

Schedule :A

SCHEDULE -A

(See Clauses 2.1 and 8.1)

SITE OF THE PROJECT

1. The Site

- 1.1 Site of the Four Laning divided Project Highway of Existing Dimapur- Kohima Road on EPC basis starts from design km. 152.490 to km 166.700 (Design Length 14.21 Kms) (Existing km. 156.000 to km. 172.900, Length 16.900 Kms) of NH 39 (New No. is NH-29) in the state of Nagaland. Project Highway shall include the land, buildings, structures and road works as described in Annex-1 of this Schedule-A. The existing condition of site can be viewed by using the link <https://youtu.be/NBBMvk8a3zg> to remotely visit the site. However a physical site visit shall be made by the bidders to correctly assess the site and requirement of works.
- 1.2 The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- 1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2.1 of this Agreement.
- 1.4 The proposed alignment plans of the Project Highway are specified in Annex-III which has to be followed by the Contractor as a minimum The Contractor may, however, improve upon the alignment plans and profile and raise the finished roadway level (FRL) with approval from the Authority's Engineer within the available Right of Way.
- 1.5 The status of the environment clearances obtained or awaited is given in Annex IV.

Annex-1
(Schedule-A)

Note:Through suitable drawings and description in words, the land, buildings, structures and road works comprising the Site shall be specified briefly but precisely in this Annex-1. All the chainages/location referred to in Annex- I to Schedule-A shall be existing chainages.

1. Site

The site of the four lane Project Highway comprises the section of Dimapur- Kohima road commencing from Km 156.000 to Km 172.900 (Existing, Length= 16.90 Kms) and from Design Km 152.490 to Km 166.700 (Design, Length = 14.21 Kms) i.e. Dimapur – Kohima Section in the State of Nagaland. The land, carriageway and structures comprising the Site are described below.

2. Current Status of Project Chainages: The following work has been completed.

Sl. No.	Activity	Chainage		Side	Length (M)	Remarks
		From	To			
1	Earthwork upto Subgrade Top	152+490	153+100	LHS	610	
		153+425	154+890	LHS	1465	
		156+420	157+130	LHS	710	
		158+240	158+390	LHS	150	
		158+610	159+450	LHS	840	
		159+470	160+600	LHS	1130	
		160+650	160+810	LHS	160	
		160+830	161+180	LHS	350	
		161+530	161+790	LHS	260	
		161+820	162+540	LHS	720	
		163+070	163+980	LHS	910	
		164+300	165+100	LHS	800	
		166+290	166+420	LHS	130	
		152+490	152+560	RHS	70	
		152+620	153+100	RHS	480	
		153+510	154+800	RHS	1290	
		156+420	156+850	RHS	430	
		158+240	158+390	RHS	150	
		158+610	158+780	RHS	170	
		158+900	159+140	RHS	240	
		159+370	160+810	RHS	1440	
		160+830	161+200	RHS	370	
		161+460	162+600	RHS	1140	
		163+000	164+100	RHS	1100	
		164+300	165+101	RHS	801	
		165+630	166+090	RHS	460	

Construction of Four Laning of existing Dimapur-Kohima Road from Km 152.490 to Km 166.700 (Existing Km. 156.000 to Km 172.900)(Package-III) excluding Dimapur & Kohima Bypass, in the state of Nagaland through an Engineering Procurement and Construction (EPC) contract under SARDPE-NE

Sl. No.	Activity	Chainage		Side	Length (M)	Remarks
		From	To			
		166+290	166+380	RHS	90	
		Total			16466	
2	GSB	152+490	153+100	LHS	610	
		153+425	154+890	LHS	1465	
		156+420	157+130	LHS	710	
		158+240	158+390	LHS	150	
		158+610	159+450	LHS	840	
		159+470	160+600	LHS	1130	
		160+650	160+810	LHS	160	
		160+830	161+180	LHS	350	
		161+530	161+790	LHS	260	
		161+820	162+540	LHS	720	
		163+070	163+980	LHS	910	
		164+300	165+100	LHS	800	
		166+290	166+420	LHS	130	
		152+490	152+560	RHS	70	
		152+620	153+100	RHS	480	
		153+510	154+800	RHS	1290	
		156+420	156+850	RHS	430	
		158+240	158+390	RHS	150	
		158+610	158+780	RHS	170	
		158+900	159+140	RHS	240	
		159+370	160+810	RHS	1440	
		160+830	161+200	RHS	370	
		161+460	162+600	RHS	1140	
		163+000	164+100	RHS	1100	
		164+300	165+101	RHS	801	
		165+630	166+090	RHS	460	
166+290	166+380	RHS	90			
		Total			16466	
Sl. No.	Activity	Chainage		Side	Length (M)	Remarks
		From	To			
3	WMM	152+560	152+620	LHS	60	
		152+630	152+960	LHS	330	
		152+975	153+070	LHS	95	
		153+530	154+800	LHS	1270	
		156+420	156+970	LHS	550	
		158+680	159+450	LHS	770	
		160+040	160+600	LHS	560	
		160+650	160+810	LHS	160	
		160+830	160+960	LHS	130	

		160+970	161+170	LHS	200			
		161+530	162+540	LHS	1010			
		163+080	163+980	LHS	900			
		164+330	164+900	LHS	570			
		164+910	165+100	LHS	190			
		152+490	153+101	RHS	611			
		153+500	153+780	RHS	280			
		153+950	154+780	RHS	830			
		156+600	156+849	RHS	249			
		158+900	159+100	RHS	200			
		159+470	160+690	RHS	1220			
		160+830	160+960	RHS	130			
		160+970	161+200	RHS	230			
		161+550	162+100	RHS	550			
		162+170	162+501	RHS	331			
		163+100	163+339	RHS	239			
		165+630	166+090	RHS	460			
		Total			12125			
Sl. No.	Activity	Chainage		Side	Length (M)	Remarks		
		From	To					
4	DBM	152+490	152+830	LHS	340			
		152+990	153+050	LHS	60			
		154+730	154+770	LHS	40			
		156+420	156+610	LHS	190			
		158+680	159+450	LHS	770			
		160+040	160+500	LHS	460			
		160+660	160+790	LHS	130			
		160+830	161+160	LHS	330			
		161+560	162+070	LHS	510			
		162+100	162+540	LHS	440			
		163+080	163+979	LHS	890			
		164+420	165+100	LHS	680			
		152+490	152+830	RHS	340			
		154+000	154+760	RHS	760			
		156+610	156+831	RHS	221			
		159+470	160+210	RHS	740			
		161+690	161+790	RHS	100			
		161+800	162+070	RHS	270			
				Total			7821	

3. Land

The Site of the Project Highway as described below:

Sl. No.	Existing Chainage		Design Chainage		Length (m)	Available ROW (m)	Remarks
	From	To	From	To			
1	156.000	172.900	152.490	166.700	14210	45	

4. Carriageway

The Proposed Project section is completed partly 4-lane and partly 2-Lane bituminous carriageway with variable width with Earthen Shoulders with a Width of 1.5 m on Valley side as per proposed cross section. The Project stretch runs through hilly terrain.

5. Major Bridge -The Site includes the following Major Bridges:

Sl. No.	Design (Km)	Type of Structure			Span Length (m)	HFL (m)	Width (m)	Remarks (River/Nala Name)
		Foundation	Sub-Structure	Super Structure				
1	155.245		Steel Girder		1 x 81.0	-	7.80 m Carriage plus 1.5 footpath on either side	Dzozaru constructed in year 2013 (LHS)
2	155.245		Steel Girder		1 x 81.0	-	7.80 m Carriage plus 1.5 footpath on either side	Upto Sub-Structure completed (RHS)

6. Road over-bridges (ROB)

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

Sl. No.	Chainage (km)	Type of Structure		No. of Spans with span length (m)	Width (m)	ROB
		Foundation	Superstructure			
NIL						

7. Grade separators

The Site includes the following grade separators:

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

8. Minor bridges

The Site includes the following minor bridges:

Sl. No.	Design (Km)	Type of Structure			Span Length (m)	HFL (m)	Width (m)	Remarks (River/Nala Name)
		Foundation	Sub-Structure	Super Structure				
1	158.817	RCCSlab			1 x 9.80	967.980	7.9	Diaru, Completed
2	161.255	RCC T-Beam			1 x 14.50	961.440	8.4	Kharu, LHS, Existing
2A	161.255	RCC T-Beam			1 x 14.50	961.440	8.4	Kharu, RHS, Sub-Structure Completed
3	165.158	RCC T-Beam			1 x 24.5	981.146	8.6	Dzuza, LHS, Existing
3A	165.158	RCC T-Beam			1 x 24.5	981.146	8.6	Dzuza, RHS, To be constructed
4	165.585	RCC Box			1 x 9.80	967.980	7.9	Dzuza, LHS, Completed and RHS to be constructed

9. Railway level crossings/Railway Track

The Site includes the following railway level crossings/Track:

Sl. No.	Location (km)	Remarks
NIL		

10. Underpasses (Vehicular, Non Vehicular)

The Site includes the following underpasses:

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

11. Culverts: The Site has the following culvert:

S.No	Design Ch.	Span Arrangement	Type of Culvert	Completed	Remarks
1	152+515	(1X1.5X1.5)	Box culvert	1.00	Completed

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2	152+577	(1X1.5X1.5)	Box culvert	1.00	Completed
3	152+826	(1X1.5X1.5)	Box culvert	1.00	Completed
4	152+858	(1X1.5X1.5)	Box culvert	1.00	Completed
5	152+900	(1X1.5X1.5)	Box culvert	1.00	Completed
6	152+965	(1X1.5X1.5)	Box culvert	1.00	Completed
7	153+104	(1X1.5X1.5)	Box culvert	1.00	Completed
8	153+422	(1X1.5X1.5)	Box culvert	1.00	Completed
9	153+450	(1X1.5X1.5)	Box culvert	1.00	Completed
10	153+610	(1X1.5X1.5)	Box culvert	1.00	Completed
11	153+652	(1X1.5X1.5)	Box culvert	1.00	Completed
12	153+820	(1X1.5X1.5)	Box culvert	1.00	Completed
13	153+881	(1X1.5X1.5)	Box culvert	1.00	Completed
14	153+980	(1X1.5X1.5)	Box culvert	1.00	Completed
15	154+022	(1X1.5X1.5)	Box culvert	1.00	Completed
16	154+133	(1X1.5X1.5)	Box culvert	1.00	Completed
17	154+243	(1X1.5X1.5)	Box culvert	1.00	Completed
18	154+340	(1X1.5X1.5)	Box culvert	1.00	Completed
19	154+388	(1X1.5X1.5)	Box culvert	1.00	Completed
20	154+450	(1X1.5X1.5)	Box culvert	1.00	Completed
21	154+495	(1X1.5X1.5)	Box culvert	1.00	Completed
22	154+612	(1X1.5X1.5)	Box culvert	1.00	Completed
23	154+808	(1X1.5X1.5)	Box culvert	1.00	Completed
24	154+834	(1X1.5X1.5)	Box culvert	1.00	Completed
25	154+908	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
26	154+989	(1X1.5X1.5)	Box culvert	0.00	To be constructed
27	155+039	(1X1.5X1.5)	Box culvert	0.00	To be constructed
28	155+130	(1X1.5X1.5)	Box culvert	0.00	To be constructed
29	155+445	(1X1.5X1.5)	Box culvert	0.00	To be constructed
30	155+555	(1X1.5X1.5)	Box culvert	0.00	To be constructed
31	155+680	(1X1.5X1.5)	Box culvert	0.00	To be constructed
32	155+707	(1X1.5X1.5)	Box culvert	0.00	To be constructed
33	155+820	(1X1.5X1.5)	Box culvert	0.00	To be constructed
34	155+867	(1X1.5X1.5)	Box culvert	0.00	To be constructed
35	156+087	(1X1.5X1.5)	Box culvert	0.00	To be constructed
36	156+230	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
37	156+418	(1X1.5X1.5)	Box culvert	1.00	Completed
38	156+485	(1X1.5X1.5)	Box culvert	1.00	Completed
39	156+543	(1x4.0X3.0)	Box culvert	1.00	Completed
40	156+595	(1X1.5X1.5)	Box culvert	1.00	Completed
41	156+786	(1X1.5X1.5)	Box culvert	1.00	Completed
42	156+847	(1X1.5X1.5)	Box culvert	1.00	Completed
43	157+003	(1X1.5X1.5)	Box culvert	1.00	Completed
44	157+074	(1x3.0x3.0)	Box culvert	1.00	Completed
45	157+750	(1X1.5X1.5)	Box culvert	1.00	Completed
46	157+800	(1X1.5X1.5)	Box culvert	1.00	Completed

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47	157+475	(1X4.0X3.0)	Box culvert	0.00	To be constructed
48	158+045	(1x3.0x3.0)	Box culvert	0.00	To be constructed
49	158+140	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
50	158+254	(1X1.5X1.5)	Box culvert	1.00	Completed
51	158+296	(1X1.5X1.5)	Box culvert	1.00	Completed
52	158+754	(1X1.5X1.5)	Box culvert	1.00	Completed
53	158+896	(1X1.5X1.5)	Box culvert	1.00	Completed
54	159+445	(1X1.5X1.5)	Box culvert	1.00	Completed
55	159+567	(1X1.5X1.5)	Box culvert	1.00	Completed
56	159+656	(1X1.5X1.5)	Box culvert	1.00	Completed
57	159+701	(1X1.5X1.5)	Box culvert	1.00	Completed
58	159+860	(1X1.5X1.5)	Box culvert	1.00	Completed
59	159+891	(1X1.5X1.5)	Box culvert	1.00	Completed
60	159+978	(1X1.5X1.5)	Box culvert	1.00	Completed
61	160+037	(1X1.5X1.5)	Box culvert	1.00	Completed
62	160+279	(1X1.5X1.5)	Box culvert	1.00	Completed
63	160+385	(1X1.5X1.5)	Box culvert	1.00	Completed
64	160+541	(1X1.5X1.5)	Box culvert	1.00	Completed
65	160+640	(1x3.0x3.0)	Box culvert	1.00	Completed
66	160+822	(1X1.5X1.5)	Box culvert	1.00	Completed
67	160+876	(1X1.5X1.5)	Box culvert	1.00	Completed
68	160+990	(1X1.5X1.5)	Box culvert	1.00	Completed
69	161+057	(1X1.5X1.5)	Box culvert	1.00	Completed
70	161+205	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
71	161+300	(1X1.5X1.5)	Box culvert	0.00	To be constructed
72	161+556	(1X1.5X1.5)	Box culvert	1.00	Completed
73	161+640	(1X1.5X1.5)	Box culvert	1.00	Completed
74	161+715	(1X1.5X1.5)	Box culvert	1.00	Completed
75	161+758	(1X1.5X1.5)	Box culvert	1.00	Completed
76	161+820	(1x6.0x3.0)	Box culvert	1.00	Completed
77	161+918	(1X1.5X1.5)	Box culvert	1.00	Completed
78	162+030	(1X1.5X1.5)	Box culvert	1.00	Completed
79	162+085	(1X1.5X1.5)	Box culvert	1.00	Completed
80	162+175	(1X1.5X1.5)	Box culvert	1.00	Completed
81	162+222	(1X1.5X1.5)	Box culvert	1.00	Completed
82	162+299	(1X1.5X1.5)	Box culvert	1.00	Completed
83	162+326	(1X1.5X1.5)	Box culvert	1.00	Completed
84	162+364	(1X1.5X1.5)	Box culvert	1.00	Completed
85	162+392	(1X1.5X1.5)	Box culvert	1.00	Completed
86	162+428	(1X1.5X1.5)	Box culvert	1.00	Completed
87	162+457	(1X1.5X1.5)	Box culvert	1.00	Completed
88	162+497	(1X1.5X1.5)	Box culvert	1.00	Completed
89	162+551	(1X1.5X1.5)	Box culvert	1.00	Completed
90	162+730	(1X1.5X1.5)	Box culvert	1.00	Completed
91	162+820	(1X1.5X1.5)	Box culvert	1.00	Completed

92	162+980	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
93	163+065	(1X1.5X1.5)	Box culvert	1.00	Completed
94	163+138	(1X1.5X1.5)	Box culvert	1.00	Completed
95	163+177	(1X1.5X1.5)	Box culvert	1.00	Completed
96	163+280	(1X1.5X1.5)	Box culvert	1.00	Completed
97	163+309	(1x2.0X2.0)	Box culvert	1.00	Completed
98	163+380	(1X1.5X1.5)	Box culvert	1.00	Completed
99	163+514	(1X1.5X1.5)	Box culvert	1.00	Completed
100	163+579	(1X1.5X1.5)	Box culvert	1.00	Completed
101	163+694	(1X1.5X1.5)	Box culvert	1.00	Completed
102	163+892	(1X1.5X1.5)	Box culvert	1.00	Completed
103	164+018	(1x2.0X2.0)	Box culvert	1.00	Completed
104	164+123	(1X1.5X1.5)	Box culvert	1.00	Completed
105	164+314	(1X1.5X1.5)	Box culvert	1.00	Completed
106	164+431	(1X1.5X1.5)	Box culvert	1.00	Completed
107	164+507	(1X1.5X1.5)	Box culvert	1.00	Completed
108	164+596	(1X1.5X1.5)	Box culvert	1.00	Completed
109	164+667	(1X1.5X1.5)	Box culvert	1.00	Completed
110	164+782	(1x2.0X2.0)	Box culvert	1.00	Completed
111	164+907	(1X1.5X1.5)	Box culvert	1.00	Completed
112	165+014	(1X1.5X1.5)	Box culvert	1.00	Completed
113	165+290	(1X1.5X1.5)	Box culvert	1.00	Completed
114	165+390	(1X1.5X1.5)	Box culvert	0.00	To be constructed
115	165+418	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
116	165+691	(1X1.5X1.5)	Box culvert	0.00	To be constructed
117	166+247	(1X1.5X1.5)	Box culvert	0.00	To be constructed
118	165+762	(1X1.5X1.5)	Box culvert	1.00	Completed
119	165+837	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
120	165+974	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
121	166+092	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
122	166+191	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
123	166+210	(1X1.5X1.5)	Box culvert	0.50	Partially Completed
124	166+340	(1X1.5X1.5)	Box culvert	1.00	Completed
125	166+530	(1X1.5X1.5)	Box culvert	0.50	Partially Completed

* Protection work to be constructed for all culverts as per site condition.

12. Bus Bays

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

SI. No.	Design Chainage	LHS	RHS	Village Name	Remarks
1	154+330		√		
2	155+400	√	√		

3	156+650	√	√	KIRUPHEMA	
4	158+400	√	√	ZUBZA	
5	160+820	√	√	SECHU ZUBZA	
6	161+600	√	√		
Total		11			

13. Truck Lay Byes

The details of truck lay byes are as follows:

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

14. Road Side Drains

The details of completed PCC roadside drains are as follows:

SL NO.	Chainage		LENGTH IN Mtrs	SIDE
	From	To		
1	152+520	152+575	55	RHS
2	153+465	153+606	141	RHS
3	153+613	153+649	36	RHS
4	153+740	153+790	50	RHS
5	153+985	154+129	144	RHS
6	154+136	154+240	104	RHS
7	154+255	154+300	45	RHS
8	154+390	154+560	170	RHS
9	154+615	154+680	65	RHS
10	156+660	156+840	180	RHS
11	159+450	159+695	245	RHS
12	159+710	159+880	170	RHS
13	159+965	159+975	10	RHS
14	159+980	160+080	100	RHS
15	160+180	160+250	70	RHS
16	160+310	160+350	40	RHS
17	160+470	160+540	70	RHS
18	161+830	161+910	80	RHS
19	161+930	162+020	90	RHS
20	162+180	162+295	115	RHS
21	162+305	162+360	55	RHS
22	162+400	162+450	50	RHS
23	163+180	163+220	40	RHS

15. Major Junctions

Sl. No.	Location		At Grade	Separated	Category of Cross Road			
	Existing Ch.	Design Ch.			NH	SH	MDR	Others
NIL								

The details of major junctions are as follows,

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

16. Minor Junctions

The details of the minor junctions are as follows:

Sl. No.	Design Ch. (m)	Side	Type of Junction	Remarks
1	156556	RHS	Minor	To Village

17. Bypass

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

Sl. No.	Name of Bypass to Town	Chainage (km) from km to km
NIL		

18. Other Structure/Details

The locations of other structure/Land Slide are as follows:

Sl. No.	Existing Chainage (m)		Design Chainage (m)		Length in m (Design)	Remarks
	From	To	From	To		
NIL						

Annex-II
(Schedule-A)

Details of providing Right of Way

The dates on which the authority shall provide RoW to the Contractor on different stretches of site are stated below:

Sl. No.	Design Ch. (Km)		Length in Km	Existing RoW as per Clause 3 of Schedule A	Proposed RoW width (m)	Date of providing proposed RoW
	From	To				
1	152+490	166+700	14.210	45	45	At appointed date

Annex-III
(Schedule-A)

Alignment Plans

The existing alignment of the Project Highway shall be modified in the following sections as per the alignment plan indicated in the attached documents.

Annex-IV

(Schedule-A)

Environment Clearances

Environment Clearance for the Project Road Section has been obtained on 22.10.2007.

SCHEDULE - B

(See Clause 2.1)

Development of the Project Highway

1. Development of the Project Highway

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

2. Upgradation to 4 lane highway

Upgradation shall include Four-Lanning 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 Four-Lanning

1. WIDENING OF THE EXISTING HIGHWAY

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

1.2 WIDTH OF CARRIAGEWAY

1.2.1 Construction of Four-Lane pavement with paved shoulders shall be undertaken. The paved carriageway on both side of median shall be 7m wide with paved shoulders and 1.5 m wide median in accordance with the typical cross sections drawings as per four lane manual 2014

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

2. GEOMETRIC DESIGN AND GENERAL FEATURES

2.1 General

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

2.2 Design speed

The design speed shall be the minimum design speed of 40 km/hr and ruling design speed of 60 km/hr for mountainous and steep terrain.

2.3 Improvement of the existing road geometrics

Improvement of the existing road geometrics shall be carried out as per section 2 of the Manual (IRC: 84-2014).

2.4 Right of Way

Details of the Right of Way are given below.

Design ch. (from)	Design ch. (to)	Design Length	PROW width (m)	EROW width (m)
152+490	166+700	14210	45	45

2.5 Type of shoulders

The shoulder shall be paved shoulder on hill and valley in open areas along with divided carriageway and

1.75m wide raised footpath in Built-up locations as per typical cross section of Four lane manual 2014

(a) In built-up sections. Raised footpaths shall be provided in the following stretches:

Sl. No.	Stretch (from Km to Km)	Raised footpaths	Reference to cross section
1	Length of 555m	2 X 1.75 m width Footpath	TCS-II

(b) Paved shoulders of 1.5 m width shall be provided with selected earth wherever applicable as per TCS drawing.

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

2.6 Lateral and vertical clearances at underpasses

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

2.6.2 Lateral clearance: The width of the opening at the under passes shall be as follows:

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

2.7 Lateral and vertical clearances at overpasses

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

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

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

2.8 Service roads

Service roads shall be constructed at the locations and for the lengths indicated below: [Refer requirements specified in the relevant Manual]

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

2.9 Grade separated structures

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

[Refer to requirements specified in the relevant Manual]

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

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

Construction of Four Laning of existing Dimapur-Kohima Road from Km 152.490 to Km 166.700 (Existing Km. 156.000 to Km 172.900) (Package-III) excluding Dimapur & Kohima Bypass, in the state of Nagaland through an Engineering, Procurement and Construction (EPC) contract under SARDPE-NE

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

2.10 Cattle and pedestrian underpass /overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows: [Refer to provision of the relevant Manual and specify the requirements of cattle and pedestrian underpass/overpass]

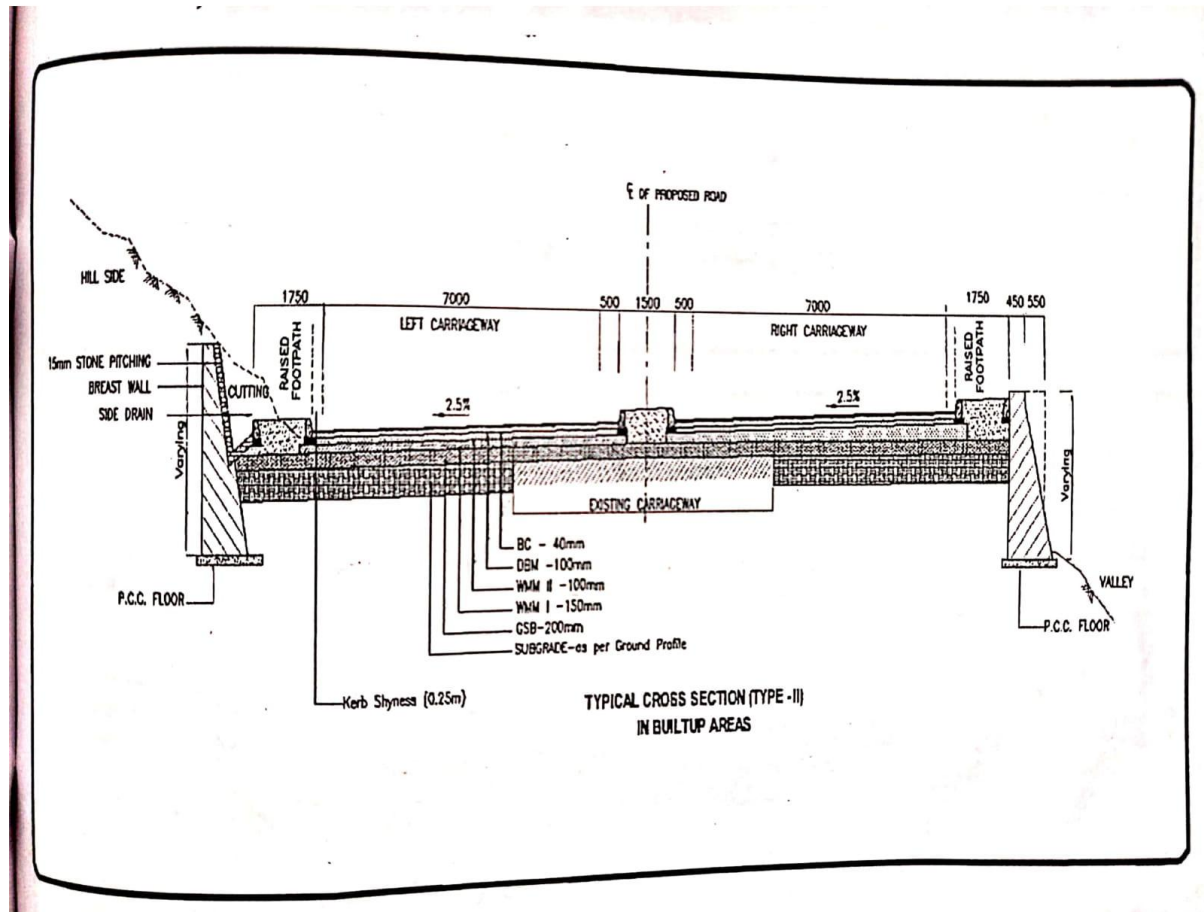
Sl.No.	Location	Type of crossing
Nil		

2.11 Typical cross-sections of the Project Highway

[Give typical cross-sections of the Project Highway by reference to the Manual]As per attached Drawings

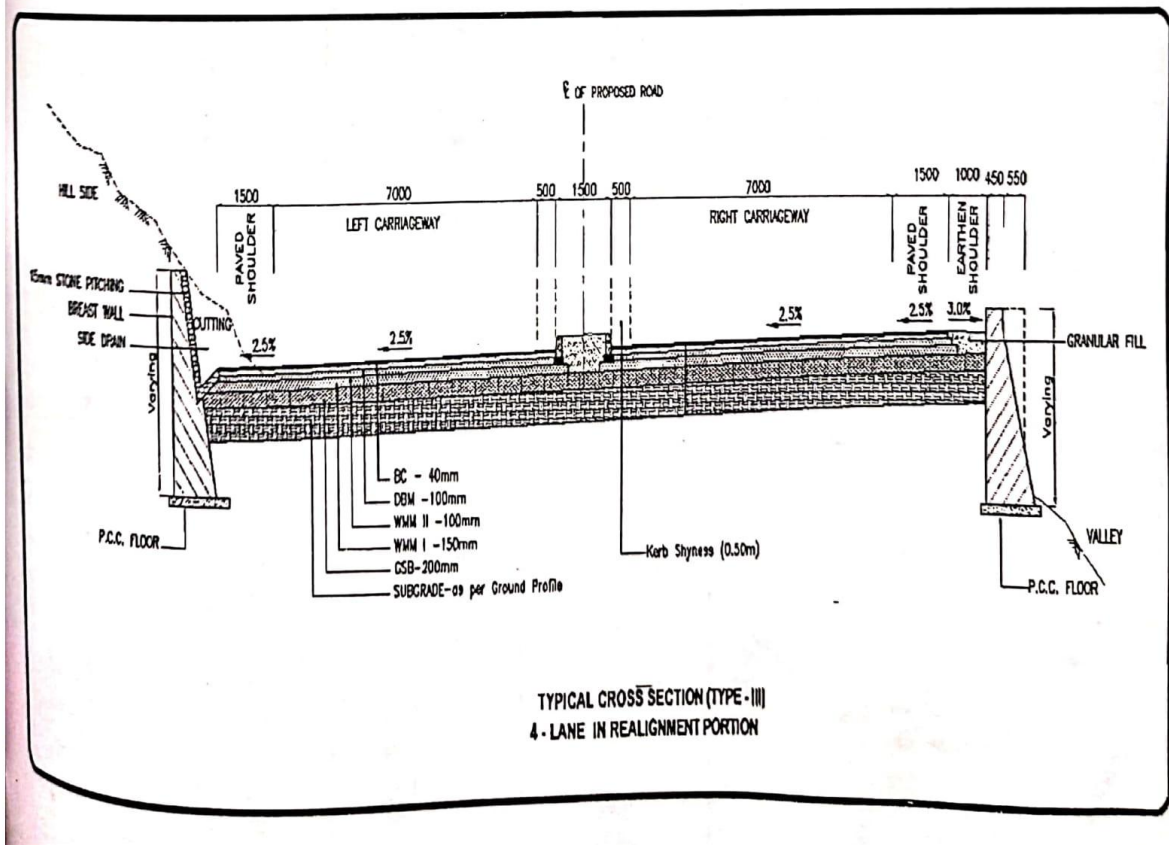
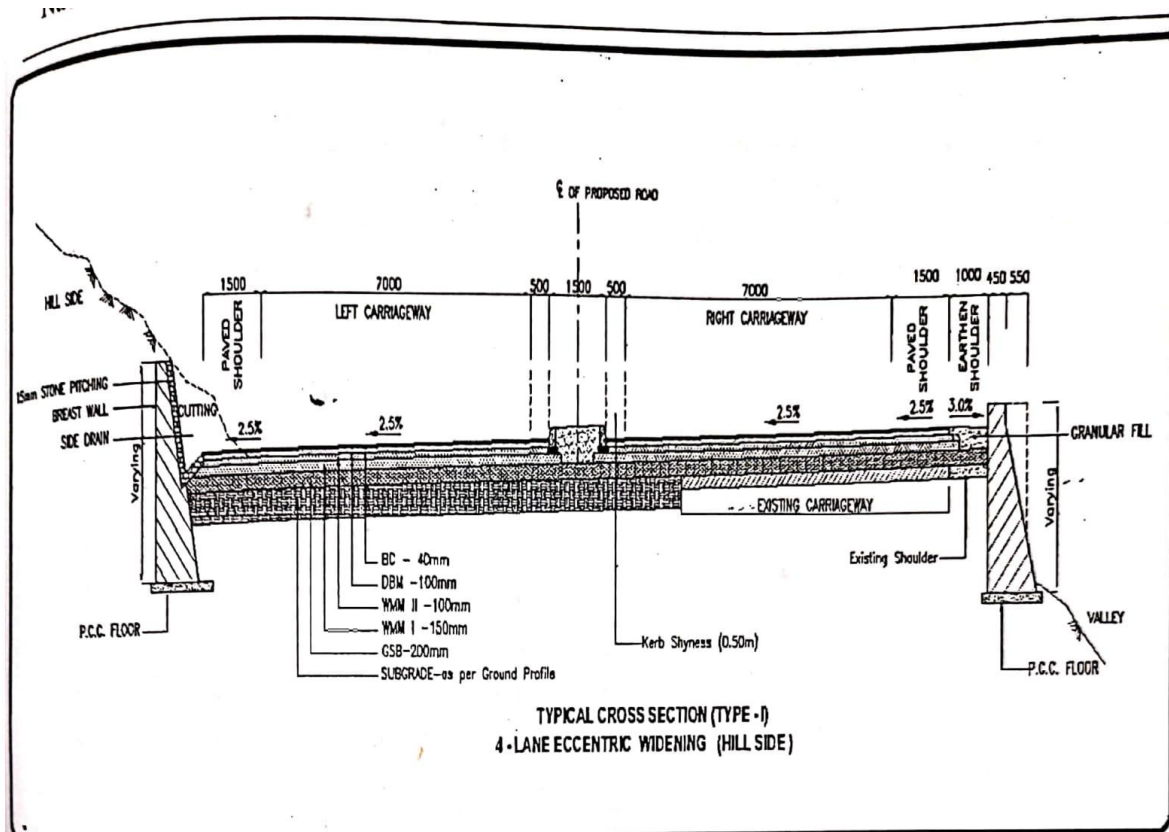
TCS TYPE	DESCRIPTION
TCS-II	In Built Up section
TCS-I	Widening on Hill side
TCS-II	Re-alignment section

Construction of Four Laning of existing Dimapur-Kohima Road from Km 152.490 to Km 166.700 (Existing Km. 156.000 to Km 172.900) (Package-III) excluding Dimapur & Kohima Bypass, in the state of Nagaland through an Engineering, Procurement and Construction (EPC) contract under SARDPE-NE



Scanned with CamScanner

Construction of Four Laning of existing Dimapur-Kohima Road from Km 152.490 to Km 166.700 (Existing Km. 156.000 to Km 172.900) (Package-III) excluding Dimapur & Kohima Bypass, in the state of Nagaland through an Engineering, Procurement and Construction (EPC) contract under SARDPE-NE



Scanned with CamScanner

Realignment chainages of the Project Highway are tabulated below:

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Design Chainage (m) as per Plan & Profile		
From	To	Length (m)
152490	152560	70
152620	152700	80
152800	152860	60
152975	153425	450
153680	153780	100
153820	153870	50
154155	154235	80
155040	155120	80
155580	155650	70
155710	156220	510
156300	156980	680
157130	157480	350
158300	158470	170
158680	158760	80
158830	159450	620
159590	159660	70
159730	159760	30
159800	159830	30
159880	159930	50
160060	160150	90
160620	160810	190
160910	160970	60
161530	161690	160
161790	162030	240
162100	162165	65
162210	162275	65
162600	162710	110
162745	162790	45
162840	162900	60
162960	163040	80
163080	163290	210
163380	163440	60
163570	163850	280
163920	164010	90
164220	164270	50
164100	164150	50
164800	164860	60
164910	164990	80
165740	165800	60
165870	165920	50
165980	166140	160
166235	166495	260
166640	166670	30
Total		6235

3. INTERSECTIONS AND GRADE SEPARATORS

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

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

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

(a) At-grade intersections

Sl. No.	Design chainage (Km)	Side	Type of Junction	Remarks
1	156550	RHS	Minor	To Village

(b) Grade separated intersection with/without ramps

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

4. ROAD EMBANKMENT AND CUT SECTION

4.1 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.

4.2 The existing road including raising shall be reconstructed as per FRL mentioned in Plan & Profile as attached in Annex III of Schedule A.

The existing road shall be raised in the following sections:

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

5. PAVEMENT DESIGN

5.1 Pavement design shall be carried out in accordance with provision of the relevant manual.

5.2 Type of pavement

5.2.1 Flexible pavement design as per Clause 2.2 (i) i.e. Granular base and sub base with DBM & BC as per IRC 37-2012, plate for 8 CBR and 30 msa, is considered as tabulated below-

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Sl. No.	Section (Design Km)	Design Length (km)	BC (mm)	DBM (mm)	WMM (250)	GSB (mm)	Total Crust (mm)
1	Km 152+490 to Km 166+700	14.210	40	100	250	200	590

Flexible pavement for section 1 of above table under sub clause 5.2.1 shall be adopted in accordance with IRC:37-2012. Clause 2.2 of IRC:37-2012 Identifies four types of flexible pavements. Since, the successful bides under EPC mode can use any type of four flexible pavements mentioned in Clause 2.2 of IRC:37-2012, they may carry out their own due diligence to arrive at project cost before submitting bids.

5.3 Design requirements

5.3.1 Design Period and Strategy

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

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual. The Contractor shall design the pavement for design traffic of 30 msa & minimum CBR of 8.

6 Reconstruction of stretches

[Refer to provision of the relevant Manual and specify the stretches if any to be reconstructed.]

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

SL NO.	Stretch from Km to Km	Remarks	TCS Type
1		Nil	

7 Balance work of 4 laning: layer wise and side wise

a) Earthwork upto Top of subgrade:

SL. NO.	CHAINAGE		Side	LENGTH IN Mtrs	SCOPE
	From	To			
1	153+100	153+425	LHS	325	
2	154+890	156+420	LHS	1530	
3	157+130	158+240	LHS	1110	
4	158+390	158+610	LHS	220	
5	159+450	159+470	LHS	20	
6	160+600	160+650	LHS	50	
7	160+810	160+830	LHS	20	

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8	161+180	161+530	LHS	350	
9	161+790	161+820	LHS	30	
10	162+540	163+070	LHS	530	
11	163+980	164+300	LHS	320	
12	165+100	166+290	LHS	1190	
13	166+420	166+700	LHS	280	
14	152+560	152+620	RHS	60	
15	153+100	153+510	RHS	410	
16	154+800	156+420	RHS	1620	
17	156+850	158+240	RHS	1390	
18	158+390	158+610	RHS	220	
19	158+780	158+900	RHS	120	
20	159+140	159+370	RHS	230	
21	160+810	160+830	RHS	20	
22	161+200	161+460	RHS	260	
23	162+600	163+000	RHS	400	
24	164+100	164+300	RHS	200	
25	165+101	165+630	RHS	529	
26	166+090	166+290	RHS	200	
27	166+380	166+700	RHS	320	
Total Length (2 Lane)				11954	
Total Length (4 Lane)				5977	

b) Granular Works (Sub –Base)

SL. NO.	CHAINAGE		Side	LENGTH IN Mtrs	SCOPE
	From	To			
1	153+100	153+425	LHS	325	
2	154+890	156+420	LHS	1530	
3	157+130	158+240	LHS	1110	
4	158+390	158+610	LHS	220	
5	159+450	159+470	LHS	20	
6	160+600	160+650	LHS	50	
7	160+810	160+830	LHS	20	
8	161+180	161+530	LHS	350	
9	161+790	161+820	LHS	30	
10	162+540	163+070	LHS	530	
11	163+980	164+300	LHS	320	
12	165+100	166+290	LHS	1190	
13	166+420	166+700	LHS	280	
14	152+560	152+620	RHS	60	
15	153+100	153+510	RHS	410	

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16	154+800	156+420	RHS	1620	
17	156+850	158+240	RHS	1390	
18	158+390	158+610	RHS	220	
19	158+780	158+900	RHS	120	
20	159+140	159+370	RHS	230	
21	160+810	160+830	RHS	20	
22	161+200	161+460	RHS	260	
23	162+600	163+000	RHS	400	
24	164+100	164+300	RHS	200	
25	165+101	165+630	RHS	529	
26	166+090	166+290	RHS	200	
27	166+380	166+700	RHS	320	
Total Length (2 Lane)				11954	
Total Length (4 Lane)				5977	

c) Granular Works (Base, Shoulders)

SL. NO.	CHAINAGE		Side	LENGTH IN Mtrs	SCOPE
	From	To			
1	152+490	152+560	LHS	70	
2	152+620	152+630	LHS	10	
3	152+960	152+975	LHS	15	
4	153+070	153+530	LHS	460	
5	154+800	156+420	LHS	1620	
6	156+970	158+680	LHS	1710	
7	159+450	160+040	LHS	590	
8	160+600	160+650	LHS	50	
9	160+810	160+830	LHS	20	
10	160+960	160+970	LHS	10	
11	161+170	161+530	LHS	360	
12	162+540	163+080	LHS	540	
13	163+980	164+330	LHS	350	
14	164+900	164+910	LHS	10	
15	165+100	166+700	LHS	1600	
16	153+101	153+500	RHS	399	
17	153+780	153+950	RHS	170	
18	154+780	156+600	RHS	1820	
19	156+849	158+900	RHS	2051	
20	159+100	159+470	RHS	370	
21	160+690	160+830	RHS	140	
22	160+960	160+970	RHS	10	
23	161+200	161+550	RHS	350	
24	162+100	162+170	RHS	70	
25	162+501	163+100	RHS	599	

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26	163+339	165+630	RHS	2291	
27	166+090	166+700	RHS	610	
Total Length (2 Lane)				16295	
Total Length (4 Lane)				8147.5	

d) DBM with Prime coat & Tack Coat

SL NO	CHAINAGE		Side	LENGTH IN Mtrs	SCOPE
	From	To			
1	152+830	152+990	LHS	160	
2	153+050	154+730	LHS	1680	
3	154+770	156+420	LHS	1650	
4	156+610	158+680	LHS	2070	
5	159+450	160+040	LHS	590	
6	160+500	160+660	LHS	160	
7	160+790	160+830	LHS	40	
8	161+160	161+560	LHS	400	
9	162+070	162+100	LHS	30	
10	162+540	163+080	LHS	540	
11	163+970	164+420	LHS	450	
12	165+100	166+700	LHS	1600	
13	152+830	154+000	RHS	1170	
14	154+760	156+610	RHS	1850	
15	156+831	159+470	RHS	2639	
16	160+210	160+310	RHS	100	
17	160+690	160+880	RHS	190	
18	161+050	161+690	RHS	640	
19	161+790	161+800	RHS	10	
20	162+070	166+700	RHS	4630	
Total Length (2 Lane)				20599	
Total Length (4 Lane)				10299.5	

e) BC with Tack Coat : From Km 152+490 to Km 166+700= 14.210 Km (4 lane)

f) Rectification / Reconstruction of Damaged DBM stretch :

SL. NO.	CHAINAGE		Side	LENGTH IN Mtrs	SCOPE
	From	To			
1	152+490	152+830	LHS	340	
2	158+900	159+420	LHS	520	
3	159+430	159+800	RHS	370	
4	161+820	162+000	LHS	180	
5	161+820	162+000	RHS	180	
6	162+150	162+400	LHS	250	

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7	163+200	164+000	LHS	800	
Total Length (2 Lane)				2640	
Total Length (4 Lane)				1320	

Bidders are requested to visit the site/stretch to understand the requirement of rectification as per their own assessment.

8. ROADSIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway has been provided as per Section 6 of the Manual. However balance drains shall be provided in the table given below:

RCC/PCC Drain

SL. NO.	DESIGN CHAINAGE (Km)		Length (M)	Remarks
	FROM	TO		
1	As per TCS II Schedule	In Built up section	555m	As per Four lane manual 2014 & IRC : SP-48
2	As per TCS I Schedule	Widening on Hill Side	5480m	
3	As per TCS III Schedule	Re-alignment section	6235m	

9. DESIGN OF STRUCTURES

9.1 General

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

9.1.2 Width of the carriageway of new bridges and structures shall be as per figure 7.2 A and figure 7.3 of the Four lane manual (IRC SP:84-2014)

9.1.3 Cross section of two lane new bridge with existing two lane shall be as per figure 7.4 A & &.4 B of four lane Manual (IRC:84-2014)

9.1.4 The following structures shall be provided with footpaths:

Sl. No.	Design (Km)	Type of Structure			Span Length (m)	Footpath Width (m)	Remarks
		Foundation	Sub-structure	Superstructure			
1	155+245	Steel Truss			1 x 81.00	1.5	Dzozaru
2	158+817	RCC slab			1 x 9.8	1.5	Diaru
3	161+255	RCC T – Beam Girder			1 x 14.50	1.5	Kharu
4	165+158	RCC T-Beam Girder			1 x 24.75	1.5	Dzuza

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5	165+585	RCC Box Type	1 x 9.8	1.5	
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9.1.5 All bridges shall be high-level bridges.

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

Sl.No.	Bridge at km	Utility service to be carried	Scope
1	155+245	Water Pipe	New
2	158+817	Water Pipe	New
3	161+255	Water Pipe	New
4	165+158	Water Pipe	New
5	165+585	Water Pipe	New

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

9.2 Culverts

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

9.2.2 Widening of Proposed culverts:

The culverts at the following locations shall be constructed as widening / new culverts:

S.No	Design Ch.	Span Arrangement	Type of Culvert	Completed	Balance to be constructed
1	152+515	(1X1.5X1.5)	Box culvert	1.00	0.0
2	152+577	(1X1.5X1.5)	Box culvert	1.00	0.0
3	152+826	(1X1.5X1.5)	Box culvert	1.00	0.0
4	152+858	(1X1.5X1.5)	Box culvert	1.00	0.0
5	152+900	(1X1.5X1.5)	Box culvert	1.00	0.0
6	152+965	(1X1.5X1.5)	Box culvert	1.00	0.0
7	153+104	(1X1.5X1.5)	Box culvert	1.00	0.0
8	153+422	(1X1.5X1.5)	Box culvert	1.00	0.0
9	153+450	(1X1.5X1.5)	Box culvert	1.00	0.0
10	153+610	(1X1.5X1.5)	Box culvert	1.00	0.0
11	153+652	(1X1.5X1.5)	Box culvert	1.00	0.0

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12	153+820	(1X1.5X1.5)	Box culvert	1.00	0.0
13	153+881	(1X1.5X1.5)	Box culvert	1.00	0.0
14	153+980	(1X1.5X1.5)	Box culvert	1.00	0.0
15	154+022	(1X1.5X1.5)	Box culvert	1.00	0.0
16	154+133	(1X1.5X1.5)	Box culvert	1.00	0.0
17	154+243	(1X1.5X1.5)	Box culvert	1.00	0.0
18	154+340	(1X1.5X1.5)	Box culvert	1.00	0.0
19	154+388	(1X1.5X1.5)	Box culvert	1.00	0.0
20	154+450	(1X1.5X1.5)	Box culvert	1.00	0.0
21	154+495	(1X1.5X1.5)	Box culvert	1.00	0.0
22	154+612	(1X1.5X1.5)	Box culvert	1.00	0.0
23	154+808	(1X1.5X1.5)	Box culvert	1.00	0.0
24	154+834	(1X1.5X1.5)	Box culvert	1.00	0.0
25	154+908	(1X1.5X1.5)	Box culvert	0.50	0.5
26	154+989	(1X1.5X1.5)	Box culvert	0.00	1.0
27	155+039	(1X1.5X1.5)	Box culvert	0.00	1.0
28	155+130	(1X1.5X1.5)	Box culvert	0.00	1.0
29	155+445	(1X1.5X1.5)	Box culvert	0.00	1.0
30	155+555	(1X1.5X1.5)	Box culvert	0.00	1.0
31	155+680	(1X1.5X1.5)	Box culvert	0.00	1.0
32	155+707	(1X1.5X1.5)	Box culvert	0.00	1.0
33	155+820	(1X1.5X1.5)	Box culvert	0.00	1.0
34	155+867	(1X1.5X1.5)	Box culvert	0.00	1.0
35	156+087	(1X1.5X1.5)	Box culvert	0.00	1.0
36	156+230	(1X1.5X1.5)	Box culvert	0.50	0.50
37	156+418	(1X1.5X1.5)	Box culvert	1.00	0.0
38	156+485	(1X1.5X1.5)	Box culvert	1.00	0.0
39	156+543	(1x4.0x3.0)	Box culvert	1.00	0.0
40	156+595	(1X1.5X1.5)	Box culvert	1.00	0.0
41	156+786	(1X1.5X1.5)	Box culvert	1.00	0.0
42	156+847	(1X1.5X1.5)	Box culvert	1.00	0.0
43	157+003	(1X1.5X1.5)	Box culvert	1.00	0.0
44	157+074	(1x3.0x3.0)	Box culvert	1.00	0.0
45	157+750	(1X1.5X1.5)	Box culvert	1.00	0.0
46	157+800	(1X1.5X1.5)	Box culvert	1.00	0.0
47	157+475	(1X4.0X3.0)	Box culvert	0.00	1.0
48	158+045	(1x3.0x3.0)	Box culvert	0.00	1.0
49	158+140	(1X1.5X1.5)	Box culvert	0.50	0.5
50	158+254	(1X1.5X1.5)	Box culvert	1.00	0.0
51	158+296	(1X1.5X1.5)	Box culvert	1.00	0.0
52	158+754	(1X1.5X1.5)	Box culvert	1.00	0.0
53	158+896	(1X1.5X1.5)	Box culvert	1.00	0.0
54	159+445	(1X1.5X1.5)	Box culvert	1.00	0.0
55	159+567	(1X1.5X1.5)	Box culvert	1.00	0.0
56	159+656	(1X1.5X1.5)	Box culvert	1.00	0.0
57	159+701	(1X1.5X1.5)	Box culvert	1.00	0.0
58	159+860	(1X1.5X1.5)	Box culvert	1.00	0.0

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59	159+891	(1X1.5X1.5)	Box culvert	1.00	0.0
60	159+978	(1X1.5X1.5)	Box culvert	1.00	0.0
61	160+037	(1X1.5X1.5)	Box culvert	1.00	0.0
62	160+279	(1X1.5X1.5)	Box culvert	1.00	0.0
63	160+385	(1X1.5X1.5)	Box culvert	1.00	0.0
64	160+541	(1X1.5X1.5)	Box culvert	1.00	0.0
65	160+640	(1x3.0x3.0)	Box culvert	1.00	0.0
66	160+822	(1X1.5X1.5)	Box culvert	1.00	0.0
67	160+876	(1X1.5X1.5)	Box culvert	1.00	0.0
68	160+990	(1X1.5X1.5)	Box culvert	1.00	0.0
69	161+057	(1X1.5X1.5)	Box culvert	1.00	0.0
70	161+205	(1X1.5X1.5)	Box culvert	0.50	0.5
71	161+300	(1X1.5X1.5)	Box culvert	0.00	1.0
72	161+556	(1X1.5X1.5)	Box culvert	1.00	0.0
73	161+640	(1X1.5X1.5)	Box culvert	1.00	0.0
74	161+715	(1X1.5X1.5)	Box culvert	1.00	0.0
75	161+758	(1X1.5X1.5)	Box culvert	1.00	0.0
76	161+820	(1x6.0x3.0)	Box culvert	1.00	0.0
77	161+918	(1X1.5X1.5)	Box culvert	1.00	0.0
78	162+030	(1X1.5X1.5)	Box culvert	1.00	0.0
79	162+085	(1X1.5X1.5)	Box culvert	1.00	0.0
80	162+175	(1X1.5X1.5)	Box culvert	1.00	0.0
81	162+222	(1X1.5X1.5)	Box culvert	1.00	0.0
82	162+299	(1X1.5X1.5)	Box culvert	1.00	0.0
83	162+326	(1X1.5X1.5)	Box culvert	1.00	0.0
84	162+364	(1X1.5X1.5)	Box culvert	1.00	0.0
85	162+392	(1X1.5X1.5)	Box culvert	1.00	0.0
86	162+428	(1X1.5X1.5)	Box culvert	1.00	0.0
87	162+457	(1X1.5X1.5)	Box culvert	1.00	0.0
88	162+497	(1X1.5X1.5)	Box culvert	1.00	0.0
89	162+551	(1X1.5X1.5)	Box culvert	1.00	0.0
90	162+730	(1X1.5X1.5)	Box culvert	1.00	0.0
91	162+820	(1X1.5X1.5)	Box culvert	0.50	0.5
92	162+980	(1X1.5X1.5)	Box culvert	0.50	0.5
93	163+065	(1X1.5X1.5)	Box culvert	1.00	0.0
94	163+138	(1X1.5X1.5)	Box culvert	1.00	0.0
95	163+177	(1X1.5X1.5)	Box culvert	1.00	0.0
96	163+280	(1X1.5X1.5)	Box culvert	1.00	0.0
97	163+309	(1x2.0X2.0)	Box culvert	1.00	0.0
98	163+380	(1X1.5X1.5)	Box culvert	1.00	0.0
99	163+514	(1X1.5X1.5)	Box culvert	1.00	0.0
100	163+579	(1X1.5X1.5)	Box culvert	1.00	0.0
101	163+694	(1X1.5X1.5)	Box culvert	1.00	0.0
102	163+892	(1X1.5X1.5)	Box culvert	1.00	0.0
103	164+018	(1x2.0X2.0)	Box culvert	1.00	0.0
104	164+123	(1X1.5X1.5)	Box culvert	1.00	0.0
105	164+314	(1X1.5X1.5)	Box culvert	1.00	0.0

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106	164+431	(1X1.5X1.5)	Box culvert	1.00	0.0
107	164+507	(1X1.5X1.5)	Box culvert	1.00	0.0
108	164+596	(1X1.5X1.5)	Box culvert	1.00	0.0
109	164+667	(1X1.5X1.5)	Box culvert	1.00	0.0
110	164+782	(1x2.0X2.0)	Box culvert	1.00	0.0
111	164+907	(1X1.5X1.5)	Box culvert	1.00	0.0
112	165+014	(1X1.5X1.5)	Box culvert	1.00	0.0
113	165+290	(1X1.5X1.5)	Box culvert	1.00	0.0
114	165+390	(1X1.5X1.5)	Box culvert	0.00	1.0
115	165+418	(1X1.5X1.5)	Box culvert	0.50	0.5
116	165+691	(1X1.5X1.5)	Box culvert	0.00	1.0
117	166+247	(1X1.5X1.5)	Box culvert	0.00	1.0
118	165+762	(1X1.5X1.5)	Box culvert	1.00	0.0
119	165+837	(1X1.5X1.5)	Box culvert	0.50	0.5
120	165+974	(1X1.5X1.5)	Box culvert	0.50	0.5
121	166+092	(1X1.5X1.5)	Box culvert	0.50	0.5
122	166+191	(1X1.5X1.5)	Box culvert	0.50	0.5
123	166+210	(1X1.5X1.5)	Box culvert	0.50	0.5
124	166+340	(1X1.5X1.5)	Box culvert	1.00	0.0
125	166+450	(1X1.5X1.5)	Box culvert	0.50	0.5

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

[Refer provision of the relevant Manual and provide details]

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

9.2.4 Floor protection works shall be as specified in the relevant IRC Codes and Specifications.

9.3 Bridges

9.3.1 Existing bridges to be re-constructed/widened

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

[Refer provision of the relevant Manual and provide details]

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

(ii) The following narrow bridges shall be widened:

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

9.3.2 Additional new bridges (Minor)

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

Sl. No.	Location (km)	Total Length (m)	Scope
1	161+255	14.5	2 lane
2	165+158	24.75	2 lane
3	165+585	9.8	2 lane

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

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

Sl.No.	Location at km	Scope
Nil		

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

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

Sl.No.	Location at km	Scope
1	161+225	Repair
2	165+158	Repair

9.3.5 Drainage system for bridge decks

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

9.3.6 Structures in marine environment

Nil

9.4 Rail-road bridges

9.4.4 Design construction and detailing of ROB/RUB shall be as specified in provision of the relevant Manual

Nil

9.4.5 Road over-bridges

Road over-bridges(road over rail)shall be provided at the following level crossings.

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

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(c) Road under-bridges

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

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

9.5 Grade separated structures

Nil

9.6 Repairs and strengthening of bridges and structures

A. Bridges

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

Sl. No.	Location of bridge (km)	Scope
1	161+255	Existing 2 lane
2	165+158	Existing 2 lane

B. ROB / RUB

Nil

C. Overpasses/Underpasses and other structures

Nil

9.7 List of Major Bridges and Structures

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

Sl. No.	Location (Km)	Proposed span (in m)	Proposed width
1	155+254	81*	New 2 lane with existing 2

* Only balance work of superstructure is required to be done.

10. TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

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

10.2 Specifications of the reflective sheeting. As per the Clause 9.3 of the Manual of Specifications and Standards

11. ROADSIDE FURNITURE

11.1 Road side furniture shall be provided in accordance with the provisions of Section 12 of the Manual.

11.2 The Overhead traffic signs: location and size

Sl. No.	Location (Km)	Remarks
1	Full width overhead sign at 166+700	Location may change in consultation with Authority's Engineer

2	Cantilever over head signs (6 nos.)	Location to be identified in consultation with Authority's Engineer
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12. COMPULSORY AFFORESTATION

The number of trees which are required to be planted by the contractor as compulsory afforestation shall be as per Forest Conservation Act and as per the section 11 of four lane Manual 2014

13. HAZARDOUS LOCATION / SAFETY PRECAUTIONS / PROTECTION WORKS

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

13.1 Gabion Breast Wall :- The provision of Gabion Breast wall including slope protection measures are:

Sl. no.	Chainage		Length(m)	Scope
	From km.	To Km.		
1	158350	158538	188	
		Total	188	

13.2 R R masonry / CC Breast Wall :- The provision of Breast wall including slope protection measures are:

Sl.No	CHAINAGE		Length (m)	Scope
	From	To		
1	153140	153390	500	BHS
2	155840	156300	920	BHS
3	159130	159350	220	
4	162560	162730	170	
5	162770	162845	75	
6	163050	163270	220	
7	165200	165500	300	
		Total	2405	

13.3 Retaining Wall : The Provision of Retaining wall including slope protection measures are:

Sl.No	CHAINAGE		Length (m)	Scope
	From	To		
1	154890	154910	20	
2	155100	155140	40	
3	156220	156280	60	
4	156490	156530	40	
5	157990	158080	90	

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6	159460	159470	10	
7	159550	159560	10	
8	159840	159860	20	
9	160280	160360	80	
10	161130	161170	40	
11	161300	161360	60	
12	162570	162600	30	
13	162780	162800	20	
14	162925	162950	25	
15	164180	164200	20	
16	164200	164220	20	
17	164270	164305	35	
18	164415	164470	55	
19	165330	165400	70	
20	165550	165565	15	
21	165595	165640	45	
22	165680	165730	50	
23	165800	165850	50	
24	165930	165970	40	
Total			945	

NOTE-The length of Retaining Wall shown above is minimum, to be constructed at site for proper geometrics and will not be converted to Breast Wall. Any reduction in the total length of Retaining Wall constructed at site shall constitute of negative change of scope.

14. Metal Beam Crash Barrier / Parapet wall with Cement Concrete block:

The parapet wall shall be provided on valley edge in complete length minus built up length, bridge span etc. Minimum length of parapet shall be 7362 m. The design of parapet shall be as per IRC SP48:1998.

15. SPECIAL REQUIREMENT FOR HILL ROADS

Slope Protection Measures

Refer to section 13 of IRC: SP: 73-2018

A brief chainage-wise summary of the slope stabilization solutions is given below which is to be constructed in consultation with Authority's Engineer.

Sl. No.	Chainage		Length (m)	Avg. Height(m)	Area (sqm.)	Suggested Slope Stability Solution
	From	To				
1	152.490	152.570	80.000	20.000	1600	Vetiver Plantation
2	152.630	152.700	70.000	30.000	2100	Rhomboidal Rope net drapery system with opening of 300x300 mm with primary & secondary mesh (Double Twist Mesh 10x12, wire Dia: 2.7mm) including nailing at top & bottom of slope with 32mm dia

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						3m deep fully grouted anchors with all accessories.
3	153.000	153.050	50.000	35.000	1750	Rhomboidal Rope net drapery system with opening of 300x300 mm with primary & secondary mesh (Double Twist Mesh 10x12, wire Dia: 2.7mm) including nailing at top & bottom of slope with 32mm dia 3m deep fully grouted anchors with all accessories with Drainage Holes
4	153.180	153.230	50.000	40.000	2000	Hydroseeding
5	153.350	153.400	50.000	35.000	1750	Hydroseeding with Coir Mat
6	153.660	153.760	100.000	25.000	2500	Hydroseeding with Coir Mat
7	154.500	154.600	100.000	25.000	2500	Vetiver Plantation
8	154.840	154.900	60.000	15.000	900	Vetiver Plantation
9	155.300	155.840	540.000	15.000	8100	Drapery with Pocket Reinforced Erosion Control System (PRECS) which is proven anti-erosion Geocomposite with a combination of Double Twist (DT) hexagonal wire mesh (10x12) with wire dia. 2.7mm & Zinc coating & soil nails along with a pocket based non-woven blanket of 600 GSM system including lacing wire & ropes for reinforcement, seeds & mulches.
10	157.100	157.700	600.000	25.000	15000	Drapery with high tensile steel wire rope system & Coir mat
11	158.000	158.300	300.000	25.000	7500	Debris Flow Barriers in stages
12	158.660	158.760	100.000	20.000	2000	Hydroseeding with Coir Mat Vetiver grass
13	159.000	159.400	400.000	15.000	6000	Hydroseeding with Coir Mat
14	159.000	159.400	400.000	15.000	6000	Drapery with Pocket Reinforced Erosion Control System (PRECS) anti-erosion Geocomposite with a combination of Double Twist (DT) hexagonal wire mesh (10x12) with wire dia. 2.7mm & Zinc coating & soil nails along with a pocket based non-woven blanket of 600 GSM system including lacing wire &

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						ropes for reinforcement, seeds & mulches with Drainages Holes
15	159.870	160.000	130.000	15.000	1950	Drapery of high tensile steel wire rope system Double Twisted Mesh & Coir mat
16	160.650	160.800	150.000	15.000	2250	Soil nailing with high tensile strength low deformation wire mesh in combination with fully grouted anchors with diameter 32mm length 6m with grid pattern of 1.5 x 1.5
17	161.130	161.200	70.000	20.000	1400	Vetiver Plantation
18	162.080	162.170	90.000	15.000	1350	Vetiver Plantation
19	162.500	163.000	500.000	25.000	12500	Hydroseeding with Coir Mat
20	163.000	163.270	270.000	15.000	4050	Vetiver Plantation
21	163.350	163.450	100.000	10.000	1000	Hydroseeding with Coir Mat
22	163.930	164.300	370.000	25.000	9250	Hydroseeding with Coir Mat
23	164.600	165.000	400.000	15.000	6000	Vetiver & Hydroseeding with Coir Mat
24	165.230	165.500	270.000	20.000	5400	Drapery with Pocket Reinforced Erosion Control System (PRECS) which is proven anti-erosion Geocomposite with a combination of Double Twist (DT) hexagonal wire mesh (10x12) with wire dia. 2.7mm & Zinc coating & soil nails along with a pocket based non-woven blanket of 600 GSM system including lacing wire & ropes for reinforcement, seeds & mulches.
25	152.490	166.700	6000	10.000	60000	Vetiver Plantation

Note- (i) The Contractor shall be responsible for accurate assessment of the actual requirement as per site situation & prepare designs for slope protection & stabilization as per the specifications & standards stipulated in schedule 'D' and submit the same to the AE for review through the proof consultant and implement it accordingly thereafter.

(ii) Any increase in quantity over and above the minimum qty. as mentioned in above table or through change in specifications will not be considered as change of scope. **Therefore contractor shall make thorough investigation at site and assess**

the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid

(iii) Entire slope/formation which has been cut apart from the above tabulated lengths shall have to be stabilized by the Contractor using techniques approved by AE.

16. UTILITIES

Provision of accommodating utilities shall be made both over as well as underground wherever required.

17. Change of Scope

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

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(Schedule-B1)

1. The shifting of utilities and felling of trees shall be carried out by the concerned department. The cost of the same shall be borne by the concerned department.

SCHEDULE - C
(See Clause 2.1)

PROJECT FACILITIES

1 Project Facilities

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

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

2 Description of Project Facilities

- a) **Toll Plaza:** The detail of Toll plaza proposed on Project road section is:

SI. No.	Existing Chainage (Km)	Design Chainage (Km)	Remarks
NIL			

*Typical layout of Toll plaza shall be as per fig 10.1 & 10.2 of four lane manual 2014

- b) **Road Side Furniture**

Roadside furniture shall be provided in accordance with the provisions of Section 12 of the manual.

- c) **Pedestrian Facilities**

Pedestrian Facilities in the form of guard rails, footpath, at grade pedestrian crossing etc. shall be provided wherever required as per Four Lane Manual.

- d) **Tree plantation**

Tree plantation shall be done as per section 11 of Manual.

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e) **Truck lay-bays**

The locations of proposed truck lay bays are as under:

SI. No.	Existing Km	Design Km	Side	Remarks
NIL				

f) **Bus-bays and bus shelters**

11nos of Bus bays shall be provided, the location of proposed Bus bays are as under:

SI. No.	Design Chainage	LHS	RHS	Village Name	Remarks
1	154+330		√		
2	155+400	√	√		
3	156+650	√	√	KIRUPHEMA	
4	158+400	√	√	ZUBZA	
5	160+820	√	√	SECHU ZUBZA	
6	161+600	√	√		
Total Numbers....		11			

g) **Rest areas:**

NIL

h) **Others to be specified:**

NIL

SCHEDULE-H
(See Clauses 10.1.4 and 19.3)
Contract Price Weightages

1.1 The Contract Price for Balance works in this Agreement is Rs.

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

ITEM	WEIGHTAGE IN PERCENTAGE TO THE CONTRACT PRICE	STAGE FOR PAYMENT	PERCENTAGE WEIGHTAGE
1	2	3	4
Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures	73.15%	A-Widening and Strengthening	
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock.	4.59%
		(2) Granular work (sub- base)	3.47%
		(3) Granular work (base, shoulders)	6.26%
		(4) Bituminous work	0.00%
		a) DBM with Prime coat & Tack Coat	9.43%
		b) BC with Tack Coat	5.22%
		(5) Widening and repair of culverts	1.18%
		(6) Widening and repair of minor bridges	0.72%
		(7) Recostruction of Damaged DBM stretch	3.95%
		B- New 4-lane alignment	0.00%
		(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock.	4.71%
		(2) Granular work (sub- base)	2.43%
		(3) Granular work (base, shoulders)	4.78%
		(4) Bituminous work	0.00%

		a) DBM with Prime coat & Tack Coat	6.86%
		b) BC with Tack Coat	3.94%
		C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:	0.00%
		(1) Culverts	4.73%
		(2) Protection work of Culverts	5.24%
		(3) Minor bridges	5.64%
Major Bridge works and ROB/RUB	1.93%	D- New Major Bridges	0.00%
		(1) Balance work of Sub-structure	0.02%
		(2) Super-structure (including crash barriers etc. complete)	1.91%
Other Works	24.92%		0.00%
		(i) Foot Over Bridge	0.00%
		(ii) Toll Plaza	0.00%
		(iii) Road side drains	0.00%
		a) RCC / PCC Drain	1.51%
		(iv) Road signs, markings, km stones, safety devices,	0.59%
		(v) Project facilities	0.00%
		(a) Bus bays	0.44%
		(b) Truck lay-byes	0.00%
		(c) Junction Improvement	0.07%
		(vi) Protection works	0.00%
		a) Slope Protection Works (Including Retaining wall, Gabion wall & Breast wall, Parapet etc)	0.00%
		Parapet wall on Valley Side.	2.02%
		Gabion Wall	0.80%
		Retaining W all	3.74%
		Breast W all	8.90%
		Slope protection measures in hill side i.e. a) vetiver plantation.	0.95 %
		Slope protection measures in hill side i.e b) Hydroseeding with coir netting	1.50 %
		Slope protection measures in hill side i.e c) Rock netting	2.44 %
		Slope protection measures in hill side i.e d) Reinforcement erosion control	1.96 %
			100.00%

TABLE 1.3.1

1.3 Procedure of estimating the value of work done

STAGE OF PAYMENT	PERCENTAGE -WEIGHTAGE	PAYMENT PROCEDURE
A-Widening and Strengthening		
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock.	4.59%	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 5 (Five) percent of the balance length.
(2) Granular work (sub- base)	3.47%	
(3) Granular work (base, shoulders)	6.26%	
(4) Bituminous work	0.00%	
a) DBM with Prime coat & Tack Coat	9.43%	
b) BC with Tack Coat	5.22%	
(5) Widening and repair of culverts	1.18%	Cost of five completed culverts shall be determined pro rata with respect to the total number of culverts. Payment shall be made on the completion of five culverts.
(6) Widening and repair of minor bridges	0.72%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of a minor bridge.
(7) Reconstruction of Damaged DBM stretch	3.95%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in 0.25 km length.

B- New 4-lane alignment	0.00%	Unit of measurement is linear length. Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 5 (five) percent of the balance length.
(1) Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock.	4.71%	
(2) Granular work (sub- base)	2.43%	
(3) Granular work (base, shoulders)	4.78%	
(4) Bituminous work	0.00%	
a) DBM with Prime coat & Tack Coat	6.86%	
b) BC with Tack Coat	3.94%	
C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:	0.00%	
(1) Culverts	4.73%	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 five culverts.
(2) Protection work of Culverts	5.24%	Cost of each culvert shall be determined on pro rata basis with respect to the total number of culverts. Payment shall be made on the completion of five culverts.
(3) Minor bridges balance work	5.64%	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of a minor bridge.
D- New Major Bridges	0.00%	Payment shall be made on pro rata basis on completion of each stage of a Major
(1) Balance work of Sub-structure	0.02%	

(2) Super-structure (including crash barriers etc. complete)	1.91%	Bridge as per the weightage given in this table.
(i) Foot Over Bridge	0.00%	Unit of measurement is completed FOB. Payment of FOB shall be made on pro rata basis with respect to the total of all items completed.
(ii) Toll Plaza	0.00%	Unit of measurement is each completed toll plaza. Payment of each toll plaza shall be made on pro rata basis with respect to the total of all toll plazas.
(iii) Road side drains	0.00%	Unit of measurement is linear length in km. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 10 (ten) percent of the total length.
a) RCC / PCC Drain	1.51%	
b) Random Rubble Masonry Drain	0.00%	
(iv) Road signs, markings, km stones, safety devices,	0.59%	Payment shall be made on pro rata basis for completed facilities.
(v) Project facilities	0.00%	
(a) Bus bays	0.44%	
(b) Truck lay-byes	0.00%	
(c) Junction Improvement	0.07%	
(vi) Protection works	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less than 5 (Five) percent of the total length.
a) Slope Protection Works (Including Retaining wall, Gabion wall & Breast wall, Parapet etc)	0.00%	Unit of measurement is linear length. Payment shall be made on pro rata basis on completion of a stage in a length of not less
Parapet wall on Valley Side.	2.02%	
Gabion Wall	0.80%	
Retaining Wall	3.74%	

Breast Wall	8.90%	than 5 (Five) percent of the total length.
Slope protection measures in hill side i.e. a) vetiver plantation,	0.95 %	Unit of measurement is Sqm. Payment shall be made on pro rata basis on completion of a stage in a area of not less than 5 (Five) percent of the total quantity.
Slope protection measures in hill side i.e. b)Hydroseeding with coir netting	1.50 %	Unit of measurement is Sqm. Payment shall be made on pro rata basis on completion of a stage in a area of not less than 5 (Five) percent of the total quantity.
Slope protection measures in hill side i.e. c) Rock netting	2.44 %	Unit of measurement is Sqm. Payment shall be made on pro rata basis on completion of a stage in a area of not less than 5 (Five) percent of the total quantity.
Slope protection measures in hill side i.e. d) Reinforcement erosion control	1.96 %	Unit of measurement is Sqm. Payment shall be made on pro rata basis on completion of a stage in a area of not less than 5 (Five) percent of the total quantity.