2023

Widening /Improvement to 2 (Two) Lane with Earthen Shoulder of Jessami- Laynen bridge Section of NH 29 from Km 0.000 to Km 11.009 in the state of Manipur on EPC mode .

TECHNICAL SCHEDULE

Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1 The Site

(i) Site of the [Two-Lane] Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

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

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

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

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

Annex –I

(Schedule-A)

Site

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

1. Site

The Site of the [Two-Lane] Project Highway comprises the section of NH-29 commencing design chainage from km 0/000 to km 11/009 i.e. Jessami to Lanyen bridge (Nagaland border) section in the state of Manipur.
The land, carriageway and structures comprising the Site are described below.

2. Land

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

SL NO.	EXISTING CHAINAGE (km)		DESIGN CHAINAGE (km)		Existing ROW	Remarks
	From	To	From	To		
1	338+500	326+600	0+000	11+009	5-15 m approx.	

3. Carriageway

The present carriageway of the Project Highway is single Lane from km 338+500 to km 326+600. The type of the existing pavement is [flexible].

4. Major Bridges

The Site includes the following Major Bridges: -

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

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

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

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

6. Grade separators

The Site includes the following grade separators:

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

7. Minor bridges

The Site includes the following minor bridges:

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

8. Railway level crossings

The Site includes the following railway level crossings:

S. No.	Location(km)	Remarks
Nil		

9. Underpasses (vehicular, non- vehicular)

The Site includes the following underpasses:

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

10. Culverts

The Site has the following culverts:

Sl. No.	Chainage	Existing Structure	Existing Span Arrangement
1	0.762	Hume pipe	1 x 0.6
2	1.116	slab	1 x 4.5
3	1.630	Hume pipe	1 x 0.6
4	1.800	Hume pipe	1 x 0.6
5	2.156	Hume pipe	1 x 0.9
6	2.628	Hume pipe	1 x 1.1
7	2.735	Hume pipe	1 x 0.9
8	2.870	Hume pipe	1 x 0.9

Sl. No.	Chainage	Existing Structure	Existing Span Arrangement
9	3.145	Hume pipe	1 x 0.9
10	3.520	Hume pipe	1 x 1.1
11	4.074	Hume pipe	1 x 0.9
12	4.253	Hume pipe	1 x 1.1
13	4.580	Hume pipe	1 x 0.6
14	4.965	Hume pipe	1 x 0.6
15	5.310	Hume pipe	1 x 0.9
16	5.510	Hume pipe	1 x 1.1
17	6.375	Hume pipe	1 x 0.6
18	6.527	Hume pipe	1 x 0.6
19	6.635	Hume pipe	1 x 0.6
20	6.875	Hume pipe	1 x 0.9
21	7.260	Hume pipe	1 x 0.9
22	7.850	Hume pipe	2 x 0.9
23	8.366	Hume pipe	2 x 0.9
24	8.542	Hume pipe	1 x 0.9
25	9.105	Hume pipe	1 x 0.9
26	9.305	Hume pipe	1 x 0.9
27	9.595	Hume pipe	1 x 0.9
28	9.705	Hume pipe	1 x 0.9
29	9.876	Hume pipe	1 x 0.9
30	9.932	Hume pipe	1 x 0.9
31	10.420	Hume pipe	2 x 0.9
32	10.860	Hume pipe	1 x 0.9

11. Bus bays

The project road has no bus-bay and no bus shelters. The details of bus bays on the Site are as follows:

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

12. Truck Lay byes

The details of truck lay byes are as follows:

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

13. Major junctions

The details of major junctions are as follows:

S. No.	Location		At grade	Separated	Category of Cross Road			
	From km	to km			NH	SH	MDR	Others
NIL								

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

14. Minor junctions

The details of the minor junctions are as follows:

Sl. No.	Location		Type of intersection	
	From Km	Towards	Y-Junction	Cross Road
NIL				

15. Bypasses

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

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

16. Other structures

[Provide details of other structures, if any.]

17. Existing utilities

(i) Electrical utilities

The site includes the following electrical utilities:-

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

SL NO	Chainage (Km)		Length (in Km)					Crossings					No of Towers/Poles obstructing/infringing ROW
	From	To	400 KV	220 KV	132 KV	110 KV	66 KV	400 KV	220 KV	132 KV	110 KV	66 KV	
1	0.300	0.500		0.150					1				3
	TOTAL		0.150km					1no					3nos

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

SL NO	Chainage (Km)		Length (in Km)			Crossings			Nos of Poles infringing/obstructing ROW		
	From	To	33KV	11KV	LT	33KV	11KV	LT	33KV	11KV	LT
1	0.225	0.300		0.060						1	
2	0.500	0.700		0.190						3	
3	3.700	4.000					2			1	
4	5.400	5.500		0.080						2	
5	6.000	6.150		0.105			1			4	
6	9.500	9.600					1			2	
	TOTAL		0.435km			4nos			13nos		

c) Transformer details:

Sl. No.	Chainage(km)	11KV	
		NO	Capacity (KVA)
Nil			

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

The site includes the following Public Health utilities:-

SL No	Chainage		Length in (Km)				Crossing			
			Water supply Line		Sewage Line		Water supply Line		Sewage Line	
	from	To	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow	With Pumping	With Gravity Flow
Nil										

(iii) Any Other line

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

Annex – II

(As per Clause 8.3 (i))

(Schedule-A)

Dates for providing Right of Way of Construction Zone

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

S. No	Design Chainage (From km to km)	Length (km)	Width (m)	Date of providing ROW
1	Km 0/000 to Km 11/009	11.009	20 m (Built-up Area) 24 m (Open Area)	90 % length at appointed date
				Balance 10% length shall be provided 150 days from the appointed date.

The Construction of Project Highway will be implemented as per Manual, details of which are already given in Article-2 of Annexure – I of Schedule –A.

Annex - III

(Schedule-A)

Alignment Plans

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

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

(ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.

Annex – IV

(Schedule-A)

Environment Clearances

Environmental Clearances are not required for the project.

Schedule - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. [Rehabilitation and augmentation]

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

3. Specifications and Standards

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

Annex – I

(Schedule-B)

Description of [Two-Lanning]

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

1. Widening of the Existing Highway

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

(ii) Width of Carriageway

(a) Two-Lanning [with] earthen shoulders shall be undertaken. The paved carriageway shall be [7(seven) m] wide.

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

Sl. No.	Built-up stretch (Township)	Location	Width (m)	Typical Cross Section (Refer to Manual)	Remarks (Reference to cross section)
2	Jessami	0.000km to 0.650km	7	As per TCS	**1**

(b) Except as otherwise provided in this Agreement the width of the paved carriageway and cross-sectional features shall confirm to paragraph 1(ii) above.

2. Geometric Design and General Features

(i) General

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

(ii) Design speed

For Mountainous terrain design speed shall be the minimum design speed of 40-50 km/hr and for sharp curve and hair pin bend locations speed reduces up to 30kmph & 20 kmph respectively.

(iii) Improvement of the existing road geometrics

The stretches where design speed reduces below 30 kmph are summarized below:

Sl. No.	Chainage	Type of Deficiency	Remarks (Design Speed in kmph)
1.	0.018	Jessami Junction	20
2.	0.089	Jessami Built up Section	20
3.	0.182	Jessami Built up Section	20
4.	0.301	Jessami Built up Section	20
5.	0.382	Jessami Built up Section	20
6.	0.740	Jessami Built up Section	25
7.	1.083	Hair pin Bend	20
8.	2.580	Hair pin Bend	20
9.	3.579	Reverse Curve	25
10.	3.843	Hair pin Bend	20
11.	4.244	Deep Valley	20
12.	4.572	Hair pin Bend	25
13.	4.755	Hair pin Bend	20
14.	4.839	Hair pin Bend	25
15.	4.951	Hair pin Bend	25
16.	6.025	High Hill Cut	20
17.	7.549	Hair pin Bend	20
18.	7.655	Hair pin Bend	25
19.	8.914	Hair pin Bend	20
20.	9.784	High Hill Cut	20
21.	9.890	Deep Valley	20
22.	10.253	Hair pin Bend	20
23.	10.696	Hair pin Bend	20

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

(iv) Right of Way

[Refer to provision of relevant Manual]. Details of the Right of Way are given in Annex-II of Schedule-A.

(v) Type of shoulders
[Refer to provision of relevant Manual and specify]

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

Sl. No.	Stretch (from Km to Km)	Fully Paved shoulders/footpaths	Reference to cross section
Nil			

(b) Earthen shoulders of 1.5 m minimum and 2.5m on valley side shall be provided with selected earth wherever applicable as per TCS drawing.

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

(vi) Lateral and vertical clearances at underpasses

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

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

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

(vii) Lateral and vertical clearances at overpasses

(a) Lateral and vertical clearances at overpasses shall be as per requirements specified in the relevant Manual.

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

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

(viii) Service roads

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

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

(ix) Grade separated structures

(a) Grade separated structures shall be provided as per provision of the Manual. The requisite are given below:

[Refer to requirements specified in the relevant Manual]

Sl. No.	Location of Structure (VUP)	Length (m)	Number and length of spans	Approach gradient	Remarks. if any
Nil					

(b) In the case of grade separated structures the type of structure and the level of the Project Highway and the cross roads shall be as follows: [Refer to provision of the Manual and specify the type of vehicular under pass/ overpass structure and whether the cross road is to be carried at the existing
Level. Raised or lowered]

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

(x) Cattle and pedestrian underpass /overpass

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

Sl. No.	Location	Type of crossing
Nil		

(xi) Typical cross-sections of the Project Highway

SL NO	TYPE OF CROSS SECTION	DETAILS	Location
1	Refer Sch. D	2-lane with 1.5 m earthen shoulders with and 0.6 m lined drain on both side	Built-up Sections
2	Refer Sch. D	2-lane with 1.5 m earthen shoulders with 0.6m lined drain with gabion wall on both side	Open Areas with hill cutting Section
3	Refer Sch. D	2-lane with 1.5 m earthen shoulders with 0.6m lined drain with gabion wall on hill side and breast wall on other hill side	Open Areas with hill cutting Section
4	Refer Sch. D	2-lane with 1.5 m earthen shoulders with breast wall on both side	Open Areas with hill cutting Section
5	Refer Sch. D	2-lane with 1.5 m earthen shoulders with 0.6m lined drain and 2.5 m earthen shoulders with gabion structure on valley side.	Open Areas with hill on one side
6	Refer Sch. D	2-lane with 1.5 m earthen shoulders with 0.6m lined drain with gabion wall on hill side and 2.5 m earthen shoulders, W-beam crash barrier on valley side	Open Areas with hill on one side
7	Refer Sch. D	2-lane with 1.5 m earthen shoulders with 0.6 lined drain and gabion wall on hill side and 2.5 m earthen shoulders, Gabion structure with W-beam crash barrier on valley side	Open Areas with hill cutting on hill side and stiff valley
8	Refer Sch. D	2-lane with 1.5 m earthen shoulders with breast wall on hill side and 2.5 m earthen shoulders, Gabion structure with W-beam crash barrier on valley side	Open Areas with hill cutting on hill side and stiff valley

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.

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

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

(i) At-grade intersections

Major Intersections

There is only one major junction t the starting of the streatch. Which is designed at grade intersection as rotary junction.

Minor Intersections

Sl. No.	Location (km)	Type of intersection T/Y Junction	Towards
1	0.000	Rotary	Left-Jessami Village Right Down-Akash Bridge Right Up-Ukhrul

(ii) Grade separated intersection with/without ramps

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

4. Road Embankment and Cut Section

(i) Widening and improvement of the existing road embankment/cuttings and construction of new road embankment/ cuttings shall conform to the Specifications and Standards given in Section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

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

The existing road shall be raised in the following sections:

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

5. Pavement Design

(i) Pavement design shall be carried out in accordance with provision of the relevant manual.

(ii) Type of pavement

The project road shall be developed as Flexible Pavement.

(iii) Design requirements

(a) Design Period and strategy

Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

(b) Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual. The Contractor shall design the pavement for design traffic of 20 MSA.

(iv) Reconstruction of stretches

The following stretches of the existing road shall be reconstructed. These shall be

designed as new pavement.

Sl NO	Chainage(From-TO)	Length
Nil		

6. Roadside Drainage

Drainage system including surface and subsurface drains for the Project Highway has been provided in the table given below:

Lined Drain

TCS No	Length (m)	Side
Refer Sch. D	1274.00	Both Side
Refer Sch. D	2224.00	Both Side
Refer Sch. D	1126.95	One Side
Refer Sch. D	4815.49	One Side
Refer Sch. D	2155.90	One Side
Refer Sch. D	146.99	One Side
Total Length (m)=	**11743.00**	

7. Design of Structures

(i) General

(a) All bridges culverts and structures shall be designed and constructed in accordance with provision of the relevant Manual and shall conform to the cross- sectional features and other details specified therein.

(b) Width of the carriageway of new bridges and structures shall be as follows:

Sl. No.	Bridge/Structure at km	Width of carriageway and cross-sectional features
All Major and Minor Bridges shall be provided as per GAD attached.		

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

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

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

The following structures shall be designed to carry utility services specified in Table below:

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

Nil

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

(ii) Culverts

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

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

Sl. no	NEW CHAINAGE	Proposed Span(m)	Width (m)	Proposed TYPE	PROPOSAL
1	0.762	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
2	1.800	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
3	2.156	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
4	2.628	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
5	2.735	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
6	2.870	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
7	3.145	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
8	3.520	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
9	4.074	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
10	4.253	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
11	4.580	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
12	4.965	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
13	5.310	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
14	5.510	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
15	6.375	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
16	6.527	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
17	6.635	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
18	6.875	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
19	7.260	1 X 2.0	1x10.9	RCC BOX	RECONSTRUCTION
20	7.850	1 X 4.5	12	RCC SLAB	RECONSTRUCTION
21	8.366	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
22	8.542	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
23	9.105	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
24	9.305	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION

Sl. no	NEW CHAINAGE	Proposed Span(m)	Width (m)	Proposed TYPE	PROPOSAL
25	9.595	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
26	9.705	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
27	9.876	1 X 4.5	12	RCC SLAB	RECONSTRUCTION
28	9.932	1 X 4.5	12	RCC SLAB	RECONSTRUCTION
29	10.420	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION
30	10.860	1 X 2.0	1x10.9	SLAB	RECONSTRUCTION

(c) Widening of existing culverts:

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

Sl. no	NEW CHAINAGE	Proposed Span (m)	Width (m)	Proposed TYPE	PROPOSAL
1	1.116	1 X 4.5	1x12	SLAB	WIDENING

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

Sl. no	NEW CHAINAGE	Proposed Span(m)	Width (m)	Proposed TYPE	PROPOSAL
1	0.100	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
2	0.200	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
3	0.380	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
4	0.620	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
5	0.950	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
6	1.315	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
7	1.430	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
8	1.550	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
9	1.630	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
10	1.970	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
11	2.350	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
12	3.360	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
13	3.610	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
14	3.865	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
15	4.455	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION

Sl. no	NEW CHAINAGE	Proposed Span(m)	Width (m)	Proposed TYPE	PROPOSAL
16	4.770	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
17	5.870	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
18	6.045	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
19	6.780	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
20	7.466	1 X 2.0	1x10.9	RCC BOX	NEW CONSTRUCTION
21	8.200	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
22	8.720	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
23	8.935	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
24	9.220	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
25	9.800	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
26	10.180	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
27	10.535	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION
28	10.720	1 X 2.0	1x10.9	SLAB	NEW CONSTRUCTION

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

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

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

(iii) Bridges

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

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

[Refer provision of the relevant Manual and provide details]

Sl. No.	Bridge location	Salient details of existing bridge		Adequacy or otherwise of the existing waterway, vertical clearance etc.*	Remarks
	(km)	Type of Structures	Span Arrangement and Total Vent way (No. x Length) (m)		
Nil					

(ii) The following narrow bridges shall be widened:

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

(b) Additional new bridges

[Specify additional new bridges if required. And attach GAD]

New bridges at the following locations on the Project Highway shall be constructed. GADs for the new bridges are attached in the drawings folder.

Sl. No.	Location (km)	Span	Total Length (m)	Remarks. If any
Nil				

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

Sl. No.	Location at km	Remarks
Nil		

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

Sl. No.	Location at km	Remarks
Nil		

(e) Drainage system for bridge decks

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

(f) Structures in marine environment

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

(v) Rail-road bridges

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

(b) Road over-bridges

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

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

(c) Road under-bridges

Road under-bridges (road under railway line) shall be provided at the following

level crossings as per GAD drawings attached:

Sl. No.	Location of Level crossing (Chainage km)	Number and length of span (m)
Nil		

(v) Grade separated structures

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

(vi) Repairs and strengthening of bridges and structures

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

(a) Bridges

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

(b) ROB / RUB

Sl. No.	Location of ROB/RUB (km)	Nature and extent of repairs/strengthening to be carried out
Nil		

(c) Overpasses/Underpasses and other structures

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

(vii) List of Major Bridges and Structures

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

Sl. No.	Location (Km)
Nil	

8. Traffic Control Devices and Road Safety Works

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

Sl. No	Traffic Signage, Road Marking and other appurtenances	unit	Quantity
1	Ordinary Kilometer stones=	Nos	9
2	5th Kilometer stones=	Nos	2
3	Hectometer Stones=	Nos	44
4	Delineators (100 cm long and circular shaped) + Hazard marker	Nos	20
5	900 mm Octagonal	Nos	1
6	600 mm circular	Nos	25
7	900 mm Triangular	Nos	60

Sl. No	Traffic Signage, Road Marking and other appurtenances	unit	Quantity
8	600 mm x 600 mm Square	Nos	161
9	Object Hazard Marker (one way)	Nos	118
10	Fluorescent Strips	Rolls	5

(ii) Specifications of the reflective sheeting. [Refer to provision of relevant Manual and specify]

9. Roadside Furniture

(i) Roadside furniture shall be provided in accordance with article 8(i) of this schedule.

(ii) Overhead traffic signs: location and size

Sl. No.	Location (Km)	Size
1	Ch 10/955	10 m X 1.2 m

10. Compulsory Afforestation

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

11. Hazardous Locations

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

a) Breast Wall (2m)

SL. No.	From	To	Length (in m)
1	2400	2550	150
2	3000	3050	50
3	2700	2850	150
4	4700	4750	50
5	5200	5250	50
6	5250	5300	50
7	5450	5500	50
8	5800	5900	100
9	5900	5960	60
10	6100	6150	100
11	6200	6250	100
12	6400	6450	50
13	8150	8500	350
14	8700	8750	100
15	8800	8850	50
16	9500	9550	50
17	9650	9700	50
18	10000	10050	100
19	10300	10450	300
20	10450	10700	250
21	10850	10950	200

Total Length of Breast Wall= **2361.69m**

(a) Gabion Wall (5m)

SL. No.	From	To	Length (in m)	Side
1.	800	900	100	L
2.	1300	1350	50	L
3.	1450	1550	100	R
4.	1450	1600	150	L
5.	1650	1700	100	B
6.	1700	1900	400	B
7.	1900	2400	500	L
8.	2500	2700	200	L
9.	2950	3000	50	B
10.	3000	3050	50	L
11.	3500	3600	100	L
12.	3700	3750	50	L
13.	3750	3900	300	B
14.	4150	4250	100	R
15.	4300	4350	50	R
16.	4600	4700	100	R
17.	4700	4750	50	L
18.	5250	5300	50	L
19.	5350	5400	50	L
20.	5450	5500	50	L
21.	5750	5800	100	B
22.	5800	5900	100	L
23.	6400	6450	50	L
24.	6600	6700	100	L
25.	6750	6850	200	B
26.	6950	7200	500	B
27.	7200	7250	100	B
28.	7300	7400	100	L
29.	8050	8150	100	R
30.	8150	8500	350	R
31.	8500	8550	50	R
32.	8600	8700	100	R
33.	8750	8800	50	R
34.	8800	8950	150	R
35.	9050	9300	250	L
36.	9350	9500	150	L
37.	9500	9550	50	L
38.	9650	9700	50	L
39.	9950	10000	50	L
40.	10200	10300	200	B
41.	10450	10700	250	R

a) Gabion Retaining Structure (On Filling) (2.0m)

Sl	From	To	Length (in m)
1	0.65	0.80	150.00
2	0.90	1.30	400.00
3	1.35	1.45	100.00
4	1.55	1.60	50.00
5	2.40	2.50	100.00
6	2.70	2.85	150.00
7	3.25	3.50	250.00
8	3.60	3.70	100.00
9	4.25	4.30	50.00
10	4.35	4.60	250.00
11	5.90	5.96	60.00
12	5.96	6.07	210.00
13	6.15	6.20	50.00
14	6.20	6.25	50.00
15	6.25	6.35	100.00
16	6.35	6.40	50.00
17	6.45	6.50	100.00
18	6.50	6.60	100.00
19	7.30	7.40	100.00
20	8.55	8.60	50.00
21	9.30	9.35	50.00
22	9.55	9.65	100.00
23	10.30	10.45	150.00
24	10.70	10.75	50.00
25	10.75	10.85	100.00
26	10.95	11.01	59.00

b) Gabion Retaining Structure (On Filling) (3.0m)

Sl	From	To	Length (in m)
1	1.60	1.65	50.00
2	3.05	3.15	100.00
3	3.15	3.25	100.00
4	3.90	4.15	250.00
5	4.75	4.8	50.00
6	4.80	5.2	400.00
7	5.20	5.25	50.00
8	5.30	5.35	50.00
9	5.40	5.45	50.00
10	5.50	5.75	250.00
11	6.70	6.75	50.00
12	7.40	7.45	50.00
13	7.60	8.05	450.00
14	8.95	9.05	100.00
15	9.70	9.95	250.00
16	10.05	10.2	150.00

C) Gabion Retaining Structure (On Filling) (5.0m)

Sl	From	To	Length (in m)
1	2.85	2.95	100.00
2	6.85	6.90	100.00
3	6.90	6.95	50.00
4	7.25	7.30	50.00
4	7.45	7.60	300.00

a) W-Beam Crash Barrier

Sl.No.	Chainage		Length	
	From	To		
1	0.650	0.800	150	5
2	0.800	0.900	100	6
3	0.900	1.300	400	5
4	1.300	1.350	50	6
5	1.350	1.450	100	5
6	1.550	1.600	50	7
7	1.600	1.650	50	5
8	1.900	2.400	500	6
9	2.400	2.500	100	8
10	2.550	2.700	150	6
11	2.700	2.850	150	8
12	2.850	2.950	100	5
13	3.050	3.150	100	5
14	3.150	3.250	100	5
15	3.250	3.500	250	5
16	3.500	3.600	100	6
17	3.600	3.700	100	5
18	3.700	3.750	50	6
19	3.900	4.150	250	5
20	4.150	4.250	100	6
21	4.250	4.300	50	5
22	4.300	4.350	50	6
23	4.350	4.600	250	5
24	4.600	4.700	100	6
25	4.750	4.800	50	5
26	4.800	5.200	400	5
27	5.200	5.250	50	8
28	5.300	5.350	50	5
29	5.350	5.400	50	6
30	5.400	5.450	50	5
31	5.500	5.750	250	5
33	5.900	5.960	60	8
34	5.960	6.065	105	5
35	6.150	6.200	50	5
36	6.200	6.250	50	8
37	6.250	6.350	100	5
38	6.350	6.400	50	5
39	6.450	6.600	150	5
40	6.600	6.700	100	6
41	6.700	6.750	50	5

42	6.850	6.900	50	5
43	6.900	6.950	50	5
44	7.250	7.300	50	5
45	7.300	7.400	100	7
46	7.400	7.600	200	5
47	7.600	8.050	450	5
48	8.050	8.150	100	6
49	8.500	8.550	50	6
50	8.550	8.600	50	5
51	8.600	8.700	100	6
52	8.750	8.800	50	6
53	8.850	8.950	100	6
54	8.950	9.050	100	5
55	9.050	9.300	250	6
56	9.300	9.350	50	5
57	9.350	9.500	150	6
58	9.550	9.650	100	5
59	9.700	9.950	250	5
60	9.950	10.000	50	6
61	10.050	10.200	150	5
62	10.300	10.450	150	8
63	10.700	10.750	50	5
64	10.750	10.850	100	5
65	10.950	11.009	59	5

12. Special Requirement for Hill Roads

Seeding and Mulching: Seeding and Mulching (Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sq.m and laying and fixing jute netting, including watering for 3 months all as per clause 308) has been provided along project road. Details of seeding andmulching has been described below:

Sl No	From	To	Length
1	800.00	900.00	100.00
2	1450.00	1600.00	150.00
3	1650.00	1700.00	100.00
4	1700.00	1900.00	400.00
5	3750.00	3900.00	300.00
6	5250.00	5300.00	50.00
7	5750.00	5800.00	100.00
8	6750.00	6850.00	200.00
9	6950.00	7200.00	500.00
10	7300.00	7400.00	100.00
11	8050.00	8150.00	100.00

Total length of Seeding and Mulching=**2057.90m**

So total area of seeding and mulching=**11524.2445 Sq.m**

Bamboo Plantation

For protection earth slope on hill side provision of plantation has been made as detailed below.

Sl No	From	To	Area	Remark
1	0.000	11.009	48900 Sq Mt	Locations shall be finalized as per site condition and prior approval from Authority Engineer.

Hydro seeding:

Details of Hydro seeding has been described below:

Sl No	From	To	Area	Remark
1	0.000	11.009	11524.2445 Sq.m	Locations shall be finalized as per site condition and prior approval from Authority Engineer.

Soil Nailing:

Sl No	From	To	Area	Remark
1	0.000	11.009	4238 Sq Mt	Locations shall be finalized as per site condition and prior approval from Authority Engineer.

13. Change of Scope

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

Annexure-I

Schedule-B1

(Refer Sheet-II)

Utility Shifting.

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

Notes:

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

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

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

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

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

Schedule - C

(See Clause 2.1)

Project Facilities

1. Project Facilities

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

(a) Toll plaza[s]

(b) Roadside furniture;

(c) Pedestrian facilities;

(d) Truck Lay byes;

(e) Bus-bays and passenger shelters;

(f) Rest areas; and

(g) Others to be specified

2. Description of Project Facilities

Each of the Project Facilities is described below:

a) Toll Plaza: -

Sl. No.	Design Chainage (km)	Name of the Place
Nil		

b) Roadside furniture: -

Sl. No.	Description	Location	Design Standard
1	Traffic sign & pavement marking	Entire Length (As per Schedule B)	As per Manual
2	Km Stone, 5th kilometre stone	Entire Length	As per Manual
3	Boundary Stone	Entire Length	As per Manual
4	Roadside Delineator, marker & Road Stud	As per Schedule B	As per Manual
5	Metal beam crash barrier	As per Schedule B	As per Manual

C) Pedestrian Facility:-

Pedestrian facilities in the form of foot path shall be provided in the built up area (refer typical cross – section drawing). Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL.

d) Truck Lay bye:-

Sl. No.	Truck lay bye Chainage (Both Side)	Name of the Place
Nil		

e) Bus Bay & Passenger shelter: -

SL No	Chainage	Location	Remark
1	0.000	Left	Bus Shelter

f) Rest Areas

Sl. No.	Rest Area Chainage	Name of the Place
Nil		

g) Others to be specified

Street Lighting:

Total 10 Nos. Street lighting shall be provided in junction and passenger shelters & near the bus shelter locations. 1 nos. of toilet has been proposed.

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

Schedule - D

(See Clause 2.1)

Specifications and Standards

1. Construction

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

2. Design Standards

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

Manual of Specifications and Standards for Two Lanning of Highways (IRC: SP: 73-2018) and Hill Road Manual (IRC-SP-48-1998) referred to herein as the Manual.

Note-: For TCS and TCS schedule refer to given Drawing Volume.

Annex – I

(Schedule-D)

Specifications and Standards for Construction

1. Specifications and Standards

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

2. Deviations from the Specifications and Standards

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

(ii) [Not withstanding anything to the contrary contained in Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Specifications and Standards shall be deemed to be amended to the extent set forth below:]

<table>
<tr><th>Item</th><th>Manual Clause Reference</th><th colspan="6">Provision as per Manual</th><th colspan="6">Modified Provision</th></tr>
<tr><td rowspan="5">Shoulder</td><td rowspan="5">2.6</td><td colspan="6"><u>Mountainous Terrain</u></td><td colspan="6"><u>Mountainous Terrain</u></td></tr>
<tr><td rowspan="2">Type of Section</td><td rowspan="2"></td><td colspan="3">Width of Shoulder (m)</td><td rowspan="2">Type of Section</td><td rowspan="2"></td><td colspan="2">Width of Shoulder (m)</td></tr>
<tr><td>Paved</td><td>Earthen</td><td>Total</td><td>Paved</td><td>Earthen</td></tr>
<tr><td rowspan="2">Open Country with Isolated Built-up Area</td><td>Hill Side</td><td>1.5</td><td>-</td><td>1.5</td><td rowspan="2">Open Country with Isolated Built-up Area</td><td>Hill Side</td><td>-</td><td>-</td></tr>
<tr><td>Valley Side</td><td>1.5</td><td>1</td><td>2.5</td><td>Valley Side</td><td>-</td><td>Up to 2.5 m</td></tr>
<tr><td>Built-up Area and Approaches to grade separated structures/</td><td>Hill Side</td><td>0.25 m + 1.5 m (Raised)</td><td>-</td><td>1.75</td><td>Built-up Area and Approaches to grade separated structures/</td><td>Hill Side</td><td>-</td><td>-</td></tr>
<tr><td>bridges</td><td>Valley Side</td><td>0.25 m + 1.5 m (Raised)</td><td>-</td><td>1.75</td><td>bridges</td><td>Valley Side</td><td>-</td><td>-</td></tr>
<tr><td rowspan="3">Design Speed</td><td rowspan="3">2.2</td><td colspan="6"><u>Mountainous Terrain</u>:</td><td colspan="6"><u>Mountainous Terrain</u>:</td></tr>
<tr><td colspan="6">Ruling : 60 Kmph</td><td colspan="6">Design Speed followed 40-60 kmph in 176.76. However design speed has been reduced to 20 kmph due to site constraints and to accommodate the proposal within EROW.</td></tr>
<tr><td colspan="6">Minimum : 40 Kmph</td><td colspan="6">(Refer Horizontal Alignment Drawing and Table 1.1 below)</td></tr>
<tr><td rowspan="6">Extra Widening</td><td rowspan="6">2.7</td><td colspan="6">Extra Widening has been proposed as per IRC: SP: 73-2015</td><td colspan="6">Extra Widening has been proposed as per IRC: SP: 48-1998 (Table 6.9) of Hill Road Manual.</td></tr>
<tr><td>Radius</td><td colspan="2">Extra Widening</td><td colspan="2"></td><td>Radius</td><td colspan="2">Extra Widening</td><td colspan="2"></td></tr>
<tr><td>75-100 m</td><td colspan="2">0.9 m</td><td colspan="2"></td><td>21-40 m</td><td colspan="2">1.5 m</td><td colspan="2"></td></tr>
<tr><td>101-300 m</td><td colspan="2">0.6 m</td><td colspan="2"></td><td>41-60 m</td><td colspan="2">1.2 m</td><td colspan="2"></td></tr>
<tr><td colspan="6"></td><td>61-100 m</td><td colspan="2">0.9 m</td><td colspan="2"></td></tr>
</table>

Item	Manual Clause Reference	Provision as per Manual	Modified Provision			
			75-100 m	0.9 m		
			101-300 m	0.6 m		
			Above 300 m	NIL		
Radii of Horizontal Curve	2.9.4	**Mountainous Terrain:** Desirable Minimum Radius: 150 m Absolute Minimum Radius: 75 m	Radius below 75 m has been provided in the location listed in table.			
Gradient	2.9.7.2	**Mountainous Terrain:** Limiting Gradient-6%	Gradient Provided more than 6% in the location listed below:			

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

The stretches where design speed reduces below 30 kmph are summarized below:

Sl. No.	Chainage	Type of Deficiency	Remarks (Design Speed in kmph)
1.	0.018	Jessami Junction	20
2.	0.089	Jessami Built up Section	20
3.	0.182	Jessami Built up Section	20
4.	0.301	Jessami Built up Section	20
5.	0.382	Jessami Built up Section	20
6.	0.740	Jessami Built up Section	25
7.	1.083	Hair pin Bend	20
8.	2.580	Hair pin Bend	20
9.	3.579	Reverse Curve	25
10.	3.843	Hair pin Bend	20
11.	4.244	Deep Valley	20
12.	4.572	Hair pin Bend	25
13.	4.755	Hair pin Bend	20
14.	4.839	Hair pin Bend	25
15.	4.951	Hair pin Bend	25
16.	6.025	High Hill Cut	20
17.	7.549	Hair pin Bend	20

18.	7.655	Hair pin Bend	25
19.	8.914	Hair pin Bend	20
20.	9.784	High Hill Cut	20
21.	9.890	Deep Valley	20
22.	10.253	Hair pin Bend	20
23.	10.696	Hair pin Bend	20

Locations where Radii of Horizontal Curve is less than 75 m

Sl. No	Chainage	Radious	Side
1.	17.992	40.000	LEFT
2.	88.685	30.000	RIGHT
3.	181.997	15.000	LEFT
4.	301.000	30.000	LEFT
5.	381.943	15.000	RIGHT
6.	740.306	50.000	RIGHT
7.	1082.948	23.500	RIGHT
8.	2580.346	35.000	RIGHT
9.	2810.663	30.000	LEFT
10.	3503.368	30.000	RIGHT
11.	3578.969	50.000	LEFT
12.	3843.141	20.000	RIGHT
13.	4243.614	30.000	LEFT
14.	4571.707	50.000	LEFT
15.	4754.604	18.000	LEFT
16.	4838.941	50.000	LEFT
17.	4951.117	50.000	RIGHT
18.	6024.506	35.000	LEFT
19.	7549.148	18.000	RIGHT
20.	7654.589	50.000	RIGHT
21.	7837.876	30.000	LEFT
22.	8329.166	70.000	LEFT
23.	8579.990	60.000	RIGHT
24.	8708.256	30.000	RIGHT
25.	8913.909	18.000	LEFT
26.	9208.699	30.000	LEFT
27.	9784.068	30.000	LEFT
28.	9890.381	30.000	RIGHT
29.	10253.184	20.000	RIGHT
30.	10406.072	30.000	LEFT
31.	10696.042	18.000	LEFT

Locations where Gradient more than 6%

CHAINAGE		GRADIENT LENGTH	GRADIENT	GRADIENT TYPE
7503.766	8134.28	630.514	7	DN
9948.074	10355.574	407.5	7	DN

Schedule - H

(See Clauses 10.1 (iv) and 19.3)

Contract Price Weightages

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

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

Bill No	Weightage in percentage to the contract price	Description of Items		Percentage weightage
1		**WIDENING AND STRENGTHENING OF EXISTING ROAD**		
	53.24%	*A1.1*	*Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.*	**0.00%**
		A1.2	*Sub-Base Course*	**0.00%**
		A1.3	*Non Bituminous Base Course*	**0.00%**
		A1.4	*Bituminous Base Course*	**0.00%**
		A1.5	*Wearing Coat*	**0.00%**
		A1.6	*Widening and repair of culverts*	**0.00%**
		A1.7	*Hard Shoulder*	**0.00%**
2		**RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS(FLEXIBLE PAVEMENT)**		**0.00%**
		A2.1	*Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.*	**33.95%**
		A2.2	*Sub-Base Course*	**9.92%**
		A2.3	*Non Bituminous Base Course*	**13.34%**
		A2.4	*Bituminous Base Course*	**14.21%**
		A2.5	*Wearing Course*	**5.36%**
		A2.6	*Shoulder*	**0.00%**
3		**RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS(RIGID PAVEMENT)**		**0.00%**
		A3.1	*Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.*	**0.00%**
		A3.2	*Sub-Base Course*	**0.00%**
		A3.3	*Dry Lean Concrete(DLC) Course*	**0.00%**
		A3.4	*Pavemennt Quality Control(PQC) Course*	**0.00%**
4		**RECONSTRUCTION/NEW SERVICE ROAD (FLEXIBLE PAVEMENT)**		**0.00%**
		A4.1	*Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.*	**0.00%**
		A4.2	*Sub-Base Course*	**0.00%**

		A4.3	*Non Bituminous Base Course*	**0.00%**
		A4.4	*Bituminous Base Course*	**0.00%**
		A4.5	*Wearing Coat*	**0.00%**
5		**RECONSTRUCTION/NEW SERVICE ROAD (RIGID PAVEMENT)**		**0.00%**
		A5.1	*Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.*	**0.00%**
		A5.2	*Sub-Base Course*	**0.00%**
		A5.3	*Dry Lean Concrete(DLC) Course*	**0.00%**
		A5.4	*Pavemennt Quality Control(PQC) Course*	**0.00%**
6		**RECONSTRUCTION AND NEW CULVERTS ON EXISTING ROAD, REALIGNMENTS, BYPASSES**		**0.00%**
		A6.1	*Culverts and associated Protection Works (Length< 6m)*	**23.22%**
7	**0.00%**	**WIDENING AND REPAIR OF MINOR BRIDGES (Length > 6 m and < 60 m)**		**0.00%**
		A7.1	*Minor Bridges*	
8		**RECONSTRUCTION MINOR BRIDGES (Reconstructions) (Length > 6 m and < 60 m)**		**0.00%**
		A8.1	***Foundation + Sub Structures:*** *On completion of the foundation work including foundations for wing wall and return walls, abutments, piers upto the abutment/pier cap.*	**0.00%**
		A8.2	***Super-structure:*** *On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.*	**0.00%**
		A8.3	***Approaches:*** *On completion of approaches including retaining wall, stone pitching, protection works complete in all respect and fit for use.*	**0.00%**
		A8.4	***Guide Bunds and River Training Works:*** *On completion of Guide bunds and river training works complete in all respects.*	**0.00%**
9		**WIDENING AND REPAIRS OF UNDERPASSES/ OVERPASSES**		**0.00%**
		A9.1	*Underpasses/ Overpasses*	**0.00%**
10		**NEW UNDERPASSES/ OVERPASSES**		**0.00%**
		A10.1	***Foundation + Sub Structures:*** *On completion of the foundation work including foundations for wing wall and return walls, abutments, piers upto the abutment/pier cap.*	**0.00%**
		A10.2	***Super-structure:*** *On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of overpass- wearing coat including expansion joint complete in all respects as specified and (b) in case of underpass- Rigid pavement including drainage facility complete in all respects as specified.*	**0.00%**

		A10.3		***Approaches:*** *On completion of approaches including retaining walls/ Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use.*		**0.00%**
11	**0.00%**	**WIDENING AND REPAIRS OF MAJOR BRIDGES**				**0.00%**
		A11.1		*Foundation*		**0.00%**
		A11.2		*Sub-structure*		**0.00%**
		A11.3		*Super-structure(including bearings)*		**0.00%**
		A11.4		*Wearing Coat including expansion joints*		**0.00%**
		A11.5		*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
		A11.6		*Wing walls/ Return walls*		**0.00%**
		A11.7		*Guide Bunds, River Training Works etc*		**0.00%**
		A11.8		*Approaches (including Retaining walls, stone pitching and protection works)*		**0.00%**
12		**NEW MAJOR BRIDGES**				**0.00%**
		A12.1		*Foundation*		**0.00%**
		A12.2		*Sub-structure*		**0.00%**
		A12.3		*Super-structure(including bearings)*		**0.00%**
		A12.4		*Wearing Coat including expansion joints*		**0.00%**
		A12.5		*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
		A12.6		*Wing walls/ Return walls*		**0.00%**
		A12.7		*Guide Bunds, River Training Works etc*		**0.00%**
		A12.8		*Approaches (including Retaining walls, stone pitching and protection works)*		**0.00%**
13		**WIDENING AND REPAIR OF ROB/RUB**				**0.00%**
		A13.1	***(a)***	***ROB***		**0.00%**
			(i)	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**
			(iii)	*Super-structure(including bearings)*	-	**0.00%**
			(iv)	*Wearing Coat in case of ROB- wearing coat including expansion joint complete in all respects as specified.*	-	**0.00%**
			(v)	*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
			(vi)	*Wing walls/ Return walls*		**0.00%**
			(vii)	*Approaches (including Retaining walls, stone pitching and protection works)*	-	**0.00%**
		A13.2	***(b)***	***RUB***		**0.00%**
			(i)	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**
			(iii)	*Super-structure(including bearings)*	-	**0.00%**
			(iv)	*Wearing Coat in case of RUB- Rigid pavement under RUB including drainage facility complete in all respects as specified.*	-	**0.00%**

			(v)	*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
			(vi)	*Wing walls/ Return walls*		**0.00%**
			(vii)	*Approaches (including Retaining walls, stone pitching and protection works)*	-	**0.00%**
14		**NEW ROB/RUB**				**0.00%**
		A14.1	***(a)***	***ROB***		**0.00%**
			(i)	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**
			(iii)	*Super-structure(including bearings)*	-	**0.00%**
			(iv)	*Wearing Coat in case of ROB- wearing coat including expansion joint complete in all respects as specified.*	-	**0.00%**
			(v)	*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
			(vi)	*Wing walls/ Return walls*		**0.00%**
			(vii)	*Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)*	-	**0.00%**
		A14.2	***(b)***	***RUB***		**0.00%**
			(i)	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**
			(iii)	*Super-structure(including bearings)*	-	**0.00%**
			(iv)	*Wearing Coat in case of RUB- Rigid pavement under RUB including drainage facility complete in all respects as specified.*	-	**0.00%**
			(v)	*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
			(vi)	*Wing walls/ Return walls*		**0.00%**
			(vii)	*Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)*	-	**0.00%**
15		**WIDENING AND REPAIR OF ELEVATED SECTION/ FLYOVERS/ GRADE SEPARATORS**				**0.00%**
		A.15.1	*(i)*	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**
			(iii)	*Super-structure(including bearings)*	-	**0.00%**
			(iv)	*Wearing Coat including expansion joint.*	-	**0.00%**
			(v)	*Miscellaneous items like handrails, crash barriers, road markings etc.*		**0.00%**
			(vi)	*Wing walls/ Return walls*		**0.00%**
			(vii)	*Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)*	-	**0.00%**
16		**NEW ELEVATED SECTION/ FLYOVERS/ GRADE SEPARATORS**				**0.00%**
		A.16.1	*(i)*	*Foundation*	-	**0.00%**
			(ii)	*Sub-structure*	-	**0.00%**

			(iii)	Super-structure(including bearings)	-	**0.00%**
			(iv)	Wearing Coat including expansion joint.	-	**0.00%**
			(v)	Miscellaneous items like handrails, crash barriers, road markings etc.		**0.00%**
			(vi)	Wing walls/ Return walls		**0.00%**
			(vii)	Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)	-	**0.00%**
17	**46.08%**	**OTHER WORKS**				**0.00%**
		A17.1	Toll Plaza			**0.00%**
		A17.2	Road Side drain			**4.35%**
		A17.3	Road signs, marking, Km stones, Safety devices etc.			**0.00%**
			(a)	Pavement Marking		**0.78%**
			(b)	Crash barrier/W metal crash barrier		**6.51%**
			(c)	Traffic Sign and overhead sign board		**0.56%**
			(d)	Road Boundary stone, km Stone,5th km stone and hectometer stone		**0.02%**
			(e)	Traffic blinker LED delineator, stud, reflective payment marker, tree reflector		**0.01%**
			(f)	Traffic impact Attenuators at Abutments and Piers traffic island		**0.00%**
			(g)	Road furniture		**0.00%**
			(h)	Others including Toilet Blocks and Street lightining		**0.29%**
		A17.4	Project facilities			**0.00%**
			(a)	Truck lay-byes		**0.00%**
			(b)	Bus Shelter		**0.04%**
			(c)	Junctions (Major & Minor)		**0.63%**
			(d)	Stair case used for public facilities (HILL SIDES).		**0.00%**
			(e)	Rest areas (viewpoint/recreational areas)		**0.00%**
		A17.5	Road Side Plantation, Median plantation & Turfing of the embankment slope			**0.00%**
		A17.6	Repair of protection works other than approaches to the bridges, elevated sections/ fly-overs/ grade separator and ROBs/ RUBs.			**0.00%**
		A17.7	Traffic diversion, Safety and traffic management during construction			**0.00%**
		A17.8	Slope Protection Works as special requirement for hill road			**0.00%**
			(a)	Hydro Seeding of Cut Slopes in Soil		**0.08%**
			(b)	Seeding and Mulching with Jute net all along the perpetual slide locations		**0.79%**
			(c)	Catchwater Drain		**0.00%**
			(d)	Retaining Wall		**0.00%**
			(e)	Bamboo Plantation for slope protection works		**0.45%**
			(f)	Breast wall		**13.18%**
			(g)	Soil Nailing		**3.74%**

			(h)	*Gabion Wall*	**68.57%**
	0.68%	**A18**		Utility Shifting (excluding taxes & supervision)	**100.00%**

Sheet-III

1.2.1 Details of utility shifting

Item	Weightage in percentage to the Utility Shifting Price	Stage for Payment	Percentage weightage
Electrical Utilities and public Health Utilities (Water pipe lines and sewage lines)	*0.43%*	(i) EHT line	0%
		(ii) EHT crossings	
		(iii) HT/LT line	100%
		(iv) HT/LT crossings	
		(v) Water pipeline	0.0%
		(vi) Water pipeline crossings	
		(vii) Sewage lines	0%
		(viii) Sewage lines crossings	

Procedure of estimating the value of work done

Road works

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

Table 1.3.1

Stage of Payment	Percentage weightage	Payment Procedure
A- Widening & Strengthening of 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	[Nil]	
(3) Sub-base Course	[Nil]	
(4) Non bituminous Base course	[Nil]	
(5) Bituminous Base course	[Nil]	
(6) Wearing Coat	[Nil]	
(7) Widening and repair of culverts	[Nil]	Cost of ten completed culverts shall be determined on pro rata basis with respect to the total number of culverts.
B.1- Reconstruction/New2-Lane Realignment/Bypass (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on prorata 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	**33.95%**	
(2) Sub-base Course	**9.92%**	
(3) Non bituminous Base course	**13.34%**	
(4) Bituminous Base course	**14.21%**	
(5) Wearing Course	**5.36%**	
(6) Shoulder	**0.00%**	
(7) Widening and repair of culverts		
B.2- Reconstruction/New 8-Lane Realignment/Bypass(Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Dry Lean Concrete (DLC) Course	[Nil]	

Stage of Payment	Percentage weightage	Payment Procedure
(4) Pavement Quality Control (PQC) Course	[Nil]	
C.1- Reconstruction/New Service Road/ Slip Road (Flexible Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Non bituminous Base course	[Nil]	
(4) Bituminous Basecourse	[Nil]	
(5) Wearing Coat	[Nil]	
C.2- Reconstruction/New Service road (Rigid Pavement)		Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 5 (five) km length, whichever is less.
(1)Earthwork up to top of the sub-grade	[Nil]	
(2) Sub-base Course	[Nil]	
(3) Dry Lean Concrete (DLC)Course	[Nil]	
(4) Pavement Quality Control (PQC) Course	[Nil]	
D- Reconstruction &New Culverts on existing road, realignments, bypasses		Cost of each culverts shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of at least Five culverts
Culverts (length <6m)	23.22%	

@ For example, if the total length of bituminous work to be done is 100 km, the cost per km of bituminous work shall be determined as follows:

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

Where,

P = Contract Price

L = Total length in km

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

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

Minor Bridges and Underpasses/Overpasses.

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

Table 1.3.2

Stage of Payment	Weightage	Payment Procedure
1	2	3
A.1-Widening and repairs of Minor Bridges(length>6m&<60m)		Cost of each minor bridge shall be determined on pro-rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening & repair works of a minor bridge

Stage of Payment	Weightage	Payment Procedure
A.2- Reconstructions Minor Bridges (length > 6m & < 60m)		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	0.00%	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 shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road,signs & markings, tests on completion etc. complete in all respect.	0.00%	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least 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
(3)Approaches :On completion of approaches including Retaining walls, stone pitching, protection works complete in all and fit for use	0.00%	Approaches: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.
(4) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	[Nil]	Guide Bunds and River Training Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of Guide Bund sand River training Works in all respects as specified
B.1- Widening and repairs of underpasses/overpasses	[Nil]	Cost of each underpass/overpass shall be determined on pro-rata basis with respect to the total linear length of the underpasses/ overpasses. Payment shall be made on the completion of widening & repair works of a underpass/overpass.
B.2- New Underpasses/Overpasses		
(1)Foundation + Sub-Structure: On completion of the foundation work including foundations for wing and return walls, abutments, piers up to the abutment/pier cap.	[Nil]	Foundation: Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of foundation of each Underpasses/ Overpasses. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Super-structure: On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs &	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least 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

Stage of Payment	Weightage	Payment Procedure
markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of Overpass-wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass- rigid pavement including drainage facility complete in all respects as specified.		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
(3) Approaches: On completion of approaches including Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

Major Bridge works, ROB/RUB and Structures.

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

Table 1.3.3

Stage of Payment	Weightage	Payment Procedure
A.1- Widening and repairs of Major Bridges		
(1) Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. 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
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.

Stage of Payment	Weightage	Payment Procedure
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Guide Bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
A.2-NewMajorBridges		
(1)Foundation	[Nil]	Foundation: Cost of each Major Bridge shall be determined on pro-rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2)Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not lessthan25% of the scope of sub- structure of major bridge.
(3)Super-structure(including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. 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
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings. complete in all respects as specified.
(6) Wing walls/return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Guide bunds, River Training works etc.	[Nil]	Guide Bunds, River Training works: Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8)Approaches(including Retaining walls, stone pitching and protection works)	[Nil]	Approaches: Payments shall be made on pro-rata basis on completion of 10% of the scope of each stage.
B.1- Widening and repairs of (a)ROB (b)RUB		
(1) Foundations	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the

Stage of Payment	Weightage	Payment Procedure
		trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-Structure (Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor,50%ofthe 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
(4) Wearing Coat(a)in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (Including Retaining walls, Stone Pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.
B.2-NewROB/RUB		
(1) Foundation	[Nil]	Foundation: Cost of each ROB/RUB shall be determined on pro-rata basis with respect to the total linear length (m)of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB.
(2) Sub-structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. Not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-structure (including bearing)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. 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
(4)Wearing Coat (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB	[Nil]	Wearing Coat: Payment shall be made on completion (a) in case of ROB-wearing coat including expansion joints complete in all respects as specified

Stage of Payment	Weightage	Payment Procedure
including drainage facility complete in all respects as specified		and (b) In case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.1-Wideningandrepairs of Elevated Section/ Flyovers/Grade Separators		
(1) Foundations	[Nil]	Foundation: Cost of each structure shall be determined on pro-rata basis with respect to the total linear length (m)of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. 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
(4) Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. Complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
C.2- New Elevated Section/ Flyovers/Grade Separators		
(1) Foundations	[Nil]	Foundation: Cost of each structure shall be determined on pro-rata basis with respect to the total linear length (m)of the

Stage of Payment	Weightage	Payment Procedure
		structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-Structure	[Nil]	Sub-structure: Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3)Super-Structure(Including bearings)	[Nil]	Super-structure: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. 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 foreach span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4)Wearing Coat including expansion joints	[Nil]	Wearing Coat: Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like handrails, crash barrier, road markings etc.	[Nil]	Miscellaneous: Payments shall be made on completion of all miscellaneous works like handrails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/Return walls	[Nil]	Wingwalls/return walls: Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7)Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	[Nil]	Payments shall be made on pro-rata basis on completion of 20% of the total area.

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

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

Other works.

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

Table 1.3.4

Stage of Payment	Weightage	Payment Procedure
1	2	3
(1) Toll Plaza	[Nil]	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro-rata basis with respect to the total of all toll plaza.
(2) Roadside drains	4.35%	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a

Stage of Payment	Weightage	Payment Procedure
		length of not less than 10% (Ten percent) of the total length.
(3) Road signs, markings, km stones, safety devices etc.		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 percent) of the total length.
a)Pavement Marking	0.78%	
b)Traffic Signs and over head sign boar	0.56%	
c)Road km Stone,5th km stone and hectometer stone	0.02%	
d) Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	0.01%	
(4) Project Facilities		Payment shall be made on pro-rata basis for completed facilities.
a) Bus shelter	0.04%	
b) Stair case used for public facilities	0.00%	
c) Road lighting and Toilets	0.29%	
d) Rest Area	0.00%	
e) Junction	0.63%	
(5) Road side Plantation including Horticulture in Wayside Amenities	[Nil]	Unit of measurement is linear length
(6) Repair of Protection Works other than approaches to the bridges, elevated sections/flyover/grade separators and ROBs/ RUBs	[Nil]	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 percent)of the total length.
(7) Safety and traffic management during construction	[Nil]	Payment shall be made on prorate basis every six months.
(8) Protection Works		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 percent) of the total length.
(a) Retaining Wall	0.00%	
(b) Breast Wall	13.18%	
(c) Gabion Wall	68.57%	
(c) W metal beam crash barrier	6.51%	
(9) Soil Nailing	3.74%	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 percent) of the total length.
(10) Seeding & Mulching,	0.79 %	Unit of measurement is linear length. Payment shall be made on pro-rata basis on completion of a stage in a length of not less than 10% (Ten percent) of the total length.
(11) Hydroseeding)	0.08%	
(12) Bamboo plantation	0.45%	

Utility Shifting

Stage of Payment	Weightage	Payment Procedure
1	2	3
Percentage for Utility shifting		

1.3.6	Utility Shifting	100%	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 percent) of the total length.

2. Procedure for payment for Maintenance

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

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