Schedules

SCHEDULE- A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

Site of the Project Shall include the land, Buildings, Structures and road works as described in Annex-1 of the Schedule-A

The dates of providing the Right of Way to the Contractor are specified in Annex-II of this Schedule-A

An inventory of the site including the land, buildings, Structures and road works, Tree and any other immovable property on, or attached to, the site shall be prepared jointly by the Authority Representative and the Contractor, and Such inventory Shall Form part of the memorandum referred to in Clause8.2.1 of this Agreement.

The alignment plans of the project are specified in Annex-III. In the case of section where no Modification in the alignment of the project 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 modified.

The Status of the environment clearances obtained or awaited is given in Annex-IV.

SCHEDULE- A

(See Clauses 2.1 and 8.1)

SITE OFTHE PROJECT

1. The Site

- The Project road starts from design km 72.000 (Pati Chhari), to design km 107.654 (Harina).

  The Design length of project road is 35.654 km. Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

	Existing NH-208 km	Design Chainage (km)	Remarks
Start of Project	226.150	72.000	Start with Re-alignment
End of Project	273.382	107.654	Ends at Harina Junction

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

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

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

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

Annex – I

(Schedule – A)

Site

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

1. Site

- The Project road starts from design km 72.000 (Pati Chhari), to design km 107.654 (Harina).

  The design length of project road is 35.654 km.

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

2. Land

The Site of the Project highway comprises the land as described below –

Si. No.	Chainage (km)		Right of way (m)	Remarks
	From	To		
1	72+000	77+520	30	
2	77+520	78+560	45	
3	78+560	85+700	30	
4	85+700	87+750	70	
5	87+750	88+130	30	
6	88+130	88+335	45	
7	88+335	89+500	30	
8	89+500	92+100	80	
9	92+100	96+000	60	
10	96+000	99+715	30	
11	99+715	99+955	40	
12	99+955	106+385	30	
13	106+385	107+654	20	

3. *Carriageway*

The existing carriageway of the Project highway is as described below –

Sl. No.	Existing Chainage (km)		Carriage way width (m)	Remarks
	From	To		
1	85.600	132.882	3.5 – 4.0	

Thetype of the existingpavementis flexible.

4. *Major Bridges*

The Site includes the following Major Bridge

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

5 *Road over-Bridge (ROB)/ Road under-Bridge(RUB)*

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

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with Spanlength(m)	Width (m)	ROB/ RUB
		Foundation	Super Structure			
Nil						

6 *Grade separators*

The Site includes the following grade separators:

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with Span length(m)	Width (m)
		Foundation	Super Structure		
Nil					

7 *Minor Bridge*

The Site includes the following minor Bridge:

Sl. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super structure		
1	87+370	CONCRETE BRIDGE			9	5.2
2	91+500	CONCRETE STRUCTURE			20	7.5
3	95+150	STEEL TRUSS BRIDGE			30	3.5
4	96+520	CONCRETE BRIDGE			5.8+5.8 = 11.6	7.4
5	113+350	CONCRETE BRIDGE			6.9+6.9+7.1 = 20.9	7.5
6	120+860	CONCRETE BRIDGE			4+4+4 = 12	7.2
7	124+050	CONCRETE BRIDGE			24	7.5
8	129+000	CONCRETE BRIDGE			6.0	7.5

8 Railway level crossings

The Site includes the following railway level crossings:

Sl.No.	Location (km)	Remarks
Nil		

9 Underpasses (vehicular, Non-vehicular)

The Site includes the following underpasses:

Sl. No.	Chainage (km)	Type of Structure	No. of Spans withSpan length(m)	Width (m) / Remarks
Nil				

10 Culverts :

The Site has the following culverts:

Sl. No.	Existing Chainage(Km)	Type of Structure (Pipe/Slab /Box /Arch)	Span Arrangement		C'Way Width (m)
			No	Vent Width (m) (Clear)	
1	85+785	PIPE	3	0.3	3.2
2	85+930	BOX	1	1.7	3.5
3	86+200	BOX	1	1.5	3.4
4	86+385	BOX	1	1.4	3.2
5	86+725	BOX	1	1.4	3.6
6	86+900	BOX	1	1.5	3.6
7	87+070	PIPE	1	1	3.3
8	87+210	BOX	1	1.6	3.5
9	87+260	PIPE	1	1	3.2
10	87+460	SLAB	1	1.3	3.2
11	87+550	SLAB	1	0.6	3.4
12	87+940	BOX	1	1.2	3.7
13	88+130	BOX	1	1.2	3.8
14	88+480	SLAB	1	0.6	3.2
15	88+950	BOX	1	1.3	3.4
16	89+130	SLAB	1		4.5
17	90+250	BOX	1	0.9	3.4
18	90+600	SLAB	1	6	4
19	90+680	BOX	1	0.8	3.2
20	90+900	BOX	1	0.8	3.8
21	91+190	BOX	1	0.8	3.6
22	91+325	BOX	1	1.4	4.1
23	91+590	SLAB	1	3.2	3.9
24	91+670	BOX	1	0.7	3.5

Sl. No.	Existing Chainage(Km)	Type of Structure (Pipe/Slab /Box /Arch)	Span Arrangement		C'Way Width (m)
			No	Vent Width (m) (Clear)	
25	91+770	SLAB	1	1	3.9
26	91+970	BOX	1	0.8	3.8
27	92+120	BOX	1	0.8	3.7
28	92+310	BOX	1	0.8	3.8
29	92+430	BOX	1	0.8	3.6
30	93+810	BOX	1	0.8	3.7
31	94+025	BOX	1	0.8	3.5
32	94+290	BOX	1	0.8	3.7
33	94+420	BOX	1	0.8	3.7
34	94+640	BOX	1	1.8	4
35	94+760	BOX	1	0.8	3.4
36	94+890	BOX	1	0.8	4
37	95+890	BOX	2	3.4	3.7
38	96+650	BOX	1	0.8	3.7
39	96+970	BOX	1	0.8	3.7
40	97+790	BOX	2	2	3.9
41	97+840	SLAB	1	5.7	4
42	98+210	BOX	1	1.7	3.7
43	98+330	BOX	1	1.8	3.7
44	98+630	BOX	1	0.8	3.7
45	98+750	BOX	2	3.7	3.7
46	98+870	BOX	1	0.8	3.7
47	98+930	BOX	1	0.8	3.6
48	100+730	BOX	1	0.8	3.7

Sl. No.	Existing Chainage(Km)	Type of Structure (Pipe/Slab /Box /Arch)	Span Arrangement		C'Way Width (m)
			No	Vent Width (m) (Clear)	
49	100+835	BOX	1	0.8	3.8
50	101+970	SLAB	1	5.9	3.9
51	102+100	BOX	1	1.4	3.6
52	103+575	BOX	2	3.4	3.8
53	104+320	BOX	1	0.8	3.7
54	104+500	BOX	2	5.6	3.5
55	104+530	BOX	1	1	3.7
56	104+650	SLAB	1	2.8	3.7
57	104+830	BOX	1	0.8	3.7
58	105+050	BOX	1	0.8	3.6
59	105+320	BOX	1	0.8	3.7
60	105+390	BOX	1	0.8	3.8
61	105+460	BOX	1	0.8	3.9
62	105+790	BOX	1	0.8	3.6
63	105+950	BOX	1	0.8	3.8
64	106+080	BOX	1	0.8	3.7
65	106+185	BOX	1	5	3.5
66	106+330	BOX	1	0.8	3.7
67	106+800	BOX	1	0.8	3.7
68	107+225	BOX	1	0.8	3.7
69	107+440	BOX	1	0.8	3.6
70	108+400	BOX	1	0.8	3.7
71	109+075	BOX	1	1.6	3.8
72	109+550	BOX	1	0.8	3.9

Sl. No.	Existing Chainage(Km)	Type of Structure (Pipe/Slab /Box /Arch)	Span Arrangement		C'Way Width (m)
			No	Vent Width (m) (Clear)	
73	110+180	BOX	1	0.8	3.6
74	110+430	BOX	1	0.8	3.8
75	110+730	BOX	1	0.8	3.7
76	111+000	BOX	1	0.8	3.5
77	111+210	BOX	1	0.8	3.7
78	111+910	BOX	1	0.8	3.7
79	111+930	BOX	1	0.8	3.7
80	112+060	BOX	1	0.8	3.6
81	112+225	SLAB	1	0.5	3.7
82	112+470	BOX	1	0.8	3.8
83	112+750	BOX	1	0.8	3.9
84	112+910	BOX	1	1.7	3.6
85	112+970	BOX	1	1.2	3.8
86	113+150	BOX	1	0.8	3.7
87	113+960	BOX	1	0.8	3.5
88	114+100	BOX	1	0.8	3.7
89	115+450	BOX	1	0.8	3.7
90	115+610	BOX	1	0.8	3.6
91	115+860	BOX	1	0.8	3.8
92	116+870	BOX	1	0.8	3.8
93	116+980	BOX	1	0.8	3.8
94	117+135	BOX	1	0.8	3.8
95	118+250	BOX	1	0.8	3.8
96	120+200	BOX	1	1.7	3.7

Sl. No.	Existing Chainage(Km)	Type of Structure (Pipe/Slab /Box /Arch)	Span Arrangement		C'Way Width (m)
			No	Vent Width (m) (Clear)	
97	120+950	BOX	1	1.7	3.8
98	121+700	BOX	1	0.8	4
99	122+260	BOX	1		3.8
100	122+560	BOX	1	0.8	3.8
101	124+270	BOX	1	0.8	3.8
102	125+230	BOX	1	0.8	3.7
103	126+035	SLAB	1	1	3.8
104	127+150	SLAB	1	1	3.6
105	127+270	SLAB	1	1	3.7
106	130+980	BOX	1	2.7	3.8

11 Bus Bays

The details of bus bays at site are as follows:

SL.NO	Ex. Chainage	LHS	RHS	Remark
1	86+375	LHS		
2	87+550	LHS		
3	99+800		RHS	
4	102+225	LHS		
5	116+875		RHS	
6	118+250	LHS		
7	121+375		RHS	
8	122+275	LHS		
9	124+600	LHS		
10	125+825	LHS		
11	127+050		RHS	

SL.NO	Ex. Chainage	LHS	RHS	Remark
12	128+875	LHS		

12 Truck Lay byes

The details of truck laybyes are as follows:

Sl. No.	Chainage (Km)	Length (m)	Left Hand Side	Right Hand Side
Nil				

13 Road side drains

The details of the road side drains are as follows:

Sl. No.	Location (km)		Type	
	From	To	Masonry/cc (Pucca)	Earthen (Kutcha)
Nil				

14 Major junctions

The detail of major junction are as follows:

Sl. No.	Location (Km)		At grade	Separated	Category of Cross Road			
	From	To			NH	SH	MDR	Others
1	132.882		At Grade		08			

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

15 Minor junctions

The details of the minor junctions are as follows:-

Sl. No.	Design Chainage (Km)	Side	Type of Junction
1	72+275	RHS	Minor Junction

Sl. No.	Design Chainage (Km)	Side	Type of Junction
2	72+300	LHS	Minor Junction
3	72+650	RHS	Minor Junction
4	72+650	LHS	Minor Junction
5	73+670	LHS	Minor Junction
6	74+000	BHS	Minor Junction
7	74+250	LHS	Minor Junction
8	74+700	LHS	Minor Junction
9	74+840	BHS	Minor Junction
10	75+600	LHS	Minor Junction
11	76+250	LHS	Minor Junction
12	76+580	LHS	Minor Junction
13	76+860	RHS	Minor Junction
14	77+100	BHS	Minor Junction
15	77+300	RHS	Minor Junction
16	77+330	LHS	Minor Junction
17	77+630	BHS	Minor Junction
18	77+800	BHS	Minor Junction
19	78+150	BHS	Minor Junction
20	78+380	BHS	Minor Junction
21	78+660	BHS	Minor Junction
22	79+200	BHS	Minor Junction
23	79+530	LHS	Minor Junction
24	79+800	RHS	Minor Junction
25	79+900	LHS	Minor Junction
26	79+990	BHS	Minor Junction
27	80+320	BHS	Minor Junction
28	80+710	BHS	Minor Junction
29	80+980	BHS	Minor Junction
30	81+380	RHS	Minor Junction
31	81+400	LHS	Minor Junction
32	82+050	LHS	Minor Junction
33	82+340	RHS	Minor Junction
34	82+550	RHS	Minor Junction
35	83+100	LHS	Minor Junction
36	83+650	BHS	Minor Junction
37	83+750	RHS	Minor Junction
38	85+250	LHS	Minor Junction
39	87+100	LHS	Minor Junction
40	87+500	RHS	Minor Junction
41	87+670	LHS	Minor Junction
42	88+260	LHS	Minor Junction
43	88+400	LHS	Minor Junction
44	89+300	BHS	Minor Junction
45	91+900	LHS	Minor Junction

Sl. No.	Design Chainage (Km)	Side	Type of Junction
46	91+970	RHS	Minor Junction
47	93+900	RHS	Minor Junction
48	93+940	LHS	Minor Junction
49	94+000	LHS	Minor Junction
50	94+200	RHS	Minor Junction
51	95+200	LHS	Minor Junction
52	95+860	LHS	Minor Junction
53	96+260	LHS	Minor Junction
54	96+740	RHS	Minor Junction
55	96+760	LHS	Minor Junction
56	97+570	BHS	Minor Junction
57	97+700	RHS	Minor Junction
58	97+900	LHS	Minor Junction
59	98+150	LHS	Minor Junction
60	99+040	BHS	Minor Junction
61	100+200	RHS	Minor Junction
62	100+880	RHS	Minor Junction
63	101+080	RHS	Minor Junction
64	101+400	LHS	Minor Junction
65	101+620	RHS	Minor Junction
66	101+800	LHS	Minor Junction
67	102+080	RHS	Minor Junction
68	102+470	BHS	Minor Junction
69	102+800	RHS	Minor Junction
70	102+820	LHS	Minor Junction
71	103+020	BHS	Minor Junction
72	103+400	LHS	Minor Junction
73	103+650	LHS	Minor Junction
74	103+870	LHS	Minor Junction
75	104+230	LHS	Minor Junction
76	104+870	LHS	Minor Junction
77	104+880	RHS	Minor Junction
78	105+300	RHS	Minor Junction
79	105+870	BHS	Minor Junction
80	106+050	BHS	Minor Junction
81	106+360	LHS	Minor Junction
82	106+450	RHS	Minor Junction
83	106+570	RHS	Minor Junction
84	106+730	RHS	Minor Junction

16 ***Other structures -*** *Nil*

Annex-II
(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)	Proposed Width (m)	Date of providing ROW*
(1)	(2)		(3)	(4)	(5)
(i) Full Right of Way (full Width)					
1	72+000	77+520	5.52	30	On Appointed date
2	77+520	78+560	1.04	45	
3	78+560	85+700	7.14	30	
4	85+700	87+750	2.05	70	
5	87+750	88+130	0.38	30	
6	88+130	88+335	0.205	45	
7	88+335	89+500	1.165	30	
8	89+500	92+100	2.6	80	
9	92+100	96+000	3.9	60	
10	96+000	99+715	3.715	30	
11	99+715	99+955	0.24	40	
12	99+955	106+385	6.43	30	
13	106+385	107+654	1.269	20	

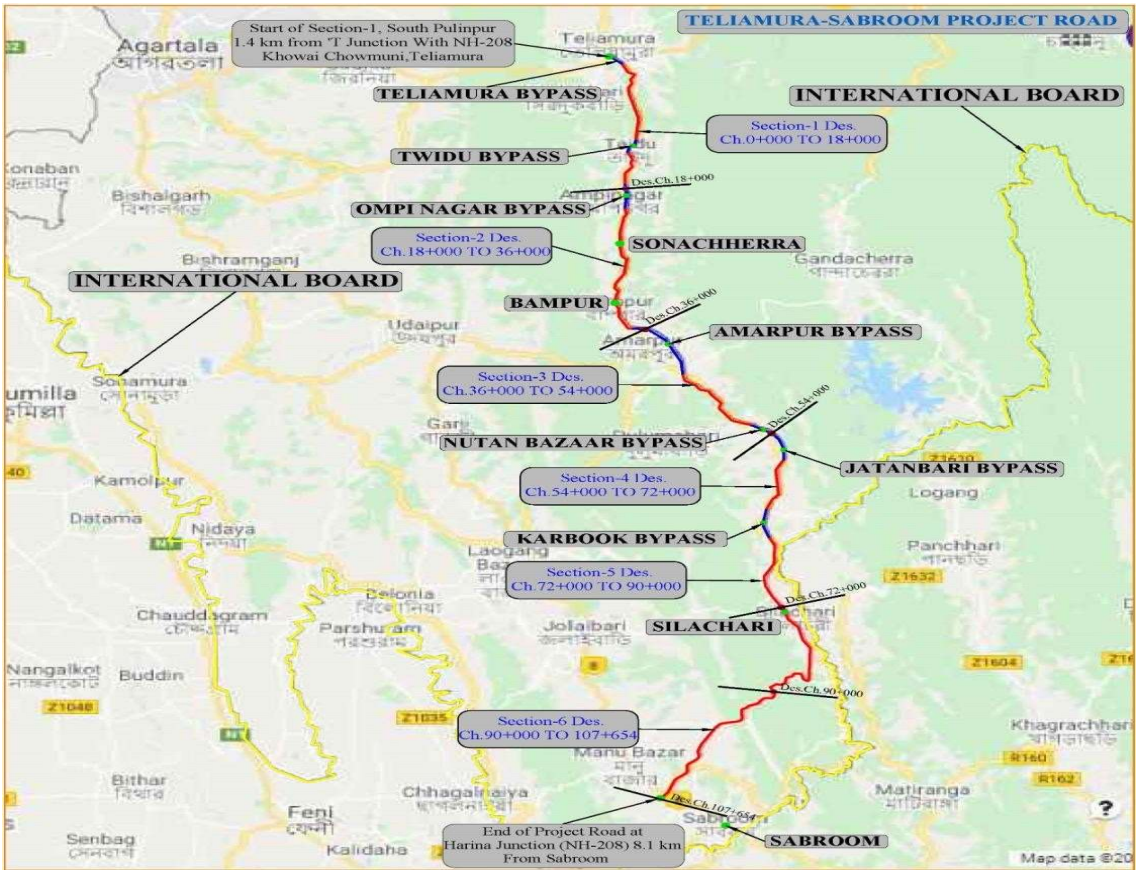
*The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.

Annex-III
(Schedule-A)

Alignment Plans

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

An alignment plan is given in soft copy.



(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 IRC: SP: 99 & IRC: 67.

Annex-IV
(Schedule-A)

Environment Clearances

The following clearances have been obtained:

Sl. No.	Clearances	Present Status
1	Environment clearance	Environment Clearance is not required for Project Highway as per MOEF Notification on 22nd Aug, 2013.
2	Forest Clearance	Stage-I Clearance received from MoEF&CC

Annex - V

(Schedule-A)

Electrical Utilities

(i) ELECTRICAL UTILITIES

The site includes the following electrical utilities: -

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

Sr. No	Chainage(km)		Length along NH (in Km)				ROW Crossings (in km)			
	From	**To**	**400KV**	**220KV**	**132KV**	**66KV**	**400KV**	**220KV**	**132KV**	**66KV**
1	Nil									

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

	Chainage (km)		**Length (in Km)**				**Crossings (no's)**				**Transformer**	
Sr. No	**From**	**To**	**33KV**	**22KV**	**11KV**	**LT**	**33KV**	**22KV**	**11KV**	**LT**	**No**	**Capacity**
1	72.00	108			17.5						2 3 4 2 1	- 25KVA - 16KVA - 63KVA - 25KVA - 100 KVA

(ii) Public Health Utilities (Water/Sewage pipe lines)*

(a) The site includes the following public health utilities: -

Sr. No	Chainage(km)		Length along NH (in Km)				ROW Crossings (in km)			
	From	**To**	Water Supply line		Sewage line		With pumping		Sewage line	
			With Pumping	With Gravity	With Pumping	With Gravity	With Pumping	With Gravity	With Pumping	With Gravity
1	72.0	108.0	7.7 km				0.9 km			

(ii) Any Other Line:

Note: *No change of scope shall be paid for any over-ground utilities. However, for any underground utilities not mentioned in Schedule 'B' shall form change of scope, which shall be worked out as per the estimation of the concerned utility owning department shall be payable.*

SCHEDULE - B
(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

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

2 Rehabilitation and Augmentation

[Rehabilitation and Augmentation] shall include (Two laning / Four laning and strengthening) of the Project highway as described in Annexure I of this schedule-B & in schedule-C.

3 Specifications and Standards

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

Annex-I
(Schedule-B)

Description of two lane with paved shoulder

The proposal of project road improvement is

- 2 lane with paved shoulder from design km 72.000 (Pati Chhari) to design km 107.654 (Harina).
- The design length of project road is 35.654 km after its geometric improvement.

1 Widening of the Existing Highway

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

(ii) Width of Carriageway

(a) Two-Laning with paved shoulders shall be undertaken. The paved carriageway shall be 7m (seven) wide with 1.5m/2.5m wide paved shoulder on either side of carriage way in accordance with the typical cross sections drawings in the Manual (refer MoRT&H circular dated 17th July 2020).

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

Sl. No	Built-up Stretch (Township)	Location / Design Chainage (km)		Paved Width (m)	Typical Cross Section
		From	To		
Nil					

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

2. Geometric design and general features

(i) General

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

(ii) Design speed

The design speed shall be100kmph (Ruling) /80kmph (minimum) for Plain/Rolling terrain & 60kmph (Ruling) /40kmph (minimum) for Mountainous/steep terrain as per the section 2 of two lane manual IRC - SP: 73:2018.

(iii) Improvement of the existing road geometrics

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

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

Sl. No.	HORIZONTAL CURVE				Transition length	Speed (Kmph)	Reason for Deviation
	Start Chainage	End Chainage	Radius	Direction			
Nil							

(iv) Right of way

Details of Right of Way are given below:

Si. No.	Chainage (km)		Right of way (m)	Remarks
	From	To		
1	72+000	77+520	30	
2	77+520	78+560	45	
3	78+560	85+700	30	
4	85+700	87+750	70	
5	87+750	88+130	30	
6	88+130	88+335	45	
7	88+335	89+500	30	
8	89+500	92+100	80	
9	92+100	96+000	60	
10	96+000	99+715	30	
11	99+715	99+955	40	
12	99+955	106+385	30	
13	106+385	107+654	20	

(v) Type of shoulders

(a) In Built up sections, Footpath/Fully paved shoulders shall be provided in the following stretches:

Sl. No.	Stretch (design km)	Fully Paved shoulders/Footpath	References to Cross Section

	From	To		
1	Nil			

In open country, [paved shoulders of 1.5m width and 1.0m earthen shoulder shall be provided.

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

(vi) Lateral and vertical clearances at underpasses

(a) Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the provision of two lane manual / four lane manual.

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

Sl. No.	Location (Chainage) (From km to km)	Span / Opening (m)	Remarks
Nil			

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per the provision of relevant Manual.

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

Sl. No.	Location (Chainage) (From km to km)	Span / Opening (m)	Remarks
Nil			

(Viii) Service roads

Service roads shall be constructed at the locations and for the lengths indicated below: [Refer to the provision of relevant Manual and providedetails]

Sl. No.	Location of Service road (from km to km)		Right hand side (RHS)/Left hand side (LHS)/ or Both sides	Length (km) of Service road
	From	To		
Nil				

(IX) Grade separated structures

(a) *Grade separated structures shall be provided as per provision of the relevant Manual. The requisite particulars are given below:*
[Refer to the provision of relevant Manual and provide details]

Sl. No.	Location of structure	Length (m)	Number and length of spans (m)	Approach Gradient	Remarks, If any
Nil					

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:[Refer to the provision of relevant Manual and specify the type of vehicular underpass/ overpass structure and whether the cross road is to be carried at the existinglevel, raised or lowered]

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

(X) Cattle and pedestrian underpass /overpass

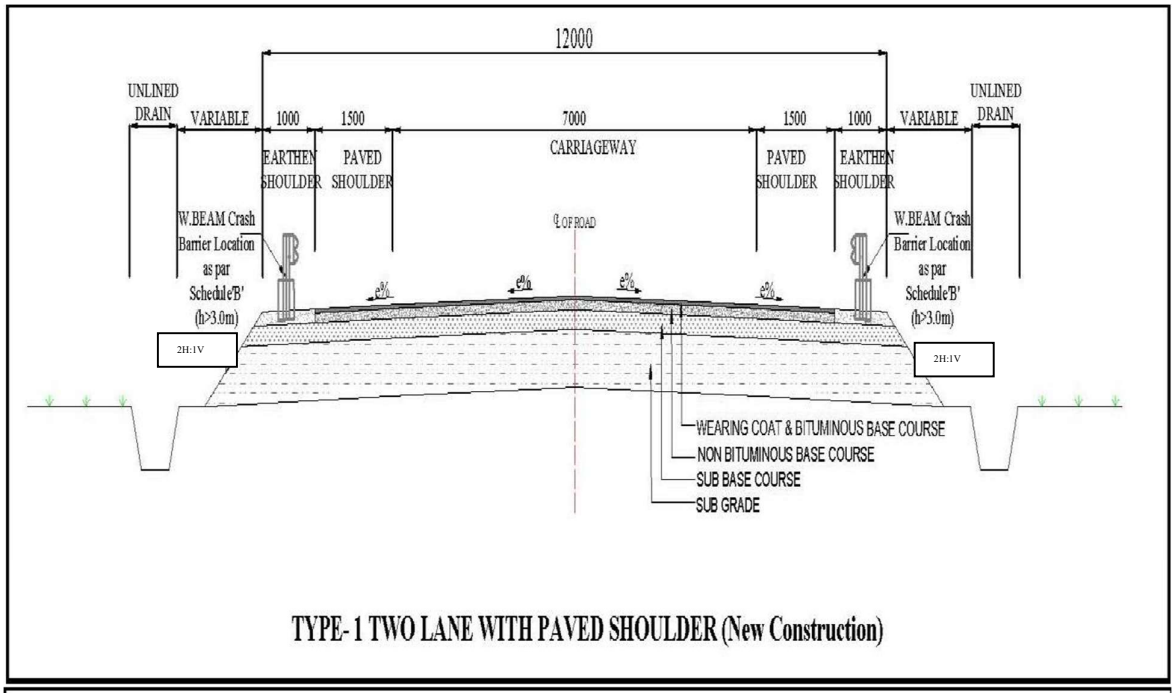
Cattle and pedestrian underpass/ overpass shall be constructed as follows:

[Refer to the provision of relevant Manual and specify the requirements of Cattle and pedestrian underpass/ overpass]

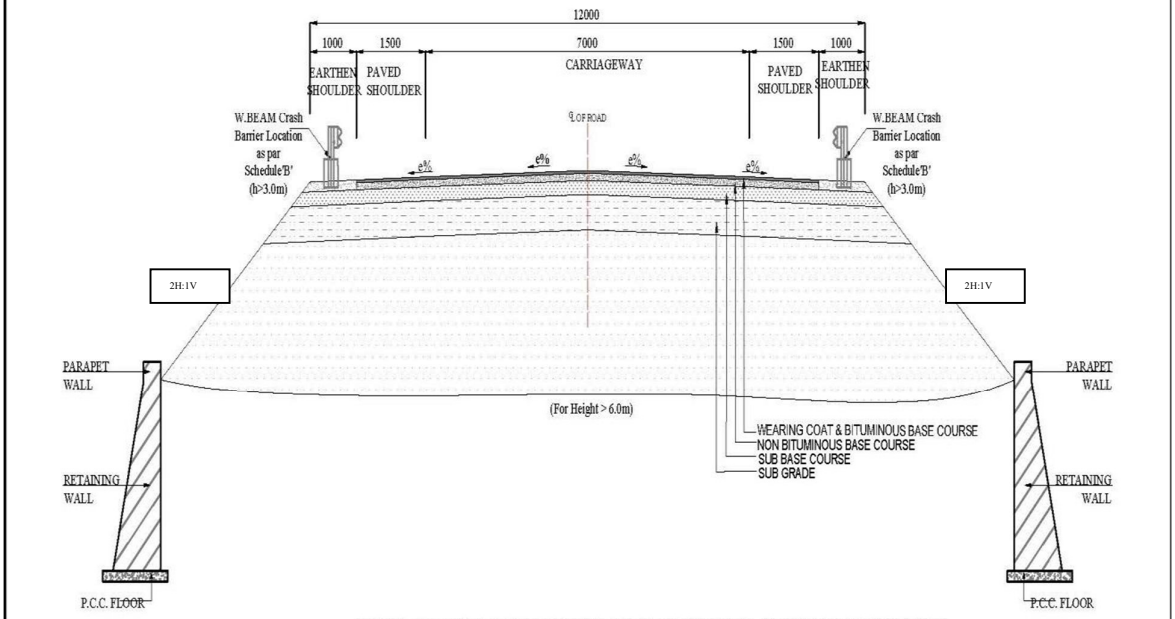
Sl. No.	Location	Type of Crossing
Nil		

(XI) Typical cross-sections of the Project Highway

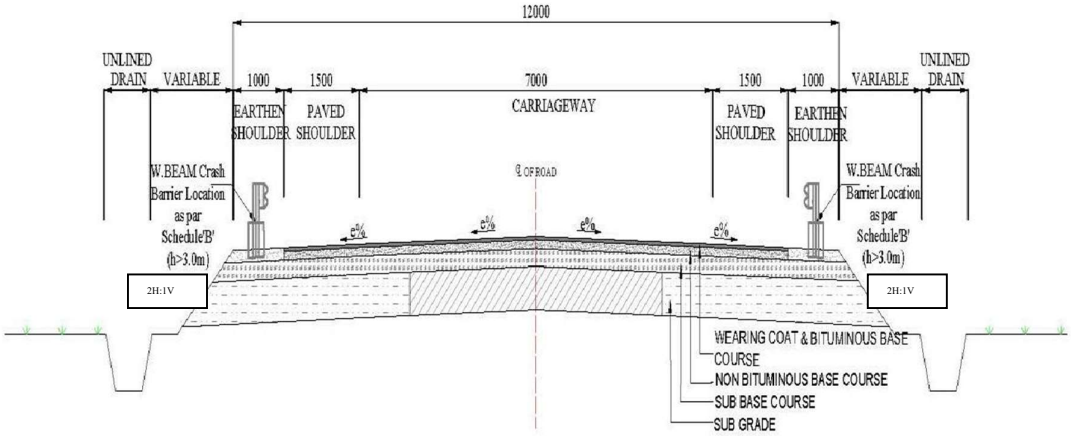
Typical Cross section of Project road is as shown below –



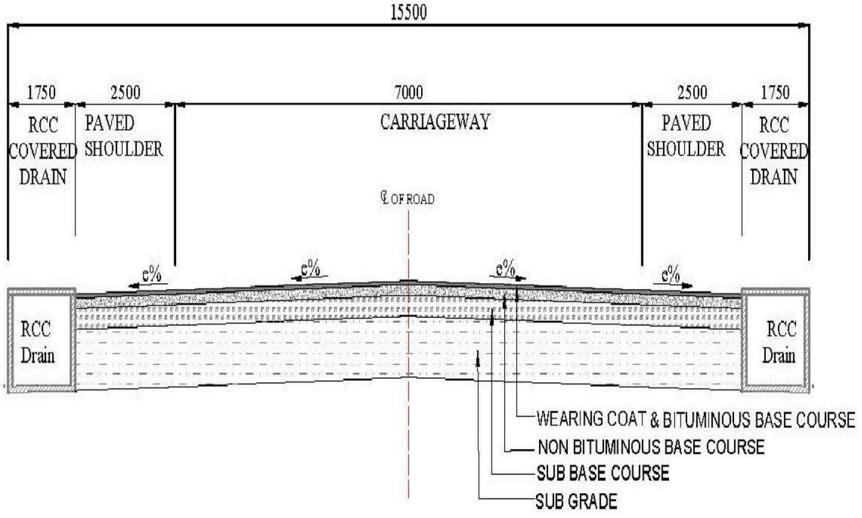
TYPE- 1 TWO LANE WITH PAVED SHOULDER (New Construction)



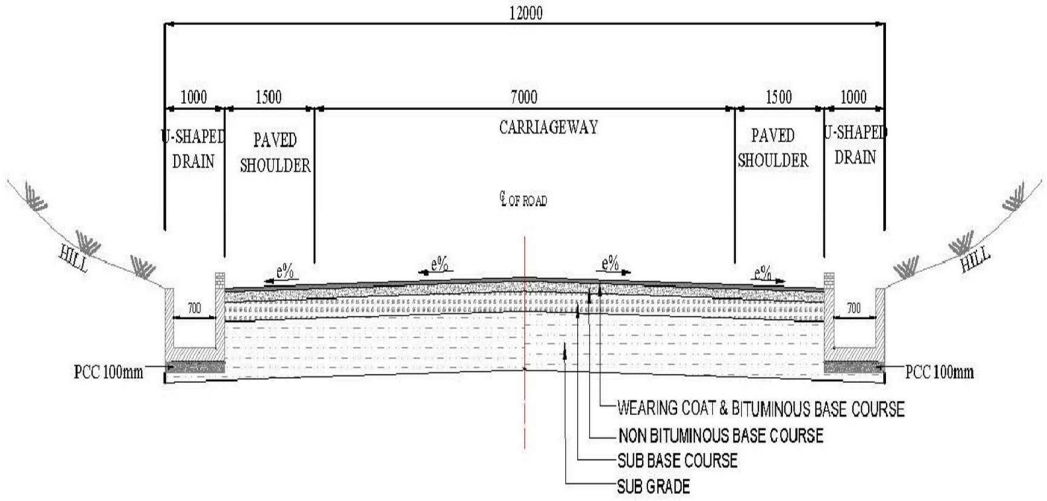
TYPE- 1B -TWO LANE WITH PAVED SHOULDER (HIGH EMBANKMENT)



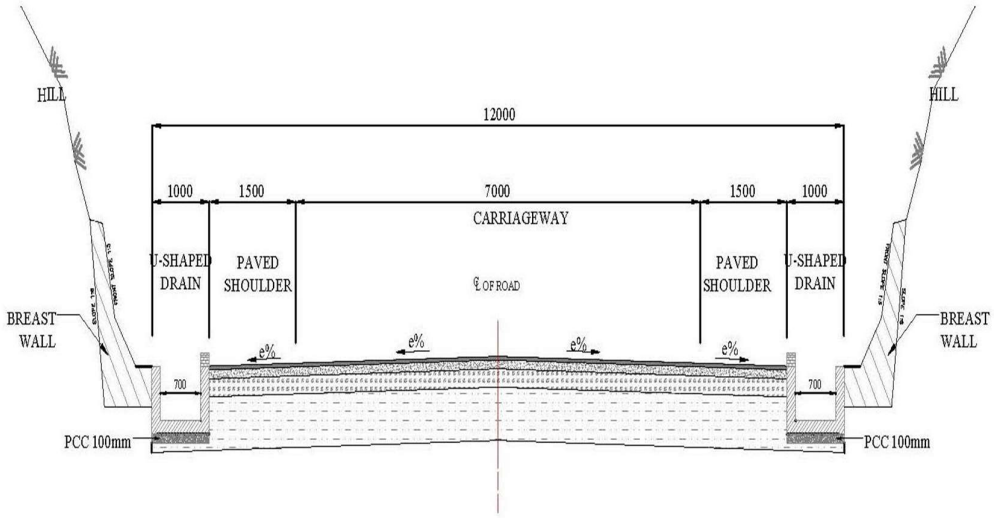
TYPE- 2 TWO LANE WITH PAVED SHOULDER (PARTIALLY EXISTING / NEW ALIGNMENT)



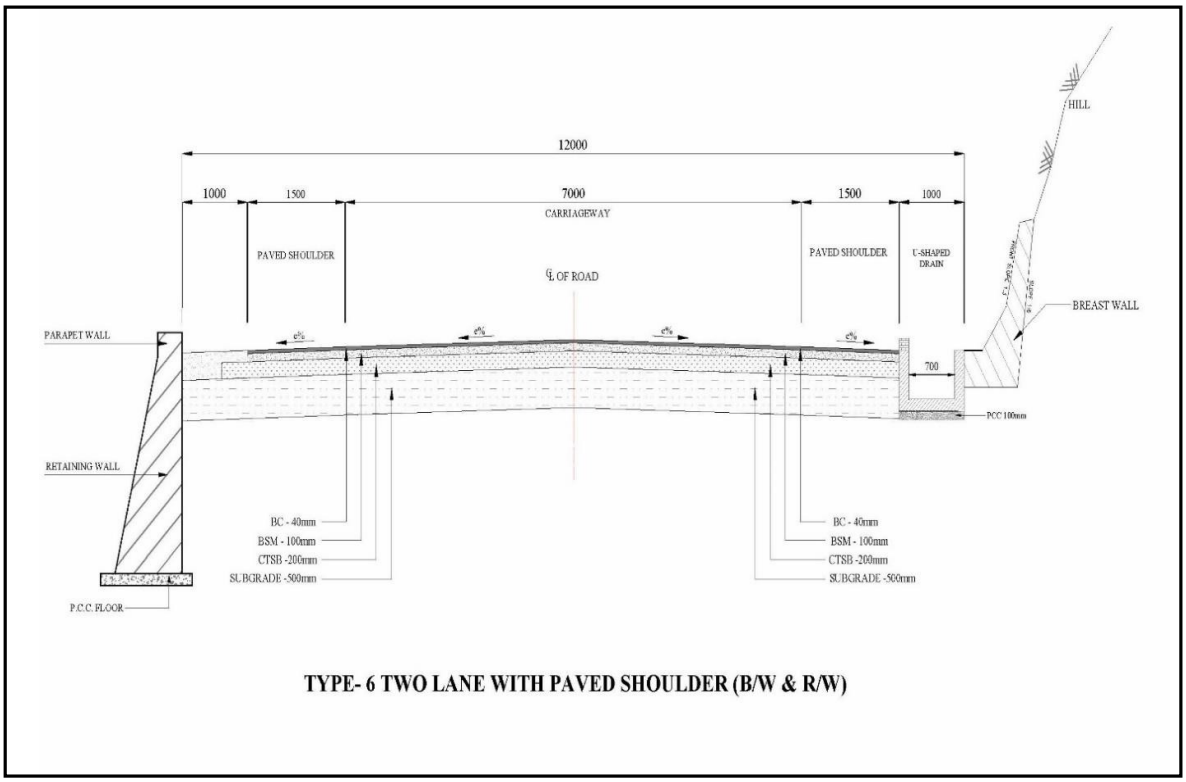
TYPE- 3 TWO LANE WITH PAVED SHOULDER (Built-up Section)



TYPE- 4 TWO LANE WITH PAVED SHOULDER (WITH U-SHAPED DRAIN)



TYPE- 5 TWO LANE WITH PAVED SHOULDER (HILL SIDE PROTECTION WORKS (ONE SIDE /EITHER SIDE)



Widening Scheme

TCS Type	Description
TCS-1	Two Lane With Paved Shoulder (New Construction) with high embankment
TCS-2	Two Lane With Paved Shoulder
TCS-3	Two lane with paved shoulder (Built-up section)
TCS-4	Two Lane With Paved Shoulder (b/s PCC drain)
TCS-5	Two Lane With Paved Shoulder in hill B/s Breast wall
TCS-6	Two lane with paved shoulder (B/w & R/w)

Sl. No	Design Chainage (Km)		Bridge Length (m)	Total length (km)	TCS Type
	From	To			
1	72+000	72+300	26	0+274	TCS-1

Sl. No	Design Chainage (Km)		Bridge Length (m)	Total length (km)	TCS Type
	From	To			
2	72+300	75+560	23	3+237	TCS-2
3	75+560	75+820		0+260	TCS-5
4	75+820	76+900	16	1+064	TCS-2
5	76+900	78+600		1+700	TCS-1
6	78+600	78+820		0+220	TCS-4
7	78+820	80+340	27	1+493	TCS-4
8	80+340	82+300		1+960	TCS-1
9	82+300	83+580	15	1+265	TCS-2
10	83+580	83+740		0+160	TCS-5
11	83+740	84+380		0+640	TCS-4
12	84+380	84+940		0+560	TCS-5
13	84+940	85+820	33	0+847	TCS-4
14	85+820	85+960		0+140	TCS-5
15	85+960	86+140		0+180	TCS-4
16	86+140	90+000	0	3+860	TCS-6
17	90+000	96+520	50	6+470	TCS-6
18	96+520	99+620	124	2+976	TCS-4
19	99+620	101+520		1+900	TCS-1
20	101+520	101+700		0+180	TCS-4
21	101+700	101+840		0+140	TCS-5
22	101+840	104+860	50	2+970	TCS-4

Sl. No	Design Chainage (Km)		Bridge Length (m)	Total length (km)	TCS Type
	From	To			
23	104+860	105+100		0+240	TCS-5
24	105+100	105+540		0+440	TCS-4
25	105+540	107+654		2+114	TCS-2
	Total Length..		**364**	**35+290**	
				5+834	**TCS-1**
				7+680	**TCS-2**
				0+000	**TCS-3**
				9+946	**TCS-4**
				1+500	**TCS-5**
				10+330	**TCS-6**

3. Intersection and grade Separators

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

[Refer to the provision of relevant Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement]

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

(i) At-Grade Intersections:

01 – Major Junctions &

84 – Minor Junctions

Sl. No.	Design Chainage (Km)	Side	Type of Junction
1	72+275	RHS	Minor Junction
2	72+300	LHS	Minor Junction
3	72+650	RHS	Minor Junction
4	72+650	LHS	Minor Junction
5	73+670	LHS	Minor Junction
6	74+000	BHS	Minor Junction
7	74+250	LHS	Minor Junction
8	74+700	LHS	Minor Junction
9	74+840	BHS	Minor Junction
10	75+600	LHS	Minor Junction
11	76+250	LHS	Minor Junction
12	76+580	LHS	Minor Junction
13	76+860	RHS	Minor Junction
14	77+100	BHS	Minor Junction
15	77+300	RHS	Minor Junction
16	77+330	LHS	Minor Junction
17	77+630	BHS	Minor Junction
18	77+800	BHS	Minor Junction
19	78+150	BHS	Minor Junction
20	78+380	BHS	Minor Junction
21	78+660	BHS	Minor Junction
22	79+200	BHS	Minor Junction
23	79+530	LHS	Minor Junction
24	79+800	RHS	Minor Junction
25	79+900	LHS	Minor Junction
26	79+990	BHS	Minor Junction
27	80+320	BHS	Minor Junction
28	80+710	BHS	Minor Junction
29	80+980	BHS	Minor Junction
30	81+380	RHS	Minor Junction
31	81+400	LHS	Minor Junction
32	82+050	LHS	Minor Junction
33	82+340	RHS	Minor Junction
34	82+550	RHS	Minor Junction
35	83+100	LHS	Minor Junction
36	83+650	BHS	Minor Junction
37	83+750	RHS	Minor Junction
38	85+250	LHS	Minor Junction

Sl. No.	Design Chainage (Km)	Side	Type of Junction
39	87+100	LHS	Minor Junction
40	87+500	RHS	Minor Junction
41	87+670	LHS	Minor Junction
42	88+260	LHS	Minor Junction
43	88+400	LHS	Minor Junction
44	89+300	BHS	Minor Junction
45	91+900	LHS	Minor Junction
46	91+970	RHS	Minor Junction
47	93+900	RHS	Minor Junction
48	93+940	LHS	Minor Junction
49	94+000	LHS	Minor Junction
50	94+200	RHS	Minor Junction
51	95+200	LHS	Minor Junction
52	95+860	LHS	Minor Junction
53	96+260	LHS	Minor Junction
54	96+740	RHS	Minor Junction
55	96+760	LHS	Minor Junction
56	97+570	BHS	Minor Junction
57	97+700	RHS	Minor Junction
58	97+900	LHS	Minor Junction
59	98+150	LHS	Minor Junction
60	99+040	BHS	Minor Junction
61	100+200	RHS	Minor Junction
62	100+880	RHS	Minor Junction
63	101+080	RHS	Minor Junction
64	101+400	LHS	Minor Junction
65	101+620	RHS	Minor Junction
66	101+800	LHS	Minor Junction
67	102+080	RHS	Minor Junction
68	102+470	BHS	Minor Junction
69	102+800	RHS	Minor Junction
70	102+820	LHS	Minor Junction
71	103+020	BHS	Minor Junction
72	103+400	LHS	Minor Junction
73	103+650	LHS	Minor Junction
74	103+870	LHS	Minor Junction
75	104+230	LHS	Minor Junction
76	104+870	LHS	Minor Junction

Sl. No.	Design Chainage (Km)	Side	Type of Junction
77	104+880	RHS	Minor Junction
78	105+300	RHS	Minor Junction
79	105+870	BHS	Minor Junction
80	106+050	BHS	Minor Junction
81	106+360	LHS	Minor Junction
82	106+450	RHS	Minor Junction
83	106+570	RHS	Minor Junction
84	106+730	RHS	Minor Junction
85	**107+654**	**T Junction**	**Major Junction**

(ii) Grade separated intersection with/without ramps

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

4. Road Embankment and cut section

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/cuttings shall conform to the Specifications and Standards given in section-4 of the Manual and the specified cross sectional details.

Turfing on slopes (Filling sections) & Hydroseeding on slopes (Cut sections) shall be provided.

(ii) Raising of the existing road [Refer to the provision of relevant Manual and specify sections to be raised]
The existing road shall be raised in the following sections:

Sl. No.	Section (from km To km)	Length	Extent of raising [Top of finished road level]
Refer design plan & profile			

5 Pavement Design

(i) Pavement design shall be carried out in accordance with the provision of relevant Manual. Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design CBR of not exceeding 8%.
Wherever existing soil is to be used as subgrade and found in poor condition, soil stabilization shall be done to achieve minimum design CBR of 8%.

(ii) Type of pavement

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

(iii) Design requirements

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

a) Design Period and strategy

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

b) Design Traffic

Not with standing anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for minimum design traffic of 20 million standard axles.

(iv) Re-construction of stretches

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

Sl. No.	Stretch (km)		Remarks
	From	To	
1	73+400	73+520	TCS 2
2	74+400	74+500	TCS 2
3	75+600	75+830	TCS 5
4	78+680	78+800	TCS 4
5	86+300	86+480	TCS 6
6	87+200	87+400	TCS 6

Sl. No.	Stretch (km)		Remarks
	From	To	
7	91+500	92+450	TCS 6
8	95+900	96+400	TCS 6
9	100+400	100+750	TCS 1
10	101+050	101+700	TCS 4
11	103+650	103+850	TCS 4
12	106+450	106+900	TCS 2

6 Road Side Drainage

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

Sl. No.	Design Chainage (km)		Drain Length = (Length – Bridge length) (m)	Side	Remarks
	From	To			
A	**PCC Drain**				
	PCC (U-shaped) drain along hill sections		**18600**		Refer TCS 4,5 & 6
B	**Unlined Surface drain**		**27028**		
C	**RCC lined Covered drain**		**400**		At Harina

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 carriage way of new bridges and structures shall be as follows:

[Refer to the provision of relevant Manual and specify the width of carriageway of new bridges and structures of more than 60 (sixty) meter length, if the carriageway width is different from 7.5 (seven point five) meters in the table below.]

Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges

Sl. No.	Bridge (km)	Width of carriage way (m) and Cross – Sectional feature
1	72+400	18m width (13m c'way + 1.5m paved footpath with Crash barrier (b/s) + (crash barrier 2m (4 x 0.5m)))
2	73+600	-do-
3	76+600	-do-
4	77+000	-do-
5	80+270	-do-
6	83+400	-do-
7	85+270	-do-
8	85+445	-do-
9	85+725	-do-
10	91+100	-do-
11	97+715	-do-
12	97+885	-do-
13	98+800	-do-
14	98+960	-do-
15	104+080	-do-

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

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

Refer – Two lane manual IRC SP 73 -2018, fig. 7.6 for bridges

Sl. No.	Location (m)	Remarks
1	72400	Minor Bridge, 1.5m paved footpath (b/s) with crash barrier
2	73600	-do-
3	76600	-do-
4	77000	-do-
5	80270	-do-
6	83400	-do-
7	85270	-do-
8	85445	-do-
9	85725	-do-

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

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

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

Sl. No.	Location (km)	Utility services to be carried	Remarks
1	72400		Minor Bridge
2	73600		Minor Bridge
3	76600		Minor Bridge
4	77000		Minor Bridge
5	80270		Minor Bridge
6	83400		Minor Bridge
7	85270		Minor Bridge
8	85445		Minor Bridge
9	85725		Minor Bridge
10	91100		Minor Bridge
11	97715		Minor Bridge
12	97885		Minor Bridge
13	98800		Minor Bridge

Sl. No.	Location (km)	Utility services to be carried	Remarks
14	98960		Minor Bridge
15	104080		Minor Bridge

(f) Cross–section of the new culverts and bridges at deck level for the project highway shall confirm to the typical cross- sections given in the provision of manual.

(ii) **Culverts:**

(a) *Overall width of all culverts shall be equal to the roadway width of the approaches.*

(b) **Reconstruction of Existing Culverts:**

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

Sl. No.	Culvert location (Chainage Km)	Size/Openning(m)	Remarks
1	72655	1x2x2	
2	73450	1x2x2	
3	73500	1x2x2	
4	73690	1x5x4	
5	76210	1x2x2	
6	76800	1x2x2	
7	79710	1x2x2	
8	82700	1x2x2	
9	83100	1x3x4	
10	85610	1x 3x3	
11	86860	1x 3x3	
12	87030	1x3x3	
13	88765	1x2x2	
14	89130	1x2x2	
15	89385	1x3x4	
16	91600	1x2x2	
17	91730	1x2x2	
18	93100	1x2x2	
19	94240	1x2x2	
20	101620	1x2x2	

(c) **Widening of existing culverts**

All existing culverts which are not to be reconstructed shall be widened to the road way

width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

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

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

Sl. No.	Culvert location (Chainage Km)	Size/Opening(m)	Remarks
1	72+260	1x2x3	
2	73+000	1x 3x3	
3	73+160	1x 3x3	
4	73+870	1x2x2	
5	74+135	1x 3x3	
6	74+360	1x2x2	
7	74+650	1x 3x3	
8	74+900	1x 3x3	
9	75+240	1x5x4	
10	75+540	1x2x2	
11	75+840	1x2x2	
12	77+240	1x5x4	
13	77+535	1x3x4	
14	77+800	1x4x4	
15	78+240	1x 3x3	
16	78+540	1x5x4	
17	78+970	1x 3x3	
18	79+100	1x4x4	
19	79+340	1x4x3	
20	79+850	1x2x3	
21	80+605	1x6x3	
22	80+910	1x5x4	
23	81+380	1x6x3	
24	82+035	1x2x2	
25	82+200	1x4x4	
26	82+590	1x2x2	
27	82+960	1x5x3	

Sl. No.	Culvert location (Chainage Km)	Size/Opening(m)	Remarks
28	83+700	1x5x3	
29	83+740	1x 3x3	
30	84+240	1x2x2	
31	84+540	1x2x2	
32	85+120	1x2x2	
33	85+530	1x 3x3	
34	85+810	1x 3x3	
35	86+060	1x 3x3	
36	86+270	1x2x2	
37	86+525	1x3x3	
38	86+710	1x2x2	
39	87+430	1x2x2	
40	87+830	1x2x2	
41	88+400	1x2x2	
42	89+285	1x 3x3	
43	89+575	1x2x3	
44	90+185	1x2x2	
45	90+315	1x 3x3	
46	90+650	1x 3x3	
47	91+250	1x 3x3	
48	92+215	1x2x2	
49	92+520	1x2x2	
50	92+930	1x 3x3	
51	93+290	1x 3x3	
52	93+830	1x2x3	
53	94+000	1x4x5	
54	94+130	1x 3x3	
55	94+610	1x2x2	
56	95+285	1x 3x3	
57	95+560	1x2x2	
58	95+970	1x2x2	
59	96+240	1x2x2	
60	96+490	1x2x3	
61	96+850	1x2x2	
62	97+140	1x2x2	
63	97+490	1x2x2	
64	97+990	1x 3x3	
65	98+170	1x 3x3	

Sl. No.	Culvert location (Chainage Km)	Size/Opening(m)	Remarks
66	98+490	1x2x3	
67	99+155	1x4x5	
68	99+620	1x3x4	
69	99+845	1x4x4	
70	100+310	1x 3x3	
71	100+850	1x2x2	
72	101+190	1x2x2	
73	101+890	1x2x2	
74	102+240	1x 3x3	
75	102+690	1x 3x3	
76	103+090	1x 3x3	
77	103+580	1x2x2	
78	103+840	1x2x2	
79	104+265	1x 3x3	
80	104+690	1x2x2	
81	105+190	1x3x4	
82	105+890	1x4x4	
83	106+190	1x4x5	
84	106+490	1x2x2	
85	106+790	1x 3x3	
86	107+090	1x 3x3	
87	107+390	1x 3x3	

Note:

i. The location of additional culvert may change as per site with approval of Client/Authority Engineer.

(e) Repairs/ Replacement of Railing/Parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

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

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

(f) Floor Protection works shall be as specified in the relevant IRC codes and specifications.

(iii) Bridges

(a) Existing Bridges to be re-constructed/Widened

(i) The existing major/minor bridges at the following locations shall be reconstructed as new structures:

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

Sl. No.	Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)
		Foundation	Sub-Structure	Super structure		
1	73+600	RCC BOX			2x8	18m
2	76+600	RCC BOX			2x11.5	18m

Attach GAD*

Note: PCC work shall be done on embankment slope of each bridge approach.

(ii) The following narrow bridges shall be widened:

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

Attach GAD*

(b) Additional New Bridges

(i) Major Bridges: - New major bridge at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Span Arrangement (m)	Total proposed length(m)	Remarks
Nil				

(ii) Minor Bridges: - New minor bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sl. No.	Location (km)	Total Length (m)	Remarks
1	72+400	10	
2	77+000	16	
3	80+270	27	
4	83+400	15	
5	85+270	10	
6	85+445	12.5	
7	85+725	10	
8	91+100	51	
9	97+715	46	
10	97+885	20	
11	98+800	46	
12	98+960	23	
13	104+080	51	

Note: PCC (M-15 grade) work shall be done on embankment slope of each bridge approach on both side.

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

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

Sl. No.	Location at km	Remarks
Nil		

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

[Refer to the provision of relevant Manual and providedetails]

Sl. No.	Location (km)	Remarks
Nil		

(e) Drainage system for bridge decks

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.21 of the Manual.

(f) Structures in marine environment

[Refer to the provision of relevant Manual and specify the necessary measures/ treatments for protecting structures in marine environment, where applicable]

(iv) Rail- Road Bridges

Design, construction and detailing of ROB/RUB shall be as specified in section 7 of the Manual. (Refer to the provision of relevant Manual and specify modification, if any)

(a) Road Over-Bridges

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

Sl. No.	Location of Level crossing (km)	Length of RoB (m) except approach length	Type of structure	Remarks
Nil				

(b) Road under-Bridges

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

Sl. No.	Location of Level crossings (km)	Number and length of Span (m)
Nil		

(v) Grade separated structures

[Refer to the provision of relevant Manual]

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

(vi) Repairs and strengthening of bridges and structures

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

Theexistingbridgesandstructurestoberepaired/strengthened,andthenatureand extent of repairs /strengthening required are given below:

A. Bridges

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

B. ROB / RUB

Sl. No.	Location of ROB/RUB (km)	Nature and Extent of Repairs / Strengthening to be carried out
Nil		

C. Overpass / Underpass and Other structures

Sl. No.	Location of Structure (km)	Nature and Extent of Repairs / Strengthening to be carried out
Nil		

(vii) **List of Major Bridges and Structures**

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

Sl. No.	Location (Design Chainage km)
Nil	

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

(i) Traffic control devices like **markers, signs and signal devices used to inform, guide and control traffic** and road safety works shall be provided in accordance with the provision of relevant manual adjacent to built-up areas, junctions and as per site requirements.

(ii) Specification of the reflective sheeting. [Refer to the provision of relevant manual]

9. ROADSIDE FURNITURE

(i) Roadside furniture like Sign Boards, Over Head Gantry Boards, Cantilevers, Raised Pavement Markers etc shall be provided in accordance with the provisions of Two lane manual IRC: SP: 73-2018.

(ii) Overhead traffic signs: 7 nos.

Sl. No.	Location of Overhead sign board
1	Km 72+300
2	Km 78+700
3	Km 82+400
4	Km 85+200
5	Km 93+500
6	Km 96+800
7	Km 107+650

The above locations may change as per site requirement in consultation with the Authority's Engineer

10. Compulsory Afforestation

[Refer to the provision of relevant Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.]

11. Hazardous Locations

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

Sl. No.	**Location stretch from (km) to (km)**	**LHS/RHS**
This shall be Provided at High Embankment and at sharp curve locations.		

a) **Breast Walls-** Breast wall shall be used with minimum length:-

Chainage From	Chainage To	Side
75660	75820	LHS
79480	79500	LHS
82020	82080	LHS
83580	83660	LHS
83980	84020	LHS
84480	84560	LHS
85800	85860	LHS
85920	85960	LHS
86160	86280	LHS
86500	87100	LHS
87140	87340	LHS
87400	87540	LHS
87580	87800	LHS
87840	87900	LHS
88120	88320	LHS
88360	88480	LHS
88780	88820	LHS
88960	89000	LHS
89180	89200	LHS
89940	90000	LHS
90000	91060	LHS
91180	92320	LHS
92360	92500	LHS
92540	92600	LHS
92700	92960	LHS
93140	93180	LHS
93320	93360	LHS
93460	93760	LHS
94940	94960	LHS
95840	95940	LHS
96880	96960	LHS
104400	104520	LHS
105660	105680	LHS
74520	74580	RHS
74740	74800	RHS
75600	75800	RHS
79160	79180	RHS
79480	79500	RHS
82040	82080	RHS
83580	83640	RHS
83720	83740	RHS
83980	84000	RHS

Chainage From	Chainage To	Side
84400	84540	RHS
84700	84720	RHS
84760	84800	RHS
84880	84940	RHS
85800	85920	RHS
86200	86300	RHS
86540	87100	RHS
87160	87320	RHS
87360	87840	RHS
87880	87920	RHS
88100	88140	RHS
88180	88320	RHS
88360	88380	RHS
88440	88540	RHS
88580	88640	RHS
88780	88820	RHS
88960	89000	RHS
89080	89100	RHS
89160	89260	RHS
89300	89320	RHS
89520	89560	RHS
89900	90000	RHS
90000	91020	RHS
91180	92320	RHS
92440	92580	RHS
92660	92960	RHS
93120	93160	RHS
93320	93360	RHS
93460	93780	RHS
94840	95060	RHS
95860	95980	RHS
97180	97200	RHS
104440	104500	RHS
106000	106020	RHS

Note: **The above length of breast wall is minimum & any increase in the length/Qty of Breast wall as per site requirements may not be considered as positive change of scope.**

b) **Retaining wall –** Retaining wall (for embankment protection/ in pond areas / water logged areas shall be used at following locations:-

Chainage From	Chainage To	Side
85000	85020	LHS
85680	85740	LHS
89580	89680	LHS
77350	77430	LHS
93240	93280	LHS
93920	94020	LHS
94180	94280	LHS
94480	94500	LHS
94640	94840	LHS
95460	95480	LHS
95760	95800	LHS
106920	107060	LHS
107160	107260	LHS
107340	107440	LHS
100700	101000	LHS
102100	102400	LHS
104700	104800	LHS
105200	105250	LHS
106100	106300	LHS
106950	107050	LHS
107160	107260	LHS
74960	74980	RHS
75180	75260	RHS
76680	76720	RHS
77520	77600	RHS
77660	77720	RHS
77940	78100	RHS
78280	78300	RHS
78520	78540	RHS
83000	83040	RHS
84980	85000	RHS
85230	85300	RHS

Chainage From	Chainage To	Side
85700	85740	RHS
89580	89660	RHS
93940	94000	RHS
94200	94220	RHS
95240	95260	RHS
95460	95480	RHS
95680	95700	RHS
95760	95800	RHS
96500	96600	RHS
97020	97080	RHS
97380	97400	RHS
97760	97860	RHS
100700	101000	RHS
102100	102400	RHS
102340	102400	RHS
103460	103500	RHS
103960	104060	RHS
104100	104140	RHS
105200	105220	RHS
106100	106300	RHS
106920	107060	RHS
107160	107260	RHS
107340	107440	RHS

Note: The above length of retaining wall is minimum & any increase in the length/Qty of retaining wall as per site requirements may not be considered as positive change of scope.

2. <u>W-Beam Crash Barrier (along High Embankment & Bridge approach)</u>

- W Beam crash barrier shall be provided in minimum length of 18380m,

S. No.	Chainage		Length	Side	Remarks
	From	To			
1	72000	72080	80	BHS	
2	72240	72300	60	LHS	
3	72380	72560	180	BHS	
4	72640	73040	400	BHS	
5	73060	73160	100	RHS	
6	73440	73720	280	BHS	
7	73920	73980	60	BHS	
8	74080	74360	280	BHS	

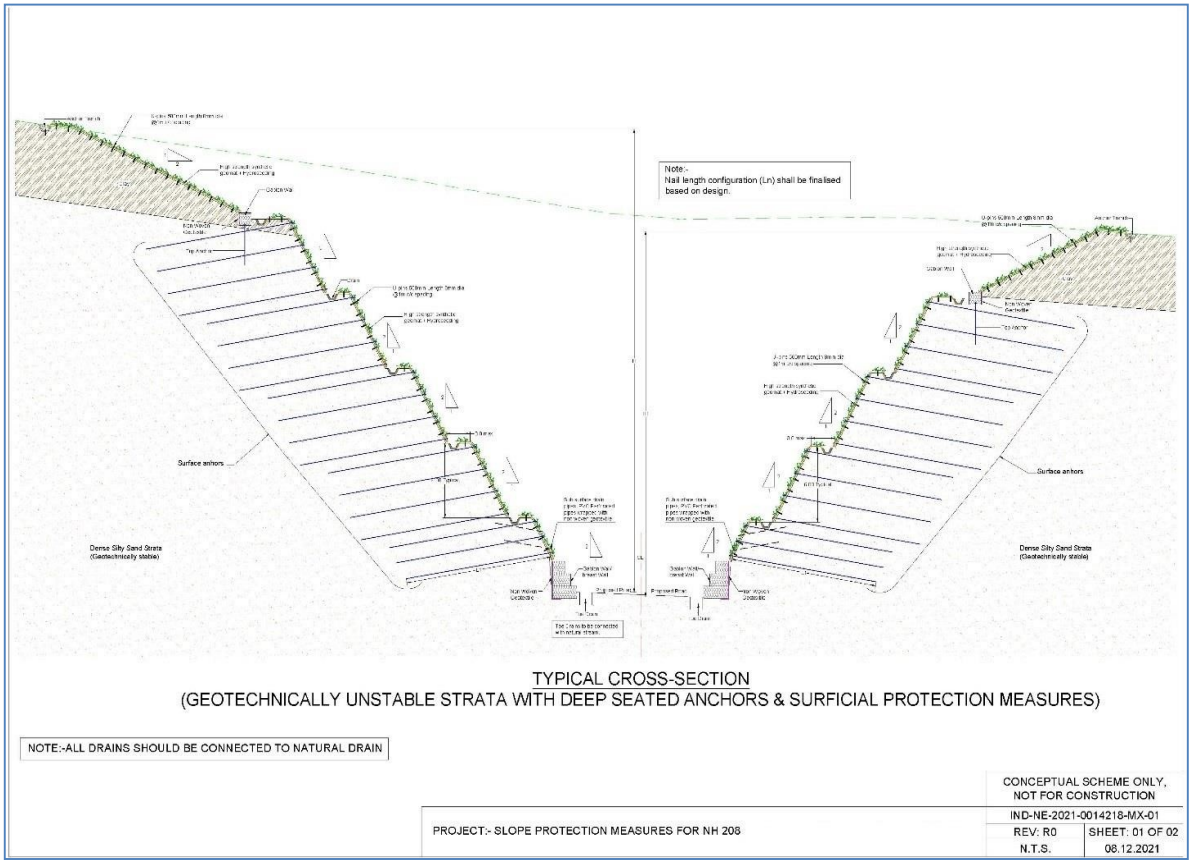
S. No.	Chainage		Length	Side	Remarks
	From	To			
9	74620	74680	60	BHS	
10	74840	74980	140	LHS	
11	75180	75260	80	BHS	
12	75940	76040	100	BHS	
13	76340	76420	80	RHS	
14	76440	77020	580	BHS	
15	77140	77440	300	BHS	
16	77520	77860	340	BHS	
17	77940	78120	180	BHS	
18	78200	78420	220	BHS	
19	78500	78540	40	BHS	
20	78840	79000	160	BHS	
21	80000	80280	280	BHS	
22	80540	80680	140	BHS	
23	82140	82300	160	BHS	
24	82420	82540	120	BHS	
25	82720	82860	140	LHS	
26	82900	83160	260	BHS	
27	84220	84340	120	LHS	
28	84600	84660	60	BHS	
29	84980	85100	120	BHS	
30	85260	85320	60	BHS	
31	85520	85600	80	BHS	
32	85660	85760	100	BHS	
33	89360	89400	40	BHS	
34	89580	89660	80	BHS	
35	89680	89820	140	LHS	
36	93220	93280	60	LHS	
37	93900	94020	120	BHS	
38	94180	94520	340	BHS	
39	94640	94760	120	BHS	
40	95440	95500	60	RHS	
41	95660	95820	160	BHS	
42	96520	96580	60	BHS	
43	97020	97100	80	BHS	
44	97340	97480	140	BHS	
45	97580	98160	580	BHS	
46	98400	98960	560	BHS	
47	99160	99360	200	BHS	
48	99380	99520	140	RHS	
49	99760	99840	80	BHS	
50	100400	100460	60	RHS	
51	100680	100920	240	BHS	
52	100940	101080	140	LHS	
53	102120	102420	300	BHS	
54	102680	102720	40	BHS	
55	102840	103140	300	LHS	
56	103220	103260	40	BHS	
57	103440	103500	60	BHS	

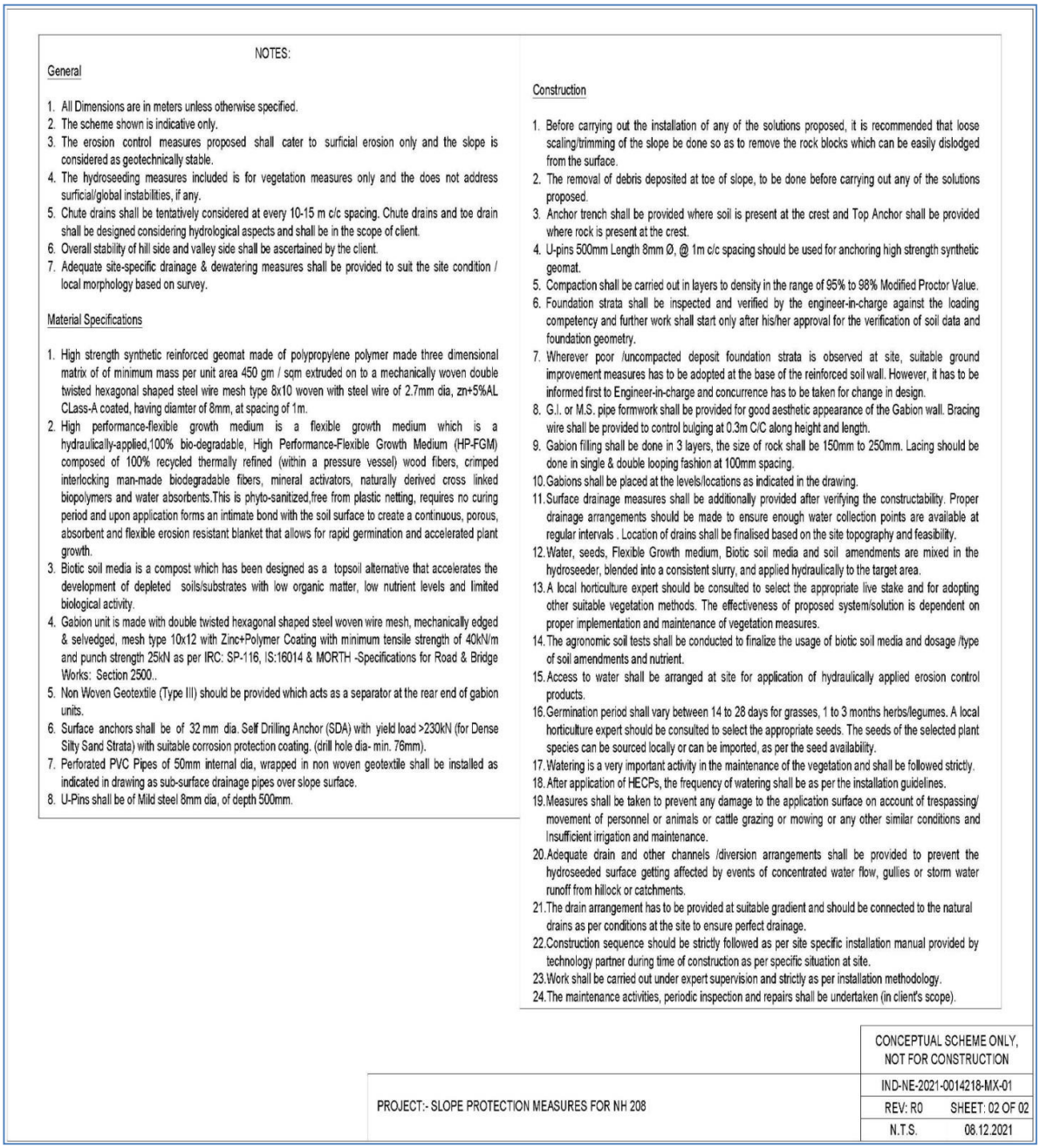
S. No.	Chainage		Length	Side	Remarks
	From	To			
58	103960	104160	200	BHS	
59	104240	104280	40	LHS	
60	106120	106180	60	BHS	
61	106260	106320	60	BHS	
62	106940	107020	80	BHS	
63	107200	107240	40	BHS	

Note: The above length of W beam crash barrier is minimum & any increase in the length of crash barrier as per site requirements may not be considered as positive change of scope.

12. Special Requirement for Hill Roads:

Slope Protection works for Geotechnically Unstable strata with Deep seated Anchors & Surficial Protection Measures proposed from km 90+240 to km 90+960 (both Side) & km 91+440 to km 92+100 (Both Side). TCS for reference is given below -.





NOTES:

General

1. All Dimensions are in meters unless otherwise specified.
2. The scheme shown is indicative only.
3. The erosion control measures proposed shall cater to surficial erosion only and the slope is considered as geotechnically stable.
4. The hydroseeding measures included is for vegetation measures only and the does not address surficial/global instabilities, if any.
5. Chute drains shall be tentatively considered at every 10-15 m c/c spacing. Chute drains and toe drain shall be designed considering hydrological aspects and shall be in the scope of client.
6. Overall stability of hill side and valley side shall be ascertained by the client.
7. Adequate site-specific drainage & dewatering measures shall be provided to suit the site condition / local morphology based on survey.

Material Specifications

1. High strength synthetic reinforced geomat made of polypropylene polymer made three dimensional matrix of of minimum mass per unit area 450 gm / sqm extruded on to a mechanically woven double twisted hexagonal shaped steel wire mesh type 8x10 woven with steel wire of 2.7mm dia, zn+5%AL CLass-A coated, having diamter of 8mm, at spacing of 1m.
2. High performance-flexible growth medium is a flexible growth medium which is a hydraulically-applied,100% bio-degradable, High Performance-Flexible Growth Medium (HP-FGM) composed of 100% recycled thermally refined (within a pressure vessel) wood fibers, crimped interlocking man-made biodegradable fibers, mineral activators, naturally derived cross linked biopolymers and water absorbents.This is phyto-sanitized,free from plastic netting, requires no curing period and upon application forms an intimate bond with the soil surface to create a continuous, porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth.
3. Biotic soil media is a compost which has been designed as a topsoil alternative that accelerates the development of depleted soils/substrates with low organic matter, low nutrient levels and limited biological activity.
4. Gabion unit is made with double twisted hexagonal shaped steel woven wire mesh, mechanically edged & selvedged, mesh type 10x12 with Zinc+Polymer Coating with minimum tensile strength of 40kN/m and punch strength 25kN as per IRC: SP-116, IS:16014 & MORTH -Specifications for Road & Bridge Works: Section 2500..
5. Non Woven Geotextile (Type III) should be provided which acts as a separator at the rear end of gabion units.
6. Surface anchors shall be of 32 mm dia. Self Drilling Anchor (SDA) with yield load >230kN (for Dense Silty Sand Strata) with suitable corrosion protection coating. (drill hole dia- min. 76mm).
7. Perforated PVC Pipes of 50mm internal dia, wrapped in non woven geotextile shall be installed as indicated in drawing as sub-surface drainage pipes over slope surface.
8. U-Pins shall be of Mild steel 8mm dia, of depth 500mm.

Construction

1. Before carrying out the installation of any of the solutions proposed, it is recommended that loose scaling/trimming of the slope be done so as to remove the rock blocks which can be easily dislodged from the surface.
2. The removal of debris deposited at toe of slope, to be done before carrying out any of the solutions proposed.
3. Anchor trench shall be provided where soil is present at the crest and Top Anchor shall be provided where rock is present at the crest.
4. U-pins 500mm Length 8mm Ø, @ 1m c/c spacing should be used for anchoring high strength synthetic geomat.
5. Compaction shall be carried out in layers to density in the range of 95% to 98% Modified Proctor Value.
6. Foundation strata shall be inspected and verified by the engineer-in-charge against the loading competency and further work shall start only after his/her approval for the verification of soil data and foundation geometry.
7. Wherever poor /uncompacted deposit foundation strata is observed at site, suitable ground improvement measures has to be adopted at the base of the reinforced soil wall. However, it has to be informed first to Engineer-in-charge and concurrence has to be taken for change in design.
8. G.I. or M.S. pipe formwork shall be provided for good aesthetic appearance of the Gabion wall. Bracing wire shall be provided to control bulging at 0.3m C/C along height and length.
9. Gabion filling shall be done in 3 layers, the size of rock shall be 150mm to 250mm. Lacing should be done in single & double looping fashion at 100mm spacing.
10. Gabions shall be placed at the levels/locations as indicated in the drawing.
11. Surface drainage measures shall be additionally provided after verifying the constructability. Proper drainage arrangements should be made to ensure enough water collection points are available at regular intervals . Location of drains shall be finalised based on the site topography and feasibility.
12. Water, seeds, Flexible Growth medium, Biotic soil media and soil amendments are mixed in the hydroseeder, blended into a consistent slurry, and applied hydraulically to the target area.
13. A local horticulture expert should be consulted to select the appropriate live stake and for adopting other suitable vegetation methods. The effectiveness of proposed system/solution is dependent on proper implementation and maintenance of vegetation measures.
14. The agronomic soil tests shall be conducted to finalize the usage of biotic soil media and dosage /type of soil amendments and nutrient.
15. Access to water shall be arranged at site for application of hydraulically applied erosion control products.
16. Germination period shall vary between 14 to 28 days for grasses, 1 to 3 months herbs/legumes. A local horticulture expert should be consulted to select the appropriate seeds. The seeds of the selected plant species can be sourced locally or can be imported, as per the seed availability.
17. Watering is a very important activity in the maintenance of the vegetation and shall be followed strictly.
18. After application of HECPs, the frequency of watering shall be as per the installation guidelines.
19. Measures shall be taken to prevent any damage to the application surface on account of trespassing/ movement of personnel or animals or cattle grazing or mowing or any other similar conditions and Insufficient irrigation and maintenance.
20. Adequate drain and other channels /diversion arrangements shall be provided to prevent the hydroseeded surface getting affected by events of concentrated water flow, gullies or storm water runoff from hillock or catchments.
21. The drain arrangement has to be provided at suitable gradient and should be connected to the natural drains as per conditions at the site to ensure perfect drainage.
22. Construction sequence should be strictly followed as per site specific installation manual provided by technology partner during time of construction as per specific situation at site.
23. Work shall be carried out under expert supervision and strictly as per installation methodology.
24. The maintenance activities, periodic inspection and repairs shall be undertaken (in client's scope).

	CONCEPTUAL SCHEME ONLY, NOT FOR CONSTRUCTION
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13. Change of Scope

The length of Structures and bridges specified here in above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B

shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article13.

14. UTILITY SHIFTING

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

Notes:

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

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

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

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

SCHEDULE- C
(SeeClause2.1)

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;

(b) Road side furniture;

(c) Pedestrian facilities;

(d) Tree plantation;

(e) Truck lay-byes;

(f) Bus stop and bus shelters;

(h) Rest areas; and

(i) Others to bespecified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

(a) Toll Plaza

Toll plaza shall be designed as per the guidelines of manual and it is provided at followinglocations:

S. No.	Toll Plaza Location (Design Chainage in Km)
Nil	

(b) Road side Furniture

i) Traffic Signs and Pavement Markings:
Traffic signs and pavement markings includes roadside signs, overhead signs, and road marking along the Project Road.

Cautionary, mandatory and informatory signs are provided depending on the situation and function they perform in accordance with the IRC: 67-1997 guidelines for Road Signs. The different types of road signs are proposed to be provided are:

i. Mandatory /Regulatory
ii. Cautionary /Warning
iii. Directional
iv. Hazard Markers
v. Informa Tory

Overhead signboard will be installed as per locations mentioned in schedule 'B". provision has been made in the estimate for installation of road signs of various types.

Markings:

Longitudinal markings
: centre lines
: edge lines
: Width transition
: obstructions ahead

Intersections.
: Stop lines
: Word "Stop"
: Pedestrian crossings.
: Approach to intersection.
: Direction arrows.
: Continuity lines
: Traffic island.

Parking:
: Bus stop

ii) Traffic signs and pavement markings shall include road side signs, overhead signs, curve mounted signs and road marking along the project highway. The location for these provisions shall be finalized as per manual.

iii) Boundary stones -
Boundary stone shall be fixed on either side of the road land opposite every 200m stone and kilometre stone (as per IRC-25).

iv) 5th Km stone/ Hectometre / Kilometre stones – Refer Schedule 'B'

v) Delineators and studs: Studs (100mm*100mm) with reflective panels of duel prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators or night time visibility shall be provided for the locations where extra width is proposed.

(c) Pedestrian Facilities

The additional pedestrian facilities in the form of guard rails, footpath, lighting etc shall be provided wherever required as per the provisions of IRC: 103-2012.

(d) Landscaping and Tree Plantation

The landscaping and tree plantation shall be provided. The locations for these provisions shall be finalized in consultation with Authority Engineer.

(e) Truck Lay-byes

Truck lay byes shall be provided at the following locations.

Sl. No.	Proposed Chainage (Km)
Nil	

(f) Bus Bays

Bus lay byes shall be provided at the following locations.

Sl. No.	Design Chainage (Km)		Remarks
	LHS	RHS	
1	76.885	75.960	
2	82.840	83.210	
3	103.280	103.470	

(g) Rest Areas,

Nil.

(h) Others

1. Highway Lighting

Shall be provided as per manual at below locations –

Sl. No	Design Chainage (Km)		Length (m)
	From	To	
1	75+400	75+800	400

Sl. No	Design Chainage (Km)		Length (m)
	From	To	
2	107+000	108+191	1191

Note: The above length is minimum & any increase in the length/Qty as per site requirements may not be considered as positive change of scope.

2. **Highway Patrol**

As per manual

3. **Ambulances**

As per manual

4. **Cranes**

As per manual

5. **Traffic Aid Post**

Traffic aid post shall be provided in consultation with Authority Engineer, the tentative locations for Traffic Aid post is as under –

Sl. No.	Location for Traffic Aid Post
1	Near km 87+100
2	Near km 100+400

6. **Rainwater Harvesting**

As per Ministry of Environment and Forests Notification, New Delhi dated 14/01/1997 (as amended on 13/01/1998, 05/01/1999 & 6/11/2000), the construction of Rain water, harvesting structure is mandatory in and around Water Crisis area, notified by the Central Ground Water Board.

In this section the contractor shall provide minimum 43 nos. of rain water harvesting system.

Sl. No.	Location for Rain water harvesting
1	Near km 72+200
2	Near km 74+400
3	Near km 75+800
4	Near km 78+200

Sl. No.	Location for Rain water harvesting
5	Near km 80+500
6	Near km 83+100
7	Near km 85+700
8	Near km 88+300
9	Near km 90+900
10	Near km 93+500
11	Near km 96+700
12	Near km 99+200
13	Near km 101+300
14	Near km 103+600
15	Near km 106+800

The above locations of Rain water Harvesting is tentative and may change as per site requirement on approval of Client/ Authority Engineer.

SCHEDULE - D
(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1 Construction

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

2 Design Standards

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

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

[Note: Specify the relevant manual, specification and standards]

3 Design Standards for Utility Shifting

As regards, the work of utility shifting, the relevant specification, relevant rules, regulations and acts of Utility owning Departments/Agencies shall be applicable.

Annex - I
(Schedule-D)

Specifications and Standards for Construction

1 ***Specifications and Standards***

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

2 ***Deviations from the Specifications and Standards***

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

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

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

Clause Referred in Manual	Item	Provision as per Manual	Modified Provision	Remarks
2.2.1	Minimum design speed in Plain & Rolling Terrain	100kmph/ 80kmph	At 1 location listed below, where the horizontal curve radius is not meeting the criteria as per clause 2.9.4 and table 2.5 of IRC: SP: 73-2018.	Speed is restricted for Curve having radius listed below -
2.2.1	Minimum design speed in	60kmph/40kmph	No deviation	

Clause Referred in Manual	Item	Provision as per Manual	Modified Provision	Remarks
	Mountainous & Steep Terrain			

3. Deficient curve details:

Horizontal curve which comes under deviation are listed below:

Sl. No.	HORIZONTAL CURVE				Terrain	Transition length	Speed (Kmph)
	Start Chainage	End Chainage	Radius	Direction			
1	84+823.108	85+353.531	200	Right	Hilly	35	50
2	85+793.230	85+803.627	200	Right	Hilly	35	50
3	86+053.979	86+108.641	150	Left	Hilly	30	50
4	86+268.584	86+294.991	75	Left	Hilly	30	40
5	86+502.192	86+690.398	200	Left	Hilly	35	50
6	87+389.973	87+478.712	75	Left	Hilly	30	40
7	87+566.418	87+627.165	300	Left	Hilly	20	50
8	87+705.250	87+736.490	100	Right	Hilly	45	50
9	87+831.004	87+917.095	75	Left	Hilly	30	40
10	87+986.898	88+042.436	75	Right	Hilly	30	40
11	88+120.162	88+127.838	150	Right	Hilly	30	50
12	88+265.583	88+297.418	75	Right	Hilly	60	40
13	88+395.492	88+454.599	150	Left	Hilly	30	50
14	88+533.458	88+590.413	200	Left	Hilly	35	50
15	88+727.788	88+786.106	75	Right	Hilly	30	40
16	88+843.927	88+874.289	300	Left	Hilly	20	50
17	89+026.296	89+093.427	100	Left	Hilly	45	50
18	89+561.326	89+699.407	100	Left	Hilly	20	40
19	89+892.427	90+021.462	500	Right	Hilly	0	50
20	90+320.860	90+395.077	200	Right	Hilly	35	50
21	90+677.013	90+947.181	500	Right	Hilly	0	50
22	91+158.602	91+276.162	125	Right	Hilly	35	50

Sl. No.	HORIZONTAL CURVE				Terrain	Transition length	Speed (Kmph)
	Start Chainage	End Chainage	Radius	Direction			
23	91+518.828	91+660.751	200	Left	Hilly	35	50
24	92+291.612	92+381.763	500	Right	Hilly	0	50
25	92+536.855	92+620.269	75	Right	Hilly	30	40
26	92+693.178	92+816.001	90	Left	Hilly	25	40
27	93+175.952	93+199.385	200	Right	Hilly	35	50
28	93+392.952	93+597.525	300	Left	Hilly	20	50
29	93+809.293	93+854.336	150	Right	Hilly	30	50
30	94+901.728	95+019.630	200	Right	Hilly	35	50
31	95+132.644	95+166.982	75	Left	Hilly	30	40
32	95+257.898	95+362.789	75	Right	Hilly	30	40
33	95+479.005	95+547.214	500	Right	Hilly	0	50
34	95+777.921	95+840.050	200	Right	Hilly	35	50
35	96+241.554	96+348.938	75	Right	Hilly	30	40
36	96+415.058	96+451.067	75	Left	Hilly	30	40
37	96+971.998	97+192.373	400	Left	Plain	55	80
38	100+696.743	100+765.041	500	Right	Plain	45	80
39	100+993.290	101+109.353	250	Left	Plain	90	80
40	101+294.629	101+991.041	500	Right	Plain	45	80
41	103+907.173	104+235.258	500	Right	Plain	45	80

4 **Deviations in Vertical improvement of Project Road are** –

There is no any vertical curves comes under deviation.

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

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

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

[Specify all the relevant documents]

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection/Post-monsoon inspection

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

8. Repairs on account of natural calamities

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

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Table -1: Maintenance Criteria for Pavements:

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

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	**Acceptable**					
S of Grade structure, approaches of connecting roads, slip roads,layb yes etc. as applicable)	Cracking	Nil	< 5 % subject to limitof 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
	Corrugation and Shoving	Nil	< 0.1% Of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2015

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

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

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

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

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

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

In addition to the above performance criterion, the contractor shall strictly maintain the rigid pavements as per requirements in the following table Table -2:

Maintenance Criteria for Rigid Pavements:

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

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

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

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

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

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length(m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be fulldepth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within30days
			5	w > 3 mm, L > 3 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 or Honeycomb type surface	r = area damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term** No action.	**Long Term** Not Applicable
			1	r < 2 %	Local repair of areas damaged and liable to be damaged. Within 15 days	
			2	r = 2 - 10 %		
			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**
					Within 30 days	
			5	r > 50% and h > 25 mm	Reconstruct slabs, 4 or more slabs if affecting. Within 30 days	
8	**Scaling**	r = damaged surface/total surface of slab (%) h = maximum depth of damage	0	Nil, not discernible	**Short Term** No action.	**Long Term** Not Applicable
			1	r <**2 %**	Local repair of areas damaged	
			2	r = 2 - 10 %	and liable to be damaged. Within 7days	

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	For the case d > D/2
			5	t < 0.1 mm	Diamond Grinding if affecting 50% or more slabs ina continuous stretch of minimum 5 km. Within 30 days	
10	**Popout (Small Hole), Pothole Refer Para 8.4**	n = number/m² d = diameter h = maximum depth	0	d < 50 mm; h < 25 mm; n < 1 per 5 m²	No action.	Not Applicable
			1	d=50-100mm;h<50mm;n<1 per 5 m²	Partial depth repair 65 mm deep. Within 15 days	
			2	d=50-100mm;h>50mm;n<1 per 5 m²		

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

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

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

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

			3	h = 12 - 25 mm	within 7 days	
			4	h > 25 mm	Full Depth Repair. Within 30 days	
			5	shattered slabs, ie 4 or more pieces	Replace broken slabs. Within 30 days	
15	**Depression**	h = negative vertica displacement from normal profile L =length	0	Not discernible, h < 5 mm	No action.	Not Applicable
			1	h = 5 - 15 mm		
			2	h = 15-30 mm, Nos<20% joints	Install Signs to Warn Traffic within 7 days	
			3	h = 30 - 50 mm		
			4	h > 50 mm or >20% joints	Strengthen sub grade. Reinstate pavement at normal level	

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

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

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

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

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="4">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="5">Highway</td><td rowspan="5">Availability of Safe Sight Distance</td><td colspan="4">As per IRC SP :73-2018, a minimum of safe stopping sight distance shall be available throughout.</td><td rowspan="5">Monthly</td><td rowspan="5">Manual Measurements with Odometer along with video/ image backup</td><td rowspan="5">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 theearliest
Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td rowspan="5"></td><td rowspan="5">IRC SP :73-2018</td></tr>
<tr><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance(m)</td><td colspan="2">Safe Stopping Sight Distance (m)</td></tr>
<tr><td>100</td><td>360</td><td colspan="2">180</td></tr>
<tr><td>80</td><td>240</td><td colspan="2">120</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td>Pavement Marking</td><td>Wear</td><td colspan="4"><70% of marking remaining</td><td>Bi-Annually</td><td>Visual Assessment as per Annexure-F of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2months</td><td>IRC:35-2015</td></tr>
</table>

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="3">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="11"></td><td>Day time Visibility</td><td colspan="3">During expected life Service Time
Cement Road - 130mcd/m²/lux
Bituminous Road - 100mcd/m²/lux</td><td>Monthly</td><td>As per Annexure-D of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td rowspan="10">Night Time Visibility</td><td colspan="3"><u>Initial and Minimum Performance for Dry Retro reflectivity during night time:</u></td><td rowspan="10">Bi-Annually</td><td rowspan="10">As per Annexure-E of IRC:35-2015</td><td rowspan="10">Re - painting</td><td rowspan="10">Cat-1 Defect – within 24 hours
Cat-2 Defect – within 2 months</td><td rowspan="10">IRC:35-2015</td></tr>
<tr><td>Design Speed</td><td colspan="2">(RL) Retro Reflectivity (mcd/m²/lux)</td></tr>
<tr><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td></tr>
<tr><td>Up to 65</td><td>200</td><td>80</td></tr>
<tr><td>65 - 100</td><td>250</td><td>120</td></tr>
<tr><td>Above 100</td><td>350</td><td>150</td></tr>
<tr><td colspan="3"><u>Initial and Minimum Performance for Night Visibility under wet</u> condition(Retro reflectivity):</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3"></td></tr>
<tr><td colspan="3"></td></tr>
</table>

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.		Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:73-2018 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC SP :73-2018,IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC SP :73-2018
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC SP :73-2018, IRC:119-2015
	End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC SP :73-2018,

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Traffic Safety Barriers			backup			IRC:119-2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-73: 2018, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC SP :73-2018
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC SP :73-2018
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC SP :73-2018
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC SP :73-2018
	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 :73-2018
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC SP :73-2018

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC SP :73-2018
	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 :73-2018
	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 73-2018
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Other Project Facilities and Approach roads	Damage or deterioration in Approach Roads, pedestrian facilities, truck lay-bys, bus-bays, bus-shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and other works		Daily	-	Rectification	15 days	IRC:SP 73-2018

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Pipe/box/slab culverts	Free waterway/ unobstructed flow section	85% of culvert normal flow area to available.	2 times in a year (before and after rainy season)	Inspection by Bridge Engineer as per IRC SP: 35-1990 and recording of depth of silting and area of vegetation.	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of bushes and vegetation, U/s of barrel, under barrel and D/s of barrel before rainy season.	15 days before onset of monsoon and within 30 days after end of rainy season.	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35- 1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as perIRC:SP:40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregatelength					

	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansionjoint	Daily	Visual inspection as per IRC SP:35- 1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier andguard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 73-2018 and IRC SP: 40-1993.

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

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

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

	Bearings	Delamination of bearing reinforcement not more than 5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier/abutment, all the bearings on that pier/abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810and IRC SP: 40-199.
Bridge Foundations	Scouring around foundations	Scouring shall not be lower than maximum scour level for the bridge	Bi-Annually	Condition survey and visual inspection as per IRC SP:35-1990 using Mobile Bridge Inspection Unit. In case of doubt, use Underwater camera for inspection of deep wells in major Rivers.	Suitable protection works around pier/abutment	1 month	IRC SP: 40-1993, IRC 83-2014, MORTH specification 2500
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or2	IRC: SP 40-1993 and IRC:SP:13-2004.

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

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

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

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

Nature of Defect or deficiency		Time limit for repair/ rectification
(i)	Scouring and/or cavitation	15 (fifteen) days
(c) Piers, abutments, return walls and wing walls		
(i)	Cracks and damages including settlement and tilting, spalling, scaling	30 (thirty) days
(d) Bearings (metallic) of bridges		
(i)	Deformation, damages, tilting or shifting of bearings	15 (fifteen) days Greasing of metallic bearings once in a year
(e) Joints		
(i)	Malfunctioning of joints	15 (fifteen) days
(f) Other items		
(i)	Deforming of pads in elastomeric bearings	7 (seven) days
(ii)	Gathering of dirt in bearings and joints; or clogging of spouts, weep holes and vent-holes	3 (three) days
(iii)	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3 (three) days (immediately within 24 hours if posing danger to safety)
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	7 (seven) days
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall/breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours

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

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

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

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

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

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

(c) Licence for use of explosives;

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

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

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

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

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

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

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

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

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

WHEREAS:

_____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "**Agreement**") for the **Improvement and Widening to two lane with paved shoulder of road from design Km 72.000 (Pati Chhari) to design Km 107.654 (Harina) (Total length 35.654 Km) on Teliamura to Harina section of NH 208 (Package-IV) in the state of Tripura on EPC mode under JICA ODA Loan Phase 6"**

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

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

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

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

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

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

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shallnot 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 underany such law.

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

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

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

the Bank shall be relieved from its liabilities hereunder.

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

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

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

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

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

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

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

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature)
(Name
)(Designation)
(Code
Number)
(Address)

NOTES:

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

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

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

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

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

110001

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for **Improvement and Widening to two lane with paved shoulder of road from design Km 72.000 (Pati Chhari) to design Km 107.654 (Harina) (Total length 35.654 Km) on Teliamura to Harina section of NH 208 (Package-IV) in the state of Tripura on EPC mode under JICA ODA Loan Phase 6** 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; andthat 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 andaffirms as follows:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the

Bank by:(Signature)

(Name)

(Designati

on) (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

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

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

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
Road works including culverts, widening and repair of culverts.	**39.81%**	**A-Widening and Strengthening of existing road**	
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	2.28%
		(2) Sub Base courses	2.39%
		(3) Non Bituminous Base Course	0.00%
		(4) Bituminous Base Course	2.69%
		(5) Wearing coat	1.68%
		(6) Widening and repair of culverts	0.00%
		B 1- Reconstruction / New two lane alignment / bypass (Flexible pavement)	
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	17.75%
		(2) Sub Base Course	18.68%
		(3) Non Bituminous Base Course	*12.59%*
		(4) Bituminous Base Course	*8.39%*
		(5) Wearing coat	13.11%
		B 2- Reconstruction / New two lane alignment / bypass (Rigid pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		(2) Sub Base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) course	0.00%
		C 1- Reconstruction / New Service road/ Slip Road (Flexiblepavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub Base Course	0.00%
		(3) Non Bituminous Base Course	0.00%
		(4) Bituminous Base Course	0.00%
		(5) Wearing coat	0.00%
		C 2- Reconstruction / New Service road (Rigid pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub Base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) course	0.00%
		D - Reconstruction and New culverts on existing road, Realignments, bypasses:	
		Culverts (Length <6m)	
		a - Pipe Culverts	0.00%
		b - Box Culverts	20.44%
Minor Bridges / underpasses / over passes	**15.51%**	**A 1- Widening and repairs of Minor Bridges (length >6m and<60m)**	
		Minor Bridges	0.00%
		A 2- New Minor Bridges (length >6m and<60m)	

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	30.00%
		(2) Superstructure : on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, testson completion etc. complete in all respect.	30.00%
		(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, test on completion in all respects and fitfor use.	30.00%
		(4) Guide bunds and river training works: on completion of guide bunds and repair training works complete in all respects.	10.00%
		B 1 - Widening and repair of underpasses / overpasses	
		Underpasses / Overpasses	0.00%
		B 2 - New Underpasses / Overpasses	
		(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	0.00%

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		(2) Superstructure : on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road sign & markings, testson completion etc. complete in all respect.	0.00%
		Wearing coat (a) in case of overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass - rigid pavement including drainage facility complete in all respects as specified.	0.00%
		(3) Approaches : On completion of approaches including Retaining walls/ Reinforced earth walls, stonepitching, protection works completein all respect and fit for use.	0.00%
Major bridge (length > 60m) works and RoB / RUB / Elevated sections / Flyovers including viaducts, if any	**0.00%**	**A 1 - Widenng and repair of major bridges**	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markingsetc.	0.00%
		(6) Wing walls/return walls	0.00%
		(7) Guide bunds, River Trainingworks etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		A 2 - New Major bridges	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous Items like hand rails, crash barrier, road markingsetc.	0.00%
		(6) Wing walls/return walls upto top	0.00%
		(7) Guide bunds, River Trainingworks etc.	0.00%
		(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		B 1 - Widening and repair of	
		a) RoB	
		b) RuB	
		1) Foundation	0.00%
		2) Sub Structure	0.00%
		3) Super Structure (Including bearings)	0.00%
		4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%
		6) wing walls / return walls	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		B 2 - New RoB / RuB	

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		a) RoB	
		b) RuB	
		1) Foundation	0.00%
		2) Sub Structure	0.00%
		3) Super Structure (Including bearings)	0.00%
		4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%
		6) wing walls / return walls	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		C 1 - Widening and repair of Elevated sections / Fly overs / Grade Separators	
		1) Foundation	0.00%
		2) Sub Structure	0.00%
		3) Super Structure (Including bearings)	0.00%
		4) Wearing coat including expansion joints	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%
		6) wing walls / return walls	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
		C 2 - New Elevated sections / Fly overs / Grade Separators	
		1) Foundation	0.00%

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		2) Sub Structure	0.00%
		3) Super Structure (Including bearings)	0.00%
		4) Wearing coat including expansion joints	0.00%
		5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%
		6) wing walls / return walls	0.00%
		7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%
Other Works	**42.65%**	**(i) Toll Plaza**	0.00%
		(ii) Road side drains	
		Lined Drain (RCC)	0.00%
		Lined Drain (PCC)	6.06%
		Unlined Drain	0.09%
		(iii) Road Signs, markings, km stones, safety devices, Road furniture etc	0.72%
		(iv) Project facilities	
		(a) Bus Bays	0.54%
		(b) Truck lay byes	0.00%
		© Rain water harvesting	0.18%
		(d) Others	
		a) Clearing n Grubbing & Dismantling works	0.18%
		b) improvement of Junctions	3.09%
		c) Turfing and hydroseeding	4.78%
		d) Traffic Aid Post	0.07%
		e) Lighting works	0.15%

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
		(vi) Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs	
		(a) Crash Barrier	3.55%
		(b) Retaining wall	12.44%
		('c) Breast Wall	44.63%
		(d) Pitching work for diversion of nala	0.00%
		('e) Slope Protection works	23.52%
		(vii) Safety and traffic management during construction	
Electrical utilites and public Health Utilities (water pipe lines and sewage lines)	***2.03%***	**(i) EHT Lines**	0.00%
		(ii) EHT Crossings	0.00%
		(iii) HT/LT line	38.72%
		(iv) HT/LT crossings	17.60%
		(v) Transformer	2.35%
		(vi) Water pipeline	39.70%
		(vii) Water pipeline crossings	0.81%
		(viii) Water Pipe line (WRD)	0.82%

Procedure of estimating the value of work done

Road works

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

Table1.3.1

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
A-Widening and Strengthening of existing road		
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	2.28%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
(2) Sub Base courses	2.39%	
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous Base Course	2.69%	
(5) Wearing coat	1.68%	
(6) Widening and repair of culverts	0.00%	Cost of completed culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of atleast five culverts.
B 1- Reconstruction / New two lane alignment / bypass (Flexible pavement)		
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock, removal of unserviceable soil etc	17.75%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.
(2) Sub Base Course	18.68%	
(3) Non Bituminous Base Course	*12.59%*	
(4) Bituminous Base Course	*8.39%*	
(5) Wearing coat	13.11%	
B 2- Reconstruction / New two lane alignment / bypass (Rigid pavement)		
(1) Earthwork up to top of the sub-grade	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.
(2) Earthwork in shoulders	0.00%	
(3) Sub Base Course	0.00%	
(4) Dry Lean Concrete (DLC) Course	0.00%	
(5) Pavement Quality Control (PQC) course	0.00%	
C 1- Reconstruction / New Service road/ Slip Road (Flexible pavement)		
(1) Earthwork up to top of the sub-grade including shoulder	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
(2) Sub Base Course	0.00%	pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous Base Course	0.00%	
(5) Wearing coat	0.00%	
C 2- Reconstruction / New Service road (Rigid pavement)		
(1) Earthwork up to top of the sub-grade	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km. length, whichever is less.
(2) Sub Base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) course	0.00%	
D - Reconstruction and New culverts on existing road, Realignments, bypasses:		
Culverts (Length <6m)		Cost of each culverts shall be determined on pro rata basis with respect to the total no. of culverts. The payment shall be made on the completion of at least five culverts.
a - Pipe Culverts	0.00%	
b - Box Culverts	20.44%	

@ 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.

Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
A 1- Widening and repairs of Minor Bridges (length >6m and<60m)		
Minor Bridges	0.00%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on completion of widening and repair works of a minor bridge.
A 2- New Minor Bridges (length >6m and<60m)		
(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	30.00%	**(1) Foundation + Sub Structure:** Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment against Foundation + Sub Structure shall be made on pro rata basis on completion of a stage ie. not less than 25% of the scope of Foundation + Sub Structure of each bridge subject to completion of at least two foundations along with sub structure upto abutment/pier cap level of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Superstructure :on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on	30.00%	**(2) Super structure:** Payment shall be made on pro rata basis on completion of a stage ie. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this Sub-clause.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
completion etc. complete in all respect.		
(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	30.00%	**(3) Approaches:** Payment shall be made on pro rata basis on completion of a stage ie. completion of approaches in all respect as specified in the column of " Stage of Payment" in this Sub-clause.
(4) Guide bunds and river training works: on completion of guide bunds and repair training works complete in all respects.	10.00%	**(4) Guide bunds and river training works:** Payment shall be made on pro rata basis on completion of a stage ie. completion of guide bunds and river training works in all respect as specified.
B 1 - Widening and repair of underpasses / overpasses		
Underpasses / Overpasses	0.00%	Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpass / overpass. Payment shall be made on completion of widening and repair works of a underpass / overpass.
B 2 - New Underpasses / Overpasses		

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
(1) Foundation + Sub-structure: on completion of foundation work including foundation for wing and return wall, abutments, piers upto the abutment/pier cap.	0.00%	**(1) Foundation + Sub Structure:** Cost of each underpass / overpass shall be determined on pro rata basis with respect to the total linear length of the underpass / overpass. Payment against Foundation + Sub Structure shall be made on pro rata basis on completion of a stage ie. not less than 25% of the scope of Foundation + Sub Structure of each underpass / overpass subject to completion of atleast two foundations along with sub structure upto abutment/pier cap level of each underpass / overpass. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Superstructure :on completion of super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	0.00%	**(2) Super structure:** Payment shall be made on pro rata basis on completion of a stage ie. completion of super structure of atleast one span in all respect as specified in the column of " Stage of Payment" in this Sub-clause.
(3) Approaches: on completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use.	0.00%	**(3) Approaches:** Payment shall be made on pro rata basis on completion of a stage ie. completion of approaches in all respect as specified in the column of " Stage of Payment" in this Sub-clause.

Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
A 1 - Widening and repair of major bridges		
(1) Foundation	0.00%	**(i)Foundation:** Cost of each Major Bridge shall be determined on prorata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of at least two foundations of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.
(2) Sub-structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the major bridge subject to completion of at least two sub structures of abutment / pier cap level of the major bridge..
(3) Super-structure (including bearings)	0.00%	**(iii) Super-structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of at least one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	**(iv)Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(v) Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls upto top	0.00%	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
(7) Guide bunds, River Training works etc.	0.00%	**(vii) Guide Bonds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(viii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A 2 - New Major bridges		
(1) Foundation	0.00%	**(i)Foundation:** Cost of each Major Bridge shall be determined on prorata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge subject to completion of atleast two foundations of the major bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also were specified.
(2) Sub-structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the major bridge subject to completion of atleast two sub structures of abutment / pier cap level of the major bridge..
(3) Super-structure (including bearings)	0.00%	**(iii) Super-structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified.
(4) Wearing Coat including expansion joints	0.00%	**(iv)Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	**(v) Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls upto top	0.00%	**(vi) Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
(7) Guide bunds, River Training works etc.	0.00%	**(vii) Guide Bonds, River Training works:** Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(viii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B 1 - Widening and repair of		
a) RoB		
b) RuB		
1) Foundation	0.00%	**(i)Foundation**: Cost of each RoB / RuB shall be determined on pro rata basis with respect to the total linear length (m) of the RoB / RuB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the RoB / RuB subject to completion of atleast two foundations of the RuB/ROB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
2) Sub Structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the RoB / RuB subject to completion of atleast two sub structure of abutments / pier cap level of the RuB/ROB.
3) Super Structure (Including bearings)	0.00%	**(iii) Super-structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified.
4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%	(iv) **Wearing Coat**: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	(v) **Miscellaneous**: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
6) wing walls / return walls	0.00%	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B 2 - New RoB / RuB		
1) Foundation	0.00%	**(i)Foundation**: Cost of each RoB / RuB shall be determined on pro rata basis with respect to the total linear length (m) of the RoB / RuB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the RoB / RuB subject to completion of atleast two foundations of the RuB/ROB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
2) Sub Structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e.not less than 25% of the scope of sub-structure of the RoB / RuB subject to completion of atleast two sub structure of abutments / pier cap level of the RuB/ROB.
3) Super Structure (Including bearings)	0.00%	**(iii) Super-structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified.
4) Wearing coat (a) in case of **RoB** - wearing coat including expansion joints complete in all respect as specified and (b) in case of **RuB** - rigid pavement under RuB including drainage facility complete in all respect as specified	0.00%	(iv) **Wearing Coat**: Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	(v) **Miscellaneous**: Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
6) wing walls / return walls	0.00%	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C 1 - Widening and repair of Elevated sections / Fly overs / Grade Separators		
1) Foundation	0.00%	**(i)Foundation**: Cost of each RoB / RuB shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
2) Sub Structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of the structure subject to completion of atleast two sub structure of abutments / pier cap level of the structure.
3) Super Structure (Including bearings)	0.00%	**(iii) Super-structure:**Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified.
4) Wearing coat including expansion joints	0.00%	(iv) **Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	0.00%	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls / return walls complete in all respects as specified.

STAGE of PAYMENT	PERCENTAGE WEIGHTAGE	Payment Procedure
7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C 2 - New Elevated sections / Fly overs / Grade Separators		
1) Foundation	0.00%	**(i)Foundation**: Cost of each RoB / RuB shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure subject to completion of atleast two foundations of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
2) Sub Structure	0.00%	**(ii) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e.not less than 25% of the scope of sub-structure of the structure subject to completion of atleast two sub structure of abutments / pier cap level of the structure.
3) Super Structure (Including bearings)	0.00%	**(iii) Super-structure:** Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respects as specified.
4) Wearing coat including expansion joints	0.00%	(iv) **Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
5) miscellaneous items like hand rails, crash barrier, road markings etc	0.00%	(v) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
6) wing walls / return walls	0.00%	(vi) **Wing walls/return walls:** Payments shall be made on completion of all wing walls / return walls complete in all respects as specified.
7) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	(vii) **Approaches**: Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

Note:(1) In case of innovate Major Bridge projects like cable suspension/cable stayed/

Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of Competent Authority.

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

Other works.

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

Table1.3.4

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
Other Works		
(i) Toll Plaza	0.00%	Unit of measurement is each completed Toll Plaza. Payment of each Toll Plaza shall be made on pro rata basis with respect to the total of all Toll Plaza.
(ii) Road side drains		
Lined Drain (RCC)	0.00%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten percent) of the total length.
Lined Drain (PCC)	6.06%	
Unlined Drain	0.09%	
(iii) Road Signs, markings, km stones, safety devices, Road furnitures etc	0.72%	
(iv) Project facilities		
(a) Bus Bays	0.54%	Payment shall be made on pro rata basis for completed facilities.
(b) Truck lay byes	0.00%	
© Rain water harvesting	0.18%	
(d) Others		
a) Clearing n Grubbing & Dismantling works	0.18%	
b) improvement of Junctions	3.09%	
c) Turfing and hydroseeding	4.78%	
d) Traffic Aid Post	0.07%	
e) Lighting Works	0.15%	
(vi) Protection works other than approaches to the bridges, elevated sections / flyovers / grade separators and RoBs/RuBs		
(a) Crash Barrier	3.55%	
(b) Retaining wall	12.44%	
(c) Breast Wall	44.63%	

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
(d) Pitching work for diversion of nala	0.00%	Payment shall be made on pro rata basis for completed facilities.
('e) Slope Protection works	23.52%	Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 20% (twenty percent) of the total length.
(vii) Safety and traffic management during construction	0.00%	Payment shall be made on pro rata basis every six months.

Electrical utilities and public Health Utilities (water pipe lines and sewage lines)

Procedure for estimating the value of utilities shifting done shall be as stated in table 1.3.5.

Table1.3.5

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
Electrical utilities and public Health Utilities (water pipe lines and sewage lines)		
(i) EHT Lines	**0.00%**	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of EHT line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is (i) Erection of Poles - 20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-15% and (iv) Charging of line including dismantling and site clearance -35% (with DTR) and 50% without DTR.
(ii) EHT crossings	**0.00%**	Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 4 crossings

STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE	PAYMENT PROCEDURE
(iii) HT/LT Lines	**38.72%**	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro-rata basis as per its weightage with reference to total cost of LT/HT line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is (i) Erection of Poles - 20% (ii) Conductor stringing including laying of cable-30%, (iii) DTR erection (if involved)-10% and (iv) Charging of line including dismantling and site clearance -40% (with DTR) and 50% without DTR.
(iv) HT/LT Crossings	**17.60%**	Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 10 crossings
(v) Transformer	**2.35%**	Cost of each transformer shall be determined on pro rata basis with reference to total no. of transformers. Payment shall be made for completion of each unit shifting.
(v) Water pipelines	**39.70%**	Unit of measurement is as per completed activities. Cost per activity shall be determined on pro -rata basis as per its weightage with reference to total cost of pipe line. Payment shall be made for completed activity. (The average weightage of major activities (Only for payment purpose) in shifting work is laying pipe - 50%, charging of line including all miscellaneous works and dismantling and site clearance -50%)
(vi) Water pipeline crossings	**0.81%**	Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for not less than 25% of the crossings subject to a minimum of 8 crossings.
(vii) Water Pipe line (WRD)	**0.82%**	Cost of each crossing shall be determined on pro rata basis with reference to total no. of crossings. Payment shall be made for completed activity. (The average weightage of major activities in shifting work is laying pipe - 50%, charging of line including all miscellaneous works and dismantling and site clearance -50%)

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2. Procedure for payment for Maintenance

The cost for maintenance shall be as stated inClause14.1.1.

Payment for Maintenance shall be made in quarterly installments in accordance withthe provisions of Clause 19.7.

Schedule - I

(See Clause 10.2 (iv))

Drawings

1. Drawings

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

2. Additional Drawings

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

Annex – I

(Schedule - I)

List of Drawings

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

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. Project Milestone-I

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

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

3. Project Milestone-II

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

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

4. Project Milestone-III

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

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

5. Scheduled Completion Date

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

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

6. Extension of time

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

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

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

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

2. Tests

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

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

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

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

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

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

3. Agency for conducting Tests

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

4. Completion Certificate

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

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

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

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

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated.....(the "**Agreement**"), for **"Improvement and Widening to two lane with paved shoulder of road from design Km 72.000 (Pati Chhari) to design Km 107.654 (Harina) (Total length 35.654 Km) on Teliamura to Harina section of NH 208 (Package-IV) in the state of Tripura on EPC mode under JICA ODA Loan Phase 6** ,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
ANDDELIVERED

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 Paragraph2.

2. Percentage reductions in lump sum payments on monthly basis

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

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

S.No.	Item/Defect/Deficiency	Percentage
(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5thkmstones	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 asunder:

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

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**")fortheAuthority'sEngineerarebeingspecified 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 **Improvement and Widening to two lane with paved shoulder of road from design Km 72.000 (Pati Chhari) to design Km 107.654 (Harina) (Total length 35.654 Km) on Teliamura to Harina section of NH 208 (Package-IV) in the state of Tripura on EPC mode under JICA ODA Loan Phase 6**,, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

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

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

2. Definitions and interpretation

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

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

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

3. General

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

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

(a) any Time Extension;

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

(c) the Termination Payment; or

(d) issuance of Completion Certificate or

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

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

(iv) The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause18.2.

(v) The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article13.

(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 Clause10.4.

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

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

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

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

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

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

(xiii) The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project Highway, whether because of an accident,unforeseeableeventorotherwise;providedthatincaseofanyworkrequired 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 Clause12.2.

(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 Clause14.5.

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) TheAuthority'sEngineershalldeterminetheperiodofTimeExtensionthatisrequired 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 Clause18.5.

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 Clause19.16.

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-builtsurveyillustratingthelayoutoftheProjectHighwayandsetbacklines,ifany,ofthe 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) TheAuthority'sEngineershallinformtheAuthorityandtheContractorofanyeventof 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) theestimatedamountfortheWorksexecutedinaccordancewithClause19.3
(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) amountsreflectingadjustmentinprice,ifany,for(c)aboveinaccordancewith 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 the value of the contract price

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

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

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

4. Insurance to be in joint names

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

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

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

2. Visual and physical test:

The Authority's Engineer shall conduct a visual and physical check of construction todeterminethatallworksandequipmentformingpartthereofconformtothe provisions of this Agreement. The physical tests shall include measurement of cracking, rutting, stripping and potholes and shall be as per the requirementof maintenance mentioned in Schedule-E.

Schedule-R

(See Clause 14.10)

Taking Over Certificate

I, …….. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated …… (the "**Agreement**"), for **Improvement and Widening to two lane with paved shoulder of road from design Km 72.000 (Pati Chhari) to design Km 107.654 (Harina) (Total length 35.654 Km) on Teliamura to Harina section of NH 208 (Package-IV) in the state of Tripura on EPC mode under JICA ODA Loan Phase 6** through (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED
ANDDELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)

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