 2.2.	
Shoulder	2.6	In open country (Table-2.3) Hill side -Paved shoulder-1.5m Valley side - Paved shoulder-1.5m & Earthen shoulder- 1.0m		In open country Hill side -Hard shoulder-1.5m Valley side - Hard shoulder-1.5m & Earthen shoulder-1.0m	

Table 2.1: Locations where Design Speed is less than 40 kmph due to Sharp Bend

SL. No	Stretch		Design speed in
	From	To	
1	283081.856	283091.203	30
2	283135.309	283163.162	30
3	283197.300	283229.230	30
4	283254.269	283269.110	30
5	283634.660	283682.610	30
6	283740.236	283752.253	30
7	286221.964	286262.239	30
8	286326.716	286447.284	30
9	286570.813	286608.601	30
10	286911.163	286951.413	30
11	286987.833	287012.023	30

SL. No	Stretch		Design speed in
	From	To	
12	287043.069	287053.729	30
13	287379.728	287385.828	30
14	287440.766	287449.370	30
15	287489.482	287505.298	30
16	287552.712	287576.360	30
17	287615.985	287629.901	30
18	287679.295	287699.752	30
19	287793.115	287839.211	30
20	287898.803	287907.918	30
21	287952.820	287978.404	30
22	288017.662	288042.782	30
23	288368.658	288414.140	30
24	288455.926	288539.609	30
25	288611.313	288647.164	30
26	288741.955	288881.040	30
27	288980.553	288994.925	30
28	289057.700	289063.188	30
29	289136.573	289145.620	30
30	289223.455	289232.677	30
31	289291.219	289333.294	30
32	289433.997	289474.157	30
33	289511.792	289555.671	30
34	290093.500	290115.341	30
35	290206.354	290243.584	30
36	290266.217	290308.367	30
37	290331.302	290415.474	30
38	290469.239	290510.897	30
39	290566.858	290585.213	30
40	291116.955	291147.555	30
41	291197.162	291228.178	30
42	291305.275	291317.321	30
43	291396.160	291412.906	30
44	291459.251	291486.616	30
45	291527.239	291598.907	30
46	291635.322	291652.285	30
47	291708.223	291724.702	30
48	291847.172	291861.458	30
49	291921.766	291928.742	30
50	291990.686	292015.353	30
51	292067.245	292076.739	30
52	292114.829	292187.068	20
53	292258.841	292286.977	30
54	292516.802	292539.483	30
55	292739.993	292768.669	30

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

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SL. No	Stretch		Design speed in
	From	To	
56	292792.523	292851.413	30
57	292911.676	292963.686	30
58	293038.477	293053.934	30
59	293169.807	293237.690	30
60	293883.283	293906.602	30
61	293975.296	294016.368	30
62	294090.889	294099.384	30
63	294857.681	294862.930	30
64	294944.731	294975.355	30
65	295035.643	295087.184	30
66	295174.270	295174.841	30
67	295602.386	295658.855	30
68	295708.413	295796.282	30
69	295884.937	295890.260	30
70	295953.880	295961.340	30
71	296043.130	296070.174	30
72	296305.763	296348.559	30
73	296409.594	296419.004	30
74	296466.229	296474.020	30
75	296510.002	296525.291	30
76	296599.730	296652.223	30
77	296780.207	296811.624	30
78	296870.964	296878.573	30
79	297112.339	297131.071	30
80	297979.134	297997.326	30
81	298056.909	298068.945	30
82	298432.219	298446.145	30
83	298489.751	298498.601	30
84	298560.901	298575.000	30
85	298948.117	298954.510	30
86	299005.870	299039.236	30
87	300148.155	300178.537	30
88	300590.174	300611.714	30
89	300908.595	300914.476	30
90	300970.787	300990.664	30
91	301011.239	301035.009	30
92	301060.047	301073.991	30
93	301156.154	301197.937	30
94	301281.297	301319.670	30
95	301357.649	301369.254	30
96	301414.318	301425.877	30
97	301465.553	301474.035	30
98	301526.516	301536.525	30
99	301580.135	301611.549	30

SL. No	Stretch		Design speed in
	From	To	
100	301704.654	301751.027	30
101	301802.446	301849.568	20
102	301913.522	301930.130	20
103	302289.242	302306.924	30
104	302359.695	302368.608	30
105	302480.240	302525.990	30
106	302586.075	302625.750	30
107	302874.393	302891.050	30
108	302932.974	302947.121	30
109	303254.076	303286.274	30
110	303491.151	303502.360	30
111	303570.295	303582.811	30
112	304336.902	304343.630	30
113	304569.877	304615.538	30
114	304695.312	304718.908	30
115	305010.826	305053.857	30
116	305105.534	305184.325	30
117	305254.057	305273.695	30
118	305367.255	305396.362	30
119	305449.230	305491.758	30
120	305542.011	305556.704	30
121	305645.647	305658.263	30
122	305708.939	305736.649	30
123	305789.959	305805.249	30
124	305834.203	305887.142	30
125	305933.170	305951.244	30
126	305973.266	305996.961	30
127	306030.214	306035.983	30
128	306084.641	306101.472	30
129	306777.955	306817.958	30
130	307342.110	307379.972	30
131	307421.815	307434.088	30
132	307492.512	307535.349	30
133	307590.600	307624.712	30
134	308074.120	308095.803	30
135	308134.044	308138.397	30
136	308192.859	308200.503	30
137	308548.507	308561.514	30
138	309563.309	309589.856	30
139	309642.580	309655.007	30
140	309720.255	309743.398	30
141	309799.795	309816.879	30
142	309838.582	309852.424	30
143	309906.667	309909.273	30

SL. No	Stretch		Design speed in
	From	To	
144	309943.127	310065.559	20
145	310098.083	310137.880	30
146	310153.975	310199.566	30
147	310268.415	310296.568	30
148	310377.523	310392.281	30
149	310610.579	310613.898	30
150	310661.829	310699.271	20
151	310760.229	310766.220	35
152	311548.968	311560.993	30
153	311613.330	311651.715	20
154	312088.714	312098.497	30
155	312153.067	312160.292	30
156	312212.422	312257.416	30
157	312321.240	312332.638	30
158	312379.476	312449.698	30
159	312660.202	312674.349	30
160	312743.062	312792.622	30
161	312868.175	312921.85	30
162	313186.412	313207.293	30
163	313256.744	313262.231	30
164	313310.131	313366.117	30
165	313398.549	313411.759	30
166	313473.833	313480.749	30
167	314168.328	314183.15	30
168	314259.413	314272.74	30
169	314411.223	314445.907	30
170	314485.364	314498.002	30
171	314556.216	314596.015	20
172	314649.4	314670.278	30
173	314741.993	314760.587	30
174	314800.292	314832.514	30
175	314906.518	314920.196	30
176	314939.431	314961.69	30
177	314983.767	315018.425	30
178	315079.036	315119.267	20
179	315193.479	315200.808	30
180	315251.646	315264.395	30
181	315313.2	315329.464	30
182	315370.017	315377.207	30
183	315415.398	315438.32	30
184	315504.648	315510.88	30
185	315773.859	315784.555	30
186	315827.042	315833.276	30
187	315908.974	315939.47	30

SL. No	Stretch		Design speed in
	From	To	
188	315984.384	316007.85	30
189	316073.108	316097.007	30
190	316145.565	316186.567	20
191	316220.29	316256.085	30
192	316342.222	316383.979	30
193	316414.595	316467.865	30
194	316674.116	316705.968	30
195	317267.193	317275.134	30
196	317372.788	317380.689	30
197	317436.809	317482.468	30
198	317540.911	317547.1	30
199	317607.141	317619.839	30
200	317915.918	317930.619	30
201	317972.24	317977.689	30
202	318040.682	318060.069	30
203	318180.909	318202.939	30
204	318256.671	318267.348	30
205	318322.403	318336.385	30
206	318382.907	318413.725	30
207	319324.616	319333.245	30
208	319401.49	319436.462	20
209	319526.786	319542.425	20
210	319601.878	319674.496	30
211	319729.582	319754.694	30
212	319803.892	319810.617	30
213	319859.703	319869.194	30
214	319919.752	320010.551	30
215	320060.759	320082.183	30
216	320318.016	320331.285	30
217	320377.219	320438.093	30
218	320492.226	320498.414	30
219	320969.682	320981.928	30
220	321171.438	321179.049	30
221	321210.422	321217.022	30
222	321247.361	321261.741	30
223	321326.888	321338.649	30
224	321407.948	321424.095	30
225	321482.328	321522.373	20
226	321595.841	321602.134	30
227	321649.364	321654.623	30
228	321702.379	321725.056	30
229	322385.437	322402.896	30
230	322851.163	322858.43	30
231	322904.71	322956.609	30

SL. No	Stretch		Design speed in
	From	To	
232	323631.739	323646.137	30
233	323718.375	323737.19	30
234	324075.111	324085.323	30
235	324121.672	324136.124	30
236	325402.922	325413.484	30

Table 2.2: Locations where Radii of Horizontal Curve is less than 75 m

Sl. NO.	Stretch		Radius (m)
	From	To	
1	283135.309	283163.162	50
2	283254.269	283269.110	70
3	283634.660	283682.610	40
4	283740.236	283752.253	30
5	284072.029	284132.944	60
6	284452.327	284512.483	55
7	284834.315	284856.083	70
8	284968.483	284990.721	50
9	285404.535	285412.948	70
10	285784.753	285805.415	50
11	286221.964	286262.239	30
12	286570.813	286608.601	30
13	286766.251	286781.508	50
14	286911.163	286951.413	45
15	287043.069	287053.729	60
16	287379.728	287385.828	30
17	287440.766	287449.370	50
18	287489.482	287505.298	60
19	287552.712	287576.360	30
20	287793.115	287839.211	30
21	287952.820	287978.404	60
22	288017.662	288042.782	60
23	288172.154	288223.556	70
24	288368.658	288414.140	50
25	288455.926	288539.609	50
26	288611.313	288647.164	30
27	288980.553	288994.925	30
28	289057.700	289063.188	30
29	289136.573	289145.620	70
30	289223.455	289232.677	70
31	289291.219	289333.294	30
32	289433.997	289474.157	30
33	289511.792	289555.671	60
34	290093.500	290115.341	30

Sl. NO.	Stretch		Radius (m)
	From	To	
35	290206.354	290243.584	50
36	290331.302	290415.474	70
37	290469.239	290510.897	30
38	290566.858	290585.213	50
39	290949.881	290962.271	70
40	291023.220	291047.522	70
41	291116.955	291147.555	70
42	291197.162	291228.178	30
43	291305.275	291317.321	30
44	291396.160	291412.906	60
45	291459.251	291486.616	30
46	291635.322	291652.285	40
47	291708.223	291724.702	30
48	291847.172	291861.458	30
49	291921.766	291928.742	30
50	291990.686	292015.353	30
51	292067.245	292076.739	60
52	292114.829	292187.068	30
53	292258.841	292286.977	30
54	292516.802	292539.483	30
55	292739.993	292768.669	60
56	292911.676	292963.686	30
57	293169.807	293237.690	40
58	293627.532	293637.397	70
59	293883.283	293906.602	30
60	293975.296	294016.368	30
61	294090.889	294099.384	40
62	294281.766	294290.136	50
63	294551.360	294555.603	70
64	294857.681	294862.930	70
65	295035.643	295087.184	30
66	295357.777	295383.063	70
67	295602.386	295658.855	30
68	295884.937	295890.260	30
69	295953.880	295961.340	35
70	296043.130	296070.174	40
71	296171.113	296195.516	70
72	296305.763	296348.559	30
73	296409.594	296419.004	35
74	296510.002	296525.291	70
75	296599.730	296652.223	30
76	296780.207	296811.624	30
77	297112.339	297131.071	30
78	297281.297	297348.883	50

Sl. NO.	Stretch		Radius (m)
	From	To	
79	297979.134	297997.326	40
80	298056.909	298068.945	30
81	298369.007	298380.263	70
82	298432.219	298446.145	50
83	298489.751	298498.601	50
84	298560.901	298575.000	40
85	298948.117	298954.510	50
86	299005.870	299039.236	30
87	300148.155	300178.537	30
88	300498.420	300515.022	50
89	300590.174	300611.714	40
90	300831.188	300842.170	50
91	300908.595	300914.476	40
92	300970.787	300990.664	50
93	301060.047	301073.991	40
94	301156.154	301197.937	30
95	301357.649	301369.254	40
96	301414.318	301425.877	50
97	301465.553	301474.035	60
98	301526.516	301536.525	40
99	301580.135	301611.549	60
100	301802.446	301849.568	30
101	301913.522	301930.130	30
102	302289.242	302306.924	30
103	302359.695	302368.608	50
104	302480.240	302525.990	30
105	302586.075	302625.750	30
106	302874.393	302891.050	40
107	302932.974	302947.121	70
108	303254.076	303286.274	30
109	303491.151	303502.360	40
110	303570.295	303582.811	50
111	304336.902	304343.630	30
112	304569.877	304615.538	30
113	304695.312	304718.908	30
114	305010.826	305053.857	30
115	305105.534	305184.325	50
116	305367.255	305396.362	50
117	305449.230	305491.758	30
118	305645.647	305658.263	30
119	305708.939	305736.649	60
120	305789.959	305805.249	50
121	305933.170	305951.244	50
122	306030.214	306035.983	50

Sl. NO.	Stretch		Radius (m)
	From	To	
123	306084.641	306101.472	40
124	306613.639	306625.789	50
125	306777.955	306817.958	30
126	307052.482	307124.048	70
127	307342.110	307379.972	50
128	307421.815	307434.088	70
129	307492.512	307535.349	30
130	307590.600	307624.712	60
131	307860.964	307869.922	50
132	308074.120	308095.803	50
133	308134.044	308138.397	60
134	308192.859	308200.503	60
135	308419.877	308489.514	50
136	308548.507	308561.514	60
137	309265.099	309348.014	60
138	309442.990	309458.686	60
139	309563.309	309589.856	50
140	309642.580	309655.007	50
141	309720.255	309743.398	40
142	309799.795	309816.879	70
143	309906.667	309909.273	70
144	309943.127	310065.559	55
145	310153.975	310199.566	60
146	310377.523	310392.281	30
147	310610.579	310613.898	50
148	310661.829	310699.271	20
149	311005.442	311011.339	50
150	311097.757	311121.252	60
151	311265.118	311272.134	50
152	311548.968	311560.993	50
153	311613.330	311651.715	20
154	311859.825	311873.325	50
155	312088.714	312098.497	40
156	312153.067	312160.292	40
157	312212.422	312257.416	60
158	312321.240	312332.638	30
159	312379.476	312449.698	70
160	312660.202	312674.349	30
161	312743.062	312792.622	30
162	312978.924	313074.566	70
163	313186.412	313207.293	70
164	313256.744	313262.231	30
165	313310.131	313366.117	70
166	313398.549	313411.759	60

Sl. NO.	Stretch		Radius (m)
	From	To	
167	313473.833	313480.749	30
168	313871.271	313950.472	70
169	314026.679	314082.08	70
170	314168.328	314183.15	50
171	314259.413	314272.74	50
172	314485.364	314498.002	40
173	314556.216	314596.015	20
174	314649.4	314670.278	70
175	314741.993	314760.587	50
176	314800.292	314832.514	60
177	314906.518	314920.196	70
178	314983.767	315018.425	60
179	315079.036	315119.267	20
180	315193.479	315200.808	35
181	315251.646	315264.395	50
182	315313.2	315329.464	40
183	315370.017	315377.207	60
184	315415.398	315438.32	60
185	315504.648	315510.88	30
186	315602.59	315639.749	70
187	315773.859	315784.555	70
188	315827.042	315833.276	40
189	315908.974	315939.47	35
190	316145.565	316186.567	20
191	316342.222	316383.979	35
192	316545.871	316555.042	60
193	316674.116	316705.968	50
194	316854.939	316871.454	70
195	317007.303	317015.9	70
196	317267.193	317275.134	40
197	317372.788	317380.689	70
198	317436.809	317482.468	50
199	317540.911	317547.1	30
200	317607.141	317619.839	50
201	317915.918	317930.619	45
202	317972.24	317977.689	50
203	318040.682	318060.069	40
204	318256.671	318267.348	35
205	318322.403	318336.385	40
206	318382.907	318413.725	70
207	318956.204	318965.814	70
208	319324.616	319333.245	30
209	319401.49	319436.462	20
210	319526.786	319542.425	20

Sl. NO.	Stretch		Radius (m)
	From	To	
211	319729.582	319754.694	70
212	319859.703	319869.194	30
213	319919.752	320010.551	55
214	320060.759	320082.183	30
215	320249.778	320255.337	60
216	320318.016	320331.285	40
217	320377.219	320438.093	45
218	320492.226	320498.414	30
219	320725.425	320735.076	50
220	320969.682	320981.928	30
221	321171.438	321179.049	60
222	321247.361	321261.741	60
223	321482.328	321522.373	20
224	321649.364	321654.623	30
225	321702.379	321725.056	70
226	322091.981	322150.979	50
227	322316.505	322324.707	70
228	322385.437	322402.896	30
229	322471.997	322490.16	70
230	322851.163	322858.43	35
231	322904.71	322956.609	60
232	323314.071	323320.332	50
233	323483.144	323511.957	70
234	323631.739	323646.137	30
235	323718.375	323737.19	50
236	323985.571	324000.04	70
237	324075.111	324085.323	50
238	324121.672	324136.124	60
239	324854.113	324860.113	70
240	325402.922	325413.484	50

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

- (i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- (ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.
- (iii) All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / Post-monsoon inspection

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

8. Repairs on account of natural calamities

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

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Annex -I (Schedule-E)

Annex -I Repair/rectification of Defects and deficiencies

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

Table -1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/ Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/Repair	Maintenance Specifications
		Desirable	Acceptable					
Flexible Pavement (Pavement of MCW, Service Road, approaches of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhr.com/pavement/ltp/reports/03031/)	24-48 hours	MORT&H Specification 3004.2
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like Scale, Tape, odometer etc.		2-7 days	IRC:82-2015
	Bleeding	Nil	< 1 % of area	Daily			3-7 days	MORT&H Specification 3004.4
	Ravelling/ Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2015 read with IRC SP 81
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricted to 30 cm from the edge	Daily			7- 15 days	IRC:82-2015
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM (Sideway-force Coefficient)	Class I Profilometer : ASTM E950 (98) :2004 –Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with	180 days	IRC:82-2015
	Skid Number	60SN	50SN	Bi-Annually		180 days	BS: 7941-1: 2006	
	Pavement Condition Index	3	2.1	Bi-Annually		180 days	IRC:82-2015	

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/ Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/Repair	Maintenance Specifications
		Desirable	Acceptable					
	Other Pavement Distresses			Bi-Annually	Routine Investigation Machine or equivalent)	Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000-Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	2-7 days	IRC:82-2015
	Deflection/ Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Roughness BI	2200mm/km	2400mm/km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 -94: 2000	180 days	IRC:SP:83-2008
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	IRC:SP:83-2008	180 days	IRC:SP:83-2008
		Minimum SN	Traffic Speed (Km/h)					
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					
Embankment / Slope	Edge drop at shoulders	Nil	40mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber/cross fall	Nil	<2% variation in prescribed slope of camber /cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribe side slope	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Protection	Nil	Nil	Daily	NA		7-15 days	MORT&H Specification

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

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

Table -2: Maintenance Criteria for Rigid Pavements:

Sr. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
CRACKING						
1	Single Discrete Cracks Not intersecting with any joint	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	Not applicable
			1	w < 0.2 mm. hair cracks		
			2	w = 0.2 - 0.5 mm, discernible from slow-moving car	Seal without delay	Seal, and stitch if L > 1m. Within 7days
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > 1 m. Within 7 days	Staple or Dowel Bar Retrofit, FDR for affected portion. Within 15days
			5	w > 3 mm.		
2	Single Transverse (or Diagonal) Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected.

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Sr. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			5	$w > 6$ mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	Portion with norms and specifications - See Para 5.5 & 9.2 Within 15days
3	Single Longitudinal Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	$w < 0.5$ mm, discernible from slow moving vehicle	Seal with epoxy, if $L > 1$ m. Within 7 days	Staple or dowel bar retrofit. Within 15days
			2	$w = 0.5 - 3.0$ mm, discernible from fast vehicle	Route seal and stitch, if $L > 1$ m. Within 15 days	-
			3	$w = 3.0 - 6.0$ mm	Staple, if $L > 1$ m. Within 15 days	Partial Depth Repair with stapling. Within 15 days
			4	$w = 6.0 - 12.0$ mm, usually associated with spalling		Full Depth Repair Dismantle and reconstruct affected portion as per norms and specifications - See Para 5.6.4 Within 15 days
			5	$w > 12$ mm, usually associated with spalling, and/or slab rocking under traffic	Not Applicable, as it may be full depth	
4	Multiple Cracks intersecting with one or more joints	w = width of crack	0	Nil, not discernible	No Action	-
			1	$w < 0.2$ mm, hair cracks	Seal, and stitch if $L > 1$ m.	
			2	$w = 0.2 - 0.5$ mm. discernible from slow vehicle	Within 15 days	
			3	$w = 0.5 - 3.0$ mm, discernible from fast vehicle		Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within 30 days
			4	$w = 3.0 - 6.0$ mm panel broken into 2 or 3 pieces	Full depth repair within 15 days	
			5	$w > 6$ mm and/or panel broken into more than 4 pieces		
5	Corner Break	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	$w < 0.5$ mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts Within 7 days	Seal with epoxy seal with epoxy Within 7days
			2	$w < 1.5$ mm; $L < 0.6$ m, only one corner broken		
			3	$w < 1.5$ mm; $L < 0.6$ m, two corners broken	Partial Depth (Refer Figure 8.3 of IRC:SP: 83-2008)	Full depth repair
			4	$w > 1.5$ mm; $L > 0.6$ m or three corners broken		

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Sr. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			5	three or four corners broken	Within 15 days	Reinstate sub-base, and reconstruct the slab as per norms and specifications within 30days
6	Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)	w = width of crack L = length (m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m ²	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m ²		
			3	w > 1.5 mm and L < 3 m/m ²		
			4	w > 3 mm, L < 3 m/m ² and deformation		
			5	w > 3 mm, L > 3 m/m ² and deformation	Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within 30days	
Surface Defects						
7	Ravelling or Honeycomb type surface	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	Short Term	Long Term
				No action.	Not Applicable	
			1	r < 2 %		Local repair of areas damaged and liable to be damaged. Within 15 days
			2	r = 2 - 10 %		Bonded Inlay, 2 or 3 slabs if affecting. Within 30 days
			3	r = 10-25%		Reconstruct slabs, 4 or more slabs if affecting. Within 30 days
			4	r = 25 - 50 %		
5	r > 50% and h > 25 mm					
8	Scaling	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	Short Term	Long Term
				No action.	Not Applicable	
			1	r < 2 %		Local repair of areas damaged and liable to be damaged. Within 7days
			2	r = 2 - 10 %		

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					For the case $d < D/2$	For the case $d > D/2$
			3	$r = 10 - 20\%$	Bonded Inlay within 15 days	
			4	$r = 20 - 30 \%$		
			5	$r > 30 \%$ and $h > 25 \text{ mm}$		
9	Polished Surface/Glazing	t = texture depth, sand patch test	0		No action.	Not Applicable
			1	$t > 1 \text{ mm}$		
			2 '	$t = 1 - 0.6 \text{ mm}$		
			3	$t = 0.6 - 0.3 \text{ mm}$	Monitor rate of deterioration	
			4	$t = 0.3 - 0.1 \text{ mm}$		
			5	$t < 0.1 \text{ mm}$		
10	Popout (Small Hole), Pothole Refer Para 8.4	n = number/ m^2 d = diameter h = maximum depth	0	$d < 50 \text{ mm}$; $h < 25 \text{ mm}$; $n < 1$ per 5 m^2	No action.	Not Applicable
			1	$d = 50 - 100 \text{ mm}$; $h < 50 \text{ mm}$; $n < 1$ per 5 m^2	Partial depth repair 65 mm deep. Within 15 days	
			2	$d = 50 - 100 \text{ mm}$; $h > 50 \text{ mm}$; $n < 1$ per 5 m^2		
			3	$d = 100 - 300 \text{ mm}$; $h < 100 \text{ mm}$ $n < 1$ per 5 m^2	Partial depth repair 110mm i.e.10 mm more than the depth of the hole. Within 30 days	
			4	$d = 100 - 300 \text{ mm}$; $h > 100 \text{ mm}$; $n < 1$ per 5 m^2		
			5	$d > 300 \text{ mm}$; $h > 100 \text{ mm}$: $n > 1$ per 5 m^2	Full depth repair. Within 30 days	
Joint Defects						
11	Joint Seal Defects	loss or damage L = Length as % total joint length	0	Difficult to discern.	Short Term	Long Term
					No action.	Not Applicable
			1	Discernible, $L < 25\%$ but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Clean joint, inspect later.	

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Sr. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			3	Notable. $L > 25\%$ insufficient protection against ingress of water and trapping incompressible material.	Clean and reapply sealant in selected locations. Within 7 days	
			5	Severe; $w > 3$ mm negligible protection against ingress of water and trapping incompressible material.	Clean, widen and reseal the joint. Within 7 days	
12	Spalling of Joints	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	Not Applicable
			1	$w < 10$ mm	Apply low viscosity epoxy resin/ mortar in cracked portion. Within 7 days	
			2	$w = 10 - 20$ mm, $L < 25\%$	Partial Depth Repair. Within 15 days	
			3	$w = 20 - 40$ mm, $L > 25\%$	30 - 50 mm deep, $h = w + 20\%$ of w , within 30 days	
			4	$w = 40 - 80$ mm, $L > 25\%$	50 - 100 mm deep repair. $H = w + 20\%$ of w . Within 30 days	
			5	$w > 80$ mm, and $L > 25\%$		
13	Faulting (or Stepping) in Cracks or Joints	f = difference of level	0	not discernible, < 1 mm	No action.	No action.
			1	$f < 3$ mm		
			2	$f = 3 - 6$ mm	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate. Within 30days
			3	$f = 6 - 12$ mm	Diamond Grinding	
			4	$f = 12 - 18$ mm	Raise sunken slab.	Replace the slab as appropriate. Within 30days
			5	$f > 18$ mm	Strengthen subgrade and sub-base by grouting and raising sunken slab	
14	Blowup or Buckling	h = vertical displacement from normal profile	0	Nil, not discernible	Short Term	Long Term
					No Action	

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					For the case $d < D/2$	For the case $d > D/2$
			1	$h < 6$ mm	Install Signs to Warn Traffic within 7 days	
			2	$h = 6 - 12$ mm		
			3	$h = 12 - 25$ mm		
			4	$h > 25$ mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	Depression	h = negative vertical displacement from normal profile L =length	0	Not discernible, $h < 5$ mm	No action.	Not Applicable
			1	$h = 5 - 15$ mm		
			2	$h = 15-30$ mm, Nos $<20\%$ joints	Install Signs to Warn Traffic within 7 days	
			3	$h = 30 - 50$ mm		
			4	$h > 50$ mm or $> 20\%$ joints	Strengthen sub-grade. Reinstate pavement at normal level if $L < 20$ m. Within 30 days	
			5	$h > 100$ mm		
16	Heave	h = positive vertical displacement from normal profile. L = length	0	Not discernible. $h < 5$ mm	Short Term	Long Term
				No action.		
			1	$h = 5 - 15$ mm	Follow up.	scrabble
			2	$h = 15 - 30$ mm, Nos $<20\%$ joints	Install Signs to Warn Traffic within 7 days	
			3	$h = 30 - 50$ mm		
			4	$h > 50$ mm or $> 20\%$ joints	Stabilise subgrade. Reinstate pavement at normal level if length < 20 m. Within 30 days	
			5	$h > 100$ mm		
17	Bump	h = vertical displacement from normal profile	0	$h < 4$ mm	No action	Construction Limit for New Construction.
			1	$h = 4 - 7$ mm	Grind, in case of new construction within 7 days	
			3	$h = 7 - 15$ mm	Grind, in case of ongoing Maintenance within 15 days	

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Sr. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			5	$h > 15 \text{ mm}$	Full Depth Repair. Within 30 days	Full Depth Repair. Within 30days
18	Lane to Shoulder Dropoff	f = difference of level	0	Nil, not discernible < 3mm	Short Term No action.	Long Term
			1	$f = 3 - 10 \text{ mm}$	Spot repair of shoulder within 7 days	
			2	$f = 10 - 25 \text{ mm}$		
			3	$f = 25 - 50 \text{ mm}$		
			4	$f = 50 - 75 \text{ mm}$		
			5	$f > 75 \text{ mm}$	Fill up shoulder within 7 days	For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30days
Drainage						
19	Pumping	quantity of fines and water expelled through open joints and cracks Nos	0	not discernible	No Action	
			1 to 2	slight/ occasional Nos < 10%	Repair cracks and joints Without delay.	Inspect and repair sub-drainage at distressed sections and upstream.
			3 to 4	appreciable/ Frequent 10 - 25%	Lift or jack slab within 30 days.	
		Nos/100 m stretch	5	abundant, crack development > 25%	Repair distressed pavement sections. Strengthen subgrade and subbase. Replace slab. Within 30 days	
20	Ponding	Ponding on slabs due to blockage of drains	0-2	No discernible problem	No action.	
			3 to 4	Blockages observed in drains, but water flowing	Clean drains etc within 7 days, Follow up	Action required to stop water damaging foundation within 30 days.
			5	Ponding, accumulation of water observed	-do-	

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

Asset Type	Performance Parameter	Level of Service (LOS)			Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Highway	Availability of Safe Sight Distance	As per IRC SP: 84-2014, a minimum of safe stopping sight distance shall be available throughout.			Monthly	Manual Measurements with Odometer along with video/ image backup	Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction/improvement of deficiency at the earliest Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.		IRC:SP 84-2014
Pavement Marking	Wear	<70% of marking remaining			Bi-Annually	Visual Assessment as per Annexure-F of IRC:35-2015	Re - painting	Cat-1 Defect - within 24 hours Cat-2 Defect - within 2 months	IRC:35-2015
	Day time Visibility	During expected life Service Time Cement Road - 130mcd/m ² /lux Bituminous Road - 100mcd/m ² /lux			Monthly	As per Annexure-D of IRC:35-2015	Re - painting	Cat-1 Defect - within 24 hours Cat-2 Defect - within 2 months	IRC:35-2015

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Night Time Visibility	<u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u>	Bi-Annually	As per Annexure-E of IRC:35-2015	Re - painting	Cat-1 Defect – within 24 hours Cat-2 Defect – within 2 months	IRC:35-2015
		Design Speed					
		(RL) Retro Reflectivity (mcd/m ² /lux)					
		Initial (7 days)					
		Minimum Threshold level (TL) & warranty period required up to 2 years					
		Up to 65					
	Skid Resistance	65 - 100	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
		Above 100					
		Initial and Minimum Performance for Night Visibility under wet condition (Retro reflectivity):					
		Initial 7 days Retro reflectivity: 100 mcd/m ² /lux					
		Minimum Threshold Level: 50 mcd/m ² /lux					
		Initial and Minimum performance for Skid Resistance:					
	Skid Resistance	Initial (7days): 55BPN	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
		Min. Threshold: 44BPN					
		*Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc					

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Road Signs	Shape and Position	Shape and Position as per IRC:67-2012. Signboard should be clearly visible for the design speed of the section.	Daily	Visual with video/image backup	Improvement of shape, in case if shape is damaged. Relocation as per requirement	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 15 Days in case of Gantry/Cantilever Sign boards	IRC:67-2012
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.	Change of signboard	48 hours in case of Mandatory Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sign boards	IRC:67-2012
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	IRC 86:1983
	Kerb Painting	<u>Functionality</u> : Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	IRC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	<u>Functionality</u> : Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2014

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

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84-2014

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Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
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Table 4: Maintenance Criteria for Structures and Culverts:

Pipe/box/slab culverts	Free waterway/unobstructed flow section	85% of culvert normal flow area to available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation.	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC: SP: 40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregate length					
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Bridges including ROB's Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge - Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.
	Rusted reinforcement	Not more than 0.25 sqm	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out the repairs to affected concrete portion with epoxy mortar / concrete.	15 days	IRC SP: 40-1993 and MORTH Specification 1600.
	Spalling of concrete	Not more than 0.50 sqm					
	Delamination	Not more than 0.50 sq.m					

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Cracks wider than 0.30 mm	Not more than 1m total length	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes for cracks development and carry out necessary rehabilitation.	48 Hours	IRC SP: 40-1993 and MORTH Specification 2800.
	Rainwater seepage through deck slab	Leakage - nil	Quarterly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1 months	MORTH specifications 2600 & 2700.
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40 m	Load test method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30 m	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
	Leakage in Expansion joints	No damage to elastomeric sealant compound in strip seal expansion joint, no leakage of rain water through expansion joint in case of buried and asphalt plug and copper strip joint.	Bi-Annually	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-1993.

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap.	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge Inspection Unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP: 40-1993.
	Drainage spouts	No down take pipe missing/broken below soffit of the deck slab. No silt, debris, clogging of drainage spout collection chamber.	Monthly	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH specification 2700.

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Bridge-substructure	Cracks/spalling of concrete/rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with anti-corrosive coating before carrying out repairs to substructure by grouting/guniting and micro concreting depending on type of defect noticed	30 days	IRC SP: 40-1993 and MORTH specification 2800.
	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810 and IRC SP: 40-199.

Sub: Construction of 2 lane with Hard shoulder from Design Chainage Km 283.000 (5-legged junction at Old Akhegwo) to Design Chainage Km 325.440 (Akash Bridge) of Akegwo- Jessami section of NH-202 in the State of Nagaland on EPC Mode (Package-I)

Aug 2021

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron (concrete apron) not more than 1 sq.m	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.

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

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

Nature of Defect or deficiency		Time limit for repair/ rectification
(b) Granular earth shoulders, side slopes, drains and culverts		
(i)	Variation by more than 1 % in the prescribed slope of camber/cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 (thirty) days
(iv)	Rain cuts/ gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side	7 (seven) days
(vi)	Desilting of drains in urban/semi- urban	24 (twenty four) hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore immediately if causing safety hazard)
(c) Road side furniture including road sign and pavement marking		
(i)	Damage to shape or position, poor visibility or loss of retro- reflectivity	48 (forty eight) hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/ Once every year
(iii)	Damaged/missing signs road requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d) Road lighting		
(i)	Any major failure of the system	24 (twenty four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e) Trees and plantation		
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty four) hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g) [Toll Plaza]		
(h) Other Project Facilities and Approach roads		

Nature of Defect or deficiency		Time limit for repair/ rectification
(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	within 48 (forty eight) hours
	Permanent measures	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	
(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 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

- (i) The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:
 - (a) Permission of the State Government for extraction of boulders from quarry;
 - (b) Permission of Village Panchayats and Pollution Control Board for installation of crushers;
 - (c) Licence for use of explosives;
 - (d) Permission of the State Government for drawing water from river/reservoir;
 - (e) Licence from inspector of factories or other competent Authority for setting up batching plant;
 - (f) Clearance of Pollution Control Board for setting up batching plant;
 - (g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant;
 - (h) Permission of Village Panchayats and State Government for borrow earth; and
 - (i) Any other permits or clearances required under Applicable Laws.
- (ii) Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

Schedule - G

(See Clauses 7.1 and 19.2)

Annex-I : Form of Bank Guarantee

(See Clause 7.1)

[Performance Security /Additional Performance Security]

To

_____ [name of Authority]
_____ [address of Authority]

WHEREAS _____ [name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No. _Dated _ for construction of [name of the Project] (hereinafter called the "Contract")

AND WHEREAS the Contract requires the Contractor to furnish an {Performance Security/ Additional Performance Security} for due and faithful performance of its obligations, under and in accordance with the Contract, during the {Construction Period/ Defects Liability Period and Maintenance Period} in a sum of Rs..... cr. (Rupees crore) (the "**Guarantee Amount**"¹).

AND WHEREAS we, ... through our branch at
(the "**Bank**") have agreed to furnish this Bank Guarantee (hereinafter called the "**Guarantee**") by way of Performance Security.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Contract, 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 of National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance

¹ Guarantee Amount for Performance Security and Additional Performance Security shall be calculated as per Contract.

of all or any of its obligations under and in accordance with the Contract 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 Contract 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 Contract or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Contract 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 Contract 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 Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Contract.

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

8. The Guarantee shall cease to be in force and effect on ****\$. Unless a demand or

claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shall be discharged from its liabilities hereunder.

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

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

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

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

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

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

⁹Insert date atleast 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 2.21 of the RFP). The Contractors can submit the BG for periods of two years at one time and keep on renewing the same till the DLP is over if they have problems in getting the BG in one go for the entire DLP.

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

5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001
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Signed and sealed this day of, 20..... at

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (ii) The address, telephone number and other details of the head office of the Bank as well as of issuing branch should be mentioned on the covering letter of issuing branch.

Annex - II
(Schedule - G)
(See Clause 19.2)

Annex - II: Form for Guarantee for Advance Payment

To

_____ [name of Authority]
_____ [address of Authority]

WHEREAS:

- (A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the construction of the ***** section of [National Highway No. **] on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement
- (B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing @Bank Rate + 3% advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. _____ cr. (Rupees _____ crore) and the amount of this Guarantee is Rs. _____ cr. (Rupees _____ crore) (the "**Guarantee Amount**")².
- (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.

A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with

² The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment

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

2. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.
3. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.
4. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.
5. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.
6. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
7. The Guarantee shall cease to be in force and effect on ****³ 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.

³ 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).

8. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.
9. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly 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.
10. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
11. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.
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. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch IFSC	CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank) transport Bhawan, 1st Parliament Street, New Delhi-110001

Signed and sealed this day of..., 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 percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
Road Works including Culverts, widening and repair of culverts.	68.49	A- Widening and strengthening of existing road	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub-Base Course	[Nil]
		(3) Non Bituminous Base course	[Nil]
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	[Nil]
		(6) Widening and repair of culverts	[Nil]
		B.1-Reconstruction/New 2-Lane Realignment /Bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	22.68
		(2) Sub Base Course	18.40
		(3) Non Bituminous Base course	12.61
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	10.17
		(6) Hard Shoulder	5.15
		(7) Earthen Shoulder	1.24
		B.2-Reconstruction/New 2-Lane Realignment/ Bypass (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub Base Course	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		C.1-Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub Base Course	[Nil]
		(3) Non Bituminous Base course	[Nil]
		(4) Bituminous Base course	[Nil]
		(5) Wearing Coat	[Nil]
		C.2- Reconstruction/New Service Road (Rigid Pavement)	
		(1) Earthwork up to top of the sub- grade	[Nil]
		(2) Sub Base Course	[Nil]
		(3) Dry Lean Concrete (DLC) Course	[Nil]
		(4) Pavement Quality Control (PQC) Course	[Nil]
		D- Reconstruction and New culverts on existing road, realignments, bypasses: Culverts (length <6m)	29.75
Minor Bridges/ Underpasses/ Overpasses	5.07	A.1-Widening and Repair of Minor bridges (length >6 m and<60m).	
		Minor Bridges	[Nil]
		A.2- New Minor bridges (length >6 m and<60m)	
		(1) Foundation + Sub Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	69.18

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearing, expansion joint, hand rails, crash barrier, road signs & markings, tests on completion etc. complete in all respect.	24.20
		(3) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	6.62
		(4) Guide Bunds & River Training Works: On completion of Guide Bunds and river Training Works complete in all respects	[Nil]
		B.1- Widening and Repair of underpasses/overpasses	
		Underpasses/ Overpasses	[Nil]
		B.2-New underpasses/overpasses	
		(1) Foundation + Sub Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	[Nil]
		(2) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		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.	
		(3) Approaches: On completion of approaches including Retaining walls/Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]
Major bridge (length>60 m) works and ROB/RUB/ elevated sections/ flyovers including viaducts ,if any	Nil	A.1- Widening and repairs of Major Bridges	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4) Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Guide Bunds, River Training works etc.	[Nil]
		(8) Approaches(including Retaining walls, stone pitching and protection works)	[Nil]
		A.2-New Major Bridges	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4) Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]

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

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(4) Wearing Coat (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.1- Widening and repair of Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]
		(5) Miscellaneous Items like handrails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	[Nil]
		C.2- New Elevated Section/Flyovers/Grade Separators	
		(1) Foundation	[Nil]
		(2) Sub-structure	[Nil]
		(3) Super-structure (including bearings)	[Nil]
		(4)Wearing Coat including expansion joints	[Nil]

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(5) Miscellaneous Items like handrails, crash barriers, road markings etc.	[Nil]
		(6) Wing walls/return walls	[Nil]
		(7) Approaches (including Retaining walls/ Reinforced Earth wall, stone pitching and protection works)	[Nil]
Other Works	26.44	(i) Toll Plaza	[Nil]
		(ii) Road side covered drains	3.73
		(iii) Road side open drains	12.23
		(iv) Road signs, markings, km stones, safety Devices,... etc.	
		a) Pavement marking	5.55
		b) Crash Barrier - "W" : Metal Beam Crash Barrier & Wire Rope Safety Barrier	3.27
		c) Road signs,	0.84
		d) Road boundary stones, km stones, 5th	0.03
		e) Road Delineators, studs, lighting	8.30
		f) Road furniture (overhead gantry sign)	0.13
		g) Steel Railing	0.64
		(iv) Project facilities	
		a) Bus Bays	0.69
		b) Truck Lay-Byes	[Nil]
		c) Junctions (Major & Minor)	4.46
		d) Rest areas	[Nil]
		e) Diversion work	0.39
		f) Others (Footpath,)	1.02
		(v) Road side plantation	[Nil]
		(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/ grade separators and ROBs/ RUBs	[Nil]
		(vii) Safety and traffic management during construction	[Nil]
		(viii) Protection Works	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(a) Retaining wall with parapet	16.87
		(b) Breast wall	25.98
		(c) Seeding Mulching with jute net	11.28
		(ix) Site clearance & Dismantling	2.74
		(x) Utility shifting	
		a) EHT line	[Nil]
		b) EHT Crossing	[Nil]
		c) HT / LT line	1.10
		d) HT / LT line crossings	
		(e) Water pipeline	0.75
		(x) Utility shifting	

1.3 Procedure of estimating the value of work done

1.3.1 Road works

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 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 Base Course	[Nil]	
(5) Wearing Coat	[Nil]	
(6) Widening and repair of culverts	[Nil]	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.
B.1- Reconstruction/New 2-lane realignment/ bypass (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 3 (three) km. length, whichever is less.
(1) Earthwork up to top of the sub- grade	22.68	
(2) Sub Base Course	18.40	
(3) Non Bituminous Base course	12.61	
(4) Bituminous Base course	[Nil]	
(5) Wearing Coat	10.17	
(6) Hard Shoulder	5.15	
(7) Earthen Shoulder	1.24	
B.2- Reconstruction/New 2-Lane realignment / bypass (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion
(1) Earthwork up to top of the sub- grade	[Nil]	

Stage of Payment	Percentage weightage	Payment Procedure
(2) Sub Base Course	[Nil]	of a stage in full length or 5(five) km. length, whichever is less.
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
C.1- Reconstruction/ New service road (Flexible pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.
(1) Earthwork up to top of the sub-grade	[Nil]	
(2) Sub Base Course	[Nil]	
(3) Non-Bituminous Base Course	[Nil]	
(4) Bituminous Base Course	[Nil]	
(5) Wearing Coat	[Nil]	
C.2- Reconstruction/ New service road (Rigid pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5(five) km. length, whichever is less.
(1) Earthwork up to top of the sub- grade	[Nil]	
(2) Sub Base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
D- Re-Construction and New culverts on existing road, realignments, bypasses		Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least five culverts.
(1) Culverts (length <6m)	29.75	

@ 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:

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repair of minor bridges (length > 6m and < 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 (i) Foundation +Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers upto the abutment/pier cap.	69.18	(i) Foundation +Sub-Structure: Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation + sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation +sub- structure of each bridge subject to completion of atleast two foundations along with sub-structure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified

1	2	3
(ii) Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	24.20	(ii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub-clause.
(iii) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	6.62	(iii) Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(iv) Guide Bunds and River Training Works: On completion of Guide Bunds and river Training Works complete in all respects	[Nil]	(iv) Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bunds and River training Works in all respects as specified



1	2	3
B.1-Widening and repair of underpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro rata basis with respect to the total linear length of the underpasses/overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.



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



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



1.3.3 Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1- Widening and repairs of Major Bridges		
(i) Foundation	[Nil]	(i) Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25 of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major Bridge . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	(ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25 of the scope of sub- structure of the major bridge subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge.



Stage of Payment	Weightage	Payment Procedure
1	2	3
(iii) Super-structure (including bearings)	[Nil]	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc	[Nil]	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[Nil]	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Guide Bunds, River Training works etc.	[Nil]	(vii) Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	(viii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A.2- New Major Bridges		



Stage of Payment	Weightage	Payment Procedure
1	2	3
(i) Foundation	[Nil]	(i) Foundation: Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25 of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major Bridge . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	(ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25 of the scope of sub- structure of the major bridge subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the major bridge.
(iii) Super-structure (including bearings)	[Nil]	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc	[Nil]	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[Nil]	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as



Stage of Payment	Weightage	Payment Procedure
1	2	3
		specified.
(vii) Guide Bunds, River Training works etc.	[Nil]	(vii) Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(viii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	(viii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.1 -Widening and repairs of (a)ROB (b) RUB		
(i) Foundation	[Nil]	i) Foundation: Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUBs. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25 of the scope of foundation of the ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	(ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25 of the scope of sub- structure of the ROB/RUB subject to completion of atleast two sub-structures of abutments/piers upto



Stage of Payment	Weightage	Payment Procedure
1	2	3
		abutment/pier cap level of the ROB/RUB.
(iii) Super-structure (including bearings)	[Nil]	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	[Nil]	(iv) Wearing Coat: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[Nil]	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B.2 -New (a) ROB (b) RUB		



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



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



Stage of Payment	Weightage	Payment Procedure
1	2	3
		structures of abutments/piers upto abutment/pier cap level of the structure.
(iii) Super-structure (including bearings)	[Nil]	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[Nil]	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C.2- New Elevated Section/Flyovers/ Grade Separators		



Stage of Payment	Weightage	Payment Procedure
1	2	3
(i) Foundation	[Nil]	(i) Foundation: Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro- rata basis on completion of a stage i.e. not less than 25 of the scope of foundation of the structure subject to completion of atleast two foundations of the structure . In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Sub-structure	[Nil]	(ii) Sub-Structure: Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25 of the scope of sub- structure of the structure subject to completion of atleast two sub-structures of abutments/piers upto abutment/pier cap level of the structure.
(iii) Super-structure (including bearings)	[Nil]	(iii) Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super-structure including bearings of atleast one span in all respects as specified.
(iv) Wearing Coat including expansion joints	[Nil]	(iv) Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(v) Miscellaneous Items like hand rails, crash barriers, road markings etc.	[Nil]	(v) Miscellaneous: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(vi) Wing walls/return walls	[Nil]	(vi) Wing walls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.



Stage of Payment	Weightage	Payment Procedure
1	2	3
(vii) Approaches (including Retaining walls, stone pitching and protection works)	[Nil]	(vii) Approaches: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

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

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll plaza	[Nil]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii) Road side Covered drains	3.73	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten per cent) of the total length.
(iii) Road side open drains	12.23	



Stage of Payment	Weightage	Payment Procedure
(iii) Road signs, markings, km stones, safety devices, ... a) Pavement marking b) Crash Barrier - "W" : Metal Beam Crash Barrier & Wire Rope Safety Barrier c) Road signs, d) Road boundary stones, km stones, 5th km stones and hectometer stones, other items etc e) Road Delineators, studs, lighting f) Road furniture	 5.55 3.27 0.84 0.03 8.30 0.13 0.64	
(iv) Project Facilities a) Bus bays b) Truck lay-byes c) Junctions (Major & Minor) d) Rest areas e) Diversion work f) others (Footpath)	 0.69 [Nil] 4.46 [Nil] 0.39 1.02	 Payment shall be made on pro rata basis for completed facilities.
(v) Roadside plantation	[Nil]	Unit of measurement is linear length.



Stage of Payment	Weightage	Payment Procedure
(vi) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROB/RUBs.	[Nil]	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten per cent) of the total length.
(vii) Safety and traffic management during construction	[Nil]	Payment shall be made on pro rata basis every six months.
(viii) Protection Works a) Retaining wall with parapet b) Breast wall c) Seeding Mulching with jute net	16.87 25.98 11.28	Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten per cent) of the total length.
(ix) Site clearance & Dismantling	2.74	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.



Stage of Payment	Weightage	Payment Procedure
(x) Utility Shifting i) EHT line	[Nil]	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rate basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20, (ii) Conductor stringing including laying of cable-30, (iii) DTR erection (if involved)-15 and (iv) Charging of line including dismantling and site clearance-35
ii) EHT Crossing	[Nil]	Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25 of the crossings subject to a minimum of 4 crossings.



Stage of Payment	Weightage	Payment Procedure
iii) HT I LT line (including transformers if any)	1.10	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT I HT line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is (i) Erection of Poles-20 (ii) Conductor stringing including laying of cable-30, (iii) DTR erection (if involved)-10 and (iv) Charging of line including dismantling and site clearance-40 (with DTR) and 50 without DTR)
iv) HT I LT line crossings		Cost of each crossing shall be determined on pro-rata basis with reference to total no. of crossings. Payment shall be made for not less than 25 of the crossings subject to a minimum of 10 crossings.
(v) Water pipeline	0.75	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (only for payment purpose) in shifting work is laying of pipe-50, Charging of line including all miscellaneous works and dismantling and site clearance-



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

2. Procedure for payment for Maintenance

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

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



Schedule -I

(See Clause 10.2 (iv))

Drawings

1. Drawings

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

2. Additional Drawings

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



Annex -I

(Schedule -I)

Annex -I: List of Drawings

A minimum list of the drawings of the various components / elements of the Project Highway and project facilities required to be submitted by the Contractors given below:

- a) Drawings of horizontal alignment, vertical profile and detailed cross sections.
- b) Drawings of all Major and Minor Bridges.
- c) Drawings of cross-drainage works.
- d) Drawings of Major intersections, Grade Separated Structures, Viaduct.
- e) Drawing of Toll Plaza layout and building.
- f) Drawing of bus-bay and bus shelters.
- g) Drawing of road furniture including traffic signage, marking, safety barriers etc.
- h) Drawing of traffic diversion plan.
- i) General arrangement showing area of base camp and administrative block.
- j) Any other Drawing as per instruction of Authority's Engineer.



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 **191th** 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 **328th** day from the Appointed Date (the "**Project Milestone- II**").
- (ii) Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 35% (thirty five per cent) of the Contract Price **and should have started construction of all bridges**

4. Project Milestone-III

- (i) Project Milestone-III shall occur on the date falling on the **465th** day from the Appointed Date (the "**Project Milestone- III**").
- (ii) Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 70% (seventy per cent) of the Contract Price and **should have started construction of all project facilities**.

5. Scheduled Completion Date

- (i) The Scheduled Completion Date shall occur on the **547th** day from the Appointed Date.



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

6. Extension of time

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



Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

- (i) The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project Highway to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish to the Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.
- (ii) The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2. Tests

- (i) Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include [***].
- (ii) Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a Network Survey Vehicle (NSV) fitted with latest equipments and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometre.
- (iii) Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.
- (iv) Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards, except tests as specified in clause 5, but shall include measuring the reflectivity of road markings and road signs; and measuring the illumination level (lux) of lighting using requisite testing equipment.



- (v) Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project Highway with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- (vi) Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project Highway with the safety requirements and Good Industry Practice.

3. Agency for conducting Tests

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

4. Completion Certificate

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

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

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

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



Schedule - L

(See Clause 12.2)

Completion Certificate

1. I,..... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated (the "**Agreement**"), for [construction of the ****section (km ** to km **) of National Highway No. ***] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis through..... (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.
2. It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the day of 20....., Scheduled Completed Date for which was the..... day of.....20.....

SIGNED, SEALED AND DELIVERED

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

(Signature)

(Name)

(Designation) (Address)



Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

- (i) Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.
- (ii) Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.
- (iii) The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2. Percentage reductions in lump sum payments on monthly basis

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

S.No.	Item/Defect/Deficiency	Percentage
(a)	Carriageway/Pavement	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	Road, Embankment, Cuttings, Shoulders	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	Bridges and Culverts	
(i)	Desilting, cleaning, vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(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/5 th km stones	5%
(f)	Miscellaneous Items	
(i)	Removal of dead animals, broken down/accident vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%



S.No.	Item/Defect/Deficiency	Percentage
(ii)	Any other Defects in accordance with paragraph 1.	5%
(g)	Defects in Other Project Facilities	5%

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

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

Where,

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

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

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

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

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

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

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



Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

- (i) The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.
- (ii) In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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



Annex -I (Schedule - N)

Annex -I: Terms of Reference for Authority's Engineer

1. Scope

- (i) These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated (the "**Agreement**"), which has been entered into between the [name and address of the Authority] (the "**Authority**") and..... (the "**Contractor**")# for [Two-Laning] of the **** section (km ** to km **) of National Highway No. ** in the State of *** on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

- In case the bid of Authority's Engineer is invited simultaneously with the bid of EPC project, then the status of bidding of EPC project only to be indicated

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

2. Definitions and interpretation

- (i) The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.
- (ii) References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.
- (iii) The rules of interpretation stated in Article 1 of the Agreement shall apply, mutatis mutandis, to this TOR.

3. General

- (i) The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.
- (ii) The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:
- (a) any Time Extension;



- (b) any additional cost to be paid by the Authority to the Contractor;
 - (c) the Termination Payment; or
 - (d) issuance of Completion Certificate or
 - (e) any other matter which is not specified in (a), (b), (c) or (d) above and which creates a financial liability on either Party.
- (iii) The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shall be submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.
- (iv) The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.
- (v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.
- (vi) In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4. Construction Period

- (i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- (ii) The Authority's Engineer shall review and approve any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.



- (iii) The Authority's Engineer shall review and approve the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty one) days stating the modifications, if any, required thereto.
- (iv) The Authority's Engineer shall complete the review and approve of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.
- (v) The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.
- (vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.
- (vii) The Authority's Engineer shall inspect the Construction Works and the Project Highway and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.
- (viii) The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.
- (ix) For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- (x) The Authority's Engineer shall test check at least 50 (fifty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the Contractor.
- (xi) The timing of tests referred to in Paragraph 4 (ix), and the criteria for acceptance/rejection of their results shall be determined by the Authority's Engineer in accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample



basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

- (xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.
- (xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- (xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.
- (xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.
- (xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.
- (xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- (xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.



5. Maintenance Period

- (i) The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.
- (ii) The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.
- (iii) The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project Highway is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.
- (iv) In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- (v) The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

- (i) The Authority's Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- (ii) The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.
- (iii) The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause 18.5.

7. Payments



- (i) The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2 (iv) (d).
- (ii) Authority's Engineer shall -
 - (a) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and
 - (b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.
- (iii) The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.
- (iv) The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8. Other duties and functions

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

9. Miscellaneous

- (i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.
- (ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- (iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form



or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

- (iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.
- (v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.



Schedule - O

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

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

- (a) the estimated amount for the Works executed in accordance with Clause 19.3 (i) subsequent to the last claim;
- (b) amounts reflecting adjustments in price for the aforesaid claim;
- (c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;
- (d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2 (iii) (a);
- (e) total of (a), (b), (c) and (d) above;
- (f) Deductions:
 - i. Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
 - ii. Any amount towards deduction of taxes; and
 - iii. Total of (i) and (ii) above.
- (g) Net claim: (e) - (f) (iii);
- (h) The amounts received by the Contractor upto the last claim:
 - iv. For the Works executed (excluding Change of Scope orders);
 - v. For Change of Scope Orders, and
 - vi. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

- (a) the monthly payment admissible in accordance with the provisions of the Agreement;
- (b) the deductions for maintenance work not done;
- (c) net payment for maintenance due, (a) minus (b);
- (d) amounts reflecting adjustments in price under Clause 19.12; and
- (e) amount towards deduction of taxes

3. Contractor's claim for Damages

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



Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

- (i) The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:
 - (a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
 - (b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.
- (ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

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

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



- (ii) The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor's performance of this Agreement excluding:
- (a) the Authority's right to have the construction works executed on, over, under, in or through any land, and to occupy this land for the Works; and
 - (b) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4. Insurance to be in joint names

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



Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

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

2. Visual and physical test:

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



Schedule-R

(See Clause 14.10)

Taking Over Certificate

I,..... (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated..... (the "**Agreement**"), for [construction of the****section (km ** to km **) of ****] (the "**Project Highway**") on Engineering, Procurement and Construction (EPC) basis

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

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)



*****END OF THE DOCUMENT*****

