SCHEDULE - A

(See Clauses 8.1)

SITE OF THE PROJECT

1. The Site

1.1 Site of the Two-Laning of existing Singtam- Gyalshing Road on EPC basis from design Km16+000 to Km 32+500 within South of Sikkim under SARDP-NE- Phase-A Project Highway shall include the land, buildings, structures and roadworks as described in Annex-I of this Schedule-A.

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

1.3 An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, andsuch inventory shall form part of the memorandum referred to in Clause 8.2.1 of thisAgreement.

1.4 The alignment plans of the Project Highway are specified in Annex-III. In the case of sections where no modification in the existing alignment of the Project Highway is contemplated, the alignment plan has not been provided. Alignment plans have only been given for sections where the existing alignment is proposed to be upgraded. The proposed profile of the Project Highways shall be followed by the contractor with minimum FRL as indicated in the alignment plan.

1.5 The status of the environment clearances obtained or awaited is given in AnnexIV of Schedule A.

1.6 Additional land required for Toll Plazas, Traffic Aid Posts, Medical Aid Posts and vehicle rescue posts or for construction of works specified in the Change of Scope Order issued under Clause 13.2 of this Agreement shall be acquired. Upon acquisition, such land shall form part of the Site and vest in the Executing Agency


Damthang
Mangbru
Bak
rku
© 2015 Google

Annexure –I
(Schedule - A)

1.0 Site

The Project Corridor takes off from Km 62.80 on existing NH 10 at Singtam in East Sikkim and runs towards South Western direction passing through a number of towns like Singtam
–Tarku -Rabongla- Legship- Gyalshing within South & West District. **This project section road (Package-I) starts from Km 16+000 (near Dentam) to Km 32+50 (near Rabangal)**.

The topography falls under the hilly terrain of IRC classification and traverse generally through rural area with semi-urban areas in some places.

Majority of the land use along the project road is for agriculture in rural areas and commercial, residential, educational institutions, petrol stations and religious centers etc in built-up sections.

Traffic on this stretch of project road is of mixed type mostly with small passenger's vehicles and two wheelers. The number of commercial vehicles & passenger vehicles are very much less.

2.0 ReferencingSystem

Kilometer stones are existing in some of the locations of the project highway. It is called the "Existing Chainage". During topographical survey with Total Station, observations made are referred to "Design Chainage". The relationship between the "Existing Chainage" and the "Design Chainage" as per field surveys of the location of existing Km stones using the total station for the "Project Highway" is given below:

Design Chainage corresponding to Existing Chainage

Sr.No.	Existing Chainage (Km)	Design Chainage (Km)	Remarks
1	15+300	16+00	ExistingRoad
2	16+320	17+000	ExistingRoad
3	17+345	18+000	ExistingRoad
4	18+360	19+000	ExistingRoad
5	19+520	20+000	ExistingRoad
6	20+600	21+000	ExistingRoad
7	21+620	22+000	ExistingRoad
8	22+630	23+000	ExistingRoad
9	23+680	24+000	ExistingRoad
10	24+750	25+000	ExistingRoad
11	25+820	26+000	ExistingRoad
12	26+880	27+000	ExistingRoad
13	28+000	28+000	ExistingRoad
14	29+105	29+000	ExistingRoad
15	30+140	30+000	ExistingRoad
16	31+160	31+000	ExistingRoad
17	32+150	32+000	ExistingRoad
18	32+675	32+500	ExistingRoad

3.0 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/ Available ROW (m)
	From	To	From	To		
1	15+300	32+675	16+00	32+500	16500	24

4.0 Carriageway

The present carriageway of the Project Highway is substandard single lane configuration. The type of the existing pavement is flexible.

Sl. No.	Existing Chainage (km)		Design Chainage (km)		Length in m (Design)	Lane Width (m)	Remarks
	From	To	From	To			
1	15+300	32+675	16+00	32+50	16500	3.5 to 4.0	Lane width of existing road

5. Minor Bridges*.*

The site includes the following Minor Bridges:

S. No	Name of Bridge	Existing Chainage (km)	Width (m)	Span Arrangement (m)	Type of Structure		
					Foundation	Sub-structure	Super-structure
1	RingplChu	Minor	19.295	4.25	1x26.5	Open	RCC Abutment
2	RankaKhola	Minor	24.563	4.25	1x26.5	Open	RCC Abutment
3	-	Minor	13.	32.45	1x32.45	Open	Steel Super structure

6. Major Junction

The details of major junctions are as follows:

Sl. No.	Location		At Grade	Separated	Category of Cross Roads			
	Existing Ch.	Design Ch.			NH	SH	MDR	Others
1	22+920	**3+780**	At-Grade				√	

7. Minor Junctions

The details of minor junctions are as follows:

S. No	Existing Chainage (Km)	Type	Type of junction	Place
1	21+800	At-Grade	Y	Mangley VillageRoad
2	22+325	At-Grade	Y	Nambrick VillageRoad

8. Status of Highway Work: -

(i) Following table shows progress of site work of Existing Project Road stretch up-to 10 June 2021.

Sr. no.	Description of Work	Chainage from	Chainage to	Total Length in meter (completed)	Remarks
1	(a) Granular work (sub-base, base, shoulders) (b) Traffic Diversion Safety & Traffic Management during Construction. (c) Dismantling of Flexible Pavement.	16+015	16+022	7	Work completed in 2-Lane Specification
2		16+022	16+482	460	
3		16+485	16+560	75	
4		16+670	16+810	140	
5		17+070	17+180	110	
6		17+572	17+632	60	
7		17+638	17+800	162	
8		17+911	18+087	176	
9		18+200	18+360	160	
10		18+532	19+483	951	
11		19+485	19+513	28	
12		19+515	19+560	45	
13		20+480	20+599	119	
14		20+601	20+686	85	
15		20+780	20+830	50	
16		21+180	21+290	110	
17		21+400	21+445	45	
18		21+449	22+200	751	
19		22+200	22+300	100	
20		22+390	22+500	110	
21		22+500	22+620	120	
22		22+620	23+000	380	
23		23+000	23+250	250	
24		23+250	23+275	25	
25		23+790	23+881	91	
26		23+881	23+899	18	
27		23+901	24+030	129	
28		24+050	24+220	170	
29		24+250	24+400	150	
30		24+400	24+510	110	
31		24+510	24+520	10	
32		24+522	24+530	8	
33		24+530	24+609	79	
34		24+612	24+750	138	
35		24+750	24+860	110	
36		25+086	25+280	194	
37		25+280	25+488	208	
38		25+488	25+660	172	
39		25+660	26+000	340	

40		26+000	26+260	260	
41		26+400	26+520	120	
42		26+522	26+569	47	
43		26+571	26+600	29	
44		26+600	26+840	240	
45		26+840	27+100	260	
46		27+100	27+230	130	
47		27+230	27+380	150	
48		27+380	27+530	150	
49		27+530	27+650	120	
50		27+650	27+760.5	110.5	
51		27+763.5	27+940	176.5	
52		27+940	28+030	90	
53		28+034	28+100	66	
54		28+100	28+240	140	
55		28+240	28+250	10	
56		28+253	28+260	7	
57		28+260	28+436	176	
58		28+439	28+580	141	
59		28+580	28+695	115	
60		28+695	28+760	65	
61		28+760	28+860	100	
62		28+860	28+900	40	
63		28+900	29+045	145	
64		29+045	29+170	125	
65		29+190	29+299	109	
66		29+600	29+840	240	
67		29+840	29+990	150	
68		29+990	30+160	170	
69		30+160	30+700	540	
70		30+700	30+780	80	
71		30+780	31+029	249	
72		31+031	31+135	104	
73		31+135	31+404	269	
74		31+406	31+549	143	
75		31+551	31+660	109	
76		31+660	31+995	335	
77		31+995	32+310	315	
78		32+310	32+377	67	
79		32+377	32+419	42	
80		32+421	32+480	59	
81	Bituminous work (Dense Bituminous Macadam)	16+015	16+560	545	DBM Completed (With Paved Shoulders)
82		16+670	16+790	120	
83		17+910	18+090	180	
84		18+530	19+550	1020	
85		19+550	19+560	10	

86		20+480	20+686	206	
87		21+180	21+290	110	
88		21+400	21+470	70	
89		21+470	21+870	400	
90		21+870	22+300	430	
91		22+500	22+700	200	
92		23+000	23+250	250	
93		23+800	24+030	230	
94		24+050	24+220	170	
95		24+250	24+510	260	
96		24+510	24+750	240	
97		24+750	24+860	110	
98		25+110	25+150	40	
99		25+160	25+470	310	
100		25+470	25+780	310	
101		25+950	26+260	310	
102		26+450	26+630	180	
103		26+630	27+570	940	
104		27+570	27+650	80	
105		27+650	27+940	290	
106		27+940	28+120	180	
107		28+120	28+215	95	
108		28+215	28+270	55	
109		28+270	28+850	580	
110		28+850	29+045	195	
111		29+045	29+170	125	
112		29+600	29+800	200	
113		29+800	30+090	290	
114		30+090	30+550	460	
115		30+550	31+030	480	
116		31+030	31+140	110	
117		31+140	31+200	60	
118		31+200	31+400	200	
119		31+400	31+640	240	
120		31+640	32+000	360	
121		32+000	32+210	210	
122		32+210	32+365	155	
123		32+385	32+480	95	
124	Bituminous work (Bituminous Concrete)	30+550	31+860	1310	BC Completed (With Paved Shoulders)

Carriageway

(ii) The width of carriageway varies from 3.75 m to 12.00 m as under. The type of the existing pavement is Flexible.

Single Lane/Two Lane(under progress)		Two Lane		Remarks
From	To	From	To	
May be referred Schedule-A, where Subgrade/granular work has been completed. And rest of stretches is single lane.		16+015	16+560	DBM completed (with paved shoulder)
		16+670	16+790	
		17+910	18+090	
		18+530	19+550	
		19+550	19+560	
		20+480	20+686	
		21+180	21+290	
		21+400	21+470	
		21+470	21+870	
		21+870	22+300	
		22+500	22+700	
		23+000	23+250	
		23+800	24+030	
		24+050	24+220	
		24+250	24+510	
		24+510	24+750	
		24+750	24+860	
		25+110	25+150	
		25+160	25+470	
		25+470	25+780	
		25+950	26+260	
		26+450	26+630	
		26+630	27+570	
		27+570	27+650	
		27+650	27+940	
		27+940	28+120	
		28+120	28+215	
		28+215	28+270	
		28+270	28+850	
		28+850	29+045	
		29+045	29+170	
		29+600	29+800	
		29+800	30+090	
		30+090	30+550	
		30+550	31+030	
		31+030	31+140	
		31+140	31+200	
		31+200	31+400	
		31+400	31+640	
		31+640	32+000	
		32+000	32+210	

	32+210	32+365	
	32+385	32+480	

(iii) Major **Bridges**

The Site includes the following Major Bridges

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Sub-structure	Super structure			
1	24+970	Open	RCC Abutment	Steel Super Structure	1x64.50	12	Newly Built (Completed up to Sub-structure level)

(iv) **Carriageway**

The width of carriageway varies from 3.75 m to 12.00 m as under. The type of the existing pavement is Flexible.

Single Lane/Two Lane(under progress)		Two Lane		Remarks
From	To	From	To	
May be referred Schedule-A, where Subgrade/granular work has been completed. And rest of stretches is single lane.		16+015	16+560	DBM completed (with paved shoulder)
		16+670	16+790	
		17+910	18+090	
		18+530	19+550	
		19+550	19+560	
		20+480	20+686	
		21+180	21+290	
		21+400	21+470	
		21+470	21+870	
		21+870	22+300	
		22+500	22+700	
		23+000	23+250	
		23+800	24+030	
		24+050	24+220	
		24+250	24+510	
		24+510	24+750	
		24+750	24+860	
		25+110	25+150	
		25+160	25+470	
		25+470	25+780	
		25+950	26+260	
		26+450	26+630	
		26+630	27+570	

	27+570	27+650	
	27+650	27+940	
	27+940	28+120	
	28+120	28+215	
	28+215	28+270	
	28+270	28+850	
	28+850	29+045	
	29+045	29+170	
	29+600	29+800	
	29+800	30+090	
	30+090	30+550	
	30+550	31+030	
	31+030	31+140	
	31+140	31+200	
	31+200	31+400	
	31+400	31+640	
	31+640	32+000	
	32+000	32+210	
	32+210	32+365	
	32+385	32+480	

(v) Major Bridges

The Site includes the following Major Bridges

Sr. No.	Existing Chainage (km)	Type of Structure			No. of Spans with span length (m)	Width (m)	Remarks
		Foundation	Sub-structure	Super structure			
1	24+970	Open	RCC Abutment	Steel Super Structure	1x64.50	12	Newly Built (Completed up to Sub-structure level)

(vi) 3. Road over-bridges (ROB)/ Road under-bridges (RUB)

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

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

(vii) Grade separators

The Site includes the following grade separators:

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

(viii) Culverts and causeway:

The Site has the following culverts:

Sr. No.	Locations	Length (m)	Type of Structures (Pipe, Slab, Box, Arch)	Span Arrangement and total Ventway (No x Length (m))	Carriageway Width (m)	Remark
1	16+785		HPC		12	Newly Built Completed
2	17+014		HPC		12	Newly Built Completed
3	18+189		HPC		12	Newly Built Completed
4	20+288		HPC		12	Newly Built Completed
5	20+540		HPC		12	Newly Built Completed
6	21+391		HPC		12	Newly Built Completed
7	21+510		HPC		12	Newly Built Completed
8	22+147		HPC		12	Newly Built Completed
9	22+434		HPC		12	Newly Built Completed
10	22+581		HPC		12	Newly Built Completed
11	23+327		HPC		12	Newly Built Completed
12	23+553		HPC		12	Newly Built Completed
13	23+721		HPC		12	Newly Built Completed
14	24+200		HPC		12	Newly Built Completed
15	24+400		HPC		12	Newly Built Completed
16	24+800		HPC		12	Newly Built Completed
17	25+285		HPC		12	Newly Built Completed
18	25+400		HPC		12	Newly Built Completed
19	25+660		HPC		12	Newly Built Completed
20	26+000		HPC		12	Newly Built Completed
21	27+165		HPC		12	Newly Built Completed
22	28+911		HPC		12	Newly Built Completed
23	30+364		HPC		12	Newly Built Completed

24	30+616		HPC		12	Newly Built Completed
25	30+838		HPC		12	Newly Built Completed
26	31+668		HPC		12	Newly Built Completed
27	31+725		HPC		12	Newly Built Completed
28	31+810		HPC		12	Newly Built Completed
29	31+992		HPC		12	Newly Built Completed
30	32+070		HPC		12	Newly Built Completed
31	32+248		HPC		12	Newly Built Completed
32	16+733	2	Box Culvert	2X2	12	Newly Built Completed
33	16+484	3	Box Culvert	3X3	12	Newly Built Completed
34	17+635	6	Box Culvert	6X4	12	Newly Built Completed
35	17+910	2	Box Culvert	2X2	12	Newly Built Completed
36	18+087	3	Box Culvert	3X3	12	Newly Built Completed
37	18+550	4	Box Culvert	4X4	12	Newly Built Completed
38	19+484	2	Box Culvert	2X2	12	Newly Built Completed
39	19+514	2	Box Culvert	2X2	12	Newly Built Completed
40	20+197	6	Box Culvert	6X4	12	Newly Built Completed
41	20+600	2	Box Culvert	2X2	12	Newly Built Completed
42	20+668	4	Box Culvert	4X4	12	Newly Built Completed
43	20+985	2	Box Culvert	2X2	12	Newly Built Completed
44	21+081	2	Box Culvert	2X2	12	Newly Built Completed
45	21+447	4	Box Culvert	4X4	12	Newly Built Completed
46	22+927	2	Box Culvert	2X2	12	Newly Built Completed
47	23+364	2	Box Culvert	2X2	12	Newly Built Completed
48	23+900	2	Box Culvert	2X2	12	Newly Built Completed
49	24+521	2	Box Culvert	2X2	12	Newly Built Completed

50	24+610	3	Box Culvert	3X3	12	Newly Built Completed
51	25+045	2	Box Culvert	2X2	12	Newly Built Completed
52	25+085	2	Box Culvert	2X2	12	Newly Built Completed
53	26+260	4	Box Culvert	4X4	12	Newly Built Completed
54	26+400	3	Box Culvert	3X3	12	Newly Built Completed
55	26+520	2	Box Culvert	2X2	12	Newly Built Completed
56	26+570	2	Box Culvert	2X2	12	Newly Built Completed
57	27+145	3	Box Culvert	3X3	12	Newly Built Completed
58	27+762	3	Box Culvert	3X3	12	Newly Built Completed
59	28+030	4	Box Culvert	4X4	12	Newly Built Completed
60	28+180	2	Box Culvert	2X2	12	Newly Built Completed
61	28+252	3	Box Culvert	3X3	12	Newly Built Completed
62	28+437	3	Box Culvert	3X3	12	Newly Built Completed
63	28+760	3	Box Culvert	3X3	12	Newly Built Completed
64	29+180	2	Box Culvert	2X2	12	Newly Built Completed
65	29+390	2	Box Culvert	2X2	12	Newly Built Completed
66	29+600	2	Box Culvert	2x2	12	Newly Built Completed
67	30+055	2	Box Culvert	2X2	12	Newly Built Completed
68	31+030	2	Box Culvert	2X2	12	Newly Built Completed
69	31+405	2	Box Culvert	2X2	12	Newly Built Completed
70	31+550	2	Box Culvert	2X2	12	Newly Built Completed
71	32+375	4	Box Culvert	4X4	12	Newly Built Completed
72	32+420	2	Box Culvert	2X2	12	Newly Built Completed

(ix) Protective works:

Details of newly constructed protective works are listed below:

Sr. No.	From km	To km	Length (in M)	Type of structure

1	19+450	19+485	35	Ground Water Drainage (Newly Built)
2	19+660	19+700	40	
3	19+700	19+720	20	
4	20+440	20+460	20	
5	22+782	22+835	53	
6	23+845	23+875	30	
7	24+510	24+525	15	
8	26+118	26+160	42	
9	26+470	26+520	50	
10	31+680	31+710	30	
11	31+710	31+725	15	
12	31+930	31+964	34	
13	31+964	31+990	26	
14	19+300	19+318	18	Toe Wall (Newly Built)
15	19+318	19+338	20	
16	19+338	19+450	112	
17	19+450	19+474	24	
18	19+900	19+942	42	
19	20+110	20+136	26	
20	24+237	24+243	6	
21	24+427.2	24+432.2	5	
22	26+509	26+518	9	
23	26+522	26+529	7	
24	28+090	28+100	10	
25	28+125	28+155	30	
26	28+181	28+207	26	
27	28+231	28+251	20	
28	28+255	28+279	24	
29	28+357	28+365	8	
30	28+365	28+385	20	
31	28+550	28+572	22	
32	28+577	28+600	23	
33	28+600	28+605	5	
34	28+615	28+620	5	
35	28+680	28+690	10	
36	28+733	28+740	7	
37	28+903	28+909	6	
38	28+912	28+937	25	
39	29+710	29+740	30	
40	30+000	30+030	30	
41	30+080	30+110	30	
42	15+800	16+000	200	Gabion Wall (Newly Built)
43	16+020	16+050	30	
44	16+062	16+200	138	
45	16+198	16+272	74	
46	16+508	16+520	12	
47	16+520	16+570	50	

48	16+646	16+691	45	
49	16+710	16+723	13	
50	16+730	16+812	82	
51	17+250	17+350	100	
52	17+910	18+024	114	
53	18+024	18+090	66	
54	19+150	19+255	105	
55	20+450	20+800	350	
56	20+590	20+625	35	
57	23+050	23+086	36	
58	23+538	23+570	32	
59	23+620	23+720	100	
60	23+720	23+820	100	
61	25+800	26+000	200	
62	26+850	26+900	50	
63	26+900	26+950	50	
64	26+950	27+041	91	
65	27+050	27+140	90	
66	28+850	28+870	20	
67	28+870	28+920	50	
68	28+920	28+950	30	
69	29+070	29+180	110	
70	29+700	29+733	33	
71	29+748	29+767	19	
72	29+766	29+780	14	
73	29+773	29+781	8	
74	29+781	29+786	5	
75	29+850	29+910	60	
76	30+750	31+050	300	
77	31+050	31+100	50	
78	31+100	31+200	100	
79	31+200	31+250	50	
80	31+300	31+435	135	
81	31+435	31+450	15	
82	31+450	31+530	80	
83	16+050	16+062	12	PLUM CONCRETE WALL (Newly Built)
84	16+062	16+092	30	
85	16+092	16+140	48	
86	16+140	16+145	5	
87	16+145	16+198	53	
88	16+273	16+308	35	
89	16+308	16+425	117	
90	16+425	16+445	20	
91	16+445	16+482	37	
92	16+482	16+500	18	
93	16+980	17+000	20	
94	17+120	17+165	45	
95	17+165	17+184	19	

96	17+184	17+248	64	
97	17+248	17+262	14	
98	17+600	17+630	30	
99	17+640	17+661	21	
100	17+661	17+702	41	
101	17+702	17+720	18	
102	17+720	17+755	35	
103	17+755	17+758	3	
104	18+318	18+340	22	
105	18+340	18+360	20	
106	18+560	18+577	17	
107	18+675.5	18+690	14.5	
108	18+690	18+698	8	
109	18+698.4	18+713	14.6	
110	18+713	18+733	20	
111	18+735	18+765	30	
112	18+733	18+750	17	
113	18+750	18+807	57	
114	18+807	18+840	33	
115	18+840	18+850	10	
116	18+850	18+860	10	
117	18+860	18+895	35	
118	18+895	18+910	15	
119	18+960	18+975	15	
120	18+975	18+988	13	
121	18+988	18+998	10	
122	18+998	19+023	25	
123	19+023	19+035	12	
124	19+035	19+094	59	
125	19+094	19+115	21	
126	19+115	19+144	29	
127	19+144	19+214	70	
128	19+214	19+280	66	
129	19+280	19+320	40	
130	19+320	19+330	10	
131	19+330	19+363	33	
132	19+363	19+380	17	
133	19+380	19+410	30	
134	19+410	19+415	5	
135	19+415	19+444	29	
136	19+444	19+450	6	
137	19+485	19+490	5	
138	19+490	19+500	10	
139	19+500	19+520	20	
140	19+530	19+541	11	
141	19+510	19+535	25	
142	20+150	20+178.5	28.5	
143	20+178.5	20+186	7.5	

144	20+186	20+195	9	
145	20+195	20+230	35	
146	20+300	20+350	50	
147	20+350	20+360	10	
148	20+500	20+510	10	
149	20+540	20+550	10	
150	20+550	20+562	12	
151	20+562	20+570	8	
152	20+570	20+580	10	
153	20+590	20+625	35	
154	21+150	21+182	32	
155	21+182	21+251	69	
156	21+251	21+264	13	
157	21+264	21+274	10	
158	21+274	21+331	57	
159	21+350	21+394	44	
160	21+394	21+449	55	
161	21+449	21+451.5	2.5	
162	21+451.5	21+463	11.5	
163	21+470	21+477	7	
164	21+477	21+500	23	
165	21+620	21+627	7	
166	21+627	21+650	23	
167	21+650	21+660	10	
168	21+660	21+670	10	
169	21+873	21+893	20	
170	21+893	21+911	18	
171	21+911	21+923	12	
172	22+265	22+293	28	
173	22+236	22+278	42	
174	22+309	22+321	12	
175	22+300	22+334	34	
176	22+341	22+364	23	
177	22+364	22+381	17	
178	22+381	22+400	19	
179	22+400	22+450	50	
180	22+450	22+496	46	
181	22+496	22+530	34	
182	22+530	22+607	77	
183	22+607	22+616	9	
184	22+630	22+670	40	
185	22+670	22+720	50	
186	22+835	22+878	43	
187	22+878	22+913	35	
188	22+913	22+965	52	
189	22+965	23+000	35	
190	23+000	23+100	100	
191	23+100	23+150	50	

192	23+150	23+180	30	
193	23+180	23+200	20	
194	23+200	23+223	23	
195	23+223	23+259	36	
196	23+791	23+845	54	
197	24+100	24+125	25	
198	24+100	24+110	10	
199	24+125	24+150	25	
200	24+188.4	24+198.4	10	
201	24+201.6	24+221.6	20	
202	24+235	24+240	5	
203	24+250	24+280	30	
204	24+280	24+300	20	
205	24+320	24+335	15	
206	24+335	24+350	15	
207	25+100	25+186	86	
208	25+186	25+211	25	
209	25+211	25+228	17	
210	25+228	25+250	22	
211	25+250	25+263	13	
212	25+263	25+280	17	
213	25+290	25+330	40	
214	26+670	26+700	30	
215	26+700	26+747	47	
216	26+747	26+795	48	
217	26+795	26+825	30	
218	26+825	26+840	15	
219	26+840	26+850	10	
220	26+850	26+928	78	
221	26+928	26+963	35	
222	26+963	26+970	7	
223	27+165	27+200	35	
224	27+200	27+275	75	
225	27+275	27+276	1	
226	27+276	27+360	84	
227	27+360	27+460	100	
228	27+460	27+480	20	
229	27+480	27+501.4	21.4	
230	27+501.4	27+513	11.6	
231	27+513	27+515	2	
232	27+515	27+527	12	
233	27+527	27+541	14	
234	27+541	27+554.4	13.4	
235	27+554.4	27+570	15.6	
236	27+570	27+640	70	
237	27+650	27+690	40	
238	27+690	27+701	11	
239	27+701	27+747	46	

240	27+747	27+752	5	
241	27+752	27+761	9	
242	27+770	27+777	7	
243	27+777	27+802	25	
244	27+802	27+816	14	
245	27+816	27+827	11	
246	27+827	27+890	63	
247	27+890	27+950	60	
248	27+950	27+958.2	8.2	
249	28+550	28+620	70	
250	28+620	28+666	46	
251	28+666	28+740	74	
252	28+804	28+855	51	
253	28+855	28+906	51	
254	28+906	28+911	5	
255	29+601	29+627	26	
256	29+670	29+685	15	
257	30+300	30+325	25	
258	30+332	30+352	20	
259	30+352.4	30+362.4	10	
260	30+362.4	30+365.6	3.2	
261	30+365.6	30+614.4	248.8	
262	30+614.4	30+617.6	3.2	
263	30+617.6	30+626	8.4	
264	30+626	30+634	8	
265	30+634	30+670	36	
266	30+670	30+709	39	
267	30+709	30+720	11	
268	30+720	30+750	30	
269	30+750	30+840	90	
270	30+857	30+919	62	
271	30+932	30+964	32	
272	31+030	31+031	1	
273	31+031	31+075	44	
274	31+220	31+264	44	
275	31+075	31+130	55	
276	31+130	31+310	180	
277	31+406	31+422.5	16.5	
278	31+422.5	31+459	36.5	
279	31+459	31+484	25	
280	31+512	31+547	35	
281	31+552	31+630	78	
282	31+630	31+680	50	
283	32+000	32+050	50	
284	32+050	32+068.4	18.4	
285	32+071.6	32+095.4	23.8	
286	32+095.4	32+102	6.6	
287	32+180	32+334.5	154.5	

288	32+334.5	32+360	25.5	
289	20+030	20+061	31	Reinforcement Anchor Wall (Newly Built)
290	20+357	20+398.5	41.5	
291	20+835	20+847	12	
292	20+870	20+887	17	
293	16+005	16+050	45.0	Breast Wall
294	16+198	16+228	30.0	
295	16+228	16+272	44.0	
296	16+500	16+540	40.0	
297	16+540	16+572	32.0	
298	16+646	16+691	45.0	
299	16+720	16+730	10.0	
300	16+733	16+815	82.0	
301	17+096	17+120	24.0	
302	17+488	17+500	12.0	
303	17+910	18+040	130.0	
304	18+040	18+107	67.0	
305	18+600	18+665	65.0	
306	18+665	18+668	3.0	
307	18+668	18+670	2.0	
308	19+450	19+485	35.0	
309	20+360	20+382	22.0	
310	20+564	20+570	6.0	
311	21+923	21+983	60.0	
312	22+000	22+020	20.0	
313	22+060	22+080	20.0	
314	22+080	22+125	45.0	
315	22+145	22+200	55.0	
316	22+210	22+224	14.0	
317	22+220	22+265	45.0	
318	22+786	22+825	39.0	
319	22+915	22+941	26.0	
320	23+517	23+570	53.0	
321	23+856	23+878.5	22.5	
322	23+881.5	23+891.5	10.0	
323	23+935	23+970	35.0	
324	24+335	24+350	15.0	
325	24+426	24+480	54.0	
326	24+493	24+509	16.0	
327	24+532	24+537	5.0	
328	24+576	24+584	8.0	
329	24+700	24+730	30.0	
330	24+750	24+762	12.0	
331	25+043	25+085	42.0	
332	25+330	25+360	30.0	
333	25+642	25+655	13.0	
334	25+665	25+715	50.0	
335	25+680	25+692	12.0	

336	25+715	25+850	135.0	
337	25+850	25+955	105.0	
338	25+959	26+013	54.0	
339	26+080	26+092	12.0	
340	26+160	26+218	58.0	
341	26+214	26+228	14.0	
342	26+240	26+245	5.0	
343	26+400	26+450	50.0	
344	26+450	26+470	20.0	
345	26+500	26+509	9.0	
346	26+605	26+623	18.0	
347	26+645	26+670	25.0	
348	26+970	27+000	30.0	
349	27+000	27+083	83.0	
350	27+083	27+120	37.0	
351	27+120	27+140	20.0	
352	27+958.2	27+986.2	28.0	
353	28+300	28+330	30.0	
354	28+330	28+370	40.0	
355	28+450	28+550	100.0	
356	29+070	29+085	15.0	
357	29+085	29+141	56.0	
358	29+141	29+179	38.0	
359	29+627	29+670	43.0	
360	29+670	29+700	30.0	
361	29+700	29+733	33.0	
362	29+742	29+750	8.0	
363	29+740	29+769	29.0	
364	29+750	29+795	45.0	
365	29+795	29+810	15.0	
366	29+810	29+826	16.0	
367	29+826	29+834	8.0	
368	29+834	29+854	20.0	
369	29+854	29+860	6.0	
370	29+860	29+890	30.0	
371	29+917	29+980	63.0	
372	30+135	30+175	40.0	
373	30+175	30+210	35.0	
374	30+210	30+235	25.0	
375	30+235	30+300	65.0	
376	31+310	31+336.5	26.5	
377	31+484	31+512	28.0	
378	31+670	31+676	6.0	
379	32+250	32+256	6.0	
380	16+400	16+410	10	Retaining Wall
381	16+410	16+442	32	
382	16+446	16+453	7	
383	16+503	16+530	27	

384	16+530	16+538	8	
385	16+544	16+550	6	
386	16+611	16+632	21	
387	16+726	16+731	5	
388	16+736	16+742	6	
389	16+950	16+998	48	
390	16+998	17+011	13	
391	17+015	17+027	12	
392	17+027	17+036	9	
393	17+041	17+050	9	
394	17+080	17+092	12	
395	17+638	17+650	12	
396	17+765	17+795	30	
397	17+940	17+971	31	
398	18+024	18+039	15	
399	18529	18546	17	
400	18+555	18+560	5	
401	18+560	18+620	60	
402	18+620	18+675	55	
403	20+174	20+193	19	
404	20+202	20+205	3	
405	20+590	20+603	13	
406	20+652	20+666	14	
407	20+670	20+685	15	
408	20+615	20+635	20	
409	21+436	21+446	10	
410	21+458	21+462	4	
411	23+150	23+193	43	
412	23+193	23+329	136	
413	23+329	23+361	32	
414	23+366	23+373	7	
415	23+373	23+400	27	
416	24+509	24+519	10	
417	24+522	24+532	10	
418	24+584	24+609	25	
419	24+613	24+623	10	
420	25+033	25+042	9	
421	25+047	25+060	13	
422	25+323	25+398	75	
423	25+456	25+461	5	
424	25+461	25+486	25	
425	25+564	25+654	90	
426	25+654	25+658	4	
427	25+661	25+671	10	
428	25+978	26+000	22	
429	26+003	26+029	26	
430	26+241	26+254	12.5	
431	26+260	26+300	40	

432	26+340	26+363	23	
433	26+363	26+394	31	
434	26+404	26+411	6.5	
435	26+411	26+423	12	
436	26+560	26+568	8	
437	26+573	26+579	6	
438	27+005	27+061	56	
439	27+061	27+067	6	
440	27+153	27+163	10	
441	27+166	27+176	10	
442	27+176	27+184	8	
443	27+460	27+480	20	
444	27+725	27+751	26	
445	27+765	27+785	20	
446	28+005	28+030	25	
447	28+035	28+070	35	
448	28+425	28+435	10	
449	28+439	28+458	19	
450	28+660	28+680	20	
451	28+740	28+757	17	
452	28+745	28+760	15	
453	28+745	28+760	-15	
454	28+763	28+783	20	
455	30+364	30+390	26	
456	31+398	31+403	5	
457	31+407	31+433	26	
458	31+993	32+038	45	

(x) Road side drains

The details of the roadside drains are as follows:

Sr No	Locations		Length (M)	Remarks
	From km	To km		
1	18+030	18+090	60	Newly Constructed
2	21+400	22+300	900	Newly Constructed
3	26+520	26+700	180	Newly Constructed
4	26+700	26+910	210	Newly Constructed
5	26+910	27+ 100	190	Newly Constructed
6	27+200	27+450	250	Newly Constructed
7	27+ 450	27+550	100	Newly Constructed
8	27+550	27+760	210	Newly Constructed
9	27+760	27+850	90	Newly Constructed
10	27+850	28+000	150	Newly Constructed
11	28+030	28+437	407	Newly Constructed
12	28+437	28+850	413	Newly Constructed
13	28+850	28+910	60	Newly Constructed
14	28+910	29+035	125	Newly Constructed
15	29+700	29+800	100	Newly Constructed
16	29+800	29+990	190	Newly Constructed
17	29+990	30+100	110	Newly Constructed
18	30+100	30+340	240	Newly Constructed
19	30+340	30+364	24	Newly Constructed
20	30+364	30+500	136	Newly Constructed
21	30+500	30+950	450	Newly Constructed
22	30+950	31+020	70	Newly Constructed
23	31+020	31+050	30	Newly Constructed
24	31+050	31+120	70	Newly Constructed
25	31+120	31+130	10	Newly Constructed
26	31+130	31+320	190	Newly Constructed
27	31+320	31+405	85	Newly Constructed
28	31+405	31+640	235	Newly Constructed
29	31+640	31+860	220	Newly Constructed
30	31+950	32+340	390	Newly Constructed

(a) Status of concrete works is mentioned in other relevant Paras.
(b) The site will be provided as is as on where is basis. The Contractor shall visit the site and take realistic assessment of the same.

10. Built Up Locations

The following are the Built-up locations on the Project Road.

Existing Chainage			Length in m	Village Name	District
Sr.No.	From	To			
1	15200	15800	600	Dentam	South
2	17120	18650	1530	Simkharka	South
3	19850	20160	310	Dodung	South
4	20700	20900	200	Bensimkharka	South
5	21450	21810	360	Ben Tthalabari	South
6	22420	22830	410	Ben Thaka	South
7	24950	25650	700	Cheerakh	South
8	26340	28700	2360	Rankey	South
9	29400	30650	1250	Ningaon	South
10	30950	31400	450	BhsiFatak	South

(Schedule - A)

Dates 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 statedbelow:

Sl. No	Design Chainage		Length (km)	Existing ROW asperClause 3ofSchedule A	Proposed ROW Width(m)	Date of providing ROW*
	From	To				
(i) 90% of ROW (full width)	16+000	32+500	16+500	24 m	24 m	100% available
(iii) Balance Right of Way (width)						

Annex - III
(Schedule - A)

Alignment Plans

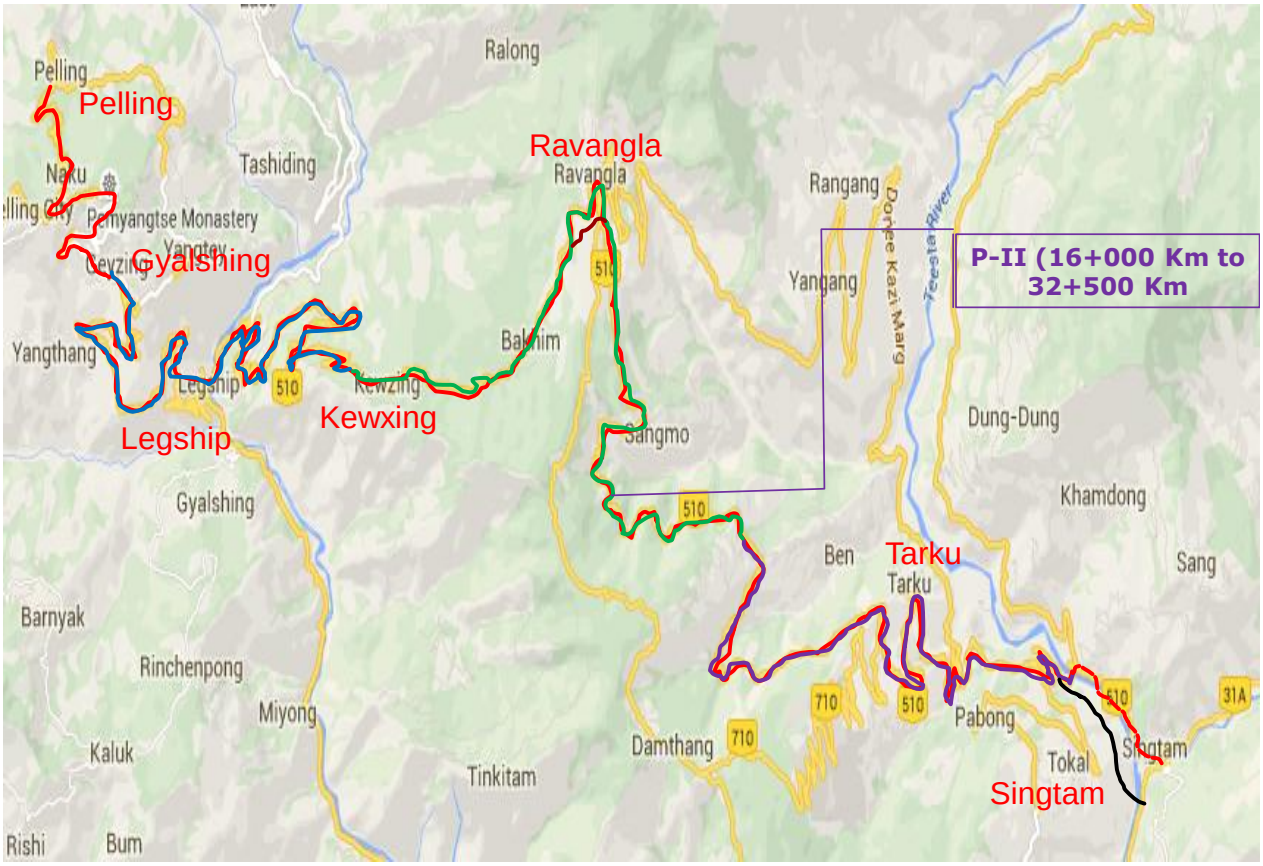
The existing alignment plan of the Project Highway is enclosed in digital form.

Annexure - IV

(Schedule-A)

Environment Clearances

The project Highway does not require Environment Clearance as per MoEF corrigendum dated 22.08.2013.The muck dumping sites in forest area stand identified and freezed by Forest department to be abided by agency during dumping of muck as stated in Schedule 'F'



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.

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

SCHEDULE-B

(SeeClause2.1)

DEVELOPMENTOFTHEPROJECTHIGHWAY

1 Development of the Project Highway

Development of the Project Highway shall include design and construction of the 2 Lane with Paved shoulder Project Highway as described in this Schedule-B and in Schedule-C.

2 Rehabilitation and augmentation

Rehabilitation and augmentation shall include Two Laning with Paved Shoulder 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 inconformity with the Specifications and Standards specified in Annex-I of Schedule-D.

4 As per Government of Sikkim Gazette Notification, **Blasting** is not allowed for road formation widening work. In case of any special situation, controlled blasting can be resorted with the prior permission of the concerned District Administration after taking all necessary safety measures.

5 Recovery of the Hard Rock. At least 50% quantity of the hard rock obtained from the road widening works is to be used for the Road Works. The cost effect of the same will be recovered in the running bill of the work as per the Government of Sikkim Notified Rates

Annexure–I

(Schedule–B)

Project is construction/ improvement of the existing single lane road to two lane with paved shoulder in accordance with IRC-SP:73:2015, IRC-SP:48:1998 and other relevant codes including standard good practice of the road construction.

1. SCOPEOFTHEPROJECT

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's, 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. enabletheNHIDCLtoprovidealevelofhighwayservicetothepublicnotinferiortothatprovided 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 thatmembersofthepublicaretreatedwithallduecourtesyandconsideration;

i. provide a safe, clear and informative system of road signs;

j. comply with any specified programme requirements, including for the completion of the newroad;

k. enable standards of reliability, durability, accessibility, maintainability, quality control andassurance, and fitness for purpose appropriate to a highway of the character of the ProjectHighwaytobeachievedthroughouttheContractPeriod;

l. ensureadequateoff-streetparkingfacilitiesforbothpassengerandgoodsvehicles;

m. provide adequate bus bays for stopping of buses and bus shelters for commuters to waitunderprotection;

n. achieve a high standard in the appearance and aesthetic quality of the Project Highway andachieve integration of the Project Highway with the character of the surrounding landscapethrough both sensitive design and sensitive management of all visible elements includingthoseontheexistingroad;

o. Undertake proper safety audit through an appropriate consultant (i.e. apart from the Independent Consultant) before C.O.D.;

p. Carry out accident recordingand reporting (to NHIDCL)by typeonregularbasis; and

q. Ensure adequate safety of the Project Workers on the worksite.

2. WIDENING OF THE EXISTING HIGHWAY

2.1 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 thelocationsandindicativedesignsgivenin**Schedule–C**andshallcomplywithdesignspecifications and standards outlined in **Schedule–D.** All the designs and drawings shall be reviewed by the Authority Engineer 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.Geometricdeficiencies,ifany,intheexistinghorizontaland vertical profiles shall be corrected as per the prescribed standards for [mountainous /Steep]terrain to the extent land is available.

2.2 WidthofCarriageway

2.2.1 Theproposed2-Lane Carriageway starts from Km 16+00toKm32+50. Thepavedcarriageway shall be 7.0m + 1.5m paved shoulder valley side +1.635m paved shoulder on hillside +1.0m Earthenshoulder/ ParapetonValleyside+0.865m roadsideonHill side.

2.2.2 Except as otherwise provided in this Agreement, the width of the paved carriagewayandcross-sectionalfeaturesshallconformtoparagraph2.1above.

3. GEOMETRICDESIGNANDGENERALFEATURES

3.1 General

GeometricdesignandgeneralfeaturesoftheProjectHighwayshallbeinaccordancewit htherelevantSectionsoftheManuals fortwolaning

3.2 Designspeed

The design speed shall be the minimum design speed of[30 kmperhr for hilly and mountainous/steepterrain].

3.3 Improvementoftheexistingroadgeometrics

[Refertoparagraph2.1(v)oftheManualandprovidedetails]

The hilly gradients shall be corrected in such away so as to attain a limiting gradient of 6%inorder to achieve longitudinal drainage. Also vertical curves shall be improved/introducedsothattheverticalcurvesmeetIRC:SP-73- 2015standards.

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

The improvement shall be done in consultation with the Independent consultant / Project Company ensuring that the proposed improvements are accommodated within the land width available as far as practical otherwise action to acquire more land shall be resorted to through NHIDCL.

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:

S.No.	From	To	Radius	TypeofDeficiency	Remarks
1	19927.906	19946.48	20	Hairpinbendcurve	AdoptedDesignSpeed of20Kmph
2	19988.388	19997.74	20	Hairpinbendcurve	AdoptedDesignSpeed of20Kmph
3	24930.577	24936.42	20	Hairpinbendcurve	AdoptedDesignSpeed of20Kmph
4	24976.351	24988.08	20	Hairpinbendcurve	AdoptedDesignSpeed of20Kmph

The proposed horizontal and vertical alignment is available in digital format and this is for information and authority shall not be held responsible for any implications of the contract. EPCcontractor shall carry out his own survey and investigations and due diligence both during bidding andduringdesign andconstruction.

3.4 RightofWay

DetailsofProposedROW

AsdescribedinAnnex-IIofSchedule-A.

3.5 Typeofshoulders

Paved shoulders of 1.5 m width on Valley side & 1.635 m width on Hillside shall beprovided and balance 1.0m width on hill side earthen shoulder shall be covered with150mmthickcompactedlayerofgranularmaterial.

3.6 Lateral and vertical clearances at Underpasses

Lateral and vertical clearance sat under passes and provision of guardrails/ crash barriers shall be as perparagraph2.11oftheManual.

3.7 Lateral and vertical Clearances at Overpasses

Lateral and vertical clearances at over passes shall be as per paragraph 2.12oftheManual.

3.8 Service roads-Nil

3.9 Grade separated structures

3.9.1 Grade separated structures shall be provided as per paragraph2.14 of the Manual. The requisite particulars aregivenbelow:

[Refertoparagraphs2.14.1oftheManualandprovidedetails]

S. No.	Design Chainage(Km)	Nameof IntersectingRoads	ProposedSpan Arrangement(m)	Remarks
Nil				

3.9.2 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:[Referto paragraphs 2.14.2 of the Manual and specify the type of vehicular under pass/ overpass structure and whether the crossroad is to be carried at the existing level, raised or lowered].

SlNo.	Location	Type of Structure/Length(m)	Cross Road at			Remarks, ifany
			Existing Level	Raised Level	Lowered Level	
Nil						

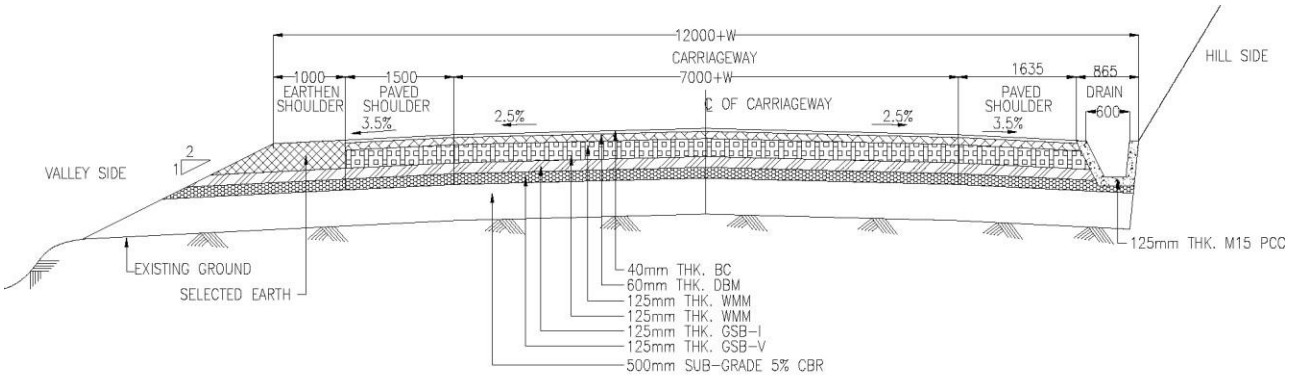
3.10 Cattle and pedestrian underpass/overpass

Cattle and pedestrian underpass/overpass shall be constructed as follows: [Refer toparagraph2.14.3oftheManualandspecifytherequirementsofcattleandpedestrianunderpass/overpass.

S.No.	Location	Typeofcrossing
Nil		

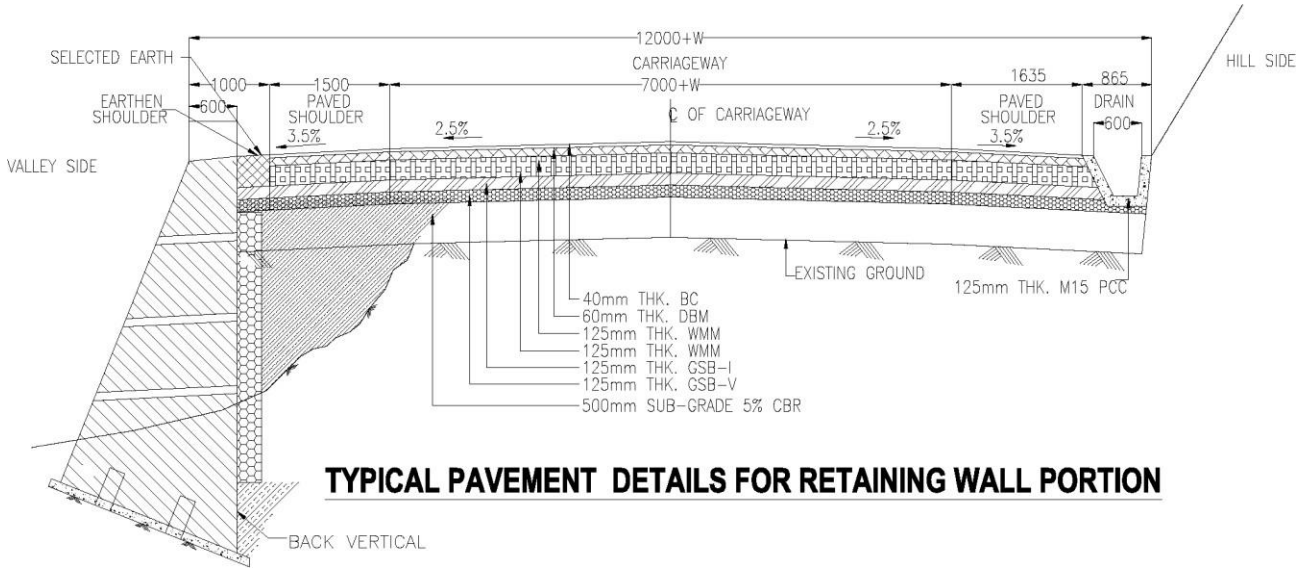
3.11 Typical cross-sections of the Project Highway

Approximate cross section type(tentative)suitable at various chainages of project highway is as shownbelow:

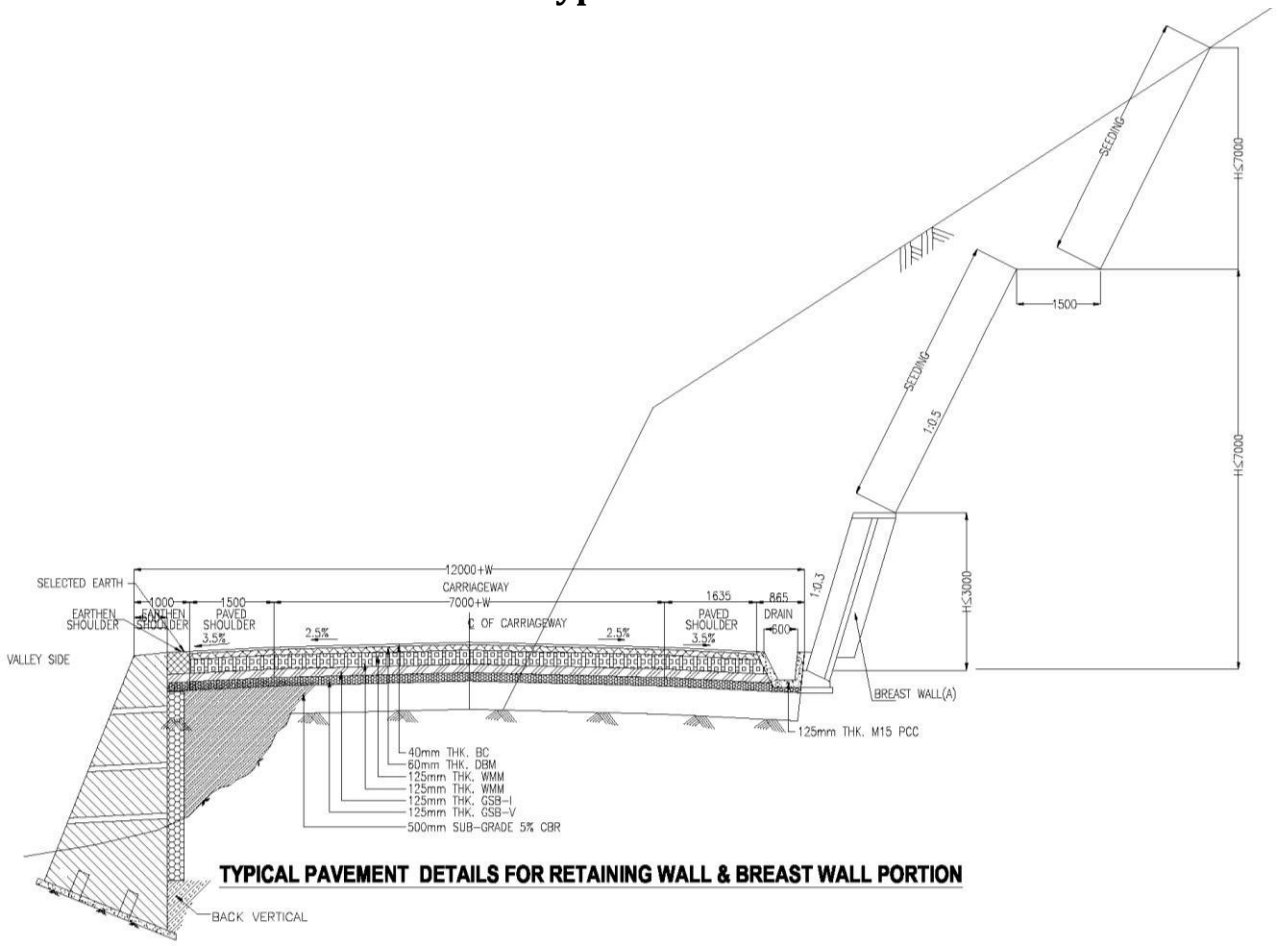


TYPICAL PAVEMENT DETAILS FOR MAIN ROAD

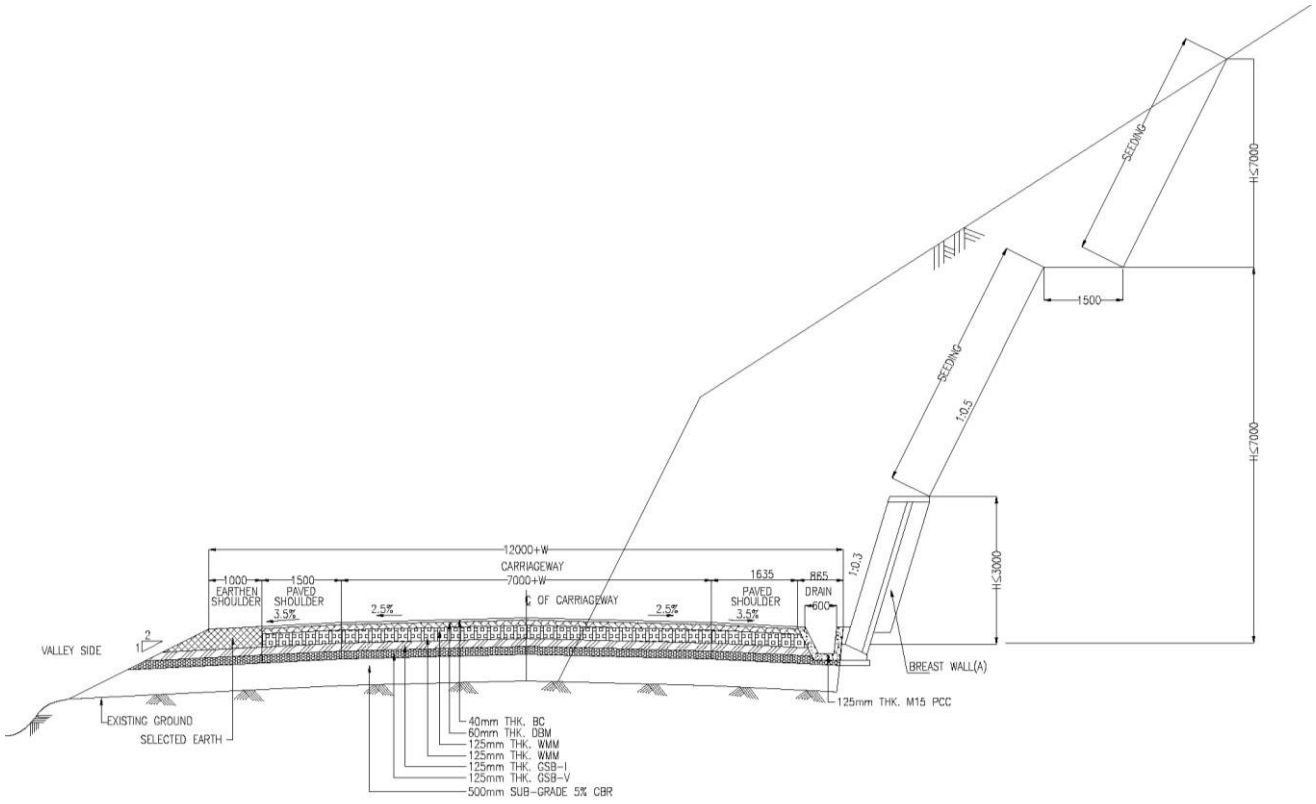
TCS1-TypicalCrossSection



TCS2-TypicalCrossSection



TCS3-TypicalCrossSection



TYPICAL PAVEMENT DETAILS FOR BREAST WALL PORTION

TCS4-TypicalCrossSection

Sr. No.	Typical section	TCS No.	Remarks
1	TypicalCrosssection-1	TCS-1	General typical section of pavement
2	TypicalCrosssection-2	TCS-2	Ref clause No-8.1&8.2
3	TypicalCrosssection-3	TCS-3	Ref clause No-8.1,8.2,8.5&8.6
4	TypicalCrosssection-4	TCS-4	Ref clause No-8.5&8.6

3.12 Longitudinal Section

As a minimum, the Construction Contractor shall achieve the proposed finished road levelas 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 withNHIDCL. The proposed profile of the Project Highway shall be followed by the contractor with minimum FRLas indicated in the alignment plan.

3.13 Built-Up Areas

ExistingChainage			Lengthin m	VillageName	District
Sr.No.	From	To			
1	15200	15800	600	Dentam	South
2	17120	18650	1530	Simkharka	South
3	19850	20160	310	Dodung	South
4	20700	20900	200	Bensimkharka	South
5	21450	21810	360	BenTthalabari	South
6	22420	22830	410	BenThaka	South
7	24950	25650	700	Cheerakh	South
8	26340	28700	2360	Rankey	South
9	29400	30650	1250	Ningaon	South
10	30950	31400	450	BhsiFatak	South

4 INTERSECTIONS AND GRADE SEPARATORS

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

[Refertoparagraphs3.1.1,3.1.2and3.3 of the Manual and specify the requirements. Explain where necessary with drawings/sketches/general arrangement].

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

(a) At-grade Major intersections

S.No	Existing Chainage (Km)	Design Chainage (Km)	Location	Proposed Structure	Remarks
Nil					

(b) Grade separated intersection with/without tramps

S.No.	Design Chainage (Km)	Road LeadsTo	Junction Type	Proposed Improvements
Nil				

(c) MajorIntersections

Sr.No.	DesignChainage	Side	Remarks	Shape	Type
1	23310.00	LHS	Junction with Damthang Road	Y	Major

(d) MinorIntersections

Sr.No.	DesignChainage	Side	Remarks	Shape	Type
1	22175.00	RHS	Junction with Mangley VillageRoad	Y	Minor
2	22710.00	RHS	Junction with Nambrick VillageRoad	Y	Minor
3	32590.00	LHS	ArmyCampApproachroad	Y	Minor

5.0 ROAD EMBANKMENT AND CUTSECTION

5.1 Widening and improvement of the existing road embankment/cuttings and construction of

new road embankment/ cuttings shall conform to the Specifications and Standards given inrelevant sections of the Manuals and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

5.2 Raising of the existing road [Refer to paragraph 4.2.2ofthe Manual and specify sections tobe raised].
The existing road shall be raised in the followings ections:

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

*Difference between levels at proposed c/l and existing road/ ground below proposed c/l

6.0 PAVEMENT DESIGN

6.1 Pavement design shall be carried out in accordance with relevant Sections of the Manuals.

6.2 Type of pavement

Flexible Pavement with GranularSub-base (GSB)and Wet Mix Macadam(GSB) shall be designed asper IRC-37:2012.

6.3 Design requirements

6.3.1 Design Period and strategy

Flexible pavement shall be designed for a minimum design period of 15 years as per IRC-37:2012. Stage construction shall not be permitted.

6.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the Contractor shall design the pavement for design traffic of as given below:

From (Km)	To (Km)	Minimum Design Loading in terms of Million Standard Axles
16+00	32+50	10 msa

6.3.3 Design Parameters

The flexible pavement for the main carriageway is a 2-lane carriageway having 1.5 m wide paved shoulder and 1.0 m wide earthen shoulder in some stretches. This shall be designed using the IRC 37: 2012 Method for the projected traffic levels and

the following indicative design input parameters:

Indicative Design Parameters

(i)	Performance Period	15years+Construction Period of36months
(ii)	Traffic on Design Lane	Minimum 10 msa as per IRC-SP-73. Design should take care of the maximum wheel load derived from the axle load survey on the design lane
(iii)	Design serviceability Loss	2.0
(iv)	Reliability	90%
(v)	Overall Standard Deviation	0.49
(vi)	Effective Roadblock Soil Resilient Modulus	Corresponding to 4-day soaked CBRvalue of 5.0%to8.0%
(vii)	Layer Coefficients	AspertheIRC37:2012procedures
(viii)	Drainage quality of Pavement	Good

6.0.1 The Project highway will be a light-trafficked section connecting the major arterial network of the country. The design exercise should therefore duly take into account the importance of the road, the performance level and the maintenance requirements during the performance period. The provision of Wet Mix Macadam (granular base)/cement-treatedbase/sub-base(crushed stoneonly)/sub grade layer(s)and the use of 60/70Bitumen in bituminous base layers and polymer modified bitumen (PMB 40) in wearing course shall be considered while deciding about the composition of the pavement structure. The design should also accompany the Quality Assurance Plan(QAP)alongwithitsimplementationschemefortheconstructionofthepavementstructure.

6.0.2 However, in case of a change in the pavement design at the detailed engineering stage, the same shall not be considered as a change in scope of work nor shall qualify for a variation order.

6.0.3 Pavedshouldersof1.5mwidthshallhavesamethicknessofthepavementasthatofthe Main carriageway with same composition as that of maincarriageway for monolithic construction.

6.0.4 Contractor shall design the pavement for design traffic of 10 million standard axles(msa) corresponding subgrade CBR.

6.0.5 Rigid Pavement

No rigid pavement has been considered for the Project Highway.

6.1 Reconstruction of stretches

The various components of Project Roadshall be considered as reconstruction from sub—gradelevel as perIRC-37-2012.

A. Earthwork up to top of subgrade

Sr.No.	Chainage in m		Length	Remarks
	From	To		
1	16570	16630	16	
2	16820	16965	145	
3	17000	17017	17	
4	17370	17580	210	
5	17600	17620	20	
6	17875	17915	40	
7	18080	18195	115	
8	18520	18530	10	
9	19560	19600	40	
10	19800	20080	280	
11	20785	20850	65	
12	20910	21140	230	
13	22400	22445	45	
14	22570	22590	20	
15	22920	22935	15	
16	23330	23500	170	
17	23630	23700	70	
18	23805	23807	2	
19	24000	24050	50	
20	24730	24810	80	
21	24900	25000	100	
22	26275	26390	115	
23	26398	26402	4	
24	29190	29290	100	
25	29330	29555	225	

	Total length (M)	**222 8**	

B. Granular work

Sr.No.	**Chainage in m**		**Length**	**Remarks**
	From	**To**		
1	16000	16015	15	
2	16482	16485	3	
3	16560	16670	110	
4	16810	17070	260	
5	17180	17572	392	
6	17632	17638	6	
7	17800	17911	111	
8	18087	18200	113	
9	18360	18532	172	
10	19483	19485	2	
11	19513	19515	2	
12	19560	20421	861	
13	20599	20601	2	
14	20686	20780	94	
15	20830	21180	350	
16	21290	21400	110	
17	21445	21449	4	
18	23275	23790	515	
19	23899	23901	2	
20	24030	24050	20	
21	24220	24250	30	
22	24520	24522	2	
23	24609	24612	226	
24	26260	26400	2	
25	26520	26522	2	
26	26569	26571	2	
27	27760.5	27763 .5	3	
28	28030	28034	4	
29	28250	28253	3	
30	28436	28439	3	

31	29170	29190	20	
32	29299	29600	301	
33	31029	31031	2	
34	31404	31406	2	
35	31549	31551	2	
36	32419	32421	2	
37	32480	32500	20	
	Total length (M)		**3770**	

C. Bituminous Work
DBM

Sr.No.	**Chainage in m**		**Length**	**Remarks**
	From	**To**		
1	16000	16015	15	
2	16560	16670	110	
3	16790	17910	1120	
4	18090	18530	440	
5	19560	20480	920	
6	20686	21180	494	
7	21290	21400	110	
8	22300	22500	200	
9	22700	23000	300	
10	23250	23800	550	
11	24030	24050	20	
12	24220	24250	30	
13	24860	25110	250	
14	25150	25160	10	
15	25780	25950	170	
16	26260	26450	190	
17	29170	29600	430	
18	32365	32385	20	
19	32480	32500	20	
	Total length (M)		**5399**	

Bituminous Concrete work

Sr.No.	Chainage in m		Length	Remarks
	From	To		
1	16000	30550	14550	
2	31860	32500	640	
	Total length (M)		**15190**	

7 ROADSIDE DRAINAGE

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

The improvements in the drainage and the slope erosion shall be made as per the following norms:

7.1 Roadside Drainage Measures

Following measures shall be adopted:

i) Openside V shape drains at the hill side for widening at hill sides and both sides in realignment stretches by hillcut.

Open side V shape cross section drain shall be provided on hill sides of the project highway in order to intercept surface water from the carriageway, shoulders and hillslopes. Trapezoidal Lined drains have slopes also been proposed in urban/semiurban/intersectionstretches. The concrete drains shall be covered in reaches along commercial establishments and intersections. The drains outfall into the natural water courses i.e. either in culverts or bridges. Table below gives the location of lined drains.

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

Sr.No.	Chainageinm		Length	Type	Remarks
	From	To			
1	16000	17790	1790	Type-1	VshapeDrain
2	17790	18030	240	Type-1	VshapeDrain
3	18090	19285	1195	Type-2	TrapezoidalDrain
4	19285	20280	995	Type-1	VshapeDrain
5	20280	20585	305	Type-2	TrapezoidalDrain
6	20585	21100	515	Type-1	VshapeDrain
7	21100	21195	95	Type-2	TrapezoidalDrain
8	21195	21400	205	Type-2	TrapezoidalDrain
9	22300	22795	495	Type-1	VshapeDrain
10	22795	23195	400	Type-2	TrapezoidalDrain
11	23195	25190	1995	Type-1	VshapeDrain
12	25190	25835	645	Type-2	TrapezoidalDrain
13	25835	26470	635	Type-1	VshapeDrain
14	26470	26520	50	Type-2	TrapezoidalDrain
15	27100	27200	100	Type-2	TrapezoidalDrain
16	28000	28030	30	Type-2	TrapezoidalDrain
17	29035	29295	260	Type-1	VshapeDrain
18	29295	29700	405	Type-2	TrapezoidalDrain
19	31860	31950	90	Type-1	VshapeDrain
20	32340	32500	160	Type-1	VshapeDrain

Note:(TheabovelocationsshallbereviewedinconsultationwiththeIndependentConsultantatthetimeofconstructionasperthesitecondition).

7.2 Chutes

Surface run off on a hill slope flows down in the form of natural gulleys / chutes. The water entrapped in the catch water drains is also brought down by connecting them with existing natural gulleys. It is therefore desired to provide lined chutes to lead the discharge to thecatchpitofculvertorto anaturaldrainage channel.

Sr.No.	Chainage	ClearWidthofChute (m)	LengthofChute (m)	Remarks
1	17384.00	1.85	20	Type-1
2	17630.00	1.85	20	Type-1
3	17881.00	1.85	20	Type-1

4	17910.00	3.2	20	Type-3
5	18087.00	1.85	20	Type-1
6	18525.00	2.70	20	Type-2
7	20197.00	1.85	20	Type-1
8	20623.00	2.70	20	Type-2
9	21081.00	1.85	20	Type-1
10	26130.00	3.2	20	Type-3
11	26280.00	1.85	20	Type-1
12	26385.00	1.85	20	Type-1
13	27025.00	2.70	20	Type-2
14	27555.00	1.85	20	Type-1
15	27798.00	1.85	20	Type-1
16	27947.00	2.70	20	Type-2
17	28005.00	1.85	20	Type-1
18	28163.00	1.85	20	Type-1
19	28465.00	3.2	20	Type-3
20	28624.00	1.85	20	Type-1
21	28746.00	1.85	20	Type-1
22	29031.00	3.2	20	Type-3
23	31253.00	1.85	20	Type-1
24	31303.00	1.85	20	Type-1
25	31405.00	3.2	20	Type-3
26	31696.00	1.85	20	Type-1
27	32311.00	1.85	20	Type-1

7.3 Drain on valley side at Box Cutting portion –1400mVshapeddrain.

As per plan & Profile drawing

7.4 Catch water drain -1800mVshapeddrain

Location will be finalized during construction stage as per site conditions in consultation with NHIDCL/AE

8. SLOPE PROTECTION MEASURES

In accordance with section 13 of the manual (from IRC:SP 73-2015), (IRC:SP 48-1998) and recommended practices for treatment of embankment and road side slopes for erosion control (First edition) IRC:56-2011 and relevant IRC Code.

SLOPE PROTECTION

As the project involves cutting of the hill slope, it's imperative that slopes rae stabilized for ensuring longevity of the slopes and the road , Slope stability, erosion control and land slide correction shall be accomplished in accordance with IRC:SP 48:1998. Reference may be drawn from IRC:56-2011.
The minimum quantity of protection works may be taken as below.

Details of Reinforced Earth Wall locations:-

Sr.No.	Chainage		Length in m	Height in m	Remarks
	From	To			
	20847	20855.5	8.5	10	RHS

Note: The wall length is indicative and shall be estimated by the EPC contractor.

8.1 Gabion Wall:

The requirement of the Gabion wall is generated only where the road is aligned along a saddle portion, Near bus stand &river bank or a nallah (stream)slope failure and erosion of toe has also to be prevented and valley side slope made stable These are proposed at locations having hill with steep slope, having soil matrix Soil Mixed with Boulders and sharp curve portion. It is also proposed where the road side excavated spoils dumping area and embankment toe.

Sr.No.	CHAINAGE		LENGTH in m	HEIGHT in M	REMARKS
	FROM	TO			
1	20782	20980	198	3	DisposalYardon RHS
2	22215	22325	110	3	SinkingPortion
3	32210	32660	450	2	DisposalYardon RHS
			758		

Note: The wall length is indicative and shall be estimated by the EPC contractor.

8.2 BreastWall: The requirement of the breast walls is generated only when the road has been in use and problems of the slope line have been identified. These are proposed at locations having hill with steep slope, having soil matrix Soil Mixed with Boulders and sharp curve portion. It is also proposed where the rainwater spills all around causing mudflow.

Sr.No.	Chainage		Length inm	Heighti nm	Side
	From	To			
1	16000	16005	5.00	2.00	LHS
2	16574	16646	72.00	2.00	LHS
3	16691	16720	29.00	3.00	LHS
4	16730	16733	3.00	2.00	LHS
5	16815	16900	85.00	2.00	LHS
6	17900	17910	10	3.00	LHS
7	18107	18140	33	3.00	LHS
8	21983	22000	17.00	3.00	LHS

9	22125	22145	20.00	3.00	LHS
10	23450	23517	67.00	3.00	LHS
11	23570	23600	30.00	3.00	LHS
12	24191	14198	7.00	2.00	LHS
13	24201	24208	7.00	2.00	LHS
14	24350	24380	30.00	3.00	LHS
15	24480	24500	20.00	2.00	LHS
16	24730	24750	20.00	2.00	LHS
17	25085	25100	15.00	2.00	LHS
18	25955	25959	4.00	2.00	LHS
19	26623	26645	22.00	2.00	LHS
20	28370	28400	30.00	3.00	LHS
21	29193	29250	57.00	3.00	LHS
22	29550	29599	49.00	3.00	LHS
23	29601	29627	26.00	2.00	LHS
24	29980	30000	20.00	3.00	LHS
25	22690	22730	40.00	2.00	RHS
26	25585	25650	65.00	2.00	LHS
27	32460	32500	40.00	3.00	LHS
		Total	823m		

Note: The wall length is indicative and shall be estimated by the EPC contractor.

8.3 **Plum Concrete Wall:** Slope protection along hill side to protect the public properties andsoilexposedfaceonhillsideHeightofwallvariesfrom3mto5.0m and shall be constructed with M15PCC. Lengthofwall–7500m.

Sr.No.	Chainage		Length	Height in	Side
	From	To	In m	m	
1	16900	16980	80	5	LHS
2	17630	17640	10	4	LHS
3	17758	17800	42	5	LHS
4	18360	18470	110	5	LHS
5	18577	18600	23	54	LHS
6	18910	18960	50	5	LHS
7	19520	19530	10	5	LHS
8	19541	19625	83	5	LHS
9	19750	19775	25	54	LHS
10	20252	20300	48	4	LHS
11	20360	20435	75	5	LHS
12	20435	20500	65	5	LHS
13	20510	20540	30	5	LHS
14	20625	20650	25	5	LHS
15	21100	21150	50	5	LHS
16	21331	21350	19	5	LHS
17	21463	21470	7	5	LHS
18	22720	22730	10	5	LHS
19	22770	22835	65	5	LHS
20	23259	23290	31	5	LHS
21	23750	23791	41	5	LHS
22	23875	23899	24	5	LHS
23	24125	24150	25	5	LHS
24	24510	24571	61	5	LHS
25	26585	26605	20	5	RHS
26	27640	27650	10	5	LHS
27	30325	30332	7	5	LHS
		Total	1046m		

Locationwillbefinalizedduringconstructionstageaspersiteconditionsinconsultationwithnhidcl/AE

8.4 Vetiver Plantation, HydroSeeding and Hydro Mulching etc or similar works is to be done for slope protection and site mitigation measure upto a height of 12-15 m all along the slopes in each cutting locations except hard rock location which needs to be protected with appropriate applicable technologies, if required.

8.5 Turfing with Sods on hillside slope shall be as per MoRTH Specifications

9. DESIGN OF STRUCTURES

9.1 General

All bridges and structures shall be designed and constructed in accordance with section 7 ofthe Manual and shall conform to the cross sectional features and other details specified inMoRTH circular No: RW/NH/33044/2/88-S&R dated 24.03.2009 (for 2 lane structures as13.0m without) and shall conform to the cross sectional features and other details specifiedin IRC: SP: 84-2014. The culverts shall be designed and constructed in accordance withsection7oftheManuals.

The following guidelines shall be followed:

i) All the cross drainage structures for the new carriageway shall be designed in such away so that the outer most face of railing/parapet shall be in line with the out most edge of shoulder.

ii) The existing culverts shall be extended to match the new road crosssections.

iii) The adequacy of the vent size for all culverts/bridges shall be ascertained throughdetailedhydrologicalsurveysandfinalizedinconsultationwiththeIC/ProjectCompany. The highest flood level/maximum supply level shall be properly assessed after collecting flood histories form local authorities/interviews with locals/irrigation authorities.

iv) For drainage purpose the new /to be re constructed box culverts of minimum span 2.0 m shall be provided.

v) Suitable river training works, bank protection and embankment protection worksensuringsafetyofbridgestructureanditsapproachesagainstdamagebyfloodwater/rainwatershallbeprovided.

The cross drainage plan of the highway shall be finalized in consultation with IC/Project Company and if required additional culverts shall be provided.

Cross-section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross-sections given in section 7oftheManual.

9.2.1Allbridgesshallbe high-level bridges.

9.2.2 All bridges shall be designed to carry utility services

9.3 Culverts

9.3.2 Overall width of all culvert shall be equal to the roadway width of the approaches as per TCS at that particular location.

Proposed Culvert:

Sr. No.	Chainage (m)	Type	Span X Depth
1	17044	HPC	1.20 X D NP-4
2	17277	HPC	1.20 X D NP-4
3	17384	Box culvert	3 X 3
4	17881	Box culvert	2 X 2
5	20505	HPC	1.20 X D NP-4

6	21739	Box culvert	2X2
7	23327	Box culvert	2X2
8	23423	HPC	1.20 X D NP-4
9	24660	HPC	1.20 X D NP-4
10	29750	HPC	1.20 X D NP-4
11	30715	HPC	1.20 X D NP-4

9.4 Widening of existing culverts-Nil

9.4.2 Repairs/replacements ofrailing/parapets, flooring and protection works of the existingculverts-Nil

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

10. Bridges (Major & Minor)

S/N	Location inm	Foundation	Remarks	Span Arrangement
1	19565	Open	Nala	1x10+1X40+1X20
2	19965	Open	Nala	1X20+1X35
3	24970	Open	Nala	1X25+1X50+1X25

Remarks: Total scope was 225m out of which two bridges at km 19+965 & km 24+970 are on the verge of completion**.**

10.1 Existing bridges to be Re-constructed

The bridges at the following locations shall be constructed as new Structures:-

S/N	Location in m	Super structure	Foundation	Remarks	Span Arrangement	Remarks
1	19565	PSC	Open	Nala	1x10+1X40+1X20	Existing bridge

Remarks: For Km 24+970, open foundation bridge of single span steel superstructure (64.50m) has been constructed upto the level of sub-structure. Steel super structure has to be constructed by the EPC contractor. Payment for super structure of the bridge work shall be made on pro rata basis for a length of 64.50 m out of total scope length of 225m.

Note:Extra widening shall be provided over structures falling on curves with radius less than300m.

10.1.1 Additional new bridges

New bridges at the following locations on the Project Highway shall be constructed.

S/N	Location in m	Superstructure	Foundation	Remarks	SpanArrangement	Remarks
Nil						

Note:Extra widening shall be provided over structures falling on curves with radius less than300m.

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

S.No.	LocationatKm	Remarks
Nil		

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

S.No.	LocationatKm	Remarks
Nil		

10.1.4 Drainage system for bridge decks

An effective drainage system for bridgedecks shall be provided as specified in paragraph 7.21oftheManual

10.1.5 Structures in marine environment-Nil

10.1.6 Rail-road bridges-Nil

10.1.7 Roadover-bridges-Nil

10.1.8 Roadunder-bridges:-Nil

10.1.9 Grade separated structures-Nil

10.1.10 Vehicular Underpass-Nil

11 TRAFFIC CONTROL DEVICES AND ROAD SAFETY WORKS

11.1 General

Trafficcontroldevicesandroadsafetyworksshallbeprovidedinaccordancewith Section9oftheManual.
Specificationsofthereflectivesheeting[Refertoparagraph9.3oftheManualandspecify]

Traffic signs and pavements markings shall include roadside signs, overhead signs, curveamounted signs and road marking along the Project Highway. The design and marking forthe project Highway shall be as per design standards indicated in **Schedule—D** and the location for various treatments shall be finalized in consultation with the Independent Consultantand Project Company.

The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, directional arrows, diagonal/chevron markings, and Zebra crossings at parking areas.

PCC kerbs (duly painted) approximately 460 RM (minimum) shall be provided by EPC Contractor in busbays and Islands.

TrafficSigns

(i) A complete range of permanent retro-reflective trafficsigns as per the requirements defined in but not limited to the FPR, for the safe and efficient movement oft raffic.These sign are to be of regulatory, warning and informatory types and placed on the road side except at the start and end of the project road and start and end of two bypasses where overhead directional and lane designation signs shall be mounted on the steels portals.

(ii) Temporary traffic and construction signs are to be provided during construction and maintenance operations for traffic diversion and pedestrian safety.

(iii)

11.2 Pavement Marking

I. Retro-reflective thermoplastic paint is proposed for use.
The road markings shall be applied to lane lines, road center lines, edge lines, continuity line, stop lines, give way lines, diagonal/chevron markings, Zebra crossings and at parking areas.

II. Delineators bollards and other safety devices shall be provided on entire project Highway and other locations as directed by NHIDCL.

III. All signs shall be the reflectorized type with high intensity retro-reflective sheeting conforming to ASTMD 4956-01,type VIIIand/or typeIX of micro prismatic type. All sign boards of size more than 1.2m and less than 0.9m shall be provided at the locations finalized in consultation withNHIDCL.

IV. Cautionary signboards (900mmEquilateralTriangle), stop sign(900mm Octagonal)mandatory signboards(600mmdia), Village name boards(600X900mm),Hazard Plate(300X900mm), chevron signboard(600X750mm),Facility information sign(600X800mm), Advance direction sign (1800X1200mm), Place identification sign (1200X900mm) shall be provided by the Construction Contractor with suitable interval in consultation with NHIDCL.

The minimum quantity of Traffic signages and pavement marking are tabulated here

Sr.No.	Traffic Signages, Road Marking and other appurtenances	unit	Quantity
1	90cm equilateral triangle	each	12
2	60cm equilateral triangle	each	30
3	60cm circular	each	33

4	80mmx60mm rectangular	each	22
5	60cmx45cm rectangular	each	28
6	60cmx60cm square	each	30
7	Direction and Place Identification signs upto 0.9sqm size board.	Sqm	7.5
8	Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass	Sqm	4125
9	5th kilometrestone(precast)	each	
10	Ordinary Kilometer stone(Precast)	each	3
11	Hectometer stone(Precast)	each	13
12	Road Delineators	each	65
13	Boundary pillar	each	15
14	Street Furniture	each	180

12 ROADSIDE FURNITURE

12.1 Roadside furniture shall be provided in accordance with the provisions of Section11 of the manual.

12.2 Overhead trafficsigns: location and size

[Refer to paragraph 11.5 of the Manual and provide details]

The overheadsigns shall be the reflectorized type with high intensity retro-reflectivesheeting 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 instillation shall be as per relevant clauses of MoRTH specifications. Over headsign shall be installed ahead of major intersections and urban areas as per detailed design requirements.

SlNo.	Location(km)	Size	Remarks
NIL			

13 COMPULSORY AFFORESTATION

[Refer to paragraph 12.1 of the Manual and specify the number of trees which are required to be planted by the Contractor as compensatory afforestation.] Minimum2600 nos .trees are required to be planted.

14 HAZARDOUS LOCATIONS

Metal Beam crash barrier length of minimum 3000 m (single runner, heavy duty and W-shape) shall be provided at the locations of bridge approaches, sheep valley side and 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.

15 SPECIAL REQUIREMENTS FOR HILLROADS

15.1 In accordance with section 13 of the manual (from IRC:SP 73-2015), (IRC:SP 48-1998) and recommended practices for treatment of embankment and road side slopes for erosion control (First edition) IRC:56-2011 and relevant IRC Code.

15.2 SLOPE PROTECTION

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

The minimum quantity of protection works may be taken as below.

15.2.1 Land Slide Clearance in soil: Clearance of landslides in soil, ordinary rock and rock disposal of the same on the valleyside/selected disposal side.

Sr. No.	Landslide Location		Disaster Type	Soil/Rock Condition	Landslide Size	
	Start	End			Length	Width
1	22215	22325	Sinking Portion	Bed Rock	110	60

15.3 Mitigation measure adopted in above location

Sr. No.	Description	Unit	Quantity
1	Seeding and Mulching(Soil Cut Slope)	sqm	35345
2	Vegetation Mat(Steep Slope)	sqm	1600.00
3	Crib Work(F300)	sqm	200.00
4	Crib Work(F500)	sqm	200.00
5	Ground water Drainage Work	meter	590.00
6	Anchor Work	Rm	800.00
7	Rock-bolt Work	Rm	700.00
8	Turfing with Sods	sqm	25000

15.4 Dismantling of Structures

Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000metres

Nos of culvert & other cross drainage structure. Nos of retaining wall, breast wall & other protection structure - 512Nos

15.5 Dismantling of Flexible Pavements

Dismantling of flexible pavements and disposal of dismantled materials upto a lead of 1000 metres, stacking serviceable and unserviceable materials separately

Length of existing pavement- 2370m

15.6 Removal of landslide

Clearance of landslides in soil and ordinary rock and disposal of the same on the valley side.

15.7 Disposal of cut material

Disposal of cut material at designed disposal area. Spreading & Compaction of Roadway cutting and excavation from drain and foundation of other structures surplus material in layers not exceeding 300mm thickness at selected displosal location by Dozer at least four passes including construction of approach road to dumping site.

16 CHANGEOFSCOPE

The length of Structures and bridges specified herein above shall be treated as an

Approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified in this Schedule-B shall not constitute a Change of Scope, save and except any variations in the length arising out of a Change of Scope expressly undertaken in accordance with the provisions of Article13.

SCHEDULE–C

(SeeClause2.1)

PROJECTFACILITIES

1 Project Facilities

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

(a) Toll plazas;

(b) Roadside furniture;

(c) Pedestrian facilities;

(d) Landscaping and tree plantation;

(e) Truck lay-byes;

(f) Bus-bays and bus shelters;

(g) Rest areas

(h) Street lighting;

(i) Traffic aid posts;

(j) Medical aid posts;

(k) Vehicle rescue posts; and

(l) Others

2 Description of Project Facilities

Each of the Project Facilities is description below:

S.No.	ProjectFacility	Location	Design Requirements	Otheressential details

Annex-I

(Schedule-

C)PROJECTFACILITI

1 ProjectFacilities ES

The EPC Contractor shall construct the Project Facilities described in this Annex-Itoformpart of the Two-Lane Project Highway. The Project Facilities shall include:

(a) Toll plazas;

(b) Roadside furniture;

(c) Pedestrian facilities;

(d) Landscaping and tree plantation;

(e) Trucklay-byes;

(f) Bus-bays and bus shelters;

(g) Rest areas

(h) Street lighting;

(i) Traffic aid posts;

(j) Medical aid posts;

(k) Vehicle rescue posts; and

(l) Others

2 Description of Project Facilities

Each of the Project Facilities is briefly described below:

(a) Toll Plazas

Toll Plaza shall be provided at following one location in accordance with Section 10 of Manual. The pavement shall be concrete pavement, the requirements and equipment's shall be provided in accordance with Clause 10.4.9 of Manual of Standards and Specifications. The Toll Plaza complex shall be provided at the TollPlazas or at any other location along the highway in accordance with Clause10.4.20 of the Manual of Standards and Specifications.

Design Chainage	Toll Lanes
Nil	

Note: The location may be suitably modified as per the site condition and as decided by Authority/Authority Engineer.

(b) Roadside Furniture

Roadside furniture shall be provided in accordance with Section9.0 of the Manual of Standards and Specifications.

(c) Pedestrian Facilities

Pedestrian crossing Facilities shall be provided in accordancewithClause9.8/12.2ofthe2Lane / 4LaneManualof Standards and Specifications and Typical Cross Section Details provided in Appendix BI.

(d) Landscaping and Tree Plantation

Highway landscaping and tree plantation shall be provided in accordance with Section11ofthe Manual of Standards and Specifications.

(e) Truck Lay-byes- Nil

(f) Bus-bays and Bus Shelter

Bus-bays and shelters shall be provided in accordance with Clause12.6ofthe2 Lane Manual of Standards and Specifications at following locations.

S.No	Design Chainage(km)	Village	Side
1	32+500	Rabangla	Valley side

Note:*referIRCSP-73:2015

(g) Rest areas - Nil

(h) Streetl ighting

Lighting shall be provided at the following locations:

(i) Lighting shall be provided at Bus stops as per Schedule D

(i) High Mast Lighting shall be provided at all Major Junctions

(i) Traffic aid posts - Nil

5 Emergency Medical Services- Nil

Emergency medical Services shall be provided at the Toll Plazas inaccordance with Clause 12.12 ofthe2 Lane Manual of Standards and Specifications with the provisions of the Contract.

(k) Highway Patrol Unit-Nil

Highway Patrol unit shall be provided at the TollPlazas in accordance with Clause12.11 of the 2 Lane Manual of Standards and Specifications with the provisionsof the Contract.

(l) Crane Services-Nil

(m) Others: Tree Plantation for compulsory afforestation.

(n) Removal of landslide

(o) Dismantling of existing structure

SCHEDULE–D

(SeeClause2.1)

SPECIFICATIONSANDSTANDARDS

1 Construction

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

2 Design Standards

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

Manual of Standards and Specifications for Two Laning of Highways (IRC:SP:73-2015)

Annexure - I

(Schedule-D)

SPECIFICATIONS AND STANDARDS FOR CONSTRUCTION

1 Specifications and Standards

1.1 All Materials, works and construction operations shall conform to the Two lane Manual(IRC:SP:73-2015) of Specifications and Standards for Two-Laning (IRC:SP:73-2015) and MORTH Specifications for Road and Bridge Works(Fifth Revision) and IRC 56-2011Where 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:73-2015) shall be deemed to be substituted by the terms "Contractor", "Authority's Engineer" and "Agreement" respectively.

SCHEDULE-E

(SeeClauses2.1and14.2)

MAINTENANCEREQUIREMENTS

1 Maintenance Requirements

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

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

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

2 Repair/rectification of Defects and deficiencies

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

3 Other Defects and deficiencies

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

4 Extension of time limit

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

5 Emergency repairs/restoration

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

6 Daily inspection by the Contractor

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

7 Pre-monsoon inspection/Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all bridges, culverts and

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

8 Repairs on account of natural calamities

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

Annexure-I

(Schedule-E)

Repair/rectification of Defects and deficiencies

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

Nature of deficiency		Time limit for repair/ratification
Roads		
a	**Carriageway and paved Shoulders**	
I	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent Restoration within 15(fifteen)days
II	Roughness value exceeding 2,200 mm in a stretchof1km(as measured by a calibrated bump integrator)	120(one hundred and twenty)days
III	Potholes	24hours
IV	Any cracks in road surface	15(fifteen)days
V	Anydepressions,ruttingexceeding10mmin Road surface	30(thirty)days
VI	Bleeding/skidding	7(seven)days
VII	Any other defects distress on road	15(fifteen)days
VIII	Damage to pavement edges	15(fifteen)days
IX	Removal of debris, dead animals	6hours
b	**Granular earth shoulders, side slopes, drains and culverts**	
I	Variation by more than 1% in the prescribed slope of camber/cross fall (shall not be less Than the camber on the main carriageway)	7(seven)days
II	Edgedropatshouldersexceeding40mm	7(seven)days
III	Variation by more than 15% in the prescribed Slopes	30(thirty)days
IV	Rain cuts/gullies in slope	7(seven)days
V	Damage to or silting of culverts And side drains	7(seven)days
VI	Desilting of drains in urban/semi-urban areas	24hours
VII	Railing, parapets, crash barriers	7(seven)days(restore immediately If causing safety hazard
c	**Road side furniture including road sign And pavement marking**	
I	Damage to shape or position ,poor Visibility or loss of retro-reflectivity	48hours
II	Painting of km stone, railing, parapets/crash Barrier	As and when required /onceina Year
III	Damaged/missing road signs Requiring replacement	7(seven)days
IV	Damage to road markups	7(seven)days
d	**Road lighting**	
I	Any major failure of the system	24hours
II	Faults or minor failures	8hours
e	**Trees and plantation**	
I	Obstruction in a minimum head-	24hours

Nature of deficiency		Time limit for repair/ratification
	Room of 5m above carriageway or obstruction in visibility of road signs	
II	Removal of fallen trees from carriageway	4hours
III	Deterioration in health of trees and bushes	Timely watering and treatment
IV	Trees and bushes requiring replacement	30(thirty)days
V	Removal of vegetation affecting sightline And road structures	15(fifteen)days
f	**Rest Area**	
I	Cleaning of toilets	Every4hours
II	Defects in electrical, water and Sanitary installations	24hours
g	**Toll Plazas**	
h	**Other project facilities and approach roads**	
I	Damage in approach roads, pedestrian facilities, truck lay- byes, bus-bays, bus - shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts and service roads	15(fifteen)days
II	Damaged vehicles or debris on the road	4hours
III	Malfunctioning crane	4hours
BRIDGES		
a	**Superstructures**	
I	Any damage, cracks, scaling Temporary measures Permanent measures	 within48hours within15(fifteen)days or as specified by the Authority's Engineer
b	**Foundation**	
I	Scouring and/or cavitation	15(fifteen)days
c	**Piers, abutments, return walls and wingwalls**	
I	Cracks and damages including settlement and tilting, spalling, scaling	30(thirty)days
d	**Bearing(metallic) of bridges**	
I	Deformation, damages, tilting or shifting of bearings	15(fifteen)days Greasing of metallic bearings once in a year
e	**Joints**	
I	Malfunctioning of joints	15(fifteen)days
f	**Other items**	
I	Deforming of padsinelastomeric bearings	7(seven)days
II	Gathering of dirt in bearings and joints; or clogging of spouts, weep Holes and vent-holes	3(three)days
III	Damage or deterioration in kerbs, parapets, handrails and crash barriers	3(three)days (immediatelywithin24hoursifposing danger to safety)

IV	Raincuts or erosion of banks on the side slopes	7(seven)days
Nature of deficiency		**Time limit for repair/ratification**
	Of approaches	
V	Damage to wearingcoat	15(fifteen)days
VI	Damage or deterioration in Approach slabs, pitching, apron, toes, floor or guide bunds	30(thirty)days
VII	Growth of vegetation affecting the Structure or obstructing the waterway	15(fifteen)days
g	**Hill Roads**	
I	Damage to retaining wall/breast wall	7(seven)days
II	Landslides requiring clearance	12hours
III	Snow requiring clearance	24hours

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

SCHEDULE-F

(SeeClause3.1.7(a))

APPLICABLEPERMITS

1 Applicable Permits

1.1 The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

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

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

(c) License for use of explosives;

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

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

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

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

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

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

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

SCHEDULE - G

(See Clauses 7.1.1, 7.5.3 and 19.2)

FORM OF BANK GUARANTEE

Annexure-I
(See Clause 7.1.1)

Performance Security

To

_____ [name of Authority]

_____[address of Authority]

WHEREAS_____[name and address of Contractor] (hereafter called the "Contractor") has undertaken, in pursuance of Letter of Acceptance (LOA) No. Dated _ for construction of [name of the Project] (hereinafter called the"Contract")

AND WHEREAS the Contract requires the Contractor to furnish an {Performance Security/ Additional Performance Security} for due and faithful performance of its obligations, under and in accordance with the Contract, during the {Construction Period/ Defects Liability Period and Maintenance Period} in a sum of Rs….. cr. (Rupees …….…. crore) (the "**Guarantee Amount**"[1]).

AND WHEREAS we, …….. through our branch at ……

(the "**Bank**") have agreed to furnish this Bank Guarantee (hereinafter called the **"Guarantee**") by way of PerformanceSecurity.

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

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

2. A letter from the Authority, under the hand of an officer not below the rank of [Executive Director of National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Contract and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the

3. Authority and the Contractor,or any dispute

between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

4. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the

Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under thisGuarantee.

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

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

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

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

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

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

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

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

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

herebyexcluded.

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

15. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of [MoRT&H/NHAI/NHIDCL/State PWD/BRO], details of which is as under:

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

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

SIGNED, SEALED ANDDELIVERED
For and on behalf of the Bankby:
(Signature)
(Name)

(Designation) (Code Number)
(Address)

Annexure–II
(Schedule-

G)(SeeClause7.5

.3

Formf or Guarantee for Withdrawal of Retention Money

The Managing Director,
National Highways & Infrastructural Development Corporation Ltd.
PTIBuilding,3rdFloor,
4,Parliament Street
NewDelhi-110001

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "Contractor") has executed anagreement(hereinaftercalledthe"Agreement")withtheNationalHighwaysandInfrastructure Development Corporation Ltd., (hereinafter called the "Authority") for the"**Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku - Rabangla of NH-510 on EPC basis under SARDP –NE Phase 'A' in the State of Sikkim (Balanced work).**" subject to and in accordance with the provisions of the Agreement.

(B) InaccordancewithClause7.5.3oftheAgreement,theContractormaywithdrawtheretentionmoney(hereinaftercalledthe"**RetentionMoney**")afterfurnishingtotheAuthorityabankguaranteeforan amount equal to the proposed withdrawal.

(C) We,……..throughourbranchat……..(the"**Bank**")haveagreedtofurnishthisbankguarantee(hereinaftercalledthe"**Guarantee**")fortheamountofRscr.
(Rs ---------- crore)(the" **Guarantee Amount**").

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

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority beingrequiredtoproveortoshowgroundsorreasonsforitsdemandand/orforthesumspecifiedtherein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager in the National Highways Authority of India, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, not withstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

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

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

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

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

7. Not withstanding anything contained herein before, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities here under.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause12.4of the Agreement.

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

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

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

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

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

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

Signedandsealedthis…….dayof……..,20……at……..

SIGNED,SEALEDANDDELIVERED

Forandonbehalfofthebankby:(Si

gnature)

(Name)(Design

ation)(Code

Number)(Addr

ess)

Notes:

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

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

Annexure—III
(Schedule G)

(SeeClause19.

2)

Form for Guarantee for Advance Payment

The Managing Director,
National Highways& Infrastructural Development Corporation
Ltd. PTIBuilding,3rdFloor,
4,Parliament
Street
NewDelhi-
110001

WHEREAS:

(A) [name and address of contractor](hereinafter called the "**Contractor**")has executed an agreement(hereinaftercalledthe"**Agreement**")withtheNationalHighwaysandInfrastructureCorporationLtd., (herein after called the "**Authority**") for the **"Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku-Rabangla of NH-510 on EPC basis under SARDP—NE Phase 'A' in the State of Sikkim"**, subject to and in accordance with the provisions of the Agreement

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

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

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid installment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the

Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specifiedtherein.

2. A letter from the Authority, under the hand of an officer not below the rank of [General Manager in the National Highways & Infrastructure Development Corporation Limited], that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reasonwhatsoever.

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

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

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

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

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

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

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

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

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

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

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

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

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

SIGNED , SEALED AND DELIVERED

For and on behalf of the bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address).

NOTE:

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

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

SCHEDULE-H

(SeeClauses10.1.4 and19.3)

CONTRACTPRICEWEIGHTAGES

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

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

S.No	Item	Weightage in percentage to the contract Price		Stage for Payment	Percentage Weightage
1	**Roadworks including culverts, minor bridges, underpasses, overpasses, approaches toROB/RUB/ Major Bridges/ Structures (but excluding service roads)**	46.00%	A	**Widening and strengthening of Existing road**	**94.14%**
			1	Earthwork upto top of the sub-Grade	18.13%
			2	Granular work (sub base, base, shoulders)	22.83%
			3	Dense Bituminous Macadam (DBM)	17.13%
			4	Bituminous Concrete	36.05%
			5	Widening and repair of culverts	0.00%
			6	Widening and repair of minor Bridges	0.00%
			B	**B-New2-lane realignment/bypass**	**0.00%**
			1	Earthwork upto top of the sub-Grade	0.00%
			2	Granular work (sub base, base, shoulders)	0.00%
			3	Dense Bituminous Macadam (DBM)	0.00%
			4	Bituminous Concrete	0.00%
			5	CC Pavement	0.00%
			C	**C New culverts ,minor bridges, underpasses, overpasses on existing road, realignments, By passes:**	**5.86%**
			1	**Culverts**	**5.86%**
			a	Pipe culvert	2.20%
			b	RCC Box Culvert	3.66%
			2	Minor bridges	0.00%
			3	Cattle/Pedestrian underpasses	0.00%
			4	Pedestrain overpasses	0.00%
			5	**Grade separated structure**	**0.00%**
				(a)Underpasses	0.00%
				(b)Overpasses	0.00%
2	**MajorBridge**	20.93%	A	**A-Widening and repairs of Major Bridges**	0.00%

	worksandROB/RUB		1	Foundation	0.00%
			2	Sub-structure	0.00%
			3	Super-structure(including crash Barriers etc. complete)	0.00%

S.No	Item	Weightage in percentage to the contract price		Stage for Payment	Percentage Weightage
			4	Approaches(excluding Retaining wall)	
			5	Retaining Wall	
			B	**B-Widening and repair of**	0.00%
			(a)	ROB	0.00%
			(b)	RUB	0.00%
			1	Foundation	
			2	Sub-structure	
			3	Super-structure(including crash Barriers etc. complete)	
			4	Approaches(excluding Retaining wall)	
			5	Retaining Wall	
			C	**C-New Major Bridges**	**100.00%**
			1	Foundation	16.66%
			2	Sub-structure	20.70%
			3	Super-structure(including crash Barriers etc. complete)	62.64%
			4	Approaches(excluding Retaining wall)	
			5	Retaining Wall	
				D-New rail-road bridges	0.00%
				(a)ROB	0.00%
				(b)RUB	0.00%
3	**Structures (elevatedsections,reinforcedearth**	0.0%	1	Foundation	0.00%
			2	Sub-structure	0.00%
			3	Super-structure(including crash Barriers etc. complete)	0.00%
			4	Approaches(excluding Reinforced Earth Wall)	
			5	Reinforced Earth Wall	0.00%
4	**Otherworks**	33.07%	(i)	Service roads/slip road	0.00%
			(ii)	Toll Plaza	0.00%
			(iii)	Roadside drains	13.39%
			(iv)	**Roadsigns, markings, kmstones, safety device,**	
			a	Traffic Sign	0.57%
			b	Pavement marking	3.34%
			c	Crash barrier/"W"Metal Beam Crash Barrier	9.74%
			d	Boundarystone,kmstone,5th Km stone ,& hectometer stones	0.10%
			e	Traffic blinker LED Delineator, stud, reflective payment marker, tree reflector Direction and Place Identification signs upto 0.9sqm size board	0.10%

S.No	Item	Weightage in percentage to the contract price		Stage for Payment	Percentage Weightage
			g	Median Kerbs	0.00%
			h	Median filling shrub plantation & maintenance for1year	0.00%
			i	Mino rjunction	4.39%
			j	Major Junction	2.48%
			k	Overhead signboard	0.00%
			l	Painting on kerb	0.00%
			m	Footpath & Separator	0.00%
			n	Solar stud & solar blinking LED	0.00%
			o	Traffic control devices and road Safety works	0.00%
			p	Traffic diversion, Safety and traffic management during construction	1.03%
			q	Road furniture	0.67%
			r	Dismantling of Structures	1.18%
			s	Dismantling of Flexible Pavements	0.54%
			t	Site Clearance	0.48%
			u	Chute drain	2.77%
			v	LandSlide Clearance	0.67%
			(v)	**Project facilities**	
			a	Bus bays	0.0%
			b	Truck lay–byes	0.00%
			c	Rest areas	0.38%
			d	Others	0.19%
			(vi)	**Repairs to existing bridges/structures**	
			a	Providing wearing coat	0.00%
			b	Replacement of bearing joints	0.00%
			c	Providing crash barriers	0.00%
			d	Other items	0.00%
			(vii)	**Roadside plantation**	
			a	Road side plantation & medium Plantation.	0.00%
			b	Plantation (Vetiver, Hydroseeding, Mulching & Turfineetc.) for slope protection on exposed hillslopes as slide Mitigation measure.	0.96%
			(viii)	**Protection works**	
			a	Breast wall	8.01%

S.No	Item	Weightage in percentage to the contract price		Stage f or Payment	Percentage Weightage
			b	Retaining wall	0
			c	Plum Concrete Wall	15.65%
			d	Gabion wall	6.06%
			e	Toe wall	0
			f	Reinforce Anchored wall	2.66%
			g	Seeding and Mulching(Soil Cut Slope)	4.20%
			h	Vegetation Mat(Steep Slope)	0.86%
			i	Crib Work(F300)	0.57%
			j	Crib Work(F500)	0.96%
			k	Groundwater Drainage Work	5.35%
			l	Anchor Work	12.13%
			m	Rock-bolt Work	0.57%
			n	Protection works of guide bund including construction of flexible aprons, boulder pitchingand Filter mediaon slopes	0.00%
			(ix)	**Safety and traffic management during construction**	0.00%

Remarks:

Payment shall be made on Percentage Weightage visavis Overall Project.

1.3 Procedure of estimating the value of work done

1.3.1 Road works including approaches to minor bridges, Major Bridges and Structures (excluding service roads).

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

Table1.3.1

Stage of Payment	Payment Procedures
A-Wideningand strengthening	Unit of measurement is linear length . Payment of each stage shall be made on pro rata basis on completion of a stage in a length of not less than 10(ten) percent of the total length.@
(1)Earth work upto top of The sub-grade	
(2)Granular work (sub-base, base, shoulders	
(3) Dense Bituminous Macadam(DBM)	
(4)Bituminous Concrete	
(5)Widening and repair of culverts	CostofFivecompletedculvertsshallbedetermined proratawithrespecttothetotalnumberbemadeonthecompletionofFive Culverts

(6) Widening and repair of minor bridges	Cost of each minor bridge shall be determined on pro rata basis with respect to the total linear length of the bridges. Payment shall be made on The completion of a minor bridge

StageofPayment	PaymentProcedures
B- New2-lanerealignment,by pass	
(1)Earthwork upto top of The sub-grade	Unit of measurement is linear length . Payment of each stage shall be made on prorate basis on completion of a stage in full length or 5(five) km length
(2)Granular work(sub-base, base ,shoulders)	
(3)Dense Bituminous Macadam(DBM)	
(4)Bituminous Concrete	
(5)CC Pavement	
C-New culverts , minor bridges underpasses, overpasses on existing road, realignments , bypasses:	
(1)Culverts	Cost of each culverts shall be determined on prorate basis with respect to the total number of culverts. Payment shall be made on the Completion of five culverts
(a)Pipe Culvert	
(b)RCC Box culvert	
(2)Minor bridges	Cost of each minor bridge shall be determined onproratabasiswithrespecttothetotallinearlength ofthebridges.Paymentshallbemadeon The completion of a minor bridge
(3)Cattle/Pedestrian underpasses	Cost of each cattle/pedestrian underpass shall be determined on pro rata basis with respect to the total number of cattle / pedestrian underpasses. Payment shall be made on the completion of the number of cattle/ pedestrian nunder passes specified below: Total no. Stage for Payment:(i)1to5-oncompletionof all,(ii)6ormore- on completion of Five
(4)Pedestrian Overpasses	Same as for(3)above
(5)Grade separated structures	
(a)Underpasses	Same as for (3)above
(b)Overpasses	Same as for(3)above

@. For example, if the total length of bituminous work to be done is 100km, the cost per km of bituminous work shall be determined as follows:
Cost per km =Px weightage for road work x weightage for bituminous work x (1/L)Where P=Contract Price
L=Total length in km
Similarly, the rates per km for stages (1),(2)and(4)aboveshallbeworkedout.

1.3.2 Major Bridge works and ROB/RUB.

Procedure for estimating the value of Major Bridge works and of ROB/RUB shall be as stated in table1.3.2.

Table1.3.2

Stage of Payment	Payment Procedures
A-Widening and repairs of Major Bridges	Cost of each MajorBridge (widening and repairs) shall be determined on proratabasis with respect to the total linear length (m) of the Major Bridges(widening and repairs) Payment shall be made on completion of each stage of a Major Bridge as per the weightage given.
Foundation: On completion of the foundation work including foundations For wing and return walls	
Sub-structure: On completion of abutments, piers upto the abutment/piercap	
Super -structure : On completion of thesuper structure in all respects including hand rails/crash barriers, wing walls return walls, guide bunds, if any, tests on completion etc., bridge complete in all Respects and fit for use.	
Approaches: On completion of approaches (excluding retaining wall ifany),filter media etc. and complete in all respects & fit for use.	
Retaining Wall: On completion of Retaining Wall if any in all respects.	
B-widening and repairs of	
(a)ROB	
(b)RUB	
Foundation: On completion of the foundation work including foundations Forwing and returnwalls	Cost of each ROB/RUB(wideningandrepairsshallbedeterminedonproratabasiswithrespect to total linear (m) of the ROB/RUB(widening and repairs). Payment shall be made on completion of an ROB/RUB as per weightage given
Sub-structure: On completion of abutments, piers upto the abutment/piercap	
Super -structure: On completion of the super structure in all respects including hand rails/crash barriers, wing walls return walls, guide bunds, if any, tests on completion etc., bridge complete in all Respects and fitfor use.	
Approaches: On completion of approaches (excluding reinforced earthwall ifany), filter media etc. and complete in all respects & fit for use.	
Reinforced earth wall: On completion of Retaining Wall if any in all respects.	
C-New Major Bridges	
Ch19565 Span Arrangement 1X10+1X40+1X20	

Stage of Payment	Payment Procedures
(1) Foundation: On completion of the foundation work including foundations for wing and return walls	Cost of each Major Bridge (70m) shall be determined on prorate basis with respect to the total linear length(m) 0f the MajorBridges i.e., 225 m. Payment shall be made on completion of each stage of a Major Bridge as per the weightage given.
(2)Sub-structure: On completion of abutments, piers uptothe abutment/piercap	
(3)Super-structure: On completion of the superstructure in all respects including hand rails/crashbarriers, wingwalls, returnwalls, guidebunds, ifany, tests on completionetc., completeinall Respects and fit foruse	
(4)Approaches: On completion of approaches (excluding retaining wall ifany),filter media etc. nd complete in all respects &fit for use.	
(5)Retaining Wall: On completion of Retaining Wall if any in all respects.	
Ch24970SpanArrangement 1X64.50m (Single span steel superstructure)	
	Cost of each Major Bridge (64.50m) shall be determined on prorate basis with respect to the total linear length(m) 0f the Major Bridgesi.e. 225m.Payment shall be made on completion ofeach stage of a

Stage of Payment	Payment Procedures
(3)Super-structure:Oncompletionofthesuperstructureinallrespectsincludinghand rails/crashbarriers,wingwalls,returnwalls, guidebunds,ifany,testsoncompletionetc.,completeinall Respects and fit foruse	Major Bridge as per the weightage given.
(4)Approaches: On completion of approaches (excluding retaining wall ifany),filter media etc. and complete in all respects & fit for use.	
(5)Retaining Wall: On completion of Retaining Wallif any inall respects.	
D-NewRail-road bridges	
(a)ROB	Cost of each ROB/ RUB shall be determined on pro rata basis with respect to the linear length (m) of the ROB/RUB. Payment shall be made on completion of an ROB/RUBas per the weightage given.
(b)RUB	
(1) Foundation: On completion of the foundation work including foundations For wing and return walls	
(2)Sub-structure: On completion of abutments, piers upto the abutment/piercap	
(3)Super-structure: On completion of the super structure in all respects including hand rails/crash barriers, wing walls return walls, guide bunds, if any, tests on completion etc., bridge complete in all Respects and fit foruse.	
(4)Approaches: On completion of approaches (excluding reinforced earth wall if any), filter media etc .and complete in all respects & fit for use.	
(5)Reinforced earth wall:On completion Of Retaining Wall if any in all respects.	

1.3.3 Structures

Procedure for estimating the value of structure work shall be as stated in 1.3.3.

Stage of Payment		Payment Procedures
1	Foundation: On completion of the foundation works including Foundations for wing and return walls	Cost of each structure shall be Determined on prorate basis in respect To the total linear length(m)of all the structure. Payment shallbe made on Completion of each stage of a structure As per the weightage given.
2	Sub-structure: On completion of abutments, piers up to the Abutment / piercap	
3	Super-structure: On completion ofthe Structure along with superstructure, including handrails/ crashbarriers, wingwalls, returnwalls, tests on completionetc., elevated structure completein All respects and fit for use.	
4	Approaches : On completion of approaches (excluding reinforcedearth wall if any), filter media etc. and complete in al lrespects &fit for use.	
5	Reinforced earth work	Payment shall be made on prorata Basis on completion of 25(twentyfive) percent of total area as per the weightage given.

1.3.4 Other works.

Procedure for estimating the value of other works done shall be as stated in table1.3.4.

Stage of Payment		Payment Procedures
	Other Engineering Works	
(i)	Service roads/ sliproad	Unit of measurement is linear length in km. Cost per km shall be determined on prorate basis with respect to the total length of the serviceroads/sliproads. Payment shall be made for completed service roads/slip roads in a length of not lessthan20(twenty)percent of the total Length of service roads/slip roads. as per the weightage given.
(ii)	TollPlaza	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 as per the weightage given.
(iii)	Roadsidedrains	Unit of measurement is linear length in km. Payment shall be made on prorata basis on completion of a stage in a length of not lessthan10%(ten Percent of total length as per the weightage given.
(iv)	Road signs, markings, kmstones, Safety device,	
a	Traffic Sign	Payment shall be made for completed items.
b	Pavement marking	
c	Crashbarrier/"W"Metal Beam Crash Barrier	
d	Boundarystone,kmstone,5thkm stone,& hectometrestones	
e	Trafficblinker LED Delineator, stud, Reflective payment marker, tree	

	Stage of Payment	Payment Procedures
Reflector, Direction and Place Identification signs upto0.9sqm sizeboard.		
		Unit of measurement is linear length.Payment shall be made on proratabasis on completion of a stage in a length of not less than10(ten)percent Of the total length asper the weightage given.
g	Median Kerbs	
h	Median filling shrub plantation& Maintenance for1year	
i	Minor junction	Payment shall be made for completed Items as per the weightage given.
j	Major Junction	Payment shall be made for completed Items as per the weightage given.
k	Overhead signboard	Unit of measurement is linear length. Payment shall be made on prorate basis on completion of a stage in a length of not less than 10 (ten) percent of the total length as per the weightage given.
l	Painting on kerb	
m	Footpath &Separator	
n	Solarstud & solarblinking LED	
o	Traffic control devicesand road safety works	
p	Traffic diversion, Safety and traffic Management during construction	
q	Road furniture	
r	Dismantling of Structures	
s	Dismantling of Flexible Pavements	
t	Site Clearance	
u	Chute drain	
v	LandSlide Clearance	
(v)	**Project facilities**	
a	Bus bays	Paymentshallbemadeforcompletedite ms as per theweightagegiven.
b	Trucklay- byes	
c	Rest areas	
d	Others	
(vi)	**Repairs to existing bridges/structures**	
a	Providing wearing coat	Payment shall be made for completed items as per the weightage given.
b	Replacement of bearing joints	
c	Providing crash barriers	
d	Other items	
(vii)	**Road side plantation**	
a	Road side plantation &medium Plantation.	Unit of measurement is linear length.Payment shall be made on proratabasis on completion of a stage In a length of not less than 10 (ten) percent of the total length as per the weightage given.
b	Plantation (Vetiver, Hydro seeding, Mulching & Turfineetc.)for slope protection on exposed hillslopes as Slide mitigation measure.	
(viii)	**Protection works**	
a	Breast wall	Unit of measurement is linear length.Payment shall be made on prorate basis on completion of a stage
b	Retaining wall	
c	Plum concrete Wall	
d	Gabionwall	

e	Toe wall	in a length of not less than 10 (ten) percent of the total length as per the weightage given.
f	Reinforce Anchored wall	
g	Seedingand Mulching(Soil CutSlope)	

	Stage of Payment	PaymentProcedures
h	VegetationMat(SteepSlope)	
i	CribWork(F300)	
j	CribWork(F500)	
k	GroundwaterDrainageWork	
l	AnchorWork	
m	Rock-boltWork	
n	Protection works of guide bund including construction of flexible aprons, boulder pitching and filter Mediaon slopes	
(ix)	**Safety and traffic management during construction**	Payment shall be made on prorate basis every six months as per the weightage given.

SCHEDULE-I

(SeeClause10.2.4)

DRAWINGS

1 Drawings

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

2 Additional Drawings

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

Annexure-I

(Schedule-I)

ListofDrawings

(a) Working Drawings of all the components/elements of the Project Highway as determined by Authority Engineer/ NHIDCL,and

(b) As-built drawings for the Project Highway components/elements as determined by AuthorityEngineer/NHIDCL.As-built drawings shall be duly certified by Authority Engineer.

Abroad list of the drawings of the various components/elements of the Project Highway and project facilities required to be submitted by the Contractor is given below:

a) <u>Road works</u>

1. IndexMap
2. Alignment Plan ,Drawing of Horizontal Alignment, Verticalprofile,
3. Typical Cross Section
4. Miscellaneous Drawings

(i) Road Signs& Road Delineators-(3Sheets)

(ii) Road/Kerb Markings

(iii) Typical Details of Distance Stone, Boundary Stone & GuardPost

(iv) Typical Details of Overhead Sign

(v) Typical Details of Drain

(vi) Typical Details of Kerb, Kerb with Channel Footpath and Pedestrian GuardRail

(vii) Typical Details of Metal Beam Crash Barrier

(viii) Attainment of Super-elevation

SCHEDULE-J

(SeeClause10.3.2)

PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth inthis 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

2.1 Project Milestone-I shall occur on the date falling on the 60th (Sixty days) day from the Appointed Date (the"**ProjectMilestone-I**").

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

3 Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 180th (One hundred and eighty) day from the Appointed Date(the"**ProjectMilestone-II**").

3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued withconstructionoftheProjectHighwayandsubmittedtotheAuthoritydulyandvalidlyprepared Stage Payment Statements for an amount not less than 40% (Fourty per cent) of the Contract Price.

4 Project Milestone-III

4.1 Project Milestone – III shall occur on the date falling on the 300th (Three hundred) day from the Appointed Date (the " **Project Milestone-III**").

4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project Highway and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 80% (Eighty percent) of the Contract Price.

5 Scheduled Completion Date

5.1 The Scheduled Completion Date shall occur on the 365th(Three hundred and sixty five) days from the Appointed Date.

5.2 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

(SeeClause12.1.2)

Tests on Completion

1 Schedule for Tests

1.1 The Contractor shall, no laterthan30(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.

1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project Highway to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall there upon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article12 and this Schedule-K.

2 Tests

2.1 Visual and physical test: The Authority's Engineer shall conduct a visual and physical check of construction to determine that all works and equipment forming part thereof conform to the provisions of this Agreement. The physical tests shall include all the tests required for quality control or as decided in consultation with the Authority's Engineer at the time of physical tests as per relevant IRC code Manual.

2.2 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 2,000(two thousand) mm for each kilometer.

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

2.4 Othertests: The Authority's Engineer may require the Contractor to carry out orc ause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project Highway with Specifications and Standards.

2.5 Environmental audit: The Authority's Engineer shall carry outa check to determine conformity of the Project Highway with the environmental Requirements set forth in Applicable Laws and Applicable Permits.

2.6 SafetyAudit: TheAuthority'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 theA uthority.

4 Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue the Completion Certificate inaccordance with the provisions of Article12.

SCHEDULE-L

(SeeClause12.2and12.4)

PROVISIONAL CERTIFICATE

1 I, …….. (Name of the Authority's Engineer), acting as the Authority's Engineer, underandinG accordance with the Agreement dated……(the "Agreement"),for **"Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku - Rabangla of NH-510 on EPC basis under SARDP –NE Phase 'A' in the State of Sikkim (balanced work)"** 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 undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Highway or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30(thirty) days hereof. These minor works have also been specified in the aforesaid Punch List.

3 In view of the foregoing, I am satisfied that the **"Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku - Rabangla of NH-510 on EPC basis under SARDP –NE Phase 'A' in the State of Sikkim (balanced work)"**,can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Highway is hereby provisionally declared fit for entry into operation on this the……dayof……..20…...

ACCEPTED,SIGNED,SEALED	SIGNED,SEALED AND
ANDDELIVERED	DELIVERED
Forandonbehalf of	Forandonbehalfof
CONTRACTORby:	AUTHORITYENGINEERby:
(Signature)	(Signature)

COMPLETION CERTIFICATE

1 I,……(Name ofthe Authority's Engineer), acting as theAuthority's Engineer, under and in accordance with theAgreement dated……(the"Agreement"),for **"Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku - Rabangla of NH-510 on EPC basis under SARDP – NEPhase 'A' in the State of Sikkim (balanced work)"** 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 Iam satisfied that the Project Highway can be safely and reliably placed in service of the Users thereof.

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

SIGNED,SEALEDANDDELIVERED
ForandonbehalfoftheAuthority'sEngineerby:
(Signature)

(Name)

(Designation)

(Address)

SCHEDULE-M

(SeeClauses14.6,15.2and19.7)

PAYMENTREDUCTIONFORNON-COMPLIANCE

1 Payment reduction for non-compliance with the Maintenance Requirements

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

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

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

2 Percentage reductions in lumpsum payments

2.1 The following percentages shall govern the payment reduction:

SlNo	Item/Defect/Deficiency	Percentage (%)
a	**Carriageway/Pavement**	
I	Potholes, cracks, other surface defects	15
II	Repair ofedges, rutting	5
b	**Road, Embankment, Cuttings, Shoulders**	
I	Edge drop, inadequate crossfall, undulations, settlement, potholes, ponding, obstructions	10
II	Deficient slopes, raincuts, disturbed pitching, vegetation growth, Pruning of trees	5
c	**Bridges and Culverts**	
I	Desilting ,Cleaning ,vegetation ,growth,damaged pitching, flooring, parapets, wearing course, footpaths, any damage to foundations	20
II	Any Defects in superstructures ,bearings and sub-structures	10
III	Painting, repairs/replacement kerbs, railings, parapets, guideposts/ crashbarriers.	5
d	**Roadside drains**	
I	Cleaning and repair Of drains	5
e	**Road Furniture**	
I	Cleaning ,painting, replacement of road signs, delineators, road markings,200m/km/5thkmstones.	5
f	**Miscellaneous Items**	
I	Removal of dead Animals ,broken down/accidented vehicles, fallen trees,road blockades or malFunctioning of mobile crane	10
II	Any other Defects in accordance withparagraph1.	5
g	**Defects in Other Project Facilities**	5

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

R=P/IOOxMxL1/L

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

M=Monthlylump-sum payment in a ccordance with the Bid

L1=Non-complying Length

L=Total length of theroad

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 kilometre, the non-conforming length shall be taken as one kilometre.

SCHEDULE-N

(SeeClause18.1.1)

SELECTIONOFAUTHORITY'SENGINEER

1 Selection of Authority's Engineer

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

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

2 Terms of Reference

The Terms of Reference for the Authority's Engineer (the "TOR") shall substantially conform with Annex1 to this ScheduleN.

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.

Annexure–I

(Schedule-N)

TERMSOFREFERENCEFORAUTHORITY'SENGINEER

1 Scope

1.1 TheseTermsofReference(the"TOR")fortheAuthority'sEngineerarebeingspecifiedpursuanttot heEPCAgreementdated.....(the"A**greement")**,whichhasbeenenteredinto between the National Highways and Infrastructure Development Corporation Ltd. (the "**Authority**")and.....(the"**Contractor**") for the **"Construction of 2-lane with paved shoulder including geometric improvement from Km 16.00 to Km 32.50 of stretch Tarku –Rabangla of NH-510 on EPC basis under SARDP–NE Phase'A' in the State of Sikkim (balanced work)."**, on Engineering, Procurement, Construction(EPC) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project Highway.

2 Definitions and interpretation

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

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shallbe deemed to be references to Paragraph of thisTOR.

2.3 The rules of interpretation stated in Clauses1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, tot ThisTOR.

3. General

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner,
consistentwiththehigheststandardsofprofessionalintegrityandGoodIndustryPractice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordancewiththeprovisionsofthisAgreement,butsubjecttoobtainingpriorwrittenappro valoftheAuthoritybeforedetermining:

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

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

1.2 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause18.2.

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

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

4 ConstructionPeriod

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

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

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

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

4.5 TheAuthority'sEngineershallgrantwrittenapprovaltotheContractor,wherenecessary,for

interruption and diversion of the flow of traffic in the existing lane(s) of the Project Highway for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

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

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

4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer mayrequire.

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

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

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

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

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

4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that

completion of the Project Highway is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress,andtheperiodwithinwhichtheProjectCompletionDateshallbeachieved.Upon receipt of a report from the Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuant to Clause12.2.

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

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

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

5. MaintenancePeriod

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

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

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

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

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

6 Determination of costs andtime

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

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

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

7. Payments

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

7.2 Authority's Engineer shall-

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

(b) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause19.10.

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

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

8. Other duties andfunctions

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

9 Miscellaneous

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

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

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

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

9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of itsoccurrence.

SCHEDULE-O

(*See Clauses 19.4.1, 19.6.1, and 19.8.1***)**

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 19.3.1 subsequent to the last claim;

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

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

(d) Amounts reflecting adjustment in price, if any, for (c) above in accordance with the provisions of Clause 13.2.3(a);

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

(f) Deductions:

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

(ii) Any amount towards deduction of taxes; and

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

(g) Net claim: (e) – (f)(iii);

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

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

(ii) For Change of Scope Orders, and

(iii) Taxes deducted

2. Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

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

(b) The deductions for maintenance work not done;

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

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

(e) Amount towards deduction of taxes

3. Contractor's claim for Damages

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

SCHEDULE-P

(SeeClause20.1)

INSURANCE

1. Insurance during Construction Period

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

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

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

1.2 The insurance under paragraph 1.1 (a) and (b) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph1.1 other than risks which are not insurable at commercial terms.

2. Insurance for Contractor's Defects Liability

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

3. Insurance against injury to persons and damage to property

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

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

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

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

the Works.

4. Insurance to be in joint names

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

SCHEDULE - Q
(See Clause 14.10)

Tests on Completion of Maintenance Period

1. **Riding Quality test:**

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

2. Visual and physical test:

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

SCHEDULE - R
(See Clause 14.10)

Taking Over Certificate

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

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

SIGNED, SEALED AND DELIVERED

(Signature)

(Name and designation of Authority's Representative)

(Address)