SCHEDULES

Schedule A

(See Clause 2.1 and 8.1)

SITE OF THE PROJECT

1 The Site

1.1 Site of the Four-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.The site is a balance work site with partially/fully completed Road Works, between Jhanji-Demow section of NH-37 (Old).

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

1.3 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.

1.4 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, has to improve/upgrade the Road Profile as indicated in Annexure-III, based on site/design requirement.In no case the FRL of the new road to be less than the FRL of the existing road.

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

1.6 The instant work is a balance work of Road Works, along with construction of approaches to the structures coming in the stretch (as per details in Para 2.1 of Schedule-A) and laying of Wearing Coat on these structures. Being a Balance Work, at several locations work has been carried out which may be partially/fully complete. Further, some of the partially/fully completed works might have been deteriorated. The EPC Contractor shall have to assess the level of deterioration of such works, carry out the required remedial measures/rectification works as per the satisfaction of the AE and then proceed for the next stage of work. It is being stipulated that in case any partially/completed work has failed or deteriorated and rectification work is to be carried out and the same is not discretely mentioned in the schedules, the same shall not qualify for Change of Scope as per the Article 13 of the EPC CA

1.7 It is clarified that the works which requires fresh construction either due to substantial damages of the completed/partially completed works or in case the previous contractor did not start the work, they have not been indicated in completed/partially completed works in Schedule A and the same shall fall in the scope of the EPC Contractor.

1.8 The instant project is a balance work. The process of termination of the present EPC Contractor is in progress and works are also being executed by the EPC Contractor. Accordingly, the prospective bidders are strongly advised to visit the site and get themselves acquainted with the ground situation during the bidding. The actual scope of work for this project will be decided based on the Joint Inspection of the executed works by the AE, newly appointed EPC Contractor and present EPC Contractor (which will be terminated before appointment of the new EPC Contractor), as on Appointed Date. In case, any work is required to be deleted/added from/in the scope of the newly appointed Contractor on account of the newly executed works beyond the Schedule A or non-existent works due to any discrepancy/error in the Schedule A in the completed works specified in Schedule A, as verified during Joint inventory, the same shall be added/deleted and the corresponding amount will be deducted/added based on the Schedule-H rates of the newly appointed EPC Contractor. In case of any disagreement between the parties, the decision of the AE shall prevail and will be binding on the parties.

1.9 The Jhanji-Demow Section of NH-37 (Old) is 44.00 Km long. Earlier, the 4-laning work was being carried out in the entire length. Now, with a sole intention to carry out the work in multiple fronts and complete the balance work in 12 months, the stretch has been fragmented into 4 parts. 3 parts consists of Road Works (along with construction of approaches to all the structures and laying of wearing coat on all the structures and carry out Road Furniture work on these structures) and the 4th part consists of Structures (VUP/PUP/Minor Bridges/Major Bridges/Grade Separator) & Toll Plaza. All 4 EPC Contractors are required to coordinate with each other and are required to execute the works keeping in mind the Work Program of each other to provide requisite base to execute the work.

Annex-I

(Schedule-A)
Site

1. Site

1.1 The Site of the 4 lane Project Highway comprises the section of National Highway 37 (old) commencing from Km 490.800 to Km 501.800 (Design Chainage) in the state of Assam. The land,carriageway and structures comprising the site are described below.

2. Land

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

Design Chainage (Km)		**Total PROW (inm)**	**Remarks**
From	**To**		
490.800	501.800	60	

2.1 In this stretch of 11 Km, there are Structures, as per details below, which are under construction by a separate EPC Contractor. The EPC Contractor, appointed through the instant bid is required to construct the approaches to these structures and lay wearing course alongwith Road Furniture on these Structures:

Sl. No.	**Design Chainage**	**Structure**	**RoW**
1	500+978	VUP	60
2	490+889	MNB	60
3	492+351	MNB	60
4	493+609	MNB	60
5	498+787	MNB	60
6	500+578	MNB	60

3. Carriageway

The existing carriageway of the Project Highway (4 lane/2 lane). The type of the existing pavement is flexible except the Toll Plaza location which is a Rigid Pavement. The carriageway consists of the following which are complete/incomplete/partially complete/damaged and are to be completed in all respect.

(a) <u>Main Carriage Way (Widening Portion of existing 2-lane)</u>

<u>Subgrade in Widening of Existing Road:</u>

Sl No	**Chainage**	**Side**	**Length (m)**	**Status**	**Remarks**

	From	To				
1	492+720	493+220	LHS	500	Subgrade completed	-
2	493+220	493+480	LHS	260	Subgrade completed	-
3	493+480	493+860	LHS	380	Subgrade completed	-
4	495+040	496+050	RHS	1010	Subgrade completed	-
5	496+660	497+000	RHS	340	Subgrade completed	-
6	497+560	498+455	RHS	895	Subgrade completed	-
7	498+455	498+785	RHS	330	Subgrade completed	-
8	498+845	499+045	RHS	200	Subgrade completed	-
9	499+045	499+475	RHS	430	Subgrade completed	-
10	501+450	501+800	RHS	350	Subgrade completed	-
	Total length completed in (M)			**4695.00**		
1	501+280	501+450	RHS	170	Subgrade partially completed	-
2	498+785	498+845	RHS	60	Subgrade partially completed	-
	Total length completed in (M)			**230.00**		

GSB in Widening of Existing Road:

Sl No	Chainage		Side	Length in (m)	Status	Remarks
	From	To				
1	492+720	493+220	LHS	500	GSB completed	-

2	493+220	493+480	LHS	260	GSB completed	-
3	493+480	493+860	LHS	380	GSB completed	-
4	495+040	496+050	RHS	1010	GSB completed	-
5	496+660	497+000	RHS	340	GSB completed	-
6	497+560	498+455	RHS	895	GSB completed	-
7	498+455	498+785	RHS	330	GSB completed	-
8	498+845	499+045	RHS	200	GSB completed	-
9	499+045	499+475	RHS	430	GSB completed	-
	Total length completed in (M)			**4345.00**		
10	501+450	501+800	RHS	350	GSB Partially completed	Rectification Required
	Total length partially completed in (M)			**350.00**		

WMM in Widening of Existing Road:

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
1	493+220	493+480	LHS	260	WMM Completed	-
2	495+040	496+050	RHS	1010	WMM Completed	-
3	497+560	498+455	RHS	895	WMM Completed	-
4	499+045	499+475	RHS	430	WMM Completed	-
	Total length completed in (M)			**2595.00**		
1	498+455	498+785	RHS	330	WMM rectification required	

2	492+720	493+220	LHS	500	WMM rectification required	
3	493+480	493+860	LHS	380	WMM rectification required	
4	496+660	497+000	RHS	340	WMM rectification required	
5	498+845	499+045	RHS	200	WMM rectification required	
	Total length rectification required in (M)			**1750.00**		

DBM in Widening of Existing Road:

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
1	493+220	493+480	LHS	260	DBM completed	-
	Total length completed in (M)			**260.00**		-
1	495+040	496+050	RHS	1010	DBM damaged	
2	497+560	498+455	RHS	895	DBM damaged	
3	499+045	499+475	RHS	430	DBM damaged	
	Total length rectification required in (M)			**2335.00**		

BC in Widening of Existing Road:

Sl No	Chainage		Side	Length in (m)	Status	Remarks
	From	To				
1	493+220	493+480	LHS	260	BC Completed	-
	Total length completed in (M)			**260.00**		

(b) Main Carriage Way (New 2-Lane Construction/4-LaneinRealignment)

Subgrade in New 2-lane Realignment:

Sl No	Chainage	Side	length in	Status	Remarks

	From	To		(m)		
1	493+860	493+880	LHS	20	Subgrade completed	-
2	493+880	494+515	LHS	635	Subgrade completed	-
3	494+515	495+115	LHS	600	Subgrade completed	-
4	495+115	495+150	LHS	35	Subgrade completed	-
5	495+150	495+235	LHS	85	Subgrade completed	-
6	496+270	496+300	LHS	30	Subgrade completed	-
7	496+300	496+895	LHS	595	Subgrade completed	-
8	496+895	496+925	LHS	30	Subgrade completed	-
9	497+150	497+210	LHS	60	Subgrade completed	-
10	497+210	497+410	LHS	200	Subgrade completed	-
11	497+410	497+425	LHS	15	Subgrade completed	-
12	499+800	500+040	LHS	240	Subgrade completed	-
13	490+800	490+900	RHS	100	Subgrade completed	-
14	492+885	493+100	RHS	215	Subgrade completed	-
15	493+100	493+495	RHS	395	Subgrade completed	-
16	493+495	493+530	RHS	35	Subgrade completed	-
17	493+530	493+580	RHS	50	Subgrade completed	-
18	493+580	493+860	RHS	280	Subgrade completed	-
19	493+860	495+040	RHS	1180	Subgrade completed	-

20	496+050	496+190	RHS	140	Subgrade completed	-
21	496+190	496+220	RHS	30	Subgrade completed	-
22	496+240	496+290	RHS	50	Subgrade completed	-
23	496+600	496+660	RHS	60	Subgrade completed	-
24	497+000	497+150	RHS	150	Subgrade completed	-
25	497+150	497+430	RHS	280	Subgrade completed	-
26	497+430	497+530	RHS	100	Subgrade completed	-
27	497+530	497+560	RHS	30	Subgrade completed	-
28	496+290	496+600	RHS	310	Subgrade completed	-
	Total length completed in (M)			**5950.00**		
1	492+100	492+150	RHS	50	Embankment (partially done)	-
2	492+290	492+538	RHS	248	Embankment (partially done)	-
3	492+720	492+837	RHS	117	Embankment (partially done)	-
4	499+655	499+800	LHS	145	Embankment top (partially done)	-
5	500+040	500+310	LHS	270	Embankment top (partially done)	
	Total length partially done in (M)			**830.00**		

GSB in New 2-lane Realignment:

Sl No	Chainage		Side	Length in (m)	Status	Remarks
	From	To				
1	493+860	493+880	LHS	20	GSB completed	-
2	493+880	494+515	LHS	635	GSB completed	-
3	494+515	495+115	LHS	600	GSB completed	-
4	495+115	495+150	LHS	35	GSB completed	-
5	496+300	496+895	LHS	595	GSB completed	-
6	496+895	496+925	LHS	30	GSB completed	-
7	497+150	497+210	LHS	60	GSB completed	-
8	497+210	497+410	LHS	200	GSB completed	-
9	497+410	497+425	LHS	15	GSB completed	-
10	492+885	493+100	RHS	215	GSB completed	-
11	493+100	493+495	RHS	395	GSB completed	-
12	493+495	493+530	RHS	35	GSB completed	-
13	493+530	493+580	RHS	50	GSB completed	-
14	493+580	493+860	RHS	280	GSB completed	-
15	493+860	495+040	RHS	1180	GSB completed	-
16	496+050	496+190	RHS	140	GSB completed	-

17	496+190	496+220	RHS	30	GSB completed	-
18	496+240	496+290	RHS	50	GSB completed	-
19	496+290	496+600	RHS	310	GSB completed	-
20	496+600	496+660	RHS	60	GSB completed	-
21	497+000	497+150	RHS	150	GSB completed	-
22	497+150	497+430	RHS	280	GSB completed	-
23	497+430	497+530	RHS	100	GSB completed	-
24	497+530	497+560	RHS	30	GSB completed	-
	Total length completed in (M)			**5495.00**		

WMM in New 2-lane Realignment:

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
1	493+860	493+880	LHS	20	WMM Completed	
2	493+880	494+515	LHS	635	WMM Completed	
3	494+515	495+115	LHS	600	WMM Completed	
4	495+115	495+150	LHS	35	WMM Completed	
5	496+300	496+895	LHS	595	WMM Completed	
6	496+895	496+925	LHS	30	WMM Completed	

7	497+210	497+410	LHS	200	WMM Completed	
8	493+100	493+495	RHS	395	WMM Completed	
9	493+495	493+530	RHS	35	WMM Completed	
10	493+860	495+040	RHS	1180	WMM Completed	
11	496+290	496+600	RHS	310	WMM Completed	
12	497+150	497+430	RHS	280	WMM Completed	
13	497+530	497+560	RHS	30	WMM Completed	
	Total length in M			**4345.00**		

Sl No	**Chainage**		**Side**	**length in (m)**	**Status**	**Remarks**
	From	To				
1	497+150	497+210	LHS	60	WMM(Rectification required)	
2	497+410	497+425	LHS	15	WMM(Rectification required)	
3	492+885	493+100	RHS	215	WMM(Rectification required)	
4	493+530	493+580	RHS	50	WMM(Rectification required)	
5	496+050	496+190	RHS	140	WMM(Rectification required)	
6	496+190	496+220	RHS	30	WMM(Rectification required)	
7	496+240	496+290	RHS	50	WMM(Rectification required)	
8	496+600	496+660	RHS	60	WMM(Rectification required)	

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
9	497+000	497+150	RHS	150	WMM(Rectification required)	
10	497+430	497+530	RHS	100	WMM(Rectification required)	
	Total Length rectification required in m			**870**		

DBM in New 2-lane Realignment:

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
1	494+515	495+115	LHS	600	DBM Completed	
2	496+300	496+895	LHS	595	DBM Completed	
3	497+210	497+410	LHS	200	DBM Completed	
4	493+100	493+495	RHS	395	DBM Completed	
5	493+495	493+530	RHS	35	DBM Completed	
6	493+860	495+040	RHS	1180	DBM Completed	
7	496+290	496+600	RHS	310	DBM Completed	
8	497+150	497+430	RHS	280	DBM Completed	
	Total length in m			**3595**		

Sl No	Chainage	Side	length in	Status	Remarks

	From	To		(m)		
1	493+880	494+515	LHS	635	DBM damaged	
2	497+530	497+560	RHS	30	DBM damaged	
	Total length rectification required in (M)			**665.00**		

BC in New 2-lane Realignment:

Sl No	Chainage		Side	length in (m)	Status	Remarks
	From	To				
1	494+515	495+115	LHS	600	BC Completed	-
2	497+210	497+410	LHS	200	BC Completed	(Median & Shoulder filling balance)
3	493+100	493+495	RHS	395	BC Completed	(Median filling balance)
4	493+860	495+040	RHS	1180	BC Completed	-
5	497+150	497+430	RHS	280	BC Completed	(Median & Shoulder filling balance)
6	496+290	496+600	RHS	310	BC Completed	
	Total length completed in (M)			**2965.00**		
1	496+300	496+895	LHS	595	BC damaged	
2	493+880	494+515	LHS	635	BC damaged	
	Total length rectification required in (M)			**1230**		

Note: Kerb in a length of about 2830 m is pending to be completed besides the above-mentioned length.

(c) Service Road:

Sl. No.	Chainage (Km)		Length (m)	Side
	From	To		
Subgrade Completed				
1	500+960	501+800	840	RHS
Total Completed length in (M)			**1020**	
GSB Completed				
1	501+720	501+800	80	RHS
2	501+100	501+280	180	RHS
Total completed length in (M)			**440**	
WMM Completed				
	NIL			
DBM Completed				
	NIL			
BC Completed				
	NIL			

4. Major Bridges

(a) The site includes the following existing 2-lane Major Bridges:

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

(b) New 2-lane Major Bridge Partially completed:

Sl. No.	Design Chainage (km)	Type of Structure& Status			No. of Spans with span length in m	Width (m)
		Foundation	Sub structure	Super structure		
NIL						

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

The Site includes the following ROB (road over bridge)/RUB (road under Railway line):

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

6. Grade Separators

The Site includes the following grade separators.

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

7. Minor bridges

The Site includes the following minor bridges in existing 2-lane:

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

New Minor Bridge (Partially completed):

Sl. No.	Design Chainage (km)	Type of Structures			No. of Spans with span length in m	Status
		Foundation	Sub Structure	Super Structure		
NIL						

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.

Underpasses (Partially Completed):

Sl. No.	Design Chainage (Km)	Type of Structures	No. of Spans with span length (m)	Width (m)
	NIL			

Note: One VUP at Km 500+978 is in the project whose structure is complete and the Contractor needs to complete the work of RE Walls erection & earth filling therein including the friction slab. Besides, approaches to the structures falling in the package shall also be completed within the available RoW with/without retaining structures.

Details of RE Wall in approaches of VUP/PUP:

Custody of the RE Panels, available within the ROW of the Site RE Panels having an approximate area of 9482.082 Sqm is available within the ROW of the Site. The same are proposed to be jointly verified at site on the date of declaration of the Appointed Date of the Civil Work Packages and 1/3rd of the panels will be handed over to each of the Road Work's Contractors.

10. Culverts

The Site includes the following culverts:

List of Existing Box Culverts, in 4-lane width

Sl. No.	Design Chainage	Type of Culvert	Span/opening with span length (m)	Present Status
1	496+513	Box Culvert	1x 4.3x3.061m	Completed up toDeck Slab, Protection works are balance
2	497+298	Box Culvert	1x 4.7x2.59 m	Completed up to Deck Slab, Protection works are balance

Pipe Culvert (partially completed)

Sl. No.	Design Chainage	Existing Type of Structure	Existing (m) span Arrangement	Existing Width (m)	Status
NIL					

11. Bus Bays

The details of existing bus bays on the site are as follows:-

Sl. No.	Chainage (Km)	Length (m)	LHS	RHS
As per Schedule C				

12. Truck Lay Byes

The details of truck lay byes are as follows:

Sl. No.	Chainage (Km)	Length (m)	LHS	RHS
As per Schedule C				

13. Road side drains

The details of road side drains completed/partially completed and to be completed:

Drain Status LHS:

Sl. No	Chainage		Length (Km)	Present Status
	From	To		
1	500.886	500.931	0.045	Completed
2	500.970	501.151	0.181	Completed
3	501.166	501.183	0.017	Completed
4	501.191	501.218	0.027	Completed
5	501.225	501.251	0.026	Completed
6	501.263	501.341	0.078	Completed
7	501.349	501.359	0.010	Completed
8	501.605	501.643	0.038	Completed
9	501.643	501.656	0.013	Completed
	Total length completed in Km		**0.435**	

Drain Status RHS:

Sl. No.	Chainage		Length (Km)	Status
	From	To		
1	500.844	500.847	0.003	Completed
2	500.847	500.864	0.017	Completed
3	500.874	500.922	0.048	Completed
4	500.934	501.013	0.079	Completed
5	501.022	501.077	0.055	Completed
6	501.095	501.345	0.250	Completed
7	501.358	501.396	0.038	Completed

8	501.407	501.572	0.165	Completed
9	501.577	501.784	0.207	Completed
10	501.790	501.83	0.040	Completed
	Total length completed in Km		**0.872**	

14. Major Junctions

The details of major junctions are as follows: -

Sl. No	**Location**		**At Grade**	**Separated**	**Category of Cross Road**			
	From Km	**To Km**			**NH**	**SH**	**MDR**	**Others**
NIL								

15. Minor Junctions

The details of minor junctions are noted below: -

Sl. No.	**Design Chainage**	**Side (Left/Right)**	**Carriageway Width in m**	
			Left	**Right**
1	492+770	Left	4.25	-
2	493+340	Right	-	3.75
3	495+260	Right	-	3.50
4	495+515	Right	-	4.25
5	496+240	Right	-	4.00
6	497+825	Right	-	4.25
7	498+000	Left	4.00	-
8	498+380	Right	-	4.00
9	499+560	Left	4.00	-
10	500+800	Left	3.75	-
11	500+940	Left	3.50	-

16. Bypasses

The details of existing Road sections proposed to be bypassed are as follows:-

Sl. No.	**Name of Bypass (town)**	**Chainage (km) from…. to**	**Length in Km**	**Carriageway**	
				Width (m)	**Type**
NIL					

17. Other Structures

NIL

Annex-II

(Schedule-A)

Dates for Providing Right of Way

The dates on which the Authority shall provide Right to Way to the Contractor on different stretches of the Site are stated below.

Sl. No.		**From Km**	**To Km**	**Hindrance Free Length Available(Km)**	**Width (m)**	**Date of Providing ROW**
1		**2**	**3**	**4**	**5**	**6**
(a) Right of Way Full Width	1	490.800	491.260	0.460	60.000	On Appointed Date
	2	491.320	491.620	0.300	60.000	
	3	491.650	492.820	1.170	60.000	
	4	492.890	495.290	2.400	60.000	
	5	495.400	501.800	6.400	60.000	
		Total length, Km		**10.73**		
(b) Right of Way full Width	1	491.260	491.320	0.060	35.000	Within 150 Days of Appointed Date
	2	491.620	491.650	0.030	35.000	
	3	492.820	492.890	0.070	35.000	
	4	495.290	495.400	0.110	35.000	
		Total Length, Km		**0.270**		

Annex-III

(Schedule-A)

Alignment Plans

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

(i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the Contractor as minimum FRL.In any case, the finished road level of the project highway shall not belessthan those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based onsite/design requirements and the same shall not qualify for Change in Scope as per the Article 13 of the EPC Contract Agreement.

(ii) Traffic signages in the Project Highway shall be provided as per relevant specifications/IRC Codes/Manual to the satisfaction of the Authority's Engineer.

Annex-IV

(Schedule-A)

Environment Clearances

The following environment clearance have been obtained: Not Applicable

The following environment clearance are awaited: NIL

(Schedule-B)

(See Clause 2.1)

Development of the Project Highway

1 Development of the Project Highway

1.1 Development of the Project Highway shall include design and construction of the Project Highway as described in this Schedule-B and in Schedule-C. The alignment plan of the Project Highway is specified in Annexure-III of Schedule A. The proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be treated as an approximate assessment. Contractor shall design the alignment plans and profiles of the Project Highway based on site / design requirement mentioned in Schedule-D with approval from Authority's Engineer within the available Right of Way.

1.2 The majority of the designs and drawings have already been approved by the AE and are available and have been also made part of this Bid Document. However, the EPC Contractor is at a liberty of minor modifications, so as to save time. Further, the EPC Contractor will have a freedom to propose any upgraded design/alternate design/new technology design which will not make the already executed work at site, infructuous. The balance designs and drawings shall be prepared as per Manual and get approved by the EPC Contractor from AE, in accordance with the EPC Contract Agreement.

1.3 The instant project is a balance work. The process of termination of the present EPC Contractor is in progress and works are also being executed by the EPC Contractor. Accordingly, the prospective bidders are strongly advised to visit the site and get themselves acquainted with the ground situation during the bidding. The actual scope of work for this project will be decided based on the Joint Inspection of the executed works by the AE, newly appointed EPC Contractor and present EPC Contractor (which will be terminated before appointment of the new EPC Contractor), as on Appointed Date. In case, any work is required to be deleted/added from/in the scope of the newly appointed Contractor on account of the newly executed works beyond the Schedule A or non-existent works due to any discrepancy/error in the Schedule A in the completed works specified in Schedule A, as verified during Joint inventory, the same shall be added/deleted and the corresponding amount will be deducted/added based on the Schedule-H rates of the newly appointed EPC Contractor. In case of any disagreement between the parties, the decision of the AE shall prevail and will be binding on the parties.

2 Rehabilitation and augmentation

Rehabilitation and augmentation shall include Four- Laning and strengthening of the Project Highway as described in Annex-1 of this Schedule-B and in Schedule-C.

3 Specification 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 Four Lanning and strengthening

1. Widening of the Existing Highway

1.1 The Project Highway shall follow the existing alignment unless otherwise specified by the Authority and shown in the alignment plans specified in Annex III of Schedule-A. Notwithstanding anything to the contrary contained in this Agreement or IRC: SP: 84-2014, the proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be treated as an approximate assessment. Contractor shall design the alignment plan and profile of the Project Highway based on site / design requirement mentioned in Schedule-D with approval from Authority's Engineer within the available Right of Way. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for plain terrain to the extent land is available. The same shall not constitute a change of scope, save and except any variations arising out of a change of scope expressly undertaken in accordance with the provision of Article 13.

1.2 Width of the carriageway

1.2.1 The paved carriageway shall be as per IRC: SP: 84-2014.

1.2.2 Provided that in following Built-up/urban stretches, the service road shall be provided with the main carriageway as per IRC: SP: 84-2014.

Sl. No.	Name of Township	Design Chainage (km)	
		From	To
1	Gaurisagar	500+640	501+800

1.2.3 Except as otherwise provided in this Agreement, the width of the paved carriageway and Cross-Sectional features shall conform to paragraph 1.2.1 above.

2. Geometric Design and General Features

2.1 General

Geometric design and general features of the Project Highway shall be in accordance with Section 2 of the Manual IRC SP 84-2014.

2.2 Design Speed

The design speed shall be the minimum design speed of 80 Km per hour except the locations having RoW constraints (Constrained Locations should be Accepted by the Authority/AE).

2.3 Improvement of the existing Road Geometrics

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

Design Chainage in km		Length in m	Type of Deficiency	Remarks
From	To			
496+190	496+660	470	Curve Improvement	
497+000	497+560	560	Curve Improvement	

2.4 Right of Way

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

2.5 Type of Shoulders

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

Sl.No.	Design Chainage (Km)		Reference to cross section	Remarks
	From	To		
1	500+650	501+800	Figure 2.5/2.6	Namdang,Gaurisagar

Note: Figure 2.5 and Figure 2.6 refer Manual IRC: SP:84-2014 of Clause 2.16

Sl. No.	Stretch (from km to km)	Fully paved shoulders/footpath	Reference to cross section
As per TCS reviewed by Engineer in conformity with the Manual			

(b) In open country, PavedShouldersof1.50mwidth and Earthen Shoulders for a width of 2.00 m will be provided.

(c) Design and specifications of paved shoulders and granular material shall conform to the requirements specified in paragraphs 5.10, 5.11 and 5.12 of the manual.

2.6 Lateral and Vertical Clearances at Underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per the paragraph 2.11 of the Manual.

2.6.2 Lateral clearance: - The width/size of the opening at the underpasses shall be as follows:

Sl. No.	Design Chainage	Span (No. x length) in m	Remarks
NIL			

2.7 Lateral and vertical clearance at overpasses

2.7.1 Lateral and vertical clearances at over passes shall be as per paragraph 2.12 of the Manual.

NIL

2.7.2 Lateral clearances: The size of the opening at the overpasses shall be as follows:

Sl. No.	Location (Chainage) From km to km	Number and length of spans	Remarks
NIL			

RE Panels, available within the ROW of the Site is having an approximate area of 9482.082Sqm. The same are proposed to be jointly verified at site on the date of declaration of the Appointed Date of the Civil Work Packages and 1/3rdof the panels will be handed over to each of the Road Works Contractors for using into the VUP Approach.

2.8 Service roads/Slip Road

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

Sl. No.	Design Chainage		Length (m)	Width (m)	Side
	From	To			
1	500+640	501+800	1160	7.0	LHS & RHS

2.9 Grade separated structures

2.9.1 Grade separated structures shall be provided as per paragraph 2.13 of the Manual. The requisite particulars are given below:

Sl.No.	Location of Structure	Design Chainage	Length (m)	Number and length of spans	Approach gradient	Remarks
NIL						

2.9.2 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 follow:

Sl. No.	Location	Type of Structure Length(m)	Cross road at			Remarks
			Existing level	Raised Level	Lowered Level	
NIL						

2.10 Cattle and Pedestrian Underpass/Overpass

Pedestrian Underpass (PUP) shall be constructed as follows:

Sl. No.	Design Chainage	Proposed span arrangement
NIL		

2.10.1 Vehicular Underpasses (VUP) shall be constructed as follows:

Sl. No.	Design Chainage	Span (No. x length) in m	Minimum Length of RE wall(m)	Remarks
NIL				

2.11 Typical cross-sections of the Project Highway

Type of cross sections for different segments of Four lane stretch shall be developed as provided in' Manual of Specifications & Standard for Four Laning of Highways as per IRC:SP:84-2014 referred in schedule-D.

Sl No	Chainage		Side	length in (m)	Remarks
	From	To			
1	490+800	492+720	LHS	1920	Widening Existing road
2	492+720	493+220	LHS	500	Widening Existing road
3	493+220	493+480	LHS	260	Widening Existing road
4	493+480	493+860	LHS	380	Widening Existing road
5	500+595	500+640	LHS	45	Widening Existing road
6	501+280	501+800	LHS	520	Widening Existing road

Sl No	Chainage		Side	length in (m)	Remarks
	From	To			
7	495+040	496+050	RHS	1010	Widening Existing road
8	496+660	497+000	RHS	340	Widening Existing road
9	497+560	498+455	RHS	895	Widening Existing road
10	498+455	498+785	RHS	330	Widening Existing road
11	498+785	498+845	RHS	60	Widening Existing road
12	498+845	499+045	RHS	200	Widening Existing road
13	499+045	499+475	RHS	430	Widening Existing road
14	499+475	500+640	RHS	1165	Widening Existing road
15	501+280	501+380	RHS	100	Widening Existing road
16	501+380	501+450	RHS	70	Widening Existing road
17	501+450	501+800	RHS	350	Widening Existing road
	Total Length in M			**8575**	

Sl No	Chainage		Side	length in (m)	Remarks
	From	To			
1	493+860	493+880	LHS	20	New Alignment
2	493+880	494+515	LHS	635	New Alignment
3	494+515	495+115	LHS	600	New Alignment
4	495+115	495+150	LHS	35	New Alignment
5	495+150	495+235	LHS	85	New Alignment
6	495+235	496+270	LHS	1035	New Alignment
7	496+270	496+300	LHS	30	New Alignment
8	496+300	496+895	LHS	595	New Alignment
9	496+895	496+925	LHS	30	New Alignment
10	496+925	497+150	LHS	225	New Alignment
11	497+150	497+210	LHS	60	New Alignment

Sl No	Chainage		Side	length in (m)	Remarks
	From	To			
12	497+210	497+410	LHS	200	New Alignment
13	497+410	497+425	LHS	15	New Alignment
14	497+425	499+655	LHS	2230	New Alignment
15	499+655	499+800	LHS	145	New Alignment
16	499+800	500+040	LHS	240	New Alignment
17	500+040	500+310	LHS	270	New Alignment
18	500+310	500+595	LHS	285	New Alignment
19	500+640	501+280	LHS	640	Approach VUP
20	490+800	490+900	RHS	100	New Alignment
21	490+900	492+100	RHS	1200	New Alignment
22	492+100	492+150	RHS	50	New Alignment
23	492+150	492+290	RHS	140	New Alignment
24	492+290	492+538	RHS	248	New Alignment
25	492+538	492+720	RHS	182	New Alignment
26	492+720	492+837	RHS	117	New Alignment
27	492+837	492+885	RHS	48	New Alignment
28	492+885	493+100	RHS	215	New Alignment
29	493+100	493+495	RHS	395	New Alignment
30	493+495	493+530	RHS	35	New Alignment
31	493+530	493+580	RHS	50	New Alignment
32	493+580	493+860	RHS	280	New Alignment
33	493+860	495+040	RHS	1180	New Alignment
34	496+050	496+190	RHS	140	New Alignment
35	496+190	496+220	RHS	30	New Alignment
36	496+220	496+240	RHS	20	New Alignment

Sl No	Chainage		Side	length in (m)	Remarks
	From	To			
37	496+240	496+290	RHS	50	New Alignment
38	496+290	496+600	RHS	310	New Alignment
39	496+600	496+660	RHS	60	New Alignment
40	497+000	497+150	RHS	150	New Alignment
41	497+150	497+430	RHS	280	New Alignment
42	497+430	497+530	RHS	100	New Alignment
43	497+530	497+560	RHS	30	New Alignment
44	500+640	501+280	RHS	640	Approach VUP
	Total Length in M			**13425**	

Note:

1. In some locations, where DBM/BC are already done, Median Kerb, Earthen Shoulder & Median fillings is pending &are to be done by the Contractor to the satisfaction of the Engineer & this shall not constitute a Change of Scope as per Article 13 of the Contract Agreement.
2. Road side Toe wall to be provided for a minimum length of 2000m with slope protection by turfing with sod. The locations to be finalized by site verification with the Engineer.
3. Road Side Retaining wall for a minimum length of 2060m to be provided. The locations to be finalized by site verification with the Engineer.

3.0 Intersections and grade separators

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

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

(a) At-grade intersections

i) Major Junction

Sl.No	Design Chainage	Category of Road	Type of Junction	Remarks
NIL				

ii) Minor Junctions

The details of minor junctions to be developed are noted below: -

Sl. No.	Design Chainage	Side (Left/Right)	Carriageway Width in m	
			Left	Right
1	492+770	Left	4.25	-
2	493+340	Right	-	3.75
3	495+260	Right	-	3.50
4	495+515	Right	-	4.25
5	496+240	Right	-	4.00
6	497+825	Right	-	4.25
7	498+000	Left	4.00	-
8	498+380	Right	-	4.00
9	499+560	Left	4.00	-
10	500+800	Left	3.75	-
11	500+940	Left	3.50	-

(b) Grade separated intersection without ramps

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

4. Road Embankment and Cut Section

4.1 Widening and improvement of the existing road embankment/cuttings and constructions 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. Notwithstanding anything to the contrary contained in this Agreement or IRC: SP:84-2014, the proposed profile of the Project Highway as indicated in the Annexure-III of Schedule-A shall be deemed to be part of this Schedule-B and shall be treated as an approximate assessment. The contractor may design the alignment plan & profile of the Project Highway based on site / design requirement specified in Schedule-D, with approval from Authority's Engineer within the available Right of Way. However, the EPC Contractor shall have to abide by the already reviewed Plan & Profile (Annexure-III of Schedule-A) as the basis/guiding document and the minimum FRL is to be maintained as per it. Deficiencies in the plan and profile of the existing road shall be corrected within the available ROW. In case there is any change/modification/improvement in the geometrics proposed by the EPC Contractor, with in the ROW, the same shall not qualify for Change of Scope as per Article 13.

5.0 Pavement Design

5.1 Pavement design shall be carried out in accordance with Section-5 of IRC: SP:84-2014, IRC:37-2018.

5.2 Type of pavement

The type of the pavement for the entire stretch shall be of flexible type pavement except the following location, where the pavement shall be rigid.

Sl. No.	Design Chainage (Km)		Length (m)	Location
	From	To		
NIL				

5.3 Design requirements

5.3.1 Design Period and Strategy

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

Rigid pavement shall be constructed at proposed toll plaza location including taper portion on both sides. Pavement shall be designed for a minimum design period of 30 years.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement of the Manual, the contractor shall design the pavement for design traffic of not less than 60 million standard axles (MSA).

5.4 Reconstruction of stretches – As per TCS

6. Roadside drainage

6.1. Drainage system including surface drains for the Project Highway shall be provided as per section 6 of the Manual. Covered RCC Drains shall be provided in the following stretches.

Design Chainage in km		Length in m	Side
From	To		
491+000	491+050	50	Both Side
491+050	491+350	300	Both Side

491+350	491+500	150	Both Side
500+640	501+170	530	Both side
501+170	501+800	630	Both Side
		3300	

Status of RCC drain completed/Partially completed as per Schedule A

RCC drain (Covered) partially completed to be completed in all respect

6.2. Unlined Drain is to be constructed at all other locations as per Manual and Site Requirement.

6.3. Median Drain is also to be provided as per Manual and Site Requirement.

6.4 The EPC Contractor shall have to design the drains adequately and ensure their functionality duly taking into account the Site Conditions and Outfall locations.

7. Design of Structures

7.1 General

7.1.1 The majority of the designs and drawings have already been approved by the AE and are available and have been also made part of this Bid Document. However, the EPC Contractor is at a liberty of minor modifications, so as to save time. Further, the EPC Contractor will have a freedom to propose any upgraded design/alternate design/new technology design which will not make the already executed work at site, infructuous. The balance designs and drawings shall be prepared as per Manual and get approved by the EPC Contractor from AE, in accordance with the EPC Contract Agreement.

7.1.2 Width of the carriageway of new bridges and structures shall be as follows: -

All new structures shall be minimum carriageway as per Manual Fig. 7.2 and fig. 7.3

7.1.3 The following structures shall be provided with footpaths:

Sl. No	Bridge at Km	Utility service to be carried	Remarks
All new bridges/Bridges proposed to be widened shall have provisions for footpath			

7.1.4 All bridges shall be high-level bridges

7.1.5 Utility services to be carried over the structures

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

Sl. No	Bridge at Km	Utility service to be carried	Remarks
All new bridges/Bridges proposed to be widened shall have provisions for utility services to be carried over			

7.1.6 Cross section of the new culverts and bridges at deck level for the Project Highway shall Conform to the typical cross-sections given in section 7 of the Manual.

7.2 Culverts

7.2.1 Overall width of all culverts shall be equal to the roadway width of the approaches.

7.2.2 Reconstruction of existing culverts.

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

Sl. No.	Existing Chainage	Design Chainage	Proposed Type of Structure	Recommend ation	Proposed span Arrangement (m)	Over all Width in (m)
NIL						

Status of Culvert (Reconstruction) completed/Partially completed as per Schedule A

Culvert (Reconstruction) Work partially completed and to be completed up tofinal stage including the Protection works, Parapet wall etc.

Sl. No.	Design Chainage	Existing Type of Structure	Existing (m) span Arrangement	Present Status
1	496+513	Box Culvert	1x 4.3x3.061m	Completed up toDeck Slab, Protection works are balance.
2	497+298	Box Culvert	1x 4.7x2.59 m	Completed up to Deck Slab, protection works are balance

7.2.3 Widening of Existing Culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl. No.	Design Chainage	Proposed Type of Structure	Recommend ation	Proposed (m) span Arrangement	Overall Width in m	Status

Sl. No.	Design Chainage	Proposed Type of Structure	Recommend ation	Proposed (m) span Arrangement	Overall Width in m	Status
NIL						

7.2.4 Additional new culverts shall be constructed as per particulars given in the table below:

Sl. No.	Design Chainage (km)	Proposed Type of culvert	Span Arrangement No. x Length /No. x Día(m)	Overall Width
1	501.350	Single Row Hume Pipe Culvert of Día 1200mm	As per Site	

7.2.5 Repairs/replacement of railing/parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

As per site condition,Repairs/replacement of railing/parapets and any other defects noticed at the time of construction shall be undertaken by the contractor for all the retained culverts along with repair/construction of flooring and protection works to the satisfaction of the Engineer.

7.2.6 Floor protection works shall be as specified in the relevant IRC Codes and Specification.

7.2.7 In case of culverts proposed for widening / repair as per details in Clause 7.2.3 above, the same shall be re-constructed if the design shows that these are unsafe for design loads. No change of scope shall be considered in such cases.

7.3 Bridges

7.3.1 Existing bridges to be re-construction/widened/Repairs

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

a) Major Bridges

Sl.No.	Bridge Location (Km)	Salient details of existing Bridge	Adequacy or otherwise of the existing waterway, vertical clearance, etc	Remarks
NIL				

The following narrow bridges shall be widened

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

b) Minor Bridges

Sl. No.	Design Chainage	Proposed Structure configuration	Proposed span arrangement (No. x L)
NIL			

(ii) The following existing bridges shall be Repaired and Strengthened:

a) Major Bridges

Sl. No.	Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of Repair
				Found ation	Sub structure	Super structure	
NIL							

b) Minor Bridges

Sl. No.	Design Chainages	Width (m)	Span Arrange ment	Type of structure			Details of widening
				Found-ation	Sub structure	Super Structure	
NIL							

7.3.2 Additional new bridges

New bridges at the following location on the Project Highway shall be constructed.

Sl.No.	Location (Km)	Total Length (m)	Remarks, if any
NIL			

7.3.3 The railing of existing bridges shall be replaced by Concrete Crash barriers at the following locations:

Sl.No.	Location at Km	Remarks
NIL		

7.3.4 Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Sl.No.	Location at Km	Remarks
NIL		

7.3.5 Drainage system for bridges decks

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

7.3.6 Structure in marine environment

NIL

7.4 Rail-road bridges

7.4.1. Design, construction and detailing of ROB/RUB shall be as specified in section 7 of theManual.

7.4.2 Road over bridges(road over rail) shall be provided at the following crossing, as per GAD drawing attached:

Sl.No.	Location of Level Crossing (Km)	Length of Bridge (m)
NIL		

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

Road under bridges

Sl. No.	Location of level crossing	Number and length of span
NIL		

7.5 Grade separated structure

NIL

7.6 Repairs and strengthening of Structures

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

A-Bridges

Sl.No.	Design Chainage	Nature & Extent of Repairs/Strengthening to be carried out
NIL		

B-ROB/RUB

Sl. No.	Location of ROB/RUB (Km)	Nature and extent of repair/strengthening to be carried out
NIL		

C- Overpasses/ Underpasses and other structures

Sl. No.	Location of structure (km)	Nature and extent of repair/strengthening to be carried out
NIL		

D-The following is the list of the New Major Bridges and Structures: -

Sl.No.	Location
NIL	

Note:

1. Wearing coat (40mm BC) over Bridge Decks for a minimum length of 161m to be provided. The locations to be finalized by site verification with the Engineer.
2. Existing Culverts cleaning, provision of required Protection works/Concrete Crash Bariers for new/existing culverts are to be done by the Contractor to the satisfaction of the AE.

8. Traffic control devices and road safety works

8.1 Traffic control devices and road safety works shall be provided in accordance with section 9 of the manual.

8.2 Specifications of the reflecting sheeting: As per the clause 9.3 of the Manual of specifications andstandards.

9. Roadside furniture

Roadside Furniture shall be provided in accordance with the provision of section 11 of the Manual.

9.1 Overhead traffic signs: locations and size

01 (One) No overhead Gantry shall be provided excluding toll-Plaza locations. The locations are to be decided by site verification with the Authority's Engineer.

10. Compulsory Afforestation

Compulsory / Compensatory afforestation to be carried out at locations as per Manual.

11. Hazardous locations

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

Sl No.	Location stretches from (km) to (km)	LHS/RHS
This shall be provided at high embankment and at sharp curve locationsfor a minimum length of 18000 m in linear length, as decided by the Engineer		

12.Special requirements for hill roads

NIL

13. Change of Scope

The length of structures and bridges specified herein above shall be treated as an approximate assessment. The proposed span arrangement of above structures may change (keeping overall length same) based on innovative design of structure, latest construction techniques and aesthetics of structures and 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 increase 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 expressly undertaken in accordance with the provisions of Article 13.

Schedule-C

(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

a) Toll plaza[s];
b) Roadside Furnitures;
c) Pedestrian facilities;
d) Tree plantation;
e) Truck lay-byes;
f) Bus-bays and bus shelters;
g) Rest areas; and
h) Other to be specified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

a) Toll Plaza:

NIL

b) Road side Furniture

(i) Traffic Signs and Pavement Markings

Traffic signs and pavement marking shall include road side overhead signs (01 no), curve mounted signs and road marking along the project highway. The locations for these provisions shall be finalised as decided by the Engineer.

(ii) Concrete Crash Barrier, Metal Beam Crash Barrier(minimum length 18000 m), Guard rails (Minimum length 1020m). Locations to be decided by the Engineer.

(iii) Traffic Safety Devices wherever required

(iv) Boundary Stones

(v) Hectometre/ Kilometre Stones

(vi) Traffic Blinker Signal (L.E.D) shall be provided at all At-grade junctions, median opening, schools, hospitals, police station, places of worship and institutional buildings etc.

(vii) Overhead signs: One 01 No(Excluding overhead signs at Toll Plaza location which are as given in Schedule D) shall be provided.

(viii) Delineators and Studs(100mmx 100mm) with reflective panels of dual prismatic cube capable of providing total reflection of light entering the lens face for lane marking and delineators for night time visibility shall be provided for the entire project Highway.

c) Pedestrian Facilities

The additional pedestrian facilities in the form of guard rails (min length 1020m), footpath, lighting (min length 2300m) etc.The location shall be decided by the Engineer.

d) Land scaping &Tree Plantation

Landscaping of the highway shall be done on, but not limited to the following:

- Median
- Grade Separated intersections
- Entry and Exit ramp
- At grade islands of intersection locations
- Toll Plaza Area
- Tree Plantation shall be done in Median & Road side as per the Standard throughout the Project length.

e) **Truck Lay-byes:**Truck Lay-byes shall be provided at following locations:

Sl. No.	Design Chainage	Side
NIL		

f) Bus-bays and Bus Shelter:Bus-bays shall be provided locations:

Locations of Bus bays

Sl. No.	Chainage (km)	Side	Location
1	495+400	BHS	Gogurali/Charing
2	501+450	BHS	Gaurisagar

Note: The locations are tentative and shall be decided by the Authority's Engineer. Further, any addition in the number of Bus-Bays will not be considered as a Change of Scope.

g) Others

1. Highway Lighting shall be provided as per Contract Agreement &Schedule D(Manual of Specifications and Standard for 4-Laning of Highway) (IRC:SP:84-2014) for a minimum length of 2300m. Locations will be finalized by site verification with the Engineer.

2. **Highway Patrol**

   The Contractor shall provide Highway Patrol vehicles in adequate number as per manual and this agreement.

3. **Medical Aid Post:** As per Article 21.

4. **Cranes**

   The Concessionaire shall provide one mobile Cranes having the capacity to left a truck with a gross vehicle weight of 30,000(thirty thousand) kilogram and such posts shall be located at the toll plaza location in consultation with the IC/Authority.

5. **Traffic Aid Post**

   As per the Manual.

Schedule-D

(See Clause 2.1)

SPECIFICATIONS AND STANDARDS

1. Construction

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

2. Design Standards

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

Manual of Standards and Specifications for Four Laning manual published by the Indian Road Congress-IRC: SP:84-2014

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 four laning of Highways (IRC: SP-84: -2014) referred to as the Manual for four laning of Highways published by IRC 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.As this is being a balance work, the approved designs & drawings are available for some locations/structures/pavements. Rest required Designs & Drawings are to be submitted by the Contractor and get approved from the Authority's Engineer.

2. Deviations from the Specifications and Standards

2.1 The term "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".

2.2 Notwithstanding anything to the contrary contained in para 1 above, the following specifications and standards shall apply to the Project Highway and/or purposes of this Agreement, the aforesaid specifications and standards shall be deemed to be amended to the extent set forth below.

Sl. No.	Item	Clause referred in Manual	Provision as per Manual	Modified Provision
1	Typical Cross section	IRC: SP: 84-2014	Typical Cross Section	Typical Cross section shall be as per Manual

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

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

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

2. Repair / rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

5. Emergency repairs / restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection / post-monsoon inspection

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

8. Repairs on account of natural calamities

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

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, approaches of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Potholes	Nil	< 0.1 % of area and subject to limit of 10 mm in depth	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC 82: 2015 and Distress Identification Manual for Long Term Pavement Performance Program, FHWA 2003reports / 03031 /)	24-48 hours	MORT&H Specification 3004.2
	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 %of area	Daily	Length Measurement Unit		2-7 days	IRC:82-2015

					like			
	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 SP81
	Edge Deformation / Breaking	Nil	< 1 m for any 100 m section and width <0.1 m at any location, restricted to 30cm from the edge	Daily			7- 15 days	IRC:82-2015
	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
	Other Pavement Distresses						2-7 days	IRC:82-2015

	Deflection / Remaining Life			Annually	Falling Weight Deflectometer	IRC 115: 2014	180 days	IRC:115-2014
Rigid Pavement (Pavement of MCW, Service Road, Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Roughness BI	2200m m / km	2400mm / km	Bi-Annually	Class I Profilometer	ASTM E950 (98) :2004 and ASTM E1656 -94: 2000	180 days	IRC:SP:83-2008
	Skid	Skid Resistance no. at different speed of vehicles		Bi-Annually	SCRIM (Sideway-force Coefficient Routine Investigation Machine or equivalent)	IRC:SP:83-2008	180 days	IRC:SP:83-2008
		Minimum SN	Traffic Speed (Km / h)					
		36	50					
		33	65					
		32	80					
		31	95					
		31	110					
Embankment / Slope	Edge drop at shoulders	Nil	40mm	Daily	Length Measurement Unit like Scale, Tape, odometer etc.	IRC	7-15 days	MORT&H Specification 408.4
	Slope of camber / cross fall	Nil	<2% variation in prescribed slope of camber / cross fall	Daily			7-15 days	MORT&H Specification 408.4
	Embankment Slopes	Nil	<15 % variation in prescribed side slope	Daily			7-15 days	MORT&H Specification 408.4

	Embankment Protection	Nil	Nil	Daily			7-15 days	MORT&H Specification
	Rain Cuts / Gullies in slope	Nil	Nil	Daily Specially During Rainy Season			7-15 days	MORT&H Specification

[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.]

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:

Sl. 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. Within 7days
			3	w = 0.5 - 1.5 mm, discernible from fast-moving car		
			4	w = 1.5 - 3.0 mm	Seal, and stitch if L > l	Staple or Dowel Bar

Sl. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D / 2	For the case d > D / 2
			5	w > 3 mm.	m. Within 7 days	Retrofit, FDR for affected portion. Within 15days
2	Single Transverse (or Diagonal) Crack intersecting with one or more joints	w = width of crack L = length of crack d = depth of crack D = depth of slab	0	Nil, not discernible	No Action	
			1	w < 0.2 mm, hair cracks	Route and seal with epoxy. Within 7 days	Staple or Dowel Bar Retrofit. Within 15days
			2	w = 0.2 - 0.5 mm, discernible from slow vehicle		
			3	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route, seal and stitch, if L > 1 m. Within 7 days	
			4	w = 3.0 - 6.0 mm	Dowel Bar Retrofit. Within 15 days	Full Depth Repair Dismantle and reconstruct affected. Portion with norms and specifications - See Para 5.5 & 9.2Within 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
			2	w = 0.5 - 3.0 mm, discernible from fast vehicle	Route seal and stitch, if L> l m. Within 15 days	-

Sl. 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	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 -
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 within15 days	Dismantle, Reinstate subbase, Reconstruct whole slab as per specifications within30 days
			4	w = 3.0 - 6.0 mm panel broken into2 or 3 pieces		
			5	w > 6 mm and / or panel broken into more than 4 pieces		
5	Corner Break	w = width of crack L = length of crack	0	Nil, not discernible	No Action	-
			1	w < 0.5 mm; only 1 corner broken	Seal with low viscosity	Seal with epoxy seal

Sl. 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 < 1.5 mm; L < 0.6 m, only one corner broken	epoxy to secure broken parts Within 7 days	with epoxy Within 7days
			3	w < 1.5 mm; L < 0.6 m, two corners broken	Partial Depth (Refer Figure 8.3 of 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 slab as per norms and specifications within 30days
6	Punchout(Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)	w = width of crackL = length (m / m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m / m2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m / m2		
			3	w > 1.5 mm and L < 3 m / m2		
			4	w > 3 mm, L < 3 m / m2 and deformation		Full depth repair - Cut out and replace damaged area taking care not to damage reinforcement. Within 30days
			5	w > 3 mm, L > 3 m / m2 and deformation		

Sl. 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 %		
					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 and liable to be damaged. Within 7days	
			2	r = 2 - 10 %		
			3	r = 10 - 20%	Bonded Inlay within 15 days	
			4	r = 20 - 30 %		
			5	r > 30 % and h > 25 mm	Reconstruct slab	

Sl. 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
					within30 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		
			5	t < 0.1 mm	Diamond Grinding if affecting50% or more slabs in a continuous stretch ofminimum5 km. Within 30 days	
10	Popout (Small Hole), Pothole Refer Para8.4	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 - 100 mm; h < 50 mm; n < 1 per 5 m2	Partial depth repair 65 mm deep. Within 15 days	
			2	d = 50 - 100 mm; h > 50 mm; n < 1 per 5 m2		
			3	d = 100 - 300 mm; h < 100 mm n <1 per 5 m2	Partial depth repair110mmi.e.10 mm more than the depth of the hole. Within 30 days	
			4	d = 100 - 300 mm; h > 100 mm; n <1 per 5 m2		
			5	d > 300 mm; h > 100 mm: n > 1	Full depth repair. Within	

Sl. 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
				per5 m2	30 days	
Joint Defects						
11	Joint Seal Defects	loss or damage L = Length as % total joint length	0	Difficult to discern.	Short Term No action.	Long Term 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 and trapping in compressible material	Clean, widen and reseal the joint. Within 7 days	
12	Spalling of Joints	w = width on either side of the joint L = length of spalled portion (as % joint length)	0	Nil, not discernible	No action.	Not Applicable
			1	w < 10 mm	Apply low viscosity epoxy resin / mortar in cracked portion. Within 7 days	
			2	w = 10 - 20 mm, L < 25%		
			3	w = 20 - 40 mm, L > 25%	Partial Depth Repair.	

Sl. 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 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 (or Stepping)	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 subgrade and sub-base by grouting and raising sunken slab	
14	Blowup or Buckling	h = vertical displacement from normal profile	0	Nil, not discernible	Short Term	Long Term
					No Action	
			1	h < 6 mm		

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

Sl. No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D / 2	For the case d > D / 2
			5	h > 100 mm	Reinstate pavement at normal level if length< 20 m. Within 30 days	
17	Bump	h = vertical	0	h < 4 mm	No action	
		displacement fromnormal profile	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 days	For any 100 m stretch Reconstruct shoulder, if affecting 25% or more of stretch. Within 30days
			5	f > 75 mm		

Sl. 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
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 / Frequent10 - 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:

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Highway	Availability	As per IRC SP :84-2014, a	Monthly	Manual	Removal of obstruction within 24		IRC:SP84-

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th>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></td><td>of Safe Sight Distance</td><td>minimum of safe stopping sight distance shall be available throughout.<table><tr><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance (m)</td><td>Safe Stopping Sight Distance (m)</td></tr><tr><td>100</td><td>360</td><td>180</td></tr><tr><td>80</td><td>260</td><td>130</td></tr></table></td><td></td><td>Measurement s with Odometer along with video / image backup</td><td colspan="2">hours, in case of sight line affected by temporary objects such as trees, temporary encroachments. In case of permanent structure or design deficiency: Removal of obstruction / improvement of deficiency at the earliest Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td>2014</td></tr>
<tr><td>Pavement Marking</td><td>Wear</td><td><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 hoursCat-2 Defect - within 2 months</td><td>IRC:35-2015</td></tr>
<tr><td></td><td>Day time Visibility</td><td>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 –</td><td>IRC:35-2015</td></tr>
</table>

<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></td><td></td><td colspan="4"></td><td></td><td></td><td></td><td>within 2 months</td><td></td></tr>
<tr><td></td><td>Night Time Visibility</td><td colspan="4"><u>Initial and Minimum Performancefor Dry Retro reflectivity duringnight time:</u></td><td>Bi-Annually</td><td>As per Annexure-E 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></td><td></td><td>Design Speed</td><td colspan="3">(RL) Retro Reflectivity (mcd / m2 / lux)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>Initial (7 days)</td><td>Minimum Threshold level (TL) & warranty period required up to 2 years</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Up to 65</td><td>200</td><td>80</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>65 - 100</td><td>250</td><td>120</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>Above 100</td><td>350</td><td>150</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="4"><u>Initial and Minimum Performance forNight</u></td><td></td><td></td><td></td><td></td><td></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
		Visibility under wet condition(Retro reflectivity):					
		Initial 7 days Retro reflectivity: 100 mcd / m2 / lux Minimum Threshold Level: 50mcd / m2 / lux					
	Skid Resistance	Initial and Minimum performance for Skid Resistance: Initial (7days): 55BPNMin. 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	IRC: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
						and Informatory Signs (Single and Dual post signs)15 Days in case of Gantry / Cantilever Sign boards	
	Retro reflectivity	As per specifications in IRC:67-2012	Bi-Annually	Testing of each	change of signboard	48 hours in case of Mandatory	RC:67-2012
				signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D4956-09.		Signs, Cautionary and Informatory Signs (Single and Dual post signs)1 Month in case of Gantry / Cantilever Sign boards	

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually m	Use of distance Reassuring tape H	raising Kerb eight	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video / image K backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video / image backup	Rectification	Within 15 days	IRC:SP:84-2014
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video / image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video / image	Rectification	Within 7 days	IRC:SP:84-2014,
	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-2014,

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
							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:84-2014
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		No major / minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014
Trees and Plantation including median plantation	Obstruction in a minimum headroom of5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video / image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video / image backup	Timely watering and treatment. Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video / image backup	Removal of Trees	Immediate	IRC:SP 84-2014

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

Table 4: Maintenance Criteria for Structures and Culverts:

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	Cleaning silt up soils and debris in culvert barrel after rainy season, removal of	15 days before onset of monsoon and within 30	IRC 5-2015, IRC SP:40-1993 and IRC SP:13-

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				of depth of silting and area of vegetation.	bushes and vegetation, U / s of barrel, under barrel and D / s of barrel before rainy season.	days after end of rainy season.	2004
	Leak-proof expansion joints if any	No leakage through expansion joints	Bi-Annually	Physical inspection of expansion joints as per IRC SP: 35-1990 if any, for leakage strains on walls at joints.	Fixing with sealant suitably	30 days or before onset of rains whichever comes earlier	IRC SP:40-1993 and IRC SP:69-2011
	Structurally sound	Spalling of concrete not more than 0.25 sqm	Bi-Annually	Detailed inspection of all components of culvert as per IRC SP:35-1990 and recording the defects	Repairs to spalling, cracking, delamination, rusting shall be followed as per IRC:SP:40-1993.	15 days	IRC SP 40-1993 and MORTH Specifications clause 2800
		Delamination of concrete not more than 0.25 sq.m.					
		Cracks wider than 0.3 mm not more than 1m aggregate length					
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron)	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	IRC: SP 40-1993 and IRC:SP:13-2004.

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
		not more than 1 sqm				before onset of rainy season whichever is earlier.	
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge - Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	rail)			1990.			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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Deflection due to permanent loads and live loads	Within design limits.	Once in every 10 years for spans more than 40m	Load Test Method	Carry out major rehabilitation works on bridge to retain original design loads capacity	6 months	IRC SP: 51-1999.
	Vibrations in bridge deck due to moving trucks	Frequency of vibrations shall not be more than5 Hz	Once in every 5 years for spans more than 30m and every 10 years for spans between 15 to 30m	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	MORTHspecifications2600 and IRC SP: 40-1993.
	Debris and dust in strip seal Expansion	No dust or debris in expansion joint gap	Monthly	Detailed condition survey as per IRC SP:35-1990 using Mobile Bridge	Cleaning of expansion joint gaps thoroughly	3 days	MORTH specifications 2600 and IRC SP: 40-

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	joint			Inspection Unit			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	MORTHspecification2700.
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	30 days	IRC SP: 40-1993 and MORTH specification 2800.

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
					depending on type of defect noticed		
	Bearings	Delamination of bearing reinforcement not more than5%, cracking or tearing of rubber not more than 2 locations per side, no rupture of reinforcement or rubber	Bi-Annually	Detailed condition survey as per IRC SP: 35-1990 using Mobile Bridge Inspection Unit	In case of failure of even one bearing on any pier / abutment, all the bearings on that pier / abutment shall be replaced, in order to get uniform load transfer on to bearings.	3 months	MORTH specification 2810 and IRC SP: 40-199.
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, IRC83-2014, MORTH specification 2500

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sq.m, damage to solid apron(concrete apron) not more than 1 sq.m	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching.	30 days after defect observation or 2 Weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Note: Any Structure during the entire contract period which is found that does not comply with all requirements of this Table will be prepared, rehabilitated or even reconstructed under the scope of the contractor.							

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

Nature of Defect or deficiency		Time limit for repair / rectification
(b) Granular earth shoulders, side slopes, drains and culverts		
(i)	Variation by more than 1 % in the prescribed slope of camber / cross fall (shall not be less than the camber on the main carriageway)	7 (seven) days
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% in the prescribed side(embankment) slopes	30 (thirty) days
(iv)	Rain cuts / gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side 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

Nature of Defect or deficiency		Time limit for repair / rectification
(d) Road lighting		
(i)	Any major failure of the system	24 (twenty-four) hours
(ii)	Faults and minor failures	8 (eight) hours
(e) Trees and plantation		
(i)	Obstruction in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 (twenty-four)hours
(ii)	Removal of fallen trees from carriageway	4 (four) hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f) Rest area		
(i)	Cleaning of toilets	Every 4 (four) hours
(ii)	Defects in electrical, water and sanitary installations	24 (twenty-four) hours
(g) [Toll Plaza]		
(h)	**Other Project Facilities and Approach roads**	
(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		

Nature of Defect or deficiency		Time limit for repair / rectification
(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		
(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	7 (seven) days

Nature of Defect or deficiency		Time limit for repair / rectification
	approaches	
(v)	Damage to wearing coat	15 (fifteen) days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 (thirty) days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 (fifteen) days
(g) Hill Roads		
(i)	Damage to retaining wall / breast wall	7 (seven) days
(ii)	Landslides requiring clearance	12 (twelve) hours
(iii)	Snow requiring clearance	24 (twenty four) hours

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

Schedule - F

(See Clause 4.1 (vii)(a))

Applicable Permits

1. Applicable Permits

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

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

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
National Highway & Highway Development
Corporation Ltd. PTI Building, 3rd Floor, 4,
Parliament Street,
NewDelhi-110001

WHEREAS:

(a) _____ [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 "**Construction of Balance Work of the 4-laning of the Section from Jhanji to Demow of NH-37 (Old): Pkg-I: Road Works from Km 490+800 to Km 501+800 (11.000 Km), under SARDP- NE , under EPC Mode"** subject to and in accordance with the provisions of the Agreement

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

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

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

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

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

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

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, 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 shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the 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 to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

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

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

13. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform& shall invariably send an advice of this Bank

Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

Sr.No.	Particulars	Details
1.	NameofBeneficiary	MD-NHIDCL
2.	BeneficiaryBankAccountNo.	90621010002659
3.	BeneficiaryBankBranchNameand Address	CanaraBank(erstwhileSyndicate Bank), Transport Bhawan, 1stParliamentStreet,NewDelhi-110001
4.	BeneficiaryBankBranchIFSC	CNRB0019062
5.	SwiftCode(ForForeignBidders)	SYNBINBB126

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:

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

2. 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 accordance with Clause 7.2 of the Agreement).

Annex – II

(Schedule - G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

To
National Highway & Highway Development
Corporation Ltd. PTI Building, 3rd Floor, 4,
Parliament Street,
NewDelhi-110001

WHEREAS:

(A) _____ [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 "**Construction of Balance Work of the 4-laning of the Section from Jhanji to Demow of NH-37 (Old): Pkg-I: Road Works from Km 490+800 to Km 501+800 (11.000 Km), under SARDP- NE , under EPC Mode"** subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest bearing @Bank Rate + 3% advance payment (herein after called "Advance Payment") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first / second} installment of the Advance Payment is Rs. ------ cr. (Rupees ------ crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the "Guarantee Amount")$.

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

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

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

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

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

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

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

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

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and / or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with

reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

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

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

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

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

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

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

12. This Guarantee shall 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.

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

Sr.No.	Particulars	Details
1.	NameofBeneficiary	RONHIDCLPROJECTS
2.	BeneficiaryBankAccountNo.	73653210000013
3.	BeneficiaryBankBranchIFSC	CNRB0019062
4.	BeneficiaryBankBranchName	CanaraBank,Dispur,Guwahati
5.	BeneficiaryBankBranchAddress	UpasanaComplex,Dr.R.P.Road, Ganeshguri,Dispur,Guwahati

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:

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

2. 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.

3. The bank shall be any bank listed in the list of nationalized / Govt banks only but not any scheduled commercial private banks.

[$] 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 Clause 19.3)

Contract Price Weightages

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs xxxx

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

Item	Weightage in Percentage to the Contract Price	Activity	Percentage Weightage in Payment Schedule
Road Works Including Culverts, widening and repair of culverts	**65.56%**	**A.1) Widening and Strengthening of Existing Road to 2-Lane with Paved Shoulder including Rectification**	
		(1) Earth Work up to Top of the Sub Grade	4.49%
		(2) Sub base course (GSB,Shoulders)	2.05%
		(3) Non-Bituminous Base Course (WMM)	1.65%
		(4) Bituminous Base Course (DBM)	6.69%
		(5) Wearing Coat (BC)	4.08%
		B.1 -Reconstruction/new 2 Lane realignment/ Bypass (Flexible Pavement) including Rectification	
		(1) Earth Work up to Top of the Sub Grade	34.99%
		(2) Sub base course (GSB,Shoulders)	12.83%
		(3) Non-Bituminous Base Course (WMM)	12.97%
		(4) Bituminous Base Course (DBM)	13.33%
		(5) Wearing Coat (BC)	6.04%
		C.1 Pending Road Kerb Construction	0.30%
		D.1Widening and repair of culverts	
		Culverts (Length<6m)	0.34%
		E.1Re-Construction and New culverts on existing road, realignments, bypasses including Rectification	
		Culverts (Length<6m)	0.24%
Minor Bridges/Underpass/Overpass	**0.00%**	**A.1. - Widening and repairs of minor bridges (length >6m and <60m) including Rectification**	
		(1) Minor Bridges	As noted below
		A.2 - New minor bridges (Length>6m and <60m) including Rectification	
		1) Foundation + Sub structure	-
		2) Super-Structure	-
		3) Approaches	-

		4) Wearing Coat	As noted below
		B.2. New Underpasses/Overpasses including Rectification	
		1) Foundation + Sub structure	-
		2) Super-Structure	-
		3) Wearing Coat& Road Markings	As noted below
		4) Approaches	
		i) Casting of Panels	
		ii) Erection of Panels	
Major Bridge (Length>60m) works and ROB/RUB/elevated sections/flyovers including viaducts, if any	**-**	**A.1. - Widening and repairs of Major Bridges including Rectification**	
		1) Foundation	-
		2) Sub-Structure	-
		3) Super Structure (including bearings)	-
		4) Wearing coat & Road Markings	As noted below
		5) Miscellaneous Items like hand rails, crash barriers, expansion Joints etc.	-
		A.2 - New Major Bridges including Rectification	
		1) Foundation	-
		2) Sub-Structure	-
		3) Super Structure (including bearings)	-
		3.1) Casting of Girder	-
		3.2) Deck Slab	-
		4) Wearing coat & Road Markings	As noted below
		5) Miscellaneous Items like hand rails, crash barriers, Expansion Joints etc.	-
		6) Wing walls /return walls	-
		7) Approaches (including retaining walls, stone pitching and protection works)	-
Other Works	**5.41%**	**Other Works**	
		A)Toll Plaza	-
		B) Reconstruction/new Service Road (Flexible Pavement) including Rectification	
		(1) Earth Work up to Top of the Sub Grade	8.87%
		(2) Sub base course (GSB,Shoulders)	16.00%
		(3) Non-Bituminous Base Course (WMM)	26.96%
		(4) Bituminous Base Course (DBM)	12.87%
		(5) Wearing Coat (BC)	8.87%
		C)Roads Side Drains (including Rectification)	26.43%
Misc. works	**15.53%**	1) Road Signs, Markings, K.M. Stones, Safety Devices, etc.	12.60%
		2) Project Facilities (Others)	

		a) Bus Bays	10.14%
		b) Truck lay-bayes	
		c) Junctions	11.97%
		3) Road Side & Median Plantation	3.84%
		4) Protection works other than approaches to the bridges, elevated sections/flyovers/grade separators and ROBs/RUBs.	0.63%
		5) Retaining wall	43.16%
		6) Toe wall with turfing	8.32%
		7) Wearing coat over bridge decks	1.02%
		8) Road safety management during construction	3.59%
		9) Others	4.73%
Reinforced Earth Wall Construction	**8.00%**	RCC Facia Elements Casting	30.00%
		Erection of Panels i.e. Assembling, joining and anchoring the reinforcing elements, including earth-filling	50.00 %
		Friction Slab cum crash barrier over VUP Approaches	20.00%
Road furniture	**5.50%**	(1) Pedestrian Guard rail at Service road locations	25.82%
		(2) Highway Lighting	18.25%
		(3) Metal Beam Crash Barrier	55.93%

Note: * The above list is illustrative and may require modification as per the scope of the work.

1.3.Procedure of estimating the value of work done.

1.3.1 Road works including approaches to Minor Bridges, Major Bridges, Toll Plaza location and Structures.

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

Table 1.3.1

Stage of payment	% Weightage	Payment procedure
A) Widening and Strengthening of Existing Road to 2-Lane with Paved		Unit of measurement is linear length. Payment of each stage shall be made on

Shoulder including Rectification		pro rata basis on completion of a stage in a length of **not less than 0.5 (Point Five) Km in 2 lane.**
(1) Earthwork up to top of the sub-grade	4.49%	
(2) Granular work (sub-base)	2.05%	
3) Non-Bituminous Base Course (WMM)	1.65%	
4) Bituminous Course(Dense Bituminous Macadam)	6.69%	
5) Wearing Course (Bituminous Concrete)	4.08%	
B.1 -Reconstruction/new 2 Lane realignment/ Bypass (Flexible Pavement) including Rectification		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 0.5 (Point Five) Km in 2 lane.**
(1) Earthwork up to top of the sub-grade	34.99%	
(2) Granular work (sub-base)	12.83%	
3) Non-Bituminous Base Course (WMM)	12.97%	
4) Bituminous Course(Dense Bituminous Macadam)	13.33%	
5) Wearing Course (Bituminous Concrete)	6.04%	
C.1Pending Road KerbConstruction	0.30%	The unit of measurement is linear length. Payment for each stage shall be made on a pro-rata basis upon completion of a stage with a length of not less than 0.500 (One) Km on **one side.**
D.1Widening and repair of culverts		
Culverts (Length<6m)	0.34%	The cost of each culvert shall be determined on a pro rata basis with respect to the total number of culverts. Payment shall be made upon **the completion of 1 (One) culvert for 2 lane carriageways.** **Further, 80% of the payment will be made for each culvert constructed in a 4-lane equivalent width without protection work. Further 20% will be released after the completion of the Protection work**
E.1Re-Construction and New culverts on existing road, realignments, bypasses including Rectification		
Culverts (Length<6m)	0.24%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. **Payment shall be made on the completion of 1 (One) culvert for 2 lane carriageways.**

		Further, 80% payment will be made for each culvert constructed in 2 lane equivalent width without protection work. Further 20% will be released after completion of Total Culvert & its Protection work
A.1. - Widening and repairs of Minor Bridges (length >6m and <60m) including Rectification	-	-
A.2 - New Minor Bridges (Length>6m and <60m) including Rectification		
1) Foundation + Sub structure	-	-
2) Super-Structure	-	-
3) Approaches	-	Covered in Road Works
4) Wearing Coat	-	Cost of shall be determined on pro rata basis with respect to the total linear length as per the Scope. Payment shall be made **on the completion of wearing coat over each Structure.**
5) Road Markings	-	Covered in Road Markings & Signages for road works
B.2. New Underpasses/Overpasses including Rectification		
1) Foundation + Sub structure	-	-
2) Super-Structure	-	-
3) Wearing Coat	-	Cost of shall be determined on pro rata basis with respect to the total linear length of the as per the Scope. Payment shall be made **on the completion of wearing coat over each Structure.**
4) Approaches		As noted below in Earthfilling of RE Wall
a) Casting of RCC facia element	30.00 %	The unit of measurement is in sqm. Payment shall be made on a pro-rata basis on casting a minimum 750 sqm facia panel after getting satisfied with 7 days cube strength (Min 75% of the specified 28 days strength).
b) Erection of Panels i.e. Assembling, joining and anchoring the reinforcing element including earth filling	50.00 %	The unit of Measurement is sqm. Payment shall be made on a pro rata basis upon completion of a stage that is not less than 750 sqm complete in all respects.
c)Friction Slab cum crash barrier over VUP Approaches	20.00%	The unit of measurement is linear length in meter. Payment shall be made on a pro-rata basis on completion of friction slab of not less than 250 m.

1.3.2 Major Bridge works and ROB/RUB

Procedure for estimating the value of Major Bridge works shall be as stated in table 1.3.2:

Table 1.3.2

Stage of payment	% weightage	Payment Procedure
A- Widening and repairs of Major Bridges including Rectification **Foundation:** On completion of the Foundation work including Foundations for wing and return walls	-	-
Sub-structure: On completion of abutments, piers up to the abutment/pier cap	-	-
Super-structure: On completion of the super structure in all respects including hand rails/crash barriers, wing walls, return walls, guide bunds, if any, tests on completion etc., bridge complete in all respects and fir for use.	-	-
4)Wearing coat	-	Cost of shall be determined on pro rata basis with respect to the total linear length of the as per the Scope. Payment shall be made **on the completion of wearing coat over each Structure.**
5) Miscellaneous Items like hand rails, crash barriers, expansion joints etc.	-	
6) Approaches	-	Covered in Road Works
7) Approaches (retaining walls, stone pitching and protection works)	-	-
8) Road Markings	-	Covered in Signages & Road Markings
B- New Major Bridges including Rectification		
(1)**Foundation:** On completion of the foundation work including foundations for wing and return walls.	-	-
(2)**Sub-structure:** On completion of abutments, piers up to	-	-
(3)**Super-structure**: On completion of the super structure in all respects including hand rails/crash barriers, wing walls, return walls, guide bunds, if any, tests on completion etc., complete in all respects and fit	-	-

Stage of payment	% weightage	Payment Procedure
for use		
3.1) Casting of Girder	-	-
3.2) Deck Slab	-	-
4) Wearing coat	-	The cost shall be determined on a pro rata basis with respect to the total linear length of the as per the Scope. Payment shall be made upon the completion of wearing the **coat over each Structure.**
5) Road Markings	-	Covered in Road Markings & Signages
5) Miscellaneous Items like hand rails, crash barriers, expansion joints etc.	-	-
6) Wing walls /return walls	-	
7) Approaches	-	Covered in Road Works
8) Approaches (retaining walls, stone pitching and protection works)	-	-

1.3.3**Other Engineering works**

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

Stage of payment	% weightage	Payment procedure
A) Toll plaza	-	-
B) Reconstruction/new Service Road (Flexible Pavement) including Rectification		
(1) Earth Work up to Top of the Sub Grade	8.87%	The unit of measurement is linear length in km. Cost per km shall be determined on a pro-rata basis with respect to the total length of the Service Roads. Payment shall be made **completion of a stage in a length of not less than 0.5 Km (Point Five) in One Side.**
(2) Sub base course (GSB,Shoulders)	16.00%	
(3) Non-Bituminous Base Course (WMM)	26.96%	
(4) Bituminous Base Course (DBM)	12.87%	

(5) Wearing Coat (BC)	8.87%	
C)Roads Side Drains (including Rectification)	26.43%	The unit of measurement is linear length in Rm. Payment shall be made pro rata upon completion of a stage with a length of not less than 5 % (Fiveper cent) of the total length of One Lane.
Miscellaneous work		
(i) Road signs, markings, km stones, safety devices.	12.60%	The unit of measurement is linear length in Km. Payment shall be made on a pro rata basis upon completion of a stage with a length of not less than 5 % (five per cent) of the total length.
(ii) Project Facilities		Payment shall be made on a pro rata basis for one unit of completed facilities.
a) Bus bays	10.14%	
b) Truck lay-bays		
c) Others (Junctions)	11.97%	
(iii) Roadside & Median plantation	3.84%	The unit of measurement is linear length. Payment shall be made on a pro rata basis on completion of a stage with a length of not less than 5 % (five per cent) of the total length.
(iv) Repair & Protection works	0.63%	
(v) Retaining wall	43.16%	The unit of measurement is linear length. Payment shall be made on a pro-rata basis on completion of a stage in a length of not less than 5% (Five per cent) of the Specified Scope.
(vi) Toe wall with turfing	8.32%	
(vii) Wearing coat over Bridges/Under Passes	1.02%	The unit of measurement is linear length. Payment will be made pro rata upon completion of each structure.
(viii) Road safety management during construction	3.59%	Payment to be made monthly on pro rata basis based on Safety measures taken by the Contractor to the level of satisfaction of the Engineer
Others	4.73%	The payment shall be made upon completing the 25 % scope of the activities determined by AE as per Contract Agreement.
Road furniture		

(1) Pedestrian Guard rail at Service road locations	19.82%	Unit of Measurement is linear length. Payment shall be made on pro rata basis on completion of a stage not less than 5% of the specified scope.
(2) Highway Lighting	17.86%	
(3) Metal Beam Crash Barrier	62.32%	

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

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

(a) Drawing of horizontal alignment & vertical profile and detailed cross sections.

(b) Drawings of cross drainage works i.e. Bridges/Culverts/Flyovers and Other Structures.

(c) Drawings for River Training works.

(d) Drawings of interchanges, major intersections and underpasses .

(e) Drawing of control centre.

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

(g) Drawings of traffic diversions plans and traffic control measures.

(h) Drawings of road drainage measures .

(i) Drawings of typical details slope protection measures.

(j) Drawings of landscaping and horticulture.

(k) Drawings of pedestrian crossing.

(l) Drawings of street lighting.

(m) Any other drawings as per instruction of Authority Engineer.

(n) General Arrangement showing Base Camp and Administrative Block.

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule – 12 months (360 Days) **from appointed date.**

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

2.1 Project Milestone-I shall occur on the date falling on the 90th day [25% of the Scheduled Construction Period] day from the Appointed Date (the "Project Milestone- I").

2.2 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

3.1 Project Milestone-II shall occur on the date falling on the 180th day [50%of the Scheduled Construction Period] day from the Appointed Date (the "Project Milestone- II").

3.2 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

1.1. Project Milestone-III shall occur on the date falling on the 270th day [75%of the Scheduled Construction Period] day from the Appointed Date (the "Project Milestone- III").

1.2. 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

5.1 The Scheduled Completion Date shall occur on the 360th day [Scheduled Construction Period] from the Appointed Date.

5.2 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
(SeeClause12.1(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 to the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2 Tests

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

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

2.3 Tests for bridges: All major and minor bridges shall be subjected to the rebound hammer and ultrasonic pulse velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Non-destructive Testing Techniques, at two spots in every span, to be

chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to load testing.

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

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

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

3 Agency for conducting Tests

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

4 Completion Certificate

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

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

S.No.	Keymetricso f Asset	Equipmenttobeused	Frequencyofconditionsurvey
1	Surface defectsof pavemen t	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	Strengthof 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	Roadsigns	Retro-reflectometer	At least twice a year(As per survey Months defined for the state basis rainy season)

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

Schedule - L

(See Clause 12.2)

Completion Certificate

1. I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated …… (the "Agreement"), for "**Construction of Balance Work of the 4-laning of the Section from Jhanji to Demow of NH-37 (Old): Pkg-I: Road Works from Km 490+800 to Km 501+800 (11.000 Km), under SARDP- NE , under EPC Mode**" (the "Project Highway") on Engineering, Procurement and Construction (EPC) through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

2. It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the …… day of …… 20….. .

SIGNED, SEALED AND DELIVERED

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

(Signature)

(Name)

(Designation)
(Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

(i) Monthly lump sum payments for maintenance shall be reduced in the case of noncompliance with the Maintenance Requirements set forth in Schedule-E.

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

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

2. Percentage reductions in lump sum payments on monthly basis

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

Sl. 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, rain cuts, disturbed pitching, vegetation growth, pruning of trees	5%
(c)	Bridges and Culverts	
(i)	Desilting, cleaning. vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(iii)	Painting, repairs / replacement kerbs, railings, parapets,	5%

Sl. No.	Item / Defect / Deficiency	Percentage
	guideposts / crash barriers	
(d)	Roadside Drains	
(i)	Cleaning and repair of drains	5%
(e)	Road Furniture	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m / km / 5th km stones	5%
(f)	Miscellaneous Items	
(i)	Removal of dead animals, broken down / 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%

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

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

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 kilometre, the non-conforming length shall be taken as one kilometre.

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

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

1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule-N.

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

1.1. These Terms of Reference (the "TOR") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated ..... (the "Agreement), which has been entered into between the [name and address of the Authority] (the "Authority") and..... (the "Contractor")# for "**Construction of Balance Work of the 4-laning of the Section from Jhanji to Demow of NH-37 (Old): Pkg-I: Road Works from Km 490+800 to Km 501+800 (11.000 Km), under SARDP-NE , under EPC Mode"** 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

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

2. Definitions and interpretation

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

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

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

3. General

3.1 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.

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

(a) any Time Extension;

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

(c) the Termination Payment; or

(d) 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.

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

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

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

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

4. Construction Period

4.1 During the Construction Period, the Authority's Engineer shall review 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.

4.2 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.

4.3 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.

4.4 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.

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

4.6 The Authority'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.

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

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

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (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.

4.10 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.

4.11 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.

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

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

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

4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause 12.2.

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

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

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate, 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

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

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

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

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

5.5 The Authority's Engineer shall examine the request of the Contractor for closure of any lane(s) of the Project Highway for undertaking maintenance / repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6. Determination of costs and time

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

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

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

7. Payments

7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2 (iv) (d).

7.2 Authority's Engineer shall -

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

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

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

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

8. Other duties and functions

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

9. Miscellaneous

9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority'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.

9.2 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.

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

9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

Schedule - O

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

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(a) the estimated amount for the Works executed in accordance with Clause 19.3(i) subsequent to the last claim;

(b) amounts reflecting adjustments in price for the aforesaid claim;

(c) the estimated amount of each Change of Scope Order executed subsequent to the last claim;

(d) amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2 (iii) (a);

(e) total of (a), (b), (c) and (d) above;

(f) Deductions:

(i) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;

(ii) Any amount towards deduction of taxes; and

(iii) Total of (i) and (ii) above.

(g) Net claim: (e) – (f) (iii);

(h) The amounts received by the Contractor upto the last claim:

(i) For the Works executed (excluding Change of Scope orders);

(ii) For Change of Scope Orders, and

(iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule - P

(See Clause 20.1)

Insurance

1. Insurance during Construction Period

1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non-Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(a) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing and removing any part of the Works and of removing debris of whatsoever nature; and

(b) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under 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

3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This

insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be not less than: Rs. [*****]

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

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

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

4. Insurance to be in joint names

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

Schedule - Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. **Riding Quality test:**

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

2. **Visual and physical test:**

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