

**SCHEDULE – A**  
*(See Clauses 2.1 and 8.1)*

**SITE OF THE PROJECT**

**1 The Site**

- (i) Site of the Two-Lane Project Highway shall include the land, buildings, structures and road works as described in Annex-I of this Schedule-A.
- (ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- (iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 8.2 (i) of this Agreement.
- (iv) The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The contractor with minimum FRL as indicated in the alignment plan shall follow the proposed profile of the Project Highways. The Contractor, however, improve/upgrade the Road Profile as indicated in Annex-III based on site/design requirement.
- (v) The status of the environment clearances obtained or awaited is given in Annex-IV.

**Annex I**  
(Schedule-A)

**1. Site**

The Site of the Two-Lane Project Highway comprises the section of National Highway 29 (old NH-150) commencing from existing **Km 29.600 (Near Junction of Kigwema Road, Chakahabama) to Km 51.500 (Near Kikruma Village)** i.e. Kohima – Manipur Border in the State of Nagaland. The Index Map is appended at the end of this **Schedule-A**.

The land, carriageway and structures comprising the site are described below

**2. Chainage References (Existing Vs Design)**

“Existing Chainage” means distance measured along existing roadway/vehicle pathway on the Project Highway. During topography survey, observations are made to these locations and after finalization of alignment by improving the existing geometry the chainage has been referred to “Design Chainage”. The relationship between the “Existing Chainage” and the “Design Chainage” as per field surveys of the location for the “Project Highway” is given below:

S. No.	Existing (km)	Design Chainage(km)
1	29.600	29.600
2	51.500	51.500

**3. Land**

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

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Length in m (Design)	Existing/Ava liable ROW (m)
	From	To	From	To		
1	29.600	31.000	29+600	31+000	1400	7-8 m
2	31.000	51.500	31+000	51+500	20500	15-24 m

**4. Current Status of Project Chainages:**

The completed work status of the project is as following

Sl. No	Chainage		Length (m)	Side	Activity	Remarks
	From	To				
1	31+000	31+200	200	BHS	Earthwork up to Subgrade top	
2	31+600	31+920	320	BHS		
3	32+000	37+001	5001	BHS		
4	37+054	38+145	1091	BHS		
5	38+188	47+390	9202	BHS		
6	47+600	51+380	3780	BHS		
7	51+430	51+500	70	BHS		
	<b>Total</b>		<b>19664</b>			

Sl. No	Chainage		Length (m)	Side	Activity	Remarks
	From	To				
1	31+050	31+200	150	BHS	Subgrade Preparation	
2	31+700	31+920	220	BHS		
3	32+000	36+200	4200	BHS		
4	37+054	38+145	1091	BHS		
5	38+188	39+000	812	BHS		
6	39+500	39+800	150	RHS		
7	39+900	40+740	840	BHS		
8	40+860	47+240	6380	BHS		
9	47+600	51+350	3750	BHS		
	<b>Total</b>		<b>17593</b>			

Sl. No	Chainage		Length (m)	Side	Activity	Remarks
	From	To				
1	31+050	31+200	150	BHS	GSB	<b>Profile correction required</b>
2	31+700	31+920	220	BHS		<b>Profile correction required</b>
3	32+000	32+580	580	BHS		<b>Profile correction required</b>
4	32+580	33+080	500	BHS		
5	33+080	33+230	150	BHS		<b>Profile correction required</b>
6	33+230	34+080	850	BHS		
7	34+080	34+150	70	BHS		<b>Profile correction required</b>
8	34+150	34+490	340	BHS		
9	34+490	34+560	70	BHS		<b>Profile correction required</b>
10	34+560	36+200	1640	BHS		
11	37+054	38+020	966	BHS		<b>Profile correction required</b>
12	38+300	39+000	700	BHS		<b>Profile correction required</b>
13	39+500	39+800	150	RHS		<b>Profile correction required</b>
14	39+900	40+250	350	BHS		<b>Profile correction required</b>
15	40+250	40+740	490	BHS		
15	40+860	41+500	640	BHS		
16	41+500	42+000	250	RHS		
17	41+500	42+000	250	LHS		<b>Profile correction required</b>
18	42+000	42+220	220	BHS		<b>Profile correction required</b>
19	42+220	42+540	160	RHS	<b>Profile correction required</b>	

20	42+540	42+850	310	BHS		Profile correction required
21	42+850	47+240	4390	BHS		
22	47+600	47+840	240	BHS		Profile correction required
23	47+840	49+700	1860	BHS		
24	49+700	51+050	1350	BHS		Profile correction required
25	51+050	51+250	100	LHS		Profile correction required
<b>Total</b>			<b>16996</b>			

Sl. No	Chainage		Length (m)	Side	Activity	Remarks
	From	To				
1	32+580	33+060	480	BHS	WMM	
2	33+240	34+080	840	BHS		
3	34+150	34+490	340	BHS		
4	34+560	35+590	1030	BHS		
5	40+250	40+660	410	BHS		
6	40+880	41+500	620	BHS		
7	41+500	42+000	250	RHS		Profile correction required
8	42+850	47+220	4370	BHS		
9	47+840	49+700	1860	BHS		
<b>Total</b>			<b>10200</b>			

Sl. No	Chainage		Length (m)	Side	Activity	Remarks (Damaged Length)
	From	To				
1	32+590	33+060	470	BHS	DBM	
2	33+240	34+070	830	BHS		
3	34+150	34+490	340	BHS		
4	34+560	34+970	410	BHS		
5	40+290	40+660	370	BHS		30
6	40+880	41+500	620	BHS		20
7	42+925	44+380	1455	BHS		10
8	44+470	44+950	480	BHS		35
9	45+040	46+140	1100	BHS		475
10	46+240	46+440	200	BHS		20
11	46+540	47+210	670	BHS		245
12	47+840	49+680	1840	BHS		230
<b>Total</b>			<b>8785</b>			<b>1065</b>

Sl. No	Chainage		Length (m)	Side	Activity	Remarks
	From	To				
1	33+700	34+080	380	BHS	Hard Shoulder	
2	34+150	34+470	320	BHS		
<b>Total</b>			<b>700</b>			

### 5. Major Bridges

The Site includes the following Medium Size Bridge:

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

### 6. Railway over-bridges (ROB)

The Site includes the following Railway Over Bridges

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

### 7. Grade Separators

The Site includes the following Grade separators

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

### 8. Minor Bridges

The Site includes the following minor Bridges:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structures			No. of Spans with Span Length	Total Width (m)
			Foundation	Sub-Structure	Super Structure		
1.		37.027	Open	RCC	PSC Box Girder	1 x 53	8.5
2.		38.165	Open	RCC	PSC Box Girder	1X43	8.5

**9. Railway level crossings / Railway Track**

The Site includes the following railway level crossings:

Sl. No.	Road Segment	Existing Chainage (km)	Remarks
Nil			

**10. Underpasses (vehicular, Non-Vehicular)**

The Site includes the following underpasses:

Sl. No.	Road Segment	Existing Chainage (km)	Type of Structure	No. of Spans with Span Length (m)	Width (m)
Nil					

**11. Culverts**

The Site includes culverts at the following locations and types:

Sl. No.	Existing Chainage (km)	Type of Structure	Span / Dia. (m)	Width of Structure (m)	Remarks
1	30+037	Pipe Arch	1 x 1.0	7.8	Poor Condition
2	30+510	Pipe Arch	1 x 1.0	7.7	Poor Condition
3	30+917	Pipe Arch	1 x 1.0	8.2	Poor Condition
4	31+241	Slab	1 x 2.5	6.7	Poor Condition
5	31+583	Slab	1 x 1.5	7	Poor Condition
6	31+692	Pipe Arch	1 x 1.0	7.2	Poor Condition
7	32+200	Slab	1 x 2	7.5	Poor Condition
8	32+338	Pipe Arch	1 x 1.0	8.8	Poor Condition
9	32+470	Pipe Arch	1 x 1.0	9.3	Poor Condition
10	34+137	Slab	1 x 1.5	7.4	Poor Condition
11	36+205	Pipe Arch	1 x 1.0	8.7	Poor Condition
12	36+269	Slab	1 x 2.5	7.6	Poor Condition
13	38+426	Pipe Arch	1 x 1.0	8	Poor Condition
14	38+506	Pipe Arch	1 x 1.0	8	Poor Condition
15	39+505	Pipe Arch	1 x 1.0	6.3	Poor Condition
16	39+761	Pipe Arch	1 x 1.0	9.5	Poor Condition
17	50+843	Pipe Arch	1 x 1.0	7.27	Poor Condition
18	50+931	Slab	1 x 1.0	7.25	Poor Condition
19	51+200	Pipe Arch	1 x 1.0	6.3	Poor Condition

Sl. No.	Existing Chainage (km)	Type of Structure	Span (m)	Width of structure (m)	Remarks
1	31+864	RCC Box	2 X 1.5	10 to 12	
2	31+930	RCC Box	2 X 1.5	10 to 12	
3	32+470	RCC Box	2 X 1.5	10 to 12	
4	32+680	RCC Box	2 X 1.5	10 to 12	
5	32+880	RCC Box	2 X 1.5	10 to 12	

6	33+170	RCC Box	2 X 1.5	10 to 12	
7	33+420	RCC Box	2 X 1.5	10 to 12	
8	33+697	RCC Box	2 X 1.5	10 to 12	
Sl. No.	Existing Chainage (km)	Type of Structure	Span (m)	Width of structure (m)	Remarks
9	33+767	RCC Box	2 X 1.5	10 to 12	
10	34+030	RCC Box	2 X 1.5	10 to 12	
11	34+540	RCC Box	2 X 1.5	10 to 12	
12	34+753	RCC Box	2 X 1.5	10 to 12	
13	34+835	RCC Box	2 X 1.5	10 to 12	
14	35+163	RCC Box	2 X 1.5	10 to 12	
15	35+511	RCC Box	2 X 1.5	10 to 12	
16	35+897	RCC Box	2 X 1.5	10 to 12	
17	35+990	RCC Box	2 X 1.5	10 to 12	
18	36+275	RCC Box	2 X 1.5	5 to 6	
19	37+302	RCC Box	2 X 1.5	10 to 12	
20	37+438	RCC Box	2 X 1.5	10 to 12	
21	37+720	RCC Box	2 X 1.5	10 to 12	
22	37+895	RCC Box	2 X 1.5	10 to 12	
23	38+530	RCC Box	2 X 1.5	5 to 6	
24	38+643	RCC Box	2 X 1.5	10 to 12	
25	38+777	RCC Box	2 X 1.5	10 to 12	
26	39+505	RCC Box	2 X 1.5	5 to 6	
27	39+883	RCC Box	2 X 1.5	10 to 12	
28	40+592	RCC Box	2 X 1.5	10 to 12	
29	40+752	RCC Box	2 X 1.5	10 to 12	
30	41+013	RCC Box	2 X 1.5	10 to 12	
31	41+235	RCC Box	2 X 1.5	10 to 12	
32	41+537	RCC Box	2 X 1.5	10 to 12	
33	41+615	RCC Box	2 X 1.5	10 to 12	
34	41+780	RCC Box	2 X 1.5	10 to 12	
35	41+979	RCC Box	2 X 1.5	10 to 12	
36	42+111	RCC Box	2 X 1.5	10 to 12	
37	42+492	RCC Box	2 X 1.5	10 to 12	
38	42+662	RCC Box	2 X 1.5	10 to 12	
39	42+765	RCC Box	2 X 1.5	10 to 12	
40	42+800	RCC Box	2 X 1.5	10 to 12	
41	43+109	RCC Box	2 X 1.5	10 to 12	
42	43+403	RCC Box	2 X 1.5	10 to 12	
43	43+691	RCC Box	2 X 1.5	10 to 12	
44	44+010	RCC Box	2 X 1.5	10 to 12	
45	44+258	RCC Box	2 X 1.5	10 to 12	
46	44+419	RCC Box	2 X 1.5	5 to 6	
47	44+533	RCC Box	2 X 1.5	10 to 12	
48	44+644	RCC Box	2 X 1.5	10 to 12	
49	44+695	RCC Box	2 X 1.5	10 to 12	
50	44+842	RCC Box	2 X 1.5	10 to 12	
51	44+994	RCC Box	2 X 1.5	10 to 12	
52	45+116	RCC Box	2 X 1.5	10 to 12	
53	45+158	RCC Box	2 X 1.5	10 to 12	
54	45+188	RCC Box	2 X 1.5	10 to 12	
55	45+294	RCC Box	2 X 1.5	10 to 12	
56	45+394	RCC Box	2 X 1.5	10 to 12	

57	45+480	RCC Box	2 X 1.5	10 to 12	
58	45+717	RCC Box	2 X 1.5	10 to 12	
59	45+762	RCC Box	2 X 1.5	10 to 12	
60	46+048	RCC Box	2 X 1.5	10 to 12	
Sl. No.	Existing Chainage (km)	Type of Structure	Span (m)	Width of structure (m)	Remarks
61	46+160	RCC Box	2 X 1.5	10 to 12	
62	46+210	RCC Box	2 X 1.5	10 to 12	
63	46+273	RCC Box	2 X 1.5	10 to 12	
64	46+307	RCC Box	2 X 1.5	10 to 12	
65	46+495	RCC Box	2 X 1.5	10 to 12	
66	46+502	RCC Box	2 X 1.5	10 to 12	
67	46+765	RCC Box	2 X 1.5	10 to 12	
68	47+248	RCC Box	2 X 1.5	10 to 12	
69	47+800	RCC Box	2 X 1.5	10 to 12	
70	48+197	RCC Box	2 X 1.5	10 to 12	
71	48+314	RCC Box	2 X 1.5	10 to 12	
72	48+706	RCC Box	2 X 1.5	10 to 12	
73	48+762	RCC Box	2 X 1.5	10 to 12	
74	48+987	RCC Box	2 X 1.5	10 to 12	
75	49+762	RCC Box	2 X 1.5	10 to 12	
76	50+150	RCC Box	2 X 1.5	10 to 12	
77	50+210	RCC Box	2 X 1.5	10 to 12	
78	50+290	RCC Box	2 X 1.5	10 to 12	
79	50+383	RCC Box	2 X 1.5	10 to 12	
80	50+702	RCC Box	2 X 1.5	10 to 12	
81	50+990	RCC Box	2 X 1.5	10 to 12	
82	51+093	RCC Box	2 X 1.5	10 to 12	
83	51+388	RCC Box	2 X 1.5	10 to 12	
84	51+499	RCC Box	2 X 1.5	10 to 12	

## 12. Bus Shelters

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

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

## 13. Truck Lay Bye

The details of truck lay byes on the Site are as follows:

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

## 14. Roadside drains.

The details of the roadside drains on the Site are as follows:

	Chainage	Length	Side	Remarks
NIL				

Sl. No	From	To			Damaged Length	
<b>Open Lined Drain</b>						
1	31+805	31+852	47.00	RHS		
2	31+872	31+910	38.00	RHS		
Sl. No.	Chainage		Length	Side	Damaged Length	Remarks
	From	To				
3	32+335	32+445	110.00	RHS		
4	32+520	32+560	40.00	RHS		
5	32+590	32+670	80.00	RHS		
6	32+695	32+790	95.00	RHS		
7	32+820	32+870	50.00	RHS		
8	32+870	33+100	230.00	RHS	40	
9	33+210	33+315	105.00	RHS	65	
10	33+324	33+346	22.00	RHS		
11	33+472	33+610	138.00	RHS		
12	33+646	33+680	34.00	RHS	34	
13	33+800	33+980	180.00	RHS		
14	34+034	34+130	96.00	RHS	20	
15	34+150	34+506	356.00	RHS		
16	34+545	34+730	185.00	RHS		
17	34+840	34+897	57.00	RHS		
18	34+978	35+021	43.00	RHS		
19	35+060	35+132	72.00	RHS	40	
20	35+759	35+825	66.00	RHS		
21	36+050	36+172	122.00	RHS		
22	37+455	37+710	255.00	RHS	130	
23	37+729	37+887	158.00	RHS		
24	38+212	38+244	32.00	RHS	32	
25	38+300	38+340	40.00	RHS	10	
26	38+360	38+440	80.00	RHS		
27	38+794	38+960	166.00	RHS		
28	39+893	40+093	200.00	RHS		
29	40+101	40+377	276.00	RHS	90	
30	40+450	40+550	100.00	RHS		
31	40+570	40+700	130.00	RHS		
32	40+860	40+990	130.00	RHS		

33	41+017	41+152	135.00	RHS		
34	41+171	41+300	129.00	RHS		
35	41+310	41+390	80.00	RHS		
36	41+420	41+534	114.00	RHS		
37	41+540	41+600	60.00	RHS		
Sl. No.	Chainage		Length	Side	Damaged Length	Remarks
	From	To				
38	41+620	41+710	90.00	RHS		
39	41+757	41+960	203.00	RHS	110	
40	42+135	42+195	60.00	RHS		
41	42+400	42+480	80.00	LHS		
42	42+583	42+640	57.00	LHS		
43	42+740	42+760	20.00	LHS		
44	42+770	42+795	25.00	LHS		
45	42+816	43+089	273.00	LHS		
46	43+108	43+205	97.00	RHS		
47	43+295	43+395	100.00	RHS		
48	43+410	43+670	260.00	RHS	40	
49	43+715	43+930	215.00	RHS	45	
50	43+930	44+000	70.00	RHS		
51	44+020	44+250	230.00	RHS		
52	44+270	44+390	120.00	RHS		
53	44+420	44+510	90.00	RHS		
54	44+540	44+640	100.00	RHS		
55	44+750	44+838	88.00	RHS		
56	44+870	44+960	90.00	RHS		
57	45+000	45+107	107.00	RHS		
58	45+120	45+155	35.00	RHS		
59	45+162	45+180	18.00	RHS		
60	45+220	45+280	60.00	RHS		
61	45+330	45+380	50.00	RHS		
62	45+400	45+455	55.00	RHS		
63	45+520	45+758	238.00	RHS	75	
64	45+800	46+045	245.00	RHS		
65	46+072	46+154	82.00	RHS		
66	46+325	46+470	145.00	RHS		
67	46+520	46+581	61.00	RHS		

68	46+589	46+750	161.00	RHS		
69	46+770	46+996	226.00	RHS		
70	47+030	47+090	60.00	RHS		
71	47+110	47+230	120.00	LHS		
72	47+991	48+030	39.00	LHS		
Sl. No.	Chainage		Length	Side	Damaged Length	Remarks
	From	To				
73	48+040	48+175	135.00	LHS	25	
74	48+270	48+306	36.00	LHS	30	
75	48+397	48+570	173.00	LHS		
76	48+780	49+380	600.00	LHS	80	
77	49+400	49+610	210.00	LHS	60	
78	49+640	49+910	270.00	LHS	190	
79	51+450	51+495	45.00	LHS	190	
	<b>Total</b>		<b>9,690.00</b>		<b>1116</b>	

**15. Major Junctions**

The details of major junctions are as follows:

Sl. No.	Location		At Grade	Separated	Category of Cross Roads			
	Existing Km	Design km			NH	SH	MDR	Others
NIL								

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

**16. Minor Junctions**

The details of minor junctions are as follows:

S. No.	Existing (km)	Type	Leads Towards
1.	30.500	T	Kezome Town
2.	31.000	T	BSF Camp
3.	31.650	T	BSF Camp
4.	32.630	T	Chakabama
5.	33.482	T	Mitelephe
6.	41.850	T	Thipuzu Village
7.	48.940	T	Village Road
8.	51.250	T	Kikrma Road
9.	52.700	T	Village
10.	53.070	T	Village
11.	53.031	T	Village

**17. Bypasses**

The details of bypass are as follows:

Sl. No.	Proposed Bypass (Town)	Segment	From (km)	To (km)	Length (km)	Width (m)	Type
NIL							

### 18. Other Structures/Details

The details of retaining wall are as follows:

Sl. No	Chainage		Length	Side	Status	Remarks
	From	To				
1	31+510	31+559	49.00	LHS	<b>RCC Retaining wall</b>	
2	31+575	31+589	14.00	LHS		
3	34+230	34+290	60.00	LHS		
4	36+640	36+771	131.00	LHS		
5	36+795	36+825	30.00	LHS		
6	37+520	37+559	39.00	LHS		
7	37+750	37+795	45.00	LHS		
8	37+900	38+000	100.00	LHS		
9	38+020	38+104	84.00	LHS		
10	38+995	39+065	70.00	LHS		
11	42+666	42+750	84.00	RHS		
12	42+810	42+875	65.00	RHS		
13	47+805	47+830	25.00	RHS		
<b>Total</b>			<b>796.000</b>			

The details of breast wall are as follows:

Sl. No	Chainage		Length	Side	Damaged/ Incomplete Length	Balance Filter media	Remarks
	From	To					
1	31+000	31+088	88	RHS			
2	31+800	31+850	50	RHS			
3	31+876	31+908	32	RHS			
4	31+912	31+935	23	RHS	11		1st lift only
5	32+520	32+560	40	RHS			
6	32+973	33+010	37	RHS			
7	33+245	33+280	35	RHS			

8	33+310	33+401	91	RHS			
9	33+424	33+457	33	RHS			
10	33+480	33+593	113	RHS			
11	33+620	33+652	32	RHS		32	
12	33+652	33+687	35	RHS	35		Damaged
13	33+810	33+885	75	RHS		75	
<b>Sl. No</b>	<b>Chainage</b>		<b>Length</b>	<b>Side</b>	<b>Damaged/ Incomplete Length</b>	<b>Balance Filter media</b>	<b>Remarks</b>
14	34+013	34+127	114	RHS	20		Partly Damaged
15	34+146	34+327	181	RHS			
16	34+487	34+497	10	RHS			
17	34+508	34+515	7	RHS			
18	34+544	34+730	186	RHS			
19	34+758	34+810	52	RHS			
20	34+840	34+917	77	RHS			
21	34+979	35+055	76	RHS			
22	35+060	35+135	75	RHS			
23	35+168	35+208	40	RHS	40		Damaged
24	35+208	35+255	47	RHS			
25	35+307	35+349	42	RHS			
26	35+550	35+680	130	RHS			
27	35+760	35+845	85	RHS		45	
28	35+920	35+955	35	RHS	17		1st lift only
29	36+050	36+179	129	RHS			
30	36+355	36+411	56	RHS			
31	36+411	36+431	20	RHS	10		1st lift only
32	37+273	37+301	28	RHS			
33	37+352	37+430	78	RHS			
34	37+443	37+713	270	RHS		52	
35	37+736	37+886	150	RHS			
36	37+902	37+997	95	RHS			
37	38+012	38+085	73	RHS			

38	38+307	38+340	33	RHS		33	
39	38+360	38+440	80	RHS		80	
40	38+448	38+501	53	RHS		53	
41	38+535	38+624	89	RHS			
42	38+640	38+696	56	RHS			
43	38+711	38+750	39	RHS			
<b>Sl. No</b>	<b>Chainage</b>	<b>Length</b>	<b>Side</b>	<b>Damaged/ Incomplete Length</b>	<b>Balance Filter media</b>	<b>Remarks</b>	<b>Sl. No</b>
44	38+801	39+140	339	RHS		330	
45	39+365	39+467	102	RHS		21	
46	39+481	39+500	19	RHS		19	
47	39+510	39+600	90	RHS	35	55	
48	39+790	39+867	77	RHS			
49	39+895	40+194	299	RHS		111	
50	40+194	40+240	46	RHS	46		Damaged
51	40+240	40+308	68	RHS		68	
52	40+313	40+376	63	RHS		63	
53	40+483	40+585	102	RHS		102	
54	40+600	40+690	90	RHS		90	
55	40+760	40+794	34	RHS		34	
56	40+883	40+997	114	RHS		77	
57	41+011	41+153	142	RHS		112	
58	41+153	41+173	20	RHS		20	
59	41+173	41+193	20	RHS		20	
60	41+240	41+398	158	RHS		158	
61	41+445	41+530	85	RHS		85	
62	41+545	41+585	40	RHS		40	
63	41+597	41+610	13	RHS			
64	41+620	41+720	100	RHS		100	
65	41+885	41+970	85	RHS		85	
66	41+990	42+062	72	RHS		72	
67	42+135	42+195	60	RHS		60	

68	42+327	42+365	38	LHS			
69	42+377	42+393	16	LHS			
70	42+400	42+480	80	LHS			
71	42+510	42+555	45	LHS			
72	42+565	42+658	93	LHS		49	
<b>Sl. No</b>	<b>Chainage</b>	<b>Length</b>	<b>Side</b>	<b>Damaged/ Incomplete Length</b>	<b>Balance Filter media</b>	<b>Remarks</b>	<b>Sl. No</b>
73	42+666	42+743	77	LHS			
74	42+810	43+080	270	LHS		213	
75	43+115	43+213	98	LHS		98	
76	43+295	43+395	100	LHS		100	
77	43+410	43+584	174	RHS		174	
78	43+590	43+680	90	RHS		90	
79	43+809	43+865	56	RHS		56	
80	43+918	44+000	82	RHS		82	
81	44+048	44+249	201	RHS		201	
82	44+270	44+397	127	RHS		120	
83	44+455	44+525	70	RHS		70	
84	44+540	44+593	53	RHS		30	
85	44+700	44+805	105	RHS		105	
86	44+856	44+970	114	RHS		70	
87	45+002	45+044	42	RHS		42	
88	45+050	45+099	49	RHS		49	
89	45+220	45+280	60	RHS		60	
90	45+342	45+370	28	RHS		28	
91	45+412	45+464	52	RHS			
92	45+550	45+710	160	RHS		160	
93	45+729	45+755	26	RHS		26	
94	45+801	46+044	243	RHS		160	
95	46+070	46+154	84	RHS		84	
96	46+373	46+470	97	RHS		97	

97	46+523	46+753	230	RHS		119	
98	46+773	46+990	217	RHS		217	
99	47+032	47+060	28	RHS		28	
100	47+110	47+220	110	RHS		110	
101	48+035	48+179	144	LHS		144	
102	48+270	48+307	37	LHS		37	
<b>Sl. No</b>	<b>Chainage</b>	<b>Length</b>	<b>Side</b>	<b>Damaged/ Incomplete Length</b>	<b>Balance Filter media</b>	<b>Remarks</b>	<b>Sl. No</b>
103	48+380	48+570	190	LHS		190	
104	49+215	49+289	74	LHS			
105	49+723	49+755	32	LHS			
106	49+787	49+895	108	LHS		108	
107	49+895	49+925	30	LHS	30		Damaged
108	49+975	50+003	28	LHS		28	
109	50+003	50+035	32	LHS	32		Damaged
110	50+054	50+097	43	LHS	14		Partly Damaged
111	50+102	50+137	35	LHS			
112	50+155	50+180	25	LHS			
113	50+551	50+608	57	LHS			
114	50+710	50+800	90	LHS			
115	51+210	51+384	174	LHS			
116	51+445	51+500	55	LHS			
	<b>Total</b>		<b>9797</b>		<b>290</b>	<b>5237</b>	

**Annex-II**  
*(Schedule-A)*

**Details for Providing Right of Way. The dates on which the Authority shall provide Right of Way to the Contractor on Different stretches of the Site are stated below:**

Sl. No	Design Chainage		Length (Km)	Proposed ROW Width (m)	Date of Providing proposed ROW
	From	To			
1	29+600	51+500	21.90	Varying ROW from minimum 20m to maximum 24 m at different locations as per cross section in DPR	90% ROW to be handed over on Appointed Date and balance within 150 days from Appointed date

**Annex-III**  
*(Schedule-A)*

**Alignment Plans**

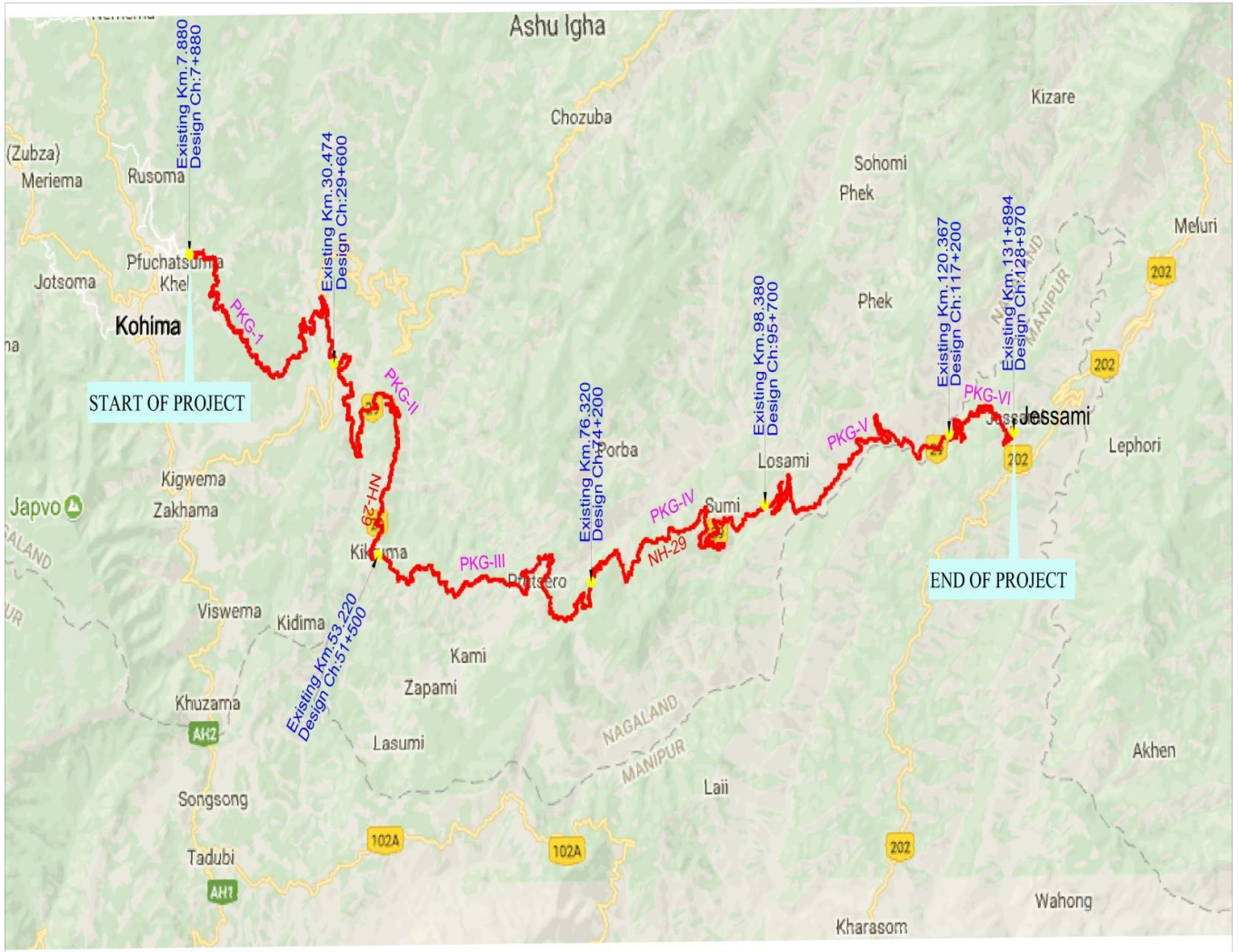
The existing alignment of the Project Highway shall be modified in the following sections as per the alignment plan indicated below:

- (i) The alignment of the Project Highway is enclosed in alignment plan. Finished road level indicated in the alignment plan shall be followed by the contractor as minimum FRL. In any case, the finished road level of the project highway shall not be less than those indicated in the alignment plan. The contractor shall, however, improve/upgrade the Road profile as indicated in Annex-III based on site/design requirement.
- (ii) Traffic Signage plan of the Project Highway showing numbers & location of traffic signs is enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.

**Annex-IV**  
*(Schedule-A)* **Environmental**

**Clearances** Not applicable

INDEX MAP OF PROJECT HIGHWAY SECTION



**SCHEDULE – B**  
*(See Clause 2.1)*

**DEVELOPMENT OF THE PROJECT HIGHWAY**

**1 Development of the Project Highway**

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

**2 Rehabilitation and augmentation**

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

**3 Specifications and Standards**

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

**Annex I**  
*(Schedule-B)*

**Description of Two Laning**

The particulars specified in this Schedule – B are listed below as per the requirements of the Manual of Specifications and Standards for Two Laning of Highways (IRC SP:73-2018); referred to as the Manual. If any standards, specifications or details are not given in the Manual, the minimum design/construction requirements are specified in this Schedule or Schedule D.

**1.0 SCOPE OF THE PROJECT**

**1.1 GENERAL**

The following sections of this schedule briefly highlight the scope of the work of the 'Project'. The descriptions of the requirements for the various elements of the Project Highway given here in under are the bare minimum requirements for the 'Project'.

In the planning, design and execution of the works and other works in connection with the repair, maintenance or improvement of the Project Highway and functions associated with the construction of the Project Highway and roadside facilities, the Construction Contractor shall take all such actions and do all such things (including, but not limiting to, organizing itself, adopting measures and standards, executing procedures, including inspection procedures and highway patrol, and engaging and managing agents and employees) as will;

- a. enable the NHIDCL to provide an acceptably safe highway in respect of its condition (structural safety) and use (road safety);
- b. enable the NHIDCL to fulfill its statutory and common law obligations;
- c. enable the NHIDCL to provide a congestion free uninterrupted flow of traffic on the Project Highway;
- d. enable the NHIDCL to provide a level of highway service to the public not inferior to that provided on the trunk road during construction or improvement works;
- e. enable the police, local authorities, and others with statutory duties or functions in relation to the Project Highway or adjoining roads to fulfill those duties and functions;
- f. minimize the occurrence and adverse effects of accidents and ensure that all accidents and emergencies are responded to as quickly as possible;
- g. minimize the risk of damage, destruction or disturbance to third party property;
- h. ensure that members of the public are treated with all due courtesy and consideration;
- i. provide a safe, clear and informative system of road signs;
- j. comply with any specified programme requirements, including for the completion of the new road;

- k. enable standards of reliability, durability, accessibility, maintainability, quality control and assurance, and fitness for purpose appropriate to a highway of the character of the Project Highway to be achieved throughout the Contract Period;
- l. ensure adequate off-street parking facilities for both passenger and goods vehicles;
- m. provide adequate bus bays for stopping of buses and bus shelters for commuters to wait under protection;
- n. achieve a high standard in the appearance and aesthetic quality of the Project Highway and achieve integration of the Project Highway with the character of the surrounding landscape through both sensitive design and sensitive management of all visible elements including those on the existing road;
- o. Undertake proper safety audit through an appropriate consultant (i.e. apart from the Authority Engineer)
- p. Carry out accident recording and reporting (to NHIDCL) by type on regular basis; and
- q. Ensure adequate safety of the Project Workers on the work site.

## **2.0 GEOMETRIC DESIGN AND GENERAL FEATURES**

### **2.1.1 General**

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

### **2.1.2 WIDENING OF THE EXISTING HIGHWAY**

Notwithstanding the basic alignment plans enclosed with this document the Construction Contractor shall himself carryout and be responsible for engineering surveys, investigation and detailed engineering designs and prepare the working drawings for all the components relevant for the improvement and up-gradation of the Project Highway to fulfill the scope of the project as envisaged herein under. These shall comply with design specifications and standards given in **Schedule-D**. The designs for different project facilities shall follow the locations and indicative designs given in **Schedule-C** and shall comply with design specifications and standards outlined in **Schedule-D**. The Authority Engineer shall review all the designs and drawings prior to execution.

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

### **2.1.3 Improvement of the existing road geometries**

The hilly gradients shall be corrected in such a way so as to attain a limiting gradient of 6% in order to achieve longitudinal drainage. Also vertical curves shall be improved / introduced so that the vertical curves meet IRC:SP:73 -2018 standards.

The horizontal alignment of the Project Highway shall be improved as per the standards set out in **Schedule-D**.

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:

**Radius of curves for 30 to 40 KMPH design speed:**

Chainage(m)	Radius(m)	Design Speed in Kmph	Hand of curve	Extra Widening (m)
29666.5225	30	30	Left	1.5
29730.3	30	30	Right	1.5
29860.3415	70	30	Right	0.9
29902.2585	70	30	Left	0.9
29958.4695	80	30	Right	0.9
30045.757	50	30	Right	1.2
30189.853	100	35	Right	0.9
30373.6685	70	40	Right	0.9
30518.171	60	30	Left	1.2
30603.505	40	30	Left	1.5
30669.882	30	30	Right	1.5
30769.563	30	30	Right	1.5
30885.209	60	30	Right	1.2
30988.427	50	30	Left	1.2
31072.8515	35	30	Left	1.5
31194.0325	70	30	Left	0.9
31385.8675	50	30	Left	1.2
31444.2825	30	30	Left	1.5
31569.9305	35	30	Left	1.5
31750.1275	60	30	Right	1.2
31822.6025	80	30	Right	0.9
31866.2105	35	30	Left	1.5
31940.016	30	30	Left	1.5
32007.093	50	30	Right	1.2
32105.753	30	30	Left	1.5
32156.837	40	30	Right	1.5
32566.205	30	30	Left	1.5
32641.5375	45	30	Right	1.2
32805.001	100	40	Right	0.9
32925.489	40	30	Left	1.5
33003.299	110	40	Right	0.6
33091.023	60	30	Left	1.2
33173.0655	35	30	Right	1.5
33260.6665	200	35	Right	0.6
33441.4385	40	30	Right	1.5
33726.4815	35	30	Left	1.5
33860.3925	30	30	Right	1.5
33988.7635	50	30	Left	1.2
34092.69	30	30	Right	1.5
34143.0205	60	30	Left	1.2
34296.1305	110	40	Left	0.6
34375.505	100	40	Right	0.9
34433.1945	70	30	Left	0.9

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
34482.533	30	30	Right	1.5
34542.168	30	30	Left	1.5
34620.662	90	40	Right	0.9
34685.982	100	40	Left	0.9
34831.8365	30	30	Right	1.5
34883.135	30	30	Left	1.5
34980.386	80	30	Left	0.9
35101.1065	50	30	Right	1.2
35174.5845	30	30	Right	1.5
35232.1085	50	30	Left	1.2
35291.642	100	40	Right	0.9
35348.073	200	50	Left	0.6
35414.8395	100	35	Left	0.9
35470.51	30	30	Right	1.5
35560.072	70	30	Right	0.9
35640.9365	40	30	Left	1.5
35682.9025	30	30	Right	1.5
35730.026	80	30	Left	0.9
35794.0265	135	40	Left	0.6
35842.6195	70	30	Right	0.9
35887.8635	30	30	Left	1.5
36001.7775	30	30	Left	1.5
36040.637	60	30	Right	1.2
36237.1035	60	30	Right	1.2
36522.165	35	30	Right	1.5
36573.222	40	30	Left	1.5
36715.2845	130	40	Left	0.6
36856.682	90	40	Left	0.9
37074.294	30	30	Left	1.5
37139.899	45	30	Right	1.2
37306.0195	30	30	Left	1.5
37351.119	30	30	Right	1.5
37416.422	80	40	Left	0.9
37572.1075	200	50	Right	0.6
37675.6135	40	30	Right	1.5
37752.0455	60	30	Left	1.2
37828.9485	35	30	Right	1.5
37902.0925	150	40	Left	0.6
38005.8465	30	30	Right	1.5
38073.837	70	30	Left	0.9
38306.302	30	30	Right	1.5
38376.492	140	40	Right	0.6
38448.9165	80	40	Left	0.9
38560.905	40	30	Right	1.5
38664.7665	50	30	Left	1.2
38725.4045	40	30	Right	1.5
38782.299	80	30	Left	0.9
38840.5145	60	30	Right	1.2
38912.802	100	40	Left	0.9
39038.9155	60	30	Left	1.2
39133.259	35	30	Right	1.5
39215.6555	200	50	Left	0.6

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
39372.9615	85	40	Left	0.9
39713.369	100	40	Right	0.9
39765.8315	80	40	Left	0.9
39822.1515	70	30	Right	0.9
39957.2975	70	30	Left	0.9
40057.806	70	30	Right	0.9
40123.157	30	30	Left	1.5
40192.24	35	30	Right	1.5
40279.6965	50	30	Left	1.2
40323.877	70	30	Right	0.9
40429.963	100	40	Right	0.9
40525.0325	70	30	Right	0.9
40598.08	50	30	Left	1.2
40687.383	60	30	Right	1.2
40842.3155	130	40	Right	0.6
40939.553	40	30	Right	1.5
41005.0575	35	30	Left	1.5
41119.8605	50	30	Right	1.2
41275.4015	35	30	Right	1.5
41312.6375	30	30	Left	1.5
41427.638	40	30	Left	1.5
41491.1345	70	30	Right	0.9
41536.9195	70	30	Left	0.9
41708.369	70	30	Right	0.9
41771.399	30	30	Left	1.5
41893.0995	40	30	Right	1.5
42065.344	80	30	Left	0.9
42216.754	60	30	Right	1.2
42379.4215	50	30	Left	1.2
42436.6075	70	30	Right	0.9
42630.7425	40	30	Left	1.5
42801.562	35	30	Right	1.5
42910.707	50	30	Left	1.2
43037.282	40	30	Left	1.5
43099.1315	60	30	Right	1.2
43148.0355	60	30	Left	1.2
43382.4395	70	30	Right	0.9
43471.811	70	30	Right	0.9
43551.866	70	30	Right	0.9
43611.2365	130	40	Left	0.6
43689.5105	30	30	Left	1.5
43774.3105	50	30	Left	1.2
43833.668	30	30	Right	1.5
43936.7325	70	30	Right	0.9
44211.452	150	40	Left	0.6
44297.8505	50	30	Right	1.2
44371.9925	100	40	Left	0.9
44512.9975	100	35	Right	0.9
44563.734	90	35	Left	0.9
44607.5325	30	30	Right	1.5
44643.286	30	30	Left	1.5
44751.2115	80	30	Right	0.9

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
45014.4745	60	30	Right	1.2
45124.069	35	30	Left	1.5
45193.2725	40	30	Right	1.5
45246.6615	60	30	Left	1.2
45515.938	40	30	Right	1.5
45603.4425	35	30	Right	1.5
45809.574	30	30	Right	1.5
45867.0255	60	30	Left	1.2
46076.4055	50	30	Left	1.2
46149.0375	55	30	Right	1.2
46214.32	30	30	Left	1.5
46272.6485	60	30	Left	1.2
46323.6245	60	30	Right	1.2
46407.8595	80	40	Right	0.9
46568.5995	60	30	Left	1.2
46629.9755	40	30	Right	1.5
46736.3005	35	30	Left	1.5
46820.4645	50	30	Right	1.2
46998.041	40	30	Left	1.5
47092.313	50	30	Left	1.2
47213.25	40	30	Right	1.5
47317.4015	50	30	Right	1.2
47436.831	100	35	Right	0.9
47544.406	70	40	Left	0.9
47607.039	45	30	Right	1.2
47667.0545	100	40	Left	0.9
47738.088	150	40	Right	0.6
47792.9555	40	30	Left	1.5
48060.475	50	30	Right	1.2
48139.1935	55	30	Right	1.2
48187.084	80	30	Left	0.9
48250.6475	35	30	Left	1.5
48454.925	40	30	Left	1.5
48522.2565	60	30	Left	1.2
48570.6315	30	30	Right	1.5
48614.6175	40	30	Left	1.5
48710.3835	65	30	Right	0.9
48806.926	60	30	Left	1.2
48988.7	30	30	Left	1.5
49094.236	50	30	Left	1.2
49138.0915	70	30	Right	0.9
49364.994	50	30	Right	1.2
49600.568	30	30	Right	1.5
49647.4595	30	30	Left	1.5
49688.8335	60	30	Right	1.2
49800.066	80	30	Right	0.9
49877.689	30	30	Left	1.5
49927.7535	50	30	Right	1.2
50084.056	70	30	Right	0.9
50151.9815	30	30	Left	1.5
50199.3945	30	30	Right	1.5
50271.7115	180	40	Right	0.6

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
50343.1075	30	30	Left	1.5
50395.157	60	30	Right	1.2
50508.2395	150	40	Right	0.6
50803.679	130	40	Left	0.6
51297.4115	40	30	Left	1.5
51507.078	40	30	Right	1.5

**locations where design speed is less than 30 KMPH:**

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
29795.299	22	20	Left	1.5
30126.7185	20	20	Left	1.5
30454.7345	25	20	Right	1.5
31118.725	20	20	Right	1.5
31331.2025	20	20	Right	1.5
31512.063	20	20	Right	1.5
31625.475	20	20	Right	1.5
31690.1655	25	20	Left	1.5
32208.379	25	20	Left	1.5
32285.2155	25	20	Right	1.5
32336.469	20	20	Left	1.5
32397.6735	20	20	Right	1.5
32458.7385	25	20	Left	1.5
32518.5625	20	20	Right	1.5
33312.9775	25	20	Left	1.5
33492.094	20	20	Left	1.5
33549.2365	25	20	Right	1.5
34217.943	20	20	Right	1.5
34752.868	20	20	Left	1.5
34929.3825	20	20	Right	1.5
35513.0945	25	20	Left	1.5
36095.6895	25	20	Right	1.5
36192.933	25	20	Left	1.5
36286.3015	17	20	Left	1.5
36360.22	20	20	Right	1.5
36964.1085	15	20	Left	1.5
38520.3625	25	20	Left	1.5
38984.0785	15	20	Right	1.5
39883.5495	20	20	Left	1.5
41366.7635	25	20	Right	1.5
42286.272	20	20	Right	1.5
43263.8555	15	20	Left	1.5
44010.5585	25	20	Left	1.5
44075.4865	25	20	Right	1.5
44847.796	25	20	Left	1.5
45328.4695	20	20	Right	1.5
45469.388	20	20	Left	1.5
45759.417	20	20	Left	1.5
45922.8685	25	20	Right	1.5
47049.443	20	20	Right	1.5
47389.4065	25	20	Left	1.5

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
47913.0735	25	20	Left	1.5
47973.795	25	20	Right	1.5
48314.9805	25	20	Right	1.5
50594.594	20	20	Left	1.5
50691.467	20	20	Right	1.5
50890.501	25	20	Left	1.5
50941.056	25	20	Right	1.5
51035.158	20	20	Left	1.5
51143.89	25	20	Left	1.5
51202.254	15	20	Right	1.5
51397.012	15	20	Right	1.5

## 2.2 Design speed

The design speed shall be as per IRC:73-2018 however in exceptional cases the minimum design speed of [30 km per hour for hilly and mountainous terrain and 20 km per hour for hair pin bend locations]. The Location of Hair Pin Bends have been shown in Plan & Profile Drawings.

## 2.3 Proposed Right of Way

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

Contractor has to design and construct the road, if required by provision of retaining walls and/or breast walls/slope stabilization/protection measures within the Right of Way given above and provision of the same shall not constitute a change of scope.

## 2.4 Type of Shoulders

- (a) In built-up sections, footpaths/fully paved shoulders shall be provided in accordance with para 2.10 of Annexure I of Schedule B.
- (b) In open country, Hard Shoulder with GSB having thickness of 200mm, total 3 metre wide including both sides shall be provided and balance width 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 paragraphs 5.10 and 5.11 of the Manual

## 2.5 Width of Carriageway/Roadway width

2.5.1 Two-Laning with hard shoulders shall be undertaken. The carriageway shall be [7(seven) m] wide and hard shoulder in accordance with the typical cross sections drawings in the Manual.

2.5.2 Except as otherwise provided in this Agreement, the width of the hard shoulder, carriageway and cross-sectional features shall conform to Section 2 of the manual.

## 2.6 Lateral and vertical clearances at underpasses

2.6.1 Lateral and vertical clearances at underpasses and provision of guardrails/crash barriers shall be as per paragraph 2.10 of the Manual.

**2.6.2 Lateral Clearance:**

The width of the opening at the underpasses shall be as follows:

Sl. No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

**2.7 Lateral and vertical clearances at overpasses**

2.7.1 Lateral and vertical clearances at overpasses shall be as per paragraph 2.11 of the Manual.

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

Sl. No.	Location [Chainage (km)]		Span/Opening (m)	Remarks
	From	To		
Nil				

**2.8 Service roads**

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

Sl. No.	Location of Service Road (km)		Right Hand Side (RHS) / Left Hand Side (LHS) / Both Sides	Length (km) of Service Road
	From	To		
Nil				

**2.9 Grade Separated Structures**

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

Sl. No.	Location of Structure	Length (m)	Number and Length of Spans (m)	Approach Gradient	Remarks, if any
Nil					

2.9.2 In the case of grade separated structures, the type of structure and the level of the Project Highway and the cross roads shall be as follows:

Sl. No.	Location	Structure/Length (m)	Existing Level	Raised Level	Lowered Level	if any
Nil						

**2.9.3 Cattle and pedestrian underpass / Overpass**

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

**NIL**

## 2.10 Typical cross-sections of the Project Highway

The cross-section schedule shall be as follows:

Chainage		Length	Description	TCS
From	To			
29600	31500	1900	Typical Cross Section of 2- lane Widening in Built-up area	4
31500	36920	5420	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
36920	36970	50	Typical Cross section of new construction of 2 lane with hard shoulder in box cutting	5
36970	37001	31	Typical cross section in rural area with retaining wall both side	1
37001	37054	53	Typical cross section of Minor Bridge Retained	6
37054	37091	37	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and Retaining wall on valley side.	2
37091	38145	1054	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural Areas	3
38145	38188	43	Typical cross section of Minor Bridge Retained	6
38188	38200	12	Typical cross section in rural area with retaining wall both side	1
38200	39660	1460	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
39660	39700	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
39700	40350	650	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural Areas	3
40350	40440	90	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
40440	40500	60	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural Areas	3
40500	40600	100	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
40600	40720	120	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural Areas	3

Chainage		Length	Description	TCS
From	To			
40720	40790	70	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
40790	41210	420	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
41210	41250	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
41250	42480	1230	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
42480	42520	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
42520	43270	750	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
43270	43350	80	Typical Cross section of new construction of 2 lane with hard shoulder in box cutting	5
43350	43390	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
43390	43430	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
43430	44400	970	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
44400	44440	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
44440	45740	1300	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
45740	45800	60	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and retaining wall on valley side.	2
45800	45950	150	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
45950	46000	50	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and	2

			retaining wall on valley side.	
--	--	--	--------------------------------	--

Chainage		Length	Description	TCS
From	To			
46000	47130	1130	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
47130	47900	770	Typical Cross Section of 2- lane Widening in Built-up area	4
47900	51150	3250	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
51150	51200	50	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and Retaining wall on valley side.	2
51200	51300	100	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3
51300	51340	40	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas with breast wall on hill side and Retaining wall on valley side.	2
51340	51500	160	Typical Cross Section in Reconstruction of 2 lane with hard shoulder in rural areas	3

Note: The extent of cross section type is indicative and shall be reviewed in consultation with the Authority Engineer at the time of construction as per the site condition. Type I Cross section consist of two variants as I (a) without retaining wall on valley side and 1(b) with retaining wall on valley side as detailed in figure B1 & B2 respectively. The locations please refer designed cross section @ 50 m interval detailed in Annexure III of Schedule A.

The alternative cross section of the Project Highway at the cross-drainage structures shall follow the typical cross section in consultation with the Authority Engineer at the time of construction.

### 2.11 Longitudinal Section

As a minimum, the Construction Contractor shall achieve the proposed finished road level as indicated in the plan and profile drawings for this purpose in FFSR. However, the final finished road levels (FRL) will be finalized as per site conditions in consultation with NHIDCL.

The balance work to be completed is as following:

Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	31+200	31+600	400	BHS		
2	31+920	32+000	80	BHS		

3	47+390	47+600	210	BHS	Earthwork up to Subgrade top	
4	51+380	51+430	50	BHS		
	<b>Total</b>		<b>740</b>			
Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	29+600	31+000	1400	BHS	Subgrade Preparation	For 7.0 m width only
2	31+000	31+050	50	BHS		
3	31+200	31+700	500	BHS		
4	31+920	32+000	80	BHS		
5	36+200	37+001	801	BHS		
6	39+000	39+500	500	BHS		
7	39+500	39+800	150	LHS		
8	39+800	39+900	100	BHS		
9	40+740	40+860	120	BHS		
10	47+240	47+600	360	BHS		
11	51+350	51+500	150	BHS		
	<b>Total</b>		<b>4211</b>			

Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	29+600	31+000	1400	BHS	GSB Preparation	For 7.0 m width only
2	31+000	31+050	50	BHS		
3	31+200	31+700	500	BHS		
4	31+920	32+000	80	BHS		
5	36+200	37+001	801	BHS		
6	38+020	38+145	125	BHS		
7	38+188	38+300	112	BHS		
8	39+000	39+500	500	BHS		
9	39+500	39+800	150	LHS		
10	39+800	39+900	100	BHS		
11	40+740	40+860	120	BHS		
12	42+220	42+540	160	LHS		
13	47+240	47+600	360	BHS		
14	51+050	51+250	100	34 LHS		

15	51+250	51+500	250	BHS		
	<b>Total</b>		<b>4808</b>			
<b>Sl. No</b>	<b>Chainage</b>		<b>Length (m)</b>	<b>Side</b>	<b>Work to be executed</b>	<b>Remarks</b>
1	31+050	31+200	150	BHS	<b>GSB profile correction required</b>	
2	31+700	31+920	220	BHS		
3	32+000	32+580	580	BHS		
4	33+080	33+230	150	BHS		
5	34+080	34+150	70	BHS		
6	34+490	34+560	70	BHS		
7	37+054	38+020	966	BHS		
8	38+300	39+000	700	BHS		
9	39+500	39+800	150	RHS		
10	39+900	40+250	350	BHS		
11	41+500	42+000	250	LHS		
12	42+000	42+220	220	BHS		
13	42+220	42+540	160	RHS		
14	42+540	42+850	310	BHS		
15	47+600	47+840	240	BHS		
16	49+700	51+050	1350	BHS		
17	51+050	51+250	100	LHS		
	<b>Total</b>		<b>6036</b>			

Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	29+600	31+000	1400	BHS	<b>WMM Preparation</b>	
2	31+000	32+580	1580	BHS		
3	33+060	33+240	180	BHS		
4	34+080	34+150	70	BHS		
5	34+490	34+560	70	BHS		
6	35+590	37+001	1411	BHS		
7	37+054	38+145	1091	BHS		
8	38+188	40+250	2062	BHS		
9	40+660	40+880	220	BHS		
10	41+500	42+000	250	LHS		
11	42+000	42+850	850	BHS		
12	47+220	47+840	620	BHS		
13	49+700	51+500	1800	BHS		
	<b>Total</b>		<b>11604</b>			
1	41+500	42+000	250	RHS	<b>Profile correction required</b>	
	<b>Total</b>		<b>250</b>			

Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	29+600	31+000	1400	BHS	DBM	
2	31+000	32+590	1590	BHS		
3	33+060	33+240	180	BHS		
4	34+070	34+150	80	BHS		
5	34+490	34+560	70	BHS		
6	34+970	37+001	2031	BHS		
7	37+054	38+145	1091	BHS		
8	38+188	40+290	2102	BHS		
9	40+450	40+480	30	BHS		
10	41+360	41+380	20	BHS		
11	41+500	42+925	1425	BHS		
12	44+230	44+240	10	BHS		
13	44+380	44+470	90	BHS		
14	44+690	44+715	25	BHS		
15	44+865	44+875	10	BHS		
16	44+950	45+040	90	BHS		
17	45+085	45+200	115	BHS		
18	45+260	45+480	220	BHS		
19	45+540	45+560	20	BHS		
20	45+570	45+590	20	BHS		
21	45+770	45+810	40	BHS		
22	45+870	45+880	10	BHS		
23	46+000	46+030	30	BHS		
24	46+050	46+070	20	BHS		
25	46+140	46+240	100	BHS		
26	46+320	46+340	20	BHS		
27	46+440	46+540	100	BHS		
28	46+580	46+660	80	BHS		
29	46+755	46+900	145	BHS		
30	47+040	47+060	20	BHS		
31	47+210	47+840	630	BHS		
32	48+310	48+350	40	BHS		
33	48+550	48+560	10	BHS		
34	48+750	48+760	10	BHS		
35	48+910	48+920	10	BHS		

36	49+120	49+280	160	BHS		
36	49+680	51+500	1820	BHS		
<b>Total</b>			<b>13864</b>			

Sl. No	Chainage		Length (m)	Side	Work to be executed	Remarks
	From	To				
1	31+000	33+700	2700	BHS	<b>Hard Shoulder</b>	
2	34+080	34+150	70	BHS		
3	34+470	37+001	2531	BHS		
4	37+054	38+145	1091	BHS		
5	38+188	51+500	13312	BHS		
<b>Total</b>			<b>19704</b>			

## 2.12 Built-Up Areas

The alignment passes through Built up areas as tabulated below.

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Name of Village/town
	From	To	From	To	
1	29.6	31.5	29.6	31.5	Chakabama
2	47.13	47.9	47.13	47.9	Kikurma

## 3.0 INTERSECTIONS AND GRADE SEPARATORS

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

- i) Typical junction treatments as specified in Final Project Report shall be applied. Design types of intersections are as given below:

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

### (a) At-grade Intersections

#### (i) Major Intersections

S. No.	Location Existing (km)	Design Chainage (Ch.)	Type	Category	Side Road/(s) Leading Towards
NIL					
37					

Details of junction improvement shall be as per IRC:SP:73-2018

**(ii) Minor Intersections**

Sl. No.	Existing (km)	Design Chainage	Type	Leads Towards
1	30+135	30+135	T	Chakabama Military Station
2	30+700	30+700	T	BSF Camp
3	30+970	30+970	T	Road towards Kezoma Town
4	31+168	31+168	Y	Road towards Cimorb Public School
5	31+721	31+721	Y	To Forest
6	32+565	32+565	T	To Mitelephe
7	33+142	33+142	T	To Mitelephe
8	36+986	36+986	Y	Village Road
9	40+447	40+447	Y	British Project Road
10	43+250	43+250	T	Village Road
11	45+450	45+450	Y	Village Road
12	47+374	47+374	T	Village Road
13	49+600	49+600	Y	Kikruma Road
14	50+810	50+810	Y	Village Road
15	51+205	51+205	T	Village Road
16	51+385	51+385	T	Village Road

Details of junction improvements shall be as per IRC:SP:73-2018.

**4.0 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 Raising of the existing road.

The existing road shall be raised in the following sections:

Sl No.	Section (km)		Length (km)	Extent of Raising*	Remarks
	From	To			
Nil					

**5.0 PAVEMENT DESIGN**

5.1 Pavement design shall be carried out in accordance with section 5 of the Manual.

## 5.2 Type of pavement

Main carriageway of entire length of project highway including, realignment, reconstruction shall be constructed with Flexible pavement as per IRC: 37-2018.

## 5.3 Design requirements

Design requirement for the flexible pavement shall be in accordance with IRC: 37- 2018. Flexible pavement for new pavement or for widening and strengthening of the existing pavement shall be designed for a minimum design period of 20 years. Stage construction shall not be permitted.

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for minimum design traffic of 5 million standard axles for BC & DBM and 20 million standard axles for granular base and sub-base courses. VG 40 grade of bitumen shall be used for BC and DBM layers. However, in no case the pavement thickness shall be less than as given below;

Pavement Composition	Pavement Type	Thickness (mm)
BC	Flexible pavement with granular base and sub-base layers (Non Cementitious)	30
DBM		50
WBM		250
GSB		200

## 5.4 Reconstruction of stretches/ Realignment/ Bypass of Sections

5.4.1 Total Project Road shall be considered as full reconstruction as per IRC-37-2018 and Manual & Specifications.

### 5.4.2 Rigid Pavement

NIL

## 6.0 ROAD SIDE DRAINAGE

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per section 6 of the Manual.

Drainage shall be provided as shown in TCSSs.

## 7.0 DESIGN OF STRUCTURES

### 7.1 General

7.1.1 The Project road from Kohima to Jessami from Km. 29+600 to Km.51+500 (design chainages), includes provision of **36 box culverts for which the status of every culvert is mentioned in clause 7.2**. All culverts and other structures shall be designed and constructed in accordance with section 7 of the Manual and shall conform to the cross-sectional features and other details specified therein. New culverts shall be constructed wide enough to accommodate the adjacent road cross section as given in this Schedule-B. The details of existing culverts are given in Schedule-A.

7.1.2 Width of the carriageway of new bridges and Structures shall be as per Clause

7.3 of the Manual.

7.1.3 All bridges shall be high-level bridges.

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

Sl. No.	Bridge at Km	Utility service to be carried	Remarks
NIL			

7.1.5 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 section 7 of the Manual.

## 7.2 Culverts

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

### 7.2.2 Construction of culverts

7.2.3 The culverts at the following locations shall be constructed as per particulars given in the table below:

Sl. No.	Design	Side	Proposed Span	Proposal
	(km)		(m)	
1	31109	BHS	1x2x1.5	RCC Box
2	31241	BHS	1x2x1.5	RCC Box
3	31368	BHS	1x2x1.5	RCC Box
4	31502	BHS	1x2x1.5	RCC Box
5	31583	BHS	1x2x1.5	RCC Box
6	31692	BHS	1x2x1.5	RCC Box
7	32200	BHS	1x2x1.5	RCC Box
8	32338	BHS	1x2x1.5	RCC Box
9	33319	BHS	1x2x1.5	RCC Box
10	34137	BHS	1x2x1.5	RCC Box
11	35378	BHS	1x2x1.5	RCC Box
12	35680	BHS	1x2x1.5	RCC Box
13	36205	BHS	1x2x1.5	RCC Box
14	36275	LHS	1x2x1.5	RCC Box
15	36465	BHS	1x2x1.5	RCC Box
16	36790	BHS	1x2x1.5	RCC Box
17	38333	BHS	1x2x1.5	RCC Box
18	38530	LHS	1x2x1.5	RCC Box
19	39003	BHS	1x2x1.5	RCC Box
20	39505	LHS	1x2x1.5	RCC Box
21	39761	BHS	1x2x1.5	RCC Box
22	39871	BHS	1x2x1.5	RCC Box
23	40097	BHS	1x2x1.5	RCC Box
24	40400	BHS	1x2x1.5	RCC Box
25	41314	BHS	1x2x1.5	RCC Box
26	42066	BHS	1x2x1.5	RCC Box
27	43721	BHS	1x2x1.5	RCC Box
28	43869	BHS	1x2x1.5	RCC Box
29	44419	LHS	1x2x1.5	RCC Box
30	47000	BHS	1x2x1.5	RCC Box

31	47680	BHS	1x2x1.5	RCC Box
32	48562	BHS	1x2x1.5	RCC Box
33	49230	BHS	1x2x1.5	RCC Box
34	49607	BHS	1x2x1.5	RCC Box
35	49935	BHS	1x2x1.5	RCC Box
36	50843	BHS	1x2x1.5	RCC Box
37	50931	BHS	1x2x1.5	RCC Box
38	51200	BHS	1x2x1.5	RCC Box

These are guidelines for minimum provisions. However, contractor has to design as per requirement of road in accordance with manual.

\* All box culverts (excluding the box culverts in cushion) shall be provided with approach slabs on both sides. Moreover, upstream and downstream protection works, including chute drains connecting stream with the culvert, catch pits; baffle piers/blocks etc. shall be provided which must be ascertained as per the site conditions and details given in drawings of culvert.

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

**CULVERT DETAILS**

Nil

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

Sl. No	Chainage	Proposal for completion of Protection works				
	As per Site	R/wall	Parapet	Catch pit	Apron	U/s & D/s
1	31+864			BHS		BHS
2	31+930					BHS
3	32+470		RHS	BHS	BHS	BHS
4	32+680					BHS
5	32+880		BHS			BHS
6	33+170	BHS	BHS	BHS	BHS	BHS
7	33+420		RHS		BHS	BHS
8	33+697	BHS	BHS	BHS	BHS	BHS
9	33+767	BHS	BHS	BHS	BHS	BHS
10	34+030	BHS	BHS	BHS	BHS	BHS
11	34+540	BHS	BHS	BHS	BHS	BHS
12	34+753		RHS	BHS	BHS	BHS
13	34+835			BHS	BHS	BHS
14	35+163		BHS	BHS	BHS	BHS
15	35+511		BHS	BHS	BHS	BHS
16	35+897	BHS	BHS	BHS	BHS	BHS
17	35+990	BHS	BHS	BHS	BHS	BHS

18	36+275	BHS	BHS	BHS	BHS	BHS
19	37+302	BHS	BHS	BHS	BHS	BHS
20	37+438	BHS	RHS		BHS	BHS
21	37+720	BHS	RHS	BHS	BHS	BHS
22	37+895	BHS			BHS	BHS
23	38+530	BHS	BHS	BHS	BHS	BHS
24	38+643		RHS	BHS	BHS	BHS
25	38+777		RHS	BHS	BHS	BHS
Sl. No	Chainage	Proposal for completion of Protection works				
	As per Site	R/wall	Parapet	Catch pit	Apron	U/s & D/s
26	39+505	BHS	BHS	BHS	BHS	BHS
27	39+883	BHS			BHS	BHS
28	40+592		BHS			BHS
29	40+752		RHS			BHS
30	41+013		RHS			BHS
31	41+235	BHS	BHS			BHS
32	41+537		BHS			BHS
33	41+615		BHS	BHS		BHS
34	41+780	BHS	BHS	BHS	BHS	BHS
35	41+979		RHS	BHS		BHS
36	42+111		RHS			BHS
37	42+492		LHS			BHS
38	42+662		LHS			BHS
39	42+765	BHS	LHS		BHS	BHS
40	42+800			BHS	BHS	BHS
41	43+109		LHS			BHS
42	43+403		RHS			BHS
43	43+691		RHS			BHS
44	44+010		RHS			BHS
45	44+258		BHS	BHS		BHS
46	44+419	BHS	BHS	BHS	BHS	BHS
47	44+533		RHS	BHS		BHS
48	44+644		RHS			BHS
49	44+695		RHS	BHS	BHS	BHS
50	44+842		RHS			BHS
51	44+994		RHS	BHS		BHS
52	45+116		RHS		BHS	BHS
53	45+158		RHS		BHS	BHS

54	45+188		RHS		BHS	BHS
55	45+294		BHS			BHS
56	45+394		RHS			BHS
57	45+480		BHS			BHS
58	45+717		BHS	BHS		BHS
59	45+762		BHS	BHS		BHS
60	46+048		RHS			BHS
61	46+160		RHS	BHS	BHS	BHS
Sl. No	Chainage	Proposal for completion of Protection works				
	As per Site	R/wall	Parapet	Catch pit	Apron	U/s & D/s
62	46+210		BHS			BHS
63	46+273		BHS	BHS		BHS
64	46+307		RHS	BHS		BHS
65	46+495		RHS	BHS		BHS
66	46+502		RHS			BHS
67	46+765		RHS			BHS
68	47+248		RHS			BHS
69	47+800		BHS	BHS	BHS	BHS
70	48+197		LHS	BHS		BHS
71	48+314		LHS	BHS		BHS
72	48+706		LHS	BHS		BHS
73	48+762		LHS	BHS		BHS
74	48+987		BHS	BHS		BHS
75	49+762		LHS	BHS	BHS	BHS
76	50+150		LHS		BHS	BHS
77	50+210		LHS			BHS
78	50+290		LHS			BHS
79	50+383		LHS	BHS	BHS	BHS
80	50+702	BHS	LHS		BHS	BHS
81	50+990	BHS	BHS	BHS	BHS	BHS
82	51+093		BHS	BHS	BHS	BHS
83	51+388		LHS		BHS	BHS
84	51+499		LHS	BHS	BHS	BHS

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

### 7.3 Bridges

43

#### 7.3.1 The existing bridges to be reconstructed/widened.

- (i) The existing bridges at the following locations shall be reconstructed as new structures (Minor Bridge)

Sl. No.	Existing Chainage (KM)	Design Chainage (KM)	Proposed Span(m)	Proposed Width(m)	Remarks
NIL					

7.3.2 The following structures shall be provided with footpaths:  
Nil

**7.3.3 Additional New Minor Bridges**

New minor bridges at the following locations on the project highways shall be constructed in Package as per manual

Sr. No.	Designed Chainage (km)	River/ Nallah Name	Proposed Span Arrangement (m)
---------	------------------------	--------------------	-------------------------------

NIL

**7.3.4 Additional new Major bridges**

[Specify additional new bridges if required, and attach GAD]

Sl. No.	Location Designed (km)	Total Length (m)	Remarks
---------	------------------------	------------------	---------

NIL

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

Sl. No.	Location (km)	Remarks
---------	---------------	---------

NIL

7.3.6 Repairs/replacements of railings/parapets of the existing bridges shall be undertaken as follows:

7.3.7 Drainage system for bridge decks

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

7.3.8 Structures in marine environment

Not applicable

**7.4 Rail-road Bridges**

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

**7.4.2 Road over-bridges**

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

Sl. No.	Location of Level Crossing (km)	Length of Bridge (m)
Nil		

**7.4.3 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 (km)	Number and Length of Span (m)
NIL		

**7.5 Grade Separated Structures**

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9 and 3 of this Annex-I.

**7.6 Underpasses/Overpasses**

There is no Underpass/Overpass proposed on the Project Highway.

**7.7 Repairs and strengthening of bridges and structures**

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

**A. Bridges**

Sl. No.	Bridge Location (km)	Salient Details of Existing Bridges					Remarks
		Span Arrangement	Adequacy or Carriageway Width	Total Width	Type of Super structure	Type of Foundation	
		(m)	(m)	(m)			
1	37+027	1 x 53	7.5	8.5	PSC Box Girder	Open	Existing Retained with Repairing & Maintenance
2	38+165	1 X 43	7.5	8.5	PSC Box Girder	Open	

**B. ROB / RUB**

Sl. No.	Location of Bridge (km)	Nature and Extent of Repairs/Strengthening to be Carried out
Nil		

**C. Overpasses / Underpasses and Other Structures**

Sl. No.	Location of Bridge (km)	Nature and Extent of Repairs/Strengthening to be Carried out
Nil		

**7.8 List of Major Bridges and Structures**

The following is the list of Major Bridges on Package

**NIL**

**8.0 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS**

- 8.1** Traffic control devices and road safety works shall be provided in accordance with Section 9 of the Manual.
- 8.2** Specifications of the reflective sheeting: shall be provided in accordance with IRC:SP:73-2018.
- 8.3** The minimum quantity of Traffic signages and pavement marking are tabulated here for Package

Sr. No.	CAUTIONARY WARNING SIGNS	Numbers
1	One way Object Hazard Marker (OHM)	226
2	Stop Sign (R1-1)	
3	Give way Sign (R1-2)	
4	Series of Bands (W-42)	76
5	Left Curve (W-19L)	28
6	Right Curve (W-19R)	28
7	over Head Cables (W-27)	31
8	Left Hairpin Band (W-33L)	2
9	Right Hairpin Band (W-33R)	2
10	School Ahead (W-41)	2
11	Side Road Right (W-43)	
12	Side Road Left(W-44)	
13	T-Intersection (W-52)	
14	Y-Intersection (W-60L)	
15	Pedestrian Crossing (W-28)	2
Sr. No.	SPEED LIMIT & VEHICLE CONTROL SIGN	Numbers
12	Speed Limit Signs (R4-5B)	12

Sr. No.	ROUTE MARKER SIGN	Numbers
1	National Highway Route Sign (I8-1)	6
Sr. No.	DIRECTION & PLACE IDENTIFICATION SIGNS	Numbers
1	SP- 19(A)	
2	IA- 1A	
3	I1-3	5
4	SP- 19(C)	
	<b>TOTAL</b>	<b>420</b>

## 9.0 ROAD SIDE FURNITURE

- 9.1 Roadside furniture shall be provided in accordance with the provisions of Section 11 of the Manual IRC:SP:73-2018.
- 9.2 Overhead traffic signs: location and size

The overhead signs shall be the reflectorized type with high intensity retro-reflective sheeting conforming to ASTM D 4956-01, type VIII and /or type IX of micro prismatic type. The retro reflected sheets of Engineering Grade and high intensity grade (ordinary) shall not be used. The height, lateral clearance, location and installation shall be as per relevant clauses of MoRTH specifications. Overhead sign shall be installed ahead of major intersections and urban areas as per detailed design requirements.

## 10.0 COMPULSORY AFFORESTATION

Minimum 14585 no. of trees are required to be planted by the contractor as compensatory afforestation in accordance with IRC:SP:73-2018 keeping in view IRC:SP:21-2009. Any increase in no. of trees shall not be treated as change of scope, save and except any variations arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13

## 11.0 HAZARDOUS LOCATIONS

i) Metal Beam crash barrier length of minimum 18360 (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches and high embankments (3.0m and more), at sharp curves on both sides. Heavy-duty metal beam crash barriers shall be provided on this project by the Construction Contractor at the locations finalized in consultation with NHIDCL. Typical details of metal crash barrier are given in as per manual.

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

### W-Beam crash Barrier-

Sr. No.	Start Ch.	End Ch.	Length(m)
1	31500	36920	5420
2	37001	37054	53
3	37090	38144	1054
4	38144	38187	43
5	38200	39660	1460
6	39700	40350	650
7	40440	40500	60
8	40600	40720	120
9	40790	41210	420
10	41250	42480	1230
11	42520	43270	750
12	43350	43390	40
13	43430	44400	970
14	44440	45740	1300
15	45800	45950	150
16	46000	47130	1130
17	47900	51150	3250
18	51200	51300	100
19	51340	51500	160

### Parapet location-

Sr. No.	Start Ch.	End Ch.	Length(m)
1	31000	31500	500
2	36970	37001	31
3	37054	37090	36
4	38187	38200	13
5	39660	39700	40
6	40350	40440	90
7	40500	40600	100
8	40720	40790	70
9	41210	41250	40
10	42480	42520	40

11	43390	43430	40
12	44400	44440	40
13	45740	45800	60
14	45950	46000	50
15	47130	47900	770
16	51150	51200	50
17	51300	51340	40

The safety barriers, protective works shall also be provided at the hazardous location/lengths.

## 12.0 SPECIAL REQUIREMENT FOR HILL ROADS

In accordance with section 13 of the manual (from IRC:SP:73-2018), IRC: SP-1998 and Recommended practices for Treatment of Embankment and Roadside slopes for erosion control (First Revision), IRC: 56-2011 and relevant IRC codes.

### 12.1 Slope Protection

As the project involves cutting of existing hill slopes, it is imperative that slopes are stabilized for ensuring longevity of the slope and the road. Slope stability, erosion control and landslide correction shall be accomplished in accordance with IRC: SP: 48-1998. Reference may be drawn from IRC: 56-2011.

(i) The **minimum quantity** of protection work may be taken as below:

Type of Protection Work		
Protection Work	Unit	Quantity
Parapet Wall	Rm	2010
Open Lined Drain	Rm	10750
Covered Drain	Rm	2670
Breast wall with Stone/PCC/RCC	Rm	2326
RCC Retaining Wall (with application of Geo– synthetic)	Rm	234
RE Wall with Geo – synthetic	Sqm	Nil
Geo Synthetic Mat for Erosion Control, Soil Nailing & Fencing lengths	Sqm	Nil
Seeding and Mulching with Polymer Net	Sqm	84097
Chute for Culvert		At Every Culvert Location
Soil Nailing for protection of slope	Sqm	38371

**Note-** 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.

**Any increase in quantity over and above the tentative 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, assess the requirement of slope protection, and slide prone zone and other safety features at his own before submission of bid.

## **12.2 ROAD LAND BOUNDARY (Clause 12.2 IRC:SP:73: 2018)**

Road land (ROW) boundary shall be demarcated by putting RCC boundary pillars of size 60cm x 15cm x 15 cm embedded in concrete (as per IRC:25) along the Project Highway at 200 m interval on both sides. All the components used in delineating road land boundary shall be aesthetically pleasing, sturdy and vandal proof. The road land boundary shall be demarcated in consultation with NHIDCL.

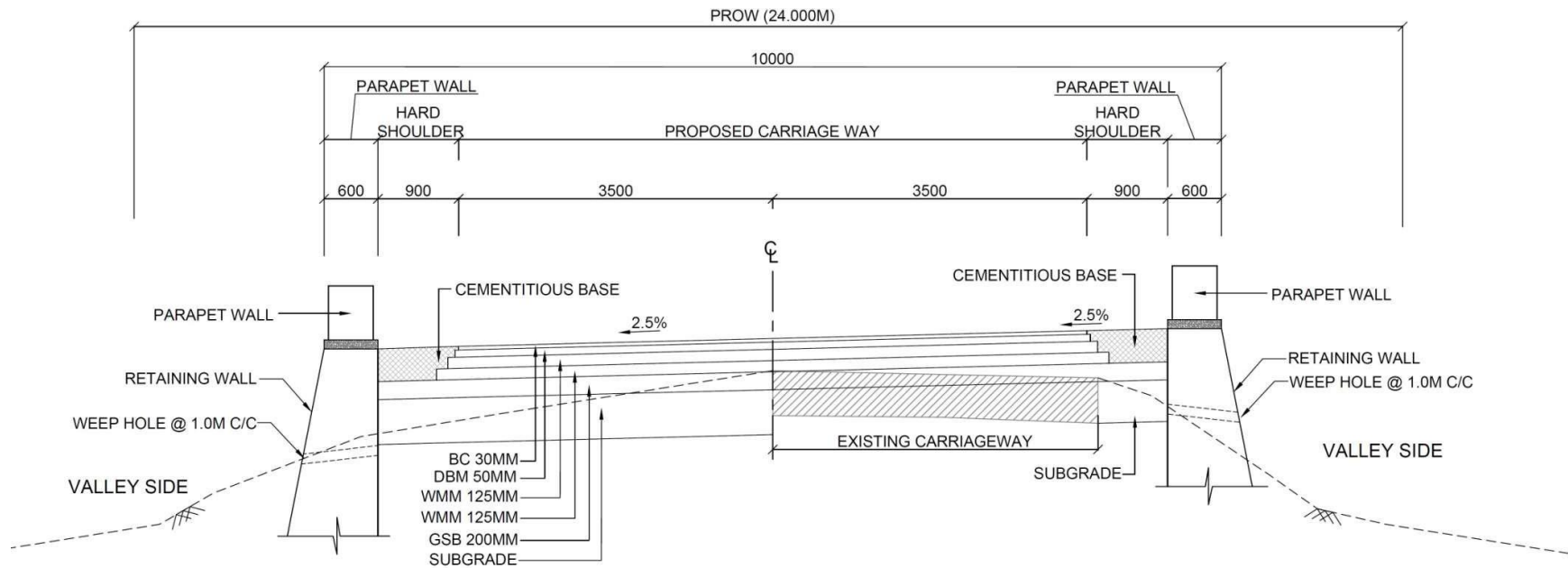
## **12.3 Disposal of Debris: - As per Manual**

## **13.0 CHANGE OF SCOPE**

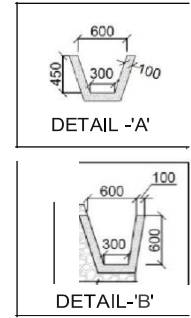
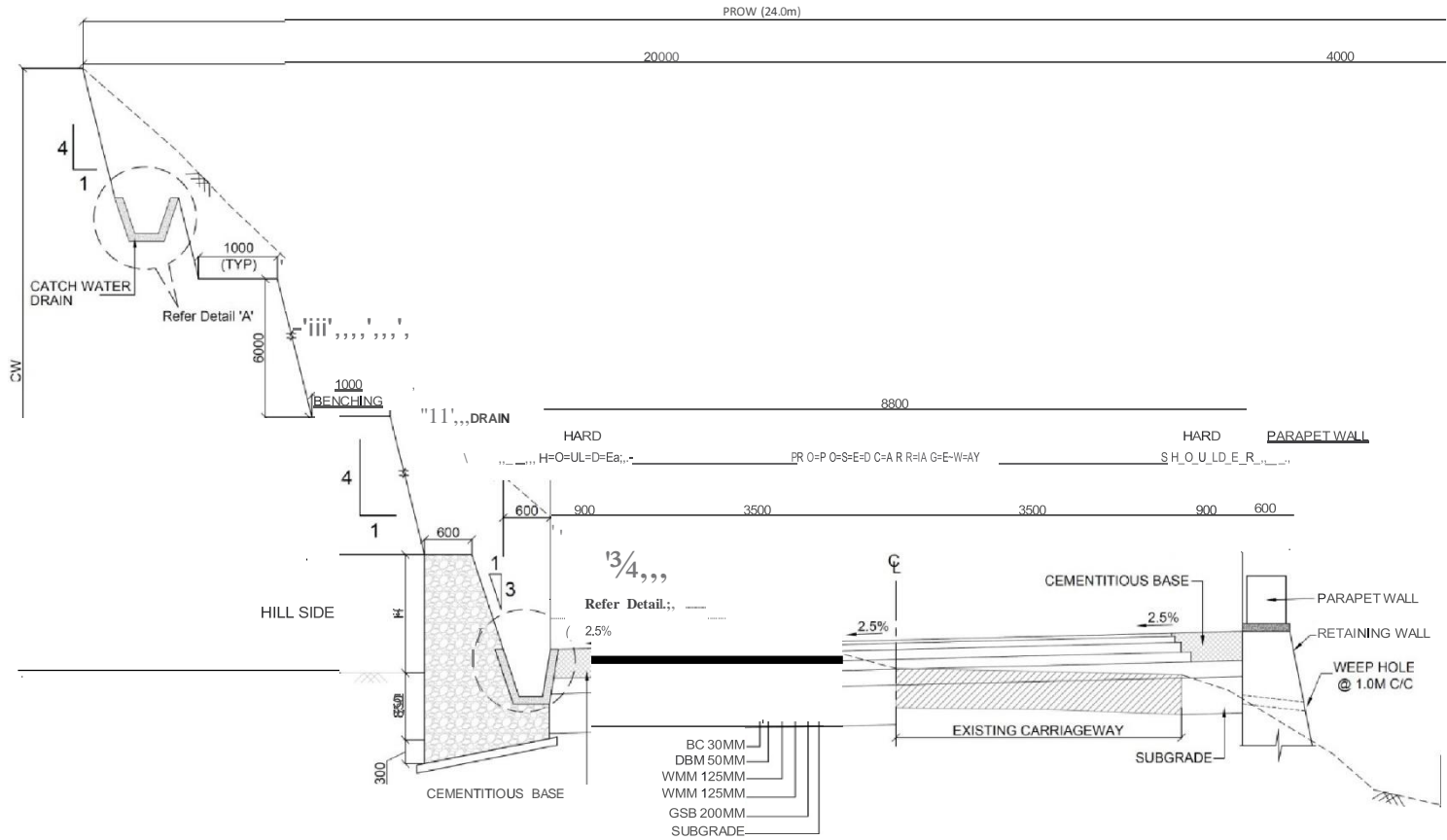
The size of Structures, bridges, culverts and slope protection works whatsoever in terms of retaining wall, breast wall, gabion wall, RE wall, chute drain, catch pit, baffle piers/blocks etc. under special requirement of hill slope specified hereinabove shall be treated as an approximate assessment. The Contractor in accordance with the Specifications and Standards shall determine the actual lengths, heights and widths as required based on detailed investigations. Any variations in the lengths, heights and widths and specifications in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length, height and width arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article 13.

14. Profile corrective course, camber correction, desirable thickness and width of present layer shall be done by the newly appointed contractor for all the completed works.

Typical Cross Section drawings:

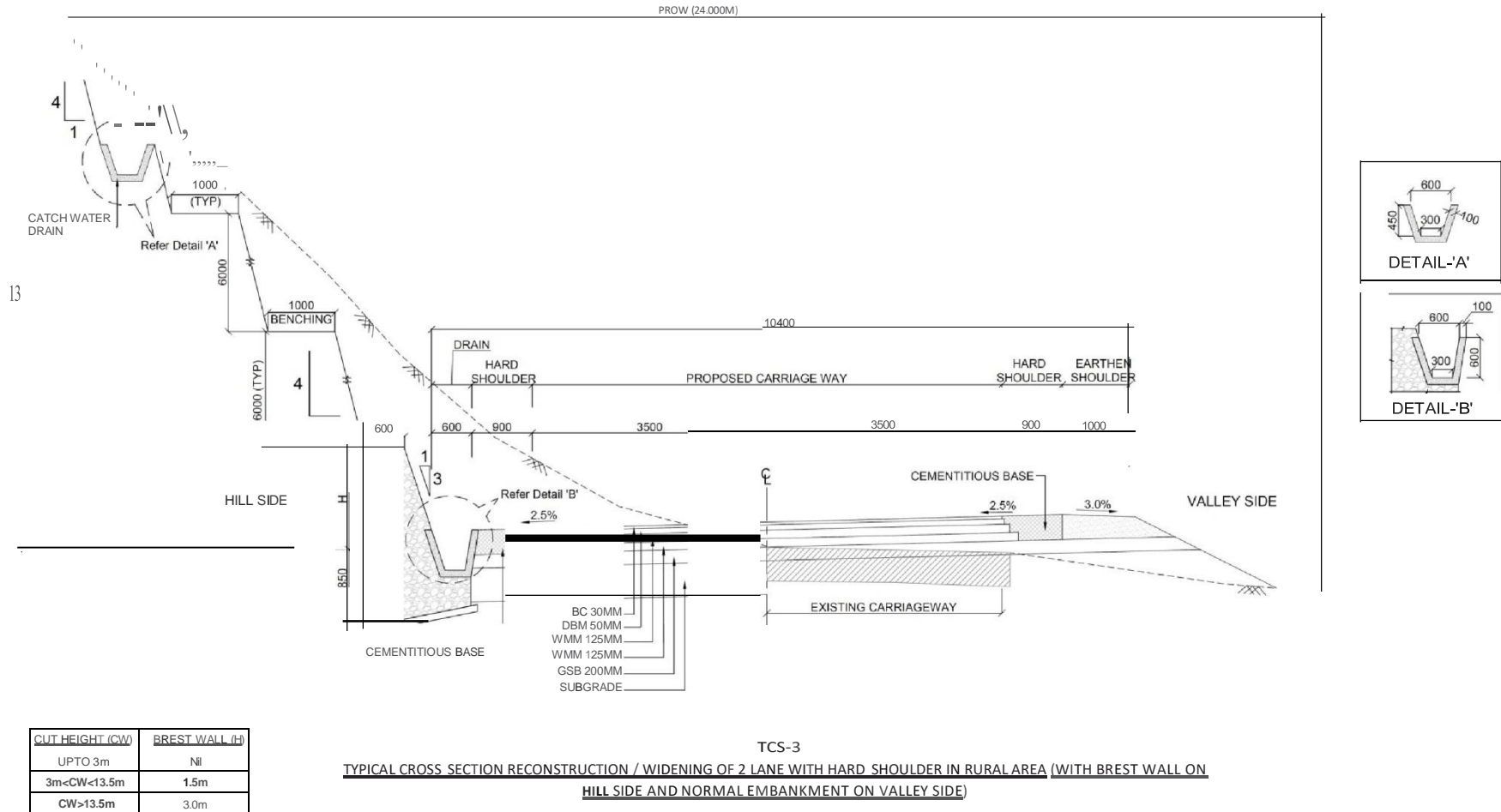


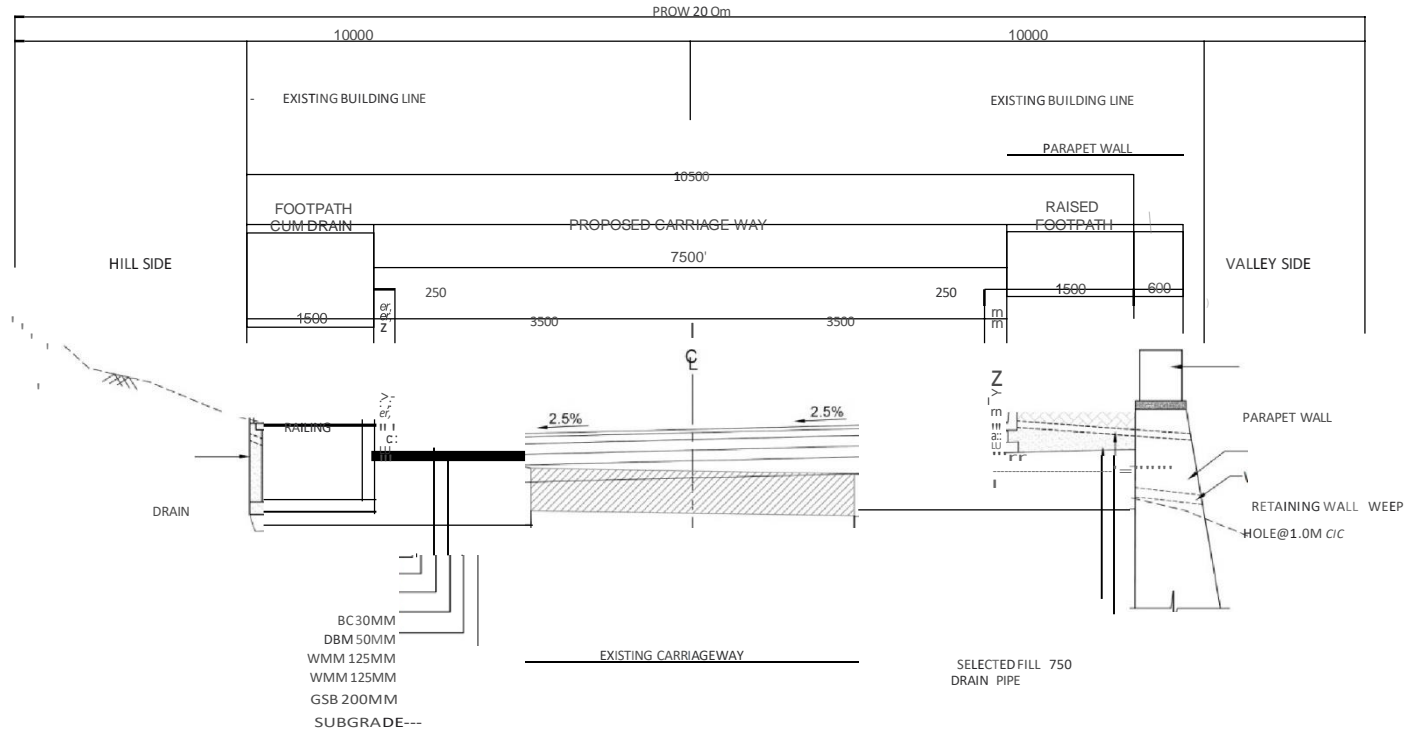
**TCS - 1**  
**TYPICAL CROSS SECTION IN RURAL AREA WITH RETAINING WALL BOTH SIDE**



CUT HEIGHT (CW)	BREST WALL (H)
UPTO 3m	Nil
3m<CW<13.5m	1.5m
CW>13.5m	3.0m

TCS-2  
**TYPICAL CROSS SECTION RECONSTRUCTION / WIDENING OF 2 LANE WITH HARD SHOULDER IN RURAL AREA**  
**(WITH BREST WALL ON HILL SIDE AND RETAINING WALL ON VALLEY SIDE)**

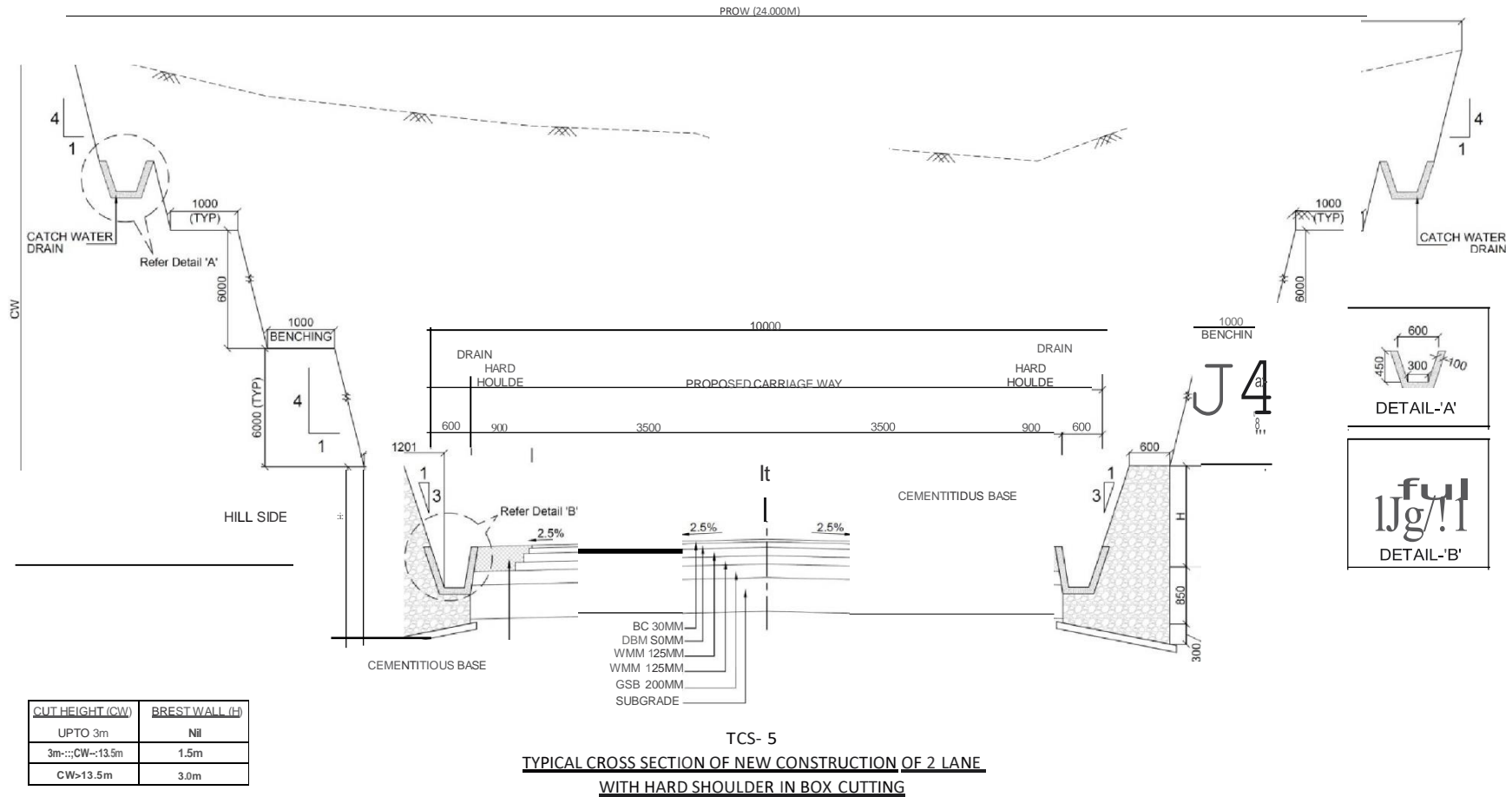


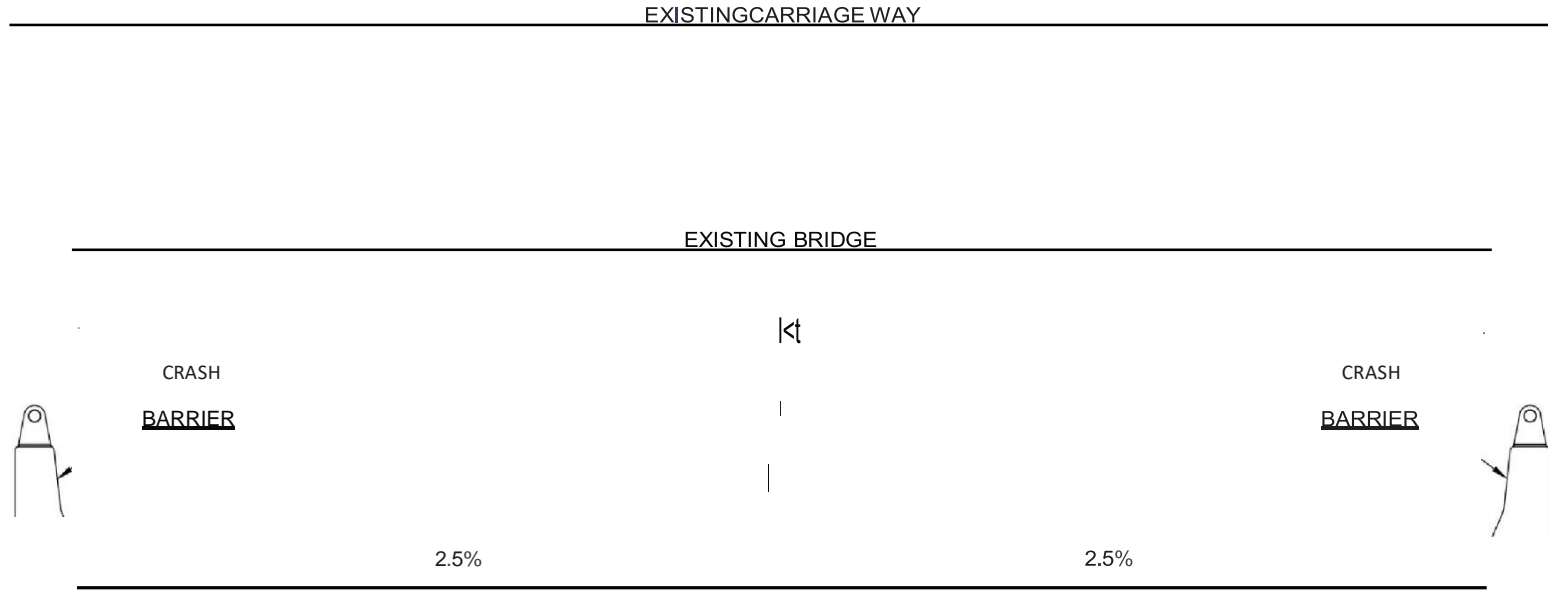


TCS-4

TYPICAL CROSS SECTION OF 2-LANE WIDENING IN BUILT-UP AREA (RECONSTRUCTION)

• IF WIDTH OF 7.5m IS NOT AVAILABLE INTERMEDIATE CARRIAGEWAY TO BE PROVIDED.





**TCS-6**

**TYPICAL CROSS SECTION OF MINOR BRIDGE (RETAINED)**

**SCHEDULE – C**  
(See Clause 2.1)

**PROJECT FACILITIES**

**1. Project Facilities**

This schedule indicates the minimum spatial and functional requirements of the facilities to be provided on the **Project Highway (Total length of 21.900 km)** with an aim to cater to the envisaged demand till the end of the concession period.

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

- (a) Roadside furniture
- (b) Pedestrian facilities
- (c) Tree plantation
- (d) Bus shelters
- (e) Passing Places
- (f) Truck lay byes and
- (g) Others to be specified

**2. Description of Project Facilities Toll**

**Plaza**

NIL

**Bus Shelters**

To ensure orderly movement of the through traffic, bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections. The bus stops have been proposed on one side of the road.

Bus shelters shall be provided on the Project Highway at 16 locations as mentioned herein under. Bus shelters shall be constructed as per Manual on both sides of the Project Highway. These bus shelters will also have passenger shelter.

#### Details of Bus shelters

S. No.	Chainage	SIDE
1	30+060	LHS
2	30+232	RHS
3	30+643	LHS
4	30+830	RHS
5	31+653	RHS
6	31+800	RHS
7	32+521	LHS
8	32+700	RHS
9	40+392	LHS
10	40+580	RHS
11	47+272	LHS
12	47+464	RHS
13	49+503	LHS
14	49+658	RHS
15	50+968	LHS
16	51+084	RHS

#### Pedestrian Facilities

Pedestrian facilities shall be provided at the locations of urban sections in order to ensure safety of pedestrians while crossing in consultation with NHIDCL. This should include (a) minimum Zebra Crossing with flashing Beacon or (b) Zebra Crossing with separate pedestrian phase or (c) any other provision as approved by NHIDCL.

#### Landscaping

Landscape treatment of the Project Highway shall be undertaken through planting of trees and ground cover of appropriate varieties and landscaping on surplus land in the ROW. The Construction Contractor should plant at least 14585 nos. of trees of minimum 6 ft. height with tree guard made up of MS sections.

Plantation scheme shall be prepared in consultation with the Forest Department of the Government of Arunachal Pradesh, and the Independent Consultant/ NHIDCL.

#### Environment

The Project Highway during design, construction and maintenance during implementation period shall conform to the environmental rules and regulations in force. The Construction Contractor shall be responsible for the same.

**SCHEDULE – D**  
*(See Clause 2.1)*

**SPECIFICATIONS AND STANDARDS**

**1. Construction**

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

**2. Design Standards**

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

Two Lane Manual (IRC:SP:73 –2018) of Specifications and Standards for Two Laning published by IRC and Hill Road Manual IRC SP 48:1998

Annex – I  
(Schedule – D)

**Specifications and Standards for Construction**

**1 Specifications and Standards**

All materials, works and construction operations shall confirm to the Two Lane Manual (IRC:SP:73 –2018) of Specifications and Standards for Two Laning (IRC:SP:73 –2018), referred as the Two Lane Manual (IRC:SP:73 –2018), and MORTH Specifications for Road and Bridge Works, IRC: SP: 48-1998 and IRC 56- 2011. 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**

2.1 The terms ‘Concessionaire’, ‘Independent Engineer’ and ‘Concession Agreement’ used in the Two Lane Manual (IRC:SP:73-2018) shall be deemed to be substituted by the terms ‘**Contractor**’, ‘**Authority’s Engineer**’ and ‘**Agreement**’ respectively.

2.2 Notwithstanding anything to the contrary contained in the Paragraph 1 above, the following Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, aforesaid Specifications and Standards of following clauses shall be deemed to be amended to the extent set forth below:

S. No.	Clause	Provision as per Manual ( IRC:SP:73-2018)	Modified Provision
1	2.16	Typical Cross-Sections	Typical Cross-Sections of the Project Highway shall be as specified in Annexure I of Schedule B
2	2.2	<b>Design Speed:</b> Ruling or minimum Design speed shall be followed	Design speed shall be 30 km/h for project highway excepting hair pin bend locations wherein design speed shall be 20 km/h. <b>Refer Appendix D-1</b>
3	2.7.2	<b>Roadway Width:</b> On horizontal curves with radius up to 300 m width of pavement and roadway shall be increased as per Table 2.4	On horizontal Curves with radius up to 300 m width of pavement and roadway shall be increased as per Plan & Profile drawings given in Annexure – III of Schedule A
4	2.9.4	<b>Radius of Horizontal Curves:</b>	Radius of Horizontal curves shall be as per the alignment plan shown in Plan & Profile drawings given in <b>Annexure-III of Schedule A.</b>

5	7.3	<b>Width of Structures</b>	Width of the structures shall be as specified in Annexure I of Schedule B
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**Appendix D-1**

**Radius of curves for 30 to 40KMPH design speed :**

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
29666.5225	30	30	Left	1.5
29730.3	30	30	Right	1.5
29860.3415	70	30	Right	0.9
29902.2585	70	30	Left	0.9
29958.4695	80	30	Right	0.9
30045.757	50	30	Right	1.2
30189.853	100	35	Right	0.9
30373.6685	70	40	Right	0.9
30518.171	60	30	Left	1.2
30603.505	40	30	Left	1.5
30669.882	30	30	Right	1.5
30769.563	30	30	Right	1.5
30885.209	60	30	Right	1.2
30988.427	50	30	Left	1.2
31072.8515	35	30	Left	1.5
31194.0325	70	30	Left	0.9
31385.8675	50	30	Left	1.2
31444.2825	30	30	Left	1.5
31569.9305	35	30	Left	1.5
31750.1275	60	30	Right	1.2
31822.6025	80	30	Right	0.9
31866.2105	35	30	Left	1.5
31940.016	30	30	Left	1.5
32007.093	50	30	Right	1.2
32105.753	30	30	Left	1.5
32156.837	40	30	Right	1.5
32566.205	30	30	Left	1.5
32641.5375	45	30	Right	1.2
32805.001	100	40	Right	0.9
32925.489	40	30	Left	1.5
33003.299	110	40	Right	0.6
33091.023	60	30	Left	1.2
33173.0655	35	30	Right	1.5
33260.6665	200	35	Right	0.6
33441.4385	40	30	Right	1.5
33726.4815	35	30	Left	1.5
33860.3925	30	30	Right	1.5
33988.7635	50	30	Left	1.2
34092.69	30	30	Right	1.5
34143.0205	60	30	Left	1.2
34296.1305	110	40	Left	0.6
34375.505	100	40	Right	0.9
34433.1945	70	30	Left	0.9
34482.533	30	30	Right	1.5

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
34542.168	30	30	Left	1.5
34620.662	90	40	Right	0.9
34685.982	100	40	Left	0.9
34831.8365	30	30	Right	1.5
34883.135	30	30	Left	1.5
34980.386	80	30	Left	0.9
35101.1065	50	30	Right	1.2
35174.5845	30	30	Right	1.5
35232.1085	50	30	Left	1.2
35291.642	100	40	Right	0.9
35348.073	200	50	Left	0.6
35414.8395	100	35	Left	0.9
35470.51	30	30	Right	1.5
35560.072	70	30	Right	0.9
35640.9365	40	30	Left	1.5
35682.9025	30	30	Right	1.5
35730.026	80	30	Left	0.9
35794.0265	135	40	Left	0.6
35842.6195	70	30	Right	0.9
35887.8635	30	30	Left	1.5
36001.7775	30	30	Left	1.5
36040.637	60	30	Right	1.2
36237.1035	60	30	Right	1.2
36522.165	35	30	Right	1.5
36573.222	40	30	Left	1.5
36715.2845	130	40	Left	0.6
36856.682	90	40	Left	0.9
37074.294	30	30	Left	1.5
37139.899	45	30	Right	1.2
37306.0195	30	30	Left	1.5
37351.119	30	30	Right	1.5
37416.422	80	40	Left	0.9
37572.1075	200	50	Right	0.6
37675.6135	40	30	Right	1.5
37752.0455	60	30	Left	1.2
37828.9485	35	30	Right	1.5
37902.0925	150	40	Left	0.6
38005.8465	30	30	Right	1.5
38073.837	70	30	Left	0.9
38306.302	30	30	Right	1.5
38376.492	140	40	Right	0.6
38448.9165	80	40	Left	0.9
38560.905	40	30	Right	1.5
38664.7665	50	30	Left	1.2
38725.4045	40	30	Right	1.5
38782.299	80	30	Left	0.9
38840.5145	60	30	Right	1.2
38912.802	100	40	Left	0.9

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
39038.9155	60	30	Left	1.2
39133.259	35	30	Right	1.5
39215.6555	200	50	Left	0.6
39372.9615	85	40	Left	0.9
39713.369	100	40	Right	0.9
39765.8315	80	40	Left	0.9
39822.1515	70	30	Right	0.9
39957.2975	70	30	Left	0.9
40057.806	70	30	Right	0.9
40123.157	30	30	Left	1.5
40192.24	35	30	Right	1.5
40279.6965	50	30	Left	1.2
40323.877	70	30	Right	0.9
40429.963	100	40	Right	0.9
40525.0325	70	30	Right	0.9
40598.08	50	30	Left	1.2
40687.383	60	30	Right	1.2
40842.3155	130	40	Right	0.6
40939.553	40	30	Right	1.5
41005.0575	35	30	Left	1.5
41119.8605	50	30	Right	1.2
41275.4015	35	30	Right	1.5
41312.6375	30	30	Left	1.5
41427.638	40	30	Left	1.5
41491.1345	70	30	Right	0.9
41536.9195	70	30	Left	0.9
41708.369	70	30	Right	0.9
41771.399	30	30	Left	1.5
41893.0995	40	30	Right	1.5
42065.344	80	30	Left	0.9
42216.754	60	30	Right	1.2
42379.4215	50	30	Left	1.2
42436.6075	70	30	Right	0.9
42630.7425	40	30	Left	1.5
42801.562	35	30	Right	1.5
42910.707	50	30	Left	1.2
43037.282	40	30	Left	1.5
43099.1315	60	30	Right	1.2
43148.0355	60	30	Left	1.2
43382.4395	70	30	Right	0.9
43471.811	70	30	Right	0.9
43551.866	70	30	Right	0.9
43611.2365	130	40	Left	0.6
43689.5105	30	30	Left	1.5
43774.3105	50	30	Left	1.2
43833.668	30	30	Right	1.5
43936.7325	70	30	Right	0.9
44211.452	150	40	Left	0.6

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
44297.8505	50	30	Right	1.2
44371.9925	100	40	Left	0.9
44512.9975	100	35	Right	0.9
44563.734	90	35	Left	0.9
44607.5325	30	30	Right	1.5
44643.286	30	30	Left	1.5
44751.2115	80	30	Right	0.9
45014.4745	60	30	Right	1.2
45124.069	35	30	Left	1.5
45193.2725	40	30	Right	1.5
45246.6615	60	30	Left	1.2
45515.938	40	30	Right	1.5
45603.4425	35	30	Right	1.5
45809.574	30	30	Right	1.5
45867.0255	60	30	Left	1.2
46076.4055	50	30	Left	1.2
46149.0375	55	30	Right	1.2
46214.32	30	30	Left	1.5
46272.6485	60	30	Left	1.2
46323.6245	60	30	Right	1.2
46407.8595	80	40	Right	0.9
46568.5995	60	30	Left	1.2
46629.9755	40	30	Right	1.5
46736.3005	35	30	Left	1.5
46820.4645	50	30	Right	1.2
46998.041	40	30	Left	1.5
47092.313	50	30	Left	1.2
47213.25	40	30	Right	1.5
47317.4015	50	30	Right	1.2
47436.831	100	35	Right	0.9
47544.406	70	40	Left	0.9
47607.039	45	30	Right	1.2
47667.0545	100	40	Left	0.9
47738.088	150	40	Right	0.6
47792.9555	40	30	Left	1.5
48060.475	50	30	Right	1.2
48139.1935	55	30	Right	1.2
48187.084	80	30	Left	0.9
48250.6475	35	30	Left	1.5
48454.925	40	30	Left	1.5
48522.2565	60	30	Left	1.2
48570.6315	30	30	Right	1.5
48614.6175	40	30	Left	1.5
48710.3835	65	30	Right	0.9
48806.926	60	30	Left	1.2
48988.7	30	30	Left	1.5
49094.236	50	30	Left	1.2
49138.0915	70	30	Right	0.9

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
49364.994	50	30	Right	1.2
49600.568	30	30	Right	1.5
49647.4595	30	30	Left	1.5
49688.8335	60	30	Right	1.2
49800.066	80	30	Right	0.9
49877.689	30	30	Left	1.5
49927.7535	50	30	Right	1.2
50084.056	70	30	Right	0.9
50151.9815	30	30	Left	1.5
50199.3945	30	30	Right	1.5
50271.7115	180	40	Right	0.6
50343.1075	30	30	Left	1.5
50395.157	60	30	Right	1.2
50508.2395	150	40	Right	0.6
50803.679	130	40	Left	0.6
51297.4115	40	30	Left	1.5
51507.078	40	30	Right	1.5

**Locations where design speed is less than 30 KMPH:**

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
29795.299	22	20	Left	1.5
30126.7185	20	20	Left	1.5
30454.7345	25	20	Right	1.5
31118.725	20	20	Right	1.5
31331.2025	20	20	Right	1.5
31512.063	20	20	Right	1.5
31625.475	20	20	Right	1.5
31690.1655	25	20	Left	1.5
32208.379	25	20	Left	1.5
32285.2155	25	20	Right	1.5
32336.469	20	20	Left	1.5
32397.6735	20	20	Right	1.5
32458.7385	25	20	Left	1.5
32518.5625	20	20	Right	1.5
33312.9775	25	20	Left	1.5
33492.094	20	20	Left	1.5
33549.2365	25	20	Right	1.5
34217.943	20	20	Right	1.5
34752.868	20	20	Left	1.5
34929.3825	20	20	Right	1.5
35513.0945	25	20	Left	1.5
36095.6895	25	20	Right	1.5
36192.933	25	20	Left	1.5
36286.3015	17	20	Left	1.5
36360.22	20	20	Right	1.5
36964.1085	15	20	Left	1.5

Chainage(m)	Radius(m)	Design Speed in Km Ph	Hand of curve	Extra Widening (m)
38520.3625	25	20	Left	1.5
38984.0785	15	20	Right	1.5
39883.5495	20	20	Left	1.5
41366.7635	25	20	Right	1.5
42286.272	20	20	Right	1.5
43263.8555	15	20	Left	1.5
44010.5585	25	20	Left	1.5
44075.4865	25	20	Right	1.5
44847.796	25	20	Left	1.5
45328.4695	20	20	Right	1.5
45469.388	20	20	Left	1.5
45759.417	20	20	Left	1.5
45922.8685	25	20	Right	1.5
47049.443	20	20	Right	1.5
47389.4065	25	20	Left	1.5
47913.0735	25	20	Left	1.5
47973.795	25	20	Right	1.5
48314.9805	25	20	Right	1.5
50594.594	20	20	Left	1.5
50691.467	20	20	Right	1.5
50890.501	25	20	Left	1.5
50941.056	25	20	Right	1.5
51035.158	20	20	Left	1.5
51143.89	25	20	Left	1.5
51202.254	15	20	Right	1.5
51397.012	15	20	Right	1.5

**Schedule – H**

**PKG-2**

(See Clauses 10.1 (iv) and 19.3)

**Contract Price Weightages**

1. The Contract Price for this Agreement is Rs. \*\*\*\*\*

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

Item	Weightage in % of CP	Stage for Payment	Percentage Weightage
1	2	3	4
Road works including culverts, Widening and Repair of culverts.	40.07%	<b>A- Widening and strengthening of existing road</b>	
		(1) Earthwork up to top of the sub-grade	0.77%
		(2) Sub-grade preparation	0.19%
		(3) Sub-Base Course	3.14%
		(4) Non-Bituminous Base course	4.94%
		(5) Bituminous Base course	3.02%
		(6) Wearing Coat	2.05%
		(7) Earthwork in shoulders	0.00%
		<b>B.1- Reconstruction/New 2-lane realignment/bypass (Flexible Pavement)</b>	
		(1) Earthwork up to top of the sub-grade	0.74%
		(2) Sub-grade preparation	0.41%
		(3) Sub-Base Course	6.88%
		(4) Non-Bituminous Base course	18.86%
		(5) Bituminous Base course	13.38%
		(6) Wearing Coat	14.46%
		(7) Earthwork in shoulders	17.04%
		<b>B.2- Reconstruction/New 2-lane realignment/bypass (Rigid Pavement)</b>	
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Earthwork in shoulders	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Concrete (PQC) Course	0.00%
		<b>C.1- Reconstruction/New Service Road (Flexible Pavement)</b>	
		(1) Earthwork up to top of the sub-grade	0.00%
(2) Earthwork in shoulders	0.00%		
(3) Sub-Base Course	0.00%		
(4) Non-Bituminous Base course	0.00%		
(5) Bituminous Base course	0.00%		

Item	Weightage in % of CP	Stage for Payment	Percentage Weightage
		(6) Wearing Coat	0.00%
		<b>C.2- Reconstruction/New Service Road (Rigid Pavement)</b>	0.00%
		(1) Earthwork up to top of the sub-grade	0.00%
		(2) Sub-Base Course	0.00%
		(3) Dry Lean Concrete (DLC) Course	0.00%
		(4) Pavement Quality Concrete (PQC) Course	0.00%
		<b>D- Reconstruction and New Culverts on existing road, realignments, bypasses Culverts (Length &lt; 6m)</b>	14.14%
<b>Minor Bridges, Underpasses, Overpasses,</b>	0.14%	<b>A.1-Widening and repair of Minor Bridges (Length&gt;6 m and &lt;60 m)</b>	
		Minor Bridges	100.00%
		<b>A.2-New Minor Bridges (Length&gt;6 m and &lt;60 m)</b>	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%
		(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%
		(4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect, tests on completion in all respect and fit for use	0.00%
		(5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%
		(6) Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	0.00%
		<b>B.1-Widening and Repair of Underpasses / Overpasses</b>	
		Underpasses/Overpasses	0.00%
		<b>B.2- New Underpasses /Overpasses</b>	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%
		(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%		



Item	Weightage in % of CP	Stage for Payment	Percentage Weightage
		(4) On completion of Retaining / Reinforced earth walls, complete in all respect and fit for use	0.00%
		(5) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, stone pitching, protection works, road signs & markings, tests on completion in all respect.	0.00%
		Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as Specified	0.00%
<b>Major Bridge (Length&gt;60m)works and ROB/RUB, Elevated Sections, Flyovers including Viaducts, if any</b>	0.00%	<b>A.1- Widening and repairs of Major Bridges</b>	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%
		(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%
		(4) Wearing Coat including expansion joints.	0.00%
		(5) Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%
		(6) Wing walls/return walls up to top	0.00%
		(7) Guide Bund, River Training works etc.	0.00%
		(8) approaches (including retaining walls, stone pitching and protection works)	0.00%
		<b>A.2 – New Major Bridges:</b>	
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%
		(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%
		(4) Wearing Coat including expansion joints.	0.00%
		(5) Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%
(6) Wing walls/return walls up to top	0.00%		
(7) Guide Bund, River Training works etc.	0.00%		

Item	Weightage in % of CP	Stage for Payment	Percentage Weightage
(8)		Approaches (including retaining walls, stone pitching and protection works)	0.00%
		<b>B.1-Widening and repair of</b>	
		<b>(a) ROB</b>	
		<b>(b) RUB</b>	
(1)		Foundations	0.00%
(2)		Sub-structure	0.00%
(3)		Super-structure (including bearings)	0.00%
(4)		<b>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</b>	0.00%
(5)		Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%
(6)		Wing walls/return walls up to top	0.00%
(7)		Retaining/Reinforced earth walls	0.00%
(8)		Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	0.00%
		<b>B.2- New ROB/RUB</b>	
		1) Foundations	0.00%
(2)		Sub-structure	0.00%
(3)		Super-structure (including bearings)	0.00%
(4)		<b>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.</b>	0.00%
(5)		Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%
(6)		Wing walls/return walls up to top	0.00%
(7)		Retaining/Reinforced earth walls	0.00%
(8)		Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	0.00%
		<b>C.1-Widening and repair of Elevated sections/Flyover/Grade separators</b>	
		1) Foundations	0.00%
(2)		Sub-structure	0.00%
(3)		Super-structure (including bearings)	0.00%
(4)		Wearing coat <b>including</b> expansion joints	0.00%
(5)		Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%

Item	Weightage in % of CP	Stage for Payment	Percentage Weightage		
		(6) Wing walls/return walls up to top	0.00%		
		(7) Retaining/Reinforced earth walls	0.00%		
		(8) Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	0.00%		
		<b>C.2-New Elevated section/ Flyovers/ Grade Separators.</b>			
		(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%		
		(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%		
		(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings.	0.00%		
		(4) Wearing coat (including expansion joints	0.00%		
		(5) Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%		
		(6) Wing walls/return walls up to top	0.00%		
		(7) Retaining/Reinforced earth walls	0.00%		
		(8) Approaches and Other Ancillary Works (wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works etc.)	0.00%		
		Other works	59.79%	(1) Toll Plaza	0.00%
				(2) Road side drains	
Open Lined Drain	6.22%				
Unlined Drain	0.00%				
Covered Drain	6.20%				
Catch pit Drain	0.00%				
(3) Road signs, safety Devices, Road Furniture etc.	0.49%				
(4) Road markings & Studs	0.44%				
(5) Crash Barrier	12.82%				
(6) Project facilities					
(a) Bus Bays	0.52%				
(b) Wayside Amenities excluding Slip Roads & but including all internal roads (Service areas including Truck Lay-Byes)					
(c) Toe wall					
(7) RCC Retaining Wall	22.97%				
(8) Stone Masonry Breast wall	22.91%				
(9) Parapet Wall	1.32%				
(10) RE Wall					

Item	Weightage in % of CP	Stage for Payment	Percentage Weightage
		(11) Street Lighting	
		(12) Chequered Tiles	0.43%
		(13) Boundary Wall	
		(14) ATMS	
		(15) Rain Water Harvesting	
		(16) Road side Plantation including Horticulture in Wayside Amenities	
		(17) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%
		a) Hydroseeding	0.00%
		b) Mulching	4.73%
		c) Soil nailing for slope protection and copping	39.14%
		(18) Safety & Traffic Management during const.	0.00%
		(19) Other miscellaneous works including Connecting road & Junction under Grade separator	
		(20) Connecting Road Etc	
		Junction under Grade separator	1.45%
		(21) Site clearance and Dismantling	0.36%
		(22) Maintenance of Road	0.00%

Procedure of estimating the value of work done

(i) 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
1	2	3
<b>A-Widening and strengthening of Existing Road</b>		
(1) Earthwork up to top of the sub-grade	0.31%	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 total length.
(2) Sub-grade preparation	0.07%	
(3) Sub-Base Course	1.26%	
(4) Bituminous Base course	1.98%	
(5) Bituminous Base course	1.21%	
(6) Wearing Coat	0.82%	
<b>B.1- Reconstruction/New 8-lane realignment/bypass (Flexible Pavement)</b>		
(1) Earthwork up to top of the sub-grade	0.30%	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 total length.
(2) Sub-grade preparation	0.16%	
(3) Sub-Base Course	2.76%	
(4) Non-Bituminous Base course	7.56%	
(5) Bituminous Base course	5.36%	
(6) Wearing Coat	5.79%	
(7) Earthwork in shoulders	6.83%	
<b>B.2- Reconstruction/New 8-lane realignment/bypass (Rigid Pavement)</b>		
(1) Earthwork up to top of the sub-grade	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 total length.
(2) Sub-Base Course	0.00%	
(3) Dry Lean Concrete (DLC)	0.00%	
(4) Pavement Quality Concrete (PQC) Course	0.00%	
<b>C.1- Reconstruction/New Service Road (Flexible Pavement)</b>		

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(1) Earthwork up to top of the sub-grade	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 total length.
(2) Earthwork in shoulders	0.00%	
(3) Sub-Base Course	0.00%	
(4) Non-Bituminous Base Course	0.00%	
(5) Bituminous Base Course	0.00%	
(6) Wearing Coat	0.00%	
<b>C.2- Reconstruction/New Service Road (Rigid Pavement)</b>		
(1) Earthwork up to top of the sub-grade	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 total length.
(2) Sub-Base Course	0.00%	
(3) Dry Lean Concrete (DLC) Course	0.00%	
(4) Pavement Quality Concrete (PQC) Course	0.00%	
<b>D- Reconstruction and New Culverts on existing road, realignments, bypasses:</b>		
(1) Culverts (Length < 6m)	5.67%	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 at least five culverts.

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

$$\text{Cost per km} = P \times \text{weightage for road work} \times \text{weightage for bituminous work} \times (1/L)$$

Where

P = Contract Price

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

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

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



(ii) 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	Percentage - Weightage	Payment Procedure
1	2	3
<b>A.1. Widening and Repair of minor bridges (length &gt;6m and &lt; 60m)</b>	0.14%	Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length of the minor bridges. Payment shall be made on the completion of widening and repair works of a minor bridge.
<b>A.2.- New Minor bridges</b>		
(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%	<b>Foundation:</b> Cost of each Minor bridge shall be determined on pro- rata basis with respect to the total linear length(m) of the minor bridges. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of each bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%	<b>Sub-structure:</b> Cost of each minor bridge shall be determined on pro- rata basis with respect to the total linear length (m) of the minor bridges. Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each bridge.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Approaches: On completion of approaches including Retaining walls, stone pitching, protection works complete in all respect and fit for use	0.00%	<b>Approaches:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of approaches in all respect as specified in the column of "Stage of Payment" in this sub-clause.

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(5) Guide Bunds and River Training Works: On completion of Guide Bunds and river training works complete in all respects	0.00%	<b>Guide Bunds and River Training Works:</b> 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
(6) Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion in all respect.	0.00%	<b>Other Ancillary Works:</b> Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
<b>B.1. Widening and repair of underpasses/overpasses</b>	0.00%	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 and repair works of a underpass/overpass.
<b>B.2. New Underpasses/Overpasses</b>		
(1) Foundation: On completion of the foundation work including foundations for wing and return walls, abutments, piers.	0.00%	<b>Foundation:</b> Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/Overpasses. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of each Underpasses/ Overpasses. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap including wing/ return/ retaining wall up to top	0.00%	<b>Sub-structure:</b> Cost of each Underpass/ Overpass shall be determined on pro- rata basis with respect to the total linear length (m) of the Underpasses/ Overpasses. Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of each Underpasses/Overpasses.

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure of at least one span in all respects as specified in the column of "Stage of Payment" in this sub-clause. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(5) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
Wearing Coat (a) in case of Overpass- wearing coat including expansion joints complete in all respects as specified and (b) in case of underpass-rigid pavement including drainage facility complete in all respects as specified	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified



(iii) Major Bridge works, ROB/RUB and Structures

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

Table 1.3.3

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
<b>A.1.- Widening and Repairs of Major Bridges</b>		
(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	0.00%	<b>Foundation:</b> Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length(m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap	0.00%	<b>Sub-structure:</b> Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of major bridge.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, Bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4). Wearing Coat including expansion joints	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls up to top	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(7) Guide bunds, River Training works etc.	0.00%	<b>Guide Bunds, River Training works:</b> Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	<b>Approaches:</b> Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
<b>A.2. New Major Bridges</b>	0.00%	
(1) Foundation: On completion of the foundation work including foundations for return walls, abutments, piers.	0.00%	<b>Foundation:</b> Cost of each Major Bridge shall be determined on pro rata basis with respect to the total linear length (m) of the Major Bridge. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the major Bridge. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure: On completion of abutments, piers up to the abutment/ pier cap	0.00%	<b>Sub-structure:</b> Payment against sub-structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub-structure of major bridge.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, Bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4). Wearing Coat including expansion joints	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified. 223
(6) Wing walls/return walls up to top	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(7) Guide bunds, River Training works etc.	0.00%	<b>Guide Bunds, River Training works:</b> Payments shall be made on completion of all guide bunds/river training works etc. complete in all respects as specified.
(8) Approaches (including Retaining walls, stone pitching and protection works)	0.00%	<b>Approaches:</b> Payments shall be made on pro rata basis on completion of 10% of the scope of each stage.
<b>B.1.- Widening and repairs of</b>	0.00%	
(a) ROB	0.00%	
(b) RUB	0.00%	
(1) Foundation	0.00%	<b>Foundation:</b> Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length(m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	<b>Sub-structure:</b> Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-structure (including bearings)	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) <b>Wearing coat (a) in case of ROB</b> – wearing coat including expansion joints complete in all respects as specified and <b>(b) in case of RUB</b> – rigid pavement under RUB including drainage facility complete in all respects as specified	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items (like hand rails, crash barriers road marking etc.)	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.



Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(6) Wing walls/return walls up to top	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining/Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
<b>B.2.- New</b>	0.00%	
(a) ROB	0.00%	
(b) RUB	0.00%	
(1) Foundation	0.00%	<b>Foundation:</b> Cost of each ROB/RUB shall be determined on pro rata basis with respect to the total linear length (m) of the ROB/RUB. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the ROB/RUB. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure	0.00%	<b>Sub-structure:</b> Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of ROB/RUB.
(3) Super-structure (including bearing)	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(4) Wearing Coat including expansion joints in case of ROB. In case of RUB-rigid pavement under RUB including drainage facility as specified	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion (a) in case of ROB- wearing coat including expansion joints complete in all respects as specified and (b) in case of RUB-rigid pavement under RUB including drainage facility complete in all respects as specified.
(5) Miscellaneous Items like hand rails, crash barrier, road markings etc.	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
<b>C.1- Widening and repairs of Elevated Section/Flyovers/Grade Separators</b>	0.00%	
(1) Foundation	0.00%	<b>Foundation:</b> Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.
(2) Sub-structure:	0.00%	<b>Sub-structure:</b> Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.



Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above.
(4) Wearing Coat including expansion joints.	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5). Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified
<b>C.2- New Elevated Section/Flyovers/Grade Separators</b>	0.00%	
(1) Foundation	0.00%	<b>Foundation:</b> Cost of each structure shall be determined on pro rata basis with respect to the total linear length (m) of the structure. Payment against foundation shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of foundation of the structure. In case where load testing is required for foundation, the trigger of first payment shall include load testing also where specified.

Stage of Payment	Percentage - Weightage	Payment Procedure
1	2	3
(2) Sub-structure:	0.00%	<b>Sub-structure:</b> Payment against sub- structure shall be made on pro-rata basis on completion of a stage i.e. not less than 25% of the scope of sub- structure of structure.
(3) Super-structure: On completion of the super-structure in all respects including Girder, Deck slab, bearings	0.00%	<b>Super-structure:</b> Payment shall be made on pro-rata basis on completion of a stage i.e. completion of super- structure including bearings of at least one span in all respects as specified. In case of structures where pre-cast girders have been proposed by the Contractor, 50% of the stage payment shall be due and payable on casting of girders for each span and balance 50% of the stage payment shall be made on completion of stage specified as above
(4) Wearing Coat including expansion joints.	0.00%	<b>Wearing Coat:</b> Payment shall be made on completion of wearing coat including expansion joints complete in all respects as specified.
(5). Miscellaneous items like hand rails, crash barriers, road markings etc	0.00%	<b>Miscellaneous:</b> Payments shall be made on completion of all miscellaneous works like hand rails, crash barriers, road markings etc. complete in all respects as specified.
(6) Wing walls/return walls	0.00%	<b>Wing walls/return walls:</b> Payments shall be made on completion of all wing walls/return walls complete in all respects as specified.
(7) On completion of Retaining / Reinforced earth walls complete in all respect and fit for use	0.00%	Payments shall be made on pro rata basis on completion of 20% of the total area.
(8) Approaches and Other Ancillary Works: On completion of wearing coat, expansion joints, hand rails, crash barriers, road signs & markings, stone pitching, protection works, tests on completion in all respect.	0.00%	Payment shall be made on pro-rata basis on completion of a stage in all respects as specified

Note:

- (1) In case of innovative Major Bridge projects like cable suspension/cable stayed/ Extra Dozed and exceptionally long span bridges, the schedule may be modified as per site requirements before bidding with due approval of DG (RD) &SS, MoRT&H.
- (2) The Schedule for exclusive tunnel projects may be prepared as per sit requirements before bidding with due approval of DG (RD) &SS, MoRT&H.



**(iv) 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	Percentage - Weightage	Payment Procedure
1	2	3
(1) 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.
(2) Road side drains	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 total length.
Open Lined Drain	3.72%	
Unlined Drain	0.00%	
Covered Drain	3.71%	
Catchpit Drain	0.00%	
(3) Road signs, safety Devices, Road Furniture etc.	0.29%	
(4) Road markings & Studs	0.26%	Payment shall be made on pro rata basis for completed facilities.
(5) Crash Barrier	7.67%	
(6) Project facilities	0.00%	
(a) Bus Bays	0.31%	
(b) Wayside Amenities excluding Slip Roads & but including all internal roads (Service areas including Truck Lay-Byes)	0.00%	
(c) Toe wall	0.00%	Payments shall be made on pro rata basis on completion of 5 % of the total area.
(7) RCC Retaining Wall	1.77%	
(8) Stone Masonry Breast wall	13.70%	
(9) Parapet Wall	0.79%	
(10) RE Wall	0.00%	Payment shall be made on pro rata basis for completed facilities.
(11) Street Lighting	0.00%	
(12) Chequered Tiles	0.26%	
(13) Boundary Wall	0.00%	Payments shall be made on pro rata basis on completion of 5 % of the total area.
(14) ATMS	0.00%	Payment shall be made on pro rata basis for completed facilities.
(15) Rain Water Harvesting	0.00%	
(16) Road side Plantation including Horticulture in Wayside Amenities	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 total length.
(17) Protection Works other than approaches to the bridges, elevated sections/ flyover/ grade separators and ROBs/ RUBs	0.00%	Payments shall be made on pro rata basis on completion of 5% of the total area.
a) Hydroseeding	0.00%	
b) Mulching	2.83%	
c) Soil nailing for slope protection and copping	23.40%	
(18) Safety & Traffic Management during const.	0.00%	Payment shall be made on prorated basis every six months.
(19) Other miscellaneous works including	0.00%	Payment shall be made on Prorate basis on

Stage of Payment	Percentage - Weightage	Payment Procedure
Connecting road & Junction under Grade separator		completion of each stage
(20) Connecting Road Etc	0.00%	
Junction under Grade separator	0.86%	
(21) Site clearance and Dismantling	0.21%	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 total length.
(22) Maintenance of Road	0.00%	

**2. Procedure for payment for Maintenance**

- (a) The cost for maintenance shall be as stated in Clause 14.1 (v).
- (b) Payment for Maintenance shall be made in accordance with the provisions of Article 14 and Article 19

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 **[255<sup>th</sup>]** 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 **[438<sup>th</sup>]** 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 **[621<sup>st</sup>]** 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 **[730<sup>th</sup>]** 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*

##### A. *Road and Bridge*

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

##### B. *Other Tests*

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

#### 3. *Agency for Conducting Tests*

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

**4. Completion Certificate**

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

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

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

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

**Schedule - L**

(See Clause 12.2)

**Completion Certificate**

- 1 I, ..... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated..... (the "**Agreement**"), "**Name of work**". (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 afore said Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the.....day of.....20..., Scheduled Completed date for which was the ..... day of .....20.....

SIGNED, SEALED 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
<b>(a)</b>	<b>Carriageway/Pavement</b>	
(i)	Potholes, cracks, other surface defects	15%
(ii)	Repairs of Edges, Rutting	5%
<b>(b)</b>	<b>Road, Embankment, Cuttings, Shoulders</b>	
(i)	Edge drop, inadequate cross fall, undulations, settlement, potholes, ponding, obstructions	10%
(ii)	Deficient slopes, rain cuts, disturbed pitching, vegetation growth, pruning of trees	5%
<b>(c)</b>	<b>Bridges and Culverts</b>	
(i)	Desilting, cleaning, vegetation growth, damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20%
(ii)	Any Defects in superstructures, bearings and sub-structures	10%
(iii)	Painting, repairs/replacement kerb, railings, parapets, guideposts/crash barriers	5%
<b>(d)</b>	<b>Roadside Drains</b>	
(i)	Cleaning and repair of drains	5%
<b>(e)</b>	<b>Road Furniture</b>	
(i)	Cleaning, painting, replacement of road signs, delineators, road markings, 200 m/km/5 <sup>th</sup> km stones	5%
<b>(f)</b>	<b>Miscellaneous Items</b>	
(i)	Removal of dead animals, broken down/accidental vehicles, fallen trees, road blockades or malfunctioning of mobile crane	10%
(ii)	Any other Defects in accordance with paragraph 1.	5%
<b>(g)</b>	<b>Defects in Other Project Facilities</b>	5%

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

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

Where,

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

M1= Monthly lump-sum payment in accordance para 1.2 above of this Schedule M2= Monthly lump-sum payment in accordance para 1.2 above of this Schedule L1= Non-complying length L = Total length of the road,

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

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

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

**Schedule - N**

(See Clause 18.1 (i))

**Selection of Authority's Engineer**

**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 entered into between the [name and address of the Authority] (the “**Authority**”) and ..... (the “**Contractor**”) # for “**Name of Work**”. (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 of the 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 Agreement and in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 4 (ix), the tests specified in the IRC Special Publication-11 (Handbook of Quality Control for Construction of Roads and Runways) and the Specifications for Road and Bridge Works issued by MORTH (the "Quality Control Manuals") or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance.
- (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 accordance with the Quality Control Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.
- (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 by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

- (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 the buildings and structures forming part of Project Facilities; and shall hand them over to the 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 afore said 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 up to 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. 2,00,00,000/- (Two Crore only)

- (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 kilometer.

**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.

(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 **"Balance Work for Construction of Two lane with hard shoulder of Kohima-Jessami Road on NH-29 (Old NH-150) from existing Km 30.474(Near Kidwema road Chakahabama) to existing Km 53.220 (Near Kikruma village) [Design km 29.6 to Design Km 51.5] [Design length- 21.90 Km] in the state of Nagaland under Bharatmala Pariyojna on EPC Mode (Pkg-II)".** (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)

SCHEDULE [S]  
( See Clause 26.1(iii))  
Procedure for Dispute Resolution Board

The parties to the Contract Agreement mutually agree as follows:

- (1) The Board shall comprise of three Members having experience in the field of construction or have been involved in the Works related to construction and with the interpretation of contractual documents. One Member shall be selected by each of the Employer and the Contractor from the list maintained by NHAH hosted on its website ([www.nhai.gov.in](http://www.nhai.gov.in)). In the event the parties fail to select the member within 28 days of the date of the signing of Contract Agreement, in that eventuality, upon the request of either or both parties such Member shall be selected by SAROD within 14 days. The third Member shall be selected by the other two members from the same list. If the two Members selected by or on behalf of the parties fail to select the third Member within 14 days after the later of their selections, then upon the request of either or both parties such third Member shall be selected by SAROD within 14 days. The third Member shall serve as Chairman of the Board.
- (2) The Board shall be constituted when each of the three Board Members has signed a Board Member's declaration of Acceptance as required by the DRB's rules and procedures (which, along with the declaration of acceptance form, are attached as Annexure herewith).
- (3) In the event of death, disability, or resignation of any Member, such Member shall be replaced in the same manner as the Member being replaced was selected. If for any other reason, a Member fails or is unable to serve, the Chairman (or failing the action of the Chairman then either of the other Members) shall inform the Parties and such non-serving Member shall be replaced in the same manner as the Member being replaced was selected. Any replacement made by the parties shall be completed within 28 days after the event giving rise to the vacancy on the Board, failing which the replacement shall be made by SAROD in the same manner as described above. Replacement shall be considered complete when the new Member signs the Board Member's Declaration of Acceptance. Throughout any replacement process, the Members not being replaced shall continue to serve and the Board shall continue to function and its activities shall have the same force and effect as if the vacancy had not occurred, provided, however, that the Board shall not conduct a hearing nor issue a decision until the replacement is completed.
- (4) If either the Employer or the Contractor is dissatisfied with any decision of the Board, and/or if the Board fails to issue its decision within 56 days after receipt of all the pleadings (along with the supporting documents) of the parties by the Chairman of the Board or any extension mutually agreed upon by the Employer and the Contractor, in such a case, either the Employer or the Contractor may, within 28 days after his receipt of the decision, or within 28 days after the expiry of the said period, as the case may be, give notice to the other party, with a copy for information to the Authority engineer, of his intention to refer the matter to the Conciliation Committee of Independent Experts (CCIE) of the Authority for Conciliation/amicable settlement.
- (5) It is mandatory to refer all the disputes to DRB before issuance of completion certificate and satisfactory completion of punch list items. No dispute shall be entertained after completion of aforementioned date.
- (6) If the Board has issued a decision to the employer and the Contractor within the said 56 days or any extension mutually agreed upon by the Employer and the Contractor and no notice of intention to commence Conciliation by the Conciliation Committee of Independent Experts (CCIE) of the Authority for Conciliation/amicable settlement as to such dispute has been given by either the Employer or the Contractor within 28 days after the parties received such decision from the

- (7) Whether or not it has become final and binding upon the Employer and the Contractor, a decision shall be admissible as evidence in any subsequent dispute resolution procedure, including any arbitration or litigation having any relation to the dispute to which the decision relates.
- (8) All decision of DRB which have become final and binding or till they have been reversed in subsequent conciliation/Arbitration process shall be implemented by the parties forthwith. Such implementation shall also include any relevant action of the Authority engineer.
- (9) If during the Contract Period, the Employer and the Contractor are of the opinion that the Disputes Resolution Board is not performing its functions properly, the Employer and the Contractor may together disband the Disputes Resolution Board and reconstitute it. In that case, a new board shall be selected in accordance with the provisions applying to the selection of the original Board as specified above, except that words "within 28 days after the signing of this Contract Agreement" shall be replaced by the words "within 28 days after the date on which the notice disbanding the original Board became effective".
- (10) The Employer and the Contractor shall jointly sign a notice specifying that the Board shall stand disbanded with effect from the date specified in the notice. The notice shall be posted by email to each Member of the Board. A Member shall be deemed to have received the e mail even if he refuses to have received the same.
- (11) All other terms and conditions of the original Contract Agreement shall remain unaltered/unaffected and the parties shall remain bound by terms and conditions as contained therein.

### Disputes Resolution Board's Rules and Procedures

1. Except for providing the services required hereunder, the Board Members shall not give any advice to either party or to the Authority engineer concerning conduct of the Works. The Board Members:
  - (a) Shall have no financial interest in any party to the 'Contract, or the Authority engineer, or a financial interest in the contract, except for payment for services on the Board.
  - (b) Shall have had no previous employment by, or financial ties to, any party to the Contract Agreement, or the Authority engineer, except for fee based consulting services/advisers on other projects, and/or be Retired Government Officers (not connected in whole or part with the project), all of which must be disclosed in writing to both parties prior to appointment to the Board.
  - (c) Shall have disclosed in writing to both parties prior to appointment to the Board any and all recent or close professional or personal relationships with any director, officer, or employee of any party to the Contract, or the Authority engineer, and any and all prior involvement in the project to which the Contract relates;
  - (d) Shall not, while Board member, be employed whether as a consultant or adviser or otherwise by either party to the Contract, or the Authority engineer, except as a Board Member, without the prior consent of the parties and the other Board Members;
  - (e) Shall not, while a Board Member, engage in discussion or make any agreement with any party to the Contract, or with the Authority engineer, regarding employment whether as a consultant or otherwise whether after the Contract is completed or after service as a Board Member is completed.
  - (f) Shall remain and be impartial and independent of the parties and shall disclose in writing to the Employer, the Contractor and one another any fact or circumstance which might be such as to cause either the Employer or the Contractor to question the continued existence of the impartiality and independence required of Board Members; and
  - (g) Shall be fluent in the language of the Contract.
2. Except for its participation in the Board's activities as provided in the Contract Agreement and in this Agreement none of the Employer, the Contractor, and or the Authority engineer shall solicit advice or consultation from the Board or the Board Members on matters dealing with the conduct of the Works.
3. The Contractor shall :
  - (a) Furnish to each Board member one copy of all documents which the Board may request including Contract Agreement, progress reports and other documents pertinent to the performance of the Contract Agreement.
  - (b) In cooperation with the Employer, coordinate the site visits of the Board, including conference facilities, and secretarial and copying service.
4. The Board shall begin its activities following the signing of a Board Member's Declaration of Acceptance by all three Board Members, and it shall terminate these activities as set forth below
  - (a) The Board shall terminate its regular activities when either (i) issuance of completion certificate and completion of punch list items or (ii) the parties have terminated the contract and when, in either case, the Board has communicated to the parties and the Authority engineer its decision on all disputes previously referred to it.
  - (b) Once the Board has terminated its regular activities as provided by the previous paragraph, the Board shall remain available to process any dispute referred to it by either party. In case of such a referral, Board Members shall receive payments as provided in paragraphs 7(a)(ii), (iii) and (iv).

Board Members shall not assign or subcontract any of their work under these Rules and Procedures.

The Board Members are Independent and not employees or agents of either the Employer or the Contractor.

Payments to the Board Members for their services shall be governed by the following provisions

(a) Each Board Member will receive payments as follows :  
i. A retainer fee per calendar month as specified in the schedule of fee made part of his Schedule and its revision from time to time. This retainer fee shall be considered as payment in full for :

- (A) Being available, on 7 days' notice, for all hearings, Site Visits, and other meetings of the Board.
- (B) Being conversant with all project developments and maintaining relevant files.
- (C) All offices and overhead expenses such as secretarial services, photocopying and office supplies (but not include telephone calls, faxes and telexes) incurred in connection with the duties as a Board Member.
- ii A daily fee as specified in the schedule of fee in respect of fee for site visit & meeting, fee for meeting/hearing not at site and extra charges for days (max. of 02 days for travel on each occasion) other than hearing / meeting days.
- iii Expenses, in addition to the above, all reasonable and necessary travel expenses (including economy class air fare, subsistence, and other direct travel expenses). Receipts for all expenses in excess of Rs. 2000/- (Rupees Two Thousand only) shall be provided.
- iv Reimbursement of any taxes that may be levied on payments made to the Board Member pursuant to this paragraph 7.

(b) The retainer fee and other fees shall remain fixed for the period of each Board Member's term until revised by NHAI.

(c) Phasing out of monthly retainer fee. Beginning with the next month after the completion certificate (or, if there are more than one, the one issued last) has been issued, the Board members shall receive only one-third of the monthly retainer fee till next one year. Beginning with the next month after the Board has terminated its regular activities pursuant to paragraph 4(a) above, the Board members shall no longer receive any monthly retainer fee.

(d) Payments to the Board Members shall be shared equally by the Employer and the Contractor. The concerned Project Implementation Unit (PIU) of Employer shall pay members' invoices within 30 calendar days after receipt of such invoices and shall invoice the Contractor for one-half of the amounts of such invoices. The Contractor shall pay such invoices within 30 days" time period after receipt of such invoices.

#### 8. Board Site Visits:

- (a) The Board shall visit the Site and meet the representatives of the Employer, the Contractor and the Authority engineer at regular intervals, at times of critical construction events, at the written request of either party, and in any case not less than 6 times in any period of 12 months. The timing of Site visits shall be as agreed among the Employer, the Contractor and the Board, but failing agreement shall be fixed by the Board.
- (b) Site visits shall include an informal discussion of the status of the construction of the Works. Site visits shall be attended by personnel from the Employer, the Contractor and the Authority engineer.
- (e) At the conclusion of each Site visit, the Board shall prepare a report covering its activities during the visit and shall send copies to the parties and to the Authority engineer.

#### 9. Procedure for Dispute Referral to the Board :

- (a) If either party objects to any action or inaction of the other party or the Authority engineer, the objecting party may file a written Notice of Dispute to the other party with a copy to the Authority engineer stating that it is given pursuant to the Agreement and state clearly and in details the basis of the dispute.
- (b) The party receiving the Notice of Dispute will consider it and respond to it in writing within 14 days after receipt.
- (c) This response shall be final and conclusive on the subject, unless a written appeal to the response is filed with the responding party within 10 days after receiving the response and call upon Authority engineer to mediate and assist the parties in arriving an amicable settlement thereof. Both parties are encouraged to pursue the matter further to attempt to settle the dispute.

(d) If the Authority engineer receiving the Notice of Dispute fails to provide a written response within 14 days after receipt of such Notice or failing mediation by Authority engineer, either party may require such dispute to be referred to the Board, either party may refer the dispute to the Board by written Request to the Board. The Request for decision shall state clearly and in full detail the specific issues of the dispute (s) to be considered by Board and shall be addressed to the Chairman of the Board, with copies to the other Board Members, the other party, and the Authority engineer, and it shall state that it is made pursuant to this Agreement.

(e) When a dispute is referred to the Board, and the Board is satisfied that the dispute requires the Board's assistance, the Board decide when to conduct a hearing on the dispute. The Board may request that written documentation and arguments from both parties be submitted to each Board Member before the hearing begins. The parties shall submit insofar as possible agreed statements of the relevant facts.

(f) During the hearing, the Contractor, the Employer, and the Authority engineer shall each have ample opportunity to be heard and to offer evidence. The Board's decision for resolution of the dispute will be given in writing to the Employer, the Contractor and the Authority engineer as soon as possible, and in any event not more than 56 days or any mutually extended period between the Employer and the Contractor. The time period of 56 days of issuance of DRB decision will reckon/start from the day of first hearing that begins after submission of complete pleadings (including supporting documents, if any) by the parties.

#### 10. Conduct of Hearings :

(a) Normally hearings will be conducted at the Site, but any location that would be more convenient and still provide all required facilities and access to necessary documentation may be utilized by the Board. Private session of the Board may be held at any cost effective location convenient to the Board. Video recordings of all hearings shall invariably be made. The Employer, the Authority engineer and the Contractor shall be given opportunity to have representatives at all hearings. Parties should restrain to bring any Advocate/Law Firm during DRB hearings.

(b) During the hearings, no Board Member shall express any opinion concerning the merit of the respective arguments of the parties.

(c) After the hearings are concluded, the Board shall meet privately to formulate its decision. The private meeting (s) of the Board shall not exceed 3 sittings. All Board deliberations shall be conducted in private, with all Members' individual views kept strictly confidential. The Board's decisions, together with an explanation of its reasoning shall be submitted in writing to both parties and to the Authority engineer. The decision shall be based on the pertinent contract provisions, applicable laws and regulations and the facts and circumstances involved in the dispute.

(d) The Board shall make every effort to reach a unanimous decision. If this proves impossible the majority shall decide and the dissenting Member may prepare a written minority report together with an explanation of its reasoning for submission to both parties and to the Authority engineer.

11. In all procedural matters, including the furnishing of written documents and arguments relating to disputes, site visits and conduct of hearings, the Board shall have full and the final authority. If a unanimous decision on any such matter proves impossible, the majority shall prevail.

12. After having been selected and where necessary approved each Board Member shall sign two copies of the following declaration and make one copy available each to the Employer and to the Contractor.

WHEREAS

- (a) A Contract agreement (the Contract) for the \_\_\_\_\_ project [fill in the name of project] has been signed on \_\_\_\_\_ [fill in date] between \_\_\_\_\_ [name of Employer] and \_\_\_\_\_ [name of Contractor] (the Contractor);
- (b) The provisions of Agreement and Dispute Resolution Board's rules and procedure provided for establishment and operation of Dispute Resolution Board (DRB).
- (c) The undersigned has been selected to serve as a Board Member on said Board; NOW

THEREFORE, the undersigned Board Member hereby declares as follows :

- 1. I accept the selection as a Board Member and agree to serve on the Board and to be bound by the provisions of Contract agreement and rules and procedure provided for establishment and operation of Dispute Resolution Board (DRB),
- 2. With respect to paragraph 1 of Dispute Resolution Board's Rules and Procedure. said Annex A, I declare
  - (a) that I have no financial interest of the kind referred to in subparagraph (a):
  - (b) that I have had no previous employment nor financial ties of the kind referred to in subparagraph (b); and
  - (c) that I have made to both parties any disclosures that may be required by sub-paragraphs (b) and (c).
- 3. I declare that I have \_\_\_\_\_ no. of Arbitrations (list enclosed) and \_\_\_\_\_ no. of DRBs (list enclosed) in progress and that I will give sufficient time for the current assignment.

BOARD MEMBER

\_\_\_\_\_  
\_\_\_\_\_ *[insert name of Board Member]*

Date \_\_\_\_\_

Schedule of expenses and fees payable to the  
Member (s) of Dispute Resolution Board (DRB)

The fee and other expenses payable to the members of DRB shall be as under :-

S.No.	PARTICULAR	AMOUNT PAYBLE
1.	Retainer-ship fee, secretarial assistance and incidental charges (telephone, fax, postage etc.)	Rs. 50,000/- per month for one package and maximum of Rs. 75,000/- per month for 2 or more packages
2(i)	Fee for site visit or meetings at site	Rs. 25,000/- per day
(ii)	Fee for meetings/hearings not at site	Rs. 10,000/- per day
3	Travelling expenses	Economy class by air, AC first class by train and AC taxi by road
4	Lodging & Boarding	Rs. 15,000/- per day (Metro Cities); or Rs. 10,000/- per day (in other cities); or Rs. 5,000/- per day (own arrangement)
5	Extra charges for days other than hearing/meeting days (travel days maximum of 2 days on each occasion)	Rs. 5,000/-
6	Local conveyance	Rs. 2,000/-

- i. Lodging, boarding and travelling expenses will be allowed only for those members who are residing 100 kms away from the place of meeting.
- ii. Delhi, Mumbai, Chennai, Kolkata, Bangalore and Hyderabad shall be considered as Metro Cities.
- iii. The above schedule of fee and expenses shall be applicable on or after the date of issue of this circular.
- iv. The expenses are to be shared equally by the parties i.e. Employer and Contractor

Appendix-III: Arbitration Rules of the Society for Affordable Redressal of

Disputes

(SAROD) SAROD'ARBITRATION RULES)

Under Clause 44.3.1

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## PREAMBLE

In order to seek speedy, affordable, just and reasonable Redressal Or Dispute/ Differences between NHAI and Concessionair/Contractor arising out of and during the course of execution of various contracts, a Society for Affordable Redressal of Disputes (SAROD) has been formed as a Society under Societies Registration Act. 1860 with registration No.S/RS/SW/10441/2013. It has been formed by National Highways Authority of India (N1IA1) and National Highways Builders Federation (NHBF) with founding members as mentioned in the Memorandum of Association of SAROD.

## SAROD ARBITRATION RULES

### Rule I -Scope of Application

Where any agreement, submission or reference provides for arbitration at the Society for Affordable Redressal of Disputes ("SAROD"), or under the Arbitration Rules of the SAROD and where the case is a domestic arbitration shall be conducted in accordance with the following Rules, or such Rules as amended by the SAROD where the amendments take effect before the commencement of the Arbitration. Parties may adopt following clause for inclusion in the contract:-  
"Any dispute or difference whatsoever arising between the parties and of or relating to the construction, interpretation, application, meaning, scope, operation or effect of this contract or the validity or the breach thereof, shall be settled by arbitration in accordance with the rules of arbitration of the "SAR.OD" and the award made in pursuance thereof shall be final and binding on the parties subject to Provisions of The Arbitration and Conciliation Act, 1996".

1.2 These rules shall come into effect from the day of approval by Governing Body of SAROD.

### Rule 2 - Definitions

2.1 These Rules shall be referred to as "the SAROD Arbitration Rules".

2.2 In these Rules:

"Act" means the 'Arbitration and Conciliation Act 1996' of India and any statutory modifications or re-enactments thereof.

"SAROD" means the Society for Affordable Redressal of Disputes.

"SAROD Arbitrator Panel" means the list of persons admitted to serve as arbitrators under these Rules.

"NHAI" means National Highways Authority of India.

"NHBF" means the National Highways Builders Federation.

"GOVERNING BODY" means Governing Body of SAROD as defined in Article 9 of Memorandum of Association.

"PRESIDENT" means President of Governing Body of SAROD as defined in Rules & Regulation of SAROD,

"SECRETARY" means. Secretary of SAROD as defined in Rules & Regulation of SAROD.

"TRIBUNAL" means either a Sole Arbitrator or all arbitrators when more than one is appointed.

PARTY" means a party to an arbitration agreement.

"E-Arbitration" means submission of pleadings, defence statement etc by E-mail and holding of proceedings via video conferencing.

#### Rule 3 - Notice, Calculation of periods of Time

- 31 For the purposes of these Rules, any notice, including a notification, communication or proposal, is deemed to have been received if it is physically delivered to the addressee or if it is delivered at his habitual residence, place of business or mailing address, or, if none of these can be found after making reasonable inquiry, then at the addressee's last-known residence or place of business. Notice shall be deemed to have been received on the day it is so delivered.
- 32 For the purposes of calculating a period of time under these Rules, such period shall begin to run on the day following the day when a notice, notification, communication or proposal is received. If the last day of such period is an official holiday or a non-business day at the residence or place of business of the addressee, the period is extended until the first business day which follows. Gazetted public holidays or non-business days occurring during the running of the period of time are included in calculating the period.
- 3.3 Without prejudice to the effectiveness of any other form of written communication, written communication may be made by fax, email or any other means of electronic transmission effected to a number, address or site of a party,
- 3.4 The transmission is deemed to have been received on the day of transmission. Rule 4 - Commencement of Arbitration

#### Rule 4 – Commencement of Arbitration

- 4.1 Any party wishing to commence an arbitration under these Rules ("the Claimant") shall file with the Secretary and serve on the other party ("the Respondent"), a written Notice of Arbitration ("the Notice of Arbitration") which shall include the following:
- a) a request that the dispute be referred to arbitration;
  - b) the names, addresses, telephone numbers, fax numbers and email addresses of the parties to the dispute;
  - c) a reference to the arbitration clause or any separate arbitration agreement that is invoked and provide a copy of the arbitration clause or arbitration agreement
  - d) a reference to the contract out of which the dispute arises and provide a copy of the contract where possible;
  - e) a brief statement describing the nature and circumstances of the dispute;
  - f) the relief or remedy sought, including the amount of claim unquantifiable at the time the Notice of Arbitration is filed;
  - g) a proposal as to the number of arbitrators (i.e. one or three), if the parties have not previously agreed on the number: and

h) the name of the claimant's nominated arbitrator.

4.2 A filing fee of Rs. 10,000/- (Ten thousand) or any amount decided by Governing Body from time to time is payable at the time of filing the Notice of arbitration.

4.3 The date of filing of the Notice of Arbitration with the Secretary is the date of commencement of the arbitration for the purpose of these Rules.

**Rule 5 - Response by Respondent**

5.1 Within 11 days of receipt of the Notice of Arbitration, the Respondent shall file with the Secretary and serve upon the Claimant, a Response including

- a. A confirmation or denial of all or part of the claims;
- b. Brief statement of the nature and circumstances of any envisaged counterclaims;
- c. A comment in response to any proposals contained in the Notice of Arbitration; and
- d. The name of the respondent's nominated arbitrator.

5.2 A filing fee of Rs. 10,000/- or any amount decided by Governing Body from time to time is payable at the time of filing the Response.

5.3 In case parties have objection to the jurisdiction of Arbitral Tribunal, such objection shall be raised not later than 15 days of the commencement of Arbitration proceedings failing which it will be deemed that parties have waived their right to objection.

**Rule 6 Filing of Case Statements**

6.1 Within 30 days after the filing of the Notice of Arbitration, the claimant must file with the Secretary and serve on the Respondent, a Statement or Claimant's Case along with all documents to be relied upon by the Claimant.

6.2 Within 30 days after the service of the statement of Claimant's Case, the Respondent must file with the Secretary and serve on the Claimant, a statement of respondent's defence and counterclaim (if any) along with all documents to be relied upon by the Respondent.

6.3 Within 30 days after the service of the statement of Respondent's defence, if the Claimant intends to challenge anything in the statement of Respondent's defence and/or counterclaim, the Claimant must then file with the Secretary and serve on the Respondent, a statement of claimant's reply and if necessary, defence to counterclaim.

6.4 No further case statements may be filed without the leave of the Tribunal or if a Tribunal has not been appointed, the Secretary.

6.5 The Tribunal or if a Tribunal has not been appointed, the Secretary, may upon the written application of a party, extend the time limits provided under this Rule,

6.6 The party required to file a case statement must at the same time deposit with the Secretary for eventual transmission to the Tribunal an additional copy or additional copies of the case statement, according to the number of arbitrators constituting or who will constitute the Tribunal.

#### **Role 7 - Contents of Case Statements**

7.1 The case statements must contain the detailed particulars of the party's claim, defence or counterclaim and must thus contain a comprehensive statement of the facts and contentions of law supporting the party's position.

7.2 It must:

- a) Set out all items of relief or other remedies sought together with the amount of all quantifiable claims and detailed calculations.
- b) State fully its reasons for denying any allegation or statement of the other party.
- c) State fully its own version of events if a party intends to put forward a version of events different from that given by the other party.

7.3 A case statement must be signed by or on behalf of the party making it.

#### **Rule 8 - Default in Filing and Serving Case Statements**

8.1 If the Claimant fails within the time specified under these Rules or as may be fixed by the Tribunal or by the Secretary, to submit its Statement of Case, the Tribunal or if a Tribunal has not been appointed, the Governing Body may issue an order for the termination of the arbitral proceedings or make such other directions as may be appropriate in the circumstances.

8.2 If the Respondent fails to submit a Statement of Respondent's Defence, the Tribunal may nevertheless proceed with the arbitration and make the award.

#### **Rule 9 - Further Written Statements**

9.1 The Tribunal will decide which further written statements, in addition to the case statement(s) already filed, are required from the parties and shall fix the periods of time for giving, filing and serving such statements.

9.2 All such further statements must be given to the Tribunal, filed with the Secretary and served on the Claimant or Respondent, whichever is applicable.

#### **Rule 10 - SAROD to Provide Assistance**

10.1 At the request of the Tribunal or either party, the Secretary will render such assistance as is required for the conduct of the arbitration, including arranging for facilities, suitable accommodation for sittings of the Tribunal, secretarial assistance or interpretation of these rules.

10.2 Any additional expenses incurred or to be incurred for any such arrangements shall be borne by the parties.

#### **Rule 11 - Appointment of Tribunal**

11.1 The disputes shall be decided by a Sole Arbitrator when the total claim of dispute is Rs. 3 Crores Or less.

11.2 In all cases of disputes claimed for more than Rs. 3 Crores, the tribunal shall consist of odd number of Arbitrators to be nominated by the parties. The Presiding Arbitrator shall be appointed by the Arbitrators nominated by the parties from amongst the panel maintained by SAROD. For

deciding the Presiding Arbitrator, a draw of lots can be carried out from amongst the names suggested by the Arbitrators nominated by the Parties. The eligibility criteria the empanelment of Arbitrators will be decided by the Governing Body.

11.3 If a Sole Arbitrator is to be appointed, the Governing Body will appoint the Arbitrator within 21 days from the date the Respondent's Statement of Defence and Counterclaim (if any) is filed or falls due, whichever is earlier. The Governing Body will appoint the Arbitrator from the panel of Arbitrators by draw of lots,

11.4 An Arbitrator/Presiding Arbitrator to be appointed under these Rules shall be a person on the SARCID Arbitration Panel as at the date of the appointment..

11.5 In the event of any party failing to appoint Arbitrator within 30 days of receipt of the notice of Arbitration, the Governing Body shall appoint the Arbitrator or Presiding Arbitrator as the case may be by a draw of lots.

#### Rule 12 - Multiparty appointment of the Tribunal

12.1 If there are more than 2 parties in the arbitration, the parties shall agree on the procedure for appointing the Tribunal Within 21 days of the receipt of the Notice of Arbitration.

12.2 If the parties are unable to do so, upon the lapse of the 21 day time period mentioned herein, the Tribunal shall be appointed by the Governing Body as soon as practicable.

#### Rule 13- Appointment of substitute Arbitrator

In the event of the death or resignation of any of the arbitrators, a substitute arbitrator must be appointed by the Same procedure as in Rule 11 by which the arbitrator concerned was appointed, failing which, the Governing Body will make the appointment.

#### Rule 14 - Independence and Impartiality of the Tribunal

14.1 The Tribunal conducting arbitration under these Rules shall be and remain at all times independent and impartial, and shall not act as an advocate for any party.

14.2 A prospective arbitrator shall disclose to those who approach him in connection with his possible appointment, any circumstances likely to give rise to justifiable doubts as to his impartiality or independence.

14.3 An arbitrator, once nominated or appointed, shall disclose any such circumstance referred to in Rule 14.2 to the Secretary and or to all parties.

#### Rule 15 - Code of Ethics for Arbitrators

An Arbitrator is a fountain of justice and emblem of equity, fairness and good conscience. Therefore he/she is expected to exhibit a noble conduct. The code of conduct prescribed by the Governing Body has to be adopted.

## Appointment

15.1 A prospective arbitrator shall accept an appointment only if he is fully satisfied that he is able to discharge his duties without bias, he has an adequate knowledge of the language of the arbitration, and he is able to give to the arbitration the time and attention which the parties are reasonably entitled to expect,

15.2 In this code, the masculine includes the feminine.

## Disclosure

15.3 A prospective arbitrator shall disclose all facts or circumstances that may give rise to justifiable doubts as to his impartiality or independence. such duty to continue thorough out the arbitral proceedings with regard to new facts and circumstances,

15.4 A prospective arbitrator shall disclose to the Secretary and any party who approaches him for a possible appointment:

(a) Any past or present close personal relationship or business relationship, whether direct or indirect, with any party to the dispute, or any representative of a party, or any person known to be a potentially important witness in the arbitration;

(b) The extent of any prior knowledge he may have of the dispute.

## Bias

15.5 The criteria for assessing questions relating to bias are impartiality and independence. Partiality arises when an arbitrator favours one of the parties or where he is prejudiced in relation to the subject matter of the dispute. Dependence arises from relationships between an arbitrator and one of the parties, or with someone closely connected with one of the parties.

15.6 Any close personal relationship or current direct or indirect business relationship between an arbitrator and a party, or any representative of a party, or with a person who is known to be a potentially important witness, will normally give rise to justifiable doubts as to a prospective arbitrator's impartiality or independence. Past business relationships will only give rise to justifiable doubts if they are of such magnitude or nature as to be likely to affect a prospective arbitrator's judgment. He should decline to accept an appointment in such circumstances unless the parties agree in writing that he may proceed.

## Communications

15.7 Before accepting an appointment, an arbitrator may only enquire as to the general nature of the dispute, the names of the parties and the expected time period required for the arbitration.

15.8 No arbitrator shall confer with any of the parties or their Counsel until after the Secretary gives notice of the formation of the Tribunal to the parties.

15.9 Throughout the arbitral proceedings, an arbitrator shall avoid any unilateral communications regarding the case with any party, or its representatives.

## Fees

15.10 In accepting an appointment, an arbitrator agrees to the remuneration as prescribed in the rules of SAROD, and he shall make no unilateral arrangements with any of the parties or their Counsel for any additional fees or expenses without the agreement of all the parties and the consent of the Secretary of SAROD.

#### **Conduct**

15.11 Once the arbitration proceedings commence, the arbitrator shall acquaint himself with all the facts and arguments presented and all discussions relative to the proceedings so that he may properly understand the dispute

#### **Confidentiality**

15.12 The arbitration proceedings shall remain confidential. An arbitrator is in a relationship of trust to the parties and should not, at any time, use confidential information acquired during the course of the proceedings to gain personal advantage or advantage for others, or to affect adversely the interest of another.

15.13 This Code is not intended to provide grounds for the setting aside of an award.

#### **Rule 16 - Challenge of Arbitrators**

16.1 An arbitrator May be challenged if there are circumstances that give rise to justifiable doubts as to his impartially or independence and also if he or she has committed any misconduct,

16.2 An arbitrator may also be challenged if he does not possess the qualifications required by the agreement of the parties,

16.3 A party may challenge an arbitrator appointed on its nomination or with its agreement only for reasons of which it becomes aware after the appointment has been made.

16.4 A party who intends to challenge an arbitrator shall file with the Secretary and serve on the other party or all other parties, whichever is applicable, a Notice of Challenge.

16.5- The Notice of challenge must be filed and served within 14 days from the appointment of the arbitrator or within 14 days after the circumstances mentioned in Rule 15.1 became known to that party.

16.6 The Notice of Challenge must state the reasons for the challenge.

16.7 The arbitration shall be suspended until the challenge is resolved or decided upon.

16.8 When an arbitrator has been challenged by one party, the other party may agree to the challenge. The arbitrator may also, after the challenge, withdraw from his office. However, it is not implied in either case that there has been an acceptance of the validity of the grounds for the

challenge. In both cases, the procedure provided in Rule 11 read with Rule. 13, shall be used for the appointment or a substitute arbitrator.

**Rule 17 - Decision on Challenge**

17.1 If the other party does not agree to the challenge and the arbitrator does not withdraw, the decision on the challenge will be made by the Governing Body.

17.2 If the Governing Body sustains the challenge, a substitute arbitrator shall be appointed or chosen pursuant to the procedure applicable to the appointment of an arbitrator as provided in Rule 11 read with Rule 13. If the Governing Body dismisses the challenge, the arbitrator shall continue with the arbitration.

**Rule 18. Removal of the Tribunal**

18.1 The. Governing Body may on the application of a party remove an arbitrator

a. Who is physically or mentally. incapable Of conducting the proceedings or where there arc justifiable doubts as to his ability to do so; or

b. Who has refused or failed to use ail reasonable dispatch in conducting the arbitration or making an award.

e. Who has continuously absented from attending the proceedings for more than 3 silting without prior permission of Presiding Arbitrator/Governing Body or SAROD.

18.2 The arbitrator(s) concerned is entitled to appear and be heard at the hearing of the application to remove him.

18.3 Upon the removal of the arbitrator, a substitute arbitrator shall be appointed in accordance with Rule IL read with Rule 13.

18.4 The Governing Body's decision on the application is final and is not subject to appeal or review.

**Rule 19 - Re-hearing in the Event of Replacement of the Tribunal**

If the sole or presiding Arbitrator is replaced, there shall be a re-hearing. If any other arbitrator is replaced, such re-hearing may take place at the discretion of the Tribunal.

**Rule 20 -Jurisdiction or the Tribunal**

20.1 The Tribunal shall have the power to rule on its own jurisdiction, including any objection with respect to the existence, termination or validity of the arbitration agreement. For that purpose, an arbitration agreement which forms part of a contract shall be treated as an agreement independent of the other terms of the contract. A decision by the Tribunal that the contract is null and void shall not entail ipso jure the invalidity of the arbitration agreement.

20.1 The plea that the Tribunal does not have jurisdiction shall be raised not later than in the Statement of Defense. A plea that the Tribunal is exceeding the scope of its authority shall be raised promptly after the Tribunal has indicated its intention to decide on the matter alleged to be beyond

the scope of its authority. In either case the Tribunal may nevertheless admit a late plea under this Rule if it considers the delay justified. A party is not precluded from raising such a plea by the fact that he has nominated, or participated in the appointment of an arbitrator.

20.3 The Tribunal must rule on an objection that it lacks jurisdiction as a preliminary question upon the objection being raised. It may rule on an objection that it exceeds the scope of its authority either as a preliminary question or in an award on the merits, as it deems just and convenient.

20.4 In addition to the jurisdiction to exercise the powers defined elsewhere in these Rules, the Tribunal shall have jurisdiction to determine any question of law arising in the arbitration; proceed with the arbitration not with sanding the failure or refusal of any party to comply with these Rules or with the Tribunal's orders or directions, or to attend any meeting or hearing, but only after giving that party written notice that it intends to do so; and to receive and take into account such written or oral evidence as it shall determine to be relevant, whether or not strictly admissible in law.

#### **Rule 21 - Fees of SAROD and Arbitral Tribunal Fee Schedule**

Registration Fee (Non - Refundable): Rs, 10000/- or any amount fixed by Governing Body from tillie to time. The Schedule of Fees and allied expenditure shall be decided by Governing Body.

#### **Rule 22- Transmission of File to the Tribunal**

22.1 The Secretary shall, as soon as practicable transmit to the Tribunal, a file containing the Notice of Arbitration, the Response and all case statements.

22.2 The Tribunal shall as soon as practicable, after consultation with the parties, issue such orders and/or directions as are necessary for the conduct of the arbitration to conclusion, including a timetable for steps to be taken in the arbitration and for the hearing of the arbitration.

#### **Rule 23 - Judicial Seat of Arbitration**

23.1 Unless otherwise agreed by the parties, the judicial seat of arbitration shall be New Delhi.

23.2 Notwithstanding Rule 22.1 and 22.2, the Tribunal may, unless otherwise agreed by the parties, hold hearings and meetings anywhere convenient, subject to the provisions of Rule 28.2.

#### **Rule 24 - Language of Arbitration**

The language of arbitrators shall be English. In case of material existing are in any other language, other than English the same has to be translated to English language.

#### **Rule 25- Conduct of the proceedings**

The Tribunal shall have the widest discretion allowed by the Act to ensure the just, expeditious, economical and final determination of the dispute. The proceedings shall be conducted from

10.AM to 5PM with a recess of one hour.

**Rule 26 - Communication between Parties and the Tribunal**

26.1 Where the Tribunal sends any written communication to one party, it shall send a copy to the other party or parties as the case may be.

26.2 Where a party sends any written communication (including Statements, expert reports or evidentiary documents) to the Tribunal, the same shall be copied to the other party or all other parties, whichever is applicable, and show to the Tribunal that the same has been so copied.

26.3 The address of the parties for the purpose of all communications during the proceedings shall be those set out in the Notice of Arbitration, or as either party may at any time notify the Tribunal and the other party or parties, whichever is applicable.

26.4 A copy of correspondence between the parties and the Tribunal shall be sent to the Secretary.

**Rule 27 - Party Representatives**

Any party may be represented by legal practitioners or any other representatives, subject to such authority as the Tribunal may require. The names and addresses of such representatives must be notified to the other party or parties. In case one party is represented by non-legal person, another party will also be represented by non-legal person so as to maintain natural justice.

**Rule 28- Hearings**

28.1 Unless the parties have agreed on documents-only arbitration, the tribunal shall hold a hearing for the presentation of evidence by witnesses, including expert witnesses, or for oral submissions.

28.2 The Tribunal shall fix the date, time and place of any meetings and hearings in the arbitrations on the first hearing, and complete time table pertaining to all the activities of the Arbitration e. g. submission of statement of claim, reply, counter claim, reply therein, admission and denial of documents, visit/inspection of site if any. The tribunal shall stick to the time table with without any deviations unless there are unavoidable circumstances warranting such deviation which will be with the prior permission of the tribunal.

28.3 Prior to the hearing, the Tribunal may provide the Parties with matters or questions to which it wishes them to give special consideration.

28.4 In the event that a party to the proceedings without sufficient cause, fails to appear at a hearing of which the notice has been given, the Tribunal may proceed with the arbitration and may make the Award after the party present has submitted evidence to prove its case.

28.5 All meetings and hearing shall be in private unless the parties agree otherwise.

**Rule 29 - Documents Only Arbitration**

29.1 The Disputes may be decided without an oral hearing if it is so agreed by the parties.

29.2.1 Where the parties agree to dispense with oral hearing, the Tribunal must be promptly informed by either of the parties, as soon as is practicable. The Tribunal must also be promptly informed if, at a later stage, the parties or either of them intends to apply for an oral hearing.

29.21 Parties may seek discovery of documents if they are not satisfied with existence of documents annexed with statement or claim, reply and counter claim by giving self contained request to the Tribunal justifying the necessity for such documents. Decision of tribunal shall be final and binding upon the parties.

**Rule 39 – Witnesses**

30.1 The Tribunal may require each party to give notice of the names and designations of the witnesses it intends to call and reasons for legal necessity of such witness.

30.2 No party shall call any expert witness without the leave of the Tribunal.

30.3 Any witness who gives evidence may be questioned by each party or its representative subject to any rulings made by the Tribunal,

30.4 A Witness may be required by the Tribunal to testify under oath or affirmation.

30.5 Subject to such order or direction which the Tribunal may make, the testimony of witness may be presented in written form, either as signed statements or by duly sworn or affirmed affidavits,

30.6 Any party may require a witness to attend an oral examination at a hearing. If the witness fails to attend, the Tribunal may place such weight on the written testimony as it thinks fit, or may exclude it altogether,

30.7 The Tribunal shall determine the admissibility, relevance, materiality and weight of the evidence given by any witness.

**Rule 31 - Experts Appointed by the Tribunal**

31.1 Unless otherwise agreed by the parties, the Tribunal may:

- a. appoint one or more experts to report to the Tribunal on specific issues;
- b. require a party to give any such expert any relevant information or to produce, or to provide access to, any relevant documents, goods or property for inspection by the expert.

31.2 Unless otherwise agreed by the parties, if a party so requests or if the Tribunal deems it fit, the expert shall, after delivery of his written or oral report, participate in an oral hearing, at which the parties may question him and present expert witnesses in order to testify on the points at issue.

31.3 Rule 30.2 shall not apply to an assessor appointed by agreement of the parties ; or to an expert appointed by the Tribunal to advise solely in relation to procedural matters.

Rule 32 - Rules applicable to substance of dispute- (1) Where the place of arbitration is situated in India,

32.1 In an arbitration, the arbitral tribunal shall decide the dispute submitted to arbitration in accordance with the substantive law for the time being in force in India;

### **Rule 33- Closure of Hearing**

33.1. The Tribunal may inquire of the parties if they have any further proof to offer or witnesses to be heard or submission to make and, if there are none, declare the hearing closed.

33.2 The Tribunal may also, in view of exceptional circumstance, reopen the hearings at any time before the award is made.

### **Rule 34 - Additional Powers of the Tribunal**

34.1 In addition to the powers conferred by the Act, the Tribunal shall also have the power to:-

- a. Allow any party, upon such terms as to costs and otherwise) as it shall determine, to amend claims or counterclaims;
- b. Extend or abbreviate any time limits provided by these Rules;
- c. Conduct such enquires as may appear to the Tribunal to be necessary or expedient;
- d. Order the parties to make any property or thing available for inspection
- e. Order any parties to produce to the Tribunal, and to the other parties for inspection, and to supply copies of any documents or classes of documents in their possession, custody or power which the Tribunal determines to be relevant.
- g. Make orders or give directions to any party for interrogatories;
- h. Make such order or give directions to any party for an interim injunction or any other interim measure;
- i. Make such orders or give such directions as it deems fit in so far as they are not inconsistent with the Act or any statutory re-enactment thereof or such law which is applicable or these Rules.

34.2 If the parties so agree, the Tribunal shall also have the power to add other parties (with their consent) to be joined in the arbitration and make a single Final Award determining all disputes between them.

### **Rule 35 - Deposits to Costs and Expenses**

35.1 The Tribunal's fees and SAROD administration fees shall be ascertained in accordance with the Schedule of Fees in Force at the time of commencement of the arbitration.

35.2 The Claimant shall deposit with the SAROD half of the fees payable at the time of filing of the Statement of Case. The Respondent shall deposit with the SAROD one-half of the fees payable at the time of filing the Statement of Respondent's Defence and Counterclaim (if any). The balance of fees payable shall be paid 60 days before the date of the final hearing or on such other date that the Secretary may direct.

35.3 Where the amount of the claim or the counterclaim is not quantifiable at the time payment is due, the Secretary will make a provisional estimate. The fees will be adjusted in the light of such information as may subsequently become available. If the arbitration is settled or disposed of without a hearing, the amount of the Tribunal's fees and SAROD administration fees shall be finally determined by the Secretary who will have regard to all the circumstances of the case, including the stage of proceedings at which the arbitration is settled or otherwise disposed of.

35.4 The Secretary may from time to time direct parties to make one or more deposit(s) towards any farther expenses incurred or to be incurred on behalf of or for the benefit of the parties.

35.5 All deposit(s) shall be made to and held by the SAROD. Any interest which may accrue on such deposit(s) shall be retained by the SAROD.

35.6 If a party fails to make the payments or deposits required or directed, the Tribunal may refuse to hear the claims or counterclaims, whichever is applicable, by the noncomplying party, although it may proceed to determine claims or counterclaims by any party who has complied with orders.

35.7 The parties shall remain jointly and severally liable to the SAROD for payment of all such fees and expenses until they have been paid in full even if the arbitration is abandoned, suspended or concluded, by agreement or otherwise, before the final Award is made.

### **Rule 36 - Decision Making by the Tribunal**

36.1 Where a Tribunal has been appointed, any direction, order, decision or award of the Tribunal must be made by the whole Tribunal or a majority. If an arbitrator refuses or fails to sign the Award, the signatures of the majority shall be sufficient, provided that the reason for the omitted signature is stated.

36.2 If there is no unanimity, the same shall be made by the majority arbitrators as well as by the dissenting Arbitrator alone as if acting as a sole arbitrator.

36.3 However in the case of a three member Tribunal the presiding arbitrator may after consulting the other arbitrators make procedural rulings alone.

### **Rule 37 - The Award**

37.1 It will be mandatory for the parties to submit written synopsis of their arguments respectively which will form part of the arbitral proceedings.

37.2 The Tribunal shall assemble at the assigned place in SAROD and shall exercise utmost secrecy and confidentiality in writing the award,

37.3 Unless the Secretary extends the time or the parties agree otherwise, the Tribunal shall make

its Award in writing within 30 days from the date on which the hearings are closed and shall state the reasons upon which its award is based. The award shall contain the date and shall be signed by the arbitrator or arbitrators.

37.4 The Tribunal may make interim awards or separate awards on different issues at different times. 37.5 All Awards must be submitted by the Tribunal to the Secretary and they shall be issued through the Secretary.

37.6 The Tribunal must deliver to the Secretary number of originals of the award sufficient for the parties and for filing with the Secretary.

37.7 The Secretary shall release the award to the parties only upon receipt of sufficient deposits to cover the fees and expenses due to the Tribunal and to the SAROD.

37.8 By agreeing to have arbitration under these Rules, the parties undertake to carry out the award without delay.

37.9 Stamp duty on award shall be payable by the party in whose favor the award has been pronounced.

#### **Rule 38 \_ - Additional Award**

38.1 Within 30 days after the receipt of award, either party, with notice to the Secretary and the other party may request the Tribunal to make an additional award as to claims presented in the arbitral proceedings but omitted from the award.

38.2 If the Tribunal considers the request for an additional award to be justified and considers that the omission can be rectified without any further hearings or evidence, it shall notify all the parties within 7 days of the receipt of the request, that it will make an additional award, and complete the additional award within 30 days after the receipt of the request.

#### **Rule 39 \_ Correction of Awards**

39.1 Within 30 days of receiving an Award, unless another period of time has been agreed upon by the parties, a party may by notice to the Secretary and the other party request the Tribunal to correct in the Award, any errors in computation, any clerical or typographical errors or any errors of similar nature.

39.2 If the Tribunal considers the request to be justified, it shall make the corrections within 30 days of receiving the request. Any correction shall be notified in writing to the parties and shall become part of the Award,

39.3 The Tribunal may correct any error or type referred to in Rule 37.1 on its

own initiative within 30 days of the date of the Award,

**Rule 40 - Settlement**

40.1 If, the parties arrived at amicable settlement of the dispute during the currency proceedings, the parties shall file memo of settlement before the tribunal who shall either issue an order for the termination of the arbitral proceedings or, if requested by both parties and accepted by the Tribunal, record the settlement in the form of an arbitral award on agreed terms. The Tribunal is not obliged to give reasons for such an award,

40.2 The Parties shall:

- a) Notify the Tribunal and the Secretary immediately if the arbitration is settled or otherwise terminated!
- b) Make provision in any settlement for payment of all the costs of the arbitration and fees and expenses due to the SAROD and the Tribunal.

40.3 If the continuation of the arbitral proceedings becomes unnecessary or impossible for any reason not mentioned in Rule 38.1, before the award is made, the Tribunal shall inform the parties of its intention to issue an order for the termination of the proceedings. The Tribunal shall have the power to issue such an order unless a party raises justifiable grounds for objection.

40.4 Copies of the order for termination of the arbitral proceedings or of the arbitral award on agreed terms, signed by the Tribunal, shall be communicated by the Tribunal to the parties through the Secretary.

**Rule 41 - Interest**

The Tribunal may award interest on any sum awarded at such rate as applicable in fixed deposits of State Bank of India in respect of such periods ending not later than the date of the award as the Tribunal considers just.

**Rule 42 - Costs**

42.1 The Tribunal shall specify in the final award, the costs of the arbitrations and decide which party shall bear them and in what proportion they shall be borne.

42.2 In this Rule, "costs of the arbitration" shall include:

- a) The fees and expenses of the Tribunal and the administration fees of the SAROD as determined by the Secretary in accordance with the Schedule of Fees;
- b) The costs of tribunal appointed experts or of other assistance rendered; and
- c) All expenses which are reasonably incurred by the SAROD in connection with the arbitration.

42.3 The Tribunal has power to order in its Award, that all or part of the legal or other costs (such as legal fees and expenses, costs incurred in respect of party appointed experts etc) of one

party shall be paid by the other party.

**Rule 43 - Waiver**

A party which is aware of non-compliance with these Rules and yet proceeds with the arbitration without promptly stating its objection in writing to such non-compliance shall be deemed to have waived its right to object

**Rule 44 - Exclusion of Liability**

44.1 The Tribunal, the President, the SAROD and any of its officers, employees or agents shall not be liable to any party for any act or omission in connection with any arbitration conducted under these Rules,

44.2 After the Award as been made and the possibilities of corrections and additional Awards have lapsed or been exhausted, neither the Tribunal nor the President shall be under any obligation to make any statement to any person about any matter concerning the arbitration, and no party shall seek to make any arbitrator or the President or the SAROD and any of its officers a witness in any legal proceedings arising out of the arbitration.

**Rule 45 - General Provisions**

45.1 In all matters not expressly provided for in these Rules, the President, the Secretary and the Tribunal shall act in the spirit of these Rules and shall make every reasonable effort to ensure the just, expeditious and economical conclusion of the arbitration.

45.2 The Secretary may from time to time issue Practice Notes on the implementation of these Rules.

**Rule 46 - Amendment to Rules**

These Rules may from time to time be amended by the Governing Body of SAROD

**\*\*\*\*\* End of the Document \*\*\*\*\***

