Schedule-A

(See Clauses 2.1 and 8.1)

Site of the Project

1. The Site

(i) Site of the "**Development of Pango-Jorging Road (Package-2) from Design Ch. 40+000 to Design Ch. 82+060 (Total Design Length: 42.060 km) Green field Alignment in the State of Arunachal Pradesh on EPC Mode**" Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.

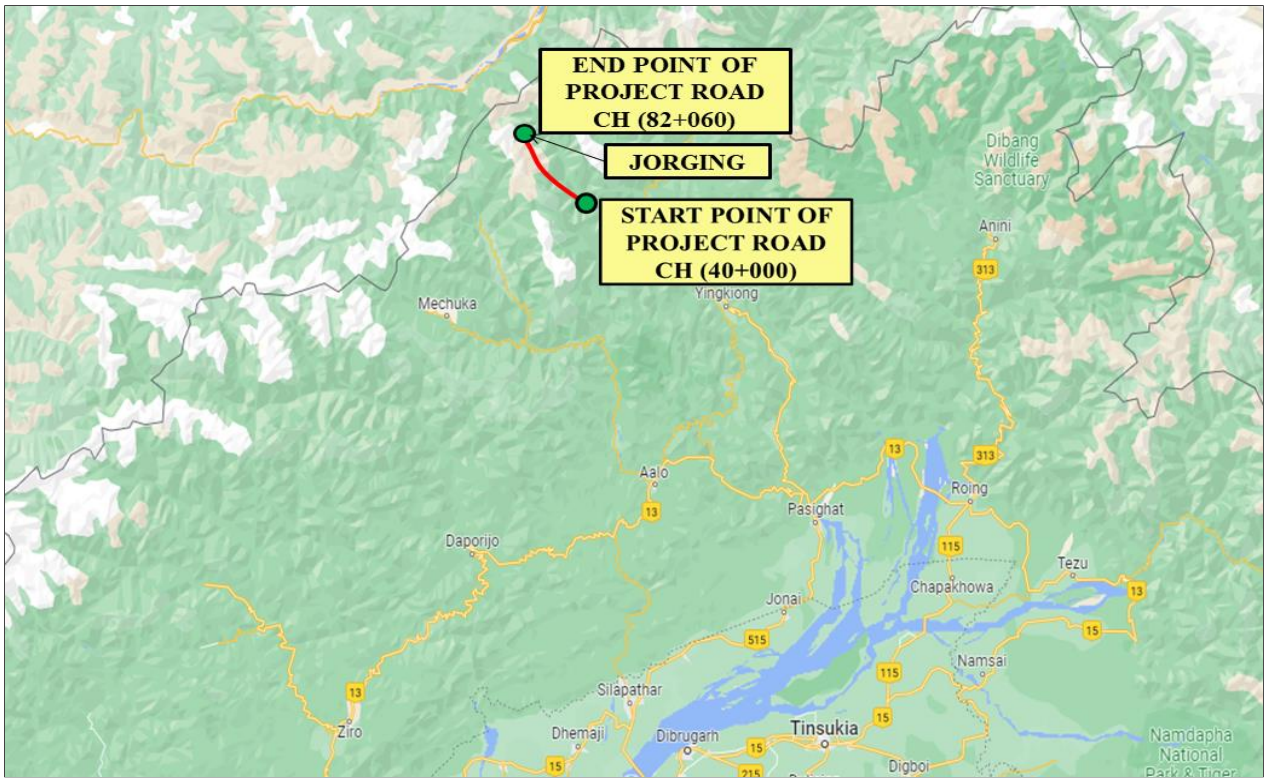
(ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.

(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 8.2.1 of this Agreement.

(iv) The alignment plans of the Project Highway are specified in Annex-III.

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

INDEX MAP OF PROJECT ROAD



Annex – I

(Schedule-A)

Site for the Project

1. Site

The Site of the **"Development of Pango-Jorging Road (Package-2) from Design Ch. 40+000 to Design Ch. 82+060 (Total Design Length: 42.060 km) Green field Alignment in the State of Arunachal Pradesh on EPC Mode"**. The land, carriageway and structures comprising the Site are described below.

2. Land

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

S. No.	Chainage (km)		Existing Right of Way (m)	Proposed Right of Way (m)
	From	To		
Nil*				

3. Carriageway

The Site of the Project Highway comprises following:

S. No.	Chainage (km)		Carriageway width (m)
	From	To	
Nil*			

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	Sub-structure	Super-structure			
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	Sub-structure	Super-structure		
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:

S. No.	Chainage (km)	Type of Culvert	Span /Opening with span length (m)
Nil*			

11. Bus bays

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. Road side drains

The details of the roadside drains are as follows:

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

14. Major junctions

The details of major junctions are as follows:

S. No.	Location	At Grade	Grade Separated	Category of Cross Road			
				NH	SH	MDR	Others
Nil*							

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

15. Minor junctions

The details of the minor junctions are as follows:

S. No.	Location	Type	
		T -junction	Cross road
Nil*			

16. Bypasses

The details of the bypasses are as follows:

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

17. Details of Existing utilities Schedule

The existing utilities schedules are as below

17.1 Electrical utilities

The site includes the following electrical utilities:-

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

SL.	Chainage		Length (in Km)				Crossings			
	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV
Nil*										

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

SL.	Chainage		No of poles affected			Transformers	
	From	To	33KV	11KV	LT	No	Capacity
Nil*							

17.2 Public Health utilities (Water/Sewage Pipelines)

(a) The site includes the following Public Health utilities:-

S. No	Chainage		Length (in Km)
	From	To	Water Supply line
Nil*			

(b) Bore well/Hand Pump within RoW – Nil*

(c) Water Tank within RoW – Nil*

17.3 Any Other Lines

No

18. Other Structures

Nil*

[Note: * = Greenfield)

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.	Chainage (km)		Existing Right Of Way (m)	Proposed Right Of Way (m)	Date of Providing Proposed ROW
	From	To			
1	0	3950	NIL	24	90% Right of Way on Appointment Date. Balance Right of Way 150 days after the Appointed Date.
2	3950	3975		30	
3	3975	5680		24	
4	5680	5725		26	
5	5725	17225		24	
6	17225	17240		33	
7	17240	19570		24	
8	19570	19800		26	
9	19800	20080		24	
10	20080	20110		26	
11	20110	28670		24	
12	28670	28780		30	
13	28780	29260		24	
14	29260	29350		30	
15	29350	32270		24	
16	32270	32400		30	
17	32400	33250		24	
18	33250	33300		26	
19	33300	34200		24	
20	34200	34350		31	
21	34350	34900		24	
22	34900	34930		27	
23	34930	36500		24	
24	36500	36620		38	
25	36620	42400		24	
26	42400	42490		27	
27	42490	46300		24	
28	46300	46330		25	
29	46330	49060		24	
30	49060	49130		28	

S.No.	Chainage (km)		Existing Right Of Way (m)	Proposed Right Of Way (m)	Date of Providing Proposed ROW
	From	To			
31	49130	53500		24	
32	53500	53520		25	
33	53520	54800		24	
34	54800	54920		25	
35	54920	57260		24	
36	57260	57360		30	
37	57360	59300		24	
38	59300	59500		30	
39	59500	61300		24	
40	61300	61330		25	
41	61330	62250		24	
42	62250	62300		26	
43	62300	67640		24	
44	67640	67720		35	
45	67720	69390		24	
46	69390	69430		29	
47	69430	73350		24	
48	73350	73420		28	
49	73420	75060		24	
50	75060	75100		25	
51	75100	77790		24	
52	77790	77820		28	
53	77820	82060		24	

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 EPC contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement within proposed ROW.

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

Annex – IV

(Schedule-A)

Environment Clearances

The proposed project does not require Environmental clearance as per the MoEF&CC Notification No S.O. 3194(E) dated 14th July, 2022 which states that ***"All Highway projects are exempted upto 100 km from line of control or border subject to compliance of Standard Operating Procedure notified in this regard from time to time".***

Forest clearance: The project road does not fall under any Reserved Forest (RF) / Permanent Reserve Forest (PRF) / Variable retention forestry (VRF) / Wildlife Sanctuary / National Park or any other forest plantation land. As per discussion with DFO, Yingkiong the whole part of the project road falls under unreserved forest land therefore forest clearance is applicable for the cutting of trees in the proposed ROW of the project and in muck dumping locations. Forest Proposal Completed.

Schedule B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

Development of the Project Stretch of NH-913 from Km 40+000 to Km 42+060 of Pango-Jorging (Package-II) 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 Intermediate Lane with earthen Shoulder 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 LANING AND STRENGTHENING

[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 Laning of Highways (Hill roads – IRC: 52-2019 and Hill Road manual IRC: SP 48 - 1998 and IRC SP 73-2018 referred to as the Manual, and MORTH Specifications for Road and Bridge Works 5th Revision 2013 or latest version), 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 particulars, 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 proposed alignment as shown in the alignment plans specified in Annex-III of Schedule-A, unless otherwise specified by the Authority. Correction of Geometric deficiencies, if any, in the existing horizontal and vertical profiles shall be done as per the prescribed standards for mountainous terrain to the extent land is available.

(ii) Width of Carriageway

(a) The paved carriageway shall be Intermediate Lane with earthen shoulder in accordance with IRC: SP: 73-2018. The paved carriageway shall be 5.5 m wide having 1.45 m earthen shoulders on both sides.

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 (km to km)	Width (m) of carriageway	Typical cross section (Ref. to Manual)	Remarks
Nil					

(b) Except as otherwise provided in this Agreement, the width of the Intermediate Lane carriageway shall conform to paragraph (a) of 1(ii).

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 IRC: SP: 73-2018.

(ii) Design Speed

The design speed shall be the minimum design speed of 30 Km/hr for mountainous terrain except hair pin bend locations where in design speed shall be 20 Km/hr.

(iii) Improvement of the Existing Road Geometrics

[Refer to paragraph 2.1 (v) of the Manual]

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

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

(iv) Right of Way

[Refer to paragraph 2.3 of the Manual].
Details of Right of way are given in Annex-II of Schedule-A.

(v) The type of shoulders

(Refer to Paragraph 2.5.2 of the Manual)

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

Sr. No.	Stretch (From km to km)	Fully paved shoulders/footpath	Reference to cross section
NIL			

(b) In open country, earthen shoulders of **1.450 m width** shall be provided shall be covered with 150 mm thick compacted layer of granular material.

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

(vi) Lateral and Vertical Clearances at Underpasses

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

b) Lateral clearance: The width of the opening at the Vehicular under Passes (VUP) shall be as follows: -

Sr. No.	Location (Design Chainage) Km	Span / Opening (m)	Vertical Clearances (m)
Nil			

(vii) Lateral and vertical clearance at overpasses

a) Lateral and vertical clearances at overpasses shall be as per the provision of relevant Manual, however no overpass has been proposed.

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

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

(viii) Service roads

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

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			

(ix) Grade Separated Structures

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

S. No.	Design Chainage	Length (m)	Number and length of spans	Approach gradient	Remarks
Nil					

(b) In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows: -
[Refer to the provision of relevant Manual and provide details]

S. No.	Location of Structure	Type of Structure	Cross Road at			Remarks
			Existing Level	Raised Level	Lowered Level	
Nil						

(x) Cattle and Pedestrian underpass / over pass

Cattle and pedestrian underpass/overpass shall be constructed as follows: - [Refer to the provision of relevant Manual and provide details]

S. No.	Location	Type
Nil		

(xi) Typical Cross-Sections of the Project Highway

[Give typical cross-sections of the Project Highway by reference to the Manual]

Different type of cross sections for different segments of Intermediate-lane stretch shall be developed as provided in 'Manual of Specifications & Standards for Two Laning of Highways with shoulder' (IRC: SP:73-2018).

From	To	Length	TCS Type
-	-	-	-
40060	40070	10	TCS-1
40190	40200	10	TCS-1
40210	40230	20	TCS-6
40260	40280	20	TCS-4
40360	40370	10	TCS-7
40430	40440	10	TCS-1
40450	40470	20	TCS-6
40510	40520	10	TCS-10
40590	40600	10	TCS-10
40620	40630	10	TCS-7
40637	40717	80	Bridge
40730	40750	20	TCS-1
40850	40860	10	TCS-2
40890	40930	40	TCS-3
40980	41000	20	TCS-6
41010	41080	70	TCS-1
41100	41170	70	TCS-5
41210	41220	10	TCS-2
41250	41260	10	TCS-2
41370	41400	30	TCS-5
41510	41520	10	TCS-2
41580	41610	30	TCS-1
41660	41890	230	TCS-5
41960	41970	10	TCS-10
42120	42140	20	TCS-1
42250	42310	60	TCS-5
42320	42390	70	TCS-3
42420	42460	40	TCS-2

From	To	Length	TCS Type
40000	40060	60	TCS-6
40070	40190	120	TCS-3
40200	40210	10	TCS-2
40230	40260	30	TCS-5
40280	40360	80	TCS-3
40370	40430	60	TCS-3
40440	40450	10	TCS-2
40470	40510	40	TCS-4
40520	40590	70	TCS-4
40600	40620	20	TCS-3
40630	40637	7	TCS-8
40717	40730	13	TCS-3
40750	40850	100	TCS-6
40860	40890	30	TCS-1
40930	40980	50	TCS-1
41000	41010	10	TCS-2
41080	41100	20	TCS-6
41170	41210	40	TCS-6
41220	41250	30	TCS-1
41260	41370	110	TCS-6
41400	41510	110	TCS-6
41520	41580	60	TCS-3
41610	41660	50	TCS-6
41890	41960	70	TCS-6
41970	42120	150	TCS-3
42140	42250	110	TCS-6
42310	42320	10	TCS-4
42390	42420	30	TCS-1
42460	42580	120	TCS-3

42580	42640	60	TCS-1
42650	42810	160	TCS-6
42940	42950	10	TCS-6
42960	43050	90	TCS-3
43060	43070	10	TCS-2
43160	43210	50	TCS-4
43300	43310	10	TCS-4
43320	43358	38	TCS-3
43528	43550	22	TCS-8
43570	43730	160	TCS-5
43790	43830	40	TCS-2
44150	44170	20	TCS-2
44220	44560	340	TCS-3
44630	44650	20	TCS-2
44830	45060	230	TCS-5
45210	45320	110	TCS-1
45330	45390	60	TCS-6
45400	45570	170	TCS-3
45600	45610	10	TCS-4
45850	45860	10	TCS-2
45870	45990	120	TCS-3
46040	46060	20	TCS-10
46320	46340	20	TCS-10
46370	46380	10	TCS-10
46590	46600	10	TCS-4
46770	46780	10	TCS-10
46920	46930	10	TCS-4
46970	47000	30	TCS-8
47010	47020	10	TCS-3
47030	47050	20	TCS-6
47250	47310	60	TCS-6
47340	47350	10	TCS-10
47450	47460	10	TCS-4
47480	47550	70	TCS-3
47580	47600	20	TCS-4
47630	47680	50	TCS-4
47690	47740	50	TCS-3
47760	47790	30	TCS-6
47900	48080	180	TCS-6
48500	48520	20	TCS-10
48530	48540	10	TCS-10
48590	48630	40	TCS-6

42640	42650	10	TCS-2
42810	42940	130	TCS-5
42950	42960	10	TCS-4
43050	43060	10	TCS-1
43070	43160	90	TCS-6
43210	43300	90	TCS-6
43310	43320	10	TCS-10
43358	43528	170	Bridge
43550	43570	20	TCS-3
43730	43790	60	TCS-6
43830	44150	320	TCS-6
44170	44220	50	TCS-1
44560	44630	70	TCS-1
44650	44830	180	TCS-6
45060	45210	150	TCS-6
45320	45330	10	TCS-2
45390	45400	10	TCS-1
45570	45600	30	TCS-10
45610	45850	240	TCS-6
45860	45870	10	TCS-1
45990	46040	50	TCS-4
46060	46320	260	TCS-3
46340	46370	30	TCS-4
46380	46590	210	TCS-3
46600	46770	170	TCS-3
46780	46920	140	TCS-6
46930	46970	40	TCS-3
47000	47010	10	TCS-7
47020	47030	10	TCS-1
47050	47250	200	TCS-5
47310	47340	30	TCS-2
47350	47450	100	TCS-3
47460	47480	20	TCS-10
47550	47580	30	TCS-10
47600	47630	30	TCS-10
47680	47690	10	TCS-10
47740	47760	20	TCS-10
47790	47900	110	TCS-5
48080	48500	420	TCS-3
48520	48530	10	TCS-4
48540	48590	50	TCS-3
48630	48640	10	TCS-4

48640	48650	10	TCS-10
48800	48810	10	TCS-7
48900	48930	30	TCS-1
49600	49620	20	TCS-2
49630	49710	80	TCS-3
49750	49760	10	TCS-7
49770	49780	10	TCS-2
49790	49950	160	TCS-5
50070	50080	10	TCS-2
50130	50150	20	TCS-4
50160	50170	10	TCS-3
50180	50340	160	TCS-3
50350	50370	20	TCS-8
50380	50400	20	TCS-1
50410	50560	150	TCS-5
50710	50720	10	TCS-10
50960	50970	10	TCS-10
50990	51070	80	TCS-6
51080	51240	160	TCS-6
51260	51270	10	TCS-4
51280	51289	9	TCS-1
51369	51380	11	TCS-3
51390	51470	80	TCS-5
51520	51540	20	TCS-1
51700	51750	50	TCS-1
51800	51980	180	TCS-1
52020	52030	10	TCS-1
52070	52084	14	TCS-4
52184	52190	6	TCS-8
52210	52230	20	TCS-4
52280	52400	120	TCS-3
52460	52470	10	TCS-4
52480	52550	70	TCS-3
52570	52640	70	TCS-3
52650	52810	160	TCS-3
52820	52890	70	TCS-6
52940	52950	10	TCS-6
52970	52980	10	TCS-10
53020	53050	30	TCS-4
53090	53110	20	TCS-5
53180	53190	10	TCS-2
53240	53260	20	TCS-7

48650	48800	150	TCS-3
48810	48900	90	TCS-3
48930	49600	670	TCS-3
49620	49630	10	TCS-1
49710	49750	40	TCS-8
49760	49770	10	TCS-3
49780	49790	10	TCS-6
49950	50070	120	TCS-6
50080	50130	50	TCS-10
50150	50160	10	TCS-10
50170	50180	10	TCS-1
50340	50350	10	TCS-7
50370	50380	10	TCS-3
50400	50410	10	TCS-6
50560	50710	150	TCS-6
50720	50960	240	TCS-3
50970	50990	20	TCS-4
51070	51080	10	TCS-5
51240	51260	20	TCS-1
51270	51280	10	TCS-2
51289	51369	80	Bridge
51380	51390	10	TCS-6
51470	51520	50	TCS-6
51540	51700	160	TCS-3
51750	51800	50	TCS-3
51980	52020	40	TCS-6
52030	52070	40	TCS-6
52084	52184	100	Bridge
52190	52210	20	TCS-3
52230	52280	50	TCS-10
52400	52460	60	TCS-10
52470	52480	10	TCS-10
52550	52570	20	TCS-10
52640	52650	10	TCS-10
52810	52820	10	TCS-10
52890	52940	50	TCS-4
52950	52970	20	TCS-4
52980	53020	40	TCS-3
53050	53090	40	TCS-6
53110	53180	70	TCS-6
53190	53240	50	TCS-3
53260	53310	50	TCS-8

53310	53320	10	TCS-3
53340	53360	20	TCS-6
53390	53430	40	TCS-6
53440	53470	30	TCS-6
53490	53500	10	TCS-10
53550	53640	90	TCS-6
53680	53690	10	TCS-10
53730	53740	10	TCS-8
53750	53760	10	TCS-10
53870	53910	40	TCS-3
53920	53930	10	TCS-4
53940	53950	10	TCS-4
53970	54030	60	TCS-3
54040	54060	20	TCS-8
54090	54120	30	TCS-8
54130	54140	10	TCS-3
54150	54190	40	TCS-8
54200	54210	10	TCS-1
54220	54480	260	TCS-5
54550	54870	320	TCS-1
54880	54960	80	TCS-1
55020	55140	120	TCS-1
55290	55300	10	TCS-2
55360	55410	50	TCS-3
55520	55670	150	TCS-3
55830	55840	10	TCS-6
55860	55950	90	TCS-3
55990	56010	20	TCS-6
56024	56124	100	Bridge
56140	56150	10	TCS-3
56270	56340	70	TCS-5
56350	56370	20	TCS-4
56380	56390	10	TCS-7
56400	56410	10	TCS-4
56430	56580	150	TCS-5
56650	56660	10	TCS-2
56690	56830	140	TCS-3
56870	56880	10	TCS-2
57250	57260	10	TCS-5
57270	57330	60	TCS-5
57380	57390	10	TCS-2
57400	57460	60	TCS-3
57480	57500	20	TCS-6
57510	57650	140	TCS-1

53320	53340	20	TCS-4
53360	53390	30	TCS-5
53430	53440	10	TCS-4
53470	53490	20	TCS-3
53500	53550	50	TCS-4
53640	53680	40	TCS-4
53690	53730	40	TCS-3
53740	53750	10	TCS-7
53760	53870	110	TCS-4
53910	53920	10	TCS-10
53930	53940	10	TCS-3
53950	53970	20	TCS-10
54030	54040	10	TCS-7
54060	54090	30	TCS-3
54120	54130	10	TCS-7
54140	54150	10	TCS-7
54190	54200	10	TCS-3
54210	54220	10	TCS-6
54480	54550	70	TCS-6
54870	54880	10	TCS-3
54960	55020	60	TCS-3
55140	55290	150	TCS-6
55300	55360	60	TCS-1
55410	55520	110	TCS-1
55670	55830	160	TCS-1
55840	55860	20	TCS-1
55950	55990	40	TCS-1
56010	56024	14	TCS-1
56124	56140	16	TCS-8
56150	56270	120	TCS-6
56340	56350	10	TCS-6
56370	56380	10	TCS-6
56390	56400	10	TCS-10
56410	56430	20	TCS-6
56580	56650	70	TCS-6
56660	56690	30	TCS-1
56830	56870	40	TCS-1
56880	57250	370	TCS-6
57260	57270	10	TCS-6
57330	57380	50	TCS-6
57390	57400	10	TCS-1
57460	57480	20	TCS-4
57500	57510	10	TCS-2
57650	57690	40	TCS-3

57690	57700	10	TCS-8
57710	57730	20	TCS-1
57740	58210	470	TCS-5
58240	58280	40	TCS-2
58300	58330	30	TCS-1
58360	58410	50	TCS-1
58420	58490	70	TCS-1
58520	58550	30	TCS-1
58570	58610	40	TCS-8
58620	58650	30	TCS-4
58660	58680	20	TCS-1
58750	58760	10	TCS-10
58830	58840	10	TCS-7
58850	58860	10	TCS-4
58870	59070	200	TCS-5
59160	59170	10	TCS-2
59180	59220	40	TCS-3
59230	59360	130	TCS-6
59370	59470	100	TCS-3
59500	59520	20	TCS-3
59790	59820	30	TCS-3
59890	59970	80	TCS-3
59990	60000	10	TCS-6
60320	60340	20	TCS-6
60390	60490	100	TCS-6
60510	60610	100	TCS-3
60630	60640	10	TCS-3
60770	60980	210	TCS-3
60990	61080	90	TCS-8
61090	61270	180	TCS-5
61520	61530	10	TCS-2
61970	62020	50	TCS-6
62250	62280	30	TCS-6
62290	62320	30	TCS-3
62330	62390	60	TCS-6
62400	62410	10	TCS-6
62430	62640	210	TCS-6
62770	62780	10	TCS-6
62810	62820	10	TCS-10
62980	62990	10	TCS-10
63020	63313	293	TCS-1
63413	63430	17	TCS-3

57700	57710	10	TCS-3
57730	57740	10	TCS-6
58210	58240	30	TCS-6
58280	58300	20	TCS-3
58330	58360	30	TCS-3
58410	58420	10	TCS-2
58490	58520	30	TCS-2
58550	58570	20	TCS-3
58610	58620	10	TCS-3
58650	58660	10	TCS-10
58680	58750	70	TCS-3
58760	58830	70	TCS-3
58840	58850	10	TCS-3
58860	58870	10	TCS-6
59070	59160	90	TCS-6
59170	59180	10	TCS-1
59220	59230	10	TCS-4
59360	59370	10	TCS-10
59470	59500	30	TCS-1
59520	59790	270	TCS-1
59820	59890	70	TCS-1
59970	59990	20	TCS-1
60000	60320	320	TCS-5
60340	60390	50	TCS-5
60490	60510	20	TCS-4
60610	60630	20	TCS-10
60640	60770	130	TCS-1
60980	60990	10	TCS-7
61080	61090	10	TCS-10
61270	61520	250	TCS-6
61530	61970	440	TCS-3
62020	62250	230	TCS-5
62280	62290	10	TCS-2
62320	62330	10	TCS-10
62390	62400	10	TCS-4
62410	62430	20	TCS-1
62640	62770	130	TCS-5
62780	62810	30	TCS-4
62820	62980	160	TCS-3
62990	63020	30	TCS-3
63313	63413	100	Bridge
63430	63530	100	TCS-1

63530	63540	10	TCS-3
63950	63960	10	TCS-3
64530	64540	10	TCS-2
64550	64580	30	TCS-5
64590	64600	10	TCS-1
64650	64690	40	TCS-1
64710	64720	10	TCS-1
64740	64760	20	TCS-5
64780	64790	10	TCS-4
64910	64930	20	TCS-1
64940	64960	20	TCS-5
65000	65030	30	TCS-5
65044	65144	100	Bridge
65150	65160	10	TCS-3
65170	65230	60	TCS-5
65250	65260	10	TCS-4
65270	65370	100	TCS-3
65390	65440	50	TCS-3
65470	65490	20	TCS-3
65670	65700	30	TCS-3
65710	65770	60	TCS-3
65930	65960	30	TCS-3
66260	66300	40	TCS-3
66320	66360	40	TCS-6
66380	66390	10	TCS-10
66550	66570	20	TCS-1
66580	66590	10	TCS-1
66600	66610	10	TCS-1
66620	66630	10	TCS-6
66690	66710	20	TCS-6
66719	66799	80	Bridge
66810	66820	10	TCS-1
66830	66840	10	TCS-1
66880	66930	50	TCS-1
66940	66950	10	TCS-1
67050	67090	40	TCS-1
67120	67160	40	TCS-1
67180	67260	80	TCS-1
67290	67370	80	TCS-1
67380	67880	500	TCS-1
67960	67990	30	TCS-1
68070	68250	180	TCS-1

63540	63950	410	TCS-1
63960	64530	570	TCS-1
64540	64550	10	TCS-6
64580	64590	10	TCS-6
64600	64650	50	TCS-3
64690	64710	20	TCS-6
64720	64740	20	TCS-6
64760	64780	20	TCS-6
64790	64910	120	TCS-3
64930	64940	10	TCS-2
64960	65000	40	TCS-6
65030	65044	14	TCS-4
65144	65150	6	TCS-8
65160	65170	10	TCS-6
65230	65250	20	TCS-6
65260	65270	10	TCS-10
65370	65390	20	TCS-1
65440	65470	30	TCS-1
65490	65670	180	TCS-1
65700	65710	10	TCS-1
65770	65930	160	TCS-1
65960	66260	300	TCS-1
66300	66320	20	TCS-1
66360	66380	20	TCS-4
66390	66550	160	TCS-3
66570	66580	10	TCS-2
66590	66600	10	TCS-6
66610	66620	10	TCS-5
66630	66690	60	TCS-5
66710	66719	9	TCS-3
66799	66810	11	TCS-3
66820	66830	10	TCS-6
66840	66880	40	TCS-3
66930	66940	10	TCS-3
66950	67050	100	TCS-3
67090	67120	30	TCS-3
67160	67180	20	TCS-3
67260	67290	30	TCS-3
67370	67380	10	TCS-3
67880	67960	80	TCS-3
67990	68070	80	TCS-3
68250	68310	60	TCS-3

68310	68330	20	TCS-1
68340	68390	50	TCS-5
68410	68430	20	TCS-5
68440	68450	10	TCS-1
68460	68470	10	TCS-7
68510	68520	10	TCS-4
68530	68540	10	TCS-3
68553	68653	100	Bridge
68680	68690	10	TCS-3
68700	68710	10	TCS-4
68720	68730	10	TCS-6
68800	68840	40	TCS-6
68850	68930	80	TCS-1
68950	68960	10	TCS-5
69030	69060	30	TCS-1
69070	69400	330	TCS-1
69460	69700	240	TCS-1
69790	69810	20	TCS-1
69840	69920	80	TCS-5
69940	69971	31	TCS-5
70071	70080	9	TCS-3
70180	70210	30	TCS-6
70230	70240	10	TCS-3
70260	70280	20	TCS-3
70320	70340	20	TCS-6
70550	70620	70	TCS-3
70640	70720	80	TCS-3
70960	70970	10	TCS-2
71000	71170	170	TCS-5
71210	71220	10	TCS-2
71270	71280	10	TCS-7
71330	71340	10	TCS-2
71580	71600	20	TCS-4
71610	72060	450	TCS-3
72090	72210	120	TCS-3
72230	72250	20	TCS-3
72260	72270	10	TCS-6
72450	72500	50	TCS-6
72510	72570	60	TCS-1
72580	72610	30	TCS-6
72650	72710	60	TCS-3
72720	72740	20	TCS-4

68330	68340	10	TCS-6
68390	68410	20	TCS-6
68430	68440	10	TCS-6
68450	68460	10	TCS-3
68470	68510	40	TCS-3
68520	68530	10	TCS-10
68540	68553	13	TCS-8
68653	68680	27	TCS-8
68690	68700	10	TCS-1
68710	68720	10	TCS-1
68730	68800	70	TCS-5
68840	68850	10	TCS-2
68930	68950	20	TCS-6
68960	69030	70	TCS-6
69060	69070	10	TCS-6
69400	69460	60	TCS-3
69700	69790	90	TCS-3
69810	69840	30	TCS-6
69920	69940	20	TCS-6
69971	70071	100	Bridge
70080	70180	100	TCS-5
70210	70230	20	TCS-1
70240	70260	20	TCS-1
70280	70320	40	TCS-1
70340	70550	210	TCS-1
70620	70640	20	TCS-1
70720	70960	240	TCS-1
70970	71000	30	TCS-6
71170	71210	40	TCS-6
71220	71270	50	TCS-3
71280	71330	50	TCS-3
71340	71580	240	TCS-6
71600	71610	10	TCS-10
72060	72090	30	TCS-1
72210	72230	20	TCS-7
72250	72260	10	TCS-1
72270	72450	180	TCS-5
72500	72510	10	TCS-2
72570	72580	10	TCS-2
72610	72650	40	TCS-1
72710	72720	10	TCS-10
72740	72760	20	TCS-2

72760	72810	50	TCS-1
72940	72950	10	TCS-10
72990	73000	10	TCS-6
73040	73070	30	TCS-6
73100	73120	20	TCS-3
73130	73180	50	TCS-8
73190	73200	10	TCS-1
73210	73350	140	TCS-5
73420	73430	10	TCS-1
73470	73490	20	TCS-1
73500	73570	70	TCS-6
73590	73620	30	TCS-6
73710	73720	10	TCS-2
73800	73860	60	TCS-1
73870	73900	30	TCS-6
73920	73950	30	TCS-6
73960	73990	30	TCS-3
74010	74020	10	TCS-6
74250	74290	40	TCS-6
74310	74340	30	TCS-3
74350	74380	30	TCS-3
74480	74550	70	TCS-6
74570	74610	40	TCS-6
74650	74680	30	TCS-10
74710	74740	30	TCS-10
74830	74840	10	TCS-8
74850	74860	10	TCS-10
74890	74920	30	TCS-6
75270	75360	90	TCS-6
75380	75390	10	TCS-10
75640	75650	10	TCS-10
75670	75760	90	TCS-6
75810	75830	20	TCS-6
75840	76030	190	TCS-3
76050	76090	40	TCS-6
76110	76130	20	TCS-3
76140	76230	90	TCS-4
76440	76450	10	TCS-10
76570	76600	30	TCS-5
76630	76640	10	TCS-10
76670	76680	10	TCS-1
76690	76700	10	TCS-6

72810	72940	130	TCS-3
72950	72990	40	TCS-4
73000	73040	40	TCS-5
73070	73100	30	TCS-1
73120	73130	10	TCS-7
73180	73190	10	TCS-3
73200	73210	10	TCS-6
73350	73420	70	TCS-6
73430	73470	40	TCS-3
73490	73500	10	TCS-2
73570	73590	20	TCS-5
73620	73710	90	TCS-1
73720	73800	80	TCS-6
73860	73870	10	TCS-2
73900	73920	20	TCS-5
73950	73960	10	TCS-1
73990	74010	20	TCS-1
74020	74250	230	TCS-5
74290	74310	20	TCS-4
74340	74350	10	TCS-10
74380	74480	100	TCS-4
74550	74570	20	TCS-4
74610	74650	40	TCS-4
74680	74710	30	TCS-3
74740	74830	90	TCS-3
74840	74850	10	TCS-7
74860	74890	30	TCS-4
74920	75270	350	TCS-5
75360	75380	20	TCS-4
75390	75640	250	TCS-3
75650	75670	20	TCS-4
75760	75810	50	TCS-5
75830	75840	10	TCS-4
76030	76050	20	TCS-10
76090	76110	20	TCS-10
76130	76140	10	TCS-10
76230	76440	210	TCS-3
76450	76570	120	TCS-6
76600	76630	30	TCS-6
76640	76670	30	TCS-3
76680	76690	10	TCS-2
76700	76940	240	TCS-5

76940	77110	170	TCS-6
77120	77200	80	TCS-1
77260	77280	20	TCS-7
77310	77330	20	TCS-3
77350	77640	290	TCS-5
77760	77870	110	TCS-5
78000	78130	130	TCS-5
78160	78240	80	TCS-5
78250	78350	100	Bridge
78360	78370	10	TCS-6
78470	78510	40	TCS-6
78570	78590	20	TCS-6
78620	78630	10	TCS-10
78660	78670	10	TCS-7
78680	78690	10	TCS-7
78740	78750	10	TCS-4
78760	78770	10	TCS-3
78780	78820	40	TCS-4
78830	78850	20	TCS-4
78990	79040	50	TCS-4
79050	79290	240	TCS-3
79330	79610	280	TCS-3
79630	79660	30	TCS-4
79670	79680	10	TCS-4
79690	79830	140	TCS-3
79850	79870	20	TCS-10
79970	80000	30	TCS-7
80060	80070	10	TCS-4
80080	80120	40	TCS-3
80130	80150	20	TCS-3
80160	80190	30	TCS-6
80200	80210	10	TCS-1
80430	80440	10	TCS-10
80500	80580	80	TCS-6
80600	80610	10	TCS-10
80640	80650	10	TCS-8
80660	80680	20	TCS-3
80700	80860	160	TCS-5
80950	80960	10	TCS-2
81020	81050	30	TCS-8
81070	81080	10	TCS-4
81170	81210	40	TCS-4

77110	77120	10	TCS-2
77200	77260	60	TCS-3
77280	77310	30	TCS-8
77330	77350	20	TCS-6
77640	77760	120	TCS-6
77870	78000	130	TCS-6
78130	78160	30	TCS-6
78240	78250	10	TCS-3
78350	78360	10	TCS-8
78370	78470	100	TCS-5
78510	78570	60	TCS-5
78590	78620	30	TCS-4
78630	78660	30	TCS-3
78670	78680	10	TCS-8
78690	78740	50	TCS-3
78750	78760	10	TCS-10
78770	78780	10	TCS-10
78820	78830	10	TCS-10
78850	78990	140	TCS-6
79040	79050	10	TCS-10
79290	79330	40	TCS-10
79610	79630	20	TCS-10
79660	79670	10	TCS-6
79680	79690	10	TCS-10
79830	79850	20	TCS-4
79870	79970	100	TCS-3
80000	80060	60	TCS-3
80070	80080	10	TCS-10
80120	80130	10	TCS-10
80150	80160	10	TCS-10
80190	80200	10	TCS-2
80210	80430	220	TCS-3
80440	80500	60	TCS-4
80580	80600	20	TCS-4
80610	80640	30	TCS-3
80650	80660	10	TCS-7
80680	80700	20	TCS-6
80860	80950	90	TCS-6
80960	81020	60	TCS-3
81050	81070	20	TCS-3
81080	81170	90	TCS-6
81210	81220	10	TCS-10

81220	81260	40	TCS-3
81280	81290	10	TCS-4
81300	81340	40	TCS-3
81350	81370	20	TCS-4
81380	81400	20	TCS-4
81410	81450	40	TCS-3
81460	81470	10	TCS-8
81500	81530	30	TCS-6
81560	81570	10	TCS-2
81590	81610	20	TCS-2
81640	81730	90	TCS-6
81770	81800	30	TCS-3
81810	81830	20	TCS-6
81840	81870	30	TCS-6
81880	81980	100	TCS-3
81990	82040	50	TCS-6

81260	81280	20	TCS-10
81290	81300	10	TCS-10
81340	81350	10	TCS-10
81370	81380	10	TCS-6
81400	81410	10	TCS-10
81450	81460	10	TCS-7
81470	81500	30	TCS-3
81530	81560	30	TCS-1
81570	81590	20	TCS-6
81610	81640	30	TCS-1
81730	81770	40	TCS-2
81800	81810	10	TCS-2
81830	81840	10	TCS-2
81870	81880	10	TCS-10
81980	81990	10	TCS-4
82040	82060	20	TCS-5

3.0 INTERSECTIONS AND GRADE SEPARATORS

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

[Refer to the provision of relevant Manual]

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

(i) At-grade Intersections

Sl. No	CHAINAGE	TYPE	SIDE	CONNECTING PLACES
Nil				

(ii) Grade Separated Intersection With/Without Ramps

S. 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

The existing road shall be raised in the following sections:

Sr. No.	Section (From km to Km)	Length	Extent of raising [Top of finished road level]
Nil			

5. PAVEMENT DESIGN

(i) Pavement design following composition shall be adopted for the project road: 20mm – MSS, 50mm – DBM, 150mm – WMM, 100mm – GSB as drainage layer.

(ii) Type of pavement

Flexible Payment shall be adopted for this project.

(iii) Design requirements

(a) Design Period and strategy

deleted

(b) Design Traffic

Deleted

(iv) Reconstruction of stretches
[Refer to the provision of relevant Manual]

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

Sl. No	Chainage From	Chainage To	Length (m)	Proposal
Nil				

6. ROADSIDE DRAINAGE

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

Sr. No.	Length (Except CD structures)	Side of construction	
	(m)	Hill	Remarks
1	26294	Stone masonry with cement mortar Open Drain	As per TCS
2	19610	Catch water Drain	

7. DESIGN OF STRUCTURES

(i) General

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

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

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

All new structures shall have minimum carriageway as per Manual.

Sl. No.	Bridge at km	Width of carriageway and cross-sectional features
1	40+677	Deck width of bridge: 12.0m, Footpath: 1.5 m on both sides, Safety crash barriers: 450 mm RCC on both sides, Railing: 300mm RCC on both side
2	43+443	
3	51+329	
4	52+134	
5	56+074	
6	63+363	
7	65+094	
8	66+759	
9	68+603	
10	70+021	
11	78+300	

(c) Following structures shall be provided with footpaths:

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

Sl. No.	Bridge at km	Footpath
1	40+677	Footpath: 1.5 m on both sides
2	43+443	
3	51+329	
4	52+134	
5	56+074	
6	63+363	
7	65+094	
8	66+759	
9	68+603	
10	70+021	
11	78+300	

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

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

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

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

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 the provisions of relevant Manual.

(ii) Culverts

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

(b) Reconstruction of existing culverts:
The existing culverts at the following locations shall be re-constructed as new culverts:

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

Sl. No.	Culvert Location	Span/Opening (m)	Remarks if any
Nil			

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

Sl. No.	Culvert location	Span/ Opening	Remarks, if any
Nil			

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

S no	Design CH	Nos	Length	Height	Size
1	40+125	1	2	2	1 X 2.0 X 2.0
2	40+270	1	2	2	1 X 2.0 X 2.0
3	40+350	1	2	2	1 X 2.0 X 2.0
4	41+250	1	2	2	1 X 2.0 X 2.0
5	41+700	1	2	2	1 X 2.0 X 2.0
6	41+900	1	2	2	1 X 2.0 X 2.0
7	42+000	1	2	2	1 X 2.0 X 2.0
8	42+310	1	2	2	1 X 2.0 X 2.0
9	42+970	1	2	2	1 X 2.0 X 2.0
10	43+150	1	2	2	1 X 2.0 X 2.0
11	43+600	1	2	2	1 X 2.0 X 2.0
12	43+720	1	2	2	1 X 2.0 X 2.0
13	43+800	1	2	2	1 X 2.0 X 2.0
14	44+170	1	2	2	1 X 2.0 X 2.0
15	44+350	1	2	2	1 X 2.0 X 2.0
16	44+850	1	2	2	1 X 2.0 X 2.0
17	45+000	1	2	2	1 X 2.0 X 2.0
18	45+175	1	2	2	1 X 2.0 X 2.0
19	45+350	1	2	2	1 X 2.0 X 2.0
20	45+900	1	2	2	1 X 2.0 X 2.0
21	45+980	1	2	2	1 X 2.0 X 2.0
22	46+250	1	2	2	1 X 2.0 X 2.0
23	46+350	1	2	2	1 X 2.0 X 2.0
24	46+560	1	2	2	1 X 2.0 X 2.0
25	46+715	1	2	2	1 X 2.0 X 2.0
26	46+830	1	2	2	1 X 2.0 X 2.0
27	46+980	1	3	3	1 X 3.0 X 3.0
28	47+080	1	2	2	1 X 2.0 X 2.0
29	47+340	1	2	2	1 X 2.0 X 2.0
30	47+450	1	2	2	1 X 2.0 X 2.0
31	47+675	1	2	2	1 X 2.0 X 2.0
32	48+080	1	2	2	1 X 2.0 X 2.0
33	48+230	1	2	2	1 X 2.0 X 2.0
34	48+435	1	2	2	1 X 2.0 X 2.0
35	48+555	1	2	2	1 X 2.0 X 2.0
36	48+755	1	2	2	1 X 2.0 X 2.0
37	48+805	1	3	3	1 X 3.0 X 3.0
38	49+040	1	2	2	1 X 2.0 X 2.0
39	49+185	1	2	2	1 X 2.0 X 2.0
40	49+275	1	2	2	1 X 2.0 X 2.0
41	49+300	1	2	2	1 X 2.0 X 2.0
42	49+655	1	2	2	1 X 2.0 X 2.0

43	49+750	1	3	3	1 X 3.0 X 3.0
44	49+830	1	2	2	1 X 2.0 X 2.0
45	49+980	1	2	2	1 X 2.0 X 2.0
46	50+230	1	2	2	1 X 2.0 X 2.0
47	50+280	1	2	2	1 X 2.0 X 2.0
48	50+520	1	2	2	1 X 2.0 X 2.0
49	50+600	1	2	2	1 X 2.0 X 2.0
50	50+930	1	2	2	1 X 2.0 X 2.0
51	50+980	1	2	2	1 X 2.0 X 2.0
52	51+545	1	2	2	1 X 2.0 X 2.0
53	51+665	1	2	2	1 X 2.0 X 2.0
54	51+770	1	2	2	1 X 2.0 X 2.0
55	52+690	1	2	2	1 X 2.0 X 2.0
56	52+740	1	2	2	1 X 2.0 X 2.0
57	53+100	1	2	2	1 X 2.0 X 2.0
58	53+220	1	2	2	1 X 2.0 X 2.0
59	53+260	1	2	2	1 X 2.0 X 2.0
60	53+300	1	2	2	1 X 2.0 X 2.0
61	53+620	1	2	2	1 X 2.0 X 2.0
62	53+720	1	2	2	1 X 2.0 X 2.0
63	54+615	1	2	2	1 X 2.0 X 2.0
64	54+770	1	2	2	1 X 2.0 X 2.0
65	54+865	1	2	2	1 X 2.0 X 2.0
66	54+965	1	2	2	1 X 2.0 X 2.0
67	55+365	1	2	2	1 X 2.0 X 2.0
68	55+560	1	2	2	1 X 2.0 X 2.0
69	55+585	1	2	2	1 X 2.0 X 2.0
70	55+645	1	2	2	1 X 2.0 X 2.0
71	55+700	1	2	2	1 X 2.0 X 2.0
72	55+865	1	2	2	1 X 2.0 X 2.0
73	55+940	1	2	2	1 X 2.0 X 2.0
74	56+855	1	2	2	1 X 2.0 X 2.0
75	56+415	1	2	2	1 X 2.0 X 2.0
76	57+275	1	2	2	1 X 2.0 X 2.0
77	57+325	1	2	2	1 X 2.0 X 2.0
78	57+605	1	2	2	1 X 2.0 X 2.0
79	57+905	1	2	2	1 X 2.0 X 2.0
80	58+165	1	2	2	1 X 2.0 X 2.0
81	58+555	1	2	2	1 X 2.0 X 2.0
82	59+525	1	2	2	1 X 2.0 X 2.0
83	59+610	1	2	2	1 X 2.0 X 2.0
84	59+785	1	2	2	1 X 2.0 X 2.0
85	59+970	1	2	2	1 X 2.0 X 2.0
86	60+190	1	2	2	1 X 2.0 X 2.0
87	60+375	1	2	2	1 X 2.0 X 2.0
88	60+430	1	2	2	1 X 2.0 X 2.0
89	60+750	1	2	2	1 X 2.0 X 2.0
90	61+310	1	2	2	1 X 2.0 X 2.0
91	61+680	1	2	2	1 X 2.0 X 2.0
92	61+810	1	2	2	1 X 2.0 X 2.0
93	61+900	1	2	2	1 X 2.0 X 2.0

94	62+300	1	2	2	1 X 2.0 X 2.0
95	62+550	1	2	2	1 X 2.0 X 2.0
96	62+740	1	2	2	1 X 2.0 X 2.0
97	62+950	1	3	3	1 X 3.0 X 3.0
98	63+095	1	2	2	1 X 2.0 X 2.0
99	63+880	1	2	2	1 X 2.0 X 2.0
100	64+115	1	2	2	1 X 2.0 X 2.0
101	64+155	1	2	2	1 X 2.0 X 2.0
102	64+445	1	2	2	1 X 2.0 X 2.0
103	64+625	1	2	2	1 X 2.0 X 2.0
104	64+810	1	2	2	1 X 2.0 X 2.0
105	64+860	1	2	2	1 X 2.0 X 2.0
106	65+275	1	2	2	1 X 2.0 X 2.0
107	65+330	1	2	2	1 X 2.0 X 2.0
108	65+410	1	2	2	1 X 2.0 X 2.0
109	65+475	1	2	2	1 X 2.0 X 2.0
110	65+660	1	2	2	1 X 2.0 X 2.0
111	65+760	1	2	2	1 X 2.0 X 2.0
112	65+890	1	2	2	1 X 2.0 X 2.0
113	65+925	1	2	2	1 X 2.0 X 2.0
114	66+005	1	2	2	1 X 2.0 X 2.0
115	66+290	1	2	2	1 X 2.0 X 2.0
116	66+430	1	2	2	1 X 2.0 X 2.0
117	66+470	1	2	2	1 X 2.0 X 2.0
118	66+855	1	2	2	1 X 2.0 X 2.0
119	67+175	1	2	2	1 X 2.0 X 2.0
120	67+280	1	2	2	1 X 2.0 X 2.0
121	67+360	1	2	2	1 X 2.0 X 2.0
122	67+570	1	2	2	1 X 2.0 X 2.0
123	67+885	1	2	2	1 X 2.0 X 2.0
124	68+015	1	2	2	1 X 2.0 X 2.0
125	68+170	1	2	2	1 X 2.0 X 2.0
126	68+270	1	2	2	1 X 2.0 X 2.0
127	68+455	1	3	3	1 X 3.0 X 3.0
128	68+705	1	3	3	1 X 3.0 X 3.0
129	69+420	1	2	2	1 X 2.0 X 2.0
130	69+545	1	2	2	1 X 2.0 X 2.0
131	69+680	1	2	2	1 X 2.0 X 2.0
132	69+745	1	2	2	1 X 2.0 X 2.0
133	70+230	1	2	2	1 X 2.0 X 2.0
134	70+275	1	2	2	1 X 2.0 X 2.0
135	70+365	1	2	2	1 X 2.0 X 2.0
136	70+545	1	2	2	1 X 2.0 X 2.0
137	70+690	1	2	2	1 X 2.0 X 2.0
138	70+745	1	2	2	1 X 2.0 X 2.0
139	71+270	1	2	2	1 X 2.0 X 2.0
140	71+370	1	2	2	1 X 2.0 X 2.0
141	71+645	1	2	2	1 X 2.0 X 2.0
142	71+820	1	2	2	1 X 2.0 X 2.0
143	71+985	1	2	2	1 X 2.0 X 2.0
144	72+115	1	2	2	1 X 2.0 X 2.0

145	72+225	1	2	2	1 X 2.0 X 2.0
146	72+315	1	2	2	1 X 2.0 X 2.0
147	72+415	1	2	2	1 X 2.0 X 2.0
148	72+535	1	2	2	1 X 2.0 X 2.0
149	72+745	1	2	2	1 X 2.0 X 2.0
150	72+885	1	2	2	1 X 2.0 X 2.0
151	73+145	1	2	2	1 X 2.0 X 2.0
152	73+230	1	2	2	1 X 2.0 X 2.0
153	73+510	1	2	2	1 X 2.0 X 2.0
154	73+590	1	2	2	1 X 2.0 X 2.0
155	73+830	1	2	2	1 X 2.0 X 2.0
156	73+940	1	2	2	1 X 2.0 X 2.0
157	74+080	1	2	2	1 X 2.0 X 2.0
158	74+210	1	2	2	1 X 2.0 X 2.0
159	74+325	1	2	2	1 X 2.0 X 2.0
160	74+580	1	2	2	1 X 2.0 X 2.0
161	74+820	1	2	2	1 X 2.0 X 2.0
162	74+920	1	2	2	1 X 2.0 X 2.0
163	75+835	1	2	2	1 X 2.0 X 2.0
164	75+160	1	2	2	1 X 2.0 X 2.0
165	75+230	1	2	2	1 X 2.0 X 2.0
166	75+525	1	2	2	1 X 2.0 X 2.0
167	75+640	1	2	2	1 X 2.0 X 2.0
168	75+760	1	2	2	1 X 2.0 X 2.0
169	76+110	1	2	2	1 X 2.0 X 2.0
170	76+320	1	2	2	1 X 2.0 X 2.0
171	76+550	1	2	2	1 X 2.0 X 2.0
172	76+850	1	2	2	1 X 2.0 X 2.0
173	77+050	1	2	2	1 X 2.0 X 2.0
174	77+250	1	2	2	1 X 2.0 X 2.0
175	77+420	1	3	3	1 X 3.0 X 3.0
176	77+535	1	2	2	1 X 2.0 X 2.0
177	77+650	1	2	2	1 X 2.0 X 2.0
178	77+850	1	2	2	1 X 2.0 X 2.0
179	77+995	1	2	2	1 X 2.0 X 2.0
180	78+675	1	2	2	1 X 2.0 X 2.0
181	78+720	1	2	2	1 X 2.0 X 2.0
182	78+750	1	2	2	1 X 2.0 X 2.0
183	79+080	1	2	2	1 X 2.0 X 2.0
184	79+210	1	2	2	1 X 2.0 X 2.0
185	79+440	1	2	2	1 X 2.0 X 2.0
186	79+725	1	2	2	1 X 2.0 X 2.0
187	79+990	1	2	2	1 X 2.0 X 2.0
188	80+295	1	2	2	1 X 2.0 X 2.0
189	80+375	1	2	2	1 X 2.0 X 2.0
190	80+640	1	2	2	1 X 2.0 X 2.0
191	80+735	1	2	2	1 X 2.0 X 2.0
192	81+020	1	3	3	1 X 3.0 X 3.0
193	81+125	1	2	2	1 X 2.0 X 2.0
194	81+390	1	2	2	1 X 2.0 X 2.0
195	81+450	1	2	2	1 X 2.0 X 2.0

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

Sr. 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 to the provision of relevant Manual]

S. No.	Location	Existing Width (m)	Existing Width of Culvert	Cross section at Deck Level for widening @
Nil				

***Attach GAD**

(ii) The following narrow bridges shall be widened:

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

@Attach cross section

(b) Additional New Bridges

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

S. No.	Chainage	Proposal	Span (No. X Length in m)	Total Length (m)	Width of CW (m)	Deck Width (m)	Superstructure
1	40+677	New	1 X 80	80	7.5	12	Steel Truss
2	43+443	New	1 X 35+1 X 100+1 X 35	170	7.5	12	Steel Girder
3	51+329	New	1 X 80	80	7.5	12	Steel Truss

4	52+134	New	1 X 100	100	7.5	12	Steel Truss
5	56+074	New	1 X 100	100	7.5	12	Steel Truss
6	63+363	New	1 X 100	100	7.5	12	Steel Truss
7	65+094	New	1 X 100	100	7.5	12	Steel Truss
8	66+759	New	1 X 80	80	7.5	12	Steel Truss
9	68+603	New	1 X 100	100	7.5	12	Steel Truss
10	70+021	New	1 X 100	100	7.5	12	Steel Truss
11	78+300	New	1 X 100	100	7.5	12	Steel Truss

***GAD attached**

(c) The railings of existing bridges shall be replaced by crash barriers at the following Locations.
[Refer to the provision of relevant Manual]

Sr. No.	Location at Km	Remarks
Nil		

(d) Repairs/replacements of railing/parapets of the existing bridges shall be undertaken as follows:
[Refer to the provision of relevant Manual]

Sr. 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 the provision of relevant Manual

(f) Structures in marine environment

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

(iv) Rail-road Bridges

(a) Design, construction and detailing of ROB/RUB shall be as specified in provisions of relevant Manual.

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

S. No.	Design Chainage (km)	Span Arrangement / length of span in m	Remark
NIL			

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

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

(v) Grade Separated Structures

[Refer to the provision of relevant Manual]

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

(vi) Repairs and Strengthening of Bridges of Structures

[Refer to the provision of relevant Manual]

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

(a) Bridges

S. No.	Location of bridge (km)	Nature and extent of repairs/ strengthening to be carried out
	Design Chainage	
NIL		

(b) – ROB / RUB

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

(c) – Overpasses/Underpasses and other structures

S. No.	Location of bridge (km)	Nature and extent of repairs/ strengthening to be carried out
	Design Chainage	
NIL		

(vii) List of Major Bridges and Structures

The following is the list of the Major Bridges and structures to be constructed:

Sr. No.	Design Chainage
1	40+677
2	43+443
3	51+329
4	52+134
5	56+074
6	63+363
7	65+094
8	66+759

9	68+603
10	70+021
11	78+300

8. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

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

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

9. ROADSIDE FURNITURE

i. Roadside furniture shall be provided in accordance with the provisions of relevant manual.

ii. Overhead traffic signs: - 02 Nos at the following locations. [Refer to the provision of relevant Manual]

10. COMPULSORY AFFORESTATION

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

11. HAZARDOUS LOCATIONS

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

Type of Protection Work			
Protection Work	**Unit**	**Quantity**	**Remarks**
Breast wall	Rm	31188	As per TCS
Retaining wall	Rm	22679	
Parapet wall	Rm	2949	
Crash Barrier	RM	1991	
Hydro seeding	Sqm	336880	
Seeding & Mulching	Sqm	66972	
Soil Nailing at Ch. 65+470-64+490 (B-8m & D-6m) and 81+970-82+060 (B-6 & D-6m)	Rm	4200	

12. Special Requirement for Hill Roads

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

13. CHANGE OF SCOPE

The length of Structures and bridges specified herein above shall be treated as an approximate assessment. The Contractor in accordance with the Specifications and Standards shall determine the actual lengths as required on the basis of detailed investigations. 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.

14. Utility Shifting

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

Note-I:

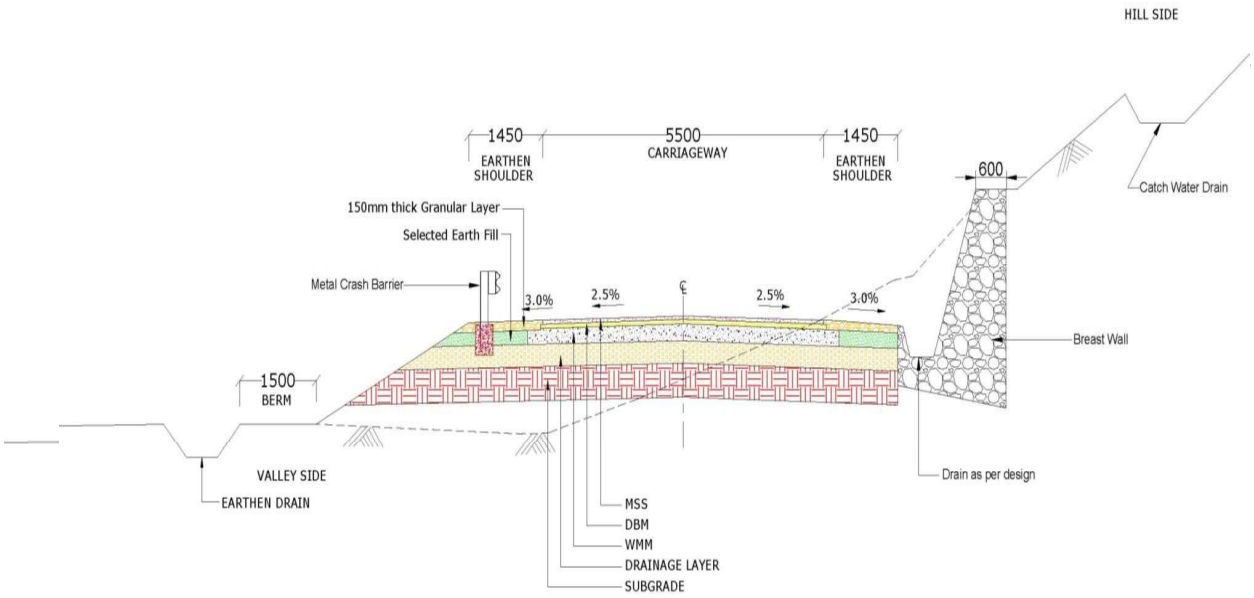
a) The type/spacing/size/specifications of poles/towers/lines/cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the contractor/Concessionaire and the utility owning department. No change of scope shall be admissible and 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.

Appendix-B

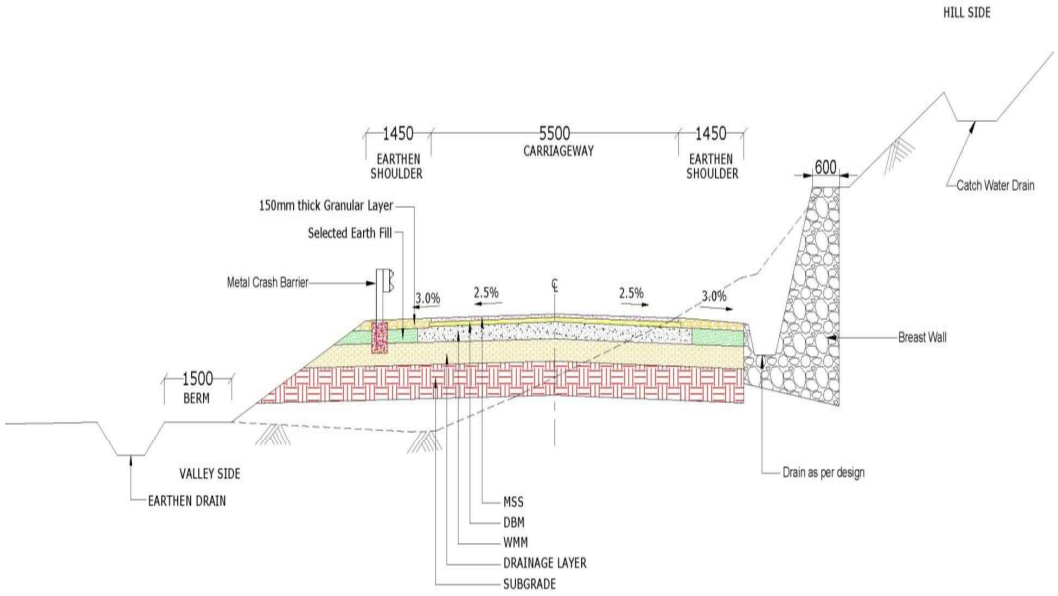


TCS-2, INTERMEDIATE LANE CARRIAGEWAY WITH BREAST WALL ON ONE SIDE

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

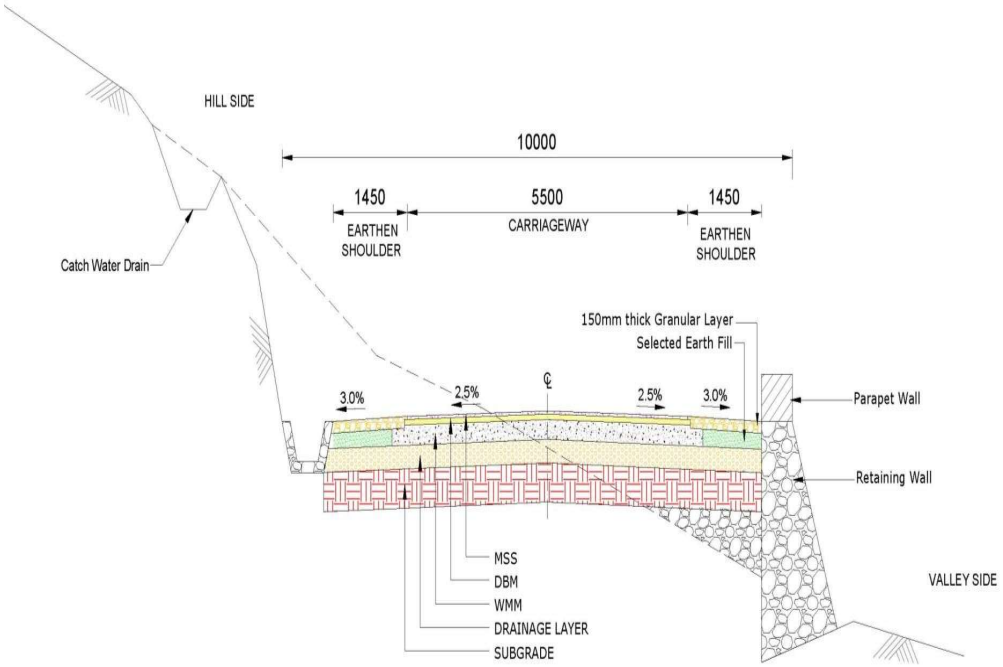
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-2, INTERMEDIATE LANE CARRIAGEWAY WITH BREAST WALL ON ONE SIDE

NOTES:-

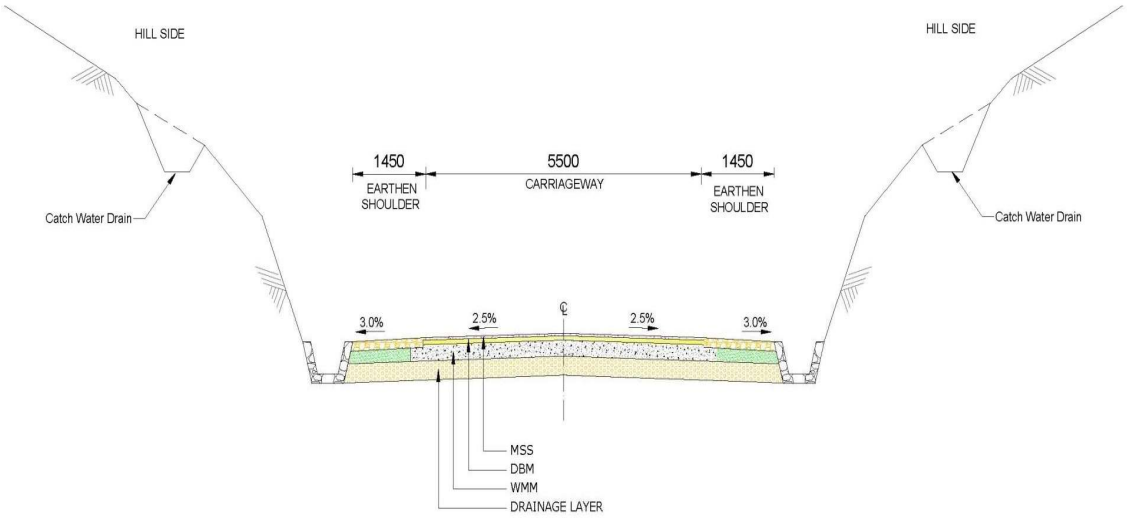
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-3, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE RETAINING WALL & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

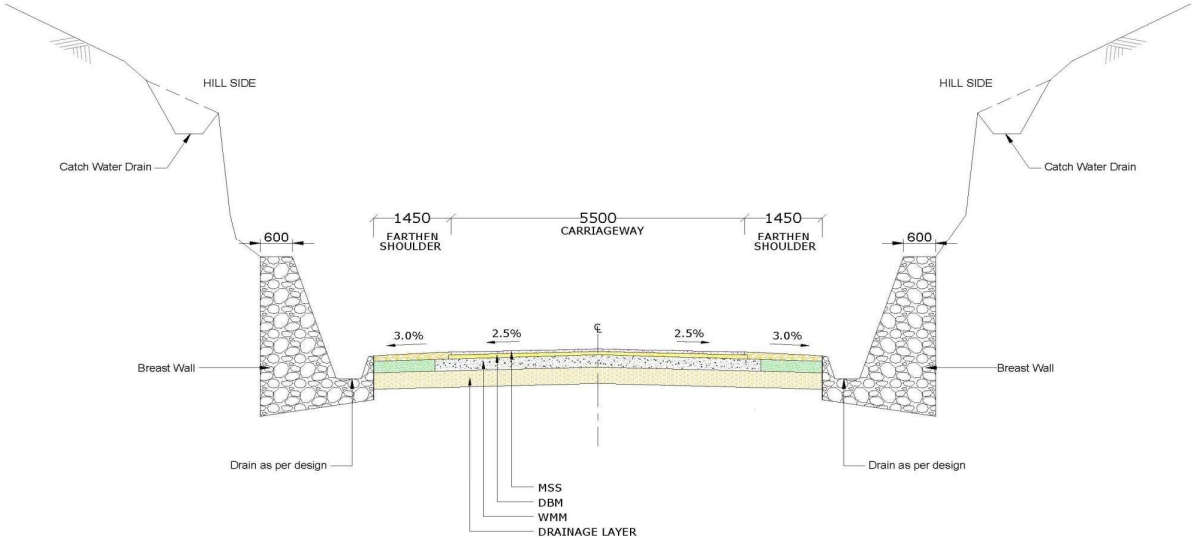
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-4, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

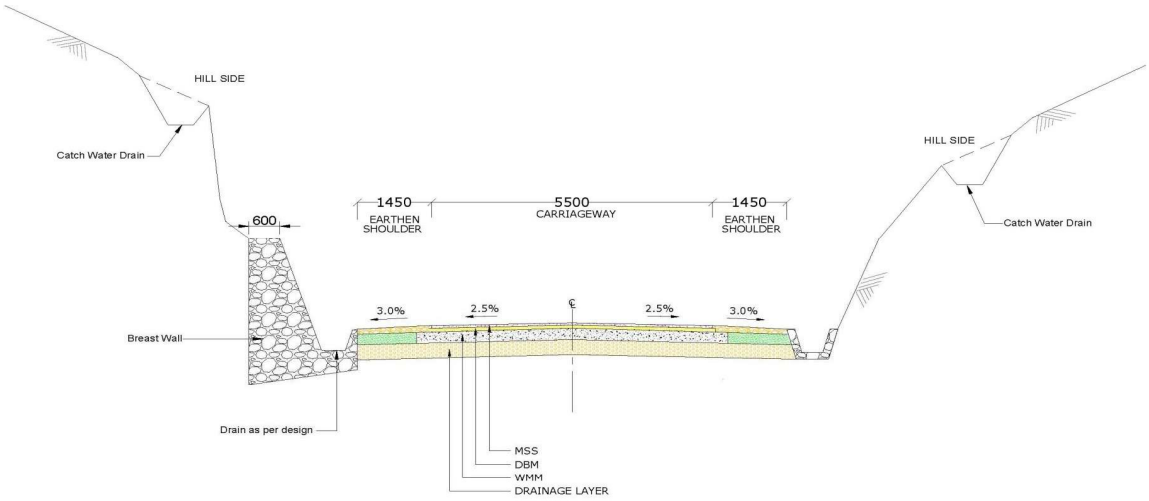
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-5, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE BREAST WALL

NOTES:-

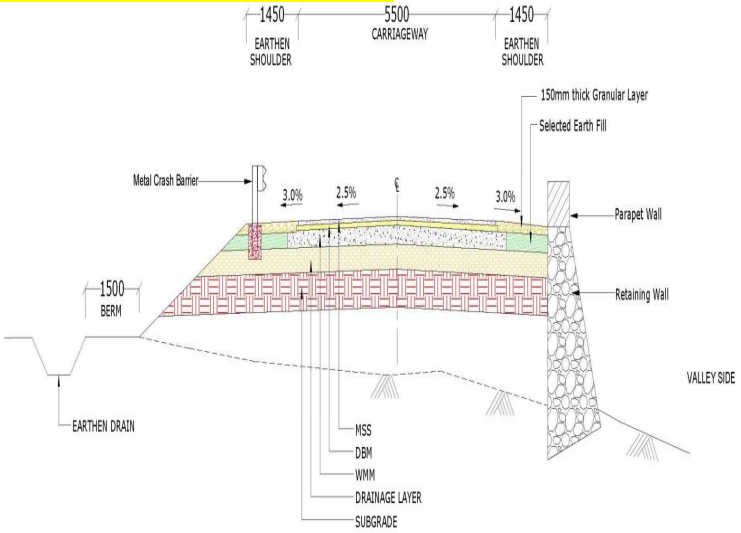
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-6, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE BREAST WALL & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

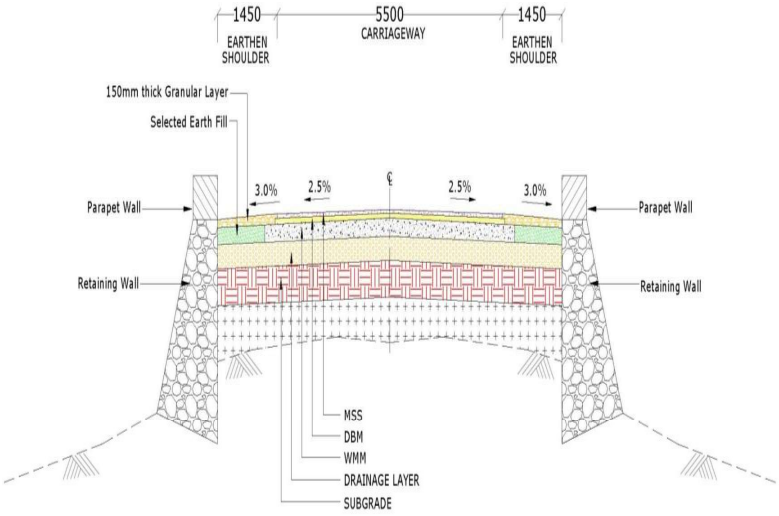
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-7, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE RETAINING WALL

NOTES:-

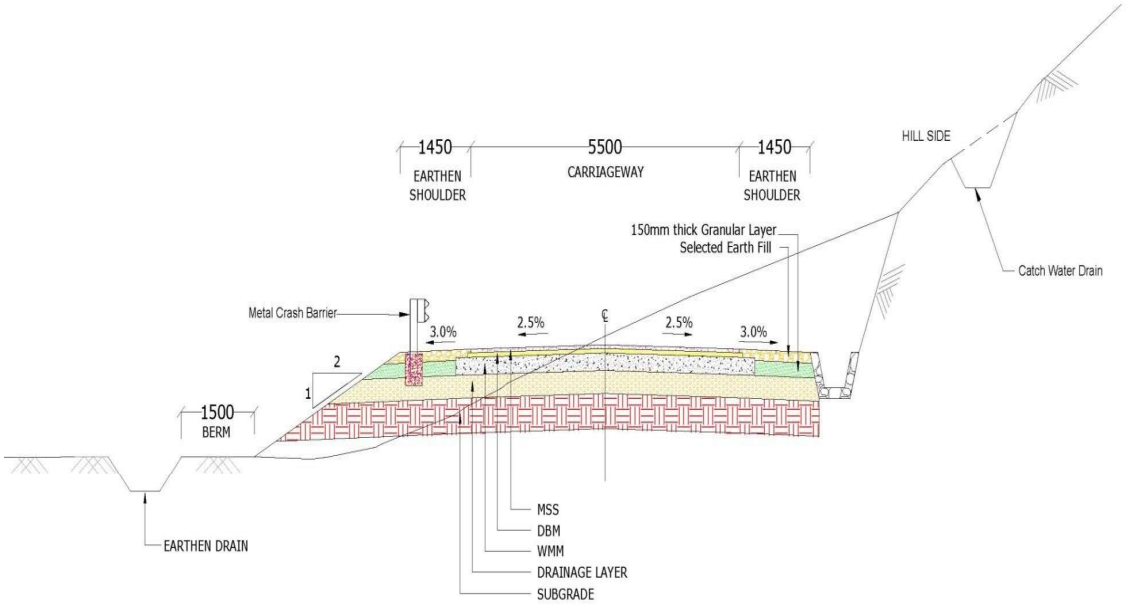
1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.



TCS-8, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE RETAINING WALL

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

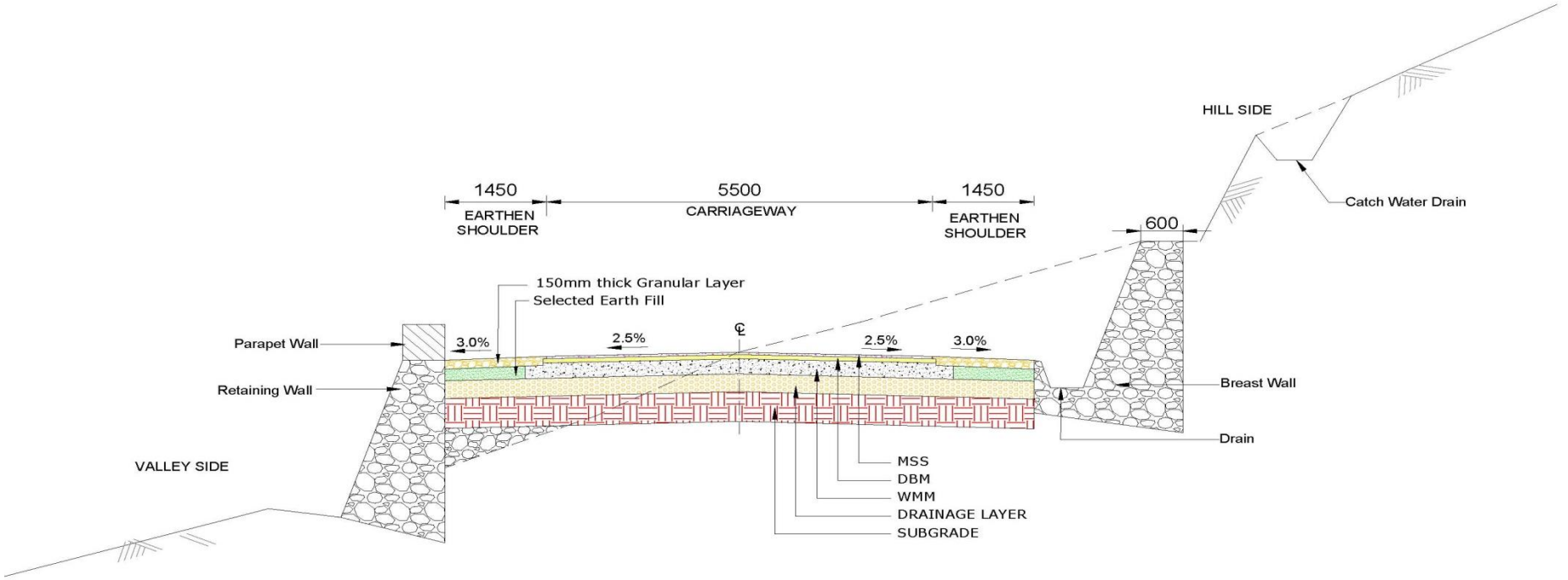


TCS-10 FOR INTERMEDIATE LANE CARRIAGEWAY WITH EARTHEN SHOULDER
VALLEY SIDE & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

Typical Cross-section along the Project Highway

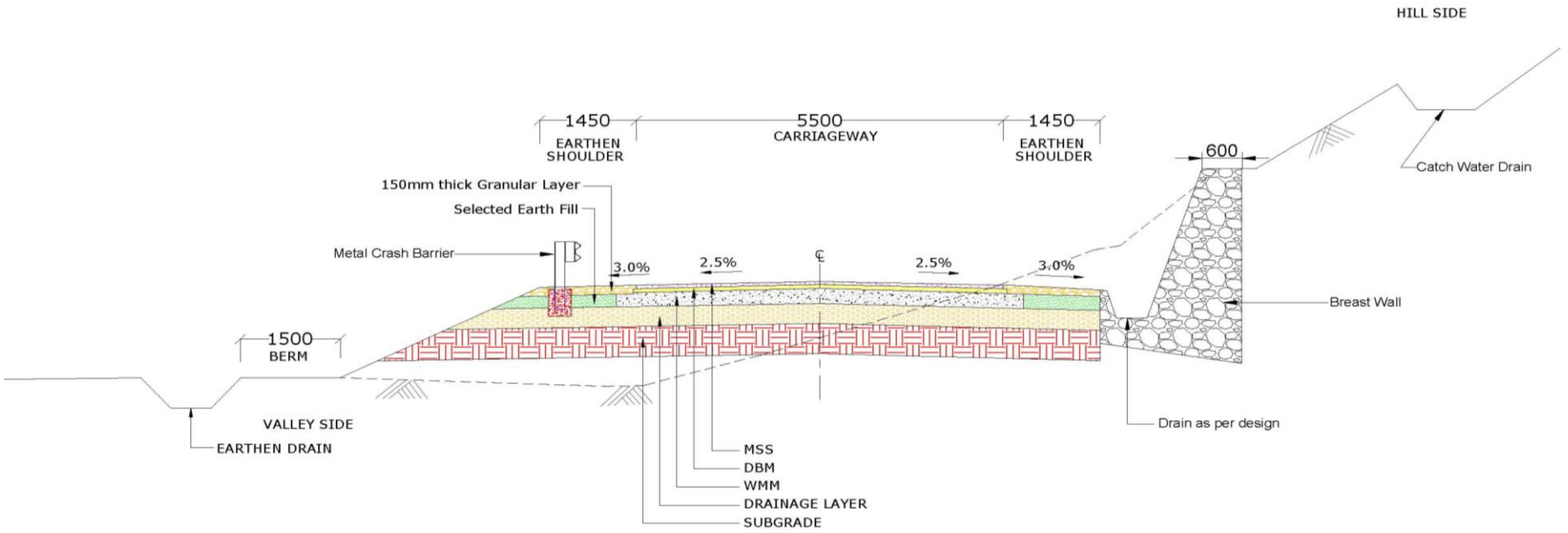


TCS-1, INTERMEDIATE LANE CARRIAGEWAY WITH RETAINING WALL ON ONE SIDE & BREAST WALL ON OTHER SIDE

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-1: Intermediate Lane Carriageway with Retaining Wall on One side & Breast Wall on Other side

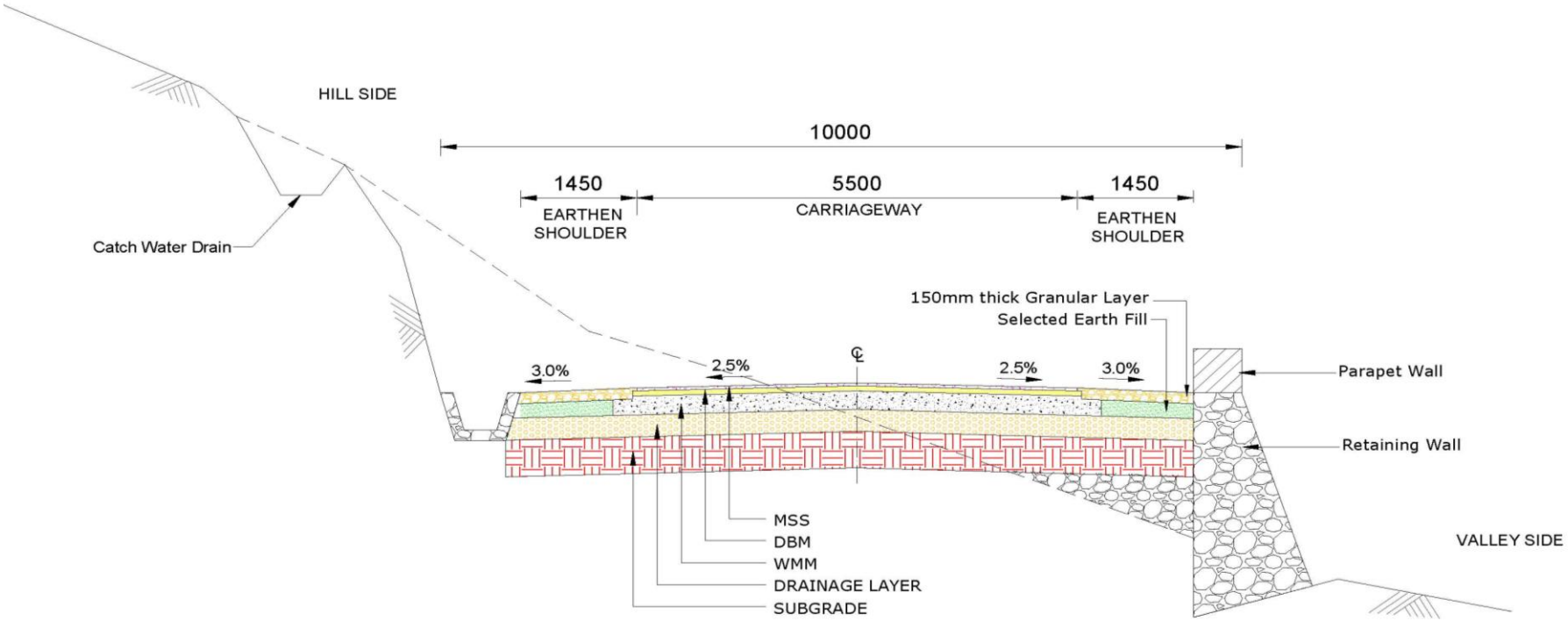


TCS-2, INTERMEDIATE LANE CARRIAGEWAY WITH BREAST WALL ON ONE SIDE

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-2: Intermediate Lane Carriageway with Breast Wall on One side

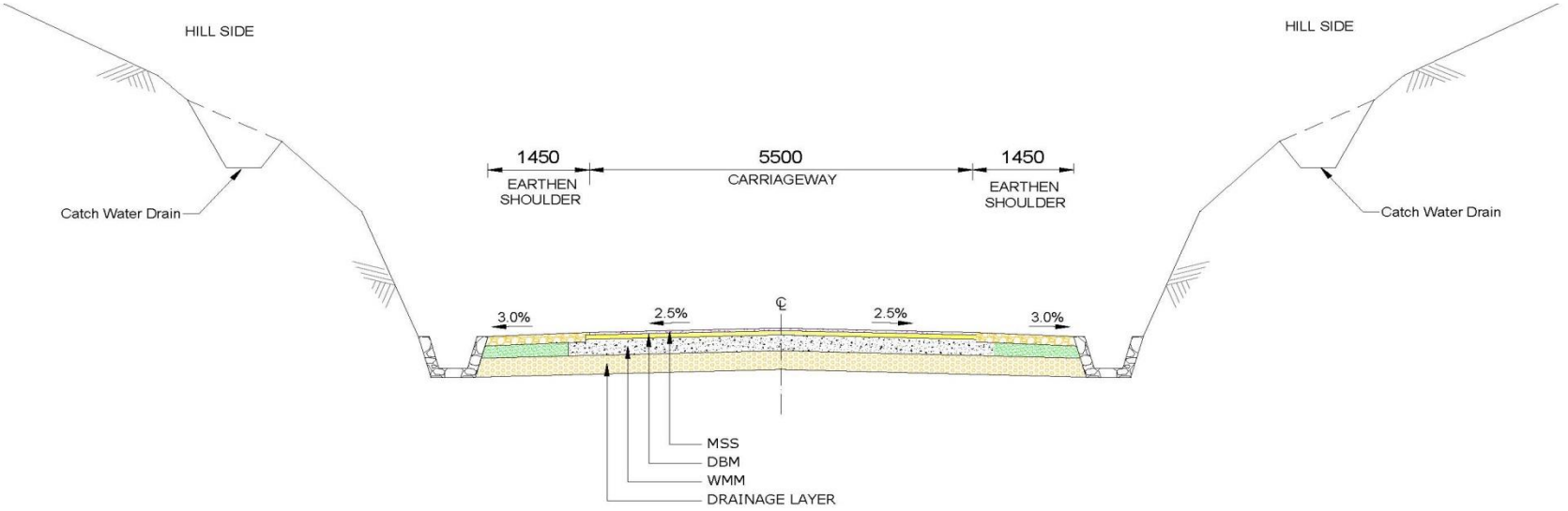


TCS-3, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE RETAINING WALL & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-3: Intermediate Lane Carriageway with One side Retaining Wall & Other Side Trapezoidal Open Drain

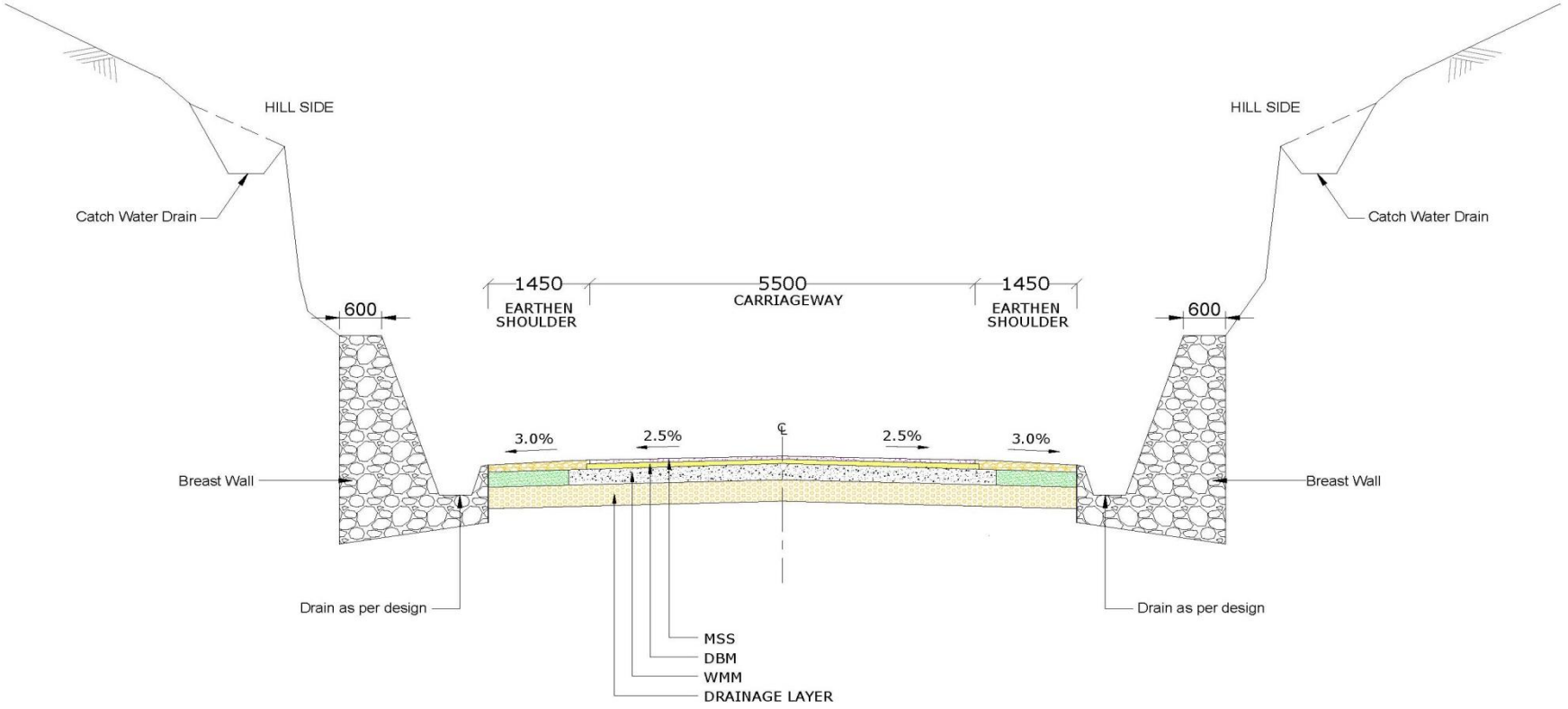


TCS-4, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-4: Intermediate Lane Carriageway with Both Side Trapezoidal Open Drain

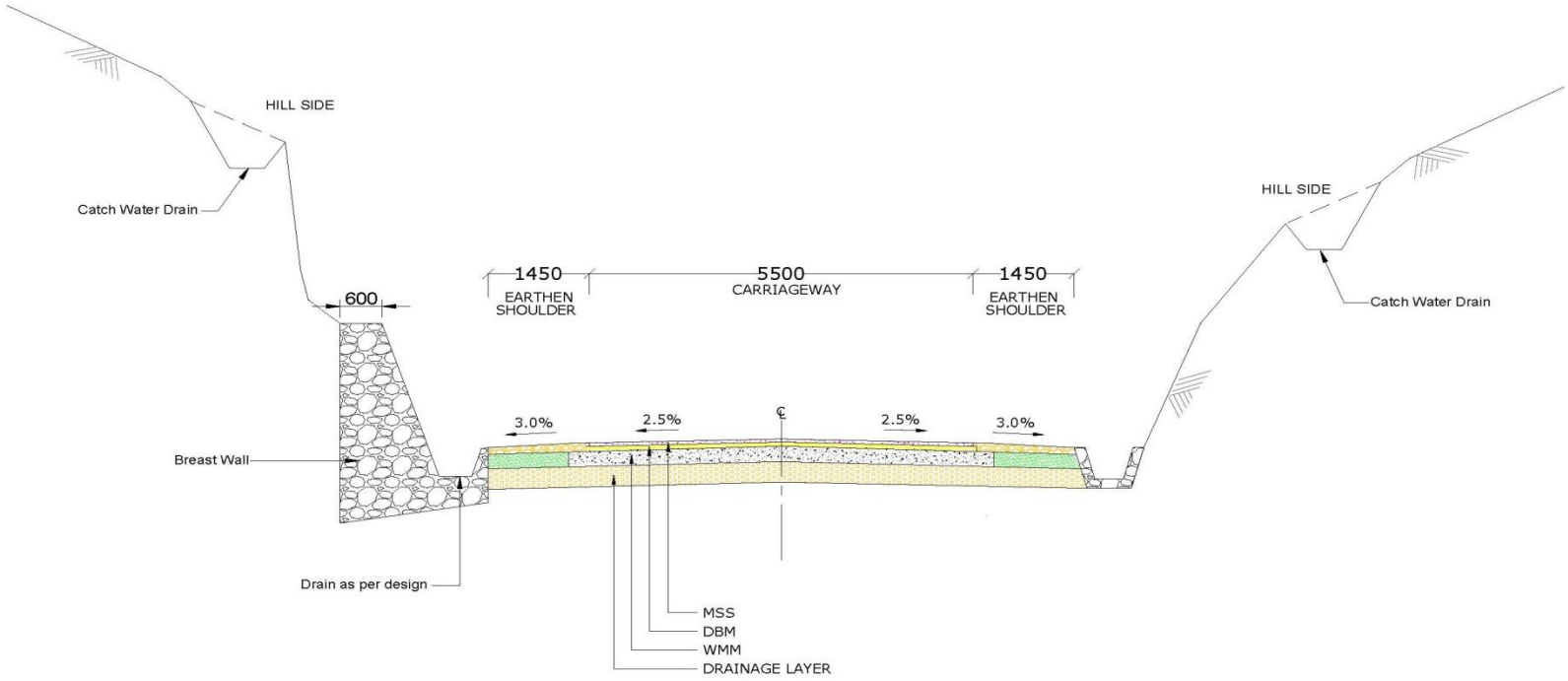


TCS-5, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE BREAST WALL

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-5: Intermediate Lane Carriageway with Both Side Breast Wall

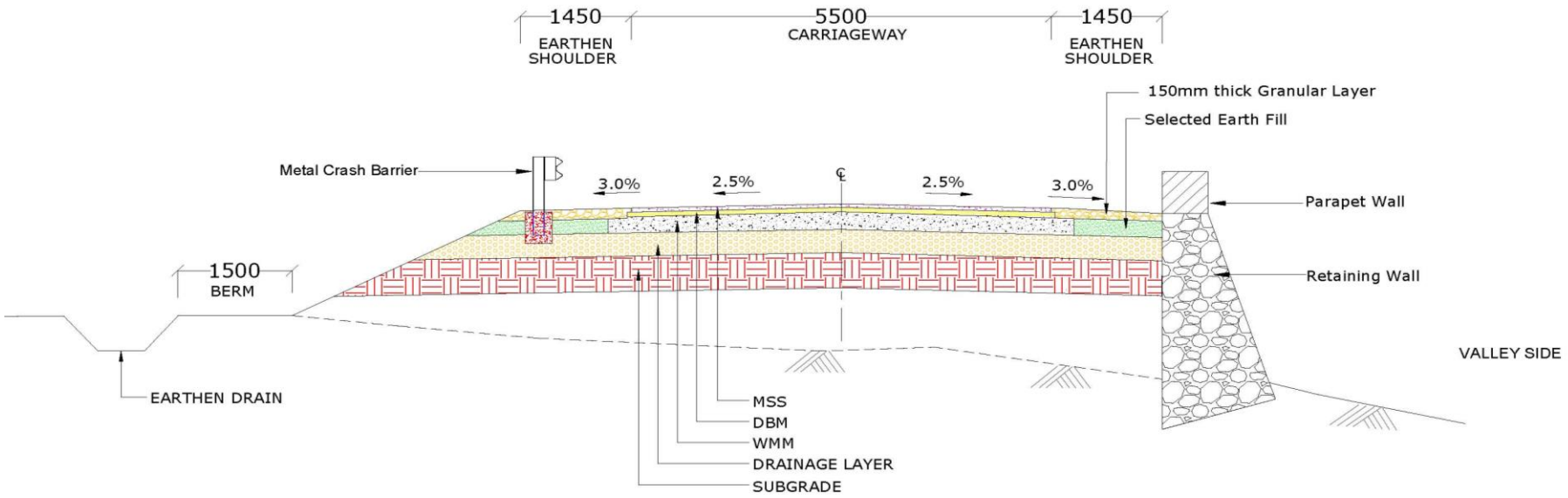


TCS-6, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE BREAST WALL & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-6: Intermediate Lane Carriageway with One Side Breast Wall & Other Side Trapezoidal Open Drain

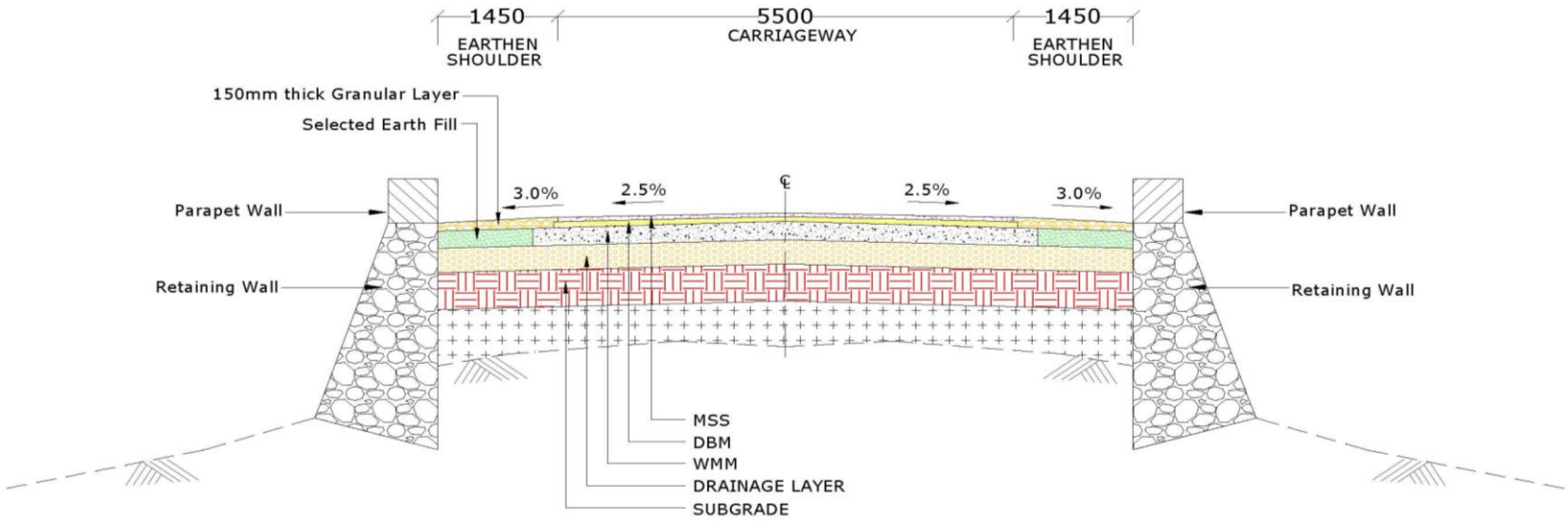


TCS-7, INTERMEDIATE LANE CARRIAGEWAY WITH ONE SIDE RETAINING WALL

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-7: Intermediate Lane Carriageway with One Side Retaining Wall

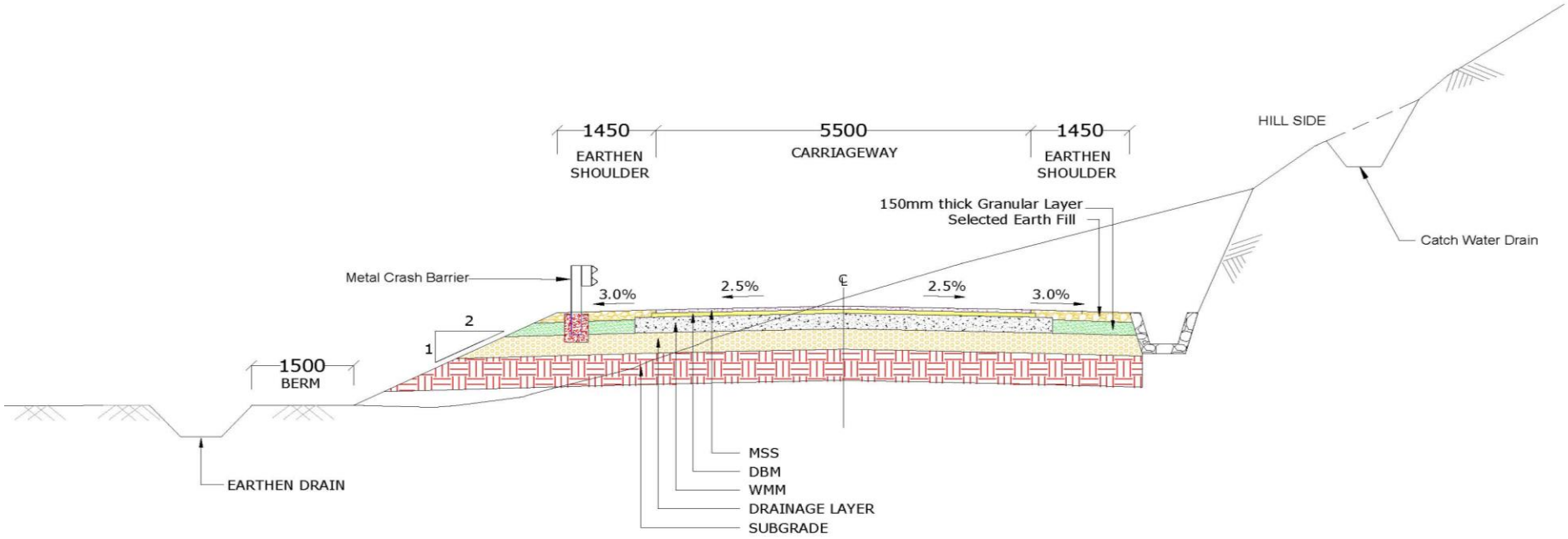


TCS-8, INTERMEDIATE LANE CARRIAGEWAY WITH BOTH SIDE RETAINING WALL

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-8: Intermediate Lane Carriageway with Both Side Retaining Wall



TCS-10 FOR INTERMEDIATE LANE CARRIAGEWAY WITH EARTHEN SHOULDER
VALLEY SIDE & OTHER SIDE TRAPEZOIDAL OPEN DRAIN

NOTES:-

1. ALL DIMENSIONS ARE IN MM FOLLOW WRITTEN DIMENSIONS NOT TO BE SCALED.
2. CROSS SLOPE /SUPER ELEVATION TO BE AS PER HIGHWAY DESIGN.
3. CRUST TO BE AS PER PAVEMENT DESIGN.

TCS-10: For Intermediate Lane Carriageway with Earthen Shoulder Valley Side & Other Side Trapezoidal Open Drain

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 plazas.
(b) Traffic Control Device/Road Safety Device/Roadside furniture.
(c) Pedestrian facilities.
(d) Landscaping and Tree plantation
(e) Truck lay-byes.
(f) Bus-bays and Passenger shelters
(g) Rest areas
(h) Others

2. Description of Project Facilities

Each of the Project Facilities is described below:

(a) Toll Plaza: Nil

(b) Roadside Furniture:

The roadside furniture shall be provided in accordance with section 9.0 of the Manual of the standards and Specifications.

Sl.No.	Project Facility	Location	Design Standard	Other essential details
1	Traffic Sign & Pavement marking	Entire Length(As per Schedule B)	As per manual	
2	Km stone, Hectometer Stone, 5th kilometer stone, boundary stone	Entire Length	As per manual	
3	Roadside Delineator, marker & Road Stud	As per Schedule B	As per manual	
4	Metal beam crash barrier	As per Schedule B	As per manual	
5	Traffic safety devises	Where ever required	As per manual	

(c) Location of Pedestrian Facilities:

Pedestrian facilities in the form of footpath cum drain 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 Authority.

(d) Landscaping & Tree plantation:

Landscaping and Tree plantation shall be done at Major intersection, Muck disposal sites and in van panchayat/nap land of the adjoining villages.

(e) Location of Truck Lay Byes:

Sl. No.	Proposed Chainage (km)
Nil	

(f) Bus –bays and Bus shelters:

As stipulated in section 12.5 of the Manual, Passenger shelters shall be provided. There are total 2 numbers of passenger shelters should be provided on whole stretches.

Note: Above shown numbers of passenger shelter are minimum, however, the location of passenger shelters shall be finalized as per suitability of location and site requirement in consultation with Client. Any change in location or numbers shall not treat as change of scope**.**

(g) Rest areas: Nil

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 Manual of Guidelines for Alignment survey and Geometric design of Hill roads – IRC: 52-2019 and Hill road manual IRC: SP 48 - 1998 and IRC SP 73-2018 referred to as the Manual, and MORTH Specifications for Road and Bridge Works 5th Revision 2013 or latest version. Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

THE NATIONAL GREEN TRIBUNAL PRINCIPAL BENCH, NEW DELHI on 01st 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 degree to 45 degree 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. All construction sites should follow and comply with the provisions of the Construction and Demolition Waste Management Rules, 2016".

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 [Guidelines for Alignment survey and Geometric design of Hill roads – IRC: 52-2019 and Hill road manual IRC: SP 48 -1998 and 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 "Contractor", "Independent Engineer" and "Concession Agreement" used in the Manual shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.

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

Item	Provision as per Manual	Modified Provision
Applicable cross section	Guidelines for Alignment survey and Geometric design of Hill roads – IRC: 52-2019 and Hill road manual IRC: SP 48 -1998 and IRC SP 73-2018	Intermediate lane with earthen shoulders. As per TCS in schedule B (with carriageway width of 5.5m, 1.45m shoulder on hillside and 1.45m shoulder on valley side)
Cross section of bridge	Guidelines for Alignment survey and Geometric design of Hill roads – IRC: 52-2019 and Hill road manual IRC: SP 48 -1998 and IRC SP 73-2018	7.5 m carriageway including shyness, 1.5 m footpath on both sides, 0.45m crash barriers and 0.3m Railings

Schedule - E

(See Clauses 2.1 and 14.2)

Maintenance Requirements

1. Maintenance Requirements

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

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

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

[Specify all the relevant documents]

2. Repair/rectification of Defects and deficiencies

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

3. Other Defects and deficiencies

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

4. Extension of time limit

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

5. Emergency repairs/restoration

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

6. Daily inspection by the Contractor

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

7. Pre-monsoon inspection/post-monsoon inspection

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

8. Repairs on account of natural calamities

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

Annex – I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Table -1: Maintenance Criteria for Pavements:

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

Asset Type	Performance Parameter	Level of Service (LOS)		Frequency of Inspection	Tools/Equipment	Standards and References for Inspection and Data Analysis	Time limit for Rectification/ Repair	Maintenance Specifications
		Desirable	Acceptable					
s of Grade structure, approaches of connecting roads, slip roads, lay byes etc. as applicable)	Cracking	Nil	< 5 % subject to limit of 0.5 sqm for any 50 m length	Daily			7-15 days	MORT&H Specification 3004.3
	Rutting	Nil	< 5 mm	Daily	Straight Edge		15 -30 days	MORT&H Specification 3004.2
	Corrugations and Shoving	Nil	< 0.1 % of area	Daily	Length Measurement Unit like		2-7 days	IRC:82-2015

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

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

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

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

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

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

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

Table -2: **Maintenance Criteria for Rigid Pavements:**

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

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

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

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

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

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

S.No.	Type of Distress	Measured Parameter	Degree of Severity	Assessment Rating	Repair Action	
					For the case d < D/2	**For the case d > D/2**
						slab as per norms and specifications within 30days
6	**Punchout (Applicable to Continuous Reinforced Concrete Pavement (CRCP) only)**	w = width of crack L = length (m/m2)	0	Nil, not discernible		No Action
			1	w < 0.5 mm; L < 3 m/m^2	Not Applicable, as it may be full depth	Seal with low viscosity epoxy to secure broken parts. Within 15days
			2	either w > 0.5 mm or L < 3 m/m^2		
			3	w > 1.5 mm and L < 3 m/m^2		
			4	w > 3 mm, L < 3 m/m^2 and deformation		Full depth repair -Cut out and replace damaged area taking care not to damage reinforcement. Within 30days
			5	w > 3 mm, L > 3 m/m^2 and deformation		

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

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

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

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

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

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

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

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

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

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

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

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

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

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

<table>
<tr><th>Asset Type</th><th>Performance Parameter</th><th colspan="3">Level of Service (LOS)</th><th>Frequency of Measurement</th><th>Testing Method</th><th>Recommended Remedial measures</th><th>Time limit for Rectification</th><th>Specifications and Standards</th></tr>
<tr><td rowspan="5">Highway</td><td rowspan="5">Availability of Safe Sight Distance</td><td colspan="3">As per IRC SP :84-2014, a minimum of safe stopping sight distance shall be available throughout.</td><td rowspan="5">Monthly</td><td rowspan="5">Manual Measurements with Odometer along with video/ image backup</td><td colspan="2" rowspan="5">Removal of obstruction within 24 hours, in case of sight line affected by temporary objects such as trees, temporary encroachments.

In case of permanent structure or design deficiency:
Removal of obstruction/improvement of deficiency at the earliest
Speed Restriction boards and suitable traffic calming measures such as transverse bar marking, blinkers, etc. shall be applied during the period of rectification.</td><td rowspan="5">IRC:SP 84-2014</td></tr>
<tr><td>Design Speed, kmph</td><td>Desirable Minimum Sight Distance (m)</td><td>Safe Stopping Sight Distance (m)</td></tr>
<tr><td>100</td><td>360</td><td>180</td></tr>
<tr><td>80</td><td>260</td><td>130</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Pavement Marking</td><td>Wear</td><td colspan="3"><70% of marking remaining</td><td>Bi-Annually</td><td>Visual Assessment as per Annexure-F of IRC:35-2015</td><td>Re - painting</td><td>Cat-1 Defect – within 24 hours
Cat-2 Defect - within 2 months</td><td>IRC:35-2015</td></tr>
</table>

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

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

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
				signboard using Retro Reflectivity Measuring Device. In accordance with ASTM D 4956-09.		Signs, Cautionary and Informatory Signs (Single and Dual post signs) 1 Month in case of Gantry/Cantilever Sign boards	
Kerb	Kerb Height	As per IRC 86:1983 depending upon type of Kerb	Bi-Annually	Use of distance measuring tape	Raising Kerb Height	Within 1 Month	RC 86:1983
	Kerb Painting	Functionality: Functioning of Kerb painting as intended	Daily	Visual with video/image backup	Kerb Repainting	Within 7-days	RC 35:2015
Other Road Furniture	Reflective Pavement Markers (Road Studs)	Numbers and Functionality as per specifications in IRC:SP:84-2014 and IRC:35-2015, unless specified in Schedule-B.	Daily	Counting	New Installation	Within 2 months	IRC:SP:84-2014, IRC:35-2015
	Pedestrian Guardrail	Functionality: Functioning of guardrail as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:SP:84-2014
	Traffic Safety Barriers	Functionality: Functioning of Safety Barriers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014, IRC:119-2015
	End Treatment of	Functionality: Functioning of End Treatment as intended	Daily	Visual with video/image	Rectification	Within 7 days	IRC:SP:84-2014,

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
	Traffic Safety Barriers			backup			IRC:119-2015
	Attenuators	Functionality: Functioning of Attenuators as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP-2014, IRC:119-2015
	Guard Posts and Delineators	Functionality: Functioning of Guard Posts and Delineators as intended	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC: 79 - 1981
	Overhead Sign Structure	Overhead sign structure shall be structurally adequate	Daily	Visual with video/image backup	Rectification	Within 15 days	IRC:67-2012
	Traffic Blinkers	Functionality: Functioning of Traffic Blinkers as intended	Daily	Visual with video/image backup	Rectification	Within 7 days	IRC:SP:84-2014
Highway Lighting System	Highway Lights	Illumination: Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major failure in the lighting system	Daily	-	Rectification of failure	24 hours	IRC:SP:84-2014
		No minor failure in the lighting system	Monthly	-	Rectification of failure	8 hours	IRC:SP:84-2014
	Toll Plaza Canopy Lights	Minimum 40 Lux illumination on the road surface	Daily	The illumination level shall be measured with luxmeter	Improvement in Lighting System	24 hours	IRC:SP:84-2014
		No major/minor failure in the lighting system	Daily	-	Rectification of failure	8 hours	IRC:SP:84-2014

Asset Type	Performance Parameter	Level of Service (LOS)	Frequency of Measurement	Testing Method	Recommended Remedial measures	Time limit for Rectification	Specifications and Standards
Trees and Plantation including median plantation	Obstruction in a minimum head-room of 5.5 m above carriageway or obstruction in visibility of road signs	No obstruction due to trees	Monthly	Visual with video/image backup	Removal of trees	Immediate	IRC:SP:84-2014
	Deterioration in health of trees and bushes	Health of plantation shall be as per requirement of specifications & instructions issued by Authority from time to time	Daily	Visual with video/image backup	Timely watering and treatment.Or Replacement of Trees and Bushes.	Within 90 days	IRC:SP:84-2014
	Vegetation affecting sight line and road structures	Sight line shall be free from obstruction by vegetation	Daily	Visual with video/image backup	Removal of Trees	Immediate	IRC:SP 84-2014
Rest Areas	Cleaning of toilets	-	Daily	-	-	Every 4 hours	
	Defects in electrical, water and sanitary installations	-	Daily	-	Rectification	24 hours	

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

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

	Protection works in good condition	Damaged of rough stone apron or bank revetment not more than 3 sqm, damage to solid apron (concrete apron) not more than 1 sqm	2 times in a year (before and after rainy season)	Condition survey as per IRC SP:35-1990	Repairs to damaged aprons and pitching	30 days after defect observation or 2 weeks before onset of rainy season whichever is earlier.	IRC: SP 40-1993 and IRC:SP:13-2004.
Bridges including ROBs Flyover etc. as applicable	Riding quality or user comfort	No pothole in wearing coat on bridge deck	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC or wearing coat	15 days	MORT&H Specification 2811
Bridge -Super Structure	Bumps	No bump at expansion joint	Daily	Visual inspection as per IRC SP:35-1990	Repairs to BC on either side of expansion joints, profile correction course on approach slab in case of settlement to approach embankment	15 days	MORT&H Specification 3004.2 & 2811.
	User safety (condition of crash barrier and guard rail)	No damaged or missing stretch of crash barrier or pedestrian hand railing	Daily	Visual inspection and detailed condition survey as per IRC SP: 35-1990.	Repairs and replacement of safety barriers as the case may be	3days	IRC: 5-1998, IRC SP: 84-2014 and IRC SP: 40-1993.

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

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

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

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

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

Table 4: Maintenance Criteria for Structures and Culverts:

Table 5: Maintenance Criteria for Hill Roads

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

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

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

A. Flexible Pavement

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

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

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

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

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

Schedule - F *(See Clause*

4.1 (vii)(a)) **Applicable**

Permits

1. Applicable Permits

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

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

Schedule – G

(See Clauses 7.1 and 19.2)

Annex-I

(See Clause 7.1)

Form of Bank Guarantee

[Performance Security/Additional Performance Security]

National Highways & Infrastructural Development Corporation Ltd.
1st & 2nd Floor, Tower A,
World Trade Center, Nauroji Nagar
New Delhi-110029

WHEREAS:

(A) _____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the "Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode" subject to and in accordance with the provisions of the Agreement

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

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

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways 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.

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

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

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

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

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has

the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

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

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

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

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

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

(Insert date at least 2 (two) years from the date of issuance of this Guarantee (in accordance with Clause 2.21of the RFP). The Contractors can submit the BG for periods of two years at one time and keep on renewing the same till the DLP is over if they have problems in getting the BG in one go for the entire DLP.)

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

Signed and sealed this ……. day of ……., 20…… at …….
SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:
(Signature) (Name)

(Designation) (Code Number)

(Address)

NOTES:

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

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

Annex – II *(Schedule - G)*

(See Clause 19.2)

Form for Guarantee for Advance Payment**,**

National Highways & Infrastructural Development Corporation Ltd.
1st & 2nd Floor, Tower A,
World Trade Center, Nauroji Nagar
New Delhi-110029

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the "**Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode**", subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest **bearing @Bank Rate + 3% advance payment** (herein after called"AdvancePayment")equalto10%(tenpercent)oftheContractPrice;and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. ------ cr. (Rupees crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the **"Guarantee Amount")$.**

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

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to then Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all orany 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 ContractorisindefaultshallbefinalandbindingontheBank,notwithstandingany differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

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

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

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

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

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

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

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

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

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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation

13. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

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

Signed and sealed this ……. day of …….., 20…… at ……..
SIGNED, SEALED AND DELIVERED

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

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

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

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

Annex-III
(Schedule-G)
(See Clause 7.5.3)

Form for Guarantee for Withdrawal of Retention Money

NHIDCL,
1st & 2nd Floor, Tower A,
World Trade Center, Nauroji Nagar
New Delhi-110029
WHEREAS:

[Name and address of contractor] (hereinafter called "**the Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [NHIDCL], (hereinafter called "the Authority") for the "**Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode.**" subject to and in accordance with the provisions of the Agreement.

(A) In accordance with the Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

(B) We, …….. through our branch at …….. (the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") for the amount of Rs. ……Cr. (Rs……. in words) (the "**Guarantee Amount"**).

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the NHIDCL 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 difference between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other Authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

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

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

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

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

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

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

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

12. This guarantee shall also be operable at our…… Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/ renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under

claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

13. Intimation regarding issuance of this Bank Guarantee shall be sent to Authority's Bank through SFMS gateway as per the details below:

S.No.	Particulars	Details
1	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	90621010002659
3	Beneficiary Bank Branch	IFSC CNRB0019062
4	Beneficiary Bank Branch Name	Transport Bhawan, New Delhi
5	Beneficiary Bank Address	Canara Bank (erstwhile Syndicate Bank), Transport Bhawan, 1st Parliament Street, NewDelhi110001

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

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

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

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

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

Annex-IV

(Schedule - G)

(See Clause 7.1)

Form of Surety Bond

[Performance Security/Additional Performance Security]

National Highways & Infrastructural Development Corporation Ltd.
1st & 2nd Floor, Tower A,
World Trade Center, Nauroji Nagar
New Delhi-110029
WHEREAS:

(A) _____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the "Authority") have entered into an agreement (hereinafter called the "Agreement") for the "**Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode"** subject to and in accordance with the provisions of the Agreement

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and MaintenancePeriod}(asdefinedintheAgreement)inasumofRs…..cr.(Rupees …….. crore) (the "**Surety Bond Amount**").

(C) We, …….. through our branch at.....(the "**Surety Insurer**") have agreed to furnish this bank guarantee (*hereinafter called the* **"Surety Bond**") by way of Performance Security.

NOW, THEREFORE, the **Surety Insurer** hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The **Surety Insurer** 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 **Surety Bond** Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the **Surety Insurer**. The **Surety Insurer** 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 **Surety Insurer**, 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 **Surety Bond**, the Authority shall be entitled to act as if the **Surety Insurer** were the principal debtor and any change in the constitution of the Contractor and/or the **Surety Insurer**, 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 **Surety Insurer** under this **Surety Bond**.
4. It shall not be necessary, and the **Surety Insurer** hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this **Surety Bond**.
5. The Authority shall have the liberty, without affecting in any manner the liability of the **Surety Insurer** under this **Surety Bond**, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment 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 **Surety Insurer** 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 **Surety Insurer** from its liability and obligation under this **Surety Bond** and the **Surety Insurer** hereby waives all of its rights under any such law.
6. This **Surety Bond** is in addition to and not in substitution of any other **Surety Bond** or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfilment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the **Surety Insurer** under this **Surety Bond** is restricted to the **Surety Bond** Amount and this **Surety Bond** 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 **Surety Insurer** under this **Surety Bond** all rights of the Authority under this **Surety Bond** shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder.

8. The **Surety Bond** shall cease to be in force and effect on ****$. Unless a demand or claim under this **Surety Bond** is made in writing before expiry of the **Surety Bond**, the **Surety Insurer** shall be discharged from its liabilities hereunder.
9. The **Surety Insurer** undertakes not to revoke this **Surety Bond** 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 **Surety Bond** and the undersigned has full powers to do so on behalf of the **Surety Insurer**.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post

addressed to the **Surety Insurer** at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

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

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

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

14. The Insurance Surety Bond shall be verified from the branch concerned/ specific portal created for this purpose.

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 Surety Bond should contain the name, designation and code number of the officer(s) signing the Surety Bond.

(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.

Annex – V

(Schedule - G)

(See Clause 19.2)

Form of Insurance Surety Bond

(**Advance Payment)**

National Highways & Infrastructural Development Corporation Ltd.
1st & 2nd Floor, Tower A,
World Trade Center, Nauroji Nagar
New Delhi-110029

WHEREAS:

(A) ([name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for the "**Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode**", subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest **bearing @Bank Rate + 3% advance payment** (herein after called"AdvancePayment")equalto10%(tenpercent)oftheContractPrice;and that the Advance Payment shall be made in two installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second} installment of the Advance Payment is Rs. ------ cr. (Rupees crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees ------ crore) (the **" Surety Guarantee Amount")$.**

(C) We, …….. through our branch at..... (the "Surety **Insurer"**) have agreed to furnish this bank guarantee (*hereinafter called the "***Surety Bond"**) for the Guarantee Amount.

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

1. The **Surety Insurer** 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 then 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 **Surety Bond Amount** as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways Authority of India], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the **Surety Insurer**.

The **Surety Insurer** 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 ContractorisindefaultshallbefinalandbindingontheBank,notwithstandingany differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

2. In order to give effect to this **Surety Bond**, the Authority shall be entitled to act as if the **Surety Insurer** were the principal debtor and any change in the constitution of the Contractor and/or the **Surety Insurer**, 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 **Surety Insurer** under this Guarantee.

3. It shall not be necessary, and the **Surety Insurer** hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the **Surety Insurer** its demand under this **Surety Bond**.

4. The Authority shall have the liberty, without affecting in any manner the liability of the **Surety Insurer** under this **Surety Bond**, 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 **Surety Insurer** 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 **Surety Insurer** from its liability and obligation under this **Surety Bond** and the **Surety Insurer** hereby waives all of its rights under any such law.

5. This **Surety Bond** is in addition to and not in substitution of any other **Surety Bond** or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.

6. Notwithstanding anything contained hereinbefore, the liability of the **Surety Insurer** under this **Surety Bond** is restricted to the **Surety Bond** Amount and this **Surety Bond** 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 **Surety Insurer** under this **Surety Bond** all rights of the Authority under this **Surety Bond** shall be forfeited and the **Surety Insurer** shall be relieved from its liabilities hereunder.

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

8. The **Surety Insurer** undertakes not to revoke this **Surety Bond** 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 **Surety Bond** and the undersigned has full powers to do so on behalf of the **Surety Insurer**.

9. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the **Surety Insurer** at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the

notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

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

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

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

13. The **Insurance Surety Bond** hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, details of which is as under:

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

Signed and sealed this ……. day of ……., 20…… at …….
SIGNED, SEALED AND DELIVERED

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

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

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

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

SCHEDULE – H

See Clauses 10.1 (iv) and 19.3

Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs. **693.55 Cr.**

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
I. Road works including culverts, widening and repair of culverts.	16.64	**A- Widening and strengthening of existing road**	
		(1) Earthwork up to top of the embankment	0
		(2) Sub-Grade	
		(3) Sub-Base Course	0
		(4) Non Bituminous Base Course	0
		(5) Bituminous Base Course	0
		(6) Wearing Coat	0
		(7) Widening and repair of culverts	0
		B.1- Reconstruction/ New realignment/ bypass (Flexible pavement)	
		(1) Earthwork up to top of the embankment	25.00
		(2) Sub-Grade	1.64
		(3) Sub Base Course	10.89
		(4) Non-Bituminous Base Course*	8.69
		(5) Bituminous Base Course	15.63
		(6) Wearing Coat	5.30
		B.2- Reconstruction/ New realignment/ bypass (Rigid Pavement)	
		(1) Earthwork up to top of the embankment	0
		(2) Sub-Grade	
		(3) Sub Base Course	0
		(4) Dry Lean Concrete(DLC) Course	0
		(5) Pavement Quality Control (PQC) Course	0
		C.1- Reconstruction/ New service road (Flexible pavement)	
		(1) Earthwork up to top of the embankment	0
		(2) Sub-Grade	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3)Sub Base Course	0
		(4) Non-Bituminous Base Course*	0
		(5) Bituminous Base Course	0
		(6) Wearing Coat	0
		C.2- Reconstruction/ New Service road (Rigid Pavement)	
		(1) Earthwork up to top of the embankment	0
		(2) Sub-Grade	
		(3) Sub Base Course	0
		(4) Dry Lean Concrete(DLC) Course	0
		(5) Pavement Quality Control (PQC) Course	0
		D- Re-Construction and New culverts on existing road, realignments, bypasses :	
		Culverts (length < 6 m)	32.85
II. Minor Bridges/ Underpasses / Overpasses	0	**A.1- Widening and Repair of Minor bridges (length > 6 m and < 60 m)**	
		Minor bridges	
		(1) **Foundation:** On completion of the foundation work of abutments and piers	0
		(2) **Sub-structure**: On completion of abutments and piers with abutment/ pier cap.	0
		(3) **Super-structure:** On completion of the super-structure in all respects including wearing coat, bearings, expansion joints, handrails, crash barriers, road signs and markings, tests on completion etc. complete in all respect.	0
		(4) **Approaches**: On completion of approaches including wing walls/ return walls, Retaining walls, stone pitching, protection works for floor, embankment slope, etc. complete in all respect and fit for use.	0
		A.2- New Minor bridges (length >6 and <60 m.)	
		(1) **Foundation:** On completion of the foundation work of abutments and piers	0
		(2) **Sub–structure**: On completion of abutments and piers with abutment/ pier cap.	0

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) **Super-structure:** On completion of the super-structure upto deck slab including bearings.	0
		(4) **Miscellaneous Works** : On completion of wearing coat, expansion joint, crash barrier, railings, protection works and any remaining work associated to bridge including tests on bridge.	0
		(5) **Approaches**: On completion of approaches including wing walls/ return walls, Retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	0
		(6) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects	0
		B.1- Widening and Repair of underpasses/ overpasses	
		Underpasses/ Overpasses	0
		B.2- New underpasses/ overpasses	
		(1) Foundation: On completion of the foundation work of abutments and piers	0
		(2) **Sub–structure** : On completion of abutments and piers with abutment/ pier cap.	
		(3) **Super-structure:** On completion of the super-structure upto deck slab including bearing.	0
		(4) **Miscellaneous Works** : On completion of wearing coat, expansion joint, crash barrier, railings and any remaining work associated to bridge including tests on bridge	
		(5) **Approaches**: On completion of approaches including Wing walls/ Return walls, Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	0

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
III. Major Bridge(length > 60 m.) works and ROB/RUB/ elevated sections/flyovers including viaducts, if any	21.84	**A.1- Widening and repairs of Major Bridges**	
		(1) Foundation	0
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0
		(3) Super-structure (including bearings)	0
		(4) Wearing Coat including expansion joints	0
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0
		(6) Wing walls/return walls	0
		(7) Guide Bunds, River Training works etc.	0
		(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	0
		A.2- New Major Bridges	
		(1) Foundation	8.32
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	11.81
		(3) Super-structure (including bearings)	78.07
		(4) Wearing Coat including expansion joints	
		(5) Miscellaneous Items (like hand rails, crash barriers, road markings etc.)	1.80
		(6) Wing walls/return walls	
		(7) Guide Bunds, River Training works etc.	
		(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope, etc.)	
		B.1- Widening and repair of **(a) ROB** **(b) RUB**	

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(1) Foundation	0
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0
		(3) Super-structure (including bearings)	0
		(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.	0
		(5) Miscellaneous Items (like hand rails, crash barriers, road markings etc.)	0
		(6) Wing walls/return walls	0
		(7) Approaches (including Retaining walls, stone pitching and protection works)	0
		B.2- New ROB/RUB	
		(a)ROB	
		(b) RUB	
		(1) Foundation	0
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	0
		(3) Super-structure (including bearings)	0
		(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.	0
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0
		(6) Wing walls/return walls	0
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0
		C.1- Widening and repair of Elevated Section/Flyovers/ Grade Separators	
		(1) Foundation	0
		i) Pile Foundation	
		ii) Open Foundation	
		(2) Sub-structure	0

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(3) Super-structure (including bearings)	0
		(4) Wearing Coat including expansion joints	0
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0
		(6) Wing walls/return walls	0
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0
		C.2-New Elevated Section/Flyovers/ Grade Separators	
		(1) Foundation	0
		(i) Well Foundation	
		(ii) Pile Foundation	
		(iii) Open Foundation	
		(2) Sub-structure	0
		(3) Super-structure (including bearings)	0
		(4) Wearing Coat including expansion joints	0
		(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.)	0
		(6) Wing walls/return walls	0
		(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0
IV. Other works	61.52	(i) Toll Plaza	0
		(ii) Road side drains	2.61
		(a) Drain	
		(b) Cover Slab	
		(iii) Road signs, markings, km stones, safety devices etc.	0.81
		(iv) Overhead gantry mounted signs	
		(v) Project facilities (a) Bus Bays (b) Truck lay-byes (c) Rest areas (d) others	0
		(vi) Road side plantation	0

Item	Weightage in percentage to the Contract Price	Stage for Payment	Percentage weightage
1	2	3	4
		(vii) Protection works# other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/RUBs.	
		(a) Crash Barrier	0.24
		(b) Retaining Wall	61.91
		(c) Breast Wall	30.11
		(viii) Safety and traffic management during construction	0.07
		(ix) Hydro seeding and Soil Nailing	4.25

*Note- In case of CTB and AIL layer, this stage may be modified suitably to permit separate weightages for each of these layers.

#Note - For specific type of protection work detailed stages can be included

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 (1) Earthwork up to top of the embankment	0	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 or 500m whichever is less
(2) Sub-Grade	0	
(3) Sub-Base Course	0	
(4) Non Bituminous Base Course*	0	
(5) Bituminous Base Course	0	
(6) Wearing Coat	0	

(7) Widening and repair of culverts	0	Cost of completed culverts shall be determined pro rata basis with respect to the total no. of culverts. The payment shall be made on the

Stage of Payment	Percentage weightage	Payment Procedure
		completion of atleast one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/ wing walls and any other work associated with culverts.
B.1- Reconstruction/New realignment/bypass (Flexible pavement) (1) Earthwork up to top of the embankment	25.00	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
(2) Sub-Grade	1.64	
(3) Sub Base Course	10.89	
(4) Non-Bituminous Base Course*	8.69	
(5) Bituminous Base Course	15.63	
(6) Wearing Coat	5.30	
B.2- Reconstruction/New realignment/bypass (Rigid pavement) (1) Earthwork up to top of the embankment	0	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
(2) Sub-Grade	0	
(3) Sub Base Course	0	
(4) Dry Lean Concrete (DLC) Course	0	
(5) Pavement Quality Control (PQC) Course	0	
C.1- Reconstruction/ New service road (Flexible pavement) (1) Earthwork up to top of the embankment	0	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m length, whichever is less.
(2) Sub-Grade	0	
(3) Sub Base Course	0	
(4) Non-Bituminous Base Course*	0	
(5) Bituminous Base Course	0	
(6) Wearing Coat		
C.2- Reconstruction/ New service road (Rigid pavement) (1) Earthwork up to top of	0	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in full length or 500 m

Stage of Payment	Percentage weightage	Payment Procedure
the embankment		length, whichever is less.
(2) Sub-Grade	0	
(3) Sub Base Course	0	
(4) Dry Lean Concrete (DLC) Course	0	
(5) Pavement Quality Control (PQC) Course	0	
D- Re-Construction and New culverts on existing road, realignments, bypasses: (1) Culverts (length < 6m)	32.85	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of atleast one culvert. 75% of the cost will be payable on completion of box/ abutments and slab/ pipe and head wall. Remaining 25% will become payable on completion of protection works including return/ wing walls and any other work associated with culverts.

*Note- In case of CTB and AIL layer, this stage may be modified suitably to permit separate weightages for each of these layers.

@. 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.

1.3.2 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 repair of minor bridges (length > 6m and < 60m)	**0**	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges.
(i) **Foundation:** On completion of the foundation work of abutments and piers	**0**	(i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e completion of atleast two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(ii) Sub – structure:	**0**	**(ii) Sub - structure** – Payment shall be made on pro-rata basis on completion of stage i.e. completion of atleast one sub-structure upto abutment/ pier cap level of each bridge.
(iii) **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**	(iii) **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.
(iv) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	**0**	(iv) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing walls/ return walls, retaining walls, stone pitching in all respect as specified in the column of "Stage of Payment" in this sub-clause for each bridge.
A.2- New minor bridges (i) **Foundation:** On completion of the foundation work of abutments and piers.	**0**	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length (m) of the minor bridges. (i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage completion of atleast two foundations of each bridge. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(ii) Sub – structure:	**0**	(ii) Sub - structure – Payment shall be made on pro-rata basis on completion of stage i.e. completion of atleast one sub-structure upto abutment/ pier cap level of each bridge.
(iii) **Super-structure:** On completion of the super-structure upto deck slab including bearings.	**0**	(iii) **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 upto deck slab including bearing as specified in the column of "Stage of Payment" in this sub-clause. If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(iv) **Miscellaneous Works:**	**0**	(iv) **Miscellaneous Works**: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of wearing coat, expansion joint, crash barrier, railing, protection works, drainage and any other remaining work associated to bridge including tests on bridge for each bridge
v) **Approaches**: On completion of approaches including Retaining walls, stone pitching, protection works for floor, embankment slope etc. complete in all respect and fit for use.	**0**	(v) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing walls/ return walls, retaining walls, stone pitching in all respect as specified in the column of "Stage of Payment" in this sub-clause for each bridge.
(vi) **Guide Bunds and River Training Works:** On completion of Guide Bunds and river Training Works complete in all respects	**0**	(vi) **Guide Bunds and River Training Works:** 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 respects as specified for each bridge.
B.1-Widening and repair of underpasses/ overpasses	**0**	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/	**0**	Cost of each Underpass/Overpass shall be

Stage of Payment	Weightage	Payment Procedure
1	2	3
Overpasses: **(i) Foundation** On completion of the foundation work including foundations, of abutments and piers		determined on pro rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. (i) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of foundation(s) of each underpass/overpass. In case where load testing is specified for foundation, the trigger of first payment shall include load testing also.
(ii) Sub-structure :	**0**	(ii) Sub-structure: Payment shall be made on pro-rata basis on completion of stage i.e. completion of atleast one sub-structure upto abutment/ pier cap level of each bridge.
(iii) **Super-structure:** On completion of the super-structure upto deck slab,	**0**	(iii) **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 upto deck slab including bearing as specified in the column of "Stage of Payment" in this sub-clause: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(iv) Miscellaneous Works:	**0**	(iv) Miscellaneous Works: Payment shall be made on pro-rata basis on completion of a stage i.e. completion of wearing coat, expansion joint, crash barrier, railing, protection works and any other remaining work associated to bridge including tests on bridge for each bridge.
v) **Approaches**: On completion of approaches including wing wall/ return wall, Retaining walls/ Reinforced Earth walls, stone pitching, protection works complete in all respect and fit for use.	**0**	(v) **Approaches:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches including wing wall/ return wall, retaining walls, Reinforced Earth walls, stone pitching, protection works complete in all respect for each bridge.

1.3.3 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
1	2	3
A.1- Widening and repairs of Major Bridges (1) Foundation	**0**	Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridges. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the major Bridge as specified hereinunder.
(i) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap : On completion of pile cap		(i) Pile Foundation (a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorate basis. (b) Pile Cap : Payment of 30% on pro-rata basis shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Open Foundation		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**0**	**(2) Sub-Structure:**. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of

Stage of Payment	Weightage	Payment Procedure
1	2	3
		the major bridge.
(3) Super-structure (including bearings)	0	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under : If pre-cast RCC/PSC/Steel girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	0	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each major bridge.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each major bridge.
(6) Wing walls/return walls	0	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each major bridge.
(7) Guide Bunds, River Training works etc.	0	(7) **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 for each major bridge.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0	**(8) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in

Stage of Payment	Weightage	Payment Procedure
1	2	3
		all respects as specified for each major bridge.
A.2- New Major Bridges (1) Foundation	**8.32**	Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the major Bridge as specified here in under:
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining : On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining : Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap : On completion of pile cap		(ii) Pile Foundation (a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorota basis. (b) Pile Cap : Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing

Stage of Payment	Weightage	Payment Procedure
1	2	3
		also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**11.81**	**(ii) Sub-Structure:**. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the major bridge.
(3) Super-structure (including bearings)	**78.07**	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon. (For cable stayed bridge and suspension cable bridge, detailed payment stage may be included on case to case basis)
(4) Wearing Coat including expansion joints	**0**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each major bridge.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**1.80**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each major bridge.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(6) Wing walls/return walls	0	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each major bridge.
(7) Guide Bunds, River Training works etc.	0	(7) **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 for each major bridge.
(8) Approaches (including Retaining walls, stone pitching and protection works for floor, embankment slope etc.)	0	**(8) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each major bridge.
B.1 -Widening and repairs of **(a) ROB** **(b) RUB** (1) Foundation	0	Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the ROB/RUB as specified here in under.
(i) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap : On completion of pile cap		(i) Pile Foundation (a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorata basis. (b) Pile Cap : Payment of 30% on pro-rata basis shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Open Foundation		(ii) Open Foundation: Payment shall

Stage of Payment	Weightage	Payment Procedure
1	2	3
		be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	0	**(2) Sub-Structure:**. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearings)	0	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under : If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	0	**(4) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified for each of the ROB and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified for each of the RUB.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the ROB/ RUB.
(6) Wing walls/return walls	0	(6) **Wing walls/return walls:**

Stage of Payment	Weightage	Payment Procedure
1	2	3
		Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the ROB/ RUB.
(7) Approaches (including Retaining walls, stone pitching and protection works)	0	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified for each of the ROB/ RUB.
B.2- New **(a) ROB** **(b) RUB** (1) Foundation	0	Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROBs/RUBs. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the ROB/RUB as specified here in under:
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining : On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining : Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation (a) Piling – On completion of pile upto bottom of pile		(ii) Pile Foundation (a) Piling : Payment of 70% shall be made on completion of piling upto

Stage of Payment	Weightage	Payment Procedure
1	2	3
cap (b) Pile Cap : On completion of pile cap		bottom of pile cap for each pile on prorota basis. (b) Pile Cap : Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
2) Sub-structure	**0**	**(2) Sub-Structure:** Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the ROB/RUB.
(3) Super-structure (including bearings)	**0**	(3) **Super-structure:** Payment shall be made on prorata basis on completion of a stage i.e. completion of superstructure upto deck slab including bearings of at least one span as specified here in under : If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB, rigid pavement under RUB including drainage facility as specified.	**0**	**(4) Wearing Coat:** Payment shall be made on completion of (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified for each of the ROB and (b) in case of RUB- rigid pavement under RUB including drainage facility complete in all respects as specified for each of the RUB.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**0**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the ROB/RUB.
(6) Wing walls/return walls	**0**	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the ROB/RUB.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	**0**	**(7) Approaches**: Payments shall be made on completion of both approaches of each ROB including stone pitching, protection works, etc. complete in all respects as specified here in under : If reinforced soil wall is used with facia panel/blocks, interim payment shall be made @75% of the Cost of that element as derived from MoRTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
C.1- Widening and repairs of Elevated Section/Flyovers/ Grade Separators (i) Foundation		Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. (1) Foundation : Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the structure as specified here in under :
(i) Pile Foundation (a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap :		(i) Pile Foundation (a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on prorate basis. (b) Pile Cap : Payment of 30% on pro-

Stage of Payment	Weightage	Payment Procedure
1	2	3
completion of pile cap		rata basis shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(ii) Open Foundation		(ii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**0**	**(2) Sub-Structure:**. Payment against Sub-structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the structure.
(3) Super-structure (including bearings)	**0**	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure upto deck slab including bearings of at least one span as specified here in under : If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	**0**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	**0**	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(6) Wing walls/return walls	0	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the structure.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects of each structure.
C.2 -New Elevated Section/Flyovers/ Grade Separators (1) Foundation	0	Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structures. (1) **Foundation:** Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one foundation of each of the structure as specified here in under :
(i) Well Foundation (a) On completion of Cutting Edge + Well Curb (b) Wellsteining : On completion of well steining upto bottom of well cap. (c) On completion of bottom plug + top plug (if provisioned as per design) + well cap		(i) Well Foundation (a) Cutting Edge + Well Curb: Payment of 10% shall be made on completion of a stage i.e. completion of cutting edge + well curb. (b) Well steining : Payment of 65% shall be made on completion of well steining upto bottom of well cap. The payment stage shall be further sub-divided on pro-rata basis i.e. (i) on completion upto 10 m and (ii) on completion of each subsequent 5 m or part thereof. (c) Bottom plug + top plug (if provisioned as per design) + well cap: Payment of 25% shall be made on completion of a stage i.e. completion of bottom plug, back fill, top plug and well cap.
(ii) Pile Foundation		(ii) Pile Foundation

Stage of Payment	Weightage	Payment Procedure
1	2	3
(a) Piling – On completion of pile upto bottom of pile cap (b) Pile Cap : On completion of pile cap		(a) Piling : Payment of 70% shall be made on completion of piling upto bottom of pile cap for each pile on pro-rata basis. (b) Pile Cap : Payment of 30% shall be made on completion of pile cap. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(iii) Open Foundation		(iii) Open Foundation: Payment shall be made on completion of a stage i.e. on completion of atleast one foundation.
(2) Sub-structure	**0**	**(2) Sub-Structure:**. Payment against Sub- structure shall be made on pro-rata basis on completion of a stage i.e. completion of atleast one sub-structure of abutments/piers upto abutment/pier cap level of each of the structure.
(3) Super-structure (including bearings)	**0**	(3) **Super-structure:** Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure upto deck slab including bearings of at least one span as specified here in under: If pre-cast girders/ segments are used, interim payments shall be made at 75% of the cost of that element, as derived from MoRTH Data Book, applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.
(4) Wearing Coat including expansion joints	**0**	**(4) Wearing Coat:** Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified for each of the structure.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(5) Miscellaneous Items like hand rails, crash barriers, road markings etc.	0	(5) **Miscellaneous:** Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified for each of the structure.
(6) Wing walls/return walls	0	(6) **Wing walls/return walls:** Payments shall be made on completion of all wing walls/return walls complete in all respects as specified for each of the structure.
(7) Approaches (including Retaining walls/Reinforced Earth wall, stone pitching and protection works)	0	**(7) Approaches**: Payments shall be made on completion of both approaches including stone pitching, protection works, etc. complete in all respects as specified here in under : If reinforced soil wall is used with facia panel/blocks, interim payment shall be made @75% of the Cost of that element as derived from MoRTH data Book. Applicable SOR of State PWD on Base Date with tender discount/premium applied thereon.

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
1	2	3
(i) Toll plaza	0	Unit of measurement is each completed toll plaza. Payment for each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas as specified here in under :

Stage of Payment	Weightage	Payment Procedure
1	2	3
(a) DLC(LHS)		(a) DLC (LHS) : Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(b) DLC (RHS)		(b) DLC (RHS) : Payment of 12.5% on pro-rata basis shall be made on completion of a stage i.e. completion of DLC on LHS.
(c) PQC(LHS)		(c) PQC(LHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on LHS.
(d) PQC(RHS)		(d) PQC(RHS): Payment of 25% on pro-rata basis shall be made on completion of a stage i.e. completion of PQC on RHS.
(e) Admin Building		(e) Admin Building: Payment of 10% on pro-rata basis shall be made on completion of a stage i.e. completion of Admin Building and miscellaneous works.
(f) Toll Booth, canopy, safety items and all other associated works		(f) Toll Booth, canopy, safety items and all other associated works: Payment of 15% on pro-rata basis shall be made on completion of a stage i.e. completion of Toll Booth, canopy, safety items and all other associated works.
(ii) Road side drains	2.61	
(a) Drains		a) Drains: Unit of measurement is linear length in metre . Payment shall be made on pro rata basis on completion of a stage in a length of not less than 100 m on one side.
(b) Cover Slabs		(b) Cover slabs: Unit of measurement is linear length in metre. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 100 m on one side.

Stage of Payment	Weightage	Payment Procedure
1	2	3
(iii) Road signs, markings, km stones, safety devices, …	0.81	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 one Km on both sides.
(iv) **Overhead gantry mounted signs**	0	Unit of measurement is each number. Payment shall be made on pro-rata basis on completion of each overhead gantry mounted sign
(v) Project Facilities (a) Bus bays (b) Truck lay-byes (c) Rest areas (d) others	 0 0 0 0	Unit of measurement is each number. Payment shall be made on pro rata basis for completed facilities.
(vi) Roadside plantation	0	Unit of measurement is linear length in Km. Payment shall be made on pro rata basis on completion of one Km.
(vii) Protection works other than approaches to the bridges, elevated sections/ flyovers/grade separators and ROBs/ RUBs (a) Crash- Barrier (b) Retaining wall (c) Breast wall	 0.24 61.91 30.11	Unit of measurement is linear length. Payment against items (a), (b) & (c) 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 and 100 m whichever is less.
(viii) Safety and traffic management during construction	0.07	Payment shall be made on prorata basis every six months.
(viii) Hydro seeding and Soil Nailing	4.25	Payment shall be made on prorata basis on completion of one Km.

Note: (1) In case of innovative Major Bridge Projects like cable suspension/cable stayed 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.

(3) (a) In order to maintain cash flow in the project, the Authority shall also make interim monthly payments to the Contractor for the work done during the month for which the corresponding stage, as mentioned in Schedule-H, has not been achieved. Such work shall be measured, in a length, number or area as specified in corresponding stage of Schedule-H and valued in accordance with the proportion of the weightage of Contract Price assigned to that stage in Schedule-H. '90% of value of such work shall be paid as an 'Interim Monthly Payment' under clause 19.3 (i) of Contract Agreement.

(b) For Pre cast/ pre-fabricated elements to be used in permanent works, interim payments to be made @ 75% of cost of that element (to be derived from MoRT&H data book) as per schedule H.

(C) Upon completion of the defined 'stage', a reconciliation of the interim payments shall be carried out, and any balance amount shall be paid. For the avoidance of doubt, it is clarified that the interim monthly payments are made solely to maintain cash flow in the project. In the event of termination of the project, under Clause23.1, 23.2 or 23.3, as the case may be, such interim payments shall be dealt with as per Clause 23.5 (i) (b) of the Contract Agreement.

Schedule - I

(See Clause 10.2 (iv))

Drawings

1. Drawings

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

2. Additional Drawings

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

Annex – I

(Schedule - I)

List of

Drawings

The list of required drawings is as under:

1. Survey Drawing.
2. Plan and Profile Drawing.
3. Cross Section and Typical Cross Section Drawing.
4. Cross Drainage Drawing.
5. GAD.
6. Structural Component Drawing of Structure.
7. Miscellaneous Drawing.
8. Any other Drawing related to or found essential of the Project.

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

Schedule - J

(See Clause 10.3 (ii))

Project Completion Schedule

1. Project Completion Schedule

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

2. Project Milestone-I

(i) Project Milestone-I shall occur on the date falling on the **[35% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- I**").

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

3. Project Milestone-II

(i) Project Milestone-II shall occur on the date falling on the **[60% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- II**").

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

4. Project Milestone-III

(i) Project Milestone-III shall occur on the date falling on the **[85% of the Scheduled Construction Period]** day from the Appointed Date (the "**Project Milestone- III**").

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

5. Scheduled Completion Date

(i) The Scheduled Completion Date shall occur on the [Scheduled Construction Period]day from the Appointed Date.

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

6. Extension of time

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

Schedule - K

(See Clause 12.1 (ii))

Tests on Completion

1. Schedule for Tests

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

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

2. Tests

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

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

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

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

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

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

3. Agency for conducting Tests

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

4. Completion Certificate

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

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

Sr. No.	Key metrics of Asset	Equipment to be used	Frequency of condition survey
1	Surface defects of pavement	Network Vehicle Survey (NSV)	At least twice a year (As per survey months defined for the state basis rainy season)
2	Roughness of pavement	Network Vehicle Survey (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 ofCompletion Certificate.

Schedule - L

(See Clause 12.2)

Completion Certificate

1 I,..... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated.....(the "**Agreement**"), for **Construction of Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode** of National Highway-913] (the "**Project Highway**") on Engineering, Procurement and Construction..... (EPC) basis through ..... (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Highway with the provisions of the Agreement, and I am satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED, SEALED AND DELIVERED

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

(Signature)

(Name

)(Designation)

(Address)

Schedule - M

(See Clauses 14.6, 15.2 and 19.7)

Payment Reduction for Non-Compliance

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

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

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

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

2. Percentage reductions in lump sum payments on monthly basis

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

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

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

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

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

Where,

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

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

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

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

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

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

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

Schedule - N

(See Clause 18.1 (i))

Selection of Authority's Engineer

1. Selection of Authority's Engineer

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

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

2. Terms of Reference

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

3. Appointment of Government entity as Authority's Engineer

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

Annex – I

(Schedule - N)

Terms of Reference for Authority's Engineer

1. Scope

(i) These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated.....(the "**Agreement**), which has been enteredinto between the [name and address of the Authority] (the "**Authority**") and ..... (the "**Contractor**") # for [Intermediate-Laning] of the **.....** of National Highway No- 913. ** in the State of **Arunachal Pradesh** on Engineering, Procurement, Construction(EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

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

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

2. Definitions and interpretation

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

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

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

3. General

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

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

(a) any Time Extension;

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

(c) the Termination Payment; or

(d) issuance of Completion Certificate or

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

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

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

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

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

4. Construction Period

(i) During the Construction Period, the Authority's Engineer shall review and approve the Drawings furnished by the Contractor along with supporting data, including the geo- technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1 (vi). The Authority's Engineer shall complete such review and approval and send its observations to the Authority and the Contractor within 15 (fifteen) days of receipt of such Drawings; provided, however that in case of a Major Bridge or Structure, the aforesaid period of 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

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

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

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

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

(vi) The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

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

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

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

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

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

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

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

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

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

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

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

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

5. Maintenance Period

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

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

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

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

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

6. Determination of costs and time

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

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

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

7. Payments

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

(ii) Authority's Engineer shall -

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

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

Contractor, after adjustments in accordance with the provisions of Clause 19.10.

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

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

8. Other duties and functions

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

9. Miscellaneous

(i) A copy of all communications, comments, instructions, Drawings or Documents sent bythe Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

(ii) The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.

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

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

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

Schedule - O

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

Forms of Payment Statements

1. Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

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

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

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

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

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

(f) Deductions:

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

ii. Any amount towards deduction of taxes; and

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

(g) Net claim: (e) – (f) (iii);

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

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

ii. For Change of Scope Orders, and

iii. Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) the deductions for maintenance work not done;

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

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

(e) amount towards deduction of taxes

3. Contractor's claim for Damages

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

Schedule - P

(See Clause

20.1)

Insurance

1. Insurance during Construction Period

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

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

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

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

2. Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover of not less than 15% of the Contract Price for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for any loss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3. Insurance against injury to persons and damage to property

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

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

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

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

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

4. Insurance to be in joint names

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

Schedule-Q

(See Clause 14.10)

Tests on Completion of Maintenance Period

1. Riding Quality test:

Riding quality test: Riding quality of each lane of the carriageway shall be checked with the help of a calibrated bump integrator 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 Intermediate Lane of Pango to Jorging Road from Design Km 40+000 to Design Km 82+060 section of frontier Highway (NH-913) (Design Length: 42.06 Km, Package-II, Greenfield Alignment) in the State of Arunachal Pradesh on EPC mode"** (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 *****