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9. PROJECT PROPOSALS

9.1 GENERAL

The proposed project corridor is widening of existing 2-lane stretch of NH-37 and NH-8 to 4-lane with service roads in the state of Assam. Cross Sections have been developed based on existing section and Geometry of the project corridor. Details of proposed cross sections are provided below:

9.2 LIST OF TYPICAL CROSS SECTION

Table 9-1: Typical Cross Sections

S. No	Description	TCS No.
1	4 Lane Divided Carriageway with Flushed Median (Bypass)	I
2	4 Lane Divided Carriageway for Approaches To VUP With Slip Roads on Both Sides (Bypass)	II
3	4 Lane Divided Carriageway with Eccentric Widening (RHS)	III
4	4 Lane Divided Carriageway with Eccentric Widening (LHS)	IV
5	4 Lane Divided Carriageway with Service Road on Both Sides (Existing Road)	V
6	4 Lane Divided Carriageway with Service Road on Both Sides (LHS Widening)	VA
7	4 Lane Divided Carriageway with Service Road on Both Sides (RHS Widening)	VB
8	4 Lane Divided Carriageway with Service Road on Both Sides (Re Construction)	VC
9	4 Lane Divided Carriageway for Approaches To VUP With Slip Roads on Both Sides (Existing Road)	VI
10	Cross Section of Bridge/ROB At Deck Level – With Footpath for 4-Lane Divided Highway(4-Lane Bridge)	VII
11	Cross Section of Structure At Deck Level - Without Footpath for 4 - Lane Divided Highway (4-Lane Bridge)	VIII
12	Cross Section of Structure At Deck Level - With Footpath for Slip/Service road For 4 - Lane Divided Highway (4-Lane Bridge)	IX
13	Cross Section of Structure At Deck Level - Without Footpath for Slip/Service Road For 4 - Lane Divided Highway (4-Lane Bridge)	X

9.3 TYPICAL CROSS SECTIONS

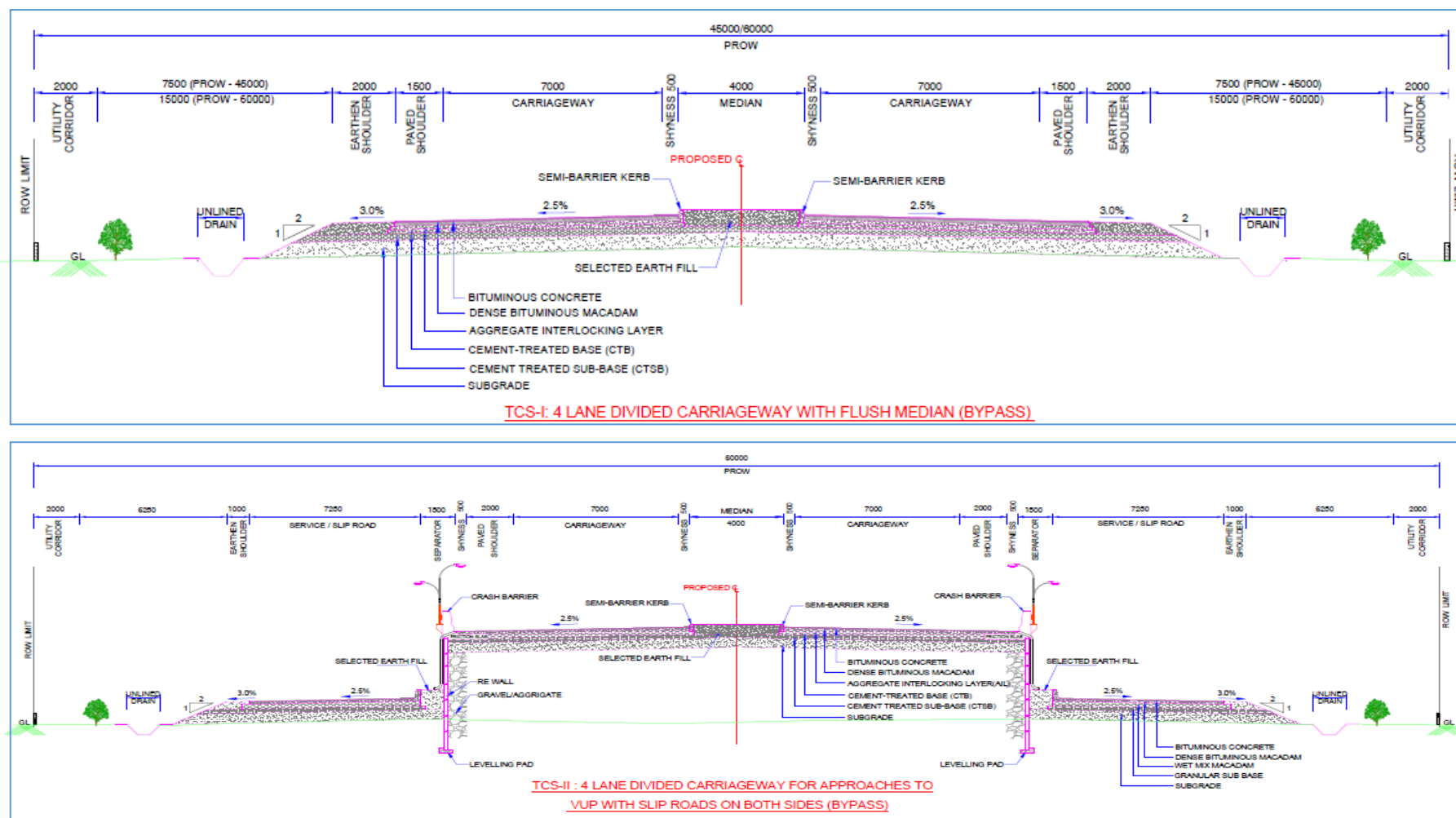


Figure 9-1: TCS-I and TCS-II

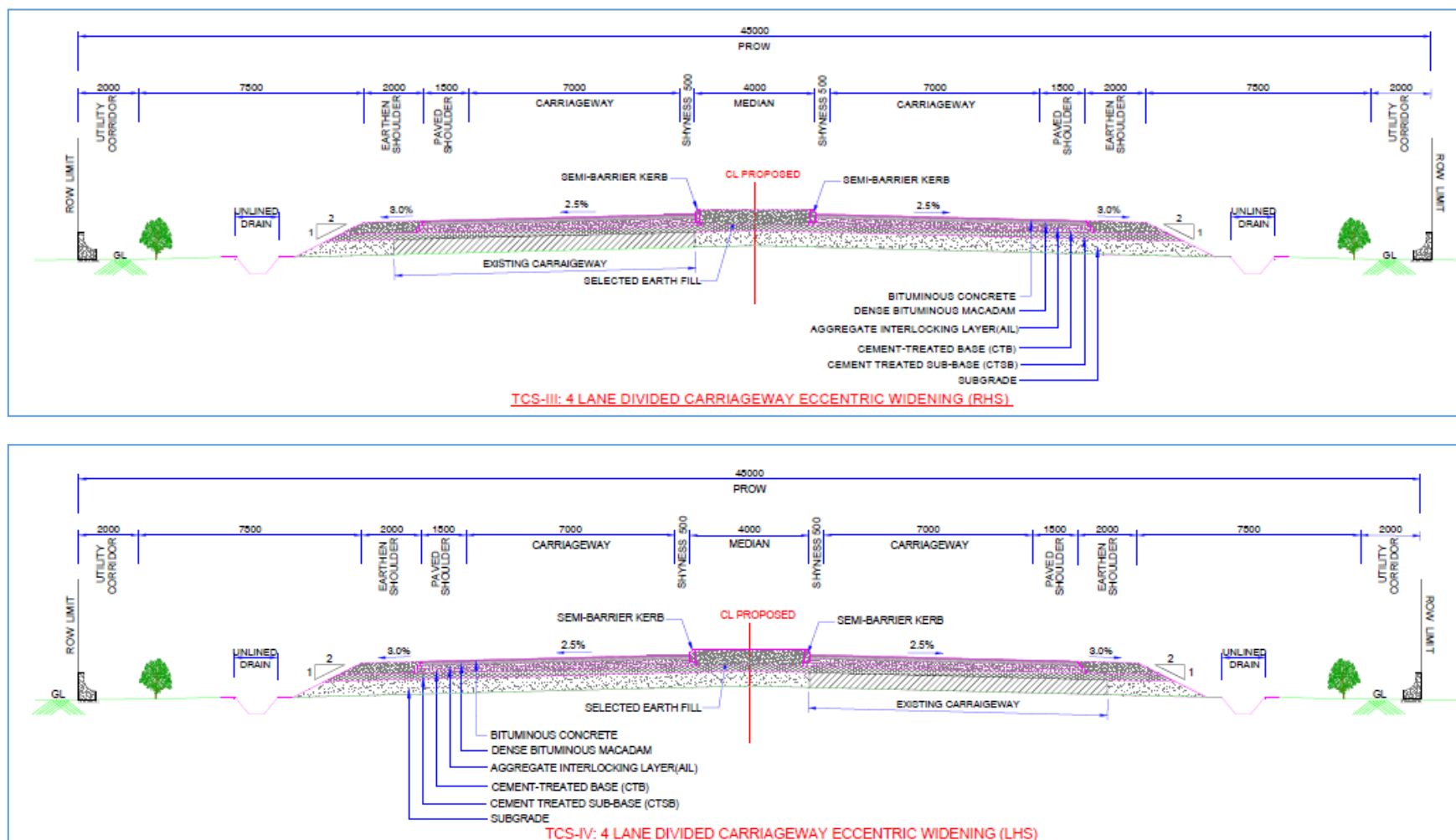


Figure 9-2: TCS-III and TCS-IV

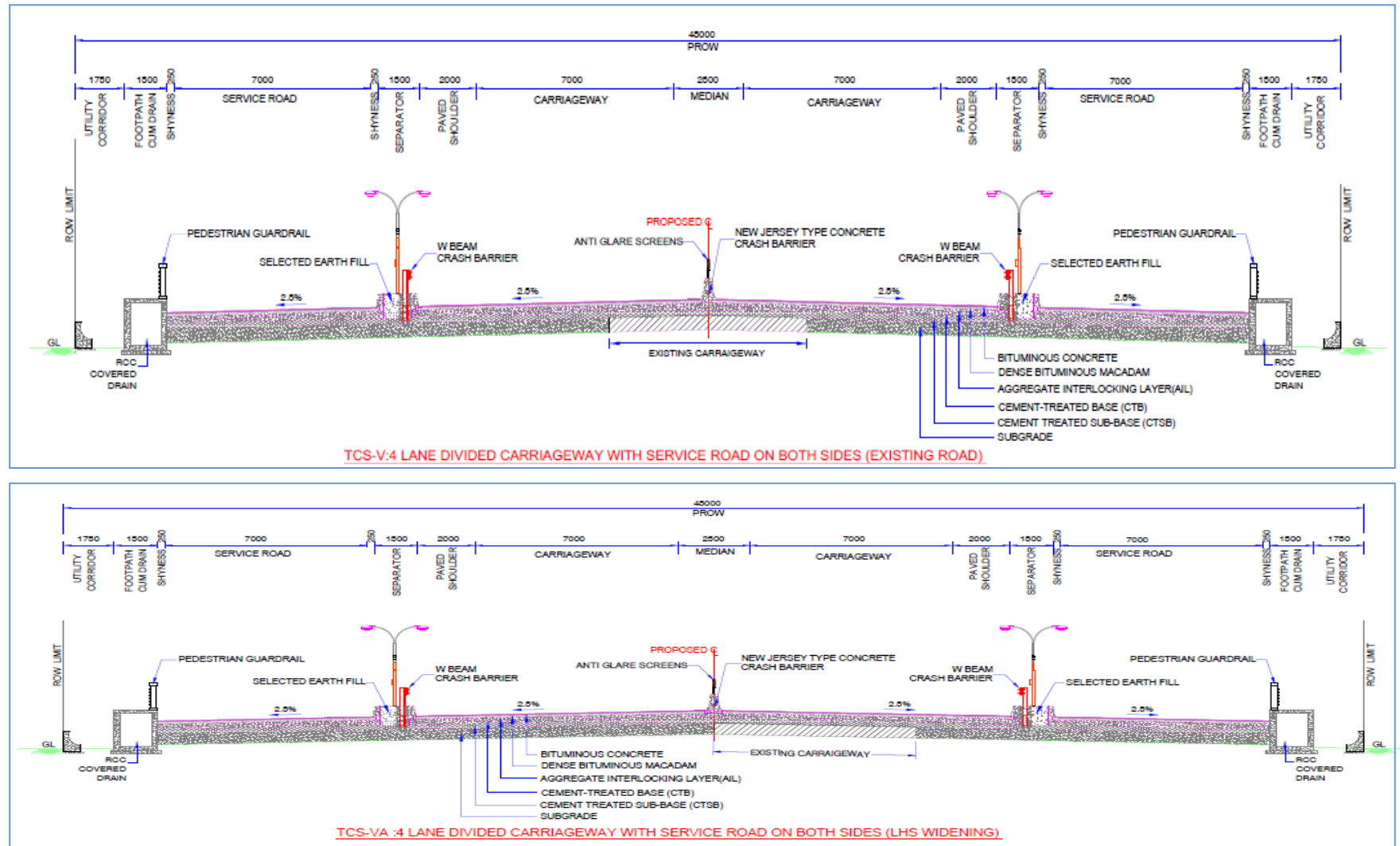


Figure 9-3: TCS-V and TCS-VA

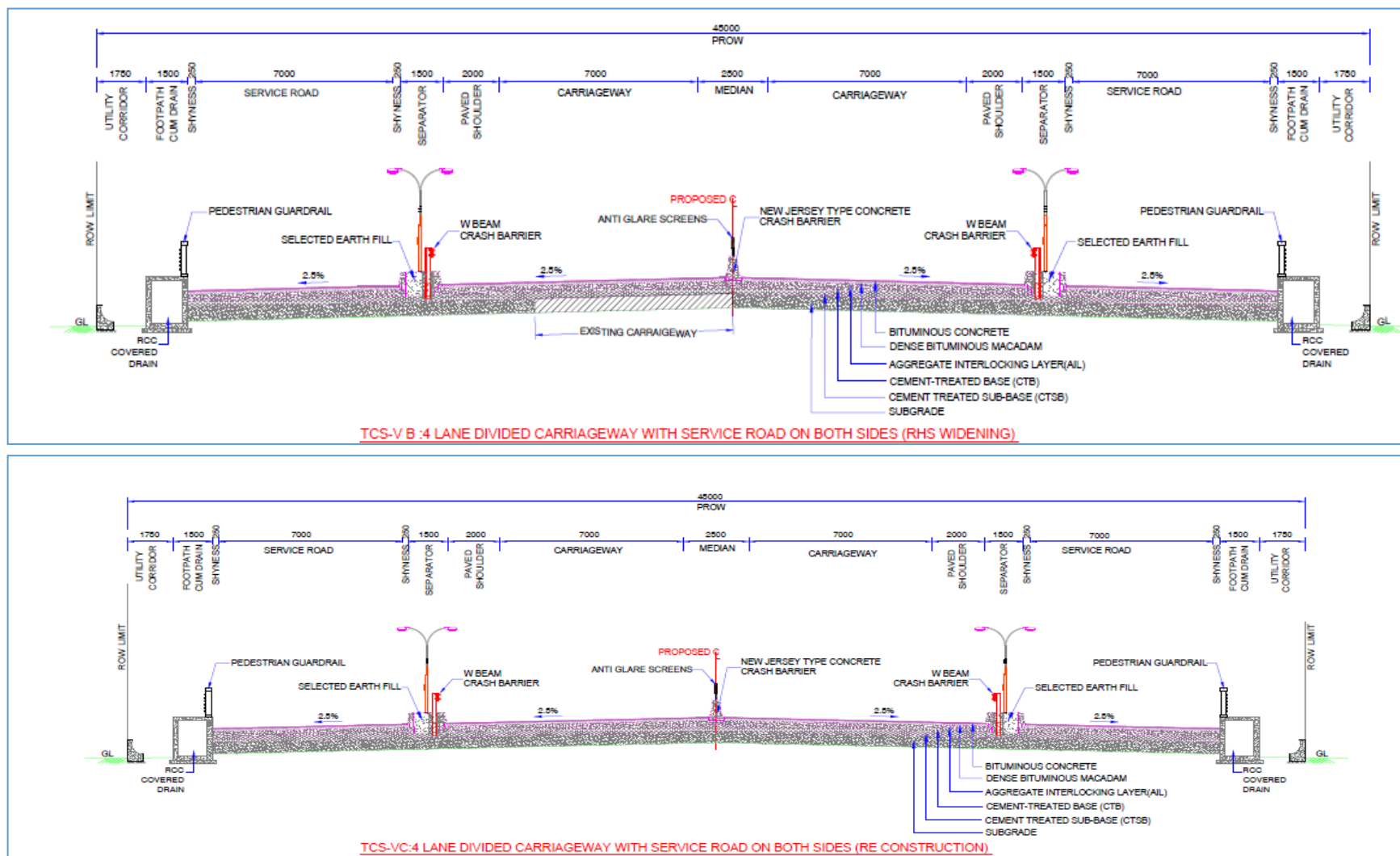


Figure 9-4: TCS-VB and TCS-VC

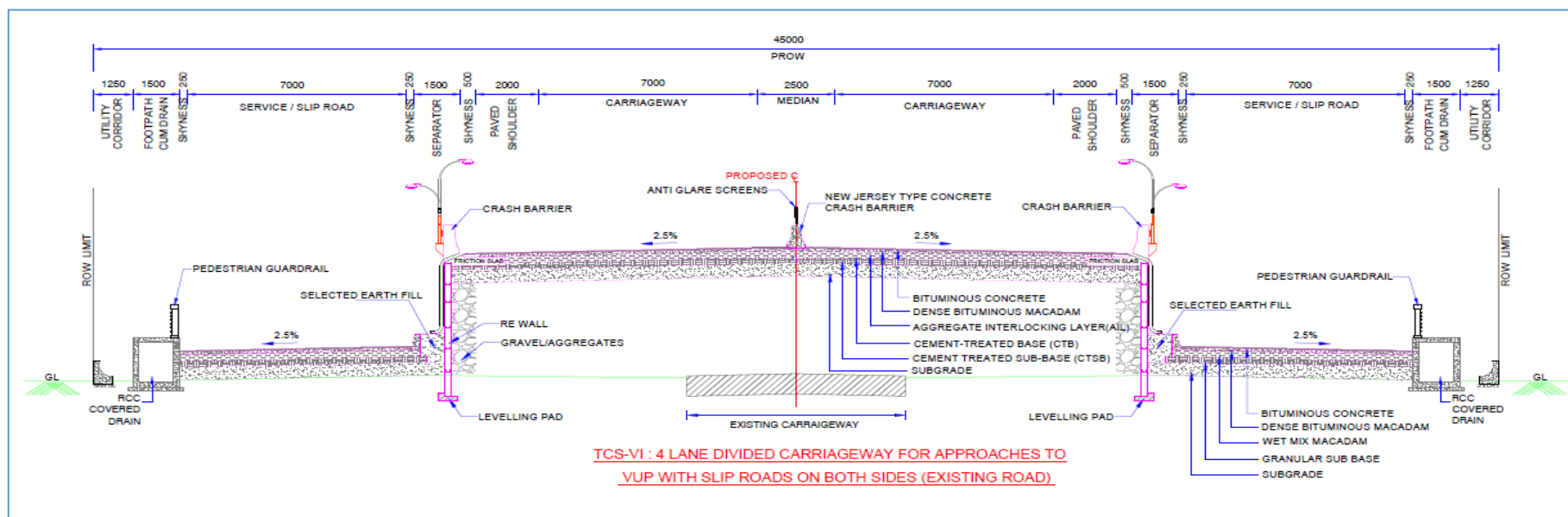
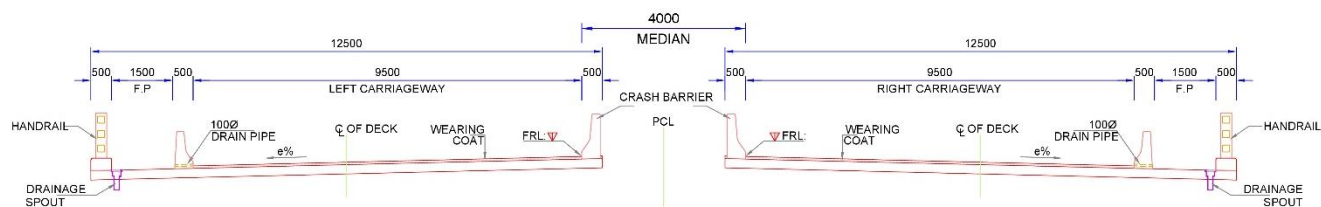
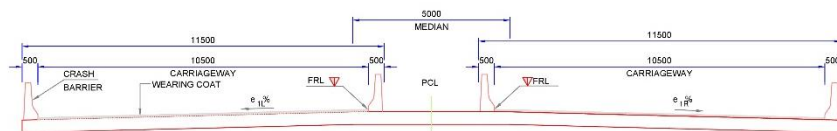


Figure 9-5: TCS-VI



**TCS-VII CROSS SECTION OF BRIDGE / ROB AT DECK LEVEL - WITH FOOTPATH
FOR 4 - LANE DIVIDED HIGHWAY (4-LANE BRIDGE)**



**TCS-VIII CROSS SECTION OF STRUCTURE AT DECK LEVEL - WITHOUT FOOTPATH
FOR 4 - LANE DIVIDED HIGHWAY (4-LANE BRIDGE)**

Figure 9-6: TCS-VII and TCS-VIII

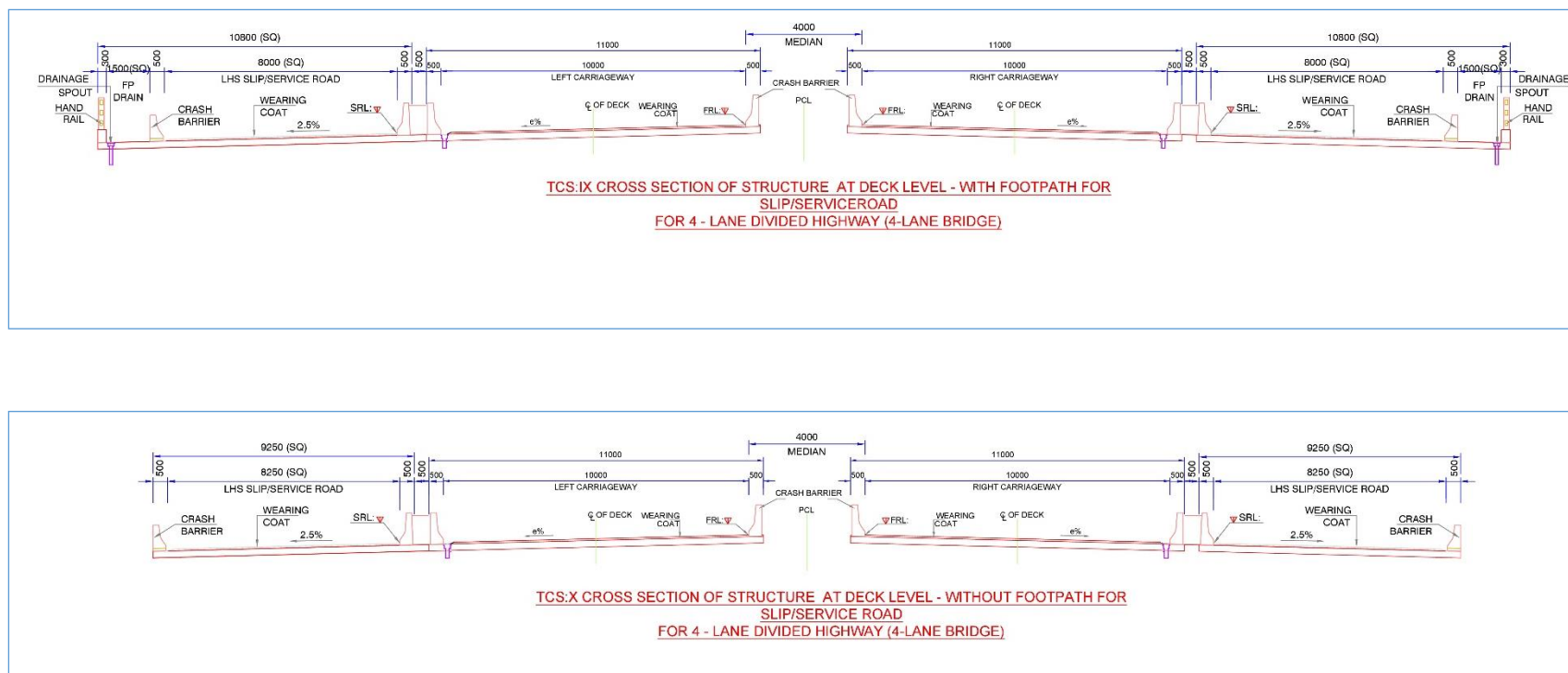


Figure 9-7: TCS-IX and TCS-X


9.4 TYPICAL CROSS SECTION SCHEDULE

The project stretch under study has multi-dimensional facets in terms of geometry, pavement condition, existing utilities, religious structures, etc. and considering all these aspects the section-wise policy is adopted based on the initial investigations. The applicable typical cross-sections along the project corridor are summarized in Table below:

9.4.1 Typical cross section schedules

Table 9-2: Applicable Typical Cross Section Schedules

Sl No.	Chainage (km)		Length(km)	TCS Type
	From	To		
1	62.800	63.150	0.350	VI
2	63.150	68.180	5.030	I
3	68.180	69.800	1.620	II
4	69.800	73.760	3.960	I
5	73.760	74.750	0.990	II
6	74.750	77.120	2.370	I
7	77.120	77.580	0.460	VA
8	77.580	78.700	1.120	VI
9	78.700	80.100	1.400	VA
10	80.100	80.900	0.800	VB
11	80.900	81.550	0.650	VA
12	81.550	83.600	2.050	I
13	83.600	84.500	0.900	VI
14	84.500	85.070	0.570	III
15	85.070	85.550	0.480	I
16	85.550	85.830	0.280	IV
17	85.830	86.110	0.280	I
18	86.110	87.030	0.920	II
19	87.030	87.600	0.570	I
20	87.600	87.700	0.100	VC

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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9.5 AT GRADE INTERSECTIONS

a) Minor Junctions

Sr. No.	Design Chainage (Km)	Junction Type	Leads to		Median Opening	Category of Cross Road	Carriageway width of crossroad	Length of crossroad to be developed		Remarks
			LHS	RHS				LHS	RHS	
1	77.433 [#]	+	Nayagram	Kanaibazar	No	VR	4.0	50.0	50.0	Connected to Slip/Service Road
2	78.187 [#]	+	Singhariah	Jamirala	No	VR	4.0	50.0	50.0	
3	80.748 [#]	+	Nalibari	Rajbari	No	VR	4.0	50.0	50.0	
4	86.192 [#]	T	-	Parugaon	No	VR	7.0	-	50.0	

9.6 EXISTING/PROPOSED STRUCTURES

9.6.1 Details of ROB's

There are 2 ROB's, all along the project stretch of package-V. Details of existing/proposed ROB's and recommendations are provided in table below:


Table 9-3: List of ROB's

S. No	Design Chainage (Km)	Package	Existing Span Arrangement	Proposed Span Arrangement (m)	TCS Type	Recommendation
1	63.391	V	-	1 x 25 + 1 x 37.280 + 1 x 25	VII	New Construction
2	73.001		-	1 x 25 + 1 x 37.280 + 1 x 25	VII	New Construction

9.6.2 Details of Major Bridges

All along the project stretch of Section-II there are 3 major bridges. Details of existing/proposed Major bridges are provided in table below:

Table 9-4: list of Major Bridges

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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S. No	Design Chainage (Km)	Package	Existing Span Arrangement(m)	TCS Type	Proposed Span Arrangement(m)	Recommendation
1	85.640	V	3 x 47.3	VII	3 x 47.3	R & W

9.6.3 Details of Minor Bridges

A total of 19 existing/proposed minor bridges are present along the project corridor of package-V in section-II. Proposals for the minor bridges are provided in Table 9-5

Table 9-5: List of Minor Bridges

S. No	Design Chainage (Km)	Package	Existing Span Arrangement(m)	TCS Type	Proposed Span (m)	Recommendation	Remarks
1	64.560	V	-	VIII	1 x 15	New Construction	MIB cum UP
2	65.342		-	VIII	1 x 20.0	New Construction	MIB
3	67.983		-	VIII	1 x 20.0	New Construction	MIB - Gas Pipe Line
4	68.395			VIII	1 x 8 x 3.0	New Construction	Box MIB
5	69.545		-	X	2 x 15	New Construction	MIB
6	70.149		-	VIII	1 x 20.0	New Construction	MIB
7	70.775		-	VIII	1 x 24.0	New Construction	MIB
8	72.284		-	VIII	2 x 20.0	New Construction	MIB cum VUP
9	73.624		-	VIII	1 x 20.0	New Construction	MIB
10	76.082		-	VIII	2 x 25	New Construction	MIB
11	77.075		-	VIII	1 x 20.0	New Construction	MIB
12	79.312		3 x 5.0	IX	3 x 5.0	R & W	Box MIB
13	79.873		4 x 4.0	IX	4 x 4.0	R & W	Box MIB
14	80.166		5 x 3.0	IX	5 x 3.0	R & W	Box MIB
15	81.393		3 x 3.0	IX	3 x 3.0	R & W	Box MIB
16	81.865		2 x 3.0	VIII	2 x 3.0	D & R	Box MIB

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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S. No	Design Chainage (Km)	Package	Existing Span Arrangement(m)	TCS Type	Proposed Span (m)	Recommendation	Remarks
17	83.060		4 x 3.25	VIII	4 x 3.25	D & R	Box MIB
18	84.365		2 x 6.0	X	1 x 12.0	D & R	Box MIB
19	85.320		-	VIII	1 x 20.0	New Construction	MIB - Gas Pipe Line

9.6.4 Details of Grade Separator Structures

Underpasses are provided at locations where roads such as National Highways, State Highways & Major District Roads etc. are intersected with project corridor and locations where movement of local traffic is observed. List of Existing & Proposed Grade Separator Structures are provided below:

a) Vehicular Under Passes (Existing):

There is no existing VUPs along proposed alignment in section-II

b) Vehicular Under Passes (VUP's New Proposals):

Table 9-6: List of VUP's

S. No	Design Chainage (Km)	Package	Proposed Type	Proposed Span Arrangement(m)	TCS Type
1	63.147	V	VUP	1 x 20.0	New Construction
2	69.016		VUP	1 x 20.0	New Construction
3	74.247		VUP	1 x 20.0	New Construction
4	78.116		VUP	1 x 30.0	New Construction
5	84.111		VUP	1 x 30.0	New Construction
6	86.545		VUP	1 x 20.0	New Construction

b) Light Vehicular Under Passes (LVUP's New Proposals):


	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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Table 9-7: List of LVUP's

S. No	Design Chainage (Km)	Package	Proposed Type	Proposed Span Arrangement(m)	Recommendation
1	63.824	V	LVUP	1 x 12.0	New Construction
2	65.090		LVUP	1 x 12.0	New Construction
3	66.215		LVUP Cum Culvert	1 x 20.0	New Construction
4	67.540		LVUP cum Bridge	1 x 20.0	New Construction
5	69.596		LVUP	1 x 12.0	New Construction
6	70.118		LVUP	1 x 12.0	New Construction
7	71.252		LVUP	1 x 12.0	New Construction
8	75.336		LVUP	1 x 12.0	New Construction
9	82.021		LVUP	1 x 12.0	New Construction
10	83.024		LVUP	1 x 12.0	New Construction

c) Box Structures (New Proposals):

Table 9-8: List of Box Structures

S. No	Design Chainage (Km)	Package	Proposed Type	Proposed Span Arrangement(m)	Recommendation
1	65.526	V	Box UP	1 x 4.0	New Construction
2	67.002		Box UP	1 x 4.0	New Construction
3	72.120		Box UP	1 x 4.0	New Construction
4	75.720		Box UP	1 x 4.0	New Construction

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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5	77.118		Box UP	1 x 4.0	New Construction
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9.6.5 Details of Proposed Culverts

(a) Box Culverts:


Details of the exiting Box Culverts along the project corridor are provided as below:

Table 9-9: List of Box Culverts

S. No	Design Chainage (Km)	Package	Existing Type	Existing Span Arrangement (m)	Proposed Type	Proposed Span Arrangement(m)	Recommendation
1	63.125	V	-	-	BC	1 x 2.0	New Construction
2	63.588		-	-	BC	1 x 2.0	New Construction
3	63.695		-	-	BC	1 x 2.0	New Construction
4	64.056		-	-	BC	1 x 2.0	New Construction
5	64.160		-	-	BC	1 x 2.0	New Construction
6	64.833		-	-	BC	1 x 2.0	New Construction
7	65.175		-	-	BC	1 x 2.0	New Construction
8	65.890		-	-	BC	1 x 2.0	New Construction
9	66.400		-	-	BC	1 x 2.0	New Construction
10	66.680		-	-	BC	1 x 5 x 3.0	New Construction
11	66.840		-	-	BC	1 x 2.0	New Construction
12	67.160		-	-	BC	1 x 2.0	New Construction
13	67.838		-	-	BC	1 x 5 x 5.0	New Construction
14	68.195		-	-	BC	1 x 2.0	New Construction

S. No	Design Chainage (Km)	Package	Existing Type	Existing Span Arrangement (m)	Proposed Type	Proposed Span Arrangement(m)	Recommendation
15	68.670		-	-	BC	1 x 2.0	New Construction
16	68.820		-	-	BC	1 x 2.0	New Construction
17	69.270		-	-	BC	1 x 2.0	New Construction
18	69.846		-	-	BC	1 x 2.0	New Construction
19	70.375		-	-	BC	1 x 2.0	New Construction
20	70.990		-	-	BC	1 x 2.0	New Construction
21	71.102		-	-	BC	1 x 2.0	New Construction
22	71.530		-	-	BC	1 x 2.0	New Construction
23	71.818		-	-	BC	1 x 2.0	New Construction
24	72.082		-	-	BC	1 x 2 x 2.0	New Construction
25	72.562		-	-	BC	1 x 2.0	New Construction
26	72.812		-	-	BC	1 x 2.0	New Construction
27	73.222	V	-	-	BC	1 x 2.0	New Construction
28	73.520		-	-	BC	1 x 3 x 2.0	New Construction
29	73.840		-	-	BC	1 x 2.0	New Construction
30	74.012		-	-	BC	1 x 2 x 2.0	New Construction
31	74.530		-	-	BC	1 x 2.0	New Construction
32	74.784		-	-	BC	1 x 2.0	New Construction
33	75.058		-	-	BC	1 x 2.0	New Construction

S. No	Design Chainage (Km)	Package	Existing Type	Existing Span Arrangement (m)	Proposed Type	Proposed Span Arrangement(m)	Recommendation
34	75.539		-	-	BC	1 x 2.0	New Construction
35	75.910		-	-	BC	1 x 2.0	New Construction
36	76.320		-	-	BC	1 x 2.0	New Construction
37	76.531		-	-	BC	1 x 4 x 3.0	New Construction
38	76.870		-	-	BC	1 x 2.0	New Construction
39	78.071		BC	1 x 3.0	BC	1 x 3.0	D & R
40	78.370	V	BC	2 x 2.0	BC	2 x 2.0	D & R
41	78.954		BC	1 x 3.0	BC	1 x 3.0	R & W
42	80.495		BC	1 x 4.0	BC	1 x 4.0	R & W
43	80.907		BC	1 x 4.0	BC	1 x 4.0	R & W
44	82.847		BC	1 x 2.0	BC	1 x 2 x 2.0	D & R
45	83.892		BC	1 x 3.0	BC	1 x 3 x 3.0	D & R
46	84.027		BC	1 x 4.0	BC	1 x 4 x 3.0	D & R
47	84.685		BC	1 x 5	BC	1 x 5	R & W
48	86.294		BC	1 x 2.0	BC	1 x 2.0	D & R
49	86.513		-	-	BC	1 x 3 x 2.0	New Construction
50	86.730		-	-	BC	1 x 2.0	New Construction
51	87.155		-	-	BC	1 x 2.0	New Construction
52	87.469		-	-	BC	1 x 2.0	New Construction

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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(b) Pipe Culverts:

Table 9-10: Details of proposals for Pipe Culverts


S. No	Design Chainage (km)	Package	Existing Type	Existing Span Arrangement(m)	Proposed Type	Proposed Span Arrangement(m)	Recommendation
1	77.523	V	HPC	1 x 1.20	HPC	1 x 1.20	R & W
2	79.193		HPC	3 x 1.20	HPC	3 x 1.2	R & W
3	79.646	V	HPC	2 x 1.20	HPC	2 x 1.20	R & W
4	80.293		HPC	3 x 1.20	HPC	3 x 1.20	R & W
5	80.693		HPC	3 x 1.20	HPC	3 x 1.2	R & W
6	81.137		HPC	3 x 1.20	HPC	2 x 1.20	R & W
7	81.657		HPC	2 x 1.20	HPC	2 x 1.20	R & W
8	82.177		HPC	2 x 1.20	HPC	2 x 1.20	R & W
9	82.565		HPC	2 x 1.20	HPC	2 x 1.20	R & W
10	83.262		HPC	2 x 1.20	HPC	2 x 1.20	R & W
11	86.008		HPC	2 x 1.20	HPC	2 x 1.20	R & W

9.7 SUMMARY OF STRUCTURES

Summary of Existing/Proposed Structures along the project corridor are provided below:

Table 9-11: Summary of Existing/Proposed Structures

S. No	Type of Structure	Existing No's	Proposed No's	Total
1	Box Culvert	10	42	52
2	Box Structure	0	5	5
3	LVUP	0	10	10
4	VUP	0	6	6
5	MIB	7	12	19
6	MJB	1	0	1
7	ROB	0	2	2
8	Pipe Culverts	11	0	11

	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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S. No	Type of Structure	Existing No's	Proposed No's	Total
9	Slab Culverts	0	0	0
Total		29	77	106

*_Existing here represents the number of existing structures in our proposed alignment that needs to be widened or reconstructed

9.8 SLIP ROADS & SERVICE ROADS

Slip roads and service roads were proposed at following locations to move the local traffic along the proposed highway.

Table 9-12: Service Road Locations

S. No	Design Chainage (Km.)		Package	Length (kms)	Width of carriageway(m)	TCS	Remarks
	From	To					
1	77.120	77.580	V	0.460	7.50	TCS-VA	BHS
2	78.700	80.100		1.400	7.50	TCS-VA	BHS
3	80.100	80.900		0.800	7.50	TCS-VB	BHS
4	80.900	81.550		0.650	7.50	TCS-VA	BHS
5	87.600	87.700		0.100	7.50	TCS-VC	BHS

Table 9-13: Slip Road Locations

S. No	Design Chainage (Km.)		Package	Design Length (kms)	Width of carriageway	TCS	Remarks
	From	To					
1	62.800	63.150	V	0.350	7.50	TCS-VI	BHS
2	68.180	69.800		1.620	7.250	TCS-II	BHS
3	73.760	74.750		0.990	7.250	TCS-II	BHS
4	77.580	78.700		1.120	7.50	TCS-VI	BHS
5	83.600	84.500		0.900	7.250	TCS-II	BHS
6	86.110	87.030		0.920	7.250	TCS-II	BHS

9.9 REALIGNMENTS

Realignments were proposed at the following locations where the existing road has substandard curves.

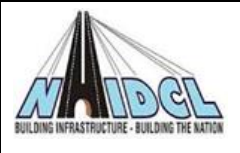
	Consultancy services for preparation of DPR and Pre-Construction services from (i) Silchar ISBT (Start point of Silchar Bypass) to junction of NH-37 & NH-6 at Dhaleshwari, (ii) End of proposed Badarpur bypass to Churaibari (Assam-Tripura border), (iii) Spur from NH-8 near Karimganj to Sutarkandi (Package-V)	PROJECT PROPOSALS
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Table 9-14: Realignment Locations

S. No	Design Chainage (Km.)		Package	Design Length (km)	Remarks
	From	To			
1	85.070	85.550	V	0.480	Realigned as per site feasibility
2	85.830	86.110		0.280	Slightly realigned
3	86.110	87.600		1.490	Realigned as per site feasibility

9.10 BYPASSES

Bypasses were proposed at following location where existing road is passing through built-up area.

Table 9-15: Bypasses Locations

S. No	Design Chainage (Km.)		Package	Design Length (kms)	Remarks
	From	To			
1	63.150	77.120	V	13.970	Nilambazar Bypass

9.11 TOLL PLAZAS

Toll Plazas are proposed in package-V

Table 9-16: Toll Plaza Location

S. No	Package	Design chainage (Km)	Remarks
1	V	84.855	4+4 Toll lanes

9.12 BUS-BAYS AND BUS SHELTERS

Bus bays/shelters are proposed at built up areas. The following are the proposed bus bays/shelters.

Table 9-17: Location of Bus-Bays

S. No	Design chainage LHS (Km)	Design chainage RHS (Km)	Package	Name of Village
Nil				

Table 9-18: Location of Bus Shelters

S. No	Design chainage LHS (Km)	Design chainage RHS (Km)	Name of Village
1	74.3	74.2	Chayabari II
2	78.08	78.16	Dulaypur Pt I
3	80.72	80.8	Tatirbond
4	84.08	84.06	Patherkandi

9.13 REST AREA

Table 9-19: Rest Area Location

S. No	Package	Existing chainage (Km)	Design chainage (Km)	Side	Remarks
1	V	-	87.300	LHS	

9.14 RETAINING WALLS

Table 9-20 : Retaining wall locations

SI No	LHS					RHS				
	Design Chainage (Km.)		Length (m)	Height (m)	Type	Design Chainage (Km.)		Length (m)	Height (m)	Type
	From	To				From	To			
1	63.160	63.340	180	5		63.160	63.340	180	5.5	
2	63.440	63.800	360	4		63.440	63.800	360	4	
3	67.250	67.520	270	1		67.250	67.520	270	1.5	
4	67.560	67.700	140	1		67.560	67.700	140	1.5	
5	72.130	72.250	120	1.5		72.130	72.250	120	1.5	
6	72.320	72.950	630	4		72.320	72.950	630	4	
7	73.050	73.500	450	4		73.050	73.500	450	4	
8	81.680	82.360	680	3		81.680	82.360	680	3	
9	82.660	83.410	750	4.5		82.660	83.410	750	4	
10	85.120	85.560	440	4		85.120	85.560	440	3	
11	85.720	86.110	390	3.5		85.720	86.110	390	3.5	
			4410					4410		

9.15 RE WALL

Retaining wall is a structure designed to restrain soil or other materials laterally so that they can be maintained at different levels on either side. The locations of Re walls are given in table

Table 9-21: Re wall locations

S. No	Chainage (Km.)		Length (m)	TCS Type	Remarks
	From	To			
1	62.800	63.150	350	VI	
2	68.180	69.800	1620	II	
3	73.760	74.750	990	II	
4	77.580	78.700	1120	VI	
5	83.600	84.730	1130	VI	
6	86.110	87.030	920	II	
			6130		

9.16 LINED DRAINS

Table 9-22: Lined Drains

S. No	Chainage (Km.)		Length (m)	TCS Type	Remarks
	From	To			
1	62.800	63.150	350	VI	BHS
2	77.120	77.580	460	VA	BHS
3	77.580	78.700	1120	VI	BHS
4	78.700	80.100	1400	VA	BHS
5	80.100	80.900	800	VB	BHS
6	80.900	81.550	650	VA	BHS
7	83.600	84.730	1130	VI	BHS
8	87.600	87.700	100	VC	BHS