



Government of India
सड़क परिवहन और राजमार्ग मंत्रालय
Ministry of Road Transport and Highways
National Highways & Infrastructure Development Corporation Limited



DETAILED PROJECT REPORT (DPR)



DRAWING VOLUME

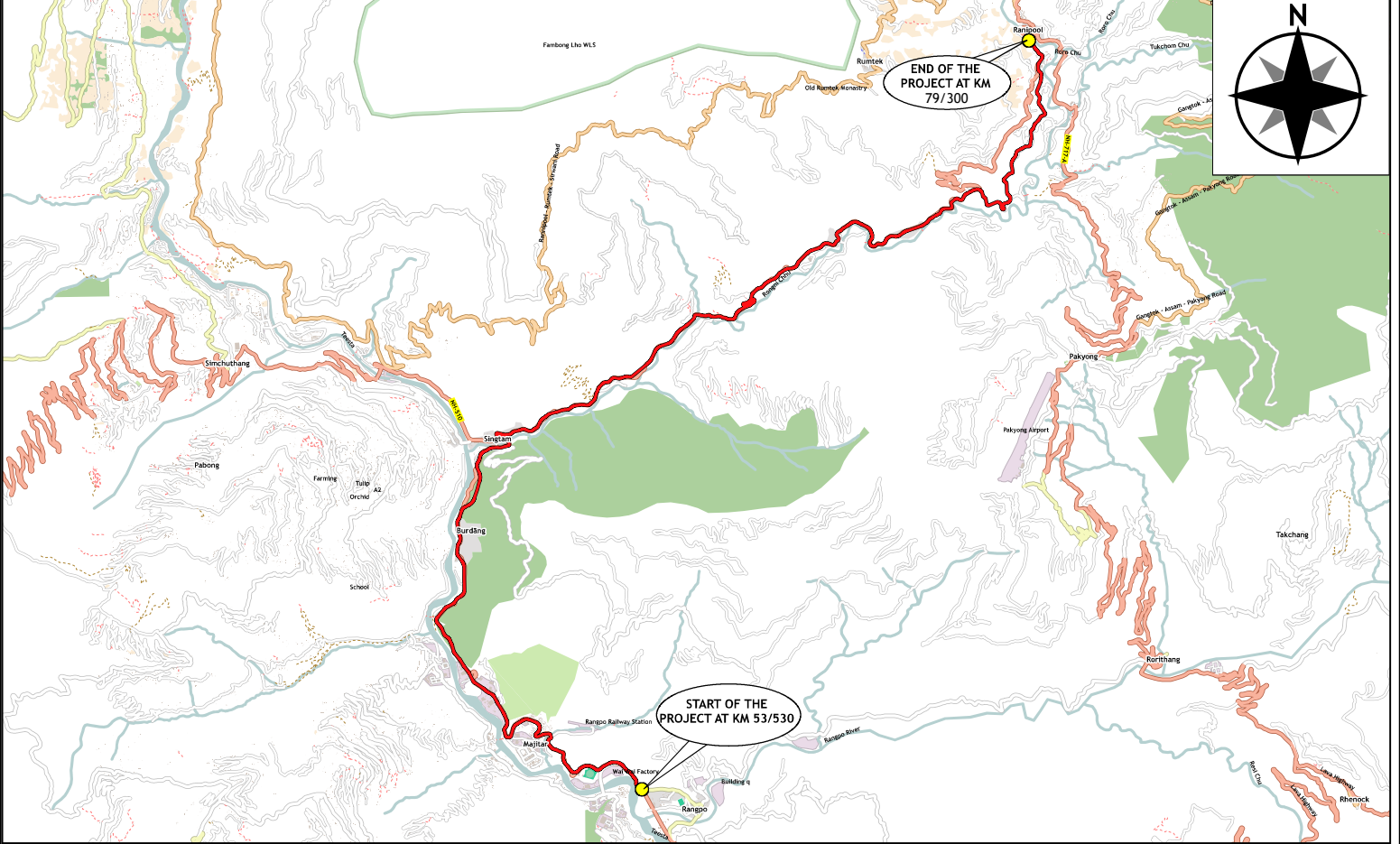
Consultancy Services for Preparation of Detailed Project Report and pre- construction activities in respect of "Widening of existing carriageway into 2-lane with paved shoulder configuration and Several slope protections works, treatment of vulnerable sliding/sinking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc. along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim.

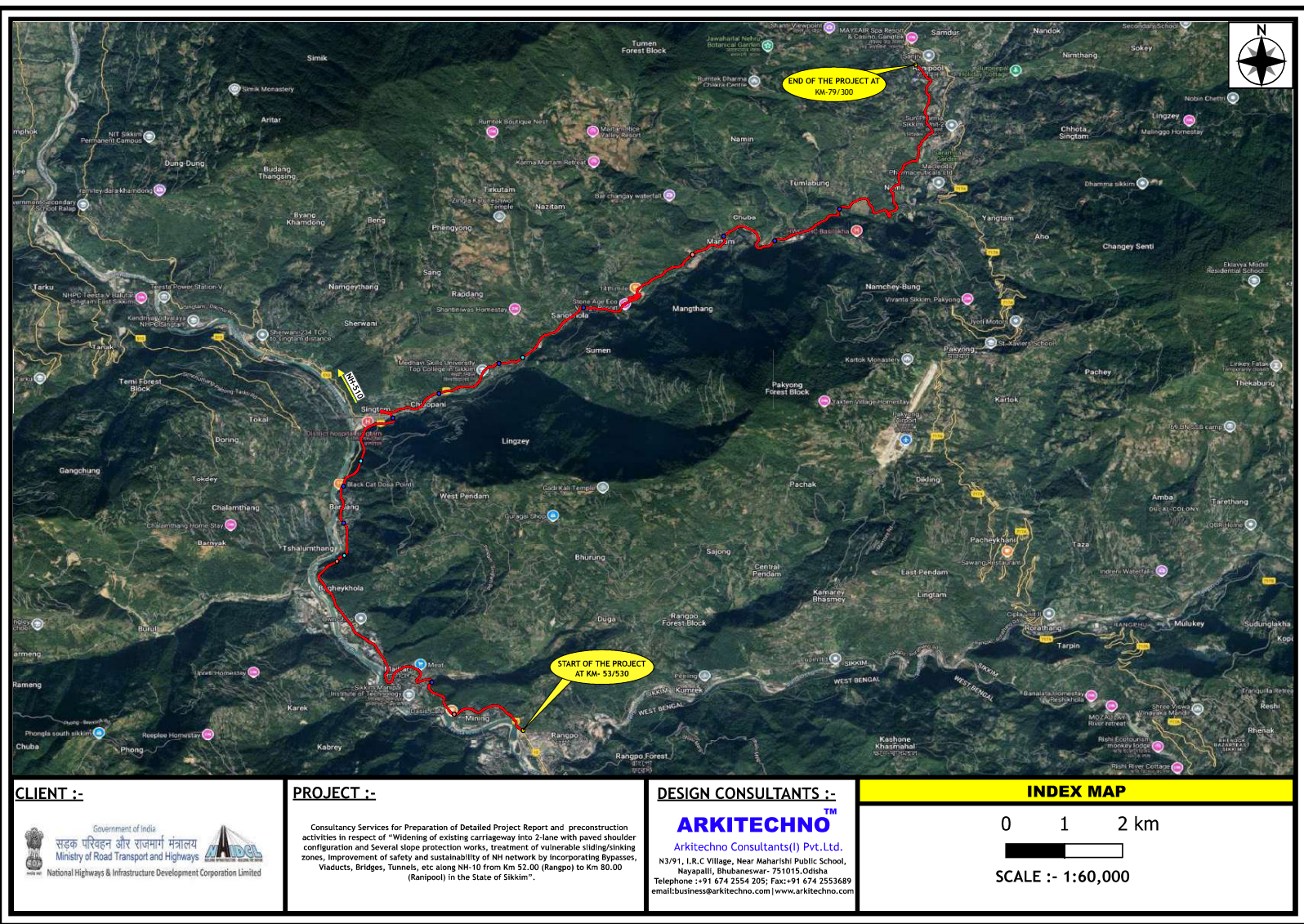
DEC 2025

Consultants:

ARKITECHNO™
CONSULTANTS (INDIA) PVT. LTD.

KEY PLAN





TOPOGRAPHIC MAP SHOWING PROPOSED ALIGNMENT AT NH-10 IN STATE OF SIKKIM.

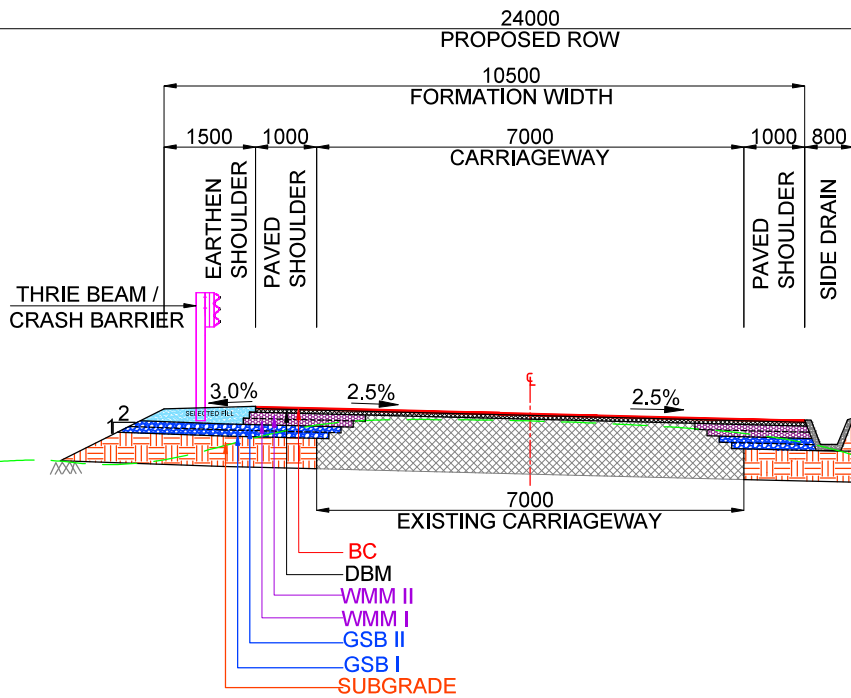


G45E7 (78A/7)	G45E11 (78A/11)
G45E8 (78A/8)	G45E12 (78A/12)

CONVENTIONAL SYMBOLS	
Express Highway with toll, with bridge, with distance stone	
Franchise, metered, according to importance	
Road, double carriageway, according to importance	
Unimproved road, Cart track, Road with pass, Foot path	
Stream, with bank in soil, unimproved, Canal	
Dam, masonry or rock-filled, with/without, with	
River, dry with water channel, with island & rocks, Tidal, river	
Submerged road, Road, Stream, Road	
Rocky road, road, Tunnel, Road, Tunnel, road, dry	
Embankment, road or rail, with, Road, ground	
Railways, broad gauge, double, single, with station, under construction	
Railways, other gauges, double, single, with station, under construction	
Minor, line or railway, line, cutting, with tunnel	
Tunnel with or without, Road, tunnel, road, with	
Side station, 100m, 200m, 300m, 400m, 500m, 600m, 700m, 800m, 900m, 1000m, 1100m, 1200m, 1300m, 1400m, 1500m, 1600m, 1700m, 1800m, 1900m, 2000m, 2100m, 2200m, 2300m, 2400m, 2500m, 2600m, 2700m, 2800m, 2900m, 3000m, 3100m, 3200m, 3300m, 3400m, 3500m, 3600m, 3700m, 3800m, 3900m, 4000m, 4100m, 4200m, 4300m, 4400m, 4500m, 4600m, 4700m, 4800m, 4900m, 5000m, 5100m, 5200m, 5300m, 5400m, 5500m, 5600m, 5700m, 5800m, 5900m, 6000m, 6100m, 6200m, 6300m, 6400m, 6500m, 6600m, 6700m, 6800m, 6900m, 7000m, 7100m, 7200m, 7300m, 7400m, 7500m, 7600m, 7700m, 7800m, 7900m, 8000m, 8100m, 8200m, 8300m, 8400m, 8500m, 8600m, 8700m, 8800m, 8900m, 9000m, 9100m, 9200m, 9300m, 9400m, 9500m, 9600m, 9700m, 9800m, 9900m, 10000m, 10100m, 10200m, 10300m, 10400m, 10500m, 10600m, 10700m, 10800m, 10900m, 11000m, 11100m, 11200m, 11300m, 11400m, 11500m, 11600m, 11700m, 11800m, 11900m, 12000m, 12100m, 12200m, 12300m, 12400m, 12500m, 12600m, 12700m, 12800m, 12900m, 13000m, 13100m, 13200m, 13300m, 13400m, 13500m, 13600m, 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TYPICAL CROSS SECTION SCHEDULE

TYPICAL CROSS SECTION



(TCS-1)
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
 (OPEN-MOUNTAINOUS TERRAIN)WITHOUT RETAINING WALL
 (OVERLAY)**

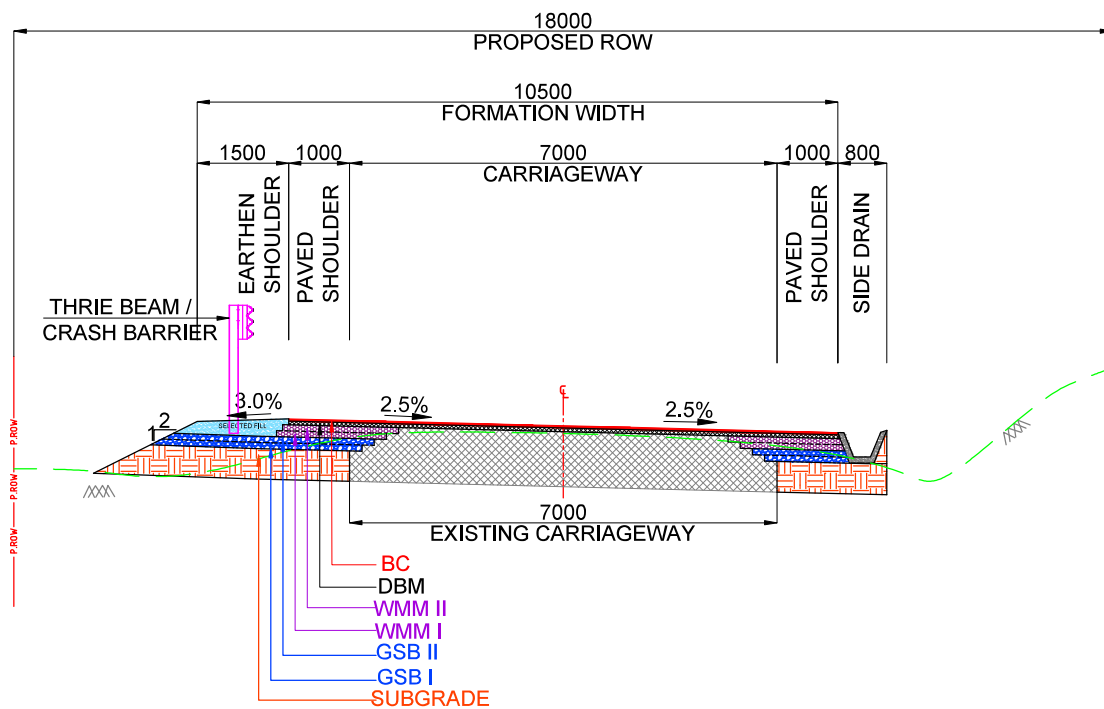


Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim".

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 1039/1, M.C.Village, Near Mahatma Public School,
 Nayasahi, Bhubaneswar- 751015, Odisha
 Telephone :+91 674 254 205, Fax :+91 674 253089
 email:business@akritechno.com/www.akritechno.com

STAGE	DPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPR/AR/HSR/22487
SHEET No.	01		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		

REV.	DATE
1	



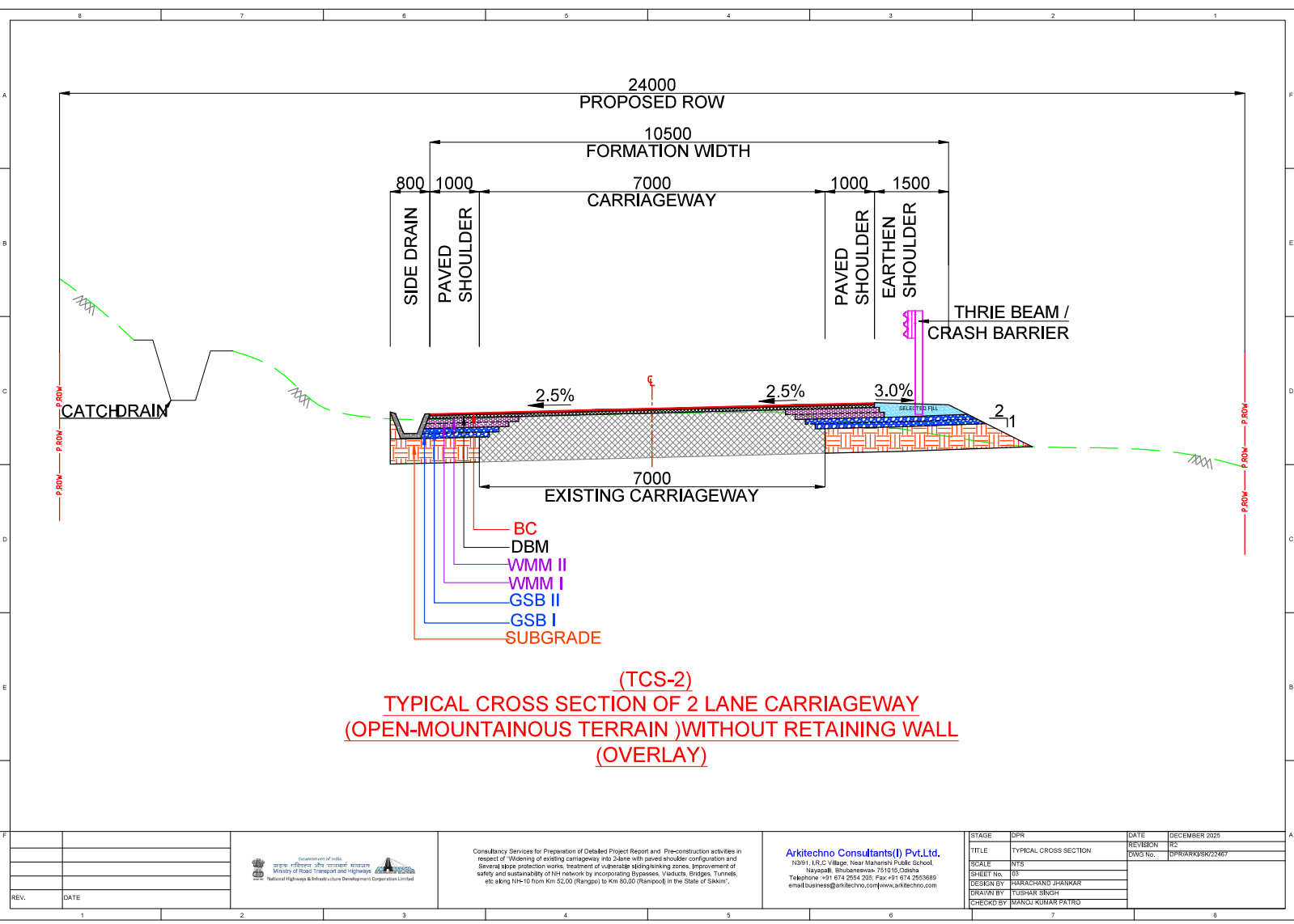
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(OPEN-MOUNTAINOUS TERRAIN) WITHOUT RETAINING WALL
(OVERLAY)**



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.

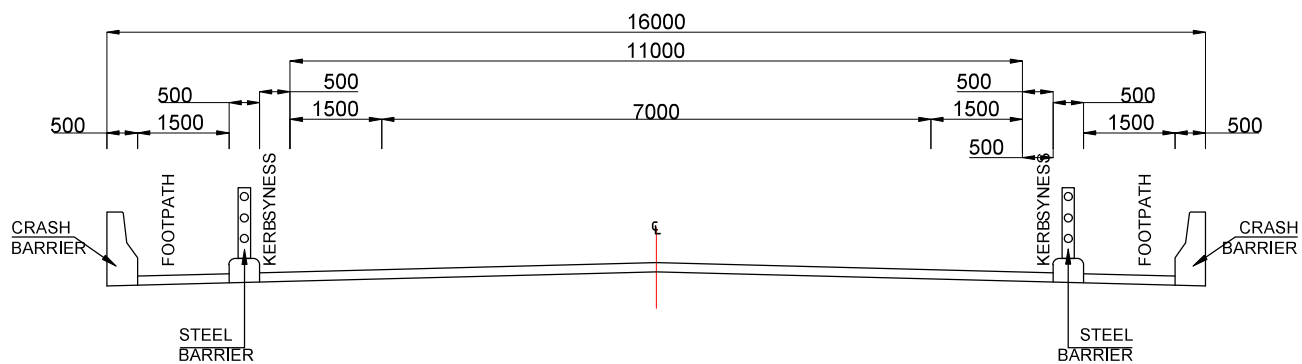
Arkitchno Consultants(I) Pvt.Ltd.
1039/1, M.C. Village, Near Mahatma Public School,
Nayapalli, Bhubaneswar- 751015, Odisha
Telephone: +91 674 254 205, Fax: +91 674 253089
email: business@arkitchno.com, www.arkitchno.com

STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
SHEET No.	02		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



(TCS-2)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(OPEN-MOUNTAINOUS TERRAIN) WITHOUT RETAINING WALL
(OVERLAY)

REV.		DATE	 Ministry of Road Transport and Highways National Highway Infrastructure Development Corporation Limited		Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.		Aktechno Consultants(I) Pvt.Ltd. 1039/1, M.C. Village, Near Mahatma Public School, Nayapalli, Bhubaneswar- 751015, Odisha Telephone: +91 674 254 205, Fax: +91 674 253689 email: business@aktechno.com, www.aktechno.com		STAGE	OPR	DATE	DECEMBER 2025
									TITLE	TYPICAL CROSS SECTION	REVISION	R2
									SCALE	NTS	DWG No.	OPR/ARJ/SR/22487
									SHEET No.	03		
									DESIGN BY	HARACHAND JHANKAR		
									DRAWN BY	TUSHAR SINGH		
									CHECKED BY	MARCO ROBERT PATRIO		



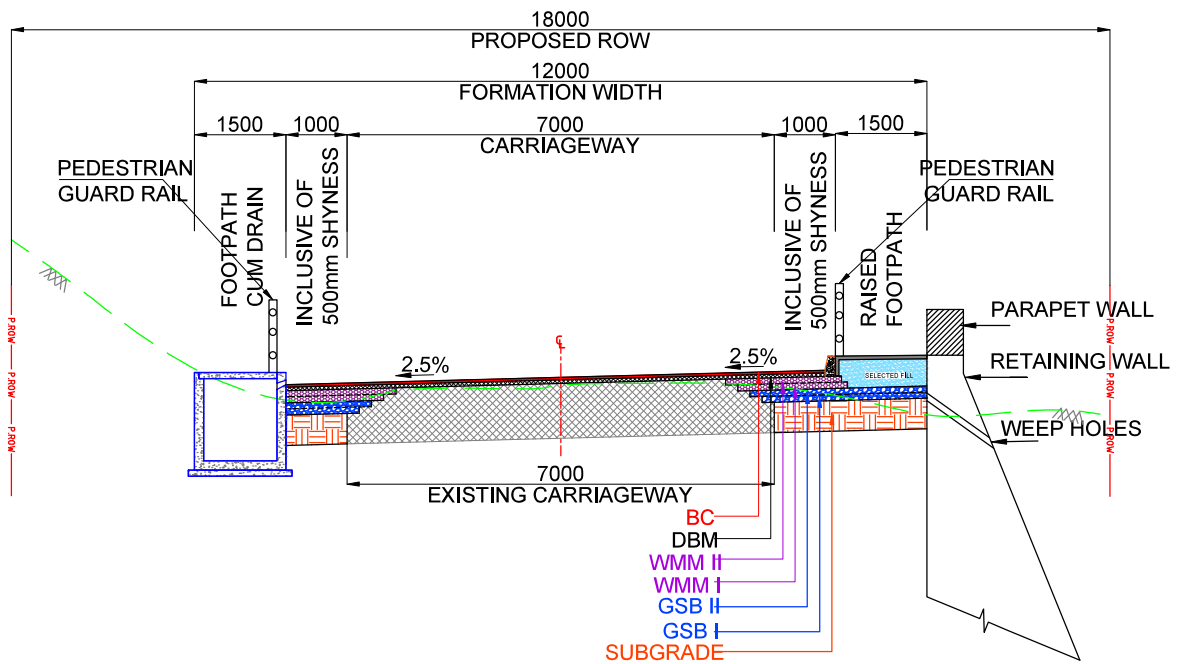
(TCS-3)
TYPICAL CROSS SECTION FOR(MJB ,MNB)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing cartageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking stones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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email: business@aktechno.com/www.aktechno.com

STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/ARJ/SR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



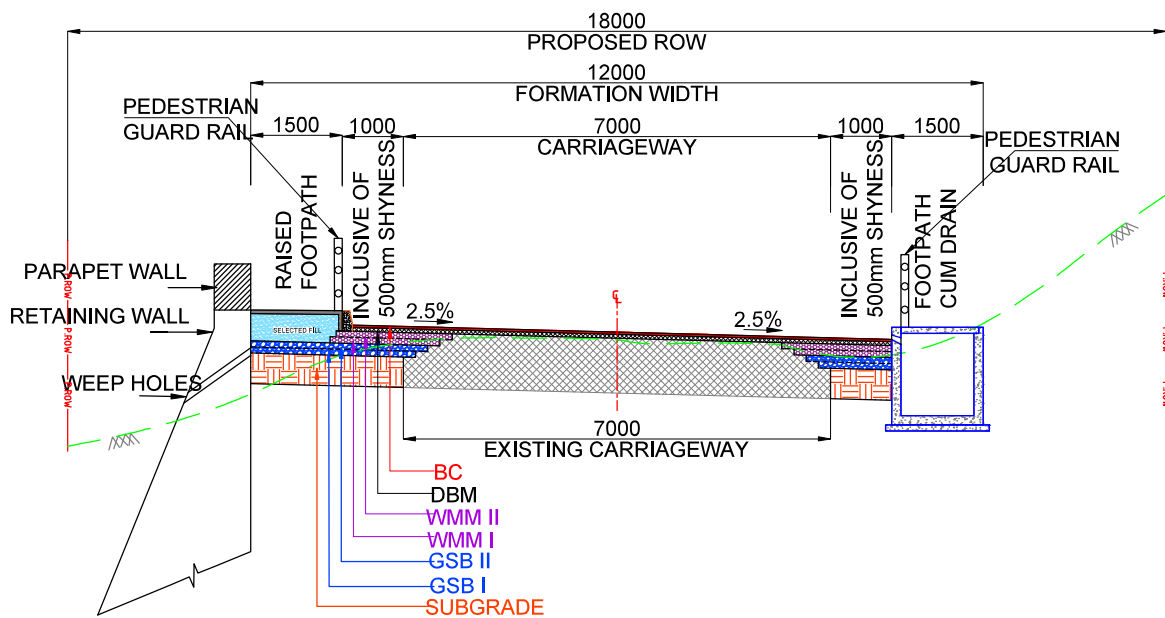
(TCS-4)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS SIDE FOOTPATH CUM COVERED DRAIN AND RHS SIDE RETAINING WALL IN
BUILT-UP AREA)
OVERLAY



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking stones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/ARH/IS/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



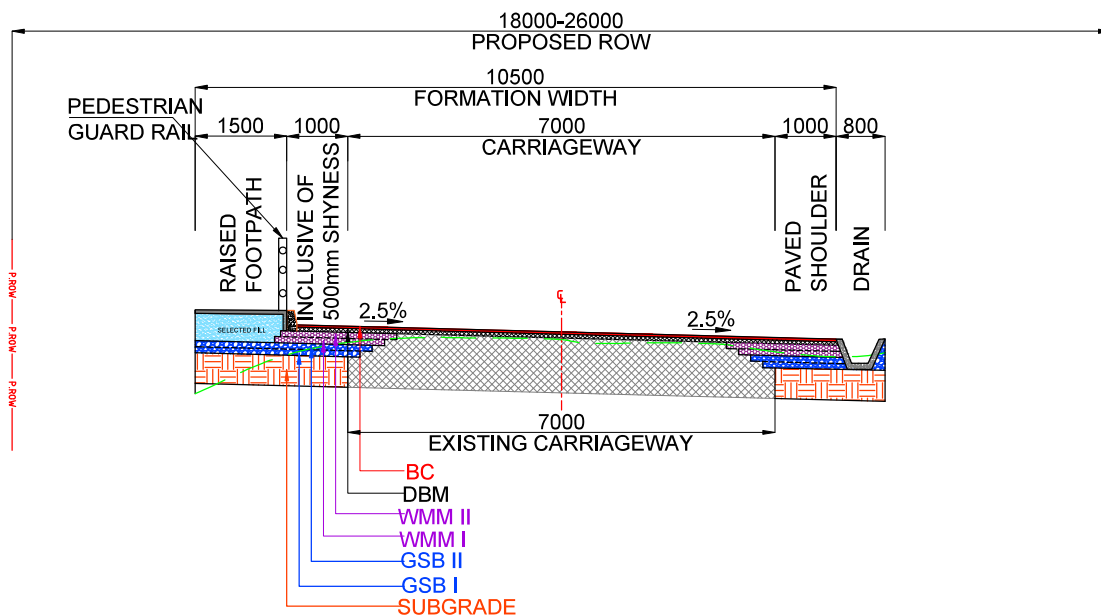
(TCS-4A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS SIDE RETAINING WALL AND RHS FOOTPATH CUM COVERED DRAIN IN BUILT-UP
AREA)
OVER RAY



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
SHEET No.	07		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



(TCS-4B)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS SIDE RAISED FOOTPATH & RHS DRAIN IN BUILT-UP AREA)
OVERLAY

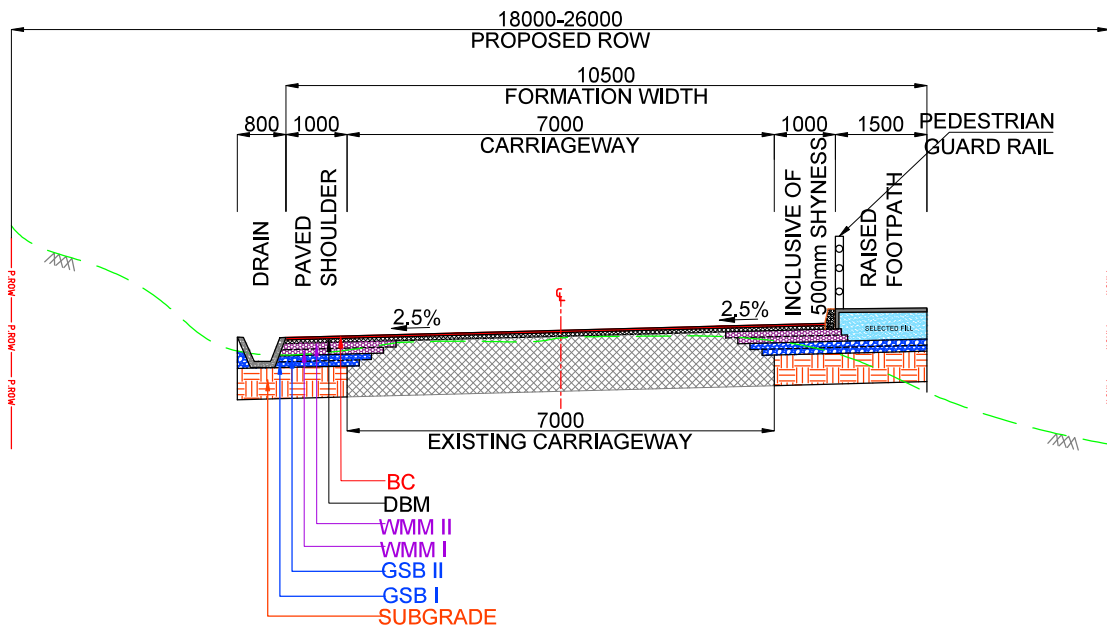


Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	OPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



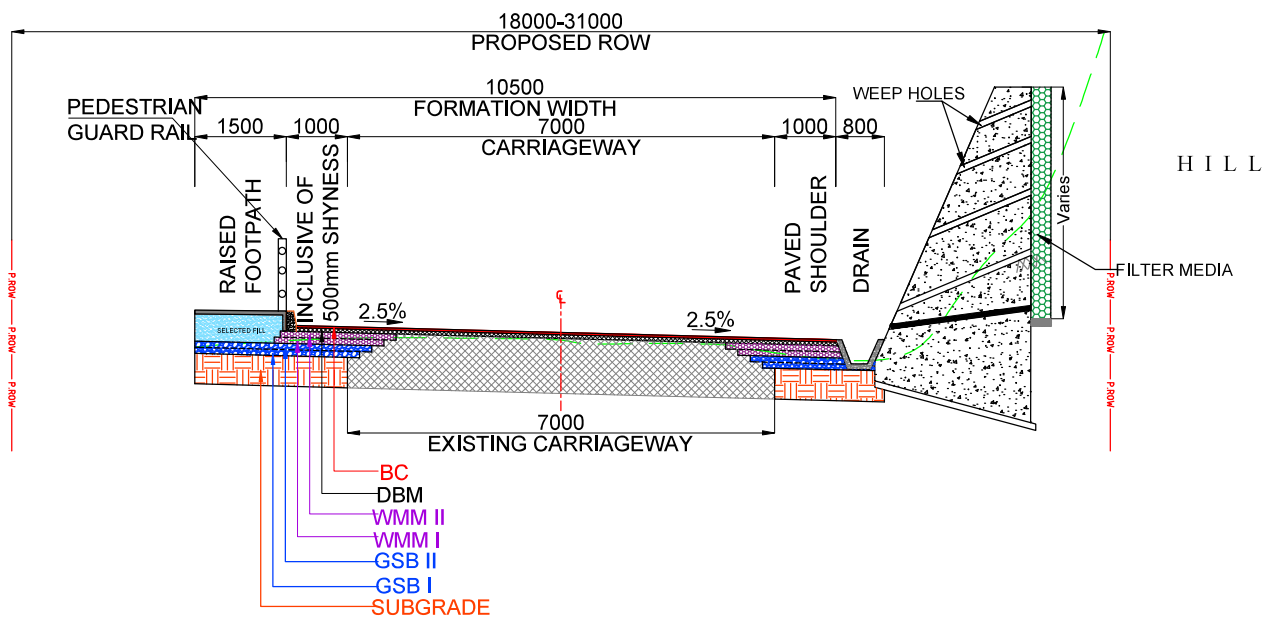
(TCS-4B1)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS DRAIN SIDE & RHS RAISED FOOTPATH IN BUILT-UP AREA)
OVERLAY



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slipping zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.

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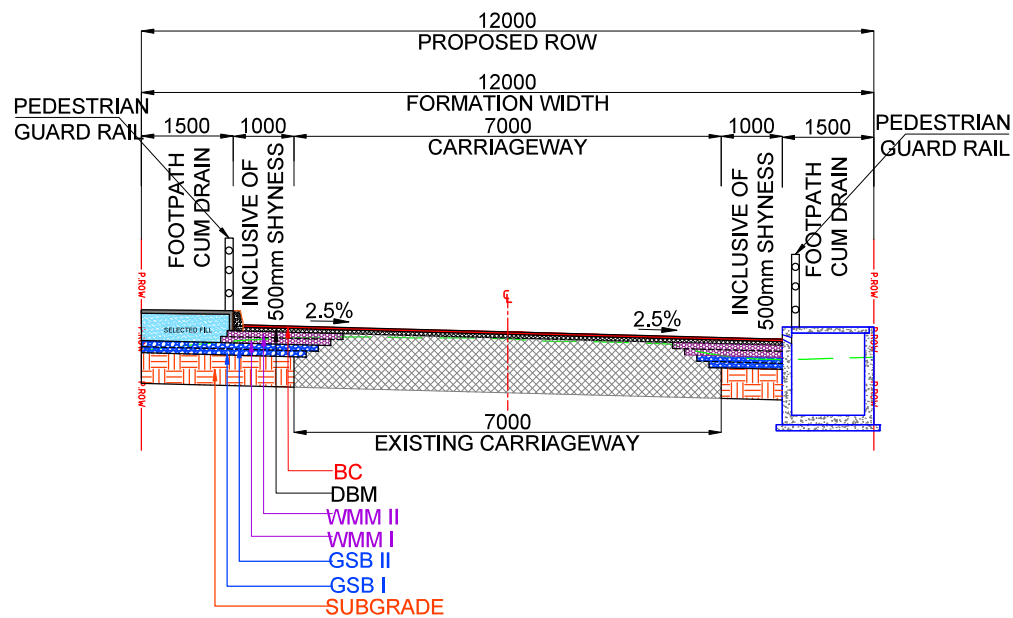
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TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/ARH/JSR/22487
SHEET No.	59		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



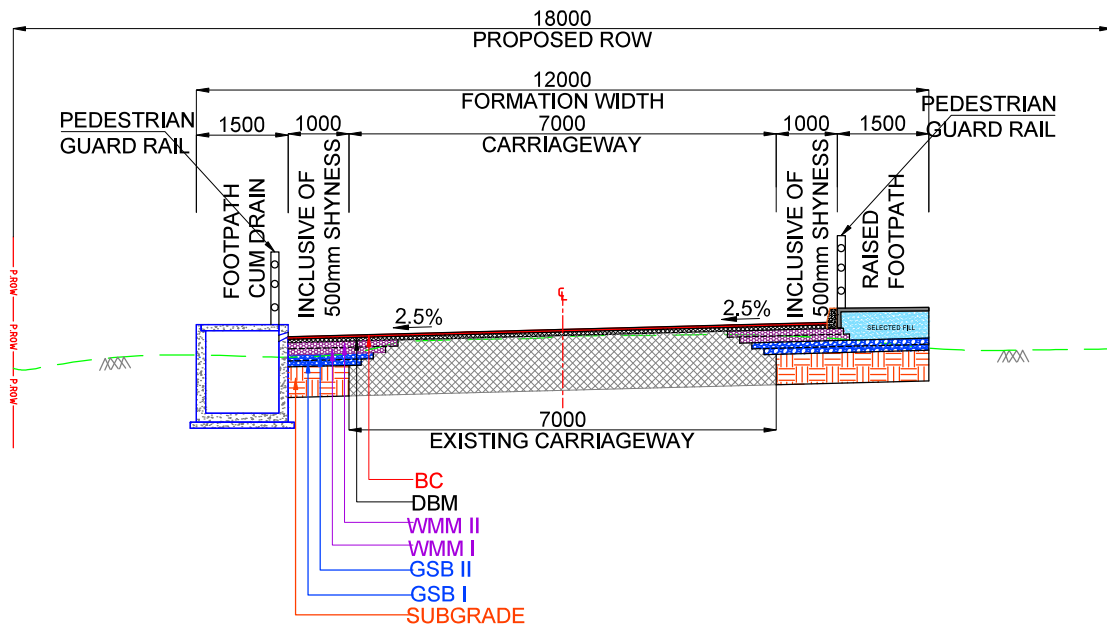
(TCS-4C)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS SIDE RAISED FOOTPATH AND RHS SIDE FOOTPATH CUM COVERED DRAIN IN
BUILT-UP AREA)
OVERLAY



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim.

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/ARX/RSR/22487
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DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



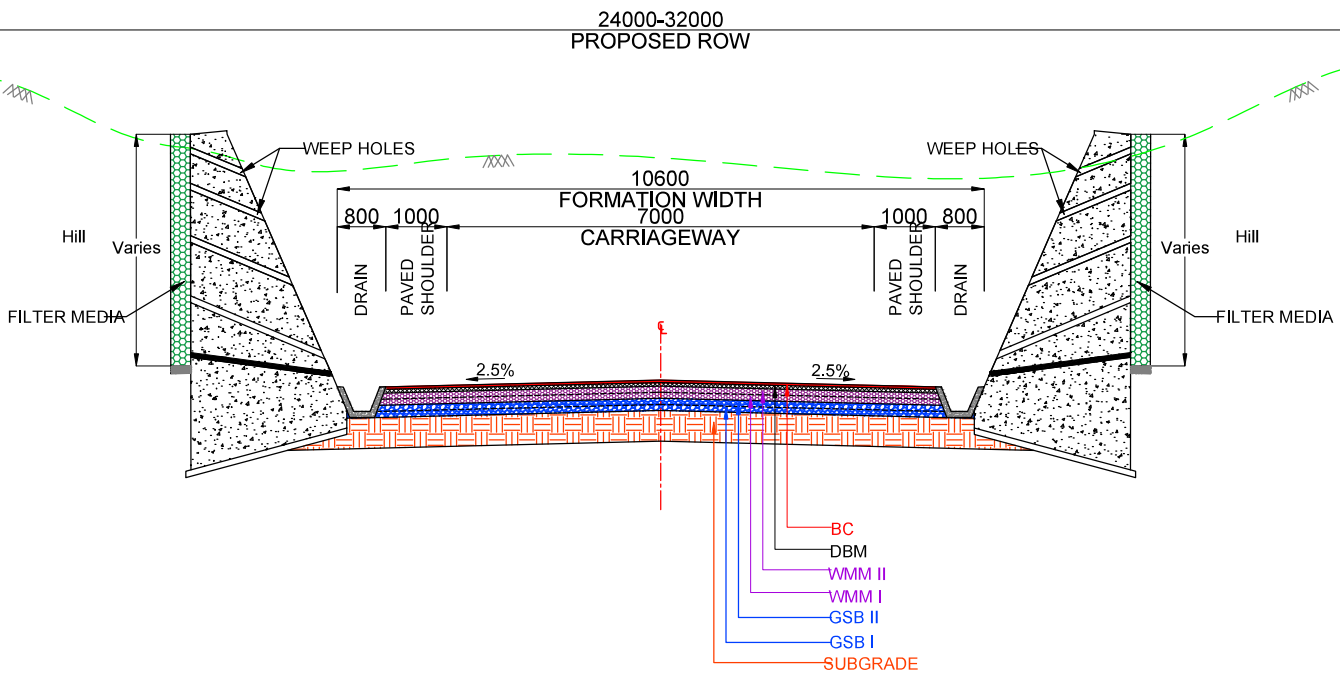
(TCS-4C1)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS FOOTPATH CUM COVERED DRAIN AND RHS SIDE RAISED FOOTPATH IN
BUILT-UP AREA)
OVERLAY



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

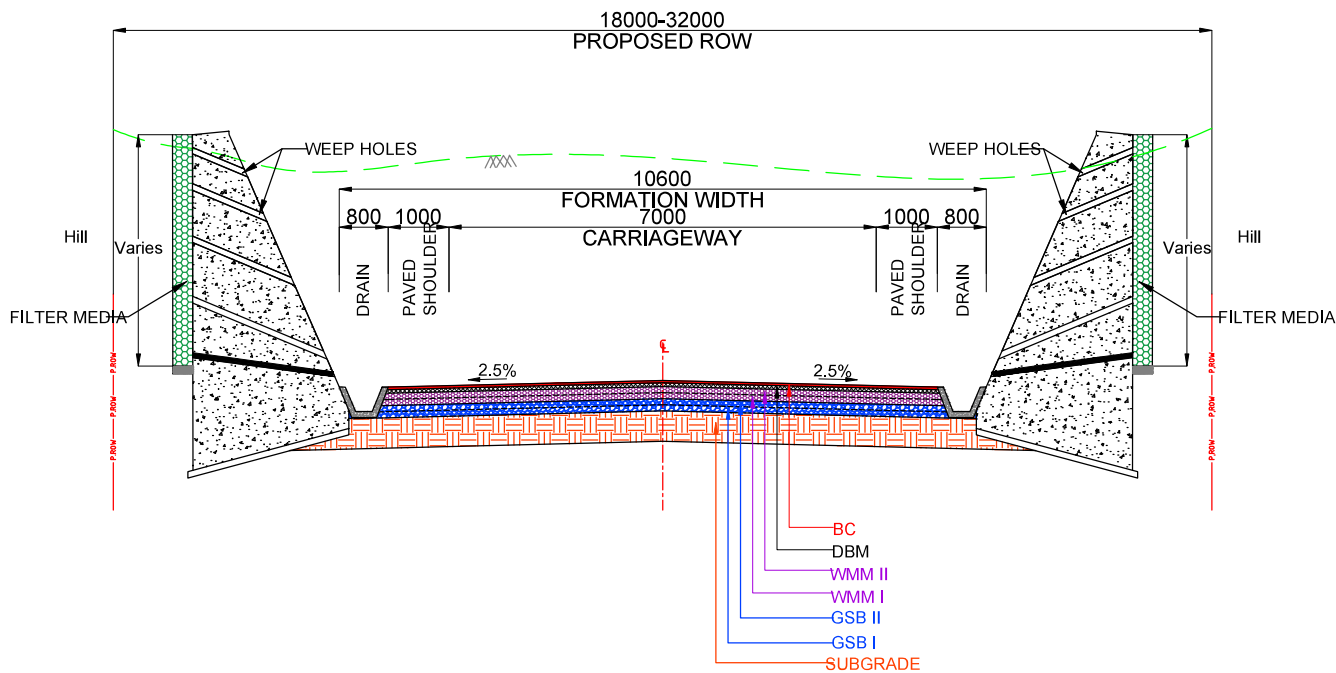
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STAGE	DPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



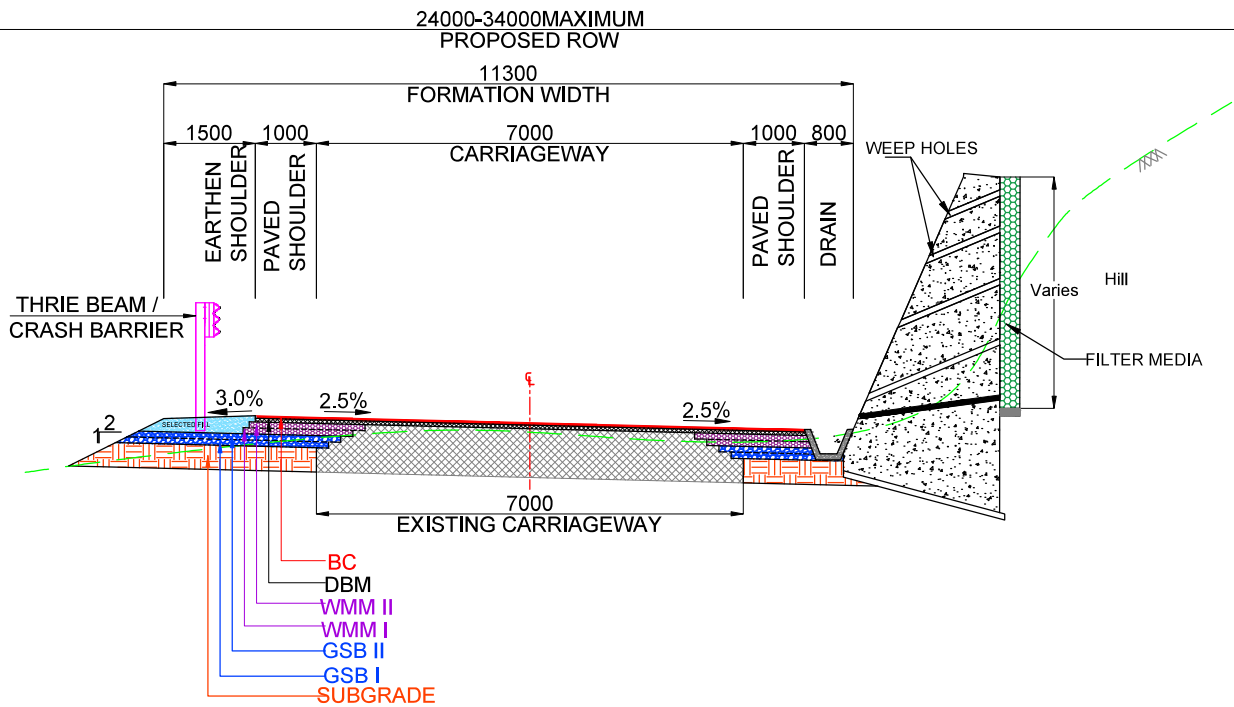
(TCS-5)
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH
(BOTH SIDE BREAST WALL) MOUNTAINOUS TERRAIN**

REV.		DATE	 Ministry of Road Transport and Highways National Highway Infrastructure Development Corporation Limited		Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Ranigee) to Km 80.00 (Ranipool) in the State of Sikkim'.		Aktechno Consultants(I) Pvt.Ltd. 1039/1, M.C.Village, Near Mahatma Public School, Nayabali, Bhubaneswar- 751015, Odisha Telephone: +91 674 254 205, Fax: +91 674 255889 email: business@aktechno.com/www.aktechno.com		STAGE	OPR	DATE	DECEMBER 2025
									TITLE	TYPICAL CROSS SECTION	REVISION	R2
									SCALE	NTS	DWG No.	OPR/ARJ/SR/22487
									SHEET No.	13		
									DESIGN BY	HARACHAND JHANKAR		
									DRAWN BY	TUSHAR SINGH		
									CHECKED BY	MARCO ROBERT PATRIO		



(TCS-5A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH
(BOTH SIDE BREAST WALL) MOUNTAINOUS TERRAIN

		 GOVERNMENT OF INDIA सर्वप्रथम महिला और सामान्य कोष Ministry of Road Transport and Highways  NATIONAL HIGHWAYS INFRASTRUCTURE DEVELOPMENT CORPORATION LIMITED		Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.		Akritechno Consultants(I) Pvt.Ltd. N39/1, I.R.C. Village, Near Mahatma Public School Nayapalli, Bhubaneswar- 751015, Odisha Telephone: +91 674 254 205; Fax: +91 674 253689 email:business@akritechno.com, www.akritechno.com		<table><tr><td>STAGE</td><td>OPR</td><td>DATE</td><td>DECEMBER 2025</td></tr><tr><td>TITLE</td><td>TYPICAL CROSS SECTION</td><td>REVISION</td><td>R2</td></tr><tr><td>SCALE</td><td>NTS</td><td>DWG No.</td><td>OPR/AR/JSR/22487</td></tr><tr><td>SHEET No.</td><td>14</td><td></td><td></td></tr><tr><td>DESIGN BY</td><td>HARACHAND JHANKAR</td><td></td><td></td></tr><tr><td>DRAWN BY</td><td>TUSHAR SINGH</td><td></td><td></td></tr><tr><td>CHECKED BY</td><td>MARCO ROBERT PATRIO</td><td></td><td></td></tr></table>	STAGE	OPR	DATE	DECEMBER 2025	TITLE	TYPICAL CROSS SECTION	REVISION	R2	SCALE	NTS	DWG No.	OPR/AR/JSR/22487	SHEET No.	14			DESIGN BY	HARACHAND JHANKAR			DRAWN BY	TUSHAR SINGH			CHECKED BY	MARCO ROBERT PATRIO		
STAGE	OPR	DATE	DECEMBER 2025																																	
TITLE	TYPICAL CROSS SECTION	REVISION	R2																																	
SCALE	NTS	DWG No.	OPR/AR/JSR/22487																																	
SHEET No.	14																																			
DESIGN BY	HARACHAND JHANKAR																																			
DRAWN BY	TUSHAR SINGH																																			
CHECKED BY	MARCO ROBERT PATRIO																																			
REV.	DATE																																			
1		2	3	4	5	6	7																													



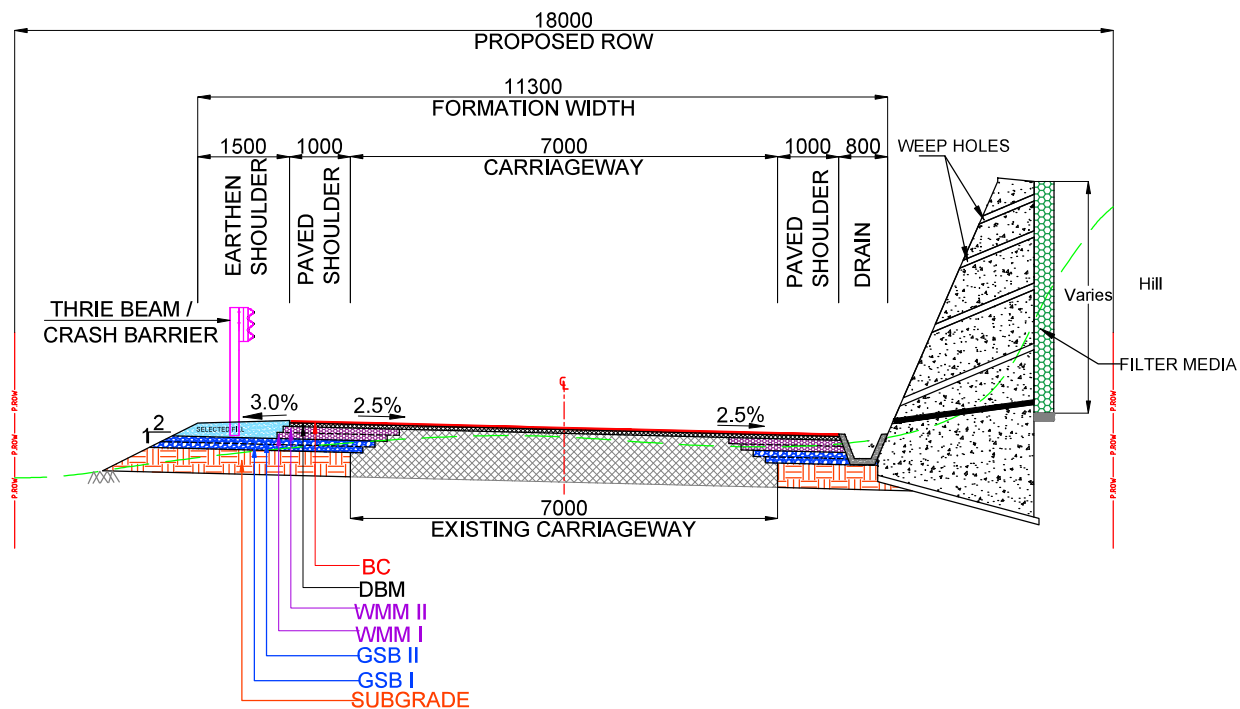
(TCS-6)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY MOUNTAINOUS TERRAIN
(LHS- VALLEY AND RHS HILL -) HILL SIDE BREAST WALL
(OVERLAY)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DRAWN BY	TUSHAR SINGH		
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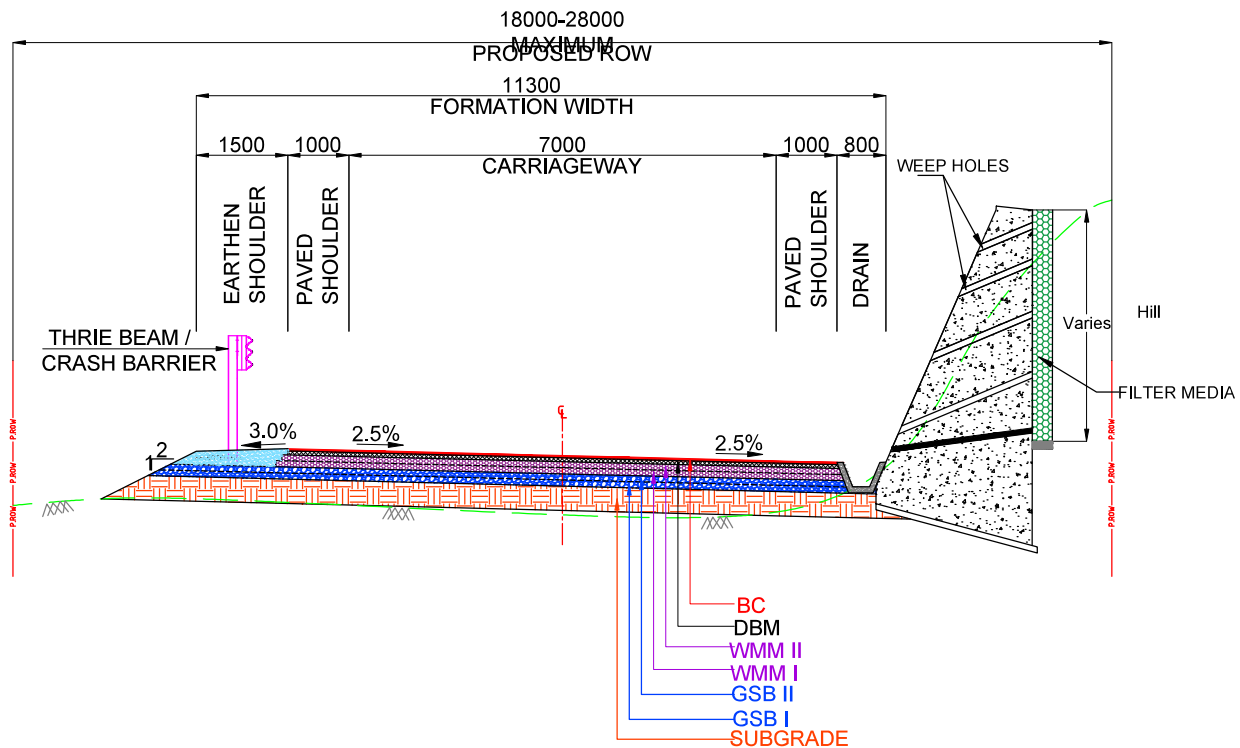
(TCS-6A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY MOUNTAINOUS TERRAIN
(LHS- VALLEY AND RHS HILL -) HILL SIDE BREAST WALL
(OVERLAY)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/AR/HSR/22487
SHEET No.	16		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRO		



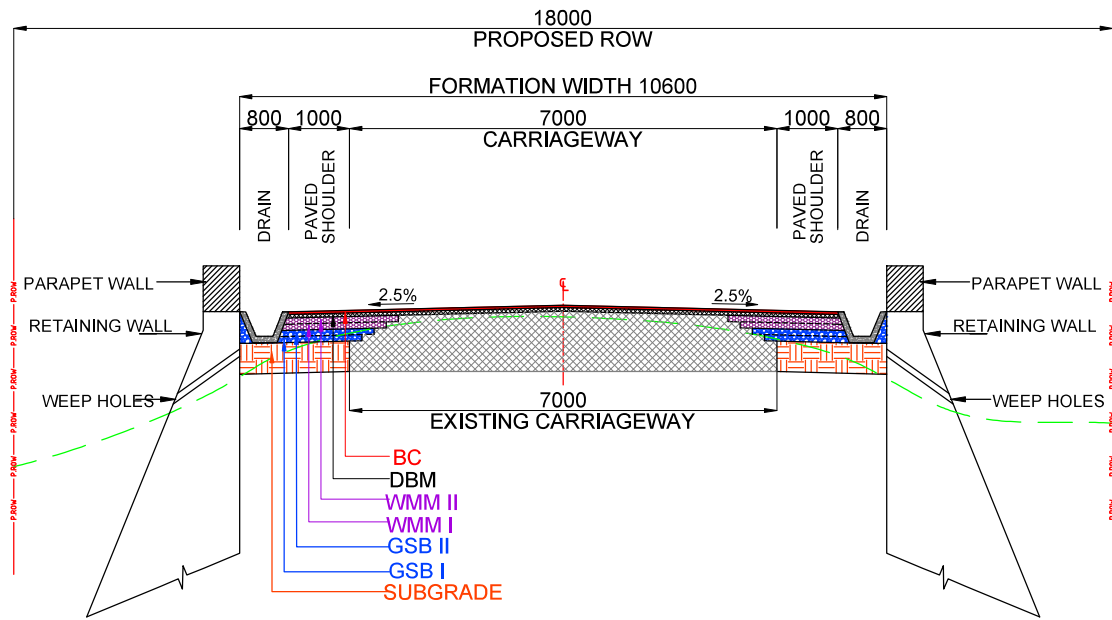
(TCS-6B)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY MOUNTAINOUS TERRAIN
(LHS- VALLEY AND RHS HILL -) HILL SIDE BREAST WALL



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



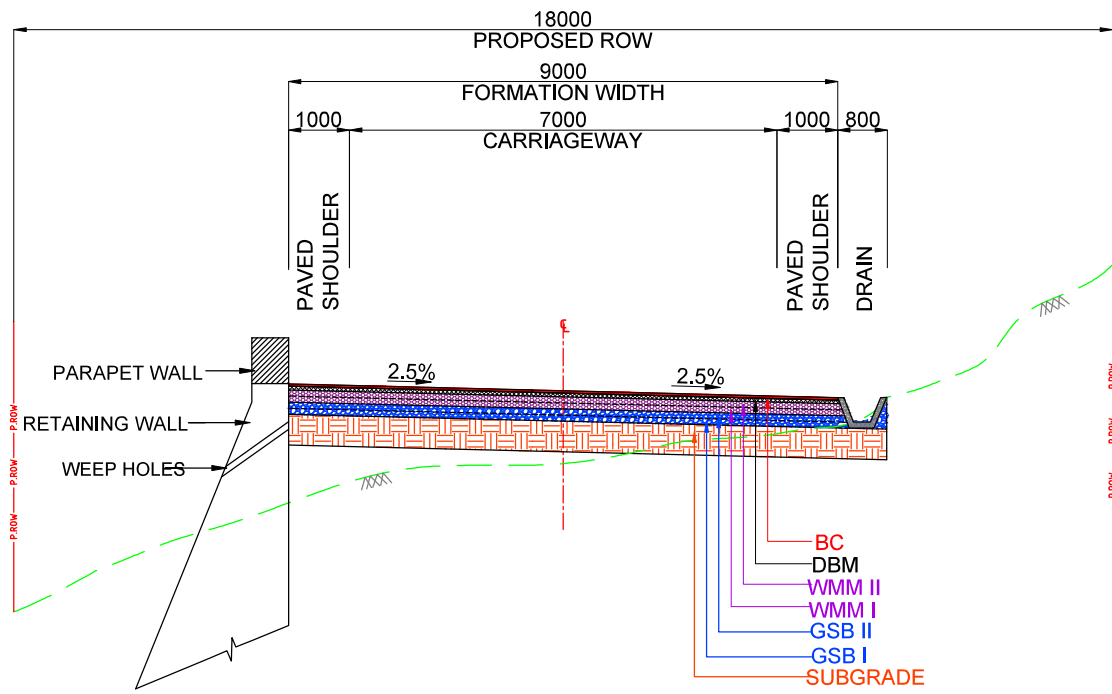
(TCS-7)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH
(BOTH SIDE RETAINING WALL)
(OVERLAY)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/RSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



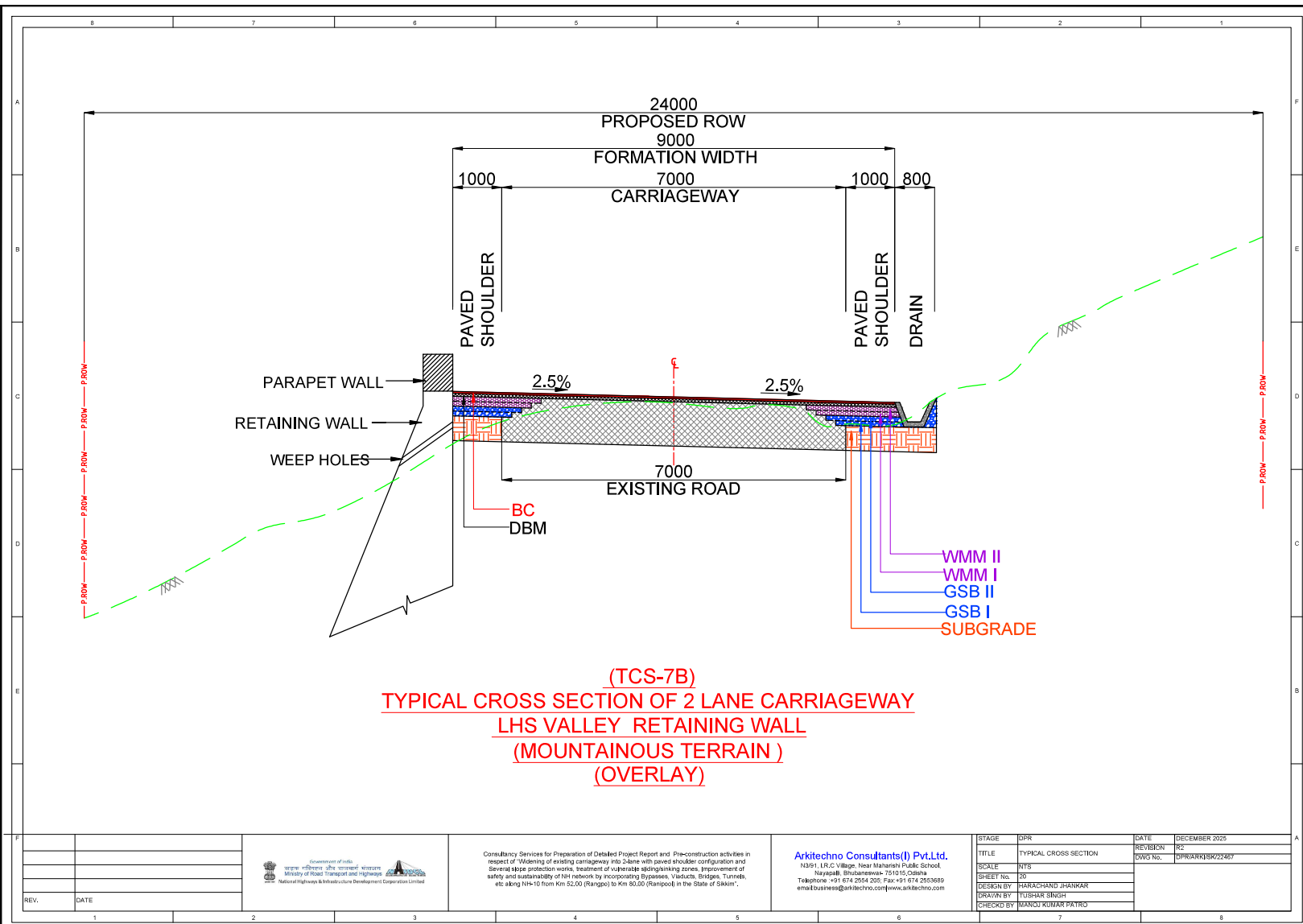
(TCS-7A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
LHS VALLEY RETAINING WALL
(MOUNTAINOUS TERRAIN)

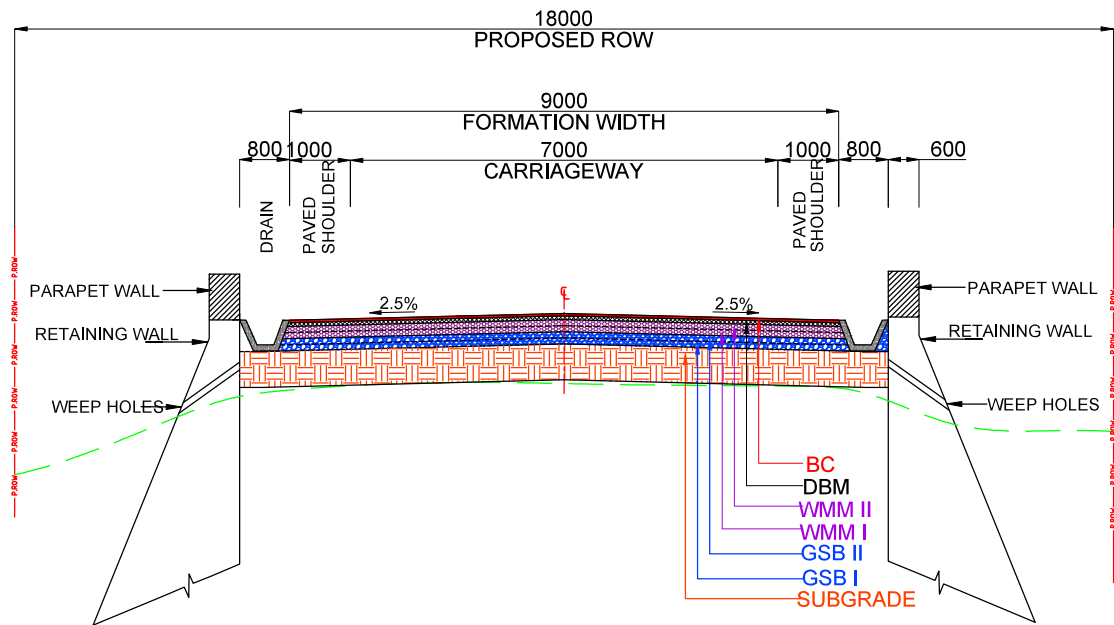


Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		





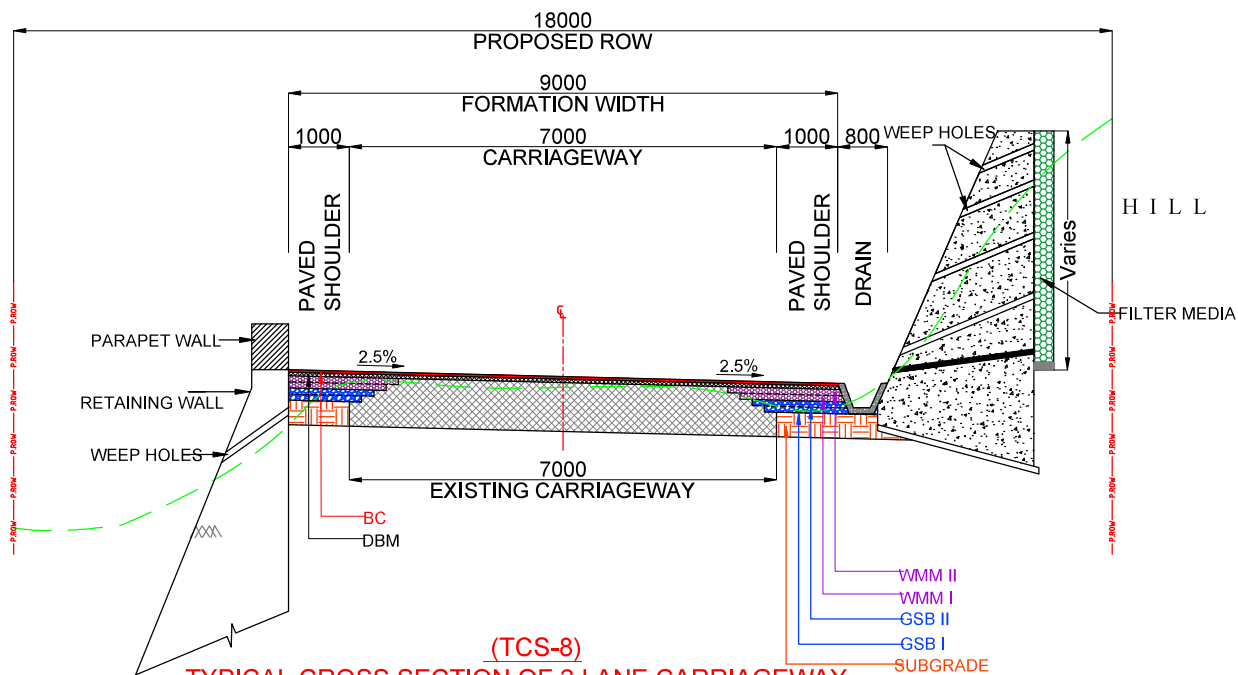
(TCS-7C)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY WITH
(BOTH SIDE RETAINING WALL) MOUNTAINOUS TERRAIN



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/ARH/JSR/22487
SHEET No.	21		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



(TCS-8)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS-VALLEY AND RHS - HILL
HILL SIDE BREAST WALL & VALLEY SIDE RETAINING WALL
(OVERLAY)

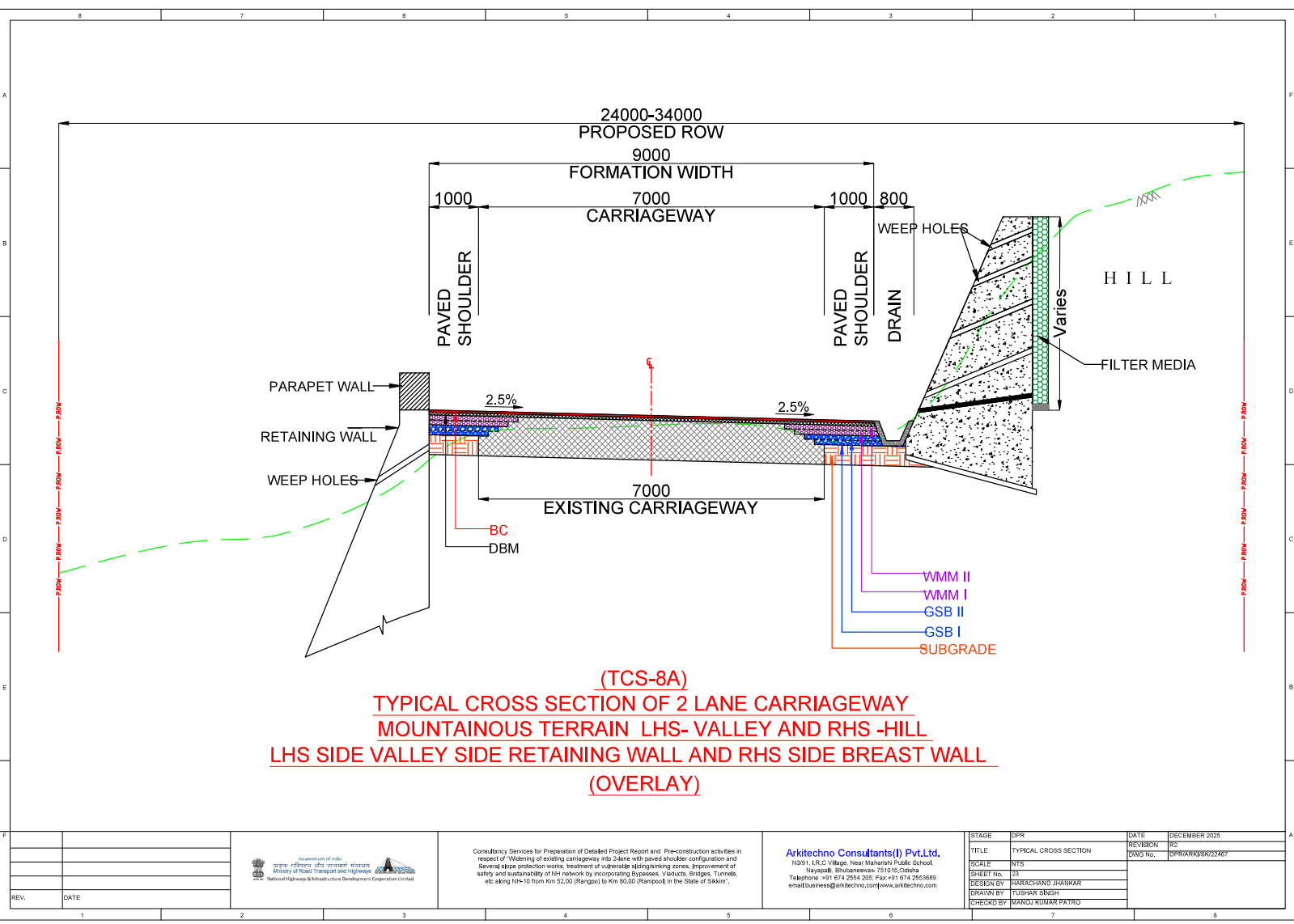


Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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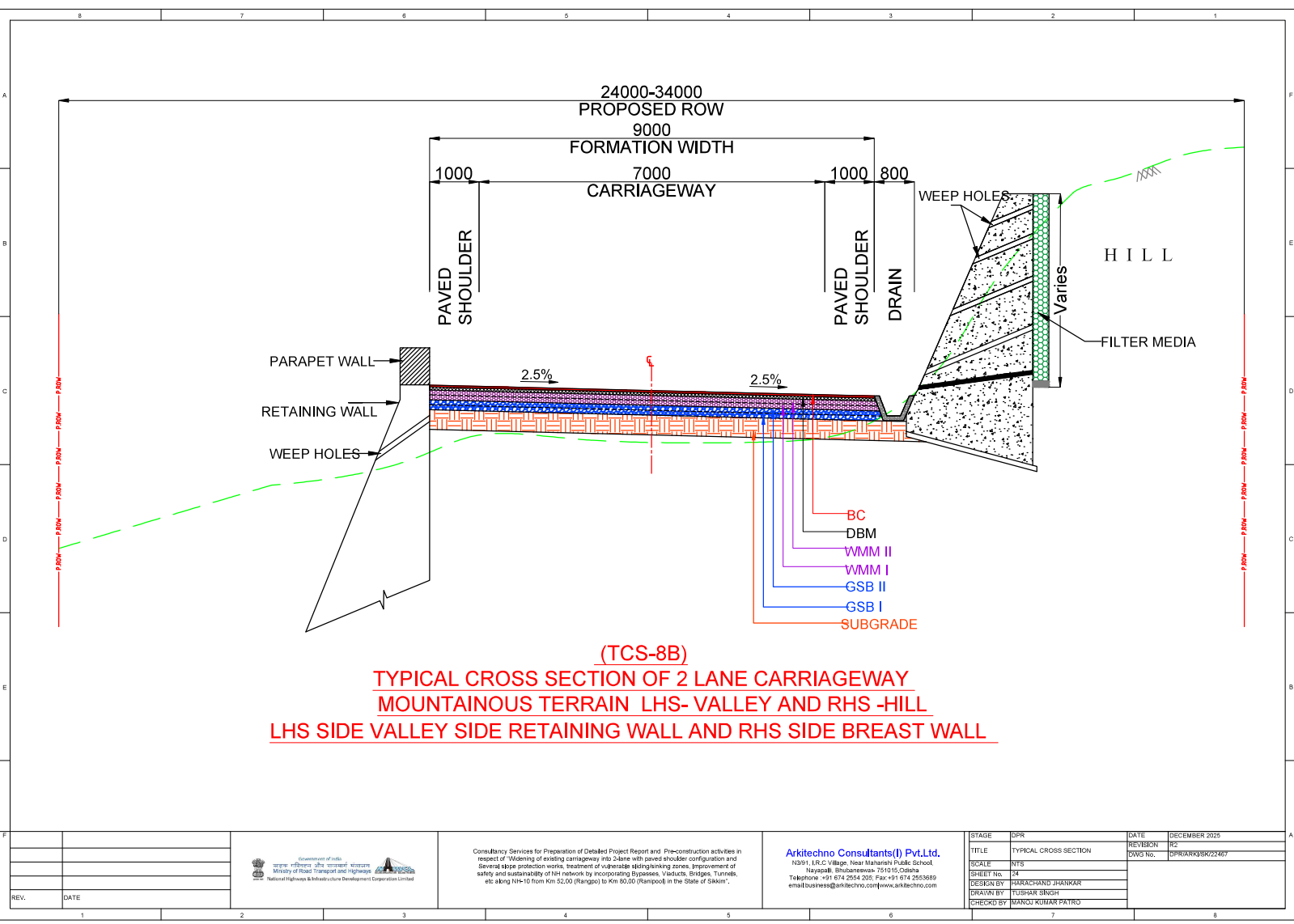
1039/1, M.C.Village, Near Mahatma Public School,
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Telephone: +91 674 254 205; Fax: +91 674 253689
email: business@arkitechno.com/www.arkitechno.com

STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/AR/HSR/22487
SHEET No.	22		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		

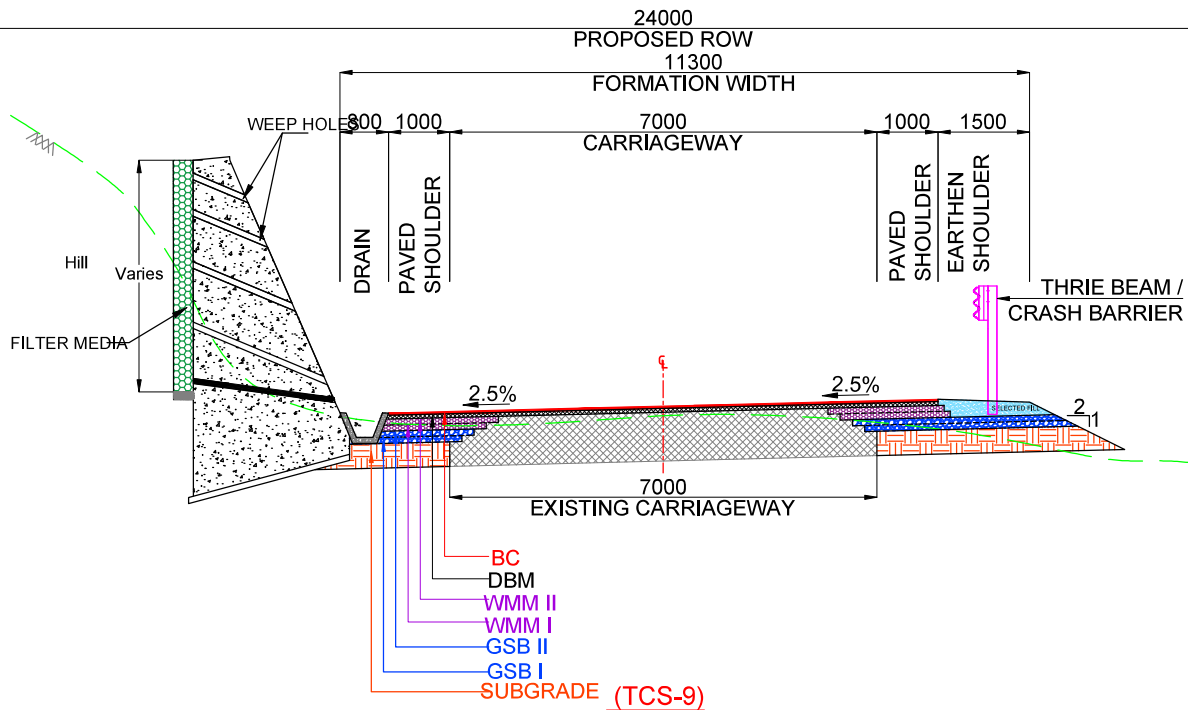


(TCS-8A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS- VALLEY AND RHS -HILL
LHS SIDE VALLEY SIDE RETAINING WALL AND RHS SIDE BREAST WALL
(OVERLAY)

REV.		DATE	  		Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.		Arkitechno Consultants(I) Pvt.Ltd. 1039/1, M.C. Village, Near Mahatma Public School, Nayabali, Bhubaneswar- 751015, Odisha Telephone: +91 674 2564 205, Fax: +91 674 2550889 email: business@arkitechno.com/www.arkitechno.com		STAGE	OPR	DATE	DECEMBER 2025
									TITLE	TYPICAL CROSS SECTION	REVISION	R2
									SCALE	NTS	DWG No.	OPR/AR/2025/022487
									SHEET No.	23		
									DESIGN BY	HARACHAND JHANKAR		
									DRAWN BY	TUSHAR SINGH		
									CHECKED BY	MARCO ROBERT PATRIO		



		 Government of India Ministry of Road Transport and Highways		 National Highway Infrastructure Development Corporation Limited		Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.		Arkitechno Consultants(I) Pvt.Ltd. 1039/1, M.C. Village, Near Mahatma Public School, Nayabali, Bhubaneswar- 751015, Odisha Telephone: +91 674 254 205, Fax: +91 674 255089 email: business@arkitechno.com/www.arkitechno.com		STAGE	DPR	DATE	DECEMBER 2025	
										TITLE	TYPICAL CROSS SECTION		REVISION	R2
										SCALE	N.T.S		DWG No.	DPR/AR/HSR/22487
										SHEET No.	24			
										DESIGN BY	HARACHAND JHANKAR			
										DRAWN BY	TUSHAR SINGH			
										CHECKED BY	MARCO KUMAR PATRO			
REV.	DATE													
1		2		3		4		5		6		7		8



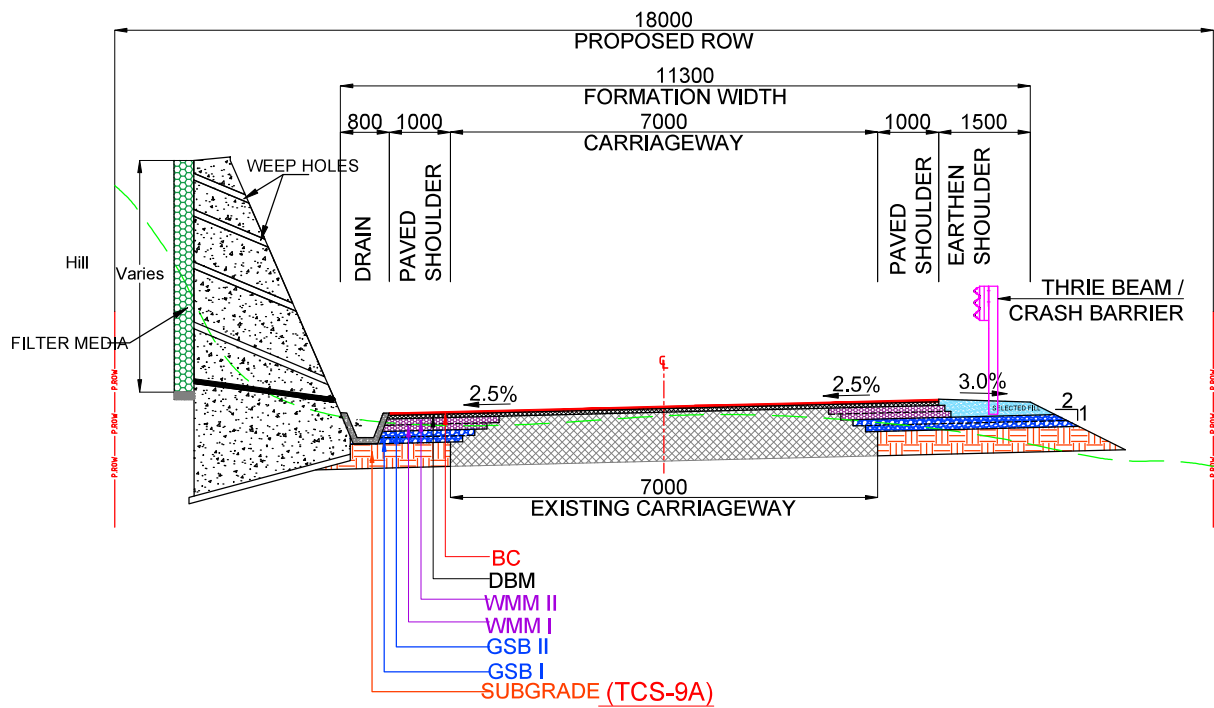
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY MOUNTAINOUS TERRAIN
(LHS- HILL AND RHS - VALLEY) LHS SIDE BREAST WALL
(OVERLAY)**



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slipping zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



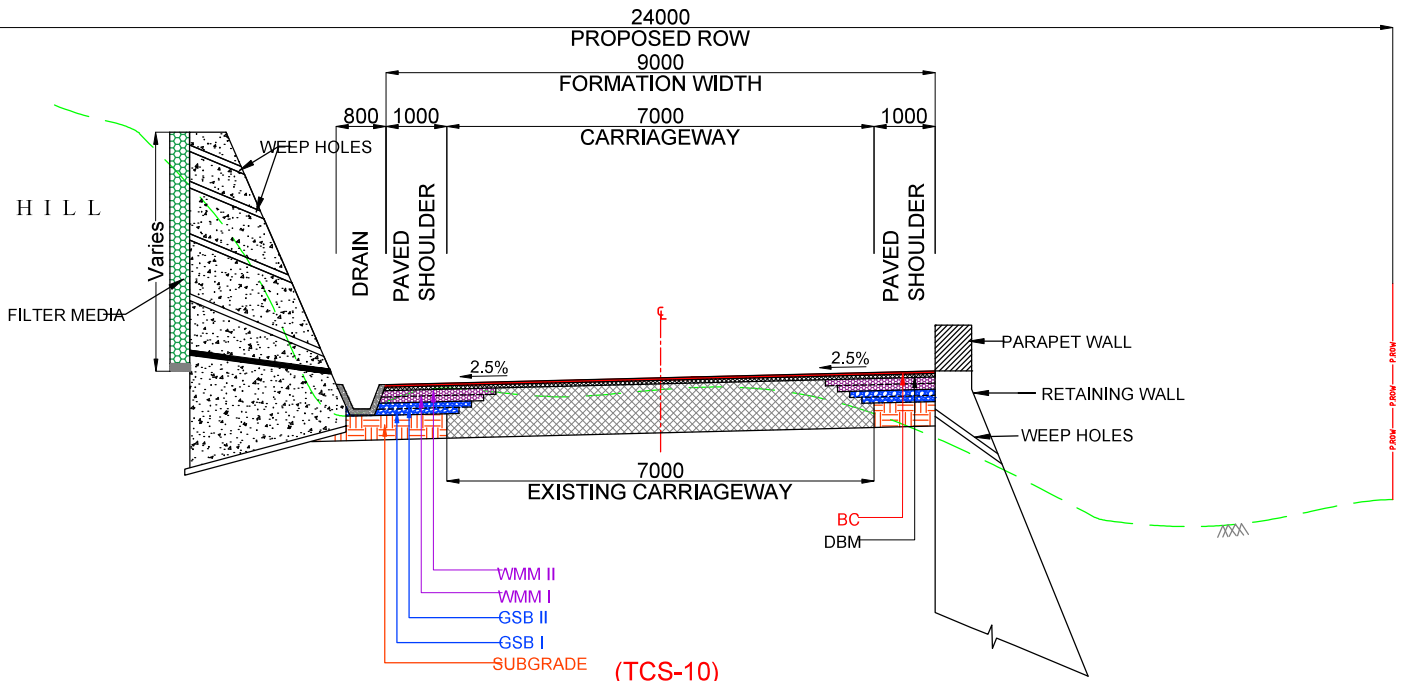
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY MOUNTAINOUS TERRAIN
(LHS- HILL AND RHS - VALLEY) LHS SIDE BREAST WALL
(OVERLAY)**



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangee) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/KJSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



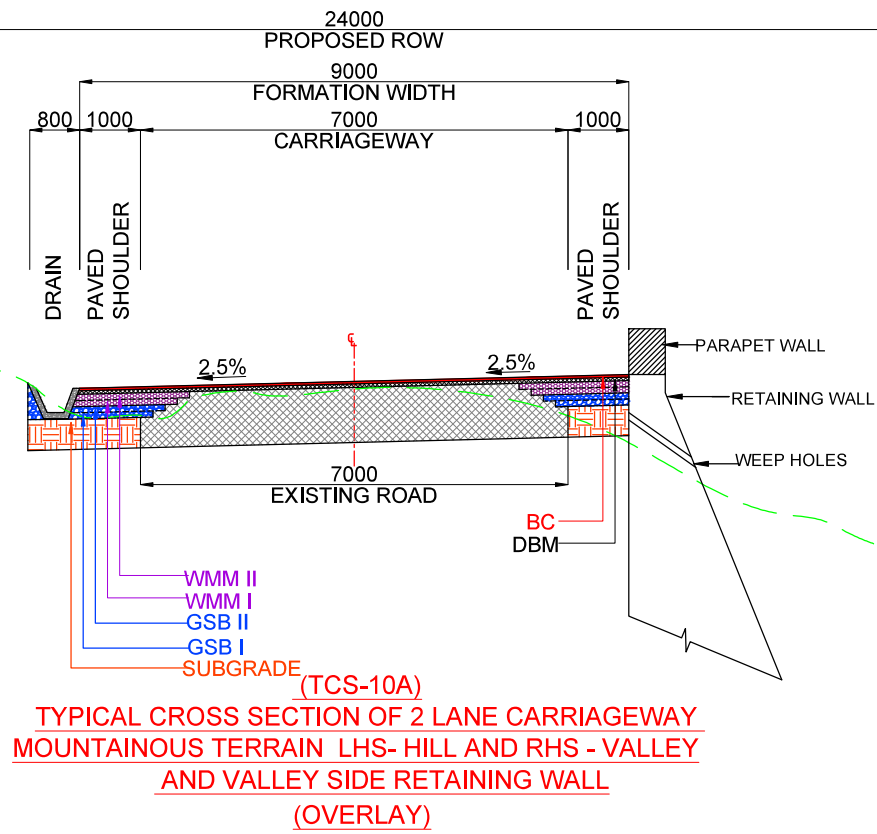
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS- HILL AND RHS - VALLEY
LHS BREAST WALL & RHS VALLEY RETAINING WALL
(OVERLAY)**



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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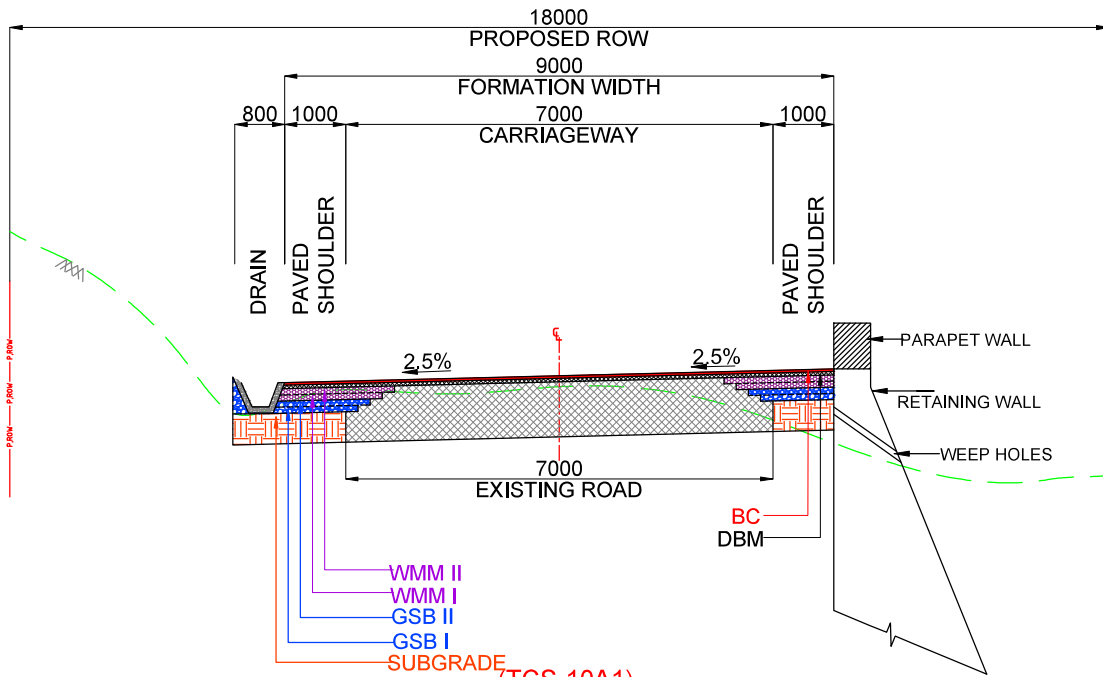
STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPR/AR/KJSR/22487
SHEET No.	27		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

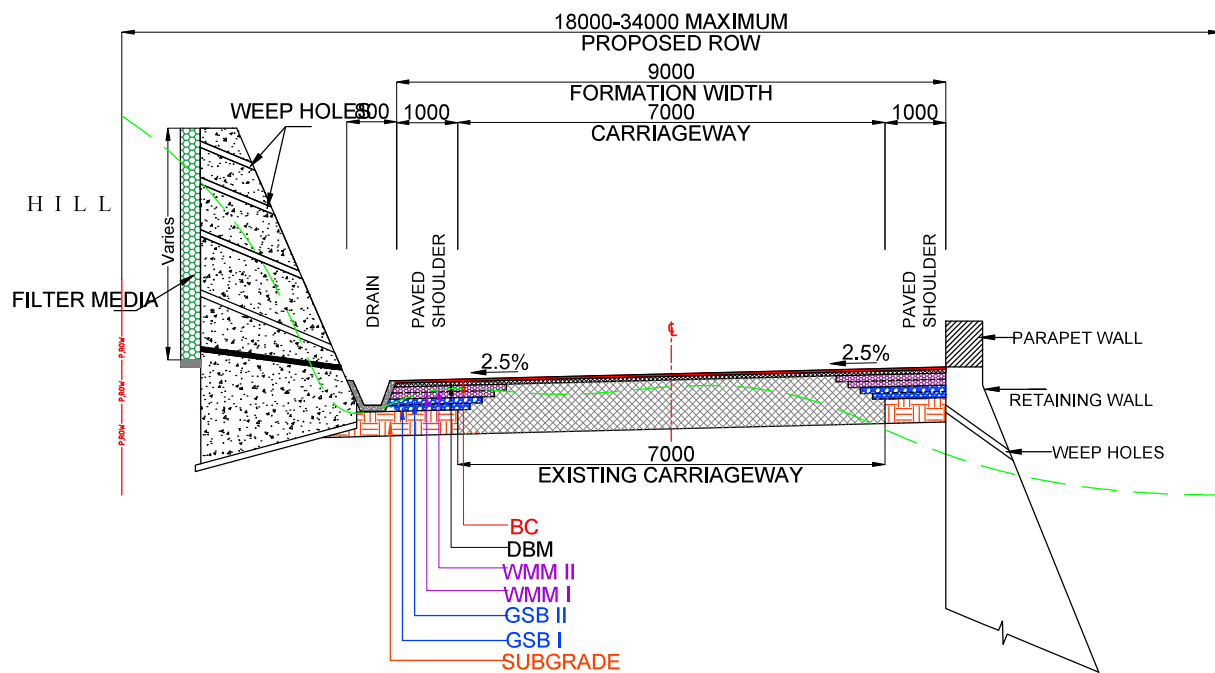
Akritechno Consultants(I) Pvt.Ltd.
1039/1, M.C.Village, Near Mahatma Public School,
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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPRIARHSR022487
SHEET No.	28		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS- HILL AND RHS - VALLEY
AND VALLEY SIDE RETAINING WALL
(OVERLAY)**

REV.	DATE	 Government of India Ministry of Road Transport and Highways National Highway Infrastructure Development Corporation Limited	Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking stones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim'.	Arkitechno Consultants(I) Pvt.Ltd. 1039/1, M.C.Village, Near Mahatma Public School, Nayapalli, Bhubaneswar- 751015, Odisha Telephone: +91 674 254 205, Fax: +91 674 2530889 email: business@arkitechno.com/www.arkitechno.com	STAGE: DPR TITLE: TYPICAL CROSS SECTION SCALE: NTS SHEET No. 29 DESIGN BY: HARACHAND JHANKAR DRAWN BY: TUSHAR SINGH CHECKED BY: MARCO ROBERT PATRIO	DATE: DECEMBER 2025 REVISION: R2 DWG No.: DPR/ARX/JSR/22487
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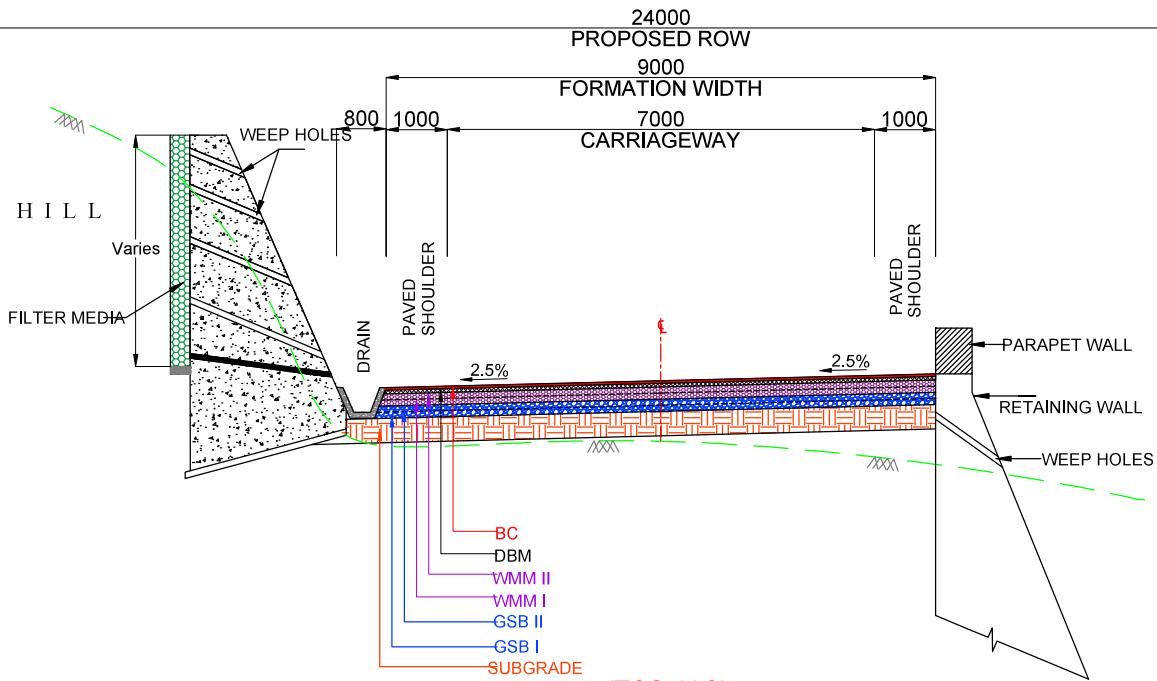
(TCS-10B)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS- HILL AND RHS - VALLEY
LHS BREAST WALL & RHS VALLEY RETAINING WALL
(OVERLAY)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking stones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Range) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
SHEET No.	30		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



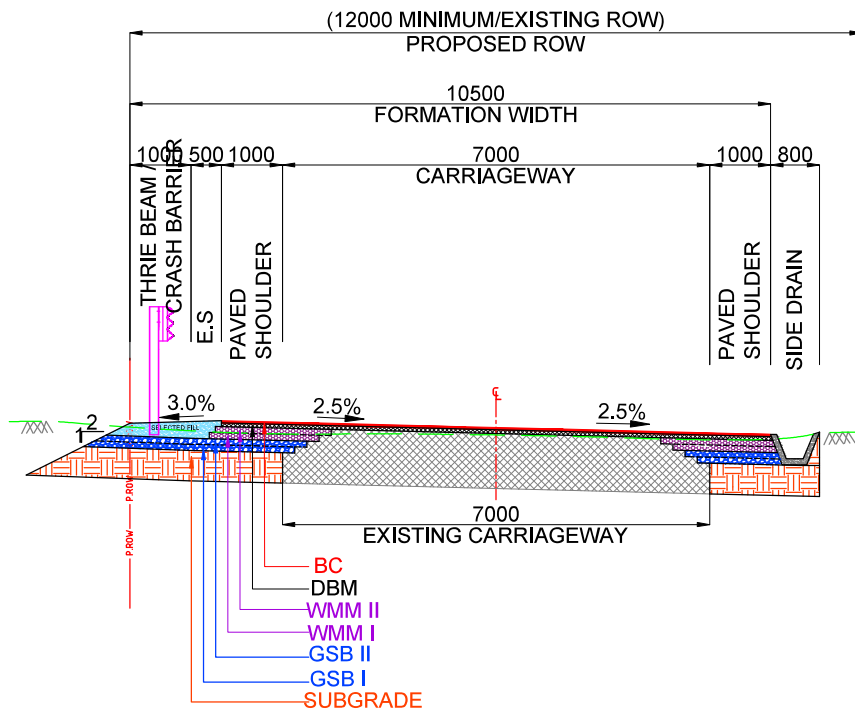
**TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
MOUNTAINOUS TERRAIN LHS- HILL AND RHS - VALLEY
LHS BREAST WALL & RHS VALLEY RETAINING WALL**



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	OPR/AR/HSR/22487
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DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



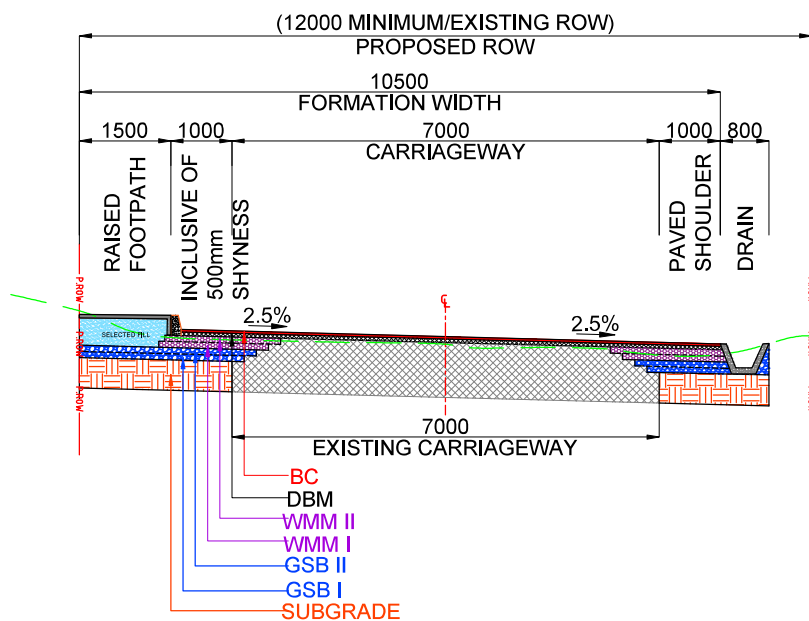
(TCS-A)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(OPEN-MOUNTAINOUS TERRAIN)WITHOUT PROTECTION WALL



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	DPR	DATE	DECEMBER 2020
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/AR/KJSR/22487
SHEET No.	32		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRO		



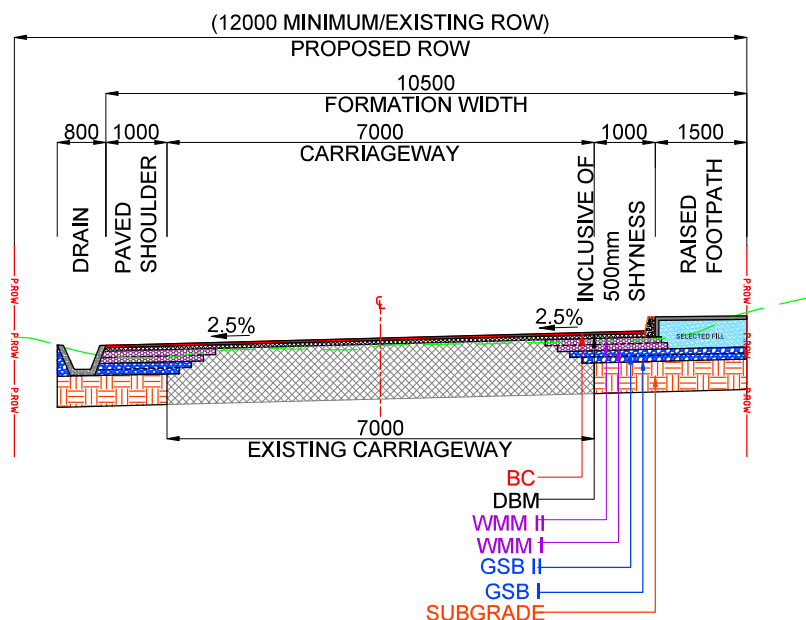
(TCS-B)
TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY
(LHS SIDE RAISED FOOTPATH & RHS DRAIN IN BUILT-UP AREA)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of "Widening of existing carriageway into 3-lane with paved shoulder configuration and Several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of the network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangpo) to Km 80.00 (Ranipool) in the State of Sikkim".

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STAGE	OPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPH/AR/RSR/22487
SHEET No.	33		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		



(TCS-B1)

TYPICAL CROSS SECTION OF 2 LANE CARRIAGEWAY

(RHS SIDE RAISED FOOTPATH & LHS DRAIN IN BUILT-UP AREA)



Consultancy Services for Preparation of Detailed Project Report and Pre-construction activities in respect of 'Widening of existing carriageway into 3-lane with paved shoulder configuration and several slope protection works, treatment of vulnerable sliding/slaking zones, Improvement of safety and sustainability of NH network by incorporating Bypasses, Viaducts, Bridges, Tunnels, etc along NH-10 from Km 52.00 (Rangoon) to Km 80.00 (Ranipool) in the State of Sikkim'.

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STAGE	DPR	DATE	DECEMBER 2025
TITLE	TYPICAL CROSS SECTION	REVISION	R2
SCALE	NTS	DWG No.	DPR/AR/RSR/22487
SHEET No.	34		
DESIGN BY	HARACHAND JHANKAR		
DRAWN BY	TUSHAR SINGH		
CHECKED BY	MARCO ROBERT PATRIO		