SCHEDULE - A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

1.1 Site of the Bagrakot to Kafer Section of NH-717A Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

1.1 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of thisSchedule-A.

1.2 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.

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

1.4 The status of the environment clearances obtained or awaited is given in AnnexIV.

1.5 The project highways was taken up for construction under EPC basis but the contractor failed to complete the project and deserted in mid-way. The status of the work done by the contractor is given below:

(a) Status of Highway Work: -
Following table shows progress of site work of Existing Project Road including Bypass stretch upto July-2021.

Sr. no.	Description	Chainage from	Chainage to	Total Length in meter (completed)	Remarks
1	**Subgrade**	0+400	1+320	920	
		1+330	3+490	2160	
		3+640	3+990	350	
		5+120	5+360	240	
		5+400	6+200	795	5 m deducted for culvert cushion
		11+750	12+180	430	
		12+670	12+800	130	
		Total		**5025**	
2	**CTSB/GSB**	0+420	3+450	3030	Deduction 10m for minor bridge
		3+650	3+990	340	

Sr. no.	Description	Chainage from	Chainage to	Total Length in meter (completed)	Remarks
	CTSB/GSB	5+120	5+360	240	
		5+410	5+740	330	
		5+920	6+200	280	5 m deducted for culvert cushion
		11+750	11+890	140	
		12+000	12+180	180	
		12+670	12+800	130	
		Total		**4670**	
3	**WMM**	0+430	3+450	3020	Deduction 10m for minor bridge
		3+650	3+990	340	
		5+410	5+630	220	
		5+920	6+070	145	5 m deducted for culvert cushion
		Total		**3725**	
4	**DBM**	0+430	3+450	3020	
		3+650	3+700	50	
		5+420	5+630	210	
		5+950	6+070	120	
		Total		**3400**	

(b) Status of concrete works is mentioned in other relevant Paras.

(c) The site will be provided as is as on where is basis. The Contractor shall visit the site and take realistic assessment of the same.

Annex – I
(Schedule – A)

Site

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

1. Site

The Site of the Two-Lane Project Highway comprises the section of National Highway-717A commencing from km 0 + 0 0 0 t o k m 1 1 + 9 6 0i.e. the Bagrakot to Kafer section (Existing Length 11.960 Km) in the State of West Bengal. 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) described below:

Sr. No.	Chainage (km)		ROW (Meter)
	From	To	
1	0+000	13+000	24

3. Carriageway

The width of carriageway varies from 3.75 m to 10.00m as under. The type of the existing pavement is Flexible.

Single Lane/Two Lane(under progress)		Two Lane		Remarks
From	To	From	To	
May be referred Schedule-A, where Subgrade work has been completed. And rest of stretches are single lane/cutting were in progress)		0+430	3+450	DBM completed (with paved shoulder)
		3+650	3+700	
		5+420	5+630	
		5+950	6+070	

4. Major Bridges

The Site includes the following Major Bridges

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

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

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

Sr. No.	Existing Chainage (km)	Type of Structure		No. of Spans with Span length(m)	Width (m)	ROB/ RUB
		Foundation	Super			

Nil

Grade separators

The Site includes the following grade separators:

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

4 Minor bridges

The Site includes the following minor bridges:

Sr.No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Superstructure			
1	1+330	Open	Slab	1x10	16	Newly Built, completed
2	3+525	Open	PSC	1x40	16	Newly Built, Completed upto substructure

5 Railway level crossings

The Site includes the following railway level crossings:

Sr. No.	Existing Chainage (km)	Remarks
1	0+100	Siliguri-Malbazar

6 Underpasses (vehicular, Non-vehicular)

The Site includes the following underpasses:

Sr. No.	Existing Chainage (km)	Type of Structure	No. of Spans with Span length (m)	Width (m)
Nil				

7 Culverts and causeway:

The Site has the following culverts:

S.No	Chainage	Span Arrangement	Type of Culvert	Remarks
1	1+190	1x 3	Box culvert	Newly Built, completed
2	1+917	1x 3	Box culvert	Newly Built, completed
3	2+750	1x 3	Box culvert	Newly Built, completed
4	3+200	1x 3	Box culvert	Newly Built, completed

5	3+255	1x 3	Box culvert	Newly Built, completed
6	3+700	1x 3	Box culvert	Newly Built, completed
7	3+800	1x3	Box culvert	Newly Built, Protection work remaining
8	3+937	2x3	Box culvert	Newly Built, Protection work remaining
9	4+200	1x3	Box culvert	Newly Built, Protection work remaining
10	5+058	1x3	Box culvert	Newly Built, Protection work remaining
11	5+095	1x3	Box culvert	Newly Built, Protection work remaining
12	5+255	1x3	Box culvert	Newly Built, Protection work remaining
13	5+285	1x3	Box culvert	Newly Built, Protection work remaining
14	5+394	1x3	Box culvert	Newly Built, Protection work remaining
15	5+872	1x3	Box culvert	Newly Built, Protection work remaining
16	7+120	1x 1.6	slab culvert	Old , To be Reconstructed
17	7+665	1x 1	slab culvert	Old , To be Reconstructed
18	8+612	1x 3	slab culvert	Old , To be Reconstructed
19	9+290	1x 3	slab culvert	Old , To be Reconstructed
20	9+326	1x 2.1	slab culvert	Old , To be Reconstructed
21	9+440	1x 3.1	slab culvert	Old , To be Reconstructed
22	9+983	1x 2	slab culvert	Old , To be Reconstructed

23	10+046	1x 2	slab culvert	Old , To be Reconstructed
24	11+120	1x 2	slab culvert	Old , To be Reconstructed

The Site has the Causeway at following chainages:

S.No	Chainage	Type
1	7+366	Causeway
2	7+950	Causeway
3	8+230	Causeway
4	8+288	Causeway
5	8+457	Causeway
6	8+532	Causeway
7	8+655	Causeway
8	8+764	Causeway
9	8+988	Causeway
10	9+027	Causeway
11	9+180	Causeway
12	9+480	Causeway
13	9+600	Causeway
14	9+780	Causeway
15	10+209	Causeway
16	10+261	Causeway
17	10+386	Causeway
18	10+419	Causeway
19	11+018	Causeway
20	11+524	Causeway
21	11+822	Causeway
22	11+950	Causeway

8 Breast Wall

Details of newly constructed Breast Walls:

Sr. No.	Location		Length (in M)	Type of structure
	From km	To km		
1	2+240	2+280	40	Plum Concrete (newly Built)
2	3+805	3+870	65	
3	5+140	5+160	20	
4	5+160	5+190	30	
5	5+340	5+370	30	
6	5+480	5+510	30	
7	5+610	5+710	100	
8	5+910	6+190	280	
9	12+975	12+992	17	
	Total		**612**	

9 Bus Bays

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

Sl. No.	Existing Chainage	Sides
1	12+305	R.H.S

10 Truck Laybays

The details of truck lay byes are as follows:

Sr. No.	Existing Chainage (Km)	Length (m)	LHS	RHS
Nil				

11 Road side drains

The details of the roadside drains are as follows:

Sr. No.	Location		Type	
	From km	To km	Masonry/cc	Earthen
			(Pucca)	(Kutcha)
1	0+072	0+100	U shape/pucca	-
2	0+112	0+132	U shape/Earthen	-
3	1+016	1+350	U shape/pucca	-
4	2+000	2+822	U shape/Brick	-

12 Major junctions

The detail of major junction is as follows:

Sr. No.	Chainage	Type	Link	Direction
NIL				

13 Minor junctions

The details of the minor junctions are as follows:-

SL. No.	Existing Chainage	Type of intersection	Direction	Type of Road	Going to
			Left/Right	E/BT/CC	
1	0+130	+	Both	Gravel Road & BT Road	L.H.S- Tea Garden, R.H.S-Railway Station
2	0+563	T	R.H.S	BT Road	R.H.S-Militry Campus
3	0+650	+	Both	BT Road & BT Road	L.H.S- Tea Garden, R.H.S-Railway Station
4	0+871	T	L.H.S	BT Road	R.H.S-Bagrakot Tea Campus
5	1+014	+	Both	BT Road & BT Road	L.H.S- Danken Tea Factory, R.H.S-Chandbarivasti
6	1+290	Y	R.H.S	BT Road	R.H.S-Bagrakotvillage
7	1+434	T	L.H.S	BT Road	R.H.S-Bagrakot Local
8	1+558	T	L.H.S	BT Road	L.H.S-Bagrakot Local
9	2+125	Y	R.H.S	BT Road	Army Camp
10	2+806	+	Both	BT Road	L.H.S- Bagrakot, R.H.S-Army Camp
11	2+977	T	R.H.S	BT Road	HQ27 mtn (MOUNTAIN ARMY BDE GATE)
12	2+310	T	R.H.S	BT Road	Army office 3m
13	3+063	T	R.H.S	BT Road	Local Bagrakote
14	3+069	T	L.H.S	BT Road	Local Bagrakote
SL. No.	**Existing Chainage**	**Type of intersection**	**Direction**	**Type of Road**	**Going to**
15	12+500	Y	R.H.S	Earthen road	Ylbhoung village

14 Bypasses

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

Sr. No.	Name of Bypass (Town)	Existing Chainage (Km)		Length (Km)	Carriageway	
		From	To		Width (m)	Type
Nil						

15 Other structures

Viaducts

Sr.No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Superstructure			
1	4+050	Open	PSC/BOX	1x40+2x26.41	12	Newly Built, completed upto substructure on Abutments & Box Substructure to be completed
2	4+340	Open	PSC	1x40	12	Newly Built, Completed upto substructure.
3	12+840	Open	PSC	2x40	12	Newly Built, completed upto substructure of abutments & substructure of pier to be completed.

Road Over-Bridges and Loop section combined

Roadover-bridges(roadoverrailway line) and loopshallbeprovidedatthefollowinglevel crossings,as per manual:

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Sl. No.	Location of Level crossing (Chainage km)	Length of bridge (m)	Type of structure	Remarks
1	0+020	(1X25) + (1X45.4) + (1X40.5) + (2X25)	PSC, RDSO(Steel)	ROB+LOOP, 8 out of 12 Abutment/piers final lift has been completed, Abutment/pier Caps to be completed.

Annex - II
(Schedule-A)

Dates for providing Right of Way of construction Zone

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

Sr. No.	From km To km	Length (Km)	Proposed Width (m)	Date of providing ROW*
1	**2**	**3**	**4**	**5**
Full Right of Way (full width)	0-13	13	24	At appointed date

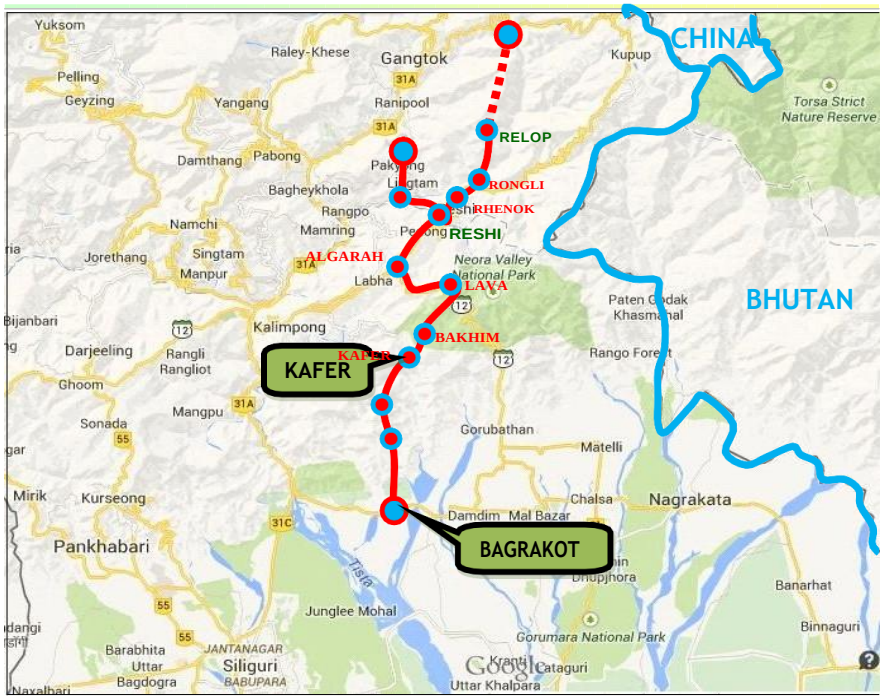
*The dates specified herein shall in no case be beyond 150 (one hundred and fifty) days after the Appointed Date.

Annex - III
(Schedule-A)

Alignment Plans

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

An alignment plan is given in soft copy.



The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/designrequirement.

Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per IRC: SP: 99 & IRC: 67.

Annex - IV
(Schedule-A)

Environment Clearances

The following clearances have been obtained:

Sr. No.	Clearances	Present Status
1	Environment clearance	Not Required (As per Ministry of Environment and Forest Notifications)as project length is less than 100 kms
2	Forest Clearance	Final Approval accorded by Dept. of forest.

SCHEDULE- B
(SeeClause2.1)

Development of theProject Highway

1 *Development of the Project Highway*

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

~~*1*~~*2* *Two Lane with Paved shoulder*

Two lane with paved shoulder shall strengthening of the existing two lane along with construction of paved shoulders as described in Annex-I & Annex-II of this Schedule-B and Annex-I of Schedule-C.

~~*2*~~*3* *Specifications and Standards*

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

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Annex-I
(Schedule-B)

Descriptionof Two Lane with Paved Shoulder

The Site of the Two-Lane Project Highway comprises the section of NationalHighway - 717Acommencingfromkm 0+000to km 13+000 i.e.the Bagrakot to Kafer section (Design length 13.000 km)in the State of West Bengal. The land, carriageway and structures comprising the Site are described below.

~~1~~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 Annexure III of Schedule-A. Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be corrected as per the prescribed standards for mountainous & steep terrain to the extent land is available.

1.2 WIDTH OF CARRIAGEWAY

~~1~~1.2.1 TwoLanning with paved shoulder shall be undertaken. The paved carriageway including paved shoulders shall be 10 m wide in accordance with the typical cross section drawings in the Manual.

Provided that in the built-up areas the width of the carriageway shall be as specified in the following table:

Sr. No.	Built-up Stretch (Township)	Location/Design Chainage (Km)		Width (m)	Typical Cross Section
		From	To		
NIL					

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

~~1~~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.

2.2 Designspeed

The design speed shall be minimum design speed of 40 km per hr. for Mountainous and Steep terrain.

2.3 Improvement ofthe existing roadgeometrics

2.3.1 Details of Bypass

Sr. No.	Existing Chainage		Length (m)	Design Chainage		Length (m)	TCS TYPE
	From	To		From	To		
1	0+000	3+500	3500	0+000	3+800	3800	Four lane divided carriage way with raised median (ROB Approach) (from Km 0+000 to 0+400) & 2-lane highway in plain/rolling terrain (from Km 0+400 to 3+800)

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2.3.2 Realignment:

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Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
1	3.860	3.915	0.055	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
2	3.970	4.120	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
3	4.190	4.340	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
4	4.460	4.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
5	4.610	4.690	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
6	4.725	4.750	0.025	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
7	4.890	4.900	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
8	4.930	5.050	0.120	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
9	5.130	5.230	0.100	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
10	5.400	5.590	0.190	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
11	6.140	6.220	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
12	6.270	6.270	0.000	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
13	6.580	6.710	0.130	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
14	7.040	7.120	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
15	7.280	7.360	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
16	7.440	7.450	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
17	8.460	8.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
18	10.020	10.030	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
19	10.160	10.240	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
20	10.340	10.360	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
21	10.420	10.480	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
22	10.520	10.550	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
23	10.620	10.650	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
24	10.720	10.760	0.040	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
25	10.790	10.820	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
26	10.910	10.930	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
27	10.980	11.000	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
28	11.090	11.140	0.050	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
29	11.940	11.970	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
30	12.200	12.280	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
31	12.360	12.500	0.140	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
32	12.570	12.590	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
33	12.820	12.910	0.090	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
34	12.940	13.000	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II

2.4 Right ofWay

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

2.5 Median

The median in built up areas shall be paved and railings of steel and suitable antiglare measures such as plastic screens shall be provided at the center of median to reduce headlight glare from opposite traffic. The total height of screen including the height of the barrier shall be 1.5m and spacing shall be such as to effectively cut the glare.

Sl. no	Design Chainage		Median	Reference to Cross Section (TCS)
	From	To		
1	C 610+360	C 611+400	Steel Railing with Antiglare measure of approved quality and height shall be 1.5m.	V
2A	A 0+000	A 0+300		IV (Left)
2B	A 0+000	A 0+400		IV (Right)

2.6 Typeofshoulders

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

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Sl. no	Design Chainage		Fully Paved Shoulder/Footpath	Reference to Cross Section (TCS)
	From	To		
1	0+400	3+800	Paved & Earthen	III

(a) In open country, (Paved shoulders of 1.5 m width shall be provided and balance 1.0 m width shall be covered with 150 mm thick compacted layer of granular material).

(b) Designand specificationsofpavedshouldersand granularmaterialshall conformto the requirements specified in paragraphs 5.10and 5.11 of the Manual.

2.7 Lateral andvertical clearances at underpasses

2.7.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriersshall be as per paragraph2.11 of 2-lanning Manual.

2.7.2 Lateralclearance:Thewidthoftheopeningattheunderpassesshallbeas follows:

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

Vertical clearance: Vertical Clearance at underpasses/Flyovers shall not be less than 5.5 m and for Cattle underpass shall not be less than 4.5 m.

2.8 Lateral andvertical clearances at overpasses

2.8.1 Lateraland vertical clearancesat overpasses shallbe as per paragraph 2.11 of the 2-lanning Manual.

2.8.2 Lateralclearance:Thewidthoftheopeningattheoverpassesshallbeas follows:

Sr.No.	Design Chainage(Km)	Span / Opening (m)	Remarks
Nil			

2.8.3 Vertical clearance: A minimum 5.5 m vertical clearance shall be provided at all points of the carriageway of the project highway.

2.9 Service roads

Service roadsshallbeconstructedat thelocations and for the lengths indicated below:

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

Details of Slip Road

Sr. No.	Existing Chainage		Design Chainage		Right Hand side(RHS) or Left Hand side (LHS) or Both side	Length Km of Service Road
	From	To	From	To		
NIL						

2.10 Gradeseparatedstructures

2.10.1 Gradeseparatedstructuresshallbeprovidedasperparagraph2.13ofthe 2-lanning Manual. Therequisiteparticulars aregiven below:

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Sr. No.	Location of structure (Existing)	Location of structure (Design)	Length (m)	Number and length of Spans(m)	Approach Gradient	Remarks, if any
1		0+020	160.9	1x25+1x45.4+1x40.5+2x25	2.5%	ROB+Loop

2.10.2 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 follows:

Sr. No.	Location (Design Chainage)	Type of Structure Length	Cross road at		
			Existing level	Raised Level	Lowered Level
1.	0+020	160.9	171.015	172.0129	-

2.11 Cattleand pedestrian underpass /overpass

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

Sr. No.	Location	Type of crossing
NIL		

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2.12 *Typical cross-sections oftheProject Highway*

Indicative typical cross section of the Project highway shall be Fig. 2.11 to 2.12 for existing road section and Bypasses & Realignment, Fig. 2.13 for built-up section of the manual (IRC: SP: 73-2015).

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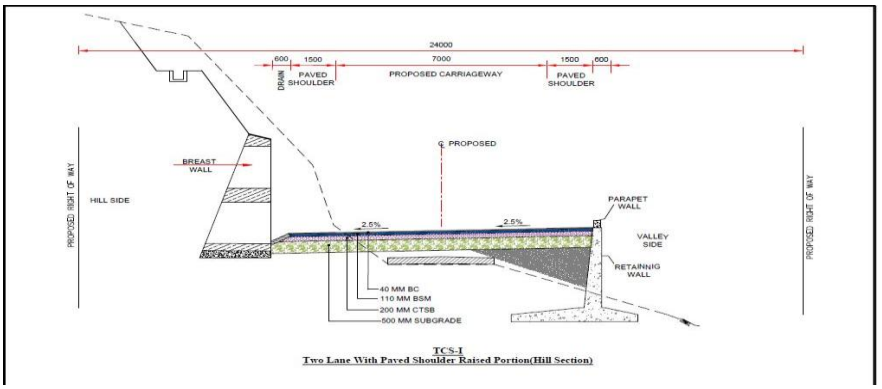
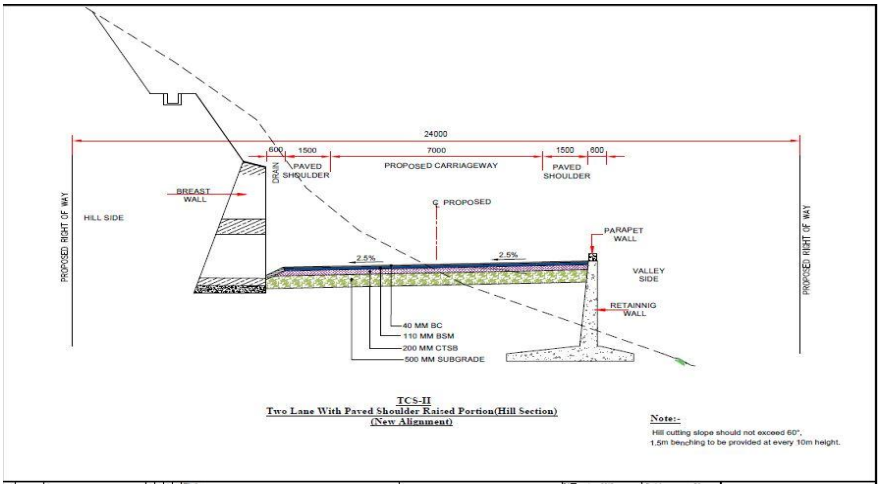
TCS-I



TCS-I
Two Lane With Paved Shoulder Raised Portion(Hill Section)

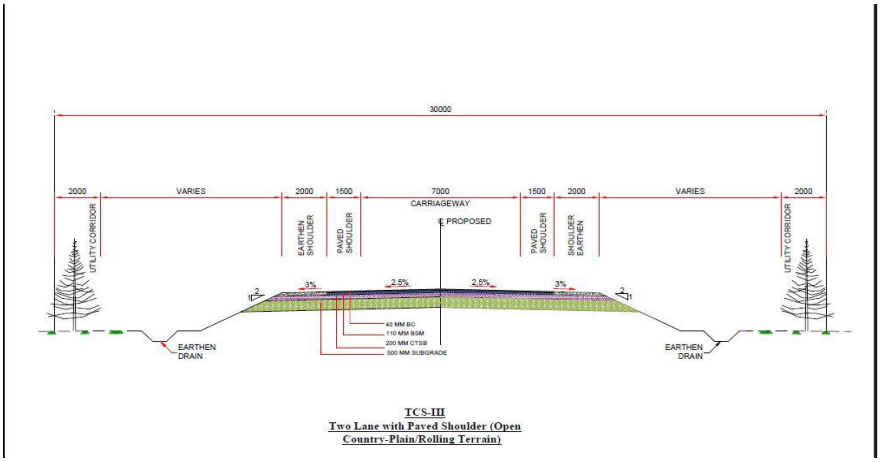
TCS-II



TCS-II
Two Lane With Paved Shoulder Raised Portion(Hill Section)
(New Alignment)

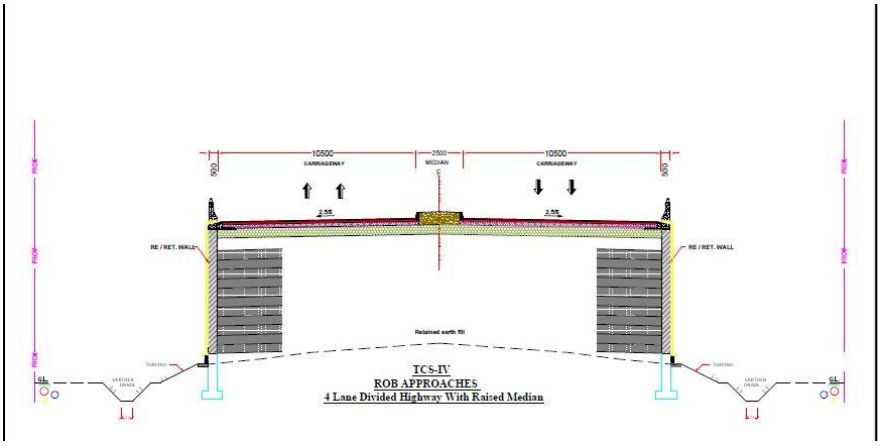
Note:-
Hill cutting slope should not exceed 60°,
1.5m benching to be provided at every 10m height.

TCS-III



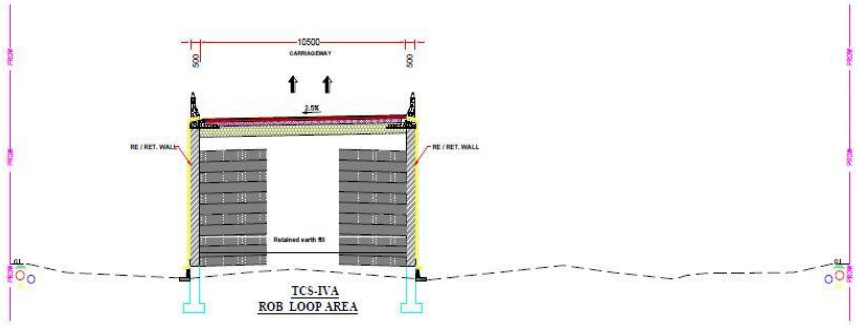
TCS-III
Two Lane with Paved Shoulder (Open Country-Plain/Rolling Terrain)

TCS-IV



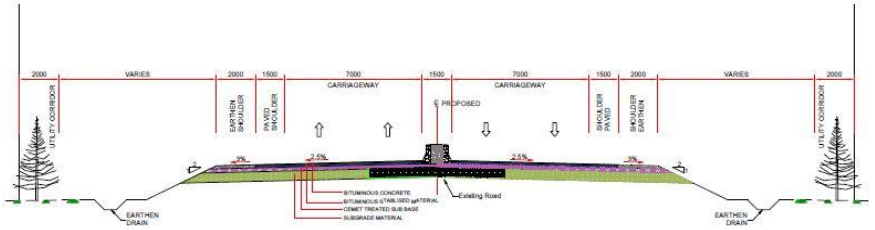
TCS-IV
ROB APPROACHES
4 Lane Divided Highway With Raised Median

TCS-IVA



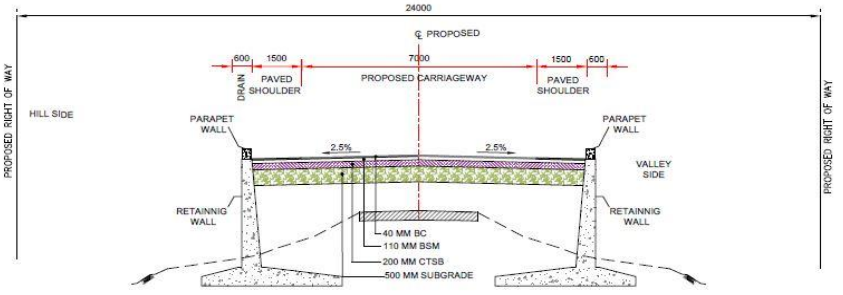
TCS-IVA
ROB LOOP AREA

TCS-V



TCS-V
Open Country - Plain/Rolling Terrain
4 Lane Divided Highway With Raised Median(At NH-31 Widening)
Median width restricted to avoid Oil pipe line in MCW

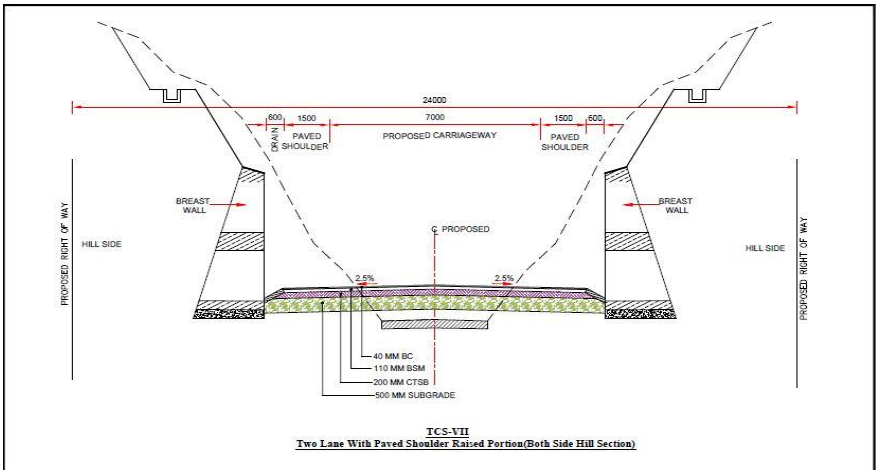
TCS-VI



TCS-VI
Two Lane With Paved Shoulder (Both Side Valley Section)

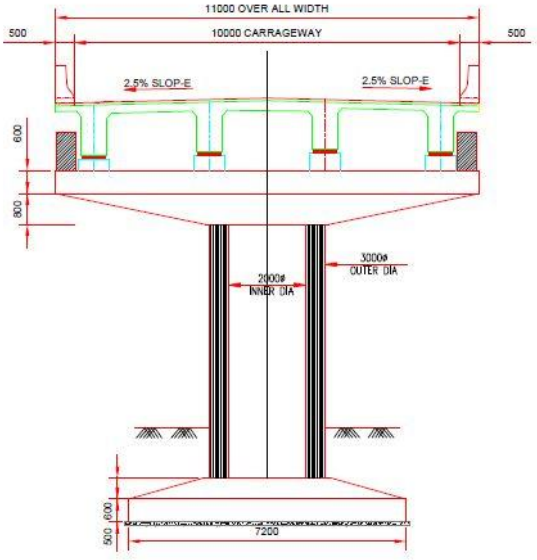
Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basis under SARDP-NE Phase 'A' in the State of West Bengal (Package-IV A).

TCS-VII



TCS-VII
Two Lane With Paved Shoulder Raised Portion(Both Side Hill Section)

TCS-VIII



TCS-VIII
Typical Cross Section for 2 Lane Elevated Section

Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basis under SARDP-NE Phase 'A' in the State of West Bengal (Package-IV A).

Type of Cross Section Description	TCS	Length in Km
Two lane with paved shoulder Raised portion (Hill section)	I	2.900
Two lane with paved shoulder Raised portion(Hill section), New Alignment	II	2.190
Type of Cross Section of 2-lane with paved shoulder (Open country- plain/rolling terrain) Bypass Section	III	3.400
Type of Cross Section of 4-lane divided highway with raised median	IV	0.400
Two lane with paved shoulder Raised portion (Both Side Valley section)	VI	0.310
Two lane with paved shoulder Raised portion (Both Side Hill section)	VII	1.780
Typical Cross Section for 2 Lane Elevated Structure	VIII	2.020
	Total	**13.000**

TCS ON ROB APPROACH AND RAMP					
Sr. No.	**Proposed Chainage**		**Length**	**Section**	**TCS**
	From (Km)	**To (Km)**	**in (Km)**		
1	A+0.000	A+0.300	0.3	On ROB Approach	IV
2	A+0.300	A+0.800	0.5	Ramp A-A	IVA
3	B+0.300	B+0.700	0.4	Ramp B-B	IVA
4	C+610.360	C+611.400	1.04	On NH-31	V
	Total		**2.24**		

3. INTERSECTIONS AND GRADE SEPARATORS

All intersections and grade separators shall be as per Section 3 of the Manual. Existing intersections which are deficient shall be improved to the prescribed standards.
Properly designed intersections shall be provided at the locations and of the types and features given in the tables below:

~~7.~~3.1 *At-GradeIntersections:*

~~9.~~3.1.1 *Major intersections*

At grade major intersections shall be improved at intersecting roads with the Project highway is given below:

Sr. No.	Location (Existing Chainage) (km)	Location (Design Chainage) (km)	Salient Feature	Minimum Length of Viaduct	Road to be carried Under structure
1	610+765 of NH-31	0+000	T- Junction (with NH-31)	-	-

~~3.1.1~~3.1.2 ***Minor Intersections***

A*t grade minor intersections shall be improved at intersecting roads with the Project highway is given*

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below:

SL. No.	Existing Chainage	Design Chainage	Type of intersection	Direction	Type of Road	Going to
				Left/Right	E/BT/CC	
1	Bypass	0+950	Y	Right	-	Tea garden
2	Bypass	1+130	X	Both	-	Tea garden
3	Bypass	2+000	Y	Left	-	Tea garden
4	Bypass	2+220	Y	Left & Right	-	Tea garden
5	Bypass	2+600	Y	Left & Right	-	Tea garden
6	3+500	3+800	Y	Left	BT Road	Jn. of Bypass and Exist. Road

3.4. Road Embankment and CutSection

(i) Widening andimprovementoftheexisting roadembankment/cuttingsand constructionof newroadembankment/cuttingsshallconformtothe SpecificationsandStandardsgiven insection4 of the Manualand the specifiedcrosssectionaldetails.Deficienciesintheplanandprofileofthe existingroad shall be corrected.

(ii) Raising of the existing road:

The existingroad shall beraised in thefollowing sections (4.990 km):

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
1	3.800	3.860	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
2	3.915	3.970	0.055	Two lane with paved shoulder Raised portion(Hill section)	I
3	4.340	4.400	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
4	4.690	4.725	0.035	Two lane with paved shoulder Raised portion(Hill section)	I
5	4.850	4.890	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
6	4.900	4.930	0.030	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
7	5.050	5.130	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
8	5.230	5.400	0.170	Two lane with paved shoulder Raised portion(Hill section)	I
9	5.590	5.660	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
10	5.660	5.820	0.160	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
11	5.820	5.880	0.060	Two lane with paved shoulder Raised portion(Hill section)	I

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Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
12	5.880	5.920	0.040	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
13	5.920	6.140	0.220	Two lane with paved shoulder Raised portion(Hill section)	I
14	6.220	6.270	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
15	6.270	6.350	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
16	6.350	6.580	0.230	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
17	7.360	7.400	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
18	7.400	7.420	0.020	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
19	7.420	7.440	0.020	Two lane with paved shoulder Raised portion(Hill section)	I
20	8.420	8.460	0.040	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
21	8.520	8.620	0.100	Two lane with paved shoulder Raised portion(Hill section)	I
22	8.620	9.670	1.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
23	9.670	10.020	0.350	Two lane with paved shoulder Raised portion(Hill section)	I
24	10.100	10.160	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
25	10.240	10.290	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
26	10.290	10.340	0.050	Two lane with paved shoulder Raised portion(Hill section)	I
27	10.360	10.420	0.060	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
28	10.550	10.620	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
29	10.760	10.790	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
30	10.820	10.910	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
31	10.930	10.980	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
32	11.000	11.090	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
33	11.140	11.530	0.390	Two lane with paved shoulder Raised portion(Hill section)	I
34	11.530	11.560	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
35	11.560	11.940	0.380	Two lane with paved shoulder Raised portion(Hill	I

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
				section)	
36	11.970	12.050	0.080	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
37	12.050	12.200	0.150	Two lane with paved shoulder Raised portion(Hill section)	I
38	12.280	12.360	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
39	12.500	12.570	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
40	12.620	12.630	0.010	Two lane with paved shoulder Raised portion(Hill section)	I
41	12.630	12.680	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
42	12.680	12.820	0.140	Two lane with paved shoulder Raised portion(Hill section)	I

~~4.~~5. PAVEMENT DESIGN

Pavementdesignshallbecarriedoutinaccordancewith Section 5 of the Manual.

5.1 Typeofpavement

The Pavement shall be flexible.
Crust composition for flexible pavement:

BC	40 mm
BSM	110 mm
CTSB	200 mm
SUBGRADE	500 mm

5.2 Design requirements

5.2.1 Design Period and strategy

As per clause 5.4.1, 5.9 & 5.10 of IRC: SP: 73- 2018

5.2.2 Design Traffic

As per clause 5.4.1, 5.9 & 5.10 of IRC: SP: 73- 2018

Notwithstandinganythingtothecontrary containedinthisAgreementorthe Manual,theContractorshalldesignthepavementfordesigntrafficof25 millionstandard axles.

5.3 Reconstruction of stretches

The stretches mention in clause 4 of Schedule B of the document shows the table of the existing road that shall be reconstructed. These shall be designed as new pavement.

5.4 DBM completed Stretches

The stretches mention in Schedule A of the document shows the table of the DBM completedstretches.
Only wearing course is required.

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6 ROAD SIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per Section 6 of the Manual. Lined and Unlined drains are provided in following stretches:

Lined Drains Location:

Sr. No.	Type of Cross Section Description	TCS	TCS Length (Km)	Total Length (Km)
1	Two lane with paved shoulder Raised portion(Hill section)	I	2.90*1	2.9
2	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II	2.19*1	2.19
3	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII	1.78*2	3.56
			Total	**8.65**

Unlined Drains Location:

Sr. No.	Type of Cross Section Description	TCS	TCS Length (Km)	Total Length (Km)
1	Type of Cross Section of 2-lane with paved shoulder (Open country- plain/rolling terrain)	III	3.40*2	6.8
2	Type of Cross Section of 4-lane divided highway with raised median	IV	0.70*2	1.4
3	Type of Cross Section of 4-lane divided highway with raised median (At NH-31 Widening)	V	1.04*2	2.08
			Total	**10.28**

Therefore total length of Lined and Unlined Drains are provided below:

Drain type	Unit	Length
(i) Lined Drain	Km	8.65
(ii) Unlined Drain	Km	10.28

7 DESIGN OF STRUCTURES

7.1 General

~~(a)~~7.1.1 Allbridges, culverts andstructuresshallbe designedandconstructedin accordance withsection 7 of theManualand shallconformto the cross- sectional features and other details specified therein

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

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Sr.No.	Bridge (km)	Widthofcarriagewayand Cross - Sectionalfeature
Nil		

7.1.3 Thefollowingstructuresshall beprovided with footpaths:

Sr. No.	Location at km		Remarks
	(Existing Chainage)	(Design Chainage)	
Nil			

~~(b)~~7.1.4 All bridges shall behigh-level bridges.

~~7.1.1~~7.1.5 Thefollowingstructuresshallbedesignedtocarryutilityservicesspecified in table below:

Sr.No.	Bridge (Km)	Utility service to be carried	Remarks
1	1+382	10 m	As per site requirement
2	3+585	40 m	

~~7.1.2~~7.1.6 Cross-sectionofthenewculvertsandbridgesatdecklevelfortheproject Highway shallconformtothetypicalcross-sectionsgiveninsection7ofthe Manual.

~~8.2~~7.2 *Culverts*

~~7.1.3~~7.2.1 Overallwidthofallculvertsshallbeequaltotheroadway widthofthe approaches.

~~7.1.4~~7.2.2 Following newly constructed culverts shall be completed in all respect.

S.No	Chainage	Span Arrangement	Type of Culvert	Remarks
1	3+800	1x3	Box culvert	Newly Built, Protection work remaining
2	3+937	2x3	Box culvert	Newly Built, Protection work remaining
3	4+200	1x3	Box culvert	Newly Built, Protection work remaining
4	5+058	1x3	Box culvert	Newly Built, Protection work remaining
5	5+095	1x3	Box culvert	Newly Built, Protection work remaining
6	5+255	1x3	Box culvert	Newly Built, Protection work remaining
7	5+285	1x3	Box culvert	Newly Built, Protection work remaining
8	5+394	1x3	Box culvert	Newly Built, Protection work remaining
9	5+872	1x3	Box culvert	Newly Built, Protection work remaining

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~~7.1.5~~7.2.3 **Reconstruction of Existing Culverts:**

The existing culverts at the following locations shall be reconstructed as new culverts:

Sl. No.	Existing Chainage (Km)	Type of Culvert	Existing No. of Spans with Span Length x Vertical Clearance (In m)	Recommendation	Design Chainage (Km)	Type of Culvert	No. of Spans with Span Length (m)
1	5+836	RCC SLAB	1X1.5	Reconstruction	6+280	RCC BOX	1X3
2	7+120	RCC SLAB	1X1.5	Reconstruction	8+520	RCC BOX	1X3
3	7+366	Causeway	-	Reconstruction	8+750	RCC BOX	1X3
4	7+665	RCC SLAB	1X1	Reconstruction	9+040	RCC BOX	1X3
5	7+950	Causeway	-	Reconstruction	9+280	RCC BOX	1X3
6	8+230	Causeway	-	Reconstruction	9+540	RCC BOX	1X3
7	8+288	Causeway	-	Reconstruction	9+620	RCC BOX	1X3
8	8+457	Causeway	-	Reconstruction	9+780	RCC BOX	1X3
9	8+532	Causeway	-	Reconstruction	9+870	RCC BOX	1X3
10	8+612	RCC SLAB	1X1	Reconstruction	9+930	RCC BOX	1X3
11	8+655	Causeway	-	Reconstruction	9+980	RCC BOX	1X3
12	8+988	Causeway		Reconstruction	10+280	RCC BOX	1X3
13	9+027	Causeway		Reconstruction	10+300	RCC BOX	1X3
14	9+180	Causeway		Reconstruction	10+420	RCC BOX	1X3
15	9+440	RCC SLAB	1X3.1	Reconstruction	10+585	RCC BOX	1X3
16	9+600	Causeway		Reconstruction	10+760	RCC BOX	1X3
17	9+780	Causeway		Reconstruction	10+900	RCC BOX	1X3
18	9+983	RCC SLAB	1X2	Reconstruction	11+000	RCC BOX	1X3
19	10+046	RCC SLAB	1X2.1	Reconstruction	11+140	RCC BOX	1X3
20	10+209	Causeway		Reconstruction	11+280	RCC BOX	1X3
21	10+261	Causeway		Reconstruction	11+350	RCC	1X3

Sl. No.	Existing Chainage (Km)	Type of Culvert	Existing No. of Spans with Span Length x Vertical Clearance (In m)	Recommendation	Design Chainage (Km)	Type of Culvert	No. of Spans with Span Length (m)
						BOX	
22	10+386	Causeway		Reconstruction	11+480	RCC BOX	1X3
23	10+419	Causeway		Reconstruction	11+500	RCC BOX	1X3
24	11+018	Causeway		Reconstruction	12+090	RCC BOX	1X3
25	11+120	RCC SLAB	1X2	Reconstruction	12+225	RCC BOX	1X3
26	11+582	Causeway		Reconstruction	12+585	RCC BOX	1X3
27	11+822	Causeway		Reconstruction	12+850	RCC BOX	1X3
28	11+950	Causeway		Reconstruction	12+950	RCC BOX	1X3

~~(a)~~7.2.4 Widening and Repairing 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.	Culvert Location (Km)	Type , Span, Height and width of existing culvert	Type of Repair Required
Nil			

~~7.1.6~~7.2.5 Additional New culverts shall be constructed as per Particulars given in the table below:

-NIL-

~~7.1.7~~7.2.6 Repairs/ Replacement of Railing/Parapets, flooring and protection works of the existing culverts shall be undertaken as follows:

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Type of Culvert	Span (m)	Type of Repair
NIL					

~~7.1.8~~7.2.7 Floor Protection works shall be as specified in the relevant IRC codes and specifications.

~~8.3~~7.3 Bridges

~~(a)~~7.3.1 Existing Bridges to be retained

(i) The existing major bridges at the following locations shall be retained:

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Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Existing no. of Spans with span length (m)	Proposed no. of Spans with span length (m)	Proposed structure	Remarks
NIL						

(ii) The following narrow bridges shall be widened:

Sr. No.	Location (Km)	Existing Width (m)	Extent of Widening (m)	Cross-section at deck level for widening
NIL				

(iii) The following Minor bridges shall be reconstructed:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Design no. of Spans with span length (m	Existing no. of Spans with span length (m)	Existing Structure	Proposed Structure
NIL						

~~(b)~~7.3.2 **Additional New Bridges**

a. New major bridge at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sr. No.	Location		Span Arrangement	Total length (m)	Remarks
	Existing Chainage (Km)	Design Chainage (Km)			
NIL					

~~a.~~b. New minor bridges at the following locations on the project highway shall be constructed. GADs for the new bridges are attached in the drawings folder:

Sr. No.	Location		Span Arrangement	Total length (m)	Remarks
	Existing Chainage(Km)	Design Chainage(Km)			
2	-	3+525	1x40	40	Work completed upto Sub-Structure.

~~7.1.9~~7.3.3 The railings of existing bridges shall be Reconstruction by crash barriers at the following locations:

Sr.No.	Location (km)	Remarks
Nil		

~~7.1.10~~7.3.4 Repairs/ replacements of railing/parapets of the existing bridges shall be undertaken as follows:

Sl. No.	Existing Chainage (Km)	Design Chainage (Km)	Existing no. of Spans with span length (m)	Remarks
Nil				

~~(c)~~7.3.5 **Drainage system for bridge decks**

An effective drainage system for bridge decks shall be provided as specified in paragraph 7.20 of the Manual.

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~~(d)~~7.3.6 Structures in marine environment

NIL

7.4 Rail - Road Bridges

~~7.1.11~~7.4.1 Design, construction anddetailingof ROB shallbe asspecifiedin paragraph 7.19 of the Manual.

7.4.2 Road Over-Bridges and Loop section combined

Roadover-bridges(roadoverrailway line) and loopshallbeprovidedatthefollowinglevel crossings,as per manual:

Sl. No.	Location of Level crossing (Chainage km)	Length of bridge (m)	Type of structure	Remarks
1	0+020	(1X25) + (1X45.4) + (1X40.5) + (2X25)	PSC, RDSO(Steel)	ROB+LOOP

~~1.1.1~~7.4.3 Road under-Bridges

Road under-bridges (road under railway line) shall be provided at the followinglevelcrossings, as per GAD drawingsattached:

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

7.5 Gradeseparatedstructures

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.10 and 3 of this Annex-I of Schedule-B.

Sr. No.	Location		Span Arrangement	Total length (m)	Remarks
	Existing Chainage (Km)	Design Chainage (Km)			
Nil					

7.6 Repairs andstrengthening of bridges andstructures

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

~~5.~~A. Bridges

Sl.No.	Location / Design Chainage (In km)/Span	Side (LHS/RHS)	Nature and Extent of Repairs / Strengthening to be carried out
Nil			

~~6.~~B. ROB / RUB

Sl.No.	Location / Design Chainage (In km)	Side (LHS/RHS)	Nature and Extent of Repairs / Strengthening to be carried out
Nil			

~~7.~~C. Overpass / Underpass and Other structures

Sr. No.	Location / Design Chainage (In km)	Side (LHS/RHS)	Nature and Extent of Repairs/ Strengthening to be carried out
Nil			

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7.7 List of Major Bridges and Structures

Viaduct: The minimum requirement of Viaducts are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work. Viaduct shall be provided where embankment height is more than 12m. Tentative locations of the Viaduct are given below:

Sl. No.	Start Chainage (Km)	End Chainage (Km)	Span Arrangement	Width of Carriageway (m)	Length (m)
1	4+520	4+610	1X20+1X30+2X20	11	90
2	4+750	4+850	5X20	11	100
3	6+710	7+040	2X20+3X30+4X20+2X30+3X20	11	330
4	7+120	7+280	3X20+2X30+2X20	11	160
5	7+450	8+420	5X20+5X30+7X20+7X30+6X20+7X30+2X20	11	970
6	10+030	10+100	1X30+2X20	11	70
7	10+480	10+520	1X40	11	40
8	10+650	10+720	1X30+2X20	11	70
9	12+590	12+620	1X30	11	30
Total Length					**1860**

(A) Partially Completed Viaducts to be Completed as per approved Design & Drawings.

Sr.No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Carriageway (m)	Remarks
		Foundation	Superstructure			
1	4+050	Open	PSC/BOX	1x40+2x26.41	11	Newly Built, completed upto substructure on Abutments & Box Substructure to be completed
2	4+340	Open	PSC	1x40	11	Newly Built, Completed upto substructure.
3	12+840	Open	PSC	2x40	11	Newly Built, completed upto substructure of abutments & substructure of pier to be completed.

(B) Partially Completed Road Over-Bridges and Loop to be completed as per approved Design & Drawings.

Roadover-bridges(roadoverrailway line) and loopshallbeprovidedatthefollowinglevel crossings,as per manual:

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

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1	0+020	(1X25) + (1X45.4) + (1X40.5) + (2X25)	PSC, RDSO(Steel)	ROB+LOOP, 8 out of 12 Abutment/piers final lift has been completed, Abutment/pier Caps to be completed.

8 TRAFFIC CONTROL DEVICES AND ROAD SAFETYWORKS

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

(a) Traffic Signs: Traffic signs include roadside signs, overhead signs and curb mounted signs along the entire Project Highway.

(b) Pavement Marking: Pavement markings shall cover road marking for the entire Project Highway.

(c) Safety Barrier: Provide W-beam crash barrier along the project highway at all locations as specified in manual recommended in Schedule D.

8.2 Specifications of the reflecting sheeting.

Retro reflective sheeting should be of high intensity grade with encapsulated lens or with micro prismatic retro reflective element in accordance with ASTM Standard D 4956-04 and IRC 67:2010 shall be provided.

~~(a)~~9 ROADSIDE FURNITURE

9.1 Roadside furniture shall be provided in accordance with the provisions of section 11 of the Manual.

(a) Road Boundary Stone: For the entire Project Highway.

(b) Pedestrian Guard Rail: The pedestrian facilities shall include the provision of the;

(i) Pedestrian guardrail: Provide pedestrian guardrail at each bus stop location.

(ii) Pedestrian Crossings: Provide pedestrian crossing facilities on Junctions.

(c) Overhead traffic signs: Location and Size

(i) Full width Overhead signs: Full width Overhead signs shall be provided as suggested in manual recommended in Schedule D.

(ii) Cantilever Overhead signs: Overhead signs shall be provided as suggested in manual recommended in Schedule D.

(iii) Delineators: Delineators for the entire Project Highway at the locations as suggested in manual recommended in Schedule D

~~(i)~~10 COMPULSORYAFFORESTATION

NIL

~~(ii)~~11 HAZARDOUS LOCATIONS

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

Sl. No.	Design Chainage			Remarks
	From	To	Length (m)	
1	0+000	13+000	5539	Deficient curve $\leq$ 25m and embankment Height more than 3m

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12 Special Requirement for Hill Roads

Reinforced Slope Structures

-

Sl. No.	Chainage		Stretch Length (m)	Vertical Height Diff. (FRL-OGL Left/Right) (m)	
	Start	End		LHS	RHS
1	4090.000	4190.000	100.000	11.748	0
2	4120.000	4200.000	80.000	0.000	13.509
3	4510.000	4520.000	10.000	9.7447	0
4	4740.000	4840.000	100.000	10.8359	0
5	4900.000	4960.000	60.000	0.000	10.560
6	7110.000	7290.000	180.000	14.0542	0
7	10000.000	10120.000	120.000	0.000	12.825
8	10160.000	10170.000	10.000	11.0231	0
9	10230.000	10250.000	20.000	11.3242	0
10	10470.000	10520.000	50.000	0.000	9.477
11	10490.000	10510.000	20.000	13.271	0
12	10650.000	10710.000	60.000	0.000	14.783
13	10650.000	10710.000	60.000	14.783	0
14	12910.000	12950.000	40.000	0.000	12.222
-	-		910.000	-	-

Tentative Details of Reinforced Soil Composite or equivalent Structure (Left & Right Side):-

Reinforced Earth Composite System

-

Sl. No.	Chainage		Stretch Length (m)	Vertical Height Diff. (FRL-OGL Left/Right) (m)	
	Start	End		LHS	RHS
1	4340.000	4600.000	260.000	-	26.718
2	4340.000	4460.000	120.000	18.6164	-
3	4560.000	4610.000	50.000	17.8798	-
4	4750.000	4850.000	100.000	-	18.119
5	6710.000	7010.000	300.000	24.8256	-
6	6720.000	7050.000	330.000	-	32.851
7	7170.000	7290.000	120.000	-	20.024
8	10050.000	10090.000	40.000	19.9603	-
9	10140.000	10340.000	200.000	-	16.626
-	-		1520.000	-	-

Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basis under SARDP-NE Phase 'A' in the State of West Bengal (Package-IV A).

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Slope Protection in Hill Cut Sections

At location where hill cutting is required Breast wall to be provided upto 4m height and the hill surface/ slope to be protected / treated with Soil/ Rock nailing & High Strength Wire Mesh having of minimum diameter 3 mm twisted or Straight of high tensile steel wire as per IRC & BS specifications. The System should be tailor made according to the site conditions and requirements with accessories like Connection Clips / Press Claws / Shackles/ Boundary Ropes / Wire Rope Anchors etc. Equivalent / Higher Protection system will be Technically Evaluated by Approving Authority. The Final Type of product to be used shall be decided upon approval of final design / drawing as per IRC & BS specification.

The minimum requirement of hill slope protection are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work.

Tentative length of Hill Cut Section (Left Side cutting)

Hill Slope Protection Details in Cut Sections (LHS)

Sl. No.	Chainage		Stretch Length (m)	Vertical Height of Retaining Area in Cutting of Slope (m)
	Start	End		
1	5680.000	5810.000	130.000	14.000
2	6250.000	6260.000	10.000	9.000
3	6400.000	6480.000	80.000	13.000
4	8630.000	8720.000	90.000	12.000
5	8770.000	8780.000	10.000	9.000
6	8800.000	9670.000	870.000	17.000
7	9700.000	9750.000	50.000	10.000
8	10370.000	10410.000	40.000	14.000
9	10770.000	10810.000	40.000	11.000
10	10930.000	10990.000	60.000	16.000
11	11530.000	11560.000	30.000	10.000
12	11990.000	12040.000	50.000	13.000
-	-	-	1460.000	-

Tentative length of Hill Cut Section (Right Side Cutting)

Hill Slope Protection Details in Cut Sections (RHS)

Sl. No.	Chainage		Stretch Length (m)	Vertical Height of Retaining Area in Cutting of Slope (m)
	Start	End		
1	6420.000	6580.000	160.000	15.000
2	8910.000	9600.000	690.000	15.000
3	10370.000	10390.000	20.000	11.000
4	10940.000	10970.000	30.000	13.000
5	11960.000	12040.000	80.000	16.000

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Retaining Wall: - The minimum requirement ofRetaining Wall are suggested as followingwhich may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work.

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Retaining Walls Locations (LHS):

Sl. No.	Chainage		Height (m)	Length (m)	Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)				From (m)	To (m)		
1	3570	3580	8	10	34	4920	4930	6	10
2	3580	3590	7	10	35	4930	4940	6	10
3	3970	3980	6	10	36	4940	4950	7	10
4	3990	4000	7	10	37	4950	4960	7	10
5	4000	4010	8	10	38	7100	7110	9	10
6	4010	4020	9	10	39	7280	7290	10	10
7	4020	4030	9	10	40	7390	7400	6	10
8	4030	4040	10	10	41	7400	7410	8	10
9	4040	4050	11	10	42	7410	7420	6	10
10	4050	4060	11	10	43	7420	7430	7	10
11	4060	4070	7	10	44	7430	7440	9	10
12	4070	4080	7	10	45	8420	8430	11	10
13	4080	4090	9	10	46	8430	8440	10	10
14	4090	4100	10	10	47	8440	8450	9	10
15	4100	4110	11	10	48	8450	8460	8	10
16	4190	4200	7	10	49	10100	10110	6	10
17	4330	4340	9	10	50	10140	10150	6	10
18	4340	4350	9	10	51	10150	10160	9	10
19	4350	4360	9	10	52	10160	10170	10	10
20	4360	4370	9	10	53	10170	10180	8	10
21	4370	4380	9	10	54	10210	10220	8	10
22	4380	4390	9	10	55	10220	10230	9	10
23	4500	4510	9	10	56	10230	10240	9	10
24	4610	4620	8	10	57	10240	10250	9	10
25	4680	4690	8	10	58	10250	10260	7	10
26	4690	4700	8	10	59	10260	10270	8	10
27	4700	4710	7	10	60	10270	10280	7	10
28	4710	4720	6	10	61	10290	10300	8	10
29	4730	4740	9	10	62	10300	10310	7	10
30	4840	4850	6	10	63	12620	12630	7	10
31	4850	4860	8	10	64	12630	12640	7	10
32	4900	4910	7	10	65	12640	12650	6	10
33	4910	4920	6	10	66	12650	12660	6	10
Sl. No.	Chainage Height (m)		Height (m)	Length (m)					
	From	To (m)							

Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basis under SARDP-NE Phase 'A' in the State of West Bengal (Package-IV A).

	(m)					
67	12660	12670	6	10		
68	12720	12730	6	10		
			Total	680		

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Retaining Walls Locations (RHS):

Sl. No.	Chainage		Height (m)	Length (m)	Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)				From (m)	To (m)		
1	3570	3580	8	10	35	7360	7370	9	10
2	3580	3590	7	10	36	7370	7380	12	10
3	4100	4110	7	10	37	7400	7410	10	10
4	4190	4200	10	10	38	7410	7420	11	10
5	4200	4210	7	10	39	8420	8430	11	10
6	4230	4240	7	10	40	8430	8440	11	10
7	4240	4250	6	10	41	8440	8450	10	10
8	4320	4330	8	10	42	8450	8460	9	10
9	4330	4340	11	10	43	8460	8470	8	10
10	4340	4350	10	10	44	8470	8480	8	10
11	4350	4360	9	10	45	9970	9980	7	10
12	4360	4370	11	10	46	9980	9990	7	10
13	4370	4380	11	10	47	9990	10000	10	10
14	4380	4390	11	10	48	10000	10010	10	10
15	4460	4470	10	10	49	10010	10020	11	10
16	4470	4480	9	10	50	10100	10110	11	10
17	4480	4490	9	10	51	10110	10120	9	10
19	4500	4510	10	10	52	10120	10130	7	10
20	4850	4860	7	10	53	10130	10140	9	10
21	4860	4870	7	10	54	10140	10150	10	10
22	4870	4880	7	10	55	10150	10160	11	10
23	4890	4900	9	10	56	10180	10190	11	10
24	4900	4910	10	10	57	10190	10200	10	10
25	4910	4920	10	10	58	10200	10210	10	10
26	4920	4930	12	10	59	10210	10220	10	10
27	4960	4970	8	10	60	10240	10250	12	10
28	7040	7050	10	10	61	10250	10260	11	10
29	7280	7290	10	10	62	10260	10270	9	10
30	7290	7300	8	10	63	10270	10280	9	10
31	7300	7310	7	10	64	10280	10290	10	10
32	7330	7340	7	10	65	10320	10330	11	10
33	7340	7350	9	10	66	10330	10340	9	10

34	7350	7360	9	10

Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)		
68	10460	10470	9	10
69	10520	10530	8	10
70	10580	10590	7	10
71	10590	10600	6	10
72	10630	10640	8	10
73	11000	11010	10	10
74	11010	11020	7	10
75	11030	11040	9	10
76	11040	11050	9	10
77	11050	11060	8	10
78	11220	11230	7	10
79	11330	11340	7	10
80	12210	12220	9	10
81	12220	12230	9	10
82	12230	12240	8	10
83	12240	12250	7	10
84	12250	12260	6	10
85	12260	12270	6	10
86	12350	12360	8	10
87	12360	12370	10	10
85	12260	12270	6	10
86	12350	12360	8	10
87	12360	12370	10	10
88	12370	12380	8	10

67	10340	10350	8	10

Sl. No.	Chainage		Height (m)	Length (m)
	From (m)	To (m)		
89	12490	12500	9	10
90	12500	12510	9	10
91	12510	12520	9	10
92	12520	12530	9	10
93	12530	12540	7	10
94	12550	12560	6	10
95	12560	12570	9	10
96	12570	12580	12	10
97	12620	12630	11	10
98	12630	12640	10	10
99	12640	12650	10	10
100	12650	12660	10	10
101	12660	12670	10	10
102	12670	12680	8	10
103	12680	12690	6	10
104	12690	12700	6	10
105	12700	12710	6	10
106	12710	12720	6	10
107	12940	12950	11	10
			Total	**1070**

12.2 4Breast Wall : The minimum requirement of 4m height Breast wall are suggested as following which may vary as per final drawings and design approved by competent authority. The Contractor is required to conduct detail investigation to assess the work based on site survey, investigations and assessment before commencement of work. Hill cutting slope should not exceed 60 degrees, 1.5m benching to be provided at least every 10m height.

Breast Wall	Left Side Length (m)	Right Side Length (m)
	2880	**2310**

13

(iii) **CHANGEOFSCOPE**

The length of Viaducts, Culverts, Retaining Walls, Breast Walls, Bridges etc. specified here in above shallbe treated as anapproximate assessment.Theactuallengthsasrequiredonthe basisof detailedinvestigationsshallbedeterminedby theContractorinaccordance

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withtheSpecificationsandStandards.Anyvariationsin thelengthsspecified inthisSchedule-BshallnotconstituteaChangeofScope,saveandexcept any variationsinthelengtharisingoutofaChangeofScopeexpressly undertaken in accordancewith theprovisions ofArticle13.

Indicative Chainages with applicable Typical Cross section :

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Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
1	0.000	0.400	0.400	Type of Cross Section of 4-lane divided highway with raised median	IV
2	0.400	3.800	3.400	Type of Cross Section of 2-lane with paved shoulder (Open country- plain/rolling terrain)	III
3	3.800	3.860	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
4	3.860	3.915	0.055	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
5	3.915	3.970	0.055	Two lane with paved shoulder Raised portion(Hill section)	I
6	3.970	4.120	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
7	4.120	4.190	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII
8	4.190	4.340	0.150	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
9	4.340	4.400	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
10	4.400	4.460	0.060	Typical Cross Section for 2 Lane Elevated Structure	VIII
11	4.460	4.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
12	4.520	4.610	0.090	Typical Cross Section for 2 Lane Elevated Structure	VIII
13	4.610	4.690	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
14	4.690	4.725	0.035	Two lane with paved shoulder Raised portion(Hill section)	I
15	4.725	4.750	0.025	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
16	4.750	4.850	0.100	Typical Cross Section for 2 Lane Elevated Structure	VIII
17	4.850	4.890	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
18	4.890	4.900	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
19	4.900	4.930	0.030	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
20	4.930	5.050	0.120	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
21	5.050	5.130	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
22	5.130	5.230	0.100	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
23	5.230	5.400	0.170	Two lane with paved shoulder Raised portion(Hill section)	I
24	5.400	5.590	0.190	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
25	5.590	5.660	0.070	Two lane with paved shoulder Raised portion(Hill	I

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
				section)	
26	5.660	5.820	0.160	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
27	5.820	5.880	0.060	Two lane with paved shoulder Raised portion(Hill section)	I
28	5.880	5.920	0.040	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
29	5.920	6.140	0.220	Two lane with paved shoulder Raised portion(Hill section)	I
30	6.140	6.220	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
31	6.220	6.270	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
32	6.270	6.270	0.000	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
33	6.270	6.350	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
34	6.350	6.580	0.230	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
35	6.580	6.710	0.130	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
36	6.710	7.040	0.330	Typical Cross Section for 2 Lane Elevated Structure	VIII
37	7.040	7.120	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
38	7.120	7.280	0.160	Typical Cross Section for 2 Lane Elevated Structure	VIII
39	7.280	7.360	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
40	7.360	7.400	0.040	Two lane with paved shoulder Raised portion(Hill section)	I
41	7.400	7.420	0.020	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
42	7.420	7.440	0.020	Two lane with paved shoulder Raised portion(Hill section)	I
43	7.440	7.450	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
44	7.450	8.420	0.970	Typical Cross Section for 2 Lane Elevated Structure	VIII
45	8.420	8.460	0.040	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
46	8.460	8.520	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
47	8.520	8.620	0.100	Two lane with paved shoulder Raised portion(Hill section)	I
48	8.620	9.670	1.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
49	9.670	10.020	0.350	Two lane with paved shoulder Raised portion(Hill section)	I
50	10.020	10.030	0.010	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
51	10.030	10.100	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
52	10.100	10.160	0.060	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
53	10.160	10.240	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
54	10.240	10.290	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
55	10.290	10.340	0.050	Two lane with paved shoulder Raised portion(Hill section)	I
56	10.340	10.360	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
57	10.360	10.420	0.060	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
58	10.420	10.480	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
59	10.480	10.520	0.040	Typical Cross Section for 2 Lane Elevated Structure	VIII
60	10.520	10.550	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
61	10.550	10.620	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
62	10.620	10.650	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
63	10.650	10.720	0.070	Typical Cross Section for 2 Lane Elevated Structure	VIII
64	10.720	10.760	0.040	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
65	10.760	10.790	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
66	10.790	10.820	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
67	10.820	10.910	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
68	10.910	10.930	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
69	10.930	10.980	0.050	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
70	10.980	11.000	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
71	11.000	11.090	0.090	Two lane with paved shoulder Raised portion(Hill section)	I
72	11.090	11.140	0.050	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
73	11.140	11.530	0.390	Two lane with paved shoulder Raised portion(Hill section)	I
74	11.530	11.560	0.030	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII
75	11.560	11.940	0.380	Two lane with paved shoulder Raised portion(Hill section)	I
76	11.940	11.970	0.030	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
77	11.970	12.050	0.080	Two lane with paved shoulder Raised portion (Both Side Hill section)	VII

Sr. No.	Proposed Chainage		Length	Type of Cross Section Description	TCS
	From (Km)	To (Km)	in (Km)		
78	12.050	12.200	0.150	Two lane with paved shoulder Raised portion(Hill section)	I
79	12.200	12.280	0.080	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
80	12.280	12.360	0.080	Two lane with paved shoulder Raised portion(Hill section)	I
81	12.360	12.500	0.140	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
82	12.500	12.570	0.070	Two lane with paved shoulder Raised portion(Hill section)	I
83	12.570	12.590	0.020	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
84	12.590	12.620	0.030	Typical Cross Section for 2 Lane Elevated Structure	VIII
85	12.620	12.630	0.010	Two lane with paved shoulder Raised portion(Hill section)	I
86	12.630	12.680	0.050	Two lane with paved shoulder Raised portion (Both Side Valley section)	VI
87	12.680	12.820	0.140	Two lane with paved shoulder Raised portion(Hill section)	I
88	12.820	12.910	0.090	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
89	12.910	12.940	0.030	Typical Cross Section for 2 Lane Elevated Structure	VIII
90	12.940	13.000	0.060	Two lane with paved shoulder Raised portion(Hill section), New Alignment	II
		Total	**13.000**		

TCS ON ROB APPROACH AND RAMP					
Sr. No.	**Proposed Chainage**		**Length**	**Section**	**TCS**
	From (Km)	**To (Km)**	**in (Km)**		
1	A+0.000	A+0.300	0.3	On ROB Approach	IV
2	A+0.300	A+0.800	0.5	Ramp A-A	IVA
3	B+0.300	B+0.700	0.4	Ramp B-B	IVA
4	C+610.360	C+611.400	1.04	On NH-31	V
	Total		**2.24**		

~~(iv)~~13 Details of Utility Shifting

The Details of Utilities to be shifted are as follow:-

Sl. No.	Location		Nature of Utility to be shifted	Side
	Chainage in Km		a) Electrical Lines b) Cable Lines c) Water Supply Line d) Gas Pipe Line	
	From Km	To Km		

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1	NIL

SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 ProjectFacilities

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

(a) Toll plaza;

(b) Roadsidefurniture;

(c) Pedestrianfacilities;

(d) Treeplantation;

(e) Trucklay-byes;

(f) Bus stop andshelters;

(h) Rest areas;and

(i) Others to bespecified

2 Description of Project Facilities

Each of the Project Facilities is described below showing:

(a) TollPlaza

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

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

(b) RoadsideFurniture

The roadside furniture shall include the provision of the;

i. TrafficSigns

Typical drawings of Traffic signs include roadside signs, overhead signs and curb mounted signs etc provided for the entire Project Highway is given and location of the same shall be as per IRC 67 recommended in ScheduleD.

~~iii.~~ ii. **PavementMarkings**

Pavement markings shall cover road marking for the entire Project Highway as per manual recommended in Schedule D.

~~iv.~~ iii. **LED TrafficBlinkers**

LED traffic blinker signal provided for entire project.

~~v.~~iv. **Crashbarrier**

Provide W-beam crash barrier along the project highway at the locations as suggested in manual recommended in Schedule D.

~~vi.~~v. **Delineators**

Delineators for the entire Project Highway at the locations as suggested in relevant IRC Manual recommended in Schedule D.

~~vii.~~vi. **Boundary stones**

For the entire Project Highway as suggested in relevant IRC Manual recommended in Schedule D.

~~viii.~~vii. **Hectometer / Kilometerstones**

For the entire Project Highway as suggested in relevant IRC Manual recommended in Schedule D.

(c) PedestrianFacilities

The pedestrian facilities shall include the provision of the;

i. Pedestrian guardrail: Provide pedestrian guardrail at each bus stoplocation.

ii. Pedestrian Crossings: Provide pedestrian crossing facilities on locations as recommended in ScheduleD.

(d) Landscaping and TreePlantation

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

(e) Truck Lay-byes

Truck lay byes shall be provided at the following locations for a capacity of minimum 10 trucks at each location.

Sr. No.	Proposed Ch.
Nil	

(f) BusBays

Bus Bays shall be provided at locations given below:

Sl. No.	Existing Chainage	Design Chainage	Sides
1	-	1+600	Both sides
2	-	3+400	Both sides

(g) RestAreas,

Rest areas shall be provided at truck lay byes locations.

(h) Others

1. HighwayLighting

Lighting shall be provided at the following locations (Minimum 40 Lux to be maintained):

(i) Lighting shall be provided at approach to bridges, Built up areas, Toll plaza, Bus stops, truck Lay-bys, and as per manual recommended in ScheduleD.

(ii) High Mast Lighting shall be provided at all Major Junctions, Toll plazalocations,

2. **HighwayPatrol**

   Not applicable

3. **Ambulances**

   Not applicable

4. **Cranes**

   Not applicable

5. **Advance Traffic Management System(ATMS)**

   Typical Drawing of Advance Traffic Management System (ATMS) is given and location of the same shall be as per IRC: 67: 2001 and IRC: SP: 84-2014. Provisions of other facilities, if required may be made in similar manner.

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

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

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

Code for Practice of Road Signs IRC 67:2001.

The Hill Road Manual IRC SP 48 -1998 should be referred.

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

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

a. Before dumping muck at the dumping yard first of all retaining/ gabion walls of specified capacity and suitable design should be constructed.

b. All the dumping sites should be properly designed with retaining wall/gabion structures and should be maintained regularly in order to check the spillage of the muck down the slope and into the rivers and other places.

c. Wherever boulders are rolling down along with much, gabion structures/retaining wall should have sufficient foundation and bottom width should be 4-5 m. Length of one gabion structure should not be more than 6-8 m. Wherever more length of gabion structure is required one gabion structure should be bound with another

d. If any new dumping sites are identified in future, then the retaining / gabion structures should be constructed at suitable vertical interval of 5-6 m so that entire disposed muck may not exert pressure only at one wall/ toe wall rather the load of muck should be distributed on different walls.

e. Angle of repose of muck should be maintained between 30 to 450. Long slopes should be intercepted to several short ones with the help of 1.5 to 2.0 m wide berms / terraces/ benches in between in order to maintain less than critical velocity for runoff water and simultaneously mass erosion with be controlled.

f. The capacity/ volume of muck disposal site should be more than volume of muck to be disposed.

g. Proper sign boards indicating the name, number, location, dumping capacity, etc. should be installed at all the dumping sites.

h. Dumping sites which are full of their capacity they should be rehabilitated with local grass or shrubs. Jute geo textile (JGT) may also be used for establishment of vegetation at vulnerable sites.

i. Gabion walls should be constructed above HFL of River. If slope is very high to construct a gabion wall then a RCC/stone masonry retaining wall should be given at bank of River after proper design including foundation. Height of this wall should be well above the HFL of River.

j. Proper protection measures should be taken along with river-side stretch in order to stop spilling/falling of muck into the river.

k. All construction sites should follow and comply with the provisions of the Construction and Demolition Waste Management Rules, 2016".

3. The contractor shall ensure maintaining plan/profile/x-sections approved by Authority's Engineer and any slope protection required shall be considered incidental to the original work with no extra payment/change of scope on this account.

Annex -I

(Schedule-D)

Annex –I: Specifications and Standards for Construction

1. Specifications and Standards

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

2. Deviations from the Specifications and Standards

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

SCHEDULE - E
(See Clauses 2.1 and 14.2)

MAINTENANCE REQUIREMENTS

1 MaintenanceRequirements

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

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-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Terminationthereof.

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 beadopted.

2 Repair/rectification of Defects anddeficiencies

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 anddeficiencies

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 timelimit

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 Emergencyrepairs/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 suchdanger.

6 Daily inspection by theContractor

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.

~~8.~~7. Pre-monsoon inspection / Post-monsooninspection

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

~~9.~~8. Repairs on account of naturalcalamities

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

Annex - I
(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Nature of Defect or deficiency		**Time limit for repair/rectification**
ROADS		
(a)	**Carriageway and paved shoulders**	
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 (fifteen) days
(ii)	Roughness value exceeding 2,200 mm in a stretch of 1 km (as measured by a calibratedbump integrator)	120 (one hundred and twenty)days
(iii)	Pot holes	24 hours
(iv)	Any cracks in road surface	15 (fifteen) days
(v)	Any depressions, rutting exceeding 10 mm in road surface	30 (thirty) days
(vi)	Bleeding/skidding	7 (seven) days
(vii)	Any other defect/distress on the road	15 (fifteen) days
(viii)	Damage to pavement edges	15 (fifteen) days
(ix)	Removal of debris, dead animals	6 hours
(b)	**Granular earth shoulders, side slopes, drains andculverts**	
(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
Nature of Defect or deficiency		**Time limit for repair/rectification**
(ii)	Edge drop at shoulders exceeding 40 mm	7 (seven) days
(iii)	Variation by more than 15% inthe prescribed side (embankment)slopes	30 (thirty) days
(iv)	Rain cuts/gullies in slope	7 (seven) days
(v)	Damage to or silting of culverts and side drains	7 (seven) days
(vi)	Desilting of drains in urban/semi-urban areas	24 hours
(vii)	Railing, parapets, crash barriers	7 (seven) days (Restore

		immediately if causing safety hazard)
(c)	**Road side furniture including road sign and pavement marking**	
(i)	Damage to shape or position, poor visibility or loss of retro-reflectivity	48 hours
(ii)	Painting of km stone, railing, parapets, crash barriers	As and when required/Once every year
(iii)	Damaged/missing road signs requiring replacement	7 (seven) days
(iv)	Damage to road mark ups	7 (seven) days
(d)	**Road lighting**	
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours
(e)	**Trees and plantation**	
(i)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(ii)	Removal of fallen trees from carriageway	4 hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
Nature of Defect or deficiency		**Time limit for repair/rectification**
(iv)	Trees and bushes requiring replacement	30 (thirty) days
(v)	Removal of vegetation affecting sight line and road structures	15 (fifteen) days
(f)	**Rest area**	
(i)	Cleaning of toilets	Every 4 hours
(ii)	Defects in electrical, water and sanitary installations	24 hours
(g)	**[Toll Plaza]**	
(h)	**Other Project Facilities and Approachroads**	
(i)	Damage in approach roads, pedestrian facilities, truck lay-byes, bus-bays, bus-shelters, cattle crossings, [Traffic Aid Posts, Medical Aid Posts] and service roads	15 (fifteen) days
(ii)	Damaged vehicles or debris on the road	4 (four) hours
(iii)	Malfunctioning of the mobile crane	4 (four) hours
Bridges		
(a)	**Superstructure**	
(i)	Any damage, cracks, spalling/ scaling Temporarymeasures Permanentmeasures	 within 48 hours within 15 (fifteen) days or

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

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

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) Licence for use of explosives;

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

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

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

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

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

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

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 thisAgreement.

SCHEDULE - G

(See Clauses 7.1.and 19.2)

FORM OF BANK GUARANTEE

Annexure-I
(See Clause7.1)

[Performance Security/Additional Performance Security]

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") and National Highways and Infrastructure Development Corporation Ltd. , (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for **"Construction of alternative highway to Gangtok in Sikkim via Bagrakot — Chuikhim — Nimbong —Kafer — Bakhim — Algarah — Rhenok in the State of West Bengal and fromRhenok — Rorathang — Pakyong along with spur from Aritar — Rolep — Menla in theStateofSikkim(PackageNo.IVAfromKm0.00toKm13.00ofBagrakot — Kafer section of NH 717A on EPC Mode under Phase A of SARDP-NE in the State of West Bengal).**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 PerformanceSecurity.

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 specifiedtherein.

2. A letter from the Authority, under the hand of an officer not below the rank of

Executive Director in the National Highways & Infrastructure Development Corporation Limited, 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.

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.

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

~~8.~~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 here under.

~~9.~~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.

~~10.~~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.

~~11.~~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 beconclusive.

~~12.~~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.

~~13.~~12. This guarantee shall also be operatable at our…….. Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

~~14.~~13. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

Sl. No	**Particulars**	**Details**
1	Name of the Beneficiary	MD-NHIDCL
2	Beneficiary Bank Account No.	90621010002610
3	Beneficiary Bank Branch	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001
4	Beneficiary Bank Branch Name	CNRB0019062

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

SIGNED , SEALED ANDDELIVERED

For and on behalf of the bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Notes:

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

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

Annexure – II
(Schedule -G)

(See Clause 19.2)

Form for Guarantee for Advance Payment

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

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the National Highways and Infrastructure Corporation Ltd., (hereinafter called the "**Authority**") for the "**Construction of alternative highway to Gangtok in Sikkim via Bagrakot — Chuikhim — Nimbong — Kafer — Bakhim — Algarah — Rhenok in the State of West Bengal and from Rhenok — Rorathang — Pakyong along with spur from Aritar — Rolep — Menla in the State of Sikkim (Package No. IVA from Km 0.00 to Km 13.00 of Bagrakot — Kafer section of NH 717A on EPC Mode under Phase A of SARDP-NE in the State of West Bengal).**, subject to and in accordance with the provisions of theAgreement

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

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

~~2.~~1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment 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 specifiedtherein.

~~3.~~2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or 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 reasonwhatsoever.

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 thisGuarantee.

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 suchlaw.

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 AdvancePayment.

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 liabilitieshereunder.

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 liabilitieshereunder.

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 thatit

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 beconclusive.

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 theAgreement.

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

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

Sl. No	**Particulars**	**Details**
1	Name of the Beneficiary	MD-NHIDCL
2	Beneficiary Bank Account No.	90621010002610
3	Beneficiary Bank Branch	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001
4	Beneficiary Bank Branch Name	CNRB0019062

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

SIGNED , SEALED AND DELIVERED

For and on behalf of the bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

Notes:

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

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

Schedule-H

(See Clause 10.1 (iv) and 19.3)

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs ----------.

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

Item	**Weightage in percentage to the Contract Price**	**Stage for Payment**	**Percentage weightage**
1	**2**	**3**	**4**
Road works including culverts, widening and repair of culverts.	20.57%	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the sub-grade	19.42%
		(2) Sub-base Course	8.49%
		(3) Non Bituminous Base Course	13.65%
		(4) Bituminous Base Course	5.20%
		(5) Wearing Coat	1.80%
		(6) Widening and repair of culvert	0.00%
		B1- Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	18.95%
		(2) Sub-base Course	7.62%
		(3) Non Bituminous Base Course	5.89%
		(4) Bituminous Base Course	3.26%
		(5) Wearing Coat	1.40%
		B2- Reconstruction/ New 2-Lane realignment/bypass (Rigid Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Control (PQC) Course	0.00%
		C1- Reconstruction/ New Service Road (Flexible Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Non Bituminous Base Course	0.00%
		(4) Bituminous Base Course	0.00%
		(5) Wearing Coat	0.00%
		C2- Reconstruction/ New Service Road (Rigid Pavement)	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(4) Pavement Quality Control (PQC) Course	0.00%
		D - Re-Construction and new culverts on existing road, realignments on existing road, realignments, bypasses:	
		Culverts(Length<6m)	14.32%
Minor Bridges/Underpasses/ Overpasses	1.50%	**A1-Widening and Repairs of Minor Bridges (Length>6m and <60m)**	
		Minor bridges	0.0%
		A2-New Minor Bridges (Length>6m and <60m)	
		(1) Foundation	
		On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	23.58%
		(2) Sub-structure:	
		On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	31.84%
		(3) Super Structure:	
		On completion ofthe super-structure in all respects including Girder, Deck slab, bearings	35.58%
		(4) Approaches:	
		On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	9.00%
		(5) Guide Bund and River Training Works:	
		On completion of Guide Bund and River Training Works complete in all respect.	0.00%
		(6) Other Ancilliary Works:	
		Oncompletion of wearing coat, expansionjoints, hand rails, crash barriers, roadsigns& markings, tests on completion in all respect.	0.00%
		B.1- Widening and repair of Underpasses/overpasses	
		Underpasses/Overpasses	0.00%
		B.2- New Underpasses/overpasses	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(1) Foundation	
		On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	0.00%
		(2) Sub-structure	
		On completion of abutments, piers upto the abutment/ pier cap including wing/ return/ retaining wall upto top	0.00%
		(3) Super Structure:	
		On completion ofthe super-structure in all respects including Girder, Deck slab, bearings	0.00%
		Wearing Coat (a) in case of Overpass-wearing coat including expansion joint complete in all respect as specified and (b) in case of underpass rigid pavement including drainage facility complete in all respects as specified.	
		(4) On completion of Retaining / Reinforced earth walls, complete in allrespect and fit for use	0.00%
		(5) Approaches and other Ancillary Works:	
		On completion of wearing coat,expansion joints, hand rails, crash barriers, stone pitching, protection works, road signs & markings, tests on completion in all respect. Wearing Coat (a) in case of Overpass wearing coat including expansion joints complete in all respect as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified	0.00%
Major Bridge (length>60m) works and RUB/ROB/elevated sections/flyovers including viaducts, if any	55.13%	**A.1 -Widening and repairs of Major Bridges**	
		(1) Foundation: on completion of the foundation work including foundations for return walls, abutments, piers	0.00%
		(2) Sub -structure: on completion abutments, piers upto the abutment/Pier	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		cap	
		(3) Super-structure: On completion of the super-structure in all respects including girder,deck slab, bearings	0.00%
		(4) Wearing coat including expansion joints	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Guide bunds, River Training Works etc	0.00%
		(8) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		A.2 -New Major Bridges	
		(1) Foundation: on completion of the foundation work including foundations for return walls, abutments, piers	0.00%
		(2) Sub-structure: on completion abutments, piers upto the abutment/Pier cap	0.00%
		(3) Super-structure: On completion of the super-structure in all respects including girder,deck slab, bearings	0.00%
		(4) Wearing Coat including expansion joints	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Guide bunds, River Training Works etc	0.00%
		(8) Approaches (including retaining walls, stone pitching and protection works)	0.00%
		B.1-Widening and repair of	
		(a) ROB	
		(b) RUB	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6)Wing walls/Return Walls	0.00%
		(7)Retaining/Reinforced earth walls	0.00%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		(8) Approaches and ancillary works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.))	0.00%
		B.2-New ROB/RUB	
		(a) ROB	
		(b) RUB	
		(1) Foundation	4.10%
		(2) Sub-structure	0.92%
		(3) Super-structure (including bearings)	4.64%
		(4) Wearing Coat (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.	0.20%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.38%
		(6) Wing walls/Return Walls	0.00%
		(7) Retaining/Reinforced earth walls	0.00%
		(8) Approaches and ancillary works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.))	0.00%
		C.1- Widening and repair of Elevated Sections/Flyovers/Grade Separators	
		(1) Foundation	0.00%
		(2) Sub-structure	0.00%
		(3) Super-structure (including bearings)	0.00%
		(4) Wearing Coat including expansion joints.	0.00%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	0.00%
		(6) Wing walls/Return Walls	0.00%
		(7) Retaining/Reinforced earth walls	0.00%
		(8) Approaches and ancillary works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.))	0.00%
		C.2.New Elevated Sections / Flyovers / Grade Separators	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	27.04%
		(2) Sub-structure: On completion of	30.25%

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
		abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	
		(3) Super-structure: On completion of the super structure in all respects including girder,deckslab,bearings	23.46%
		(4) Wearing Coat including expansion joints.	2.80%
		(5) Miscellaneous items like hand rails, crash barriers, road markings etc.	5.77%
		(6) Wing walls/Return Walls	0.00%
		(7) Retaining/Reinforced earth walls	0.00%
		(8) Approaches and ancillary works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.))	0.44%
Other works	22.80%	(i) Toll Plaza	0.00%
		(ii)Road side drains	
		Lined Drain	5.63%
		Unlined Drain	0.21%
		(iii)Road signs, markings, km stones, safety devices, …	1.41%
		(iv) Road Studs	1.00%
		(v) Project facilities	0.00%
		a) Bus bays	0.50%
		b) Truck lay bye	0.00%
		c) Rest Areas	0.00%
		d) Others (Includes junction and Site Clearance)	4.50%
		(vi) Retaining Wall	34.69%
		(vii) Breast Wall	17.87%
		(viii) RE Wall	30.62%
		(ix) Street Lighting	0.00%
		(x) Utility ducts	0.00%
		(xi) Boundary walls	0.00%
		(xii) ATMS	0.00%
		(xiii) Rain water harvesting	0.00%
		(xiv) Road side plantation including horticulture in wayside amenities	0.00%
		(xv) Repair of protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs	0.00%
		(xvi)Safety and traffic management during construction	0.00%
		(xvii)Protection works like pitching on side slopes, chutes, crash barrier	3.57%

1.3 Procedure of estimating the value of work done.

1.3.1 Road works

Procedure for estimating the value of road work done shall be as follows:
Table 1.3.1

Stage of Payment	**Percentage - weightage**	**Payment Procedure**
A- Widening and strengthening of existing road		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
(1) Earthwork up to top of the sub-grade	19.42%	
(2) Sub-base Course	8.49%	
(3) Non Bituminous Base Course	13.65%	
(4) Bituminous Base Course	5.20%	
(5) Wearing Coat	1.80%	
(6) Widening and repair of culvert	0.00%	Cost of completed culverts shall be determined pro rate with respect to the total number of culverts. Payment shall be made on the completion of atleast five culverts.
B1- Reconstruction / New 2-Lane realignment / bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length whichever is less.
(1) Earthwork up to top of the sub-grade	18.95%	
(2) Sub-base Course	7.62%	
(3) Non Bituminous Base Course	5.89%	
(4) Bituminous Base Course	3.26%	
(5) Wearing Coat	1.40%	
B2- Reconstruction/ New 2-Lane realignment/bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
C1- Reconstruction/ New Service Road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Non Bituminous Base Course	0.00%	
(4) Bituminous Base Course	0.00%	
(5) Wearing Coat	0.00%	

Stage of Payment	Percentage - weightage	Payment Procedure
C2- Reconstruction/ New Service Road (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length whichever is less.
(1) Earthwork up to top of the sub-grade	0.00%	
(2) Sub-base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Control (PQC) Course	0.00%	
D - Re-Construction and new culverts on existing road, realignments on existing road, realignments, bypasses:		Cost of completed culverts shall be determined pro rate with respect to the total number of culverts. Payment shall be made on the completion of atleast five culverts.
Culverts(Length<6m)	14.32%	

@ For calculation of payment stage for main-carriageway the project length shall be converted into equivalent 2 lane length. For example, if the total length of 4 lane main carriageway is 100 km, then the equivalent length for calculation of payment stage will be 2 x 100 km. Now, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

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

P = Contract Price

L = Total equivalent 2-Lane length in km as defined above

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

Note: The length affected due to law and order problems or litigation during execution including the length not handed over to the Contractor under clause 8.3 of this Contract Agreement due to which the Contractor is unable to execute the work, may be deducted from the total project length for payment purposes. The total length calculated here is only for payment purposes and will not affect and referred in other clauses of the Contract Agreement.

1.3.2 Minor Bridge and Underpasses/Overpasses

Procedure for estimating the value of Minor Bridge works and Underpasses/Overpasses shall be stated in table 1.3.2

Table 1.3.2

Stage of Payment	Percentage - weightage	Payment Procedure
1	**2**	**3**
A1-Widening and Repairs of Minor Bridges (Length>6m and <60m)	0.0%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening and repair works of a minor bridge.
A2-New Minor Bridges		

Stage of Payment	Percentage - weightage	Payment Procedure
(i) Foundation:		**(i) Foundation:** Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation+sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified
On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	23.58%	
(ii) Sub-structure:		
On completion of abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	31.84%	Sub-structure: Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each bridge.
(iii) Super Structure:		**(ii) Super Structure:**
On completion of the super structure in all respects including girder, deckslab, bearings	35.58%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub- clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(iv) Approaches:		**(iii) Approaches:**
On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	9.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of " Stage of Payment" in this sub clause.
(v) Guide Bund and River Training Works:		**(iv) Guide Bund and River Training Works:**
On completion of Guide Bund and River Training Works complete in all respect.	0.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of Guide Bunds and River Training Works in all respect as specified.
(6) Other Ancillary Works: On Completion of wearing coat,expansion joints, hand rails, crash barriers, road signs markings, tests on completion in all respect.	0.00%	Other Ancillary Works: Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
B.1- Widening and repair of Underpasses/overpasses	0.00%	Cost of each overpass/underpass shall be determined on pro rata basis with respect to the total linear length of the underpass/overpass. Payment shall be made on the completion of

Stage of Payment	Percentage - weightage	Payment Procedure
		wiening & repair works of a underpass/overpass.
B.2- New Underpasses/overpasses		
(i) Foundation:		**(i) Foundation:** Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. Payment against foundation+sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of foundation each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified
On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	0.00%	
(ii) Sub-structure:		
On completion of abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	0.00%	Sub-structure: Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each bridge.
(iii) Super Structure:		**(ii) Super Structure:**
On completion of the super structure in all respects including girder,deckslab,bearings	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of atleast one span in all respects as specified in the column of "Stage of Payment" in this sub- clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(iv) On completion of Retaining /Reinforced earth walls complete inall respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(iii) Approaches:		**(iii) Approaches:**
On completion of approaches including Retaining Walls, stone pitching, protection works complete in all respect and fit for use	0.00%	Payment shall be made on pro rata basis on completion of a stage in all respect as specified

1.3.3 Major Bridge Works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Percentage - weightage	Payment Procedure
1	**2**	**3**
A1-Widening and Repairs of Major Bridges		
(i) Foundation:		**(i) Foundation:** Cost of each Major bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridges. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of Major Bridge subject to completion of atleast two foundations of the Major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap	0.00%	
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion ofabutments, piers upto the abutment/pier cap including wing/ return/retaining wall upto top	0.00%	Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of Major Bridge subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the major bridge.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests on completion etc. complete in all respect,	0.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.		**Wearing Coat**
	0.00%	Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	0.00%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc.complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Guide bunds, River Training Works etc		**(vii) Guide bunds, River Training Works etc**

Stage of Payment	Percentage - weightage	Payment Procedure
	0.00%	Payment shall be made on completion of all Guide bunds/River Training Works etc. complete in all respect as specified.
(viii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
A2-New Major Bridges		
(i) Foundation:		**(i) Foundation:** Cost of each Major bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major bridges. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of Major Bridge subject to completion of atleast two foundations of the Major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	0.00%	
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion of abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	0.00%	Payment against sub structure shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of sub structure of Major Bridge subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the major bridge.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respects including girder,deckslab,bearings	0.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints.		**Wearing Coat**
	0.00%	Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	0.00%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
(vii) Guide bunds, River Training Works etc		**(vii) Guide bunds, River Training Works etc**
	0.00%	Payment shall be made on completion of all Guide bunds/River Training Works etc. complete in all respect as specified.
(viii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B1 - Widening and repairs of		
(a) ROB		
(b) RUB		
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap		
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion ofabutments, piers upto the abutment/pier cap including wing/ return/retaining wall upto top	0.00%	Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of ROB/RUB subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the ROB/RUB.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests on completion etc. complete in all respect,	0.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.		**(iv) Wearing Coat:**
	0.00%	Payment shall be made on completion of (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
(v)Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	0.00%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
B2 - New		
(a) ROB		
(b) RUB		
(i) Foundation:		**(i) Foundation:** Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of ROB/RUB subject to completion of atleast two foundations of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	4.10%	
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion of abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	0.92%	Payment against sub structure shall be made on pro rata basis on copletion of a stage i.e. not less than 25% of the scope of sub structure of ROB/RUB subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the ROB/RUB.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respects including girder,deckslab,bearings	4.64%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.		**(iv) Wearing Coat:**

Stage of Payment	Percentage - weightage	Payment Procedure
	0.2%	Payment shall be made on completion of (a) in case of ROB - wearing coat including expansion joint complete in all respect as specified and (b) in case of RUB rigid pavement under RUB including drainage facility complete in all respects as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	0.38%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C1 - Widening and repairs of Elevated Section/Flyovers/ Grade Separators		
(i) Foundation:	0.00%	**(i) Foundation:** Cost of each Structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of structures subject to completion of atleast two foundations of the structures. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments,piers upto the abutment/pier cap		
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion ofabutments, piers upto the abutment/pier cap including wing/ return/retaining wall upto top	0.00%	Payment against sub structure shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of sub structure of structures subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the structures.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers,road sign & markings, tests	0.00%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.

Stage of Payment	Percentage - weightage	Payment Procedure
on completion etc. complete in all respect.		
(iv) Wearing Coat including expansion joints.		**Wearing Coat**
	0.00%	Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	0.00%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.00%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.
C2 - New Elevated Section/Flyovers/ Grade Separators		
(i) Foundation:		**(i) Foundation:** Cost of each Structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. Payment against foundation shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of structures subject to completion of atleast two foundations of the structures. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
On completion of the foundation work including foundations for wing and return walls ,abutments, piers.	27.04%	
(ii) Sub Structure:		**(ii) Sub Structure:**
On completion of abutments, piers upto the abutment/pier cap including wing/return/retaining wall upto top	30.25%	Payment against sub structure shall be made on pro rata basis on completion of a stage i.e. not less than 25% of the scope of sub structure of structures subject to completion of atleast two sub structure of the abutment/pier upto abutment/pier cap level of the structures.
(iii) Super Structure		**(iii) Super Structure:**
On completion of the super structure in all respects includinggirder,deckslab,bearings	23.46%	Payment shall be made on pro rata basis on completion of a stage i.e. completion of super structure including bearings of atleast one span in all respect as specified.
(iv) Wearing Coat including		**Wearing Coat**

Stage of Payment	Percentage - weightage	Payment Procedure
expansion joints.		
	2.80%	Payment shall be made on completion of wearing coat including expansion joints complete in all respect as specified.
(v) Miscellaneous items like hand rails, crash barriers, road markings etc.		**(v) Miscellaneous**
	5.77%	Payment shall be made on completion of all Miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respect as specified.
(vi) Wing walls/Return Walls		**(vi) Wing walls/Return Walls**
	0.00%	Payment shall be made on completion of all Wing walls/Return Walls complete in all respect as specified.
(vii) Approaches (including retaining walls, stone pitching and protection works)		**(viii) Approaches:**
	0.44%	Payment shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified.

1.3.4 Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
(i) Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(ii)Road side drains		Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
Lined Drain	5.63%	
Unlined Drain	0.21%	
(iii)Road signs, markings, km stones, safety devices, etc.	1.41%	
(iv) Road Studs	1.00%	
(v)Project facilities	0.00%	Payment shall be made on pro rata basis for completed facilities.
a) Bus Bays	0.50%	
b) Truck Lay Bye	0.00%	
c) Rest Areas	0.00%	
d) Others	4.5%	
(vi) Retaining Wall / Breast wall	34.69%/ 17.87%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(vii) RE Wall	30.62%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (ten

Stage of Payment	Weightage	Payment Procedure
		per cent) of the total length.
(viii) Street Lighting	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.
(ix) Utility ducts	0.00%	
(x) Boundary walls	0.00%	
(xi) ATMS	0.00%	
(xii) Rain water harvesting	0.00%	
(xiii)Road side plantation	0.00%	
(xiv) Repair of Protection works other than approaches to the bridges, elevated sections/ flyovers/ grade separators and ROBs/RUBs.	0.00%	
(xv) Safety and traffic management during construction	0.00%	Payment shall be made on prorate basis every six month.
(xvi) Protection works like pitching on side slopes, chutes, crash barrier	3.57%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10% (ten per cent) of the total length.

2. Procedure for payment for Maintenance

2.1 The cost for maintenance shall be as stated in Clause 14.1(v).

2.2 Payment for Maintenance shall be made in quarterly installments in accordance with the provisions of Article 14 and Article 19.

SCHEDULE - I
(See Clause 10.2.4)

DRAWINGS

21 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.

32 Additional Drawings

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

Annex - I
(Schedule - I)

List of Drawings

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

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

a) Horizontal and Vertical Alignment (with plan & profile) with details of reference pillars. Horizontal Intersection Point, Vertical Intersection Points, elements of curves, and sight distances.

b) General Arrangement Drawings of all protection works and detailed cross section.

c) Detailed drawings showing various protection details for each zone.

d) Drawings of drainage works.

e) Drawings as per instruction of Authority's Engineer.

SCHEDULE - J
(See Clause 10.3.(ii))

PROJECT COMPLETION SCHEDULE

21 Project Completion Schedule

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

32 Project Milestone-I

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

3.22.2 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.

43 Project Milestone-II

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

4.23.2 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.**

54 Project Milestone-III

5.14.1 Project Milestone-III shall occur on the date falling on the [620th] day from the Appointed Date (the **"Project Milestone-III").**

5.24.2 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 projectfacilities.**

65 Scheduled Completion Date

6.15.1 The Scheduled Completion Date shall occur on the [730th] day from the Appointed Date.

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

76 Extension oftime

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion

Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE - K

(See Clause12.1.(ii))

Tests on Completion

1 Schedule forTests

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

1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and thisSchedule-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 : all the tests specified in IRC code, manual and MORTH specifications for the road and Bridge works, 5th revision,2013.

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 eachkilometre.

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 Nondestructive Testing Techniques, at two spots in every span, to be chosen at random by the Authority's Engineer. Bridges with a span of 15 (fifteen) metres or more shall also be subjected to loadtesting.

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 testingequipment.

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 ApplicablePermits.

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 conductingTests

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 CompletionCertificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate in accordance with the provisions of Article 12. The Authority Engineer will carry out tests with following equipment at his own cost in the presence of contractor's representative.

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

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

SCHEDULE -L
(See Clause 12.2)

Completion Certificate

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ……. (the **"Agreement"**), for "**Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basis under SARDP-NE Phase 'Á' in the State of West Bengal (Package-IV A)"**through Engineering, Procurement & Construction (EPC) Basis Contract through ……. (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED ANDDELIVERED

For and on behalf of the Authority's Engineerby:

(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 MaintenanceRequirements

1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth inSchedule-E.

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

1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph2.

2. Percentage reductions in lump sumpayments

2.1 The following percentages shall govern the paymentreduction:

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

(iii)	Painting, repairs/replacement kerbs, railings, parapets, guideposts/crash barriers	5%
(d)	**Roadside Drains**	
(i)	Cleaning and repair of drains	5%
(e)	**Road Furniture**	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5th km stones	5%
(f)	**Miscellaneous Items**	
(i)	Removal of dead animals, broken down/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%

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

R=P/IOO x (M1 or M2) x L1/L

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

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

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

L1 = Non-complying length

L = Total length of the road,

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

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/deficiency or non compliance.
For any Defect in a part of one kilometer, the non-conforming length shall be taken as one kilometer.

SCHEDULE - N
(See Clause 18.1.(i))

SELECTION OF AUTHORITY'S ENGINEER

~~2~~1 Selection of Authority's Engineer

~~2.1~~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.

~~2.2~~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 thisSchedule-N.

~~3~~2 Terms of Reference

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

~~4~~3 Appointment of Government entity as Authority'sEngineer

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 Ministry of Road Transport and Highways (the "**Authority**") and ..... (the "**Contractor**")# for "**Construction and upgradation of existing road to 2-lane with paved shoulder of Bagrakot-Kafer section of NH-717A from Km. 0.000 to Km. 13.000 on EPC basisunder SARDP-NE Phase 'Á' in the State of WestBengal (Package-IV A)"** through Engineering, Procurement & Construction (EPC) Contract, and a copy of which is annexed hereto and marked as Annex-A to form part of thisTOR.

- 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 ProjectHighway.

2 Definitions andinterpretation

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 meaningrespectively 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 thisTOR.

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

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 IndustryPractice.

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 TimeExtension;
(b) any additional cost to be paid by the Authority to theContractor;
(c) the Termination Payment;or
(d) issuance of Completion Certificateor
(e) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on eitherParty.

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 everymonth.

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 Clause18.2.

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 authenticliterature.

4 ConstructionPeriod

4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.(vi). The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended 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 andStandards.

4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving suchDrawings.

4.3 The Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, requiredthereto.

4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from theContractor.

4.5 TheAuthority'sEngineershallgrantwrittenapprovaltotheContractor,wherenecessary,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 suchreport.

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 SafetyConsultant.

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 mayrequire.

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 qualityassurance.

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 theContractor.

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 IndustryPractice.

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 shallapply.

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,andtheperiodwithinwhichtheProjectCompletionDateshallbeachieved.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 Clause12.2.

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 berevoked.

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 theAuthority.

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.(xviii) and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 andSchedule-K.

5. MaintenancePeriod

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 theContractor.

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 thisbehalf.

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 permissiblelimit.

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 ofdelay,

determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 Determination of costs andtime

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

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

6.3 The Authority's Engineer shall consult each Party in every case of determination in accordance with the provisions of Clause18.5.

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 Clause19.10.

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 theAgreement.

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 andfunctions

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 Authorityforthwith.

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 safecustody.

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 itsoccurrence.

SCHEDULE - O

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

Forms of Payment Statements

1. Stage Payment Statement forWorks

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 lastclaim;
(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 exceptttaxes;
  (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 lastclaim:
  (i) For the Works executed (excluding Change of Scopeorders);
(ii) For Change of Scope Orders,and
(iii) Taxesdeducted

2. Monthly Maintenance PaymentStatement

The monthly Statement for Maintenance Payment shall state:

(a) the monthly payment admissible in accordance with the provisions of theAgreement;
(b) the deductions for maintenance work notdone;
(c) net payment for maintenance due, (a) minus(b);
(d) amounts reflecting adjustments in price under Clause 19.12;and
(e) amount towards deduction oftaxes

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 ConstructionPeriod

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

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

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

1.2 The insurance under paragraph 1.(i) (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

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

The insurance cover shall be not less than: 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 Qualitytest:

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

2. Visual and physical test:

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

SCHEDULE - R
(See Clause 14.10)

Taking Over Certificate

I, ……. (Name and designation of the Authority's Representative) under and in accordance with the Agreement dated …… (the "Agreement"), for [construction of the ****section (km ** to km **) of

****] (the "Project Highway") on Engineering, Procurement and Construction (EPC) basis through ……. (Name of Contractor), hereby certify that the Tests on completion of Maintenance Period in accordance with Article 14 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement and I hereby certify that the Authority has taken over the Project highway from the Contractor on this day.....

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address

End of the Document