



**Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (design chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design chainage Km 29+030) (Length =29.030) on HAM Mode in the State of Meghalaya.**

## **TECHNICAL SCHEDULES**

**JULY 2025**

**National Highways & Infrastructure Development Corporation Ltd**  
1<sup>st</sup> floor, Tower A, World Trade Centre, Nauroji Nagar

New Delhi – 110029

## Schedules

## **Schedule - A**

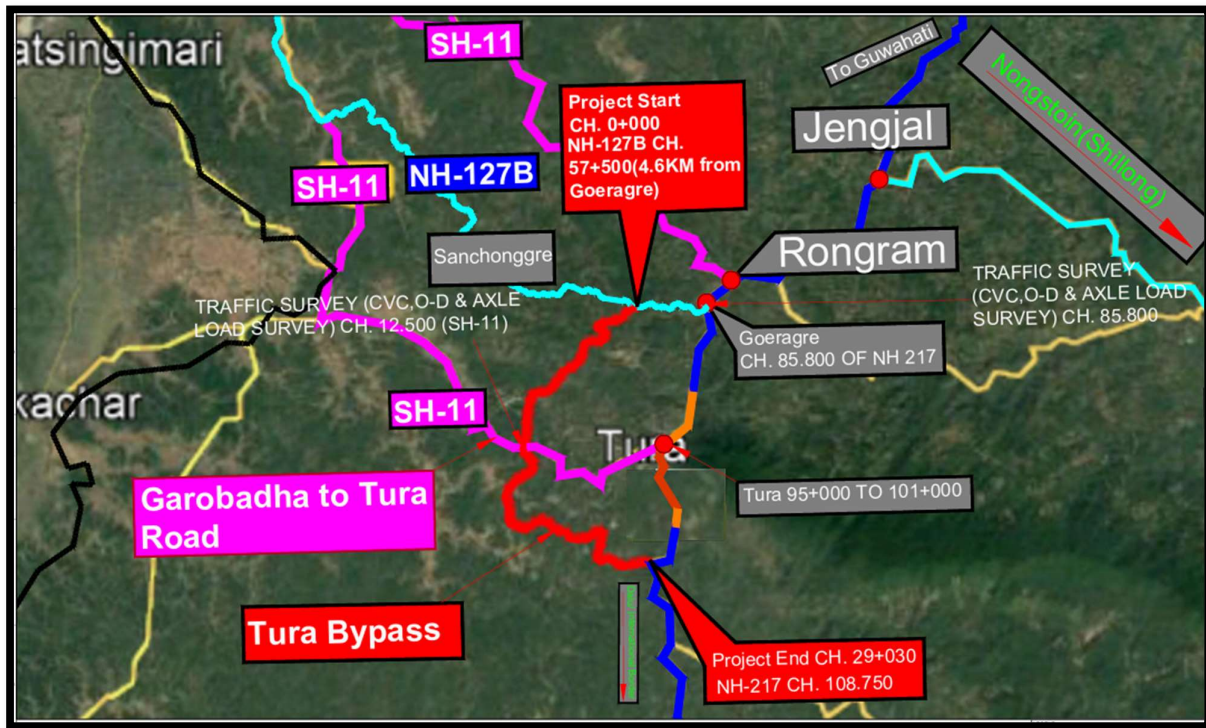
*(See Clause 10.1)*

### **Site of the Project**

#### **1. The Site**

- (i) Site of the Proposed Two-Lane Highway Project shall include the land, buildings, structures and road works as described in Annex-I of this **Schedule-A**
- (ii) The dates of handing over the Right of Way to the Contractor are specified in Annex-II of this Schedule-A.
- (iii) An inventory of the Site including the land, buildings, structures, road works, trees and any other immovable property on, or attached to, the Site shall be prepared jointly by the Authority Representative and the Contractor, and such inventory shall form part of the memorandum referred to in Clause 10.3.1 of this Agreement.
- (iv) The alignment plans of the Project Highway are specified in Annex-III.
- (v) The status of the environmental clearances obtained or awaited is given in Annex IV.

## PROPOSED ALIGNMENT



**Annex - I**  
**(Schedule-A)**  
**Site**

**1. Site**

The Site of the two-lane proposed Project Highway starts at existing Km 57+500 of NH-217B near Goeragre and ends at existing Km 108+750 of NH-217. The land, carriageway and structures comprising the Site are described below.

**2. Land**

The Site of the Project Highway comprises the land along existing NH described below:

SL No.	Design Chainage (km)		Length (m)	Right of Way (m)	Remarks
	From	To			
The Proposed Project is greenfield alignment. There is no existing NH or road.					

**3. Carriageway**

The present carriageway of the Project Highway (NH-37) is 7.0 m wide. The type of existing pavement is flexible. The details are given below.

SL No.	Existing Chainage (km)		Length (m)	Carriageway Width (m)	Remarks
	From	To			
Greenfield Alignment					

**4. Major Bridges**

The Site includes the following Major Bridges:

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

**5. Road over-bridges (ROB)/ Road under-bridges (RUB)**

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

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

**6. Grade separators**

The Site includes the following grade separators:

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

**7. Minor bridges**

The Site includes the following minor bridges:

S. No.	Chainage (km)	Type of super structures			No. of Spans with span length (m)	Width (m)
		Foundation	Sub- structure	Superstructure		
NIL						

#### 8. Railway level crossings

The Site includes the following railway level crossings:

Sl. No.	Chainage (km)	Name of the crossing	Leads to		Remarks
			LHS	RHS	
NIL					

#### 9. Underpasses (vehicular, non-vehicular)

The Site includes the following underpasses:

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

#### 10. Culverts

The Site has the following culverts:

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

#### 11. Bus bays

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

Sl. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand side
NIL (Project Road follows Green Field Alignment)				

#### 12. Truck Lay byes

The details of truck lay byes are as follows:

Sl. No.	Chainage (km)	Length (m)	Left Hand Side	Right Hand side
NIL (Project Road follows Green Field Alignment)				

#### 13. Roadside drains

The details of the roadside drains are as follows:

S. No.	Location		Type	
	From km	to km	Masonry/cc (Pucca)	Earthen (Kutcha)
NIL (Project Road follows Green Field Alignment)				

#### 14. Major Junctions

The details of major junctions are as follows.

Sl. No.	Chainage (km)	To-towards	At Grade	Side	Category of crossroad
NIL (Project Road follows Green Field Alignment)					

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

#### 15. Minor Junctions

The details of the minor junctions are as follows:

Sl. No.	Existing Chainage	Design Chainage	Type of Road (BT, CC, Gr.)	Type of Junctions (T, Y, +)	Side	Type of Road (SH/ MDR/ PMGSY/ VR)
NIL (Project Road follows Green Field Alignment)						

#### 16. Roads Crossing the Greenfield Alignment:

S. No.	Existing Chainage (Km)	Design Chainage (Km)	Carriageway	
			Type	Cross road
1	(Project road follows Green Field Alignment)	27+210	2- Lane BT (Under Construction)	Village Road
2		27+868	Intermediate - Lane BT	Village Road
3		29+700	2- Lane BT	Village Road

#### 17. Bypasses

The details of the bypasses are as follows:

S. No.	Name of bypass (town)	Chainage (km) From km to km	Length
NIL			

#### 18. Details of Existing Utilities Schedule

The existing utilities schedules as below,

##### 18.1 Electrical Utilities

The Site includes the following Electrical Utilities: -

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

S. No	Chainage		Length (in Km)				Crossings			
	From	To	400KV	220KV	110KV	66KV	400KV	220KV	110KV	66KV
Nil										

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

Sr. No.	Design Chainage (m)		Length (Km)				Crossing (Nos.)			Transformer	
	From	To	11 KV (HT)	33 KV (HT)	LT	RHS/LHS	11 KV (HT)	33 KV (HT)	LT	Number	Capacity
1	0+000	29+030	2.600	0.700	2.500	RHS/LHS	8	2	12	1	16 KVA
	Total		5.200								

Description	33 KV	11KV	LT Poles
No. of Poles 33KV/11KV/LT	13	62	25

## 18.2 Public Health Utilities (Water/Sewage Pipelines)

(a) The Site includes the following Public Health Utilities: -

Sr. No	Design Chainage (km)		LHS/ RHS	Length (Km)			Crossings		Type of Pipeline
	From	To		Water Supply line			Water Supply line		
				With Pumping	With Gravity flow	DIA	With Pumping	DIA	
1	0+000	1+1000	RHS/LHS	2.070	-	-	2	-	HDPE 50mm
2				0.200	-	-	-	-	HDPE 20mm
3				0.072	-	-	1	-	GI Pipe 50mm
4	5+300	6+000	LHS/RHS	0.100	-	-	2	-	HDPE 75mm
5				0.900	-	-		-	HDPE 20mm
6				0.100	-	-		-	GI Pipe 50mm
7	12+500	12+800	LHS/RHS	0.120	-	-	1	-	HDPE 90mm
8				0.150	-	-		-	HDPE 20mm
9	15+000	15+500	LHS/RHS	0.300	-	-	1	-	HDPE 90mm
10				0.600	-	-		-	HDPE 20mm
11	19+800	24+000	LHS/RHS	1.960	-	-	4	-	HDPE 160mm
12				1.450	-	-		-	HDPE 110mm
13				0.050	-	-		-	HDPE 75mm
14				0.050	-	-		-	HDPE 63mm
15				0.050	-	-		-	HDPE 50mm
16				0.060	-	-		-	HDPE 40mm
17				0.540	-	-		-	HDPE 20mm
18				1.450	-	-		-	GI Pipe 65mm
19	26+000	29+000	LHS/RHS	2.800	-	-	3	-	HDPE 90mm
20				0.100	-	-		-	HDPE 20mm
21				2.800	-	-		-	GI Pipe 80mm
22				0.432	-	-		-	GI Pipe 15mm
	TOTAL LENGTH (Km)			16.354					

(b) Bore well/Hand Pump within RoW

Sl. No.	Bore Well**		Hand Pump	
	Chainage	Nos	Chainage	Nos
NIL				

(c) Water Tank within ROW

Sl. No.	Water Tank		
	Chainage	Nos	Capacity
NIL			



**18.3 Any Other Lines - NIL**

**19. Other Structures: - NIL**

Annex – II  
(Schedule-A)

**Dates for providing Right of Way of Construction Zone**

The dates on which the Authority shall provide Right of Way to the Contractor on different stretches of the Site are Stated below:

**(i) Full Right of Way (full width)**

Description	Design Chainage (km)		Length (m)	Width (m)	Date of Providing ROW
	From	To			
-	0.000	29.030	29.030	30m to 70m (Full Right of Way)	80% on appointed date and remaining within 90 days from appointed date.

**(ii) Balance Right of Way (available width)**

Description	Design Chainage (km)		Length (m)	Width (m)	Date of Providing ROW
	From	To			
NIL					

**COORDINATE SYSTEM\_ UNIVERSAL TRANSVERSE MERCATOR (UTM)-WGS84 (ZONE 46N)**

The co-ordinates of Centerline are given below: -

Sl. No.	Station	Northing (m)	Easting (m)
1	0.000	2,832,620.46	218,692.68
2	0.050	2,832,583.15	218,659.40
3	0.100	2,832,546.34	218,625.57
4	0.150	2,832,515.59	218,586.30
5	0.200	2,832,495.48	218,540.67
6	0.250	2,832,487.27	218,491.48
7	0.300	2,832,490.83	218,441.69
8	0.350	2,832,498.72	218,392.31
9	0.400	2,832,499.74	218,342.48
10	0.450	2,832,485.14	218,294.90
11	0.500	2,832,455.77	218,254.72
12	0.550	2,832,414.90	218,226.30
13	0.600	2,832,368.59	218,207.50
14	0.650	2,832,322.29	218,188.63
15	0.700	2,832,276.78	218,167.93
16	0.750	2,832,232.14	218,145.42
17	0.800	2,832,188.43	218,121.15
18	0.850	2,832,145.73	218,095.15
19	0.900	2,832,104.08	218,067.48
20	0.950	2,832,064.72	218,036.71
21	1.000	2,832,030.10	218,000.69
22	1.050	2,832,000.97	217,960.11
23	1.100	2,831,977.90	217,915.79
24	1.150	2,831,961.38	217,868.65
25	1.200	2,831,951.74	217,819.63
26	1.250	2,831,948.17	217,769.77

Sl. No.	Station	Northing (m)	Easting (m)
27	1.300	2,831,945.51	217,719.84
28	1.350	2,831,942.85	217,669.91
29	1.400	2,831,940.19	217,619.98
30	1.450	2,831,937.54	217,570.05
31	1.500	2,831,934.88	217,520.12
32	1.550	2,831,932.22	217,470.19
33	1.600	2,831,927.48	217,420.45
34	1.650	2,831,912.56	217,372.87
35	1.700	2,831,887.38	217,329.74
36	1.750	2,831,859.46	217,288.26
37	1.800	2,831,831.54	217,246.78
38	1.850	2,831,804.94	217,204.47
39	1.900	2,831,784.82	217,158.76
40	1.950	2,831,772.56	217,110.34
41	2.000	2,831,768.51	217,060.57
42	2.050	2,831,770.66	217,010.62
43	2.100	2,831,773.49	216,960.70
44	2.150	2,831,776.31	216,910.78
45	2.200	2,831,779.13	216,860.86
46	2.250	2,831,781.95	216,810.94
47	2.300	2,831,784.09	216,761.00
48	2.350	2,831,772.35	216,712.72
49	2.400	2,831,743.35	216,672.36
50	2.450	2,831,702.12	216,644.31
51	2.500	2,831,659.07	216,618.88
52	2.550	2,831,616.03	216,593.44
53	2.600	2,831,572.68	216,568.56
54	2.650	2,831,524.07	216,558.85
55	2.700	2,831,476.19	216,571.63
56	2.750	2,831,438.88	216,604.26
57	2.800	2,831,419.85	216,650.03
58	2.850	2,831,420.18	216,699.89
59	2.900	2,831,423.37	216,749.79
60	2.950	2,831,426.56	216,799.68
61	3.000	2,831,429.75	216,849.58
62	3.050	2,831,428.36	216,899.37
63	3.100	2,831,409.28	216,945.25
64	3.150	2,831,374.37	216,980.62
65	3.200	2,831,328.74	217,000.30
66	3.250	2,831,279.06	217,001.43
67	3.300	2,831,230.01	216,991.74
68	3.350	2,831,180.97	216,982.01
69	3.400	2,831,131.92	216,972.27
70	3.450	2,831,082.88	216,962.54
71	3.500	2,831,033.84	216,952.80
72	3.550	2,830,984.79	216,943.07
73	3.600	2,830,935.75	216,933.34

Sl. No.	Station	Northing (m)	Easting (m)
74	3.650	2,830,886.71	216,923.60
75	3.700	2,830,837.66	216,913.87
76	3.750	2,830,788.93	216,902.81
77	3.800	2,830,746.23	216,877.73
78	3.850	2,830,720.60	216,835.40
79	3.900	2,830,718.01	216,785.92
80	3.950	2,830,729.12	216,737.18
81	4.000	2,830,741.13	216,688.65
82	4.050	2,830,753.14	216,640.11
83	4.100	2,830,765.14	216,591.58
84	4.150	2,830,777.15	216,543.04
85	4.200	2,830,789.16	216,494.50
86	4.250	2,830,801.17	216,445.97
87	4.300	2,830,811.75	216,397.12
88	4.350	2,830,813.84	216,347.25
89	4.400	2,830,806.02	216,297.95
90	4.450	2,830,792.39	216,249.84
91	4.500	2,830,778.54	216,201.80
92	4.550	2,830,764.92	216,153.69
93	4.600	2,830,755.16	216,104.68
94	4.650	2,830,749.57	216,055.00
95	4.700	2,830,744.30	216,005.28
96	4.750	2,830,739.03	215,955.56
97	4.800	2,830,733.44	215,905.87
98	4.850	2,830,720.24	215,857.83
99	4.900	2,830,692.51	215,816.50
100	4.950	2,830,652.78	215,786.52
101	5.000	2,830,605.44	215,771.18
102	5.050	2,830,555.68	215,772.18
103	5.100	2,830,507.67	215,785.98
104	5.150	2,830,460.29	215,801.98
105	5.200	2,830,412.51	215,816.64
106	5.250	2,830,363.15	215,824.22
107	5.300	2,830,313.21	215,823.50
108	5.350	2,830,264.08	215,814.50
109	5.400	2,830,217.13	215,797.48
110	5.450	2,830,173.11	215,773.81
111	5.500	2,830,129.75	215,748.91
112	5.550	2,830,086.39	215,724.02
113	5.600	2,830,043.03	215,699.13
114	5.650	2,829,999.66	215,674.23
115	5.700	2,829,956.30	215,649.34
116	5.750	2,829,912.94	215,624.45
117	5.800	2,829,869.57	215,599.55
118	5.850	2,829,826.21	215,574.66
119	5.900	2,829,782.85	215,549.77
120	5.950	2,829,739.49	215,524.87

Sl. No.	Station	Northing (m)	Easting (m)
121	6.000	2,829,696.12	215,499.98
122	6.050	2,829,652.76	215,475.09
123	6.100	2,829,609.40	215,450.20
124	6.150	2,829,566.11	215,425.17
125	6.200	2,829,525.86	215,395.65
126	6.250	2,829,492.22	215,358.76
127	6.300	2,829,466.59	215,315.93
128	6.350	2,829,448.33	215,269.40
129	6.400	2,829,431.20	215,222.43
130	6.450	2,829,414.07	215,175.45
131	6.500	2,829,396.94	215,128.48
132	6.550	2,829,379.80	215,081.51
133	6.600	2,829,362.67	215,034.53
134	6.650	2,829,345.54	214,987.56
135	6.700	2,829,328.41	214,940.59
136	6.750	2,829,311.27	214,893.62
137	6.800	2,829,294.14	214,846.64
138	6.850	2,829,276.26	214,799.96
139	6.900	2,829,253.18	214,755.65
140	6.950	2,829,224.03	214,715.08
141	7.000	2,829,189.39	214,679.08
142	7.050	2,829,150.03	214,648.30
143	7.100	2,829,108.47	214,620.51
144	7.150	2,829,066.84	214,592.81
145	7.200	2,829,025.22	214,565.11
146	7.250	2,828,983.59	214,537.41
147	7.300	2,828,941.96	214,509.71
148	7.350	2,828,900.50	214,481.77
149	7.400	2,828,859.51	214,453.14
150	7.450	2,828,819.00	214,423.84
151	7.500	2,828,778.98	214,393.87
152	7.550	2,828,739.46	214,363.23
153	7.600	2,828,700.47	214,331.94
154	7.650	2,828,662.00	214,300.00
155	7.700	2,828,623.95	214,267.56
156	7.750	2,828,585.93	214,235.09
157	7.800	2,828,547.91	214,202.62
158	7.850	2,828,509.89	214,170.14
159	7.900	2,828,471.87	214,137.67
160	7.950	2,828,433.85	214,105.20
161	8.000	2,828,395.83	214,072.72
162	8.050	2,828,357.81	214,040.25
163	8.100	2,828,319.79	214,007.78
164	8.150	2,828,281.77	213,975.30
165	8.200	2,828,243.75	213,942.83
166	8.250	2,828,205.73	213,910.36
167	8.300	2,828,168.80	213,876.68

Sl. No.	Station	Northing (m)	Easting (m)
168	8.350	2,828,135.31	213,839.58
169	8.400	2,828,105.69	213,799.32
170	8.450	2,828,080.24	213,756.31
171	8.500	2,828,059.21	213,710.97
172	8.550	2,828,042.81	213,663.76
173	8.600	2,828,031.21	213,615.14
174	8.650	2,828,024.52	213,565.61
175	8.700	2,828,022.81	213,515.66
176	8.750	2,828,026.09	213,465.79
177	8.800	2,828,034.22	213,416.47
178	8.850	2,828,044.01	213,367.44
179	8.900	2,828,052.59	213,318.20
180	8.950	2,828,056.48	213,268.37
181	9.000	2,828,055.38	213,218.40
182	9.050	2,828,049.29	213,168.80
183	9.100	2,828,038.28	213,120.04
184	9.150	2,828,022.46	213,072.64
185	9.200	2,828,001.98	213,027.04
186	9.250	2,827,977.06	212,983.72
187	9.300	2,827,947.93	212,943.11
188	9.350	2,827,914.90	212,905.60
189	9.400	2,827,878.29	212,871.58
190	9.450	2,827,838.46	212,841.39
191	9.500	2,827,795.82	212,815.32
192	9.550	2,827,750.79	212,793.64
193	9.600	2,827,703.81	212,776.56
194	9.650	2,827,655.73	212,762.87
195	9.700	2,827,607.58	212,749.37
196	9.750	2,827,559.44	212,735.87
197	9.800	2,827,511.30	212,722.37
198	9.850	2,827,463.15	212,708.87
199	9.900	2,827,415.01	212,695.37
200	9.950	2,827,366.87	212,681.87
201	10.000	2,827,318.65	212,668.65
202	10.050	2,827,270.05	212,656.90
203	10.100	2,827,221.16	212,646.44
204	10.150	2,827,172.24	212,636.09
205	10.200	2,827,123.33	212,625.73
206	10.250	2,827,074.41	212,615.37
207	10.300	2,827,025.49	212,605.02
208	10.350	2,826,976.58	212,594.66
209	10.400	2,826,927.66	212,584.31
210	10.450	2,826,878.75	212,573.95
211	10.500	2,826,829.83	212,563.60
212	10.550	2,826,780.92	212,553.24
213	10.600	2,826,732.00	212,542.88
214	10.650	2,826,683.08	212,532.53

Sl. No.	Station	Northing (m)	Easting (m)
215	10.700	2,826,634.17	212,522.17
216	10.750	2,826,585.25	212,511.82
217	10.800	2,826,535.91	212,503.93
218	10.850	2,826,485.97	212,502.15
219	10.900	2,826,436.14	212,506.04
220	10.950	2,826,386.39	212,511.12
221	11.000	2,826,336.65	212,516.19
222	11.050	2,826,286.91	212,521.27
223	11.100	2,826,237.17	212,526.34
224	11.150	2,826,187.43	212,531.42
225	11.200	2,826,137.69	212,536.49
226	11.250	2,826,087.85	212,540.38
227	11.300	2,826,038.02	212,537.09
228	11.350	2,825,988.99	212,527.35
229	11.400	2,825,940.08	212,516.96
230	11.450	2,825,891.17	212,506.57
231	11.500	2,825,842.26	212,496.18
232	11.550	2,825,793.35	212,485.79
233	11.600	2,825,744.44	212,475.40
234	11.650	2,825,695.53	212,465.01
235	11.700	2,825,646.63	212,454.62
236	11.750	2,825,597.72	212,444.23
237	11.800	2,825,548.81	212,433.84
238	11.850	2,825,499.90	212,423.45
239	11.900	2,825,450.99	212,413.06
240	11.950	2,825,402.08	212,402.67
241	12.000	2,825,353.18	212,392.28
242	12.050	2,825,304.27	212,381.89
243	12.100	2,825,255.36	212,371.50
244	12.150	2,825,206.45	212,361.11
245	12.200	2,825,157.54	212,350.72
246	12.250	2,825,108.63	212,340.33
247	12.300	2,825,059.72	212,329.94
248	12.350	2,825,010.82	212,319.55
249	12.400	2,824,961.51	212,311.39
250	12.450	2,824,911.59	212,309.29
251	12.500	2,824,861.79	212,313.44
252	12.550	2,824,812.90	212,323.76
253	12.600	2,824,765.68	212,340.09
254	12.650	2,824,720.86	212,362.19
255	12.700	2,824,679.10	212,389.62
256	12.750	2,824,638.76	212,419.17
257	12.800	2,824,598.43	212,448.72
258	12.850	2,824,558.09	212,478.27
259	12.900	2,824,517.76	212,507.82
260	12.950	2,824,477.43	212,537.37
261	13.000	2,824,437.10	212,566.92

Sl. No.	Station	Northing (m)	Easting (m)
262	13.050	2,824,396.76	212,596.47
263	13.100	2,824,356.43	212,626.02
264	13.150	2,824,316.10	212,655.57
265	13.200	2,824,275.76	212,685.13
266	13.250	2,824,235.43	212,714.68
267	13.300	2,824,195.10	212,744.23
268	13.350	2,824,154.76	212,773.78
269	13.400	2,824,114.43	212,803.33
270	13.450	2,824,074.10	212,832.88
271	13.500	2,824,033.76	212,862.43
272	13.550	2,823,993.43	212,891.98
273	13.600	2,823,951.41	212,918.96
274	13.650	2,823,903.76	212,933.33
275	13.700	2,823,854.03	212,931.32
276	13.750	2,823,807.70	212,913.15
277	13.800	2,823,769.86	212,880.82
278	13.850	2,823,742.58	212,839.01
279	13.900	2,823,718.27	212,795.31
280	13.950	2,823,693.97	212,751.62
281	14.000	2,823,669.67	212,707.92
282	14.050	2,823,645.36	212,664.23
283	14.100	2,823,621.06	212,620.53
284	14.150	2,823,596.75	212,576.84
285	14.200	2,823,572.45	212,533.14
286	14.250	2,823,548.14	212,489.45
287	14.300	2,823,523.84	212,445.75
288	14.350	2,823,499.54	212,402.05
289	14.400	2,823,475.23	212,358.36
290	14.450	2,823,450.93	212,314.66
291	14.500	2,823,426.62	212,270.97
292	14.550	2,823,402.32	212,227.27
293	14.600	2,823,378.01	212,183.58
294	14.650	2,823,353.71	212,139.88
295	14.700	2,823,329.04	212,096.39
296	14.750	2,823,303.31	212,053.52
297	14.800	2,823,276.52	212,011.30
298	14.850	2,823,248.68	211,969.77
299	14.900	2,823,219.82	211,928.95
300	14.950	2,823,189.94	211,888.86
301	15.000	2,823,159.06	211,849.53
302	15.050	2,823,127.22	211,810.99
303	15.100	2,823,094.42	211,773.25
304	15.150	2,823,060.69	211,736.35
305	15.200	2,823,026.04	211,700.30
306	15.250	2,822,990.51	211,665.12
307	15.300	2,822,954.10	211,630.85
308	15.350	2,822,916.85	211,597.50



Sl. No.	Station	Northing (m)	Easting (m)
309	15.400	2,822,878.78	211,565.09
310	15.450	2,822,839.92	211,533.63
311	15.500	2,822,800.72	211,502.59
312	15.550	2,822,761.52	211,471.56
313	15.600	2,822,722.32	211,440.52
314	15.650	2,822,683.12	211,409.48
315	15.700	2,822,643.92	211,378.44
316	15.750	2,822,604.72	211,347.40
317	15.800	2,822,565.18	211,316.80
318	15.850	2,822,522.33	211,291.14
319	15.900	2,822,476.00	211,272.46
320	15.950	2,822,427.34	211,261.22
321	16.000	2,822,377.51	211,257.69
322	16.050	2,822,327.74	211,261.96
323	16.100	2,822,278.84	211,272.33
324	16.150	2,822,230.07	211,283.35
325	16.200	2,822,181.30	211,294.37
326	16.250	2,822,132.53	211,305.40
327	16.300	2,822,083.76	211,316.42
328	16.350	2,822,034.99	211,327.44
329	16.400	2,821,986.45	211,339.42
330	16.450	2,821,938.21	211,352.57
331	16.500	2,821,889.97	211,365.72
332	16.550	2,821,841.73	211,378.87
333	16.600	2,821,793.49	211,392.02
334	16.650	2,821,745.25	211,405.17
335	16.700	2,821,696.97	211,418.16
336	16.750	2,821,648.21	211,429.21
337	16.800	2,821,598.96	211,437.81
338	16.850	2,821,549.34	211,443.94
339	16.900	2,821,499.48	211,447.58
340	16.950	2,821,449.50	211,448.73
341	17.000	2,821,399.52	211,447.37
342	17.050	2,821,349.66	211,443.67
343	17.100	2,821,299.84	211,439.45
344	17.150	2,821,250.02	211,435.22
345	17.200	2,821,200.20	211,431.00
346	17.250	2,821,150.38	211,426.77
347	17.300	2,821,100.56	211,422.55
348	17.350	2,821,050.74	211,418.33
349	17.400	2,821,000.91	211,414.10
350	17.450	2,820,951.08	211,410.12
351	17.500	2,820,901.34	211,413.34
352	17.550	2,820,855.21	211,432.02
353	17.600	2,820,817.73	211,464.76
354	17.650	2,820,791.82	211,507.38
355	17.700	2,820,770.49	211,552.60

Sl. No.	Station	Northing (m)	Easting (m)
356	17.750	2,820,749.21	211,597.85
357	17.800	2,820,727.94	211,643.10
358	17.850	2,820,706.67	211,688.35
359	17.900	2,820,685.39	211,733.60
360	17.950	2,820,664.12	211,778.85
361	18.000	2,820,642.84	211,824.10
362	18.050	2,820,621.57	211,869.34
363	18.100	2,820,600.30	211,914.59
364	18.150	2,820,579.02	211,959.84
365	18.200	2,820,557.75	212,005.09
366	18.250	2,820,536.47	212,050.34
367	18.300	2,820,515.20	212,095.59
368	18.350	2,820,494.31	212,141.01
369	18.400	2,820,478.22	212,188.31
370	18.450	2,820,469.03	212,237.41
371	18.500	2,820,466.92	212,287.32
372	18.550	2,820,471.93	212,337.03
373	18.600	2,820,483.98	212,385.51
374	18.650	2,820,502.80	212,431.79
375	18.700	2,820,528.02	212,474.91
376	18.750	2,820,559.12	212,514.01
377	18.800	2,820,595.47	212,548.29
378	18.850	2,820,634.73	212,579.23
379	18.900	2,820,674.13	212,610.02
380	18.950	2,820,712.46	212,642.06
381	19.000	2,820,741.79	212,682.35
382	19.050	2,820,764.70	212,726.79
383	19.100	2,820,787.57	212,771.25
384	19.150	2,820,810.43	212,815.72
385	19.200	2,820,833.30	212,860.18
386	19.250	2,820,856.16	212,904.65
387	19.300	2,820,876.62	212,950.13
388	19.350	2,820,884.02	212,999.56
389	19.400	2,820,890.84	213,049.09
390	19.450	2,820,897.66	213,098.63
391	19.500	2,820,904.47	213,148.16
392	19.550	2,820,911.29	213,197.69
393	19.600	2,820,918.11	213,247.23
394	19.650	2,820,924.93	213,296.76
395	19.700	2,820,937.79	213,344.95
396	19.750	2,820,952.35	213,392.76
397	19.800	2,820,949.42	213,442.15
398	19.850	2,820,923.17	213,484.10
399	19.900	2,820,884.94	213,516.31
400	19.950	2,820,846.44	213,548.22
401	20.000	2,820,814.08	213,586.13
402	20.050	2,820,783.94	213,626.02

Sl. No.	Station	Northing (m)	Easting (m)
403	20.100	2,820,752.97	213,665.22
404	20.150	2,820,714.28	213,696.87
405	20.200	2,820,675.27	213,728.14
406	20.250	2,820,636.25	213,759.41
407	20.300	2,820,597.64	213,791.14
408	20.350	2,820,566.86	213,830.32
409	20.400	2,820,524.57	213,856.83
410	20.450	2,820,481.26	213,881.82
411	20.500	2,820,439.38	213,908.90
412	20.550	2,820,412.58	213,950.50
413	20.600	2,820,396.59	213,997.87
414	20.650	2,820,380.60	214,045.25
415	20.700	2,820,364.61	214,092.62
416	20.750	2,820,348.59	214,139.98
417	20.800	2,820,329.75	214,186.28
418	20.850	2,820,309.19	214,231.86
419	20.900	2,820,290.09	214,278.02
420	20.950	2,820,281.38	214,327.12
421	21.000	2,820,285.09	214,376.86
422	21.050	2,820,300.99	214,424.12
423	21.100	2,820,324.40	214,468.30
424	21.150	2,820,337.68	214,516.01
425	21.200	2,820,326.66	214,564.25
426	21.250	2,820,299.98	214,606.52
427	21.300	2,820,272.71	214,648.42
428	21.350	2,820,241.81	214,687.43
429	21.400	2,820,197.13	214,708.70
430	21.450	2,820,147.54	214,706.80
431	21.500	2,820,098.41	214,697.52
432	21.550	2,820,048.77	214,692.36
433	21.600	2,819,999.91	214,701.81
434	21.650	2,819,956.83	214,726.72
435	21.700	2,819,924.27	214,764.36
436	21.750	2,819,905.81	214,810.58
437	21.800	2,819,902.72	214,860.33
438	21.850	2,819,906.43	214,910.19
439	21.900	2,819,908.03	214,960.12
440	21.950	2,819,896.16	215,008.45
441	22.000	2,819,872.37	215,052.39
442	22.050	2,819,849.92	215,097.00
443	22.100	2,819,836.42	215,145.06
444	22.150	2,819,832.74	215,194.84
445	22.200	2,819,838.99	215,244.37
446	22.250	2,819,850.85	215,292.94
447	22.300	2,819,862.88	215,341.47
448	22.350	2,819,877.74	215,389.19
449	22.400	2,819,895.21	215,436.02

Sl. No.	Station	Northing (m)	Easting (m)
450	22.450	2,819,900.72	215,485.48
451	22.500	2,819,890.91	215,534.39
452	22.550	2,819,885.25	215,583.69
453	22.600	2,819,896.55	215,632.34
454	22.650	2,819,892.13	215,681.76
455	22.700	2,819,880.18	215,730.31
456	22.750	2,819,879.05	215,779.97
457	22.800	2,819,897.33	215,826.15
458	22.850	2,819,927.02	215,866.36
459	22.900	2,819,941.46	215,913.57
460	22.950	2,819,951.25	215,962.28
461	23.000	2,819,982.05	216,001.00
462	23.050	2,820,025.09	216,026.38
463	23.100	2,820,068.75	216,050.75
464	23.150	2,820,116.41	216,064.61
465	23.200	2,820,164.45	216,077.26
466	23.250	2,820,201.25	216,110.34
467	23.300	2,820,217.69	216,157.02
468	23.350	2,820,219.13	216,206.99
469	23.400	2,820,222.02	216,256.84
470	23.450	2,820,240.87	216,302.79
471	23.500	2,820,273.44	216,340.65
472	23.550	2,820,295.81	216,384.99
473	23.600	2,820,299.16	216,434.54
474	23.650	2,820,287.06	216,483.02
475	23.700	2,820,273.75	216,531.21
476	23.750	2,820,260.39	216,579.40
477	23.800	2,820,236.39	216,622.70
478	23.850	2,820,194.66	216,649.29
479	23.900	2,820,145.95	216,660.39
480	23.950	2,820,096.91	216,653.81
481	24.000	2,820,057.03	216,624.52
482	24.050	2,820,028.82	216,583.30
483	24.100	2,819,988.58	216,554.50
484	24.150	2,819,940.06	216,542.65
485	24.200	2,819,891.16	216,532.20
486	24.250	2,819,842.23	216,521.90
487	24.300	2,819,792.52	216,522.80
488	24.350	2,819,743.18	216,530.84
489	24.400	2,819,693.43	216,533.50
490	24.450	2,819,645.48	216,520.14
491	24.500	2,819,599.99	216,499.41
492	24.550	2,819,552.61	216,483.52
493	24.600	2,819,503.63	216,473.67
494	24.650	2,819,453.80	216,470.00
495	24.700	2,819,403.89	216,472.57
496	24.750	2,819,354.61	216,480.91

Sl. No.	Station	Northing (m)	Easting (m)
497	24.800	2,819,305.29	216,488.60
498	24.850	2,819,257.32	216,476.46
499	24.900	2,819,216.95	216,447.05
500	24.950	2,819,173.56	216,422.52
501	25.000	2,819,133.11	216,393.90
502	25.050	2,819,105.66	216,352.17
503	25.100	2,819,073.98	216,313.94
504	25.150	2,819,032.62	216,285.85
505	25.200	2,818,990.91	216,258.28
506	25.250	2,818,945.69	216,237.37
507	25.300	2,818,896.22	216,231.83
508	25.350	2,818,847.67	216,242.76
509	25.400	2,818,802.96	216,265.07
510	25.450	2,818,759.00	216,288.90
511	25.500	2,818,715.04	216,312.73
512	25.550	2,818,671.09	216,336.56
513	25.600	2,818,627.13	216,360.39
514	25.650	2,818,583.70	216,385.11
515	25.700	2,818,553.48	216,424.13
516	25.750	2,818,548.38	216,473.23
517	25.800	2,818,569.91	216,517.66
518	25.850	2,818,603.78	216,554.43
519	25.900	2,818,637.77	216,591.11
520	25.950	2,818,671.75	216,627.78
521	26.000	2,818,705.74	216,664.46
522	26.050	2,818,739.72	216,701.14
523	26.100	2,818,773.70	216,737.81
524	26.150	2,818,805.19	216,776.42
525	26.200	2,818,811.75	216,825.06
526	26.250	2,818,786.97	216,867.48
527	26.300	2,818,749.93	216,901.06
528	26.350	2,818,717.53	216,938.98
529	26.400	2,818,695.51	216,983.73
530	26.450	2,818,683.61	217,032.25
531	26.500	2,818,673.22	217,081.16
532	26.550	2,818,655.50	217,127.66
533	26.600	2,818,623.18	217,165.48
534	26.650	2,818,582.80	217,194.95
535	26.700	2,818,552.00	217,233.91
536	26.750	2,818,536.45	217,281.31
537	26.800	2,818,517.83	217,327.58
538	26.850	2,818,488.39	217,367.84
539	26.900	2,818,454.29	217,404.41
540	26.950	2,818,420.18	217,440.96
541	27.000	2,818,386.06	217,477.52
542	27.050	2,818,351.95	217,514.07
543	27.100	2,818,317.83	217,550.62

Sl. No.	Station	Northing (m)	Easting (m)
544	27.150	2,818,284.69	217,588.04
545	27.200	2,818,259.17	217,630.88
546	27.250	2,818,245.03	217,678.70
547	27.300	2,818,243.16	217,728.54
548	27.350	2,818,253.68	217,777.29
549	27.400	2,818,275.93	217,821.92
550	27.450	2,818,308.15	217,860.03
551	27.500	2,818,343.97	217,894.92
552	27.550	2,818,375.88	217,933.29
553	27.600	2,818,397.69	217,978.14
554	27.650	2,818,407.74	218,026.99
555	27.700	2,818,405.38	218,076.80
556	27.750	2,818,393.37	218,125.31
557	27.800	2,818,379.86	218,173.45
558	27.850	2,818,366.35	218,221.59
559	27.900	2,818,352.83	218,269.73
560	27.950	2,818,344.14	218,318.72
561	28.000	2,818,358.01	218,366.21
562	28.050	2,818,390.72	218,403.84
563	28.100	2,818,410.50	218,448.76
564	28.150	2,818,404.44	218,498.24
565	28.200	2,818,411.24	218,547.04
566	28.250	2,818,428.91	218,593.82
567	28.300	2,818,446.58	218,640.59
568	28.350	2,818,464.25	218,687.36
569	28.400	2,818,481.92	218,734.14
570	28.450	2,818,499.59	218,780.91
571	28.500	2,818,517.26	218,827.68
572	28.550	2,818,534.87	218,874.48
573	28.600	2,818,547.40	218,922.76
574	28.650	2,818,544.77	218,972.46
575	28.700	2,818,526.17	219,018.65
576	28.750	2,818,498.64	219,060.37
577	28.800	2,818,470.46	219,101.67
578	28.850	2,818,448.35	219,146.26
579	28.900	2,818,445.22	219,195.93
580	28.950	2,818,448.78	219,245.81
581	29.000	2,818,447.71	219,295.56
582	29.025	2,818,441.49	219,320.15

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

The alignment plan of the Project Highway is available on E - Tendering portal of NHIDCL.

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

- (i) The alignment of the Project Highway is enclosed in the alignment plan. The finished road level indicated in the alignment plan shall be treated as minimum & indicative. The contractor shall design the road profile of the project highway in accordance with Schedule-D.
- (ii) Traffic Signages of the Project Highway showing numbers & location of traffic signs are enclosed. The contractor shall, however, improve/upgrade upon the traffic signage plan as indicated in Annex-III based on site/design requirement as per the relevant specifications/IRC Codes/Manual.

Annex - IV

*(Schedule-A)*

**Environment and Forest Clearances**

As per MOEF notification F. No. 21-270/2008-1A.III (dated 22 August 2013), Environmental Clearance is not required. Forest Clearance is not Required.



Schedule - B  
(See Clause 2.1)

**Development of the Project Highway**

**1 Development of the Project Highway**

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

**2 Two-Laning with Paved Shoulder**

Construction of Tura Bypass with Two-Lane with Paved Shoulders of the Project Highway as described in Annex-I of Schedule-B, Schedule-B1 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)

Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (design chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design chainage Km 29+030) (Length = 29.030) on HAM Mode in the State of Meghalaya.

The coordinates of start and end point of project road are given below.

#### Co-ordinates of Start and End of Project Stretch

Location		UTM Co-Ordinate	
Description	Design Chainage	Easting (m)	Northing (m)
Start of Project Road	0+000	2832620.46	218692.68
End of Project Road	29+030	2818441.49	219320.15

#### Description of the Project

##### 1. Development of the Project Highway

The Project Highway shall generally follow the horizontal alignment shown in the plan specified in Annex - III of Schedule-A, unless otherwise specified by the Authority. Notwithstanding anything to the contrary contained in this Agreement or IRC: SP: 73 the proposed plan & profile, locations of different structures/drains/service & slip road/RE walls, chainages of different structures/drains/service & slip road/RE walls, length of different structures/drains/service & slip road/RE walls etc. of the project highway as indicated in the Schedule A, Schedule B, Schedule C and their Annexes shall be treated as minimum requirement. Based on site/design requirement, the Concessionaire shall finalize their Detailed Designs (Development Stage) including plan & profile of the project highway and submit the same to Authority & its Engineer for its Consent/Approval and Safety Audit by Safety Auditor, before the start of the execution of project. The designs so approved shall not be in contradiction with the scope of project. For avoidance of doubt, the provisions mentioned in schedule B & C cannot be changed, only the design of the components is to be submitted for consent/ approval.

##### 1.1 Width of Carriageway

1.1.1 Two Lane with paved shoulders shall be undertaken. The paved carriageway shall be 10.0 m for two laning (including paved shoulder).

1.1.2 The width of paved carriageway shall be 10 m for two laning (Including paved shoulder).

Sl. No.	Built-up stretch (Township)	Location (km)	Width (m)	Typical cross section (Ref. to Manual)
NIL				

1.1.3 Except as otherwise provided in this Agreement, the width shall be adjusted to fit into appropriate plans and cross sections developed in accordance with TCS enclosed.

1.1.4 The entire cross-sectional elements shall be accommodated in the available/proposed ROW. Consultant has to mention specifically such areas in Schedule-B). If required, suitable retaining structures shall be provided to accommodate the highway cross section within the available/ proposed ROW. The details of such sections are mentioned in Schedule-B. In case

of any other section not included in Schedule-B, where retaining structures are to be provided, shall constitute a Change of Scope.

- 1.1.5 In addition to the width of paved carriageway mentioned in above clauses, additional lanes shall be provided as acceleration/deceleration lane and taper to the required length at entry/exit locations as per manual.

## 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. (IRC: SP: 73-2018) & (IRC SP 87-2019).

### 2.2 Design Speed

The project road shall be designed for 100 Kmph for plain and rolling terrain and 60 Kmph for mountainous and steep terrain except at the locations mentioned below (As per IRC SP: 73-2018, IRC: SP: 84-2019). However, the contractor shall adopt minimum design speed for designing the project highway as specified in plan and profile drawings of Annex-III of Schedule A and in Annex-I of Schedule D.

S. No.	Design Chainage (km)	Min Radius (m)	Design Speed (Kmph)	Type of Deficiency
1	25+719	90	40	ROW Constraints
2	26+184	75	40	
3	26+328	130	40	

### 2.3 Improvements of the existing road geometrics

- 2.3.1 The existing road geometrics shall be improved as per the codal provisions. In the 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 appropriate road signs, pavement markings and safety measures shall be provided.

Sl. no.	Stretch (Design Chainage) Km.		Type of Deficiency	Remarks
	From	To		
NIL				

- 2.3.2 The entire cross-sectional elements shall be accommodated in the available/proposed ROW. If required, suitable full height retaining structures shall be provided to accommodate the highway cross section within the available/ proposed ROW. The details of such sections are mentioned in Schedule-B. In case of any other section not included in Schedule-B, where retaining structures are to be provided, shall constitute a Change of Scope.

- 2.3.3 Bypasses / Greenfield:** The existing road shall be bypassed to the standards as specified in the manual at the following locations:

Sl. No	Location	Existing Chainage (Km)		Existing Length (m)	Design Chainage (Km)		Design Length (m)
		From	To		From	To	
NIL							

## 2.4 Right of Way

Details of the Right of Way along Project Highways and Side Roads are given in Annex-II of Schedule-A.

## 2.5 Type of shoulders

- 2.5.1** The Design Specification of paved shoulders shall conform to the requirements specified in paragraph 5.10 of the manual.
- 2.5.2** Paved shoulders and strip on median side shall be of same specification and pavement composition as of main carriageway (clause No. 5. 10 IRC SP: 84-2019).
- 2.5.3** The overlay on the main carriageway pavement and on the paved shoulders shall be uniform in thickness and composition. (Clause No. 5.10IRC SP: 84-2019) - Not Applicable.
- 2.5.4** In Built-up sections, footpaths/fully paved shoulder shall be provided with width 1.5m / 2.5m respectively. (Clause No. 2. 15 & clause No. 2.6 IRC SP: 84-2019) – **Not Applicable**.
- 2.5.5** The width of paved shoulders and earthen shoulders shall be as indicated in Annex-II of Schedule B.
- 2.5.6** The Design Specification of paved shoulder shall conform to the requirements specified in paragraph 5.11 of the manual.
- 2.5.7** The earthen shoulder shall be well graded with granular material / gravel crust stones or combination thereof, confirming to Clause 401 of MoRTH specification. (Clause No. 5. 11 IRC: SP: 84-2019).
- 2.5.8** The earthen shoulder of 1.0m width on median side shall be provided with top 150 mm on earthen shoulder with well graded naturals and moorum gravel crust stones thereof, confirming to Clause 401 of MoRTH specification to fix MBCB and confirm placement requirement of MBCB. (Clause No. 9.7.2(C) IRC: SP: 84-2019)

## 2.6 Lateral and Vertical Clearances at Underpasses

- 2.6.1** In case of VUP/ LVUP/ SVUP, the proposed structure, the finish road level in VUP/ LVUP/ SVUP shall be kept 150 mm above the ground level/service road/ crossroad (whichever is higher) to ensure that these VUP/ LVUP/ SVUP don't become water accumulation points. (Clause No. 2.10 IRC: SP: 84-2019)
- 2.6.2** The vertical and horizontal clearance at the underpasses shall be as per Clause 2.10.2 of the manual.

S. No.	Location Chainage (Km.)	Span / opening (m)	Minimum Vertical Clearance (m)	Remarks
NIL				

**\*Note-** Any requirement of Ground Improvement at the locations of proposed Retaining Wall / Toe Wall / High Embankment shall not be treated as COS and will be incidental to work.

## 2.7 Lateral and Vertical Clearances at overpasses

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

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

Sl. No.	Location Chainage (Km.)	Span / opening (m)	Vertical Clearance	Remarks
1	12+335	2X12X5.5	5.5	VOP AT SH-11

## 2.8 Service roads /Slip Road /Connecting Roads

2.8.1 Service Road: The height of embankment of service road shall confirm to clause 4.2.1 of IRC: SP 73-2018.

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

Sl. No.	Design Chainage (Km.)		Right Hand side (RHS)/Left Hand side (LHS)/Both side (BHS)	Paved carriageway width including shyness (m.)	Total length (m)
	From	To	BHS		
1	12+100	12+910	810 m	5.5	810

2.8.3 The Parking bays shall be provided along the service road (clause No. 2. 12.2.1 IRC: SP: 84-2019)

Sl. No.	Design Chainage (Km.) of Parking Bay		Remarks
	LHS Service Road	RHS Service Road	
NIL			

2.8.4 Slip Road: The height of embankment of slip road shall confirm to clause 4.2.1. (Clause No. 4.2.1 IRC: SP: 84-2019)

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

Sl. No.	Design Chainage (Km.)		Right Hand side (RHS)/Left Hand side (LHS)/Both side (BHS)		Paved carriageway width including shyness (m.)	Total length (m)
	From	To	LHS	RHS		
NIL						

## 2.9 Grade Separated Structures (Clause No. 3.4 IRC: SP: 84-2019):

Grade separated structures shall be constructed as per paragraph 2.13 of the Manual. Proposed levels at structure locations as shown in plan & profile specified in Annex-III of schedule A are minimum requirement and only for guidance and any increase in levels shall not constitute any change of scope. Entry/Exit arrangement from main carriageway shall be 50m before/after the start/end of approach road to grade separator i.e. Start/end of valley curve (clause No.2.12.2.2 IRC: SP: 84-2019). RCC barrier shall start from start of valley curve and end after grade separator at end of valley curve.

The sub-structure shall be continued in the median portion with RCC barrier wherever

superstructure has not been proposed in median portion. (Clause 7.1 (vii) I RC: SP: 84-2019/ IRC: SP: 87-2019).

50m long MBCB Safety barriers on structure approaches shall be provided on all four faces of each structure. MBCB provided towards median side of each structure shall be joined on ends in semi-circular shape. (Clause No. 4.3.5 and 4.9, IRC 119)

2.5m/1.5m/0.75m wide footpaths shall be provided at grade intersection below structures for each direction of pedestrian movement (refer fig 3.1 to 3.6 IRC: SP: 84-2019).

The requisite particulars are given below:

#### 2.9.1 Vehicle Overpass (VOP)

Sr. no.	Design Chainage (Km.)	LHS Roadway width (m)	RHS Roadway width (m)	Superstructure provision in median	Span arrangement (m)	Minimum vertical clearance	Skew angle	Remarks
1.	12+335	-	-	-	2x12	5.5	-	-

#### 2.9.2 Vehicle Underpasses (VUP)

Sr. no.	Design Chainage (Km.)	LHS Roadway width (m)	RHS Roadway width (m)	Superstructure provision in median	Overall Span arrangement (m)	Minimum vertical clearance	Skew angle	Remarks
NIL								

#### 2.9.3 Light Vehicle Underpasses (LVUP)

Sr. no.	Design Chainage (Km.)	LHS Roadway width (m)	RHS Roadway width (m)	Superstructure provision in median	Clear Span arrangement (m)	Minimum vertical clearance (m)	Skew angle	Remarks
NIL								

#### 2.9.4 Small Vehicle Underpasses (SVUP)

Sr. no.	Design Chainage (Km.)	LHS Roadway width (m)	RHS Roadway width (m)	Superstructure provision in median	Clear Span arrangement (m)	Minimum vertical clearance (m)	Skew angle	Remarks
NIL								

#### 2.9.5 Cattle and Pedestrian underpasses

Sr. no.	Design Chainage (Km.)	LHS Roadway width (m)	RHS Roadway width (m)	Superstructure provision in median	Span arrangement (m)	Minimum vertical clearance	Skew angle	Remarks
NIL								

Cattle and pedestrian underpass shall be constructed as follows: (No Clause exists IRC:

**2.9.6 Interchanges (IC) (clause No. 3.4 IRC: SP:84-2019)**

Sr. no.	Design Chainage (Km.)	Name of Structure	Span arrangement (m)	Total width (m)	Typical cross section	Remarks
NIL						

**2.9.7 Details of Ramps, Crossroads and Connecting Roads at Interchanges (IC)**

Sr. no.	Carriageway width including Kerb shyness (m.)	Length (m)	Description of Ramps, Crossroads and connecting roads	Remarks
NIL				

**2.10 Typical Cross Section (TCS) of the Project Highway (clause No. 2. 17 IRC: SP: 84-2019)**

The Project Highway shall be constructed to Four lane configuration. Typical cross sections required to be developed in different sections of the Project Highway are given below.

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
1	0+000	0+150	150	TCS-2B
2	0+150	0+180	30	TCS-5B
3	0+180	0+310	130	TCS-1
4	0+310	0+610	300	TCS-2B
5	0+610	1+010	400	TCS-1
6	1+010	1+100	90	TCS-2B
7	1+100	1+240	140	TCS-1
8	1+240	1+310	70	TCS-2B
9	1+310	1+410	100	TCS-5B
10	1+410	1+470	60	TCS-2
11	1+470	1+510	40	TCS-1
12	1+510	1+640	130	TCS-2
13	1+640	1+940	300	TCS-2B
14	1+940	2+020	80	TCS-2A
15	2+020	2+190	170	TCS-2
16	2+190	2+240	50	TCS-1
17	2+240	2+370	130	TCS-2A
18	2+370	2+390	20	TCS-2B
19	2+390	2+520	130	TCS-5B
20	2+520	2+590	70	TCS-1

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
21	2+590	2+710	120	TCS-2A
22	2+710	2+780	70	TCS-1
23	2+780	2+840	60	TCS-4
24	2+840	2+990	150	TCS-5
25	2+990	3+030	40	TCS-1
26	3+030	3+070	40	TCS-2
27	3+070	3+230	160	TCS-2A
28	3+230	3+290	60	TCS-4
29	3+290	3+360	70	TCS-2
30	3+360	3+430	70	TCS-2
31	3+430	3+490	60	TCS-2A
32	3+490	3+640	150	TCS-4
33	3+640	3+790	150	TCS-5
34	3+790	4+070	280	TCS-2A
35	4+070	4+100	30	TCS-2
36	4+100	4+220	120	TCS-5B
37	4+220	4+270	50	TCS-4
38	4+270	4+330	60	TCS-2
39	4+330	4+430	100	TCS-5B
40	4+430	4+530	100	TCS-1
41	4+530	4+640	110	TCS-3
42	4+640	4+730	90	TCS-2A
43	4+730	4+760	30	TCS-2
44	4+760	4+820	60	TCS-2A
45	4+820	4+920	100	TCS-1
46	4+920	4+960	40	TCS-5B
47	4+960	5+040	80	TCS-1
48	5+040	5+190	150	TCS-2A
49	5+190	5+310	120	TCS-5
50	5+310	5+400	90	TCS-1
51	5+400	5+500	100	TCS-2



Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
52	5+500	5+560	60	TCS-4
53	5+560	5+660	100	TCS-5B
54	5+660	5+740	80	TCS-2
55	5+740	5+810	70	TCS-1
56	5+810	5+890	80	TCS-5B
57	5+890	5+960	70	TCS-2
58	5+960	6+130	170	TCS-2A
59	6+130	6+310	180	TCS-2
60	6+310	6+440	130	TCS-5B
61	6+440	6+500	60	TCS-2
62	6+500	6+700	200	TCS-2A
63	6+700	6+790	90	TCS-2
64	6+790	7+130	340	TCS-2A
65	7+130	7+340	210	TCS-2
66	7+340	7+530	190	TCS-5B
67	7+530	7+700	170	TCS-2
68	7+700	7+750	50	TCS-1
69	7+750	7+860	110	TCS-2B
70	7+860	7+970	110	TCS-2
71	7+970	8+000	30	TCS-2B
72	8+000	8+110	110	TCS-1
73	8+110	8+230	120	TCS-2B
74	8+230	8+300	70	TCS-1
75	8+300	8+420	120	TCS-2B
76	8+420	8+510	90	TCS-2
77	8+510	8+600	90	TCS-1
78	8+600	8+670	70	TCS-5B
79	8+670	8+900	230	TCS-2B
80	8+900	8+920	20	TCS-3
81	8+920	9+000	80	TCS-5B
82	9+000	9+040	40	TCS-1

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
83	9+040	9+210	170	TCS-2B
84	9+210	9+230	20	TCS-2
85	9+230	9+270	40	TCS-2A
86	9+270	9+310	40	TCS-2
87	9+310	9+380	70	TCS-3
88	9+380	9+410	30	TCS-1
89	9+410	9+560	150	TCS-5B
90	9+560	9+640	80	TCS-2
91	9+640	9+700	60	TCS-2A
92	9+700	9+830	130	TCS-2
93	9+830	9+980	150	TCS-2A
94	9+980	10+060	80	TCS-1
95	10+060	10+200	140	TCS-5B
96	10+200	10+250	50	TCS-2B
97	10+250	10+320	70	TCS-2A
98	10+320	10+360	40	TCS-2
99	10+360	10+580	220	TCS-1
100	10+580	10+780	200	TCS 5B
101	10+780	11+060	280	TCS-2B
102	11+060	11+260	200	TCS-1
103	11+260	11+400	140	TCS-2B
104	11+400	11+450	50	TCS-1
105	11+450	11+480	30	TCS-5B
106	11+480	11+510	30	TCS-1
107	11+510	11+800	290	TCS-2
108	11+800	11+820	20	TCS-1
109	11+820	12+100	280	TCS-5B
110	12+100	12+910	810	TCS-1A
111	12+910	13+180	270	TCS-2
112	13+180	13+310	130	TCS-2A
113	13+310	13+410	100	TCS-2

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
114	13+410	13+700	290	TCS-1
115	13+700	13+750	50	TCS-2
116	13+750	14+500	750	TCS-2A
117	14+500	14+790	290	TCS-2
118	14+790	14+840	50	TCS-1
119	14+840	14+980	140	TCS-5B
120	14+980	15+050	70	TCS-1
121	15+050	15+130	80	TCS-5B
122	15+130	15+330	200	TCS-1
123	15+330	15+400	70	TCS-2B
124	15+400	15+460	60	TCS-1
125	15+460	15+720	260	TCS-5B
126	15+720	15+740	20	TCS-1
127	15+740	15+800	60	TCS-3
128	15+800	15+890	90	TCS-5B
129	15+890	15+940	50	TCS-3
130	15+940	15+960	20	TCS-2
131	15+960	16+030	70	TCS-1
132	16+030	16+090	60	TCS-2
133	16+090	16+260	170	TCS-1
134	16+260	16+300	40	TCS-5A
135	16+300	16+340	40	TCS-2B
136	16+340	16+360	20	TCS-1
137	16+360	16+490	130	TCS-5B
138	16+490	16+520	30	TCS-3
139	16+520	16+620	100	TCS-1
140	16+620	16+680	60	TCS-5B
141	16+680	16+850	170	TCS-1
142	16+850	17+050	200	TCS-2
143	17+050	17+100	50	TCS-1
144	17+100	17+250	150	TCS-5B

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
145	17+250	17+320	70	TCS-3
146	17+320	17+370	50	TCS-2
147	17+370	17+480	110	TCS-2A
148	17+480	17+560	80	TCS-5A
149	17+560	18+350	790	TCS-2A
150	18+350	18+410	60	TCS-1
151	18+410	18+520	110	TCS-3
152	18+520	18+630	110	TCS-2
153	18+630	18+670	40	TCS-5A
154	18+670	18+700	30	TCS-3
155	18+700	18+820	120	TCS-2A
156	18+820	18+940	120	TCS-2
157	18+940	18+990	50	TCS-5A
158	18+990	19+220	230	TCS-2A
159	19+220	19+270	50	TCS-5
160	19+270	19+340	70	TCS-5B
161	19+340	19+430	90	TCS-3
162	19+430	19+600	170	TCS-2
163	19+600	19+870	270	TCS-5A
164	19+870	20+370	500	TCS-5B
165	20+370	20+680	310	TCS-5A
166	20+680	20+970	290	TCS-5
167	20+970	21+030	60	TCS-1
168	21+030	22+090	1060	TCS-5
169	22+090	22+340	250	TCS-1
170	22+340	22+680	340	TCS-5
171	22+680	22+890	210	TCS-1
172	22+890	23+270	380	TCS-2A
173	23+270	23+340	70	TCS-1
174	23+340	23+470	130	TCS-2B
175	23+470	23+590	120	TCS-2

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
176	23+590	23+610	20	TCS-1
177	23+610	23+770	160	TCS-2B
178	23+770	23+830	60	TCS-1
179	23+830	23+900	70	TCS-2B
180	23+900	24+040	140	TCS-1
181	24+040	24+160	120	TCS-2B
182	24+160	24+190	30	TCS-1
183	24+190	24+350	160	TCS-1
184	24+350	24+490	140	TCS-2B
185	24+490	24+630	140	TCS-1
186	24+630	24+800	170	TCS-2B
187	24+800	25+090	290	TCS-1
188	25+090	25+260	170	TCS-2
189	25+260	25+450	190	TCS-2B
190	25+450	25+570	120	TCS-3
191	25+570	25+640	70	TCS-5B
192	25+640	25+850	210	TCS-1
193	25+850	26+200	350	TCS-5B
194	26+200	26+240	40	TCS-1
195	26+240	26+270	30	TCS-2
196	26+270	26+460	190	TCS-2A
197	26+460	26+610	150	TCS-2B
198	26+610	27+060	450	TCS-2A
199	27+060	27+200	140	TCS-2
200	27+200	27+440	240	TCS-2B
201	27+440	27+490	50	TCS-1
202	27+490	27+600	110	TCS-5
203	27+600	27+700	100	TCS 4
204	27+700	27+820	120	TCS-2B
205	27+820	28+050	230	TCS-1
206	28+050	28+140	90	TCS-5B

Sr. No.	Design Chainage (Km.)		Length (m)	TCS
	From	To		
207	28+140	28+350	210	TCS-1
208	28+350	28+500	150	TCS-2B
209	28+500	28+660	160	TCS-1
210	28+660	29+030	370	TCS-2

**Note:**

1. Applicable typical cross-sections for the project highway in different segments of Two Lane with paved shoulders, four lane divided carriage way and Two Lane with paved shoulders with service road at built up stretch are given below:

### 3. Intersections and Grade Separated Intersections

All at-grade intersections and grade separated intersections shall be as per Section 3 of the manual. Existing at-grade intersections shall be improved to the prescribed standards.

The service road pavement composition shall be continued on crossroads of the intersections for the length specified for at-grade and grade separated intersections.

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

#### 3.1 At-grade intersections (IRC SP: 73-2018):

##### (a) Major Junctions:

Sl. No.	Design Chainage (Km)	Type of Junctions (T, Y, +)	Leads to	Median Opening	Category of crossroad	Carriageway width of crossroad (m)	Length of crossroad to be developed (m)	
							LHS	RHS
1	0+000	T	Tura	-	NH 127-B	7	150	150
2	29+030	T	Dalu	-	NH 217	7	150	150

##### (b) Minor Junctions:

Sl. No.	Design Chainage (Km)	Type of Junctions (T, Y, +)	Leads to	Median Opening	Category of crossroad	Carriageway width of crossroad	Length of crossroad to be developed	
							LHS	RHS
NIL								

**Note:**

1. Type of Junction to be improved as per manual. (IRC: SP: 73-2018)
2. The contractor shall take up 'Detailed Engineering study' to ascertain further details of all

intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in section-3 of the manual. Auxiliary lanes including storage, acceleration and deceleration lane along with physical islands to be provided.

The crossroad at the junctions which are having a level difference from the main carriageway, are to be improved at the level of main carriageway for the length of 30m and then to be merged with the crossroad at the gradient not more than 1: 50. (Clause No. 3.2.2 IRC: SP: 84-2019).

**3.2 At-Grade Intersections below Grade Separators/ Interchanges: These shall be provided as given at para below of this Annex-I of the Schedule B. (Clause No. 3.4.7 of IRC: SP: 84-2019)**

Sl. No.	Design Chainage (Km)	Type of Junctions (T, Y, +)	Leads to	U-Turn provision in Viaduct spans	Category of crossroad	Carriageway width of crossroad	Length of crossroad to be developed	
							LHS	RHS
1	12+335	+	Tura - Ampati	-	SH-11	5.5	-	-

**Note:**

1. The Concessionaire /Contractor shall take up 'Detailed Engineering study' to ascertain further details of all intersections and treatment of the intersections shall be designed in accordance with the latest guidelines mentioned out in section-3 of manual.
2. Junction improvement under grade separators shall be carried out as per manual with proper entry/exit to crossroads and slip/service roads, etc. Auxiliary lanes including storage, acceleration and deceleration lane along with physical islands to be provided.
3. The location of grade-separated structures is indicative. Exact location should be decided in consultation with Independent Engineer
4. Intersection Layout, Entry/Exit, Right Turning Lane, U-Turns, Geometric Design and Typical Cross Sections of Interchange shall be included by DPR consultant in Annexes to schedule-B.
5. Only Entry or Exit shall be designed at any location (provision of entry/exit by Ghost Island not permitted). (Clause No. 2.13.1 IRC: SP:84-2019)

**4. Road Embankment and Cut Section**

Construction of road embankment/cuttings shall conform to the Specifications and Standards given in section 4 of the manual. Notwithstanding anything to the contrary contained in this Agreement or Manual, the proposed profile of the project highway as indicated in the Annex-III of Schedule A shall be treated as minimum requirement.

Based on site/design requirement, the Concessionaire / Contractor shall design the alignment plans and profiles of the project highway based on site/design requirement mentioned in Schedule B with approval from the Independent Engineer/Authority Engineer within the available Right of Way. However, it is clarified that bottom of subgrade level shall be at-least 1500 mm above HFL/Existing ground level for a Greenfield/ bypass stretch.

The side slopes shall not be steeper than 2H: 1V. In case, there is a ROW constraint than, suitable soil retaining structures shall be provided. (Clause No. 4.2 IRC: SP:84-2019)

For stability of slope up to 3m height the turfing can be adapted. For the slope from 3-6m suitable, geocell, geo-grid, geo-green etc. with 1.5H: 1V slope can be provided with suitable drainage chutes as per IRC 56. For the slope more than 6m height, a complete slope stability analysis as per IRC:75 shall be done and the slopes shall be (1.5H:1V) compulsory protected with stone pitching within stone masonry grid structure of 4mx4m and suitable drains/chutes etc. shall be provided for effective drainage of the water.

Where pond ash is used for embankment construction, the embankment shall be designed and constructed in accordance with IRC: SP: 58 (Clause No. 4.2.4 & 4.4.4.i (d) IRC: SP: 84-2019)

## **5. Pavement Design**

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

**5.2** Type of Pavement and Design requirement (IRC 37-2018)

The pavement shall be flexible type for entire length of project highway except for toll plaza location and Tunnel location where rigid pavement shall be provided. Design Period and Strategy Pavement shall be constructed for the entire length of Project Highway including paved shoulders. Flexible Pavement shall be designed for a minimum design period of 15 years and minimum sub grade CBR of 8%. Whereas rigid pavement shall be designed for a minimum design period of 30 years. Stage construction shall not be permitted.

**5.2.1** Recommended Pavement Design: Notwithstanding anything to the contrary contained in this Agreement or the manual, the Concessionaire / contractor shall design the pavement of main carriageway for design traffic of 30 MSA.

**5.2.2** The pavement for service road/slip roads shall be designed for projected traffic 30 MSA subject to minimum as follows:

- i. Service Roads in Built-up areas for minimum 30 MSA: Not Applicable.
- ii. Slip Roads for minimum 30 MSA
- iii. Service Roads in Rural Area for minimum 30 MSA

**5.3** In order to meet the intended functional requirement of respective pavement layers on main carriageway, the minimum thickness of respective pavement layers for main carriageway and connecting crossroads/ service roads/ slip roads/ entry/exit locations, acceleration/ deceleration lane, right turning lanes shall, however, in no case be less than as given below. However, the Concessionaire shall propose new innovative technology as per Circular in consultation with Independent Engineer.

**5.3.1** Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Flexible) with GSB/WMM

<b>Pavement composition</b>	<b>Minimum crust thickness in mm</b>
Subgrade	500
CTSB	200
WMM	150
DBM	50



BC	40
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- 5.3.2** Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Flexible) with CTB/CTSB & Subgrade CBR 8%

Pavement composition	Minimum crust thickness in mm
Subgrade	500
CTSB	200
WMM	150
DBM	50
BC	40

- 5.3.3** Main carriageway, paved shoulder, median side paved strip, entry/exit locations, acceleration/ deceleration lane, right turning lanes (Rigid) -For Toll Plaza location and Tunnel.

Pavement composition	Minimum crust thickness in mm
Subgrade	500
GSB	150
DLC	150
PQC	300

- 5.3.4** Crossroads / service roads/ slip roads

Pavement composition	Minimum crust thickness in mm
Subgrade	500
CTSB	200
WMM	150
DBM	50
BC	40

- 5.4** Reconstruction of Stretches with New pavement (Clause No. 5.9.4 IRC: SP: 84-2019)

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

## 6. Roadside Drainage

- 6.1** Drainage system including surface and subsurface drains for the Project Highway including crossroads shall be provided as per section 6 of the manual. RCC Drain cum footpaths / PCC open Drain shall conform to the cross- sectional features and other details as given in Annexes to Schedule-B and shall be provided as under:

- i) **RCC Cover Drain shall be proposed in built-up locations listed below:**

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
1	0+000	0+150	150	1	11940
2	0+310	0+610	300	1	
3	1+010	1+100	90	1	
4	1+240	1+310	70	1	
5	1+640	1+940	300	1	

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
6	1+940	2+020	80	1	
7	2+240	2+370	130	1	
8	2+370	2+390	20	1	
9	2+590	2+710	120	1	
10	3+070	3+230	160	1	
11	3+430	3+490	60	1	
12	3+790	4+070	280	1	
13	4+530	4+640	110	1	
14	4+640	4+730	90	1	
15	4+760	4+820	60	1	
16	5+040	5+190	150	1	
17	5+960	6+130	170	1	
18	6+500	6+700	200	1	
19	6+790	7+130	340	1	
20	7+750	7+860	110	1	
21	7+970	8+000	30	1	
22	8+110	8+230	120	1	
23	8+300	8+420	120	1	
24	8+670	8+900	230	1	
25	8+900	8+920	20	1	
26	9+040	9+210	170	1	
27	9+230	9+270	40	1	
28	9+310	9+380	70	1	
29	9+640	9+700	60	1	
30	9+830	9+980	150	1	
31	10+200	10+250	50	1	
32	10+250	10+320	70	1	
33	10+780	11+060	280	1	
34	11+260	11+400	140	1	
35	11+900	11+930	30	1	
36	11+930	12+120	190	1	
37	12+120	12+920	800	1	
38	12+920	12+950	30	1	
39	12+950	12+960	10	1	
40	12+960	12+970	10	1	
41	12+970	13+090	120	1	
42	13+090	13+100	10	1	
43	13+180	13+310	130	1	
44	13+750	14+500	750	1	
45	15+330	15+400	70	1	
46	15+740	15+800	60	1	
47	15+890	15+940	50	1	
48	16+260	16+300	40	1	
49	16+300	16+340	40	1	
50	16+490	16+520	30	1	
51	17+250	17+320	70	1	

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
52	17+370	17+480	110	1	
53	17+480	17+560	80	1	
54	17+560	18+350	790	1	
55	18+410	18+520	110	1	
56	18+630	18+670	40	1	
57	18+670	18+700	30	1	
58	18+700	18+820	120	1	
59	18+940	18+990	50	1	
60	18+990	19+220	230	1	
61	19+340	19+430	90	1	
62	19+600	19+870	270	1	
63	20+370	20+680	310	1	
64	22+890	23+270	380	1	
65	23+340	23+470	130	1	
66	23+610	23+770	160	1	
67	23+830	23+900	70	1	
68	24+040	24+160	120	1	
69	24+350	24+490	140	1	
70	24+630	24+800	170	1	
71	25+260	25+440	180	1	
72	25+450	25+570	120	1	
73	26+270	26+450	180	1	
74	26+460	26+610	150	1	
75	26+610	27+030	420	1	
76	27+200	27+440	240	1	
77	27+700	27+820	120	1	
78	28+350	28+500	150	1	

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
1	0+000	0+150	150	1	13140
2	0+310	0+610	300	1	
3	1+010	1+100	90	1	
4	1+240	1+310	70	1	
5	1+640	1+940	300	1	
6	1+940	2+020	80	1	
7	2+240	2+370	130	1	
8	2+370	2+390	20	1	
9	2+590	2+710	120	1	
10	2+780	2+840	60	1	
11	2+840	2+990	150	1	
12	3+070	3+230	160	1	
13	3+230	3+290	60	1	
14	3+430	3+490	60	1	

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
15	3+490	3+640	150	1	
16	3+640	3+790	150	1	
17	3+790	4+070	280	1	
18	4+220	4+270	50	1	
19	4+640	4+730	90	1	
20	4+760	4+820	60	1	
21	5+040	5+190	150	1	
22	5+190	5+310	120	1	
23	5+500	5+560	60	1	
24	5+960	6+130	170	1	
25	6+500	6+700	200	1	
26	6+790	7+130	340	1	
27	7+750	7+860	110	1	
28	7+970	8+000	30	1	
29	8+110	8+230	120	1	
30	8+300	8+420	120	1	
31	8+670	8+900	230	1	
32	9+040	9+210	170	1	
33	9+230	9+270	40	1	
34	9+640	9+700	60	1	
35	9+830	9+980	150	1	
36	10+200	10+250	50	1	
37	10+250	10+320	70	1	
38	10+780	11+060	280	1	
39	11+260	11+400	140	1	
40	11+900	11+930	30	1	
41	11+930	12+120	190	1	
42	12+120	12+920	800	1	
43	12+920	12+950	30	1	
44	12+950	12+960	10	1	
45	12+960	12+970	10	1	
46	12+970	13+090	120	1	
47	13+090	13+100	10	1	
48	13+180	13+300	120	1	
49	13+750	14+500	750	1	
50	15+330	15+400	70	1	
51	16+300	16+340	40	1	
52	17+370	17+480	110	1	
53	17+560	18+350	790	1	
54	18+700	18+820	120	1	
55	18+990	19+220	230	1	
56	19+220	19+270	50	1	
57	20+680	20+970	290	1	
58	21+030	22+060	1030	1	
59	22+340	22+680	340	1	
60	22+890	23+270	380	1	

Sl. No.	Design Chainage (Km)		Length (m)	Width Drain (m)	Total Length (m)
	From	To	LHS		
61	23+340	23+470	130	1	
62	23+610	23+770	160	1	
63	23+830	23+900	70	1	
64	24+040	24+160	120	1	
65	24+350	24+490	140	1	
66	24+630	24+800	170	1	
67	25+260	25+450	190	1	
68	26+270	26+460	190	1	
69	26+460	26+610	150	1	
70	26+610	27+060	450	1	
71	27+200	27+440	240	1	
72	27+490	27+590	100	1	
73	27+600	27+700	100	1	
74	27+700	27+820	120	1	
75	28+350	28+500	150	1	

**Note:** The above locations are minimum. Additional locations, if any required as per site condition shall be provided as per manual. It shall not be treated as a change in scope of work.

**ii) PCC Open Drain at Grade Separator:**

PCC Open Drain shall be provided on Grade Separator at following locations.

Sl. No.	Design Chainage (Km)		Length (m)		Width Drain (m)	Total Length (m)
	From	To	LHS	RHS		
NIL						

**Note:** The above locations are minimum. Additional locations, if any required as per site condition shall be provided as per manual. It shall not be treated as a change in scope of work.

**iii) PCC Open Drain at Locations from cutting to filling side:**

PCC Open drain shall be provided at the following locations.

Sl. No.	Design Chainage (Km)		Length (m)		Width Drain (m)	Total Length (m)
	From	To	LHS	RHS		
NIL						

**Note:** The above locations are minimum. Additional locations, if any required as per site condition shall be provided as per manual. It shall not be treated as a change in scope of work. Outlet of rainwater shall be connected nearest cross drainage structures / chutes as per design and site condition.

**iv) PCC Open Drain at Hill Side**

PCC Open drain at Hill side section shall be provided at following locations.

Sl. No.	Design Chainage (Km)		Length (m)		Width Drain (m)	Total Length (m)
	From	To	LHS	RHS		
NIL						

**Note:** The above locations are minimum. Additional locations, if any required as per site condition shall be provided as per manual. It shall not be treated as a change in scope of work.

## **6.2 Drainage for Structures (Clause No. 6.8 IRC: SP: 84-2019)**

A suitable drainage arrangement for draining storm water from deck slab shall be provided. Water shall not fall on any surface of the structures or remain standing or flowing over the road below structure.

## **6.3 Drainage for Underpass and Subways Structures (Clause No. 6.8.3 IRC: SP: 84-2019)**

A suitable drainage arrangement for draining storm water from Underpass and Subways shall be provided.

## **6.4 Drainage arrangement of Retaining Structures (No Clause in IRC: SP: 84-2019)**

Vertical Drop-down drainage pipes with suitable cleaning provision shall be provided at suitable interval. Drainage fixtures and dropdown pipes shall be of rigid, corrosion resistant material not less than 100mm dia. The Storm water of main carriageway draining on service road is not permitted.

# **7. Design of Structures**

## **7.1 General**

Project Highway is proposed to be constructed to Four-lane configuration. As such, superstructure of all bridges, culverts and structures is to be designed for edge movement of the vehicle considering stitching of new superstructure in future due to widening for additional lane. Special vehicle loading is to be considered in design of all bridges, culverts and structures.

All structures except wherever expansion joints have been provided, the pavement layers WMM, DBM & BC shall be continued over the structures for smooth riding quality of the project highway. These structures shall be designed considering the dead load of pavement (WMM, DBM, BC, etc.) layers.

All major structures will be designed preferably as continuous slab to reduce the number of expansion joints on the MJB/ ROBs/ flyover/ Interchange etc.

**7.1.1** All bridges, culverts and structures shall be designed for IRC class Special Vehicle (SV) loading as per IRC: 6 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** The overall width of the structures shall be as given in Para 7.3 of Annex-I of Schedule- B. (ref. Clause No. 7.3 IRC: SP: 84-2019 other than overall deck width)

**7.1.3** All bridges shall be high level bridges.

**7.1.4** All structures shall be designed to carry utility services on outer side of RCC barrier/Railing as per site requirement.

**7.1.5** Cross section of the new culverts and bridges at deck level for the Project Highway shall conform to the typical cross sections.

## **7.2 Culverts**

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

**7.2.2 New/Reconstruction of existing RCC pipe culverts:** The existing culverts at the following locations shall be re-constructed as new culverts

Sl. no.	Design Chainage (km)	Culvert type	Skew angle	Span/ Opening (m)	New / Reconstruction	Culvert crossing type (Balancing /Stream etc.)	Remarks
NIL							

**7.2.3 Widening of existing RCC pipe culverts (Clause No. 7.3 iii IRC: SP: 84-2019)**

All existing culverts which are to be retained shall be widened to the proposed 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 (km)	Culvert type	Skew angle	Span/ Opening (m)	Repairs Rehabilitation proposals	Culvert crossing type (Balancing/ Stream etc.)	Remarks
NIL							

**7.2.4 Construction of Box Culverts:**

**7.2.5 New culverts (given in table below) shall be constructed for width equal to the proposed roadway width of the Project Highway & as per typical cross-section given in schedule B. The details are given as under:**

Box Culverts (Clause No. 7.3 i IRC: SP: 84-2019)

Sl. no.	Design Chainage (km)	Span arrangement (m)	Skew angle	Structure type	Remarks
1	0+165	1x3		Slab Culvert	
2	0+752	1x2		Box Culvert	
3	1+368	1x2		Box Culvert	
4	2+755	1x2		Slab Culvert	
5	2+225	1x3		Box Culvert	
6	3+345	1x3		Slab Culvert	
7	3+715	1x5		Slab Culvert	
8	4+130	1x5		Slab Culvert	
9	4+359	1x5		Box Culvert	
10	4+940	1x5		Box Culvert	
11	5+235	1x2		Slab Culvert	
12	5+630	1x2		Box Culvert	
13	5+840	1x5		Box Culvert	
14	6+405	1x5		Box Culvert	
15	6+763	1x3		Box Culvert	
16	7+720	1x2		Box Culvert	
17	7+982	1x2		Box Culvert	
18	8+090	1x5		Box Culvert	
19	8+270	1x2		Box Culvert	
20	8+640	1x5		Box Culvert	
21	8+955	1x5		Box Culvert	
22	9+520	1x3		Slab Culvert	
23	10+700	1x2		Box Culvert	
24	11+190	1x3		Slab Culvert	
25	11+470	1x2		Slab Culvert	

Sl. no.	Design Chainage (km)	Span arrangement (m)	Skew angle	Structure type	Remarks
26	11+870	1x5		Box Culvert	
27	12+490	1x5		Box Culvert	
28	13+040	1x5		Box Culvert	
29	13+425	1x2		Slab Culvert	
30	13+650	1x2		Slab Culvert	
31	14+950	1x3		Box Culvert	
32	15+255	1x3		Box Culvert	
33	15+850	1x5		Box Culvert	
34	16+180	1x2		Box Culvert	
35	16+430	1x5		Box Culvert	
36	16+645	1x3		Slab Culvert	
37	17+140	1x2		Slab Culvert	
38	17+510	1x5		Slab Culvert	
39	18+380	1x2		Box Culvert	
40	18+634	1x3		Slab Culvert	
41	18+944	1x3		Slab Culvert	
42	19+280	1x2		Slab Culvert	
43	19+640	1x5		Slab Culvert	
44	19+980	1x3		Slab Culvert	
45	21+020	1x3		Slab Culvert	
46	21+410	1x2		Box Culvert	
47	21+710	1x5		Box Culvert	
48	22+130	1x2		Slab Culvert	
49	22+740	1x2		Slab Culvert	
50	23+320	1x2		Box Culvert	
51	23+570	1x3		Slab Culvert	
52	24+205	1x3		Box Culvert	
53	24+940	1x2		Box Culvert	
54	25+915	1x5		Box Culvert	
55	27+465	1x2		Box Culvert	

### 7.2.6 Widening of existing box culverts

All existing culverts which are to be retained shall be widened to the proposed roadway width of the Project Highway as per the typical cross section given in Schedule-B. Repairs and strengthening of existing structures where required shall be carried out.

(Clause No. 7.3 iii IRC: SP: 84-2019)

Sl. no.	Design Chainage (km)	Culvert type	Skew angle	Span/ Opening (m)	Repairs Rehabilitation proposals	Culvert crossing type (Balancing/ Stream etc.)	Remarks
NIL							

### 7.2.7 Pipe Culverts on Crossroads:

Sl. no.	Design Chainage (km)	Span Arrangement	Type	Length of culvert (m)	Remarks
NIL					

### 7.2.8 Utility ducts in bypasses (Greenfield as well as Brownfield which is being upgraded) in form of NP-4 RCC Pipe dia 600 mm shall be provided across the Project Highway @ 0.50 km c/c



and along with inspection chamber where directed for crossing of utilities anywhere as per manual (Clause 2. 16) requirements. **(Clause No. 2.16 IRC: SP:84-2019)**

Location of Utility duct

Sl. no.	Design Chainage (Km)		Remarks
	From	To	
NIL			

### 7.3 Bridges

#### 7.3.1 Existing bridges to be re-constructed/widened:

- Existing bridges proposed for reconstructed as new structures: (Clause No. 7.3 iv(a) IRC: SP:84-2019)  
-NIL
- Existing narrow bridges proposed to be retained and widened: (Clause No. 7.3 iv IRC: SP:84-2019)  
-NIL

#### 7.3.2 Additional New Bridges: New bridges at the following locations on the Project Highway shall be constructed. GADs for the new bridges are attached in the drawings folder for reference purpose. (Ref. Clause: No. 7.3 ii IRC: SP: 84-2019 except overall deck width)

Sl. no.	Design Chainage (km)	Total proposed length (m)	Type of crossing	Total proposed width (m)		TCS	Skew angle
				MCW	SR		
Major Bridge							
1	7+430	100	RIVER	12.5	-		0°
2	15+650	80	RIVER	12.5	-		0°
Minor Bridge							
3	2+455	60	RIVER	12.5	-		0°
4	10+148	60	STREAM	12.5	-		0°
5	15+525	40	STREAM	12.5	-		0°
6	20+344	20	VALLEY	12.5	-		0°
7	26+110	40	RIVER	12.5	-		0°
8	28+110	20	VALLEY	12.5	-		0°

#### 7.3.3 The railings of existing bridges shall be replaced by crash barriers at the following locations: (Clause No. 7.17 iv IRC: SP: 84-2019)

Sl. no.	Design Chainage (Km)		Length (m)	Remarks
	From	To		
NIL				

#### 7.3.4 The existing bridges/ RoB / Grade Separators/ RUB retained on the project highway shall be upgraded and rehabilitation measures/proposals shall be specified as follows: (Clause No.7.3 iv(b) IRC: SP:84-2019)

Sl. no.	Location (km)	Rehabilitation proposals	Remarks
NIL			

#### 7.3.5 Structures in marine environment: - the specific locations are to be mentioned by DPR Consultant.

-NIL

#### 7.4 Railroad Bridges (ROB/RUB) (Clause No. 7.18 IRC: SP: 84-2019)

**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 locations, as per GAD drawings attached in the drawing folder.

Sl. no.	Design Chainage (km)	Proposed Span arrangement (m)	Type of super structure (i.e. Bow string, simply supported, composite structure etc.)	Name of crossing	Total width (m)	Skew angle	Remarks
NIL							

**Note:**

If the length/width of the span/ type of super-structure is changed due to any reason the COS shall be considered.

1. ROB shall be designed, constructed and maintained as per the requirements of Railway authorities. The construction plan shall be prepared in consultation with the concerned railway authority.
2. The ROB shall be constructed and maintained by the concessionaire /Contractor under supervision of the Railway Authorities.
3. All charges payable to the Railways like D&G, Capitalized maintenance, signaling, cabling, OHE modification, earthing etc. except P&E charges shall be borne by the Concessionaire / Contractor.

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

Sl. no.	Design Chainage (km)	Proposed Span arrangement (m)	Name of crossing	Total width (m)	Skew angle	Remarks
NIL						

#### 7.5 Grade Separated Structures (Clause No. 7.19 IRC: SP: 84-2019)

The grade separated structures shall be provided at the locations and of the type and length specified in paragraphs 2.9, 2.10 and 3 of Annex-I of Schedule-B.

#### 7.6 FOB / Skywalks (Clause No. 10 IRC: 103 and Clause No. 9.8.5 IRC: SP: 84-2019)

FOB / Skywalks shall be provided in buildup areas/ near schools.

-NIL

#### 7.7 A summary of Culverts, Bridges and Structures shall be presented as follows:

Sl. no.	Name of Structures	Total numbers	Remarks
1	Major Bridge	2	

Sl. no.	Name of Structures	Total numbers	Remarks
2	Minor Bridge	6	
3	ROB	0	
4	VUP	0	
5	VOP	1	
6	LVUP	0	
7	SVUP	0	
8	Box Culverts	32	
9	Slab Culverts	23	
10	Pipe Culverts	0	

## 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 IRC: SP: 84

### 8.2. Traffic Signs:

Traffic signs shall be provided as per IRC 67 as mentioned in Schedule-C.

### 8.3. Pavement Marking:

Pavement markings shall be completed as per IRC 35 as mentioned in Schedule-C.

### 8.4. Safety Barrier:

The safety barriers shall be provided in accordance with Section-9 of the Clause 9. 7 of the manuals.

The Safety Barrier length proposed are excluding the safety barrier already proposed on Culverts, Grade Separated Structures, Interchange, Bridges, RoB and RUB as applicable cross sections respectively.

End Treatment of Steel barriers/Rope Barrier shall be specified i.e. MELT or P-4 confirming to EN 1317-4, TT, MBCB barrier to Concrete Barrier (Clause No. 9.7.2 (b) IRC: SP: 84-2019)  
End Treatment to Concrete barrier shall be done as specified in Clause No. 9.7.3 (b) IRC: SP: 842019.

The details of the location are as below:

Sl. no.	Item	Left		Total length (m)	RHS		Total length (m)	Remarks
		From	To			To		
1	W-beam Single faced MCB barrier							
2	Thrie-beam Single faced MCB	0+150	0+180	30.00	0+150	0+180	30.00	
		1+310	1+410	100.00	1+310	1+410	100.00	
		2+390	2+520	130.00	2+390	2+520	130.00	
		2+780	2+840	60.00	4+100	4+220	120.00	
		3+230	3+290	60.00	4+330	4+430	100.00	
		3+490	3+640	150.00	4+530	4+640	110.00	
		4+100	4+220	120.00	4+920	4+960	40.00	

Sl. no.	Item	Left		Total length (m)	RHS		Total length (m)	Remarks
		From	To			To		
		4+220	4+270	50.00	5+560	5+660	100.00	
		4+330	4+430	100.00	5+810	5+890	80.00	
		4+920	4+960	40.00	6+310	6+440	130.00	
		5+500	5+560	60.00	7+340	7+530	190.00	
		5+560	5+660	100.00	8+600	8+670	70.00	
		5+810	5+890	80.00	8+900	8+920	20.00	
		6+310	6+440	130.00	8+920	9+000	80.00	
		7+340	7+530	190.00	9+310	9+380	70.00	
		8+600	8+670	70.00	9+410	9+560	150.00	
		8+920	9+000	80.00	10+060	10+200	140.00	
		9+410	9+560	150.00	11+450	11+480	30.00	
		10+060	10+200	140.00	11+820	11+900	80.00	
		11+450	11+480	30.00	14+840	14+980	140.00	
		11+820	11+900	80.00	15+050	15+130	80.00	
		14+840	14+980	140.00	15+460	15+720	260.00	
		15+050	15+130	80.00	15+740	15+800	60.00	
		15+460	15+720	260.00	15+800	15+887	87.00	
		15+800	15+890	90.00	16+260	16+300	40.00	
		16+260	16+300	40.00	16+360	16+490	130.00	
		16+360	16+490	130.00	16+490	16+520	30.00	
		16+620	16+680	60.00	16+620	16+680	60.00	
		17+480	17+560	80.00	17+100	17+250	150.00	
		18+630	18+670	40.00	17+250	17+320	70.00	
		18+940	18+990	50.00	17+480	17+560	80.00	
		19+270	19+340	70.00	18+410	18+520	110.00	
		19+600	19+870	270.00	18+630	18+670	40.00	
		19+870	20+370	500.00	18+670	18+700	30.00	
		20+370	20+680	310.00	18+940	18+990	50.00	
		25+570	25+640	70.00	19+270	19+340	70.00	
		25+850	26+200	350.00	19+340	19+430	90.00	
		27+600	27+700	100.00	19+600	19+870	270.00	
		28+050	28+140	90.00	19+870	20+370	500.00	
					20+370	20+680	310.00	
					25+450	25+570	120.00	
					25+570	25+610	40.00	
					25+850	26+200	350.00	
					28+050	28+140	90.00	
3	wire rope safety barrier	-	-	-	-	-	-	-
4	W-beam double faced MCB	-	-	-	-	-	-	-
5	Thrie-beam double faced metal crash barrier	-	-	-	-	-	-	-
6	Concrete Single faced barrier	-	-	-	-	-	-	-
7	Concrete double-faced barrier	-	-	-	-	-	-	-
8	Pedestrian guard rail	-	-	-	-	-	-	-

Sl. no.	Item	Left		Total length (m)	RHS		Total length (m)	Remarks
		From	To			To		
9	End treatment for steel barrier	-	-	-	-	-	-	-
	<b>Total Length</b>			<b>4680</b>			<b>5027</b>	

## 9. ROADSIDE FURNITURE

9.1 It shall be provided as per the details mentioned in Schedule-C.

## 10. Hazardous Locations

The safety barriers shall be provided at the following hazardous location such as ponds, well, electric sub-station, Electric tower, spilt carriageway, etc.

Sl. no.	Location stretch (km.)		Type of safety barrier	LHS/RHS
	From	To		
NIL				

## 11. Special Requirement:

As the project involves cutting existing hill slopes, it is imperative that slopes are to be stabilized for insuring longevity of the slopes and the roads. Slope stability, erosion control and landslide correction shall be accomplished in accordance with IRC: SP 48:1998, IRC: 56-2011 and manual. The contractor shall be responsible for accurate assessment of the actual requirement & prepare design for slope protection & stabilization as per manual. Cut slopes should be designed in such a manner as to keep the cutting within available RoW and protection measures like rock bolting/ soil nailing/ reinforcing, as appropriate, shall be applied to ensure both stability and protection from erosion/ withering as per Engineering Guidelines on Landslide Mitigation Measures for Indian Roads IRC: SP-106-2015. The Contractor/ Concessionaire shall undertake detailed investigations and design of all cut/ fill slopes beyond 3m depth / height for stability. Investigations shall inter-alia include fill soil, sub-soil/ rock strata for engineering properties, faults & fractures, geological studies. Contractor shall obtain approval/ no objection from the Independent Engineer and Authority before undertaking construction.

Any increase in length will not be considered as a change of scope. Therefore, the contractor should carry out thorough investigation at site and assess the requirement of slope protection and slide prone zone and other safety features at his own before submission of bid.

Disposal of Debris: - As per Manual under clause "13.13" of section 13 (Special Requirement for Hill Road)

Retaining Structure and protection works shall be provided at locations as indicated below and as provided in TCS schedule in cl. 2.10 of schedule-B.

### (i) RCC Retaining wall (Minimum Avg. height 4 m)

Left Side			Right Side		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
0+750	0+810	60	9+330	9+340	10

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
3+370	3+380	10	9+400	9+430	30
3+580	3+610	30	9+570	9+580	10
4+230	4+270	40	10+710	10+730	20
10+590	10+610	20	11+130	11+180	50
15+000	15+040	40	11+450	11+490	40
15+160	15+190	30	13+080	13+090	10
15+240	15+260	20	13+390	13+400	10
15+280	15+300	20	13+460	13+490	30
16+390	16+410	20	15+000	15+040	40
16+460	16+500	40	15+070	15+100	30
16+640	16+650	10	16+540	16+560	20
16+690	16+700	10	16+690	16+740	50
17+120	17+140	20	18+050	18+070	20
17+230	17+260	30	18+100	18+120	20
17+500	17+510	10	18+340	18+350	10
18+950	18+960	10	18+410	18+430	20
19+320	19+330	10	18+850	18+870	20
20+730	20+750	20	19+320	19+380	60
20+810	20+960	150	19+990	20+060	70
21+100	21+110	10	20+590	20+610	20
21+200	21+220	20	22+810	22+820	10
21+250	21+260	10	23+310	23+330	20
21+500	21+680	180	25+980	26+020	40
21+970	21+990	20	28+230	28+270	40
22+050	22+110	60	<b>Total</b>		<b>700</b>
26+000	26+050	50			
<b>Total</b>		<b>950</b>			

(ii) RCC Retaining wall (Minimum Avg. height 5 m)

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
1+350	1+360	10	0+170	0+180	10
1+400	1+410	10	1+340	1+350	10
2+220	2+230	10	1+400	1+410	10
2+510	2+530	20	3+670	3+680	10
4+460	4+490	30	3+740	3+750	10
6+760	6+780	20	4+370	4+400	30
7+340	7+350	10	5+640	5+660	20
7+530	7+540	10	5+860	5+870	10
8+620	8+630	10	6+740	6+750	10
8+920	8+930	10	7+340	7+350	10
9+500	9+510	10	7+720	7+740	20
9+540	9+550	10	8+070	8+110	40
10+060	10+070	10	8+610	8+630	20
10+610	10+630	20	9+000	9+010	10
10+730	10+740	10	9+340	9+380	40

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
13+000	13+010	10	9+430	9+440	10
13+090	13+100	10	9+560	9+570	10
13+650	13+680	30	10+060	10+070	10
14+800	14+810	10	10+210	10+230	20
14+990	15+000	10	11+470	11+480	10
15+140	15+160	20	11+830	11+840	10
15+260	15+280	20	13+000	13+010	10
15+480	15+490	10	13+400	13+460	60
15+580	15+630	50	13+640	13+650	10
15+870	15+880	10	13+680	13+690	10
16+410	16+420	10	14+810	14+830	20
16+450	16+460	10	14+990	15+000	10
16+650	16+660	10	15+040	15+070	30
16+680	16+690	10	15+560	15+570	10
17+540	17+550	10	15+630	15+640	10
19+250	19+260	10	15+830	15+840	10
19+310	19+320	10	15+880	15+890	10
20+710	20+730	20	16+360	16+370	10
20+750	20+760	10	16+480	16+500	20
20+770	20+810	40	16+560	16+630	70
21+080	21+100	20	16+680	16+690	10
21+220	21+250	30	16+780	16+800	20
21+260	21+330	70	17+070	17+080	10
21+450	21+470	20	17+090	17+100	10
21+480	21+500	20	17+310	17+320	10
21+540	21+550	10	17+480	17+490	10
21+680	21+700	20	18+070	18+100	30
21+780	21+860	80	18+350	18+410	60
21+890	21+900	10	18+430	18+450	20
21+910	21+970	60	19+380	19+410	30
21+990	22+050	60	20+560	20+590	30
22+110	22+120	10	22+710	22+720	10
22+360	22+370	10	22+800	22+810	10
22+400	22+480	80	23+330	23+370	40
22+620	22+650	30	23+570	23+600	30
23+540	23+550	10	25+590	25+600	10
23+590	23+600	10	25+650	25+660	10
24+210	24+220	10	26+000	26+010	10
25+980	26+000	20	26+020	26+030	10
26+050	26+070	20	28+050	28+060	10
26+080	26+090	10	28+120	28+140	20
26+230	26+240	10	28+200	28+210	10
27+450	27+490	40	28+220	28+230	10
27+510	27+520	10	<b>Total</b>		<b>1030</b>
27+590	27+610	20			
28+600	28+610	10			

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
<b>Total</b>		<b>1220</b>			

**(iii) RCC Retaining wall (Minimum Avg. height 6 m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
0+160	0+180	20.00	1+350	1+360	10.00
1+390	1+400	10.00	1+390	1+400	10.00
2+500	2+510	10.00	2+530	2+540	10.00
2+870	2+900	30.00	3+680	3+710	30.00
2+910	2+960	50.00	3+720	3+730	10.00
2+970	2+980	10.00	4+130	4+140	10.00
3+290	3+300	10.00	4+150	4+160	10.00
4+410	4+460	50.00	4+350	4+370	20.00
4+870	4+880	10.00	5+600	5+640	40.00
4+960	4+970	10.00	5+790	5+800	10.00
5+240	5+250	10.00	6+340	6+380	40.00
5+530	5+550	20.00	8+240	8+280	40.00
5+790	5+800	10.00	8+630	8+650	20.00
5+810	5+820	10.00	8+660	8+670	10.00
6+440	6+450	10.00	8+920	8+930	10.00
8+630	8+640	10.00	10+070	10+080	10.00
8+660	8+670	10.00	11+840	11+850	10.00
9+000	9+010	10.00	11+890	11+900	10.00
9+530	9+540	10.00	13+010	13+020	10.00
10+630	10+690	60.00	13+070	13+080	10.00
10+720	10+730	10.00	13+650	13+680	30.00
11+840	11+860	20.00	14+830	14+860	30.00
13+080	13+090	10.00	14+970	14+990	20.00
14+810	14+840	30.00	15+500	15+510	10.00
14+970	14+990	20.00	15+550	15+560	10.00
15+040	15+060	20.00	15+710	15+720	10.00
15+130	15+140	10.00	15+840	15+860	20.00
15+490	15+500	10.00	16+370	16+400	30.00
15+570	15+580	10.00	16+460	16+480	20.00
15+630	15+640	10.00	16+630	16+640	10.00
15+700	15+710	10.00	16+660	16+680	20.00
15+840	15+870	30.00	17+080	17+090	10.00
16+420	16+430	10.00	17+270	17+280	10.00
16+440	16+450	10.00	17+300	17+310	10.00
16+660	16+680	20.00	18+450	18+460	10.00
17+140	17+150	10.00	18+690	18+700	10.00
17+180	17+200	20.00	18+990	19+000	10.00
17+510	17+540	30.00	19+310	19+320	10.00
19+260	19+270	10.00	19+910	19+940	30.00
20+760	20+770	10.00	19+970	19+980	10.00
20+960	20+970	10.00	20+540	20+550	10.00



<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
21+060	21+080	20.00	22+720	22+730	10.00
21+330	21+380	50.00	22+790	22+800	10.00
21+440	21+450	10.00	24+200	24+210	10.00
21+470	21+480	10.00	24+220	24+230	10.00
21+740	21+780	40.00	25+600	25+610	10.00
21+860	21+890	30.00	25+630	25+650	20.00
21+900	21+910	10.00	25+860	25+870	10.00
22+390	22+400	10.00	25+950	25+960	10.00
22+480	22+530	50.00	26+030	26+050	20.00
22+590	22+620	30.00	26+060	26+070	10.00
23+580	23+590	10.00	28+030	28+090	60.00
25+900	25+920	20.00	<b>Total</b>		<b>840.00</b>
25+970	25+980	10.00			
26+070	26+080	10.00			
26+160	26+200	40.00			
26+220	26+230	10.00			
27+440	27+450	10.00			
27+490	27+500	10.00			
28+080	28+090	10.00			
28+120	28+130	10.00			
<b>Total</b>		<b>1090.00</b>			

**(iv) RE/RS wall (Minimum Avg. height 7 m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
1+360	1+390	30.00	1+370	1+390	20.00
2+900	2+910	10.00	3+710	3+720	10.00
2+960	2+970	10.00	3+730	3+740	10.00
3+300	3+310	10.00	4+140	4+150	10.00
3+350	3+360	10.00	4+930	4+940	10.00
3+650	3+660	10.00	5+810	5+830	20.00
3+770	3+790	20.00	5+850	5+860	10.00
4+210	4+220	10.00	6+380	6+390	10.00
4+350	4+360	10.00	6+430	6+440	10.00
4+370	4+410	40.00	7+350	7+360	10.00
4+930	4+940	10.00	8+650	8+660	10.00
5+510	5+530	20.00	8+990	9+000	10.00
5+550	5+600	50.00	9+440	9+450	10.00
5+620	5+630	10.00	9+550	9+560	10.00
5+650	5+660	10.00	11+850	11+860	10.00
5+820	5+830	10.00	14+860	14+880	20.00
6+330	6+340	10.00	14+950	14+970	20.00
8+640	8+660	20.00	15+510	15+520	10.00
8+930	8+940	10.00	15+640	15+660	20.00
8+980	9+000	20.00	15+700	15+710	10.00
9+510	9+520	10.00	15+860	15+880	20.00

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
10+070	10+080	10.00	16+400	16+410	10.00
10+690	10+720	30.00	16+450	16+460	10.00
11+860	11+870	10.00	16+650	16+660	10.00
11+890	11+900	10.00	17+100	17+120	20.00
13+010	13+020	10.00	17+250	17+270	20.00
14+840	14+900	60.00	17+280	17+300	20.00
14+950	14+970	20.00	18+460	18+470	10.00
15+060	15+070	10.00	18+500	18+510	10.00
15+100	15+130	30.00	19+580	19+590	10.00
15+500	15+510	10.00	19+700	19+710	10.00
15+560	15+570	10.00	19+950	19+960	10.00
15+640	15+660	20.00	22+730	22+740	10.00
15+690	15+700	10.00	22+750	22+790	40.00
16+430	16+440	10.00	24+210	24+220	10.00
17+150	17+180	30.00	25+610	25+630	20.00
17+200	17+230	30.00	25+870	25+880	10.00
19+270	19+310	40.00	26+050	26+060	10.00
20+970	20+980	10.00	26+070	26+080	10.00
21+050	21+060	10.00	28+090	28+100	10.00
21+380	21+410	30.00	<b>Total</b>		<b>530.00</b>
21+430	21+440	10.00			
21+730	21+740	10.00			
22+530	22+540	10.00			
22+580	22+590	10.00			
23+550	23+560	10.00			
23+570	23+580	10.00			
25+860	25+870	10.00			
25+890	25+900	10.00			
25+960	25+970	10.00			
26+090	26+100	10.00			
26+210	26+220	10.00			
27+500	27+510	10.00			
<b>Total</b>		<b>860.00</b>			

**(v) RE/RS wall (Minimum Avg. height 8 m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
2+400	2+410	10.00	1+360	1+370	10.00
3+310	3+320	10.00	2+520	2+530	10.00
3+340	3+350	10.00	4+950	4+960	10.00
3+760	3+770	10.00	5+800	5+810	10.00
4+110	4+120	10.00	7+530	7+540	10.00
4+360	4+370	10.00	8+930	8+940	10.00
5+600	5+620	20.00	8+980	8+990	10.00
5+630	5+650	20.00	9+470	9+500	30.00
5+800	5+810	10.00	10+080	10+090	10.00

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
5+830	5+840	10.00	11+860	11+890	30.00
5+860	5+870	10.00	13+020	13+030	10.00
7+350	7+360	10.00	13+060	13+070	10.00
7+520	7+530	10.00	14+880	14+910	30.00
8+940	8+950	10.00	14+940	14+950	10.00
8+970	8+980	10.00	15+520	15+530	10.00
9+520	9+530	10.00	15+540	15+550	10.00
10+080	10+090	10.00	15+660	15+670	10.00
10+200	10+210	10.00	15+690	15+700	10.00
11+870	11+890	20.00	16+410	16+450	40.00
13+020	13+030	10.00	16+640	16+650	10.00
13+050	13+080	30.00	17+120	17+130	10.00
14+900	14+950	50.00	17+230	17+250	20.00
15+070	15+100	30.00	17+550	17+560	10.00
15+510	15+560	50.00	18+470	18+500	30.00
15+660	15+690	30.00	18+620	18+630	10.00
20+980	20+990	10.00	18+680	18+690	10.00
21+030	21+050	20.00	18+920	18+930	10.00
21+410	21+430	20.00	18+980	18+990	10.00
21+700	21+710	10.00	19+270	19+280	10.00
21+720	21+730	10.00	19+300	19+310	10.00
22+540	22+580	40.00	19+650	19+660	10.00
23+560	23+570	10.00	19+960	19+970	10.00
25+880	25+890	10.00	20+370	20+380	10.00
25+920	25+930	10.00	22+740	22+750	10.00
26+140	26+160	20.00	26+080	26+090	10.00
26+200	26+210	10.00	26+160	26+170	10.00
<b>Total</b>		<b>590.00</b>	27+590	27+600	10.00
			28+110	28+120	10.00
			<b>Total</b>		<b>500.00</b>

(vi) RE/RS wall (Minimum Avg. height 9 m)

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
3+320	3+340	20.00	5+830	5+850	20.00
3+660	3+670	10.00	8+940	8+950	10.00
3+750	3+760	10.00	8+970	8+980	10.00
4+160	4+190	30.00	9+450	9+470	20.00
4+200	4+210	10.00	9+500	9+510	10.00
5+840	5+860	20.00	9+540	9+550	10.00
6+340	6+350	10.00	10+200	10+210	10.00
6+430	6+440	10.00	13+030	13+040	10.00
8+950	8+970	20.00	13+050	13+060	10.00
13+030	13+050	20.00	14+910	14+940	30.00
20+340	20+360	20.00	15+530	15+540	10.00
20+990	21+030	40.00	15+670	15+690	20.00

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
21+710	21+720	10.00	17+130	17+140	10.00
25+870	25+880	10.00	17+160	17+180	20.00
25+950	25+960	10.00	17+210	17+230	20.00
28+090	28+120	30.00	18+670	18+680	10.00
			19+280	19+300	20.00
			19+590	19+620	30.00
			19+640	19+650	10.00
			19+660	19+670	10.00
			20+360	20+370	10.00
			25+880	25+920	40.00
			25+940	25+950	10.00
			26+090	26+100	10.00
			26+190	26+200	10.00
			28+100	28+110	10.00
<b>Total</b>		<b>280.00</b>	<b>Total</b>		<b>390.00</b>

**Note:** RS wall shall be Proposed at Slip Road location (Km 12+335) = 1.355 km

**(vii) RE/RS wall (Minimum Avg. height 10 m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
3+670	3+680	10.00	2+500	2+510	10.00
3+740	3+750	10.00	7+360	7+370	10.00
4+130	4+140	10.00	7+520	7+530	10.00
6+350	6+360	10.00	9+520	9+530	10.00
6+370	6+380	10.00	9+530	9+540	10.00
6+420	6+430	10.00	17+190	17+200	10.00
7+360	7+370	10.00	18+660	18+670	10.00
7+500	7+510	10.00	18+930	18+940	10.00
10+190	10+200	10.00	19+680	19+690	10.00
26+100	26+110	10.00	19+690	19+700	10.00
26+130	26+140	10.00	25+930	25+940	10.00
			26+130	26+140	10.00
			26+150	26+160	10.00
			26+180	26+190	10.00
<b>Total</b>		<b>110.00</b>	<b>Total</b>		<b>140.00</b>

**(viii) RE/RS wall (Minimum Avg. height 12 m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
3+680	3+740	60.00	6+400	6+420	20.00
4+940	4+960	20.00	7+490	7+520	30.00
6+380	6+420	40.00	10+190	10+200	10.00
7+490	7+500	10.00	17+490	17+550	60.00
26+110	26+130	20.00	18+630	18+660	30.00
			18+940	18+970	30.00
			20+340	20+350	10.00

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
			26+100	26+130	30.00
<b>Total</b>		<b>150.00</b>	<b>Total</b>		<b>220.00</b>

### **Height of retaining wall**

- 1) Length of retaining wall of minimum Average Ht 4.0m = 1.650 Km
- 2) Length of retaining wall of minimum Average Ht 5.0m = 2.260 Km
- 3) Length of retaining wall of minimum Average Ht 6.0m = 1.930 Km
- 4) Length of retaining wall of minimum Average Ht 7.0m = 1.390 Km
- 5) Length of retaining wall of minimum Average Ht 8.0m = 1.090 Km
- 6) Length of retaining wall of minimum Average Ht 9.0m = 2.025 Km
- 7) Length of retaining wall of minimum Average Ht 10.0m = 0.300 Km
- 8) Length of retaining wall of minimum Average Ht 11.0m = 0.250 Km
- 9) Length of retaining wall of minimum Average Ht 12.0m = 0.370 Km

**Note:** Above length of the retaining wall / RE/RS wall is minimum specified. The actual length shall be determined by the Contractor in accordance with the approved plan & profile and design approved from the Authority Engineer. Any increase/decrease in length upto 10% from the length specified in this Clause of Schedule-B shall not constitute a Change of Scope. Any change above 10% of the specified length may constitute COS.

However, the concessionaire can propose the new innovative technology in consultation with Authority.

### **(ix) Breast wall (Minimum Average height 2.0m)**

<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
1+530	1+540	10.00	0+320	0+370	50.00
1+620	1+710	90.00	0+460	0+470	10.00
1+870	1+890	20.00	0+490	0+580	90.00
1+920	1+940	20.00	1+280	1+290	10.00
2+050	2+060	10.00	1+450	1+480	30.00
2+080	2+090	10.00	1+520	1+540	20.00
2+140	2+190	50.00	1+600	1+630	30.00
2+260	2+270	10.00	1+680	1+730	50.00
2+350	2+370	20.00	1+870	1+910	40.00
2+650	2+680	30.00	2+060	2+080	20.00
3+060	3+080	20.00	2+190	2+200	10.00
3+210	3+230	20.00	2+270	2+280	10.00
3+390	3+400	10.00	2+380	2+400	20.00
3+860	3+880	20.00	2+600	2+630	30.00
4+070	4+080	10.00	2+680	2+720	40.00
4+560	4+580	20.00	2+780	2+800	20.00
4+740	4+750	10.00	2+840	2+850	10.00
4+800	4+810	10.00	3+010	3+040	30.00
4+830	4+840	10.00	3+270	3+290	20.00
5+030	5+040	10.00	3+380	3+400	20.00
5+090	5+190	100.00	3+550	3+630	80.00

Left Side			Right Side		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
5+280	5+290	10.00	3+780	3+800	20.00
5+430	5+450	20.00	4+100	4+110	10.00
5+690	5+710	20.00	4+270	4+290	20.00
5+920	5+950	30.00	4+320	4+340	20.00
6+260	6+290	30.00	4+690	4+750	60.00
6+480	6+560	80.00	4+830	4+840	10.00
6+700	6+720	20.00	5+030	5+040	10.00
6+800	6+810	10.00	5+200	5+230	30.00
7+070	7+140	70.00	5+280	5+310	30.00
7+560	7+580	20.00	5+330	5+350	20.00
7+640	7+670	30.00	5+400	5+420	20.00
7+780	7+800	20.00	5+450	5+490	40.00
7+850	7+970	120.00	5+680	5+720	40.00
8+140	8+150	10.00	5+910	5+940	30.00
8+200	8+220	20.00	6+220	6+290	70.00
8+380	8+390	10.00	6+470	6+480	10.00
8+410	8+470	60.00	6+680	6+700	20.00
8+520	8+530	10.00	6+800	6+810	10.00
8+720	8+730	10.00	7+080	7+140	60.00
8+760	8+770	10.00	7+580	7+590	10.00
8+790	8+810	20.00	7+670	7+690	20.00
8+830	8+860	30.00	7+790	7+810	20.00
9+080	9+150	70.00	7+880	7+960	80.00
9+170	9+190	20.00	8+450	8+460	10.00
9+220	9+230	10.00	8+530	8+540	10.00
9+290	9+300	10.00	8+800	8+820	20.00
9+590	9+610	20.00	8+840	8+870	30.00
9+730	9+820	90.00	9+080	9+130	50.00
9+980	10+000	20.00	9+150	9+160	10.00
10+240	10+250	10.00	9+240	9+250	10.00
10+320	10+340	20.00	9+290	9+300	10.00
10+870	10+890	20.00	9+610	9+660	50.00
10+970	11+030	60.00	9+730	9+760	30.00
11+320	11+350	30.00	9+800	9+840	40.00
11+540	11+560	20.00	9+970	9+990	20.00
11+720	11+770	50.00	10+240	10+260	20.00
11+950	11+980	30.00	10+340	10+370	30.00
12+180	12+270	90.00	10+790	10+900	110.00
12+400	12+420	20.00	10+990	11+000	10.00
12+550	12+560	10.00	11+300	11+350	50.00
12+930	12+950	20.00	11+540	11+560	20.00
13+160	13+170	10.00	11+710	11+760	50.00
13+330	13+350	20.00	11+950	12+040	90.00
13+730	13+750	20.00	12+170	12+280	110.00
14+530	14+660	130.00	12+390	12+430	40.00
16+040	16+060	20.00	12+550	12+570	20.00
16+070	16+090	20.00	12+930	12+950	20.00

Left Side			Right Side		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
16+300	16+340	40.00	13+150	13+170	20.00
16+910	16+990	80.00	13+330	13+350	20.00
17+000	17+050	50.00	13+740	13+820	80.00
17+350	17+360	10.00	14+520	14+610	90.00
17+670	17+740	70.00	14+640	14+680	40.00
17+910	17+960	50.00	14+720	14+740	20.00
18+010	18+030	20.00	15+350	15+360	10.00
18+250	18+310	60.00	15+390	15+400	10.00
18+520	18+620	100.00	16+940	17+010	70.00
18+700	18+710	10.00	17+370	17+400	30.00
18+840	18+870	30.00	17+430	17+440	10.00
18+900	18+920	20.00	17+470	17+480	10.00
18+980	19+000	20.00	17+570	17+580	10.00
19+230	19+240	10.00	18+570	18+600	30.00
19+440	19+450	10.00	18+730	18+740	10.00
19+470	19+480	10.00	18+800	18+820	20.00
19+510	19+530	20.00	19+020	19+030	10.00
19+570	19+580	10.00	19+140	19+150	10.00
19+720	19+730	10.00	19+230	19+240	10.00
19+740	19+770	30.00	20+180	20+220	40.00
19+810	19+840	30.00	20+730	20+760	30.00
19+890	19+900	10.00	20+770	20+780	10.00
20+000	20+010	10.00	20+820	20+920	100.00
20+070	20+080	10.00	20+940	20+950	10.00
20+330	20+340	10.00	21+110	21+120	10.00
20+410	20+430	20.00	21+190	21+200	10.00
20+530	20+670	140.00	21+210	21+380	170.00
23+000	23+160	160.00	21+500	21+670	170.00
23+250	23+260	10.00	21+800	21+860	60.00
23+420	23+510	90.00	21+890	21+900	10.00
23+860	23+900	40.00	21+910	22+000	90.00
24+070	24+140	70.00	22+010	22+030	20.00
24+710	24+750	40.00	22+040	22+060	20.00
25+120	25+130	10.00	22+420	22+520	100.00
25+140	25+180	40.00	22+990	23+040	50.00
25+240	25+260	20.00	23+100	23+150	50.00
25+310	25+350	40.00	23+230	23+240	10.00
25+370	25+390	20.00	23+420	23+430	10.00
25+470	25+530	60.00	24+050	24+060	10.00
25+590	25+630	40.00	24+080	24+130	50.00
25+690	25+710	20.00	24+140	24+150	10.00
25+750	25+760	10.00	24+670	24+770	100.00
26+280	26+290	10.00	25+200	25+220	20.00
26+500	26+520	20.00	25+330	25+380	50.00
26+530	26+550	20.00	26+260	26+280	20.00
26+600	26+630	30.00	26+430	26+510	80.00
26+980	27+000	20.00	26+600	26+630	30.00

Left Side			Right Side		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
27+010	27+020	10.00	26+650	26+660	10.00
27+080	27+120	40.00	27+030	27+040	10.00
27+190	27+230	40.00	27+050	27+060	10.00
27+310	27+410	100.00	27+140	27+160	20.00
27+740	27+790	50.00	27+180	27+210	30.00
28+380	28+410	30.00	27+320	27+400	80.00
28+690	28+700	10.00	27+520	27+550	30.00
28+730	28+840	110.00	27+640	27+790	150.00
			28+360	28+450	90.00
			28+680	28+710	30.00
			28+850	28+870	20.00
Total		4060.00	Total		4490.00

(x) Breast wall (Minimum Average height 3.0m)

Left Side			Right Side		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
1+540	1+620	80.00	1+540	1+600	60.00
1+940	2+050	110.00	1+910	2+060	150.00
2+090	2+140	50.00	2+080	2+190	110.00
2+270	2+350	80.00	2+280	2+380	100.00
3+080	3+210	130.00	2+630	2+680	50.00
3+400	3+510	110.00	2+800	2+840	40.00
3+800	3+860	60.00	3+040	3+270	230.00
3+880	4+070	190.00	3+400	3+550	150.00
4+580	4+740	160.00	3+800	4+100	300.00
4+810	4+830	20.00	4+290	4+320	30.00
5+040	5+090	50.00	4+750	4+830	80.00
5+950	6+260	310.00	5+040	5+200	160.00
6+560	6+700	140.00	5+420	5+450	30.00
6+810	7+070	260.00	5+940	6+220	280.00
7+570	7+640	70.00	6+480	6+680	200.00
8+470	8+520	50.00	6+810	7+080	270.00
8+810	8+830	20.00	7+600	7+670	70.00
9+150	9+170	20.00	8+460	8+530	70.00
9+230	9+290	60.00	8+820	8+860	40.00
9+610	9+730	120.00	9+250	9+290	40.00
9+800	9+980	180.00	9+660	9+730	70.00
10+250	10+320	70.00	9+840	9+970	130.00
11+560	11+720	160.00	10+260	10+340	80.00
11+980	12+180	200.00	11+560	11+710	150.00
12+270	12+400	130.00	12+040	12+170	130.00
12+560	12+930	370.00	12+280	12+390	110.00
13+170	13+330	160.00	12+570	12+930	360.00
13+750	14+530	780.00	13+170	13+330	160.00
16+060	16+070	10.00	13+820	14+520	700.00
16+990	17+000	10.00	14+610	14+640	30.00



<u>Left Side</u>			<u>Right Side</u>		
Ch. From	Ch. To	Length (m)	Ch. From	Ch. To	Length (m)
17+360	17+490	130.00	17+440	17+470	30.00
17+570	17+670	100.00	18+740	18+800	60.00
17+960	18+010	50.00	19+030	19+140	110.00
18+710	18+840	130.00	19+150	19+230	80.00
19+000	19+230	230.00	23+150	23+230	80.00
19+450	19+470	20.00	24+060	24+080	20.00
19+530	19+570	40.00	26+280	26+430	150.00
19+710	19+720	10.00	26+660	27+030	370.00
19+730	19+740	10.00	27+040	27+050	10.00
19+770	19+810	40.00	27+160	27+180	20.00
19+840	19+890	50.00	28+710	28+850	140.00
20+080	20+330	250.00			
20+430	20+530	100.00			
23+160	23+250	90.00			
25+180	25+240	60.00			
25+350	25+370	20.00			
25+530	25+590	60.00			
26+290	26+500	210.00			
26+630	26+980	350.00			
27+020	27+080	60.00			
<b>Total</b>		<b>6170.00</b>	<b>Total</b>		<b>5450.00</b>

#### Height of Stone Breast wall

1. Length of Breast wall of Minimum Average Ht. 2 m = 8.550 Km
2. Length of Breast wall of Minimum Average Ht. 3m = 11.620 Km

**Note:** Above length of the Breast wall is minimum specified. The actual length shall be determined by the Contractor in accordance with the approved plan & profile and design approved from the Authority Engineer. Any increase/decrease in length upto 10% from the length specified in this Clause of Schedule-B shall not constitute a Change of Scope. Any change above 10% of the specified length may constitute COS.

However, the concessionaire can propose the new innovative technology in consultation with Authority.

#### 11.1 Embankment and Cut slope Protection works – The following shall be provided.

- a) Embankment slope protection shall be provided as per requirement of the site as per Manual.
- b) 64232 sqm erosion control on filling side (using geo-green) shall be provided. However, keeping in view sustainability, the geo-green blanket with vegetation should have minimum tensile strength 7.5 kn/m in machine direction (MD) and should be certified by at least Central Government Organization and product has minimum 5-7 years product performance certificate.
- c) 8946 Nos. Anchor bolts for cut slope protection.

d) Cut Slope treatment of 91241.84 sqm by Hydro seeding & 9136.85 Sqm DT Mesh for Face 2.7/3.7mm dia. wire, ZN+PVC with vegetation.

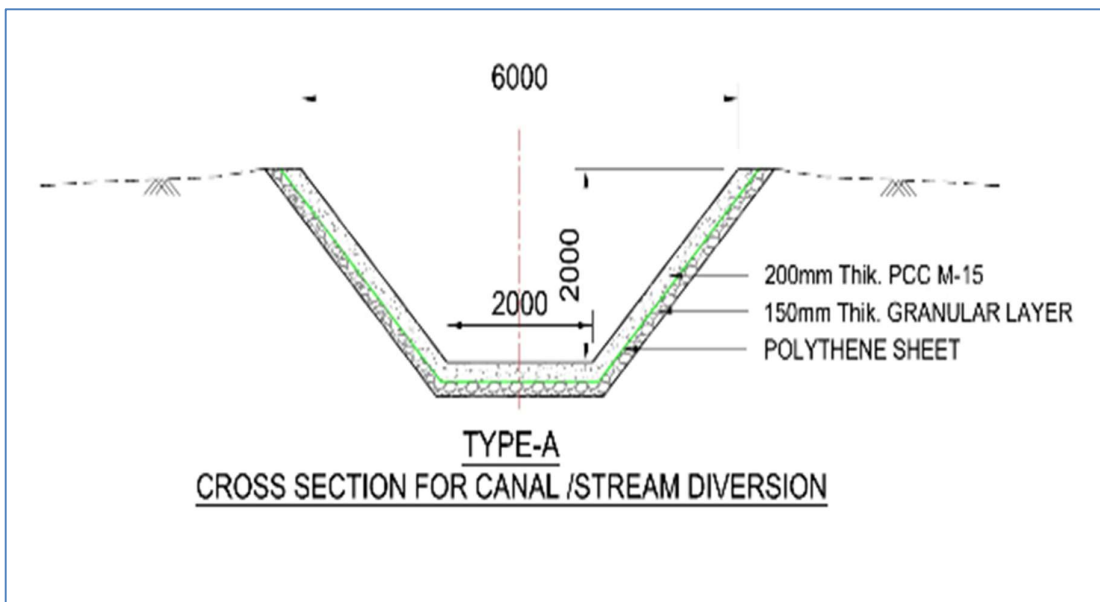
**Note:**

Before placement of support system at site, the slopes shall be stripped to remove the excess debris / hanging boulders, stones, muck, shrubs etc. and site specific best possible smooth surface shall be prepared. The support system shall be laced on this smooth surface.

The locations and quantity of various protection works specified in this clause is tentative and minimum specified. The contractor shall be responsible for accurate assessment of slope protection & stabilization measures as per schedule D. Any change in location, increase in quantity, change in specifications or change in type of protection work shall not constitute a Change of Scope.

## 11.2 Diversion of nallah

Diversion of Nallah shall be constructed as per site requirement.



**Note:**

The actual cross-section of canal/ stream to be shifted and extent of such shifting (length) shall be determined by the Contractor as per the site/ design requirement with approval of concerned irrigation authority / Independent Engineer. Any variation in the cross-section and length specified in this Clause of 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 16.

## 12. Open Well within RoW

The Open well shall be identified, and appropriate treatment shall be provided.

Sl. no.	Design Chainage (km)	Well dimension (m)	Well depth (m)	Filling material for well	Slab on top of well Yes/ No	Remarks
NIL						

## 13. Emergency Crossover

Emergency crossovers shall be provided in accordance with Manual.

#### 14. Shifting of Utilities

The Concessionaire / contractor shall undertake the work of shifting of any utility (including electric lines, water pipes, gas pipelines and telephone cables) to an appropriate location or alignment, in accordance with the provisions of Concession Agreement. Shifting of obstructing existing utilities indicated in Schedule A to an appropriate location in accordance with the standards and specifications of concerned Utility Owning Department is part of the scope of work of the Concessionaire / Contractor. The bidders may visit the site and assess the quantum of shifting of utilities for the projects before submission of their bid. The specifications of concerned Utility Owning Department shall be applicable and followed.

##### Note-I:

- (a) The type/ spacing/ size/ specifications of poles/ towers/ lines/ cables to be used in shifting work shall be as per the guidelines of utility owning department and it is to be agreed solely between the Contractor and the utility owning department. No change of scope shall be admissible, and no cost shall be paid for using different type/ spacing/ size/ specifications in shifted work in comparison to those in the existing work or for making any overhead crossings to underground as per requirement of utility owning department and/or construction of project highway. The Contractor shall carry out joint inspection with utility owning department and get the estimates from the utility owning department. The assistance of the Authority is limited to forwarding letter on the proposal of Contractor to utility owning department whenever asked by the Contractor. The decision/ approval of the utility owning department shall be binding on the Contractor.
- (b) The supervision charges at the rates/ charges applicable of the utility owning department shall be paid directly by the Authority to the Utility Owning department as and when Contractor furnishes demand of Utility Owning Department along with a copy of estimated cost given by the later.
- (c) The dismantled material / scrap of existing Utility to be shifted/ dismantled shall belong to the Concessionaire / Contractor who would be free to dispose-off the dismantled material as deemed fit by them unless the Concessionaire / Contractor is required to deposit the dismantled material to utility owning department as per the norm and practice and in that case the amount of credit for dismantled material may be availed by the Contractor as per estimate agreed between them.
- (d) The utilities shall be handed over after shifting work is completed to the Utility Owning Department to their entire satisfaction. The maintenance liability shall rest with the Utility Owning Department after the handing over process is complete as far as utility shifting works are concerned.

**Note II:** - Copy of Utility shifting plan enclosed.

#### 14.1 Details of proposed Utilities Schedules

Utilities details are given below under specific items.

Sr. No.	Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A	Electrical Utilities			

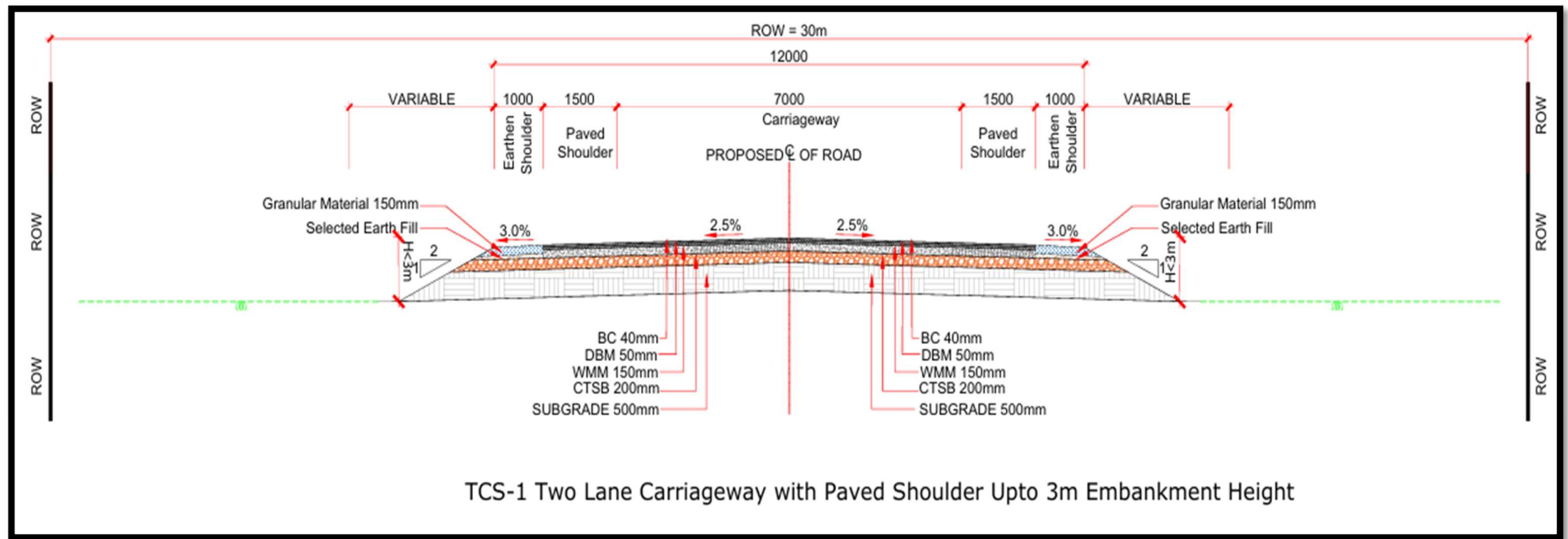
Sr. No.	Type of Utility	Unit	Quantity	Location/stretch (LHS/RHS)
A1	Electrical Poles (with Appraisal)	Nos.	100	BHS
A2	LT / 11KV / 440V Length	Km	5.5	BHS
A3	Transformer 25 KVA / 63 KVA / 100 KVA	Nos.	01	BHS
A4	HT location	Nos.	22 nos.	BHS
<b>B</b>	<b>Water/Sewage pipeline</b>	Km	16.354	BHS
B1	Water supply (Different dia. and Specification)	Km	16.354	
<b>C</b>	<b>Felling of Tress</b>	Nos.	4117	BHS

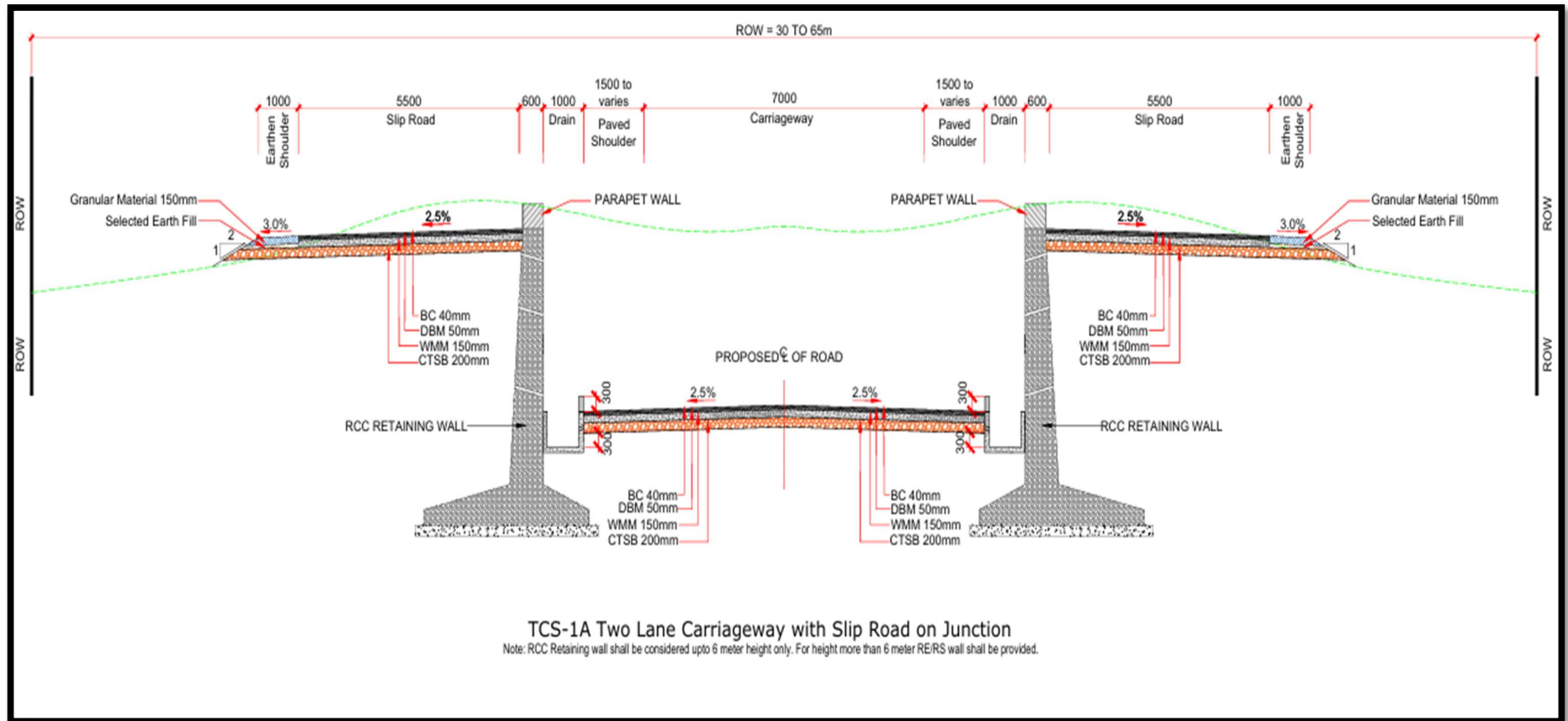
*Note: Above quantities are excluding EHT (400 KV & 132 KV) towers of PGCIL & AEGCL.*

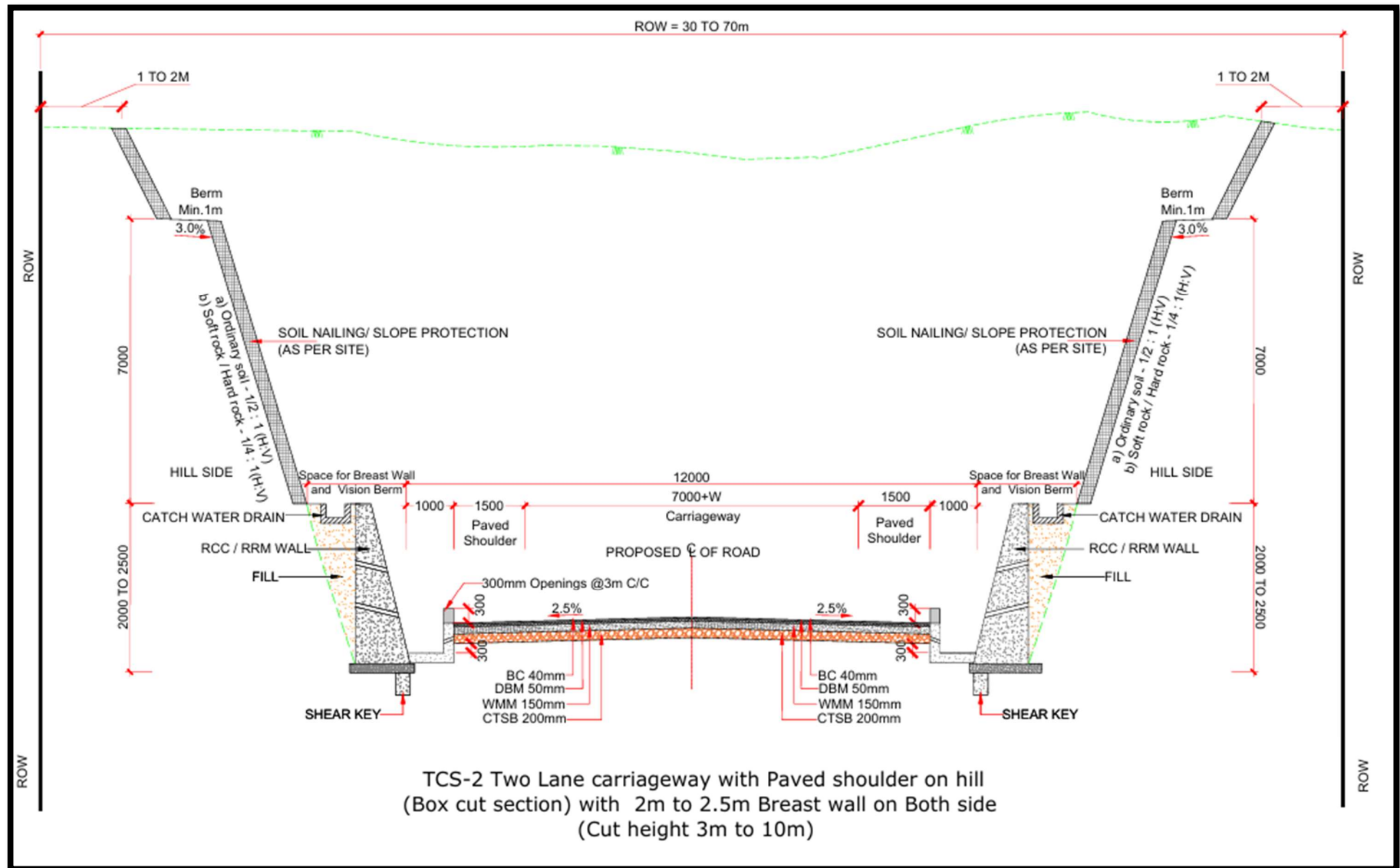
**15. Work Zone Traffic Management Plans (Clause No. 7.19 IRC: SP:84-2019) Annex-II Schedule B- Typical Cross Sections**

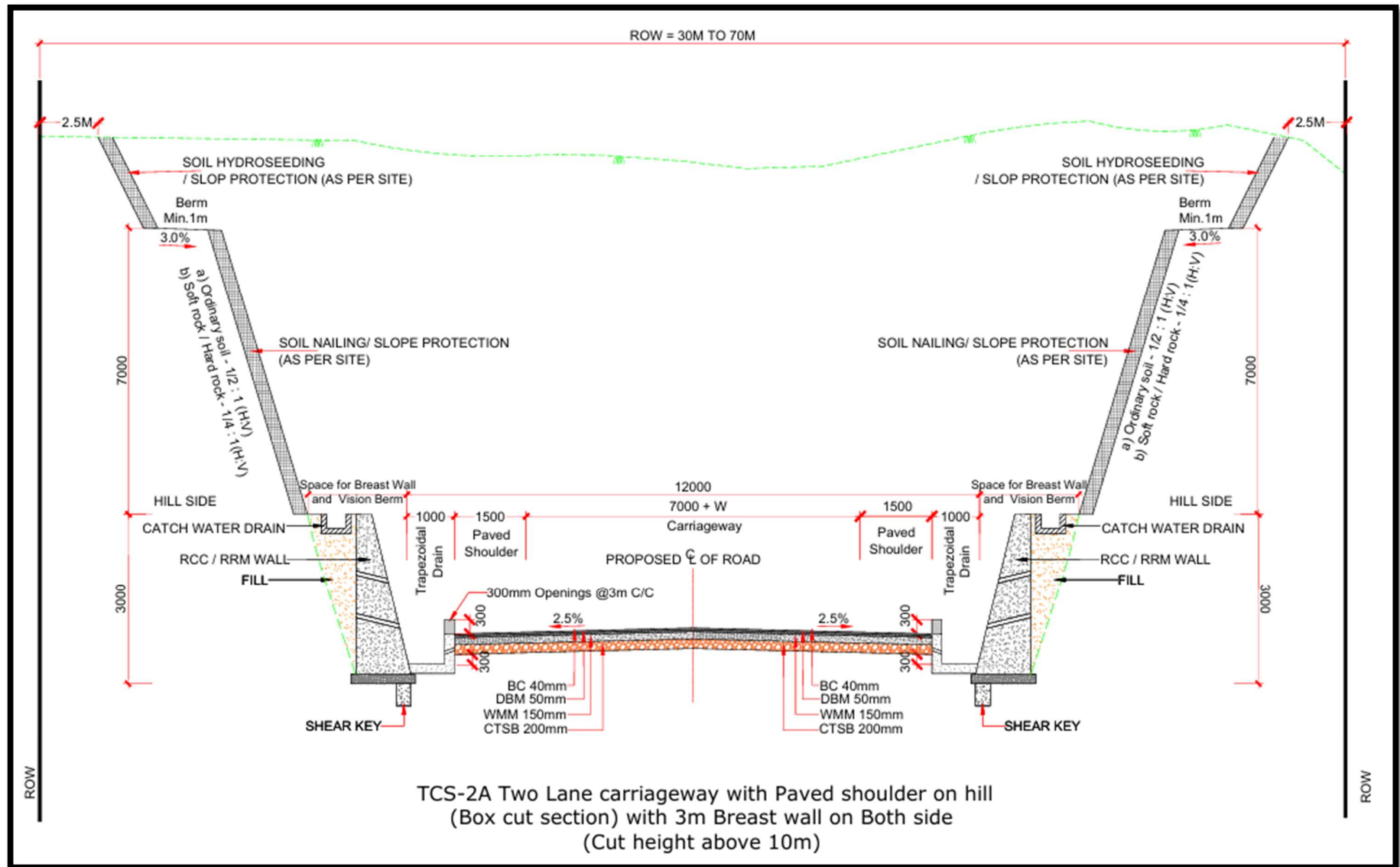
The traffic diversion plans shall be prepared as per IRC SP 55 for smooth flow of traffic and safety. A diversion plan shall be proposed for construction of Culvert, Grade Separated Structures, Bridges, RoB/RUB, etc. and traffic management plan for widening/ reconstruction of carriageway.

**16. TYPICAL CROSS-SECTIONS: As enclosed below,**

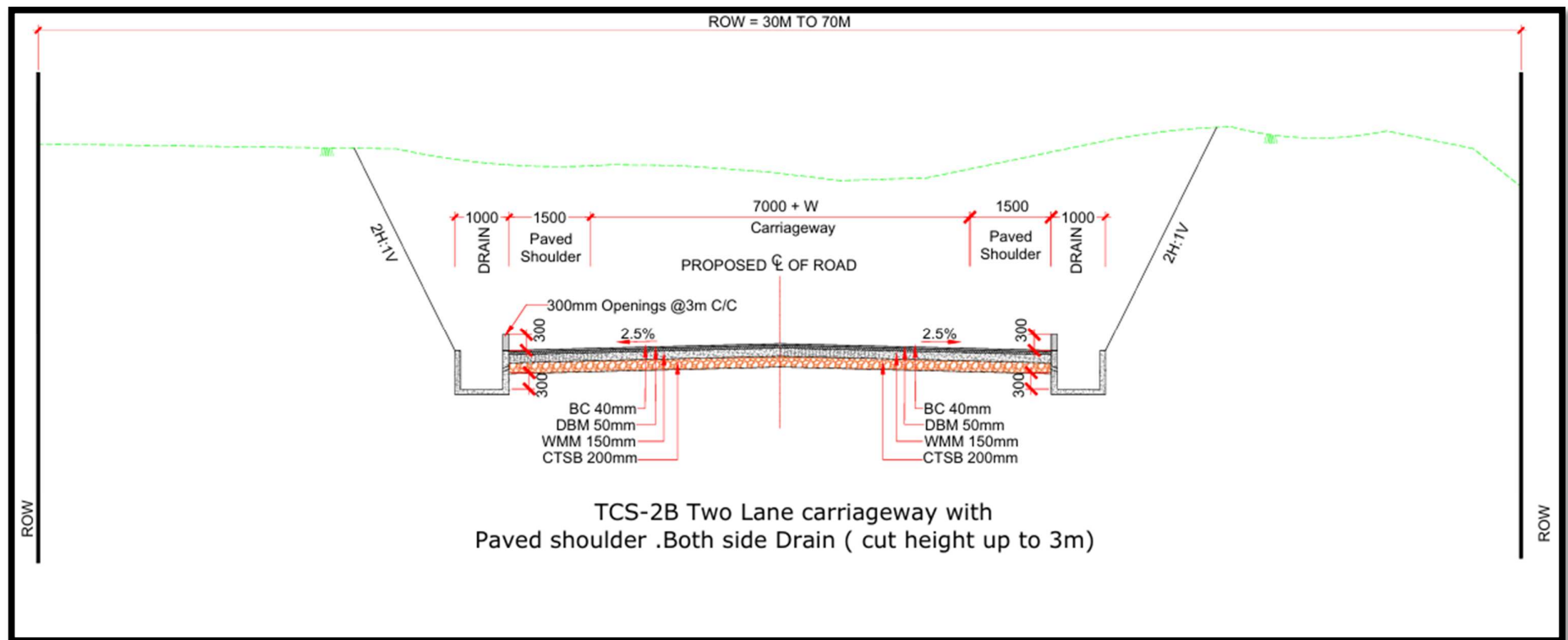


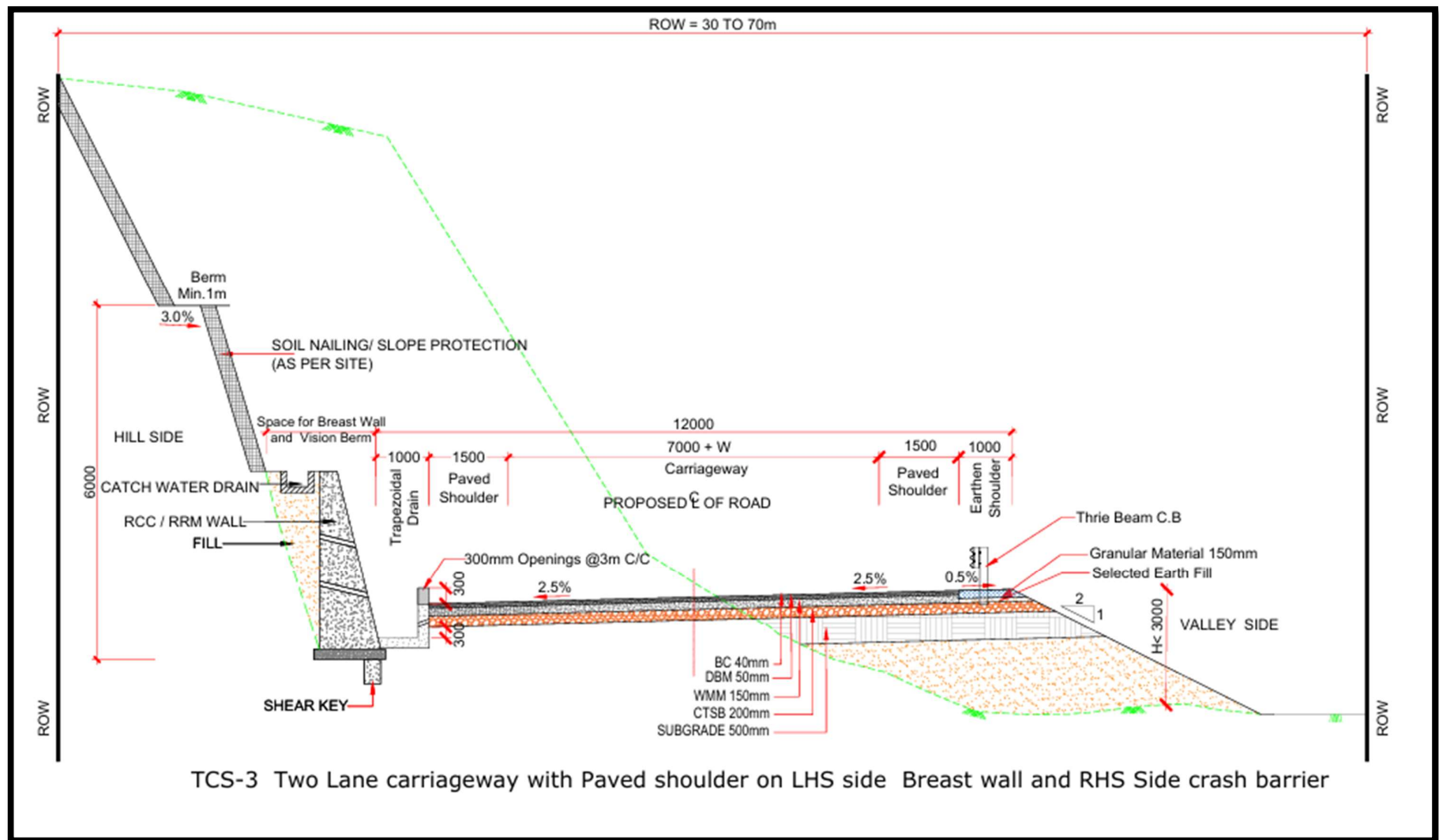


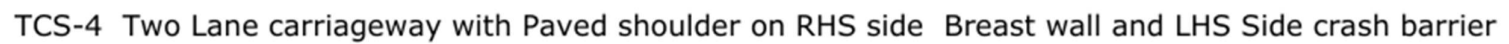


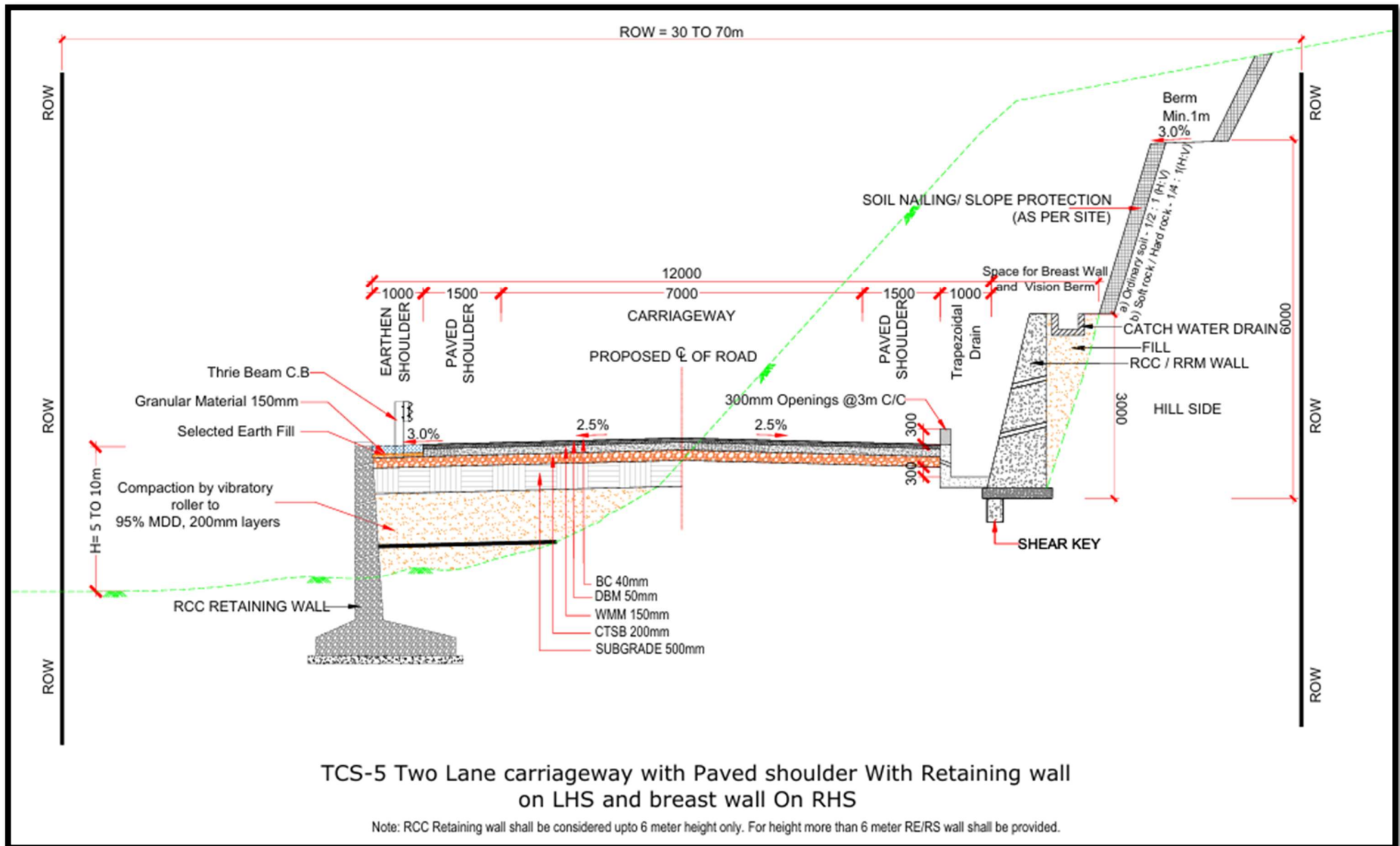


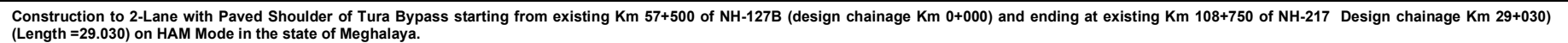


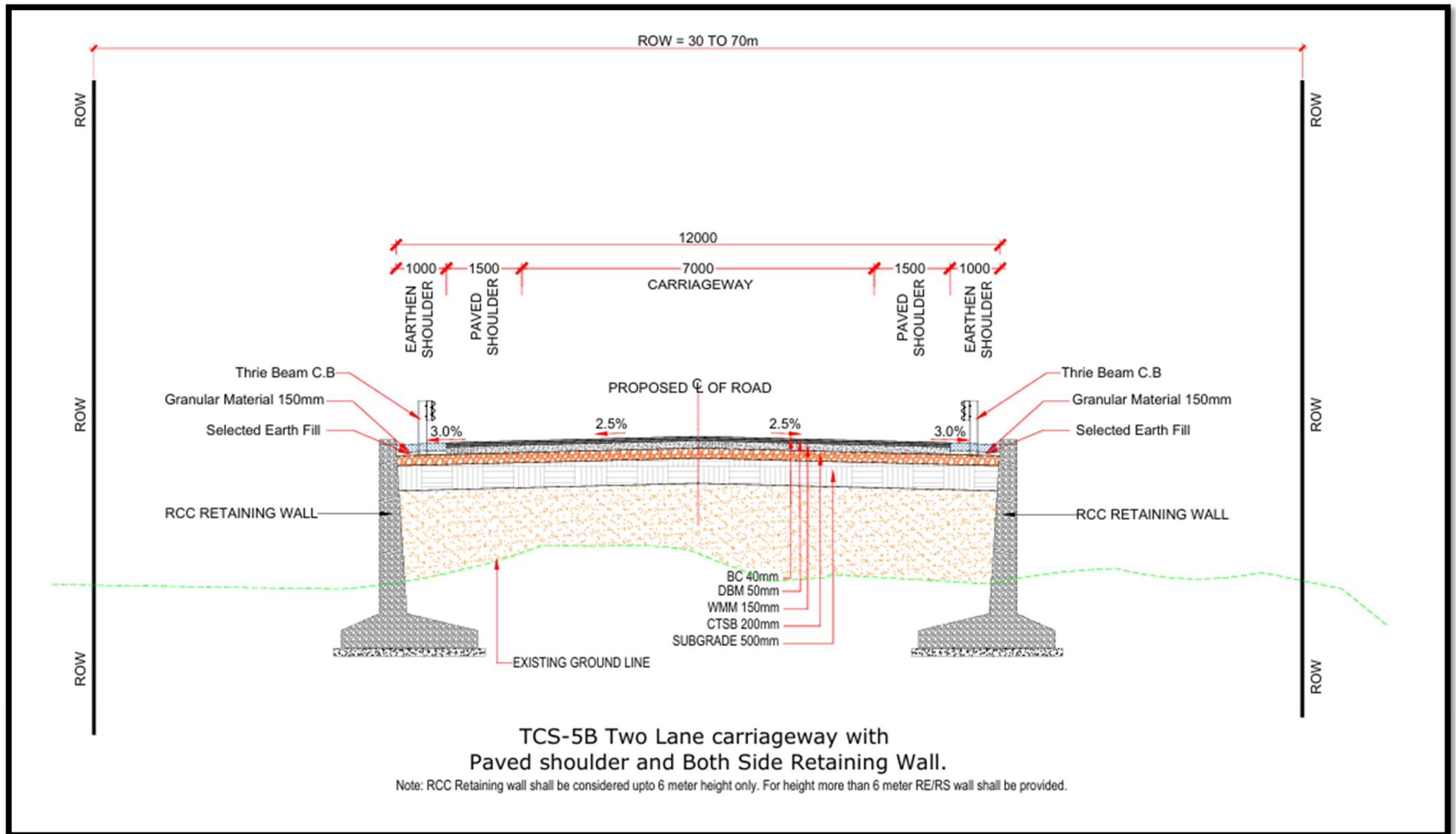












## Schedule - C

*(See Clause 2.1)***Project Facilities**

**1** The Concessionaire shall construct the project facilities in accordance with the provisions of this agreement. Such Project facilities shall include:

- a) Toll Plaza
- b) Roadside furniture
  - i. Kilometer and Hectometer Stones
  - ii. Traffic Signs
  - iii. Overhead Signs
  - iv. Road Marking
  - v. Road Delineators
  - vi. Reflective Pavement Markers & Solar Studs
  - vii. Traffic Impact Attenuators
  - viii. Boundary wall and Fencing
- c) Operation and Maintenance centers
- d) Way side Amenities / Service Areas
- e) Truck lay-byes
- f) Bus Bay and Bus shelter
- g) Pedestrian Facilities
- h) Highway Lighting
- i) Rainwater Harvesting
- j) Environmental Management Plan
- k) Landscaping and Tree Plantation
- l) Advanced Traffic Management System (ATMS)
- m) Highway Patrol Units
- n) Emergency medical services
- o) Crane Service

**1.1** Project Facilities to be completed on or before project completion date have been described in Annex-I of this Schedule-C

**Annex - I****(Schedule-C)****PROJECT FACILITIES****1. Project Facilities**

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

- a) Toll Plaza
- b) Roadside furniture
  - i. Kilometer and Hectometer Stones
  - ii. Traffic Signs
  - iii. Overhead Signs
  - iv. Road Marking
  - v. Road Delineators
  - vi. Reflective Pavement Markers & Solar Studs
  - vii. Traffic Impact Attenuators
  - viii. Boundary wall and Fencing
- c) Operation and Maintenance centers
- d) Way side Amenities / Service Areas
- e) Truck lay-byes
- f) Bus Bay and Bus shelter
- g) Pedestrian Facilities
- h) Highway Lighting
- i) Rainwater Harvesting
- j) Environmental Management Plan
- k) Land Scaping and Tree Plantation
- l) Advanced Traffic Management System (ATMS)
- m) Highway Patrol Units
- n) Emergency medical services
- o) Crane Service

**2. Description of Project Facilities**

Each of the Project Facilities is briefly described below:

**2.1 Toll Plaza**

Tolling system shall be provided in entire length of the project and the same is integrated with



the adjoining packages. The Toll Plazas shall be provided as per NHA circular No. 17.5. 82 dated 24/5/2021 and Schedule D. Minimum Lane requirement in the opening year are as follows.

Toll Plaza shall be provided confirming to **(IRC: SP 73 – 2018)** at the following locations:

S. no.	Location of toll plaza (km.)		Direction (Entry: to Highway, Exit: from Highway)	Minimum number of toll lanes	
	Existing chainage	Design chainage		Entry	Exit
1	-	18+150		3	3

The sub-Items of toll plaza are as follows:

S. no.	Item	Number	Remarks
1	No of toll lanes	2 x 3	
2	Toll booth complex	2	1 each on either side
3	Weigh bridges	2	1 each on either side of toll plaza
4	Electrical system	-	Sufficient for all equipment placed on Toll Plaza and for future expansion
5	Highway nest with toilet facility	2	1 in each direction after crossing the toll booth
6	Internet facility	2	Internet facility with 2 different telecom operators

Note:

- The Toll Plaza shall be constructed as per Manual (Schedule D) considering the modification as per NHA Circular NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17. 5.82 dated 24th May 2021.
- Based on the toll lanes as given above, toll Booth complex, weigh bridges, electrical systems, and all other facilities required/ mentioned in manual shall be provided as per specification mentioned in Schedule D
- No. of toll lane specified above are to be provided. The Concessionaire / Contractor shall design and provide toll lane as per Manual (Schedule D) & NHA Circular NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5. 82 dated 24th May 2021 subject to as specified above.
- All Toll Lanes to be equipped with Hybrid ETC equipment's as per NHA/Policy Guidelines/Management of Toll Plaza/2021 Policy Circular No. 17.5. 82 dated 24th May 2021.
- A separate Highway Nest with toilet facility for road users shall be provided near toll plaza location along with parking facility. One toilet block on each direction shall be provided. These toilet facilities shall follow CPWD specifications for sanitary ware items and fittings such as WC, wash basin, Wash basin-Under counter, Urinal flat back, PVC Cistern, IWC Orissa Pan, Flush Value -CP, Wash Basin pillar cock-GP, Bib Cock-GP, Health Faucet, W/c Bib cock, Wash Basin angle cock. One WC shall be provided for specially challenged persons.
- Point of Sale (POS) with card swapping machines shall be provided.

7. Provide Lane markings and Traffic Signs as per IRC: SP: 84-2019, IRC 35 and IRC 67 **(Clause No. 10.8 & 10.9 of IRC: SP: 84-2019)**
8. Solar panels shall be erected over the either on FOB or over Toll Plaza / Admin building to generate the green energy. Same shall be utilized for toll plaza lighting and other energy requirement within toll plaza area along with conventional lighting.
9. Medium speed Weigh in Motion (MSWIM) devices shall be provided in all toll lanes at Toll Plaza Location. In addition to MSWIM, Static weigh Bridge (SWBs) shall be provided on each direction as per manual. **(Clause No. 10.6, IRC: SP: 84-2019).**
10. Provide impact Attenuators on Toll Plaza islands in the direction of traffic. Impact attenuators shall be self-restoring conform to section 10.6 of IRC SP 99 i.e. Manual of Specifications and Standards for Expressways. **(Clause No.9.6, IRC: SP: 84-2019)**
11. Provide Staircase on either side of the FOB at Median Island location by widening the island appropriately

## 2.2 Roadside furniture

### 2.2.1 Kilometer and Hectometer stones (clause no. 12.3 IRC: SP:84-2019)

S. no.	Item	Number	Remarks
1	5 <sup>th</sup> Kilometer marker/stone & Kilometer marker/stone	5 & 24	The KM/ Hectometer stones/ marker can be concrete/ stones and shall be placed on both outer side of the earthen shoulder.
2	Hectometer marker/ stone	(4x no. of km) = 116	In case KM/ Hectometer marker are to be fixed on separator between Main Carriageway & Service Road then these should be fixed as reflective signs. In case of Access Control Highway/ Expressway, KM/ Hectometer marker should be fixed as reflective sign Km/ Hectometer stones are required to provide on main carriageway and Service Road, both if continuous service road is provided throughout project, length if service road length is more than 1 km.

### 2.2.2 Traffic Signs (Clause No. 9.2 IRC: SP:84-2019)

Traffic Signs include roadside signs, overhead signs and kerb mounted signs etc. shall be provided along the entire Project Highway and on all Side, Roads joining the main carriageway/service road. A QR code shall be marked on back of each sign as per IRC 67.

All sign shall be of Micro Prismatic Grade Sheeting Corresponding to Class C sheeting as per ASTM D 4956 Type VIII, IX and XI. (Clause No. 9.2.3 IRC: SP: 84-2019)

All shoulder mounted signs shall be supported on GI Pipes. Overhead Signs shall be placed on a structurally sound gantry or cantilever structure made of GI pipes. (Clause No. 9.2.4 IRC: SP: 84-2019).

On multi-lane roads (6 lanes or above), signs shall be mounted overhead. (Clause No. 4.6 of IRC: 67 2022).

The siting of signs shall confirm to Table 4. 1 and Fig 4.1 of IRC 67. (Clause No. 4.7 IRC: SP: 84-2019). The two successive signs shall be placed at a minimum distance of  $0.6 \times V$  metre (V is design speed in Kmph). (Clause No. 4.8 IRC 67 2022).

The overhead gantry signs shall be placed as given below: (Clause No. 16.3.2 of IRC 67 2022)

S. No.	Item	Carriageway (Left, Right, Both)
1	Overhead Gantry signs	
a	Start of Project	Both
b	End of project	Both
c	Toll plaza location	Both
d	Advance Direction Signs on main carriageway ahead of Grade separated Junction	Either left or right
e	Reassurance Signs on main carriageway	Either left or right
2	Overhead Cantilever Gantry signs	
a	Direction Signs on main carriageway and crossroad ahead of Grade separated Junction	Either left or right
b	At all major locations of crossroads i.e. NH, SH, MDR (start of grade Separated structure/at grade interchange)	Either left or right
c	At major trauma center, roads leading to religious places or any other important location	Both sides
3.	Double/Butterfly Cantilever	On Gore Area of Exit Locations of Access Controlled Highway/ Expressway.

The minimum number of signages to be provided are as mentioned below:

S. No.	Road Signs	Number	Remarks
<b>I</b>	<b>Mandatory/Regulatory</b>	-	
1	Stop signs	4	
2	Give Way Signs	4	
3	Prohibitory signs	-	
4	No Parking signs	-	
5	No Stopping signs	-	
6	Speed Limit signs (Circular)	6	
7	Speed Limit signs (Vehicle Type)	-	
8	Vehicle Control signs	-	
9	Restriction Ends sign	-	
10	Compulsory Direction Control and other signs	-	
<b>II</b>	<b>Cautionary/Warning</b>	-	
1	Left/Right Curve	-	
2	Left/ Right Curve with side road	20	
3	Right/Left Hairpin Bend	-	

S. No.	Road Signs	Number	Remarks
4	Right/Left Reverse Bend	-	
5	Series of Bends	-	
6	270 Degree Loop	-	
7	Side Road	2	
8	Y-intersection	1	
9	Cross Road	2	
10	Roundabout	-	
11	Traffic Signals	-	
12	T- Intersection	1	
13	Major Road Ahead	-	
14	Staggered Inter-section	-	
15	Merging Traffic Ahead	-	
16	Narrow Road Ahead	-	
17	Road Widens	-	
18	Narrow Bridge Ahead	-	
20	Steep Ascent/Descent	-	
21	Reduced Carriageway	02	
23	Start /End of Dual Carriageway	-	
24	Gap in Median	-	
25	Pedestrian Crossing	-	
26	Pedestrian crossing with backing board	-	
27	School Ahead	-	
28	Built Up Area	-	
29	Two Way Operation (on main carriage way /service road)	-	
30	Two Way Traffic on Cross Road Ahead	-	
31	Danger Warning Sign	-	
32	Deaf or Blind Persons Likely on Road Ahead	-	
33	Cycle Crossing	-	
34	Cycle Route Ahead (Warning for Cycles on road ahead)	-	
35	Dangerous Dip	-	
36	Speed Breaker	-	
37	Rumble Strip	12	
38	Rough Road	-	
39	Dangerous Ditch	-	
40	Slippery Road	-	
41	Slippery Road because of Ice	-	
42	Opening or Swing Bridge	-	
43	Overhead Cable	-	

S. No.	Road Signs	Number	Remarks
44	Playground Ahead	-	
45	Quay Side or Riverbank	-	
46	Sudden Side Winds	-	
47	Tunnel Ahead Warning	-	
48	Falling Rocks	-	
49	Cattle Crossing	-	
50	Wild Animals likely to be on Road Ahead	-	
51	Queues Likely Ahead	-	
52	Low flying Aircraft	-	
53	Unguarded Railway Crossing	-	
54	Guarded Railway Crossing	-	
55	Crash prone area ahead	-	
56	U- Turn	06	
<b>III</b>	<b>Chevron Signs</b>	-	
1	Single Chevron	1025	
2	Double Chevron	-	
3	Triple Chevron	-	
<b>IV</b>	<b>Object Hazard Marker Sign</b>	-	
1	Left /Right side Object Hazard Marker	12	
2	Two-way Object Hazard Marker	-	
<b>V</b>	<b>Informatory/ Guide</b>	-	
1	Direction and Place Identification signs	16	
2	Stack Type Advance Direction Sign (Shoulder Mounted)	-	
3	Stack Type Advance Direction Sign with cautionary / regulatory signs (Shoulder Mounted)	-	
4	Map Type Advance Direction Sign (Shoulder Mounted)	-	
5	Map Type Advance Direction Sign for roundabout (Shoulder Mounted)	-	
6	Flag Type Direction Sign	-	
7	Reassurance Sign	-	
8	Place Identification Sign	-	
9	Truck Lay -By	02	
10	Toll Booth Ahead	02	
11	Weigh Bridge Ahead	-	
12	Shoulder Mounted Sign in Advance of a Grade Separated Junction/ Interchange	-	
13	Expressway Sign	-	
14	Gantry Mounted advance Direction Sign Ahead of a Flyover in Urban/City Roads	-	

S. No.	Road Signs	Number	Remarks
15	Gantry Mounted advance Direction Sign Ahead Instead of of a Grade Separated Junction	-	
16	Gantry Mounted Advance Direction Sign for interchange.	-	
17	Lane Dedicated Gantry Sign	-	
18	Definition/Supplementary Plates	-	
19	Tourism Related Sign	-	
20	Tourist Destination Direction Information Signs Without Photograph	-	
21	Tourist Destination Direction Information Signs with Photograph	-	
22	Finger Destination direction Information Sign for Pedestrians	-	
23	Tourist Map Information Sign	-	
24	Boundary sign at Entrance to a City/Place	-	
25	Boundary sign at Entrance to a Tourist Destination	-	
<b>VI</b>	<b>Facility Information Signs</b>	-	
1	Eating Place	-	
2	Light Refreshment	-	
3	Resting Place	-	
4	Resting Place	-	
5	First Aid Post	02	
6	Toilet	02	
7	Filling Station (Fuel Pump)	-	
8	Hospital	-	
9	U-Turn Ahead	-	
10	Pedestrian Subway	-	
11	Police Station	-	
12	Picnic Site	-	
13	Repair Facility	-	
14	Railway Station/Metro Station/Monorail station	-	
15	Industrial Area	-	
16	Cycle Rickshaw Stand	-	
17	Taxi Stand	-	
18	Auto Rickshaw Stand	-	
20	Home Zone	-	
21	Camp Site	-	
23	Airport	-	
24	Golf Course	-	
25	National Heritage	-	

S. No.	Road Signs	Number	Remarks
26	No Through Road	-	
27	No Through Side Road	-	
28	Toll Road Ahead	04	
29	Guide Sign on Toll Lane Portal	02	
30	Country Border	-	
31	Entry Ramp for Expressway	-	
32	Exit Ramp for Expressway	-	
33	Bus Stop	04	
34	Bus Lane	-	
35	Contra Flow Bus Lane	-	
36	Cycle Lane	-	
37	Contra Flow Cycle Lane	-	
38	Holiday Chalets	-	
39	Emergency Exit	-	
<b>VII</b>	<b>Other Useful Information Signs</b>	-	
1	Signs For Persons with Disabilities	-	
2	International symbol of Accessibility	-	
3	Parking Information	-	
4	Parking Areas	-	
5	Ramped Entrance to Subway/Over Bridge	-	
6	Telephone Facilities	-	
7	Toilet Facilities	-	
8	Way Finding	-	
9	Parking Signs	-	
10	Auto Rickshaw Parking	-	
11	Cycle Parking	-	
12	Cycle Rickshaw Parking	-	
13	Scooter and Motorcycle Parking	-	
14	Taxi Parking	-	
15	Park and Ride	-	
16	Parking Restrictions Signs for Traffic Management	-	
17	Flood Gauge Sign	-	
<b>VIII</b>	<b>Route Maker Signs</b>	-	
1	State Highway Route Marker Sign	-	
2	National Highway Route Marker Sign	02	
3	Asian Highway Route Marker Sign	-	
4	Expressway Route Marker Sign	-	

Note: The locations of the placement of signages shall be finalized in consultation with Authority Engineer / Independent Engineer/ NHIDCL, as per requirement. Above details of sign boards are indicative and minimum specified. The exact type and number of sign boards shall be decided as per manual in consultation with Authority / Independent

Engineer. Any variation in type/number/location specified above shall not constitute Change of Scope.

### 2.3 Road Marking (Clause No. 9.2 IRC: SP:84-2019)

Road Markings shall be Hot applied thermoplastic materials with reflectorized beads to achieve visibility confirming to clause 2.7.2 of IRC 35. (Clause No. 2.2 IRC: 35)

The cold applied plastics pavement markings shall be used for School Zone Markings, Audible Raised Profile Edge Lines and Block Markings (BM 01/02/03). (Clause No. 2.4 of IRC: 35)

S. No.	Item	Number & Length (m)
1	Longitudinal Marking	Nil
2	Transverse Marking	Nil
3	Hazard Marking	Nil
4	Block Marking	Nil
5	Arrow Marking	Nil
6	Directional Marking	12
7	Facility Marking	Nil
8	Center Line	29.030 Km
9	Traffic Lane Lines	As per Manual
10	No Overtaking Lines	Nil
11	Warning Lines	Nil
12	Border or Edge Lines	58.060 Km
13	Longitudinal Markings for Undivided Roads	As per Manual
14	Longitudinal Markings for divided Roads	As per Manual
15	Longitudinal Markings for Ramps/Slip Roads/One Way Streets	As per Manual
16	Stop Line	As per Manual
17	Give Way Lines	As per Manual
18	Diagonal Markings	As per Manual
19	Chevron Markings	As per Manual
20	Continuity Line	As per Manual
21	Word Messages	As per Manual
22	Lane Change	As per Manual
23	Merging/Diverging Marking	As per Manual
24	Hatch Markings	As per Manual
25	Raised Profile Lines	As per Manual
26	Lane Reduction / Narrowing Situations and Transitions (lane Balancing)	As per Manual
27	Directional Arrows	As per Manual
28	Mandatory Turn Arrows	43 nos
29	Guidance Arrows	Nil
30	Deflection Arrows	Nil



S. No.	Item	Number & Length (m)
31	Bifurcation Arrows	As per Manual
32	Arrows on Side Road Approaches	As per Manual
33	Arrows on Main Road Approaches	As per Manual
33a	Word Messages	As per Manual
34	Yellow Box Markings	As per Manual
35	Ghost Island	As per Manual
36	Marking for Speed Breakers	As per Manual
37	Pedestrian Crossing	As per Manual
38	Markings when highway passes through settlement fig 9.4 of IRC SP 84/87	As per Manual
39	Transverse Bar Markings	As per Manual
40	Bus bay Marking	As per Manual
41	Truck Lay-by Markings	As per Manual
42	Toll Plaza Marking	As per Manual
43	School Zone Markings	As per Manual
44	Object Markings within Carriageway	As per Manual
45	Objects Markings Adjacent to Carriageway	As per Manual
46	i. Subway Piers, Abutments, Culverts Head Walls, Concrete Barrier	As per Manual
47	ii Electrical poles	As per Manual
48	iii Guard rails	As per Manual
49	iv Kerb	As per Manual
50	Directional Markings as per Annexure: A 6	As per Manual
51	Facility Markings as per Annexure A.7 of IRC 35	Nil

Note: The locations of the marking shall be finalized in consultation with Authority Engineer / Independent Engineer / NHIDCL as per site requirement. Raised profile edge lines as per Clause 7.7 of IRC 35 shall be provided on both sides i.e., shoulder and median side.

## 2.4 Road Delineators (Clause No. 9.4 IRC: SP: 84-2019)

S. no.	Item	Number/Length (m)
1	Roadway indicator	340 Nos.
2	Median Marker on Median/RCC Barrier (Clause 4 of IRC 79 2019)	Nil.
3	Object marker	-
4	Flexible Object Markers (Clause 6 of IRC 79 2019)	-
i	On Metal Beam Barrier	9882 m.
ii	On Toll Booth/Toll Island	06 Nos.
iii	On Entry/Exit of Tunnel	Nil.
iv	On Exit from Main carriageway	12 Nos.
5	Solar Blinkers on Median Opening, on exit from main carriageway and on approach ramp/crossroad at junctions below grade separated intersections.	Nil

Note: The locations of the marking shall be finalized in consultation with Independent Engineer/NHAI, as per site requirement in accordance with manual.

## 2.5 Reflective Pavement Markers & Solar Studs (Clause No. 9.5 IRC: SP:84-2019)

The Prismatic Retro-Reflective type confirming to ASTM D-4280 Pavement Markers & Solar Power Studs on Highway shall be provided in accordance with Schedule - D.

Sl. No	Item	Number	Location	Remarks
1	White Colour one coloured face Road Studs	5212	Traffic lane line & centre of carriageway	Uni-directional carriageway

## 2.6 Traffic Impact Attenuators (Clause No. 9.6 IRC: SP:84-2019)

### 2.6.1 Provide Impact Attenuators in Gore Areas, it shall be self-restoring confirming to section 10.6 of IRC SP 99 i.e. Manual of Specifications and Standards for Expressways at following locations

S. No.	Item	Chainage / Number	Remarks
1	On flyover/grade separated structure at exit from main carriageway	-	
2	On Island of Toll Plaza	02	
3	Any other location which Safety Hazard	-	

### 2.6.2 Providing End Terminals

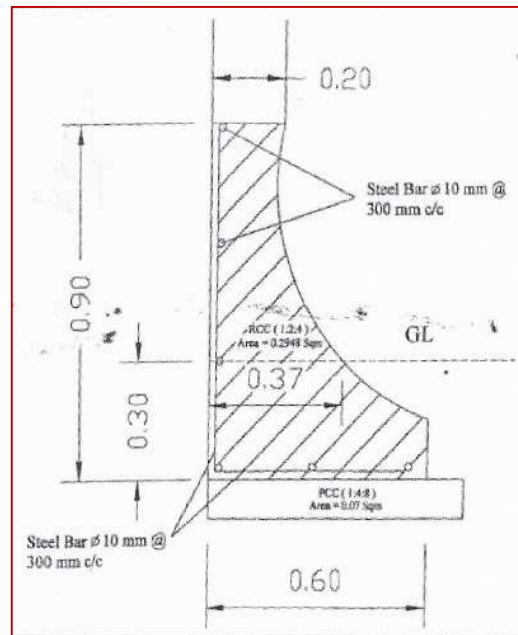
Provide End Terminals P-4 type confirming to EN 1317-4 to Parapet Walls of Culverts, Structures ends for the safety of approaching traffic etc.

S. No.	Item	Number	Remarks
1	Culvert Ends	-	
2	Structures Ends	-	At bridge / viaduct RCC crash barrier end on approaching side
3	Any other location which Safety Hazard	-	

## 2.7 Boundary wall and Fencing (Clause No. 12.2 IRC: SP:84-2019)

Boundary wall shall be provided along the entire length on either side (including transverse requirements at structure locations) as per the detail given below in accordance with IRC: SP:84. Road boundary walls shall be provided at the boundary on both sides of the right of way available under the control of the Authority, except at ingress and egress points. The boundary walls shall be of reinforced cement concrete as per figure enclosed.

At all CD structure locations, the boundary wall shall be discontinued by turning and joining it with the wing/return wall to allow crossing through these structures during dry seasons.



### 3. Operation and Maintenance centers (Clause No.12.15 IRC: SP: 84-2019)

There shall be operation and maintenance center(s) as per Clause 12.15 of Schedule-D, either near the toll plaza location or at any other location along the Project Highway, as identified by the Concessionaire. The minimum land for O & M center shall be 2000 sqm and shall be acquired by the Concessionaire at his own cost and risk. Dedicated operation and maintenance center shall be provided in accordance to Schedule D.

### 4. Way side Amenities/ Service Areas/Rest Area (Clause No. 12.6 IRC: SP:84-2019/

S. No	Item	Existing Chainage (Km)	Side	Remarks
1	Way side Amenities-1	-	-	

The Site needs to levelled/ graded for the whole of Way side Amenities area and boundary wall of the height of 1.5m shall be constructed along the periphery of the area.

### 5. Truck lay-byes: (Clause No. 12.6 IRC: SP:84-2019/ IRC: SP:87-2019

#### 5.1 The truck lay-bye shall be provided at below given location and as per the design mentioned in Schedule-D.

S. No	Design Chainage	Side	Remarks
1	11+430	BHS	

#### 5.2 Toilet block along with Janitor room on each Truck Lay bye shall be provided. The toilet block shall consist of at least 1 block for bathing, at least 2 fixtures each for urinals, WC and wash basin. There shall be 24-hour lighting facility in toilet block. These toilets facilities must be functional round the clock including proper maintenance. For arrangement of water, 1 no. of boring along with water pump shall be provided to keep the toilet clean. For upkeep and maintenance of Toilet, 3 Safai wale (1 in each 8-hour shift) shall be engaged and is in the scope throughout contract period.

- 5.3 Truck Lay Bye Pavement:** Provide pavement composition (Flexible/Rigid/ Paver Blocks) as follows:

Pavement Composition is same as MCW (Flexible)
--

**6. Bus Bay and Bus shelter: (Clause No. 12.7 IRC: SP:84-2019)**

Provision of Busbay and bus shelter on highways as per IRC 80: 2022 including paving of layby, signs, markings, speed calming measures, drainage, lighting etc., in built-up areas, intersections of NH/SH/MDR and roads leading to large settlements is as follows:

- 6.1 Bus Bays with tapers** shall be provided along with passenger's shelters shall be constructed at the following locations:

Sr. No.	Design (Existing) Chainage (Km)		Entry Taper Length	Bus Bay Length	Exit Taper Length	Remark
	Left	Right				
NIL						

- 6.2 Kerb Side Bus Stop with Pedestrian shelter** shall be provided at the following locations.

Sr. No.	Design (Existing) Chainage (Km)		Entry Taper Length	Bus Bay Length	Exit Taper Length	Remark
	Left	Right				
NIL						

- 6.3 Bus Bay Pavement:** Provide pavement composition (Flexible/Rigid/ Paver Blocks) as follows:

Pavement Composition (Flexible/Rigid/ Paver Blocks)
Flexible same as MCW

**7. Pedestrian Facilities (Clause No. 9.8 IRC: SP:84-2019)**

Pedestrian Facilities shall be provided in accordance with the Manual of Specifications and Standards as referred in Clause 9.8 of Schedule D and IRC 103 2022. This shall consist of footpath (sidewalks), pedestrian guard rails and pedestrian crossing.

The details are as mentioned below:

Sl. No	Pedestrian facilities	Location
1	Pedestrian guardrails shall be 150 mm from Carriageway / Paved Shoulder i. Hazardous Locations on Straight Stretches ii. At Junctions / Intersections iii. Schools iv. Bus Stop/Railway Stations v. Overpass, Subway vi. Central Reserve	As per manual

2	Footpath paving including fixing of Tactile pavers	As per manual
3	Pedestrian Crossing i. With Zebra Marking ii. With Tabletop Crossing iii. At Intersections iv. At Schools	As per manual

#### 8. Highway Lighting (Clause No. 12.5 IRC: SP:84-2019)

The street light poles shall be 1 piece, continuous-tapered, octagonal poles and shall be manufactured from one length of steel sheet, formed in continuous tapered tube, with one continuous arc-welded vertical seam. The minimum wall thickness for lighting poles shall not be less than 4 mm. The Bottom Diameter shall be minimum 175 mm. The Top Diameter shall be minimum 75 mm. The door on window of pole shall be antitheft. All electrical cable should be concealed. All electrical lighting fixers shall be LED. The fixtures shall be concealed except on poles. Lighting poles shall be fixed on outer side of steel/concrete barrier.

The lighting shall be Providing at the following locations:

S. No.	Lighting facilities	Chainage		Side	Lighting Source:
		From	To		
1	Toll Plaza area: The lighting in and around toll plaza, toll booths, office building, on the approach road, O&M center etc. shall be as per Section 12 of the Manual. In addition to at least two high mast light shall be provided on either side of toll plaza	18+150	18+150	BHS	Electricity Board / Generator / Solar
2	Rest Areas: The entire Rest areas shall be provided with lighting with average illumination to 40 Lux				Not Applicable
3	Truck lay-bye: The entire area of truck lay-byes and 50m length of the project highway on its either side shall be illuminated at night to provide an average illumination of 40Lux. Suitable designed electric poles having aesthetic appeal and energy saving bulbs (LED) may be used to provide required illumination. Alternatively, photo voltaic lamps may be used	11+740	11+740	LHS & RHS	Electricity Board / Solar
4	Bus Bay & bus shelter locations: The entire bus bay & bus shelter area shall be provided with Lighting (Average illumination of 40Lux.).	13+160		LHS & RHS	Electricity Board / Solar

S. No.	Lighting facilities	Chainage		Side	Lighting Source:
		From	To		
	Grade separated structures, interchanges, flyovers, underpasses (vehicular/ pedestrian) and Vehicle overpasses: Lighting requirement shall be as per section 12 of the manual. The top and underside of the grade separated structures including service road/ slip road, interchange area at the ground level up to 50m beyond the point from where flaring of the main carriageway takes place shall be provided with lighting. Also, on all legs of at grade interchange/ crossings the lighting shall be provided 50m beyond the point of Centre on all legs. The minimum illumination shall be 40 Lux., at the extreme edge of the Highway	Electricity Board / Solar			
6	Built-up sections on the project highway both in the median of main carriageway and on the service roads on both sides	Not Applicable			
7	On Median Openings provide 1 no. high mast lighting of 25m height	Not Applicable			
8	On Major Bridges and its approaches higher than 3m	Solar			

#### 9. Rainwater Harvesting

The provision of rainwater harvesting shall be provided at every 1000m staggered in the entire project length and shall be executed as per requirement of IRC SP: 42-2014 and IRC SP: 50-2013. Additionally, wherever urban drains are provided, which do not have a definite outfall for discharge of water, at such location one pit for rainwater harvesting shall be provided along the side drains at the lowest point/ where the water stagnates. The type and location of rainwater harvesting is as follows:

Sl. No.	Rainwater Harvesting Type	Number	Depth of Recharge Structure
1	Type 1 confirming to clause 10.7.2 of IRC SP 42	-	-
2	Type 2 confirming to clause 10.7.3 of IRC SP 42	-	-
3	Type 3 confirming to clause 10.7.4 of IRC SP 42	-	-
4	Type 4 confirming to clause 10.7.5 of IRC SP 42	-	-

#### 10. Environmental Management Plan (Attach MOEF Mitigation Report in Schedule D)

The Concessionaire / Contractor shall implement the Environmental Management plan & action Plan for undertaking possible mitigation measures in accordance with environmental clearance accorded by Ministry of Environment and Forests and climate change. The conditions & directions stipulated by the MOEF shall be complied by the contractor / concessionaire.

**11. Land Scaping and Tree Plantation (Section 11 of IRC SP 84 2019)**

The Concessionaire shall plant trees and shrubs of required numbers and types at the appropriate locations within Right of Way and in the land earmarked by the Authority for afforestation as per Schedule D at the following areas.

Sl. No.	Types of Plantations	Location (Km)	Number of trees to be planted	Remarks
1	Shrubs	In median except Structures+ Frist row from side of drain	Not Applicable	Ornamental type plantation shall be provided
2	Landscaping	O & M Centres, Vacant land parcels, Toll Plaza building and surroundings Vacant space below the flyovers.	Landscaping plans shall be submitted by the Concessionaire/Contractor which shall include ornamental trees, decorative statues and landscaping	The number of Ornamental type plantation and other things shall be decided on the basis availability of land.
3	Plantations	Available open land within ROW.	Minimum 2900 nos. of trees of desired type in one row as per availability of RoW @ 10 m c/c near edge of ROW on both sides (As per Schedule D)	Preferably local varieties like mango, Neem, Sheesham, Babul, Peepal etc. shall be planted

Drip irrigation system for median plantation by gravity/pressure sources with all necessary components / systems and emitting devices at plants shall be provided.

The Concessionaire shall maintain the trees and shrubs in good condition during concession period as per the concession agreement.

**12. Advanced Traffic Management System (ATMS) (NHAI Policy Circular No 11.53/2023 dated 10<sup>th</sup> October 2023)**

The Concessionaire is required to design, install, operate and maintain Advanced Traffic Management System (ATMS) as part of the project facilities. Advanced Traffic Management System shall be provided as per standards and specifications specified in the manual and as per NHAI circular 11.53/2023 dated 10th October 2023 and shall be maintained throughout the contract period.

- Deleted (Not in Scope of Contractor).

**13. Highway Patrol Units (Clause No. 12.10 IRC: SP:84-2019)**

Highway Patrol units shall be established and operate at toll plaza location as per Schedule-D Clause 12.10, which shall continuously patrol the highway in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of patrol vehicle per 50 km or less shall be provided). The vehicle shall be brand new with fuel, driver, and insurance all-

inclusive for the entire contract period. Highway Patrol units shall be fitted with GPS and GSM based vehicle tracker system. Highway Patrol Vehicles shall be stationed on layby constructed on Project Highway @ every 20 km of each Toll Plaza.

**14. Emergency medical services (Clause No. 12.11 IRC: SP:84-2019)**

The Contractor shall, at its own cost, construct a medical aid post at each toll plaza with a minimum size of 5 x 5 sq.m with a toilet (to be used for the patients of minimum size of 3 x3 sq.m) and hand it over to the Authority, no later than 30 (thirty) days prior to PCOD/COD. The Medical Aid Post(s) shall be deemed to be part of the project and shall vest in the Authority. Medical Aid Post shall be set up at Administrative Block with round-the-clock services for victims of accidents on the Project Highway.

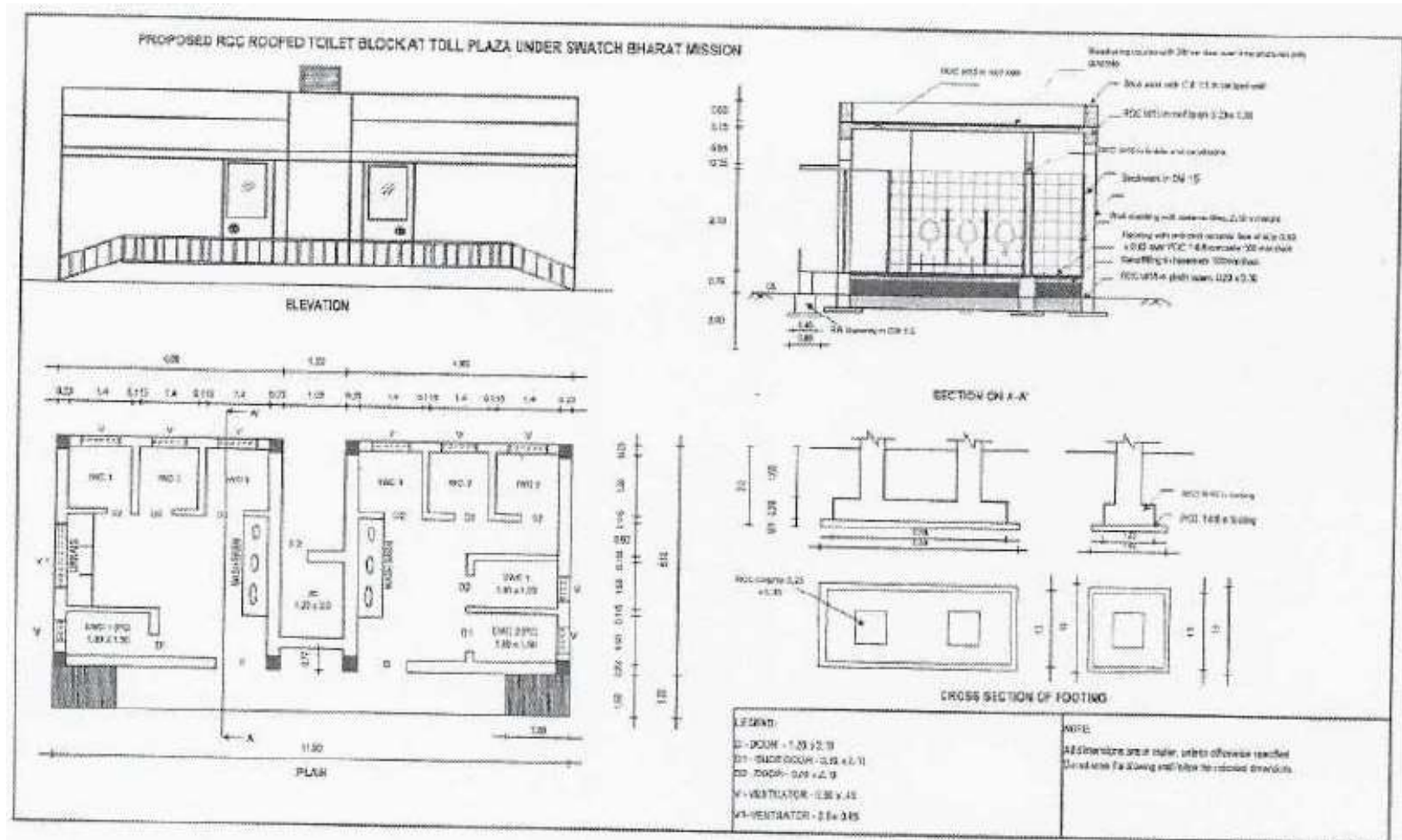
One number Ambulance shall be provided in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of ambulances per 50 km or less shall be provided). The Ambulance shall be brand new with fuel, driver, medical staff and insurance all-inclusive for the entire contract period. Ambulance fitted with GPS and GSM based vehicle tracker system shall be provided to be integrated with the Video Incident Detection System with ATMS, as per Schedule - D, Clause 12. 11 (strictly as per details mentioned in Annex-I of Schedule D), along with all necessary manpower (including paramedical staff), medicines, equipment's etc. and shall be maintained in an effective manner throughout the contract period starting from the appointed date. Ambulance shall be stationed on lay bye constructed on Project Highway@ every 20 km of each Toll Plaza.

**15. Crane Service: (Clause No. 12.12 IRC: SP:84-2019)**

Crane Service shall be provided on project highway, as specified in the manual Clause 12. 12. One number crane shall be provided in a stretch not exceeding 50 km (if the stretch is more than 50 km additional 1 number of cranes per 50 km or less shall be provided). Crane having capacity of minimum 20T shall be made available. The crane shall be brand new with fuel, driver, and insurance all-inclusive for the entire contract period. Cranes shall be stationed on layby constructed on Project Highway@ every 20 km of each Toll Plaza.



Annexure-I (Schedule C) – Standard Drawing for Toilet



## **Schedule - D**

*(See Clause 2.1)*

### **Specifications and standards**

#### **1 Construction**

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

#### **2 Design Standards**

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

## Annex - I

(Schedule-D)

### Specifications and Standards for Construction

#### 1 Manual of Specifications and Standards to apply

All Materials, works and construction operations shall conform to the Manual of Specifications and Standards for Two-Laning of Highways (IRC: SP: 73-2018) with all amendments till date published by IRC (referred to as "Manual" in this Schedule) and MORT&H Specifications for Road and Bridge Works (5th revision). Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority Engineer for construction of the project highway.

- i. As regards, the work of utility shifting, the relevant specifications, relevant rules regulations and acts of Utility Owning Department/ Agencies shall be applicable.
- ii. Technical Specifications of Tunnel work shall be referred separately from Volume-V (Tunnel Technical Specifications Report) submitted with DPR drawings and report.

#### 2 Deviations from the Specifications and Standards

- (i) Deleted.
- (ii) Notwithstanding anything to the contrary contained in the aforesaid Manual, the Specifications and Standards shall apply to the Project Highway, and for purposes of this Agreement, the aforesaid Manual shall be deemed to be amended to the extent set forth below:

Sl. No.	Manual Clause No	Details of Item	Description of Deviation
1	2.6.1	Width of paved and earthen Shoulder	Width of Shoulder shall be as given in typical cross-sections in Schedule B
2	2.2	Design Speed	The Minimum design speed shall be 60 kmph except locations specified in Schedule B.
3	2.17	Typical Cross Section	The typical cross sections shall be as given in Schedule B.
4	7.3	Overall width of structures	The Overall Deck Configuration of all structures shall be as given in Schedule B
5	6.2	Surface Drains	Lined/Unlined Side Drains shall be provided throughout the Project as per typical cross sections (TCS) except at cross drainage structures (River, nala, canal etc.)
6	9.7.5	Median Barriers	-
7	9.7.1	Roadside safety barriers	Thrie beam metal crash barriers shall be provided in entire length on outer side earthen shoulder of each main carriageway where the height is more than 3 m and approaches to bridges & underpasses but excluding stretches covered by bridges & underpasses,

Sl. No.	Manual Clause No	Details of Item	Description of Deviation
			where concrete barriers shall be provided.
8	Section 11	Landscaping and Tree Plantation	Landscaping and tree plantation shall be done as per <b>Schedule-C</b> in accordance with IRC: SP: 21:2009 and NHAI policy circular no. 7.4.11/2023 dated 03 <sup>rd</sup> July 2023.
9	Section 12	Project Facilities	The project facilities and building structures shall be constructed in accordance to <b>Annex I</b> of <b>Schedule-C</b> .

### 3 Advanced Traffic Management Systems (ATMS)

- Not in Scope.

**SCHEDULE - E**  
**(See Clause 4.1.3)**  
**APPLICABLE PERMITS**

**1      Applicable Permits**

- 1.1      The Concessionaire shall obtain, as required under Applicable Laws, the following Applicable Permits on or before the Appointed Date.

**Part-I**

- (a) Permission of the State Government for extraction of boulders from quarries for and in respect of at least 20% (twenty per cent) of the total length of the Project; and

**Part-II**

- (a)      Permission of Village Panchayat and the Pollution Control Board for installation of crushers;
  - (b)      License for use of explosives;
  - (c)      Permission of the State Government for drawing water from river/reservoir; and
  - (d)      Any other permits or clearances required under Applicable Laws.
- 1.2      Unless otherwise specified in this Agreement, Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority as a Condition Precedent.

**SCHEDULE - F**  
**(See Clause 9.1)**  
**PERFORMANCE SECURITY**

The Managing Director,

National Highways & Infrastructure Development Corporation Limited, New Delhi

WHEREAS:

(A) ..... (the “Concessionaire”) and the Managing Director, National Highways & Infrastructure Development Corporation Limited (the “Authority”) have entered into a Concession Agreement dated .....(the “Agreement”) whereby the Authority *has agreed to the Concessionaire undertaking* development and operation comprising **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** and all Project Assets, and its subsequent development and augmentation in accordance with this Agreement; on design, build, operate and transfer (“DBOT Annuity or Hybrid Annuity”) basis, subject to and in accordance with the provisions of the Agreement.

(B) The Agreement requires the Concessionaire to furnish a Performance Security to the Authority in a sum of Rs. \*\*\*\*\* cr. (Rupees \*\*\*\*\* crore) (the “Guarantee Amount”) as security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period (as defined in the Agreement).

(C) We, ..... through our Branch at ..... (the “Bank”) have agreed to furnish this Bank Guarantee by way of Performance Security.

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

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Concessionaire’s obligations during the Construction Period, under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Concessionaire, such sum or sums upto an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
2. A letter from the Authority, under the hand of an **Officer not below the rank of Executive Director**, in the National Highways & Infrastructure Development Corporation Limited, that the Concessionaire has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Concessionaire is in default in due and faithful performance of its obligations during the Construction Period under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Concessionaire, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Concessionaire 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 Concessionaire 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 Concessionaire before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfilment and/ or performance of all or any of the obligations of the Concessionaire contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Concessionaire, 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 Concessionaire or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

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

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force until the earlier of the 1<sup>st</sup> (first) anniversary of the Appointed Date or compliance of the conditions specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee, no later than 6 (six) months from the date of expiry of this Guarantee, all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Performance Security shall cease to be in force and effect when the Concessionaire shall have expended on Project construction an aggregate sum not less than 30% (thirty per cent) of the Bid Project cost which is deemed to be Rs.\*\*\* cr. (Rupees \*\*\*\*\* crore) for the purposes of this Guarantee, and provided the Concessionaire is not in breach of this Agreement. Upon request made by the Concessionaire for release of the Performance Security alongwith the particulars required hereunder, duly certified by a statutory auditor of the Concessionaire, the Authority shall release the Performance Security forthwith.

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

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

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for a period of one year and six months 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 thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.

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

S. No.	Particulars	Details
	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
	Name of Bank	Canara Bank
	Name of Branch	Transport Bhawan, 1st Parliament Street, New Delhi 110001
	Account No.	90621010002610
	IFSC Code	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)

NOTES:

- The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- 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-I of Schedule F**  
**(See Clause 23.8)**  
**Format for Guarantee for Mobilization Advance**

The Managing Director,  
National Highways & Infrastructure Development Corporation Limited  
New Delhi

WHEREAS:

(A) ..... (the “**Concessionaire**”) and the Managing Director, National Highways & Infrastructure Development Corporation Limited (the “**Authority**”) have entered into a Concession Agreement dated ..... (the “**Agreement**”) whereby the Authority has agreed to the Concessionaire undertaking development and operation of comprising **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** and all Project Assets, and its subsequent development and augmentation in accordance with this Agreement; on design, build, operate and transfer (“**DBOT Annuity or Hybrid Annuity**”) basis, subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 23.8 of the Agreement, the Authority shall make to the Concessionaire an interest bearing (@average of one year MCLR of top 5 Scheduled Commercial Banks<sup>1</sup> plus 1.25%, compounded annually) advance payment (herein after called “Mobilization Advance”) not exceeding 10% (ten per cent) of the Bid Project Cost; and that the Mobilization Advance shall be made in [one/two]<sup>2</sup> installment(s) subject to the concessionaire 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 payment of the installment of the Mobilization Advance as security for compliance with its obligations in accordance with the Agreement. The amount of {first/second}<sup>3</sup> installment of the Mobilization Advance is Rs.----- Cr. (Rupees----- Crore) and the amount of this Guarantee is Rs. ---- Cr. (Rupees---- crore) (the “Guarantee Amount”)<sup>4</sup>.

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

(i) **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 Mobilization Advance 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

---

<sup>1</sup> The Authority shall declare the list of top 5 Scheduled Commercial Banks on 1<sup>st</sup> September every calendar year based on the balance sheet size as declared in their annual reports. The 1 year MCLR of top 5 Scheduled Commercial Banks shall be taken at the start of every quarter.

<sup>2</sup> Please strike out whichever is not applicable as per Clause 23.8 of the Agreement.

<sup>3</sup> Please delete in case of mobilization advance is to be made in one/single installment.

<sup>4</sup> The Guarantee amount should be equivalent to 110% of the value of the applicable installment.

demur, reservation, recourse, contest or protest, and without any reference to the Concessionaire, such sum or sums upto an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an **Officer not below the rank of Executive Director** in the National Highways & Infrastructure Development Corporation Limited, that the Concessionaire has committed default in the due and faithful performance of all or any of its obligations for the repayment of the installment of the Mobilization Advance 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 Concessionaire is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Concessionaire, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Concessionaire for any reason whatsoever.
3. The Bank further also agrees that the Authority at its option shall be entitled to in enforce this Guarantee against the Bank as principal debtor, in the first instance without proceeding against the Concessionaire and notwithstanding any security or other guarantee that the Authority may have in relation to the Concessionaire's liability.
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 Concessionaire 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.
5. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Concessionaire before presenting to the Bank its demand under this Guarantee.
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 Mobilization Advance 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 Concessionaire, 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 Concessionaire 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.
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 Mobilization Advance.
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 9 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

9. The Guarantee shall cease to be in force and effect on \_\_\_\_\_<sup>5</sup> unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.
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 the Bank.
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 authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
12. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 9 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
13. This guarantee shall be operatable at our .....Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension/renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment thereunder claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation.
14. The guarantor/bank hereby confirms that it is on the SFMS (Structural Finance Messaging System) platform & shall invariably send an advice of this Bank Guarantee to the designated bank of NHIDCL, the details of which are as follows:

S. No.	Particulars	Details
1.	Name of Beneficiary	National Highways & Infrastructure Development Corporation Limited
2.	Name of Bank	Canara Bank
3.	Address of Bank Branch	Transport Bhawan, 1st Parliament Street, New Delhi 110001
4.	Account No.	90621010002610
5.	IFSC Code	CNRB0019062

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

SIGNED, SEALED AND DELIVERED

For and on behalf of

the BANK by:

<sup>5</sup> Initially the validity shall be 60 days after the expected date for **tenth** payment milestone mentioned in clause 23.4 of the Agreement. If the Concessionaire submits the Guarantee which has validity period which is less than that specified herein, then the Concessionaire shall also provide an undertaking to the Authority which states that the Concessionaire shall get the validity of the Guarantee extended so that the Guarantee is valid in accordance with the footnote.

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

NOTES:

- (i) The bank guarantee should contain the name, designation and code number of the officer(s) signing the guarantee.
- (iii) 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-II of Schedule F**

**(See Clauses 9.1)**

**FORM OF SURETY BOND**

**[Performance Security/Additional Performance Security]**

To,

National Highways & Infrastructure Development Corporation Limited,  
1st & 2nd Floor, Tower A, World Trade Centre,  
Nauroji Nagar, New Delhi – 110029

WHEREAS:

- (A) \_\_\_\_\_ (the "Concessionaire") and the Managing Director, National Highways & Infrastructure Development Corporation Limited (the "Authority") have entered into a concession agreement dated (the "Agreement") whereby the Authority has agreed to the Concessionaire undertaking development and operation comprising **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** and all Project Assets, and its subsequent development and augmentation in accordance with this Agreement; subject to and in accordance with the provision of the agreement.
- (B) The agreement requires the Concessionaire to furnish a performance security to the Authority in a sum of Rs \*\*\*\*\* Crore (Rupees \*\*\*\*\* Crore) (the "Surety Bond Amount") as security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the Construction Period (as defined in the Agreement).
- (C) We, through our branch at ..... (the "Surety Insurer") have agreed to furnish this Surety Bond by way of Performance security.

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

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

2. A letter from the Authority, under the hand of an **officer not below the rank of Executive Director** in the National Highways & Infrastructure Development Corporation Limited, that the Concessionaire has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Surety Insurer. The Surety Insurer further agrees that the Authority shall be the sole judge as to whether the Concessionaire is in default in due and faithful performance of its obligations during the Construction Period under the Agreement and its decision that the Concessionaire is in default shall be final, and binding on the Surety Insurer, notwithstanding any differences between the Authority and the Concessionaire, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Concessionaire for any reason whatsoever.
3. In order to give effect to this Surety Bond, the Authority shall be entitled to act as if the Surety Insurer were the principal debtor and any change in the constitution of the Concessionaire and/or the Surety Insurer, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Surety Insurer under this Surety Bond.
4. It shall not be necessary, and the Surety Insurer hereby waives any necessity, for the Authority to proceed against the Concessionaire before presenting to the Surety Insurer its demand under this Surety Bond.
5. The Authority shall have the liberty, without affecting in any manner the liability of the Surety Insurer under this Surety Bond, to vary at any time, the terms and conditions of the Agreement or to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Concessionaire contained in the Agreement or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Concessionaire, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Surety Insurer shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Concessionaire or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Surety Insurer from its liability and obligation under this Surety Bond and the Surety Insurer hereby waives all of its rights under any such law.
6. This Surety Bond is in addition to and not in substitution of any other Surety Bond or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Concessionaire under the Agreement.
7. Notwithstanding anything contained hereinbefore, the liability of the Surety Insurer under this Surety Bond is restricted to the Surety Bond Amount and this Surety Bond will remain in force until the earlier of the 1st (first) anniversary of the Appointed Date or compliance of the conditions specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Surety Insurer under this Surety Bond, no later than 6 (six) months from the date of expiry of this Surety Bond, all rights of the Authority under this Surety Bond shall be forfeited and the Surety Insurer shall be relieved from its liabilities hereunder.

8. The Performance Security shall cease to be in force and effect when the Concessionaire shall have expended on Project construction an aggregate sum not less than 30% (thirty per cent) of the Bid Project cost which is deemed to be Rs. \*\*\*\* cr. (Rupees \*\*\*\*\* crore) for the purposes of this Surety Bond, and provided the Concessionaire is not in breach of this Agreement. Upon request made by the Concessionaire for release of the Performance Security alongwith the particulars required hereunder, duly certified by a statutory auditor of the Concessionaire, the Authority shall release the Performance Security forthwith.
9. The Surety Insurer undertakes not to revoke this Surety Bond during its currency, except with the previous express consent of the Authority in writing and declares and warrants that it has the power to issue this Surety Bond and the undersigned has full powers to do so on behalf of the Surety Insurer.
10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Surety Insurer at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.
11. This Surety Bond shall come into force with immediate effect and shall remain in force and effect for a period of one year and six months or until it is released earlier by the Authority pursuant to the provisions of the Agreement.
12. This Surety Bond shall also be operatable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this bond or extension/renewal thereof shall be made available on demand. In the contingency of this bond being invoked and payment thereunder claimed, the said branch shall accept such invocation on letter and make payment of amounts so demanded under the said invocation.
13. This Surety Bond is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting Statement under Article 15(a) is hereby excluded.

Signed and Sealed this ..... Day of ....., .....at.....

SIGNED, SEALED AND DELIVERD

For and on behalf of the Surety insurer by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)





## **SCHEDULE - G**

**(See Clause 12.1)**

### **PROJECT COMPLETION SCHEDULE**

#### **1 Project Completion Schedule**

During Construction Period, the Concessionaire shall comply with the requirements set forth in this Schedule-G for each of the Project Milestones and the Scheduled Completion Date (the “Project Completion Schedule”). Within 15 (fifteen) days of the date of each Project Milestone, the Concessionaire 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 274<sup>th</sup> (Two Hundred and Seventy Fourth) day from the Appointed Date (the “Project Milestone-I”).

2.2 Prior to the occurrence of Project Milestone-I, the Concessionaire shall have expended not less than 10% (twenty per cent) of the total capital cost set forth in the Financial Package.

2.3 Prior to the occurrence of Project Milestone –I, the Concessionaire shall have commenced construction of the Project and achieved 10% Physical Progress.

#### **3 Project Milestone-II**

3.1 Project Milestone-II shall occur on the date falling on the 548<sup>th</sup> (Five Hundred And Forty Eighth) day from the Appointed Date (the “Project Milestone-II”).

3.2 Prior to the occurrence of Project Milestone-II, the Concessionaire shall have expended not less than 35% (thirty five per cent) of the total capital cost set forth in the Financial Package. Provided, however, that at least 70% (seventy percent) of the expenditure referred to hereinabove shall have been incurred on physical works which shall not include advances of any kind to any person or expenditure of any kind on plant and machinery.

3.3 Prior to the occurrence of Project Milestone- II, the Concessionaire shall have commenced construction of the Project and achieved 35% Physical Progress

#### **4 Project Milestone-III**

4.1 Project Milestone-III shall occur on the date falling on the 821<sup>st</sup> (Eight Hundred & Twenty First) day from the Appointed Date (the “Project Milestone-III”).

4.2 Prior to the occurrence of Project Milestone-III, the Concessionaire shall have commenced construction of all Project Facilities and expended not less than 75% (seventy five per cent) of the total capital cost set forth in the Financial Package.

4.3 Prior to the occurrence of Project Milestone –III, the Concessionaire shall have commenced construction of the Project and achieved 75% Physical Progress.

#### **5 Scheduled Completion Date**

5.1 The Scheduled Completion Date shall be the 1095<sup>th</sup> (One thousand & Ninety Fifth) day from the Appointed Date.

5.2 On or before the Scheduled Completion Date, the Concessionaire shall have completed the Project in accordance with this Agreement.

## **6 Extension of period**

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.

## Annexure-I of Schedule G

Format for Contract Price Weightages for Highway Projects with Flexible Pavements

### Contract Price Weightages

- 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:

Item	Stage for measurement of Physical Progress	Unit	Qty.	Weightage in percentage to the Contract Price
1	2	3	4	5
<b>Road works including culverts, minor bridges, underpasses, overpasses, approaches to ROB/RUB/ Major Bridges/ Structures (but excluding service roads)</b>	<b>A- Widening and strengthening of existing road</b>			
	(1) Earthwork up to top of the sub-grade	Km	***	***
	(2) Granular work (sub- base, base, shoulders)			
	(a) GSB	Km	***	***
	(b) WMM	Km	***	***
	(3) Shoulders	Km	***	***
	(4) Bituminous work			
	(a) DBM	Km	***	***
	(b) BC	Km	***	***
	(5) Rigid Pavement			
	Concrete work	Km	***	***
	(6) Widening and repair of culverts	No.	***	***
	(7) Widening and repair of minor bridges	No.	***	***
	<b>B- New realignment/bypass</b>			
	(1) Earthwork up to top of the sub-grade	Km	***	***
	(2) Granular work (sub- base, base, shoulders)			
	(a) GSB	Km	***	***
	(b) WMM	Km	***	***
	(3) Shoulders	Km	***	***
	(4) Bituminous work			
	(a) DBM	Km	***	***
	(b) BC	Km	***	***
	(5) Rigid Pavement			
	Concrete work	Km	***	***
	<b>C- New culverts, minor bridges, underpasses, overpasses on existing road, realignments, bypasses:</b>			
	(1) Culverts	No.	***	***
	(2) Minor bridges			
	(a) Foundation	No.	***	***
	(b) Sub-structure	No.	***	***
	(c) Super-structure (including crash barriers etc. complete)	No.	***	***
	(3) Cattle/Pedestrian underpasses			

Item	Stage for measurement of Physical Progress	Unit	Qty.	Weightage in percentage to the Contract Price
1	2	3	4	5
	(a) Foundation	No.	***	***
	(b) Sub-structure	No.	***	***
	(c) Super-structure (including crash barriers etc. complete)	No.	***	***
	(4) Pedestrian overpasses			
	(a) Foundation	No.	***	***
	(b) Sub-structure	No.	***	***
	(c) Super-structure (including crash barriers etc. complete)	No.	***	***
	(5) Grade separated structures			
	(a) Underpasses			
	(i) Foundation	No.	***	***
	(ii) Sub-structure	No.	***	***
	(iii) Super-structure (including crash barriers etc. complete)	No.	***	***
	(b) Overpass			
	(i) Foundation	No.	***	***
	(ii) Sub-structure	No.	***	***
	(iii) Super-structure (including crash barriers etc. complete)	No.	***	***
	(c) Flyover			
	(i) Foundation	No.	***	***
	(ii) Sub-structure	No.	***	***
	(iii) Super-structure (including crash barriers etc. complete)	No.	***	***
	(d) Foot over Bridge	No.	***	***
<b>Major Bridge works and ROB/RUB</b>	<b>A- Widening and repairs of Major Bridges</b>			
	(1) Foundation			
	(a) Open Foundation	No.	***	***
	(b) Pile Foundation/Well Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
	<b>B- Widening and repair of</b>			
	(a) ROB			
	(1) Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
	(b) RUB			
	(1) Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
	<b>C- New Major Bridges</b>			
	(1) Foundation	No.	***	***

Item	Stage for measurement of Physical Progress	Unit	Qty.	Weightage in percentage to the Contract Price
1	2	3	4	5
	(a) Open Foundation	No.	***	***
	(b) Pile Foundation/Well Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
	<b>D- New rail-road bridges</b>			
	(a) ROB			
	(1) Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete) ]	No.	***	***
	(b) RUB			
	(1) Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
<b>Structures (elevated sections, reinforced earth)</b>	(1) Foundation	No.	***	***
	(2) Sub-structure	No.	***	***
	(3) Super-structure (including crash barriers etc. complete)	No.	***	***
	(4) Reinforced Earth Wall (includes Approaches of ROB, Underpasses, Overpasses, Flyover etc.	Sqm	***	***
<b>Electrical and Public Health Utilities</b>	EHT line	Km	***	***
	EHT crossing	No.	***	***
	HT/LT lines (including Transformers if any)	Km	***	***
	HT/LT crossings	No.	***	***
	Water pipeline	Km	***	***
	Water pipeline crossings	No.	***	***
	Sewage line	Km	***	***
	Sewage line crossings	No.	***	***
<b>Other Works</b>	<b>(i) Service roads/ Slip Roads</b>	Km	***	***
	<b>(ii) Toll Plaza</b>	No.	***	***
	<b>(iii) Road side drains</b>	Km	***	***
	<b>(iv) Road signs, markings, km stones, safety devices, ....</b>			
	<b>(a) Road signs, markings, km stones, ....</b>	Km	***	***
	<b>(b) Concrete Crash Barrier/ W-Beam Crash Barrier in Road work</b>	Km	***	***
	<b>(v) Project facilities</b>			
	(a) Bus bays	No.	***	***
	(b) Truck lay-byes	No.	***	***
	(c) Rest areas	No.	***	***
	<b>(vi) Repairs to bridges/structures</b>	No.	***	***
	<b>(vii) Road side plantation</b>	Km	***	***
	<b>(viii) Protection works</b>			

Item	Stage for measurement of Physical Progress	Unit	Qty.	Weightage in percentage to the Contract Price
1	2	3	4	5
	(a) Boulder Pitching on slopes	Km	***	***
	(b) Toe/Retaining wall	Km	***	***
	<b>(ix) Tunnel</b>			
	(a) Excavation	Metre	***	***
	(b) Construction of support system including rock bolting, lining etc.	Metre	***	***
	(c) On complete completion of tunnel	Metre	***	***
	<b>(x) Miscellaneous</b>	Lump sum	***	***
<b>Total</b>				<b>100.00%</b>

**\*\* Measurement of Progress**

For example, if the total length of bituminous work to be done is 100 km, the physical progress of bituminous work shall be determined as follows:

Physical progress of bituminous work = Weightage for bituminous work x (L'/L)

L = Total length of bituminous work in km

L' = Executed length of bituminous work in km

Similarly, the physical progress for other stages shall be worked out and addition of all will give the total progress achieved.



## **SCHEDULE - H**

**(See Clause 12.2)**

### **DRAWINGS**

#### **1 Drawings**

In compliance of the obligations set forth in Clause 12.2 of this Agreement, the Concessionaire shall furnish to the Independent Engineer, free of cost, all Drawings listed in Annex-I of this Schedule-H.

#### **2 Additional drawings**

If the Independent 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 Concessionaire to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Concessionaire shall promptly prepare and furnish such drawings to the Independent Engineer, as if such drawings formed part of Annex-I of this Schedule-H.



## **Annex - I (Schedule-H)**

### **List of Drawings**

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

- a) Drawings of horizontal alignment, vertical profile and cross section.
- b) Drawings of drainage plan, profile, RCC Box Drain c/s, RCC open drain c/s, PCC Earthen drain c/s, Surface Drain c/s, Catch Water Drain etc.
- c) Drawing of cross drainage works – Culverts, Major Bridge, Minor Bridges, Cross Road Culverts.
- d) Drawings of Aqueducts, VOP cum Aqueducts
- e) Drawings of VUP, VOP, LVUP, SVUP
- f) Drawings of ROB and RUB
- g) Drawings of major intersections and minor intersections
- h) Drawing of toll plaza layout, toll collection systems and roadway near toll plaza
- i) Drawings of bus-bay, bus shelters, Truck Layby, Rest Areas with furniture and drainage system.
- j) Drawing of road furniture items including traffic signage, markings, safety barriers, etc.
- k) Drawings of traffic diversion plans and traffic control measures.
- l) RCC Retaining Wall, Breast Wall, Toe Wall, Median Kerb, W-Beam Crash Barrier, MS Railings, 5th KM Stone, Km Stone, HM Stone
- m) Drawing of typical details slope protection measures – Nailed RE Wall, RE Walls, Soil Nailing and Coir Geo Green Mat Laying with Hydroseeding
- n) Drawings of pedestrian crossings
- o) Drawings of street lighting and High Mast.
- p) General arrangement of Base camp, Administrative Block, QC Laboratory, Quarry and crushers, HMP, Batching Plant, Materials Stacking Yard
- q) Drawings of catch water drains, Berm Drain and surface water drains and drainage layout plan;
- r) Any other drawings which Independent Engineer may require

## **SCHEDULE - I**

(See Clause 14.1.2)

### **TESTS**

#### **1 Schedule for Tests**

- 1.1 The Concessionaire shall, no later than 30 (thirty) days prior to the likely completion of the Project, notify the Independent Engineer and the Authority of its intent to subject the Project to Tests, and no later than 7 (seven) days prior to the actual date of Tests, furnish to the Independent Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of the Project.
- 1.2 The Concessionaire shall notify the Independent Engineer of its readiness to subject the Project to Tests at any time after 7 (seven) days from the date of such notice, and upon receipt of such notice, the Independent Engineer shall, in consultation with the Concessionaire, 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 Independent Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 14 and this Schedule-I.

#### **2 Tests**

- 2.1 In pursuance of the provisions of Clause 14.1.2 of this Agreement, the Independent Engineer shall conduct, or cause to be conducted, the Tests specified in this Paragraph 2.
- 2.2 Visual and physical Test: The Independent Engineer shall conduct a visual and physical check of the Project to determine that all works and equipment forming part thereof conform to the provisions of this Agreement.
- 2.3 Test drive: The Independent Engineer shall undertake a test drive of the Project by a Car and by a fully loaded Truck to determine that the quality of service conforms to the provisions of the Agreement.
- 2.4 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 1,800 (one thousand and eight hundred) mm for each kilometer.
- 2.5 Pavement Composition Test: The thickness and composition of the pavement structure shall be checked on a sample basis by digging pits to determine conformity of such pavement structure with Specifications and Standards. The sample shall consist of one pit in each direction of travel to be chosen at random in each stretch of 5 (five) kilometers of the Project. The first pit for the sample shall be selected by the Independent Engineer through an open draw of lots and every fifth kilometer from such first pit shall form part of the sample for this pavement quality Test.
- 2.6 Cross-section Test: The cross-sections of the Project shall be checked on a sample basis through physical measurement of their dimensions for determining the conformity thereof with Specifications and Standards. For the road portion, the sample shall consist of one spot to be selected at random in each stretch of 1(one) kilometer of the Project. The first spot for the sample shall be selected by the Independent Engineer through an open draw of lots and the spots located at every one kilometer from such first spot shall form part of the sample. For the bridge portion, one spot shall be selected at random by the Independent Engineer in each span of the bridge.
- 2.7 Structural Test for bridges: All major and minor bridges, including over bridges, underpasses and flyovers, constructed by the Concessionaire shall be subjected to the Rebound Hammer and Ultrasonic Pulse Velocity tests, to be conducted in accordance with the procedure described in Special Report No. 17: 1996 of the IRC Highway Research Board on Non-destructive Testing Techniques, at two spots in every span, to be chosen at random by the Independent Engineer. Bridges with a span of 15 (fifteen) meters or more shall also be subjected to load testing.

- 2.8 Other Tests: The Independent Engineer may require the Concessionaire to carry out or cause to be carried additional Tests, in accordance with Good Industry Practice, for determining the compliance of the Project with Specifications and Standards.
- 2.9 Environmental audit: The Independent Engineer shall carry out a check to determine conformity of the Project with the environmental requirements set forth in Applicable Laws and Applicable Permits.
- 2.10 Safety review: Safety audit of the Project shall have been undertaken by the Safety Consultant as set forth in Schedule-L, and on the basis of such audit, the Independent Engineer shall determine conformity of the Project with the provisions of this Agreement.

### **3 Agency for conducting Tests**

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

### **4 Completion/Provisional Certificate**

Upon successful completion of Tests, the Independent Engineer shall issue the Completion Certificate or the Provisional Certificate, as the case may be, in accordance with the provisions of Article 14.

### **5 Tests during construction**

Without prejudice to the provisions of this Schedule-I, tests during construction shall be conducted In accordance with the provisions of Clause 13.3.1.

## SCHEDULE - J

(See Clause 14.2 & 14.3)

### COMPLETION CERTIFICATE

- 1 I/We,..... (Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement dated .....(the “Agreement”), for development and operation of the **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** Project (the “Project”) on design, build, operate and transfer (the “DBOT Annuity or Hybrid Annuity”) basis, through.....(Name of Concessionaire), hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been successfully undertaken to determine compliance of the Project with the provisions of the Agreement, and I/We am/are satisfied that the Project can be safely and reliably placed in commercial service of the Users thereof.
- 2 It is certified that Rain Water Harvesting and Artificial Recharging arrangements have been provided by the Concessionaire as per Schedule C of the Concession Agreement, and are functional. Details (with location chainage) are as given in Annex- \_\_\_\_\_.
- 3 It is certified that, in terms of the aforesaid Agreement, all works forming part of the Project have been completed, and the Project is hereby declared fit for entry into commercial operation on this the day of \_\_\_\_\_ 20\_\_\_\_.

### SIGNED, SEALED AND DELIVERED

For and on behalf of

**INDEPENDENT ENGINEER by:**

(Signature)

(Name)

(Designation)

(Address)

## PROVISIONAL CERTIFICATE

- 1 I/We,..... (Name of the Independent Engineer), acting as Independent Engineer, under and in accordance with the Concession Agreement Dated..... (the “Agreement”), for development and operation of the **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** Project (the “Project”) on design, build, operate and transfer (the “DBOT Annuity or Hybrid Annuity”) basis through.....(Name of Concessionaire), hereby certify that the Tests specified in Article 14 and Schedule-I of the Agreement have been undertaken for the Project/section..... of the Project to determine compliance thereof with the provisions of the Agreement.
- 2 Construction Works forming part of the Project/section of the Project that were found to be incomplete and/or deficient have been specified in the Punch List appended hereto, and the Concessionaire has agreed and accepted that it shall complete and/or rectify all such works in the time and manner set forth in the Agreement. Some of the incomplete works have been delayed as a result of reasons attributable to the Authority or due to Force Majeure and the Provisional Certificate cannot be withheld on this account. Though the remaining incomplete works have been delayed as a result of reasons attributable to the Concessionaire,<sup>δ</sup> I/We am/are satisfied that having regard to the nature and extent of such incomplete works, it would not be prudent to withhold commercial operation of the Project/section..... of the Project, pending completion thereof.
- 3 In view of the foregoing, I/We am/are satisfied that the Project/section of the Project can be safely and reliably placed in commercial service of the Users thereof, and in terms of the Agreement, the Project/section of the Project is hereby provisionally declared fit for entry into commercial operation on this the ..... day of..... 20

**ACCEPTED, SIGNED, SEALED  
AND DELIVERED**

FOR AND ON BEHALF OF

**CONCESSIONAIRE by:**

(Signature)  
(Name and Designation)  
(Address)

**SIGNED, SEALED AND  
DELIVERED**

FOR AND ON BEHALF OF

**INDEPENDENT ENGINEER by:**

(Signature)  
(Name and Signature)  
(Address)

---

<sup>δ</sup>May be struck out if not applicable. Also strike out other parts which are not applicable.

## **SCHEDULE - K**

(See Clause 17.2)

### **MAINTENANCE REQUIREMENTS**

#### **1 Maintenance Requirements**

- 1.1 The Concessionaire shall, at all times, operate and maintain the Project in accordance with the provisions of the Agreement, Applicable Laws and Applicable Permits. In particular, the Concessionaire shall, at all times during the Operation Period, conform to the maintenance requirements set forth in this Schedule-K (the “Maintenance Requirements”).
- 1.2 The Concessionaire shall repair or rectify any defect or deficiency set forth in Paragraph 2 of this Schedule-K within the time limit specified therein and any failure in this behalf shall constitute a breach of the Agreement. Upon occurrence of any breach hereunder, the Authority shall be entitled to recover Damages as set forth in Clause 17.8 of the Agreement, without prejudice to the rights of the Authority under the Agreement, including Termination thereof.

#### **2. Repair/rectification of defects and deficiencies**

- 2.1 The obligations of the Concessionaire in respect of Maintenance Requirements shall include repair and rectification of the defects and deficiencies specified in Annex - I of this Schedule - K within the time limit set forth therein.
- 2.2 The Concessionaire shall at all times maintain an adequate inventory of spares and consumables to meet the Maintenance Requirements.

#### **3 Other defects and deficiencies**

- 3.1 In respect of any defect or deficiency not specified in Annex - I of this Schedule-K, the Concessionaire shall undertake repair or rectification in accordance with Good Industry Practice and within the time limit specified by the Independent Engineer.
- 3.2 In respect of any defect or deficiency not specified in Annex - I of this Schedule-K, the Independent Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Concessionaire in accordance with Good Industry Practice and within the time limit specified by the Independent Engineer.

#### **4 Extension of time limit**

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

#### **5 Emergency repairs/restoration**

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

## **6 Daily Inspection by the Concessionaire**

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

## **7 Divestment Requirements**

All defects and deficiencies specified in this Schedule-K shall be repaired and rectified by the Concessionaire so that the Project conforms to the Maintenance Requirements on the Transfer Date.

## **8 Display of Schedule - K**

The Concessionaire shall display copy of this Schedule –K at the site along with the complaint register stipulated in article 40.

**ANNEX – I**  
**(Schedule-K)**

**Repair/Rectification of Defects and Deficiencies**

The Concessionaire shall repair and rectify the defects and deficiencies specified in this Annex-I of Schedule-K within the time limit set forth herein.

**ROADS**

**(a)**

S. No.	Nature of defect or deficiency	Time limit for Repair/rectification
<b>Carriageway and paved shoulders</b>		
(i)	Breach or blockade	Temporary restoration of traffic within 24 hours; permanent restoration within 15 days
(ii)	Roughness value exceeding 2,750 mm in a stretch of 1 km (as measured by a standardized rough meter/bump integrator)	180 days
(iii)	Pot holes	48 hours
(iv)	Cracking in more than 5% of road surface in a stretch of 1 km	30 days
(v)	Rutting exceeding 10 mm in more than 2% of road surface in a stretch of 1 km (measured with 3 m straight edge)	30 days
(vi)	Bleeding/skidding	7 days
(vii)	Raveling/Stripping of bitumen surface exceeding 10 Sq m	15 days
(viii)	Damage to pavement edges exceeding 100 mm	15 days
(ix)	Removal of debris	6 hours
<b>Hard/earth shoulders, side slopes, drains and culverts</b>		
(i)	Variation by more than 2% in the prescribed slope of camber/cross fall	30 days
(ii)	Edge drop at shoulders exceeding 40 mm	7 days
(iii)	Variation by more than 15% in the prescribed side (embankment) slopes	30 days
(iv)	Rain cuts/gullies in slope	7 days
(v)	Damage to or silting of culverts and side drains during and immediately preceding the rainy season	7 days
(vi)	Desalting of drains in urban/semi-urban areas	48 hours
<b>Road side furniture including road signs and pavement marking</b>		
(i)	Damage to shape or position; Poor visibility or loss of retro-reflectivity	48 hours
<b>Street lighting and telecom (ATMS)</b>		
(i)	Any major failure of the system	24 hours
(ii)	Faults and minor failures	8 hours
<b>Trees and plantation</b>		
(ii)	Obstruction in a minimum head-room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
(iii)	Deterioration in health of trees and bushes	Timely watering and treatment
(iv)	Replacement of trees and bushes	90 days



S. No.	Nature of defect or deficiency	Time limit for Repair/rectification
(v)	Removal of vegetation affecting sight line and road structures	15 days
<b>Rest areas</b>		
(i)	Cleaning of toilets	Every 4 hours
(ii)	Defects in electrical, water and sanitary installations	24 hours
<b>Other Project Facilities and Approach roads</b>		
(i)	Damage or deterioration in Approach Roads, [pedestrian facilities, truck lay-bys, bus-bays, bus- shelters, cattle crossings, Traffic Aid Posts, Medical Aid Posts, Rain Water Harvesting/Artificial Recharge Unit and other works]	15 days

## BRIDGES

<b>Superstructure of bridges</b>		
(i)	Cracks Temporary measures Permanent measures	Within 48 hours Within 45 days
(ii)	Spalling/scaling	15 days
<b>Foundations of bridges</b>		
(i)	Scouring and/or cavitation	15 days
<b>Piers, abutments, return walls and wing walls</b>		
(i)	Cracks and damages including settlement and tilting	30 days
<b>Bearings (metallic) of bridges</b>		
(i)	Deformation	15 days
<b>Joints in bridges</b>		
(i)	Loosening and malfunctioning of joints	15 days
<b>Other items relating to bridges</b>		
(i)	Deforming of pads in elastomeric bearings	7 days
(ii)	Gathering of dirt in bearings and joints or clogging of spouts, weep holes and vent-holes	3 days
(iii)	Damage or deterioration in parapets and handrails	3 days
(iv)	Rain-cuts or erosion of banks of the side slopes of approaches	15 days
(v)	Damage to wearing coat	15days
(vi)	Damage or deterioration in approach slabs, pitching, apron, toes, floor or guide bunds	30 days
(vii)	Growth of vegetation affecting the structure or obstructing the waterway	15 days

## **SCHEDULE - L**

**(See Clause 18.1.1)**

### **SAFETY REQUIREMENTS**

#### **Guiding principles**

- 1.1 Safety Requirements aim at reduction in injuries, loss of life and damage to property resulting from accidents on or about the Project, irrespective of the person(s) at fault.
- 1.2 Users of the Project include motorised and non-motorized vehicles as well as pedestrians and animals involved in, or associated with accidents. Vulnerable Road Users (VRU) include pedestrians as well as riders of motorized two-wheelers, bicycles and other vehicles which do not provide adequate occupant protection.
- 1.3 Safety Requirements apply to all phases of construction, operation and maintenance with emphasis on identification of factors associated with accidents, consideration of the same, and implementation of appropriate remedial measures.
- 1.4 Safety Requirements include measures associated with traffic management and regulation such as road signs, pavement marking, traffic control devices, roadside furniture, highway design elements, enforcement and emergency response.

#### **2 Obligations of the Concessionaire**

The Concessionaire shall abide by the following insofar as they relate to safety of the Users:

- (a) Applicable Laws and Applicable Permits;
- (b) Manual for Safety in Road Design, issued by MoRTH;
- (c) Relevant Standards/Guidelines of IRC relating to safety, road geometries, bridges, culverts, road signs, pavement marking and roadside furniture;
- (d) Provisions of this Agreement; and
- (e) Good Industry Practice.

#### **3 Appointment of Safety Consultant**

For carrying out safety audit of the Project under and in accordance with this Schedule-L, the Authority shall appoint from time to time, one or more qualified firms or organisations as its consultants (the “Safety Consultant”). The Safety Consultant shall employ a team comprising, without limitation, one road safety expert and one traffic planner to undertake safety audit of the Project.

#### **4 Safety measures during Development Period**

- 4.1 No later than 90 (ninety) days from the date of this Agreement, the Authority shall appoint a Safety Consultant for carrying out safety audit at the design stage of the Project. The Safety Consultant shall collect data on all fatal crashes and other road accidents which occurred on the Project in the preceding two years by obtaining copies of the relevant First Information Reports (FIRs) from the police stations having jurisdiction. The information contained in such FIRs shall be summarised in the form prescribed by the Authority for this purpose and the data shall be analysed for the type of victims killed or injured, impacting vehicles, location of accidents and other relevant factors.
- 4.2 The Concessionaire shall provide to the Safety Consultant, in four copies, the relevant drawings containing the design details that have a bearing on safety of Users (the “Safety Drawings”). Such design details shall include horizontal and vertical alignments; sightlines; layouts of intersections;

interchanges; road cross-section; bridges and culverts; side drains; provision for parked vehicles, slow moving vehicles (tractors, bullock carts, bicycles) and pedestrians; bus bays; truck lay-bys; and other incidental or consequential information. The Safety Consultant shall review the design details and forward 3 (three) copies of the Safety Drawings with its recommendations, if any, to the Independent Engineer who shall record its comments, if any, and forward one copy each to the Authority and the Concessionaire.

- 4.3 The accident data and the design details shall be compiled, analysed and used by the Safety Consultant for evolving a package of recommendations consisting of safety related measures for the Project. The safety audit shall be completed in a period of three months and a report thereof (the “Safety Report”) shall be submitted to the Authority, in 5 (five) copies. One copy each of the Safety Report shall be forwarded by the Authority to the Concessionaire and the Independent Engineer forthwith.
- 4.4 The Concessionaire shall endeavor to incorporate the recommendations of the Safety Report in the design of the Project, as may reasonably be required in accordance with Applicable Laws, Applicable Permits, Manuals and Guidelines of the Authority, Specifications and Standards, and Good Industry Practice. If the Concessionaire does not agree with any or all of such recommendations, it shall State the reasons thereof and convey them to the Authority forthwith. In the event that any or all of the works and services recommended in the Safety Report fall beyond the scope of Schedule-B, Schedule-C or Schedule-D, the Concessionaire shall make a report thereon and seek the instructions of the Authority for funding such works in accordance with the provisions of Article 18.
- 4.5 Without prejudice to the provisions of Paragraph 4.4, the Concessionaire and the Independent Engineer shall, within 15 (fifteen) days of receiving the Safety Report, send their respective comments thereon to the Authority, and no later than 15 (fifteen) days of receiving such comments, the Authority shall review the same along with the Safety Report and by notice direct the Concessionaire to carry out any or all of the recommendations contained therein with such modifications as the Authority may specify; provided that any works or services required to be undertaken hereunder shall be governed by the provisions of Article 18.

## **5 Safety measures during Construction Period**

- 5.1 A Safety Consultant shall be appointed by the Authority, no later than 4 (four) months prior to the expected COD, for carrying out a safety audit of the completed Construction Works.
- 5.2 The Safety Consultant shall collect and analyses the accident data for the preceding two years in the manner specified in Paragraph 4.1 of this Schedule- L. It shall study the Safety Report for the Development Period and inspect the Project to assess the adequacy of safety measures. The Safety Consultant shall complete the safety audit within a period of 4 (four) months and submit a Safety Report recommending a package of additional road safety measures, if any, that are considered essential for reducing accident hazards on the Project. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.
- 5.3 The Concessionaire shall make adequate arrangements during the Construction Period for the safety of workers and road Users in accordance with the guidelines of IRC for safety in construction zones, and notify the Authority and the Independent Engineer about such arrangements.

## **6 Safety measures during Operation Period**

- 6.1 The Concessionaire shall develop, implement and administer a surveillance and safety program for Users, including correction of safety violations and deficiencies and all other actions necessary to provide a safe environment in accordance with this Agreement.
- 6.2 The Concessionaire shall establish a Highway Safety Management Unit (the “HSMU”) to be functional on and after COD, and designate one of its officers to be in-charge of the HSMU. Such

officer shall have specialist knowledge and training in road safety and traffic engineering by having attended a course conducted by a reputed organization on the subject.

- 6.3 The Concessionaire shall keep a copy of every FIR recorded by the Police with respect to any accident occurring on the Project. In addition, the Concessionaire shall also collect data for all cases of accidents not recorded by the Police but where a vehicle rolled over or had to be towed away. The information so collected shall be summarized in the form prescribed by the Authority for this purpose. The Concessionaire shall also record the exact location of each accident on a road map. The aforesaid data shall be submitted to the Authority at the conclusion of every quarter and to the Safety Consultant as and when appointed.
- 6.4 The Concessionaire shall submit to the Authority before the 31<sup>st</sup> (thirty first) May of each year, an annual report (in ten copies) containing, without limitation, a detailed listing and analysis of all accidents of the preceding Accounting Year and the measures taken by the Concessionaire pursuant to the provisions of Paragraph 6.1 of this Schedule-L for averting or minimizing such accidents in future.
- 6.5 Once in every Accounting Year, a safety audit shall be carried out by the Safety Consultant to be appointed by the Authority. It shall review and analyses the annual report and accident data of the preceding year, and undertake an inspection of the Project. The Safety Consultant shall complete the safety audit within a period of 1 (one) month and submit a Safety Report recommending specific improvements, if any, required to be made to the road, bridges, culverts, markings, signs, road furniture and Project Facilities, including cattle crossings and pedestrian crossings. Such recommendations shall be processed, mutatis mutandis, and acted upon in the manner set forth in Paragraphs 4.3, 4.4 and 4.5 of this Schedule-L.

## **7 Costs and expenses**

Costs and expenses incurred in connection with the Safety Requirements set forth herein, including the provisions of Paragraph 2 of this Schedule-L, shall be met in accordance with Article 18, and in particular, the remuneration of the Safety Consultant, safety audit, and costs incidental thereto, shall be met by the Concessionaire.

## **SCHEDULE - M**

(See Clause 21.1)

### **SELECTION OF INDEPENDENT ENGINEER**

#### **1 Selection of Independent Engineer**

- 1.1 The provisions of the Model Request for Proposals for Selection of Technical Consultants, issued by the Ministry of Finance, GOI vide OM 24(23)/PF-II/ 2008 dated 21 May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Independent Engineer. Provided, however, that no entity which is owned or controlled by the Authority shall be eligible for appointment as the Independent Engineer hereunder.
- 1.2 In the event of termination of an Independent Engineer appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith or may engage a government-owned entity in accordance with the provisions of Paragraph 5 of this Schedule-M.
- 1.3 The Concessionaire may, in its discretion, nominate a representative to participate in the process of selection to be undertaken by the Authority under this Schedule-M.

#### **2 Terms of Reference**

The Terms of Reference for the Independent Engineer shall substantially conform to Schedule-N.

#### **3 Fee and expenses**

- 3.1 In determining the nature and quantum of duties and services to be performed by the Independent Engineer during the Development Period and Construction Period, the Authority shall endeavor that payments to the Independent Engineer on account of fee and expenses do not exceed 3% (three per cent) of the Bid Project Cost. Payments not exceeding such 3% (three per cent) shall be borne equally by the Authority and the Concessionaire in accordance with the provisions of this Agreement and any payments in excess thereof shall be borne entirely by the Authority.
- 3.2 The nature and quantum of duties and services to be performed by the Independent Engineer during the Operation Period shall be determined by the Authority in conformity with the provisions of this Agreement and with due regard for economy in expenditure. All payments made to the Independent Engineer on account of fee and expenses during the Operation Period shall be borne equally by the Authority and the Concessionaire.

#### **4 Selection every three years**

No later than 3 (three) years from the date of appointment of Independent Engineer pursuant to the provisions of Paragraph 1 of this Schedule-M, and every 3 (three) years thereafter, the Authority shall engage another firm in accordance with the criteria set forth in this Schedule-M.

#### **5 Appointment of government entity as Independent Engineer**

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Independent Engineer; provided that such entity shall be a body corporate having as one of its primary function 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 Independent Engineer.



## SCHEDULE - N

(See Clause 21.2.1)

### TERMS OF REFERENCE FOR INDEPENDENT ENGINEER

#### 1 Scope

These Terms of Reference for the Independent Engineer (the “TOR”) are being specified pursuant to the Concession Agreement dated (the “Agreement”), which has been entered into between the Authority and the “Concessionaire”) for **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** on design, build, operate and transfer (the “DBOT Annuity or Hybrid Annuity”) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this TOR.

#### 2 Definitions and interpretation

- 2.1 The words and expressions beginning with or in capital letters used in this TOR and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.
- 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 shall be deemed to be references to Paragraphs of this TOR.
- 2.3 The rules of interpretation Stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, mutatis mutandis, to this TOR.
- 3.1 The role and functions of the Independent Engineer shall include the following:
  - (I) review of the Drawings and Documents as set forth in Paragraph 4;
  - (ii) Review, inspection and monitoring of Construction Works as set forth in Paragraph 5; conducting Tests on completion of construction and issuing Completion/ Provisional Certificate as set forth in Paragraph 5
  - (iv) Review, inspection and monitoring of O&M as set forth in Paragraph 6;
  - (v) review, inspection and monitoring of Divestment Requirements as set forth in Paragraph 7;
  - (vi) determining, as required under the Agreement, the costs of any works or services and/or their reasonableness;
  - (vii) determining, as required under the Agreement, the period or any extension thereof, for performing any duty or obligation;
  - (viii) Assisting the Parties in resolution of Disputes as set forth in Paragraph 9; and
  - (ix) Undertaking all other duties and functions in accordance with the Agreement.
- 3.2 The Independent Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

#### 4 Development Period

- 4.1 During the Development Period, the Independent Engineer shall undertake a detailed review of the Drawings to be furnished by the Concessionaire along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry

- sites, topographical surveys and traffic surveys. The Independent Engineer shall complete such review and send its comments/ observations to the Authority and the Concessionaire within 15 (fifteen) days of receipt of such Drawings. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.
- 4.2 The Independent Engineer shall review any modified Drawings or supporting Documents sent to it by the Concessionaire and furnish its comments within 7 (seven) days of receiving such Drawings or Documents.
  - 4.3 The Independent Engineer shall review the Drawings sent to it by the Safety Consultant in accordance with Schedule-L and furnish its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receiving such Drawings. The Independent Engineer shall also review the Safety Report and furnish its comments thereon to the Authority within 15 (fifteen) days of receiving such report.
  - 4.4 The Independent Engineer shall review the detailed design, construction methodology, quality assurance procedures and the procurement, engineering and construction time schedule sent to it by the Concessionaire and furnish its comments within 15 (fifteen) days of receipt thereof.
  - 4.5 Upon reference by the Authority, the Independent Engineer shall review and; comment on the EPC Contract or any other contract for construction, operation and maintenance of the Project, and furnish its comments within 7 (seven) days from receipt of such reference from the Authority.

## **5 Construction Period**

- 5.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Construction Period, the provisions of Paragraph 4 shall apply, mutatis mutandis.
- 5.2 The Independent Engineer shall review the monthly progress report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.
- 5.3 The Independent Engineer shall inspect the Construction Works and the Project once every month, preferably after receipt of the monthly progress report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out a report of such inspection (the “Inspection Report”) setting forth an overview of the status, progress, quality and safety of construction, including the work methodology adopted, the materials used and their sources, and conformity of Construction Works with the Scope of the Project and the Specifications and Standards. In a separate section of the Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in the construction of the Project. The Inspection Report shall also contain a review of the maintenance of the existing lanes in conformity with the provisions of the Agreement. The Independent Engineer shall send a copy of its Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.
- 5.4 The Independent Engineer may inspect the Project more than once in a month if any lapses, defects or deficiencies require such inspections.
- 5.5 For determining that the Construction Works conform to Specifications and Standards, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests on a sample basis, to be specified by the Independent Engineer in accordance with Good Industry Practice for quality assurance. For purposes of this Paragraph 5.5, 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 the Authority (the “Quality Control Manuals”) or any modification/substitution thereof shall be deemed to be tests conforming to Good Industry Practice for quality assurance. The Independent Engineer shall issue necessary directions to the



- Concessionaire for ensuring that the tests are conducted in a fair and efficient manner, and shall monitor and review the results thereof.
- 5.6 The sample size of the tests, to be specified by the Independent Engineer under Paragraph 5.5, shall comprise 10% (ten per cent) of the quantity or number of tests prescribed for each category or type of tests in the Quality Control Manuals; provided that the Independent Engineer may, for reasons to be recorded in writing, increase the aforesaid sample size by up to 10% (ten per cent) for certain categories or types of tests.
- 5.7 The timing of tests referred to in Paragraph 5.5, and the criteria for acceptance/ rejection of their results shall be determined by the Independent 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 Concessionaire for its own quality assurance in accordance with Good Industry Practice.
- 5.8 In the event that the Concessionaire carries out any remedial works for removal or rectification of any defects or deficiencies, the Independent Engineer shall require the Concessionaire to carry out, or cause to be carried out, tests to determine that such remedial works have brought the Construction Works into conformity with the Specifications and Standards, and the provisions of this Paragraph 5 shall apply to such tests.
- 5.9 In the event that the Concessionaire fails to achieve any of the Project Milestones, the Independent Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Independent Engineer shall determine that completion of the Project is not feasible within the time specified in the Agreement, it shall require the Concessionaire to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which COD shall be achieved. Upon receipt of a report from the Concessionaire, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire forthwith.
- 5.10 If at any time during the Construction Period, the Independent Engineer determines that the Concessionaire has not made adequate arrangements for the safety of workers and Users in the zone of construction or that any work is being carried out in a manner that threatens the safety of the workers and the Users, it shall make a recommendation to the Authority forthwith, identifying the whole or part of the Construction Works that should be suspended for ensuring safety in respect thereof.
- 5.11 In the event that the Concessionaire carries out any remedial measures to secure the safety of suspended works and Users, it may, by notice in writing, require the Independent Engineer to inspect such works, and within 3 (three) days of receiving such notice, the Independent Engineer shall inspect the suspended works and make a report to the Authority forthwith, recommending whether or not such suspension may be revoked by the Authority.
- 5.12 If suspension of Construction Works is for reasons not attributable to the Concessionaire, the Independent Engineer shall determine the extension of dates set forth in the Project Completion Schedule, to which the Concessionaire is reasonably entitled, and shall notify the Authority and the Concessionaire of the same.
- 5.13 The Independent Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule-I and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 5.13 and all matters incidental thereto, the Independent Engineer shall act under and in accordance with the provisions of Article 14 and Schedule-I.
- 5.14 Upon reference from the Authority, the Independent Engineer shall make a fair and reasonable assessment of the costs of providing information, works and services as set forth in Article 16 and certify the reasonableness of such costs for payment by the Authority to the Concessionaire.

- 5.15 The Independent Engineer shall aid and advise the Concessionaire in preparing the Maintenance Manual.
- 5.16 Upon reference from the Authority, the Independent Engineer shall undertake the assessment of cost of civil works, as per applicable schedule of rates, for the reduction of Scope of work as provided in Clause 16.6.1 of the Concession Agreement.

## **6 Operation Period**

- 6.1 In respect of the Drawings, Documents and Safety Report received by the Independent Engineer for its review and comments during the Operation Period, the provisions of Paragraph 4 shall apply, *mutatis mutandis*.
- 6.2 The Independent Engineer shall review the annual Maintenance Program furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 15 (fifteen) days of receipt of the Maintenance Program.
- 6.3 The Independent Engineer shall review the monthly status report furnished by the Concessionaire and send its comments thereon to the Authority and the Concessionaire within 7 (seven) days of receipt of such report.
- 6.4 The Independent Engineer shall inspect the Project once every month, preferably after receipt of the monthly status report from the Concessionaire, but before the 20th (twentieth) day of each month in any case, and make out an O&M Inspection Report setting forth an overview of the status, quality and safety of O&M including its conformity with the Maintenance Requirements and Safety Requirements. In a separate section of the O&M Inspection Report, the Independent Engineer shall describe in reasonable detail the lapses, defects or deficiencies observed by it in O&M of the Project. The Independent Engineer shall send a copy of its O&M Inspection Report to the Authority and the Concessionaire within 7 (seven) days of the inspection.
- 6.5 The Independent Engineer may inspect the Project more than once in a month, if any lapses, defects or deficiencies require such inspections.
- 6.6 The Independent Engineer shall in its O&M Inspection Report specify the tests, if any, that the Concessionaire shall carry out, or cause to be carried out, for the purpose of determining that the Project 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 Concessionaire in this behalf.
- 6.7 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- K, the Independent Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.
- 6.8 The Independent Engineer shall determine if any delay has occurred in completion of repair or remedial works in accordance with the Agreement, and shall also determine the Damages, if any, payable by the Concessionaire to the Authority for such delay.
- 6.9 The Independent Engineer shall examine the request of the Concessionaire for closure of any lane(s) of the carriageway for undertaking maintenance/repair thereof, keeping in view the need to minimize disruption in traffic and the time required for completing such maintenance/repair in accordance with Good Industry Practice. It shall grant permission with such modifications, as it may deem necessary, within 3 (three) days of receiving a request from the Concessionaire. Upon expiry of the permitted period of closure, the Independent Engineer shall monitor the re-opening of such lane(s), and in case of delay, determine the Damages payable by the Concessionaire to the Authority under Clause 17.7.
- 6.10 The Independent Engineer shall monitor and review the curing of defects and deficiencies by the Concessionaire as set forth in Clause 19.4.

- 6.11 In the event that the Concessionaire notifies the Independent Engineer of any modifications that it proposes to make to the Project, the Independent Engineer shall review the same and send its comments to the Authority and the Concessionaire within 15 (fifteen) days of receiving the proposal.
- 6.12 The Independent Engineer shall undertake traffic sampling, as and when required by the Authority, under and in accordance with the provisions of this Agreement.

## **7 Termination**

- 7.1 At any time, not earlier than 90 (ninety) days prior to Termination but not later than 15 (fifteen) days prior to such Termination, the Independent Engineer shall, in the presence of a representative of the Concessionaire, inspect the Project for determining compliance by the Concessionaire with the Divestment Requirements set forth in Clause 32.1 and, if required, cause tests to be carried out at the Concessionaire's cost for determining such compliance. If the Independent Engineer determines that the status of the Project is such that its repair and rectification would require a larger amount than the sum set forth in Clause 33.2, it shall recommend retention of the required amount in the Escrow Account and the period of retention thereof.
- 7.2 The Independent Engineer shall inspect the Project once in every 15 (fifteen) days during a period of 90 (ninety) days after Termination for determining the liability of the Concessionaire under Article 33, in respect of the defects or deficiencies specified therein. If any such defect or deficiency is found by the Independent Engineer, it shall make a report in reasonable detail and send it forthwith to the Authority and the Concessionaire.

## **8 Determination of costs and time**

- 8.1 The Independent Engineer shall determine the costs, and/or their reasonableness, that are required to be determined by it under the Agreement.
- 8.2 The Independent Engineer shall determine the period, or any extension thereof, that is required to be determined by it under the Agreement.

## **9 Assistance in Dispute resolution**

- 9.1 When called upon by either Party in the event of any Dispute, the Independent Engineer shall mediate and assist the Parties in arriving at an amicable settlement.
- 9.2 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 Independent Engineer shall specify such meaning, scope and nature by issuing a reasoned written Statement relying on good industry practice and authentic literature.

## **10 Other duties and functions**

The Independent Engineer shall perform all other duties and functions specified in the Agreement.

## **11 Miscellaneous**

- 11.1 The Independent Engineer shall notify its programmer of inspection to the Authority and to the Concessionaire, who may, in their discretion, depute their respective representatives to be present during the inspection.
- 11.2 A copy of all communications, comments, instructions, Drawings or Documents sent by the Independent Engineer to the Concessionaire pursuant to this TOR, and a copy of all the test results with comments of the Independent Engineer thereon shall be furnished by the Independent Engineer to the Authority forthwith.

- 11.3 The Independent Engineer shall obtain, and the Concessionaire shall furnish in 2 (two) ..... Copies thereof, all communications and reports required to be submitted, under this Agreement, by the Concessionaire to the Independent Engineer, whereupon the Independent Engineer shall send 1 (one) of the copies to the Authority along with its comments thereon.
- 11.4 The Independent Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.
- 11.5 Upon completion of its assignment hereunder, the Independent Engineer shall duly classify and list all Drawings, Documents, results of tests and other relevant records, and hand them over to the Authority or such other person as the Authority may specify, and obtain written receipt thereof. Two copies of the said documents shall also be furnished in their editable digital format or in such other medium or manner as may be acceptable to the Authority.
- 11.6 Wherever no period has been specified for delivery of services by the Independent Engineer, the Independent Engineer shall act with the efficiency and urgency necessary for discharging its functions in accordance with Good Industry Practice.

## SCHEDULE -O

(See Clause 25.1.2)

### ESCROW AGREEMENT

**THIS ESCROW AGREEMENT** is entered into on this the day of 20\_\_ AMONGST

- 1 .....Limited, a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at..... (hereinafter referred to as the “Concessionaire” which expression shall, unless repugnant to the context or meaning thereof, include its successors, permitted assigns and substitutes);
- 2 .....(insert name and particulars of Lenders’ Representative) and having its registered office at..... acting for and on behalf of the Senior Lenders as their duly authorized agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the “Lenders’ Representative” which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes);
- 3 .....(insert name and particulars of the Escrow Bank) and having its registered office at..... (hereinafter referred to as the “Escrow Bank” which expression shall, unless repugnant to the context or meaning thereof, include its successors and substitutes); and
- 4 The NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED, established under the Companies Act, 2013, represented by its Managing Director and having its principal offices at 1st & 2nd Floor, Tower A, World Trade Centre, Nauroji Nagar, New Delhi – 110029 (hereinafter referred to as the “Authority” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns).

#### WHEREAS:

- (A) The Authority has entered into a Concession Agreement dated with the Concessionaire (the “Concession Agreement”) for the **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length=29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** Project (the “Project”) on design, build, operate and transfer (the “DBOT Annuity or Hybrid Annuity”) basis, and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.
- (B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.
- (C) The Concession Agreement requires the Concessionaire to establish an Escrow Account, inter alia, on the terms and conditions Stated therein.

NOW, THEREFORE, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

#### 1 DEFINITIONS AND INTERPRETATION

##### 1.1 Definitions

In this Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them:

**“Agreement”** means this Escrow Agreement and any amendment thereto made in accordance with the provisions contained herein;

**“Concession Agreement”** means the Concession Agreement referred to in Recital (A) above and annexed hereto as Annex-A, and shall include all of its Recitals and Schedules and any amendments made thereto in accordance with the provisions contained in this behalf therein;

**“Cure Period”** means the period specified in this Agreement for curing any breach or default of any provision of this Agreement by the Concessionaire, and shall commence from the date on which a notice is delivered by the Authority or the Lenders’ Representative, as the case may be, to the Concessionaire asking the latter to cure the breach or default specified in such notice;

**“Escrow Account”** means an escrow account established in terms of and under this Agreement, and shall include the Sub-Accounts;

**“Escrow Default”** shall have the meaning ascribed thereto in Clause 6.1;

**“Lenders’ Representative”** means the person referred to as the Lenders’ Representative in the foregoing Recitals;

**“Parties”** means the parties to this Agreement collectively and “Party” shall mean any of the Parties to this Agreement individually;

**“Payment Date”** means, in relation to any payment specified in Clause 4.1, the date(s) specified for such payment; and

**“Sub-Accounts”** means the respective sub-accounts of the Escrow Account, into which the monies specified in Clause 4.1 would be credited every month and paid out if due, and if not due in a month then appropriated proportionately in such month and retained in the respective sub-accounts and paid out therefrom on the Payment Date(s).

## **1.2 Interpretation**

- 1.2.1 References to Lenders’ Representative shall, unless repugnant to the context or meaning thereof, mean references to the Lenders’ Representative, acting for and on behalf of Senior Lenders.
- 1.2.2 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.
- 1.2.3 References to Clauses are, unless Stated otherwise, references to Clauses of this Agreement.
- 1.2.4 The rules of interpretation Stated in Clauses 1.2, 1.3 and 1.4 of the Concession Agreement shall apply, mutatis mutandis, to this Agreement.

## **2 ESCROW ACCOUNT**

- 2.1 Escrow Bank to act as trustee
  - 2.1.1 The Concessionaire hereby appoints the Escrow Bank to act as trustee for the Authority, the Lenders’ Representative and the Concessionaire in connection herewith and authorizes the Escrow Bank to exercise such rights, powers, authorities and discretion as are specifically delegated to the Escrow Bank by the terms hereof together with all such rights, powers, authorities and discretion as are reasonably incidental hereto, and the Escrow Bank accepts such appointment pursuant to the terms hereof.
  - 2.1.2 The Concessionaire hereby declares that all rights, title and interest in and to the Escrow Account shall be vested in the Escrow Bank and held in trust for the Authority, the Lenders’ Representative and the

Concessionaire, and applied in accordance with the terms of this Agreement. No person other than the Authority, the Lenders' Representative and the Concessionaire shall have any rights hereunder as the beneficiaries of or as third party beneficiaries under this Agreement.

## **2.2 Acceptance of Escrow Bank**

The Escrow Bank hereby agrees to act as such and to accept all payments and other amounts to be delivered to and held by the Escrow Bank pursuant to the provisions of this Agreement. The Escrow Bank shall hold and safeguard the Escrow Account during the term of this Agreement and shall treat the amount in the Escrow Account as monies deposited by the Concessionaire, Senior Lenders or the Authority with the Escrow Bank. In performing its functions and duties under this Agreement, the Escrow Bank shall act in trust for the benefit of, and as agent for, the Authority, the Lenders' Representative and the Concessionaire or their nominees, successors or assigns, in accordance with the provisions of this Agreement.

## **2.3 Establishment and operation of Escrow Account**

- 2.3.1 Within 30 (thirty) days from the date of this Agreement, and in any case prior to the Appointed Date, the Concessionaire shall open and establish the Escrow Account with the (name of Branch) Branch of the Escrow Bank. The Escrow Account shall be denominated in Rupees.
- 2.3.2 The Escrow Bank shall maintain the Escrow Account in accordance with the terms of this Agreement and its usual practices and applicable regulations, and pay the maximum rate of interest payable to similar customers on the balance in the said account from time to time.
- 2.3.3 The Escrow Bank and the Concessionaire shall, after consultation with the Lenders' Representative, agree on the detailed mandates, terms and conditions, and operating procedures for the Escrow Account, but in the event of any conflict or inconsistency between this Agreement and such mandates, terms and conditions, or procedures, this Agreement shall prevail.
- 2.4 Escrow Bank's fee The Escrow Bank shall be entitled to receive its fee and expenses in an amount, and at such times, as may be agreed between the Escrow Bank and the Concessionaire. For the avoidance of doubt, such fee and expenses shall form part of the O&M Expenses and shall be appropriated from the Escrow Account in accordance with Clause 4.1.
- 2.5 Rights of the Parties Save and except as otherwise provided in the Concession Agreement, the rights of the Authority, the Lenders' Representative and the Concessionaire in the monies held in the Escrow Account are set forth in their entirety in this Agreement and the Authority, the Lenders' Representative and the Concessionaire shall have no other rights against or to the monies in the Escrow Account.
- 2.6 Substitution of the Concessionaire The Parties hereto acknowledge and agree that upon substitution of the Concessionaire with the Nominated Company, pursuant to the Substitution Agreement, it shall be deemed for the purposes of this Agreement that the Nominated Company is a Party hereto and the Nominated Company shall accordingly be deemed to have succeeded to the rights and obligations of the Concessionaire under this Agreement on and with effect from the date of substitution of the Concessionaire with the Nominated Company.

## **3 DEPOSITS INTO ESCROW ACCOUNT**

- 3.1 Deposits by the Concessionaire
  - 3.1.1 The Concessionaire agrees and undertakes that it shall deposit into and/or credit the Escrow Account with:
    - (a) All monies received in relation to the Project from any source, including the Senior Lenders, lenders of Subordinated Debt and the Authority;
    - (b) All funds received by the Concessionaire from its shareholders, in any manner or form;

- (c) Any other revenues; rentals, deposits or capital receipts, as the case may be, from or in respect of the Project; and
  - (d) All proceeds received pursuant to any insurance claims.
- 3.1.2 The Concessionaire may at any time make deposits of its other funds into the Escrow Account, provided that the provisions of this Agreement shall apply to such deposits.

### **3.2 Deposits by the Authority**

The Authority agrees and undertakes that, as and when due and payable, it shall deposit into and/or credit the Escrow Account with:

- (a) Grant and any other monies disbursed by the Authority to the Concessionaire;
- (b) All revenues collected by the Authority in exercise of its rights under the Concession Agreement; and
- (c) Termination Payments

Provided that, notwithstanding the provisions of Clause 4.1.1, the Authority shall be entitled to appropriate from the aforesaid amounts, any amounts due and payable to it by the Concessionaire, and the balance remaining shall be deposited into the Escrow Account.

### **3.3 Deposits by Senior Lenders**

The Lenders' Representative agrees, confirms and undertakes that the Senior Lenders shall deposit into and/or credit the Escrow Account with all disbursements made by them in relation to or in respect of the Project; provided that notwithstanding anything to the contrary contained in this Agreement, the Senior Lenders shall be entitled to make direct payments to the EPC Contractor under and in accordance with the express provisions contained in this behalf in the Financing Agreements.

### **3.4 Interest on deposits**

The Escrow Bank agrees and undertakes that all interest accruing on the balances of the Escrow Account shall be credited to the Escrow Account; provided that the Escrow Bank shall be entitled to appropriate therefrom the fee and expenses due to it from the Concessionaire in relation to the Escrow Account and credit the balance remaining to the Escrow Account.

## **4 WITHDRAWALS FROM ESCROW ACCOUNT**

### **4.1 Withdrawals during Concession Period**

- 4.1.1 At the beginning of every month, or at such shorter intervals as the Lenders' Representative and the Concessionaire may by written instructions determine, the Escrow Bank shall withdraw amounts from the Escrow Account and appropriate them in the following order by depositing such amounts in the relevant Sub-Accounts for making due payments, and if such payments are not due in any month, then retain such monies in such Sub-Accounts and pay out therefrom on the Payment Date(s):
- (a) All taxes due and payable by the Concessionaire for and in respect of the Project;
  - (b) Deleted;
  - (c) All payments relating to construction of the Project, subject to and in accordance with the conditions, if any, set forth in the Financing Agreements;
  - (d) O&M Expenses, subject to the ceiling, if any, set forth in the Financing Agreements;



- (e) O&M Expenses and other costs and expenses incurred by the Authority in accordance with the provisions of the Concession Agreement, and certified by the Authority as due and payable to it;
  - (f) Any amounts due and payable to the Authority;
  - (g) Monthly proportionate provision of Debt Service due in an Accounting Year;
  - (h) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement;
  - (i) Monthly proportionate provision of debt service payments due in an Accounting Year in respect of Subordinated Debt;
  - (j) any reserve requirements set forth in the Financing Agreements; and
  - (k) Balance, if any, in accordance with the instructions of the Concessionaire.
- 4.1.2 No later than 60 (sixty) days prior to the commencement of each Accounting Year, the Concessionaire shall provide to the Escrow Bank, with prior written approval of the Lenders' Representative, details of the amounts likely to be required for each of the payment obligations set forth in this Clause 4.1; provided that such amounts may be subsequently modified, with prior written approval of the Lenders' Representative, if fresh information received during the course of the year makes such modification necessary.
- 4.2 Withdrawals upon Termination upon Termination of the Concession Agreement, all amounts standing to the credit of the Escrow Account shall, notwithstanding anything in this Agreement, be appropriated and dealt with in the following order:
- (a) All taxes due and payable by the Concessionaire for and in respect of the Project;
  - (b) Deleted;
  - (c) 90% (ninety per cent) of Debt Due excluding Subordinated Debt;
  - (d) all payments and Damages certified by the Authority as due and payable to it by the Concessionaire pursuant to the Concession Agreement, including any claims in connection with or arising out of Termination;
  - (e) Retention and payments arising out of, or in relation to, liability for defects and deficiencies set forth in Article 33 of the Concession Agreement;
  - (f) Outstanding Debt Service including the balance of Debt Due;
  - (g) Outstanding Subordinated Debt;
  - (h) Incurred or accrued O&M Expenses;
  - (i) Any other payments required to be made under the Concession Agreement; and
  - (j) Balance, if any, in accordance with the instructions of the Concessionaire: Provided that the disbursements specified in Sub-clause (i) of this Clause 4.2 shall be undertaken only after the Vesting Certificate has been issued by the Authority.

#### **4.3 Application of insufficient funds:**

Funds in the Escrow Account shall be applied in the serial order of priority set forth in Clauses 4.1 and 4.2, as the case may be. If the funds available are not sufficient to meet all the requirements, the Escrow Bank shall apply such funds in the serial order of priority until exhaustion thereof.

#### **4.4 Application of insurance proceeds**

Notwithstanding anything in this Agreement, the proceeds from all insurance claims, except life and injury, shall be deposited into and/or credited to the Escrow Account and utilized for any necessary repair, reconstruction, reinstatement, replacement, improvement, delivery or installation of the Project, and the balance remaining, if any, shall be applied in accordance with the provisions contained in this behalf in the Financing Agreements.

#### **4.5 Withdrawals during Suspension**

Notwithstanding anything to the contrary contained in this Agreement, the Authority may exercise all or any of the rights of the Concessionaire during the period of Suspension under Article 30 of the Concession Agreement. Any instructions given by the Authority to the Escrow Bank during such period shall be complied with as if such instructions were given by the Concessionaire under this Agreement and all actions of the Authority hereunder shall be deemed to have been taken for and on behalf of the Concessionaire.

### **5 OBLIGATIONS OF THE ESCROW BANK**

#### **5.1 Segregation of funds**

Monies and other property received by the Escrow Bank under this Agreement shall, until used or applied in accordance with this Agreement, be held by the Escrow Bank in trust for the purposes for which they were received, and shall be segregated from other funds and property of the Escrow Bank.

#### **5.2 Notification of balances**

7(seven) business days prior to each Payment Date (and for this purpose the Escrow Bank shall be entitled to rely on an affirmation by the Concessionaire and/or the Lenders' Representative as to the relevant Payment Dates), the Escrow Bank shall notify the Lenders' Representative of the balances in the Escrow Account and Sub-Accounts as at the close of business on the immediately preceding business day.

#### **5.3 Communications and notices**

In discharge of its duties and obligations hereunder, the Escrow Bank:

- (a) May, in the absence of bad faith or gross negligence on its part, rely as to any matters of fact which might reasonably be expected to be within the knowledge of the Concessionaire upon a certificate signed by or on behalf of the Concessionaire;
- (b) may, in the absence of bad faith or gross negligence on its part, rely upon the authenticity of any communication or document believed by it to be authentic;
- (c) shall, within 5 (five) business days after receipt, deliver a copy to the Lenders' Representative of any notice or document received by it in its capacity as the Escrow Bank from the Concessionaire or any other person hereunder or in connection herewith; and
- (d) shall, within 5 (five) business days after receipt, deliver a copy to the Concessionaire of any notice or document received by it from the Lenders' Representative in connection herewith.

#### **5.4 No set off**

The Escrow Bank agrees not to claim or exercise any right of set off, banker's lien or other right or remedy with respect to amounts standing to the credit of the Escrow Account. For the avoidance of doubt, it is hereby acknowledged and agreed by the Escrow Bank that the monies and properties held by the Escrow Bank in the Escrow Account shall not be considered as part of the assets of the Escrow Bank and being trust property, shall in the case of bankruptcy or liquidation of the Escrow Bank, be wholly excluded from the assets of the Escrow Bank in such bankruptcy or liquidation.

## **5.5 Regulatory approvals**

The Escrow Bank shall use its best efforts to procure, and thereafter maintain and comply with, all regulatory approvals required for it to establish and operate the Escrow Account. The Escrow Bank represents and warrants that it is not aware of any reason why such regulatory approvals will not ordinarily be granted to the Escrow Bank.

## **6 ESCROW DEFAULT**

### **6.1 Escrow Default**

6.1.1 Following events shall constitute an event of default by the Concessionaire (an “Escrow Default”) unless such event of default has occurred as a result of Force Majeure or any act or omission of the Authority or the Lenders’ Representative:

- (a) the Concessionaire commits breach of this Agreement by failing to deposit any receipts into the Escrow Account as provided herein and fails to cure such breach by depositing the same into the Escrow Account within a Cure Period of 5 (five) business days;
- (b) the Concessionaire causes the Escrow Bank to transfer funds to any account of the Concessionaire in breach of the terms of this Agreement and fails to cure such breach by depositing the relevant funds into the Escrow Account or any Sub-Account in which such transfer should have been made, within a Cure Period of 5 (five) business days; or
- (c) the Concessionaire commits or causes any other breach of the provisions of this Agreement and fails to cure the same within a Cure Period of 5 (five) business days.

6.1.2 Upon occurrence of an Escrow Default, the consequences thereof shall be dealt with under and in accordance with the provisions of the Concession Agreement.

## **7 TERMINATION OF ESCROW AGREEMENT**

### **7.1 Duration of the Escrow Agreement**

This Agreement shall remain in full force and effect so long as any sum remains to be advanced or is outstanding from the Concessionaire in respect of the debt, guarantee or financial assistance received by it from the Senior Lenders, or any of its obligations to the Authority remain to be discharged, unless terminated earlier by consent of all the Parties or otherwise in accordance with the provisions of this Agreement.

### **7.2 Substitution of Escrow Bank**

The Concessionaire may, by not less than 45 (forty five) days prior notice to the Escrow Bank, the Authority and the Lenders’ Representative, terminate this Agreement and appoint a new Escrow Bank, provided that the new Escrow Bank is acceptable to the Lenders’ Representative and arrangements are made satisfactory to the Lenders’ Representative for transfer of amounts deposited in the Escrow Account to a new Escrow Account established with the successor Escrow Bank.

The termination of this Agreement shall take effect only upon coming into force of an Escrow Agreement with the substitute Escrow Bank.

### **7.3 Closure of Escrow Account**

The Escrow Bank shall, at the request of the Concessionaire and the Lenders’ Representative made on or after the payment by the Concessionaire of all outstanding amounts under the Concession Agreement and the Financing Agreements including the payments specified in Clause 4.2, and upon confirmation of receipt of such payments, close the Escrow Account and Sub- Accounts and pay any

amount standing to the credit thereof to the Concessionaire. Upon closure of the Escrow Account hereunder, the Escrow Agreement shall be deemed to be terminated.

## **8 SUPPLEMENTARY ESCROW AGREEMENT**

### **8.1 Supplementary escrow agreement**

The Lenders' Representative and the Concessionaire shall be entitled to enter into a supplementary escrow agreement with the Escrow Bank providing, inter alia, for detailed procedures and documentation for withdrawals from Sub- Accounts pursuant to Clause 4.1.1 and for matters not covered under this Agreement such as the rights and obligations of Senior Lenders and lenders of Subordinated Debt, investment of surplus funds, restrictions on withdrawals by the Concessionaire in the event of breach of this Agreement or upon occurrence of an Escrow Default, procedures relating to operation of the Escrow Account and withdrawal therefrom, reporting requirements and any matters incidental thereto; provided that such supplementary escrow agreement shall not contain any provision which is inconsistent with this Agreement and in the event of any conflict or inconsistency between provisions of this Agreement and such supplementary escrow agreement, the provisions of this Agreement shall prevail.

## **9 INDEMNITIES**

### **9.1 General indemnity**

9.1.1 The Concessionaire will indemnify, defend and hold the Authority, Escrow Bank and the Senior Lenders, acting through the Lenders' Representative, harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of any breach by the Concessionaire of any of its obligations under this Agreement or on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

9.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement or this Agreement other than any loss, damage, cost and expense arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

9.1.3 The Escrow Bank will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Escrow Bank to fulfil its obligations under this Agreement materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Escrow Bank, its officers, servants and agents.

### **9.2 Notice and contest of claims**

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 9.1 or in respect of which it is entitled to reimbursement (the "Indemnified Party"), it shall notify the other Party responsible for indemnifying such claim hereunder (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, which approval shall not be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

## **10 DISPUTE RESOLUTION**

### **10.1 Dispute resolution**

- 10.1.1 Any dispute, difference or claim arising out of or in connection with this Agreement, which is not resolved amicably, shall be decided finally by reference to arbitration to a Board of Arbitrators comprising one nominee of each Party to the dispute, and where the number of such nominees is an even number, the nominees shall elect another person to such Board. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the “Rules”) or such other rules as may be mutually agreed by the Parties, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996.
- 10.1.2 The Arbitrators shall issue a reasoned award and such award shall be final and binding on the Parties. The place of arbitration shall be the capital of the State and the language of arbitration shall be English.

## **11. MISCELLANEOUS PROVISIONS**

### **11.1 Governing law and jurisdiction**

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts in the State shall have jurisdiction over all matters arising out of or relating to this Agreement.

### **11.2 Waiver of sovereign immunity The Authority unconditionally and irrevocably:**

- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;
- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally in respect of the enforcement of any judgment or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).

### **11.3 Priority of agreements**

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

### **11.4 Alteration of terms**

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorized representatives of the Parties.

### **11.5 Waiver**

- 11.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:
- (a) Shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;

- (b) shall not be effective unless it is in writing and executed by a duly authorized representative of the Party; and
  - (c) shall not affect the validity or enforceability of this Agreement in any manner.
- 11.5.2 Neither the failure by any Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by any Party to another Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.
- 11.6 No third party beneficiaries This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

## **11.7 Survival**

### **11.7.1 Termination of this Agreement:**

- (a) shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and
  - (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of, or caused by, acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.
- 11.7.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

## **11.8 Severability**

If for any reason whatever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 10.1 of this Agreement or otherwise.

## **11.9 Successors and assigns**

This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and permitted assigns.

## **11.10 Notices**

All notices or other communications to be given or made under this Agreement shall be in writing and shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number and e-mail are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on a business day, or on a day that is not a business day, the notice shall be deemed to be received on the first business day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and

communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

#### 11.11 **Language**

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

#### 11.12 **Authorized representatives**

Each of the Parties shall, by notice in writing, designate their respective authorized representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorized representative by similar notice.

#### 11.13 **Original Document**

This Agreement may be executed in four counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the day of 20 hereunto affixed in the presence of , Director, who has signed these presents in token thereof and Company Secretary / Authorized Officer who has countersigned the same in token thereof<sup>¥</sup>

SIGNED SEALED AND  
DELIVERED  
For and on behalf of  
SENIOR LENDERS by the  
Lender's representative:

(Signature)

(Signature)

(Name)

(Name)

(Designation)

(Designation)

(Address)

(Address)

(Fax No.)

(Fax N°)

(E-mail address)

(E-mail address)

SIGNED, SEALED AND

SIGNED, SEALED AND

DELIVERED

DELIVERED

For and on behalf of

for and on behalf of

THE ESCROW BANK by

THE AUTHORITY by:

<sup>¥</sup>To be affixed in accordance with the articles of association of the Concessionaire and the resolution passed by its Board of Directors.

(Signature)

(Name)

(Designation)

(Address)

(Fax No.)

(E-mail address)

SIGNED, SEALED

In the presence of:

(Signature)

(Name)

(Designation)

(Address)

(Fax No.)

(E-mail address)



## **SCHEDULE - P**

(See Clause 27.2.1)

### **PANEL OF CHARTERED ACCOUNTANTS**

#### **1 Panel of Chartered Accountants**

Pursuant to the provisions of Clause 27.2.1 of the Agreement, the Authority and the Concessionaire shall prepare a mutually agreed panel of 5 (five) reputable firms of Chartered Accountants having their registered offices in India (the “Panel of Chartered Accountants”). The criteria for preparing such Panel and the procedure to be adopted in this behalf shall be as set forth in this Schedule-P.

#### **2 Invitation for empanelment**

2.1 The Authority shall invite offers from all reputed firms of Chartered Accountants who fulfil the following eligibility criteria, namely:

- (a) the firm should have conducted statutory audit of the annual accounts of at least one hundred companies registered under the Companies Act, 1956, including any re-enactment or amendment thereof, of which at least ten should have been public sector undertakings;
- (b) The firm should have at least 5 (five) practicing Chartered Accountants on its rolls, each with a minimum experience of ten years in the profession;
- (c) The firm or any of its partners should not have been disqualified or black-listed by the Comptroller and Auditor General of India or the Authority; and
- (d) The firm should have an office in the State or in an adjacent State with at least 2 (two) practicing Chartered Accountants on its rolls in such State.

2.2 Interested firms meeting the eligibility criteria shall be required to submit a Statement of their capability including the bio-data of all the practicing Chartered Accountants on its rolls. In particular, each firm shall be required to furnish year-wise information relating to the names of all the companies with an annual turnover exceeding Rs. 25,00,00,000 (Rs. twenty five crore) whose annual accounts were audited by such firm in any of the preceding 5 (five) Accounting Years

#### **3 Evaluation and selection**

3.1 The information furnished by each firm shall be scrutinized and evaluated by the Authority and 1 (one) point shall be awarded for each annual audit of the companies specified in Paragraph 2.2 above. (For the avoidance of doubt and by way of illustration, a firm which has conducted audit of the annual accounts of any such company for 5 (five) years shall be awarded 5 (five) points).

3.2 The Authority shall prepare a list of all the eligible firms along with the points scored by each such firm and 5 (five) firms scoring the highest points shall be identified and included in the draft Panel of Chartered Accountants.

#### **4 Consultation with the Concessionaire**

The Authority shall convey the aforesaid panel of firms to the Concessionaire for scrutiny and comments, if any. The Concessionaire shall be entitled to scrutinize the relevant records of the Authority to ascertain whether the selection of firms has been undertaken in accordance with the prescribed procedure and it shall send its comments, if any, to the Authority within 15 (fifteen) days of receiving the aforesaid panel.

## **5 Mutually agreed panel**

- 5.1 The Authority shall, after considering all relevant factors including the comments, if any, of the Concessionaire, finalize and constitute a panel of 5 (five) firms which shall be deemed to be the mutually agreed Panel of Chartered Accountants.
- 5.2 After completion of every 5 (five) years from the date of preparing the mutually agreed Panel of Chartered Accountants, or such earlier period as may be agreed between the Authority and the Concessionaire, a new panel shall be prepared in accordance with the provisions of this Schedule-P.

## SCHEDULE - Q

(See Clause 32.4)

### VESTING CERTIFICATE

- 1 The Managing Director, National Highways & Infrastructure Development Corporation Limited (the “**Authority**”) refers to the Concession Agreement dated ..... (the “**Agreement**”) entered into between the Authority and ..... (the “**Concessionaire**”) **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** Project (the “**Project Highway**”) on design, build, operate and transfer (“**DBOT Annuity or Hybrid Annuity**”) basis.
- 2 The Authority hereby acknowledges compliance and fulfilment by the Concessionaire of the Divestment Requirements set forth in Clause 32.1 of the Agreement on the basis that upon issue of this Vesting Certificate, the Authority shall be deemed to have acquired, and all title and interest of the Concessionaire in or about the Project shall be deemed to have vested unto the Authority, free from any encumbrances, charges and liens whatsoever.
- 3 Notwithstanding anything to the contrary contained hereinabove, it shall be a condition of this Vesting Certificate that nothing contained herein shall be construed or interpreted as waiving the obligation of the Concessionaire to rectify and remedy any defect or deficiency in any of the Divestment Requirements and/or relieving the Concessionaire in any manner of the same.

Signed this..... day of....., 20..... At.....

AGREED, ACCEPTED AND SIGNED

For and on behalf of

CONCESSIONAIRE by:

(Signature)

(Name)

(Designation)

(Address)

SIGNED, SEALED AND DELIVERED

for and on behalf of

AUTHORITY by:

(Signature)

(Name)

(Designation)

(Address)

In the presence of:

1.

2.



## SCHEDULE - R

(See Clause 34.3.1)

### SUBSTITUTION AGREEMENT

THIS SUBSTITUTION AGREEMENT is entered into on this the.....day of.....20.....

#### AMONGST

- 1 The NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED, established under the Companies Act, 2013, represented by its Managing Director and having its principal offices at 1st & 2nd Floor, Tower A, World Trade Centre, Nauroji Nagar, New Delhi – 110029 (Hereinafter referred to as the “Authority” which expression shall unless repugnant to the context or meaning thereof include its administrators, successors and assigns);
- 2 .....Limited, a company incorporated under the provisions of the Companies Act, 2013 and having its registered office at ..... (Hereinafter referred to as the “**Concessionaire**” which expression shall unless repugnant to the context or meaning thereof include its successors and permitted assigns and substitutes);
- 3 ..... (insert name and particulars of Lenders’ Representative) and having its registered office at....., acting for and on behalf of the Senior Lenders as their duly authorized agent with regard to matters arising out of or in relation to this Agreement (hereinafter referred to as the “**Lenders’ Representative**”, which expression shall unless repugnant to the context or meaning thereof include its successors and substitutes);

#### WHEREAS:

- (A) The Authority has entered into a Concession Agreement dated..... With the Concessionaire (the “**Concession Agreement**”) for the **Construction to 2-Lane with Paved Shoulder of Tura Bypass starting from existing Km 57+500 of NH-127B (Design Chainage Km 0+000) and ending at existing Km 108+750 of NH-217 (Design Chainage Km 29+030) (Length-29.030 Km) on Hybrid Annuity Mode in the State of Meghalaya** Project (the “**Project**”) on design, build, operate and transfer basis (the “**DBOT Annuity or Hybrid Annuity**”), and a copy of which is annexed hereto and marked as Annex-A to form part of this Agreement.
- (B) Senior Lenders have agreed to finance the Project in accordance with the terms and conditions set forth in the Financing Agreements.
- (C) Senior Lenders have requested the Authority to enter into this Substitution Agreement for securing their interests through assignment, transfer and substitution of the Concession to a Nominated Company in accordance with the provisions of this Agreement and the Concession Agreement.
- (D) In order to enable implementation of the Project including its financing, construction, operation and maintenance, the Authority has agreed and undertaken to transfer and assign the Concession to a Nominated Company in accordance with the terms and conditions set forth in this Agreement and the Concession Agreement.

**NOW, THEREFORE**, in consideration of the foregoing and the respective covenants and agreements set forth in this Agreement, the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound hereby, the Parties agree as follows:

## **1 DEFINITIONS AND INTERPRETATION**

### **1.1 Definitions**

In this Substitution Agreement, the following words and expressions shall, unless repugnant to the context or meaning thereof, have the meaning hereinafter respectively assigned to them: **“Agreement”** means this Substitution Agreement and any amendment thereto made in accordance with the provisions contained in this Agreement;

**“Financial Default”** means occurrence of a material breach of the terms and conditions of the Financing Agreements or a continuous default in Debt Service by the Concessionaire for a minimum period of 3 (three) months;

**“Lenders’ Representative”** means the person referred to as the Lenders’ Representative in the foregoing Recitals;

**“Nominated Company”** means a company, incorporated under the provisions of the Companies Act, 1956, including any re-enactment or amendment thereof, selected by the Lenders’ Representative, on behalf of Senior Lenders, and proposed to the Authority for assignment/transfer of the Concession as provided in this Agreement;

**“Notice of Financial Default”** shall have the meaning ascribed thereto in Clause 3.2.1; and

**“Parties”** means the parties to this Agreement collectively and **“Party”** shall mean any of the Parties to this Agreement individually.

### **1.2 Interpretation**

1.2.1 References to Lenders’ Representative shall, unless repugnant to the context or meaning thereof, mean references to the Lenders’ Representative, acting for and on behalf of Senior Lenders.

1.2.2 References to Clauses are, unless Stated otherwise, references to Clauses of this Agreement.

1.2.3 The words and expressions beginning with capital letters and defined in this Agreement shall have the meaning ascribed thereto herein, and the words and expressions used in this Agreement and not defined herein but defined in the Concession Agreement shall, unless repugnant to the context, have the meaning ascribed thereto in the Concession Agreement.

1.2.4 The rules of interpretation Stated in Clauses 1.2, 1.3 and 1.4 of the Concession Agreement shall apply, mutatis mutandis, to this Agreement.

## **2 ASSIGNMENT**

### **2.1 Assignment of rights and title**

The Concessionaire hereby agrees to assign the rights, title and interest in the Concession to, and in favor of, the Lenders’ Representative pursuant to and in accordance with the provisions of this Agreement and the Concession Agreement by way of security in respect of financing by the Senior Lenders under the Financing Agreements.

## **3 SUBSTITUTION OF THE CONCESSIONAIRE**

### **3.1 Rights of substitution**

3.1.1 Pursuant to the rights, title and interest assigned under Clause 2.1, the Lenders’ Representative shall be entitled to substitute the Concessionaire by a Nominated Company under and in accordance with the provisions of this Agreement and the Concession Agreement.

3.1.2 The Authority hereby agrees to substitute the Concessionaire by endorsement on the Concession Agreement in favor of the Nominated Company selected by the Lenders’ Representative in accordance

with this Agreement. For the avoidance of doubt, the Senior Lenders or the Lenders' Representative shall not be entitled to operate and maintain the Project as Concessionaire either individually or collectively.

### **3.2 Substitution upon occurrence of Financial Default**

- 3.2.1 Upon occurrence of a Financial Default, the Lenders' Representative may issue a notice to the Concessionaire (the "Notice of Financial Default") along with particulars thereof, and send a copy to the Authority for its information and record. A Notice of Financial Default under this Clause 3 shall be conclusive evidence of such Financial Default and it shall be final and binding upon the Concessionaire for the purposes of this Agreement.
- 3.2.2 Upon issue of a Notice of Financial Default hereunder, the Lenders' Representative may, without prejudice to any of its rights or remedies under this Agreement or the Financing Agreements, substitute the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement.
- 3.2.3 At any time after the Lenders' Representative has issued a Notice of Financial Default, it may by notice require the Authority to suspend all the rights of the Concessionaire and undertake the operation and maintenance of the Project in accordance with the provisions of Article 30 of the Concession Agreement, and upon receipt of such notice, the Authority shall undertake Suspension under and in accordance with the provisions of the Concession Agreement. The aforesaid Suspension shall be revoked upon substitution of the Concessionaire by a Nominated Company, and in the event such substitution is not completed within 180 (one hundred and eighty) days from the date of such Suspension, the Authority may terminate the Concession Agreement forthwith by issuing a Termination Notice in accordance with the provisions of the Concession Agreement; provided that upon written request from the Lenders' Representative and the Concessionaire, the Authority may extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days. For the avoidance of doubt, the Authority expressly agrees and undertakes to terminate the Concession Agreement forthwith, upon receipt of a written request from the Lenders' Representative at any time after 240 (two hundred and forty) days from the date of Suspension hereunder.

### **3.3 Substitution upon occurrence of Concessionaire Default**

- 3.3.1 Upon occurrence of a Concessionaire Default, the Authority shall by a notice inform the Lenders' Representative of its intention to issue a Termination Notice and grant 15 (fifteen) days' time to the Lenders' Representative to make a representation, stating the intention to substitute the Concessionaire by a Nominated Company.
- 3.3.2 In the event that the Lenders' Representative makes a representation to the Authority within the period of 15 (fifteen) days specified in Clause 3.3.1, stating that it intends to substitute the Concessionaire by a Nominated Company, the Lenders' Representative shall be entitled to undertake and complete the substitution of the Concessionaire by a Nominated Company in accordance with the provisions of this Agreement within a period of 180 (one hundred and eighty) days from the date of such representation, and the Authority shall either withhold Termination or undertake Suspension for the aforesaid period of 180 (one hundred and eighty) days; provided that upon written request from the Lenders' Representative and the Concessionaire, the Authority shall extend the aforesaid period of 180 (one hundred and eighty) days by a period not exceeding 90 (ninety) days; provided further that the Lenders' Representative may at any time withdraw its representation hereunder and upon such withdrawal, the Authority may terminate this Agreement in accordance with the provisions hereof.

### **3.4 Procedure for substitution**

- 3.4.1 The Authority and the Concessionaire hereby agree that on or after the date of Notice of Financial Default or the date of representation to the Authority under Clause 3.3.2, as the case may be, the Lenders' Representative may, without prejudice to any of the other rights or remedies of the Senior Lenders, invite, negotiate and procure offers, either by private negotiations or public auction or tenders

for the take over and transfer of the Project including the Concession to the Nominated Company upon such Nominated Company's assumption of the liabilities and obligations of the Concessionaire towards the Authority under the Concession Agreement and towards the Senior Lenders under the Financing Agreements.

- 3.4.2 To be eligible for substitution in place of the Concessionaire, the Nominated Company shall be required to fulfil the eligibility criteria that were laid down by the Authority for short listing the bidders for award of the Concession; provided that the Lenders' Representative may represent to the Authority that all or any of such criteria may be waived in the interest of the Project, and if the Authority determines that such waiver shall not have any material adverse effect on the Project, it may waive all or any of such eligibility criteria.
- 3.4.3 Upon selection of a Nominated Company, the Lenders' Representative shall request the Authority to:
- (a) Accede to transfer to the Nominated Company the right to construct, operate and maintain the Project in accordance with the provisions of the Concession Agreement;
  - (b) Endorse and transfer the Concession to the Nominated Company, on the same terms and conditions, for the residual Concession Period; and
  - (c) Enter into a Substitution Agreement with the Lenders' Representative and the Nominated Company on the same terms as are contained in this Agreement.
- 3.4.4 If the Authority has any objection to the transfer of Concession in favor of the Nominated Company in accordance with this Agreement, it shall within 15 (fifteen) days from the date of proposal made by the Lenders' Representative, give a reasoned order after hearing the Lenders' Representative. If no such objection is raised by the Authority, the Nominated Company shall be deemed to have been accepted. The Authority shall thereupon transfer and endorse the Concession within 15 (fifteen) days of its acceptance/deemed acceptance of the Nominated Company; provided that in the event of such objection by the Authority, the Lenders' Representative may propose another Nominated Company whereupon the procedure set forth in this Clause 3.4 shall be followed for substitution of such Nominated Company in place of the Concessionaire.
- 3.4.5 The transfer of Concession hereunder to a Nominated Company may, notwithstanding anything to the contrary in this Agreement and the Concession Agreement, be undertaken by transfer of no less than 75% (seventy five per cent) of the equity of the Concessionaire to the Nominated Company, and upon such transfer hereunder, the Concessionaire shall be deemed to be the Nominated Company under and in accordance with the provisions of this Agreement and the Concession Agreement.

### **3.5 Selection to be binding**

The decision of the Lenders' Representative and the Authority in selection of the Nominated Company shall be final and binding on the Concessionaire. The Concessionaire irrevocably agrees and waives any right to challenge the actions of the Lenders' Representative or the Senior Lenders or the Authority taken pursuant to this Agreement including the transfer/assignment of the Concession in favor of the Nominated Company. The Concessionaire agrees and confirms that it shall not have any right to seek revaluation of assets of the Project or the Concessionaire's shares. It is hereby acknowledged by the Parties that the rights of the Lenders' Representative are irrevocable and shall not be contested in any proceedings before any court or Authority and the Concessionaire shall have no right or remedy to prevent, obstruct or restrain the Authority or the Lenders' Representative from effecting or causing the transfer by substitution and endorsement of the Concession as requested by the Lenders' Representative.



## **4 PROJECT AGREEMENTS**

### **4.1 Substitution of Nominated Company in Project Agreements**

The Concessionaire shall ensure and procure that each Project Agreement contains provisions that entitle the Nominated Company to step into such Project Agreement, in its discretion, in place and substitution of the Concessionaire in the event of such Nominated Company's assumption of the liabilities and obligations of the Concessionaire under the Concession Agreement.

## **5 TERMINATION OF CONCESSION AGREEMENT**

### **5.1 Termination upon occurrence of Financial Default**

At any time after issue of a Notice of Financial Default, the Lenders' Representative may by a notice in writing require the Authority to terminate the Concession Agreement forthwith, and upon receipt of such notice, the Authority shall undertake Termination under and in accordance with the provisions of Article 31 of the Concession Agreement.

### **5.2 Termination when no Nominated Company is selected**

In the event that no Nominated Company acceptable to the Authority is selected and recommended by the Lenders' Representative within the period of 180 (one hundred and eighty) days or any extension thereof as set forth in Clause 3.3.2, the Authority may terminate the Concession Agreement forthwith in accordance with the provisions thereof.

### **5.3 Realization of Debt Due**

The Authority and the Concessionaire hereby acknowledge and agree that, without prejudice to their any other right or remedy, the Lenders' Representative is entitled to receive from the Concessionaire, without any further reference to or consent of the Concessionaire, the Debt Due upon Termination of the Concession Agreement. For realization of the Debt Due, the Lenders' Representative shall be entitled to make its claim from the Escrow Account in accordance with the provisions of the Concession Agreement and the Escrow Agreement.

## **6 DURATION OF THE AGREEMENT**

### **6.1 Duration of the Agreement**

This Agreement shall come into force from the date hereof and shall expire at the earliest to occur of the following events:

- (a) Termination of the Agreement; or
- (b) No sum remains to be advanced and no sum are outstanding to the Senior Lenders, under the Financing Agreements.

## **7 INDEMNITY**

### **7.1 General indemnity**

7.1.1 The Concessionaire will indemnify, defend and hold the Authority and the Lenders' Representative harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense of whatever kind and nature arising out of any breach by the Concessionaire of any of its obligations under this Agreement or on account of failure of the Concessionaire to comply with Applicable Laws and Applicable Permits.

7.1.2 The Authority will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Authority to fulfil any of its obligations under this Agreement, materially and adversely affecting

the performance of the Concessionaire's obligations under the Concession Agreement or this Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Authority, its officers, servants and agents.

- 7.1.3 The Lenders' Representative will indemnify, defend and hold the Concessionaire harmless against any and all proceedings, actions and third party claims for any loss, damage, cost and expense arising out of failure of the Lenders' Representative to fulfil its obligations under this Agreement, materially and adversely affecting the performance of the Concessionaire's obligations under the Concession Agreement, other than any loss, damage, cost and expense, arising out of acts done in discharge of their lawful functions by the Lenders' Representative, its officers, servants and agents.

## **7.2 Notice and contest of claims**

In the event that any Party hereto receives a claim from a third party in respect of which it is entitled to the benefit of an indemnity under Clause 7.1 or in respect of which it is entitled to reimbursement (the "Indemnified Party"), it shall notify the other Party responsible for indemnifying such claim hereunder (the "Indemnifying Party") within 15 (fifteen) days of receipt of the claim and shall not settle or pay the claim without the prior approval of the Indemnifying Party, such approval not to be unreasonably withheld or delayed. In the event that the Indemnifying Party wishes to contest or dispute the claim, it may conduct the proceedings in the name of the Indemnified Party and shall bear all costs involved in contesting the same. The Indemnified Party shall provide all cooperation and assistance in contesting any claim and shall sign all such writings and documents as the Indemnifying Party may reasonably require.

## **8 DISPUTE RESOLUTION**

### **8.1 Dispute resolution**

- 8.1.1 Any dispute, difference or claim arising out of or in connection with this Agreement which is not resolved amicably shall be decided by reference to arbitration to a Board of Arbitrators comprising one nominee each of the Authority, Concessionaire and the Lenders' Representative. Such arbitration shall be held in accordance with the Rules of Arbitration of the International Centre for Alternative Dispute Resolution, New Delhi (the "**Rules**") or such other rules as may be mutually agreed by the Parties, and shall be subject to provisions of the Arbitration and Conciliation Act, 1996.
- 8.1.2 The Arbitrators shall issue a reasoned award and such award shall be final and binding on the Parties. The place of arbitration shall be the capital of the State and the language of arbitration shall be English.

## **9 MISCELLANEOUS PROVISIONS**

### **9.1 Governing law and jurisdiction**

This Agreement shall be construed and interpreted in accordance with and governed by the laws of India, and the courts in the New Delhi shall have jurisdiction over all matters arising out of or relating to this Agreement.

### **9.2 Waiver of sovereign immunity**

The Authority unconditionally and irrevocably:

- (a) agrees that the execution, delivery and performance by it of this Agreement constitute commercial acts done and performed for commercial purpose;
- (b) agrees that, should any proceedings be brought against it or its assets, property or revenues in any jurisdiction in relation to this Agreement or any transaction contemplated by this Agreement, no immunity (whether by reason of sovereignty or otherwise) from such proceedings shall be claimed by or on behalf of the Authority with respect to its assets;

- (c) waives any right of immunity which it or its assets, property or revenues now has, may acquire in the future or which may be attributed to it in any jurisdiction; and
- (d) consents generally in respect of the enforcement of any judgment or award against it in any such proceedings to the giving of any relief or the issue of any process in any jurisdiction in connection with such proceedings (including the making, enforcement or execution against it or in respect of any assets, property or revenues whatsoever irrespective of their use or intended use of any order or judgment that may be made or given in connection therewith).

### **9.3 Priority of agreements**

In the event of any conflict between the Concession Agreement and this Agreement, the provisions contained in the Concession Agreement shall prevail over this Agreement.

### **9.4 Alteration of terms**

All additions, amendments, modifications and variations to this Agreement shall be effectual and binding only if in writing and signed by the duly authorized representatives of the Parties

### **9.5 Waiver**

9.5.1 Waiver by any Party of a default by another Party in the observance and performance of any provision of or obligations under this Agreement:

- (a) Shall not operate or be construed as a waiver of any other or subsequent default hereof or of other provisions of or obligations under this Agreement;
- (b) Shall not be effective unless it is in writing and executed by a duly authorized representative of the Party; and
- (c) Shall not affect the validity or enforceability of this Agreement in any manner.

9.5.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this Agreement or any obligation thereunder nor time or other indulgence granted by a Party to another Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right hereunder.

### **9.6 No third party beneficiaries**

This Agreement is solely for the benefit of the Parties and no other person or entity shall have any rights hereunder.

### **9.7 Survival**

#### **9.7.1 Termination of this Agreement:**

- (a) Shall not relieve the Parties of any obligations hereunder which expressly or by implication survive termination hereof; and
  - (b) except as otherwise provided in any provision of this Agreement expressly limiting the liability of either Party, shall not relieve either Party of any obligations or liabilities for loss or damage to the other Party arising out of or caused by acts or omissions of such Party prior to the effectiveness of such termination or arising out of such termination.
- 9.7.2 All obligations surviving the cancellation, expiration or termination of this Agreement shall only survive for a period of 3 (three) years following the date of such termination or expiry of this Agreement.

## 9.8 Severability

If for any reason whatever any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner, and the Parties will negotiate in good faith with a view to agreeing to one or more provisions which may be substituted for such invalid, unenforceable or illegal provisions, as nearly as is practicable to such invalid, illegal or unenforceable provision. Failure to agree upon any such provisions shall not be subject to dispute resolution under Clause 8 of this Agreement or otherwise.

## 9.9 Successors and assigns

This Agreement shall be binding on and shall inure to the benefit of the Parties and their respective successors and permitted assigns.

## 9.10 Notices

All notices or other communications to be given or made under this Agreement shall be in writing, shall either be delivered personally or sent by courier or registered post with an additional copy to be sent by facsimile or e-mail. The address for service of each Party, its facsimile number and e-mail address are set out under its name on the signing pages hereto. A notice shall be effective upon actual receipt thereof, save that where it is received after 5.30 (five thirty) p.m. on any day, or on a day that is a public holiday, the notice shall be deemed to be received on the first working day following the date of actual receipt. Without prejudice to the foregoing, a Party giving or making a notice or communication by facsimile or e-mail shall promptly deliver a copy thereof personally, or send it by courier or registered post to the addressee of such notice or communication. It is hereby agreed and acknowledged that any Party may by notice change the address to which such notices and communications to it are to be delivered or mailed. Such change shall be effective when all the Parties have notice of it.

## 9.11 Language

All notices, certificates, correspondence and proceedings under or in connection with this Agreement shall be in English.

## 9.12 Authorized representatives

Each of the Parties shall by notice in writing designate their respective authorized representatives through whom only all communications shall be made. A Party hereto shall be entitled to remove and/or substitute or make fresh appointment of such authorized representative by similar notice.

## 9.13 Original Document

This Agreement may be executed in three counterparts, each of which when executed and delivered shall constitute an original of this Agreement.

**IN WITNESS WHEREOF THE PARTIES HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN**

THE COMMON SEAL OF CONCESSIONAIRE has been affixed pursuant to the resolution passed by the Board of Directors of the Concessionaire at its meeting held on the.....day of the .....20.....here unto affixed in to the presence of.....the Director, who has signed these presents in token thereof,	SIGNED, SEALED AND DELIVERED For and behalf of THE AUTHORITY by:
---	--

.....Company Secretary /Authorized Officer who has countersigned the same in token thereof <sup>¶</sup> .	
(Signature) (Name) (Designation) (Address) (Fax No.) (e-mail address)	(Signature) (Name) (Designation) (Address) (Fax No.) (e-mail address)

**SIGNED, SEALED AND DELIVERED**

For and on behalf of

**SENIOR LENDERS** by the

Lenders' Representative:

(Signature)

(Name)

(Designation)

(Address)

(Fax No.)

(E-mail address)

In the presence of: 1.

2.

---

<sup>¶</sup>To be affixed in accordance with the articles of association of the Concessionaire and the resolution passed by its Board of Directors

## **SCHEDULE – S**

### **Dispute Resolution Board**

#### **Procedure for Dispute Resolution Board**

The parties to the Concession Agreement mutually agree as follows:

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

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

**Disputes Resolution Board's Rules and Procedures**

1. Except for providing the services required hereunder, the Board Members shall not give any advice to either party or to the Independent Engineer concerning conduct of the Works. The Board Members:
  - (a). Shall have no financial interest in any party to the Concession Agreement, or the Independent Engineer, or a financial interest in the Concession, except for payment for services on the Board.
  - (b). Shall have had no previous employment by, or financial ties to, any party to the Concession Agreement, or the Independent Engineer, except for fee based consulting services/advisers on other projects, and/or be Retired Government Officers (not connected in whole or part with the project), all of which must be disclosed in writing to both parties prior to appointment to the Board.
  - (c). Shall have disclosed in writing to both parties prior to appointment to the Board any and all recent or close professional or personal relationships with any director, officer, or employee of any party to the Concession Agreement, or the Independent Engineer, and any and all prior involvement in the project to which the Concession relates;
  - (d). Shall not, while Board member, be employed whether as a consultant or adviser or otherwise by either party to the Concession Agreement, or the Independent Engineer, except as a Board Member, without the prior consent of the parties and the other Board Members,
  - (e). Shall not, while a Board Member, engage in discussion or make any agreement with any party to the Concession Agreement, or with the Independent Engineer, regarding employment whether as a consultant or otherwise whether after the Concession is completed or after service as a Board Member is completed
  - (f). Shall remain and be impartial and independent of the parties and shall disclose in writing to the Authority, the Concessionaire and one another any fact or circumstance which might be such as to cause either the Authority or the Concessionaire to question the continued existence of the impartiality and independence required of Board Members; and
  - (g). Shall be fluent in the language of the Concession.
2. Except for its participation in the Board's activities as provided in the Concession Agreement and in this Agreement none of the Authority, the Concessionaire, and or the Independent Engineer shall solicit advice or consultation from the Board or the Board Members on matters dealing with the conduct of the Works.
3. The Concessionaire shall:
  - (a). Furnish to each Board member one copy of all documents which the Board may request including Concession Agreement, progress reports and other documents pertinent to the performance of the Concession Agreement.
  - (b). In cooperation with the Authority, coordinate the site visits of the Board, including conference facilities, and secretarial and copying service.



4. The Board shall begin its activities following the signing of a Board Member's Declaration of Acceptance by all three Board Members, and it shall terminate these activities as set forth below:
- (a). The Board shall terminate its regular activities when either (i) issuance of completion certificate and completion of punch list items or (ii) the parties have terminated the Concession and when, in either case, the Board has communicated to the parties and the Independent Engineer its decision on all disputes previously referred to it.
  - (b). Once the Board has terminated its regular activities as provided by the previous paragraph, the Board shall remain available to process any dispute referred to it by either party. In case of such a referral, Board Members shall receive payments as provided in paragraphs 7(a) (ii), (iii) and (iv).
5. Board Members shall not assign or subcontract any of their work under these Rules and Procedures.
6. The Board Members are Independent and not employees or agents of either the Authority or the Concessionaire.
7. Payments to the Board Members for their services shall be governed by the following provisions:
- (a). Each Board Member will receive payments as follows:
    - i. A retainer fee per calendar month as specified in the schedule of fee made part of this Schedule and its revision from time to time. This retainer fee shall be considered as payment in full for:
      - (A). Being available, on 7 days' notice, for all hearings, Site Visits, and other meetings of the Board.
      - (B). Being conversant with all project developments and maintaining relevant files.
      - (C). All offices and overhead expenses such as secretarial services, photocopying and office supplies (but not include telephone calls, faxes and telexes) incurred in connection with the duties as a Board Member
    - ii. A daily fee as specified in the schedule of fee in respect of fee for site visit & meeting, fee for meeting/ hearing not at site and extra charges for days (max. of 02 days for travel on each occasion) other than hearing/meeting days.
    - iii. Expenses, in addition to the above, all reasonable and necessary travel expenses (including economy class air fare, subsistence, and other direct travel expenses) Receipts for all expenses in excess of Rs. 2000/- (Rupees Two Thousand only) shall be provided.
    - iv. Reimbursement of any taxes that may be levied on payments made to the Board Member pursuant to this paragraph 7.
  - (b). The retainer fee and other fees shall remain fixed for the period of each Board Member's term until revised by NHIDCL.
  - (c). Phasing out of monthly retainer fee. Beginning with the next month after the completion certificate (or, if there are more than one, the one issued last) has been issued, the Board members shall receive only one-third of the monthly retainer fee till next one year. Beginning with the next month after the

Board has terminated its regular activities pursuant to paragraph 4(a) above, the Board members shall no longer receive any monthly retainer fee.

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

#### 8. Board Site Visits:

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

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

- (a) If either party objects to any action or inaction of the other party or the Independent Engineer, the objecting party may file a written Notice of Dispute to the other party with a copy to the Independent Engineer stating that it is given pursuant to the Agreement and State clearly and in details the basis of the dispute.
- (b) The party receiving the Notice of Dispute will consider it and respond to it in writing within 14 days after receipt.
- (C) This response shall be final and conclusive on the subject, unless a written appeal to the response is filed with the responding party within 10 days after receiving the response and call upon Independent Engineer to mediate and assist the parties in arriving an amicable settlement thereof. Both parties are encouraged to pursue the matter further to attempt to settle the dispute.
- (d) If the Independent Engineer receiving the Notice of Dispute fails to provide a written response within 14 days after receipt of such Notice or failing mediation by Independent Engineer, either party may require such dispute to be referred to the Board, either party may refer the dispute to the Board by written Request to the Board. The Request for decision shall State clearly and in full detail the specific issues of the dispute (s) to be considered by Board and shall be addressed to the Chairman of the Board, with copies to the other Board Members, the other party, and the Independent Engineer, and it shall State that it is made pursuant to this Agreement.
- (e) When a dispute is referred to the Board, and the Board is satisfied that the dispute requires the Board's assistance, the Board decide when to conduct a hearing on the dispute. The Board may request that written documentation and arguments from both parties be submitted to each Board Member before the hearing begins. The parties shall submit insofar as possible agreed Statements of the relevant facts.

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

10. Conduct of Hearings:

- (a) Normally hearings will be conducted at the Site, but any location that would be more convenient and still provide all required facilities and access to necessary documentation may be utilized by the Board. Private session of the Board may be held at any cost effective location convenient to the Board. Video recordings of all hearings shall invariably be made.
- (b) The Authority, the Independent Engineer and the Concessionaire shall be given opportunity to have representatives at all hearings. Parties should restrain to bring any Advocate/Law Firm during DRB hearings.
- (c) During the hearings, no Board Member shall express any opinion concerning the merit of the respective arguments of the parties.
- (d) After the hearings are concluded, the Board shall meet privately to formulate its decision. The private meeting (s) of the Board shall not exceed 3 sittings. All Board deliberations shall be conducted in private, with all Members' individual views kept strictly confidential. The Board's decisions, together with an explanation of its reasoning shall be submitted in writing to both parties and to the Independent Engineer. The decision shall be based on the pertinent Concession provisions, applicable laws and regulations and the facts and circumstances involved in the dispute.
- (e) The Board shall make every effort to reach a unanimous decision. If this proves impossible the majority shall decide and the dissenting Member may prepare a written minority report together with an explanation of its reasoning for submission to both parties and to the Independent Engineer.

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

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

## **“BOARD MEMBER’S DECLARATION OF ACCEPTANCE”**

### **WHEREAS**

- (a). A Concession Agreement (the **Concession**) for the \_\_\_\_\_ project [fill in the name of project] has been signed on \_\_\_\_\_ [fill in date] between \_\_\_\_\_ [name of Authority] and \_\_\_\_\_ [name of Concessionaire] (the Concessionaire).;
- (b). The provisions of Agreement and Dispute Resolution Board’s rules and procedure provided for establishment and operation of Dispute Resolution Board (DRB).
- (c). The undersigned has been selected to serve as a Board Member on said Board;
- NOW THEREFORE, the undersigned Board Member hereby declares as follows:**

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

### **BOARD MEMBER**

\_\_\_\_\_

\_\_\_\_\_ (insert name of Board Member)

Date: \_\_\_\_\_

\_\_\_\_\_

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

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

<b>S. No.</b>	<b>PARTICULAR</b>	<b>AMOUNT PAYABLE</b>
1.	Retainer-ship fee, secretarial assistance and incidental charges (telephone, fax, postage etc.)	Rs. 50,000/- per month for one package Rs.25,000 /- per month for 2nd package, Rs. 15,000/- per month for 3rd Package and Rs. 10,000/- per month for 4th, 5th & 6th package (maximum of Rs. 1,20,000/- per month)
2. (i)	Fee for site visit or meetings at site	Rs. 25000/- per day maximum to Rs. 50,000/- irrespective to number of days of stay at site.
(ii)	Fee for meetings/hearings not at site	Rs. 10,000/- per day
3.	Traveling expenses	Economy class by air, AC first class by train and AC taxi/own car by road (mileage allowance @ Rs. 24/- per km for travel by taxi/own car)
4.	Lodging & Boarding	Rs. 15,000/- per day (Metro Cities); or Rs. 10,000/- per day (in other cities); or Rs. 5,000/- per day (own arrangement)
5.	Extra charges for days other than hearing/ meeting days (travel days maximum of 2 days on each occasion)	Rs. 5,000 per day/-
6.	Local conveyance	Rs. 2,000 per day/-

**Notes:**

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