

Schedule B

Development of the Project Highway

1 Development of the Project Highway

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

2 Rehabilitation and augmentation

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

3 Specifications and Standards

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

Annex – I**(Schedule-B)****Description of Two laning& Intermediate laning and strengthening****1. Widening of the Existing Highway**

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

1.2 Width of carriageway

- 1.2.1 The carriageway in hill section shall be Two lane (7 m) wide as per IRC: SP:48-1998. In plain terrain the carriageway shall be kept limited to intermediate lane (5.5 m) to fit within ROW.

Sl No	Design Chainage from	Design Chainage to	Carriageway	Earthen Shoulder	Types Of Cross Sections
1	0	600	5.5	1.5	Built-up with 1m Covered drain
2	600	5100	5.5	2	Open
3	5100	5300	5.5	1.5	Built-up with 1m Covered drain
4	5300	6700	5.5	2	Open
5	6700	6900	5.5	1.5	Built-up with 1m Covered drain
6	6900	8600	5.5	2	Open
7	8600	8800	5.5	1.5	Built-up with 1m Covered drain
8	8800	15510	5.5	2	Open
9	15510	16070	7	0.9	Guard Wall on Valley Side & Drain on Hill Side (at places)
10	16070	16160	7	0.9	Guard Wall on Both Side
11	16160	16300	7	0.9	Guard Wall on Valley Side & Drain on Hill Side (at places)
12	16300	16400	7	0.9	Guard Wall on Both Side
13	16400	16570	7	0.9	Drain on Both Side (at places)
14	16570	16739	7	0.9	Guard Wall on Valley Side & Drain on Hill Side (at places)
15	16739	17042	7	0.9	Guard Wall on Valley Side & Breast wall on hill side

- 1.2.2 Except as otherwise provided in this Agreement, the width of the carriageway shall confirm to paragraph 1.2.1.

1.2.3 Design Chainage corresponding to Existing Chainage

Kilometer stones were not found in entire length of the project highway. Therefore there is no marking of existing chainage. During topography survey with Total

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

Station, observations could not be made to these km stones and after finalization of alignment by improving the existing geometry the chainage has been referred to “Design Chainage”. Therefore, only design chainage is available for reference.

2. Geometric Design and General Features

2.1 General

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

2.2 Design Speed

The design speed has been provided below for each stretch.

SI No	Chainage km Location	Minimum Design Speed in kmph	Curve Type
1	27.206	20	RIGHT
2	104.899	80	RIGHT
3	200.7	40	RIGHT
4	307.378	30	LEFT
5	389.206	50	RIGHT
6	530.428	50	LEFT
7	728.666	80	LEFT
8	995.855	80	LEFT
9	1150.559	80	LEFT
10	1417.782	40	RIGHT
11	1510.696	40	RIGHT
12	1623.277	30	LEFT
13	1693.872	65	LEFT
14	1748.336	65	RIGHT
15	1872.008	65	RIGHT
16	2010.806	30	RIGHT
17	2096.349	40	LEFT
18	2169.418	25	RIGHT
19	2316.127	50	LEFT
20	2386.042	50	RIGHT
21	2472.936	30	LEFT
22	2579.022	20	RIGHT
23	2651.927	20	LEFT
24	2700.997	20	RIGHT
25	2738.53	25	LEFT
26	2911.1	80	RIGHT
27	3001.862	20	LEFT
28	3112.982	20	LEFT
29	3161.706	20	RIGHT
30	3275.984	25	RIGHT
31	3350.803	80	RIGHT
32	3425.105	80	LEFT
33	3530.58	80	LEFT
34	3609.658	80	RIGHT
35	3780.148	80	RIGHT
36	4002.443	80	LEFT
37	4144.763	80	RIGHT

38	4284.871	80	LEFT
39	4392.318	50	RIGHT
40	4639.605	80	LEFT
41	4967.402	80	LEFT
42	5321.914	50	RIGHT
43	5535.863	50	LEFT
44	5692.803	50	LEFT
45	5765.031	50	LEFT
46	5830.164	40	RIGHT
47	5932.746	40	RIGHT
48	6033.35	50	RIGHT
49	6129.516	30	LEFT
50	6243.787	80	LEFT
51	6366.151	65	RIGHT
52	6529.65	40	LEFT
53	6653.128	50	RIGHT
54	6859.991	30	RIGHT
55	7108.124	80	LEFT
56	7401.567	50	LEFT
57	7555.431	80	LEFT
58	7760.832	35	RIGHT
59	7916.845	50	LEFT
60	8072.784	80	RIGHT
61	8268.084	80	LEFT
62	8637.453	50	RIGHT
63	8730.501	50	LEFT
64	8766.35	40	RIGHT
65	8830.297	40	LEFT
66	8942.393	40	RIGHT
67	9053.022	40	LEFT
68	9190.048	65	LEFT
69	9454.244	80	RIGHT
70	9507.446	80	RIGHT
71	9588.034	80	LEFT
72	9648.204	80	RIGHT
73	9750.998	50	RIGHT
74	9885.242	80	RIGHT
75	10503.151	25	LEFT
76	10539.974	30	RIGHT
77	10688.507	30	RIGHT
78	10737.461	30	LEFT
79	10825.085	40	RIGHT
80	10876.306	40	RIGHT
81	10923.875	40	RIGHT
82	11158.629	40	LEFT
83	11197.155	25	RIGHT
84	11241.165	25	RIGHT
85	11337.155	80	RIGHT
86	11456.087	80	RIGHT
87	11615.337	40	RIGHT

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

88	11706.024	40	LEFT
89	11896.567	40	LEFT
90	11999.806	80	LEFT
91	12174.884	80	RIGHT
92	12327.788	40	LEFT
93	12390.233	30	RIGHT
94	12501.656	40	RIGHT
95	12580.587	40	LEFT
96	12676.798	50	RIGHT
97	12797.116	80	RIGHT
98	12928.263	50	LEFT
99	13065.074	50	RIGHT
100	13143.01	40	LEFT
101	13211.755	50	LEFT
102	13316.387	50	RIGHT
103	13412.69	50	RIGHT
104	13443.023	50	LEFT
105	13698.449	40	RIGHT
106	13759.427	30	LEFT
107	13825.218	40	LEFT
108	13884.265	20	RIGHT
109	13920.357	25	LEFT
110	13980.024	25	LEFT
111	14018.319	65	LEFT
112	14086.148	40	LEFT
113	14125.214	40	RIGHT
114	14173.906	50	RIGHT
115	14250.2	40	RIGHT
116	14344.542	30	LEFT
117	14402.587	30	RIGHT
118	14489.913	30	RIGHT
119	14666.651	35	LEFT
120	14757.859	35	RIGHT
121	14802.079	50	RIGHT
122	14881.506	40	RIGHT
123	15009.952	50	LEFT
124	15111.943	50	LEFT
125	15239.999	50	RIGHT
126	15329.14	40	LEFT
127	15434.075	40	RIGHT
128	15673.324	30	RIGHT
129	15758.76	20	LEFT
130	15847.534	25	RIGHT
131	15892.58	25	LEFT
132	15991.271	20	RIGHT
133	16017.688	20	LEFT
134	16066.008	20	RIGHT
135	16099.646	25	LEFT
136	16168.166	25	LEFT
137	16214.134	30	RIGHT

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

138	16290.065	40	RIGHT
139	16375.061	30	LEFT
140	16433.429	25	RIGHT
141	16474.476	20	RIGHT
142	16552.233	20	LEFT
143	16665.469	20	LEFT
144	16745.815	20	LEFT
145	16803.638	20	RIGHT
146	16823.011	20	LEFT
147	16909.718	20	RIGHT
148	16937.228	20	LEFT
149	16963.939	20	RIGHT
150	16996.206	20	LEFT
151	17030.298	25	LEFT

2.3 Improvement of the existing Road Geometrics

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.

Design Chainage in km		Length in m	Type of Deficiency	Remarks
From	To			
Nil				

2.4 Right of Way

No land acquisition shall be taken up for the construction of work. Hence the ROW shall be same as existing ROW.

2.5 Type of Shoulders

The type of shoulders provided for the project road shall be as follows:

Design Chainage in km		Length in m	Type of shoulder	Width of Earthen shoulder
From	To			
0	600	600	Paved - Flexible	1.5 m
5100	5300	200		1.5 m
6700	6900	200		1.5 m
8600	8800	200		1.5 m
600	2460	1860	Earthen	2 m
2460	5100	2640		2 m
5300	6700	1400		2 m
6900	8600	1700		2 m
8800	15510	6710		2 m
15510	17042	1532	Paved - Rigid	0.9 m

2.6 Lateral and Vertical Clearances at Underpasses

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

2.6.2 Lateral clearance: The width/size of the opening at the underpasses shall be as follows:

SI No	Existing Chainage	Design Chainage	Span (No. x length x ht.) in m	Minimum Length of RE wall	Remarks
Nil					

2.7 Lateral and vertical clearance at overpasses

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

No overpass

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

SI No	Location (Chainage) From km to km	Number and Length of Spans	Remarks
Nil			

2.8 Service roads/ Slip Road

Service roads, as per clause 2.12 of the manual, shall be constructed at the locations and for the lengths indicated below:

Sl No	Existing Chainage		Design Chainage		Length	Width	Side
	From	To	From	To			
Nil							

2.9 Grade separated structures

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

SI No	Location of Structure	Design Chainage	Length (m)	Number and length of spans	Approach Gradient	Remarks
Nil						

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

SI No	Location of Structure	Design Chainage	Length (m)	Number and length of spans	Approach Gradient	Remarks
Nil						

2.10 Cattle and Pedestrian under pass / over pass

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

SI No	Existing Chainage	Design Chainage	Proposed Span Arrangement	Width In M	Minimum Length of RE wall
Nil					

2.11 Typical cross-sections of the Project Highway

Different type of cross sections for different segments of road stretch shall be developed as provided in Schedule D. The widening of the road, due to land constraint and to avoid land acquisition is proposed concentric at most places and in

hill sections widening is proposed on hill side. The typical sections are provided in the annexure with this schedule.

3.0 Intersections and grade separators

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

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

(a) At-grade intersections

i) Major Junction

SI No	Design Chainage (km)	Category of Road	Type of Junction	Remarks
1	0/000	NH	T Junction	Bagha Bazar Junction

ii) Minor Intersection

SI No	Design Chainage (km)	Side (Left/Right)	Carriageway Width in m	
			Left	Right
1	0/257	Left & Right	4.7	3.7
2	2/000	Left	4.23	
3	6/800	Left	3	
4	6/900	Left	4	
5	8/600	Left	2	
6	8/840	Right		4.5

(b) Grade separated intersection with/without ramps

SI No	Location	Salient Features	Minimum length of viaduct to be provided	Read to be carried over / under the structures
NIL				

4. Road embankment and cut section

4.1 Widening and improvement of the existing road embankment/cuttings and construction of new road embankment / cuttings shall conform to the standards and specifications given in Section 4 of the Manual and the specified cross sectional details. Deficiencies in the plan and profile of the existing road shall be corrected.

4.2 Raising of existing road. The existing road shall be raised as per drawings enclosed.

SI No	Design Chainage		Length (m)	Average Height (m)
	From	To		
1	3/175	5/101	1926	1
2	5/582	6/640	1058	1.36 – 0.7
3	7/250	8/570	1320	0.99 – 1.2
4	8/890	8/982	92	1.33 – 1.6
5	9/071	9/162	91	1.2 – 1.47
6	9/290	10/533	1243	0.77 – 1.02
7	10/641	11/685	1044	0.87 – 1.176
9	11/810	12/380	570	0.7 – 0.98
10	12/480	14/325	1845	0.913-2.023
11	16/310	16/466	156	0.767

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

5. Pavement design

5.1 Pavement design shall be carried out in accordance with Section 5 of the Manual. Contractor has to provide additional performance bank guarantee of 5% of the contract price valid up to a period 5 years from completion of construction of highway in case the Contractor intends to use any alternative material, innovative technology/method, whether patented or otherwise, that is not specifically covered in the Indian or International Standards.

5.2 Type of pavement

The proposed pavement has been constructed with flexible pavement.

5.3 Design requirements

5.3.1 Design Period and Strategy

Flexible pavement for new pavement and for widening and strengthening of the existing pavement shall be designed as per relevant paragraphs of Section 5 of the Manual pertaining to flexible pavements, for a minimum design period of 15 years. Stage construction shall not be permitted.

5.3.2 Design Traffic

Notwithstanding anything to the contrary contained in this Agreement or the Manual, the contractor shall design the pavement for design traffic of 10 million standard axles (msa) for a design period of 15 years

5.4 Reconstruction of Stretches

Construction/ Reconstruction of the Project Highway shall be as per schedule D. The widening of the road due to land constraint and to avoid land acquisition, concentric widening has been done at open and built up sections. However in hill sections widening has been proposed on the hill side to avoid construction of costly protection structures.

6. Roadside Drainage

Drainage system including surface and subsurface drains for the Project Highway shall be provided as per section 6 of the Manual. Covered Drains and lined drain shall be provided in the Built-up sections and hill sections (where ever required and as per direction of Authority Engineer).The drains shall terminate on the existing drains.

7. Design of structures

7.1 General

7.1.1 All bridges, culverts and structures shall be designed and constructed in accordance with Section 7 of the Manual and shall conform to the cross-sectional features and other details specified therein.

7.1.2 Width of the carriageway of new bridges and structures shall be as follows:

All new structures shall have minimum carriageway as per Manual Fig. 7.2 and Fig. 7.4

7.1.3 The following structures shall be provided with footpaths

Sl. No.	Bridge at km	Structures	Remarks
Nil			

7.1.4 All bridges shall be high-level bridges

7.1.5 Utility services to be carried over the structures

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

Sl. No.	Bridge at km	Utility Service to be Carried	Remarks
Nil			

7.1.6 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 7 of the Manual.

7.2 Culverts

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

7.2.2 Reconstruction of existing culverts:

Sl No	Design Chainage	Proposed Type of Structure	Recommendation	Proposed Span (m)	Over all Width in m
1	1/900	HP Culvert		1 x 1.2	11
2	3/045	HP Culvert		1 x 1.2	11
3	3/345	HP Culvert		1 x 1.2	11

7.2.3 Widening of existing culverts

All existing culverts which are not to be reconstructed shall be widened to the roadway width of the Project Highway as per the typical cross section given in section 7 of the Manual. Repairs and strengthening of existing structures where required shall be carried out.

Sl No	Design Chainage	Proposed Type of Structure	Recommendation	Proposed Span (m)	Over all Width in m
1	0/200	HP Culvert		1 x 0.9 M DIA	11
2	1/480	HP Culvert		1 x 1 M DIA	11
3	1/800	HP Culvert		1 x 1 M DIA	11
4	2/600	HP Culvert		1 X 0.90 M DIA	11
5	3 / 485	HP Culvert		1 X 0.90 M DIA	11
6	3 / 600	HP Culvert		1 X 0.90 M DIA	11
7	3 / 680	HP Culvert		1 X 0.90 M DIA	11
8	3 / 880	HP Culvert		1 X 1.0 M DIA	11
9	3 / 970	HP Culvert		1 X 1.0 M DIA	11
10	4 / 075	HP Culvert		1 X 1.0 M DIA	11
11	4 / 180	HP Culvert		1 X 1.0 M DIA	11
12	4 / 760	HP Culvert		1 X 1.0 M DIA	11
13	5 / 150	HP Culvert		1 X 1.0 M DIA	11
14	5 / 360	HP Culvert		1 X 1.0 M DIA	11
15	5 / 610	HP Culvert		1 X 1.0 M DIA	11
16	5 / 750	HP Culvert		1 X 1.0 M DIA	11
17	5/935	HP Culvert		1 X 1.0 M DIA	11
18	6 / 290	HP Culvert		1 X 1.0 M DIA	11
19	6 / 455	HP Culvert		1 X 1.0 M DIA	11
20	6 / 800	HP Culvert		1 X 0.90 M DIA	11
21	6 / 890	HP Culvert		1 X 0.90 M DIA	11
22	7 / 090	HP Culvert		1 X 0.90 M DIA	11
23	7 / 290	HP Culvert		1 X 0.90 M DIA	11
24	7 / 565	HP Culvert		1 X 0.90 M DIA	11
25	7 / 640	HP Culvert		1 X 0.90 M DIA	11
26	7 / 830	HP Culvert		1 X 0.90 M DIA	11

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

27	8 / 040	HP Culvert		1 X 0.90 M DIA	11
28	8 / 275	HP Culvert		1 X 0.90 M DIA	11
29	8 / 510	HP Culvert		1 X 0.90 M DIA	11
30	8 / 810	HP Culvert		1 X 0.90 M DIA	11
31	9 / 220	HP Culvert		1 X 0.90 M DIA	11
32	9 / 485	HP Culvert		1 X 0.90 M DIA	11
33	9 / 565	HP Culvert		1 X 0.90 M DIA	11
34	9 / 790	HP Culvert		1 X 0.90 M DIA	11
35	10 / 010	HP Culvert		1 X 0.90 M DIA	11
36	10 / 185	HP Culvert		1 X 0.90 M DIA	11
37	10 / 325	HP Culvert		1 X 0.90 M DIA	11
38	10 / 880	HP Culvert		1 X 1.0 M DIA	11
39	11 / 070	HP Culvert		1 X 1.0 M DIA	11
40	11 / 455	HP Culvert		1 X 1.0 M DIA	11
41	11 / 990	HP Culvert		1 X 1.0 M DIA	11
42	12 / 180	HP Culvert		1 X 1.0 M DIA	11
43	12 / 700	HP Culvert		1 X 1.0 M DIA	11
44	12 / 955	HP Culvert		1 X 1.0 M DIA	11
45	13 / 245	HP Culvert		1 X 1.0 M DIA	11
46	13 / 330	HP Culvert		1 X 1.0 M DIA	11
47	13 / 530	HP Culvert		1 X 1.0 M DIA	11
48	13 / 645	HP Culvert		1 X 0.90 M DIA	11
49	13 / 770	HP Culvert		1 X 0.90 M DIA	11
50	13 / 930	HP Culvert		1 X 0.90 M DIA	11
51	14 / 000	HP Culvert		1 X 0.90 M DIA	11
52	14 / 040	HP Culvert		1 X 0.90 M DIA	11
53	14 / 190	HP Culvert		1 X 0.90 M DIA	11
54	14 / 555	HP Culvert		1 X 0.90 M DIA	11
55	14 / 865	HP Culvert		1 X 0.90 M DIA	11
56	15 / 010	HP Culvert		1 X 0.90 M DIA	11
57	15 / 635	HP Culvert		1 X 0.90 M DIA	11
58	15 / 685	HP Culvert		1 X 0.90 M DIA	11
59	15 / 745	HP Culvert		1 X 0.90 M DIA	11
60	15 / 900	HP Culvert		1 X 0.90 M DIA	11
61	16 / 010	HP Culvert		1 X 0.90 M DIA	11
62	16 / 100	HP Culvert		1 X 0.90 M DIA	11
63	16 / 150	HP Culvert		1 X 0.90 M DIA	11
64	16 / 220	HP Culvert		1 X 0.90 M DIA	11
65	16 / 255	HP Culvert		1 X 0.90 M DIA	11
66	16 / 315	HP Culvert		1 X 0.90 M DIA	11
67	16 / 370	HP Culvert		2 X 0.90 M DIA	11
68	16 / 470	HP Culvert		2 X 0.90 M DIA	11
69	16 / 665	HP Culvert		1 X 0.90 M DIA	11

7.2.4 Additional new culverts shall be constructed, as per IRC SP 73-2015, particulars given below:

Sl No	Design Chainage	Proposed Type of Culvert	Span Arrangement No. x Length / No. x Dia (m)
Nil			

7.2.5 Repairs/ replacements of railing /parapets, flooring and protection works

Sl. No.	Design Chainage	Type of Structures	Repair work	Length (m)	Width (m)
1	0/450	1 x 1 m HPC	Gravel backing	4x9.92	-
			Stone pitching	2 x (6.4+1.5)/2	2 x (3+1.5)/2
			Crash barrier	6.4 m x 2	-

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

2	0/600	2 x 1.0 m HPC	Crash barrier	2 x 8.3	-
			Stone pitching	2 x (8.3+2.7)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-
3	0/900	1.0 m HPC	Crash barrier	2 x 8.3	-
			Stone pitching	2 x (8.3+2.7)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-
4	2/400	1 x 1.2 m HPC	Crash barrier	2 x 6.6	-
			Stone pitching	2 x (6.6+1.6)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-
5	2/800	2 x 1 m HPC	Crash barrier	2 x 8.3	-
			Stone pitching	2 x (8.3+2.7)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-
6	8/425	1 x 0.9 m HPC	Crash barrier	2 x 6.3	-
			Stone pitching	2 x (6.3+1.5)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-
7	11/210	1 x 1 m HPC	Crash barrier	2 x 6.4	-
			Stone pitching	2 x (6.4+1.5)/2	2 x (3+1.5)/2
			Gravel backing	4 x 9.92	-

7.3 Bridges

7.3.1 Existing bridges to be re-constructed/widened /Repairs

- i) The existing bridges at the following locations shall be reconstructed
- a) Major Bridges: NIL
- b) Minor Bridges: NIL
- ii) The following narrow bridges shall be widened/Repairs and Strengthened:
- a) **Major Bridges:**

S. No.	Design Chainage (km)	Width (m)	Span Arrangement	Type of structure			Details of Widening
				Foundation	Sub structure	Super structure	
NIL							

b) **Minor Bridges:**

S. No.	Design Chainage (km)	Existing width (m)	Span Arrangement	Type of structure			Details of widening
				Foundation	Sub structure	Super structure	
Nil							

7.3.2 Additional new bridges

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

a) **Major Bridge:**

S. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x l)	Remarks
Nil					

b) **Minor Bridge:**

S. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x l)	Remarks
Nil					

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

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

S. No.	Location at km	Remarks
Nil		

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

S. No.	Location at km	Remarks
Nil		

7.3.5 Drainage system for bridge decks

Nil

7.3.6 Structures in marine environment: Nil

7.4 Rail-road bridges

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

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

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

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

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

7.5 Grade Separated Structures

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

7.6 Repairs and Strengthening Of Structures

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

A – Bridges

i) Major Bridges

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

ii) Minor Bridge:

S. No.	Existing Chainage (km)	Design Chainage (km)	Details of Repairing/Strengthening to be carried out
Nil			

B – ROB / RUB

Rehabilitation and up-gradation of Saiphai - Bagha Bazar Road from Bagha Bazar (0/000 km) to Saiphai(17/042 km) to intermediate & two lane carriageway in the State of Assam and Mizoram

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

C – Overpasses/Underpasses and Other Structures

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

7.7 List of Major Bridges and Structures

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

S. No.	Name of Bridge	Existing Chainage	Design Chainage	Proposed span arrangement (No. x l)	Remarks
Nil					

8. Traffic Control Devices and Road Safety Works

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

8.2 Specifications of the reflecting sheeting: As per the Clause 9.2 of the Manual of Specification and Standards.

9. Roadside Furniture

Roadside furniture shall be provided in accordance with the provisions of section 9 of the Manual.

9.1 Overhead traffic signs: location and size

S. No.	Design Chainage (km)	Remarks
1	0/000	

10. Compulsory Afforestation

The contractor is to plant trees as compensatory forestation as per as per IRC SP 21 and guidelines of the forest department.

The contractor is to plant double of no of trees cut for the widening of road on both sides of road.

11. Hazardous Locations

The safety barriers like metal beam crash barriers shall also be provided at the following hazardous locations

S. No.	Location stretch from (km) to (km)	LHS/RHS
NIL		

12. Special Requirement for hill roads

12.1 Protection work: - Construction of Guard wall, Breast Wall shall be as provided

i).Guard wall

Sl no	Chainage from to to		Height	Side
1	15510	16070	0.6 m	Valley Side
2	16070	16160	0.6 m	Both side
3	16160	16300	0.6 m	Valley Side
4	16300	16400	0.6 m	Both side
5	16570	17042	0.6 m	Valley Side

ii). Breast Wall

Sl no	Chainage from to to		Height	Side
1	16/739	17/042	2 m	Hill Side

3. Toe Wall

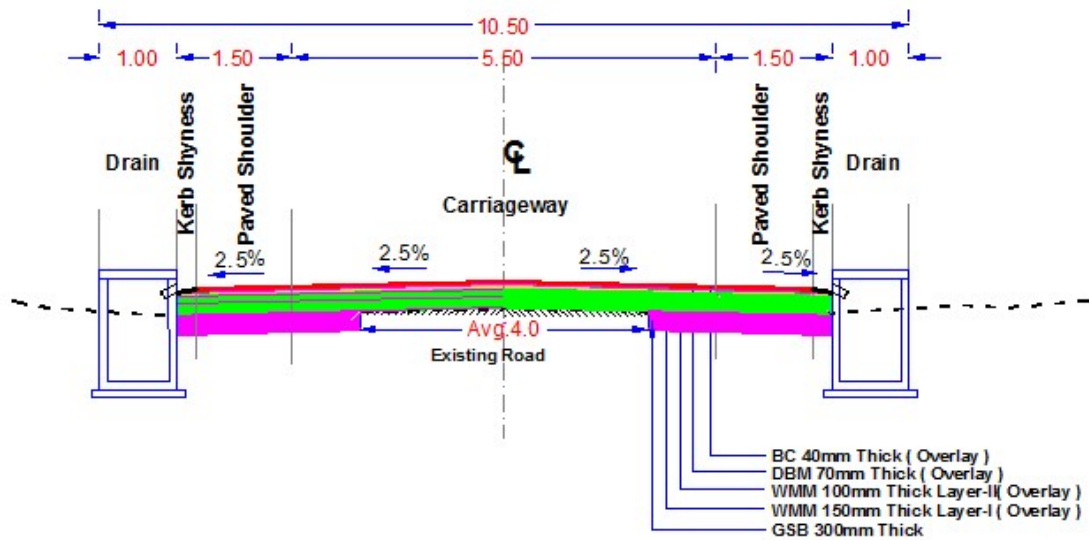
Sl no	Chainage from to to		Height	Side
1	13/100	13/419	0.6 m	Both Side

13. Change of Scope

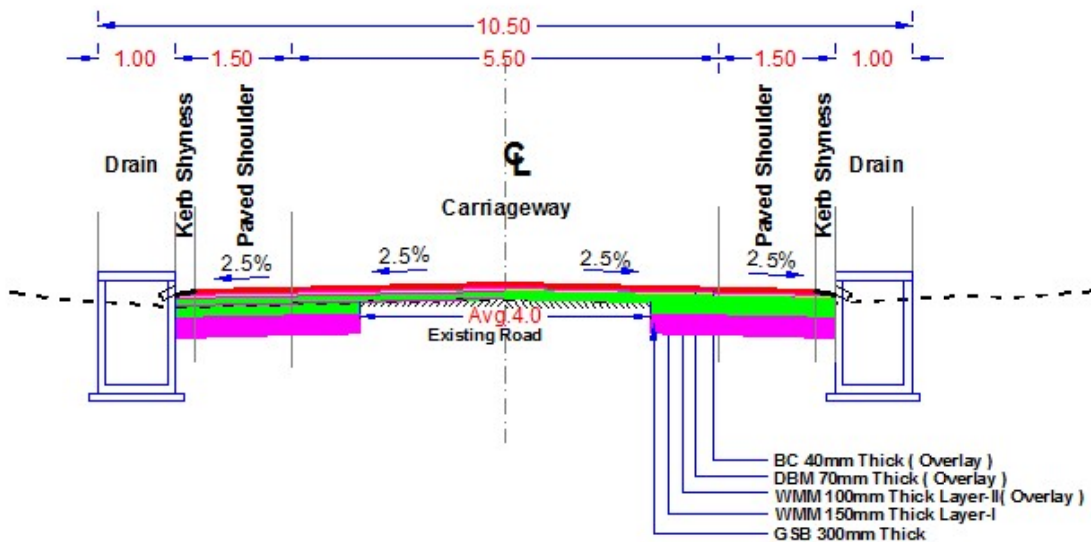
The length of Structures and bridges specified herein above shall be treated as an approximate assessment. The actual lengths as required on the basis of detailed investigations shall be determined by the Contractor in accordance with the Specifications and Standards. Any variations in the lengths specified 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 Article 13.

Appendix-B1

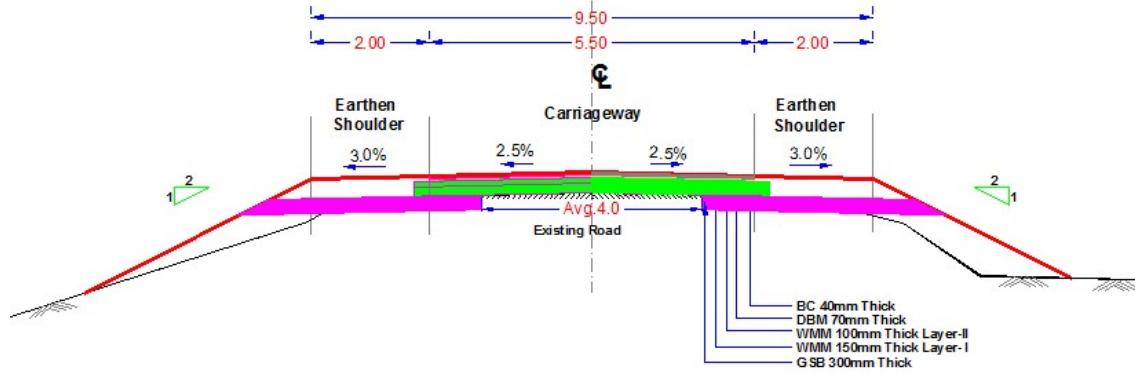
1. Typical Cross Section



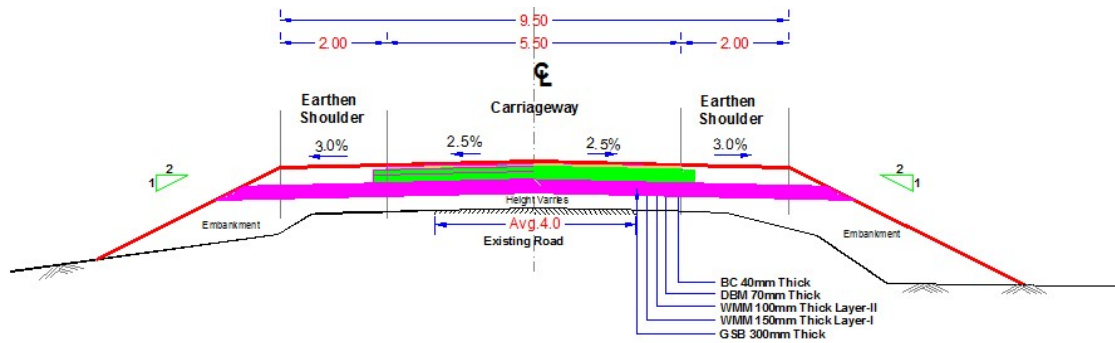
TYPICAL CROSS SECTION (TYPE - I - A)



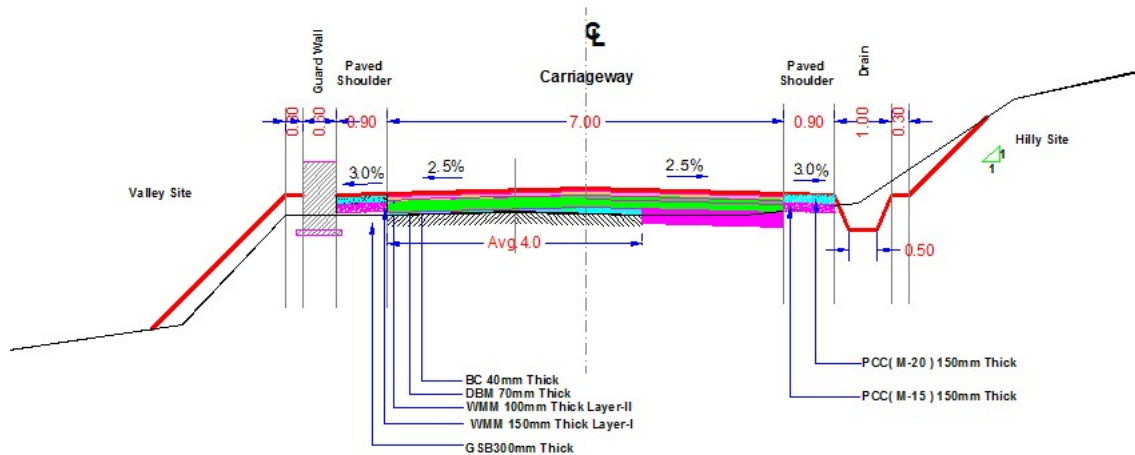
TYPICAL CROSS SECTION (TYPE - I - B)



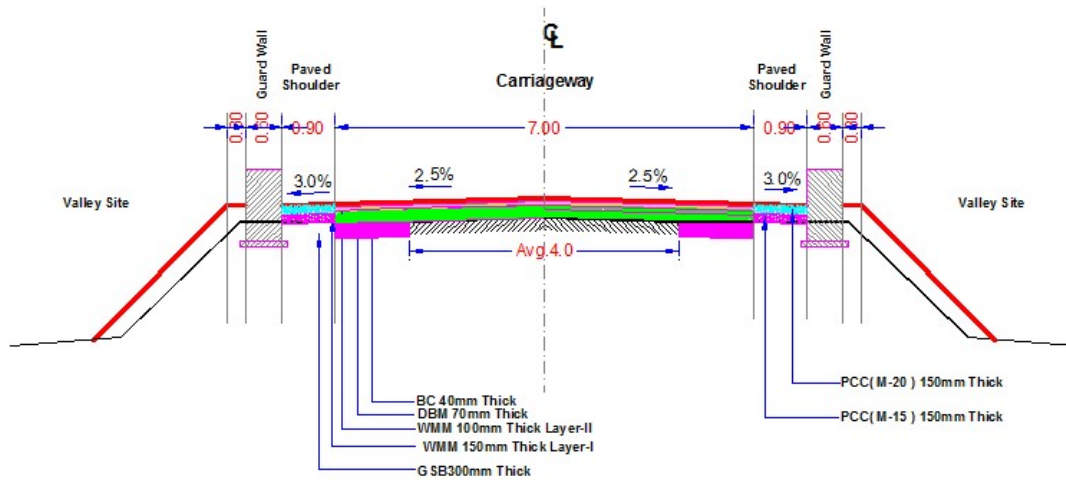
TYPICAL CROSS SECTION (TYPE - II - A)



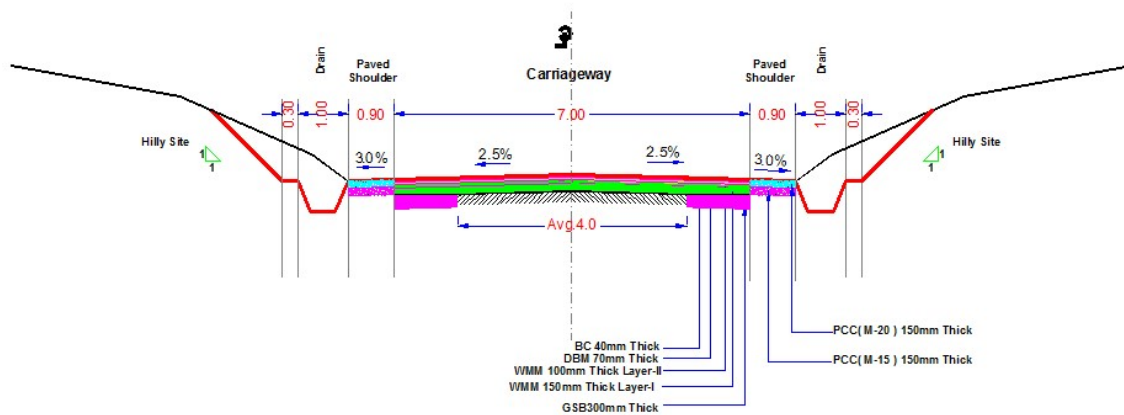
TYPICAL CROSS SECTION (TYPE - II - B)



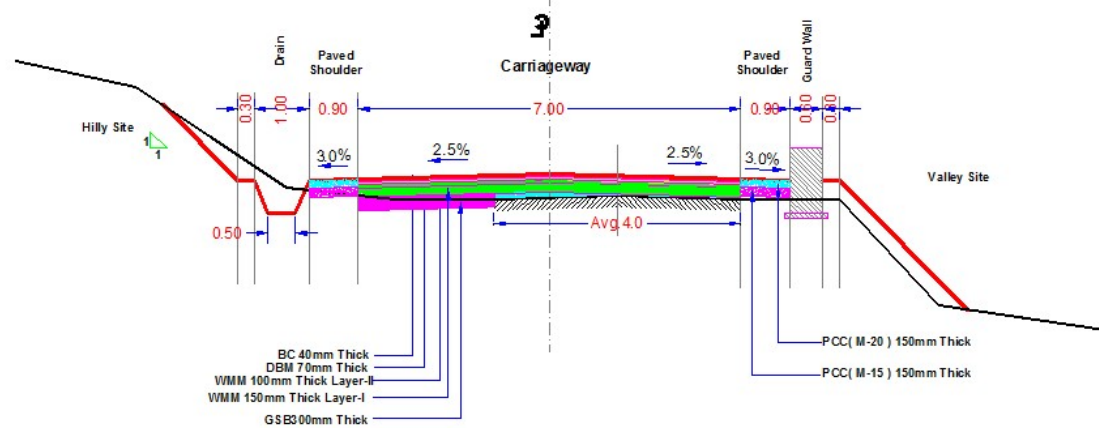
TYPICAL CROSS SECTION (TYPE - III - A)



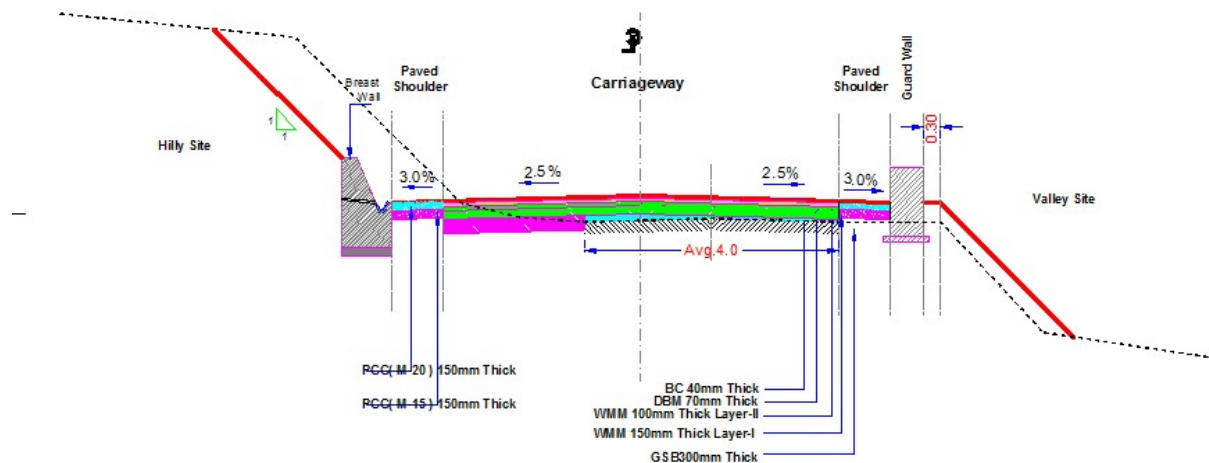
TYPICAL CROSS SECTION (TYPE - III - B)



(TYPICAL CROSS SECTION TYPE - III - C)



(TYPICAL CROSS SECTION TYPE - III - D)



TYPICAL CROSS SECTION – III E

Applicable Stretches of Typical Cross-Sections

Appendix B1

Sl No	Chainage from	Chainage to	Type of Cross-section	TYPES OF CROSS SECTIONS
1	0	600	TY-I-A	5.5 m CARRIAGEWAY WITH 1.5 M PAVED SHOULDERS WITH 1 M COVERED DRAIN
2	5100	5300	TY-I-B	
3	6700	6900	TY-I-B	
4	8600	8800	TY-I-B	
5	600	2460	TY-II-A	5.5 m CARRIAGEWAY WITH 2 M EARTHEN SHOULDERS
6	2460	5100	TY-II-B	
7	5300	6700	TY-II-B	
8	6900	8600	TY-II-B	
9	8800	15510	TY-II-B	7 m CARRIAGEWAY WITH 0.9 M PAVED SHOULDERS AND DRAIN + GUARDWALL AS DETAILED IN CROSS SECTIONS
10	15510	16070	TY-III-A	
11	16070	16160	TY-III-B	
13	16160	16300	TY-III-A	
14	16300	16400	TY-III-B	
15	16400	16570	TY-III-C	
16	16570	16739	TY-III-D	7 m CARRIAGEWAY WITH 0.9 M PAVED SHOULDERS AND BREAST WALL + GUARDWALL
17	16739	17042	TY-III-E	