

SCHEDULES

FOR

**STRENGTHENING AND RECONSTRUCTION OF NH-6 (SPUR) FROM KM 0.00
TO KM 38.80 IN THE STATE OF MIZORAM**

**Engineering, Procurement & Construction (EPC)
Mode**

**Public Works Department
Government of Mizoram**

JUNE 2026

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

- (i) The site of Strengthening and Reconstruction of NH-6 (Spur) from Km 0.00 to Km 38.80 in the state of Mizoram is 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 Annexure-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

1. Site

The Site of Strengthening and Reconstruction of NH-6 (Spur) comprises the stretch from Km 0.00 to Km 38.80 in the state of Mizoram. The land, carriageway and the structures comprising the project are described below.

2. Land.

The Site of the Project Highway comprises the land as described below:

Sl. No.	Chainage (Km)		Right of Way (m)	Remarks
	From (km)	To (km)		
1.	0.00	38.80	7.35	No Land Acquisition is necessary as the work will be done on the section of the existing NH-6 (Spur).
2.				

3. Carriageway.

The present carriageway of the Project Highway is Single Lane (3.75m) standard. The type of the existing pavement is Flexible.

4. Major Bridges.

Sl. No.	Chainage (Km)	Type of Structure			No. of Spans with span length (m)	Width(m)
		Foundation	Sub-Structure	Super Structure		
1.	.100	CRM	CRM	Bailey Bridge	44	4.3
2	1000	RCC	RCC	PSC	160	7

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

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

6. Grade separators.

Sl. No.	Chainage (km)	Type of structure		No. of Spans with span length (m)	Width (m)
		Foundation	Superstructure		
NIL					

7. Minor bridges.

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

8. Railway level crossings.

Sl. No.	Location (km)	Remarks
NIL		

9. Underpasses (vehicular, non vehicular).

Sl. No.	Chainage (km)	Type of Structure	No. of Spans with span length (m)	Width (m)
NIL				

10. Culverts.

The Site has the following Culverts:

Sl. No.	Chainage from the Starting Point (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
1	0.100	Slab Culvert	1.00	12.50
2	0.760	Hume Pipe Culvert	1.20	12.50
3	0.800	Hume Pipe Culvert	1.20	10.00
4	1.300	Hume Pipe Culvert	1.20	9.00
5	1.400	Hume Pipe Culvert	1.20	10.00
6	1.500	Hume Pipe Culvert	1.20	7.50
7	1.700	Hume Pipe Culvert	1.20	7.50
8	1.800	Hume Pipe Culvert	1.20	7.50
9	2.000	Hume Pipe Culvert	1.20	7.50
10	2.100	Hume Pipe Culvert	1.20	7.50
11	2.300	Hume Pipe Culvert	1.20	7.50
12	2.400	Hume Pipe Culvert	1.20	7.50
13	2.600	Hume Pipe Culvert	1.20	7.50
14	2.700	Hume Pipe Culvert	1.20	7.50
15	2.800	Hume Pipe Culvert	1.20	7.50
16	3.000	Slub Culvert	1.00	6.50
17	3.200	Slub Culvert	1.00	6.00

Sl. No.	Chainage from the Starting Point (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
18	3.300	Slub Culvert	1.00	6.00
19	3.400	Slub Culvert	1.00	6.00
20	3.700	Hume Pipe Culvert	1.20	7.50
21	3.800	Slub Culvert	1.20	7.00
22	5.400	Slub Culvert	1.20	7.00
23	5.600	Hume Pipe Culvert	1.20	7.50
24	6.170	Hume Pipe Culvert	1.20	7.50
25	6.800	Slub Culvert	1.60	8.20
26	7.720	Slub Culvert	1.60	8.80
27	8.080	Hume Pipe Culvert	1.20	9.00
28	8.250	Slub Culvert	1.60	7.80
29	8.500	Slub Culvert	1.60	7.80
30	8.630	Slub Culvert	1.60	8.40
31	10.100	Hume Pipe Culvert	1.20	9.90
32	11.200	Slub Culvert	1.60	7.80
33	12.040	Hume Pipe Culvert	1.20	10.00
34	12.900	Hume Pipe Culvert	1.20	9.40
35	13.180	Hume Pipe Culvert	1.20	10.00
36	13.300	Hume Pipe Culvert	1.20	8.60
37	13.600	Slub Culvert	1.50	7.00
38	13.900	Hume Pipe Culvert	1.20	8.00
39	14.000	Slub Culvert	1.50	7.00
40	14.500	Hume Pipe Culvert	1.20	10.00
41	14.900	Hume Pipe Culvert	1.20	10.00
42	15.100	Slub Culvert	1.50	8.00
43	15.200	Slub Culvert	1.50	8.00
44	15.250	Slub Culvert	1.50	8.00
45	15.600	Slub Culvert	1.50	8.00
46	15.700	Hume Pipe Culvert	1.20	8.00
47	15.900	Slub Culvert	1.00	7.00
48	17.900	HP	1	7.5
49	18.100	Slab	1.2	8
50	18.200	Slab	1.5	8
51	18.400	HP	1	7.5
52	18.740	HP	1	7.5
53	18.800	HP	1	7.5
54	19.000	HP	1	7.5
55	19.100	HP	1	7.5
56	19.250	Slab	2	8
57	19.500	HP	1	7.5
58	19.700	HP	1	7.5
59	20.600	Slab	1.5	8
60	20.850	HP	1	7.5
61	21.500	HP	1	7.5
62	22.200	HP	1	7.5
63	22.400	Slab	1.2	8
64	22.510	HP	1	7.5
65	22.700	Slab	1.2	8
66	23.200	Slab	1.2	8
67	23.100	HP	1	7.5

Sl. No.	Chainage from the Starting Point (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
68	23.320	Slab	1.2	8
69	23.340	Slab	2.2	8
70	23.700	Slab	1.4	8
71	23.900	HP	1	7.5
72	23.950	HP	1	7.5
73	24.100	HP	1	7.5
74	24.300	HP	1	7.5
75	24.600	Slab	1.4	8
76	24.700	HP	1	7.5
77	24.800	Slab	1.2	8
78	25.200	Slab	2	8
79	25.700	Slab	1.5	8
80	25.900	HP	1	7.5
81	26.100	Slab	1.2	8
82	26.500	HP	1	7.5
83	26.800	HP	1	7.5
84	27.600	HP	1	7.5
85	27.700	Slab	1.2	8
86	27.800	Slab	1.2	8
87	28.020	HP	1	7.5
88	28.100	Slab	1.5	8
89	28.500	HP	1	7.5
90	28.600	HP	1	7.5
91	28.900	Slab	1.4	8
92	28.100	Slab	1.2	8
93	29.200	Slab	1.5	8
94	29.400	Slab	1.5	8
95	29.500	Slab	1.7	8
96	30.300	HP	1	7.5
97	30.100	Slab	1.7	8
98	30.800	HP	1	7.5
99	32.000	HP	1	7.5
100	32.240	HP	1	7.5
101	32.400	HP	1	7.5
102	32.500	Slab	1.5	8
103	32.600	Slab	2.7	8
104	32.750	HP	1	7.5
105	33.200	HP	1	7.5
106	33.300	Slab	2	8
107	33.600	Slab	1.2	8
108	33.700	Slab	1.7	8
109	34.000	Slab	1.7	8
110	34.200	Slab	1.6	8
111	34.600	HP	1	7.5
112	34.700	HP	1	7.5
113	35.000	Slab	1.2	8
114	35.100	HP	1	8
115	35.130	Slab	1.5	8
116	35.400	Slab	1.5	8
117	35.600	HP	1	7.5

Sl. No.	Chainage from the Starting Point (km)	Type of Culvert	Span /Opening with span length (m)	Width (m)
118	35.900	HP	1	7.5
119	37.100	HP	1	7.5
120	37.400	HP	1	7.5
121	37.500	HP	1	7.5
122	37.700	HP	1	7.5
123	37.800	Slab	1.2	8
124	37.880	HP	1	7.5
125	38.200	HP	1	7.5
126	38.300	HP	1	7.5
127	38.500	HP	1	7.5
128	38.600	HP	1	7.5

11. Bus bays.

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

Sl. No.	Chainage (km)	Length (m)	Left Hand Side	Left Hand Side
NIL				

12. Truck Lay byes.

Sl. No.	Chainage (km)	Length (m)	Left Hand Side	Left Hand Side
NIL				

13. Road Side Drains.

The details of the roadside drains are as follows:

Sl. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca) (M)	Earthen (Kutcha)(km)
1.	0.00	38.800	0.00	38.800

14. Major Junctions.

The details of major junctions are as follows:

Sl. No.	Location		At grade	Separated	Category of Cross Road			
	From km	To km			NH	SH	MDR	Others
1.	.300	.400	At Grade		NH			
2	2.860	2.900	At Grade				MDR	

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

15. Minor junctions.

The details of Minor junctions are as follows :

Sl. No.	Location		Type	
	From km	To km	T/Y -junction	Cross road
1	8.080	8.090	Y Junction	
2	9.400	9.410	Y Junction	
3	35.800	35.820		Cross Road

16. Bypasses.

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

Sl. No.	Name of bypass (town)	Chainage (km) From ----to	Length (in Km)	Carriageway	
				Width (m)	Type
NIL					

17. Other structures:

(i) Retaining wall -

Sl. No.	Chainage from the Starting Point (km)	Type of R/wall	Length (m)	Height (m)
1	0.400	CRM	17.00	6.00
2	0.700	CRM	9.00	4.00
3	0.760	CRM	13.00	5.00
4	1.300	CRM	6.10	6.00
5	1.400	CRM	15.00	3.00
6	1.500	CRM	2.00	3.00
7	1.800	CRM	12.00	5.00
8	2.400	CRM	7.00	6.00
9	2.500	CRM	10.50	3.10
10	2.600	CRM	3.50	3.20
11	2.700	CRM	5.50	3.80
12	2.800	CRM	4.30	4.10
13	3.000	CRM	24.50	8.60
14	3.100	CRM	35.00	5.30
15	3.200	CRM	23.00	5.10
16	3.300	CRM	20.00	4.70
17	3.400	CRM	27.00	7.80
18	3.700	CRM	9.80	4.10
19	3.800	CRM	15.00	3.70
20	5.400	CRM	20.50	3.30
21	5.600	CRM	7.00	3.00
22	6.080	CRM	4.60	2.40

23	6.170	CRM	5.00	2.50
24	6.400	CRM	38.00	2.40
25	6.800	CRM	21.00	3.30
26	6.880	CRM	10.00	3.00
27	7.720	CRM	20.00	5.00
28	8.080	CRM	19.00	4.50
29	8.250	CRM	15.50	6.00
30	8.500	CRM	13.00	7.00
31	8.630	CRM	16.00	3.00
32	9.880	CRM	7.30	2.50
33	10.040	CRM	7.50	3.00
34	10.100	CRM	15.00	4.00
35	10.802	CRM	20.00	2.50
36	11.020	CRM	7.50	3.00
37	11.200	CRM	9.00	4.00
38	11.600	CRM	24.00	6.30
39	12.040	CRM	13.00	4.00
40	12.110	CRM	13.00	2.50
41	12.200	CRM	26.00	2.90
42	12.900	CRM	4.00	2.50
43	13.180	CRM	8.60	3.00
44	13.300	CRM	16.00	2.50
45	13.380	CRM	13.00	5.00
46	13.600	CRM	10.00	3.50
47	13.900	CRM	6.00	3.00
48	14.000	CRM	8.00	3.00
49	14.200	CRM	6.00	3.00
50	14.500	CRM	10.00	4.00
51	14.900	CRM	6.00	3.50
52	15.100	CRM	15.00	4.00
53	15.200	CRM	14.00	4.00
54	15.220	CRM	8.00	4.00
55	15.250	CRM	15.00	5.00
56	15.300	CRM	16.00	4.00
57	15.350	CRM	17.00	3.50
58	15.400	CRM	21.00	3.50
59	15.600	CRM	8.00	4.00
60	15.700	CRM	11.00	4.00
61	18.300	CRM	16	3
62	19.300	CRM	13	3
63	19.400	CRM	15	3
64	19.440	CRM	14	2
65	20.200	CRM	15	2.5
66	20.900	CRM	10	3
67	20.700	CRM	6	2.5
68	20.800	CRM	8	3
69	20.900	CRM	15	3
70	21.000	CRM	10	3
71	22.050	CRM	10.2	4.5
72	22.100	CRM	8	2
73	22.530	CRM	10	6
74	22.600	CRM	17	4
75	23.620	CRM	8	2

76	23.800	CRM	6	2
77	24.000	CRM	6	3
78	24.050	CRM	13	2
79	24.900	CRM	15	1.5
80	26.400	CRM	25	3
81	25.600	CRM	34	4
82	26.000	CRM	25	3.5
83	26.400	CRM	30	3.2
84	27.440	CRM	8	3
85	27.900	CRM	8	3
86	29.820	CRM	14	2.5
87	29.900	CRM	18	2
88	30.500	CRM	8	3
89	30.600	CRM	14	3
90	30.850	CRM	10	2
91	31.950	CRM	17	2.5
92	32.020	CRM	10	4
93	32.050	CRM	7	3
94	32.100	CRM	16	2.5
95	32.300	CRM	4	1.5
96	32.800	CRM	21	3
97	33.500	CRM	24	3
98	33.950	CRM	16	2.5
99	34.100	CRM	40	4.5
100	34.190	CRM	8	3
101	34.300	CRM	12	2

(ii) Cantilever Retaining wall -

Sl. No.	Chainage from the Starting Point (km)	Type of R/wall	Length (m)	Height (m)
NIL				

(iii) Breast wall -

Sl. No.	Chainage from the Starting Point (km)	Type of B/wall	Length (m)	Height (m)
1	0.900	CRM	50.00	2.50

Annex - II

(As per Clause 8.3(i))
(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

Sl. No.	From km to km	Length (km)	Width (m)	Date of providing ROW*
(i) Full Right of Way (full width) (a) Stretch	0.000 to 38.800	38.800	7.35	The work will be done on the existing road and No Land Acquisition is Required. Hence, ROW will be provided within 10 days of the date of Agreement as per Clause 8.2(i).
(ii) Part Right of Way (part width) (a) Stretch (b) Stretch (c) Stretch	-	-	-	-
(iii) Balance right of Way (width) a) Stretch b) Stretch c) Stretch	-	-	-	.

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

Annex - III
(Schedule-A)

Alignment Plans

All works are to be executed within the existing alignment.

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

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

Annex - IV
(Schedule-A)
Environment Clearances

The Project is to be carried out on the existing road of NH-6 (Spur) from Km 0.00 to Km 38.80 in the state of Mizoram , therefore, Environment Clearance is not required.

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 Strengthening and Reconstruction of the existing Pavement NH-6 (Spur) of the Project Highway as described in Annex-I of Schedule-B and 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

Name of work: Strengthening and Reconstruction of NH-6 (Spur) from Km 0.00 to Km 38.80 in the state of Mizoram.

1. Scope of work:

(i) Strengthening and Reconstruction of NH-6(Spur):

The scope of work includes the following:

- i. Scarifying existing bituminous surface between km 0.00 to km 13.5 and km 34.48 to km 38.80.
- ii. Construction of earthen shoulder of 1 m wide on either side for the whole stretch.
- iii. Compaction of original ground supporting Sub-Grade from km 13.50 to km 34.48.
- iv. Provision of 150mm thick Granular Sub-base from km 13.50 to km 34.48.
- v. Provision of 250mm thick Wet Mix Macadam from km 13.50 to km 34.48 and provision of 150mm thick Wet Mix Macadam from km 0.00 to km 13.50 and km 34.48 to km 38.80.
- vi. Provision of 50mm thick Dense graded Bituminous Macadam from km 0.00 to km 38.80.
- vii. Provision of 30mm thick Bituminous Concrete from km 0.00 to km 38.80.
- viii. Provision of paved shoulders of 0.5m width on either side with 30mm BC and 50mm DBM.
- ix. Provision of prime coat and tack coat.
- x. Provision of Jungle clearance 2 times and hill side drain clearance 2 times.
- xi. Provision of Road safety furniture such as Direction and Place identification sign, Road marking, traffic signages over the entire stretch and W-beam crash barrier of length 1862m.

(ii) WIDTH OF CARRIAGEWAY.

- a) The width of the carriageway is 3.75m
- b) Except as otherwise provided in this Agreement, the width of the paved carriageway, the pavement composition, cross-sectional features shall conform to paragraph (i) above.

2. GEOMETRIC DESIGN AND GENERAL FEATURES.

a. General

Existing alignment will be followed for the entire stretch.

b. Design speed.

The design speed shall be as per IRC:73:2023, IRC:SP:48-2023, IRC:SP:73-2018.

c. Improvement of the existing road geometrics.

Sl. No.	Stretch (from km to km)	Type of deficiency	Remarks
NIL			

d. Right of Way

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

e. Type of shoulders

- (a) Paved shoulder with DBM 50mm and BC 30mm having a minimum width of 0.5 m width on each side of carriageway and provision of 1m wide earthen shoulders on either side of the carriage way are included in the estimate.

Sl. No.	Stretch (from km to km)	Fully paved shoulders/ Footpaths/ Earthen	Reference to cross section
1	0.00 to 38.80	Paved Shoulder as with DBM 50mm & BC 30mm Earthen shoulders of 1m width on either side	As per the typical section of pavement crust.

f. Lateral and vertical clearances at underpasses.

Sl. No.	Location(Chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

g. Lateral and vertical clearances at overpasses.

Sl. No.	Location (Chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

h. Service roads.

Sl. No.	Location (Chainage) (from km to km)	Span/opening (m)	Remarks
NIL			

i. Grade separated Structures

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach gradient	Remarks, if any
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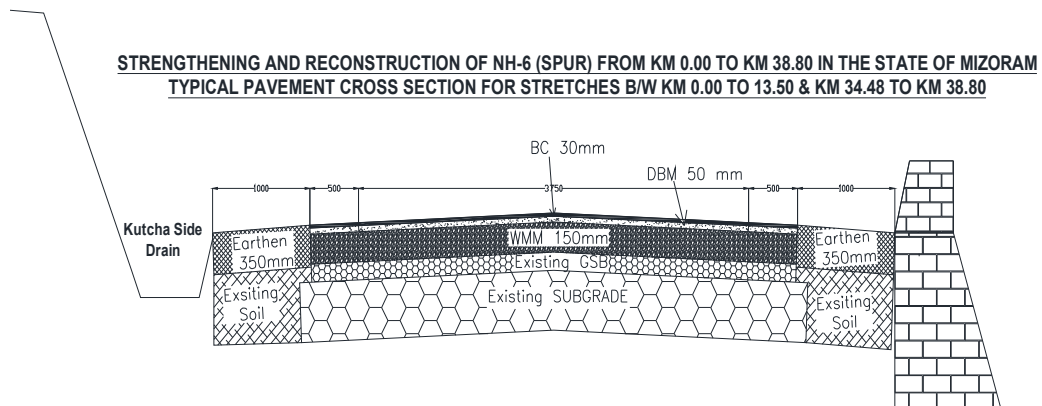
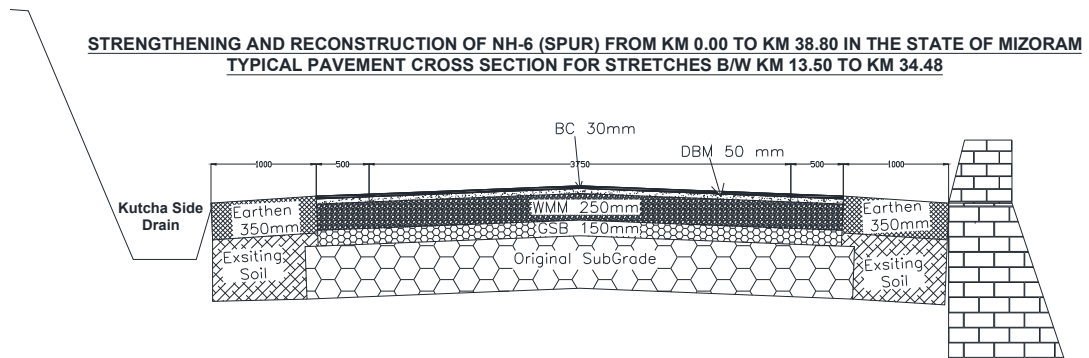
NIL

j. Cattle and pedestrian underpass/overpass.

Sl. No.	Location	Type of crossing
NIL		

k. Typical cross-sections of the Project Highway.

Typical cross-section of pavement crust is as shown below:



3. INTERSECTIONS AND GRADE SEPARATORS.

(i) At-grade intersections

Sl No	Location of Intersection	Type of Intersection	Other features
NIL			

(ii) Grade separated intersection with/without ramps

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

4. ROAD EMBANKMENT AND CUT SECTION.

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 7 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

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

5. PAVEMENT DESIGN.

The scope of work includes the following:

- Scarifying existing bituminous surface between km 0.00 to km 13.5 and km 34.48 to km 38.80.
- Construction of earthen shoulder of 1 m wide on either side for the whole stretch.
- Compaction of original ground supporting Sub-Grade from km 13.50 to km 34.48.
- Provision of 150mm thick Granular Sub-base from km 13.50 to km 34.48.
- Provision of 250mm thick Wet Mix Macadam from km 13.50 to km 34.48 and provision of 150mm thick Wet Mix Macadam from km 0.00 to km 13.50 and km 34.48 to km 38.80.
- Provision of 50mm thick Dense graded Bituminous Macadam from km 0.00 to km 38.80.
- Provision of 30mm thick Bituminous Concrete from km 0.00 to km 38.80.
- Provision of paved shoulders of 0.5m width on either side with 30mm BC and 50mm DBM.
- Provision of prime coat and tack coat.
- Provision of Jungle clearance 2 times and hill side drain clearance 2 times.
- Provision of Road safety furniture such as Direction and Place identification sign, Road marking, traffic signages over the entire stretch and W-beam crash barrier of length 1862m.

(i) Type of pavement:

The type of pavement shall be flexible for the entire stretch.

(ii) Design requirements.

As per IRC:73:2023, IRC:SP:73-2018 & IRC SP:48-2023 for Flexible Pavement.

The pavement crust shall consist of layers as mentioned in the following table. The provision as mentioned in the table is the minimum requirement.

Particulars	Minimum thickness (in mm)	Chainage (in km)	Total length (in m)
-------------	----------------------------	------------------	---------------------

GSB	150	KM 13.50 to km 34.48	20980 RM And provision of 10% Extra-widening at Curves.
WMM	150	KM 0.00 to Km 13.50 & Km 34.48 to Km 38.80	17820 RM And provision of 10% Extra-widening at Curves.
WMM	250	KM 13.50 to km 34.48	20980 RM And provision of 10% Extra-widening at Curves.
DBM	50	KM 0.00 to Km 38.80	38800 RM And provision of 10% Extra-widening at Curves
BC	30	KM 0.00 to Km 38.80	Over the Entire Stretch And Shoulders.
Earthen Shoulder.	350	KM 0.00 to Km 38.80	1m wide on either side Over the Entire Stretch.
Paved Shoulder DBM	50	KM 0.00 to Km 38.80	Width 500 mm on either side & Length 38800 RM
Paved Shoulder BC	30	KM 0.00 to Km 38.80	Width 500 mm on either side & Length 38800 RM

(iv) Reconstruction/ Strengthening of stretches

The following stretches of the existing road shall be reconstructed/ strengthened. These shall be designed as new pavement. The stretches where existing road required reconstruction/ strengthening is given below:

Sl. No.	Stretch From km to km	Remarks
1	Reconstruction of pavement between km 13.50 to km 34.480 for a length of 20980 m by providing 150mm thick GSB, 250mm thick WMM, 50mm thick DBM, prime coat, tack coat and 30mm thick BC.	Fully Damaged Portion, compaction of original ground and Reconstruction from GSB layer to surface course
2	Strengthening of pavement between km 0.00 to KM 13.50 and km 34.480 to KM 38.80 for a length of 17820 m by providing 150mm WMM, 50mm thick DBM, Prime Coat, Tack Coat and 30 mm Thick BC.	Strengthening Portion.

6. ROAD-SIDE DRAINAGE.

The work includes Hill side drain clearance for a minimum length of 38800 m two times.

7. DESIGN OF STRUCTURES

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

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

- c) The following structures shall be provided with footpaths.

Sl. No.	Location at km	Remarks
NIL		

- (d) All Bridges shall be high-level bridges.
- (e) The following structures shall be designed to carry utility services specified in table below:

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

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

(ii) Culverts.

- (a) Overall width of all culverts shall be equal to the roadway width of the approaches
- (b) Reconstruction of existing culverts:

Sl. No.	Culvert location (km)	Span/Opening (m)	Remarks, if any*
Bituminous layers shall be provided			

- (c) Widening/Extension of existing culverts.

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

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

Sl. No.	Culvert location (km)	Span/Opening (m)	Remarks, if any*
NIL			

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

Sl. No.	Location at km	Type of repair required
1	NIL	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) Existing bridges to be re-constructed/widened

Sl. No.	Bridge location (km)	Salient details of existing bridge	Adequacy or otherwise of the existing waterway, Vertical clearance, etc*	Remarks
NIL				

- (ii) The following narrow bridges shall be widened:

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

- (b) Additional new bridges

Sl. No.	Location (km)	Total length (m)	Remarks, if any
1	NIL		

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

Sl. No.	Location at km	Remarks
NIL		

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

Sl.	Location at km	Remarks
-----	----------------	---------

No.		
NIL		

- (e) Drainage system for bridge decks

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

- (f) Structures in marine environment.

NIL

- (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 modifications, if any] -NIL

- (b) Road over-bridges

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

- (c) Road under-bridges

Sl. No.	Location of Level crossing (chainage km)	Number and length of span (m)
NIL		

- (v) Grade separated structures

Sl. No.	Location
NIL	

- (vi) Repairs and strengthening of bridges and structures.

- (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.

Sl. No.	Location
NIL	

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS.

(i) Traffic control devices and road safety works shall be provided in accordance with the IRC : 67: 2022 - Code of practice for road signs.

(ii) Road marking has to be provided as per latest IRC:35:2015

Sl. No.	Particulars	Location
1	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface for Edge line (both sides).	Entire Stretch.

9. ROADSIDE FURNITURE.

(i) Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67:2022. Retro-reflectorized Cautionary, Mandatory, Warning and Informatory Traffic Sign Boards etc shall be provided as per latest IRC:67:2022 as mentioned below:

Sl. No.	Particulars of Item	Minimum Quantities	Location
1	Direction and Place Identification signs	9	Bairabi 0.00Km, 0.500KM , Suarhliap 5.00km 5.200 KM , Damdai 16.80KM 16.900 KM , Vawngawn 22.80km 22.900KM , Sabual KM 32.800,
2	Retro-reflectorised cautionary, mandatory and informatory sign as per IRC :67	127	At Curves and Junctions.

(ii) Overhead traffic signs: location and size.

Sl.No.	Particulars	Location
NIL		

10. COMPULSORY AFFORESTATION.

Sl.No.	Location
NIL	

11. HAZARDOUS LOCATIONS.

Type - A, "W" : Metal Beam Crash Barrier shall be provided as per IRC: 119-2015:-
Guidelines for Traffic Safety Barriers at the following locations :

Sl. No.	Location stretch from (km) to (km)	LHS/RHS
1	KM 2.800 to KM 3.00	RHS 200
2	KM 3.500 to KM 4.00	RHS 500
3	KM 13.00 to KM 13.422	RHS 422
4	KM 18.520 to KM 18.860	RHS 340
5	KM 19.400 to KM 19.620	LHS 220
6	KM 19.880 to KM 19.960	LHS 80
7	KM 23.640 to KM 23.470	LHS 100

12. SPECIAL REQUIREMENT FOR HILL ROADS

(a) Retaining walls

i) Reconstruction of existing Retaining walls:

Sl. No.	Location (km)	Length/Height (m)	Remarks, if any*
NIL			

ii) Additional new Retaining walls shall be constructed as per particulars given in the table:-

Sl. No.	Location (km)	Length (m)	Height (m)	Remarks, if any*
Nil				

iii) New Gabion walls shall be constructed as per particulars given in the table:-

Sl. No.	Location (km)	Length (m)	Height (m)	Remarks, if any*
Nil				

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.

(ScheduleB-1)

1. The shifting of utilities and felling of trees shall be carried out by the Contractor. The cost of the same shall be borne by the Authority. The details of utilities are as follows:

Sr.		Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A		Electrical Utilities		Nil	
A1		Electrical Poles	Nos.	Nil	

A2		Electrical cables	meters	Nil	
A3		Transformers	Nos.	Nil	
-		-----	--	Nil	
-		-----	--	Nil	
B		Water/Sewage pipeline		Nil	
B1		Sewage	meters	Nil	
B2		Water supply	meters	Nil	
-		-----	--	Nil	
-		-----	--	Nil	
C		Felling of Tress	Nos.	Nil	

Annexure-1 to Schedule-B 1
Utility Shifting (Circular MoRT&H 11.02.2021)

Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specifications 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 specifications of the concerned Utility Owning Department shall be applicable and followed.

Notes: -

(a) The type/ spacing/ size/ specifications of poles/ towers/ lines/ cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the Contractor /Concessionaire* and the utility owning department. No change of scope shall be admissible and no cost shall be paid for using different type/ spacing / size/ specifications in shifted work in comparison to those in the existing work or for making any overhead crossings to underground as per requirement of utility owning department and/or construction of project highway. The Contractor/Concessionaire* shall carry out joint inspection with the 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 binding 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 the Utility Owning Department along with a copy of estimated cost given by the latter.

(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 to utility owning department as per the norm and practice and in that case the amount of credit for 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 the Utility Owning Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owning Department after the handing over process is complete as far as utility shifting works are concerned.

All other small works involved in shifting/crossing of lines is included in the Concessionaire scope and doesn't qualify for change in scope.

Note -II Copy of utility shifting plans enclosed as Annexure-II to Schedule B1.

*Strike out which is not applicable

SCHEDULE - C **(See Clause 2.1)**

PROJECT FACILITIES

1 Project Facilities.

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

- (a) toll plaza[s].
- (b) roadside furniture.
- (c) pedestrian facilities.
- (d) tree plantation.

- (e) truck lay-byes.
- (f) bus-bays and bus shelters.
- (g) rest areas;
- (h) others to be specified

2 Description of Project Facilities.

S. No.	Project Facility	Location	Design Requirements	Other essential details
NIL				

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 following documents:

- 2.1. IRC: 82-2015, Code of practice for maintenance for bituminous road surfaces, referred to herein as the '**Manual**'.
- 2.2. MORTH Specification for road and bridge works (5th Revision)
- 2.3. IRC: 37-2018:- Design of Flexible Pavements
- 2.4. IRC: 58-2015:- Guidelines for Design of Plain Jointed Rigid Pavements for Highways.
- 2.5. IRC: SP:42-2014:- Guidelines on Road Drainage
- 2.6. IRC:52-2019: - Guidelines for the alignment Survey and geometric Design of Hill Roads
- 2.7. IRC:67-2022:- Code of Practice for Road Signs (Third Revision)
- 2.8. IRC SP: 73-2018:- Manual for specifications and Standards for Two Laning of Highways with paved shoulder
- 2.9. IRC:79-2019: - Recommended Practice for Road Delineators (First Revision)
- 2.10. IRC: SP:112-2017:- Manual for Quality Control in Road and Bridge works
- 2.11. IRC : 35-2015:- Code of practice for road markings.
- 2.12. As regards to the work of utility shifting, the relevant specification, relevant rules, regulations and acts of utility owning department /agencies shall be applicable.

Sr.No.	Policy Circular No.	Dated	Subject
1	Efile No. RW/NH-33044/55/2021-S&R (P&B) pt. /Hill Slope Monitoring (Computer No.219394)	28 th November 2024	Expert Committee Report on Cost Effective Long-term Remedial Measures for Landslide Prone Areas in Hilly Regions.
2	Efile No. RW/NH-33044/27/2024/S&R (P&B) (Computer No. 243038)	23 rd September 2024	Policy Guidelines on use of Inert Material in construction of National Highways.
3	Efile No. RW/NH-34066/09/2017/S&R(B) (Computer No. 185417)	12 th February 2021	Reinforcing Steel Bars (Clause 1000.9.3.1 of Ministry's Specifications for Road and Bridge Works).
4	Efile No. RW/NH-34066/09/2017/S&R(B) (Computer No. 185417)	22 nd January 2021	Use of Stainless steel Reinforcing Steel Bars in Bridges on National Highways and other centrally sponsored projects to constructed in marine Environment Susceptible to Severe Corrosion.
5	EFile No.RW/NH-34049/01/2020-SER (P&B) pt. (Computer No.-207229)	20 th September 2024	Use of New/ Alternative Material and Technology in Construction and Maintenance of National Highways Projects and adoption of Value Engineering Practices therein.
6	Efile No. RW/NH-35083/02/2024-S&R (Computer No. 238879)	26 th November 2024	Use of Waste Plastic in Bituminous Concrete Wearing Course Mix in National Highways Construction & Maintenance Works.
7	EFile No.RW/NH-33044/22/2020-S&R (P&B) (Computer No. 186381)	4 th June 2024	Width of Shoulder (Paved & Earthen) for National Highways".
8	EFile No.RW/NH-35072/05/2018-S&R (P&B) (Computer No. 165688)	19 th April 2024	Recommended Bitumen Type & Grade for Different Climate & Traffic Loading for National Highway and Expressway Works in

			India.
9	EFile No.RW/NH-35072/05/2018-S&R (P&B) (E165688)	23 rd August 2023	Use of Bitumen: Demand-Supply, Type & Grade, Specifications, Source of Procurement and Quality in Construction Highways Projects. of National
10	EFile No.RW/NH-36098/25/2022-SER (P&B)/pt.	16 th March 2023	Safety in Road Construction Zones in National Highway Projects effective and adequate measures to be taken.
11	EFile 33044/10/2021-No: RW/NH-S&R(P&B) (171909)	15 th March 2023	Reuse of materials reclaimed from existing pavement layers.
12	RW/NH-12 Efile No. 36098/17/2022/S&R(B)	2 nd January 2023	Provisions of crash barriers in existing bridges.
13	EFile No.RW/NH-33049/01/2020-S&R (B) PL.	22 nd February 2022	Use of Ultra High Performance Fiber Reinforced Concrete (UHPFRC) in Design & Construction of Structures/Bridges of National Highways.
14	Efile No. RW/NH-33044/04/2022-S&R(P&B)	15 th February 2022	Use of dynamite on hills mountains for the construction of roads.

Annex - I
(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards.

All Materials, works and construction operations shall conform to the MORTH Specifications for Road and Bridge Works (5th Revision), Manual of Specifications and Standards for Two-Laning of Highways with Paved Shoulder (IRC:SP:73:2018), IRC:SP:48-2023 Hill Road Manual, IRC: 58-2015:- Guidelines for Design of Plain Jointed Rigid Pavements for Highways and IRC: SP:83-2018:- Guidelines for maintenance, repair and rehabilitation of cement concrete pavement. Where the specification for a work is not given, Good Industry Practice shall be adopted to the

satisfaction of the Authority's Engineer. The work is to be carried out in accordance with Manual for Quality Control in Road and Bridge Works-IRC SP:112-2017, MORTH specifications (5th Revision) and observing strict quality control instructions contained in the Ministry letter No.RW/NH-34066/01/2020-QCZ dated 01.10.2020.

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. This is strengthening/reconstruction of pavement of existing Single lane standard road, no widening or geometric improvement has been contemplated.

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1. Maintenance Requirements.

- i) The Contractor shall, at all times maintain the Project Highway in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.
- ii) The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfilment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the

Authority shall be entitled to effect reduction in monthly lump sum payments 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 MORTH Specifications For Road And Bridge Works (5th Revision), IRC:SP:48 - Hill Roads Manual, IRC:37-2018 - Guidelines for the Design of Flexible Pavements, MoRTH Manual For Construction And Supervision Of Bituminous Works, IRC: 58-2015:- Guidelines for Design of Plain Jointed Rigid Pavements for Highways, IRC: SP:83-2018:- Guidelines for maintenance, repair and rehabilitation of cement concrete pavement and other 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 [30thSeptember] and the inspection report together with details of any damage so observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

8. Repairs on account of natural calamities.

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

Annex- I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Table-1: Maintenance Criteria for Pavements:

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/ Equipment	Standards References Inspection and Analysis	and for Data	Time limit for Rectification / Repair	Maintenance Specifications
		Desirable	Acceptable						
Flexible Pavement (Pavement of MCW, Service Road, approach)	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: 2023 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003 (http://www.tfhr.com/pavement/ltp/reports/03031/)		24-48hours	MORT&H Specification 3004.2

Asset Types of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards References Inspection Analysis and for Data	Time limit for Rectification / Repair	Maintenance Specifications
		Desirable	Acceptable					
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2023

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards References Inspection Analysis and for Data	Time limit for Rectification/Repair	Maintenance Specifications
		Desirable	Acceptable					
	Bleeding	Nil	< 1 % of area	Daily	Scale, Tape, odometer etc.		3-7 days	MORT&H Specification 3004.4
	Ravelling / Stripping	Nil	< 1 % of area	Daily			7-15 days	IRC:82-2023 read with IRC SP 81:2008
	Edge Deformation/ Breaking	Nil	< 1 m for any 100 m section and width < 0.1 m at any location, restricted to 30cm from the edge	Daily			7-15 days	IRC:82-2023

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification / Repair	Maintenance Specifications
		Desirable	Acceptable					
	Roughness BI	2000 mm/km	2400 mm/km	Bi-Annually	Class I Profilometer SCRIM	Class I Profilometer : ASTM E950 (98) :2004-Standard Test Method for measuring Longitudinal Profile of Travelled Surfaces with Accelerometer Established Inertial Profiling Reference ASTM E1656 -94: 2000-Standard Guide for Classification of Automatic Pavement Condition Survey Equipment	180 days	IRC:82-2023
	Skid Number	60SN	50SN	Bi-Annually	(Sideway-force Coefficient Routine Investigation Machine or equivalent)		180 days	BS: 7941-1: 2006
	Pavement Condition Index	3	2.1	Bi-Annually			180 days	IRC:82-2023

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification / Repair	Maintenance Specifications
		Desirable	Acceptable					
	Other Pavement Distresses			Bi-Annually			2-7 days	IRC:82-2023
	Deflection/Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure ,	Roughness BI	2200 m m/k	2400mm /km	Bi-Annually	Class Profilometer	ASTM E950 (98):2004 and ASTM E1656-94: 2000	180 days	IRC:SP:83-2018
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force	IRC:SP:83-2018	180 days	IRC:SP:83-2018

Asset Type approaches of connecting roads, slip roads, lay byes etc. as applicable)	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards References for Inspection and Data Analysis	Time limit for Rectification/Repair	Maintenance Specifications
		Desirable	Acceptable					
		Minimum SN	Traffic Speed (Km/h)		Coefficient Routine Investigation Machine or equivalent)			
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					

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

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

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

Table-2:Maintenance Criteria for Rigid Pavements:

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			4	$w = 1.5-3.0\text{mm}$	Seal, and stitch if $L > 1\text{m}$.	Staple or Dowel Bar Retrofit, FDR for affected portion.
			5	$w > 3\text{ mm.}$	m. Within 7 days	Within 15days
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	$w < 0.2\text{ mm}$, hair cracks	Route and seal with epoxy.	Staple or Dowel Bar Retrofit.
			2	$w=0.2-0.5\text{mm}$,discerniblefrom slow vehicle	Within 7 days	Within 15days
			3	$w=0.5-3.0\text{mm}$,discerniblefrom fast vehicle	Route, seal and stitch, if $L > 1\text{m}$. Within 7 days	

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			4	$w = 3.0-6.0\text{mm}$	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected.
			5	$w > 6\text{ mm}$, 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 1	Nil, not discernible $w < 0.5\text{mm}$,discernable from slow moving vehicle	No Action Seal with epoxy, if $L > 1\text{m}$. Within 7 days	Staple or dowel bar retrofit. Within 15days

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

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
				into more than 4 pieces		
5	Corner Break	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	$w < 0.5$ mm; only 1 corner broken	Seal with low viscosity epoxy to secure broken parts	Seal with epoxy seal with epoxy
			2	$w < 1.5$ mm; $L < 0.6$ m, only one corner broken	Within 7 days	Within 7 days
			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	Within 15 days	
			5	three or four corners broken		Reinstate sub-base, and

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
Surface Defects						
7	Ravelling Honeycomb surface	r = area damaged or surface/total surface of slab (%) h =maximum depth of damage	0	Nil, not discernible	No action.	Not Applicable
			1	$r < 2 \%$	Local repair of areas damaged	
			2	$r = 2-10 \%$	and liable to be damaged. Within 15 days	
			3	$r = 10-25\%$	Bonded Inlay, 2 or 3 slabs if affecting.	
			4	$r = 25-50 \%$		

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			5	$r > 50\%$ and $h > 25\text{mm}$	Within 30 days Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	Scaling	$r = \frac{\text{damaged surface}}{\text{total surface of slab}} (\%)$ $h = \text{maximum depth of damage}$	0 1 2	Nil, not discernible $r < 2\%$ $r = 2-10\%$	Short Term No action. Local repair of areas damaged and liable to be damaged. Within 7 days	Long Term Not Applicable

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

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case $d < D/2$	For the case $d > D/2$
			3	$d=100-300\text{mm}; h < 100\text{mm}; n < 1$ per 5 m^2	Partial repair to depth of 110mm	
			4	$d=100-300\text{mm}; h > 100\text{mm}; n < 1$ per 5 m^2	i.e. 10 mm more than the depth of the hole. Within 30 days	
			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. Discernible, L<25% but of little immediate consequence with regard to ingress of water or trapping incompressible material.	Short Term	Long Term
					No action.	Not Applicable
					Clean joint, inspect later.	
					Clean and reapply sealant in selected locations. Within 7 days	
					Clean, widen and reseal the joint. Within 7 days	
			3	Notable. L >25% insufficient protection against ingress of water and trapping incompressible material.		
			5	Severe; w >3mm negligible protection against ingress of water and trapping incompressible material.		

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

			1	$f < 3 \text{ mm}$		
			2	$f = 3-6 \text{ mm}$	Determine cause and observe, take action for diamond grinding	Replace the slab as appropriate.
			3	$f = 6-12 \text{ mm}$	Diamond Grinding	Within 30days
			4	$f = 12-18 \text{ mm}$	Raise sunken slab.	
			5	$f > 18 \text{ mm}$	Strengthen subgrade and sub-base by grouting and raising sunken slab	Replace the slab as appropriate. Within 30days
14	Blowup or Buckling	h = vertical displacement from normal profile	0	Nil, not discernible	Short Term	Long Term
			1	$h < 6 \text{ mm}$	No Action	
			2	$h = 6-12 \text{ mm}$	Install Signs to Warn Traffic	

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

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

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

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

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

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	Specification and Standards
Highway	Availability of Safe Sight Distance	As per IRC:SP:84-2019, 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 84-2019
		Design Speed, kmph	Desirable Minimum Sight Distance(m)	Safe Stopping Sight Distance (m)					
		100	360	180					
		80	260	130					
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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification and Standards
		Initial 7 days Retro reflectivity: 100 mcd/m ² /lux Minimum Threshold Level: 50 mcd/m ² /lux					
	Skid Resistance	Initial and Minimum performance for Skid Resistance: Initial (7 days): 55 BPN Min. Threshold: 44 BPN *Note: shall be considered under urban/city traffic condition encompassing the locations like pedestrian crossings, bus bay, bus stop, cycle track intersection delineation, transverse bar markings etc	Bi-Annually	As per Annexure-G of IRC:35-2015		Within 24 hours	IRC:35-2015
Road Signs	Shape and Position	Shape and Position as per IRC:67-2022. 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	IRC:67-2022
	Retro reflectivity	As per specifications in IRC:67-2022	Bi-Annually	Testing of each	Change of signboard	48 hours in case of Mandatory	IRC:67-2022

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification and Standards
				signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.		Signs, Cautionary and Informatory Signs(Single and Dual post signs) 1 Month incase of Gantry/ Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:2018 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb height	Within 1 Month	RC 86:2018
	Kerb Painting	<u>Functionality:</u> Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers(Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2019 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2019, IRC:35-2015
	Pedestrian Guardrail	<u>Functionality:</u> Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2019
	Traffic Safety Barriers	<u>Functionality:</u> Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2019, IRC:119-2015

	End Treatment of Traffic Safety Barriers	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2019, IRC:119-2015
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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
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 2019
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2022
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/ image backup	Rectification	Within 7 days	IRC:SP:84-2019
Highway Lighting	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2019
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2019
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2019

g System	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:84-2019
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2019
Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification 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:84-2019
	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:84-2019
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2019

Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	
Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specification and Standards
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 84-2014

Asset Type	Performance parameter	Level of Service	Frequency of Measurement	Testing Method	Recommended remedial measures	Time liomit for rectification	Specification standards
Pipe/box/slab culverts	Free waterway/ unobstructed flow section	85%of culvert normal flow area to available.	2timesin a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP:35-2024 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 30daysafter end of rainy season.	IRC 5-2024, IRC SP:40-2019 and IRC SP:13-2022
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-2024 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:40-2019 and IRC SP:69-2011
	Structurally Sound	Spalling of concrete not more than 0.25 sqm Delamination of concrete not more than 0.25 sqm wider than 0.3 mm not more than aggregate length	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-2024 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-2019	15 days	IRC SP:40-2019 and MORTH Specification Clause 2800
	Protection works in good condition	Damaged of rough stone apron or bank	2 times in a year	Condition survey as per IRC-SP:35-2024	Repair to damaged apron and pitching	30 days after defect observation	IRC: SP 40-2019 and IRC:SP:13-2022

		revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	(before and after rainy season)			or 2 weeks before onset of rainy season whichever is earlier	
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-2024	Repairs to BC or wearing coat	15 days	MORTH Specification 2811
Bridge Super Structure	Bumps	No bump at expansion joint	Daily	Visual Inspection as per IRC SP:35-2024	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:35-2024	Repairs and replacement of safety barriers	3 days	IRC:5-2024, IRC SP:84-2019 and IRC SP:40-2019
	Rusted reinforcement	Not more than 0.25 sqm	Bi-Annually		All the corroded reinforcement shall need to be thoroughly cleaned from rusting and applied with	15 days	IRCSP:40-2019 and MORTH Specification 1600.
	Spalling of Concrete	Not more than 0.50 sqm					
	Delamination	Not more than 0.50 sqm					

					anti-corrosive coating before carrying out there pairs to affected concrete portion with epoxy mortar /concrete.		
	Cracks wider than 0.30 mm	Not more than 1 m total length	Bi-Annually	Detailed condition survey as per IRC SP:35-2024 using Mobile Bridge Inspection Unit	Grouting with epoxy mortar, investigating causes cracks and carry out necessary rehabilitation.	48 hours	IRC SP: 40-2019 and MORTH Specification 2800.
	Rainwater seepage through deck slab	. Leakage-nil	Quarterly	Detailed condition survey as per IRC SP:35-2024 using Mobile Bridge Inspection Unit	Grouting of deck slab at leakage areas, waterproofing, repairs to drainage spouts	1months	MORTH specifications 2600 & 2700.
	Deflection due to permanent loads and live load	Within design limits	Once in every 10 years for span more than 40 m	Load test method	Carryout major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP:51 -2015

	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than 5 Hz	Once	Laser displacement sensors or laser vibro-meters	Strengthening of super structure	4 months	AASHTO LRFD specifications
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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:35-2024 using Mobile Bridge Inspection Unit	Replace of seal in expansion joint	15 days	MORTH specifications 2600 and IRC SP: 40-2019.
Debris and dust in strip seal expansion joint	No dust or debris in expansion joint gap	Monthly	Detailed condition survey as per IRC SP:35-2024 using Mobile Bridge Inspection unit	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP:40-2019

	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:35-2024 using Mobile Bridge Inspection Unit	Cleaning of drainage spouts thoroughly. Replacement of missing/broken down take pipes with a minimum pipe extension of 500mm below soffit of slab. Providing sealant around the drainage spout if any leakages observed.	3 days	MORTH specification 2700.
Bridge-substructure	Cracks/spalling of concrete/rusted steel	No cracks, spalling of concrete and rusted steel	Bi-Annually	Detailed condition survey as per IRC SP:35-2024 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: 40-2019 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:35-2024 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: 40-2019.
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:35-2024 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: 40-2019, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-2024	Repairs damaged aprons to and pitching.	30 days after defect observation or 2	IRC: SP 40-2019 and IRC:SP:13-2022.

		sq.m, damage to solid apron (concrete apron) not more than 1 sq.m				weeks before onset of rainy season whichever is earlier.	
<u>Note:</u> Any Structure during the entire contract period which is found that does not complies with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.							

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5 : Maintenance Criteria for Hill Roads

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

Hill Roads		
(i)	Damage to new Gabion wall/ Retaining wall	7 (Seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Hill Side drain clearance	1 (one) day
(iv)	Jungle clearance	2 (times) in a calendar year

Note: For all tables 1to5above, latest BIS & IRC standards (even those not indicated herewith) along with MoRTH specifications shall be binding for all maintenance activities.

A. Flexible Pavement

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

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Obstruction in a minimum head- room of 5 m above carriage way 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 sightline and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4(four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty four) hours
(g) [Toll Plaza]		
(h)	Other Project Facilities and Approach roads	
(i)	Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen)days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a) Superstructure		
(i)	Any damage, cracks, spalling/ scaling Temporary measures Permanent measures	within 48 (forty eight) hours within15 (fifteen) days or as the Authority's Engineer
(b) Foundations		

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Scouring and/or cavitation	15 (fifteen)days
(c) Piers, abutments, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings(metallic)of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen)days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days(immediately within 24hoursifposing 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 new Gabion wall/ Retaining wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Hill Side drain clearance	1 (one) day

Nature of Defect or deficiency		Time limit for repair/ rectification
(iv)	Jungle clearance	2 (times) in a calendar year

[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.]

(See Clause 3.1.7(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) License for use of explosives.
 - d) Permission of the State Government for drawing water from river/reservoir.
 - e) License from inspector of factories or other competent Authority for setting up batching plant.
 - f) Clearance of Pollution Control Board for setting up batching plant.
 - g) Clearance of Village Panchayats and Pollution Control Board for setting up asphalt plant.
 - h) Permission of Village Panchayats and State Government for borrow earth and
 - i) Any other permits or clearances required under Applicable Laws
- 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.

(See Clauses 7.1 and 19.2)

BANK GUARANTEE as PERFORMANCE SECURITY

Annex-I
(See Clause 7.1)

Performance Security/Additional Performance Security

To,

The Chief Engineer, PWD, Highway, Tuikhuahtlang-796001, Aizawl, Mizoram WHEREAS _____ [name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) NO. _____

Dated for construction of "Strengthening and Reconstruction of NG-6 (Spur) from km 0.00 to km 38.80 in the state of Mizoram" (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" ¹⁵). 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

Point No. 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

Point No. 2

A letter from the Authority, under the hand of an officer not below the rank of Superintending Engineer, PWD, Mizoram, that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

Point No. 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.

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.

^{1 15} **Guarantee Amount** for Performance Security and Additional Performance Security shall be calculated as per Contract.

³ \$Insert 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 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.

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

Form for Guarantee for Advance Payment

Chief Engineer, PWD, Highway
Aizawl-796001, Mizoram.

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 Strengthening and Reconstruction of NH-6 (Spur) from km 0.00 to km 38.80 in the state of Mizoram 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**”)[§].
- (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,

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

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 Superintending Engineer, PWD, Mizoram, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any 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 ****. 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.

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.

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

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

SCHEDULE - H
(See 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
Pavement Works - Reconstruction and Strengthening	94.98	B.1- Reconstruction/ Strengthening of Pavement of NH-6 Spur- Pavement Works.	
		Scarifying of Existing Pavement	0.28
		Construction of Earthen Shoulder and subgrade	4.15
		Sub-Base Course (GSB)	10.93
		Non-Bituminous Base Course (WMM)	36.82
		Bituminous Base Course (Prime coat + DBM)	29.05
		Wearing coat (BC+ Tack coat)	18.77
Other works	5.02	B.2- Reconstruction/ Strengthening of Pavement of NH-6 Spur- Other Items	
		Jungle Clearance 2 Times	2.42
		Side Drain Clearance 2 Times	8.54
		Traffic Signages	4.30
		Crash Barriers	46.79
		Road Markings	37.95

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
B.1- Reconstruction/ Strengthening of Pavement of NH-6 Spur		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
Scarifying of Existing Pavement	0.28	
Construction of Earthen Shoulder and subgrade	4.15	
Sub-Base Course (GSB)	10.93	
Non-Bituminous Base Course (WMM)	36.82	
Bituminous Base Course (Prime coat + DBM)	29.05	
Wearing coat (BC+ Tack coat)	18.77	

@. 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 proposes. The length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.4 Other works.

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

Stage of Payment	Weightage	Payment Procedure
------------------	-----------	-------------------

Jungle Clearance 2 Times	2.42	Unit of measurement is linear length in metre. Payments shall be made on pro rata basis on completion of a stage in a length of not less than 1000m on one side.
Side Drain Clearance 2 Times	8.54	Unit of measurement is linear length in km. Payments shall be made on pro rata basis on completion of a stage in a length of not less than one km on both sides.
Traffic signages	4.3	Unit of measurement is Quantity in Numbers. Payments shall be made on pro rata basis on completion of a stage in a quantity of not less than 10 units.
Crash Barriers	46.79	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% of the total length and 100m which ever is less.
Road Markings	37.95	

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 Article 14 and Article 19.

SCHEDULE - I
(See Clause 10.2.4)

DRAWINGS

1. Drawings

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

iii. Additional Drawing

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

Annex - I
(Schedule - I)

List of Drawings

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

All the constructions drawings are to be submitted by the Contractor.

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 **35% of the Scheduled Construction Period i.e. 159th 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 **60% of the Scheduled Construction Period i.e. 273rd 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 percent) 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 **85% of the Scheduled Construction Period i.e. 387th 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 **455th 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 equipment and the maximum permissible roughness for purposes of this Test shall be [2,000 (two thousand)] mm for each kilometer. Ministry vide letter dated 13.11.2019 issued detail guidelines to use of Network Survey vehicle (NSV) for all the projects involving of 2/4/6/8 lane expressway, Strengthening. Para-5(a) of said Guideline stipulates that survey shall be conducted using NSV in the following sequences.
 - (1) Before the Start of the work.
 - (2) Before issue of provisional/Final completion certificate
 - (3) Every 6 months after completion of work.
- (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)	a. Before the Start of work. b. Before issue of provisional/Final completion certificate c. Every 6 months after completion of work.
2	Roughness of pavement	Network Survey Vehicle (NSV)	
3	Strength of pavement	Falling Weight Deflectometer (FWD)	At least once a year
4	Bridges	Mobile Bridge Inspection Unit (MBU)	At least twice a year (As per survey months defined for the state basis rainy season)
5	Road signs	Retro-reflectometer	At least twice a year (As per survey months defined for the state basis rainy season)

Schedule-L
(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 Strengthening and Reconstruction of NG-6 (Spur) from km 0.00 to km 38.80 in the state of Mizoram (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.	Item/Defect/Deficiency	Percentag
(a)	Carriageway/Pavement	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
(b)	Road, Embankment, Cuttings, Shoulders	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, raincuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	Bridges and Culverts	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%

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

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

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

Where,

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

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

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

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

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

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

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

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

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

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex - I
(Schedule - N)
Terms of Reference for Authority's Engineer

1. Scope

- (i) These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated (the "Agreement"), which has been entered into between the [name and address of the Authority] (the "Authority") and..... (the "Contractor")[#] for Strengthening and Reconstruction of NG-6 (Spur) from km 0.00 to km 38.80 in the state of Mizoram 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:
- i. any Time Extension;
 - ii. any additional cost to be paid by the Authority to the Contractor;
 - iii. the Termination Payment; or
 - iv. issuance of Completion Certificate or
 - v. 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 management. For purpose of this paragraph 4 (ix), the tests specified in the MORTH Specifications for Road and Bridge Works and respective Indian Roads Congress Standards/Guidelines/Manuals, together with any other Indian/International Standards mentioned therein including any modifications/substitutions thereof shall be deemed to be tests confirming to Good Industry Practice for quality management.
- (x) The Authority's Engineer shall witness all the quality control tests carried out by Contractor at its laboratory/main the site laboratory/field/plants. These include tests for all materials, mixes, products, etc. Authority's Engineer shall also witness all tests of finished products like bearing in the manufacturers' laboratory as mandated in respective standards. Authority's Engineer will also conduct review of quality control documents in respect manufactured of materials/finished products etc. as per IRC:SR112.
- (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 MORTH specifications for Road & Bridge works and respective Indian Roads Congress Standards/Guidelines/Manuals together with any other Indian/International Standards referred thereto. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests, that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.
- (xii) In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.
- (xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident, unforeseeable event or otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.
- (xiv) In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report from the

Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

- (xv) The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.
- (xvi) Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.
- (xvii) In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- (xviii) The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, as the case may be. For carrying out its functions under this Paragraph 4 (xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5. Maintenance Period

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

reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

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

7. Payments

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

8. Other duties and functions

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

9. Miscellaneous

- (i) A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of

all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

- (ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- (iii) Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project Highway as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project Highway and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.
- (iv) The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.
- (v) The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - O
(See Clauses 19.4 (i), 19.6 (i), and 19.8 (i))
Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

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

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

3. Contractor's claim for Damages

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

Schedule - P
(See Clause 20.1)
Insurance

1. Insurance during Construction Period

- (i) The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:
 - (a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and
 - (b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.
- (ii) The insurance under sub para (a) and (b) of paragraph 1(i) above shall cover the Authority and the Contractor against all loss or damage from any cause arising 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: Rs. [*****]

- (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/NSV 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 Strengthening and Reconstruction of NG-6 (Spur) from km 0.00 to km 38.80 in the state of Mizoram 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)

