

## Executive Summary:

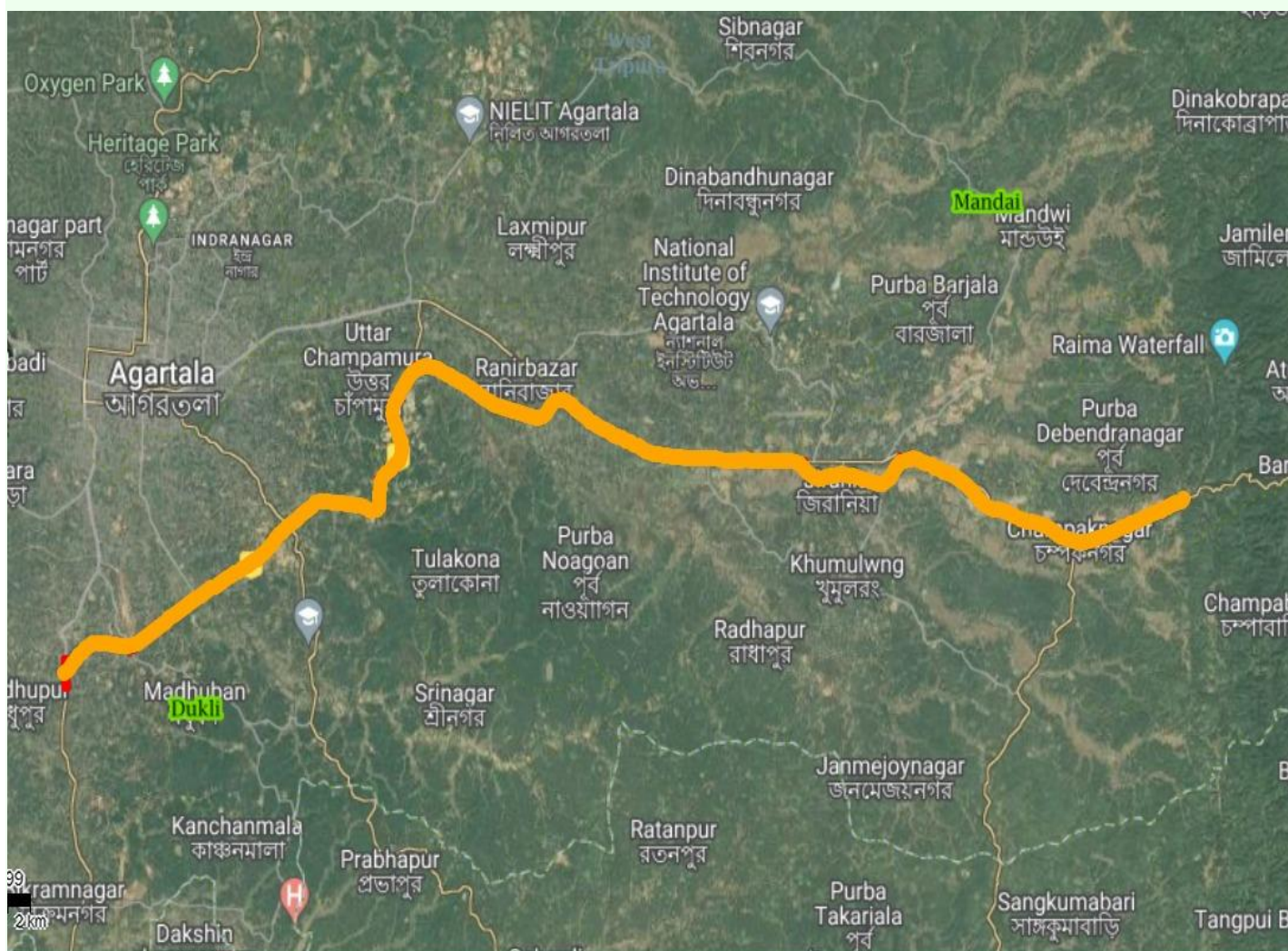
Improvement & Widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis under Bharatmala Pariyojana in Economic Corridors (Project Length- 19.110 km)



**National Highways & Infrastructure Development Corporation Ltd.**  
(Ministry of Road Transport & Highways, Government of India)

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

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*October – 2023*

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## **EXECUTIVE SUMMARY**

### **1 Background**

National Highways and Infrastructure Development Corporation (NHIDCL) is preparing the DPR for '*Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km)*'.

The design length of this proposal is 30.148 km.

### **2 Objectives**

The main objective is to establish the technical, economical, and financial viability of the project and prepare detailed project reports for the work

The viability of the project shall be established considering the requirements with regard to proposed alignment of Project based on highway design, pavement design, provision of service/Slip roads, RoB, grade separator, vehicular under passes, bridges wherever necessary, type of intersections, rehabilitation and widening of existing and/or construction of new bridges and structures, road safety features, quantities of various items of works and cost estimates and economic analysis.

### **3 Project Alignment Description**

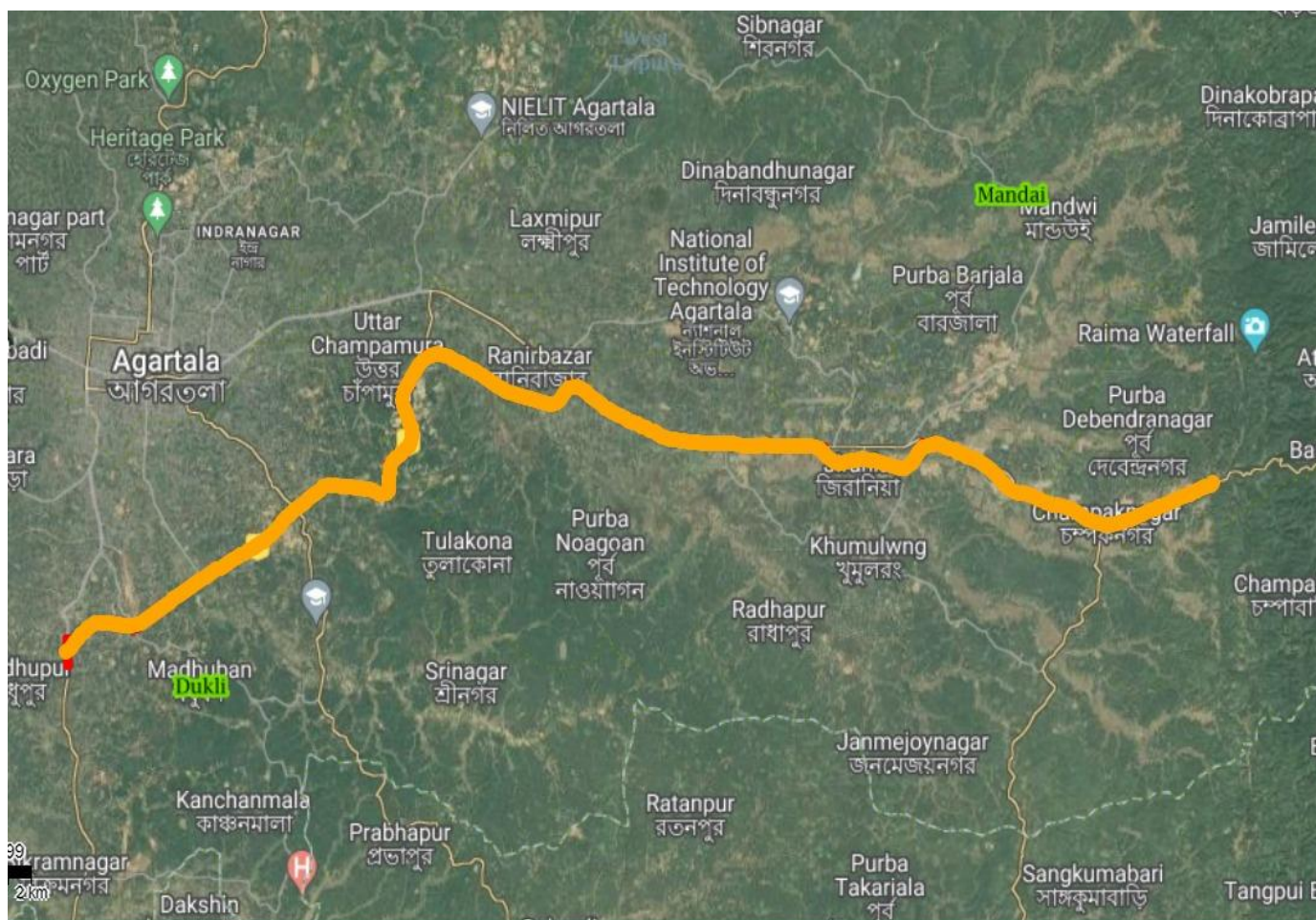
- The proposed stretch is a part of Churaibari Agartala section of NH-08 which connects Tripura with Assam by road and the Khayerpur-Amtali Bypass. The end point of the project stretch connects with Khayerpur-Amtali section of NH-08 which has already been upgraded to 2-Lane plus Paved Shoulder configuration.
- The main obligatory points connected by this alignment are NIT Agartala, Nagicherra Food Park, Khumulwng Park, Madhab Bari Truck Terminus, Chaturdas Devta Temple, Jogendranagar & Agartala Railway Stations, and Bodhjunnagar Industrial Area.
- The proposed alignment will be of 4-Lane plus paved shoulder configuration.
- This alignment starts from Champak Nagar at design chainage Km 242+500 (existing CH. Km 456+500) and passes through Jirania, Mohanpur Ranirbazar, and terminating near Khayerpur at Khayerpur-Amtali tri-junction at Design CH. Km 261+110.

The Project Road alignment shown in figure below-

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**Figure 1: –Proposed Alignment of Project Road**

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**4 Summary of Proposals-**

A brief of proposals of this project is as under–

**Table1–Proposals**

Sl. No.	Chainage	Type	Remarks
1	245+081	New VUP (1x22.5)	
2	249+565	New Minor bridge (1x20)	Jirania Bypass location
3	249+859	New Minor bridge (2x5)	Jirania Bypass location
4	250+059	New SVUP (1x7x4)	
4	250+963	New Major bridge (2x46.0)	Over river Haora at Jirania Bypass location
5	253+676	Minor bridge reconstruction (1x8)	
6	254+099	New VUP (1x22.5)	
7	258+190	New Major bridge (2x35.0)	Over river Haora at Ranirbazar Bypass location
8	259+575	New Minor bridge (1x15)	Ranirbazar Bypass location
9	260+260	New SVUP (1x7x4)	
10	260+804	New SVUP (1x7x4)	

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## **5 Right of Way (ROW)**

The proposed right of way is 30m-60m in entire project length. Chainage wise details are as below –

**Table2: -Details of Proposed RoW**

SL No.	Chainage		ROW Offset (m)		
	From	To	LHS	RHS	Total
1	242+500	244+640	22.5	22.5	45
2	244+640	245+540	23.25	23.25	46.5
3	245+540	253+700	22.5	22.5	45
4	253+700	257+300	23.25	23.25	46.5
5	257+300	261+110	22.5	22.5	45

## **6 Abutting Land Use Pattern**

Project road passes through plain & rolling terrain. Built-up and partially built-up are exists along the both side of Project Road in approx. 25% of its length.

## **7 Design standards**

Following design standards have been adopted as per Indian Roads Congress (IRC) guidelines, contained in IRC SP-73: 2018, IRC SP- 84: 2019, IRC: 37, IRC: 38, and IRC: SP: 23 and is given in Table 0.4.

**Table3-Design Parameters**

Item	Plain/Rolling /Mountainous Terrain	Reference
Design Speed (km/ph)	Ruling-100kmph / Minimum-80kmph (Speed may be varied due to ROW constraint and curve length)	Table2.1, IRC: SP:84-2019
Sight distance (minimum)	180m (SSD)	Table2.7, IRC: SP:84-2019
Proposed Land width (ROW)	45 to 60 m (refer PROW table of this chapter)	
Lane configuration	4 Lane + paved shoulder	
Formation width	7.0 m of carriage way +2.5m Paver shoulder +1.5m -2.5m earthen shoulder on either side of median (Fig.2.4) off our lane manual, Median– 2.0m	IRCSP-84:2019
Edge strip	0.25m Raised median	
	0.5m Depressed Median	
Camber/cross fall	2.5 %	Table2.8

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Item	Plain/Rolling /Mountainous Terrain	Reference
Vehicular under pass	Vertical Clearance– 5.5m(Min) Horizontal Clearance–20m	For Vertical & Horizontal clearance, refer Clause 2.10.2 of IRC SP-84: 2019. For Carriage way width, refer Fig 7.12 of IRC SP-73: 2018.
Light vehicular under pass (LVUP)	Vertical Clearance–4m(Min) Horizontal Clearance–12m	
Smaller vehicular underpass (SVUP)	Vertical Clearance – 4m (Min) Horizontal Clearance – 7m	
Shoulders	2.5% for paved shoulder and 3.0% for Earthen shoulder	
Side Slope	1(V):2(H) Fill & 1(V):1(H) Cut	
Maximum super-elevation	5.0 %	Refer clause 2.9.3 of IRC SP-84: 2019.

Radii of horizontal curves in plain/hilly terrain(m)	Ruling Gradient	2.5%	Table 2.6 of IRC: SP-84: 2019
	Absolute Min	3.3%	
Gradients in plain & rolling terrain		<b>Plain</b>	Table 2.8 of IRC: SP-84: 2019
	Ruling Min	400 m	
	Absolute Min	250 m	
Drains	“Rectangular “shape on-either side were warranted depending on Site Condition.		

#### **7.1 Factors considered in arriving at finalization of alignment:**

- Deficiencies of the existing road (s)
- Traffic congestion in existing NH-08
- Connectivity of Agartala Railway station with NH-08
- Need for better connectivity & future expansion
- Strength, safety & stability requirements
- Requirement as per Local public demand

### **8. Surveys & Investigation**

#### **8.1.1 Traffic Surveys**

Traffic survey has been conducted at Mohanpur.

**Table 4- Average Annual Daily Traffic (AADT)**

Types of Vehicles	Mohanpur	
	Annual Daily Traffic (ADT)	
	No	PCU
2-Wheeler	4394	2197

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Types of Vehicles	Mohanpur	
	Annual Daily Traffic (ADT)	
	No	PCU
Car / Jeep /Taxi/ Van Three Wheeler/ Auto Rickshaw	4931	4931
Minibus	22	34
Full Bus	24	73
LCV	771	906
2 Axle Truck	772	2312
3 Axle Truck	480	1439
Multi Axle Truck	262	1179
Tractor with Trailer	1	2
Tractor without Trailer	1	5
Bicycle	171	86
Cycle Rickshaw	21	41
Animal drawn vehicle	0	0
<b>Grant Total</b>	<b>11850</b>	<b>13523</b>

Traffic Forecast: The traffic growth rate calculated by various methodology and most likely realistic growth rates estimated and recommended. Based on the recommended growth rates, traffic projection is presented in the table below.

**Table 5- Year wise projected traffic**

Year	Mohanpur		Remarks
	Projected Traffic		
	NO	PCU	
2023-24	11850	13523	Base Year/ Current Year
2024-25	12561	14334	
2025-26	13315	15194	
2026-27	14114	16106	
2027-28	14960	17072	
2028-29	15858	18097	
2029-30	16809	19183	5 Years
2030-31	17818	20334	
2031-32	18887	21554	
2032-33	20020	22847	
2033-34	21222	24218	
2034-35	22495	25671	10 Years
2035-36	23845	27211	
2036-37	25275	28844	

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Year	Mohanpur		Remarks
	Projected Traffic		
	NO	PCU	
2037-38	26792	30574	
2038-39	28399	32409	
2039-40	30103	34353	15 Years
2040-41	31909	36414	
2041-42	33824	38599	
2042-43	35853	40915	
2043-44	38005	43370	
2044-45	40285	45972	20 Years
2045-46	42702	48731	
2046-47	45264	51654	
2047-48	47980	54754	
2048-49	53910	61521	
2049-50	57145	65213	

## **9. Development Proposals**

### **9.1 PAVEMENT DESIGN**

- ❖ The pavement design has been carried out as per IRC: 37-2018, IRC: SP-84 and MoRTH specifications, Vth Revision.
- ❖ Type of Pavement: Main carriageway including loops & ramps, raising of existing road, bypasses, realignment, reconstruction, Truck Lay Bys, Rest Areas, Bus Bays, Service Road, Slip Road sections are proposed to be constructed with flexible pavement with Cement Treated Base (CTB) and Cement Treated Sub-base (CTSB) accordance with IRC: 37-2018.
- ❖ Design Life: Flexible pavement designed for a minimum design period of 20 years for the new pavement, raising of existing road, reconstruction of existing road, widening, and strengthening of the existing road, Slip Road, Ramps and Loops.
- ❖ Design CBR: The effective design sub-grade CBR for pavement design considered is 10%.
- ❖ Design Traffic: Calculated design traffic for pavement design is 62 million standard axles (MSA) for main carriageway and 10 million standard axles (MSA) for Slip Road, Loops and Ramps of Interchanges/Grade separator.
- ❖ Pavement Crust Composition: The proposed pavement crust composition is as follows:

**Table-6 Details of Proposed Pavement Thickness for Main Carriageway**

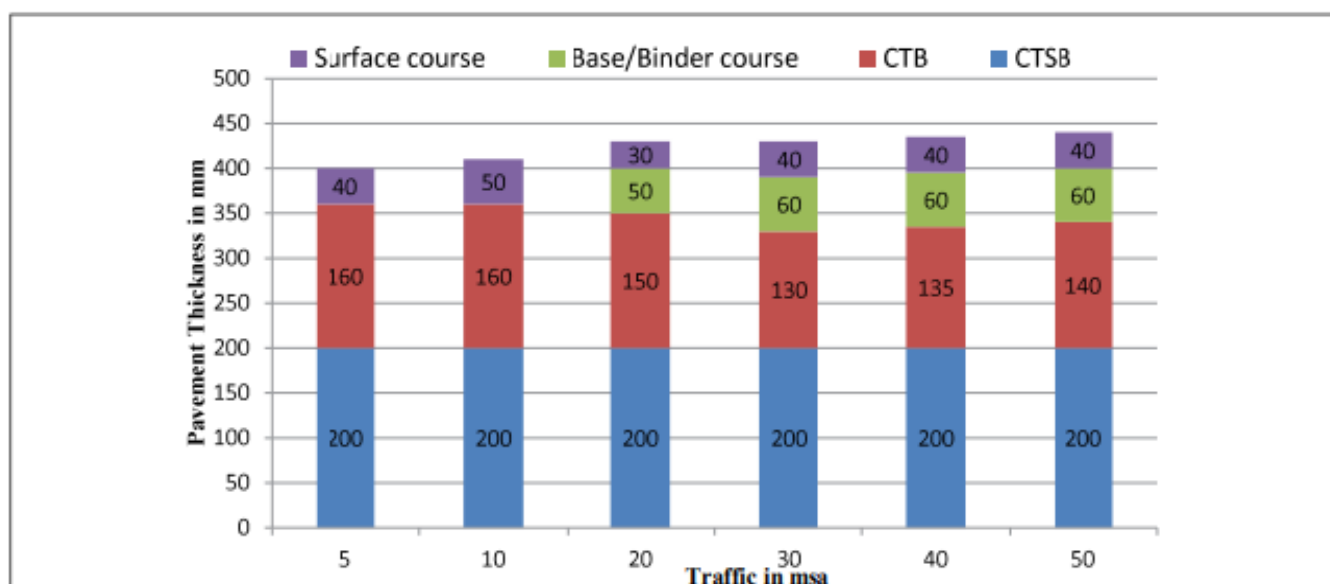
Design Chainage (km)	Design MSA	Proposed Flexible Pavement Thickness (mm)				Total (mm)
		BC	DBM	CTB	CTSB	
242+500 to 261+610	66	40	60	145	200	445

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**Table-7 Details of Proposed Pavement Thickness for Slip/Service Roads**

Design Chainage (km)	Proposed Flexible Pavement Thickness (mm)				Total (mm)
	BC	DBM	CTB	CTSB	
244+643 to 245+543	50	-	170	200	420
249+900 to 250+300	50	-	170	200	420
253+711 to 257+300	50	-	170	200	420
259+950 to 261+110	50	-	170	200	420

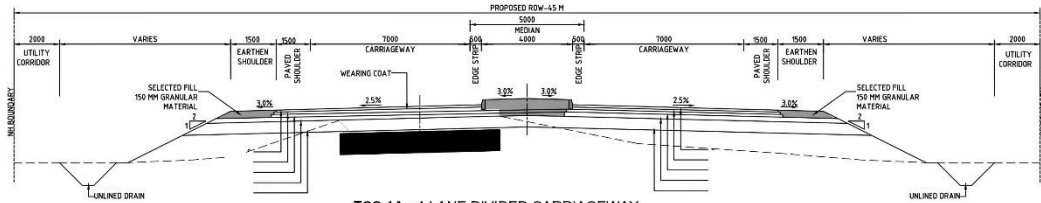


**Fig:** -Catalogue for pavement with Bituminous Surface course with CTSB, CTB and SAMI – Effective CBR 10% (Plate-22).

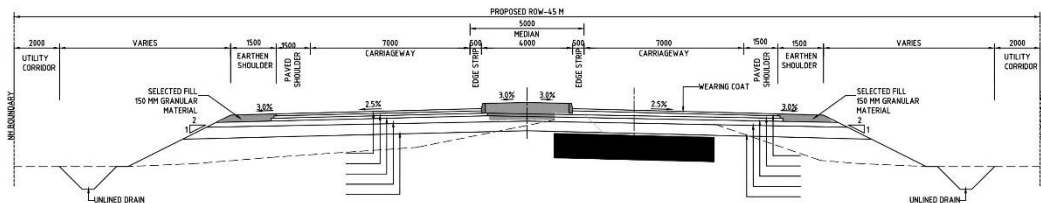
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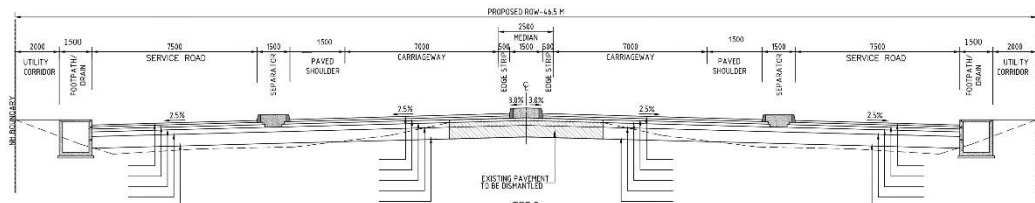
## **9.2 Typical Cross Section and Widening Scheme**



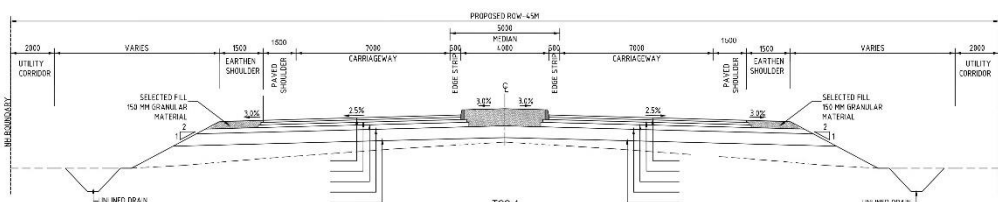
**TCS 1A - 4-LANE DIVIDED CARRIAGEWAY  
ECCENTRIC (RHS) WIDENING IN RURAL SECTION**



**TCS-1B 4 LANE DIVIDED CARRIAGEWAY ECCENTRIC  
(LHS) WIDENING IN RURAL SECTION**



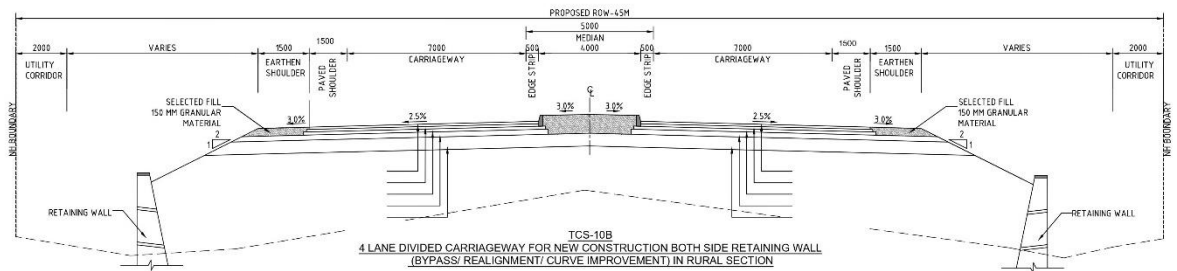
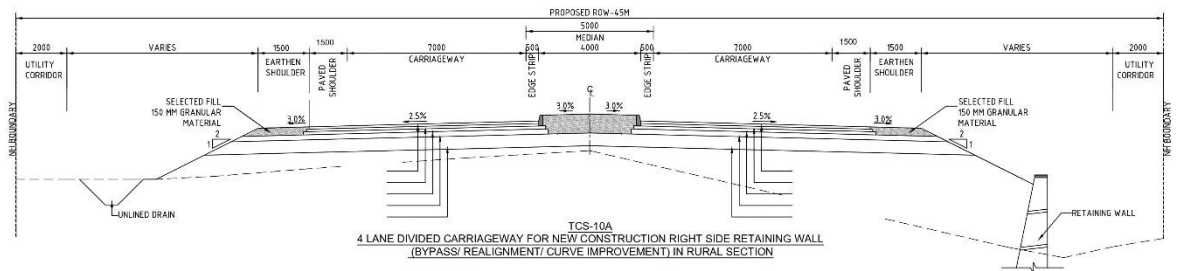
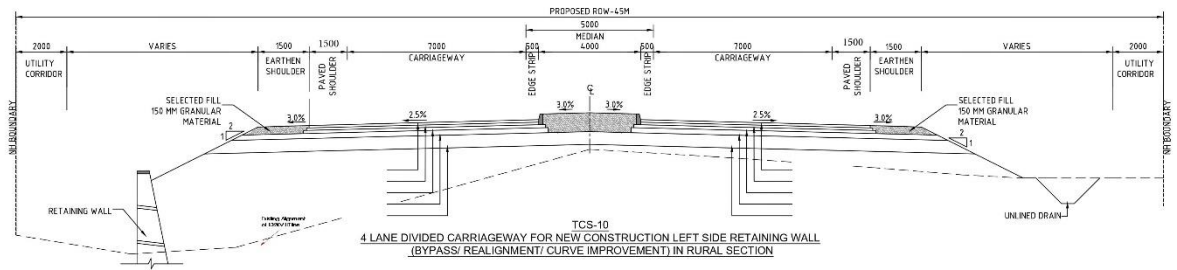
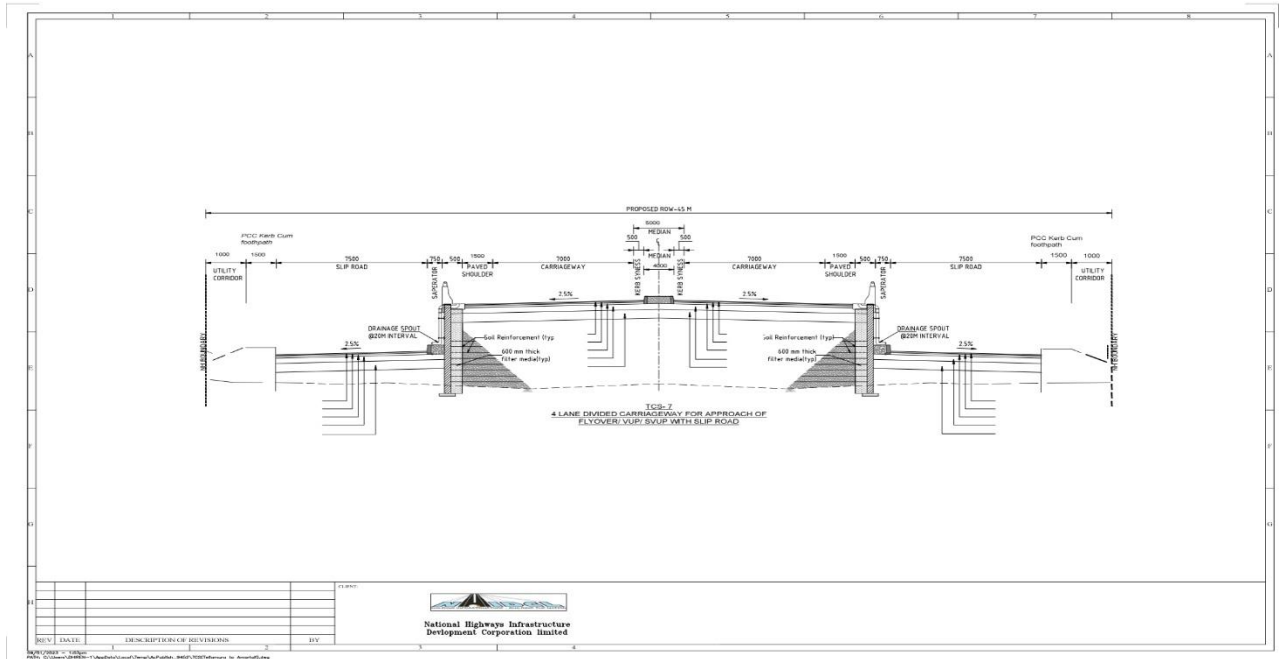
**TCS-3  
4 LANE DIVIDED CARRIAGEWAY FOR RECONSTRUCTION  
WITH SERVICE ROAD IN BUILT-UP SECTION**



**TCS-4  
4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION  
(BYPASS/REALIGNMENT/CURVE IMPROVEMENT) IN RURAL SECTION**

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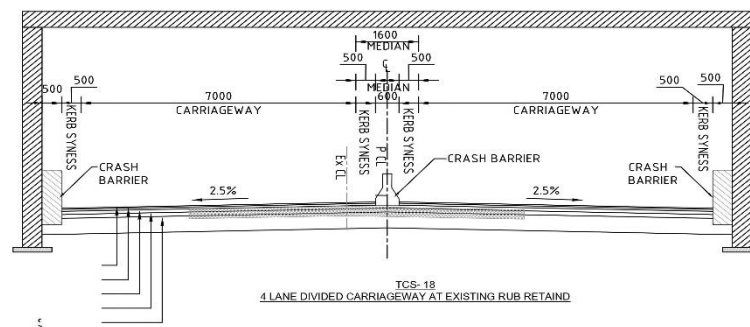
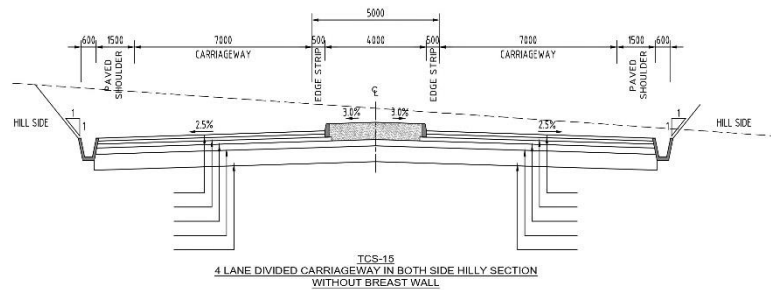
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The widening schedule as per Typical cross section is as here under–

**Table 8- Widening Schedule as per TCS**

SL No.	Design Chainage (Km)		Length (m)	TCS Type	TCS Description
	From Km	To Km			
1	242+500	244+643	2143	TCS-1A	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (RHS) WIDENING IN RURAL SECTION
2	244+643	245+543	900	TCS-7	4 LANE DIVIDED CARRIAGEWAY FOR APPROACH OF FLYOVER/ VUP/ SVUP WITH SLIP ROAD
3	245+543	246+110	567	TCS-1B	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (LHS) WIDENING IN RURAL SECTION
4	246+110	246+170	60	TCS-1A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION LEFT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
5	246+170	247+005	835	TCS-1B	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (LHS) WIDENING IN RURAL SECTION
6	247+005	247+103	98	TCS-10	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION LEFT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
7	247+103	247+200	97	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
8	247+200	247+300	100	TCS-10A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION RIGHT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
9	247+300	247+413	113	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
10	247+413	247+473	60	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
11	247+473	247+663	190	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION

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SL No.	Design Chainage (Km)		Length (m)	TCS Type	TCS Description
	From Km	To Km			
12	247+663	247+753	90	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
13	247+753	247+893	140	TCS-10A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION RIGHT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
14	247+893	247+983	90	TCS-1A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION LEFT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
15	247+983	248+250	267	TCS-1B	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (LHS) WIDENING IN RURAL SECTION
16	248+250	248+393	143	TCS-1A	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (RHS) WIDENING IN RURAL SECTION
17	248+393	248+603	210	TCS-1B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION LEFT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
18	248+603	248+850	247	TCS-1A	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (RHS) WIDENING IN RURAL SECTION
19	248+850	248+933	83	TCS-1B	4 LANE DIVIDED CARRIAGEWAY ECCENTRIC (LHS) WIDENING IN RURAL SECTION
20	248+933	249+200	267	TCS-1A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION LEFT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
21	249+200	249+370	170	TCS-15	4 LANE DIVIDED CARRIAGEWAY IN BOTH SIDE HILLY SECTION WITHOUT BREAST WALL
22	249+370	249+470	100	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
23	249+470	249+900	400	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION

**Executive Summary:**

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

SL No.	Design Chainage (Km)		Length (m)	TCS Type	TCS Description
	From Km	To Km			
24	249+900	250+300	393	TCS-7	4 LANE DIVIDED CARRIAGEWAY FOR APPROACH OF FLYOVER/ VUP/ SVUP WITH SLIP ROAD
25	250+300	250+410	110	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
26	250+410	250+470	60	TCS-10A	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION RIGHT SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
27	250+470	251+500	938	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
28	251+500	251+590	90	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
29	251+590	251+970	380	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
30	251+970	253+711	1733	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
31	253+711	254+621	890	TCS-7	4 LANE DIVIDED CARRIAGEWAY FOR APPROACH OF FLYOVER/ VUP/ SVUP WITH SLIP ROAD
32	254+621	257+300	2679	TCS-3	4 LANE DIVIDED CARRIAGEWAY FOR RECONSTRUCTION WITH SERVICE ROAD IN BUILT-UP SECTION
33	257+300	257+740	440	TCS-18	4 LANE DIVIDED CARRIAGEWAY AT EXISTING RUB RETAINED
34	257+740	258+800	990	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
35	258+800	258+950	150	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION

**Executive Summary:**

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

SL No.	Design Chainage (Km)		Length (m)	TCS Type	TCS Description
	From Km	To Km			
36	258+950	259+320	370	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
37	259+320	259+550	230	TCS-4	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
38	259+550	259+950	385	TCS-10B	4 LANE DIVIDED CARRIAGEWAY FOR NEW CONSTRUCTION BOTH SIDE RETAINING WALL (BYPASS/ REALIGNMENT/ CURVE IMPROVEMENT) IN RURAL SECTION
39	259+950	261+610	1646	TCS-7	4 LANE DIVIDED CARRIAGEWAY FOR APPROACH OF FLYOVER/ VUP/ SVUP WITH SLIP ROAD

**9.3 Horizontal Design of Project road**

The horizontal alignment design report is tabulated below.

**Table 9: -Horizontal Report**

Curve No.	HORIZONTAL CURVE				Terrain	Transition length	Speed (Kmph)
	Start Chainage	End Chainage	Radius	Direction			
1	242+582.722	242+607.901	300	Left	Plain	35	65
2	242+876.854	242+913.571	2000	Right	Plain	0	100
3	243+598.685	243+609.289	2000	Right	Plain	0	100
4	244+213.704	244+316.185	2000	Right	Plain	0	100
5	244+642.309	245+377.811	950	Right	Plain	60	100
6	245+741.848	246+054.772	1000	Left	Plain	60	100
7	246+326.091	246+348.576	400	Right	Plain	115	100
8	246+608.198	246+733.288	700	Left	Plain	55	80
9	247+092.864	247+351.812	600	Right	Plain	90	100
10	247+721.445	247+768.719	700	Left	Plain	85	100
11	248+116.669	248+159.925	400	Left	Plain	90	100

**Executive Summary:**

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

12	248+352.029	248+404.957	750	Right	Plain	50	80
13	248+565.153	248+626.168	900	Left	Plain	45	80
14	248+774.157	248+833.766	600	Right	Plain	50	80
15	249+007.194	249+080.012	250	Left	Plain	90	80
16	249+305.788	249+460.626	360	Left	Plain	130	100
17	249+808.69	250+160.579	360	Right	Plain	130	100
18	250+348.375	251+194.323	1500	Left	Plain	30	100
19	251+413.356	251+706.752	400	Right	Plain	115	100
20	251+938.961	252+151.174	400	Left	Plain	115	100
21	252+664.965	252+692.373	2200	Right	Plain	0	100
22	252+925.5	253+045.199	4000	Left	Plain	0	100
23	253+681.893	253+696.252	420	Right	Plain	85	80
24	253+894.469	253+926.966	400	Left	Plain	65	80
25	254+075.821	254+144.317	1200	Right	Plain	0	80
26	254+556.18	254+668.61	1500	Right	Plain	0	80
27	255+351.78	255+414.75	400	Right	Plain	90	80
28	255+644.47	255+771.717	1500	Left	Plain	45	100
29	256+242.18	256+294.016	1500	Right	Plain	45	100
30	256+776.059	256+870.131	700	Right	Plain	55	80
31	256+960.488	257+018.997	1200	Left	Plain	0	80
32	257+316.198	257+384.201	1200	Left	Plain	0	80
33	257+579.04	257+894.174	230	Left	Plain	50	50
34	258+048.629	258+363.208	300	Right	Plain	75	80
35	259+295.336	259+389.952	600	Right	Plain	80	100
36	259+972.127	260+034.7	1200	Left	Plain	50	100
37	260+852.154	261+504.3	500	Left	Plain	95	100
38	262+141.502	262+401.815	400	Left	Plain	115	100

**9.4 Vertical Alignment of the project Road**

Vertical design report is tabulated below:

**Table 10: -Vertical Report**

**Executive Summary:**

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

PVI	PVI	Level (m)	Curve Length	Grade		Diff. in Grade	Type of Curve	K Value
No	Design Chainage (m)			IN (%)	OUT (%)	(%)		
1	242+453.234	56.6	120	0	-0.008	0.008	Hog	150.401
2	242+641.861	55.095	60	-0.008	-0.004	-0.004	Sag	167.107
3	242+997.497	53.534	60	-0.004	-0.001	-0.003	Sag	192.627
4	243+201.084	53.275	60	-0.001	-0.005	0.004	Hog	178.661
5	243+941.305	49.847	80	-0.005	-0.008	0.003	Hog	211.277
6	244+318.135	46.675	80	-0.008	-0.003	-0.005	Sag	143.682
7	244+621.599	45.81	120	-0.003	0.025	-0.028	Sag	43.088
8	245+081.356	57.303	675	0.025	-0.025	0.05	Hog	135
9	245+599.038	44.361	100	-0.025	-0.003	-0.022	Sag	45.455
10	245+772.366	43.841	60	-0.003	0.004	-0.007	Sag	85.718
11	246+003.516	44.766	125	0.004	-0.005	0.009	Hog	138.899
12	246+266.442	43.451	80	-0.005	-0.003	-0.002	Sag	400.062
13	247+091.317	40.977	60	-0.003	0.007	-0.01	Sag	60.252
16	247+830.195	46.118	435	0.007	-0.025	0.032	Hog	136.115
17	248+265.432	35.237	130	-0.025	0.006	-0.031	Sag	41.935
18	248+525.371	36.797	125	0.006	-0.003	0.009	Hog	138.767
19	248+934.613	35.566	75	-0.003	-0.008	0.005	Hog	140.792
20	249+151.837	33.755	60	-0.008	-0.003	-0.005	Sag	114.609
21	249+241.963	33.476	100	-0.003	0.003	-0.006	Sag	163.942
22	250+098	36.044	60	0.003	0.012	-0.009	Sag	66.667
23	250+478.611	40.611	500	0.012	-0.025	0.037	Hog	135.135
24	250+790.058	32.825	120	-0.025	0.003	-0.028	Sag	42.857
25	251+147.289	33.897	150	0.003	-0.008	0.011	Hog	136.364
26	251+502.839	31.052	60	-0.008	-0.003	-0.005	Sag	120
27	252+786.729	27.201	60	-0.003	0.003	-0.006	Sag	100
28	252+991.84	27.816	94.5	0.003	-0.004	0.007	Hog	135
29	253+688.248	25.031	125	-0.004	0.025	-0.029	Sag	43.103
30	254+099.323	35.307	645	0.025	-0.022	0.047	Hog	135.789

**Executive Summary:**

**Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).**

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31	254+592.678	24.207	100	-0.022	-0.003	-0.019	Sag	51.282
32	254+818.22	23.53	100	-0.003	0.007	-0.01	Sag	100
33	254+994.721	24.766	60	0.007	0.013	-0.006	Sag	100
34	255+194.974	27.369	310.5	0.013	-0.01	0.023	Hog	135
35	255+564.111	23.678	60	-0.01	-0.003	-0.007	Sag	85.714
36	2564+90.666	20.898	60	-0.003	0.003	-0.006	Sag	100
37	2567+97.512	21.819	85	0.003	-0.003	0.006	Hog	141.666
38	257+108.52	20.886	60	-0.003	-0.012	0.009	Hog	66.667
39	257+270.314	18.944	60	-0.012	0	-0.012	Sag	50
40	257+609.311	18.944	100	0	0.015	-0.015	Sag	66.667
41	258+016.037	25.045	165	0.015	-0.003	0.018	Hog	91.667
42	258+364.164	24	165	-0.003	-0.015	0.012	Hog	137.5
43	258+601.664	20.438	80	-0.015	0.003	-0.018	Sag	44.444
44	258+946.187	21.472	60	0.003	0.007	-0.004	Sag	133.333
45	259+427.707	25.083	202.5	0.007	-0.007	0.014	Hog	135
46	259+904.424	21.508	80	-0.007	0.01	-0.017	Sag	45.714
47	260+252.664	24.99	270	0.01	-0.01	0.02	Hog	135
48	260+644.764	21.06	70	-0.01	0.005	-0.015	Sag	46.667
49	260+797.664	21.834	135	0.005	-0.001	0.006	Hog	208.663

No curve is coming below minimum gradient as per IRCSP 84-2019.

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

**9.5 Road Junctions**

Major junctions: Following locations are to be developed as major junctions:

**Table 11- Major Junctions**

Sl. No.	Design Chainage (Km)	Leading to		Junction-Type
		LHS	RHS	
1	249+357		Jirania	Y-Junction
2	251+988		Jirania	Y-Junction
3	257+718		Rani Bazar	Y-Junction

Minor junctions: Following locations are to be developed as minor junctions:

**Table 12- Minor Junctions**

Sl. No.	Design Chainage (Km)	Leading to		Junction-Type
		LHS	RHS	
1	243+845	Paschim Debendra Nagar	-	T-Junction
2	244+500	Champak Nagar	-	Y-Junction
3	246+150	-	Khamarbari	T-Junction
4	247+150	-	Kalabagan Market	Y-Junction
5	247+750	-	Kalabagan Market	Y-Junction
6	250+495	Khutamara	Jirania	X-Junction
7	250+860	-	Jirania	T-Junction
8	253+850	-	Madhav Kami	Y-Junction
9	254+800	Dasharam	-	Y-Junction
10	255+100	-	Radhamohanpur	Y-Junction
11	255+490	-	Radhamohanpur	T-Junction
12	256+160	Karaiban Bazar	-	T-Junction
13	257+185	Sutradhar Para	-	T-Junction

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

**9.6 Cross Drainage Works****9.6.1 Bridges**

- Total 7 bridges (5 new constructions + 1 reconstruction + 1 bridge parallel to existing bridge) are proposed at this alignment. The Details are-

**Table13-Proposal of Bridges (New Bridges)**

Sl. No.	Chainage(km)	Span Arrangement (m)	Total span Length (m)	Type	Width (m)	Structure width(m)
1	Minor Bridge at Km249+565	1 x 20	20	RCC I Girder	25	New Minor bridge
2	Minor Bridge at Km249+859	2 x 5	20	Box Bridge	25	New Minor bridge
3	Major Bridge at Km250+963	2 x 46	92	PSC Box	25	New Major bridge
4	Minor Bridge at Km 253+676	1x8	8	Box Bridge	25	Reconstruction of minor bridge
4	Major Bridge at Km258+190	2 x 35	70	PSC I Girder	37	New Major bridge
5	Minor Bridge at Km 259+575	1 x 15	20	RCC I Girder	25	New Minor bridge

**9.6.2 Culverts**

Reconstruction: The existing culverts at following locations shall be reconstructed as below:

**Table 14- Reconstruction of Culverts**

Sl. No.	Design Chainage (Km)	Proposed Type of Structure	Proposed Span Arrangement, Clear (m)	Remarks
1	243+589	Box culvert	1X2X1.5	Re-Construction
2	245+214	Box culvert	1X3.5X2.	Re-Construction
3	246+134	Box culvert	1X2X2	Re-Construction
4	248+251	Pipe culvert	1X1.2	Re-Construction
5	248+587	Pipe culvert	1X1.2	Re-Construction
6	253+458	Box culvert	1X1.5X2.7	Re-Construction
7	253+766	Box culvert	1X3X2	Re-Construction
8	253+991	Box culvert	1X4.5X1.5	Re-Construction
9	254+445	Box culvert	1X2.5X1.5	Re-Construction
10	254+966	Box culvert	1X5X2	Re-Construction
11	255+032	Box culvert	1X4X2.2	Re-Construction
12	261+580	Box culvert	1X3X3	Re-Construction

Widening of existing culverts: The following existing culverts are to be widened:

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

**Table 15- Widening of existing culverts**

Sl. No.	Design Chainage (Km)	Proposed Span Arrangement, clear (m)	Proposed Type of Structure	Remarks
1	245+565	1X3.3X2	Box culvert	Concentric Widening
2	245+809	1X3.3X1.2	Box culvert	LHS Widening
3	247+027	2X1.2	Pipe culvert	LHS Widening
4	252+300	1X2X1.7	Box culvert	LHS Widening
5	253+006	1X3X2	Box culvert	Concentric Widening
6	255+457	1X3.2X1	Box culvert	Concentric Widening
7	256+197	1X3.2X0.9	Box culvert	Concentric Widening

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

**Table 16- Additional new culverts**

Sl. No.	Design Chainage (Km)	Span Arrangement, clear (m)	Type of Structure	Remarks
1	242+843	1X2X2	Box culvert	New Construction
2	243+143	1X2X2	Box culvert	New Construction
3	243+973	1X2X2	Box culvert	New Construction
4	244+283	1X2X2	Box culvert	New Construction
5	244+683	1X2X2	Box culvert	New Construction
6	246+509	1X1.2	Pipe culvert	New Construction
7	246+659	1X1.2	Pipe culvert	New Construction
8	247+323	1X2X2	Box culvert	New Construction
9	247+523	1X2X2	Box culvert	New Construction
10	247+653	1X2X2	Box culvert	New Construction
11	248+093	1X2X2	Box culvert	New Construction
12	248+543	1X2X2	Box culvert	New Construction
13	248+953	1X2X2	Box culvert	New Construction
14	249+143	1X2X2	Box culvert	New Construction
15	252+802	1X2X2.5	Box culvert	New Construction
16	258+762	1X2X2	Box culvert	New Construction

**9.7 VUP, LVUP & SVUP**

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

Total 7 under passes are proposed at this alignment, the details are–

- a) Vehicular under pass - 2
- b) Smaller vehicular under pass - 3

The locations are–

**Table 17- Proposed under passes**

Sl. No.	Design Chainage (Km)	Proposed Type of Structure	Skew Angle	Span Arrangement (m)	Total Width (m)
VUPs					
1	245+081	RCC I Girder	0°	1X22.5	2x10.5
2	254+099	RCC I Girder	0°	1X22.5	2x10.5
SVUPs					
1	250+059	Box	15°	1X7X4	2x10.5
2	260+260	Box	30°	1X7X4	2x10.5
3	260+804	Box	15°	1X7X4	2x10.5

The locations may change lightly as per site/cross road location.

## 9.8 Truck Lay Bye

No Truck lay bye proposed on this alignment.

## 9.9 Bus Bays

To ensure orderly movement of the through traffic, Bus bay/bus shelters have been proposed outside the residential area, away from bridges, and high embankments and not too close to the road intersections.

The locations of bus shelters are:

**Table 18- Location of Bus shelters**

S. No.	Design Chainage (Km)	SIDE	Facility Type
1	244+963	LHS	Bus Bay with Bus Shelter
2	245+193	RHS	Bus Bay with Bus Shelter
3	249+200	LHS	Bus Bay with Bus Shelter
4	249+450	RHS	Bus Bay with Bus Shelter
5	252+100	BS	Bus Bay with Bus Shelter
6	254+011	LHS	Bus Bay with Bus Shelter
7	254+211	RHS	Bus Bay with Bus Shelter

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

8	255+861	BS	Bus Bay with Bus Shelter
9	257+650	LHS	Bus Bay with Bus Shelter
10	257+800	RHS	Bus Bay with Bus Shelter

9

**9.10 Toll Plaza**

Toll Plaza shall be provided in following locations:

**Table19- Locations of Toll Plaza**

Sl. No.	Toll Plaza Location		Remarks
	Existing Chainage (Km)	Design Chainage (Km)	
1	466.900	253+160	-

**9.11 RE Wall**

On following locations, the RE wall shall be provided –

**Table 20- Locations of RE Wall**

Sl. No.	Chainage From	Chainage To	TCS length after structure length deduction (m)	Side	Length of RE wall (m)	TCS Type
1	244+643	245+543	880	BHS	1760	TCS-7
2	249+900	250+300	393	BHS	786	TCS-7
3	253+711	254+621	890	BHS	1780	TCS-7
4	259+950	261+610	1646	BHS	3292	TCS-7
Total length					<b>7618</b>	

**9.12 Service/ Slip Road**

On following locations, the service/slip road is proposed

**Table 21- Locations of Service/ Slip Roads**

Details of Service / Slip Road					
Sl. No.	From Km	To Km	Length (m)	Side	Type of Road
5	244+643	245+543	900	Both Side	Slip Road
6	249+900	250+300	400	Both Side	” ”
7	253+711	254+621	910	Both Side	” ”

**Executive Summary:**

Improvement & widening of existing NH-08 from Champak Nagar to Khayerpur to 4-lane (Four-lane) (Km 242+500 to Km 261+610) in the state of Tripura on EPC basis Under Bharatmala Pariyojana in Economic Corridors (Project Length-19.110 Km).

Details of Service / Slip Road					
Sl. No.	From Km	To Km	Length (m)	Side	Type of Road
8	259+950	261+610	1660	Both Side	” ”
Total length			3870		

**9.13 Road side Drainage**

Drainage system including surface and subsurface drainage shall be provided as provisions of relevant Manual. The locations and quantity of drain shall be provided as mentioned in the TCS details section

**9.14 Retaining Wall and Breast Wall**

Retaining Wall shall be provided as per requirement of site conditions to restrict the right of way. The locations are:

**Table 22: - Retaining Wall Locations**

Sl. No.	Chainage From	Chainage To	Side	Length of Retaining wall (m)	TCS Type
1	247+005	247+103	LHS	98	TCS-10
2	247+200	247+300	BHS	100	TCS-10B
3	247+473	247+663	BHS	380	TCS-10B
4	247+753	247+893	RHS	140	TCS-10A
5	249+470	249+900	BHS	800	TCS-10B
6	250+300	250+410	BHS	220	TCS-10B
	250+410	250+470	RHS	60	TCS-10A
8	250+470	251+500	BHS	1676	TCS-10B
9	251+590	251+970	BHS	760	TCS-10B
10	257+740	258+800	BHS	1980	TCS-10B
11	258+950	259+320	BHS	740	TCS-10B
12	259+550	259+950	BHS	770	TCS-10B

Breast Wall shall be provided as per the requirement of site conditions to restrict the hill slope; however minimum 400 m (from km 264+420 to km 264+620) length shall be provided.

**9.15 Highway Lighting**

Highway lighting shall be provided at Built up areas, Toll Plaza, Bus Bays, underpasses, junctions and grade separator locations in conformity with IRC: SP:84-2019 specifications.

**9.16 Road Side furniture**

Roadside furniture shall be provided in accordance with Section 11 of the Manual of Specification and Standards for Four Laning of Highways through PPP.

**9.17 Landscaping and Tree Plantation**

Landscaping and tree plantation shall be provided in accordance with IRC: SP:84-2019 keeping in view of

**Executive Summary:**

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IRC: SP:21-2009.

**9.18 Safety**

A proper safety precautions are recommended on hazardous locations like RE wall, retaining wall & breast locations, the safety items to be provided are –

- i) Safety Barriers- New Jersey Crash Barrier/ RCC Crash barrier/ Thrie beam Crash barrier
- ii) High embankment slope protection for embankment height more than 6 m

**10 Utilities**

The detail of utilities to be shifted is enclosed with drawing volume and the estimate of relocation will be submitted after obtaining it from concerned departments. The Major Utilities to be relocated are Electric lines/Poles, HT Tower, Hand pumps/water pipe lines etc. The tentative cost for shifting of Utility is considered as Rs.25.98 Cr.

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## 11 Land Acquisition

The alignment is passing through plain terrain. the calculation of land acquisition area (private land) is approximate 128.44 hectare, the tentative cost of land acquisition has been considered Rs.1105.56Cr. The basis of land cost assumptions is–

- Area of Private land (tentative)- 42.6291752 Ha
- Cost (Tentative)considered as per revised area–Rs 303.92 Cr

The LA cost proposed here is tentative and calculated as per CALA letter.

**TENTATIVE COST OF ACQUISITION OF LANDS FOR CHAMPAKNAGAR TO KHAYERPUR SECTION OF NH-08 (PROJECT LENGTH 19.110 KM)**

Sl No	Mauja	Area in Ha	Area in acre	Rate per kani	Market value	Multiplication factor	huts	trees	total	Solatium	12% addl	Grand total
1	Joynagar	2.5	6.18	115763	1787851	2681777	60000000	8000000	70681777	141363553	123435	141486988
2	Purba Debendranagar	5.5	13.59	1736438	58998845	88498268	100000000	20000000	208498268	416996536	4073345	421069881
3	Jirania	2.3	5.68	800000	11366830	17050245	35000000	20000000	72050245	144100490	784778	144885268
4	Bankim nagar	3.5	8.65	3000000	64865063	97297594	40000000	25000000	162297594	324595188	4478355	329073543
5	Majlishpur	2.3	5.68	4000000	56834150	85251225	50000000	20000000	155251225	310502450	3923892	314426342
6	Mekhlipara	3.5	8.65	578813	12514914	18772371	35000000	25000000	78772371	157544741	864043	158408785
7	Uttar Champamura	13.5	33.36	5000000	416989688	625484531	60000000	28000000	713484531	1426969063	28789425	1455758488
		33.100	81.79		623357340	935036010	380000000	146000000	1461036010	2922072021	43037274	2965109295
										2.5% Contingency		74127732
												3039237027

Note: The calculated amount is tentative in nature & the cost and area of private land may vary after draft 3A & declaration of 3G awards.

Comptroller Authority  
ADM (West).  
12/10/2024  
19/10/23  
JK

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