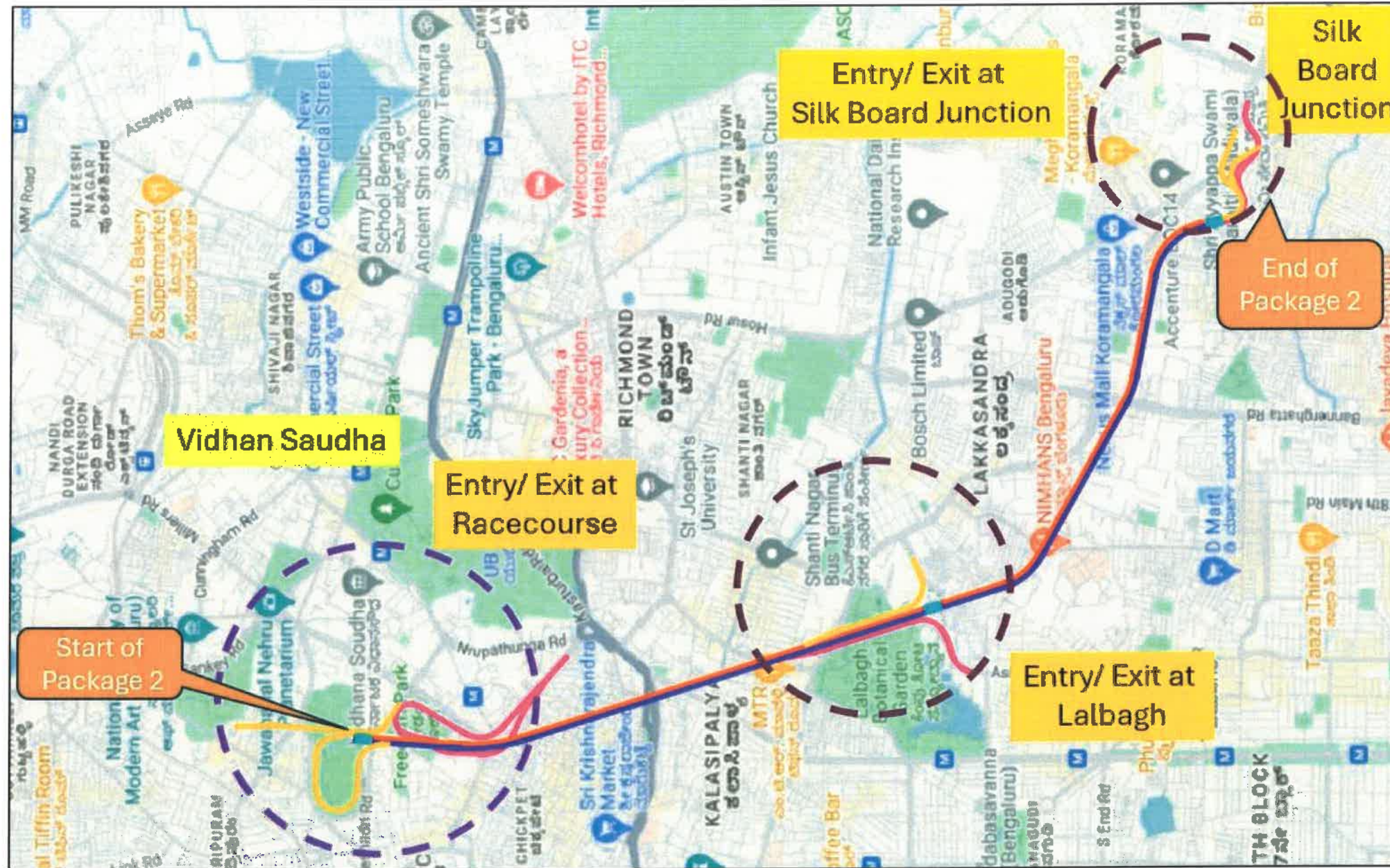




GOVERNMENT OF KARNATAKA

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND
VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION



VOLUME-4-TENDER DRAWINGS PACKAGE-2



RODIC CONSULTANTS PVT. LTD



BRUHAT BENGALURU MAHANAGARA PALIKE

Appendix-B-II

TUNNEL TUBE -I

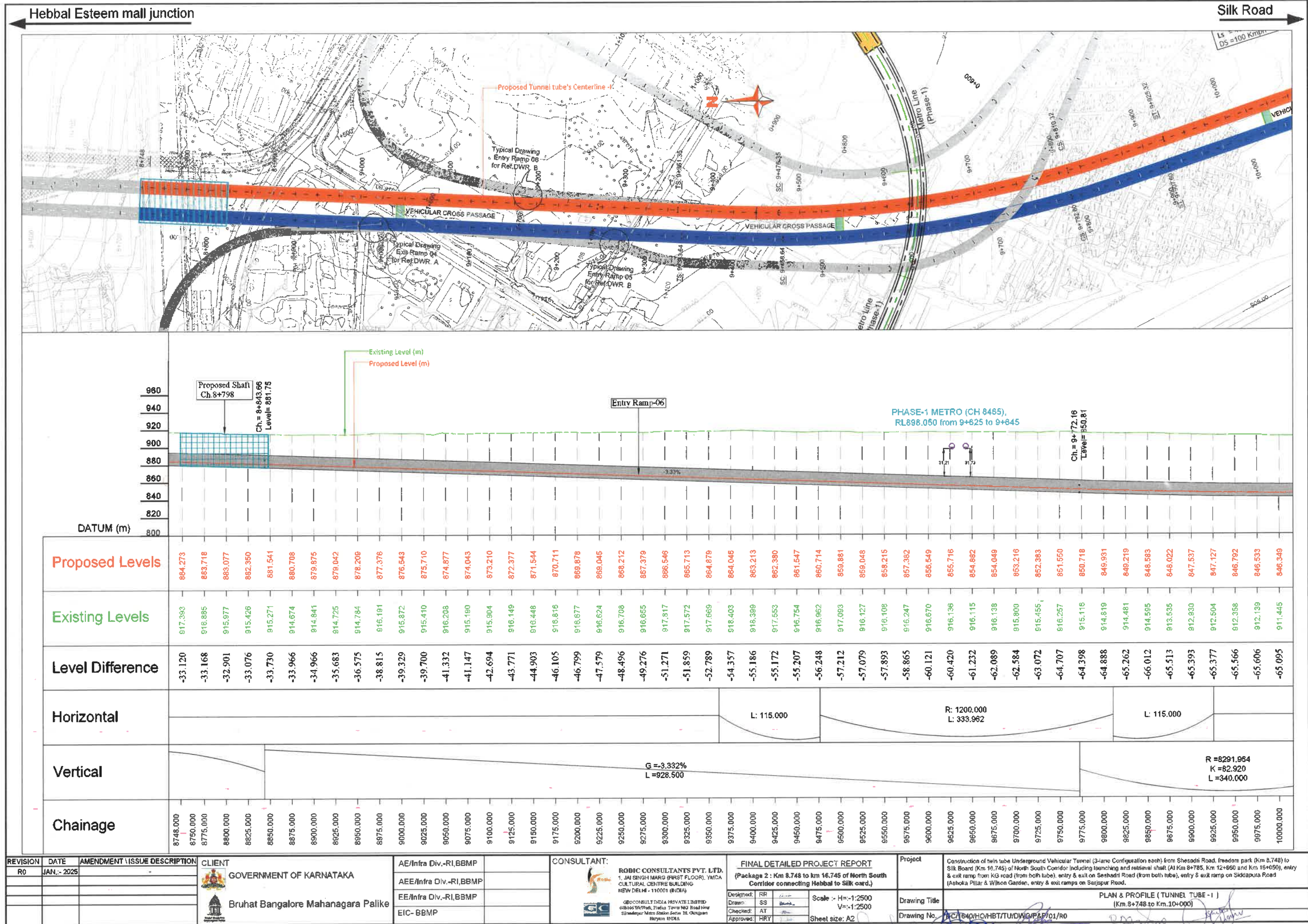
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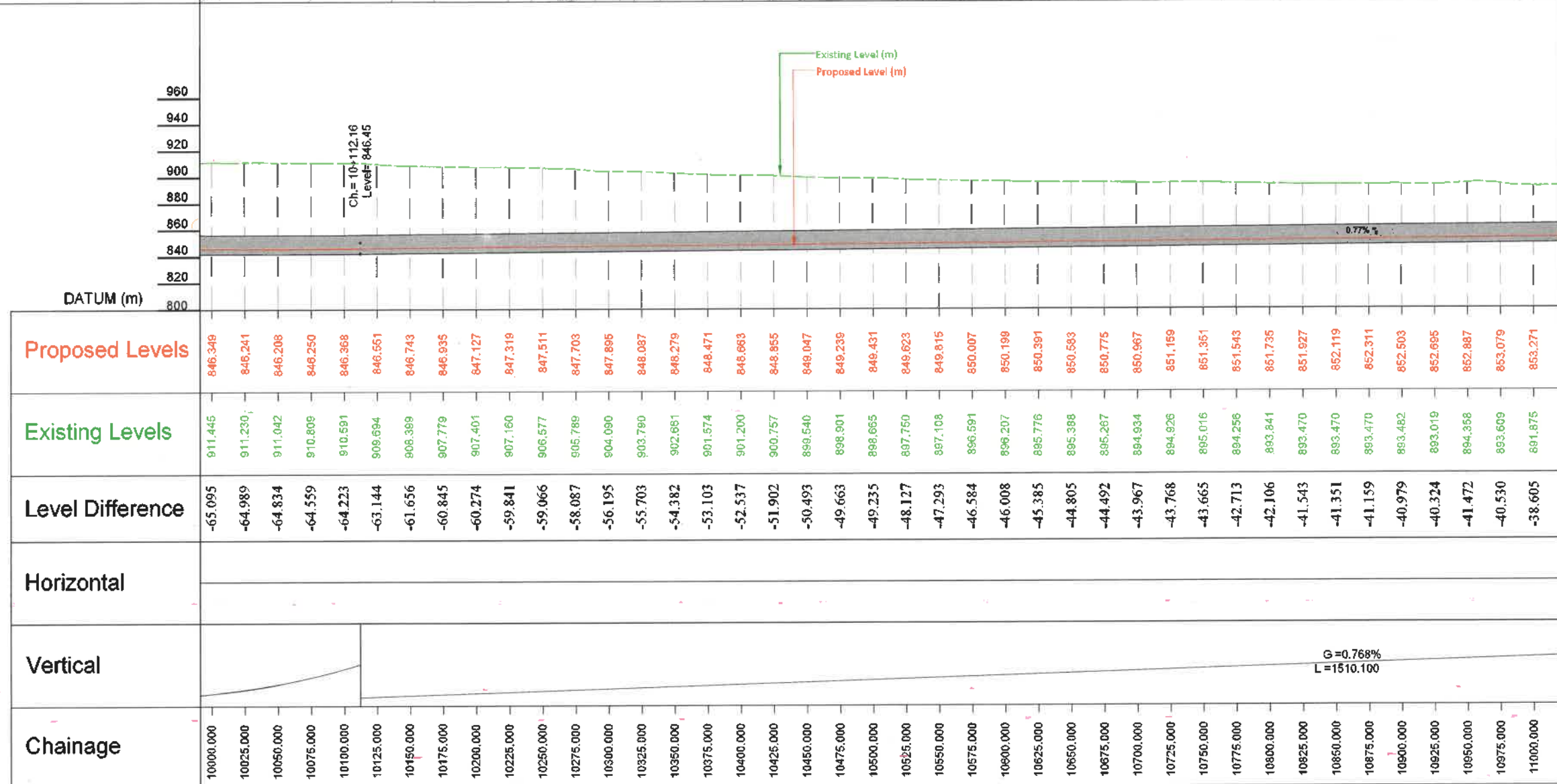
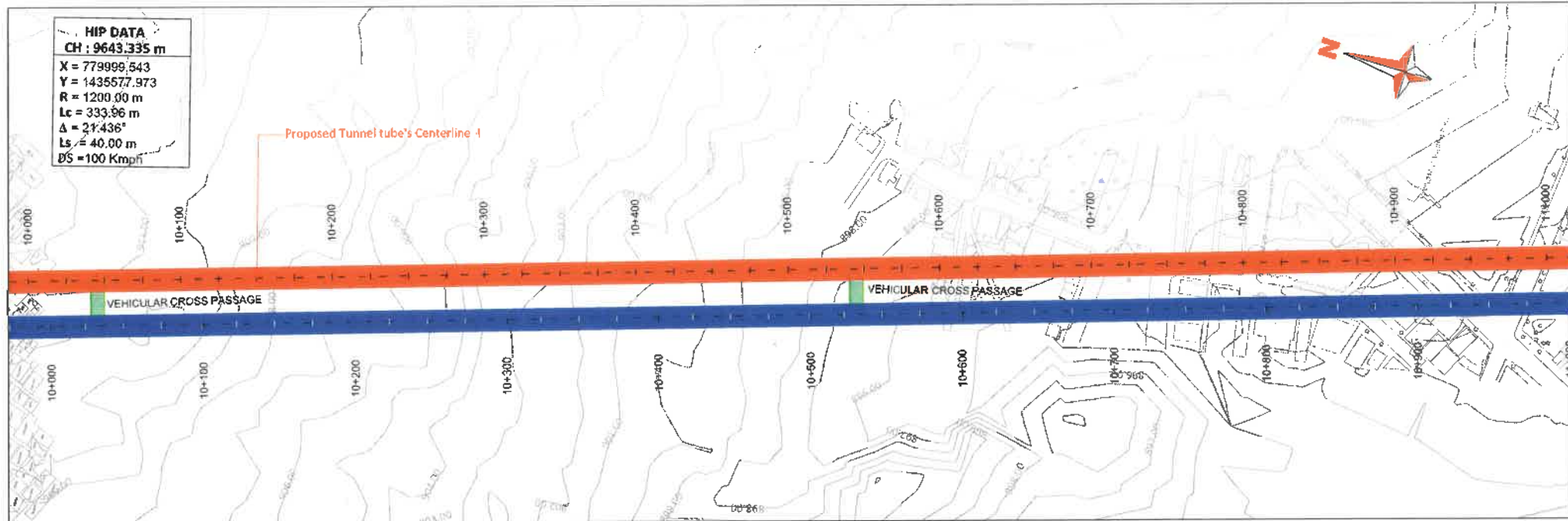
Topographic Survey					
Asphalt Edge		Flag Pole		Median	
Building		Foot Path		Palm Tree	
Bus Stop		Gate		Parking	
Bollard		Handrail		Pole	
Concrete		High Mast Light		Power Pole	
Closed Drain		Light Pole		Post	
Curb Top & Bottom		Lamp Post		Retaining Wall Top & Bottom	
Electrical Box		Manhole		Road Centreline	
Fence				Road Median	
Road Sign		Sink		Transformer	
Roof Extension		Sky Walk Bridge		Tree	
Safety Barrier		Sports Field		Tunnel	
Security Room		Stairs		Tree Line	
Shed		Telecommunication Tower		Wall	
Shelter		Telephone Box		Water Body	
Side Walk		Temporary Barrier		Water Tank	
Sign Board		Track		Zebra Crossing	
Single Post		Traffic Signal			

Legend

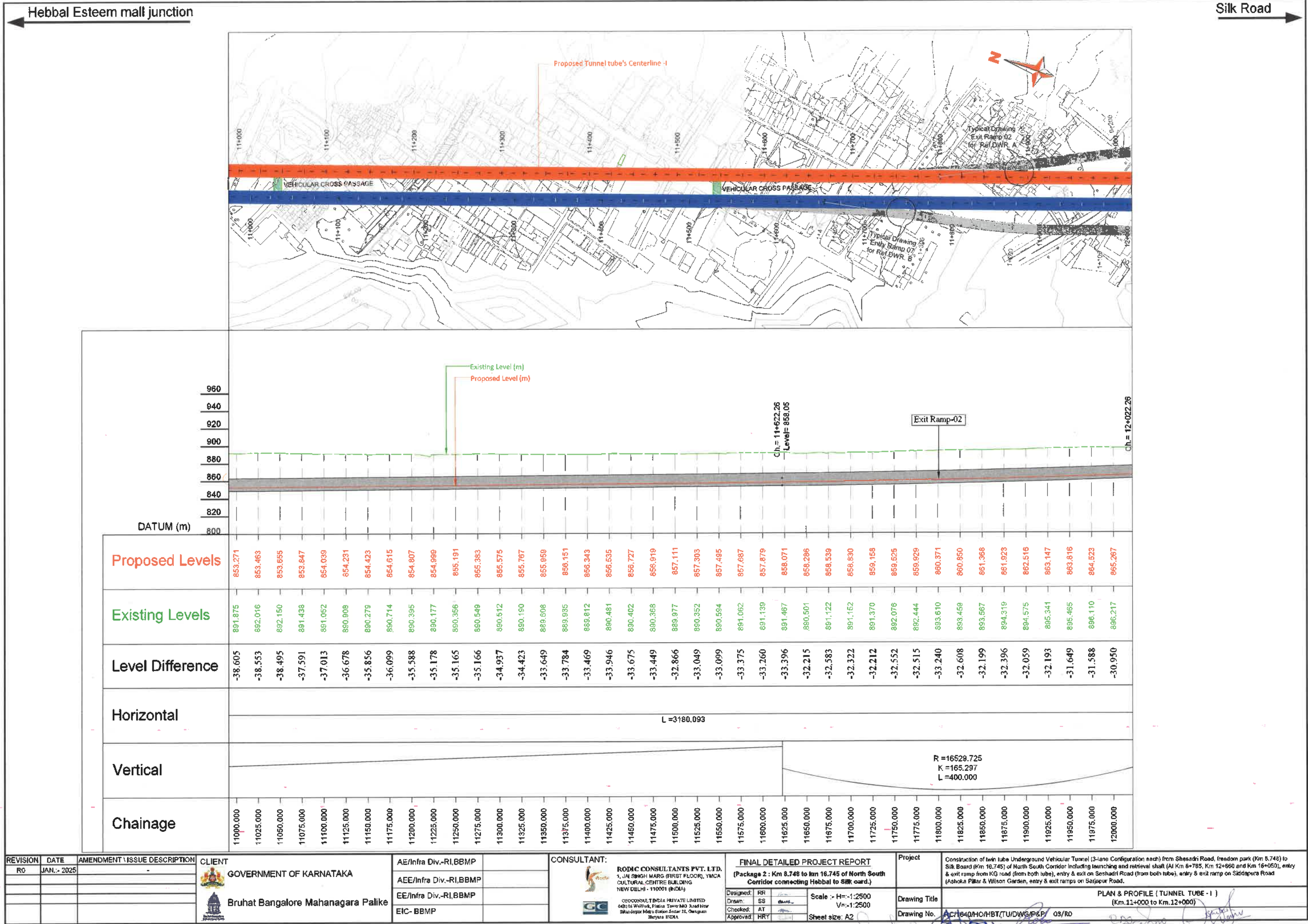
Plan		L Profile	
Proposed Tunnel Tube-I		Proposed Road Levels	
Proposed Tunnel Tube-II		Existing Levels	
Proposed Shaft		Proposed NATM	
Proposed Vehicular Cross Passage		Proposed Cut & Cover	
Proposed NATM (Entry Ramp)		Proposed Shaft	
Proposed NATM (Exit Ramp)		G - Gradient %	
Proposed Cut & Cover (Entry Ramp)		Lv - Length of Vertical Curve	
Proposed Cut & Cover (Exit Ramp)		L - Length of Grade(m)	
Proposed Open Cut (Exit Ramp)		K - Ratio Between vertical curve Length & Change of Gradient $\{L_c/(G_2-G_1)\}$	
Proposed Open Cut (Entry Ramp)		e - Superelevation (%)	
Proposed Rights of Way		D - Straight Length of Horizontal Alignment	
Existing Rights of Way		Lc - Length of Circular Curve	
Airport Metro Line			
Metro Line (Phase-1)			
Metro Line (Phase-2)			
Metro Line (Phase-3A)			
R - Radius of Curve			
Dc - Degree of Curvature			
Lc - Length of Circular Curve			
Ts - Tangent Length			
Es - Apex Distance			
LS - Length of Spiral Curve			
Δ - Deflection Angle			
DS - Design Speed Km/Hr			
PC - Point of Curvature			
PT - Point of Tangent			
HIP - Horizontal Intersection Point			

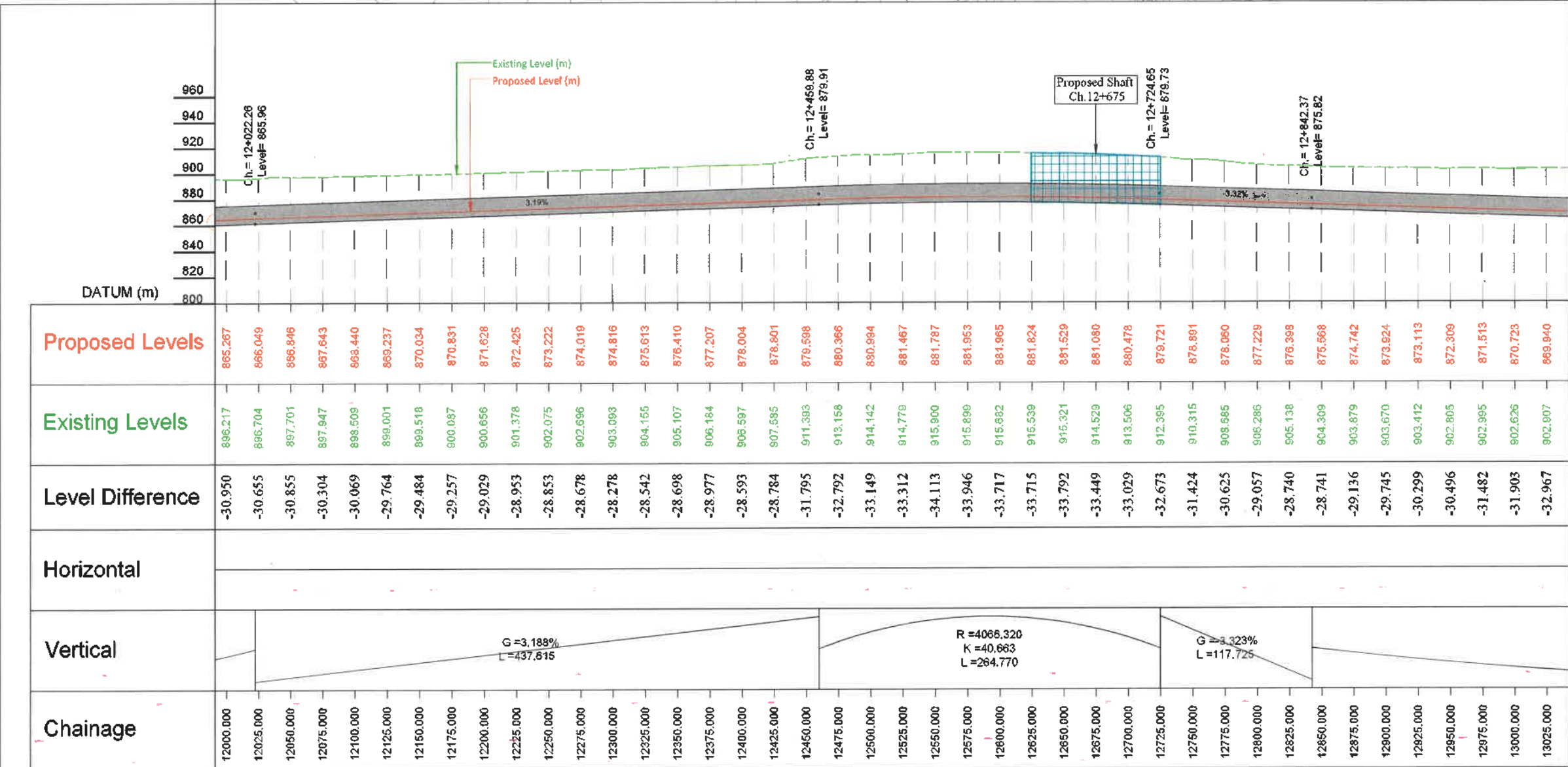
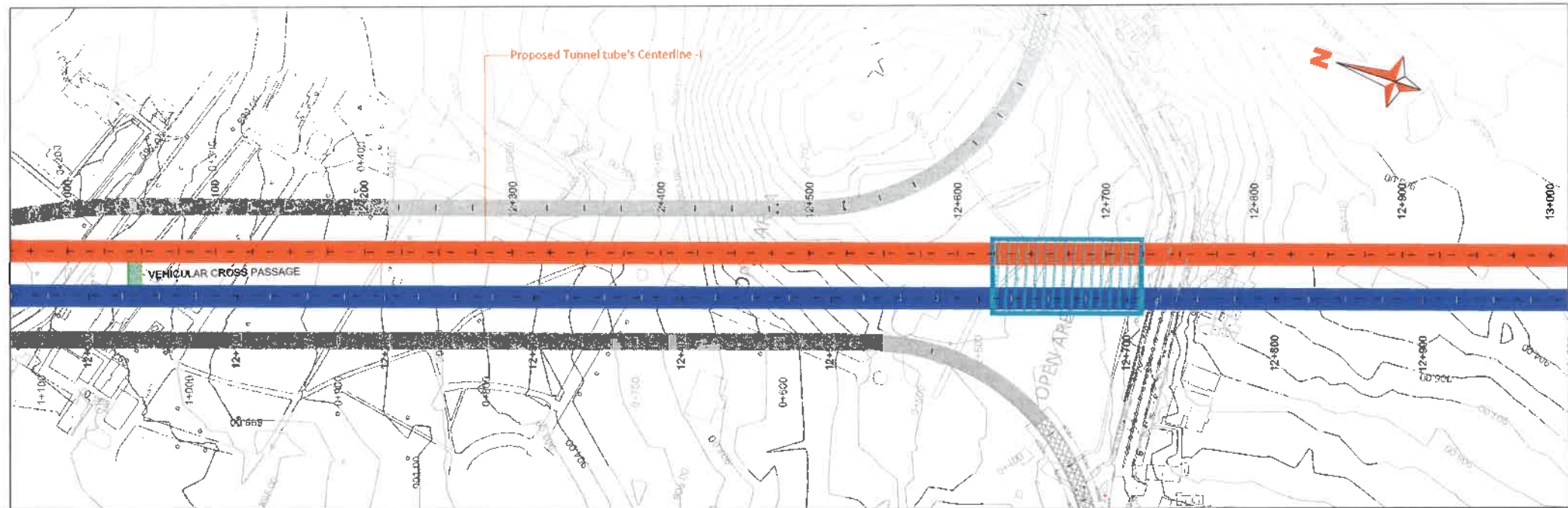
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to Km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+690 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ORCON CONSULTING PRIVATE LIMITED 401/146 WEF Park, Pinnas Tower/MD Road Near Siddapur Metro Station Sector 16, Gurgaon Haryana INDIA	Scale :- H=:-1:2500 V=:-1:2500 Sheet size: A2	Drawing Title Drawing No. AC/1840/HO/HBT/TU/DWB/P&P/Legend/00/R0
				EIC- BBMP			PLAN & PROFILE (LEGEND)





REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project		
RO	JAN.- 2025	-	 GOVERNMENT OF KARNATAKA	AE/Infra Div.-RI,BBMP	 RODDIC CONSULTANTS PVT. LTD. 1, Jai Shree Mahal (First Floor), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk oard.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shreead Road, freedom park (Km 8.748) to Silk Board (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 15+050), entry & exit ramp from KG road (from both tube), entry & exit on Sashad Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.		
			 Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	 GEOCONSULTINDIA PRIVATE LIMITED 6/Block W/Work, Flinders Tower MG Road Near Siddapura Metro Station Station 28, Changanarayana Haryana - INDIA	Designed: RR Drawn: SS Checked: AT Approved: HRY	Scale :- H=:-1:2500 V=:-1:2500	Drawing Title	PLAN & PROFILE (TUNNEL TUBE - I) (Km.10+000 to Km.11+000)
				EIC- BBMP		Sheet size: A2	Drawing No.	RCM/640HO/HBT/TU/DWG/SP&P/02/RO	

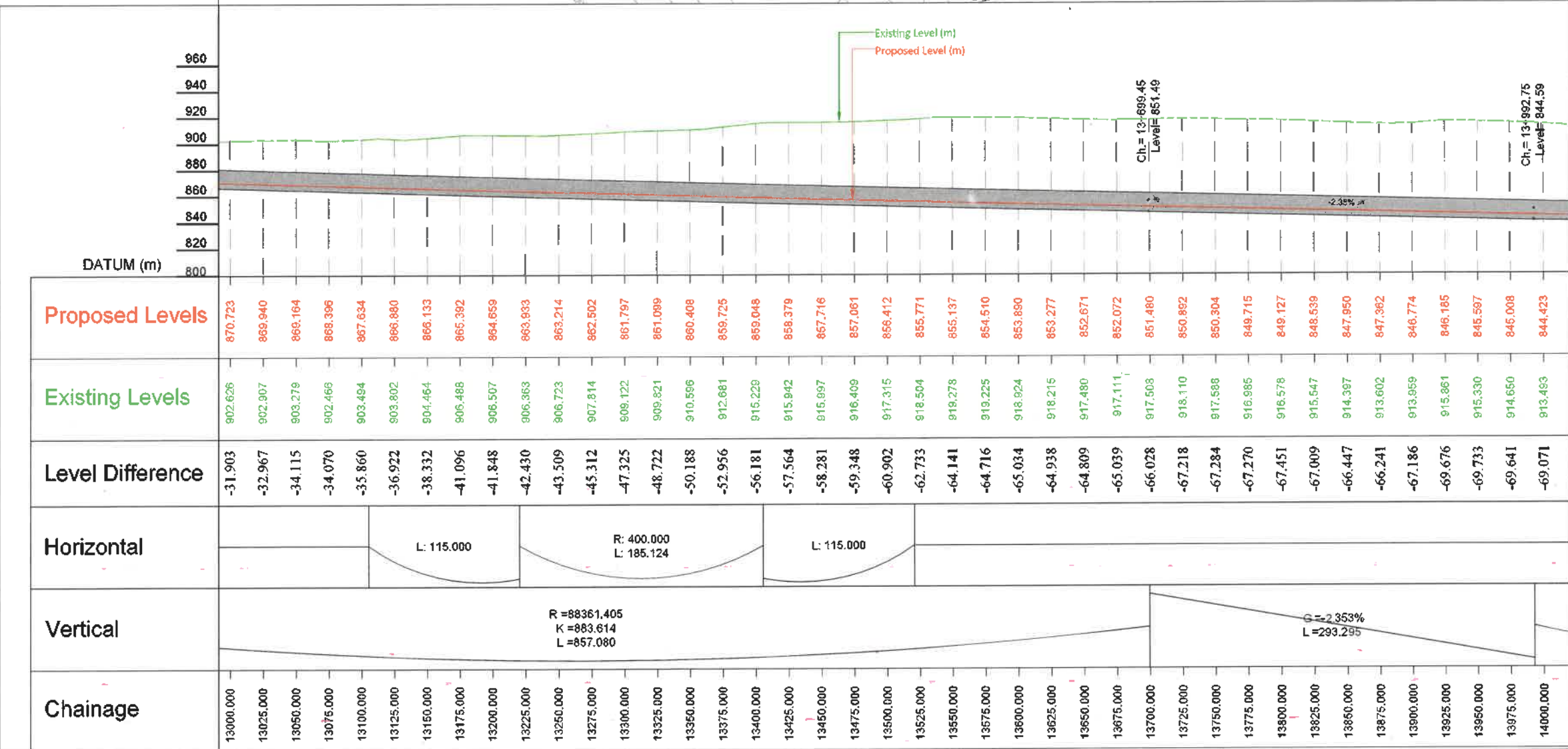
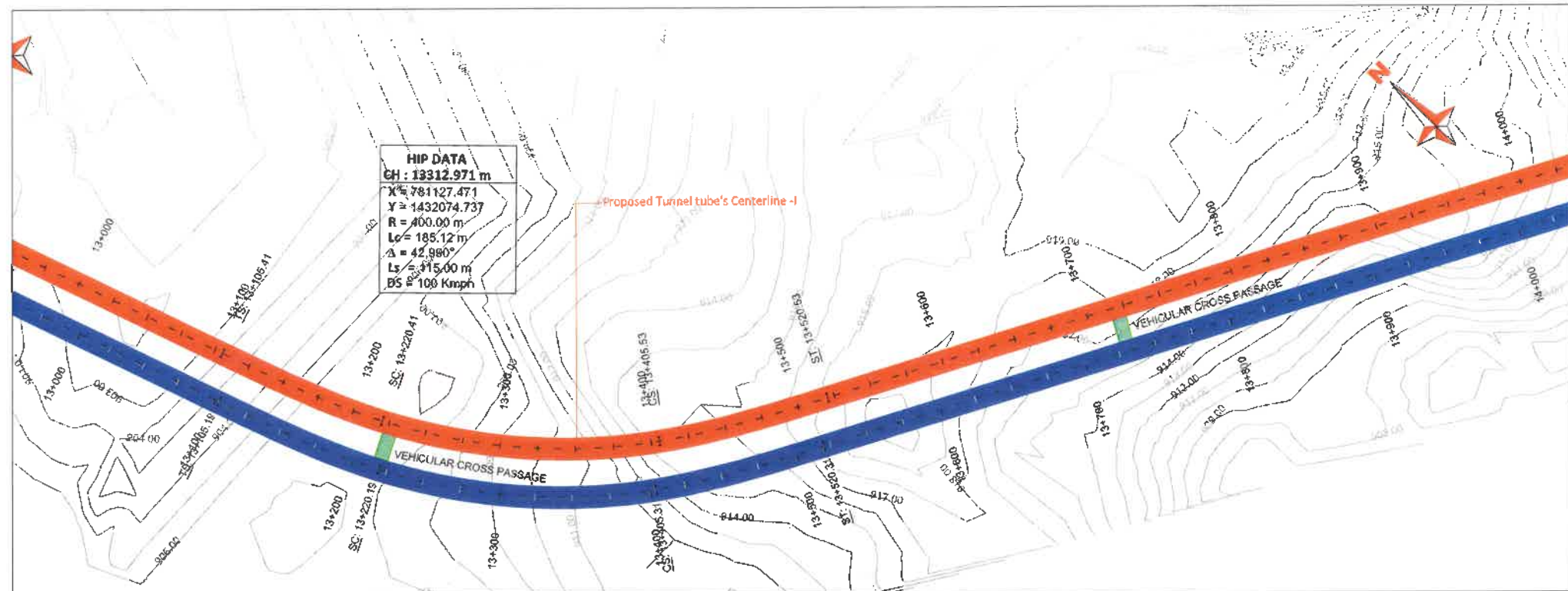




REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	IODIC CONSULTANTS PVT. LTD. 1, JAI SMITH MARG (FIRST FLOOR), YMICA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+560 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Sidepura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ODIC CONSULTANTS PRIVATE LIMITED ODIC Metro Station Area, 18, Changan Bangalore, INDIA	Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing Title Drawing No.
				EIC- BBMP		Scale :- H=1:2500 V=1:2500 Sheet size: A2	PLAN & PROFILE (TUNNEL TUBE - I) (Km.12+000 to Km.13+000)

Hebbal Esteem mall junction

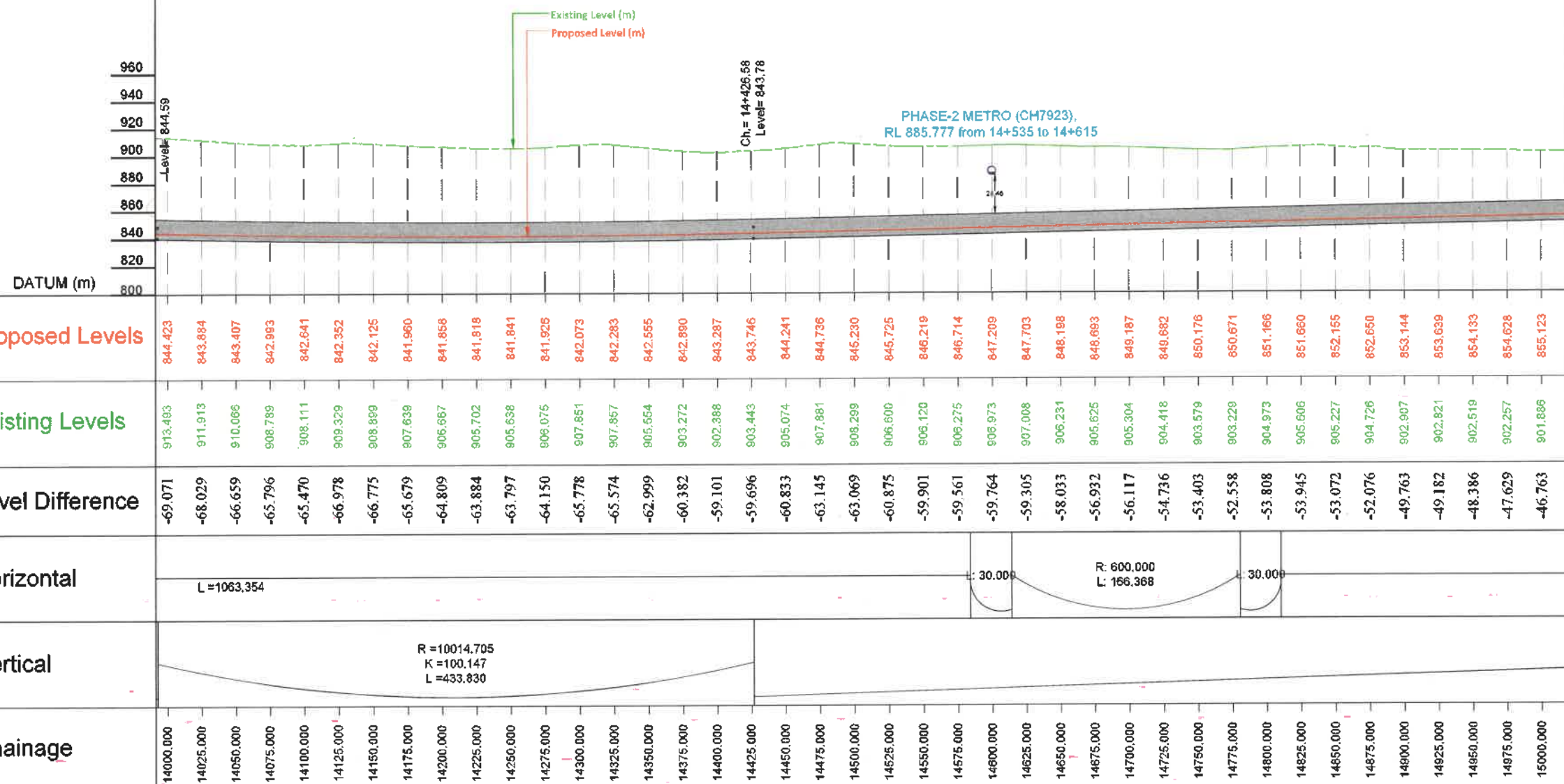
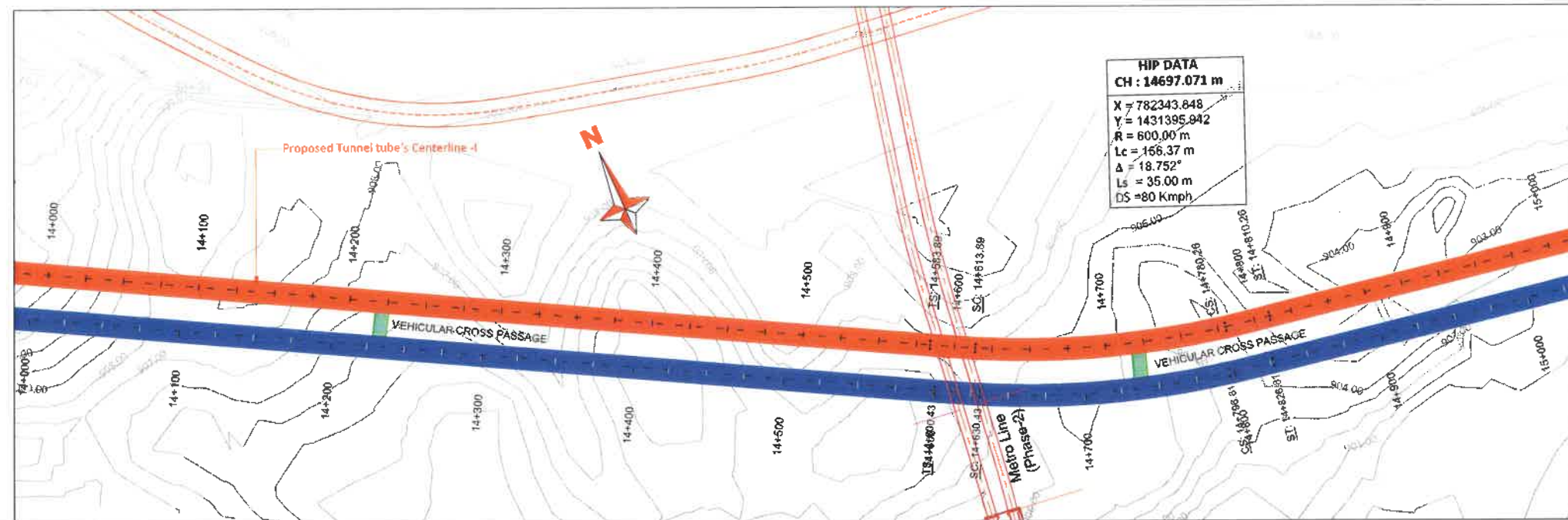
Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project	Drawing Title
R0	JAN.-2025		GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	AEE/Infra Div.-RI,BBMP EE/Infra Div.-RI,BBMP EIC- BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT INDIA PRIVATE LIMITED 60106 Wellpark Plaza, Tower MG Road New Shandapur Metro Station Sector 26, Gurgaon Haryana INDIA	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.) Designed: RR Drawn: SS Checked: AT Approved: HRY Scale :- H=1:2500 V=1:2500 Sheet size: A2	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, Freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 15+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).	PLAN & PROFILE (TUNNEL TUBE - I) (Km.13+000 to Km.14+000)

Hebbal Esteem mall junction

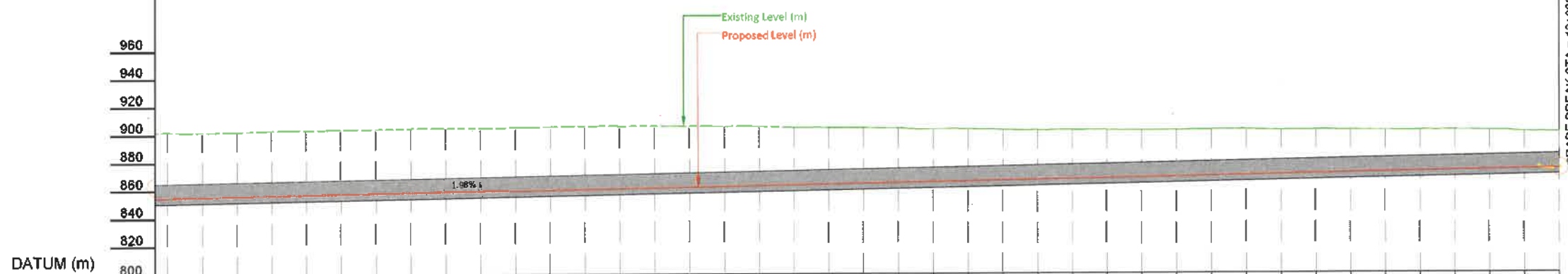
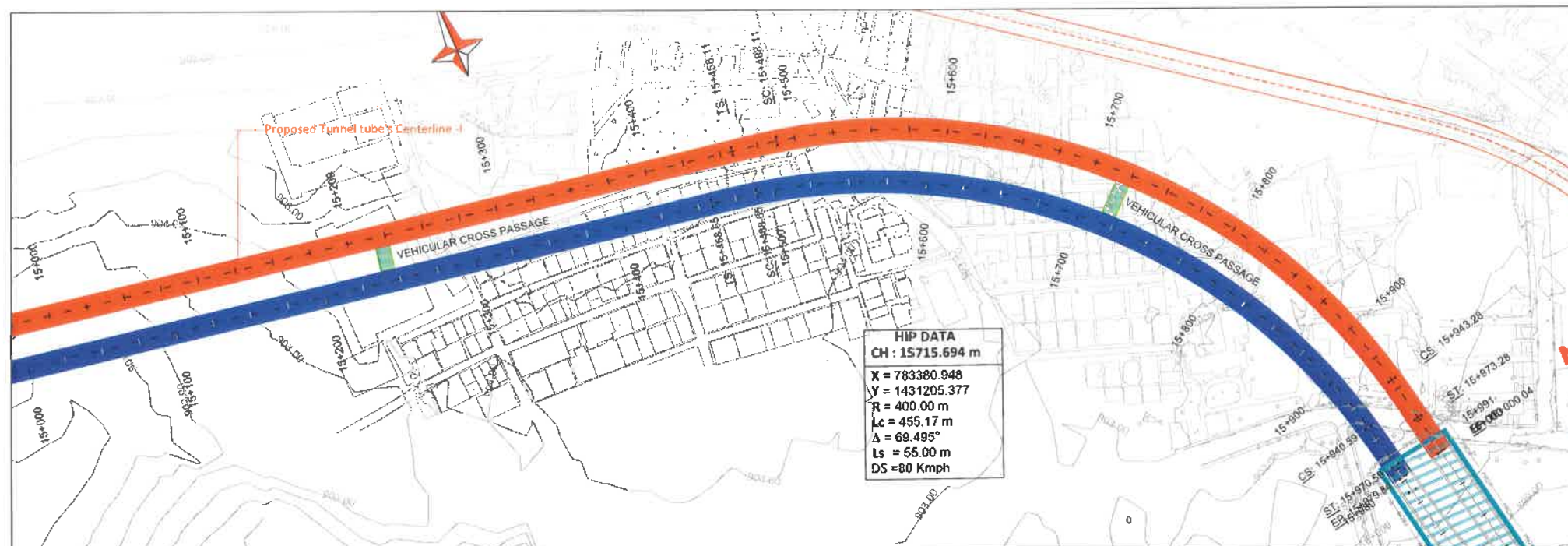
Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RG	JAN.-2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JA SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+060), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTANTS PRIVATE LIMITED #B/106, 10th Floor, 2nd Main Road, 3rd Stage, 4th Block, Sarjapur Road, Bengaluru - 560090, Karnataka INDIA	Scale :- H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No. ACP/640/HO/HBT/TU/DWG/P&P 06/R0
				EIC- BBMP			PLAN & PROFILE (TUNNEL TUBE -1) (Km.14+000 to Km.15+000)

Hebbal Esteem mall junction

Silk Road



Chainage	Vertical	Horizontal	Level Difference	Existing Levels	Proposed Levels
15000.000	G = -1.979% L = 1573.460	30.000 R: 400.000 L: 455.165 30.000 28.763	-46.763	901.886	855.123
15025.000			-46.176	901.793	855.617
15050.000			-46.012	902.123	856.112
15075.000			-46.337	902.943	856.607
15100.000			-46.206	903.307	857.101
15125.000			-45.959	903.654	857.596
15150.000			-45.825	903.916	858.090
15175.000			-45.808	904.393	858.585
15200.000			-45.474	904.554	859.080
15225.000			-45.010	904.584	859.574
15250.000			-44.816	904.885	860.069
15275.000			-44.804	905.367	860.564
15300.000			-44.668	905.727	861.058
15325.000			-44.174	905.727	861.553
15350.000			-43.952	906.000	862.047
15375.000			-43.341	906.884	862.542
15400.000			-42.510	905.546	863.037
15425.000			-41.792	905.323	863.531
15450.000			-41.013	905.039	864.026
15475.000			-40.262	904.783	864.521
15500.000	-39.732	904.747	865.015		
15525.000	-38.865	904.375	865.510		
15550.000	-37.685	903.689	866.004		
15575.000	-37.164	903.663	866.499		
15600.000	-36.024	903.018	866.994		
15625.000	-35.137	902.626	867.488		
15650.000	-34.807	902.790	867.983		
15675.000	-34.214	902.691	868.478		
15700.000	-33.410	902.382	868.972		
15725.000	-32.960	902.427	869.467		
15750.000	-32.840	902.801	869.961		
15775.000	-32.544	903.000	870.459		
15800.000	-31.433	902.383	870.951		
15825.000	-31.055	902.500	871.446		
15850.000	-30.187	902.127	871.940		
15875.000	-29.623	902.058	872.435		
15900.000	-29.136	902.065	872.929		
15925.000	-28.672	902.096	873.424		
15950.000	-27.919	901.838	873.918		
15975.000	-26.485	900.898	874.413		
16000.000	-25.576	900.483	874.908		
16000.039	-25.575	900.485	874.908		

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT			Project
R0	JAN.- 2025	-	 GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	 RUDIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG, FIRST FLOOR, YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Board.)			Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from: Seshadi Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+608 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadi Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			 Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	 GEOCONSULTINDIA PRIVATE LIMITED 48/106, VEFK, Phase-1, Tower No.3, Road Near 5B, Marayya Mills, Sarjapur, Sector 28, Bengaluru Haryana INDIA	Designed: RR	Scale : H=-1:2500	Drawing Title	PLAN & PROFILE (TUNNEL TUBE - 1)
				EIC- BBMP		Drawn: SS	V=-1:2500		(Km.15+000 to Km.16+000)
						Checked: AT		Drawing No.	ACT/540/HBT/UIDW/GP/PA/07/R0
						Approved: HRY	Sheet size: A2		

TUNNEL TUBE -II

Legend

Topographic Survey					
Asphalt Edge		Flag Pole		Median	
Building		Foot Path		Palm Tree	
Bus Stop		Gate		Parking	
Bollard		Handrail		Pole	
Concrete		High Mast Light		Power Pole	
Closed Drain		Light Pole		Post	
Curb Top & Bottom		Lamp Post		Retaining Wall Top & Bottom	
Electrical Box		Manhole		Road Centreline	
Fence				Road Median	
Road Sign		Sink		Transformer	
Roof Extension		Sky Walk Bridge		Tree	
Safety Barrier		Sports Field		Tunnel	
Security Room		Stairs		Tree Line	
Shed		Telecommunication Tower		Wall	
Shelter		Telephone Box		Water Body	
Side Walk		Temporary Barrier		Water Tank	
Sign Board		Track		Zebra Crossing	
Single Post		Traffic Signal			

Legend

Plan		L Profile	
Proposed Tunnel Tube-I		Proposed Road Levels	
Proposed Tunnel Tube-II		Existing Levels	
Proposed Shaft		Proposed NATM	
Proposed Vehicular Cross Passage		Proposed Cut & Cover	
Proposed NATM (Entry Ramp)		Proposed Shaft	
Proposed NATM (Exit Ramp)		G - Gradient %	
Proposed Cut & Cover (Entry Ramp)		Lv - Length of Vertical Curve	
Proposed Cut & Cover (Exit Ramp)		L - Length of Grade(m)	
Proposed Open Cut (Exit Ramp)		K - Ratio Between vertical curve Length & Change of Gradient {Lc/(G2-G1)}	
Proposed Open Cut (Entry Ramp)		e - Superelevation (%)	
Proposed Rights of Way		D - Straight Length of Horizontal Alignment	
Existing Rights of Way		Lc - Length of Circular Curve	
Airport Metro Line			
Metro Line (Phase-1)			
Metro Line (Phase-2)			
Metro Line (Phase-3A)			
R - Radius of Curve			
Dc - Degree of Curvature			
Lc - Length of Circular Curve			
Ts - Tangent Length			
Es - Apex Distance			
LS - Length of Spiral Curve			
Δ - Deflection Angle			
DS - Design Speed Km/Hr			
PC - Point of Curvature			
PT - Point of Tangent			
HIP - Horizontal Intersection Point			

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAL SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING PRIVATE LIMITED 945/104, 1st Floor, Phase 1, T. Nagar, MG Road, Near Siddapur Metro Station, Sector 28, Bangalore KARNATAKA, INDIA	Scale :- H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No. A/C/640/HO/HBT/TU/DWG/P&P/Legend/00/R0
				EIC- BBMP			PLAN & PROFILE (LEGEND)



RODIC CONSULTANTS PVT. LTD
1, JAI SINGH MARG (FIRST FLOOR), YMCA
CULTURAL CENTRE BUILDING
NEW DELHI - 110001 (INDIA)

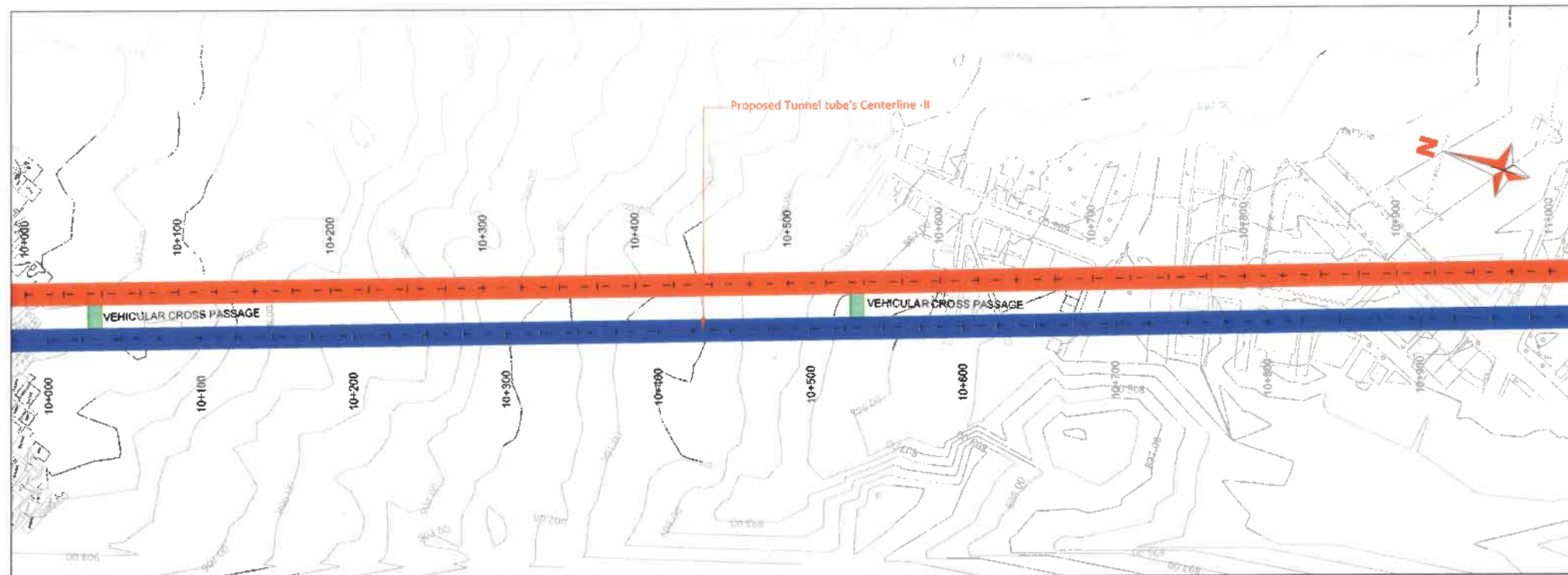
CEC CONSULT INDIA PRIVATE LIMITED
601/62 WellWood, Platinum Tower-302 Road No.5
Sikanderpura Metro Station Sector 28, Gurgaon

FINAL DETAILED PROJECT REPORT (Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbai to Silk card.)		
Designed: RR		Scale :- H=1:2500 V=1:2500
Drawn: SS		
Checked: AT		Sheet size: A2
Approved: HRY		

Project	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheeradi Road, freedom park (Km.8.748) to Silk Board (Km.16.745) of North South Corridor including launching and retrieval shaft (At Km.8-785, Km.12+660 and Km.16+650), entry & exit ramp from KG road (from both tube), entry & exit on Sheeradi Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sagarpur Road.
Drawing Title	PLAN & PROFILE (TUNNEL TUBE - II) (Km.8+748 to Km.10+000)
Drawing No.	AC/1840/HO/HBT/TU/DWS/P&P/01/RO

Hebbal Esteem mall junction

Silk Road

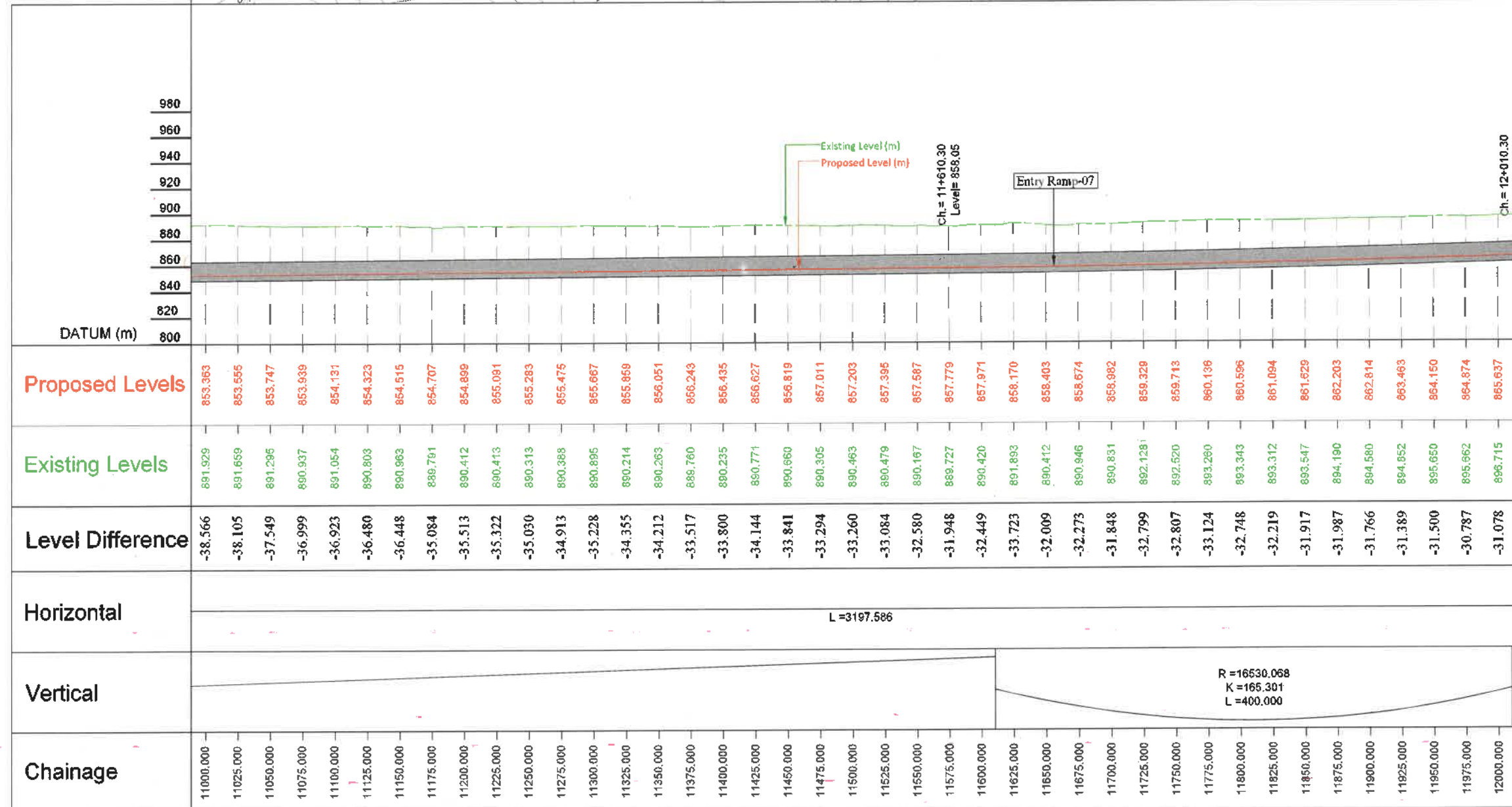
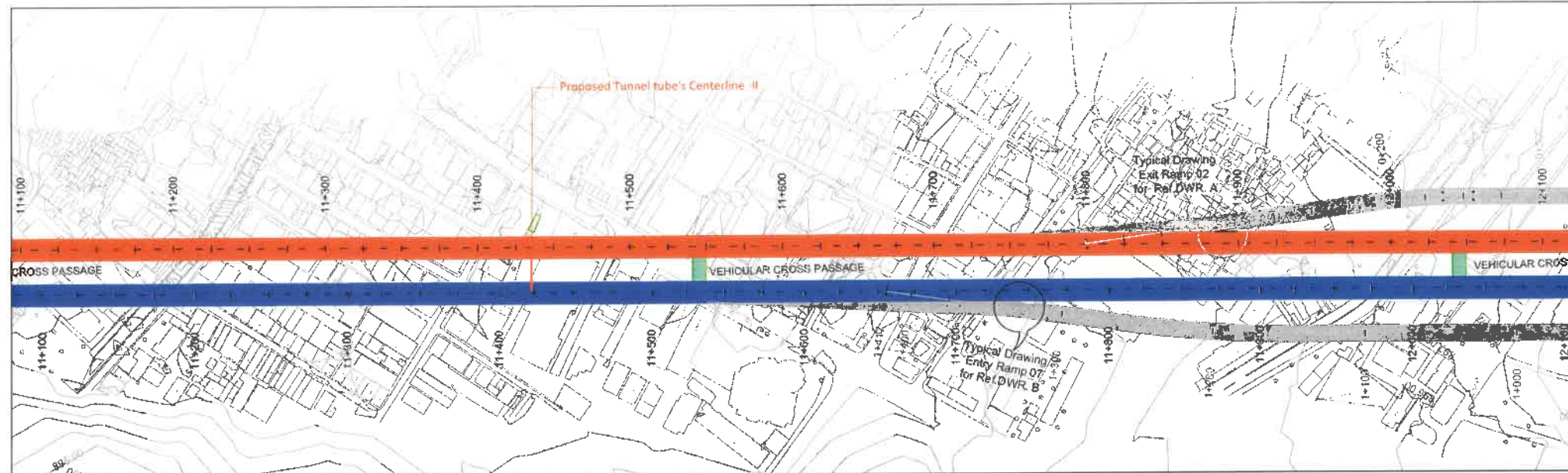


	980 960 940 920 900 880 860 840 820 800	
DATUM (m)		
Proposed Levels	846.279 846.211 846.216 846.296 846.450 846.842 846.834 847.026 847.218 847.410 847.602 847.794 847.986 848.178 848.370 848.562 848.754 848.946 849.138 849.330 849.522 849.714 849.906 850.098 850.290 850.482 850.674 850.866 851.058 851.250 851.442 851.634 851.826 852.018 852.210 852.403 852.595 852.787 852.979 853.171 853.363	
Existing Levels	910.928 910.847 910.888 910.933 910.313 908.307 907.964 907.240 906.892 907.187 906.226 904.946 903.256 902.698 901.944 901.025 900.607 900.452 899.242 898.751 897.991 896.619 896.111 895.728 895.521 895.007 894.553 894.229 893.975 894.375 894.649 893.781 892.615 892.881 892.630 892.446 892.212 892.282 892.536 891.852 891.929	
Level Difference	-64.648 -64.636 -64.672 -64.637 -63.864 -62.265 -61.130 -60.214 -59.674 -59.777 -58.624 -57.152 -55.270 -54.520 -53.574 -52.463 -51.853 -51.506 -50.103 -49.421 -48.439 -46.905 -46.204 -45.629 -45.231 -44.525 -43.919 -43.363 -42.917 -43.124 -43.207 -42.146 -40.789 -40.862 -40.420 -40.044 -39.618 -39.476 -39.558 -38.682 -38.566	
Horizontal		
Vertical		G = -0.768% L = 1510.000
Chainage	10000.000 10025.000 10050.000 10075.000 10100.000 10125.000 10150.000 10175.000 10200.000 10225.000 10250.000 10275.000 10300.000 10325.000 10350.000 10375.000 10400.000 10425.000 10450.000 10475.000 10500.000 10525.000 10550.000 10575.000 10600.000 10625.000 10650.000 10675.000 10700.000 10725.000 10750.000 10775.000 10800.000 10825.000 10850.000 10875.000 10900.000 10925.000 10950.000 10975.000 11000.000	

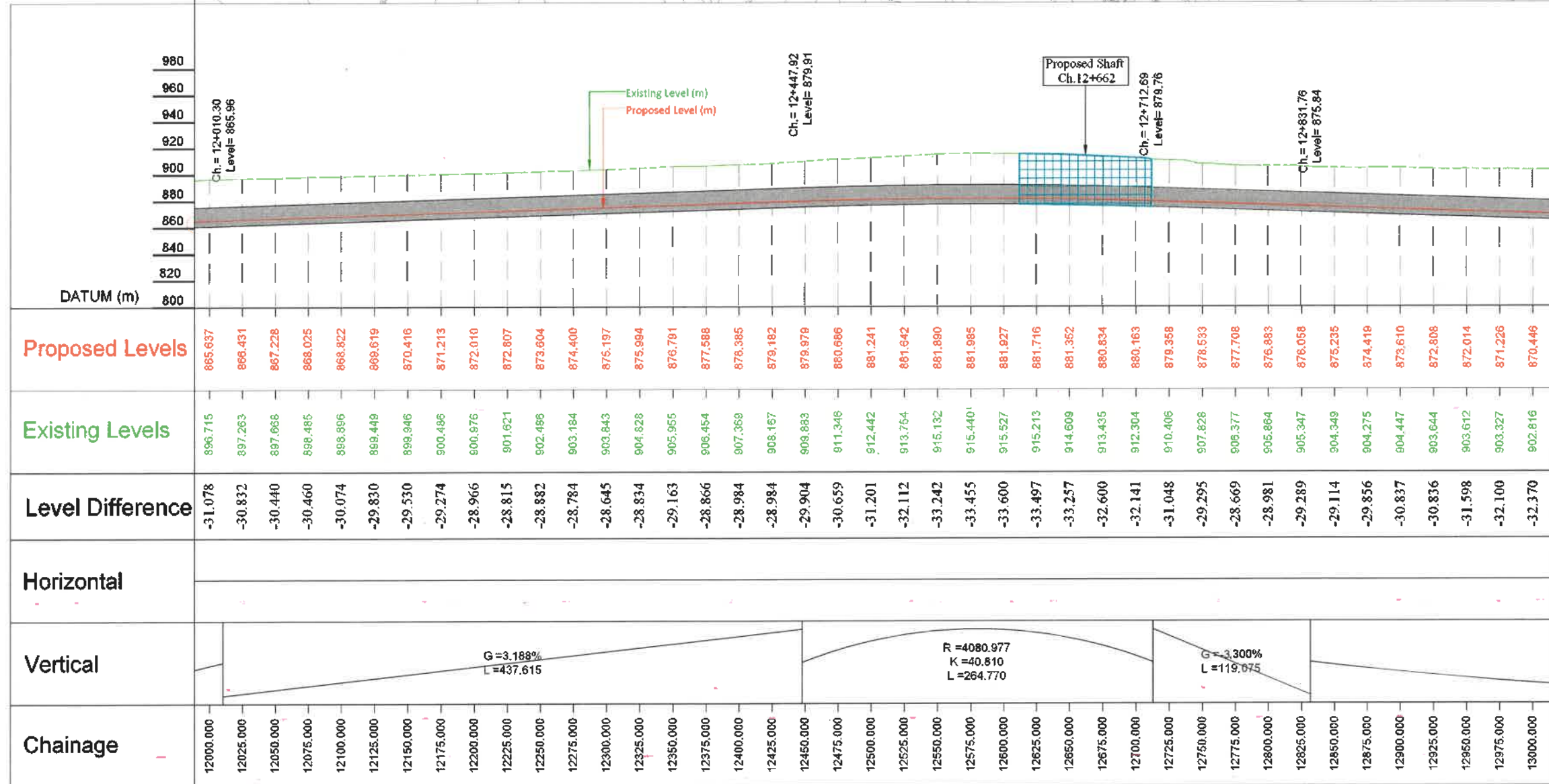
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.- 2025		GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	AEE/Infra Div.-RI,BBMP EE/Infra Div.-RI,BBMP EIC- BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT INDIA PRIVATE LIMITED 6/8/06 Westpark, Phase 1, Tower B-3, Road 31st Sector 14, Noida, Uttar Pradesh 201301 Haryana INDIA	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.) Designed: RR Drawn: SS Checked: AT Approved: HRY Scale :- H=1:2500 V=1:2500 Sheet size: A2	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from K0 road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
Drawing Title Drawing No. RC/1640/HO/MBT/TU/DWG/E&P/02/R0							PLAN & PROFILE (TUNNEL TUBE - II) (Km.10+000 to Km.10+000)

Hebbal Esteem mall junction

Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD.	(Package 2 : Km 8.748 to Km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and removal shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Shesadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GC	Scale :- H=1:2500 V=1:2500	Drawing Title
				EIC- BBMP	GC	Sheet size: A2	Drawing No. PCA/640/HQ/HBT/TU/DWG/RI&P/03/RO
							PLAN & PROFILE (TUNNEL TUBE - II) (Km.11+000 to Km.12+000)



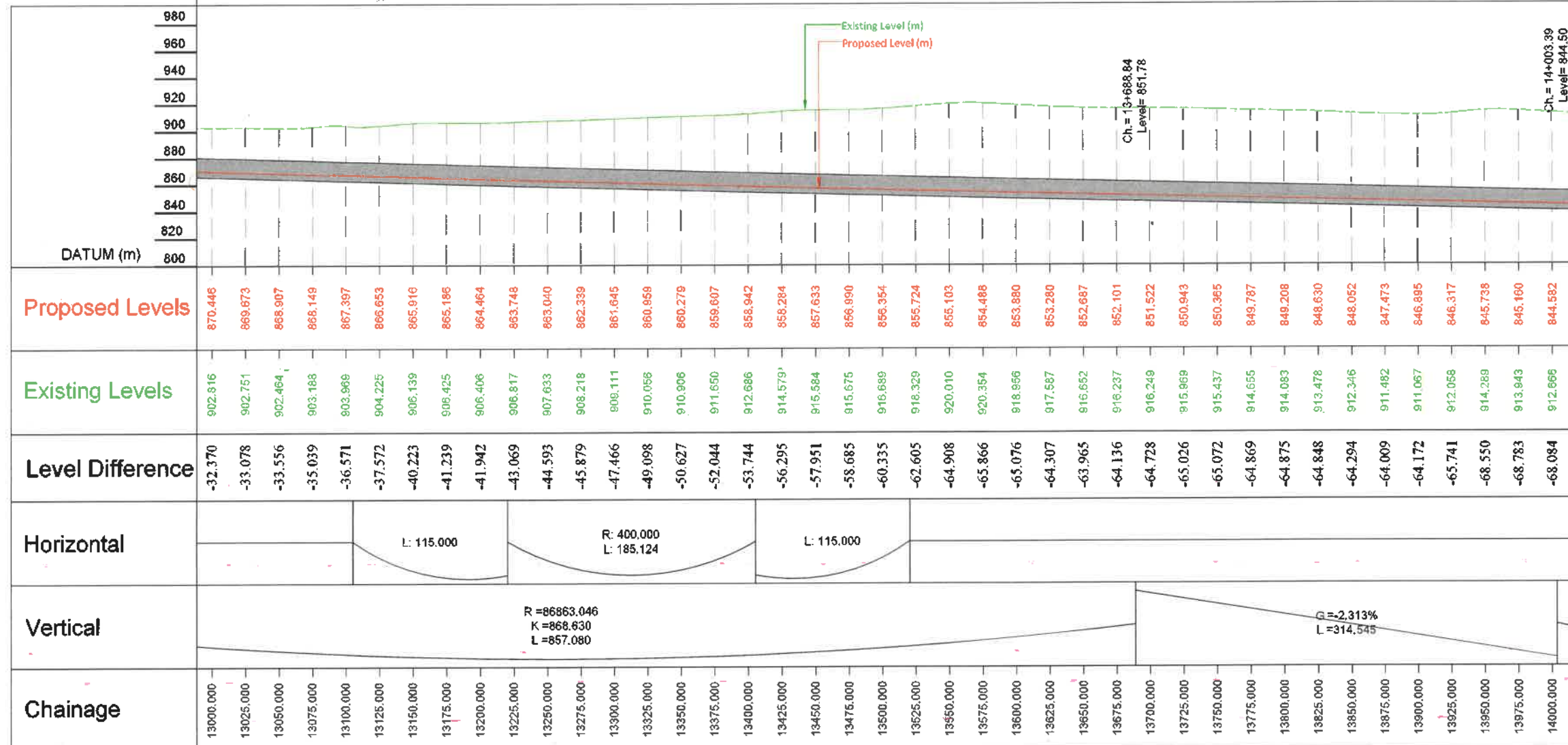
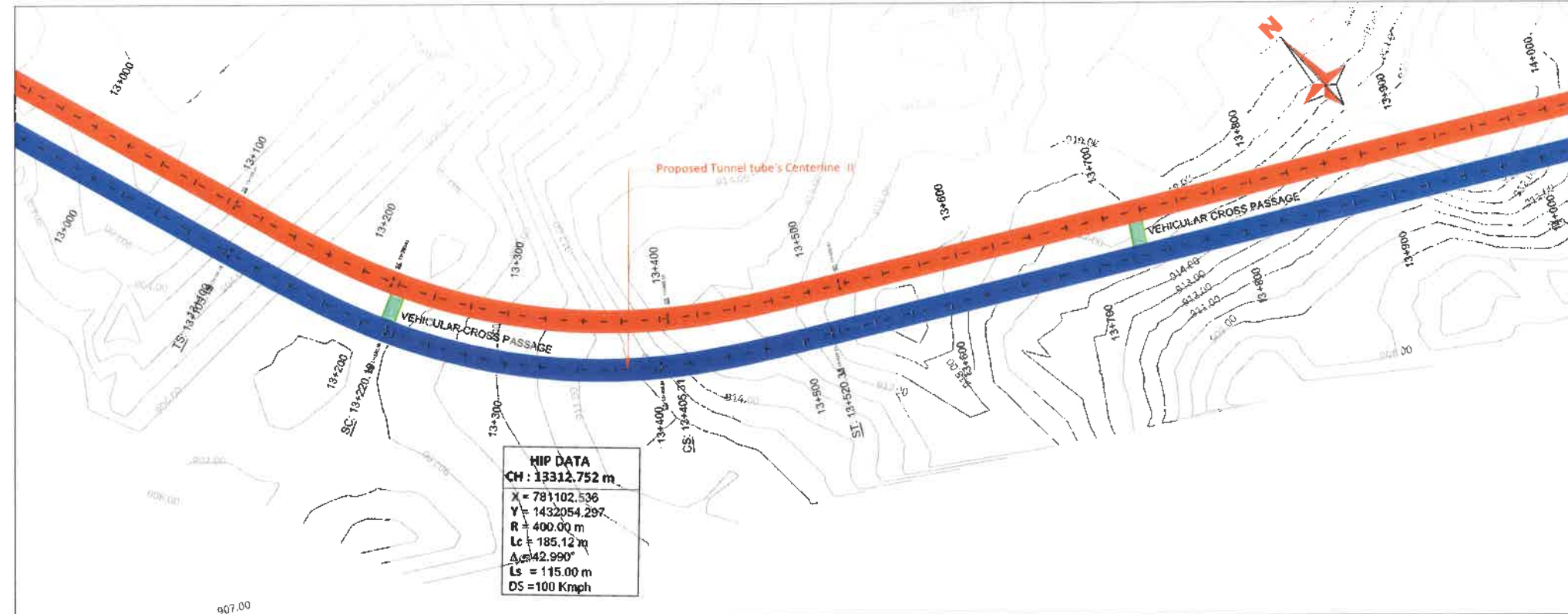
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shevadi Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GD CONSULTANTS PRIVATE LIMITED 04/106 Wellmark Plaza, Tower MG Road Near Siddapura Metro Station Sector 28, Domangudi Bengaluru - 560029	Scale :- H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No.
				EIC- BBMP			PC/H640/H0/HBT/TU/DWG/P&P/04/RO

PLAN & PROFILE (TUNNEL TUBE - II)

(Km.12+000 to Km.13+000)

Hebbal Esteem mall junction

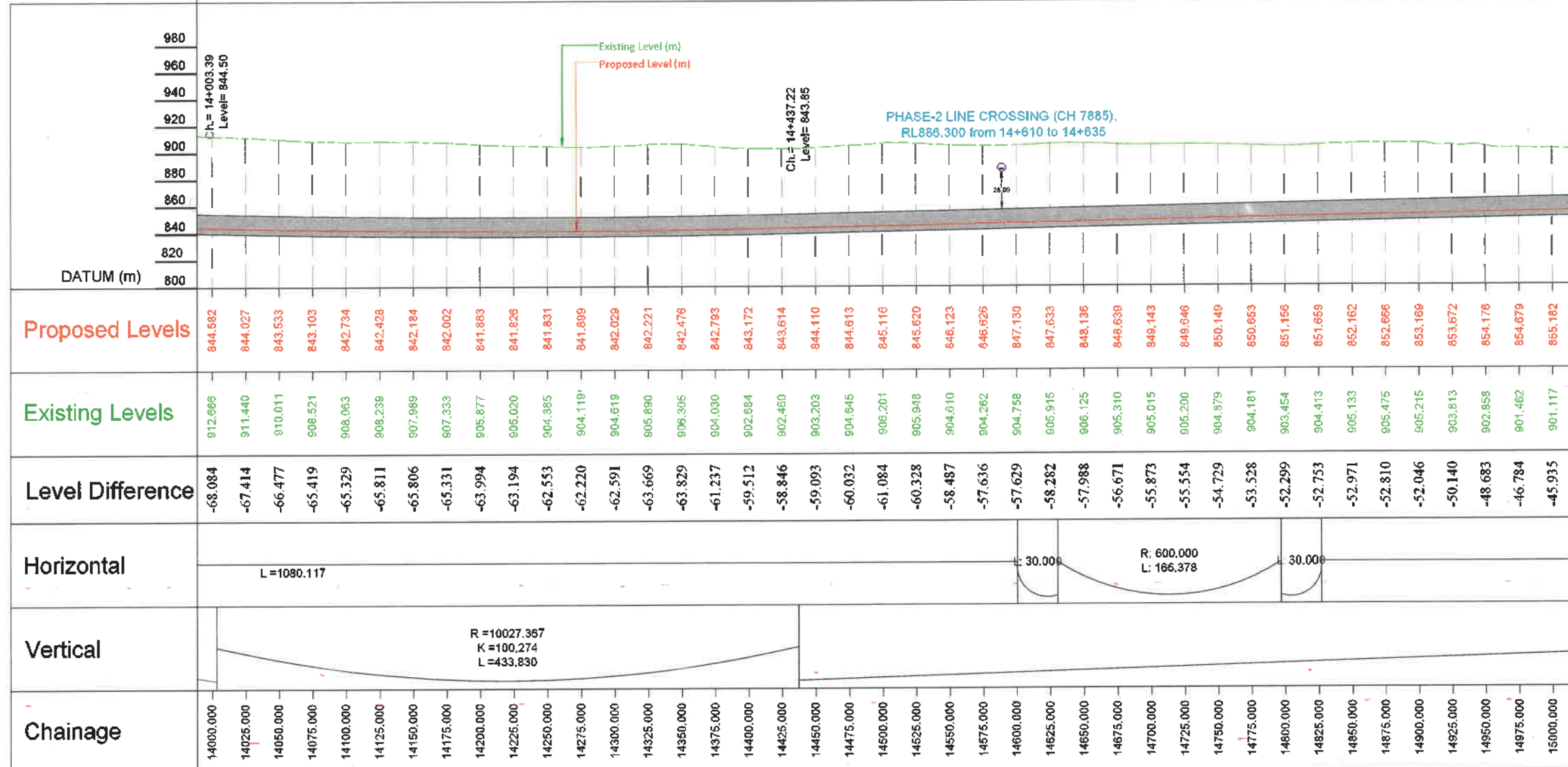
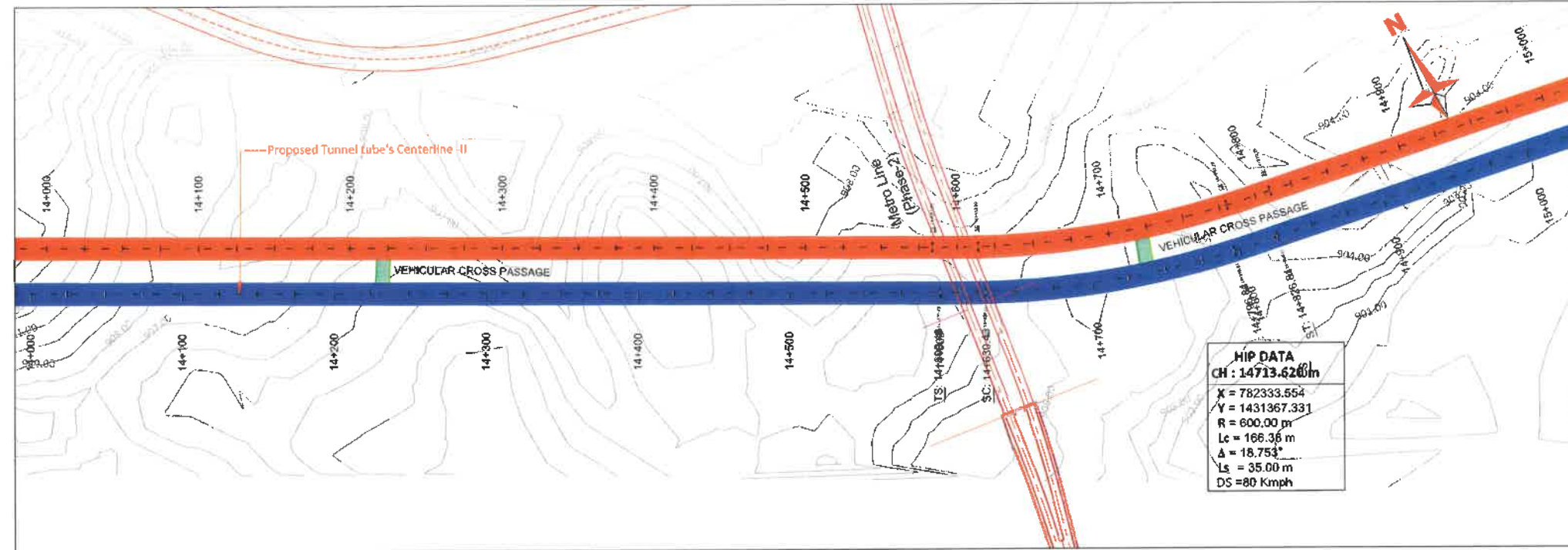
Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to Km 16.748 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, Freedom Park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Sidapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GC CONSULTANTS PRIVATE LIMITED 60/106 9th Floor, Phase 2, Road 10th Siddapur, Micro Station, Sector 26, Old Bangalore Bangalore, INDIA	Scale : H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No. PC/1640/HO/HBT/UD/RI/BBMP/05/R0
				EIC- BBMP			PLAN & PROFILE (TUNNEL TUBE - II) (Km.13+000 to Km.14+000)

Hebbal Esteem mall junction

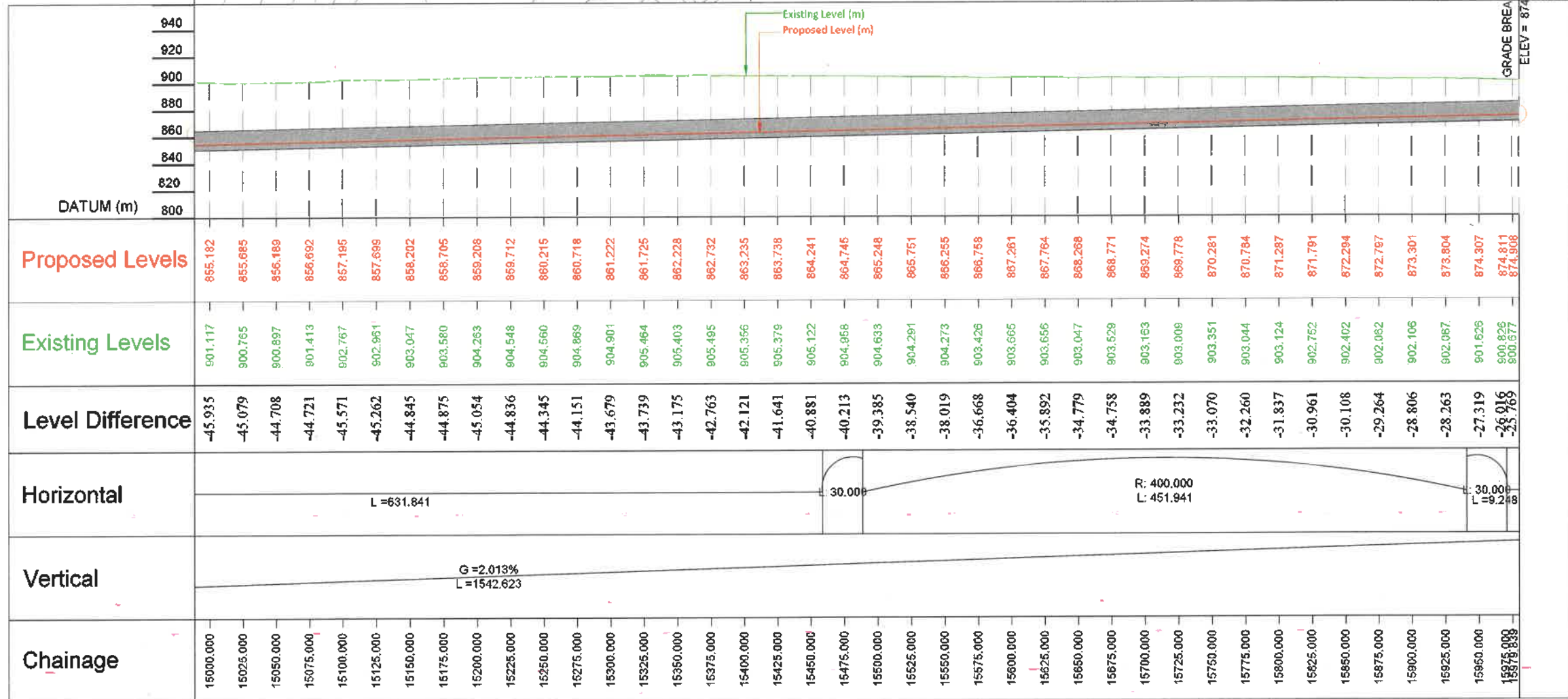
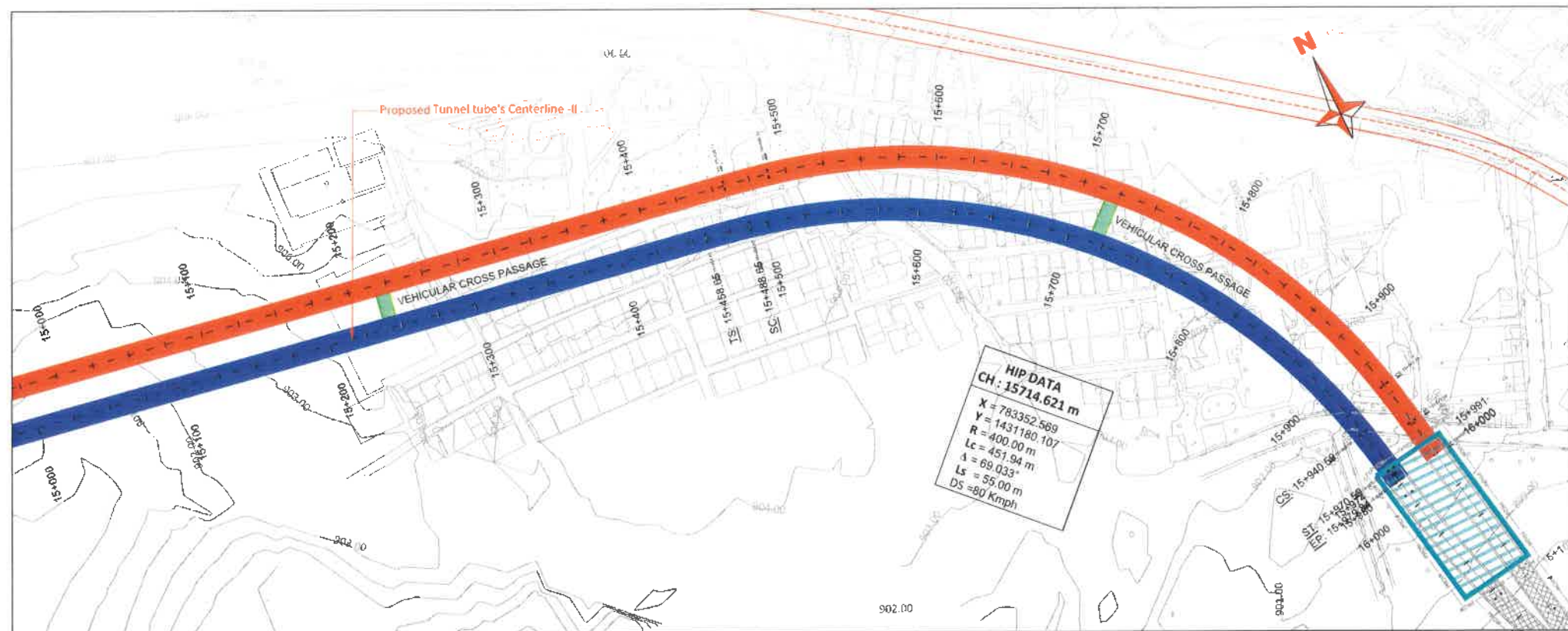
Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.- 2025	-	 GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	 ROBIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to Km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+850 and Km 15+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			 Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	 GEOCONSULT INDIA PRIVATE LIMITED 9/105a, 105b, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 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Hebbal Esteem mall junction

Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAL SINOH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sivasadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ODDICONALP P. P. PRIVATE LIMITED 6th of 1st Floor, 1st Floor, 1st Floor, 1st Floor Siddapur Main Station Station 28, Outer Bangalore INDIA	Scale :- H=-1:2500 V=-1:2500 Sheet size: A2	Drawing Title Drawing No.
				EIC- BBMP			PLAN & PROFILE (TUNNEL TUBE - II) (Km.10+000 to Km.15+979)
							RO/640/HO/HBT/TU/DWG/P&P/07/RO

PLAN & PROFILE
PACKAGE -2 (ENTRY & EXIT RAMP)

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Legend

Topographic Survey					
Asphalt Edge		Flag Pole		Median	
Building		Foot Path		Palm Tree	
Bus Stop		Gate		Parking	
Bollard		Handrail		Pole	
Concrete		High Mast Light		Power Pole	
Closed Drain		Light Pole		Post	
Curb Top & Bottom		Lamp Post		Retaining Wall Top & Bottom	
Electrical Box		Manhole		Road Centreline	
Fence				Road Median	
Road Sign		Sink		Transformer	
Roof Extension		Sky Walk Bridge		Tree	
Safety Barrier		Sports Field		Tunnel	
Security Room		Stairs		Tree Line	
Shed		Telecommunication Tower		Wall	
Shelter		Telephone Box		Water Body	
Side Walk		Temporary Barrier		Water Tank	
Sign Board		Track		Zebra Crossing	
Single Post		Traffic Signal			

Legend

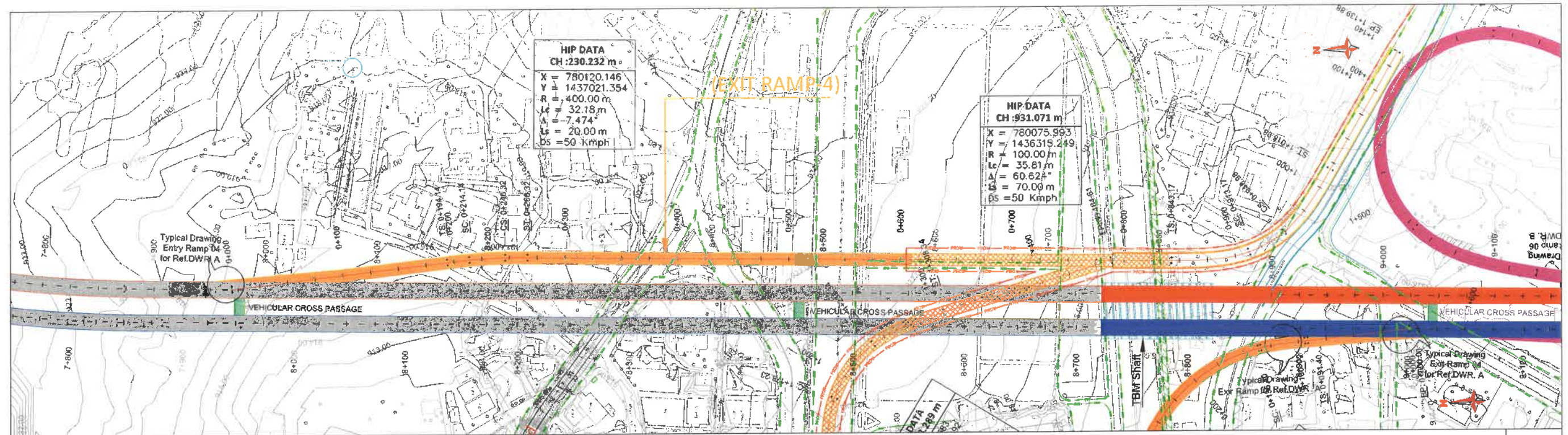
Plan		L Profile	
Proposed Tunnel Tube-I		Proposed Road Levels	
Proposed Tunnel Tube-II		Existing Levels	
Proposed Shaft		Proposed NATM	
Proposed Vehicular Cross Passage		Proposed Cut & Cover	
Proposed NATM (Entry Ramp)		Proposed Shaft	
Proposed NATM (Exit Ramp)		G - Gradient %	
Proposed Cut & Cover (Entry Ramp)		Lv - Length of Vertical Curve	
Proposed Cut & Cover (Exit Ramp)		L - Length of Grade(m)	
Proposed Open Cut (Exit Ramp)		K - Ratio Between vertical curve Length & Change of Gradient $\{L_c/(G_2-G_1)\}$	
Proposed Open Cut (Entry Ramp)		e - Superelevation (%)	
Proposed Rights of Way		D - Straight Length of Horizontal Alignment	
Existing Rights of Way		Lc - Length of Circular Curve	
Airport Metro Line			
Metro Line (Phase-1)			
Metro Line (Phase-2)			
Metro Line (Phase-3A)			
R - Radius of Curve			
Dc - Degree of Curvature			
Lc - Length of Circular Curve			
Ts - Tangent Length			
Es - Apex Distance			
LS - Length of Spiral Curve			
Δ - Deflection Angle			
DS - Design Speed Km/Hr			
PC - Point of Curvature			
PT - Point of Tangent			
HIP - Horizontal Intersection Point			

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project	
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 9.748 to Km 16.748 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seethadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sajapur Road.	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING INDIA PRIVATE LIMITED e-Block Metro Station, Plot No. 29, Ganga Nagar Siddapura, Maru Station, Sector 29, Ganga Nagar Bengaluru - 560029	Scale :- H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No. PC/1640/HO/HBT/TU/DWG/P&P/Legend/00/R0	PLAN & PROFILE (LEGEND)

PLAN & PROFILE

(EXIT RAMP - 4)

Handwritten signatures and initials at the bottom right corner.



Chainage	Vertical	Horizontal	Level Difference	Existing Levels	Proposed Levels	DATUM (m)
00.000	G = 3.377% L = 699.439	L = 194.142 R = 400.000 L = 32.181 L = 20.000 L = 20.000	-36.518	917.654	881.136	850
25.000			-34.786	916.767	881.980	860
50.000			-33.345	916.170	882.825	870
75.000			-32.456	916.125	883.669	880
100.000			-31.397	915.910	884.513	890
125.000	-30.280	915.638	885.358	900		
150.000	-29.164	915.366	886.202	910		
175.000	-28.433	915.479	887.046	920		
200.000	-28.115	916.006	887.891	930		
225.000	-27.366	916.100	888.735	940		
250.000	-27.242	916.821	888.579	950		
275.000	-27.342	917.766	889.423	960		
300.000	-26.843	918.111	889.268	970		
325.000	-27.183	919.295	889.112	980		
350.000	-26.406	919.362	889.956	990		
375.000	-26.641	920.442	890.801	1000		
400.000	-26.821	921.466	891.645	1010		
425.000	-26.659	922.148	892.489	1020		
450.000	-26.207	922.540	893.334	1030		
475.000	-26.050	923.228	894.178	1040		
500.000	-25.399	923.421	895.022	1050		
525.000	-24.290	923.157	895.867	1060		
550.000	-23.287	922.988	896.711	1070		
575.000	-22.112	922.667	897.555	1080		
600.000	-20.857	922.256	898.400	1090		
625.000	-19.602	921.846	899.244	1100		
650.000	-18.347	921.435	900.088	1110		
675.000	-17.110	921.042	900.933	1120		
700.000	-15.630	920.407	901.777	1130		
725.000	-14.217	919.772	902.622	1140		
750.000	-12.871	919.076	903.466	1150		
775.000	-11.494	918.225	904.311	1160		
800.000	-10.167	917.386	905.155	1170		
825.000	-9.504	917.210	906.000	1180		
850.000	-7.722	915.915	906.844	1190		
875.000	-7.160	915.842	907.689	1200		
900.000	-7.451	916.774	908.533	1210		
925.000	-6.528	916.763	909.378	1220		
950.000	-4.860	916.268	910.222	1230		
975.000	-4.498	917.156	911.067	1240		
1000.000	-3.922	917.830	911.911	1250		
1025.000	-3.396	918.554	912.756	1260		
1050.000	-2.975	918.383	913.600	1270		
1075.000	-2.145	918.802	914.444	1280		
1100.000	-1.560	920.468	915.289	1290		
1125.000	-0.575	920.733	916.133	1300		
1139.882	0.000	920.902	917.000	920.902	920.902	1310

Existing Level (m)

Proposed Level (m)

GRADE BREAK STA = 0+000
ELEV = 881.136

Ch = 0+699.44
Level = 904.76

Ch = 0+769.44
Level = 906.62

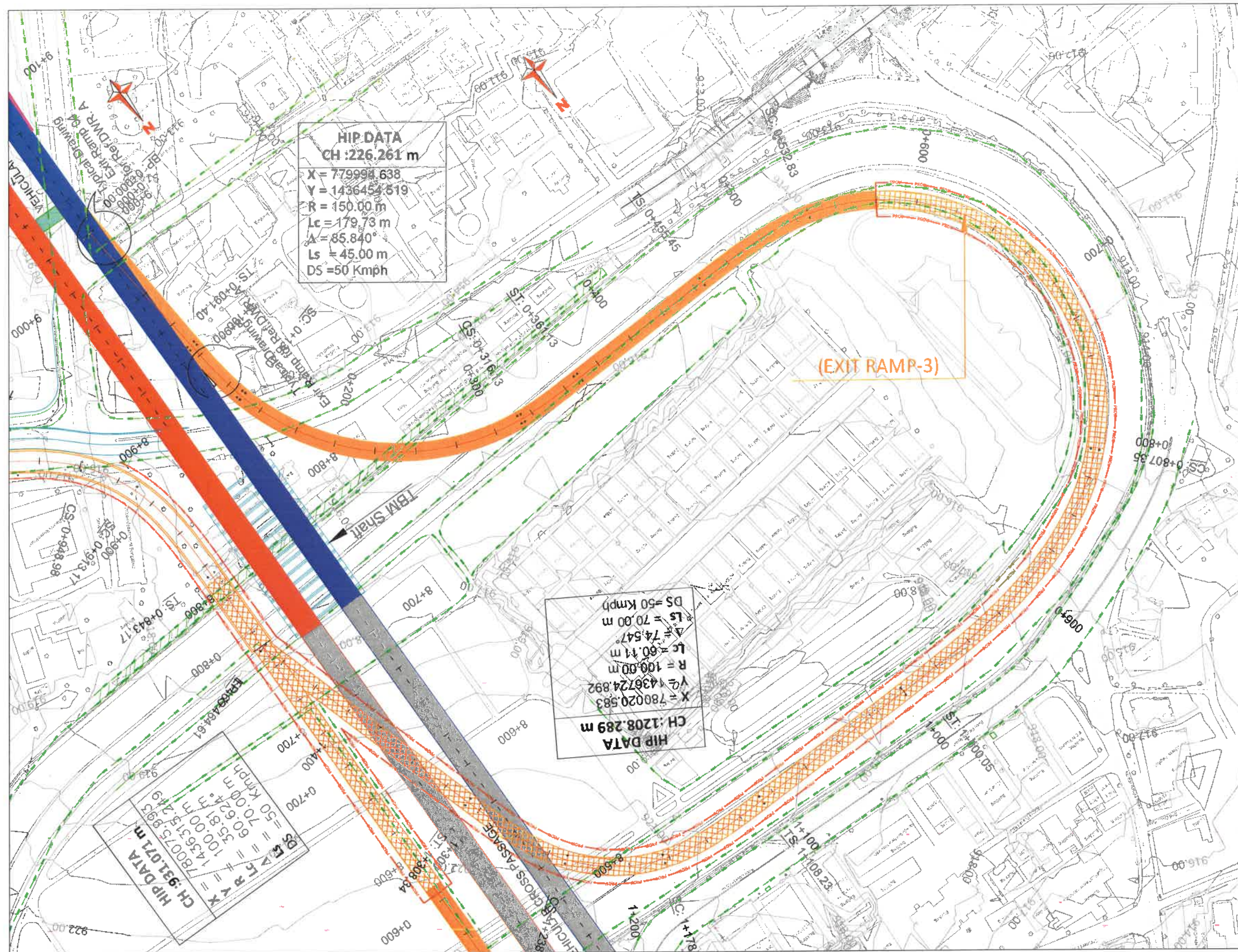
Ch = 0+873.13
Level = 908.64

Ch = 0+943.94
Level = 911.10

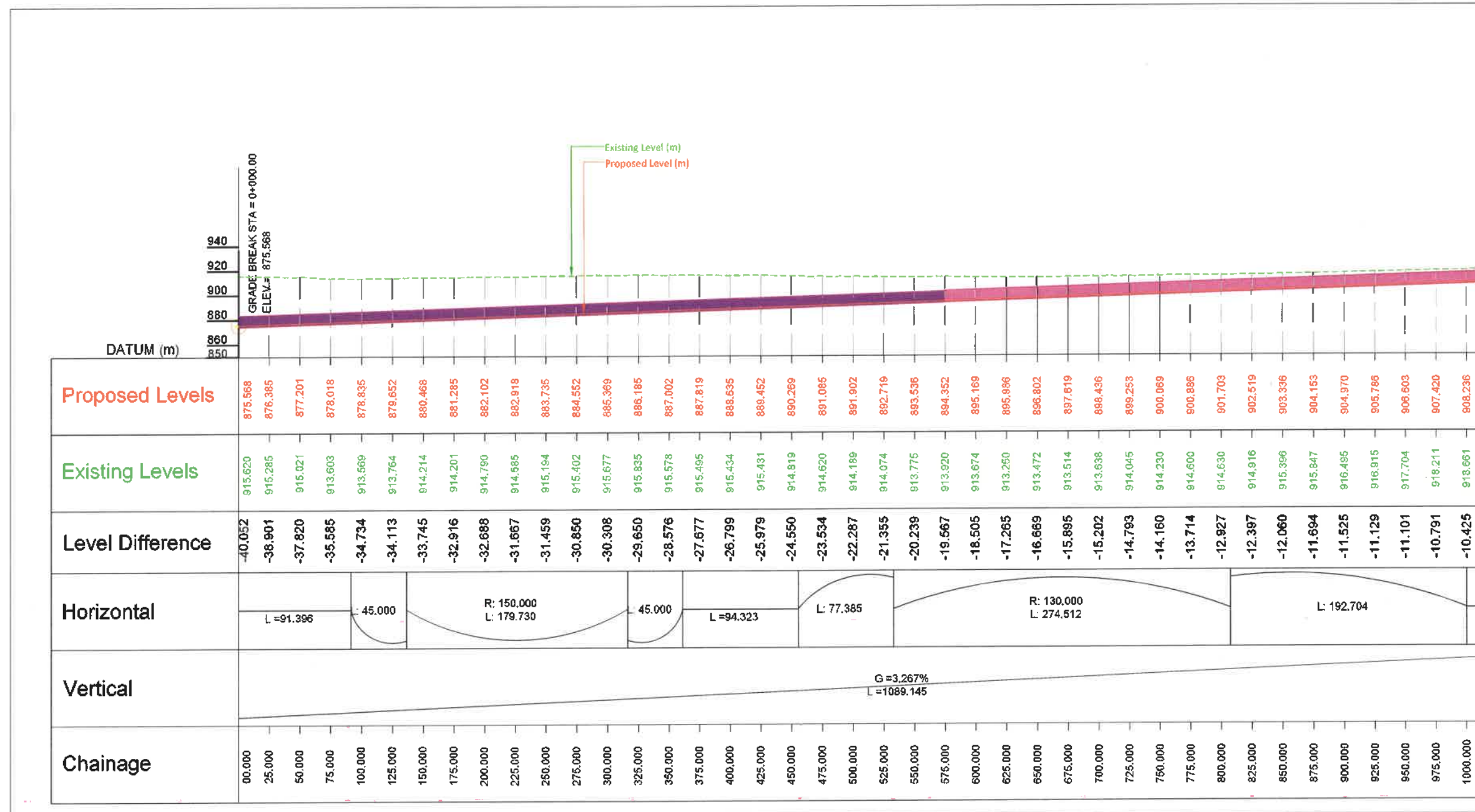
GRADE BREAK STA = 1+139.88
ELEV = 920.902

PLAN & PROFILE
(EXIT RAMP - 3)

Signature: Adar Patel Date: 22/08/2024 Dr. S. S. S.



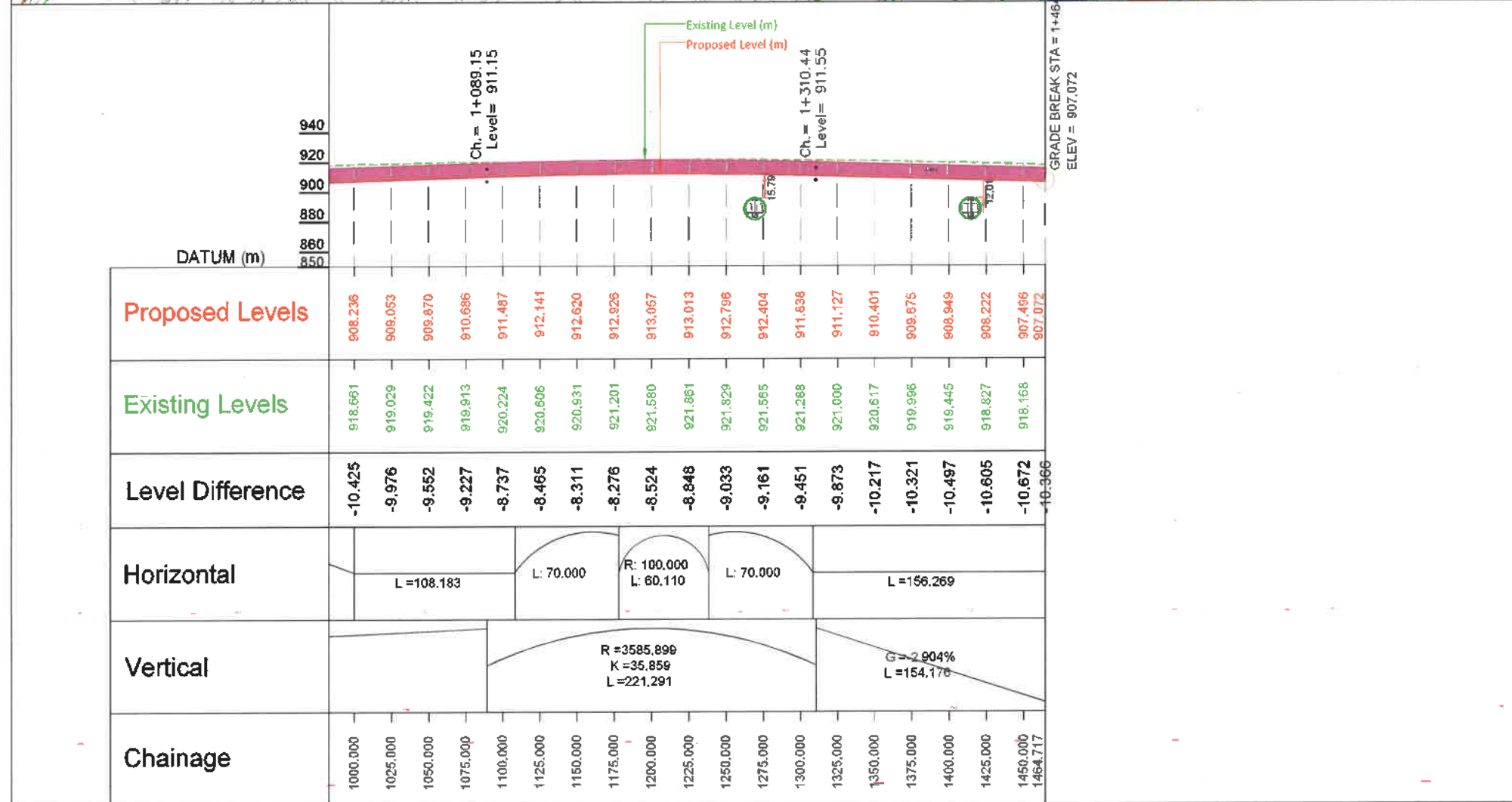
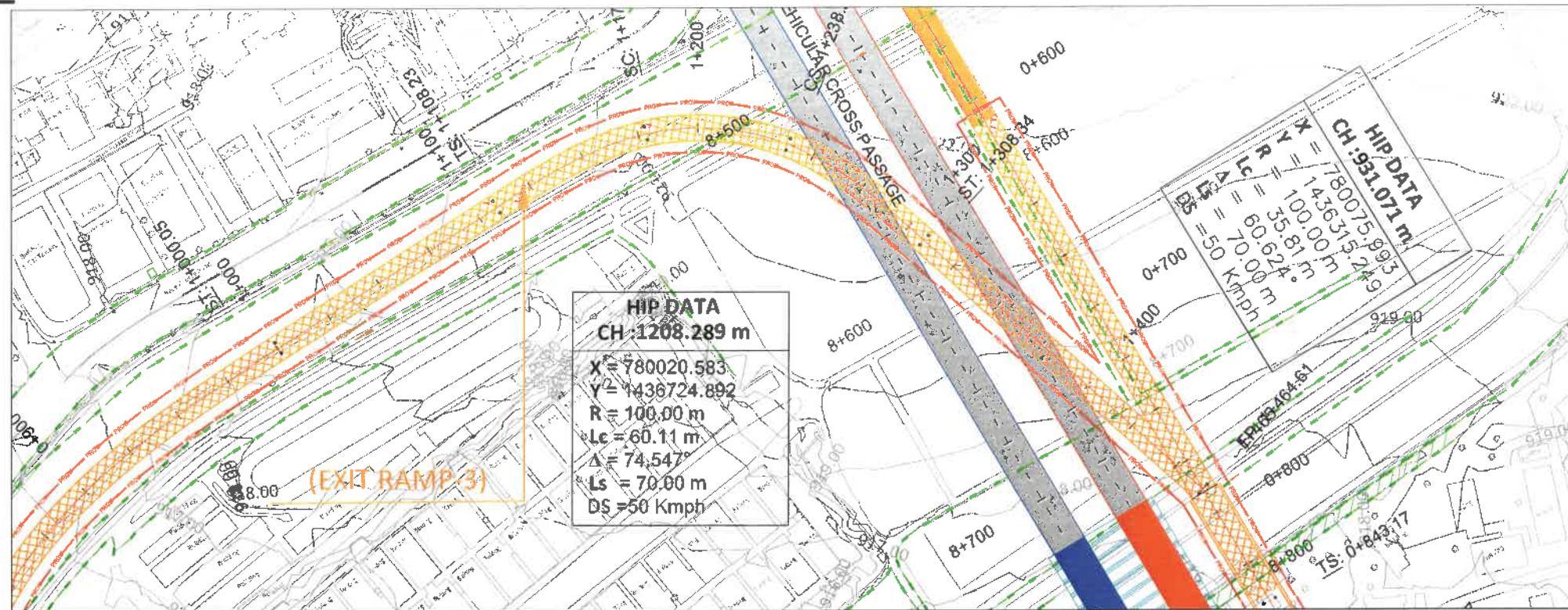
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+060), entry & exit ramp from KG road (from both tube), entry & exit on Shesadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOSCONSULT INDIA PRIVATE LIMITED 60/104 Westpark, Phase 2, Road No. 10, Old Bangalore Road, Bangalore - 560075 (INDIA)	Scale :- H=1:2500 V=1:2500	Drawing Title
				EIC- BBMP	GC	Sheet size: A2	PLAN & PROFILE (EXIT RAMP-3) (Km.0+000 to Km.1+000)
							Drawing No. AEC-040/HO/HBT/TUD/NGP/2025-01/R0



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesada Road, freedom park (Km 8.748) to Silk Road (Km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sejjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING INDIA PRIVATE LIMITED DELHI Metro Station, Phase 1, Road No. 1, Sector 1, Connaught Place, New Delhi - 110001 (INDIA)	Scale :- H=1:2500 V=1:2500 Sheet size: A2	Drawing Title Drawing No.
				EIC- BBMP			PLAN & PROFILE (EXIT RAMP-3) (Km.0+000 to Km.1+000) R011040/HO/HBT/TU/DWG/P&P 01A/R0

Hebbal Esteem mall junction

Silk Road

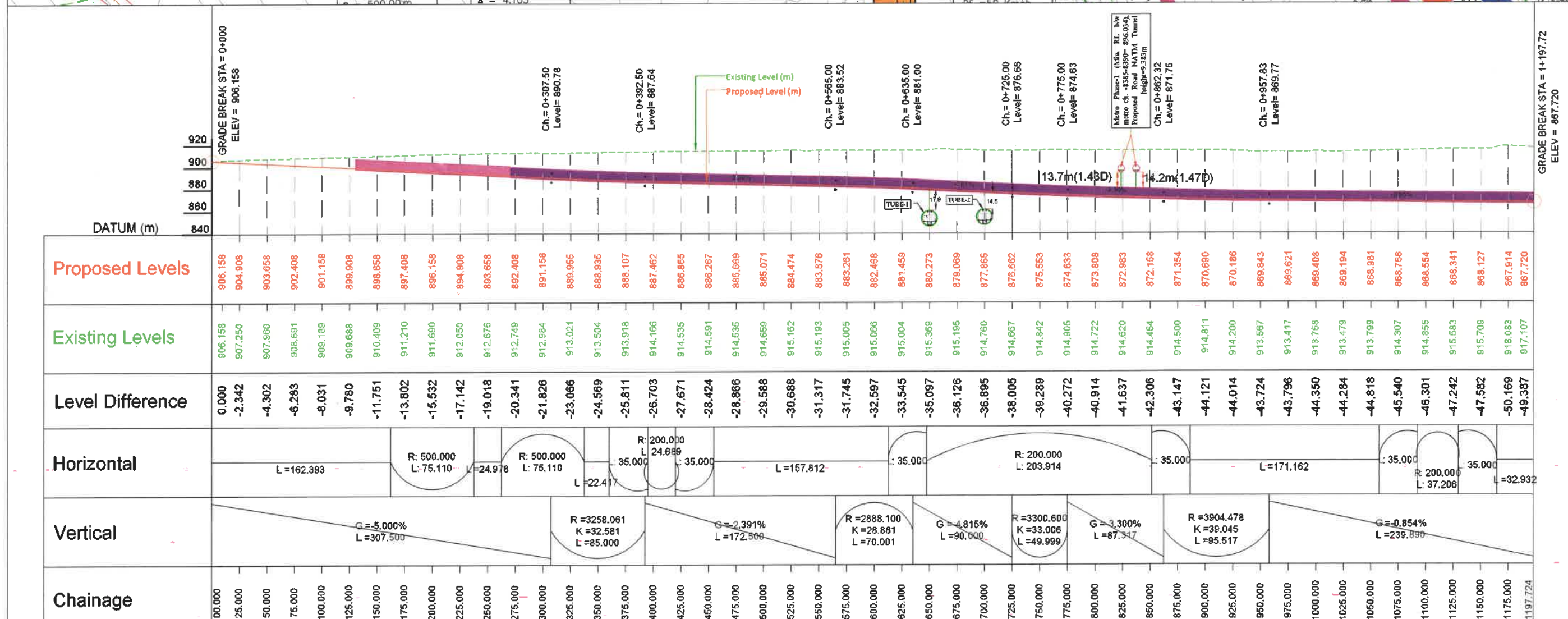


REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+680 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING INDIA PRIVATE LIMITED 048106 WATKINS, PLOT NO. 10, ROAD NO. 10 Siddapura Road, Siddapura, Bangalore - 560075 (INDIA)	Designed: RR Drawn: SS Checked: AT Approved: HRY	Scale :- H=1:2500 V=1:2500 Sheet size: A2
				EIC- BBMP			Drawing Title Drawing No. 22/1546/HO/HBT/TU/DW/P&P/01/RO
							PLAN & PROFILE (EXIT RAMP-3) (Km.1+000 to Km.1+454)

PLAN & PROFILE

(ENTRY RAMP - 5)

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REVISION R0	DATE JAN.- 2025	AMENDMENT / ISSUE DESCRIPTION -	CLIENT  GOVERNMENT OF KARNATAKA  Bruhat Bangalore Mahanagara Palike	AE/Infra Div.-RI,BBMP AEE/Infra Div.-RI,BBMP EE/Infra Div.-RI,BBMP EIC- BBMP	CONSULTANT:  RODIC CONSULTANTS PVT. LTD. 1, JN. SINGH MARG, FIRST FLOOR, YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  GEOCONSULT INDIA PRIVATE LIMITED 04/16 Wafat Park, Tower B&D Road Near Skandapada Metro Station Sector 14 Gurgaon Haryana, INDIA	FINAL DETAILED PROJECT REPORT (Package 2 : Km 8.746 to km 16.745 of North South Corridor connecting Hebbal to Silk road.) Designed: RR Drawn: SS Checked: AT Approved: HRY Scale : H=1:2500 V=1:2500 Sheet size: A2	Project Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.746) to Silk Road (Km 16.745) of North South Corridor including landings and exits (12+050), entry & exit ramp from KG road (from both tube), entry & exit on Sheshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramp on Sarjapur Road. Drawing Title PLAN & PROFILE (ENTRY RAMP-5) (Km.0+000 to Km.1+197) Drawing No. AC/1640/HO/HBT/TU/DWG/P&P/01/R0
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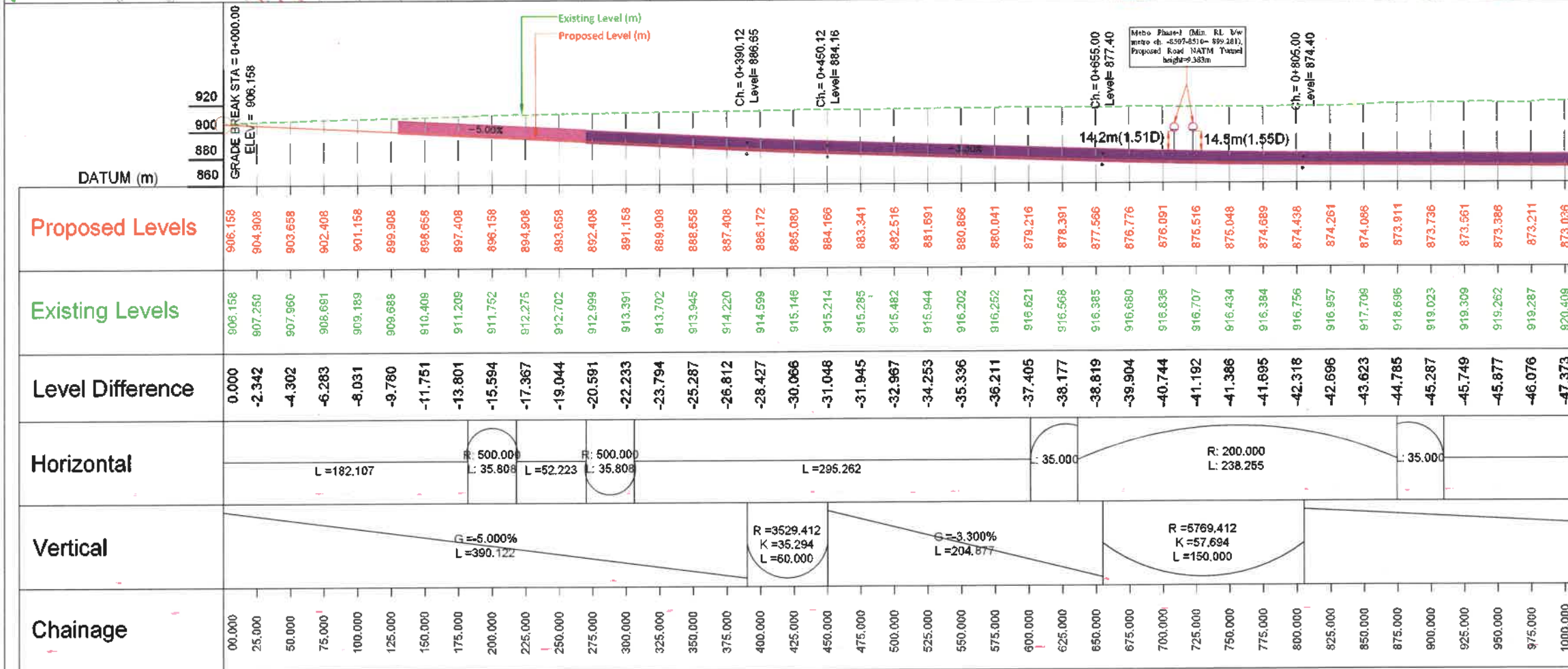
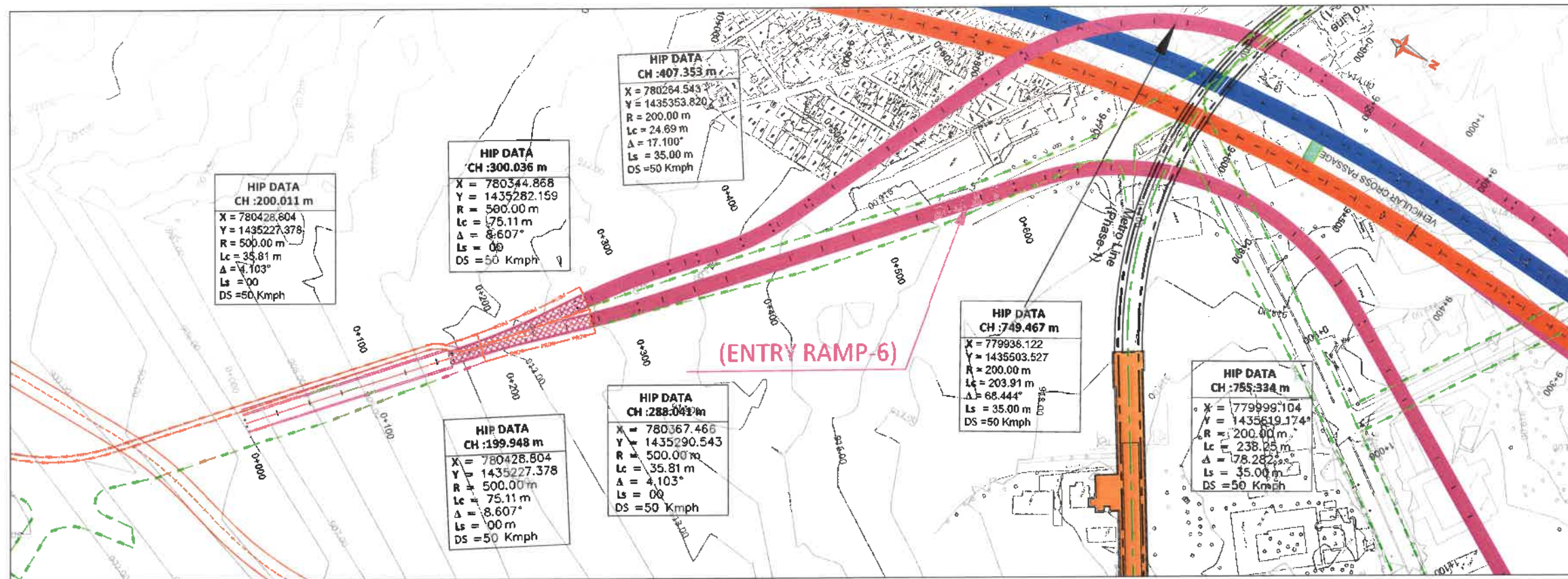
PLAN & PROFILE

(ENTRY RAMP - 6)

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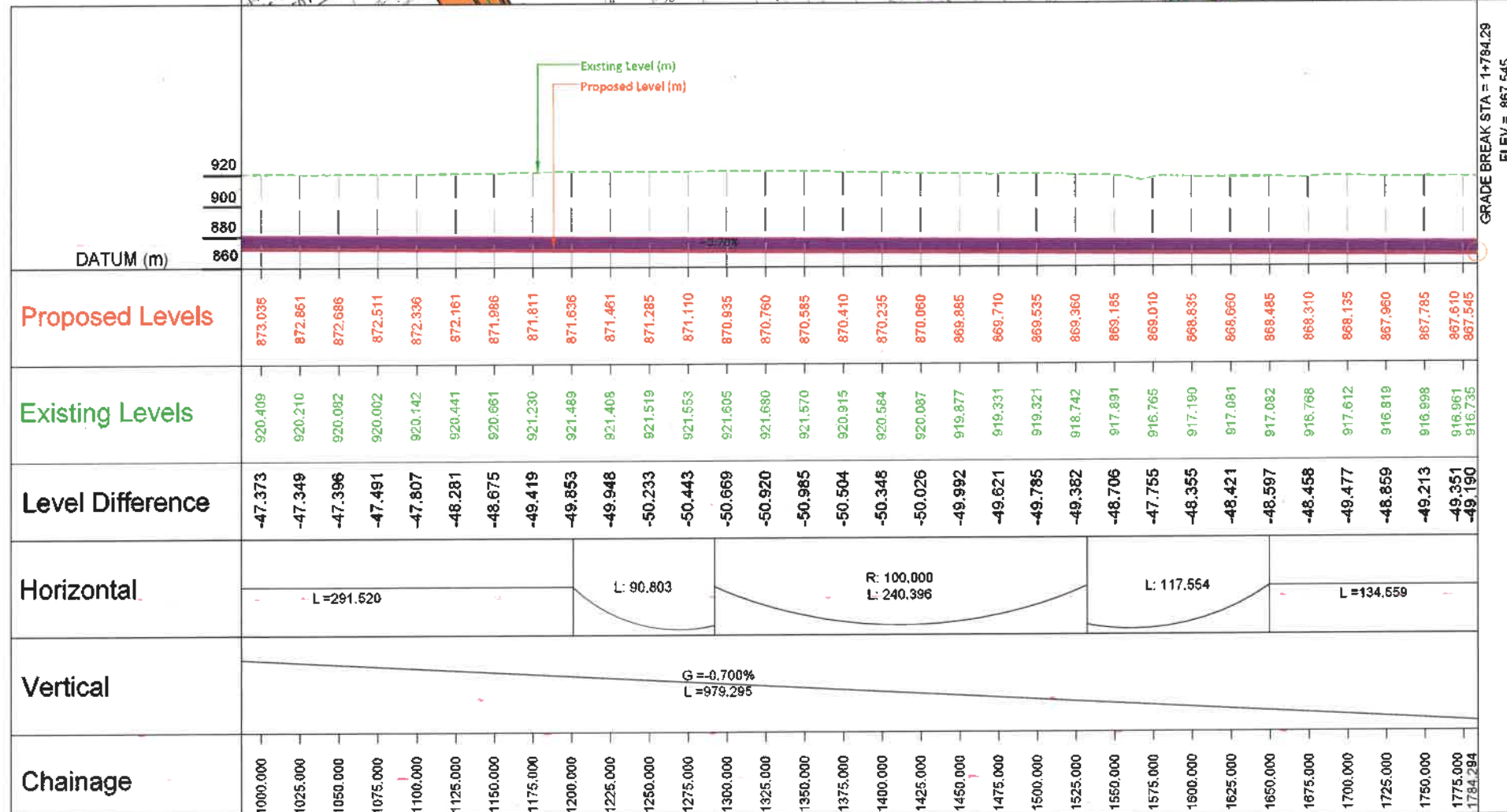
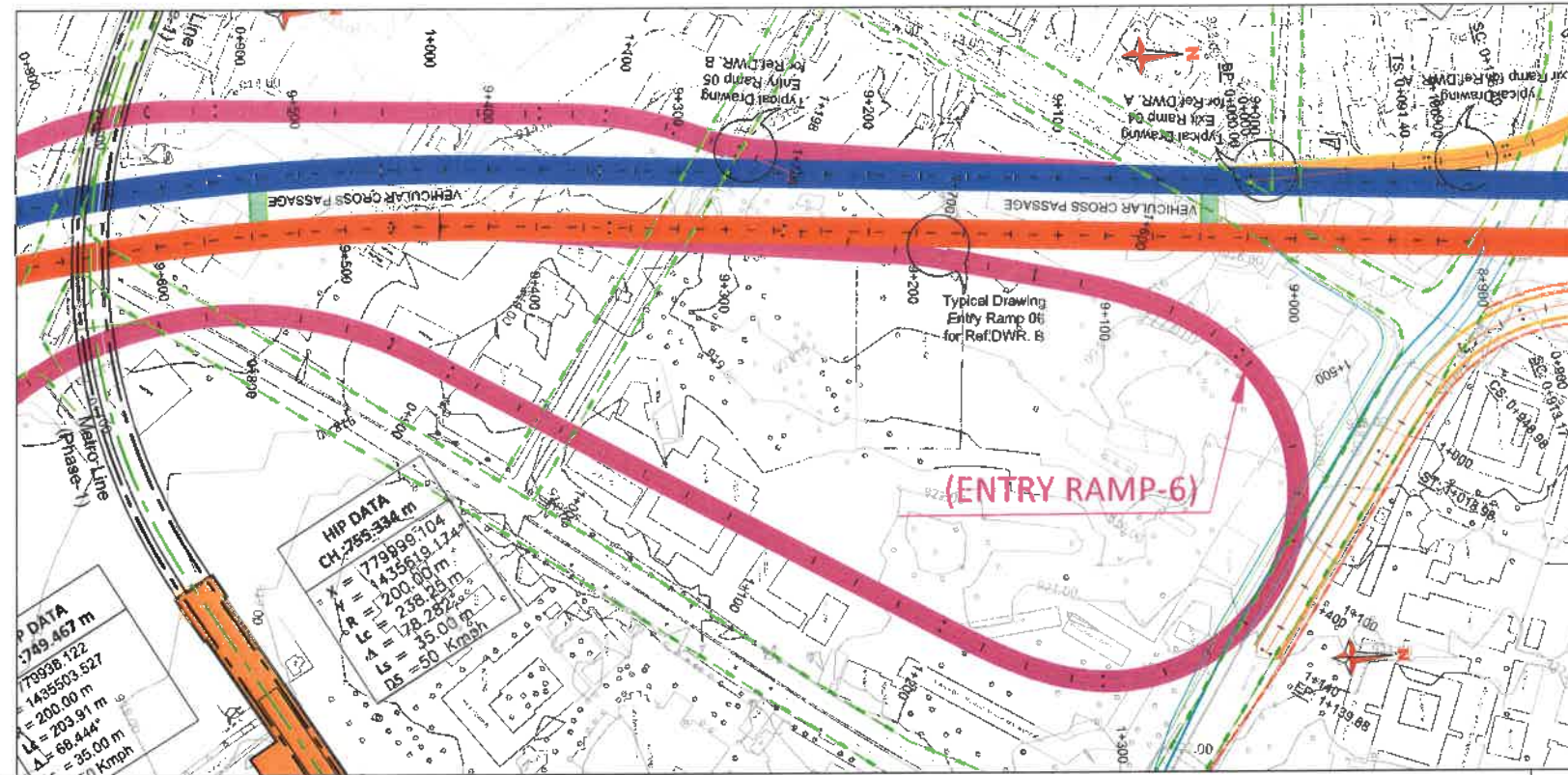
Hebbal Esteem mall junction

Silk Road



Hebbal Esteem mall junction

Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AAE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD.	(Package 2 : Km 8.748 to km 16.748 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (km 8.748) to Silk Road (km 16.748) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 15+050), entry & exit ramp from KG road (from both tube), entry & exit on Shesadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ODCONSULT INDIA PRIVATE LIMITED	Scale :- H=-1:2500 V=-1:2500	Drawing Title
				EIC- BBMP	048104 Wafvill, Phase Tower B&D Road New Siddapur Main Station Sector 28, Outer Ring Road, Bangalore	Sheet size: A2	Drawing No. 100/1640/HO/HBTATU/DWS/P&P 01A/RO

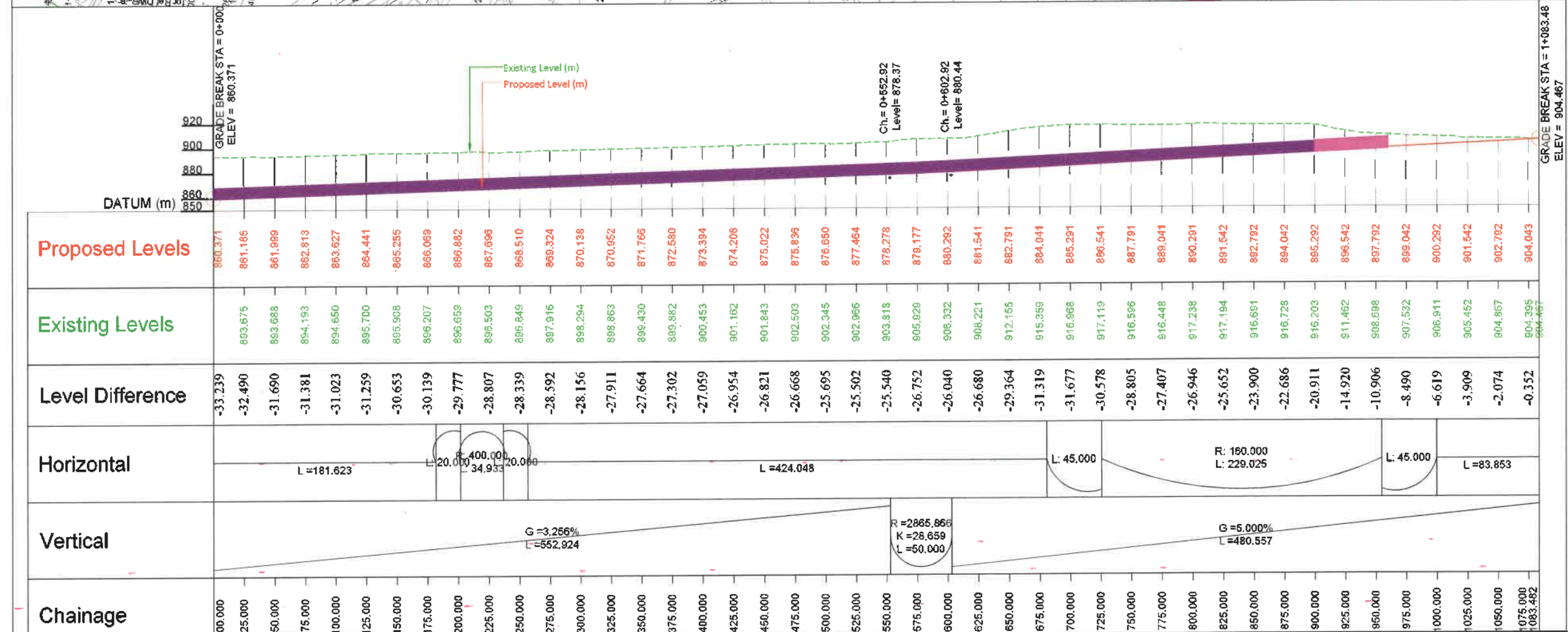
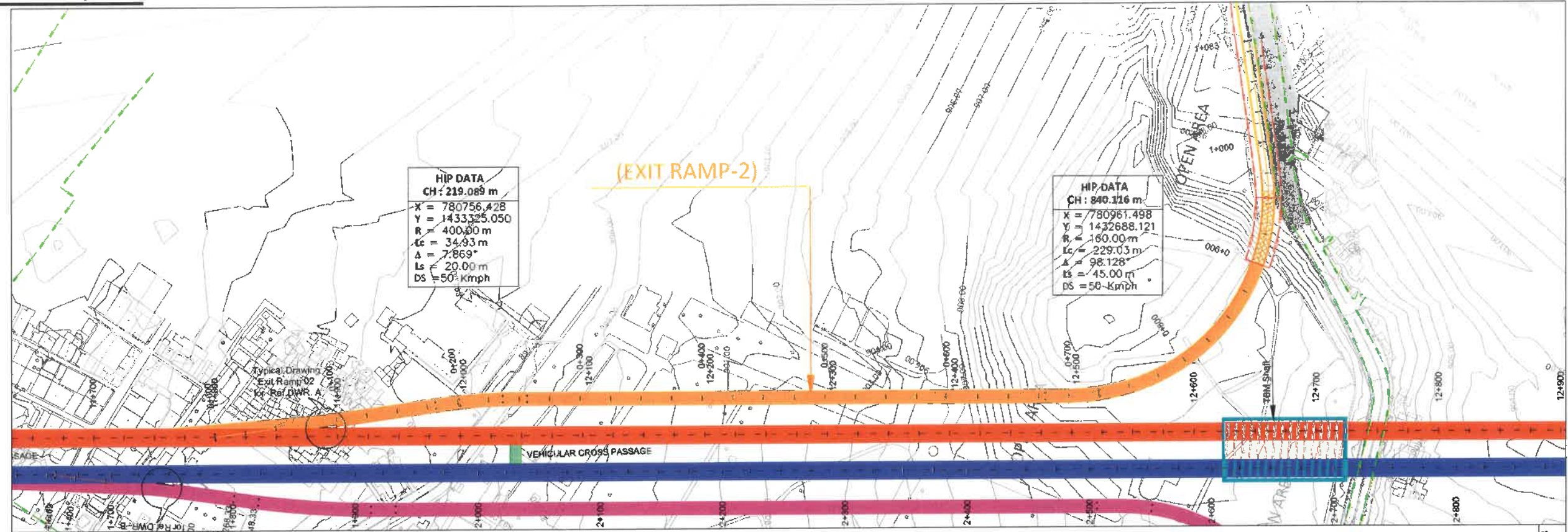
PLAN & PROFILE

(EXIT RAMP - 2)

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Hebbal Esteem mall junction

Silk Road



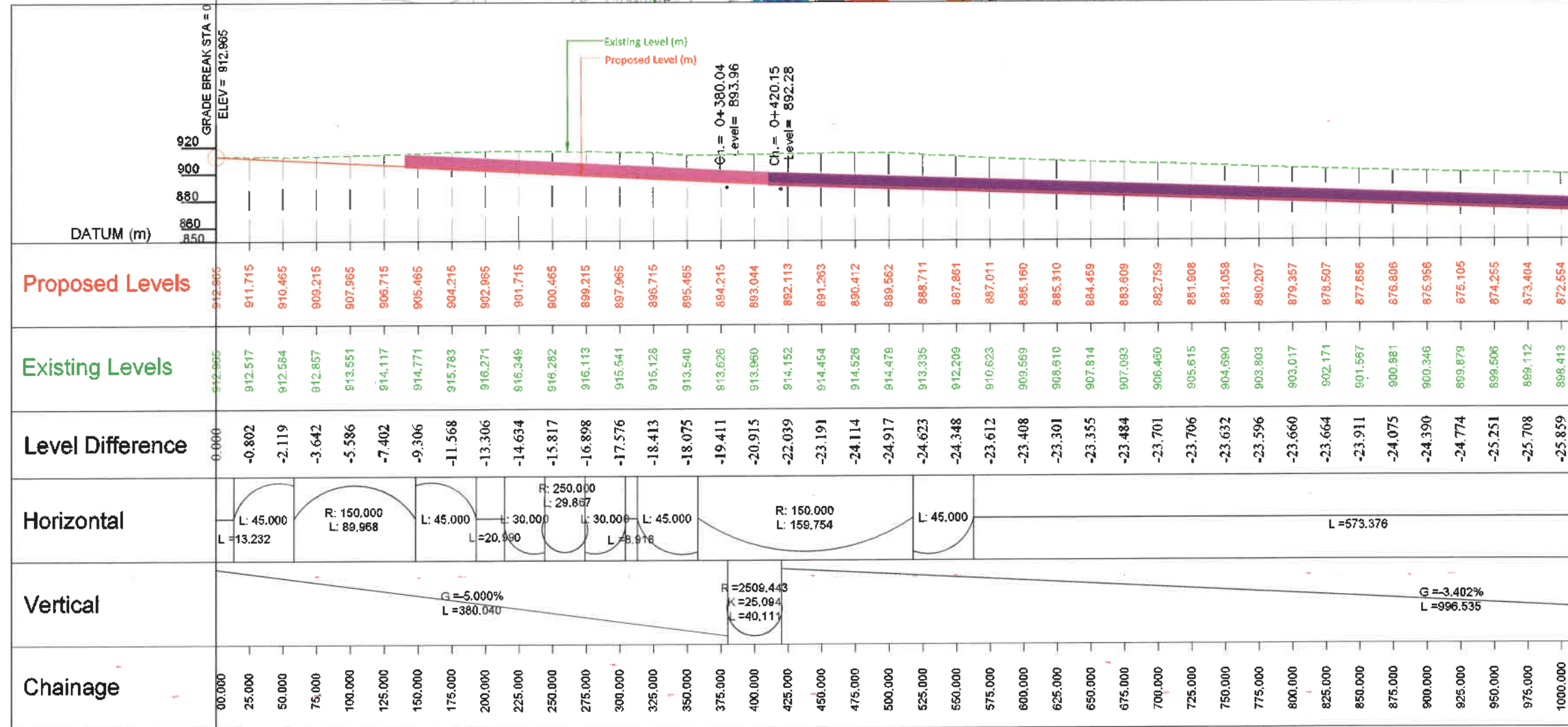
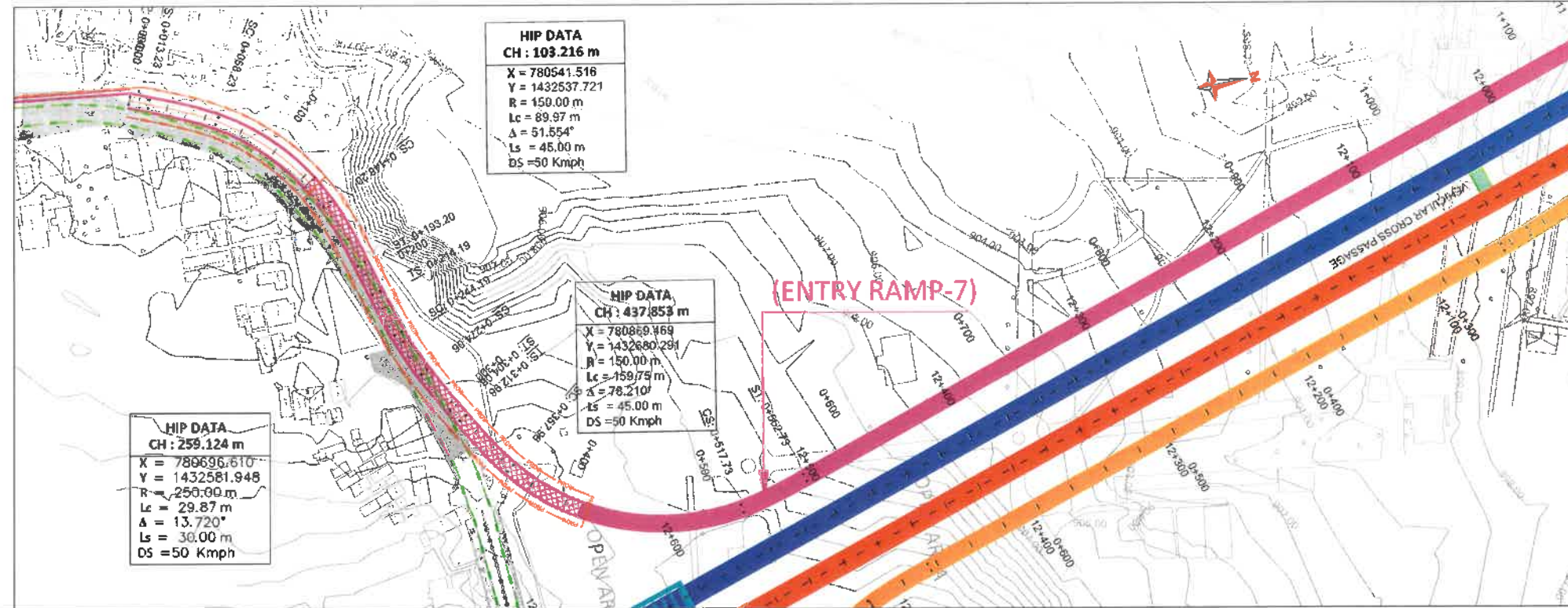
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RD	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadi Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 6+785, Km 12+660 and Km 15+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadi Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sajapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULT INDIA PRIVATE LIMITED 98186 Vethalur, Phase, Tower M3 Road Near Siddapura Metro Station Sector 24, Gurgaon Haryana INDIA	Scale :- H=-1:2500 V=-1:2500	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No. A/C/1640/HO/HBT/TU/DWG/P&P 01/RD

PLAN & PROFILE
(ENTRY RAMP - 7)

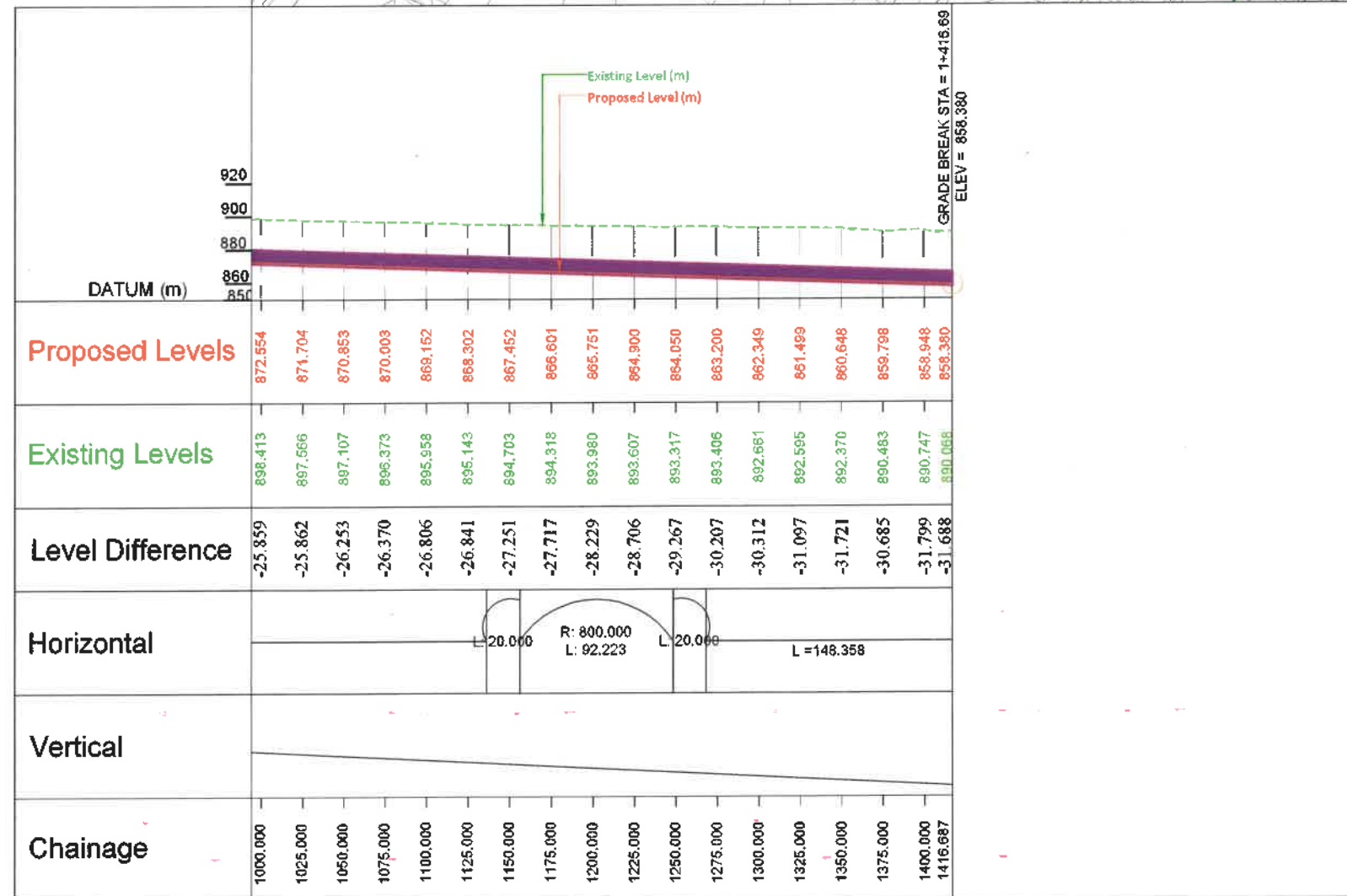
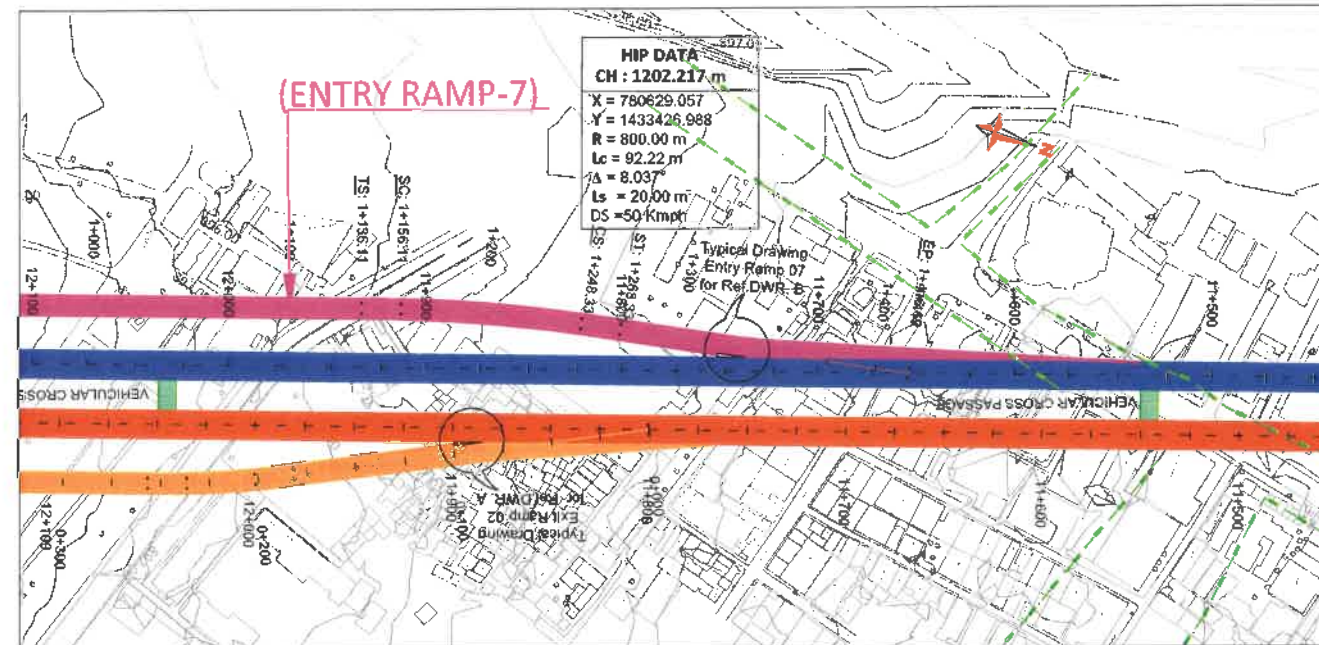
Handwritten signatures and initials at the bottom right corner.

Hebbal Esteem mall junction

Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD.	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sitedag Road, Freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8.785, Km 12+860 and Km 18+050), entry & exit ramp from KG Road (from both tube), entry & exit on Sitedag Road (from both tube), entry & exit ramp on Sitedag Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sitedag Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOSCONSULTING PRIVATE LIMITED	Scale : H=1:2500 V=1:2500	Drawing Title
				EIC- BBMP	40104 Vellore, Phase 1, Road No. 29, Bengaluru 560017, Karnataka, India	Sheet size: A2	Drawing No.
							PLAN & PROFILE (ENTRY RAMP-7) (Km.0+000 to Km.1+000)
							PC/1640/HBT/UDWA/P&P/01/R0



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-R1,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-R1,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheshadri Road, freedom park (Km 5.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Sheshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-R1,BBMP	GECON CONSULTANTS PRIVATE LIMITED M/166, 1st Floor, Phase 2, TGV Road, New Siddapur Metro Station, Sector 28, Old Bangalore Nayagauda	Scale :- H=1:2500 V=1:2500 Sheet size: A2	PLAN & PROFILE (ENTRY RAMP-7) (Km.1+000 to Km.1+416)
				EIC- BBMP			Drawing No. RCH/40/HO/HBT/UDWS/P&P/01A/R0

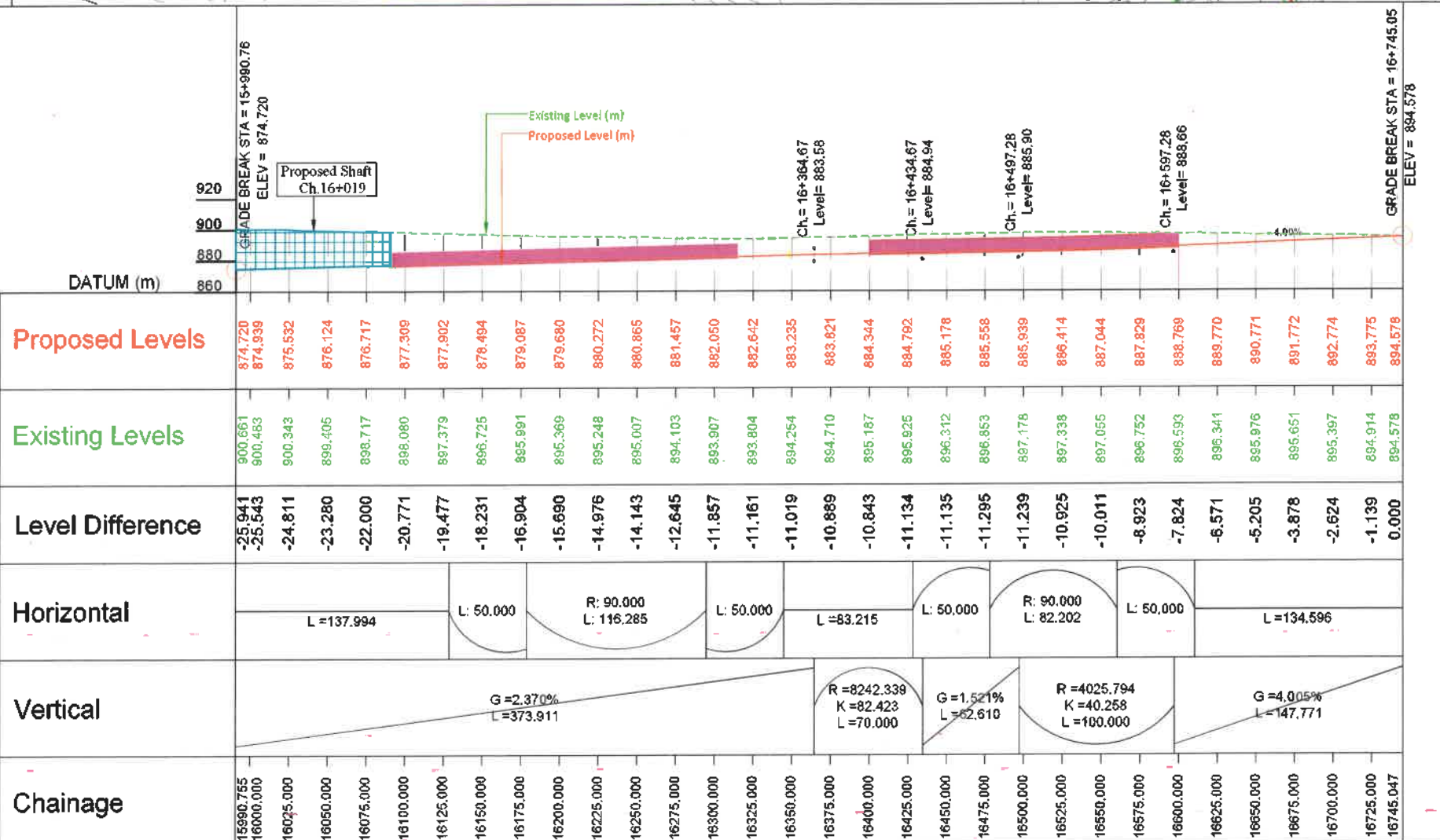
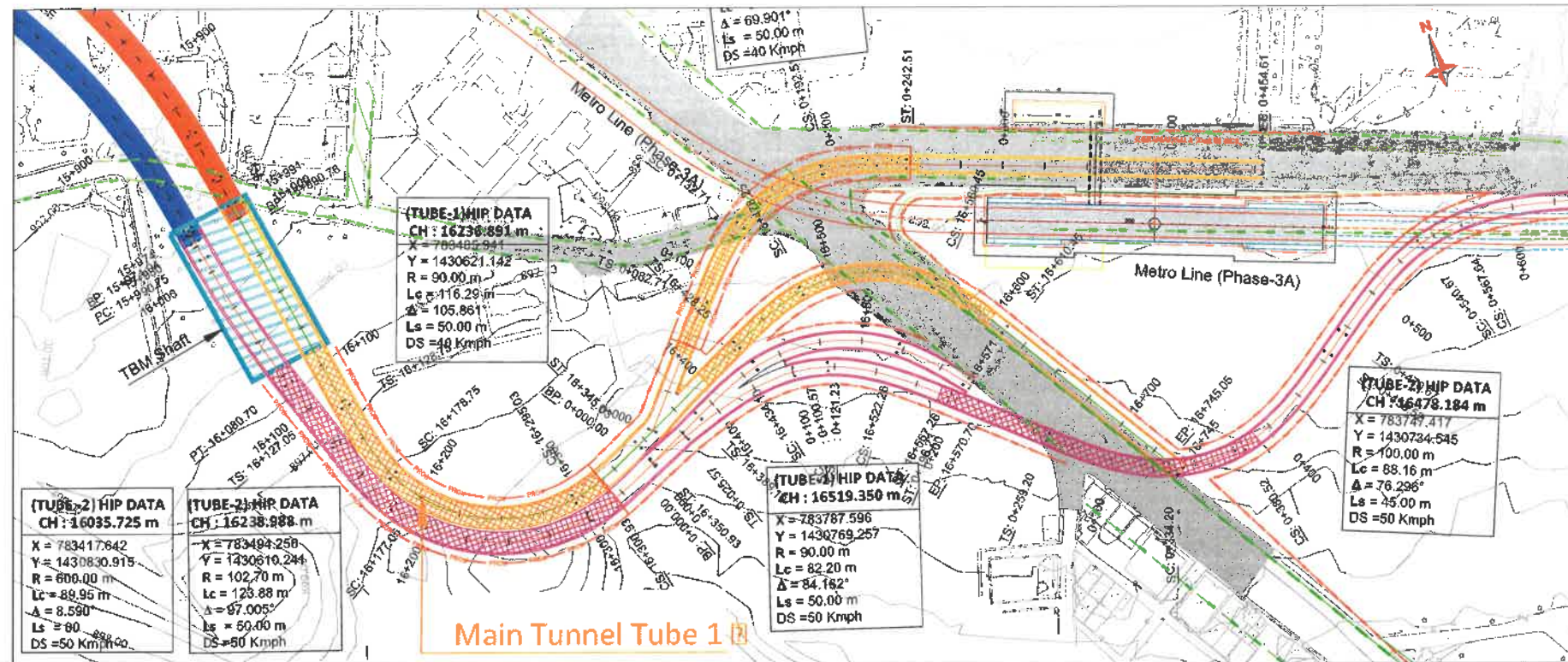
PLAN & PROFILE

(TUBE - I)

Signature: Adar Purohit Date: 22/09/2024

Hebbal Esteem mall junction

Silk Road

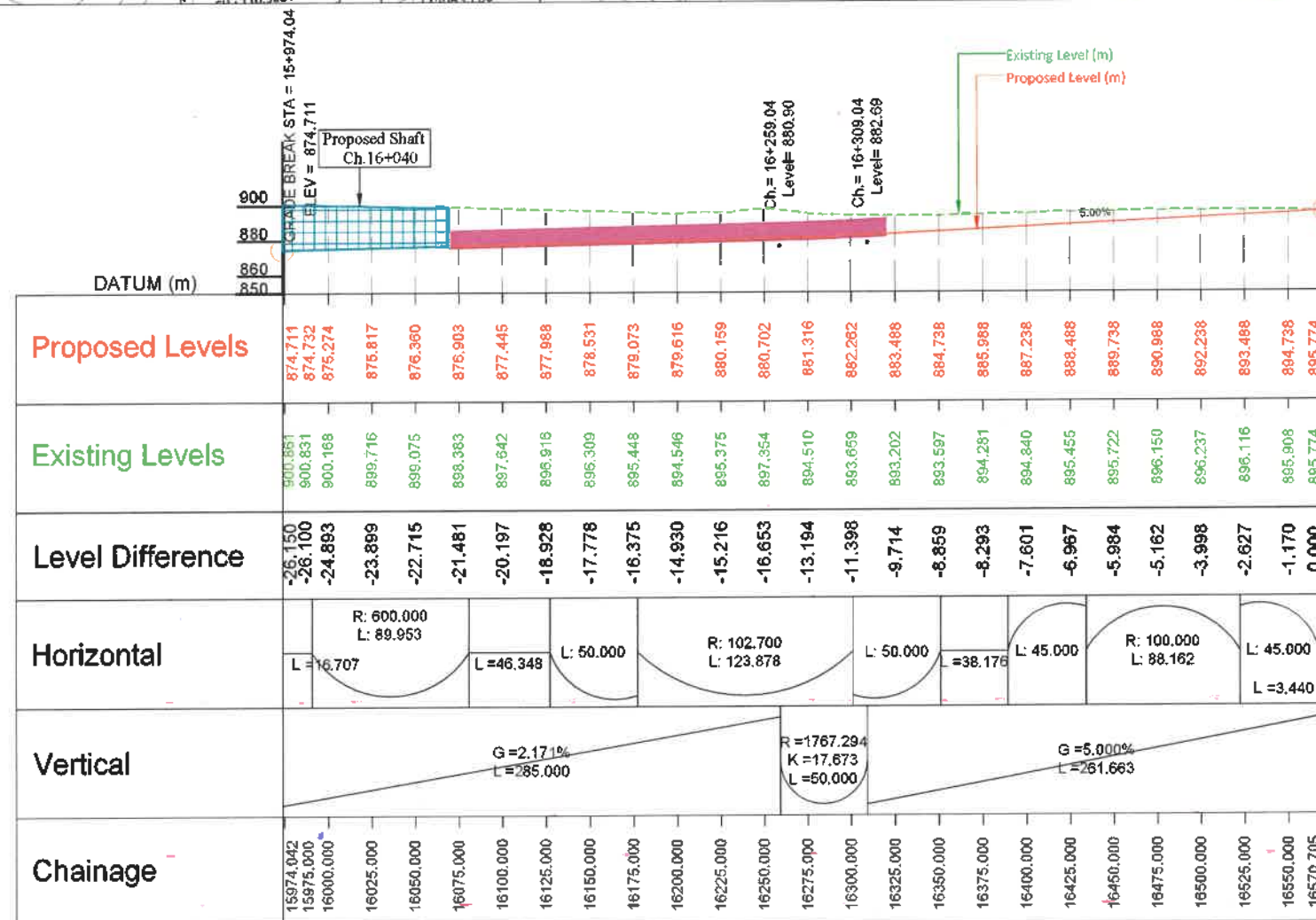
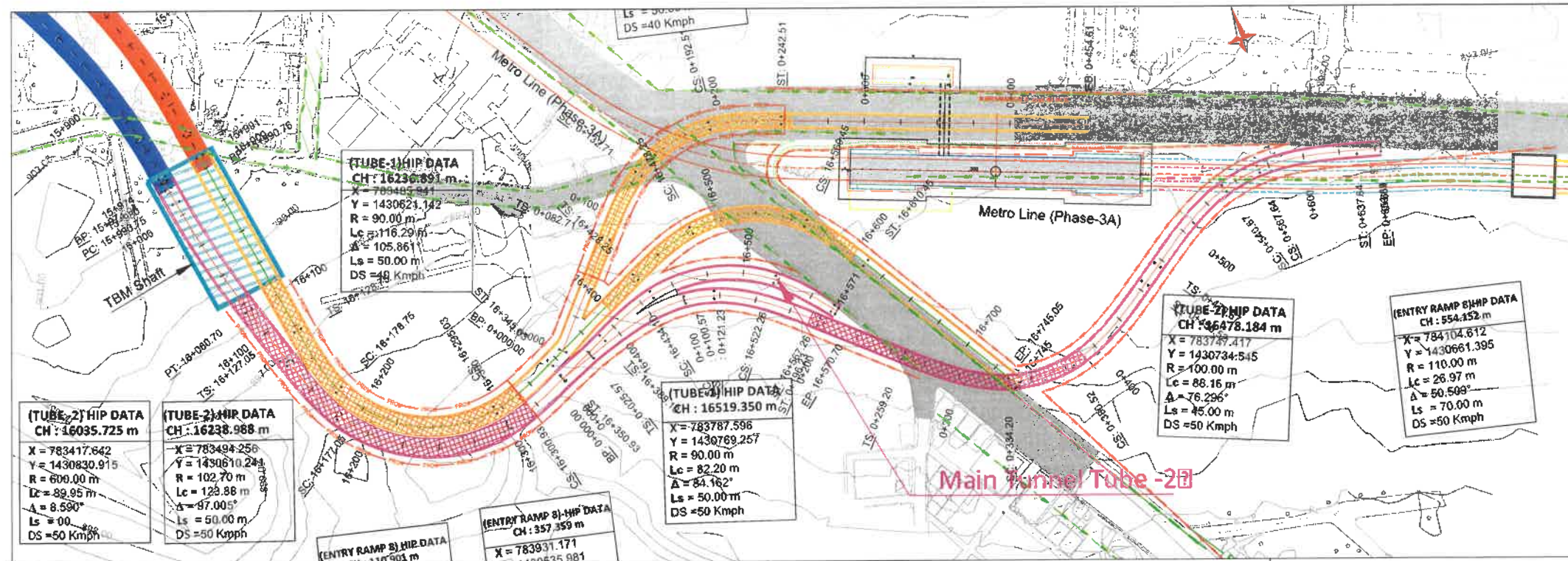


REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+755, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING PRIVATE LIMITED 48/1K, Wilevel, Phase Tower M3 Road New Siddapur Metro Station Sector 28, Outer Ring Bangalore - INDIA	Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing Title Drawing No. RCH/1640/HQ/HBT/TU/DWG/P&P/01/R0
				EIC- BBMP		Scale :- H=1:2500 V=1:2500 Sheet size: A2	PLAN & PROFILE (TUBE-1) (Km.15+990 to Km.16+745)

PLAN & PROFILE

(TUBE - II)

Signature: Adar Patel Date: 22/02/2020

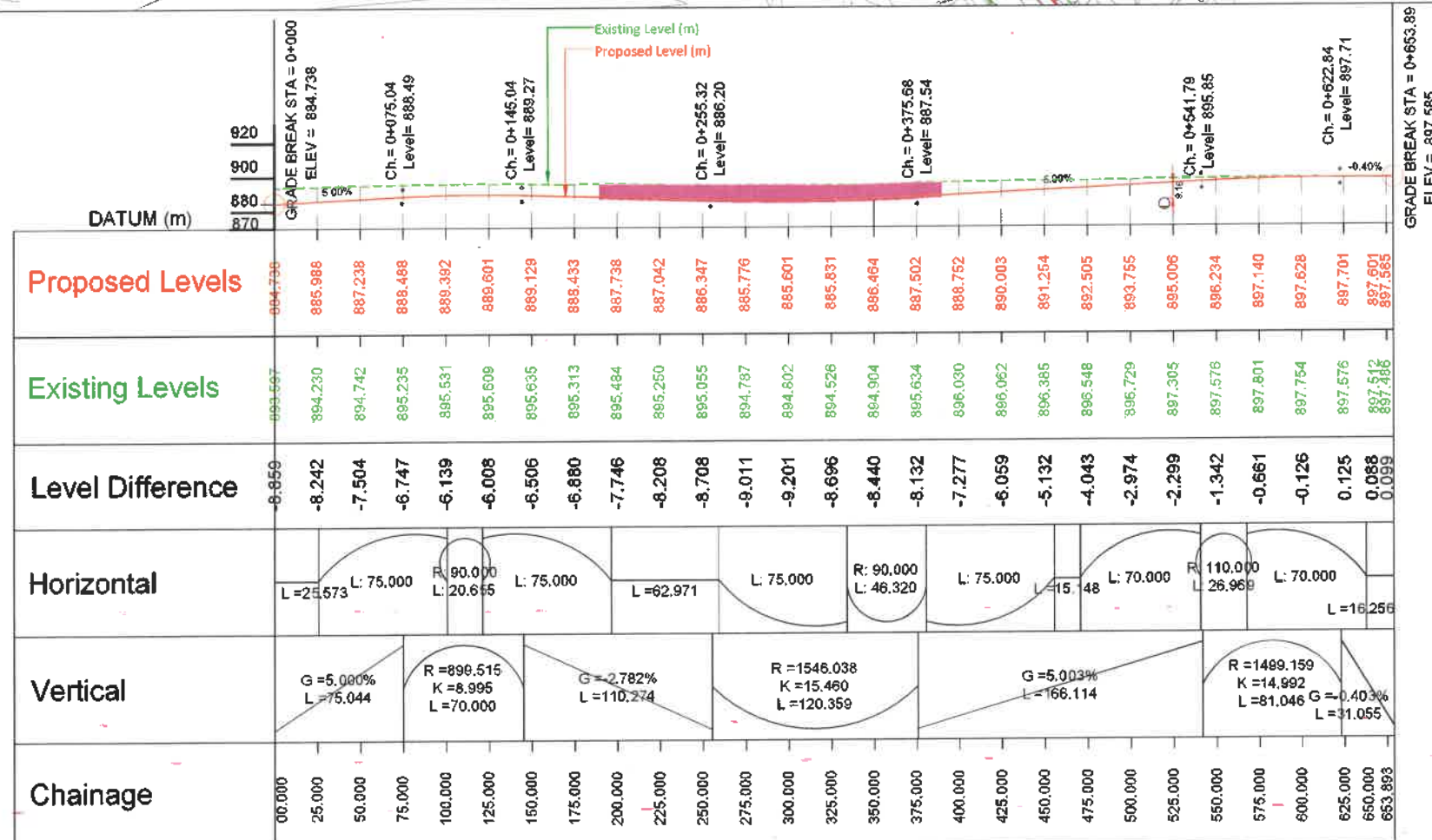
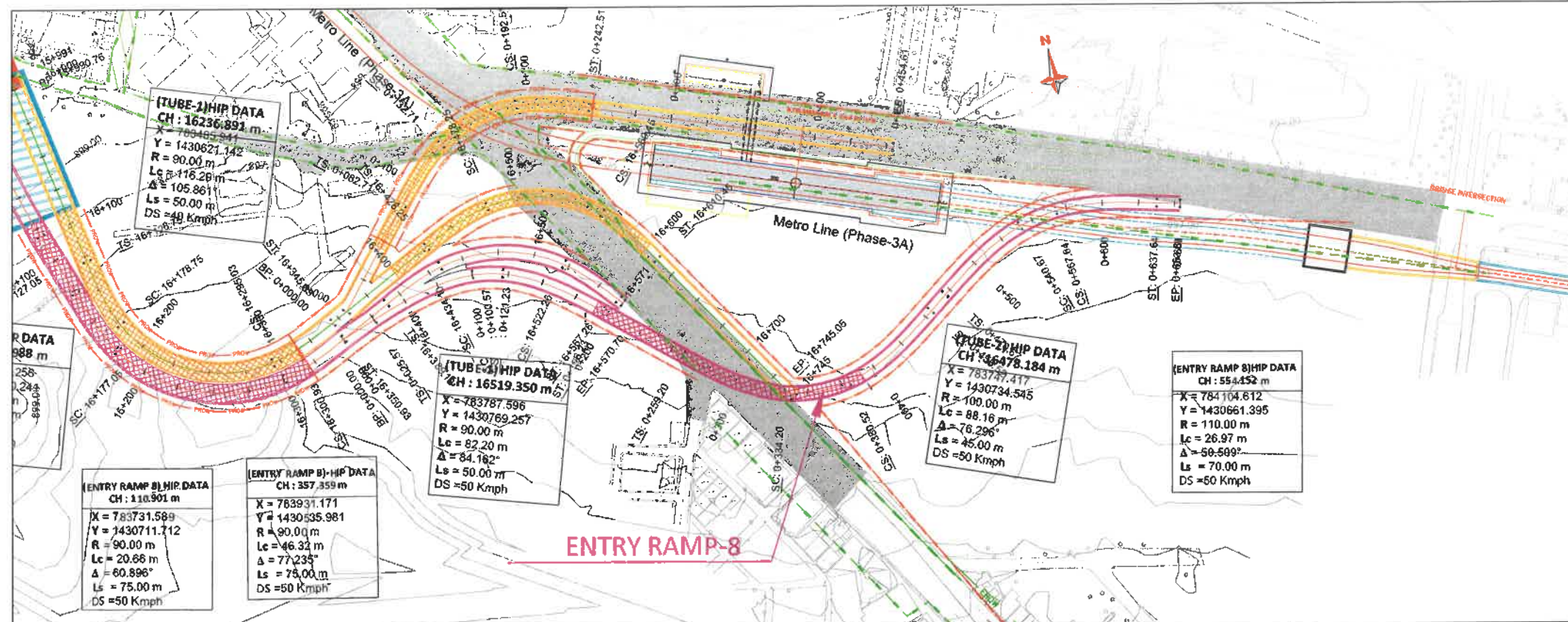


REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden), entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ODDORISULT INDIA PRIVATE LIMITED ODDORISULT INDIA PRIVATE LIMITED Siddapura Metro Station Sector 28, Outer Ring Road Bengaluru - 560075 (INDIA)	Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing Title Drawing No.
				EIC- BBMP		Scale : H=1:2500 V=1:2500 Sheet size: A2	PLAN & PROFILE (TUBE-2) (Km.15+970 to Km.16+745) A-15-10/HO/HBT/TU/DWG/B&P/01/R0

PLAN & PROFILE

(ENTRY RAMP-8)

Handwritten signatures and initials at the bottom right corner.



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION
RO	JAN.-2025	

CLIENT
GOVERNMENT OF KARNATAKA
Bruhat Bangalore Mahanagara Palike

AE/Infra Div.-RI,BBMP
AEE/Infra Div.-RI,BBMP
EE/Infra Div.-RI,BBMP
EIC- BBMP

CONSULTANT:
KODIC CONSULTANTS PVT. LTD.
1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING
NEW DELHI - 110001 (INDIA)
GECON CONSULTING INDIA PRIVATE LIMITED
96/106 Wafat, Phase II, Road Near
Chandrapur Metro Station, Sec-28, Chandrapur
Maharastra INDIA

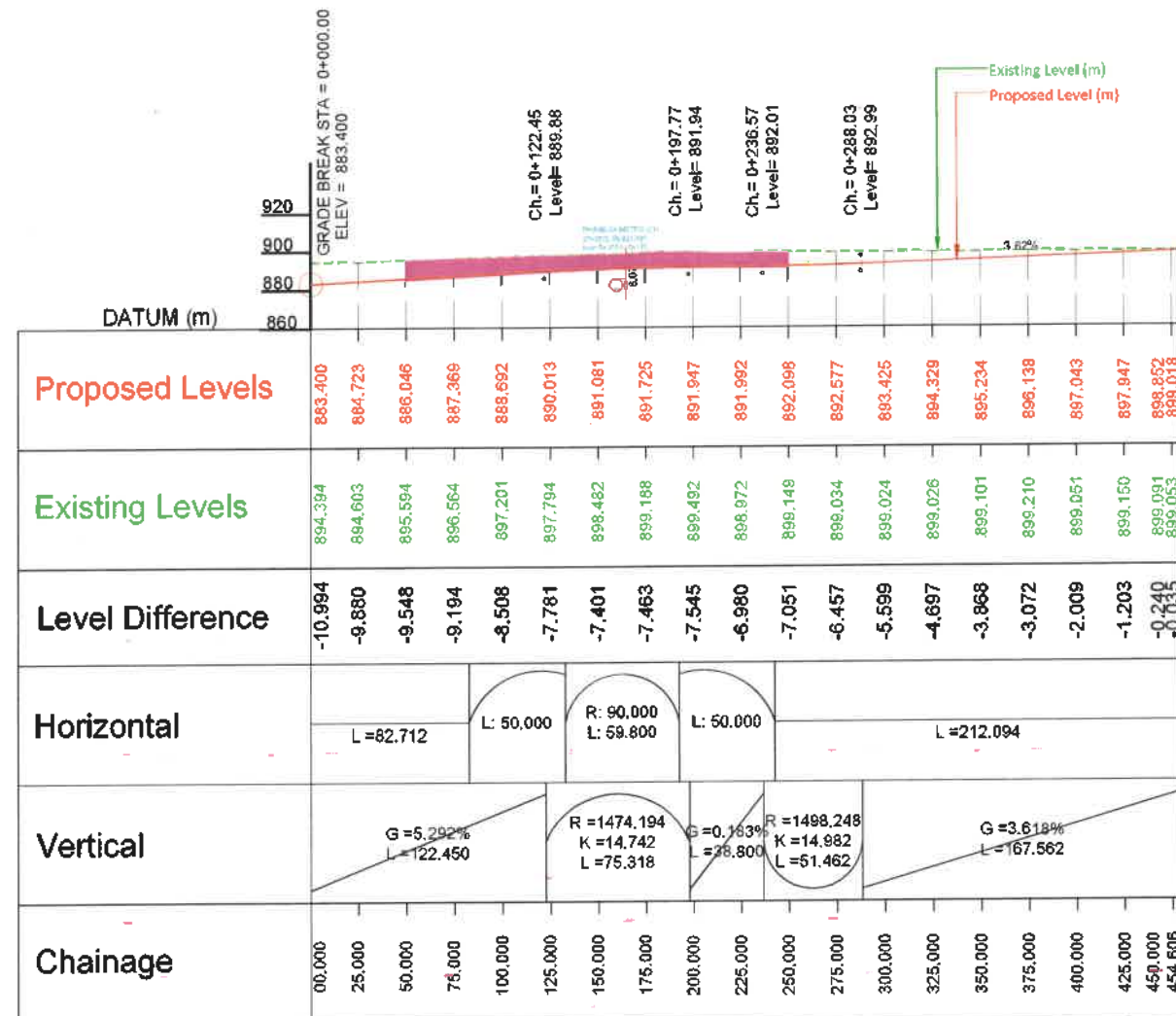
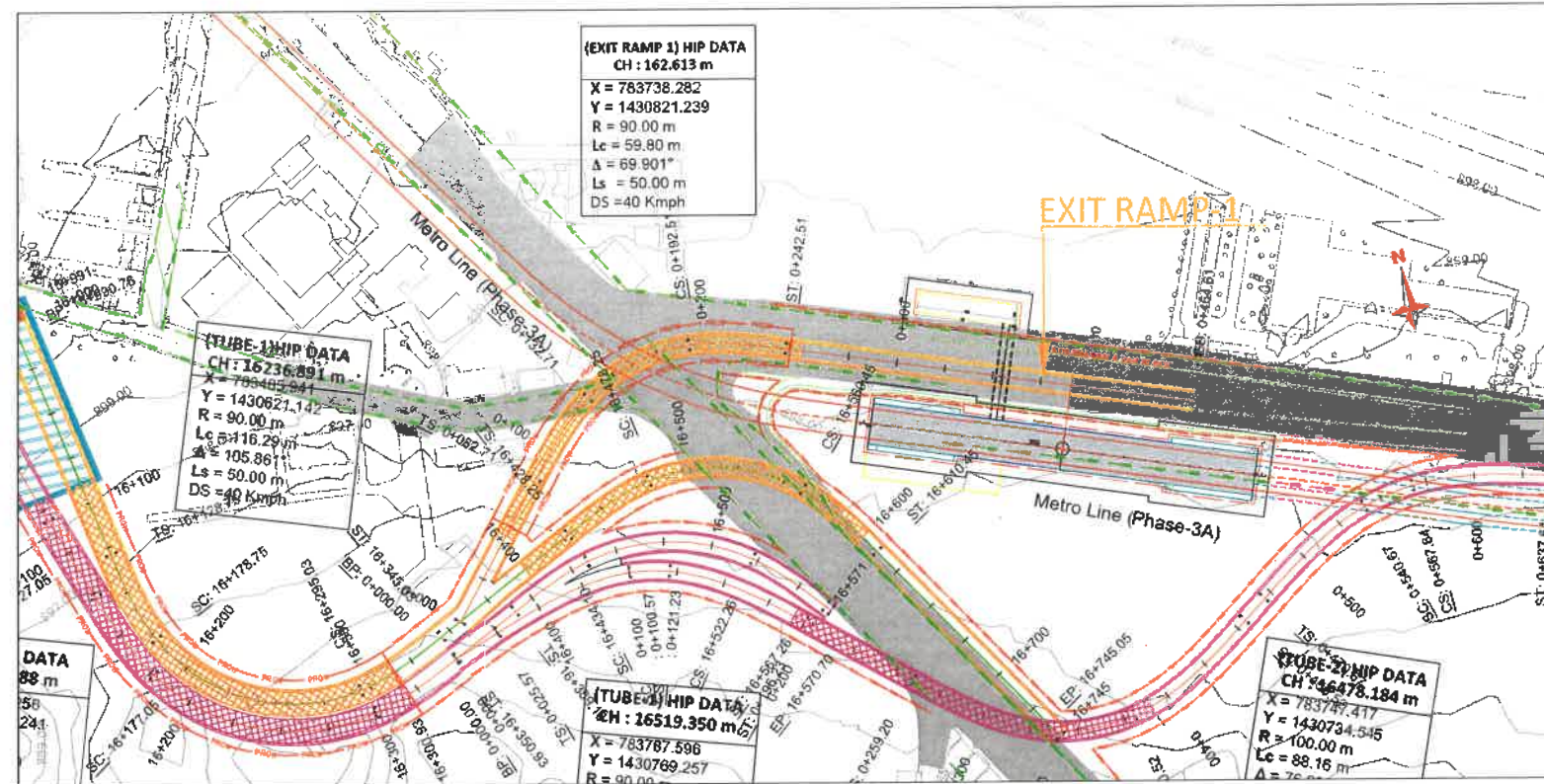
FINAL DETAILED PROJECT REPORT
(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)
Designed: RR
Drawn: SS
Checked: AT
Approved: HRY
Scale : H=1:2500
V=1:2500
Sheet size: A2

Project
Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft. (At Km 8+785, Km 12+650 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sanjapur Road.
Drawing Title
PLAN & PROFILE (ENTRY RAMP-8)
(Km.0+000 to Km.0+654)
Drawing No.
PC/1640/HO/HBT/TU/DWG/P&P/01/RO

PLAN & PROFILE

(EXIT RAMP-1)

Handwritten signatures and initials at the bottom right corner.



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION
RO	JAN.-2025	

CLIENT
GOVERNMENT OF KARNATAKA
Bruhat Bangalore Mahanagara Palike

AE/Infra Div.-RI,BBMP
AEE/Infra Div.-RI,BBMP
EE/Infra Div.-RI,BBMP
EIC- BBMP

CONSULTANT:
RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)
GECON CONSULTING PRIVATE LIMITED 64106 Westview, Phase Tower M2 Road Near Siddaganga Metro Station Sector 26, Gurgaon Haryana INDIA

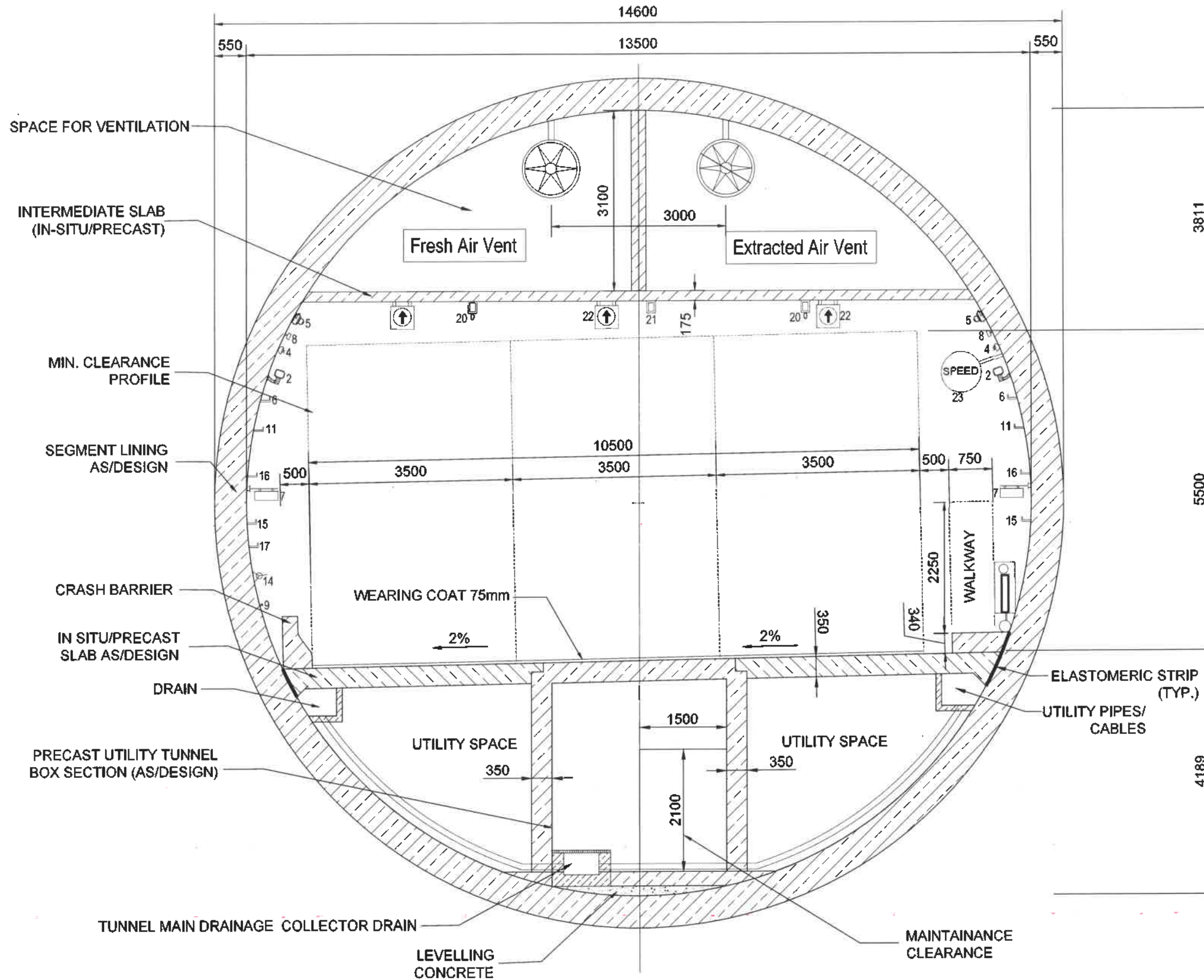
FINAL DETAILED PROJECT REPORT
(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)
Designed: RR
Drawn: SS
Checked: AT
Approved: HRY
Scale: H=1:2500 V=1:2500
Sheet size: A2

Project
Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+690 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Aehoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
Drawing Title
PLAN & PROFILE (EXIT RAMP-1) (Km.0+000 to Km.0+454)
Drawing No.
PC/643/HQ/HST/TU/DWG/P&P/01/RO

Appendix-B-I

TYPICAL CROSS SECTION PACKAGE -2

Handwritten signatures and initials at the bottom right corner.



TYPICAL CROSS SECTION-01
MAIN TBM TUNNEL (3 LANES)
SCALE 1:50

LIST OF EQUIPMENT:	
L.No	Description
1.	LINEAR HEAT DETECTION CABLE
2.	CCTV CAMERA
3.	JET FAN
4.	LIGHT
5.	VENTILATION SENSORS
6.	150MM. CABLE TRAY (LIGHTING, CCTV, SPEAKER & SENSORS)
7.	ILLUMINATED/NON ILLUMINATED EMERGENCY SIGN
8.	SPEAKER (PA)
9.	HANDRAIL
10.	RADIO (LEAKY FEEDER)
11.	150MM. CABLE TRAY (OFC)
12.	FIRE FIGHTING PIPE (150/125 NB)
14.	MAINTENANCE POWER SOCKET (THREE PHASE & SINGLE PHASE)
15.	150MM. CABLE TRAY (UPS CABLES)
16.	150MM. CABLE TRAY (JET FANS DB TO JET FANS CABLES)
17.	150MM. CABLE TRAY (MAINTENANCE POWER SOCKET CABLES)
18.	250MM. CABLE TRAY (33KV. CABLES)
19.	250MM. CABLE TRAY (11KV. CABLES)
20.	SPRINKLER
21.	FIRE ALARM
22.	TRAFFIC LIGHT
22.	TRAFFIC SIGN BOARD

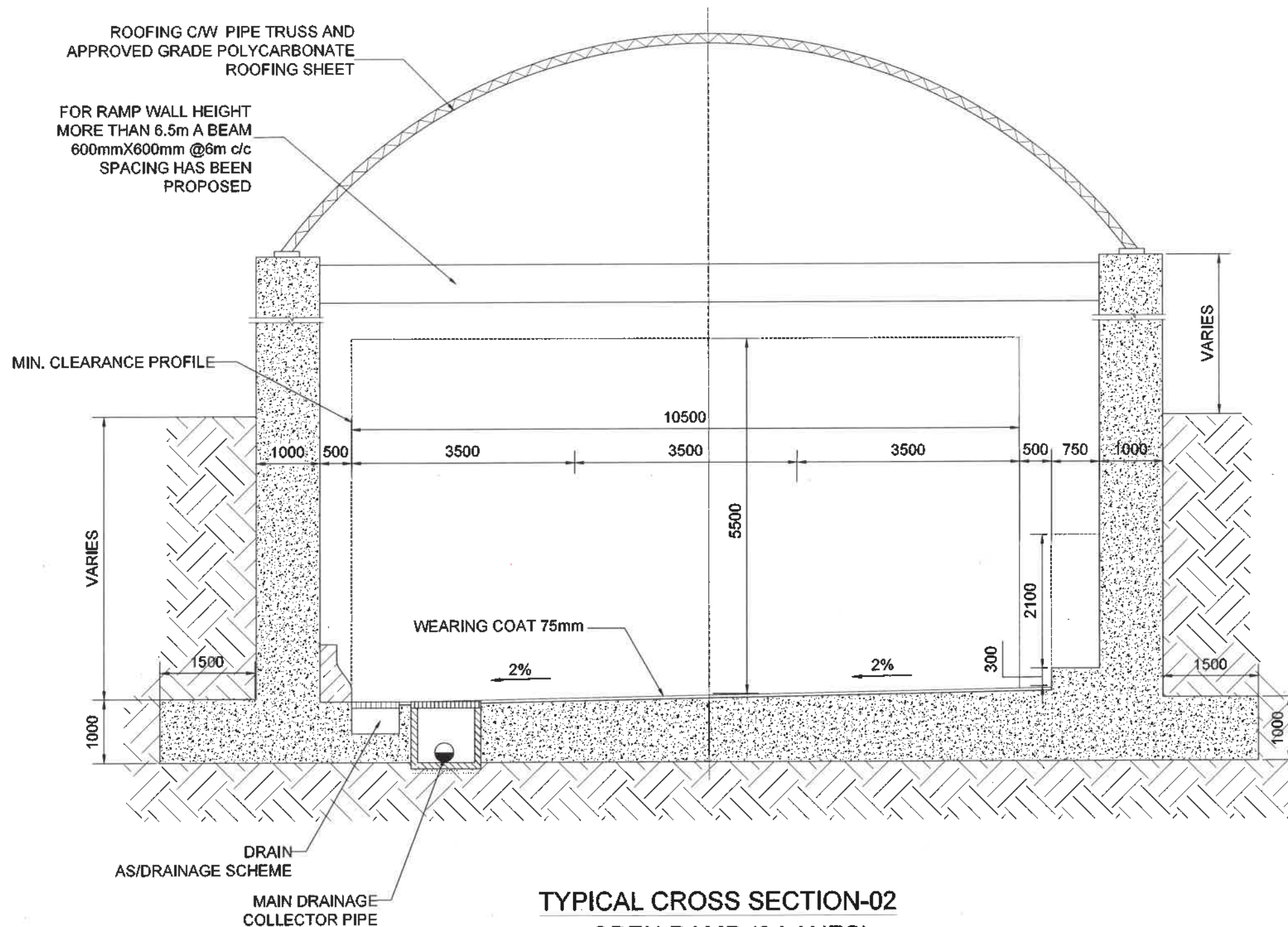
NOTES:

- ALL DIMENSIONS ARE IN mm.
- THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF SEGMENTAL LINING SHALL BE DONE BY CONTRACTOR.
- SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
- WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
- DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
- ELASTOMERIC STRIPS TO BE INSTALLED AT THE JOINT OF PAVEMENT SLAB WITH TUNNELING SEGMENTAL LINING.

MATERIALS:-

GRADE OF CONCRETE - M60

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-R, BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RD	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-R, BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, Freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8.748, Km 12+660 and Km 16+050), entry & exit ramp from K/D road (from both tube), entry & exit on Sheshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden), entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-R, BBMP	GECON CONSULTANTS PRIVATE LIMITED M-106, 1st Floor, Phase 2, 2nd Stage, 2nd Cross, 2nd Main Road, Sarjapur Road, Bangalore - 560090	Scale :- AS SHOWN	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No. PC/640/HO/HBTU/DWG/CS/01/R0



TYPICAL CROSS SECTION-02
OPEN RAMP (3 LANES)
SCALE 1:50

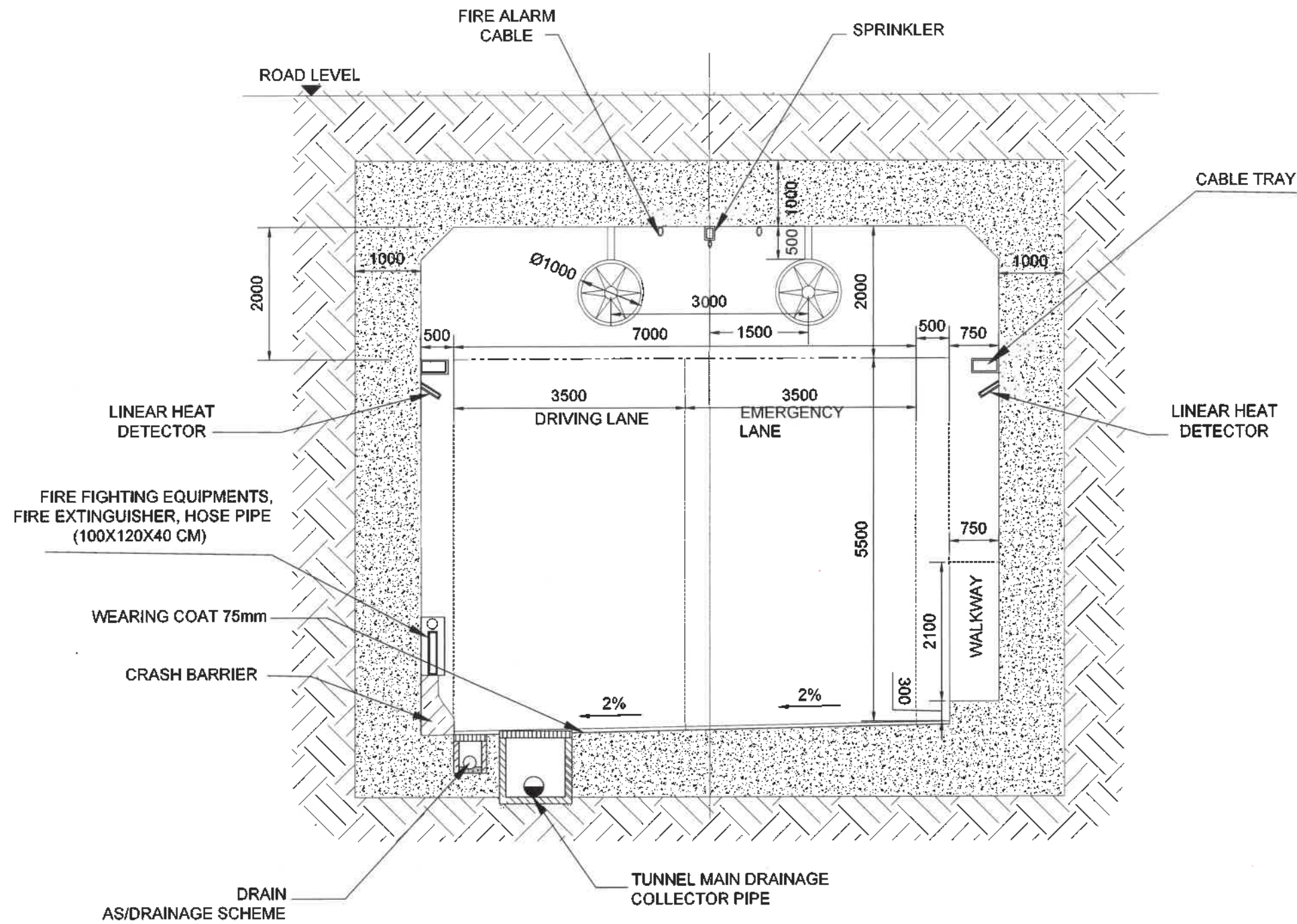
NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE , UTILITY PIPE TRENCH ETC . MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

MATERIALS:

GRADE OF CONCRETE - M35
GRADE OF STEEL Fe550D

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sagapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULT (INDIA) PRIVATE LIMITED 04B186 WeWork, Flats 2nd & 3rd Road New Siddapura Metro Station Sector 28, Oldenagar Margen INDIA	Scale :- AS SHOWN Sheet size: A2	Drawing Title TYPICAL CROSS SECTION-2
				EIC- BBMP		Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing No. RC/1640/HO/HBT/UIDWS/ITCS/02/RO



TYPICAL CROSS SECTION-03
CUT AND COVER SECTION FOR ENTRY/EXIT (2 LANE)

SCALE 1:50

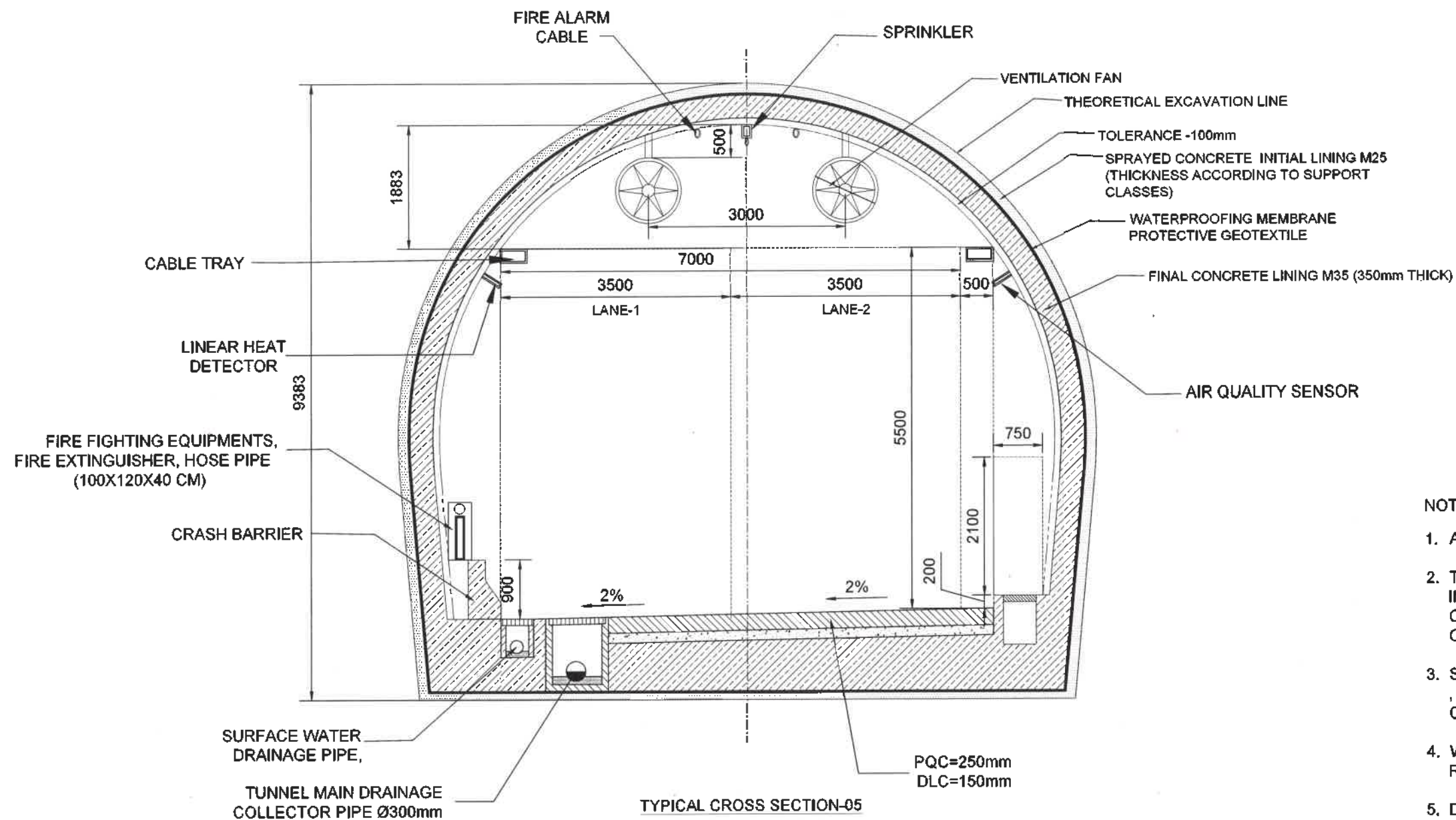
NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE , UTILITY PIPE TRENCH ETC . MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

MATERIALS:

GRADE OF CONCRETE -M35 ,
STEEL GRADE Fe550D

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+680 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTANTS PRIVATE LIMITED 64B/106 West Park, Phase 1, Tower 10, Road 10, 1st Floor, Sarjapur Road, Sarjapur, Bangalore - 560090	Scale :- AS SHOWN	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No. KA/640/HQ/HBTU/DW/03/03/RO



TYPICAL CROSS SECTION-05
NATM TUNNEL 2 LANE
REGULAR CROSS SECTION
SCALE 1:25

THEORETICAL EXCAVATION = 86.42 SQ. M

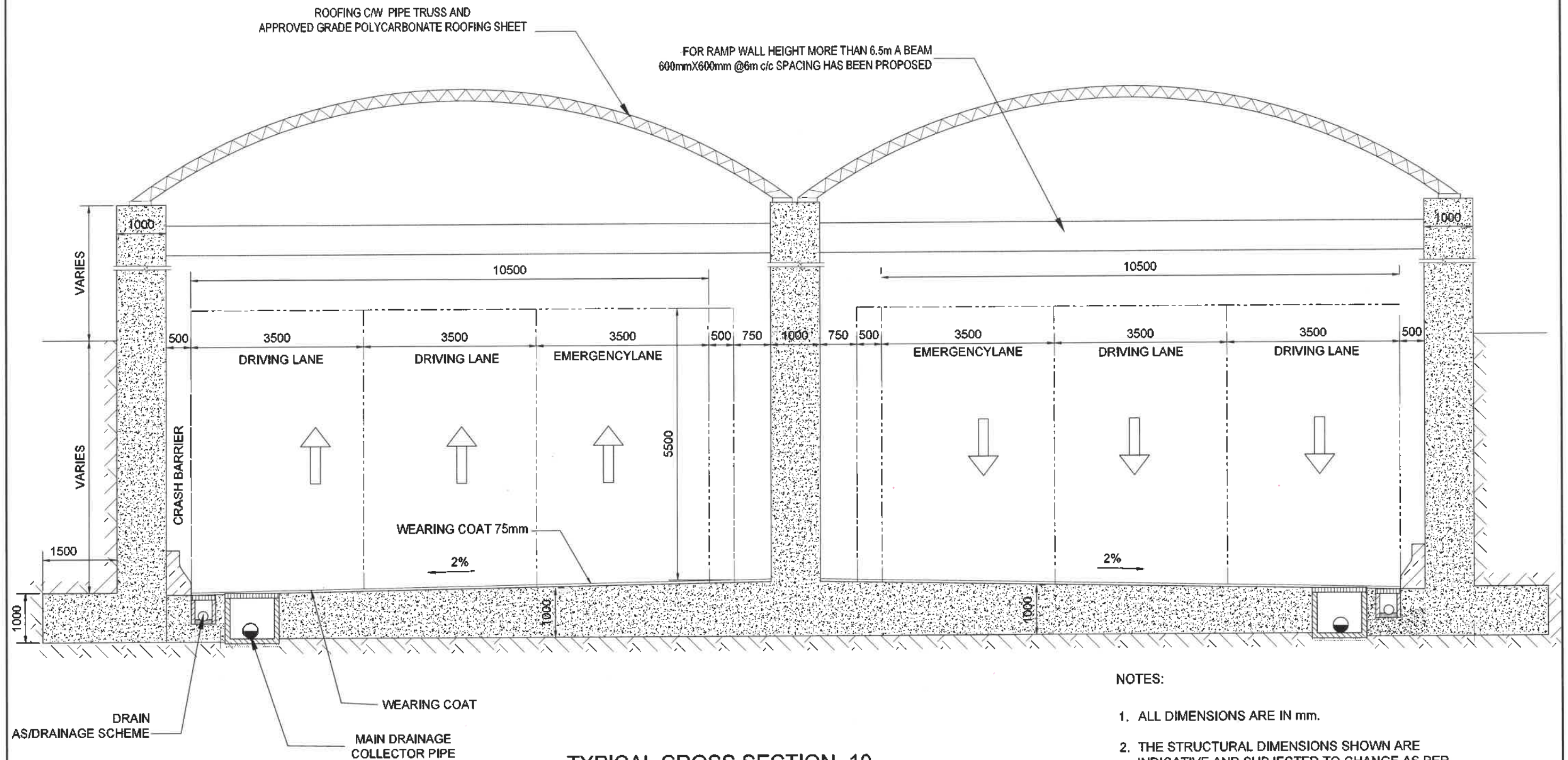
NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

MATERIALS:

GRADE OF CONCRETE - M35

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI, BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
R0	JAN.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI, BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI, BBMP	GECON CONSULT INDIA PRIVATE LIMITED B/114 Westend, Phase Town 3rd Road Near Bhaskar Metro Station Sector 25, Old Bangalore KARNATAKA INDIA	Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing Title Drawing No.
				EIC- BBMP		Scale :- AS SHOWN Sheet size: A2	TYPICAL CROSS SECTION-05 BC/1640/HO/HBT/TU/DWG/TC/05/RD



TYPICAL CROSS SECTION -10
OPEN RAMP SECTION
3LANE+MEDIAN WALL+3LANE
SCALE 1:50

MATERIALS: -
GRADE OF CONCRETE -M35 , STEEL GRADE Fe550D

NOTES:

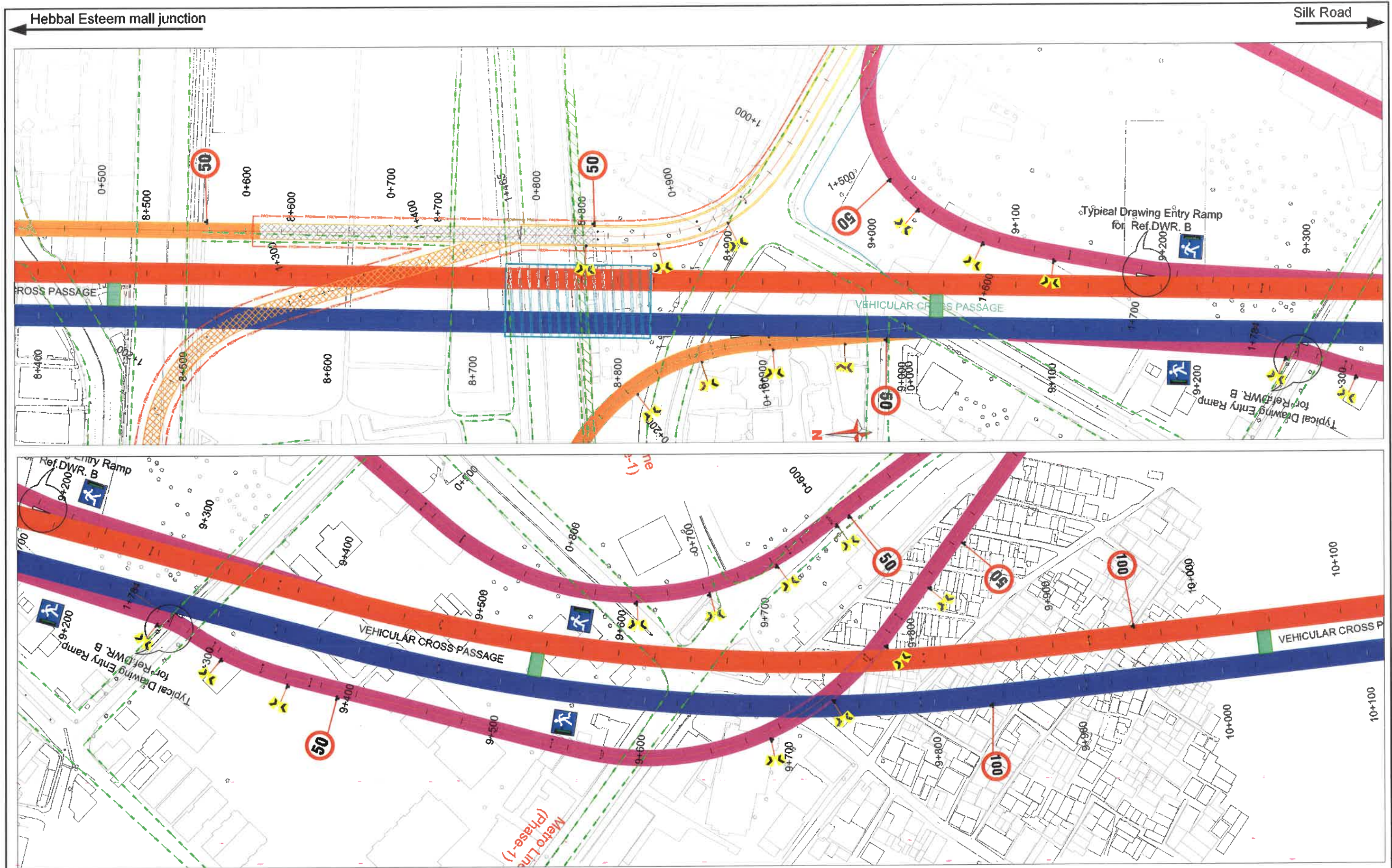
1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
3. SIZING AND DETAILS OF TYPICAL DETAILS OF CRASH BARRIER , UTILITY PIPE TRENCH , MAIN DRAINAGE ETC. MAY CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN .
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	JAN.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheshadri Road, Freedom Park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+860 and Km 16+050), entry & exit ramp from KG Road (from both tube), entry & exit on Sheshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road).
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOSURVEILLANCE PRIVATE LIMITED 64B/106 West Work, Flamingo Tower 6/O Road Near Siddapur Metro Station Sector 76, Gurgaon Haryana INDIA	Scale :- AS SHOWN Sheet size: A2	Drawing Title Drawing No.
				EIC- BBMP			RC/1640/HO/HBT/TU/DWG/TCS/10/R0

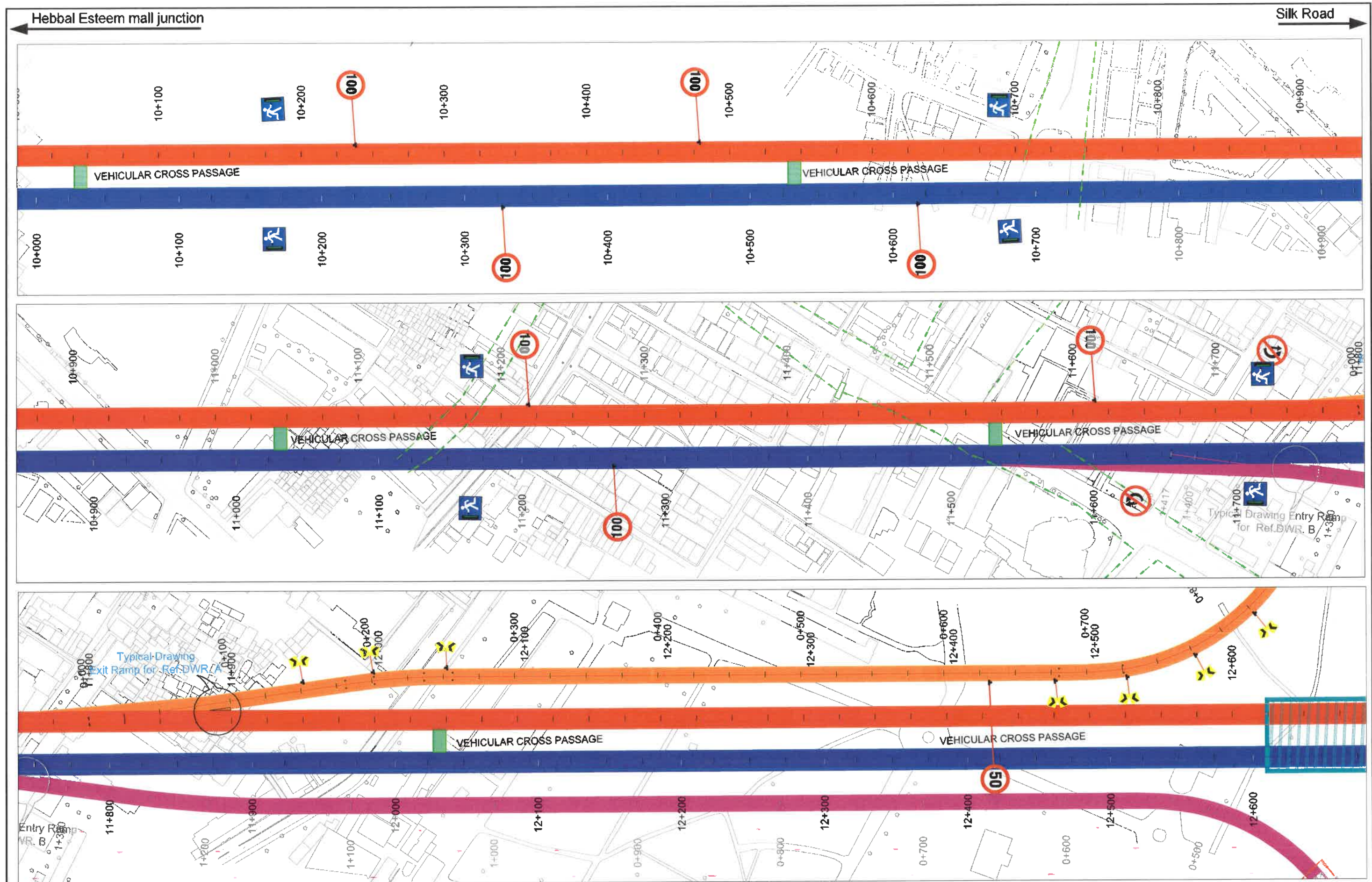
Appendix-B-V

TRAFFIC SIGNAGE PLAN

Handwritten signatures and initials at the bottom right of the page.



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shasadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+080), entry & exit ramp from KG road (from both tube), entry & exit on Seeshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTING INDIA PRIVATE LIMITED 08/100, Vittal Road, 1st Floor, T. Nagar, MG Road, Near Siddapura Metro Station Sector 14, Bengaluru KARNATAKA - 560025	Designed: RR Drawn: ML Checked: AT Approved: HRY	Scale :- H:-1:2500 Sheet size: A2
				EIC- BBMP			TRAFFIC PLAN RC/1640/HO/HST/UDWG/TP01/R0



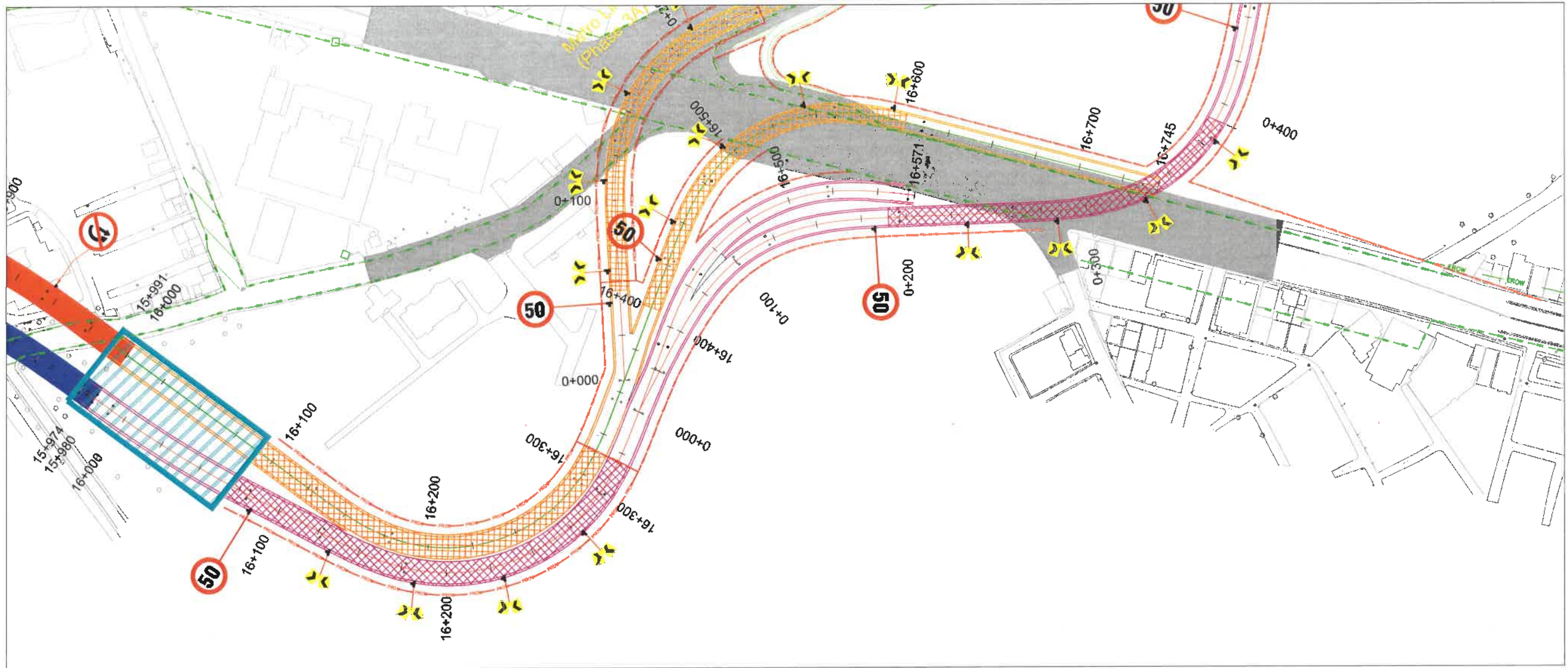
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+795, Km 12+680 and Km 16+060), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden), entry & exit ramps on Sarjapur Road.
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOSCONSULT INDIA PRIVATE LIMITED 68104 Westview, Phase, Tower M-9, Road No. 28, Maragutta, Maragutta Station, Sector 28, Gurgaon Haryana, INDIA	Scale :- H=V:1:2500	TRAFFIC PLAN
				EIC- BBMP		Sheet size: A2	RC/1640/H01/HBT/UDWG/TP01/R0



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheshadri Road, Freedom Park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG Road (from both tube), entry & exit on Seetha Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
RO	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOCONSULT INDIA PRIVATE LIMITED 04B106 WestVest, Phase 1, Tower M3 Road Near Siddapura Metro Station Sector 24, Dheerpur, Bangalore - 560075 (INDIA)	Scale :- H=1:2500	
				EIC- BBMP		Sheet size: A2	
							TRAFFIC PLAN
							RC/1640/HO/HBT/TU/DWG/TP01/RO

Hebbal Esteem mall junction

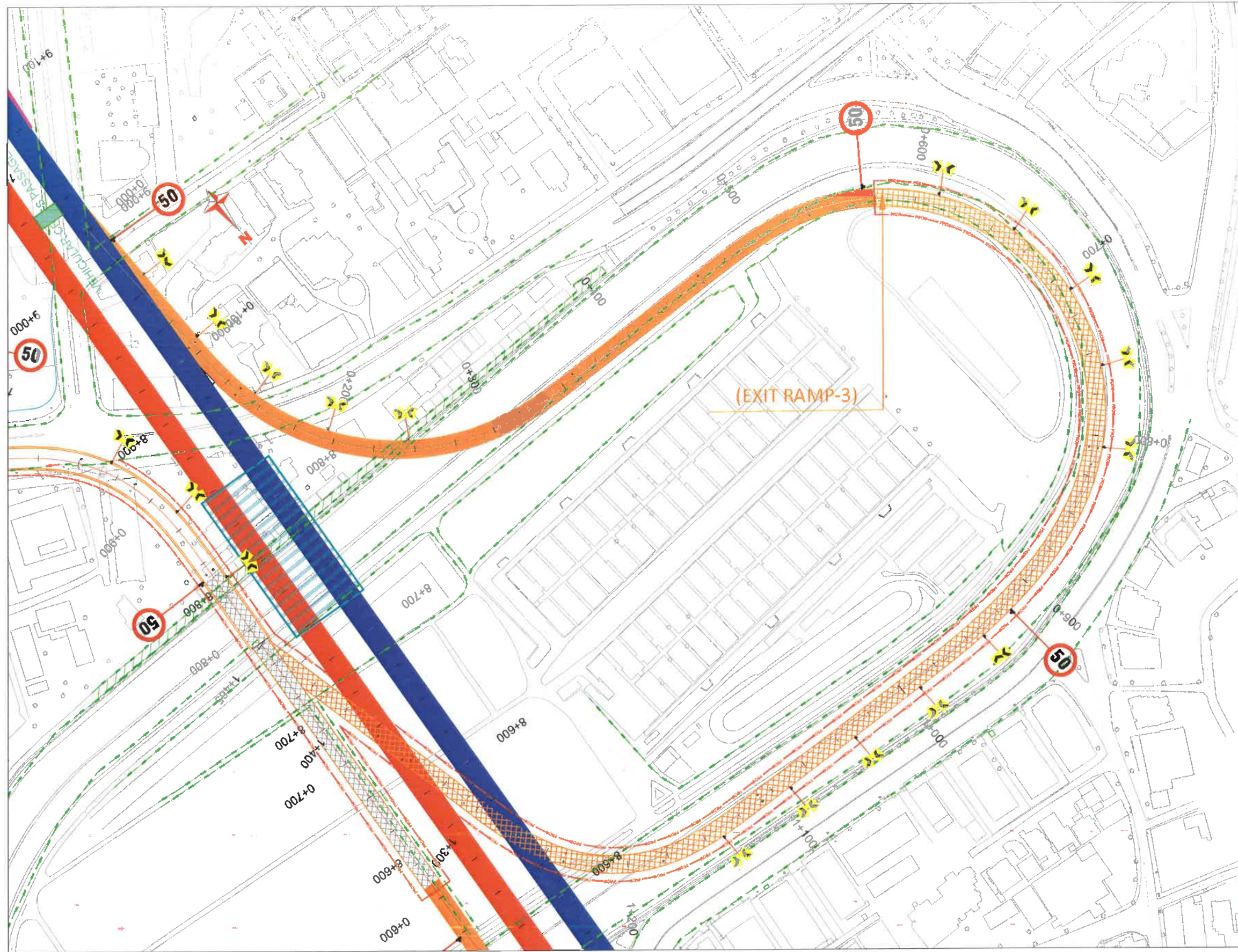
Silk Road



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	TRAFFIC PLAN
R0	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	IODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheshadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden), entry & exit ramps on Sarjapur Road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOSCONSULT INDIA PRIVATE LIMITED B4B1166 WeWork, Vidya Tower MG Road New Bangalore Metro Station Sector 35, Chang an Bangalore INDIA	Designed: RR Drawn: NL Checked: AT Approved: HRY	Scale :- H=1:2500 Sheet size: A2
				EIC- BBMP			RC/1640HQ/HBT/TU/DWG/TP01/R0

Hebbal Esteem mall junction

Silk Road



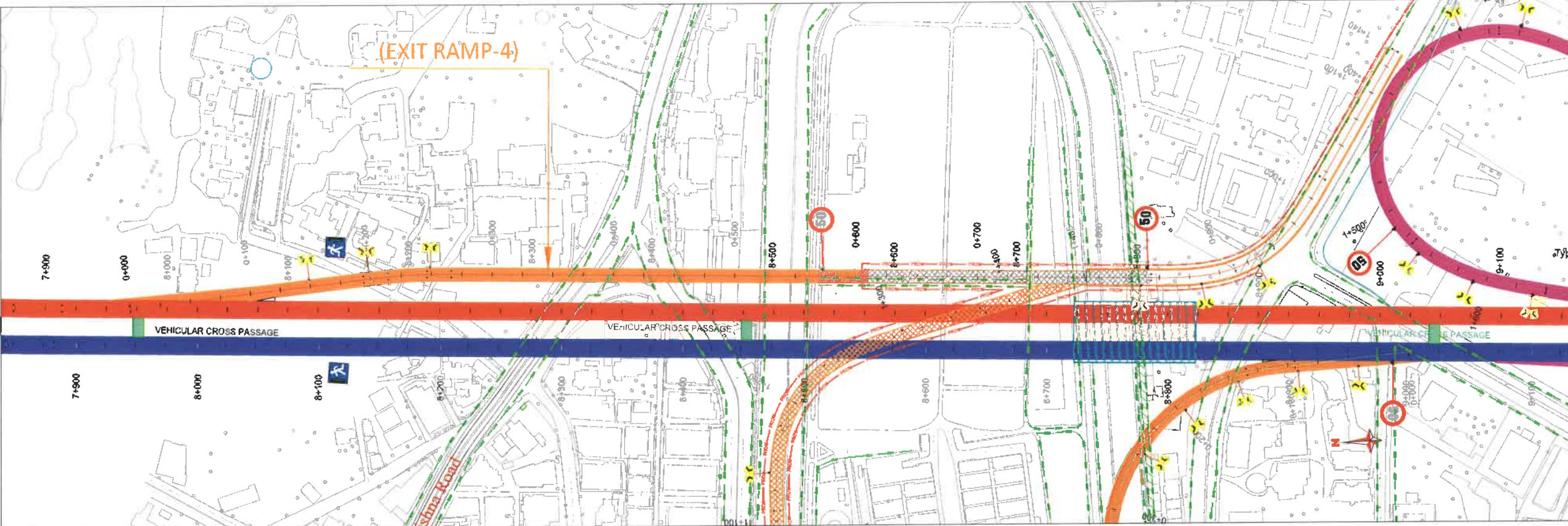
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-R.I,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-R.I,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk Road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-R.I,BBMP	GEOTECHNICAL CONSULTANTS PRIVATE LIMITED M/2/106 West, Phase 1, 1st Floor, Road No. 10 Siddapura, Metro Station Sector 38, Outer Ring Road, Bangalore - 560075	Scale :- H=1:2500	TRAFFIC PLAN
				EIC- BBMP	Approved: HRY	Sheet size: A2	RC/1640/HO/HBT/UDWG/TP01/R0

Hebbal Esteem mall junction

Silk Road



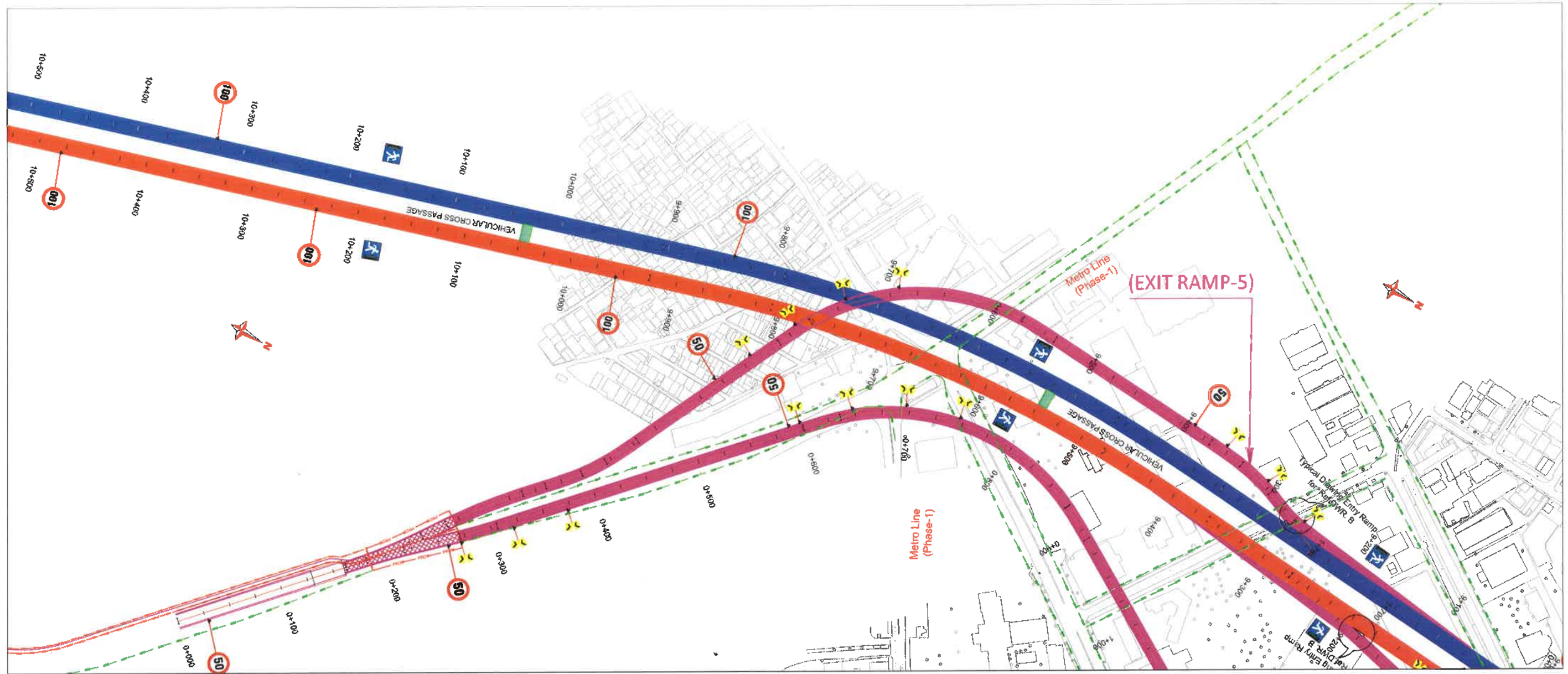
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	TRAFFIC PLAN
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA  Bruhat Bangalore Mahanagara Palike 	AEE/Infra Div.-RI,BBMP EE/Infra Div.-RI,BBMP EIC- BBMP	 RADIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  GECONSULT INDIA PRIVATE LIMITED G/Block W/10th, Pinnas Towers Bldg Road Near Siddapur Metro Station Sector 35, Okhla New Delhi - 110024 INDIA	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+680 and Km 16+060), entry & exit ramp from KG road (from both tube), entry & exit on Sheshadri Road (from both tube), entry & exit ramp on Siddapur Road (Ashoka Pillar & Wilson Garden), entry & exit ramps on Sarjapur Road. (Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.) Designed: RR Drawn: NL Checked: AT Approved: HRY Scale :- H=V:1:2500 Sheet size: A2	RC/1640/HO/HBTU/DWG/TP 01/R0



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shashadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Shashadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
RO	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, 4th FLOOR, MARIG (FIRST FLOOR), YANCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	OROC CONSULT INDIA PRIVATE LIMITED 68104, W-End, Phase Town No.1 Road near Shashadri Metro Station, Sector 28, Ganga Haraya INDIA	Designed: RR Drawn: NL Checked: AT Approved: HRY	Scale : H=V=1:2500 TRAFFIC PLAN RC/1640/HO/HB/3/UDWG/TP 01/RO
				EIC- BBMP		Sheet size: A2	

Hebbal Esteem mall junction

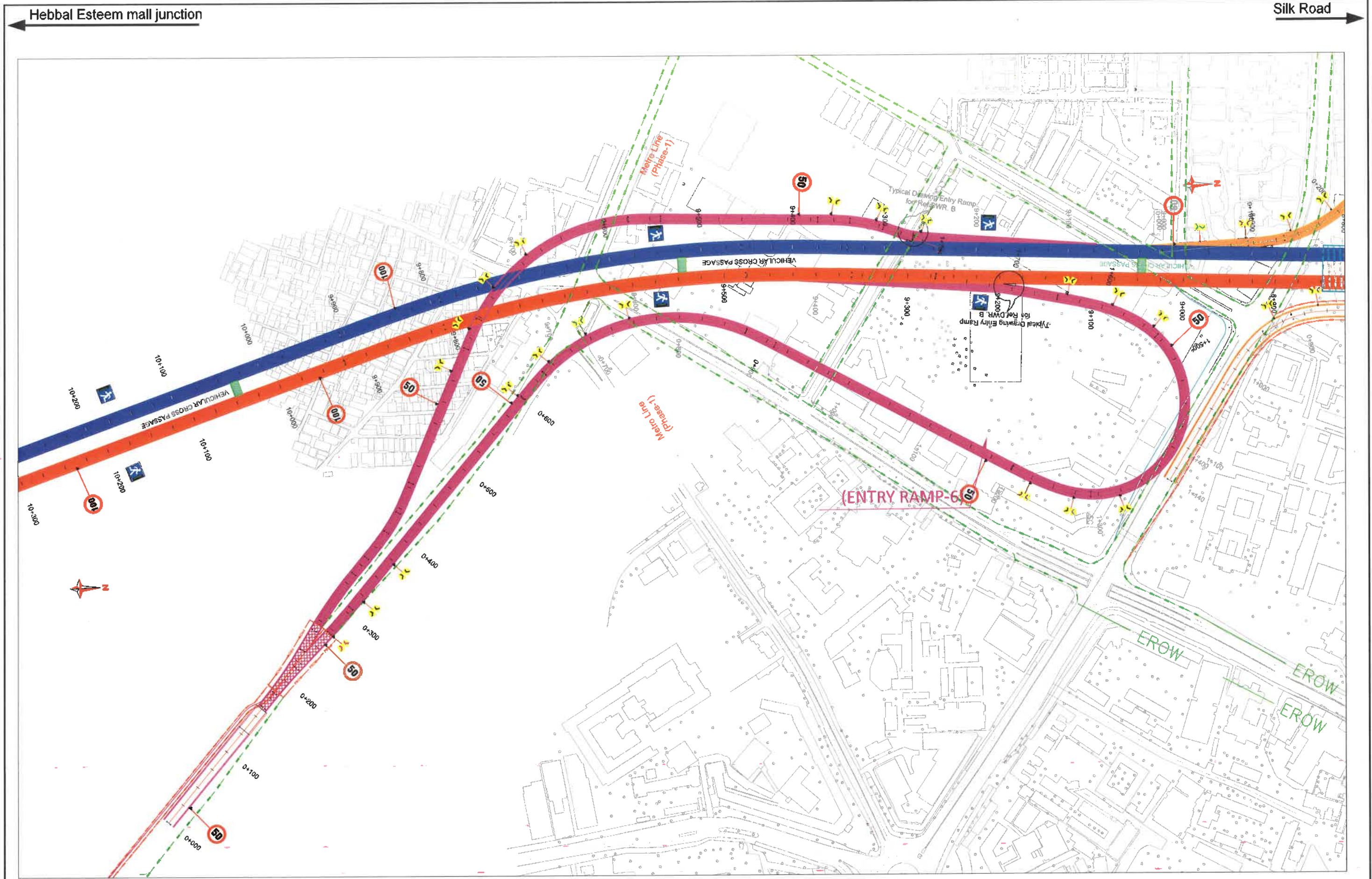
Silk Road



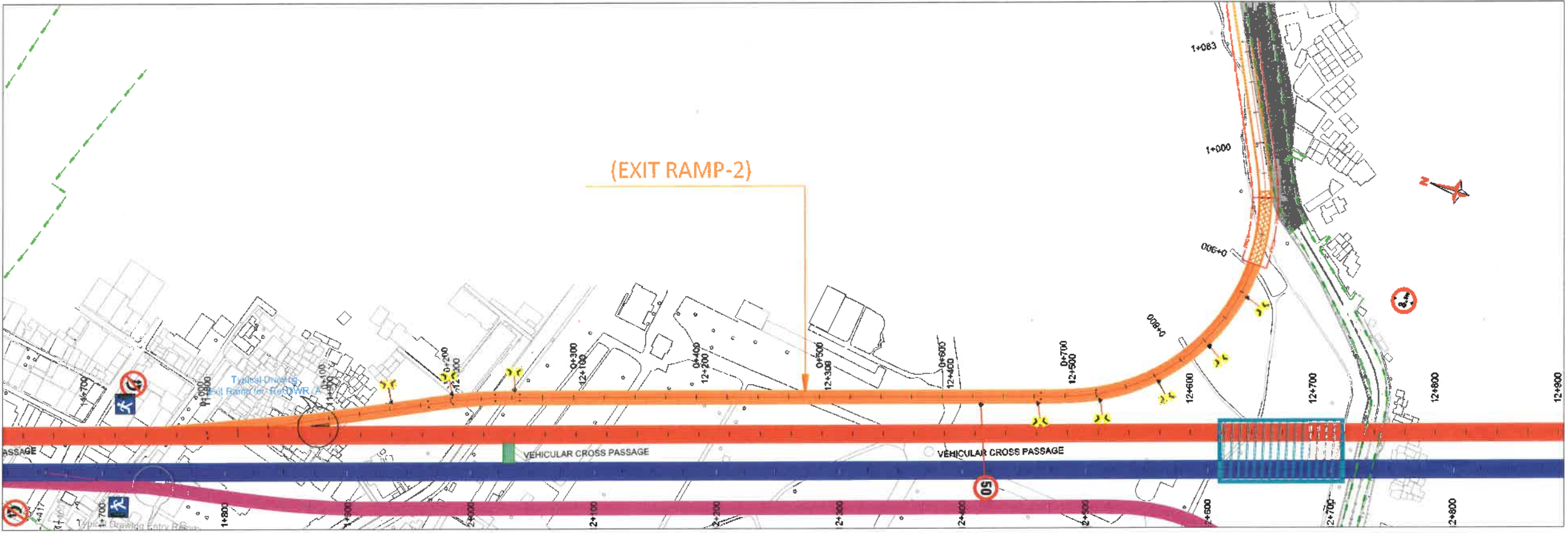
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheshadri Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+735, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOCONSULT INDIA PRIVATE LIMITED 04B 106 WeWork, Phase, Tower 3D Road New Gandhinagar Metro Station Sector 26, Gurgaon Haryana INDIA	Scale :- H=1:2500	
				EIC- BBMP		Sheet size: A2	
							TRAFFIC PLAN
							RC/1640/H0/HBT/VDWG/TP 01/R0



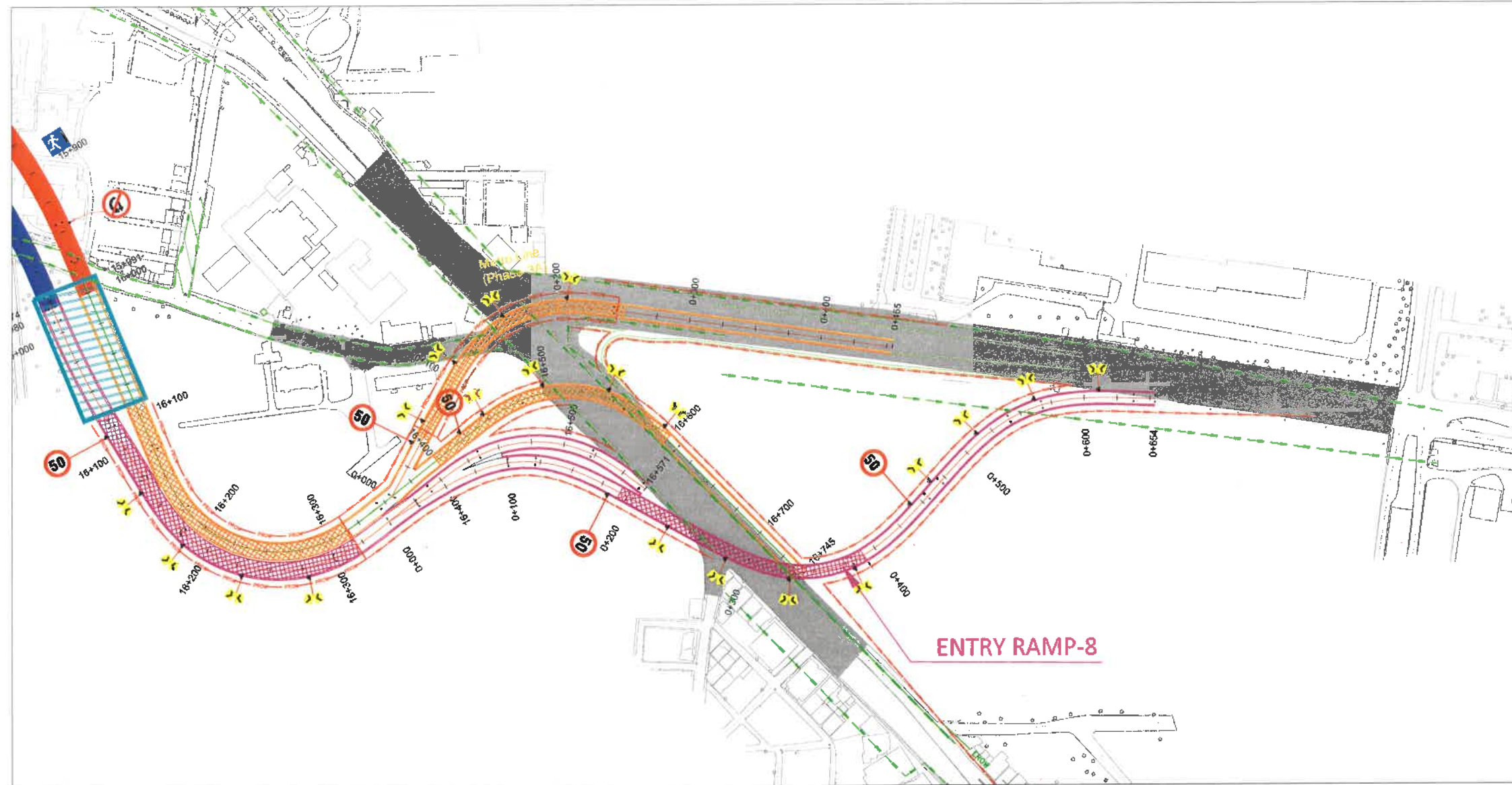
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT		Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Seshadri Road, freedom park (Km 8.748) to SSB, Board (Km 16.745) of North South Corridor including launching and retrieval shaft. (At Km 8.748, Km 12+860 and Km 16+050), entry & exit ramp from KG road from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddepura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.- 2025		 GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Designed: RR Drawn: NL Checked: AT Approved: HRY Scale :- H=:-1:2500 Sheet size: A2		
			 Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	 GEC CONSULT INDIA PRIVATE LIMITED 08B106 WeWork, Pileara Tower MG Road Near Sunderpet Metro Station 2nd floor 2A, Orange tree Haryana INDIA	TRAFFIC PLAN		
				EIC- BBMP		RC/1540/H01/BT/TU/DWG/TP01/R0		



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Sheeshi Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 9+785, Km 12+860 and Km 16+050), entry & exit ramp from KG Road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sanjapur Road,
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to Km 16.745 of North South Corridor connecting Hebbal to Silk road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	ODCONSULT INDIA PRIVATE LIMITED 6/8106 Wellwork, Piplina Tower 403 Road New Siddapura Metro Station Suvai 25, Outer Ring Highway INDIA	Scale :- H=1:2500	TRAFFIC PLAN (ENTRY RAMP-6) (Km.0+000 to Km.1+784)
				EIC- BBMP	GC	Designed: RR Drawn: NL Checked: AT Approved: HRY	Sheet size: A2 RC/1640/H/MB/17/DWG/TP01A/R0



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadri Road, freedom park (Km 8.748) to Silk Board (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	AEE/Infra Div.-RI,BBMP EE/Infra Div.-RI,BBMP EIC- BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GeoCONSULT INDIA PRIVATE LIMITED 08106 WeWork, Pinnas Tower MG Road 1st floor Sakinaka Metro Station Sector 28, Okhla Phase II, New Delhi - 110025 (INDIA)	Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk board. Designed: RR Drawn: NL Checked: AT Approved: HRY Scale :- H=V:1:2500 Sheet size: A2	TRAFFIC PLAN (EXIT RAMP-2) (Km.0+000 to Km.1+083) RC/1640/HO/HBT/TU/DWG/TP 01/R0

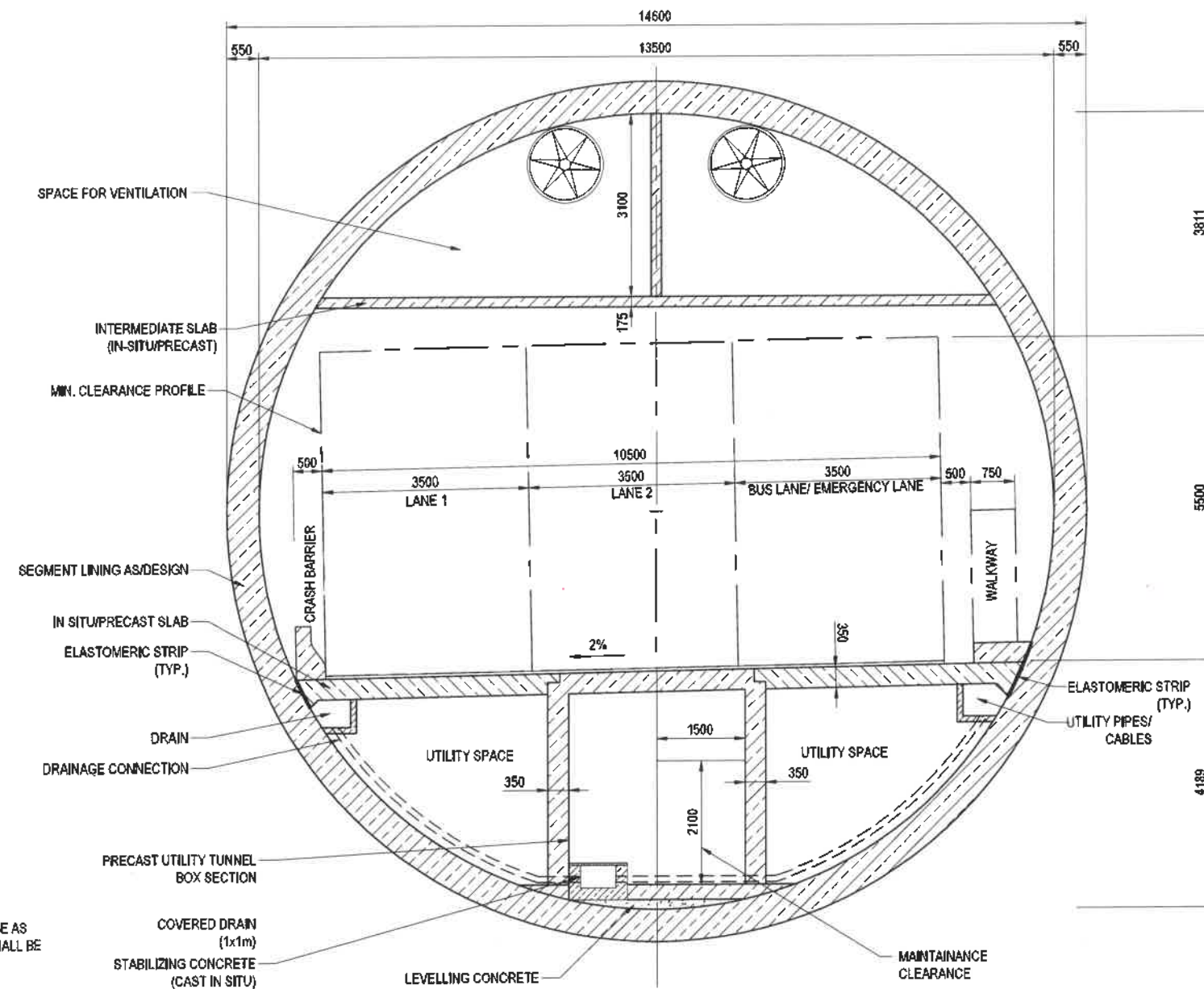


REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Shesadi Road, freedom park (Km 8.748) to Silk Road (Km 16.745) of North South Corridor including launching and retrieval shaft (At Km 8+785, Km 12+660 and Km 16+050), entry & exit ramp from KG road (from both tube), entry & exit on Seshadri Road (from both tube), entry & exit ramp on Siddapura Road (Ashoka Pillar & Wilson Garden, entry & exit ramps on Sarjapur Road.
R0	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 2 : Km 8.748 to km 16.745 of North South Corridor connecting Hebbal to Silk road.)	
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECONSTRUCT INDIA PRIVATE LIMITED 6/8194 Wellbark, Pithal, Tere MD Road Noida Sikanderpur Metro Station Sector 29, Gurgaon Haryana INDIA	Scale :- H=1:2500	TRAFFIC PLAN (ENTRY RAMP-8) (Km 0+000 to Km 0+654)
				EIC- BBMP		Sheet size: A2	RC/1640/HO/HBT/TD/DWG/TP 01/R0

Handwritten signatures: *Handwritten signatures*

GENERAL ARRANGEMENT DRAWING

Handwritten signatures: Handwritten, Adai, Robo, Prasanna, Prasanna



TYPICAL CROSS SECTION
3 LANES TUNNEL (2 LANE + 1 EMERGENCY LANE)
 SCALE 1:50

SEGMENT CONFIGURATION 9+1
 SEGMENTS WIDTH= 2000mm

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF SEGMENTAL LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-1.
7. ELASTOMERIC STRIPS TO BE INSTALLED AT THE JOINT OF PAVEMENT SLAB WITH TUNNELING SEGMENTAL LINING.

MATERIALS:

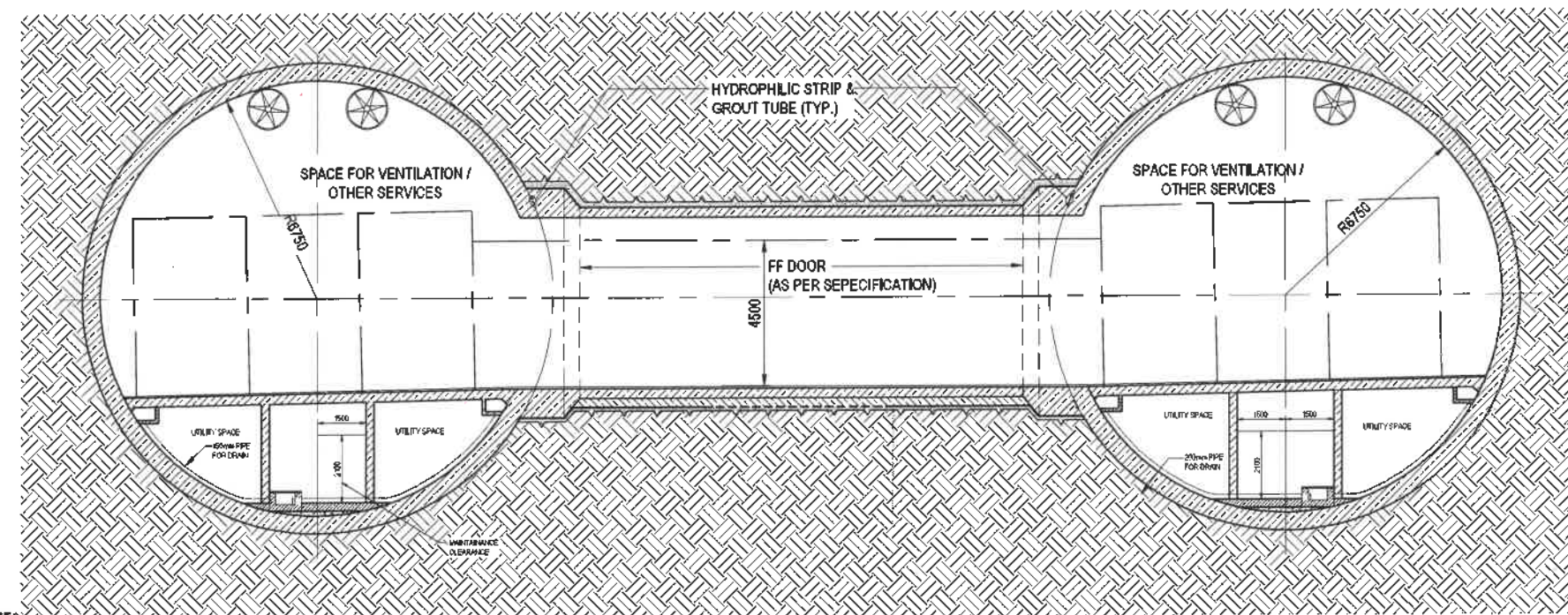
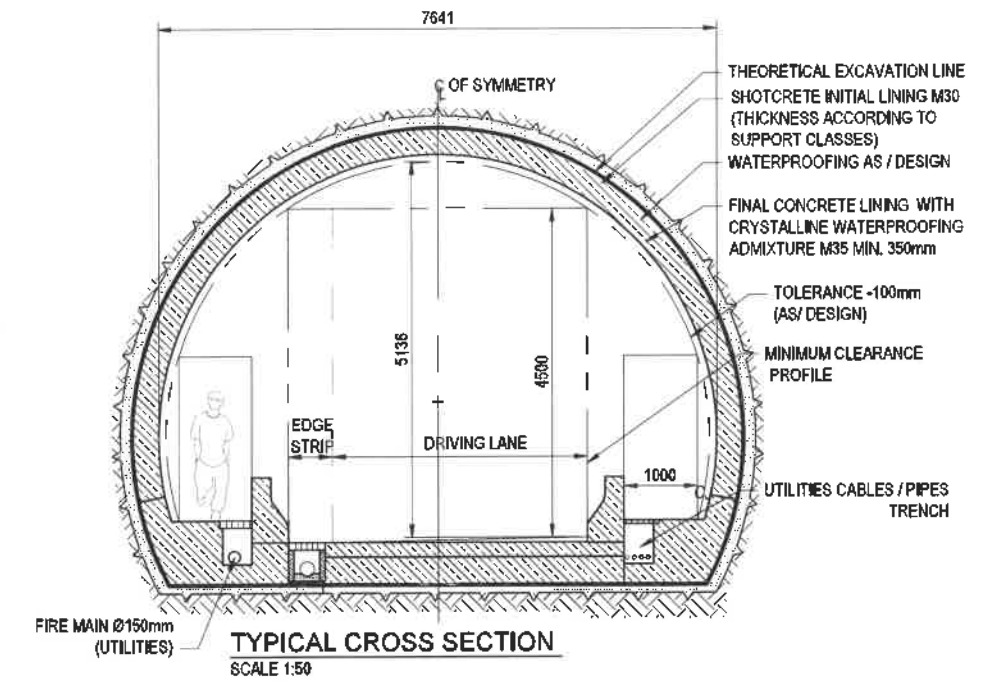
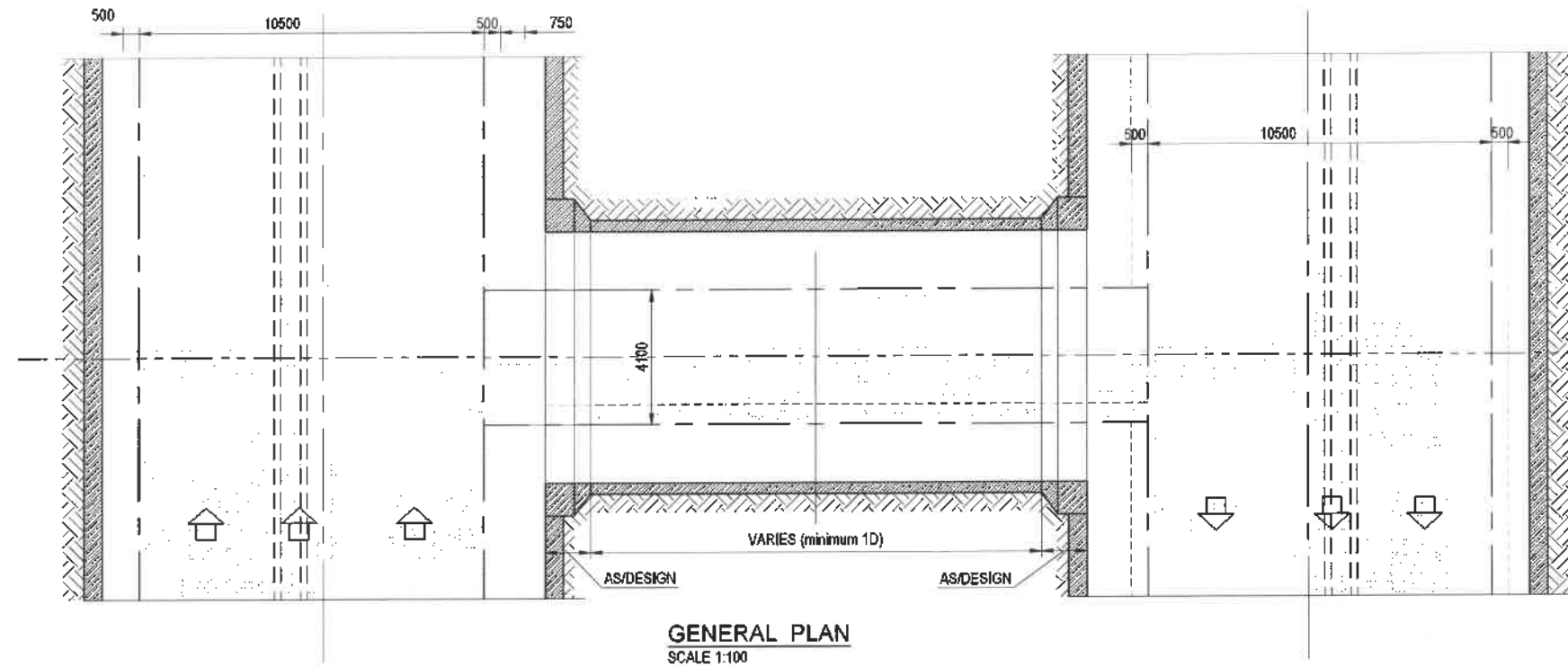
GRADE OF CONCRETE - M60

FOR DPR SUBMISSION

SCALE 1:50



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	Project	Drawing Title	Drawing No.
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Bangalore India 815, 4th floor, Outer Ring Road 20 Nagar 5th Phase Bengaluru, Karnataka 560078 India	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"	TBM TUNNEL, REGULAR CROSS SECTION, 3 LANES (2 LANES+ 1 EMERGENCY LANE)
A	30.01.25	FORMAL SUBMISSION					
				Geoconsult India Private Limited 4/3106 5th Floor, Plaza Tower MG Road Near Sakinaka Metro Station Sector 28, Connaught Place New Delhi	Designed: CSA Drawn: RMe Checked: CSA Approved: PSJ	Scale: 1:50 Sheet size: A1	RC/1640/HO/HBT/UIDWGT/ET/RCS/301/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
5. ALL CPS TO BE INSTALLED WITH FIRE-FIGHTING DOOR AS PER SPECIFICATIONS.

SCALE 1: 50

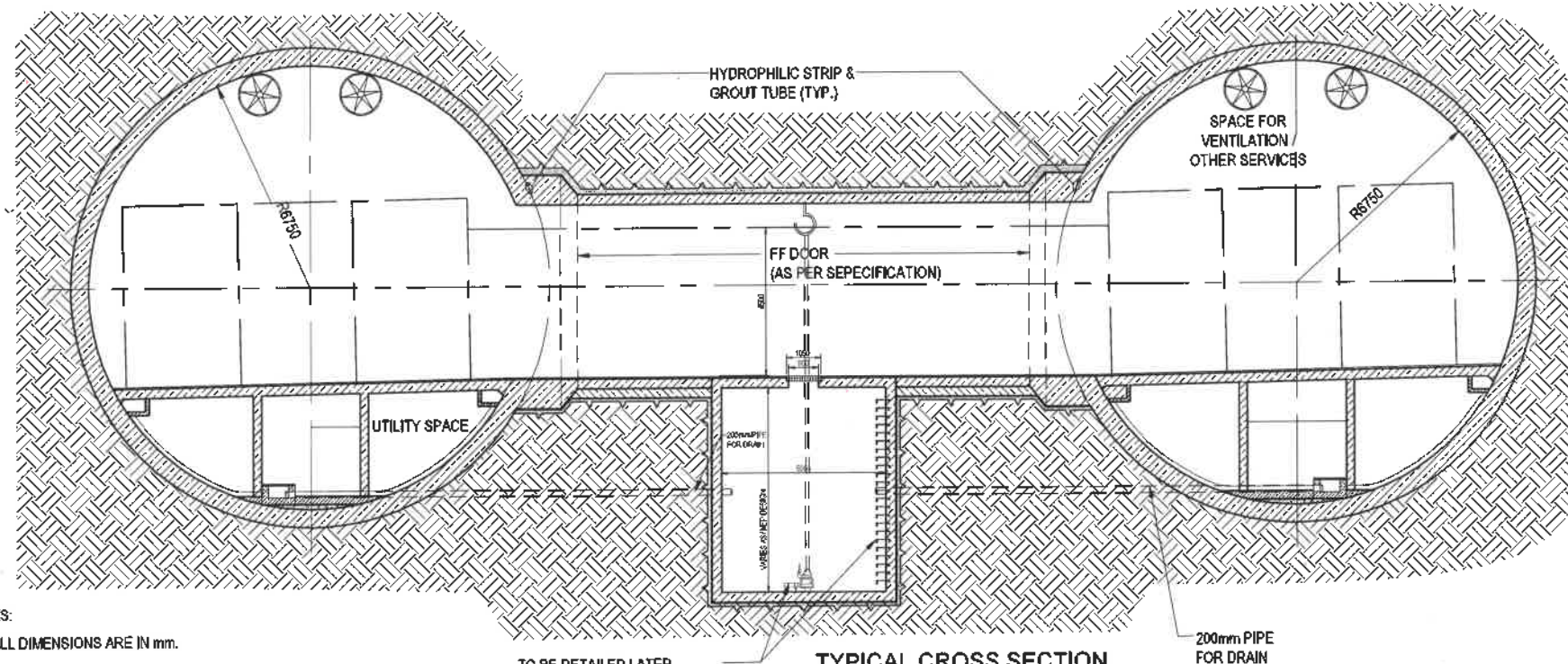
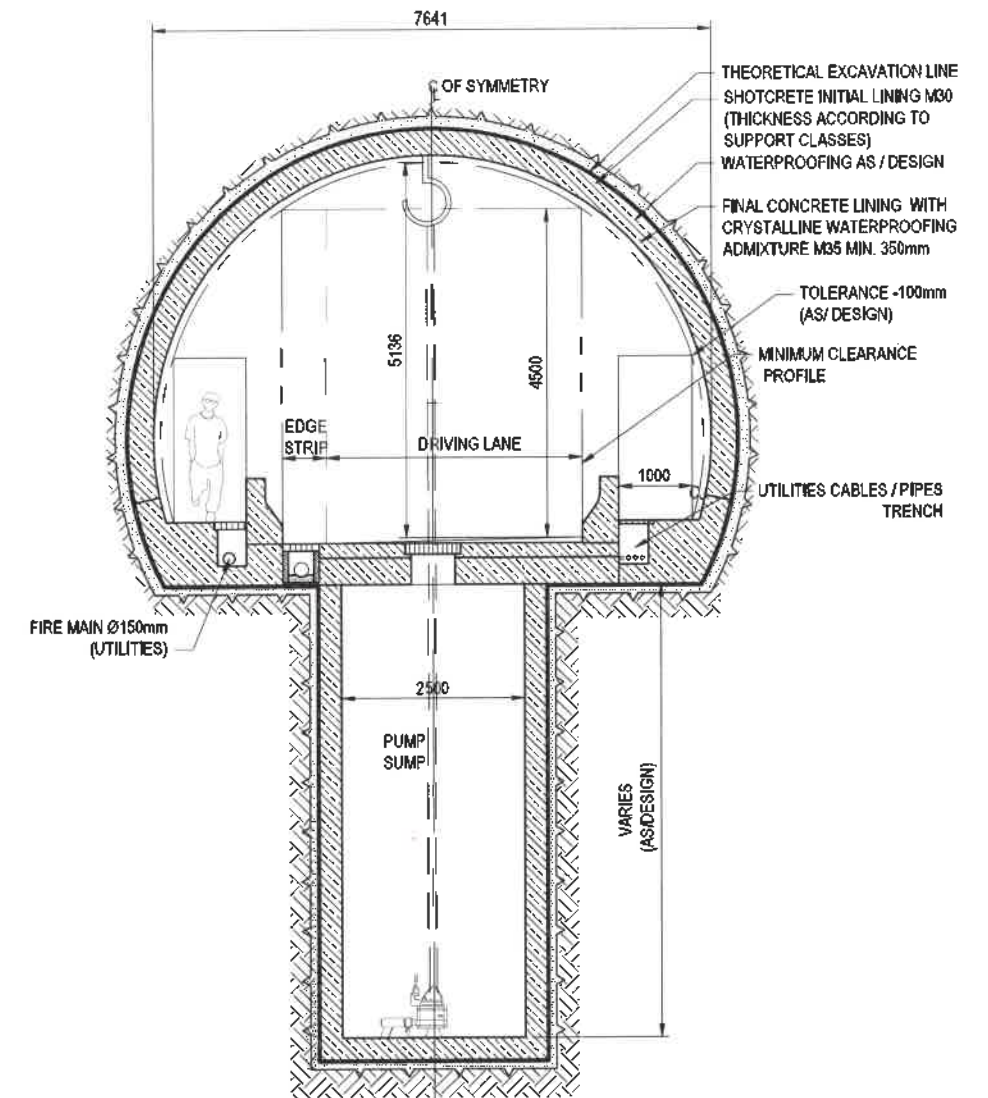
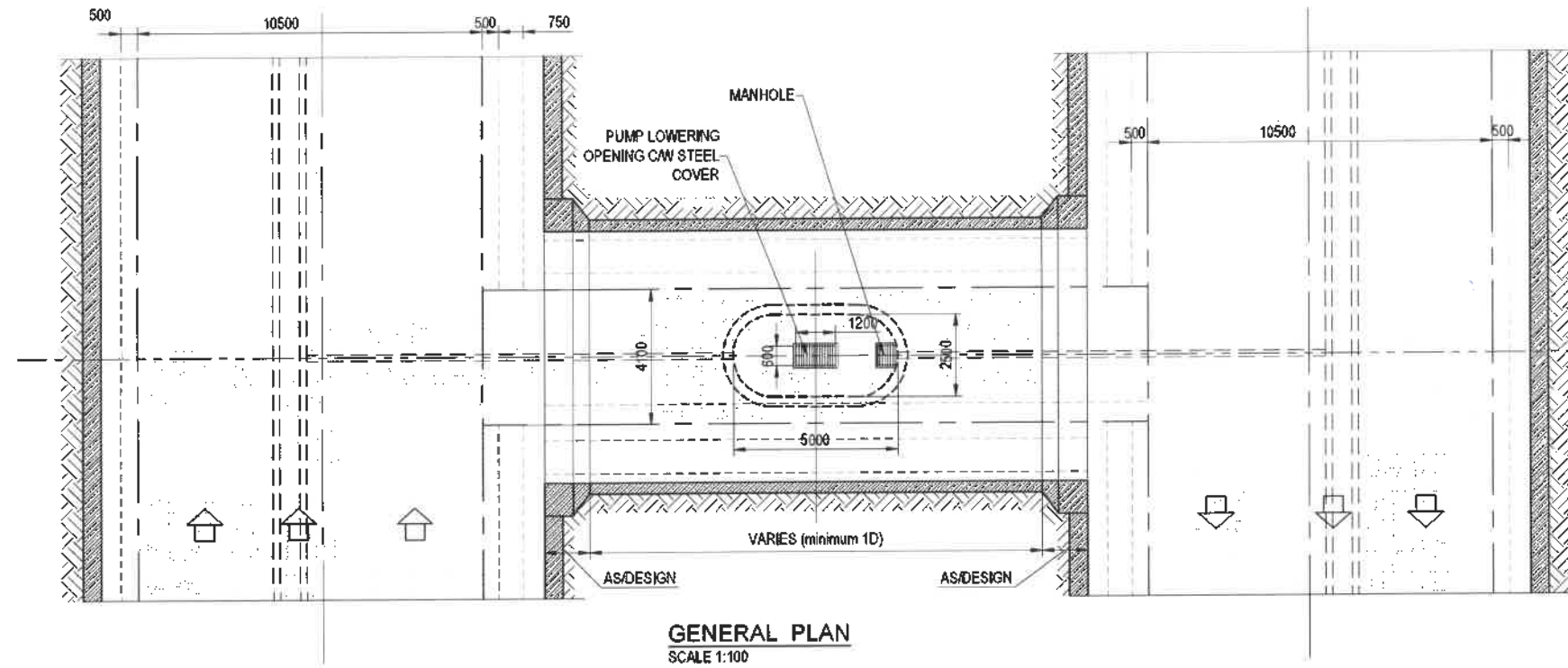
1m 0 1m 5m

SCALE 1: 100

5000mm 0 5000mm 10000mm

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project	Drawing Title
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Designed: CSA Drawn: RMe Checked: CSA Approved: PSJ	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"	VEHICULAR CROSS PASSAGE WITH TBM TUNNEL WITHOUT SUMP, GENERAL ARRANGEMENT
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	Scale :- 1:50 Sheet size: A1		RC/1640/HO/HBT/TUDWG/CP/RC3/302/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF SEGMENTAL LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
5. ALL CPS TO BE INSTALLED WITH FIRE-FIGHTING DOOR AS PER SPECIFICATIONS.

TO BE DETAILED LATER
AS/MEP / MANUFACTURER DETAILS

**TYPICAL CROSS SECTION
AT CROSS PASSAGE WITH SUMP**
SCALE 1:100

(NOTE :FOR DETAILS OF TBM SECTION , REFER RELEVANT DRAWING)

SCALE 1:50

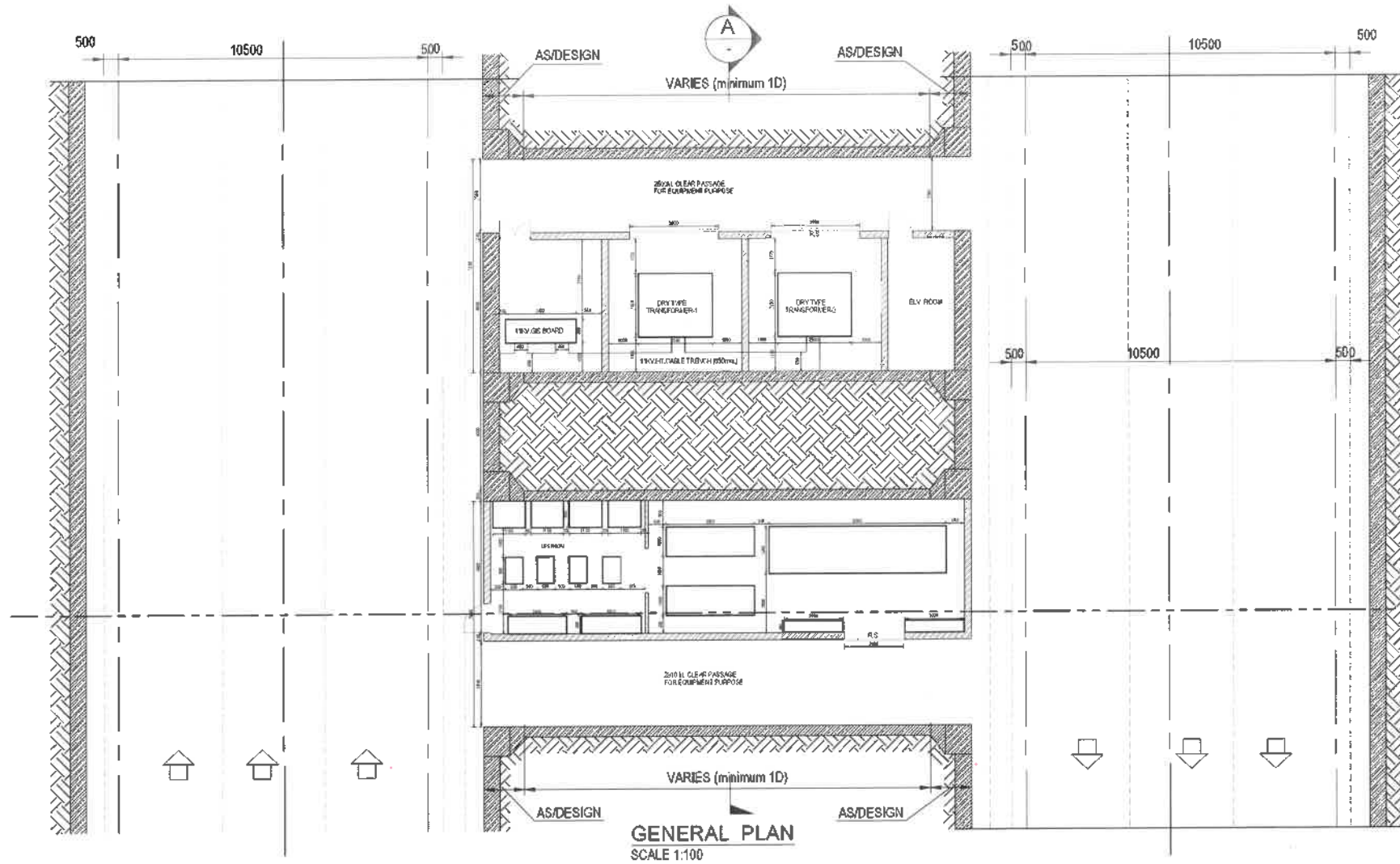
1m 0 1m 5m

SCALE 1:100

5000mm 0 5000mm 10000mm

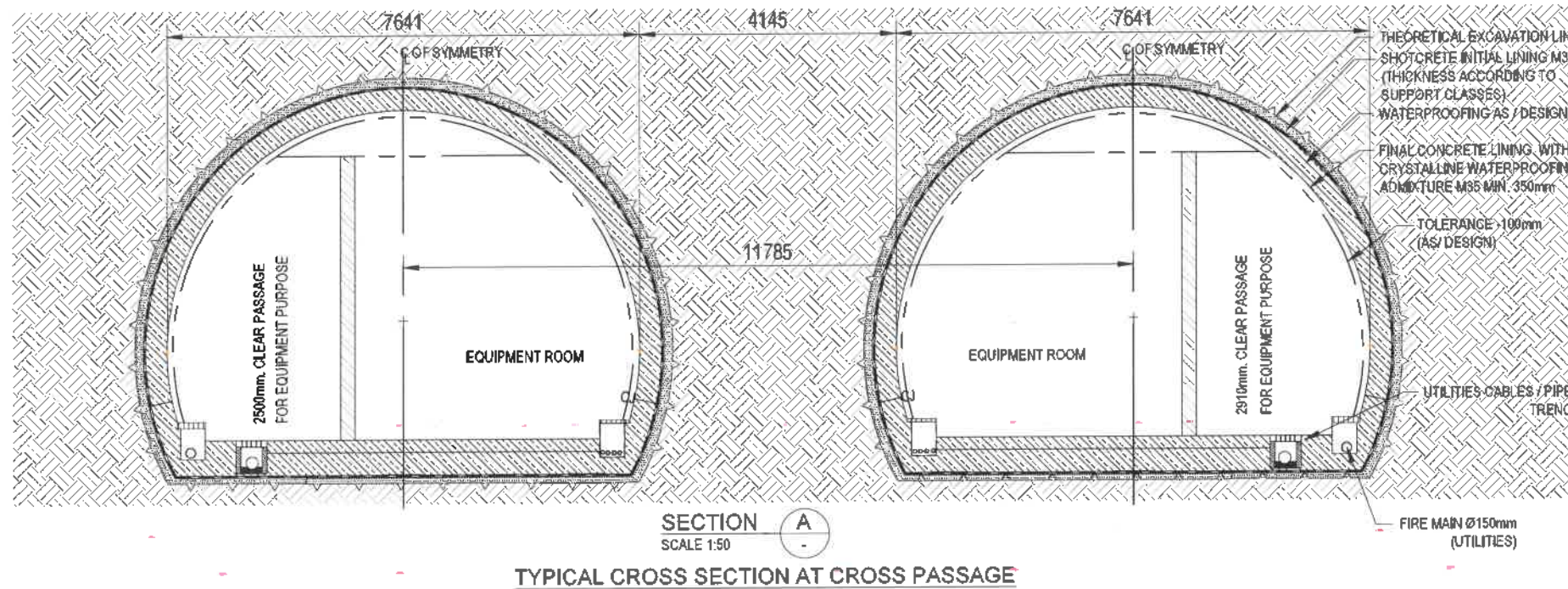
FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Designed: CSA Desunc: RME Checked: CSA Approved: PSI	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	Scale :- 1:50 Sheet size: A1	Drawing Title: CROSS PASSAGE WITH TBM TUNNEL WITH SUMP, GENERAL ARRANGEMENT Drawing No: RC/1640/HO/HBT/TU/DWG/CP/RCS/303/A



LOCATION DETAILS FOR CP-E :-

SUBSTATION IN CP -E	SUBSTATION NUMBER	PROPOSED CHAINAGE
CPE-1	S/SN-1	2331.5
CPE-2	S/SN-2	4110.5
CPE-3	S/SN-3	6006.25
CPE-4	S/SN-4	7818.75
CPE-5	S/SN-5	9775
CPE-6	S/SN-6	11675
CPE-7	S/SN-16	11725
CPE-8	S/SN-7	13541
CPE-9	S/SN-8	15114



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF MEP EQUIPMENTS MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
5. NUMBERS AND CHAINAGE OF CP-E ARE INDICATIVE AND TO BE DECIDED BASED ON DETAILED DESIGN OF CONTRACTOR.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION
A	31.01.25	FORMAL SUBMISSION

CLIENT



GOVERNMENT OF KARNATAKA

GOVERNMENT OF KARNATAKA
Bruhat Bangalore Mahanagara Palike

CONSULTANT:

RODIC CONSULTANTS PVT. LTD.
1, JAI SINGH MARG (FIRST FLOOR), YMCA
CULTURAL CENTRE BUILDING
NEW DELHI - 110001 (INDIA)RODIC CONSULTANTS PVT. LIMITED
G-10/16, Wazirpur, Phase II, Road No. 1
Bandra Kurla Complex, Sector 20, Connaught
Place, New Delhi - 110055Rodic India
B-5, 4th Floor, Outer Ring Road
IP Nagar, 6th Phase, Bangalore,
Karnataka 560078 India

DRAFT PROJECT REPORT

Designed: SDH
Checked: MGS
Scale: AS SHOWN
Approved: SDH
Sheet size: A1

Project

"Consultancy services for preparation of DPR for the
work of Construction of Underground Vehicular Tunnel
from Hebbal Esteem mall junction to Silk Board KSRP junction"

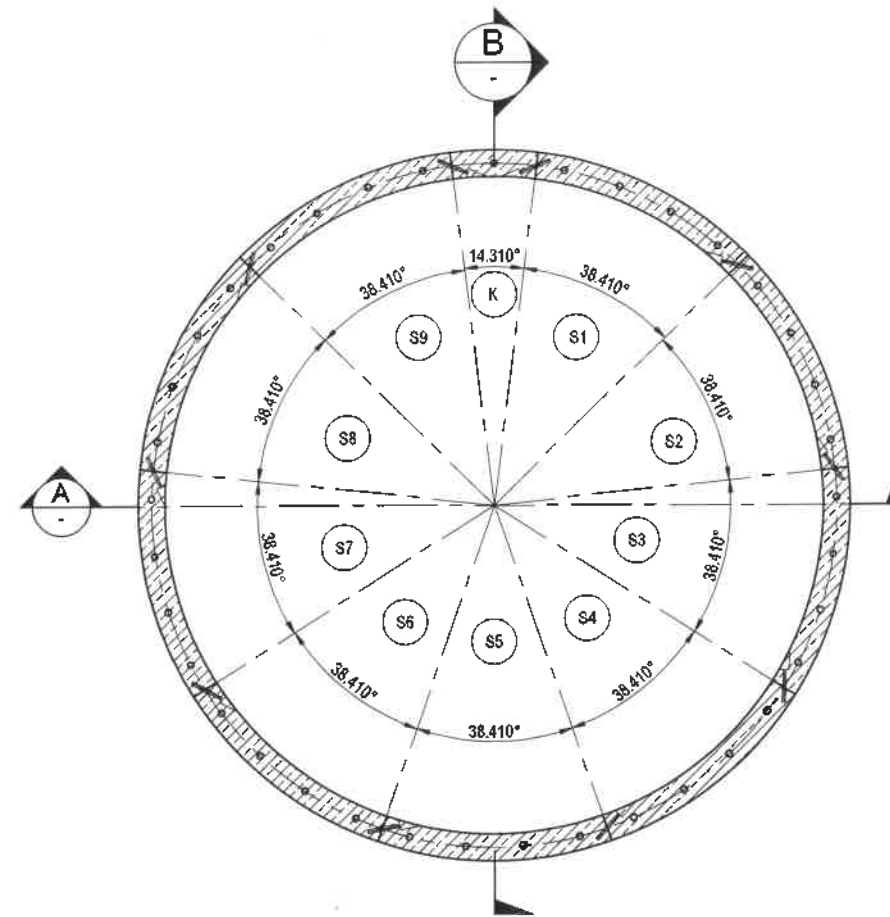
Drawing Title

GENERAL ARRANGEMENT DRAWING FOR ELECTRICAL CROSS PASSAGE

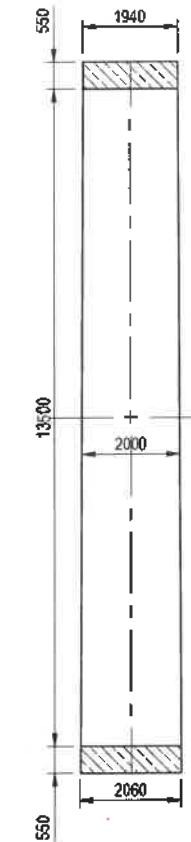
Drawing No.

RC/1640/HQ/HBT/TUN/DWG/CP/RCS/304/A

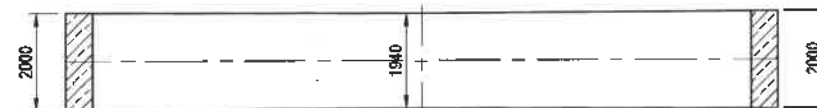
Handwritten signatures and initials are present at the bottom right of the drawing, including names like 'Rodic', 'SDH', 'MGS', and 'PSI'.



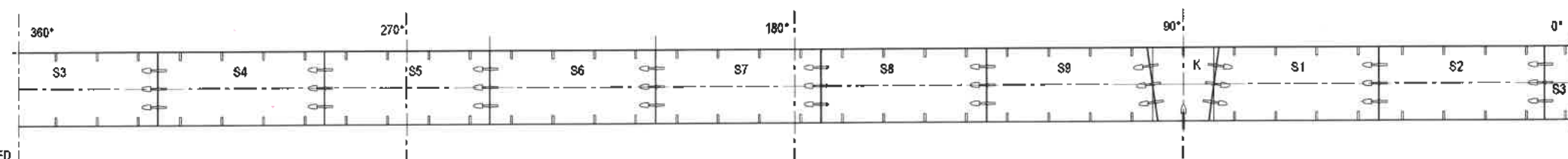
TYPICAL SEGMENTS ARRANGEMENT
SCALE 1:75



SECTION B
SCALE 1:75



SECTION A
SCALE 1:75



DEVELOPED VIEW OF RING LAYOUT ON INTRADOS OF ALL SEGMENTS
SCALE 1:75

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF SEGMENTAL LINING SHALL BE DONE BY CONTRACTOR.
3. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
4. DESIGN SHALL FULLFILL THE EMPLOYER REQUIREMENT OF FUNCTION AND DURABILITY.

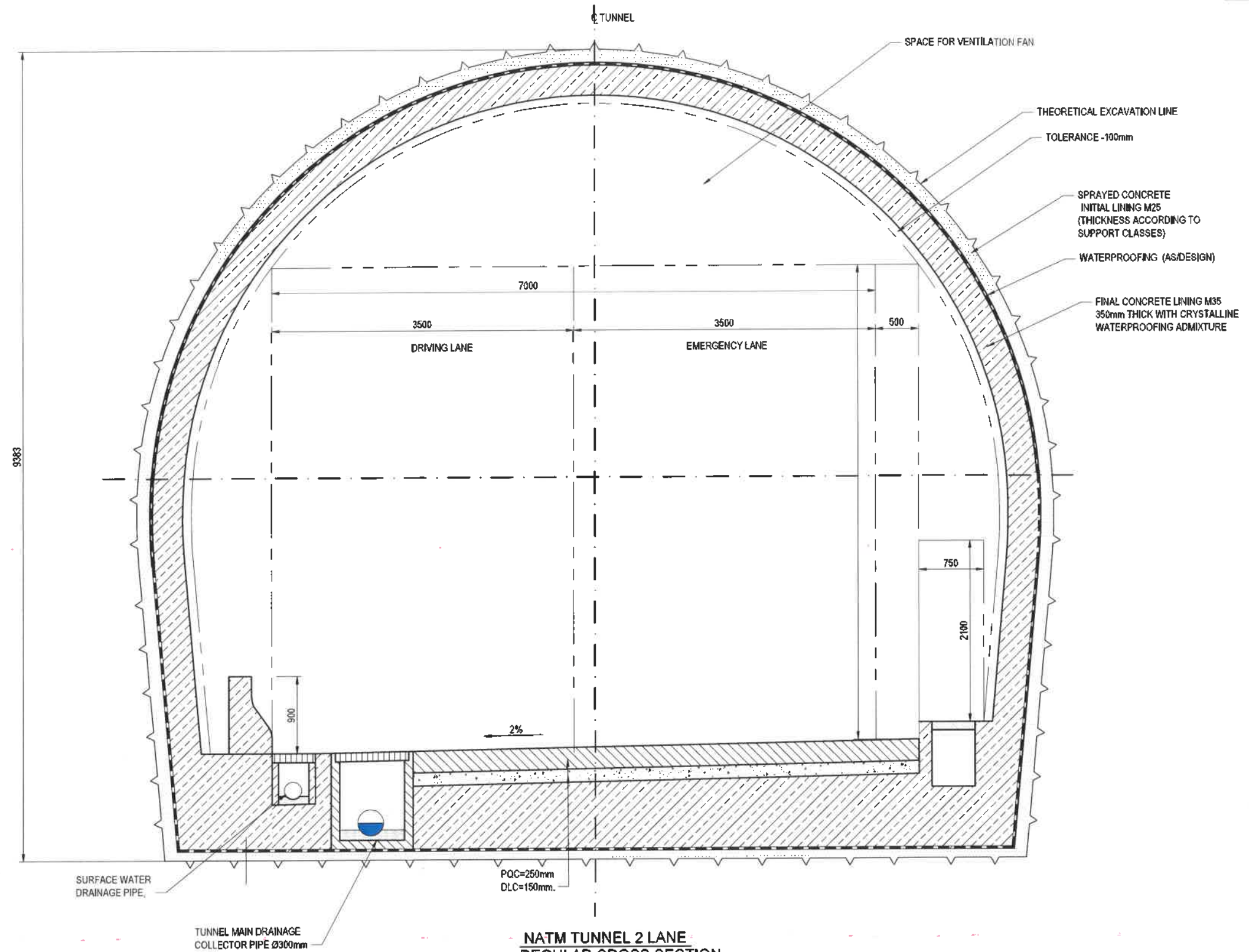
MATERIALS:

CONCRETE : M60
STEEL REINFORCEMENT Fe550D



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	Scale : 1:75 Sheet size: A1	BORED TUNNEL, GENERAL ARRANGEMENT OF PRECAST SEGMENTS
						RC/1640/HO/HBT/TUDWGBT/RCS/304/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-5.

MATERIALS:

GRADE OF CONCRETE - M35

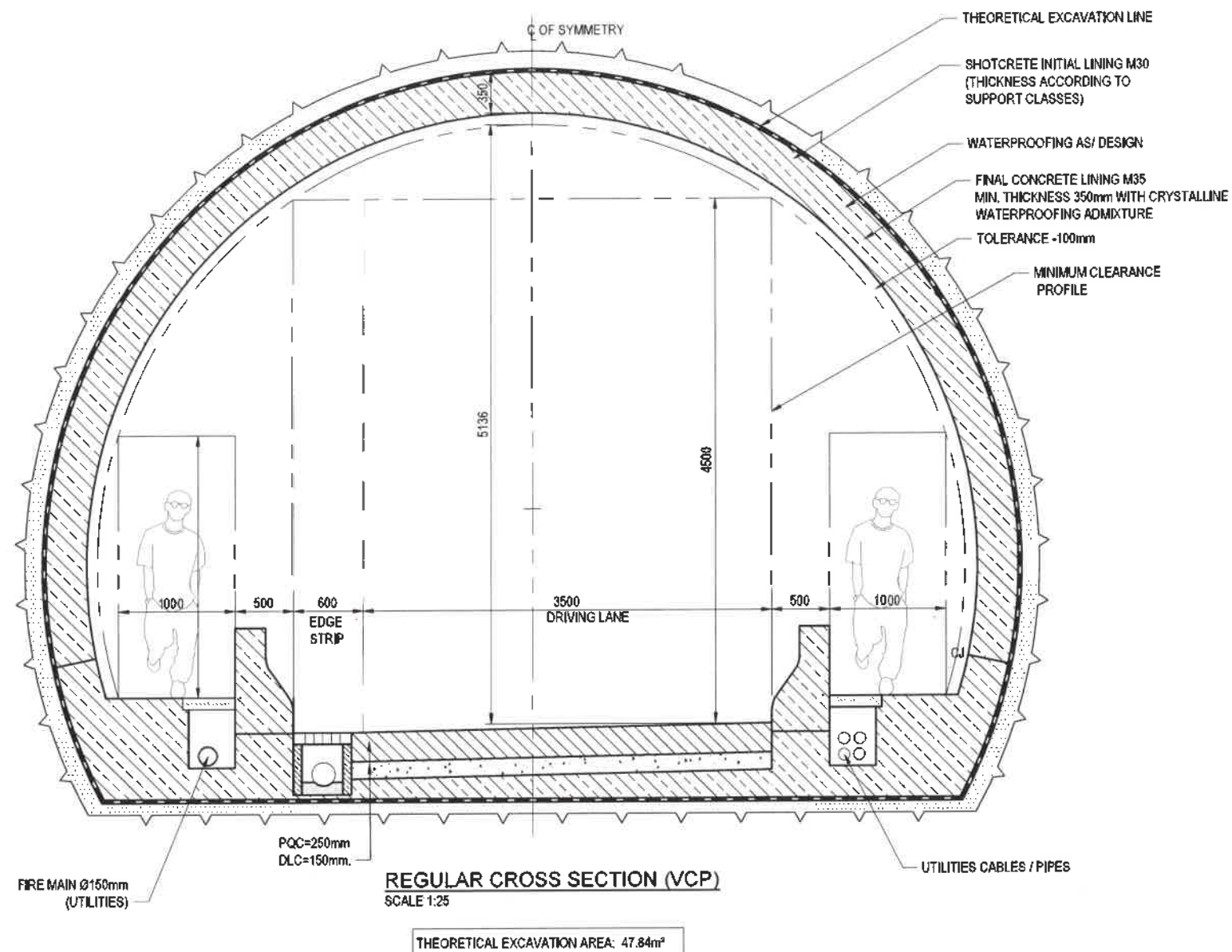
**NATM TUNNEL 2 LANE
REGULAR CROSS SECTION**
SCALE 1:25
THEORETICAL EXCAVATION = 86.42 SQ. M

SCALE 1:25



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAFT PROJECT REPORT
R0	10.09.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Fluidyn India #15, 4th Floor, Outer Ring Road AP Nagar 6th Phase Bengaluru, Karnataka 560076 India	Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION				
					Drawing Title	NATM TUNNEL, REGULAR CROSS SECTION, 2 LANES ARRANGEMENT
					Drawing No.	RCM1640/HO/HBT/TUDWG/NT/RCS/401/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH WALKWAY ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

MATERIALS:

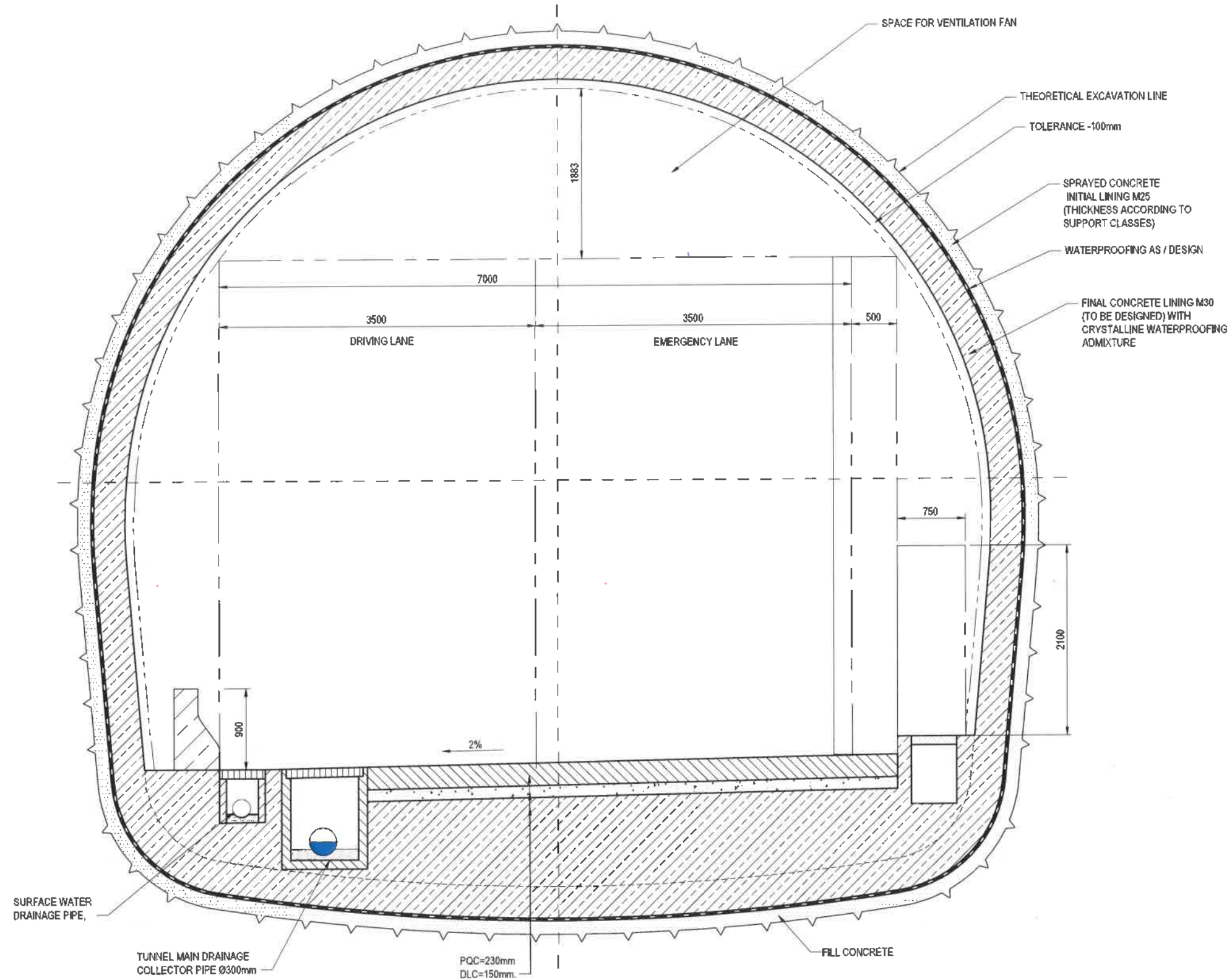
GRADE OF CONCRETE - M35

SCALE 1:25



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) 	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION				
				DESIGNED: CSA DRAWN: RMB CHECKED: CSB APPROVED: PSJ	Scale: 1:25 Sheet size: A1	Drawing No: RC/1640/HO/HBT/UDWGNTRCS/402/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH WALKWAY ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

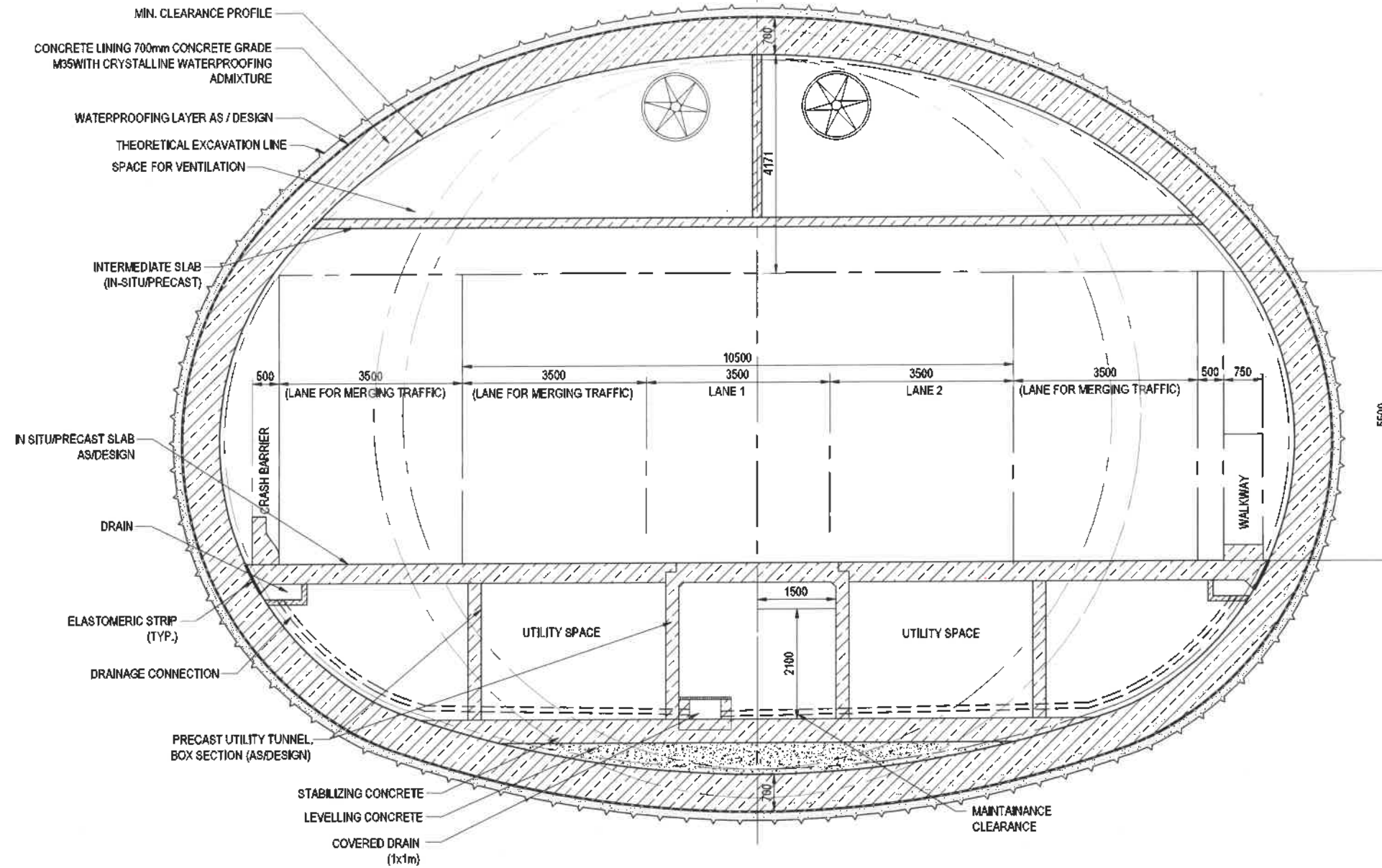
NATM TUNNEL 2 LANE
REGULAR CROSS SECTION (ARCH INVERT)
 SCALE 1:25

THEORETICAL EXCAVATION = 90.18 SQ. M



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Fluidsyn India 815, 3 rd Floor, Outer Ring Road JP Nagar 6th Phase Bangalore, Karnataka 560075 India	DRAFT PROJECT REPORT Design: CSA Drawn: RMe Checked: PSI Approved: PSI	Project: "Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction" Drawing Title: NATM TUNNEL SECTION WITH ARCH INVERT, REGULAR CROSS SECTION - 2 LANES Drawing No: RC/1640/HO/HBT/TUDWGNTRCS/403/A
A	30.01.25	FORMAL SUBMISSION				



**TYPICAL CROSS SECTION
INTERSECTION OF MAIN TUNNEL WITH ENTRY/EXIT**
SCALE 1:50

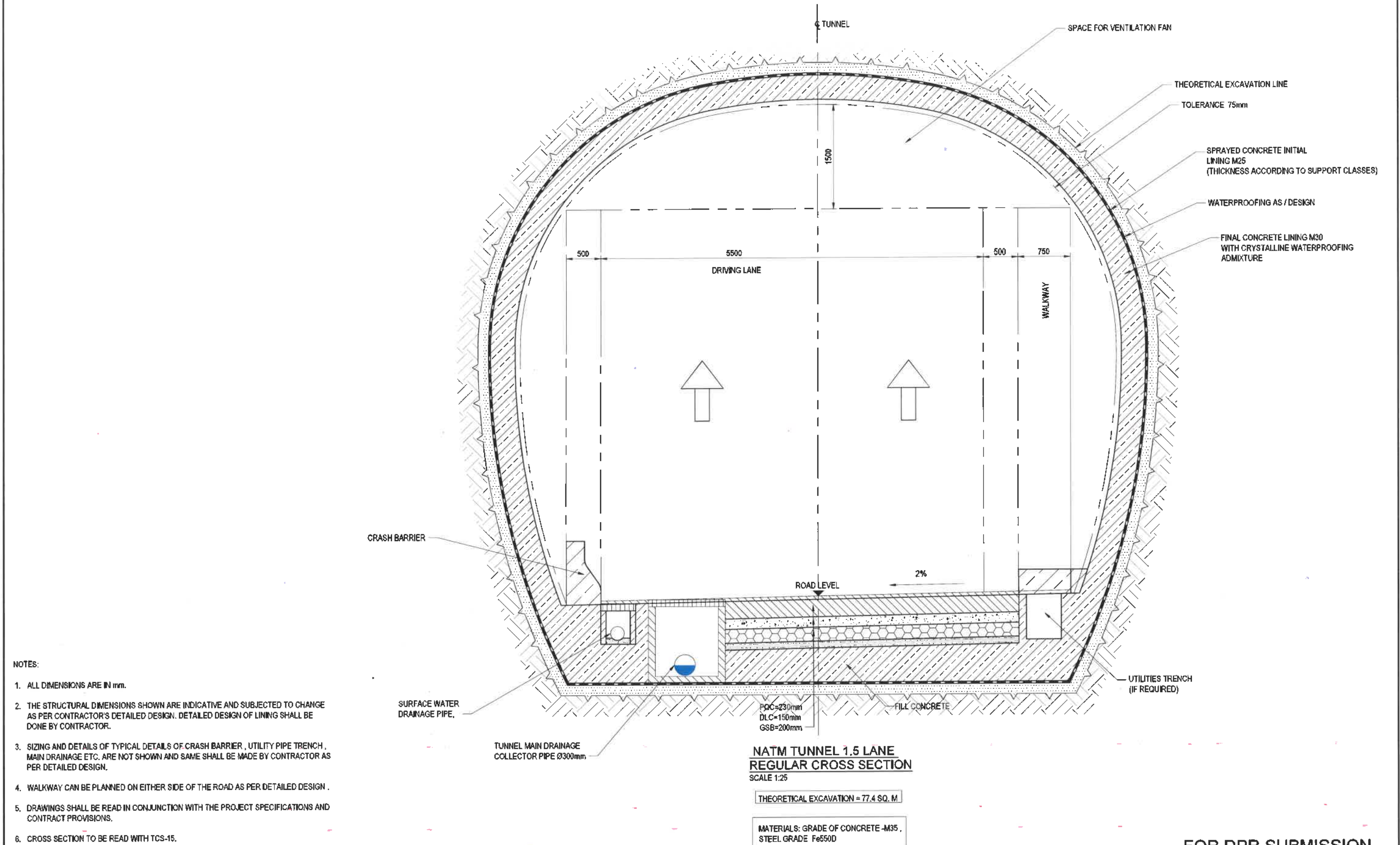
NOTES:

- ALL DIMENSIONS ARE IN mm.
- THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
- SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH WALKWAY ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
- WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
- DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.



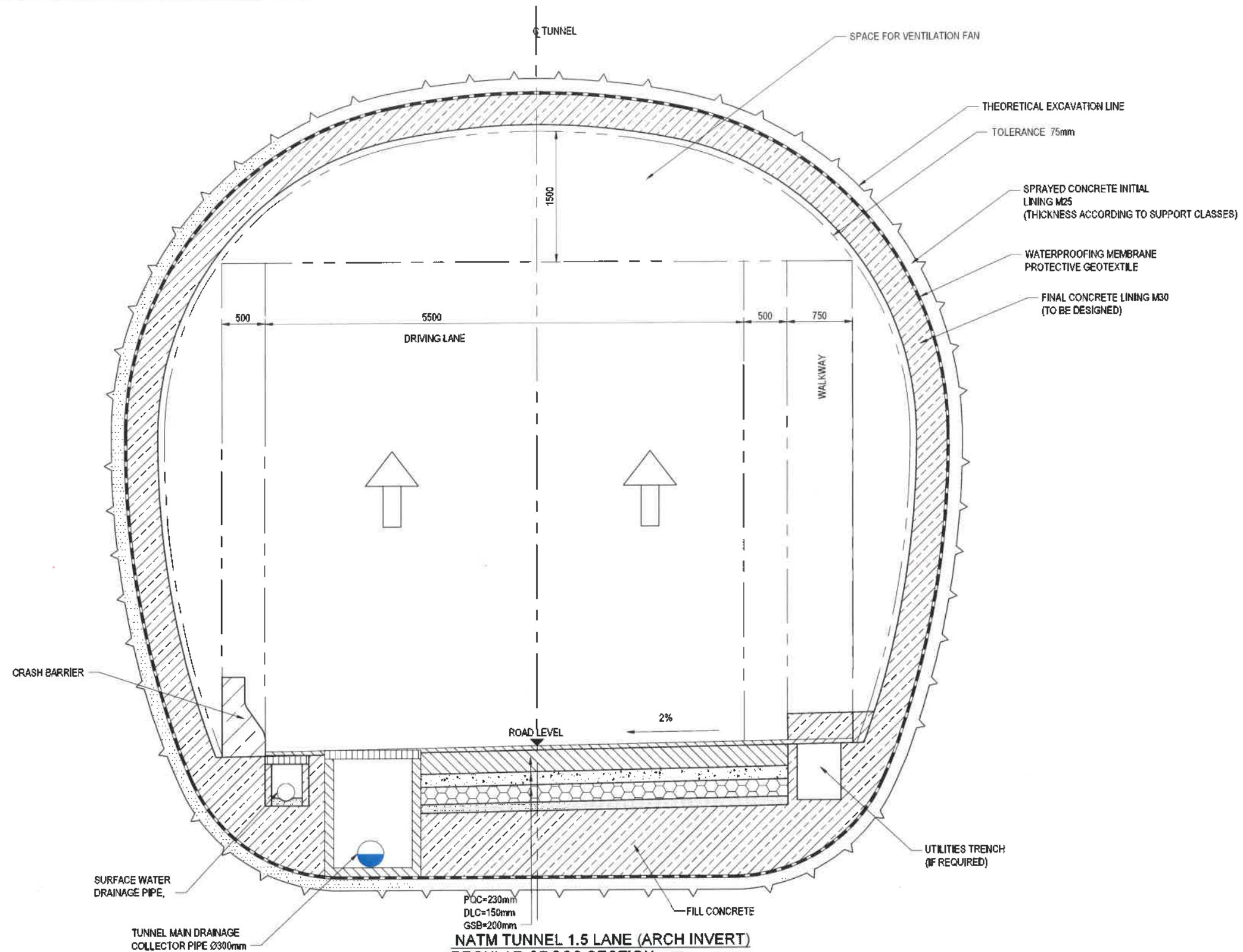
FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project	Drawing Title
R0	10.08.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Design: CSA Scale: 1:50		"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	Geotechnical India Private Limited 948106 W-Work, Plot No. 70, Road No. 10 Jakkur, Bangalore 560078 India	Drawn: RMO Checked: CSA Approved: PSI Sheet size: A1	Drawing No: RC/1640/HO/HBT/UDWGINT/RCS/404/A	NATM TUNNEL, TYPICAL CROSS SECTION, INTERSECTION OF MAIN TUNNEL WITH ENTRY/EXIT



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT	CONSULTANT	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
RD	19.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA					
A	30.01.25	FORMAL SUBMISSION	 GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 GEOCONSULT INDIA PRIVATE LIMITED 6/2/6/2, Outer Ring Road 3P Nagar, 5th Phase, Bangalore Karnataka 560074, India	 Rashmi 835, 4th Floor, Outer Ring Road 3P Nagar, 5th Phase, Bangalore Karnataka 560074, India	Designed: CSA Drawn: RMe Checked: NGG Approved: PSI	Scale: 1:50 Sheet size: A1	Drawing Title: NATM TUNNEL SECTION (TYPE NTBF3) - 1.5 LANES AT BIFURCATING SECTION Drawing No: RC/H40/HO/HBT/TU/DWGNT/RC/S/405/A



NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH WALKWAY ETC. MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

NATM TUNNEL 1.5 LANE (ARCH INVERT)
REGULAR CROSS SECTION
 SCALE 1:25

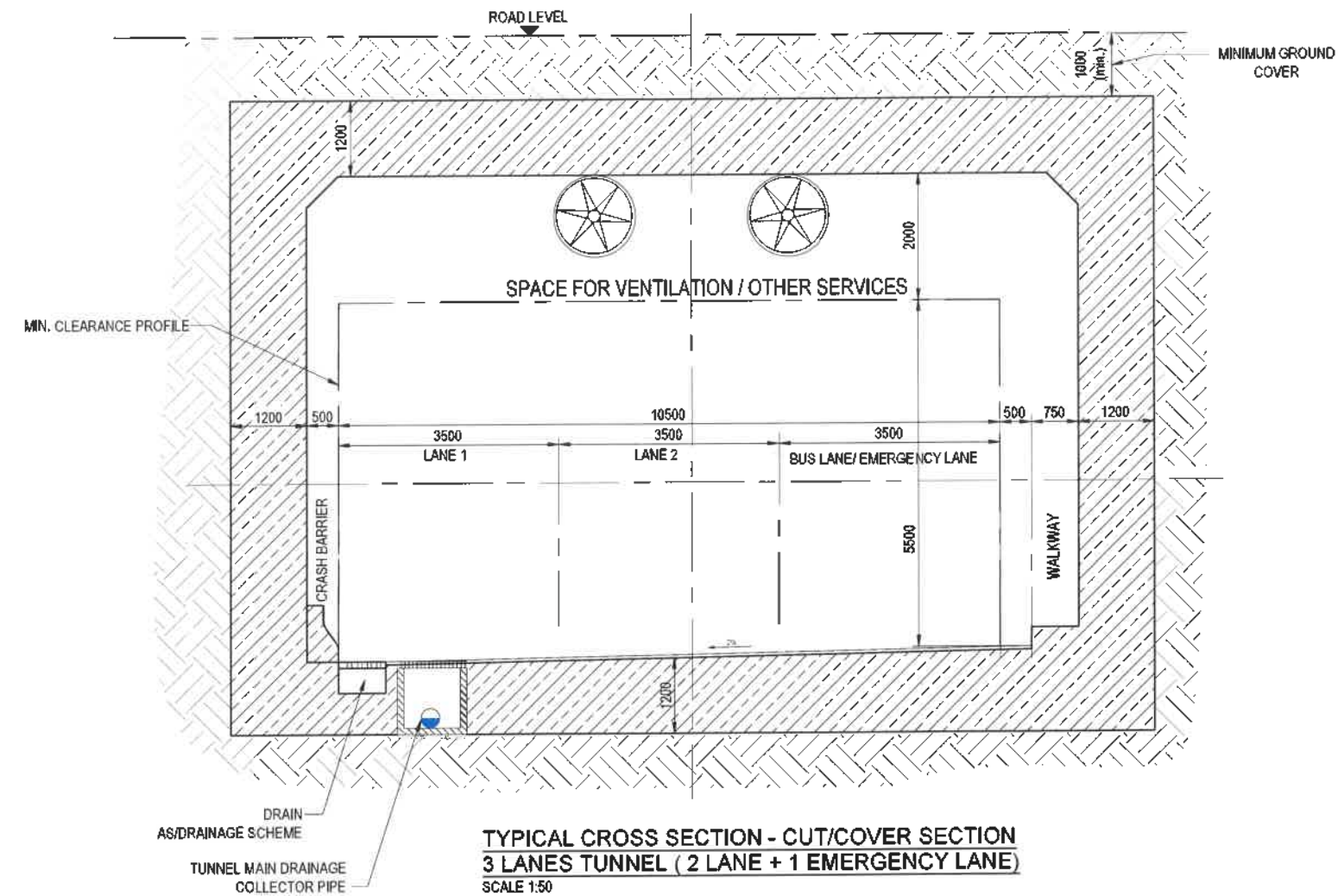
THEORETICAL EXCAVATION = 78.4 SQ. M

MATERIALS: GRADE OF CONCRETE -M35,
 STEEL GRADE Fe550D

SCALE 1:25
 1m 0 1m 2m 2.5m

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAFT PROJECT REPORT
R0	15.01.25	PRELIMINARY	 GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Bangalore Office: 4th Floor, Outer Ring Road 8th Phase, Bengaluru, Karnataka 560078 India	Project: "Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction" Drawing Title: NATM TUNNEL GENERAL ARRANGEMENT WITH ARCH INVERT, REGULAR CROSS SECTION - 1.5 LANES Drawing No: RC/1640/HO/HBT/TU/DWGINT/RCS/406/R0	Designed: CSA Drawn: RMe / ZHU Checked: CSA Approved: PSI Scale: 1:25 Sheet size: A1
A	30.01.25	FORMAL SUBMISSION				



TYPICAL CROSS SECTION - CUT/COVER SECTION
3 LANES TUNNEL (2 LANE + 1 EMERGENCY LANE)
SCALE 1:50

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF BOX LINING SHALL BE DONE BY CONTRACTOR.
3. SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE , UTILITY PIPE TRENCH ETC . MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-6.

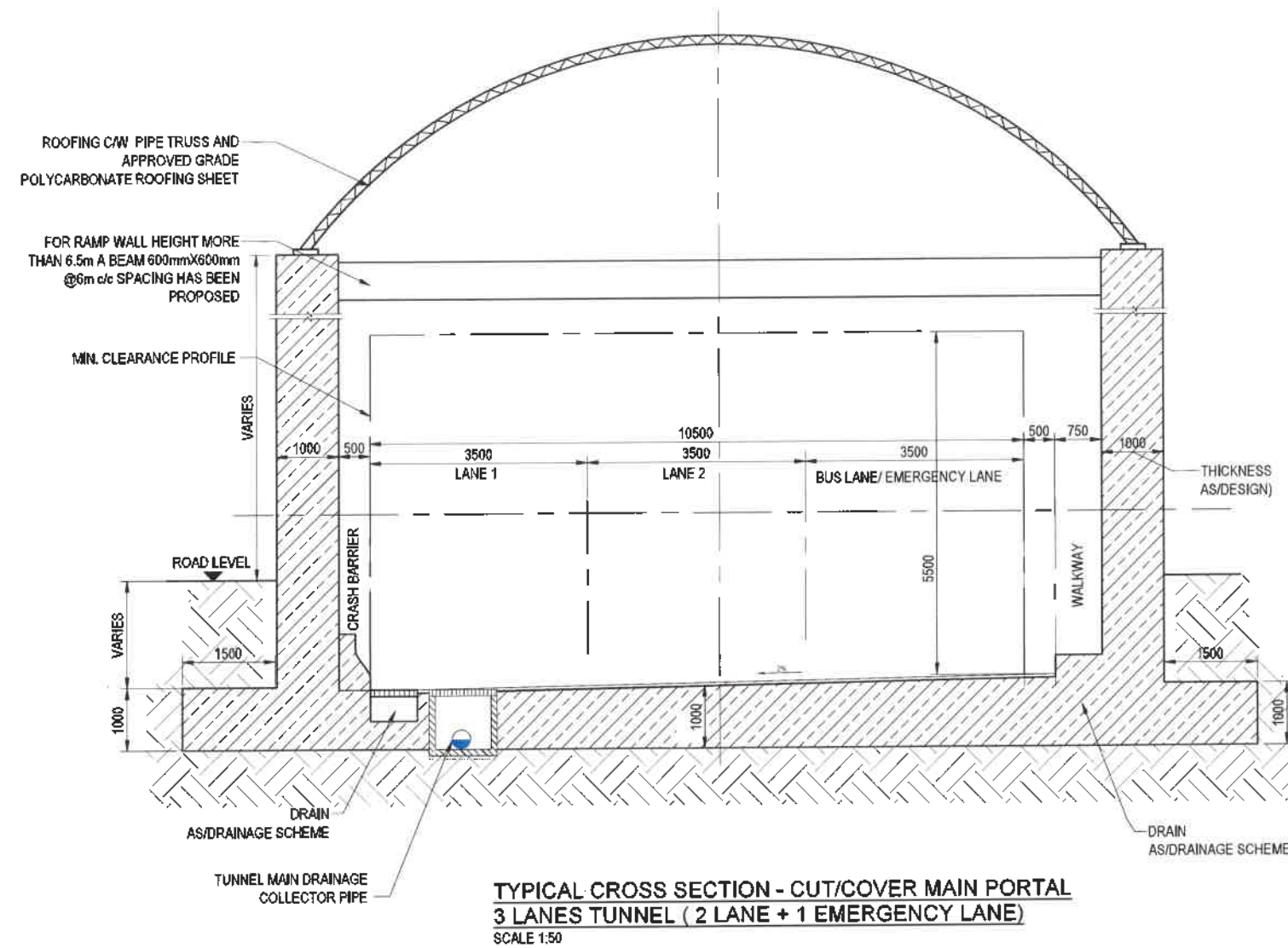
MATERIALS:

GRADE OF CONCRETE - M35
GRADE OF STEEL Fe550D

SCALE 1 : 50
1m 0 1m 5m

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	Project	Drawing Title
RO	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	DESIGNER: CSA DRAWN: RMe CHECKED: CSa APPROVED: PSI	Scale :- 1:50 Sheet size: A1	CUT AND COVER SECTION, REGULAR CROSS SECTION, 3 LANES (2 LANES + 1 EMERGENCY LANE)



NOTES:

- ALL DIMENSIONS ARE IN mm.
- THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTORS DETAILED DESIGN. DETAILED DESIGN OF RAMP LINING SHALL BE DONE BY CONTRACTOR.
- SIZING AND DETAILS OF CRASH BARRIER, DRAINAGE, UTILITY PIPE TRENCH ETC, MAY CHANGE AS PER CONTRACTORS DETAILED DESIGN.
- WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
- DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
- CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-2.

MATERIALS:

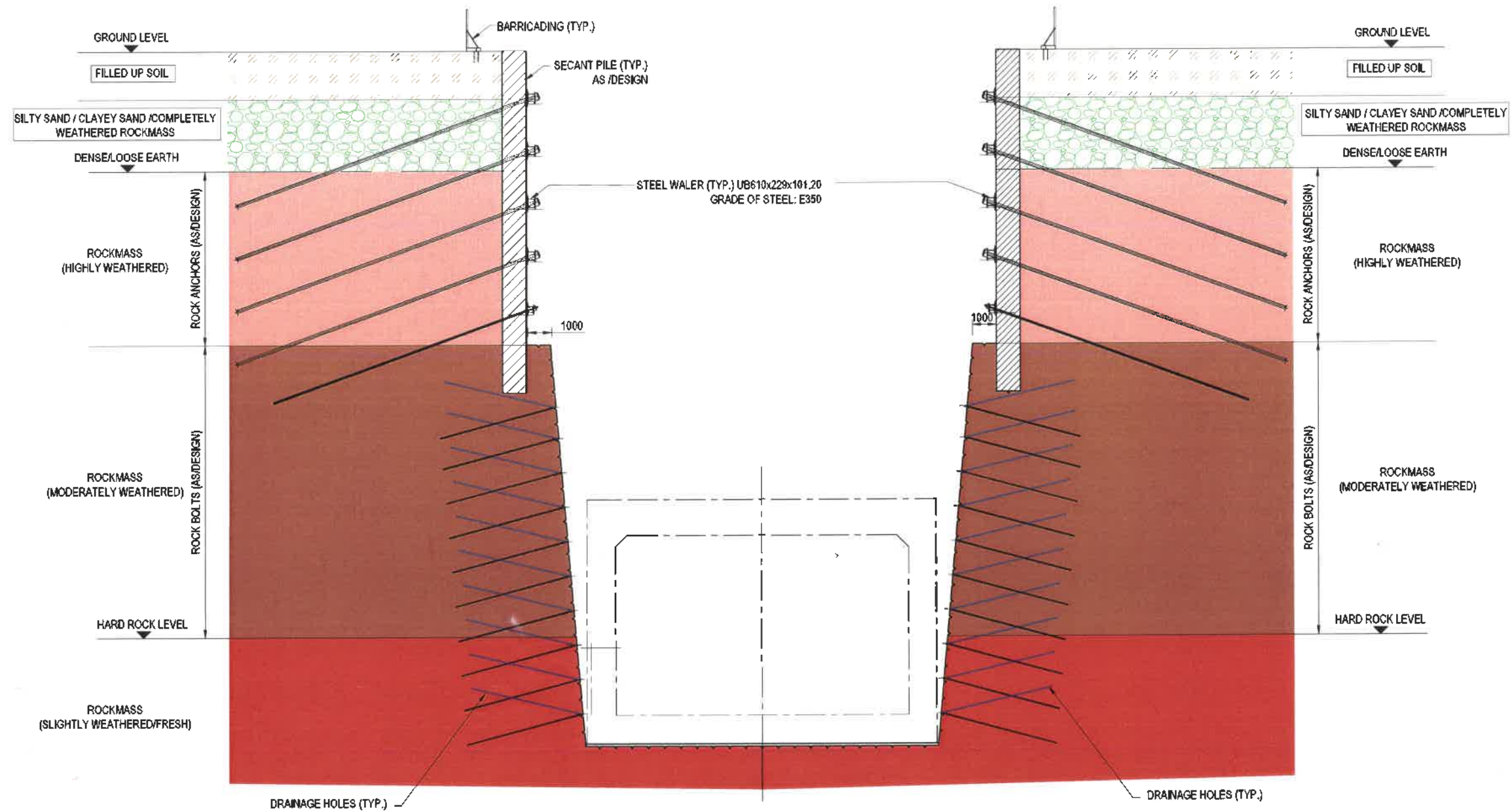
GRADE OF CONCRETE - M35
 GRADE OF STEEL Fe550D

SCALE 1:50



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	CUT AND COVER / RAMP SECTION, AT MAIN PORTAL (2LANES+1 EMERGENCY LANE)
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 815, 4 th Floor, Outer Ring Road JP Nagar 6 th Phase Bengaluru, Karnataka 560078 India	Scale :- 1:50 Sheet size: A1	RC/1640/H0/HBT/TU/DWG/CC/RCS/502/A



**TYPICAL CROSS SECTION AT CUT/COVER AND RAMP SECTION
WITH SECANT PILES, ROCK ANCHORS, ROCK BOLTS AND WALER**
SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND MAY CHANGE AFTER DETAILED DESIGN.
3. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.

SCALE 1: 100



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
RD	10.09.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) RODIC INDIA #25, 4th Floor, Outer Ring Road #1 Nagar 6th Phase Bangalore, Karnataka 560076 India	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION				
					Designed: CSA/NGO	Scale: 1:100
					Drawn: P/Me	Sheet size: A1
					Checked: PSI	
					Approved: PSI	
						Drawing No: RC/1640/HO/HBT/TU/DWG/CC/SUP/504/A

STAGE-6:

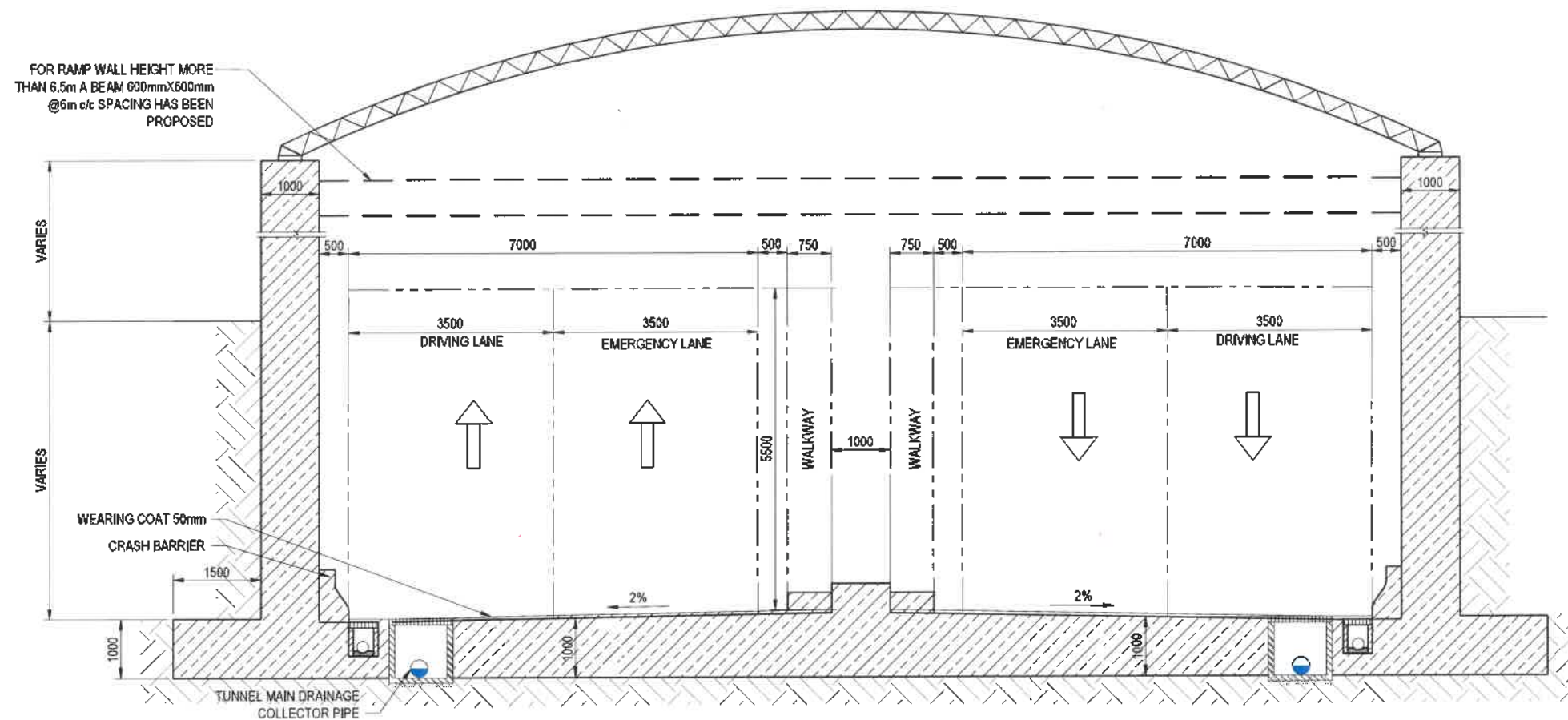
1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND MAY CHANGE AFTER DETAILED DESIGN.
3. DRAWING SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.



- A. PREPARE THE GROUND.
- B. START BORING OPERATION FOR PCC PILE AND STABILISE SOIL WITH BENTONITE OR USING CASING WHILE BORING. INSTALL PCC PILE.
- C. REPEAT THE PROCESS AND INSTALL PCC PILE AS PER THE INSTALLING SEQUENCE.
- D. START BORING OF HARD PILE WITH CASING TO CUT THROUGH PCC PILE TO THE EMBEDMENT DEPTH BELOW THE PRESCRIBED ROCK LEVEL.
- E. LOWER REINFORCEMENT CAGE AND CONCRETE.

FOR DPR SUBMISSION

[illegible]



RAMP SECTION
TYPE-RP2M2 (2 LANE+MEDIAN+2 LANE)
 SCALE 1:50

MATERIALS: GRADE OF CONCRETE -M35, STEEL GRADE Fe550D

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
3. SIZING AND DETAILS OF TYPICAL DETAILS OF CRASH BARRIER, UTILITY PIPE TRENCH, MAIN DRAINAGE ETC. MAY CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-07.

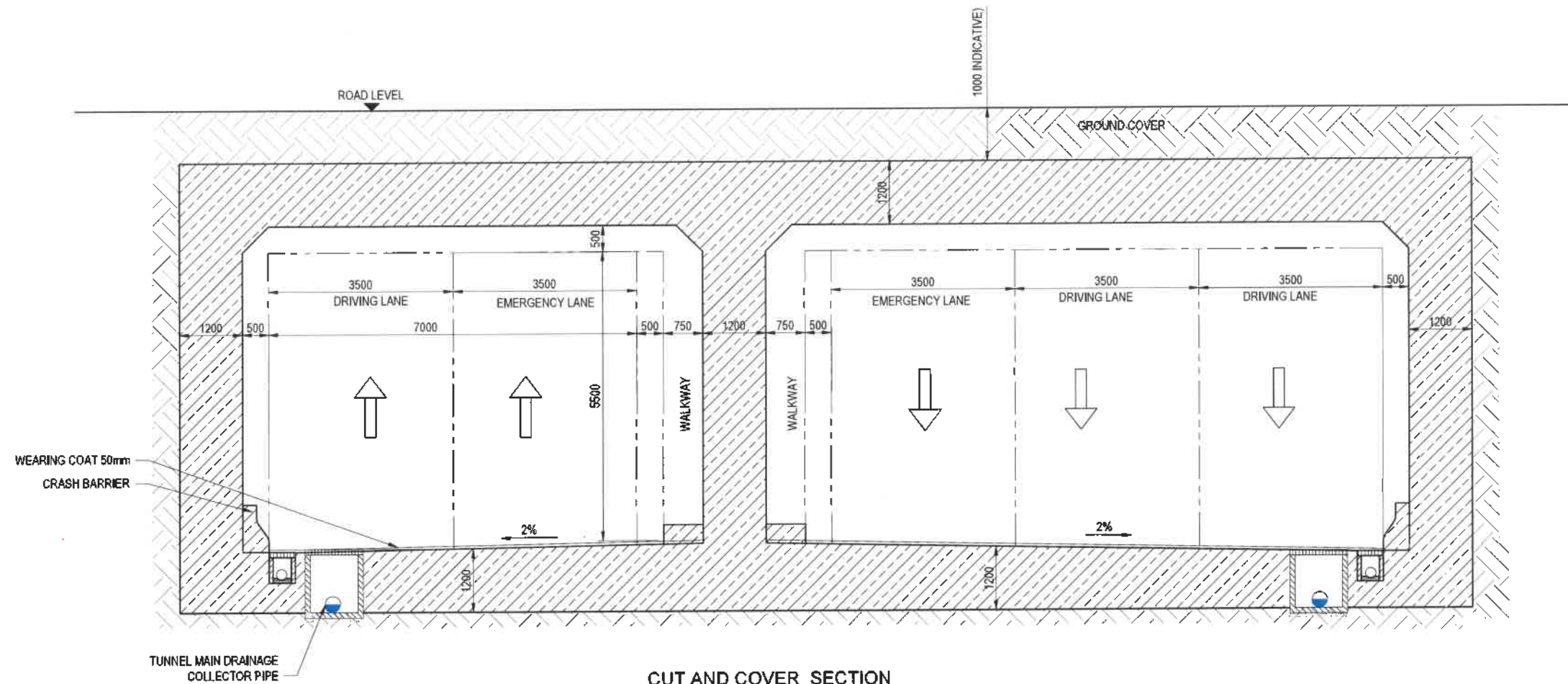
FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	03.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Head Office: 425, 4th Floor, Outer Ring Road, AP Nagar 6th Phase Bengaluru, Karnataka 560078 India	DRAFT PROJECT REPORT Scale: 1:50 Sheet size: A1	“Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction”
A	30.01.25	FORMAL SUBMISSION				OPEN RAMP (TYPE - RP2M2) - 2 LANES+1M MEDIAN+2 LANE
						Drawing No. RC/1640/HO/HBT/TUDWGRP/RCS/506/A

MATERIALS: GRADE OF CONCRETE -M35 , STEEL GRADE Fe550D

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT	CONSULTANT:	Project	
RD	03.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA	 RODICI CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	 GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 GEOCONSULT INDIA PVT. LTD. #35, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560078 India <i>Reddy</i>	Design: CSA Drawn: PMe Checked: CSA Approved: PSI	CUT AND COVER SECTION (TYPE - CC2W2)- 2 LANES+1M WALL+2 LANE
				 #35, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560078 India	Scale :- 1:50 Sheet size: A1	RCM/640/HO/HBT/TU/DWG/CC/RCRS/507/A



CUT AND COVER SECTION
TYPE - CC2W3 - 2 LANE+MEDIAN WALL+3LANE
 SCALE 1:50

MATERIALS: GRADE OF CONCRETE -M35, STEEL GRADE Fe550D

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
3. SIZING AND DETAILS OF TYPICAL DETAILS OF CRASH BARRIER, UTILITY PIPE TRENCH, MAIN DRAINAGE ETC. MAY CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION SHALL BE READ IN CONJUNCTION WITH TCS-9.

FOR DPR SUBMISSION

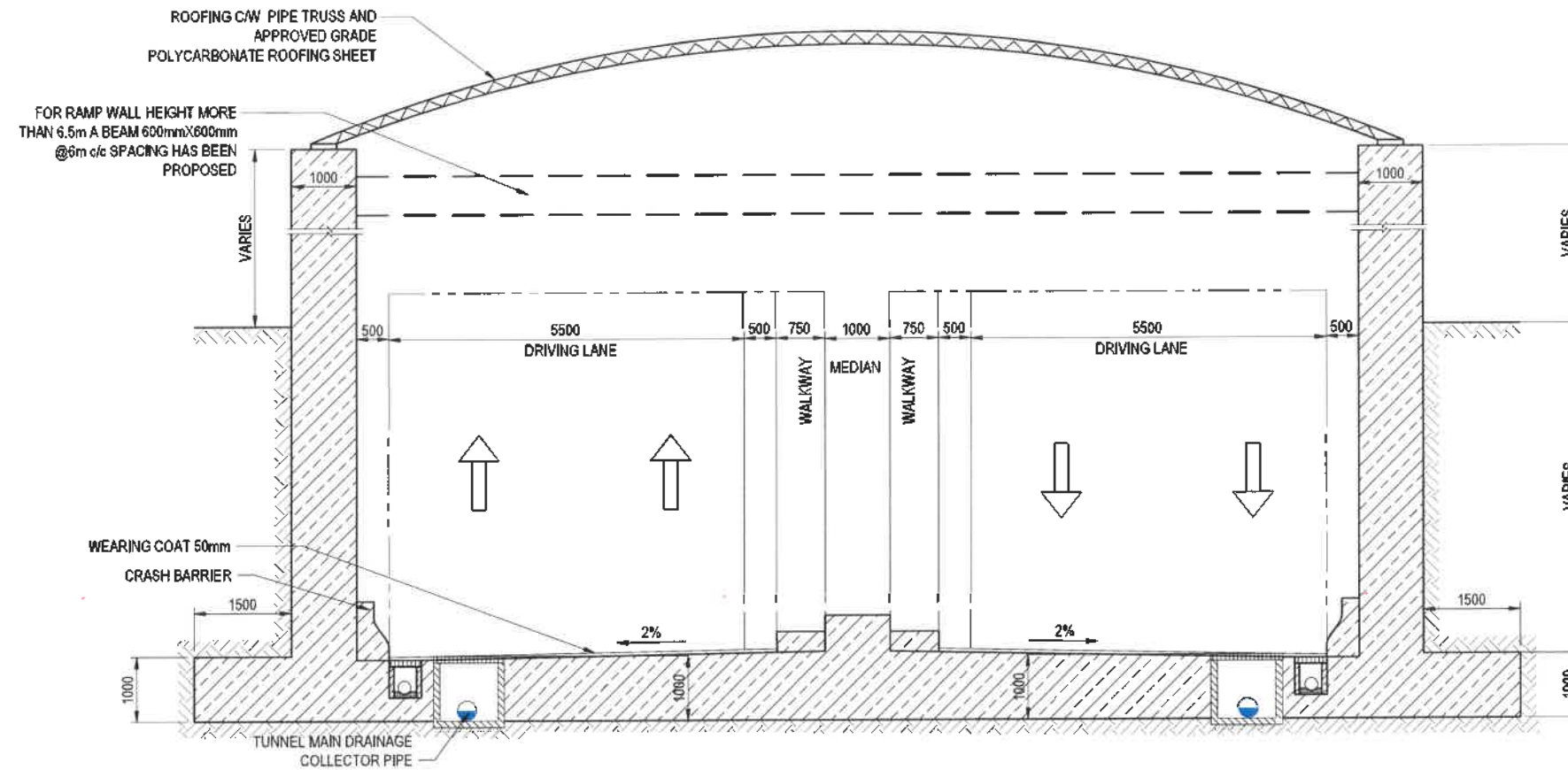
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
RD	03.12.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Fluidity 15, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560076 India	DRAFT PROJECT REPORT Scale: 1:50 Sheet size: A1	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION				

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
3. SIZING AND DETAILS OF TYPICAL DETAILS OF CRASH BARRIER, UTILITY PIPE TRENCH, MAIN DRAINAGE ETC. MAY CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTIONS TO BE READ IN CONJUNCTION WITH TCS-10.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT			Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
R6	03.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT			Project	
A	30.01.25	FORMAL SUBMISSION							
			 GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 GEOTECHNICAL INDIA PRIVATE LIMITED #10/2, 4th Floor, Outer Ring Road # Nagar 6th Phase Bangalore, Karnataka 560078 India	 Field No. India #15, 4th Floor, Outer Ring Road # Nagar 6th Phase Bangalore, Karnataka 560078 India	Designed: CSA Drawn: RMB Checked: CSe Approved: PS	Scale: 1:50 Sheet size: A1	Drawing Title Drawing No.	OPEN RAMP (TYPE - RP3W3) 3 LANES+1M WALL+3 LANE RC/1640/HO/HBT/TUDW3GRP/RCS/509/A



RAMP SECTION (TYPE - RPB03) BIDIRECTIONAL - 1.5 LANE+MEDIAN+1.5 LANE (3 LANE)
REGULAR CROSS SECTION
 SCALE 1:50

MATERIALS: GRADE OF CONCRETE -M35, STEEL GRADE Fe550D

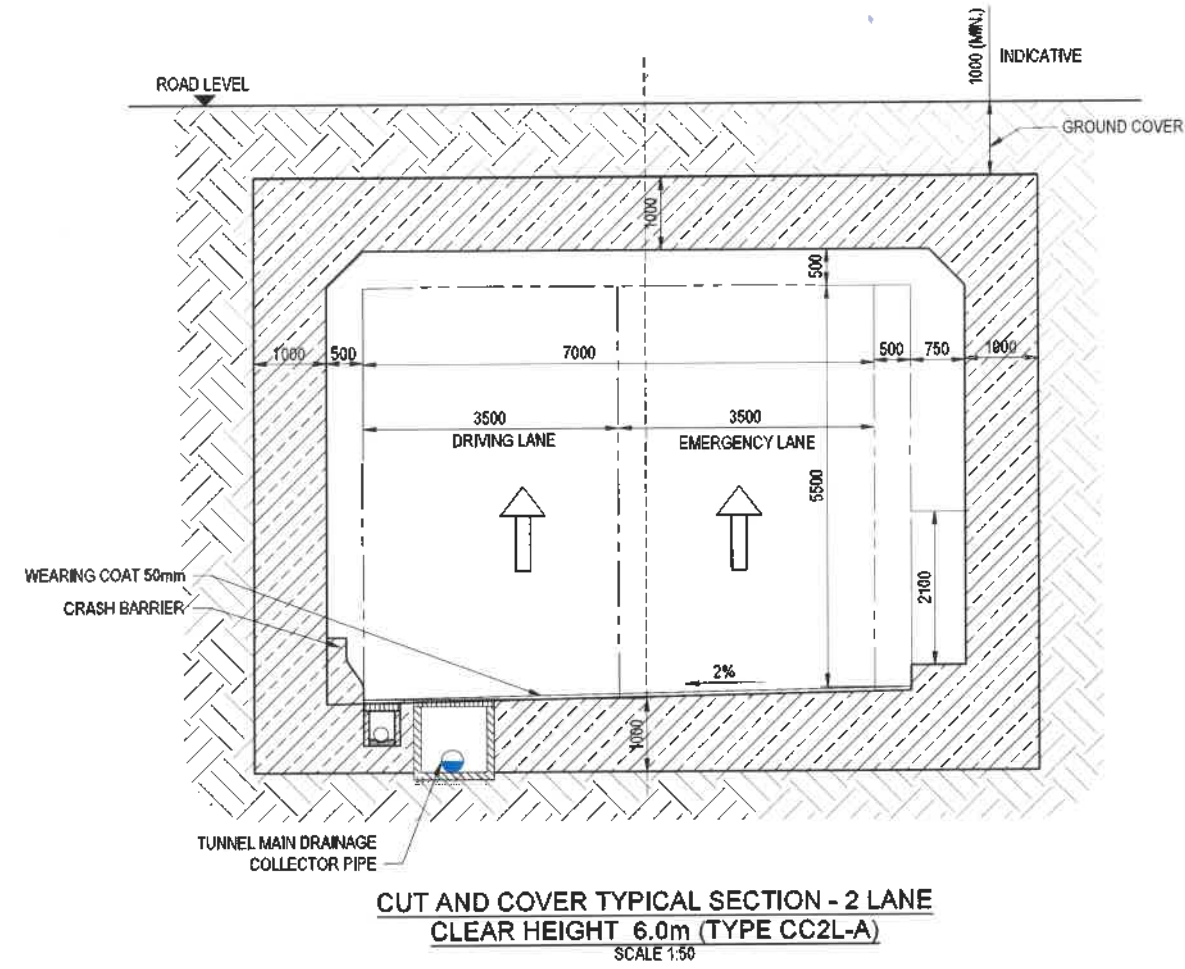
NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
3. SIZING AND DETAILS OF TYPICAL DETAILS OF CRASH BARRIER, UTILITY PIPE TRENCH, MAIN DRAINAGE ETC. MAY CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN.
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-11.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
R0	03.12.24	PRELIMINARY	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT INDIA PRIVATE LIMITED 48/100, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560076 India	DRAFT PROJECT REPORT Scale :- 1:50 Sheet size: A1	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION				

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT	CONSULTANT:	PROJECT REPORT		Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
Ro	03.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT			
A	06.01.25	FORMAL SUBMISSION	 GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 GEOCONSULTING INDIA PRIVATE LIMITED 404/1st Floor, 2nd Stage, 2nd Cross, 2nd Main Road, New Sakinagar Metro Station Sector 28, Naragur Marion, BANGA	 Rodic Bangalore India 815, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bangalore, Karnataka 560078 India	Designated: CSA Drawn: RMA Checked: CSA Approved: PSI	Scale :- 1:50 Sheet size: A1	Drawing Title: BIDIRECTIONAL CUT AND COVER SECTIONS (TYPE CCBD3-A & TYPE CCBD3-B) - 3 LANES Drawing No: RC/1840/HO/HBT/J/DWG/CC/RC/5/511/A



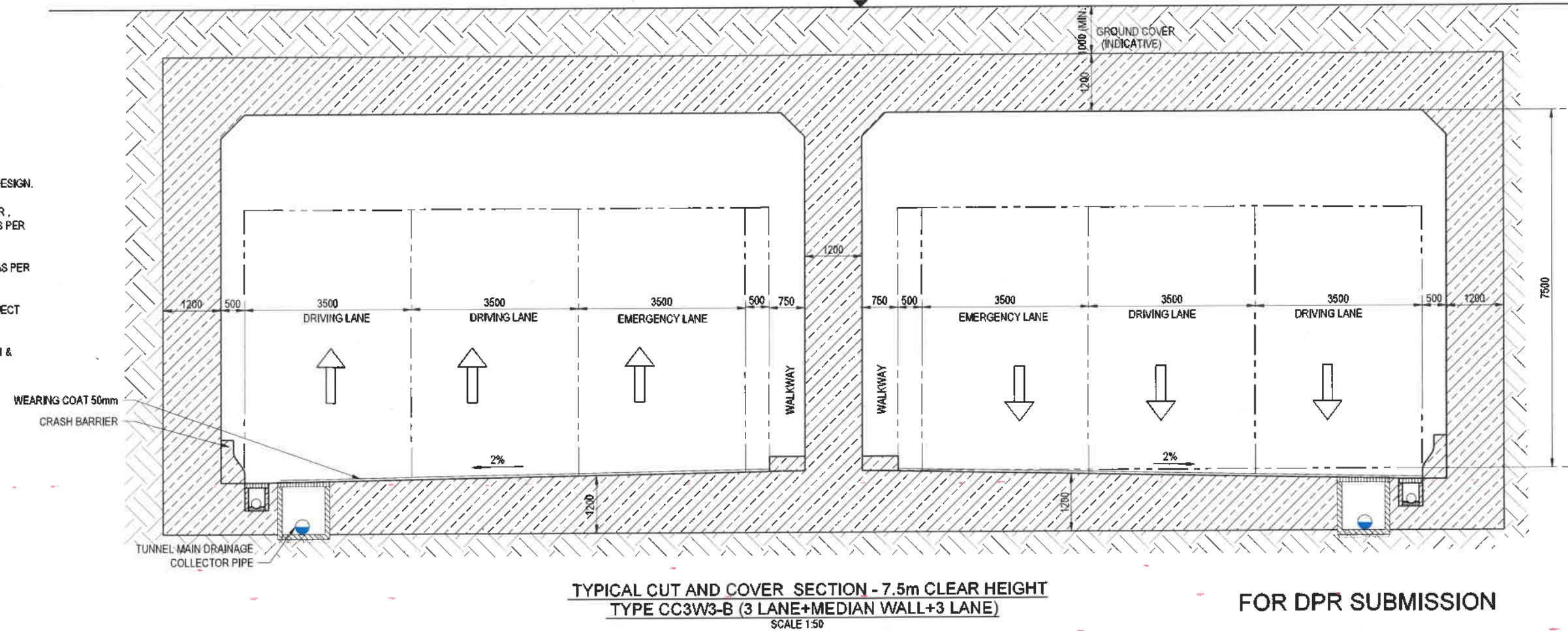
MATERIALS: GRADE OF CONCRETE -M35 , STEEL GRADE Fe550D

NOTES:

1. ALL DIMENSIONS ARE IN mm.
2. THE STRUCTURAL DIMENSIONS SHOWN ARE INDICATIVE AND SUBJECTED TO CHANGE AS PER CONTRACTOR'S DETAILED DESIGN.
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4. WALKWAY CAN BE PLANNED ON EITHER SIDE OF THE ROAD AS PER DETAILED DESIGN .
5. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS AND CONTRACT PROVISIONS.
6. CROSS SECTION TO BE READ IN CONJUNCTION WITH TCS-3A.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
RS	04.12.24	PRELIMINARY	GOVERNMENT OF KARNATAKA	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	GECON CONSULTANTS PRIVATE LIMITED 40/105 Westview L, Phase 3, 3rd Floor, Road No. 28, Changanarayana Nagar, Bangalore Karnataka 560078 India	Scale :- 1:50 Sheet size: A1	CUT AND COVER SECTION (TYPE CC2L-A & TYPE CC2L-B) - 2 LANE TYPICAL
						RC/1640/HO/HBT/TU/DWG/CC/RC/S513/R3



FOR DPR SUBMISSION

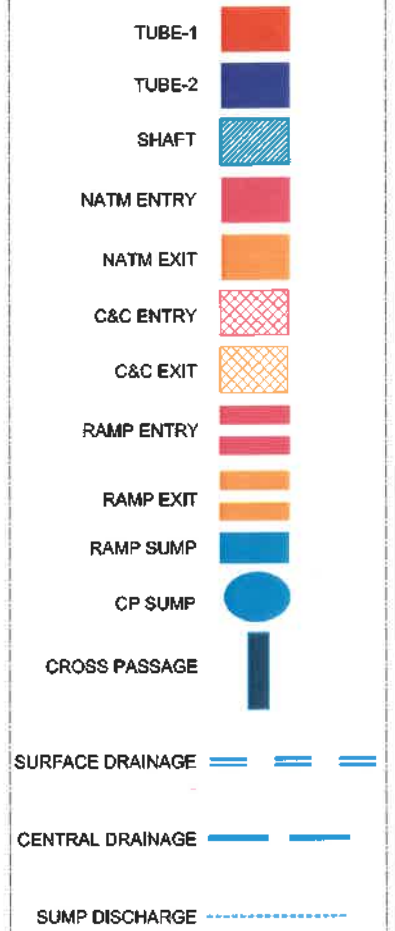
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT:	DRAFT PROJECT REPORT			Project	“Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction”
R0	03.12.24	PRELIMINARY	 GOVERNMENT OF KARNATAKA  GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1 JAM SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Designed Drawn Checked Approved	CSA	Scale :- 1:50 Sheet size: A1	Drawing Title	
A	30.01.25	FORMAL SUBMISSION				RMD		CUT AND COVER SECTION (TYPE CC3W3-A AND CC3W3-B) 3 LANE+MEDIAN WALL+3LANE	
						CsA		Drawing No.	
						PS		RC/1640/HO/HBT/TU/DWG/CC/RC/S/14/A	

Appendix-B-III



TUNNEL DRAINAGE SCHEME - PACKAGE 1

LEGEND:

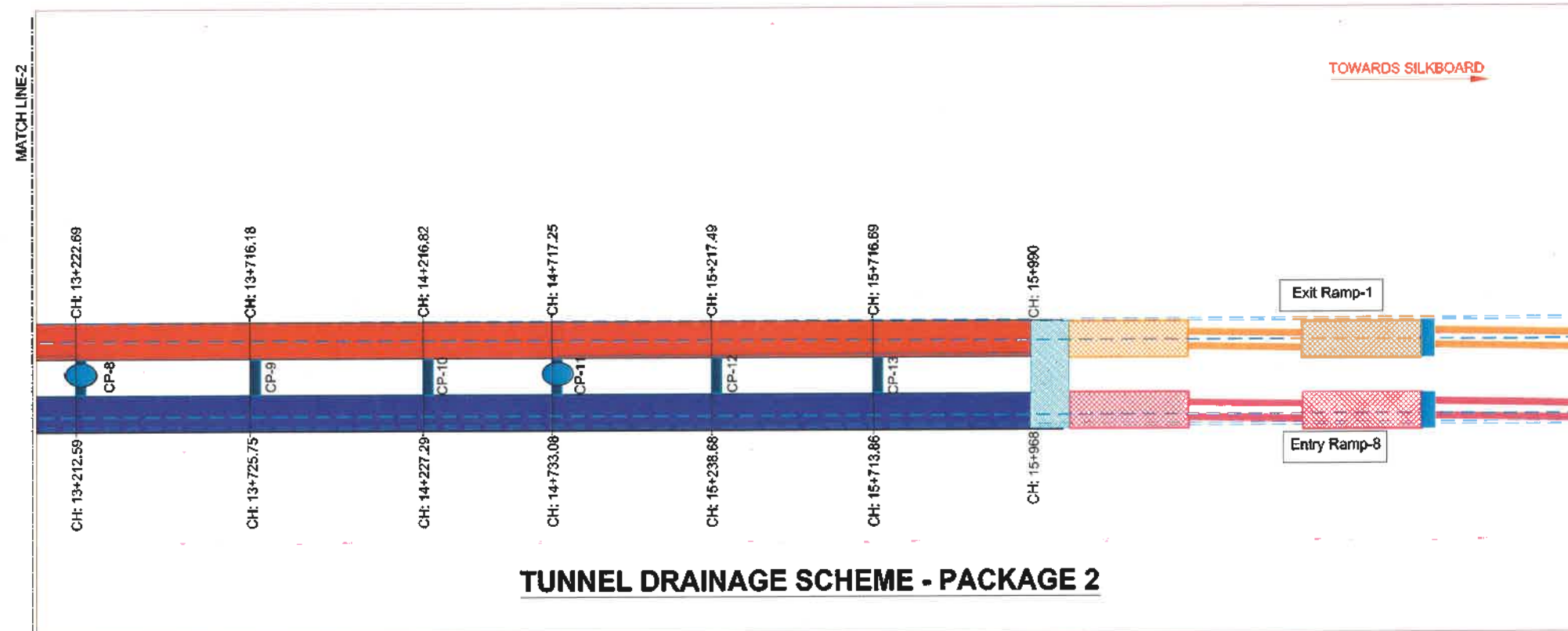
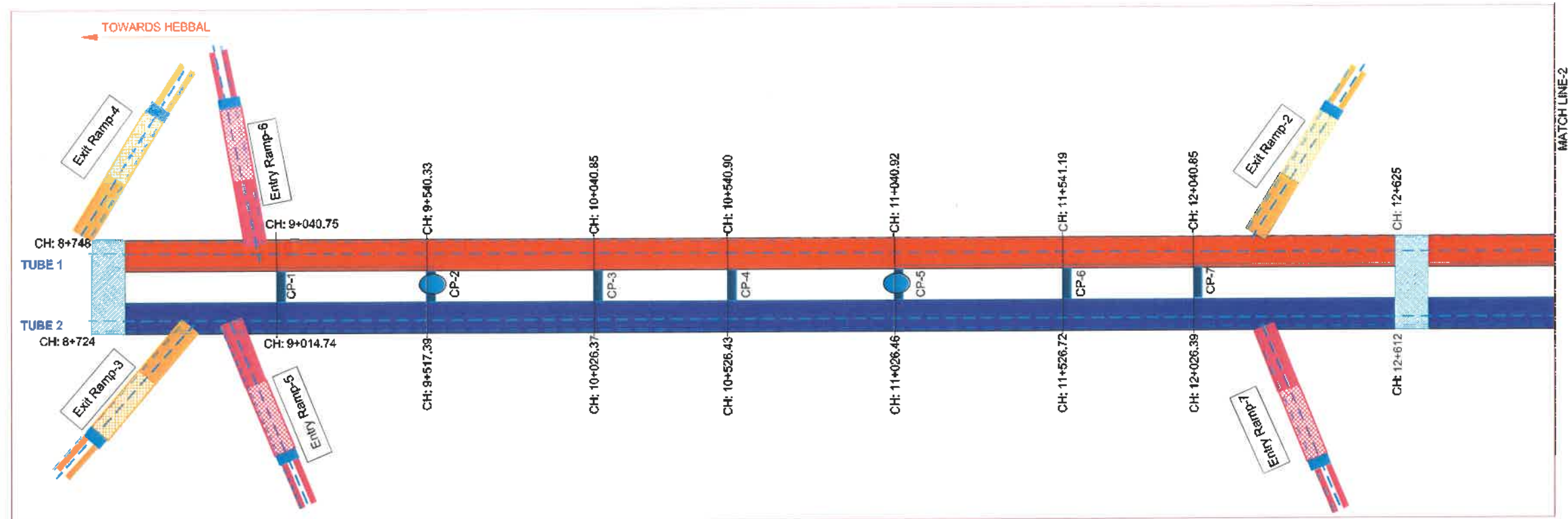


NOTE:

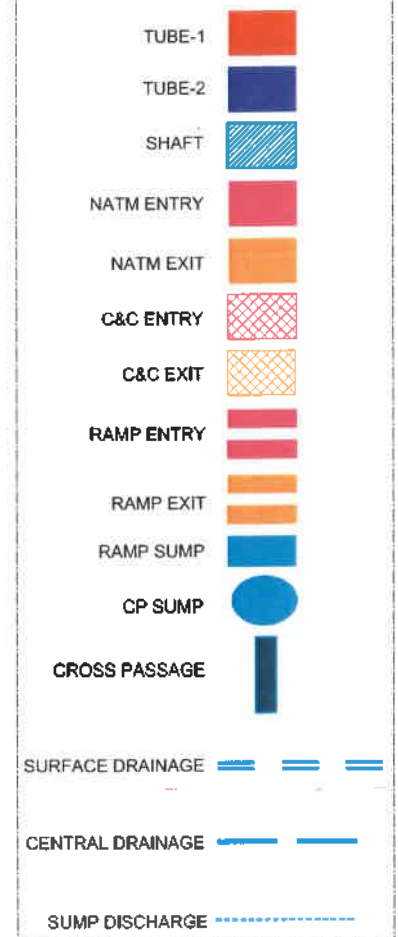
1. THE DRAWING IS INDICATIVE TO SHOW THE OVERALL DRAINAGE LAYOUT OF THE PACKAGE.
2. ALIGNMENT DRAWINGS SHALL SUPERSEDE THE DETAILS IN CASE OF ANY DISCREPANCY OF CHAINAGE/ LENGTH OR LOCATIONS ETC.
3. DRAWING IS NOT TO SCALE.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
A	31.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Rudra India #15, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560076 India	DRAFT PROJECT REPORT	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
					Designed: SDH Drawn: ZHU Checked: PSI Approved: PSI	TUNNEL DRAINAGE SCHEME PACKAGE-1 (HEBBAL TO RACE COURSE)
					Scale: 1: NTS Sheet size: A1	Drawing No. RC/1640/HO/HBT/TU/DWG/GEN-ALG-111



LEGEND:



NOTE:

1. THE DRAWING IS INDICATIVE TO SHOW THE OVERALL DRAINAGE LAYOUT OF THE PACKAGE.
2. ALIGNMENT DRAWINGS SHALL SUPERSEDE THE DETAILS IN CASE OF ANY DISCREPANCY OF CHAINAGE/ LENGTH OR LOCATIONS ETC.
3. DRAWING IS NOT TO SCALE.

FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project	Drawing Title
A	31.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110004 (INDIA) Rajdyes India #25, 4 th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560078 India	Designed: SDh Drawn: ZHu Checked: PSI Approved: PSI Scale: - NTS Sheet size: A1	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"	TUNNEL DRAINAGE SCHEME PACKAGE-2 (RACE COURSE TO SILK BOARD JUNCTION)
						Drawing No.	RC/1640/HO/HBT/TU/DWG/GEN-ALG-112

CRASH BARRIER

350

100 (TYP.)

VARIES

COVER 100mm THK.

SURFACE WATER DRAINAGE PIPE 150Ø

COVER 100mm THK.

200 600 200

VARIES

200

DRAIN

COVER 100mm THK.

100 750 100

VARIES

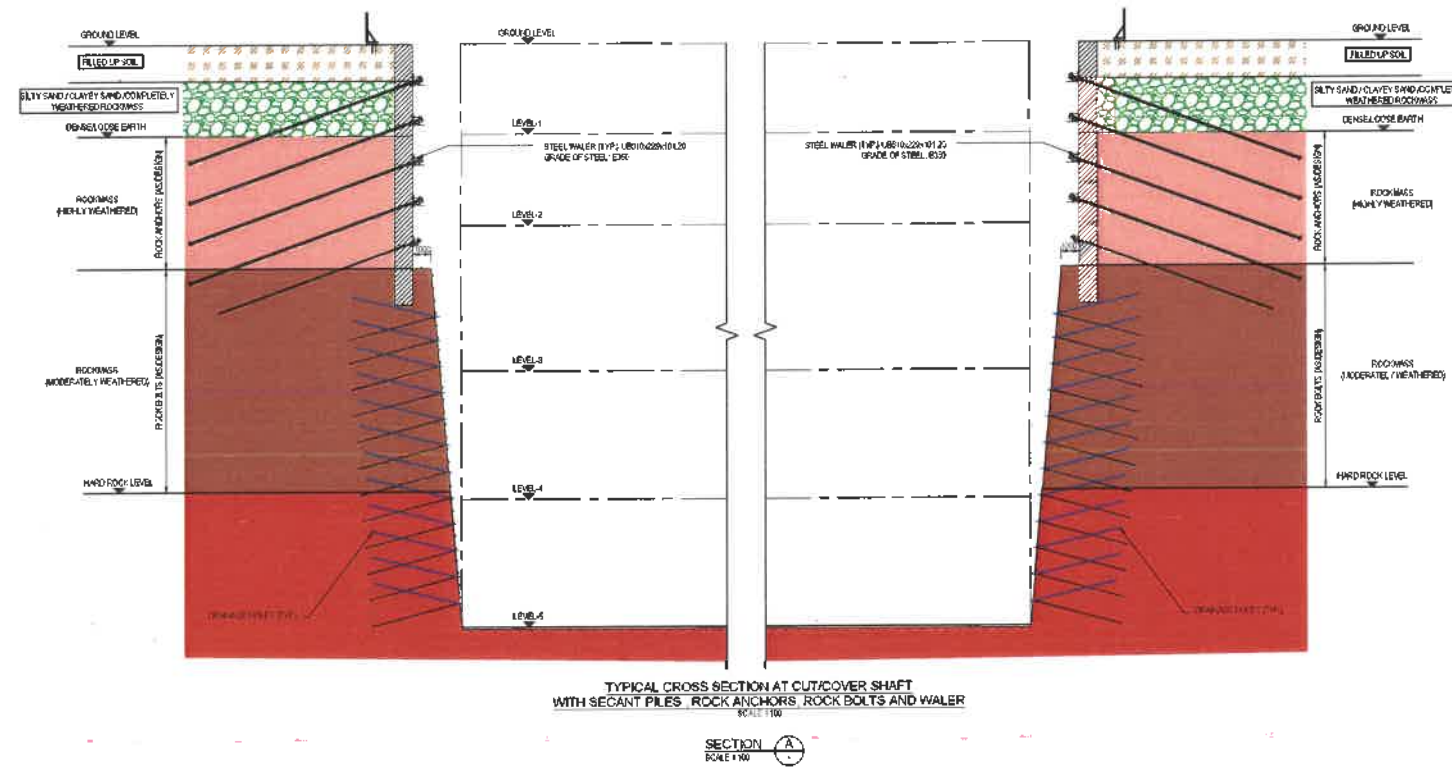
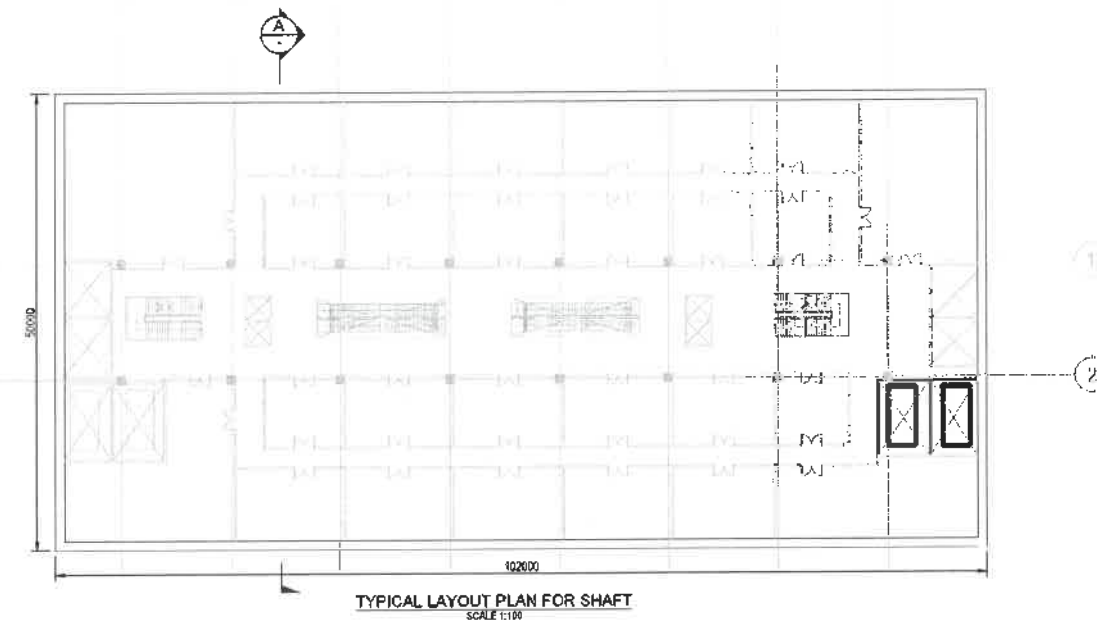
100

DECK SLAB

TUNNEL MAIN DRAINAGE COLLECTOR PIPE Ø300mm

A cross-sectional diagram of a tunnel drainage system. On the left, a hatched area represents the tunnel structure. A 'CRASH BARRIER' is shown on top of the structure. Below the barrier, a 'DECK SLAB' is shown with a width of 350. To the right of the deck slab, a 'TUNNEL MAIN DRAINAGE COLLECTOR PIPE' is shown with a diameter of 750. The pipe is partially filled with a dark substance. Above the pipe, a 'WEARING COAT' is shown with a thickness of 100. The distance between the deck slab and the pipe is labeled 'VARIES'. The bottom of the diagram shows a hatched area representing the ground or foundation.

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT	CONSULTANT:	Project	
A	31.01.25	FORMAL SUBMISSION	 GOVERNMENT OF KARNATAKA  GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  Geoconsult India Private Limited a15, 4th Floor, Cyber Rang Road JP Nagar 8th Phase Bangalore, Karnataka 560078 India	DRAFT PROJECT REPORT Designed: SDH Drawn: MGS Checked: SDH Approved: PSI Scale :- 1:50 Sheet size: A1	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRR junction" Drawing Title TYPICAL DETAILS OF DRAINS Drawing No. RC/M640/HO/HEB/TTP/UDWVG/GENALG/113/A



NOTES:

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SCALE 1:100



FOR DPR SUBMISSION

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAWING TITLE
A	30.01.25	FORMAL SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Rudra India #31, 4 th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560078 India	DRAFT PROJECT REPORT	CUT AND COVER SHAFT SECTION, TEMPORARY WORKS WITH SECANT PILES AND ROCK SLOPE
					Scale :- 1:100 Sheet size: A1	RC/1640/HQ/HBT/TU/DWG/CC/SUP/506/A

SUPPORT DESIGN AND MONITORING

Amalendu, Adar, Robo, Pradono, Ganesha

1. INSTRUMENTATION AND ITS MONITORING TO ALL ADJACENT EXISTING BUILDING STRUCTURES (EBS), UTILITIES, SERVICES, PAVEMENT, ROAD FURNITURE SHALL BE START AT LEAST 15 DAYS BEFORE EXCAVATION WORK TO ESTABLISH STABLE BASE LINE TRENDS IN READING.
2. ALL INSTRUMENTATION TO BE MAINTAINED THROUGHOUT CONSTRUCTION PERIOD AND IMMEDIATELY REPLACED /REINSTATED IF DAMAGED/DEFECTIVE OR COVERED PERMANENTLY, DEEMED CRITICAL TO THE WORKS
3. THE FREQUENCY OF MONITORING WILL BE VARIED DEPENDING ON THE TYPE OF INSTRUMENT AND THE RELATIONSHIP BETWEEN THE INSTRUMENT AND AREAS OF CURRENT ACTIVITY.
4. VIBRATION MONITORING WITH INITIAL CALIBRATION WILL BE CARRIED OUT ON SELECTED STRUCTURES WHERE THE CONSTRUCTION ACTIVITY IS LIKELY TO RESULT IN VIBRATIONS. THE VIBRATION MONITORING REQUIREMENT WILL BE ESTABLISHED DURING INITIAL STAGES OF THE SPECIFIC CONSTRUCTION ACTIVITIES, WHICH MAY CAUSE VIBRATION TO EXCEED THE ACCEPTABLE LIMITS.
- (a) THE VIBRATION WILL BE MONITORED FOR BUILDING NEAR TO CUT AND COVER STATION DURING DIAPHRAGM WALL OPERATION/PIILING OPERATION /EXCAVATION ACTIVITY.
- (b) THE VIBRATION WILL BE MONITORED FOR THE MODERATE / SEVERE / VERY SEVERE BUILDINGS OR BUILDINGS HIGHER THAN B+G+2 OR G+3 AND WITHIN 5mm CONTOUR OR LOCATED DIRECTLY ABOVE THE TBM TUNNEL.
- (c) THE VIBRATION WILL BE MONITORED MIXED FACE CONDITION IS ENCOUNTERED DURING TBM TUNNELING.
5. VIBRATION MONITORING SHALL BE CARRIED OUT BY PLACING SENSORS ON THE GROUND FLOOR AND THE HIGHEST FLOOR OF THE BUILDING. IN ADDITION, IF A BUILDING HAS MORE THAN 4 FLOORS, VIBRATION SENSORS SHALL BE INSTALLED ON EVERY FOURTH FLOOR. VIBRATION MONITORING INSTRUMENTS SHALL MEET THE REQUIREMENTS SPECIFIED IN BS 5228-2 2009.
6. SUFFICIENT NUMBER OF DEEP LEVELING DATUM SHOULD BE INSTALLED BEFORE THE START OF ANY MONITORING WORKS. THE LOCATION OF THE DEEP LEVELING DATUM SHOULD BE OUTSIDE THE ZONE OF INFLUENCE OF THE WORKS AND MUST BE ACCEPTED BY THE DESIGNER.
7. PRIOR TO THE START OF ANY EXCAVATION WORKS ON SITE, A SATISFACTORY SET OF BASE READINGS COMPRISING THE MEAN OF AT LEAST THREE SEPARATE INDEPENDENT SURVEYS WILL BE OBTAINED FOR ALL MONITORING POINTS. EACH SURVEY SHALL BE TIED TO THE REFERENCE DEEP LEVELING DATUM.
8. AT LEAST 15% OF ALL STRUTS WILL BE MONITORED FOR LOAD USING STRAIN GAUGES. LOAD CELL SHALL BE APPLICABLE WHEREVER THERE IS A PRELOADING ON THE STRUTS. WHERE STRAIN GAUGES ARE USED, A MINIMUM OF TWO STRAIN GAUGES COUPLED WITH TEMPERATURE SENSOR WILL BE INSTALLED AT EACH MONITORING LOCATION. AT LEAST 5% OF GROUND ANCHORS WILL BE MONITORED FOR LOAD USING LOAD CELL. THE STRUT AND ANCHOR MONITORING LOCATION SHOULD BE SELECTED SO THAT:
- STRUTS/ANCHOR OF ALL LEVELS AT THE SELECTED LOCATIONS IS MONITORED.
 - THE STRUT/ANCHOR MONITORING LOCATION COINCIDES APPROXIMATELY WITH MONITORING ARRAY.
9. MAJOR UTILITIES LIKE WATER PIPELINE OF MORE THAN 600MM DIAMETER OR SEWER LINE IN THE MONITORING ZONE WHETHER SUPPORTED OR NOT, WILL BE MONITORED USING SURFACE SETTLEMENT POINT PLACED ON OR IMMEDIATELY ABOVE THE UTILITY AT INTERVALS NOT MORE THAN 25M.
10. BUILDING SETTLEMENT POINT WILL BE PROVIDED ON HERITAGE STRUCTURES/HISTORIC BUILDINGS AT GROUND LEVEL AND EXTEND THROUGHOUT THE AREA WHERE PREDICTED MOVEMENTS ARE EXPECTED TO EXCEED 5 MILLIMETRES. SPECIAL ATTENTION NEEDS TO GIVE FOR EXISTING WELLS ON THE TUNNEL ALIGNMENT.
11. SURFACE SETTLEMENT POINT/PRECISE LEVELING STUDS (ROAD NAILS) WILL BE INSTALLED IN HIGHWAY AND PAVEMENT AREAS IN ARRAY AT 90 DEGREES TO THE TUNNEL ALIGNMENT, THESE ARRAYS WILL EXTEND TO THE OUTER EDGES OF THE 5 MILLIMETRES PREDICTED SETTLEMENT CONTOURS LINES. SUITABLE MONITORING POINTS WHICH CANNOT BE READILY DISTURBED WILL BE INSTALLED OVER OPEN/PARK AREAS. THE LOCATION AND TYPE OF SUCH MONITORING POINTS WILL BE AGREED WITH THE EMPLOYER'S REPRESENTATIVE.
12. THE ARRAY CAN BE SUITABLY MODIFIED OR MORE INSTRUMENTS CAN BE INCLUDED AS PER SITE CONDITIONS NEAR THE STATION AND BORED TUNNEL SECTIONS, IF REQUIRED.
13. THE MINIMUM MONITORING ZONE FOR THE BUILDINGS WILL EXTEND TO THE OUTER EDGES OF THE 5MM PREDICTED CONTOUR LINE.
14. PRECISE TOTAL STATION WITH 1" ANGULAR ACCURACY AND 1MM + 1.5PPM DISTANCE ACCURACY SHALL BE USED TO SURVEY 3D MONITORING TARGETS.THESE TARGETS SHALL BE MONITORED REGULARLY TO CHECK STABILITY.
15. PRECISE LEVELING EQUIPMENT COMPRISING AUTOMATIC DIGITAL LEVELS AND INVAR STAFF SHALL BE USED TO SURVEY THE DEEP LEVELING DATUM. THESE DEEP LEVELING DATUM SHALL BE MONITORED REGULARLY TO CHECK THEIR STABILITY.
16. ALL THE DATA FROM MONITORING INSTRUMENTS SHALL BE PROCESSED WITHIN 24HOURS AND MADE AVAILABLE TO THE RELEVANT AUTHORITY AND / OR THE EMPLOYER'S REPRESENTATIVE.
17. ALL INSTRUMENT SHALL BE CONNECTED TO DATA LOGGING EQUIPMENT WHERE POSSIBLE SO THAT MEASUREMENTS CAN BE TAKEN ON A CONTINUOUS 24 HOURS BASIS. DATA SHALL BE ACCESSIBLE VIA COMPUTER IN THE ENGINEERS SITE OFFICE. AN ALARM SYSTEM SHALL BE INCORPORATED IN TO THE COMPUTER NETWORK, WITH THE ALARM BEING ACTIVATED IF GAUGE READING EXCEED ANY OF AGREED ALERT ACTION AND ALARM LEVELS.
18. THE FREQUENCY OF MONITORING WILL BE REVISED DEPENDING ON THE CONSTRUCTION ACTIVITY AND THE PACE OF WORK. THE FOLLOWING GUIDELINES WILL BE USED WHEN DECIDING ON THE FREQUENCY OF MONITORING:
- MONITORING WILL BE REPEATED ON THE SAME DAY IF READINGS WERE CONSIDERED INCONSISTENT BY THE RELEVANT AUTHORITY.
 - IF THE READINGS SHOW SIGNIFICANT CHANGE, THE FREQUENCY OF MONITORING WILL BE INCREASED.
 - IF THERE IS AN UNDESIRABLE OCCURRENCE SUCH AS EXCESSIVE GROUND LOSS FOR BORED TUNNELS OR BASE HEAVE OR BASE BLOW OUT OR HIGH SEEPAGE IS DETECTED, THE FREQUENCY OF MONITORING WILL BE INCREASED.
19. MONITORING SHALL BEGIN PRIOR TO COMMENCEMENT OF WORK TO ENABLE INSTRUMENT BASE LINE VALUES TO BE DETERMINED ACCURATELY, AND SHALL CONTINUE UNTIL ALL MOVEMENTS AND DISTORTIONS TO THE GROUND AND EBS, AND CHANGES TO THE GROUNDWATER TABLE THAT MIGHT BE ATTRIBUTED TO THE WORKS, AS SHOWN BY THE MONITORING, HAVE EFFECTIVELY CEASED FOR A PERIOD OF THREE MONTHS.
20. DURING THE DETAIL DESIGN PHASE, IDENTIFYING OF STRUCTURES/SENSORS FOR REAL TIME MONITORING SHALL BE DONE BY CONTRACTOR WITH THE APPROVAL OF ENGINEER.
21. ALL INSTRUMENTATION AND MONITORING WORKS SHALL BE IN RIGOROUS ADHERENCE TO ACCEPTED FIELD WORKS PROCEDURES.
22. ALL EBS UNLESS NOTED OTHERWISE IF ANY PART OF A EBS FALLS WITH THE MONITORING ZONE THAT EBS SHALL BE MONITORED WITH:
- BUILDING SETTLEMENT POINTS, ONE EACH AT THE CORNERS OF THE EBS. TYPE OF POINTS TO BE INSTALLED -ON THE STRUCTURES SHALL BE ACCEPTABLE TO THE RELEVANT AUTHORITY.
 - 3D OPTICAL TARGET IN COLUMNS
 - TLT METRES
 - CRACKMETRES TO MEASURE EXISTING OR NEW CRACKS
23. ALL EXISTING PEDESTRIAN BRIDGES (UNLESS NOTED OTHERWISE) / FOOT OVER BRIDGE PILLARS IN THE MONITORING ZONE SHALL BE MONITORED WITH:
- MOVEMENT MONITORING POINTS, TYPE OF POINTS TO BE INSTALLED ON THE STRUCTURES MUST BE ACCEPTABLE TO THE RELEVANT AUTHORITY
 - 3D OPTICAL TARGET/TLT METER ON THE STRUCTURES.
24. ALL PRECISE LEVELING DATA SHALL BE CRITICALLY ANALYZED TO ELIMINATE SUPPLY OF INCORRECT, CONFUSED OR CONFLICTING INFORMATION.
25. PILE TOP/ DIAPHRAGM WALL TOP MOVEMENT SHALL BE MONITORED DURING EVERY EXCAVATION AND REFERENCE POINT SHALL BE NOTED BEFORE STARTING OF DEEP EXCAVATION.
26. ADDITIONAL DUMMY MS PIPE OF 150MM DIA SHALL BE EMBEDDED INSIDE CONCRETE AT EACH INCLINOMETER LOCATION, WHEN INSTALLING INSIDE THE D-WALL, IN CASE THE MAIN PIPE GET BLOCKED. PIPE SHOULD BE SEALED AT BOTH ENDS TO PREVENT CONCRETE ENTERING INSIDE.
27. CONTRACTOR SHALL :
- ADJUST INSTRUMENTATION MOUNTING DEVICES TO SUIT ACTUAL FIELD CONDITION WITH APPROVAL OF EMPLOYER/ENGINEER.
 - VERIFY THE LOCATIONS OF THE EXISTING STRUCTURES PRIOR TO INSTALLATION OF INSTRUMENTS.
 - HERITAGE AND SENSITIVE STRUCTURE TO BE MONITORED ON REAL TIME BASIS IF FOUND CRITICAL AS PER BUILDING DAMAGE ASSESSMENT CRITERIA.
- CUT & COVER:**
28. DURING SHAFT CONSTRUCTION, MONITORING METHOD OF EXISTING INDIAN RAILWAY LINE OR METRO LINE CROSSING SHALL BE USED WITH PRIOR APPROVAL OF CONCERNED AUTHORITY, WELL IN ADVANCE. INSTRUMENTS WITHIN OUTER EDGE OF 5mm SETTLEMENT CONTOUR LINE SHALL BE MONITORED DAILY UNTIL ONE WEEK. AFTER PERMANENT STRUCTURE IS CAST. WEEKLY MONITORING SHALL BE CARRIED OUT UNTIL 3 WEEKS CONSECUTIVE READINGS SHOW NO CHANGE.
- BORED TUNNEL:**
29. THE MONITORING FREQUENCY SHALL BE DOUBLED DURING THE TBM INITIAL DRIVE. THE INITIAL DRIVE DISTANCE IS FIRST 150 METERS OF TUNNELING.
30. THE FREQUENCY OF SURFACE MONITORING FOR THE BORED TUNNELS SHALL BE VARIED WITH RESPECT TO THE LOCATION OF THE TBM. THE FOLLOWING INDICATIVE FREQUENCY REPRESENTS THE MINIMUM REQUIRED.
- FOUR TIMES A DAY MONITORING 25m CIRCLE OF TBM CUTTER HEAD, WHEN TBM PASSING BENEATH EBS SUBJECT TO PERMISSION FROM LOCAL AUTHORITY.
 - TWICE A DAY MONITORING WITHIN 100 METERS BEHIND THE TBM AND 50 METERS IN FRONT OF CUTTER HEAD
 - ONCE A DAY BETWEEN 100 TO 300 METERS BEHIND THE TBM.
 - TWICE A WEEK BETWEEN 300 TO 500 METERS BEHIND THE TBM.
 - WEEKLY MONITORING 500 METERS BEHIND THE TBM.
31. WHERE THE TBM TUNNEL WILL PASS BENEATH EBS, THE MONITORING OF THOSE EBS AND OTHER INSTRUMENTS IN THESE AREAS WILL BE CARRIED OUT ON 6 -HOURLY BASIS WHEN TBM CUTTER HEAD IS WITHIN 25 METRES OF THOSE EBS.
32. THE FREQUENCY OF MONITORING SHALL BE REVISED DEPENDING ON THE CONSTRUCTION ACTIVITY AND THE PACE OF WORK. THE FOLLOWING GUIDELINES SHALL BE USED WHEN DECIDING ON THE FREQUENCY OF MONITORING:
- MONITORING SHALL BE REPEATED ON THE SAME DAY IF READINGS WERE CONSIDERED INCONSISTENT BY THE RELEVANT AUTHORITY.
 - IF THE READINGS SHOW SIGNIFICANT CHANGE, THE FREQUENCY OF MONITORING SHALL BE INCREASED.
 - IF THERE IS AN UNDESIRABLE OCCURRENCE SUCH AS EXCESSIVE GROUND LOSS FOR BORED TUNNELS OR BASE HEAVE OR BASE BLOW OUT IS DETECTED, THE FREQUENCY OF MONITORING SHALL BE INCREASED.
33. IN NO CASE SHALL THE MONITORING BE STOPPED UNTIL AT LEAST 3 MONTHS AFTER THE WORKS HAVE BEEN COMPLETED OR TILL 3 CONSECUTIVE READING SHOW NO CHANGE WHICHEVER IS LONGER. DECISION OF ANY MONITORING SHALL BE AGREED WITH THE ENGINEER.
- NATM TUNNEL:**
34. 3D TARGETS, WITH THE HELP OF PRECISE TOTAL STATION (REF NOTE 14) AND OFFICE SOFTWARE, GIVES REALISTIC ASSESSMENT OF THE DISPLACEMENT BEHAVIOR IN 3D OF TUNNEL SURFACE.
35. MULTIPOINT BOREHOLE EXTENSOMETER SHALL BE USED, WHEN REQUIRED, FOR DETERMINATION OF GROUND MOVEMENTS OUTSIDE OF THE EXCAVATED STRUCTURE.
36. RADIAL PRESSURE CELLS SHALL BE USED FOR MEASURING THE DEVELOPMENT OF GROUND PRESSURE ACTING ON THE TUNNEL LINING. LARGE SIZE (300mmX300mm) PRESSURE CELL SHALL BE USED FOR BETTER RESULT. READING SHALL BE TAKEN IN A REMOTE CONTROLLED MANNER WITH ELECTRICAL TRANSDUCERS.
37. STRAIN METER SHALL BE USED FOR DETERMINATION OF THE STRESS DEVELOPMENT IN THE SPRAYED CONCRETE BY MEASURING STRAINS. THEY SHALL BE INSTALLED IN PAIRS TO ALLOW A DETERMINATION OF SECTIONAL FORCES SUCH AS NORMAL THRUST AND BENDING MOMENTS. STRAIN METERS SHALL BE TEMPERATURE COMPENSATED TO COMPENSATE FOR TEMPERATURE INCREASE OF THE SPRAYED CONCRETE DURING HARDENING PROCESS.
38. FREQUENCY OF MONITORING CAN BE ENVISAGED FOR EACH MONITORING SECTION AS FOLLOWS:
- 1st WEEK: DAILY
 - 2nd WEEK: TWICE A WEEK
 - 3rd & 4th WEEK: ONCE PER WEEK
 - LATER: MONTHLY AND BI-MONTHLY
 - WHEN BENCH IS APPROACHING INSTRUMENTATION SECTION INSTALLED DURING TOP HEADING, READING FREQUENCIES SHALL BE INCREASED AGAIN
 - ACTUAL FREQUENCY OF READING WILL HOWEVER BE INFLUENCED BY THE CONSTRUCTION STAGE, MONITORING RESULT MAY CHANGE DURING CONSTRUCTION ACCORDING TO OBSERVATION APPROACH.
 - MONITORING FREQUENCY MAY INCREASE DEPENDING ON THE ACCESSIBILITY OF SITE.
39. DATA OF THE OPTICAL TARGETS DISPLACEMENT MONITORING SHALL BE PROCESSED ON THE SAME DAY AND PLOTS SHALL BE AVAILABLE AT LATE AFTERNOON FOR ASSESSMENT BY THE ENGINEER.

VIBRATION MONITORING:

MAXIMUM PERMISSIBLE PEAK PARTICLE VELOCITIES AT EXISTING BUILDING STRUCTURES		
S.NO	TYPES OF EBS	MAXIMUM ALLOWABLE PEAK PARTICLE VELOCITIES (IN MM/SEC) AT EBS
1	MOST STRUCTURES IN GOOD CONDITION (NEGUGIBLE & VERY SLIGHT)	25
2	MOST STRUCTURES IN FAIR CONDITION OCCUPANTS (SLIGHT & MODERATE)	12
3	MOST STRUCTURES IN POOR CONDITION (SEVERE & VERY SEVERE)	5
4	WATER SUPPLY STRUCTURES	5
5	HERITAGE STRUCTURES/BRIDGE STRUCTURES	5

ABOVE LIMITS ARE MAXIMUM PERMISSIBLE, HOWEVER THIS MAY HAVE TO RESTRICTED FURTHER IF REQUIRED TO AVOID DAMAGE TO THE ADJACENT EBS OR CAUSING DISCOMFORT TO THE OCCUPANTS, ALONG THE PROPOSED ALIGNMENT. OTHER LIMITATIONS MAY BE IMPOSED AT ADJECENT EBS, SUCH AS HOSPITALS, SCHOOL BUILDINGS, TELEPHONE-EXCHANGE STRUCTURES, SPECIAL WATER-SUPPLY STRUCTURES AND HERITAGE STRUCTURES ETC. IN ADDITION, WORKING HOURS FOR SUCH EQUIPMENT CAUSING VIBRATIONS MAY HAVE TO RESTRICTED, KEEPING THE CONVENIENCE AND COMFORT OF THE OCCUPANTS IN MIND.

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
R0	SEPT 24	DRAFT SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT INDIA PRIVATE LIMITED 4th Floor, Chaitanyo Building Shri Ram Nagar, 1st Phase, Bangalore, Karnataka 560078 India	Designed: SKC Drawn: ZHU Checked: PMU Approved: PSI Scale: AS SHOWN Sheet size: A1	Project Drawing Title Drawing No.	GENERAL NOTES-INSTRUMENTATION AND MONITORING RC/1640/HO/HBTU/DWG/MON/GEN/801/R0

REVIEW LEVELS

THERE ARE THREE REVIEW LEVELS AS PER CONTRACT.

1. ALERT LEVEL
2. ACTION LEVEL
3. ALARM LEVEL

THE ALERT LEVEL IS A READING AT A PREDETERMINED LEVEL PRIOR TO THE ACTION LEVEL AND ALARM LEVEL. THE ALERT LEVEL IS 50% OF THE PREDICTED SERVICEABILITY VALUE DEFINED FOR MONITORED EBS / INSTRUMENT

THE ACTION LEVEL IS A READING AT A PREDETERMINED LEVEL AFTER THE ALERT LEVEL AND PRIOR TO ALARM LEVEL. THE ALARM LEVEL IS 80% OF THE PREDICTED SERVICEABILITY VALUE DEFINED FOR MONITORED EBS / INSTRUMENT.

THE ALARM LEVEL WILL BE SET AT THE 100% OF THE PREDICTED SERVICEABILITY VALUE DEFINED FOR MONITORED EBS / INSTRUMENT.

CHANGES MAY BE PROPOSED TO THE INITIAL VALUES SELECTED BASED ON THE SITE CONDITIONS AND REQUIREMENTS. CHANGES TO ALERT AND ALARM LEVELS WILL BE JUSTIFIED ON THE BASIS OF OBSERVED PERFORMANCE AND WILL BE SUBMITTED FOR THE ACCEPTANCE OF THE EMPLOYER.

ON REACHING AN "ALERT LEVEL" AT ANY LOCATION, A REPORT WILL BE PREPARED AND SUBMITTED TO THE EMPLOYER, REVIEWING ALL TOTAL AND DIFFERENTIAL MOVEMENTS / DISTORTIONS TO DATE. ASSESSMENT OF THE EFFECTS OF THE MOVEMENTS / DISTORTIONS ON THE MONITORING ELEMENTS AND PREDICTING FURTHER MOVEMENTS AND THEIR EFFECT ON MONITORED ELEMENTS BASED ON THE TREND TO DATE. IF THE MOVEMENT TREND INDICATES THAT "ACTION LEVEL" MAY BE REACHED DURING THE COURSE OF THE WORKS, THE REMEDIAL MEASURES TO LIMIT FURTHER MOVEMENTS WILL BE PROPOSED.

ON REACHING AN "ACTION LEVEL" AT ANY LOCATION, AN UPDATED REPORT WILL BE PREPARED AND SUBMITTED TO THE EMPLOYER, REVIEWING THE MOVEMENTS INCLUDING DIFFERENTIAL MOVEMENT AND DISPERSIONS THE REPORT WILL ASSESS THE EFFECTS ON MONITORED ELEMENTS AND PREDICT FURTHER MOVEMENTS AND THEIR SUBSEQUENT EFFECT ON MONITORED ELEMENTS. THE REPORT WILL ALLOW FOR REMEDIAL WORKS THAT HAVE BEEN IMPLEMENTED AND SHOWN TO BE EFFECTIVE. IN ADDITION REVISED "ALERT LEVEL" AND "ACTION LEVEL" VALUES WHICH TAKE INTO ACCOUNT THE IMPLEMENTED REMEDIAL WORKS. THE REPORT DETAILING THE FULL HISTORY OF MOVEMENTS AND REMEDIAL MEASURES ADOPTED IN RELATION TO THE ACTUAL CONSTRUCTION SEQUENCE.

ON REACHING AN "ALARM LEVEL" ALL WORK WILL BE SUSPENDED WITHIN 30 METERS OF THE INSTRUMENT. A REPORT WILL BE PROVIDED TO THE EMPLOYER DETAILING THE FULL HISTORY OF MOVEMENTS AND AN INTERPRETATION OF EVENTS.

MONITORING DIFFERENTIAL SETTLEMENT FOR EBS AND TRIG ACTIONS ACCORDING TO FOLLOWING :-

ANGULAR DISTORTION	ACTION
1 IN 1000	ALERT
1 IN 625	ACTION
1 IN 500	ALARM WORK SUSPENSION AND REASSESSMENT

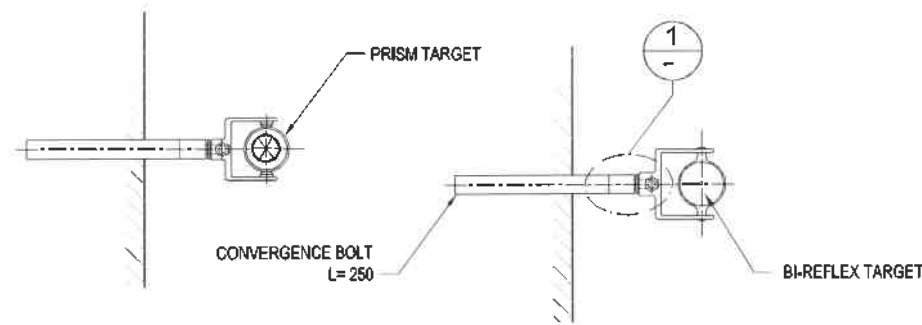
AAA LEVEL VALUE APPROVAL SHALL BE TAKEN FROM CONCERNED AUTHORITY WHEN CROSSING EXISTING INDIAN RAILWAY LINE OR METRO LINE

PROPOSED MONITORING FREQUENCY FOR DIFFERENT INSTRUMENTS

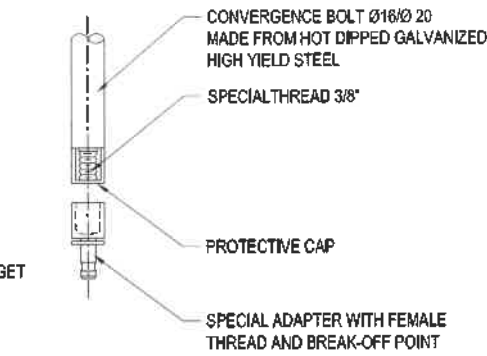
SL. NO.	TYPE OF INSTRUMENT	SYMBOL	15 DAYS PRIOR TO EXCAVATION	DURING EXCAVATION	COMPLETION OF PERMANENT WORKS	SHALL CONTINUE UNTIL ALL SETTLEMENTS HAS EFFECTIVELY STOPPED FOR A PERIOD OF THREE MONTHS
1	INCLINOMETER		WEEKLY	DAILY	WEEKLY	MONTHLY
2	STAND PIPE		WEEKLY	DAILY	WEEKLY	MONTHLY
3	VIBRATING WIRE (VW) PIEZOMETER		WEEKLY	DAILY	WEEKLY	MONTHLY
4	SURFACE SETTLEMENT POINT		WEEKLY	DAILY	WEEKLY	MONTHLY
5	BUILDING SETTLEMENT POINT		WEEKLY	DAILY	WEEKLY	MONTHLY
6	3D OPTICAL TARGET		WEEKLY	DAILY	WEEKLY	MONTHLY
7	TILT PLATE/METER		WEEKLY	DAILY	WEEKLY	MONTHLY
8	CRACK METER		WEEKLY	DAILY	WEEKLY	MONTHLY
9	EXTENSOMETER MPBX-3POINT		WEEKLY (IF FROM OUTSIDE)	DAILY	WEEKLY	MONTHLY
10	LOAD CELL (STRUTS)		WEEKLY	DAILY	WEEKLY	MONTHLY
11	LOAD CELL (ROCKBOLT/ANCHOR)		WEEKLY	DAILY	WEEKLY	MONTHLY
12	STRAIN GAUGE (STRUTS)		-	DAILY	WEEKLY	MONTHLY
13	STRAIN GAUGE (SPRAYED CONCRETE)		-	DAILY	WEEKLY	MONTHLY
14	RADIAL PRESSURE CELL		-	DAILY	WEEKLY	MONTHLY
15	VIBRATION SENSOR		-	DAILY	-	MONTHLY
16	HEAVE STAKE		-	DAILY	WEEKLY	-

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT:	DRAFT PROJECT REPORT		Project	
R0	SEPT 24	DRAFT SUBMISSION	 GOVERNMENT OF KARNATAKA	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Designed: SKC Drawn: ZHU Checked: PRA Approved: PSI Scale :- AS SHOWN Sheet size: A1		Drawing Title	“Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction”
			 GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 GLOCOMBUREAU PRIVATE LIMITED 401/100, 5th Floor, Phase - 1, Road 15, Silk Board Metro Station Sector 28, Gurgaon (Haryana) INDIA	R164/0/HO/HBTU/DWG/MON/GEN/802/R0 560078 India		Drawing No.	GENERAL NOTES-INSTRUMENTATION AND MONITORING

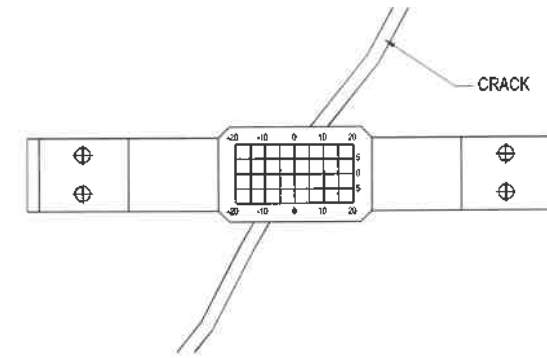
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT  GOVERNMENT OF KARNATAKA  GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	CONSULTANT:  RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  GEOCONSULT INDIA PRIVATE LIMITED 415, 4th Floor, Outer Ring Road JP Nagar 5th Phase Bengaluru, Karnataka 560078 India <i>Fluidex</i>	DRAFT PROJECT REPORT		Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
					Designed: SAC Drawn: Zhu Checked: PMH Approved: PSI	Scale :- AS SHOWN Sheet size: A1	Drawing Title Drawing No.	GENERAL - INSTRUMENTATION AND MONITORING - TYPICAL DETAILS RC/1640/HO/HBT/TU/DWG/MON/GEN/803/R0



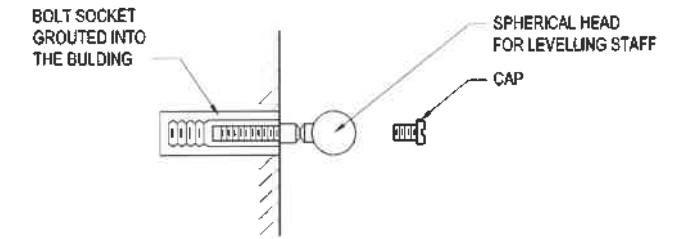
3D OPTICAL MONITORING
NOT TO SCALE



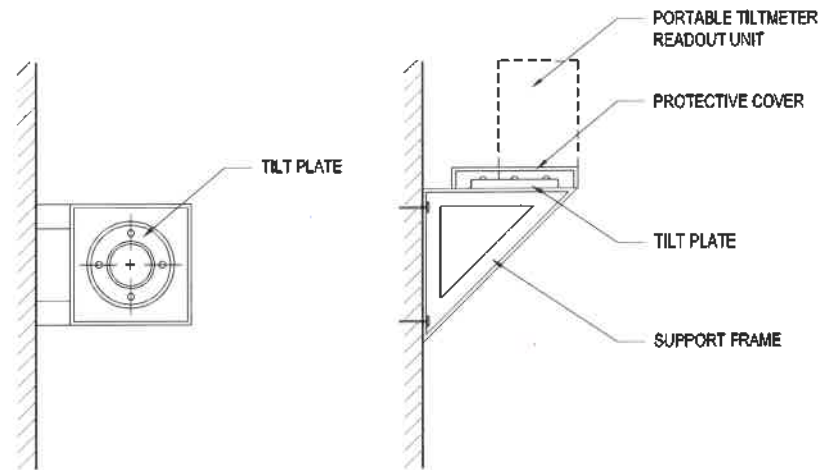
DETAIL 1
NOT TO SCALE
CONVERGENCE BOLT



CRACK METER
NOT TO SCALE

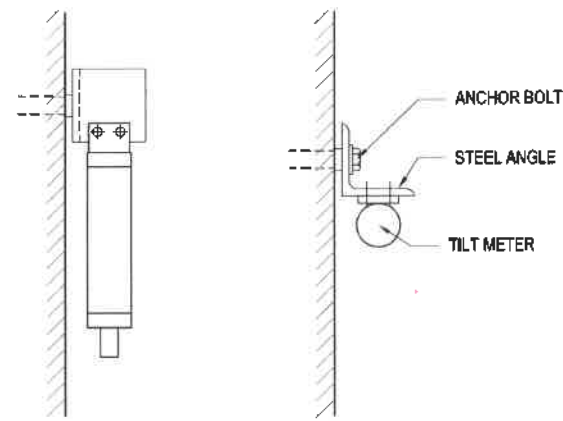


REMOVABLE MEASURING POINT
NOT TO SCALE



PLAN VIEW

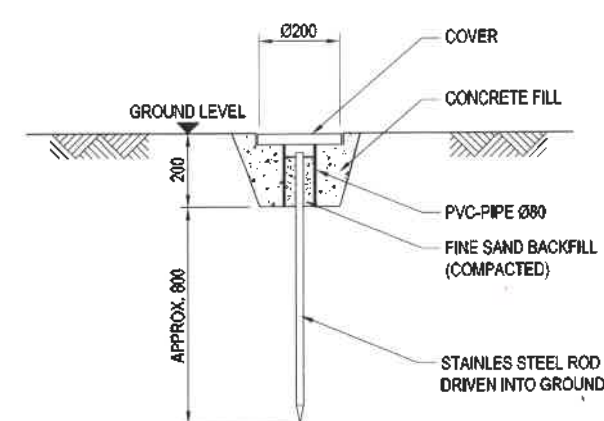
SECTION



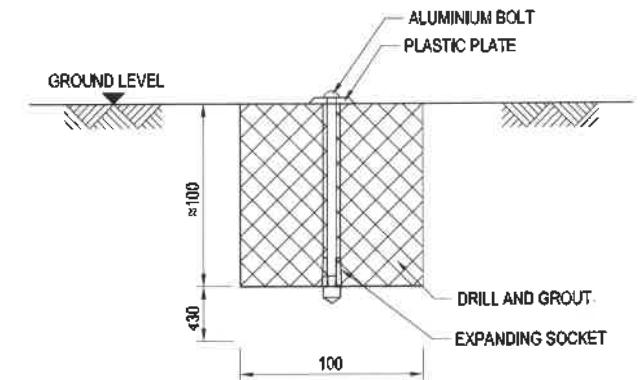
SIDE VIEW

PLAN VIEW

ELECTRONIC TILTMETER
NOT TO SCALE

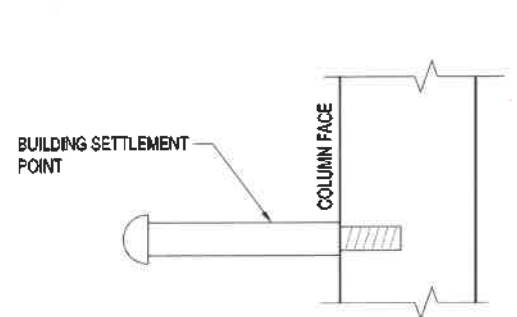


SURFACE SETTLEMENT MARKER
NOT TO SCALE
SHALLOW SUBSURFACE DATUM/SOIL SURFACE



SURFACE SETTLEMENT MARKER
NOT TO SCALE
PAVED/CONCRETE SURFACE

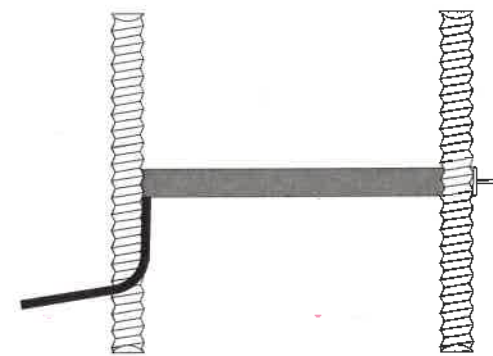
PORTABLE TILTMETER
NOT TO SCALE



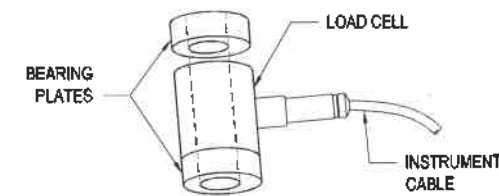
BUILDING SETTLEMENT POINT
NOT TO SCALE



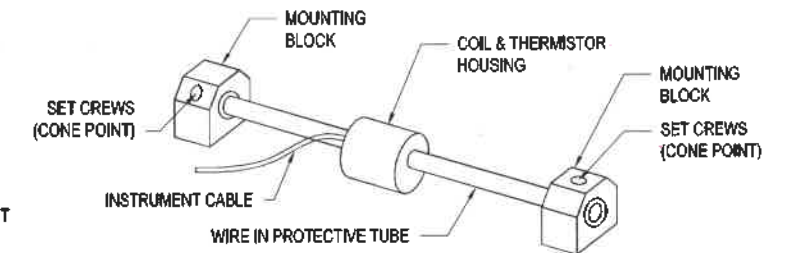
LOAD CELL
NOT TO SCALE



STRAIN GAUGE
NOT TO SCALE



CENTRE HOLE LOAD CELL
NOT TO SCALE



SPOT WELDABLE STRAIN GAUGE (VW) STRUTS
NOT TO SCALE

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

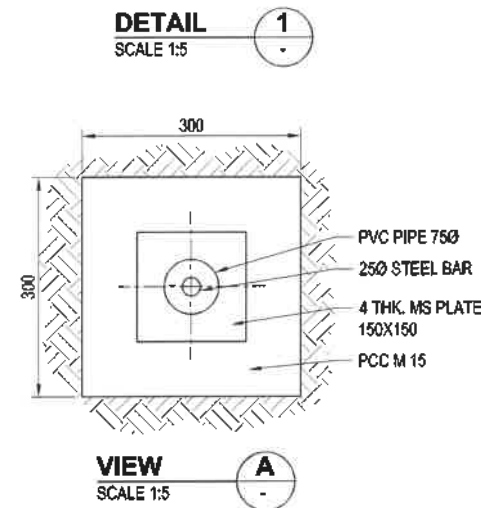
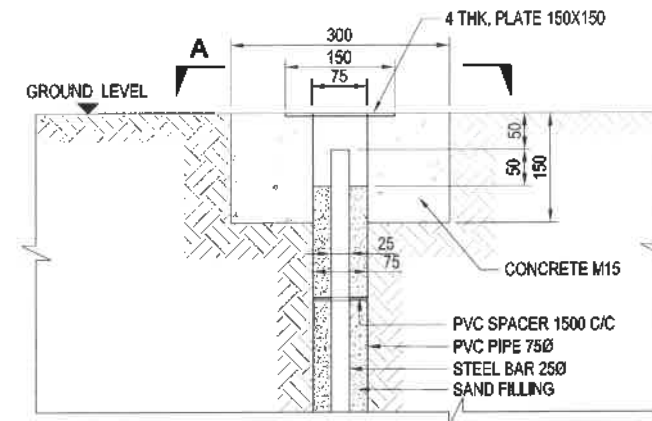
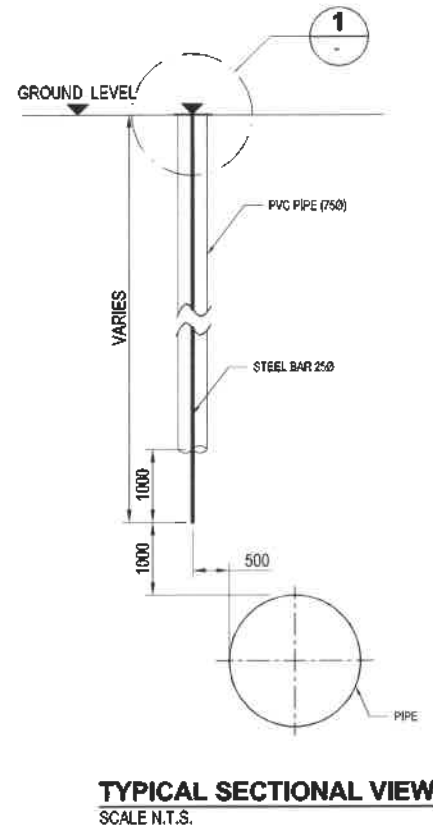
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DESIGNED	CHECKED	APPROVED	SCALE	SHEET SIZE	DRAWING TITLE	DRAWING NO.
R0	SEPT 24	DRAFT SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT INDIA PVT. LTD. 401/04 WeWork, Plasma Tower 303 Road Near Shreeganga Micro Saver Center 28, Ganga Mall, Mysore - 570018	DRAFT PROJECT REPORT	SKC	Zhu	PSI	AS SHOWN	A1	GENERAL - INSTRUMENTATION AND MONITORING - TYPICAL DETAILS	RC/1640/HO/HBT/TU/DWG/MON/GEN/804/R0

MINIMUM NUMBERS OF INSTRUMENTS FOR EBS*						
STRUCTURE TYPE IDENTIFICATION	DESCRIPTION	BUILDING SETTLEMENT POINT	TILT PLATE / METER	CRACK METER	VIBRATION SENSOR	3D OPTICAL TARGET
S3	EBS IS IN POOR / FAIR CONDITION	8	4	AS REQ	AS REQUIRED	6
S4	EBS IS IN GOOD CONDITION	4	2	AS REQ		2

LEGEND:	
SYMBOL	DESCRIPTION / INSTRUMENTS TYPE
	BUILDING SETTLEMENT POINT
	TILT-PLATES
	TILT METERS
	3D OPTICAL TARGET
	CRACK METER

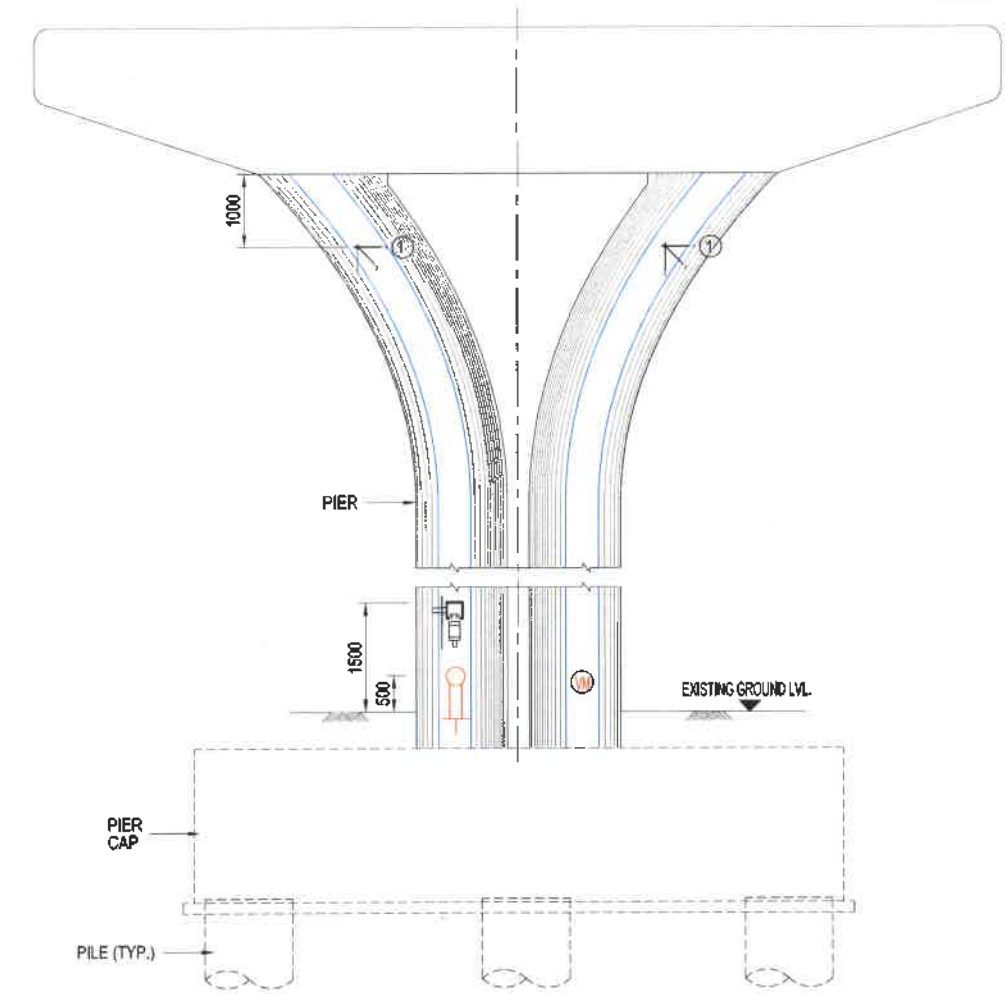
1. BUILDING FOOTPRINT SHOWN IN THE DRAWING IS TENTATIVE ONLY AND SHALL NOT BE MEASURED. ACTUAL DIMENSION SHALL BE AS PER SITE ASSESSMENT.
2. THE TOTAL NO. OF CRACK METERS TO BE INSTALLED AND ITS LOCATION SHALL BE DECIDED AT SITE.
3. BUILDING SETTLEMENT POINT, 3D OPTICAL TARGET AND TILT PLATE/METER ARE TO BE INSTALLED INTO BUILDING STRUCTURAL ELEMENTS.
4. POSITION OF 3D OPTICAL TARGET CAN BE ADJUSTED ACCORDING TO THE PREFERRED LOCATION OF TOTAL STATION.
5. EBS / UTILITY INSTRUMENTS CAN BE INCREASED AS PER MONITORING RESULTS / TREND, AS REQUIRED.

REVISION	DATE	AMENDMENT \ ISSUE DESCRIPTION	CLIENT  GOVERNMENT OF KARNATAKA  GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	CONSULTANT:  RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  GEOCONSULT INDIA PRIVATE LIMITED 8th Bldg Station, Phase-1, Tower-1, Road Near Sikanderpur Metro Station Sector 29, Gurgaon Haryana INDIA  Fluiddyn India #15, 4th Floor, Outer Ring Road #15 Nagar 6th Phase, Bengaluru, Karnataka 560078 India	DRAFT PROJECT REPORT		Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
R0	SEPT 24	DRAFT SUBMISSION			Design: SKC	Scale :- AS SHOWN	Drawing Title	GENERAL -INSTRUMENTATION AND MONITORING - TYPICAL EBS INSTRUMENTATION
					Drawn: Zhiu			
					Checked: PMS			
					Approved: PMS			
				Sheet size: A1	Drawing No.	RC/1640/HQ/HB/TU/DWG/MON/GEN/805/R0		



INSTALLATION SEQUENCE OF UTILITY SETTLEMENT MARKER

1. MARK THE LOCATION AND DEPTH OF UTILITY.
2. DRILL 750 BORE HOLES AT MONITORING LOCATION. INSTALL PVC PIPE CASING.
3. INSTALL 250 STEEL BAR DRIVEN 1.00m BELOW THE DRILL HOLE AND USING PVC SPACER @ 1.5m OR LESS BAR TOP SHALL BE ABOUT 50mm BELOW THE SURFACE.
4. BACKFILL THE PIPE WITH SAND.
5. INSTALL PCC BLOCK OF 300mmX300mmX150mm AT TOP.
6. INSTALL 4mm THICK PLATE FOR COVER AROUND THE CASING PIPE.



LEGEND:

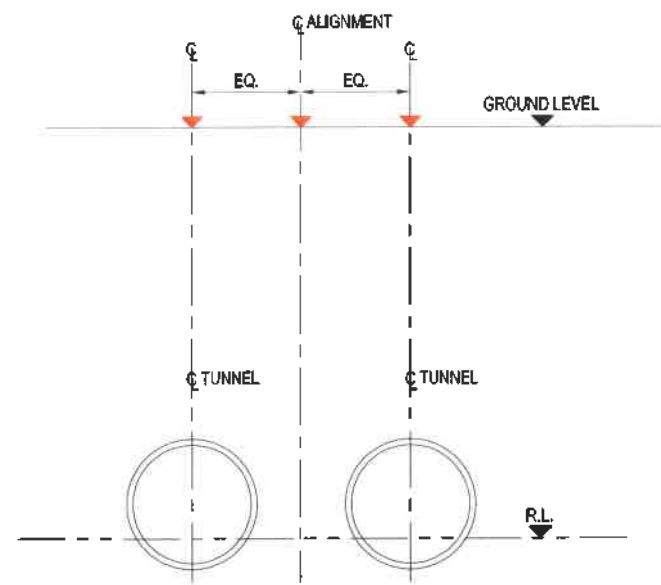
SYMBOL	DESCRIPTION / INSTRUMENTS TYPE
	BUILDING SETTLEMENT POINT
	TILT METERS
	VIBRATION METER
	3D OPTICAL TARGET

NOTES:

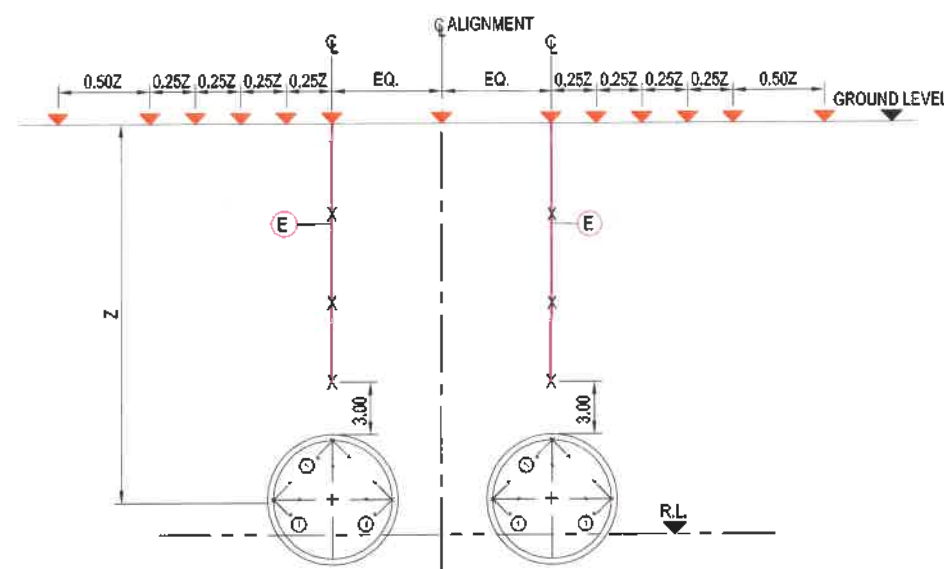
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS UNTIL SPECIFIED.
2. SEWER LINE UTILITY SETTLEMENT MARKER TO BE INSTALLED CLOSED TO MANHOLE COVER.
3. UTILITY SETTLEMENT MARKER AS SHOWN IN THE DRAWING CAN BE SHIFTED ALONG THE UTILITY TO MATCH WITH SITE CONDITION.
4. EBS / UTILITY INSTRUMENTS CAN BE INCREASED AS PER MONITORING RESULTS / TREND, AS REQUIRED.

SCALE 1:5
100mm 0 500mm

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	DRAFT PROJECT REPORT	Project	Drawing Title
RD	SEPT 24	DRAFT SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YAKA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) GEOCONSULT RITEGA PRIVATE LIMITED INDIRA NIKHIL, PUSPA, TOWER 303, TROD HUB Saket Nagar Metro Station Sector 28, Connaught Place, NEW DELHI	Designed: SKC Drawn: ZHU Checked: PMU Approved: PSI	Scale :- AS SHOWN Sheet size: A1	“Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction” GENERAL-INSTRUMENTATION AND MONITORING - TYPICAL ARRANGEMENT OF UTILITY AND PIER RC/1640/HO/HBT/TUDWG/MON/GEN/806/RD



MONITORING ARRAY FOR TUNNEL: TYPE - D
SCALE N.T.S

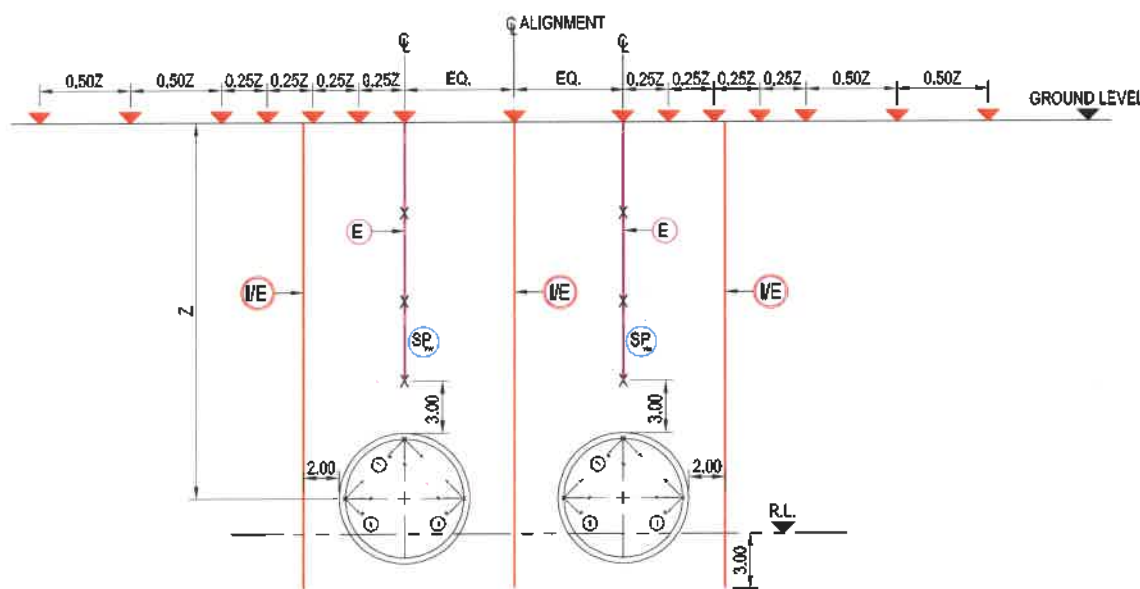


MONITORING ARRAY FOR TUNNEL: TYPE - E
SCALE N.T.S

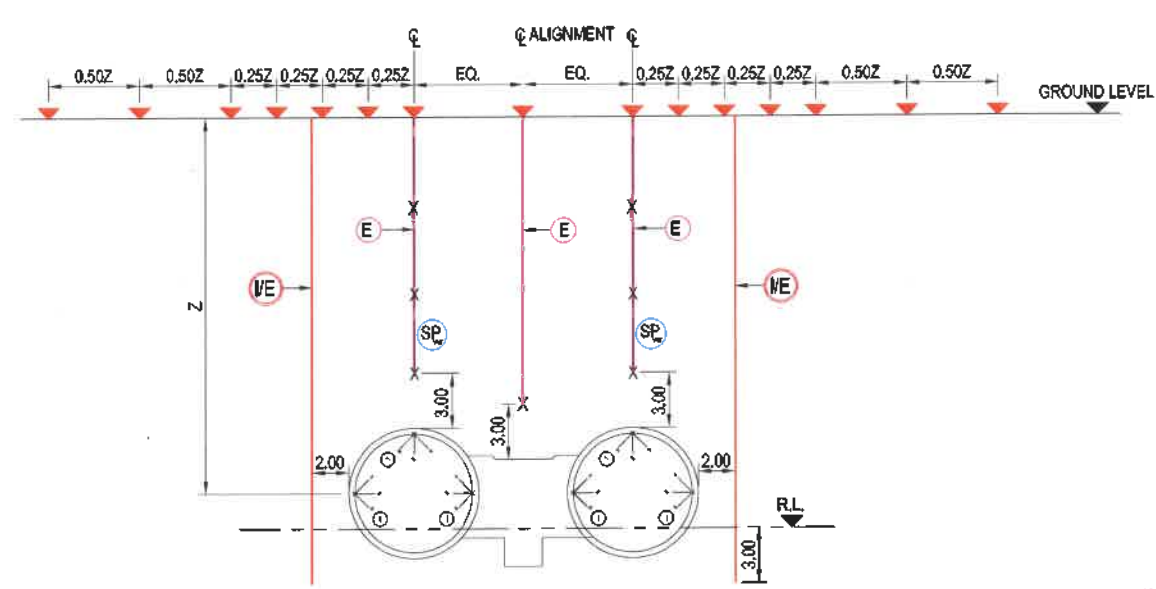
LEGEND:		
SL.	TYPE OF INSTRUMENT	SYMBOL
1.	DEPTH TO TUNNEL CENTRE AXIS	Z
2.	SURFACE SETTLEMENT POINT	X
3.	3D OPTICAL TARGET	⊕
4.	INCLINOMETER / EXTENSOMETER	VE
5.	EXTENSOMETER MPBX-3POINT	E
6.	VIBRATING WIRE (VW) PIEZOMETER	SP

MONITORING AND INSTRUMENTATION SCHEME AT TBM TUNNEL AND CROSS PASSAGES- MINIMUM REQUIREMENT
NOTE:

1. ALL DIMENSIONS ARE IN METRES; UNLESS NOTED OTHERWISE.
2. BORE HOLE FOR EXTENSOMETER SHOULD BE TERMINATED ABOUT 3m ABOVE THE TUNNEL CROWN.
3. 'D' ARRAY FOR EVERY 25m.
4. 'E' ARRAY FOR EVERY 250m.
5. 'F' ARRAY FOR EVERY 1000m.
6. ARRAY 'G' CORRESPOND TO CROSS PASSAGE MONITORING.
7. ACTUAL REQUIREMENT OF CERTAIN INSTRUMENTS SUCH AS PEIZOMETER, INCLINOMETER / EXTENSOMETER AND MPBX EXTENSOMETER WILL BE ESTABLISHED DURING INITIAL STAGES OF CONSTRUCTION ACTIVITY.



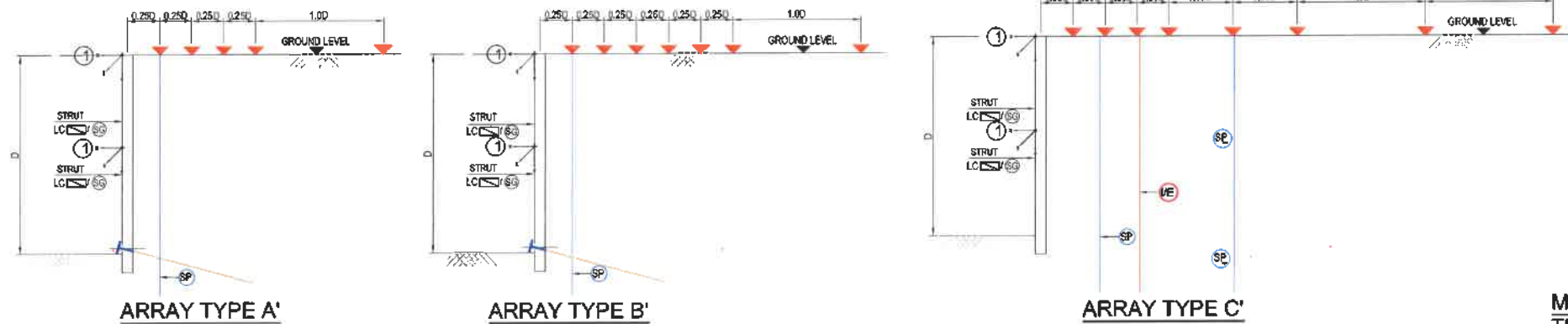
MONITORING ARRAY FOR TUNNEL: TYPE - F
SCALE N.T.S



MONITORING ARRAY FOR CROSS PASSAGE: TYPE-G
SCALE N.T.S

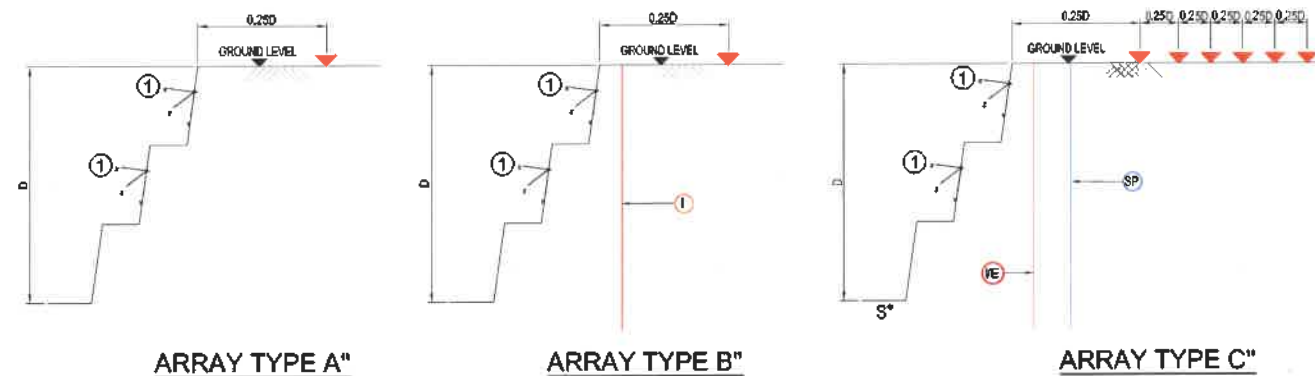
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT	PROJECT	DRAFT PROJECT REPORT
R0	SEPT 24	DRAFT SUBMISSION	GOVERNMENT OF KARNATAKA GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA) Fluidyn India #15, 4th Floor, Outer Ring Road JP Nagar 6th Phase Bengaluru, Karnataka 560078 India	Project	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
					Drawing Title	GENERAL - INSTRUMENTATION AND MONITORING - SECTIONS
					Drawing No.	RC/1640/HO/HBT/TU/DWG/MON/GEN/807/R0
					Scale :- AS SHOWN	
					Sheet size: A1	
					Designed: SKC	
					Drawn: ZHU	
					Checked: FIM	
					Approved: PSI	

1. ONE OF EACH ARRAY TYPE A OR A1 OR A2 SHALL BE SPACED EVERY 25m OF PERIMETER WALL OF CUT AND COVER SECTION.
2. AN AVERAGE OF ONE TYPE B ARRAY FOR EVERY 100m PERIMETER WALL OF CUT AND COVER SECTION.
3. AN AVERAGE OF ONE TYPE C ARRAY FOR EVERY 300m PERIMETER WALL OF CUT AND COVER SECTION.
4. TYPE 'B' AND TYPE 'C' ARRAY SHALL BE ADOPTED IN AREAS OF PERICULOUS CONCERN CONSIDERING NATURE AND SEQUENCE OF CONSTRUCTION AND ADJACENT EBS.
5. STRAIN GAUGE /LOAD CELL FOR STRUS AND LOAD CELL FOR ROCK BOLT/ANCHOR, AS APPLICABLE, ACCORDING TO CONSTRUCTION METHODOLOGY.



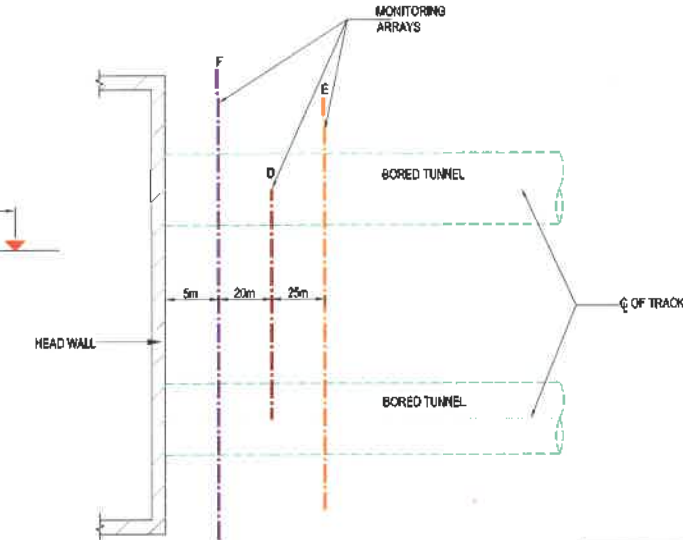
NOTE:

- ONE OF EACH ARRAY TYPE A' SHALL BE SPACED EVERY 25m OF PERIMETER WALL OF CUT AND COVER SECTION.
- AN AVERAGE OF ONE TYPE B' ARRAY FOR EVERY 100m PERIMETER WALL OF CUT AND COVER SECTION.
- AN AVERAGE OF ONE TYPE C' ARRAY FOR EVERY 300m PERIMETER WALL OF CUT AND COVER SECTION.
- TYPE B' AND TYPE C' ARRAY SHALL BE ADOPTED IN AREAS OF PERICULAR CONCERN CONSIDERING NATURE AND SEQUENCE OF CONSTRUCTION AND ADJACENT EBS.
- STRAIN GAUGE /LOAD CELL FOR STRUT AND LOAD CELL FOR ROCK BOLT/ANCHOR, AS APPLICABLE, ACCORDING TO CONSTRUCTION METHODOLOGY.



NOTE:

- ONE OF EACH ARRAY TYPE A* SHALL BE SPACED EVERY 25m OF PERIMETER WALL OF SLOPE.
- AN AVERAGE OF ONE TYPE B* ARRAY FOR EVERY 100 PERIMETER WALL OF SLOPE.
- AN AVERAGE OF ONE TYPE C* ARRAY FOR EVERY 300m PERIMETER WALL OF SLOPE.
- TYPE B* AND TYPE C* ARRAY SHALL BE ADOPTED IN AREAS OF PERICULAR CONCERN CONSIDERING NATURE AND SEQUENCE OF CONSTRUCTION AND ADJACENT EBS.
- MONITORING OF INSTRUMENTS TO BE DONE WHERE EXCAVATION DEPTH OF SLOPE IS 4m OR DEEPER FROM COMMENCING LEVEL.



**MONITORING ZONE AT EACH
TBM LAUNCH SHAFT / HEAD WALL**
(REFER DRAWING NO. MON/GEN/807 FOR ARRAY TYPES D, E AND F)

LEGEND:		
SL.	TYPE OF INSTRUMENT	SYMBOL
1.	DEPTH OF EXCAVATION	D
2.	SURFACE SETTLEMENT POINT	
3.	3D OPTICAL TARGET	
4.	INCLINOMETER / EXTENSOMETER	
5.	EXTENSOMETER MPBX-3POINT	
6.	VIBRATING WIRE (VW) PIEZOMETRE	
7.	LOAD CELL (STRUTS)	 LC
8.	STRAIN GAUGE (STRUTS)	
9.	HEAVE STAKE	S*
10.	STAND PIPE	
11.	INCLINOMETER	
12.	LOAD CELL (ROCK BOLT/ANCHOR)	

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	CONSULTANT:	DRAFT PROJECT REPORT	Project
R0	SEPT 24	DRAFT SUBMISSION	 GOVERNMENT OF KARNATAKA  GOVERNMENT OF KARNATAKA Bruhat Bangalore Mahanagara Palike	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)  GEOCONSULT INDIA PRIVATE LIMITED #15, 4th Floor, Outer Ring Road # Nagar 6th Phase Bengaluru, Karnataka 560078 India	DRAFT PROJECT REPORT Designed: SKC Scale :- AS SHOWN Drawn: ZHU Checked: PMU Approved: PSI Sheet size: A1	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRRP junction" Drawing Title RAMP AND CUT AND COVER-INSTRUMENTATION AND MONITORING - ARRAYS Drawing No. RC/1640/HQ/HBT/TUDWG/MON/GEN/808/R0

Appendix-B-IV

MECHANICAL ELECTRICAL & PLUMBING ENGINEERING

Handwritten signatures and text:
Signature: *Adar Rob*
Text: *Version 0.1*

ELECTRICAL & MECHANICAL DRAWINGS

S.Nr.	DRAWING NUMBER	REV.	DRAWING NAME
1		A	COVER PAGE_00
2	BBMP-EM-000	A	DRAWINGS LIST ELECTRICAL & MECHANICALWORKS
3	BBMP-EM-001	A	BBMP-ALIGNMENT LAYOUT WITH S/Sn
4	BBMP-EM-002	A	MAIN ELECTRICAL SCHEMATIC
5	BBMP-EM-003	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-1,2,7,& 8 (1695m.)
6	BBMP-EM-004	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-3,4,5,& 6 (1895m.)
7	BBMP-EM-005	A	ELECTRICAL SCHEMATIC FOR SUB-STATION- 9,& 10
8	BBMP-EM-006	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-11,13, & 15 IPG.EXIT, RG.EXIT-1,RC EXIT-2(1600m.)
9	BBMP-EM-007	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-14 (RC ENTRY)
10	BBMP-EM-008	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-16 (LB ENTRY & LB EXIT)(2196m.)
11	BBMP-EM-009	A	ELECTRICAL SCHEMATIC FOR SUB-STATION-12 (PG ENTRY) (1085m.)
12	BBMP-EM-010	B	MAIN TUNNEL LAYOUT OF 11/4.33KV. SUB-STATION
13	BBMP-EM-011	A	MAIN TUNNEL LAYOUT OF 11/4.33KV. NITCH SUB-STATION
14	BBMP-EM-012	A	33KV.SUB-STATION BUILDING VENTILATION SUB-STATION LAYOUT- 1,2,3,4 & 5
15	BBMP-EM-013	A	DG. BUILDING TYPE-1 & 2 VENTILATION SUB-STATION LAYOUT- 1,2,3,4 & 5
16	BBMP-EM-014	A	MAIN TUNNEL LIGHTING LAYOUT (Sheet-1/2)
17	BBMP-EM-015	A	TUNNEL AUTOMATION SYSTEM SCADA, SYSTEM ARCHITECTURE
18	BBMP-EM-016	A	MAIN TUNNEL GENERAL SCHEMATIC DIAGRAM FOR CCTV SURVEILLANCE SYSTEM
19	BBMP-EM-017	A	TYPICAL IP TELEPHONE,SOS & PUBLIC ADDRESS SYSTEM
20	BBMP-EM-018	A	TYPICAL CROSS SETION (Sheet-1/4)
21	BBMP-EM-019	A	SOS STATIONS EQUIPMENT (Sheet-1/2)

22	BBMP-EM-020	A	MAIN TUNNEL SIGNAGE LOCATION (Sheet-1/2)
23	BBMP-EM-021	A	MAIN TUNNEL CCTV. LOCATION (Sheet-1/2)
24	BBMP-EM-022	A	MAIN TUNNEL P.A SPEAKER LOCATION (Sheet-1/2)

FOR DPR PURPOSE ONLY

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SCALE 1:1000					DATE (DD/MM/YY) 01/01/2025					STATUS JAN-2025DPR			

CONSULTANCY SERVICES FOR PREPRATION OF DPR FOR THE WORK OF
CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM
MALL JUNCTION TO SILK BOARD KSRP JUNCTION

TUNNELS (E&M DESIGN)

DRAWINGS

DRAFT DPR SUBMISSION - JANUARY-2025

CLIENT:



BRUHAT BENGALURU
MAHANAGRA PALIKE

DPR CONSULTANT :



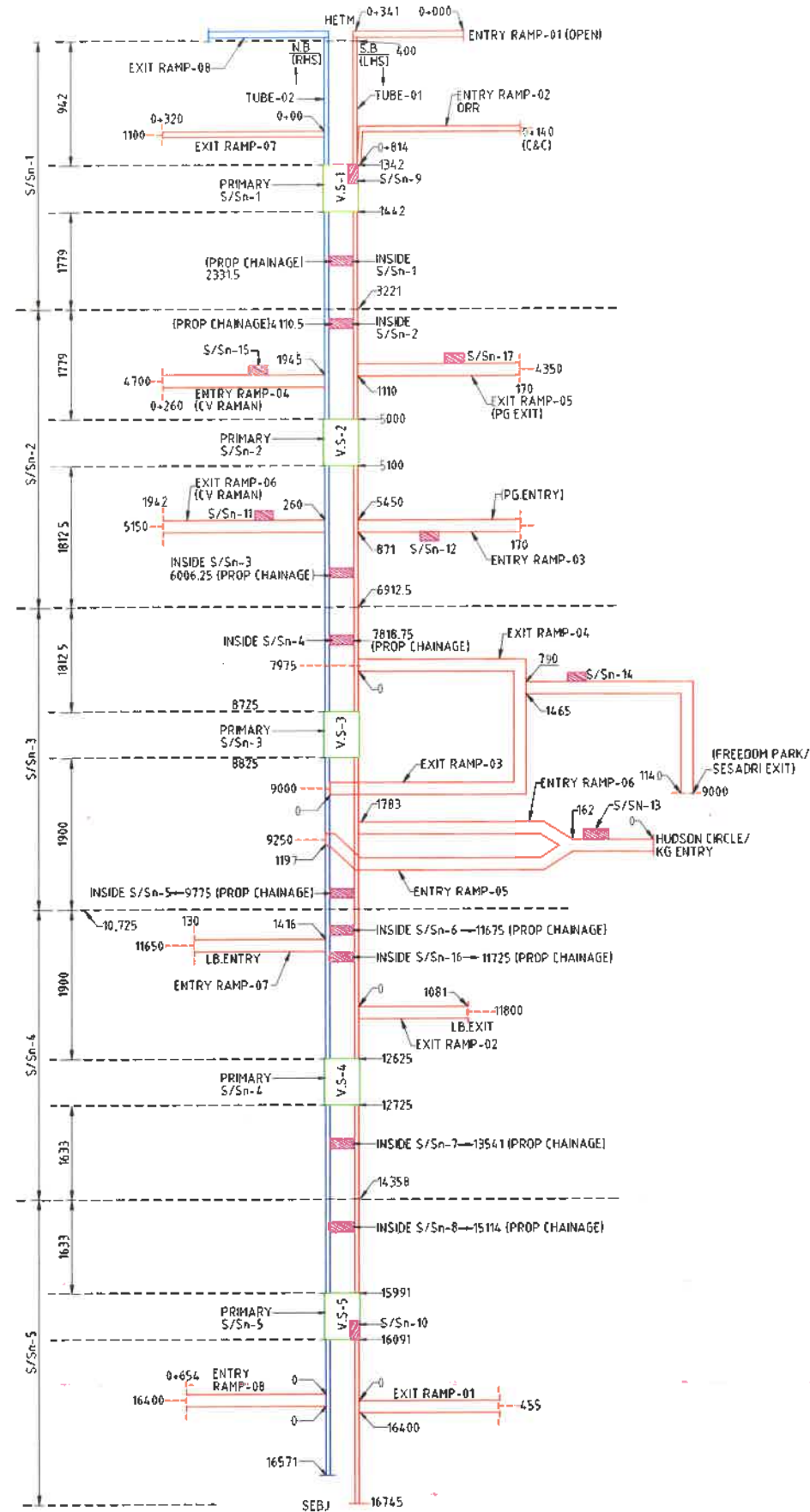
RODIC CONSULTANT PVT.LTD.

DESIGN CONSULTANTS :-



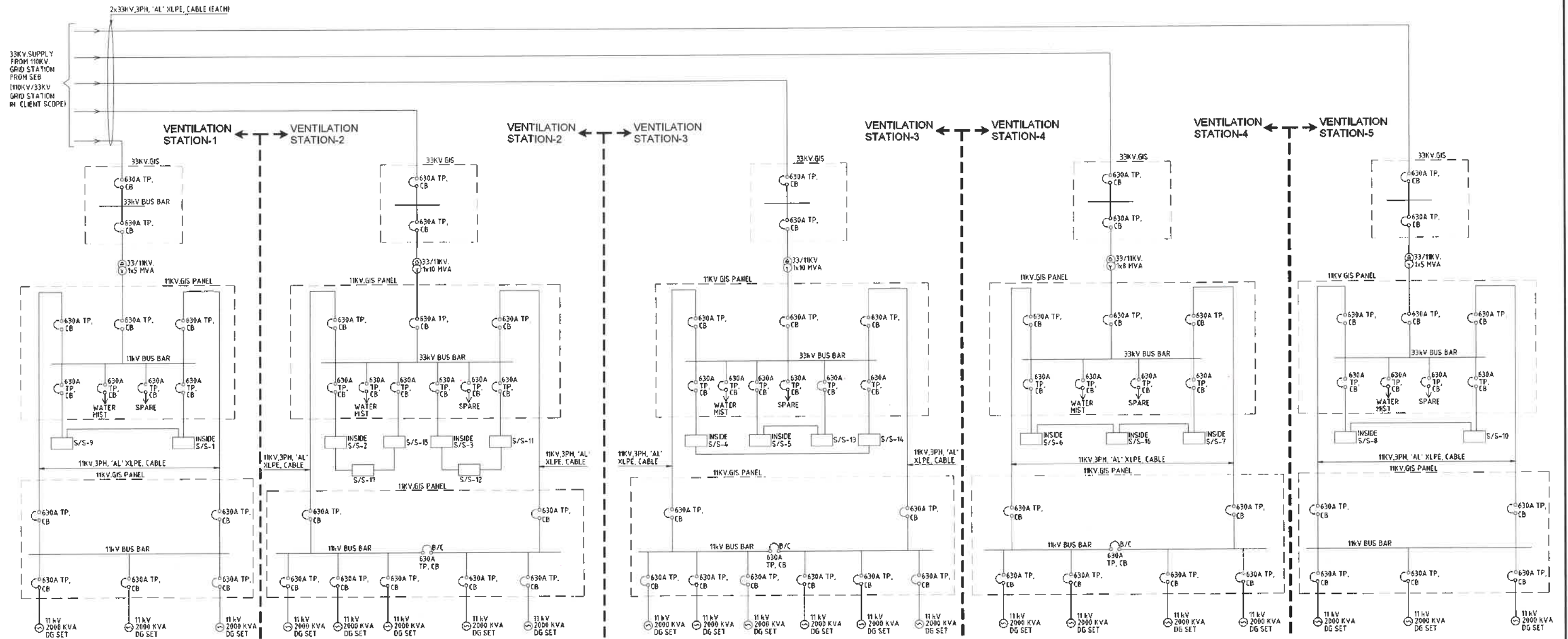
GEOCONSULT India Pvt. Ltd. -Rites Ltd.(JV)

[Handwritten signatures and initials in blue ink]



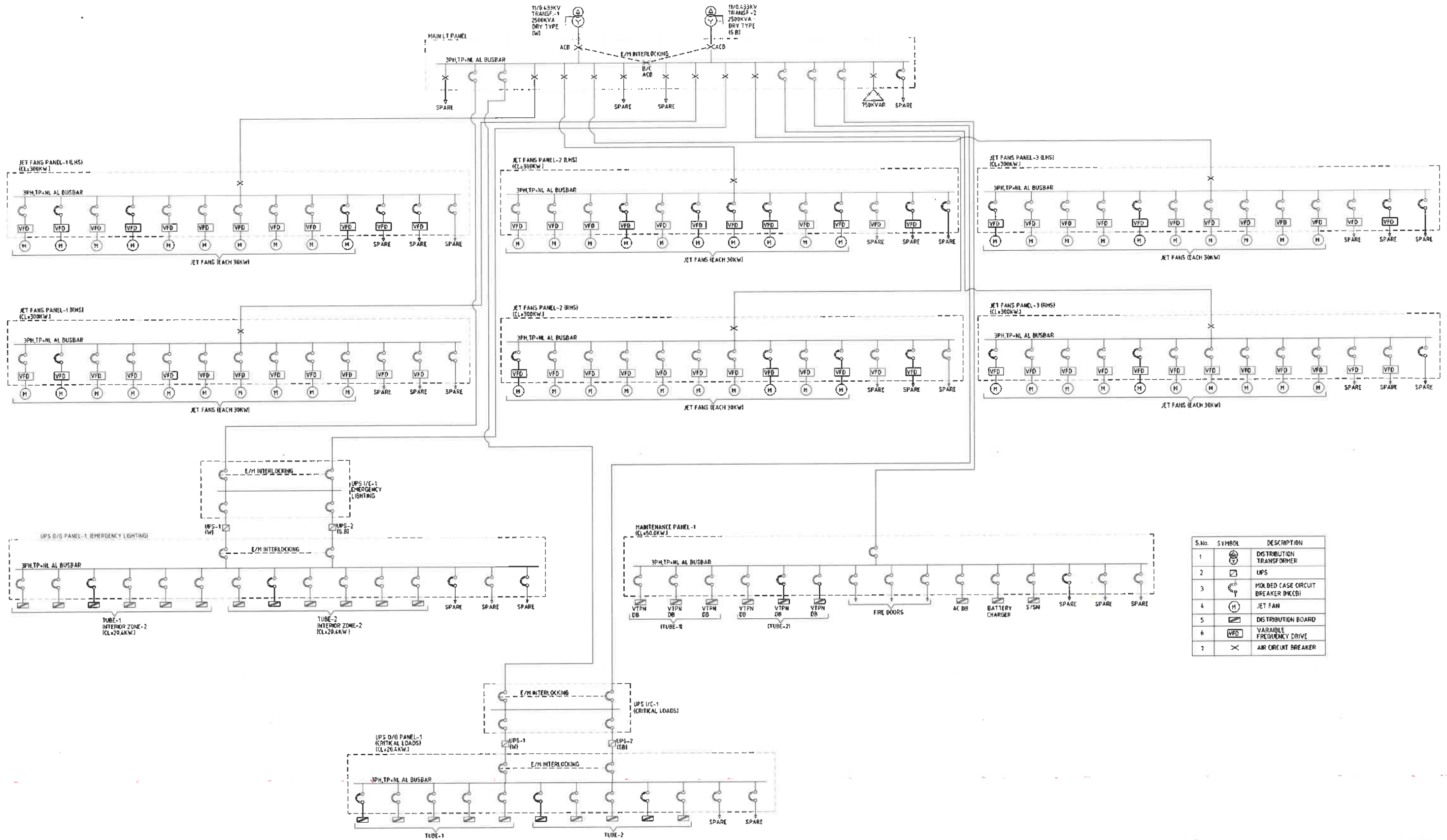
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												DRAWING TITLE	
												BBMP-ALIGNMENT LAYOUT WITH S/Sn	
	A	16.01.25	REVISED DRAWING			MR	MR	MR	Document Originators (First Issue)			PROJECT ID	
	O	23.09.24	FIRST SUBMISSION DPR			MR	MR	MR	This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Geoconsult India Pvt. Limited accepts no responsibility for this document to any other party other than the person by whom it was commissioned.			DRAWING NUMBER	
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												STATUS	
												16.01.25 DPR	



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									PROJECT TITLE CONSULTANCY SERVICES FOR PREPRATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION		DRAWING TITLE MAIN ELECTRICAL SCHEMATIC			
									PROJECT ID : I 40172		DRAWING NUMBER BBMP-EM-002		REV A	
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S.No.	SYMBOL	DESCRIPTION
1		DISTRIBUTION TRANSFORMER
2		UPS
3		MOLDED CASE CIRCUIT BREAKER (MCCB)
4		JET FAN
5		DISTRIBUTION BOARD
6		VARIABLE FREQUENCY DRIVE
7		AIR CIRCUIT BREAKER

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REFERENCE DRAWINGS

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REV.	DATE	DESCRIPTION	Drawn	Checked	Approved
A	16.01.25	REVISED DRAWING	HRa	HRa	ANA
D	16.10.24	FIRST SUBMISSION DPR	HRa	HRa	ANA
REV.	DATE	PARTICULARS	Drawn	Checked	Approved

QUALITY ASSURANCE

Date	16.10.24	16.10.24	16.10.24
Name	HRa	HRa	ANA
Drawn	Designed	Approved	
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 Haryana 122001
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DPR CONSULTANT:

Rodic Consultant Pvt. Ltd.
 6, SAROJINI HOUSE, Agni Khan Hall (1st Floor)
 Bhagwan Das Road, New Delhi-110001 (India)
 Ph: 011 69217960, Fax: 011 49434500

CLIENT

Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

**ELECTRICAL SCHEMATIC FOR
SUB-STATION-1,2,7 & 8 (1779m.)**

PROJECT TITLE

**CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
BOARD KSRP JUNCTION**

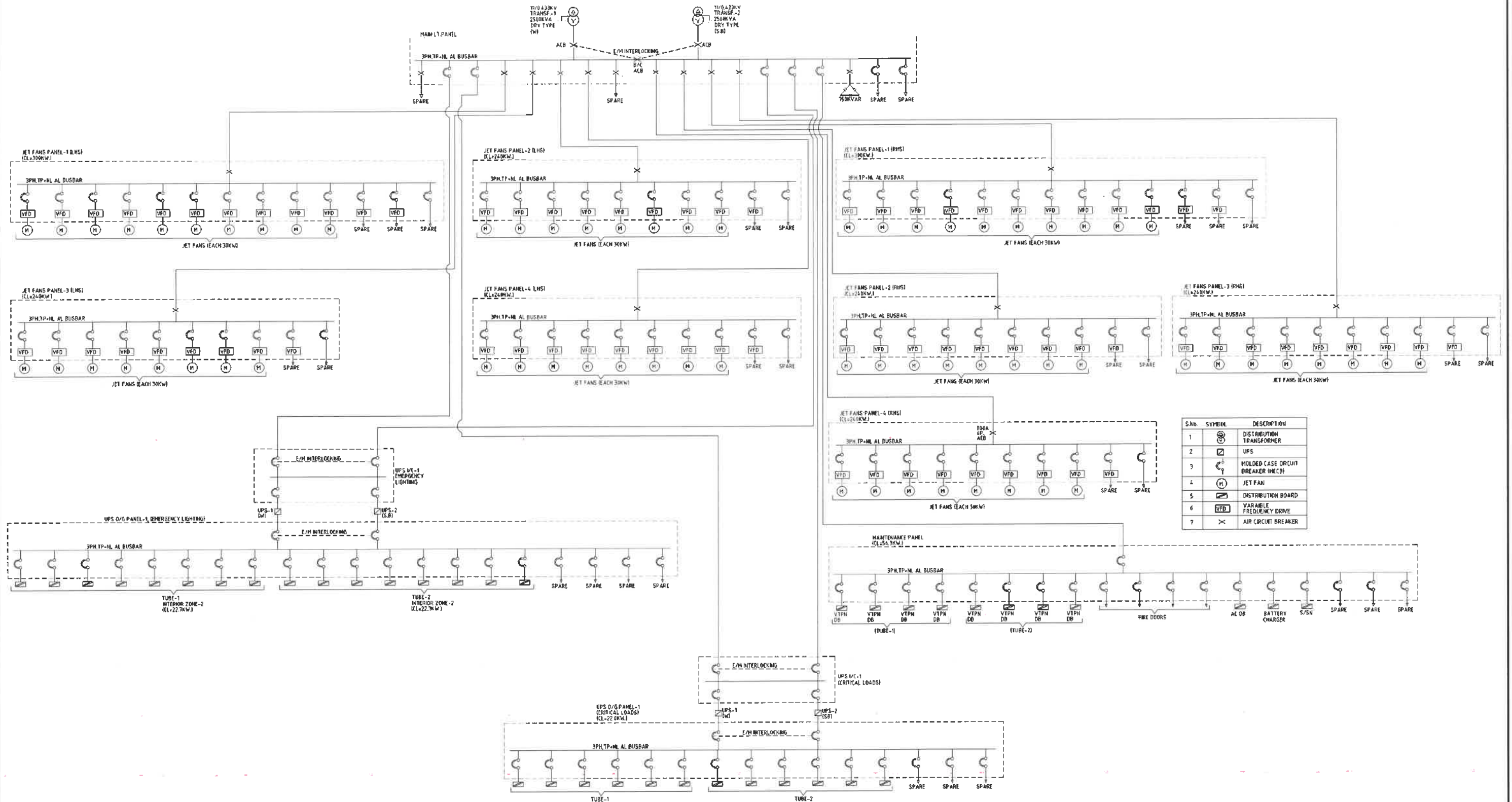
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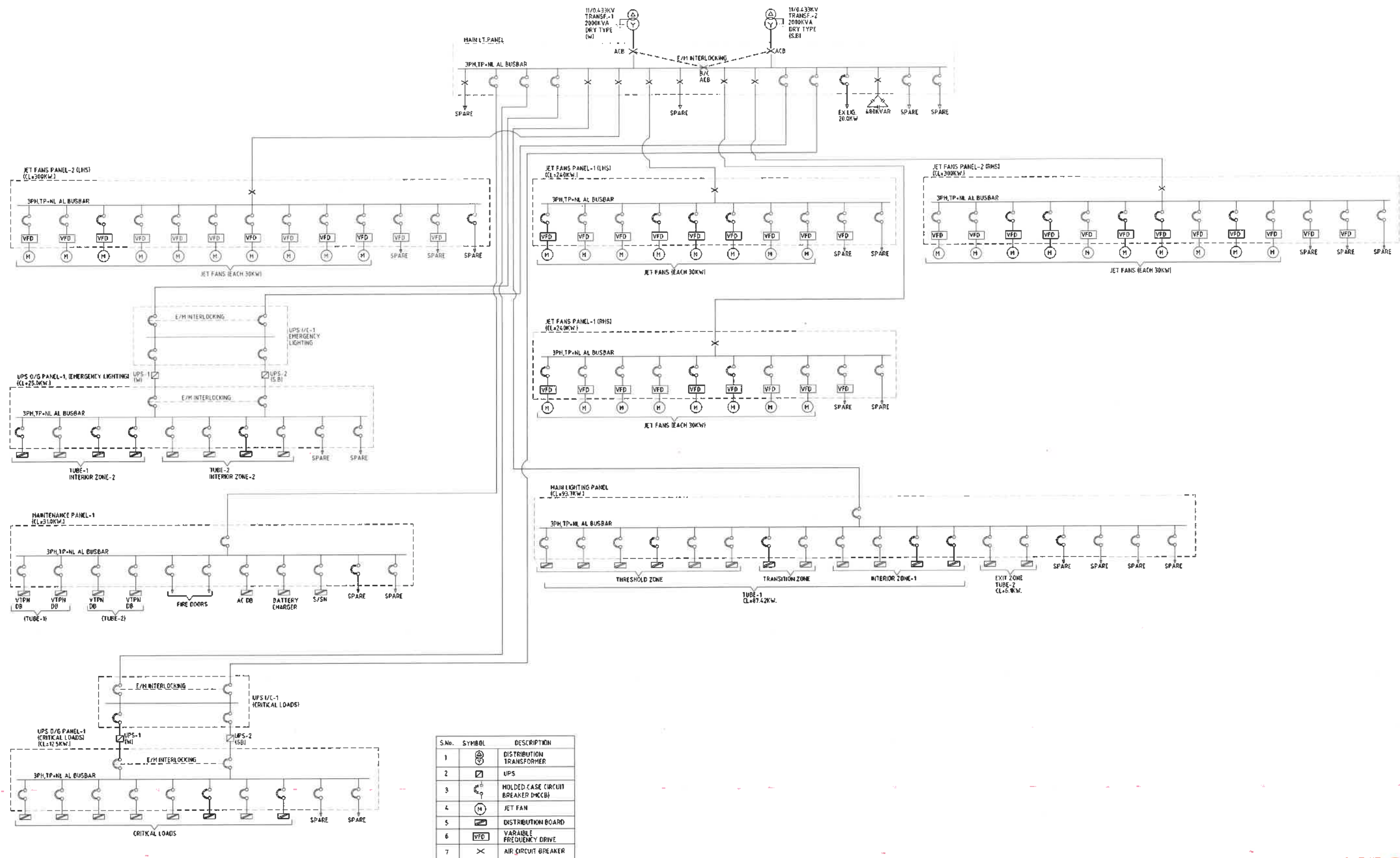
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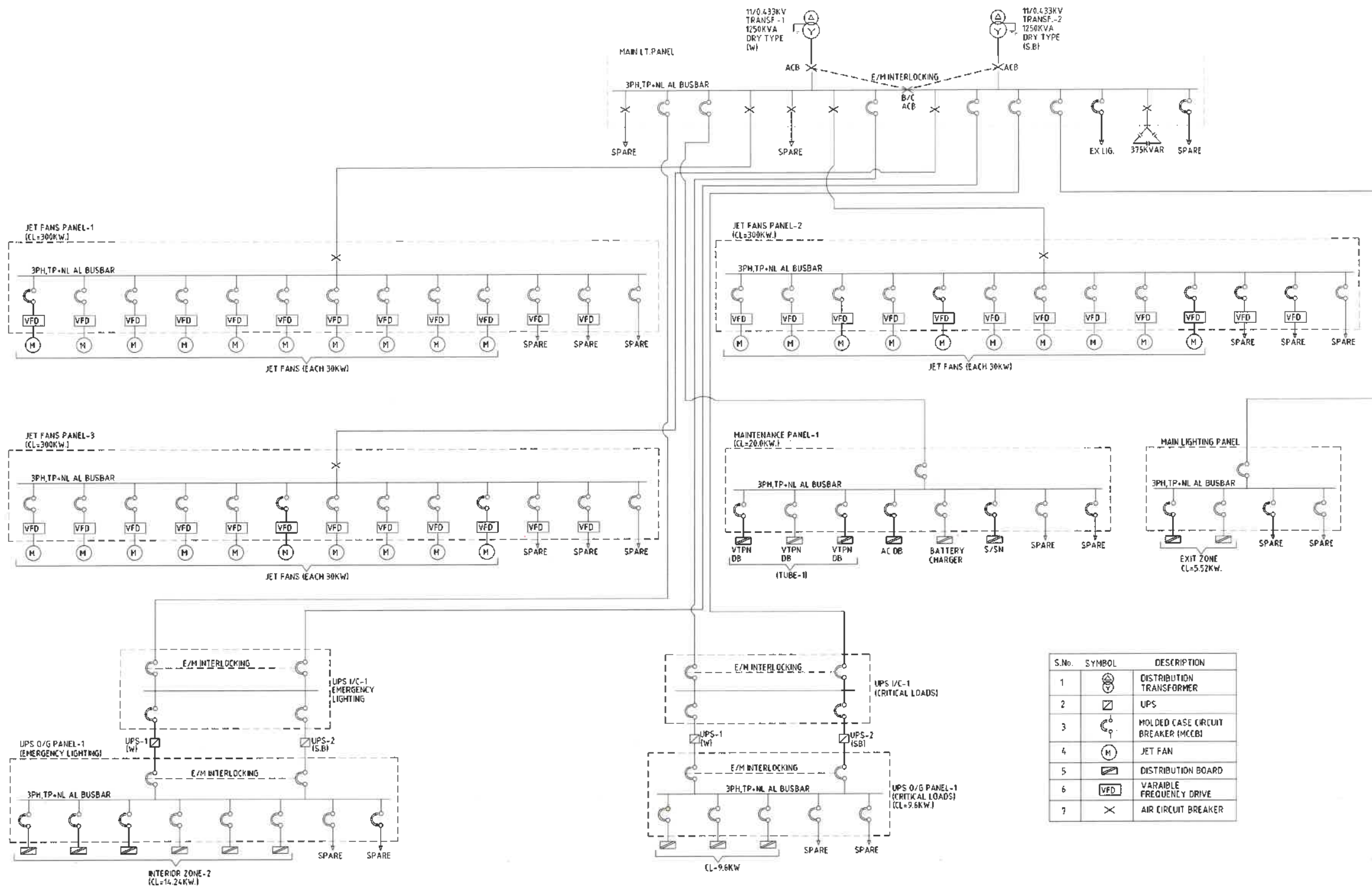
DATE OF ISSUE
16.10.24
STATUS
FOR DPR PURPOSE ONLY
JAN. 2025 DPR

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						Date	18.10.24	18.10.24	18.10.24					
						Name	MA	MR	MA					
						Drawn	Designed	Approved						
A	18.01.25	REVISED DRAWING	MA	MR	MA	Document Originals (First Issue)			PROJECT TITLE CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION					
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REV.	DATE	PARTICULARS	Drawn	Checked	Approved									
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						Date	18.10.24	18.10.24	18.10.24			DRAWING TITLE		
						Name	PKa	PKr	AKa			ELECTRICAL SCHEMATIC FOR SUB-STATION-9 & 10		
							Drawn	Designed	Approved					
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						483 of 483 483 of 483								



S.No.	SYMBOL	DESCRIPTION
1		DISTRIBUTION TRANSFORMER
2		UPS
3		MOLDED CASE CIRCUIT BREAKER (MCCB)
4		JET FAN
5		DISTRIBUTION BOARD
6		VARIABLE FREQUENCY DRIVE
7		AIR CIRCUIT BREAKER

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REV.	DATE	PARTICULARS	Drawn	Checked	Approved
A	16.01.25	REVISED DRAWING	NA	NA	NA
O	18.10.24	FIRST SUBMISSION DPR	NA	NA	NA

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Date	18.10.24	19.10.24	19.10.24
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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
 OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTERN MALL JUNCTION TO SILK
 BOARD KSRP JUNCTION

DPR CONSULTANT:

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CLIENT

Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

**ELECTRICAL SCHEMATIC FOR
 SUB-STATION-11&15
 (1685M)**

PROJECT ID:

I 40172

DRAWING NUMBER

BBMP-EM-006

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SCALE

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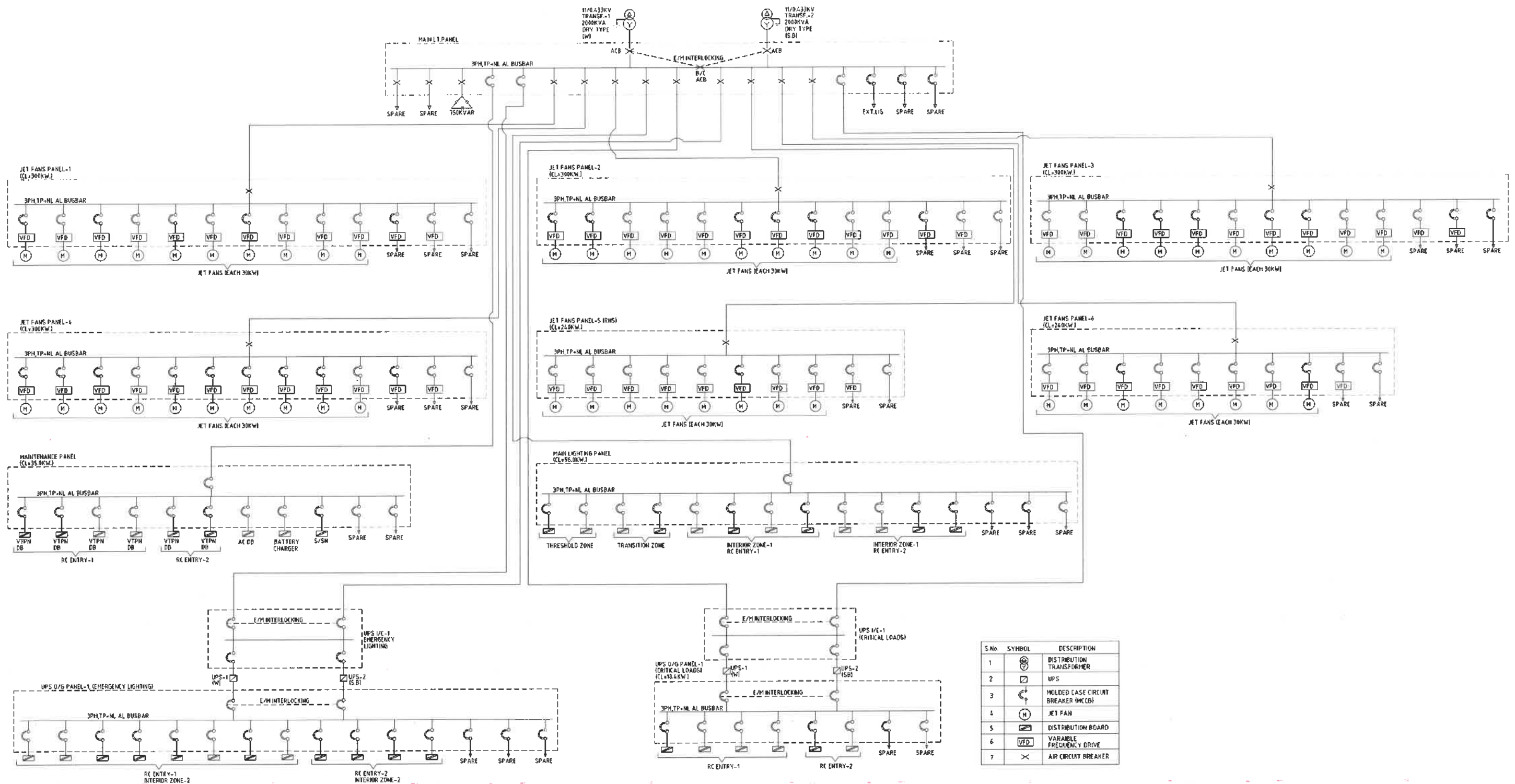
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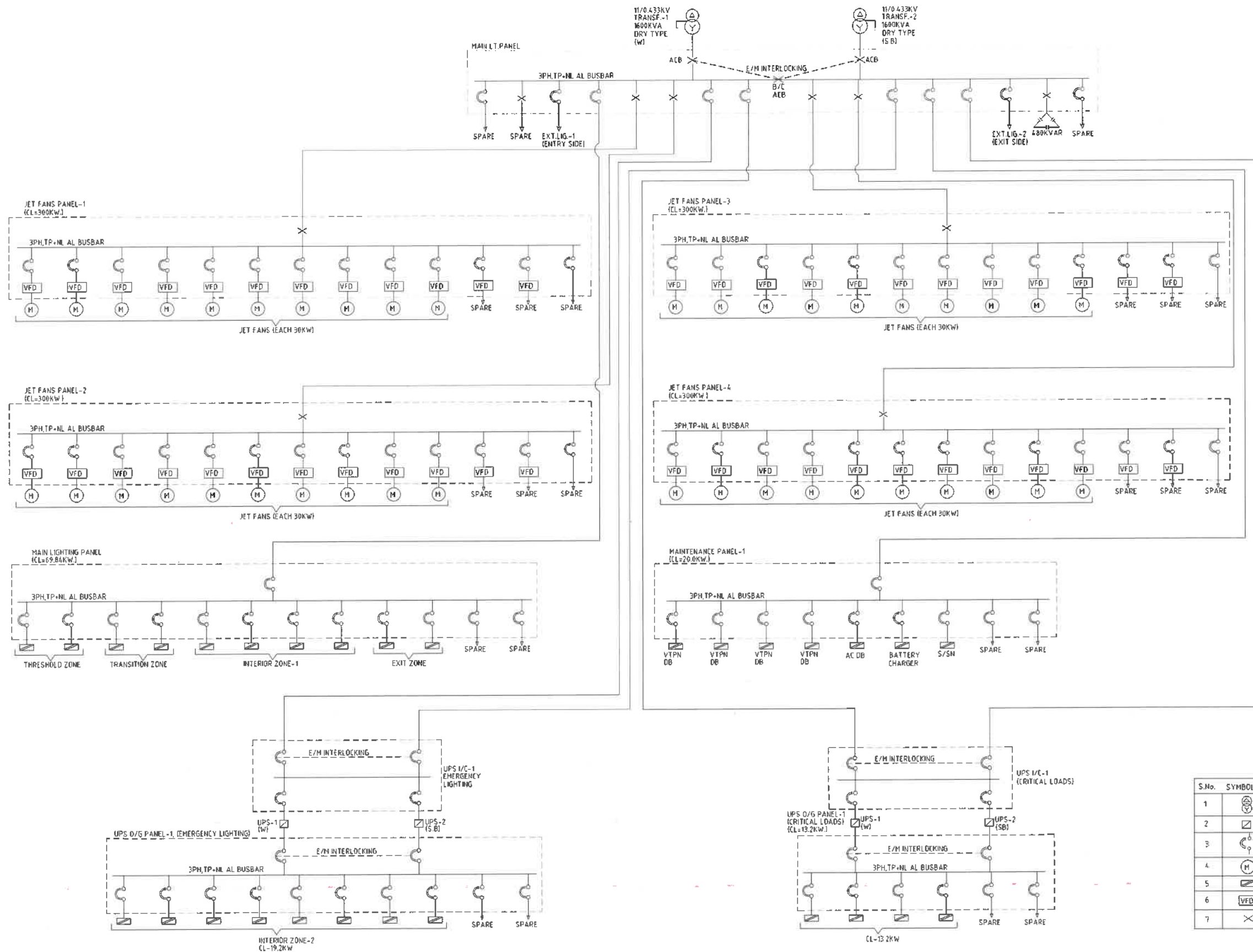
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						Name	MRa	MRr				MRa	ELECTRICAL SCHEMATIC FOR SUB-STATION-13 & 14 (FREEDOM PARK & HUDSON CIRCLE)			
						Drawn	Designed	Approved				PROJECT TITLE				
			A	16.01.25	REVISED DRAWING		MRa	MRr	MRa	CONSULTANCY SERVICES FOR PREPRATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSPP JUNCTION		PROJECT ID: I 40172		DRAWING NUMBER BBMP-EM-007		REV A
			0	18.10.24	FIRST SUBMISSION DPR		MRa	MRr	MRa	This document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Geoconsult was commissioned. Geoconsult accepts no responsibility for this document to any other party other than the person by whom it was commissioned.		SCALE		DATE (Valid Issue)		STATUS
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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION

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CLIENT

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DRAWING TITLE

**ELECTRICAL SCHEMATIC FOR
SUB-STATION-16 (LB ENTRY &
LB EXIT)**

PROJECT ID
I 40172DRAWINGS NUMBER
BBMP-EM-008SCALE
AS SHOWN

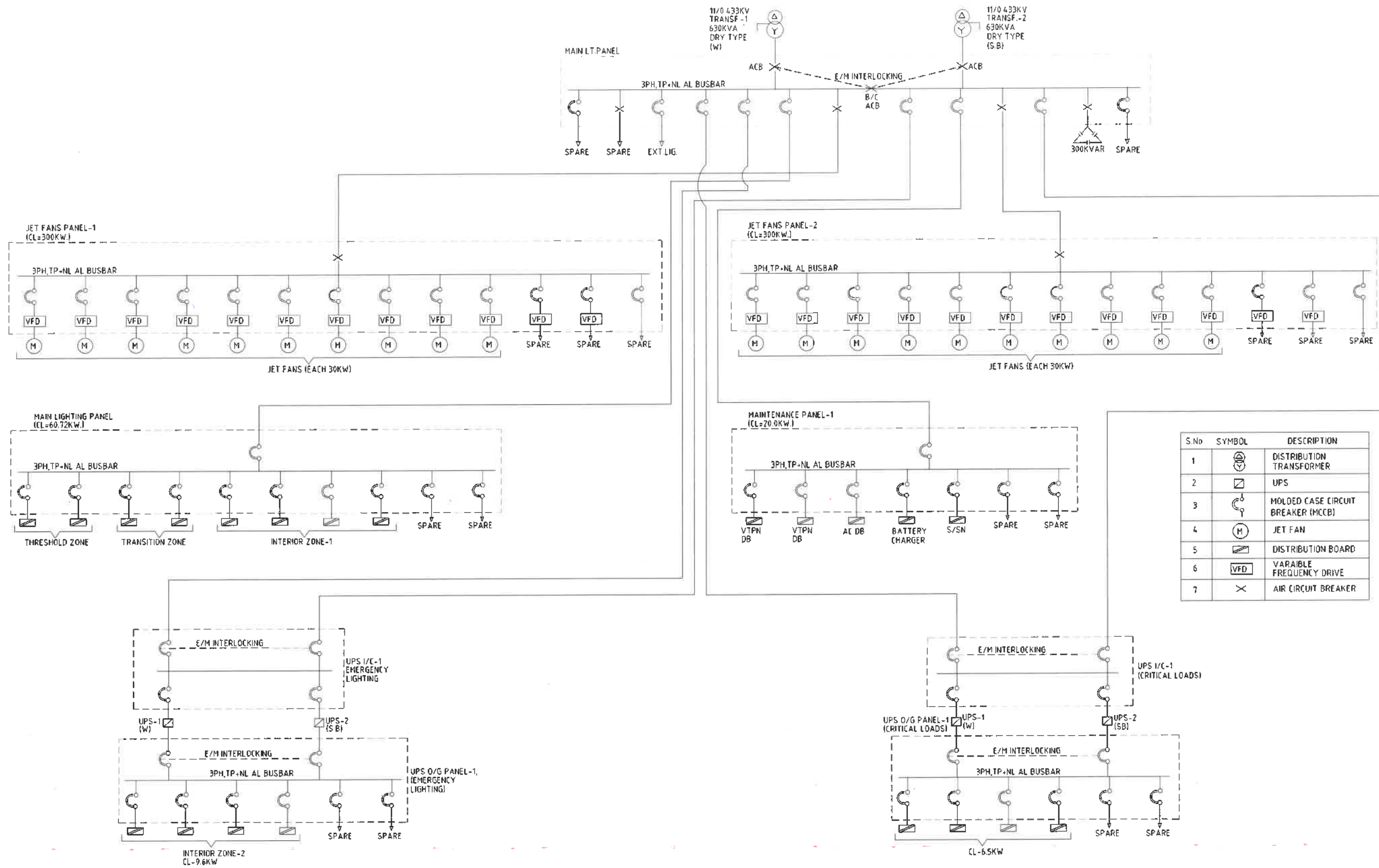
DATE (initial/issue)

STATUS

JAN. 2025

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S.No	SYMBOL	DESCRIPTION
1		DISTRIBUTION TRANSFORMER
2		UPS
3		MOULDED CASE CIRCUIT BREAKER (MCCB)
4		JET FAN
5		DISTRIBUTION BOARD
6		VARIABLE FREQUENCY DRIVE
7		AIR CIRCUIT BREAKER

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CLIENT

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DRAWING TITLE

**ELECTRICAL SCHEMATIC FOR
 SUB-STATION-12 & 17
 (940M.)**

PROJECT ID:

I 40172

DRAWING NUMBER

BBMP-EM-009

SCALE

DATE (MM/DD/YY)

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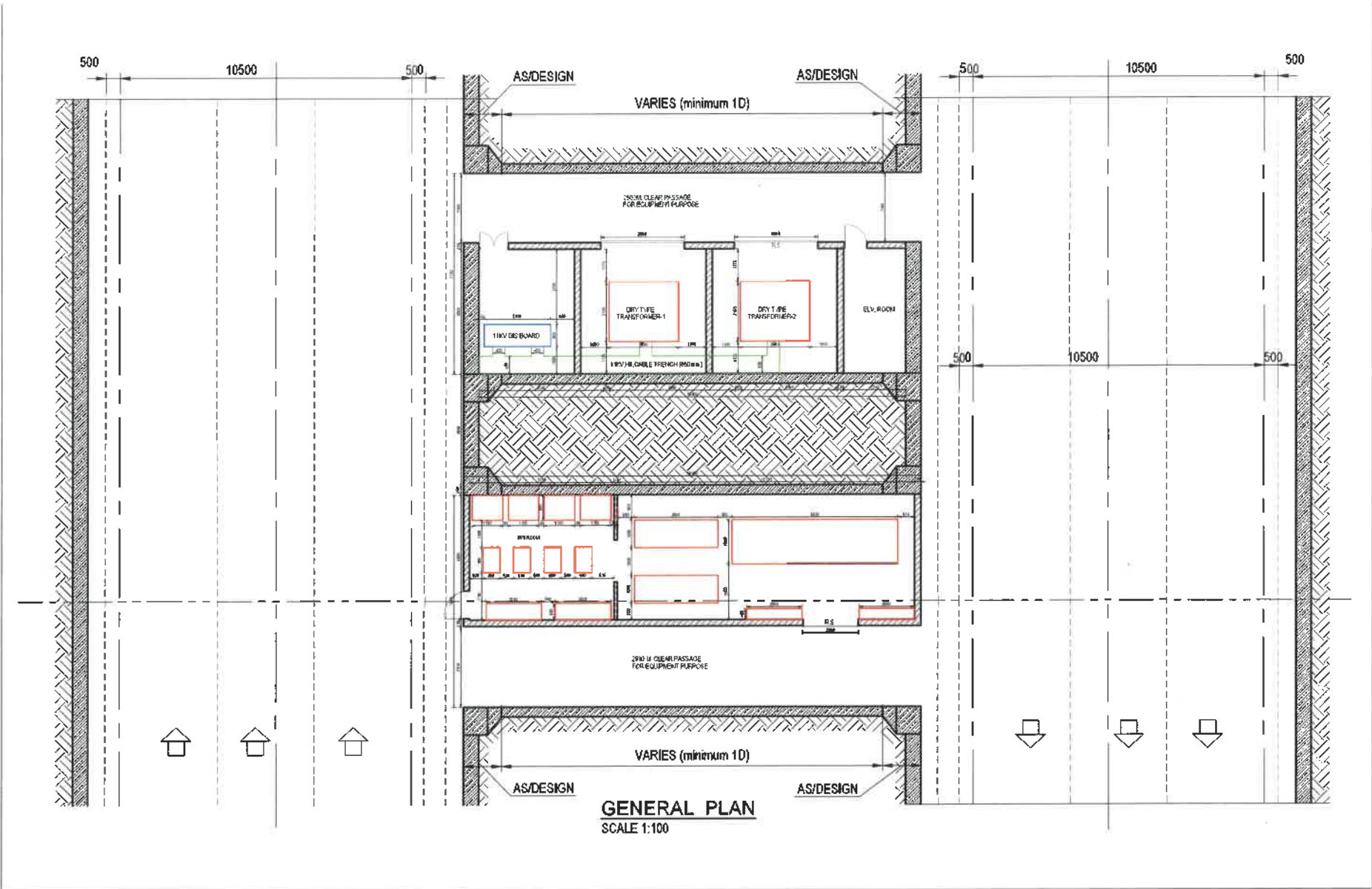
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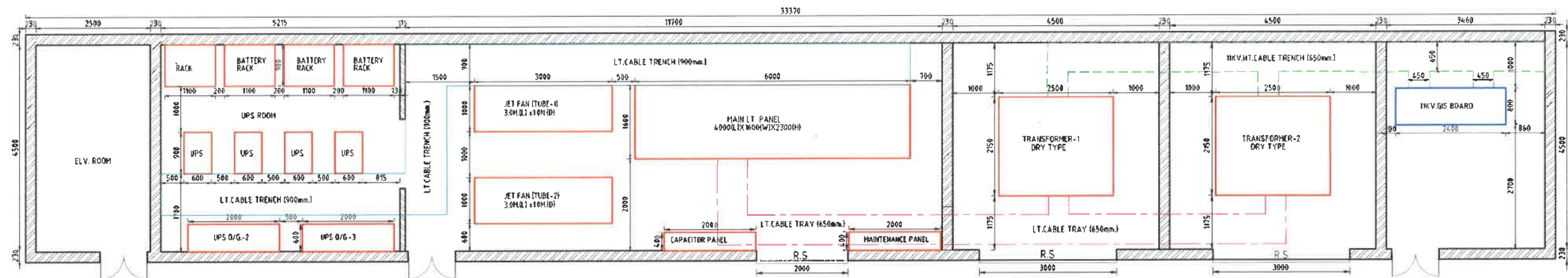


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								Date 20.11.24 20.11.24 20.11.24								DRAWING TITLE MAIN TUNNEL LAYOUT OF 11/433KV SUB-STATION							
								Name MkA Mkr N/A															
								Drawn Designed Approved															
B 24.12.24				CROSS PASSAGE WIDTH INCREASE				MkA Mkr N/A				Document Originators (First Issue)											
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												DECISION 1: Material: DPM/MS/REINFORCEMENT India Pvt. Ltd. Approved Steel: KSRP DPM DPM - Support for M&E - 1. Decision 2: IN CHARGE/ENGINEER/PROJECT/TEAM/UNIT/11/433KV Substation-47-52											
												PROJECT TITLE CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION				PROJECT ID : I 40172							
																DRAWINGS NUMBER BBMP-EM-010							
																REV B							
																SCALE 1:100							
																DATE (Initial Issue) 1:100							
																STATUS DEC. 2024							



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CLIENT



Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

**MAIN TUNNEL
 LAYOUT OF 11/433KV.
 NITCH SUBSTATION**

PROJECT ID:

I 40172

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DATE OF ISSUE

DEC. 2024

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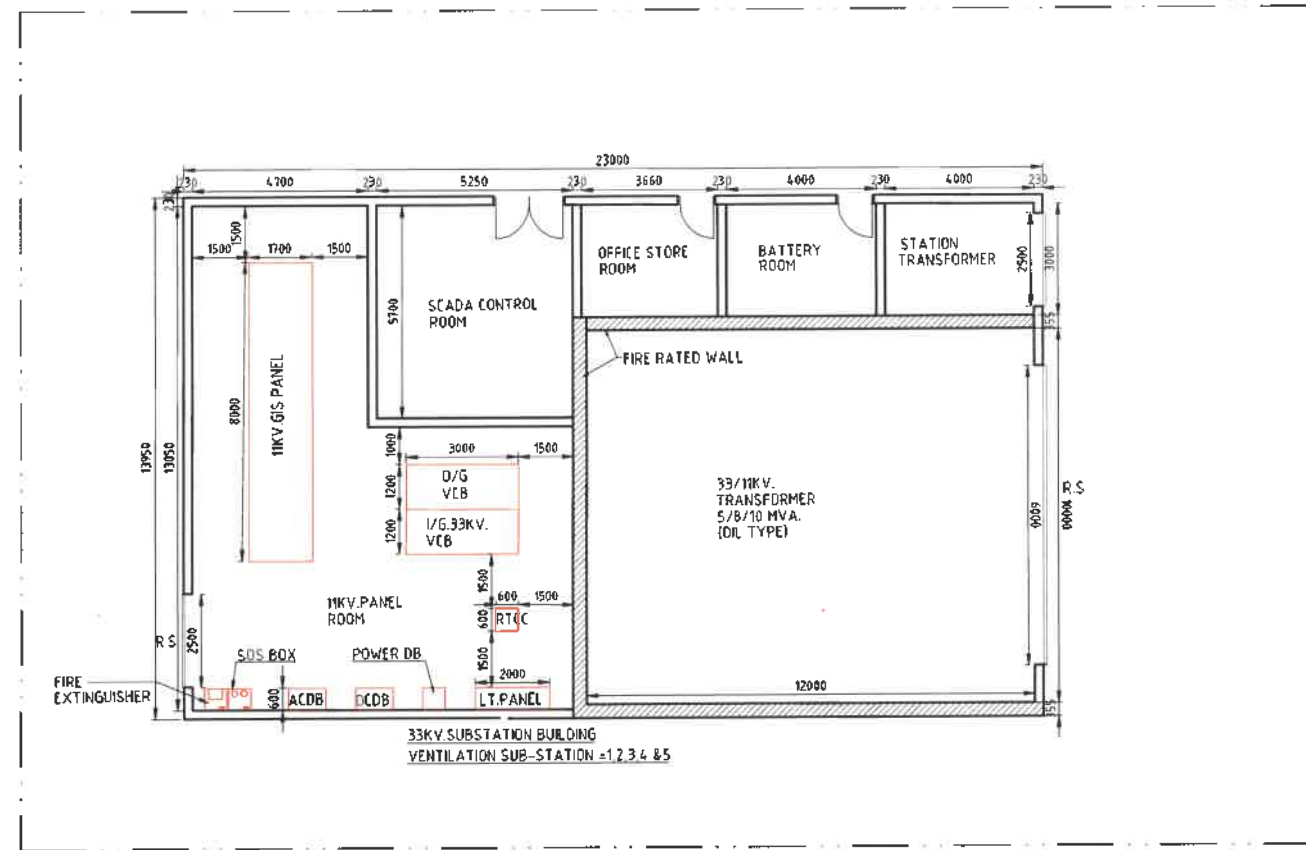
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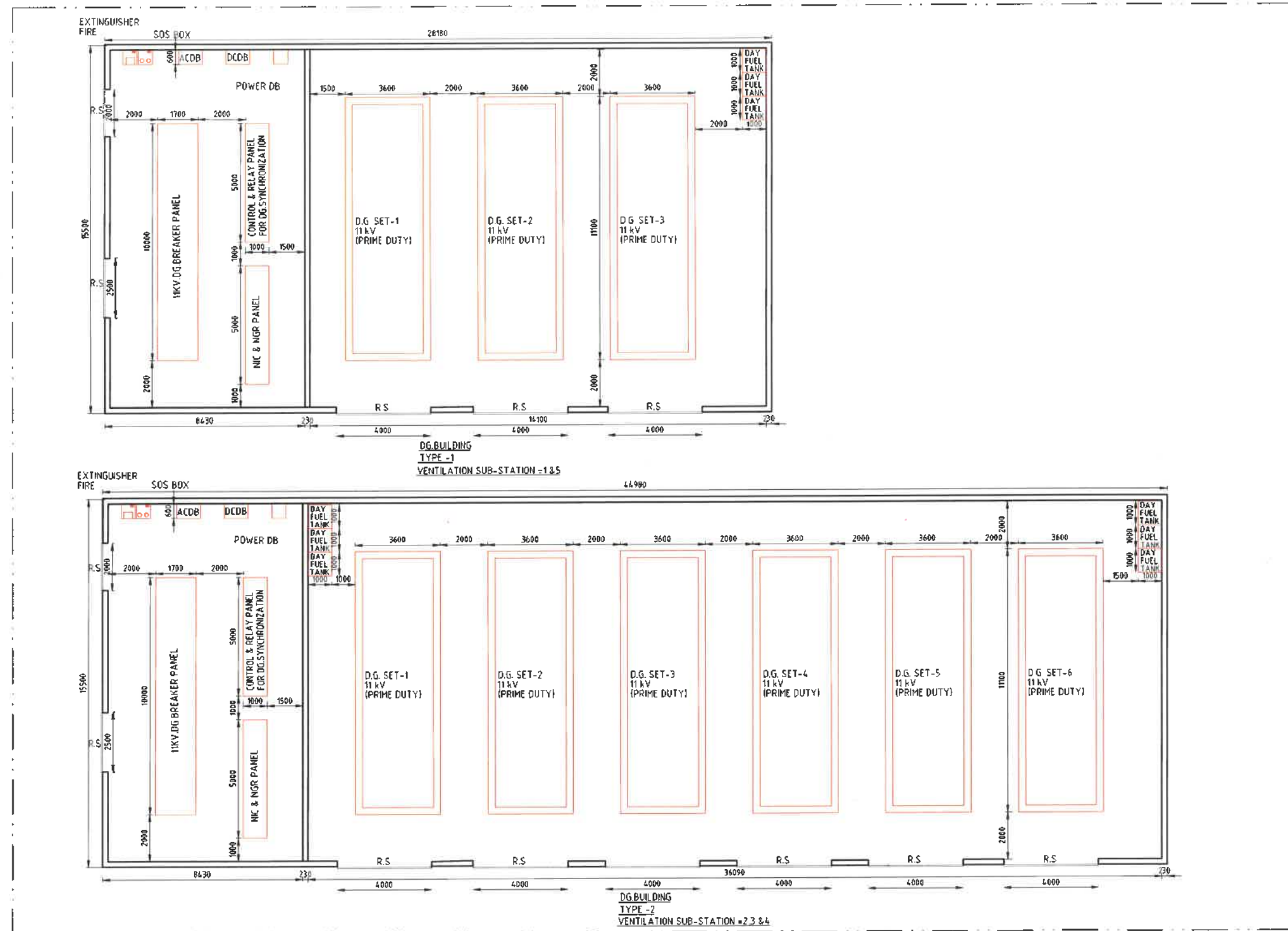
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					Name	MR.	MR.	MR.								
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REV.	DATE	PARTICULARS			Drawn	Checked	Approved	PROJECT ID :		DRAWING NUMBER		REV				
A	27.12.24	FIRST SUBMISSION DPR			MR.	MR.	MR.	140172		BBMP-EM-012		A				
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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION

CLIENT

Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

**DG BUILDING TYPE- 1&2
 VENTILATION SUB-STATION
 LAYOUT -1,2,3,4 & 5**

PROJECT ID:
I 40172

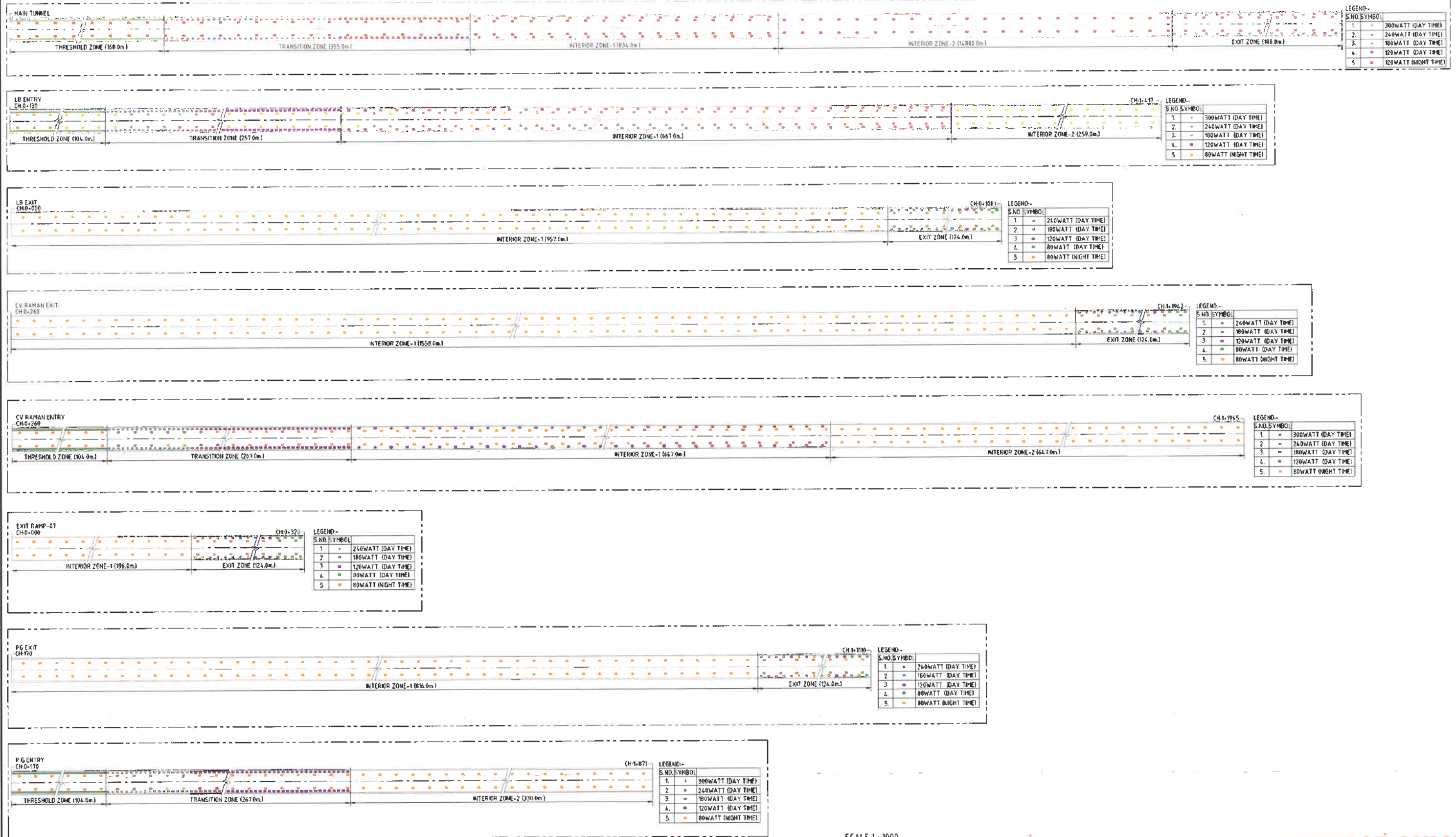
DRAWING NUMBER
BBMP-EM-013

REV
A

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1:100

DATE (DD/MM/YY) STATUS
DEC. 2024 DPR

NORTHBOUND TUNNEL (TYPICAL FOR SOUTHBOUND TUNNEL)



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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
BOARD KSRR JUNCTION

CLIENT

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DRAWING TITLE
**MAIN TUNNEL
LIGHTING LAYOUT
(Sheet-1/2)**

PROJECT ID. **I 40172**
SCALE **1000**
DRAWING NUMBER **BBMP-EM-E014**
DATE (original) **17.01.2025**
REV **A**
STATUS **DPR**



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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
BOARD KSRP JUNCTION

CLIENT	
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Bruhat Bengaluru Mahanagara Palike

	DRAWING TITLE
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**MAIN TUNNEL
LIGHTING LAYOUT
(Sheet-2/2)**

PROJECT ID:
I 40172

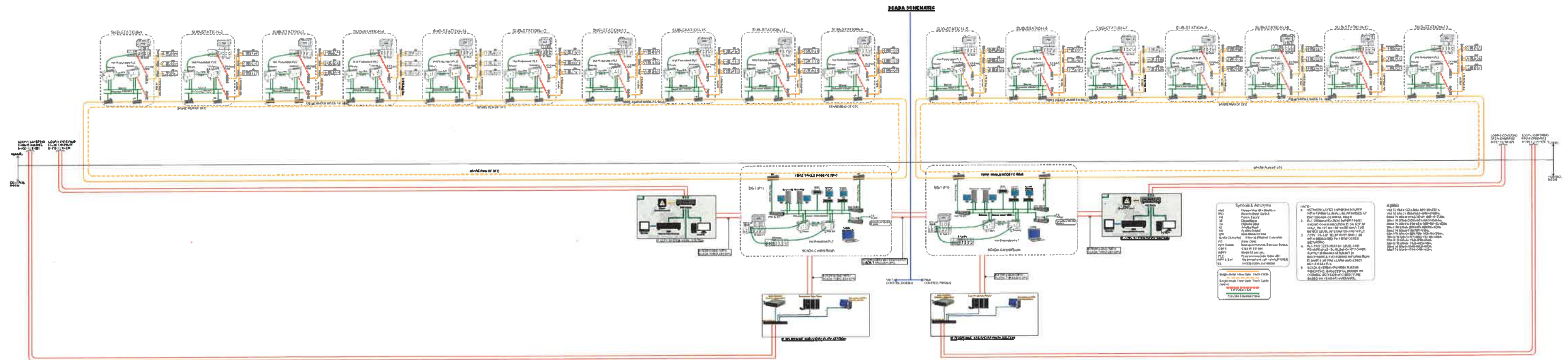
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SCALE 1000

DATE (Initials) 17/01/2025

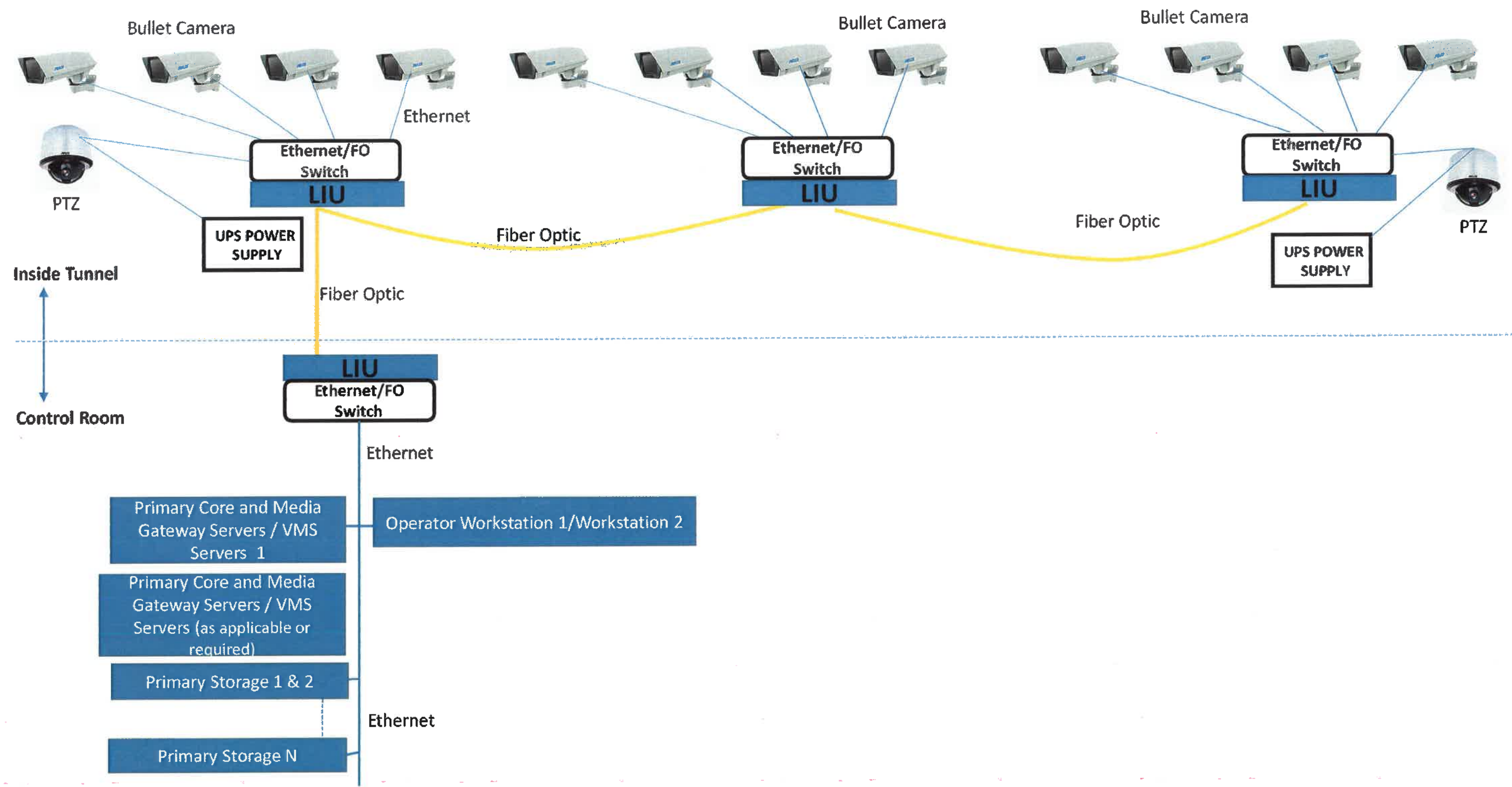
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			Date	22.10.24	22.10.24	22.10.24	Name	HA	HA	HA	DRAWING TITLE TUNNEL AUTOMATION SYSTEM SCADA SYSTEM ARCHITECTURE			
				Drawn	Designed	Approved								
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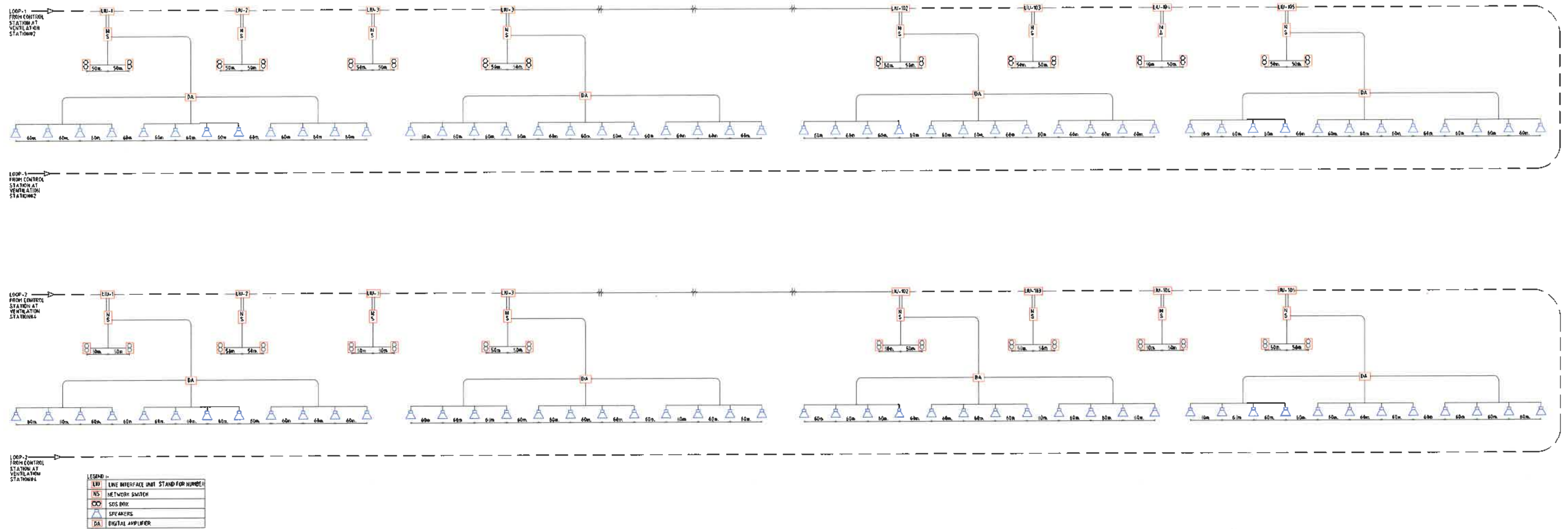
CCTV Surveillance Schematic Diagram



- LEGENDS:-**
- LIU LINE INTER PHASE UNIT
 - PAN TILT ZOOM CAMERA (PTZ)
 - BULLET CAMERA

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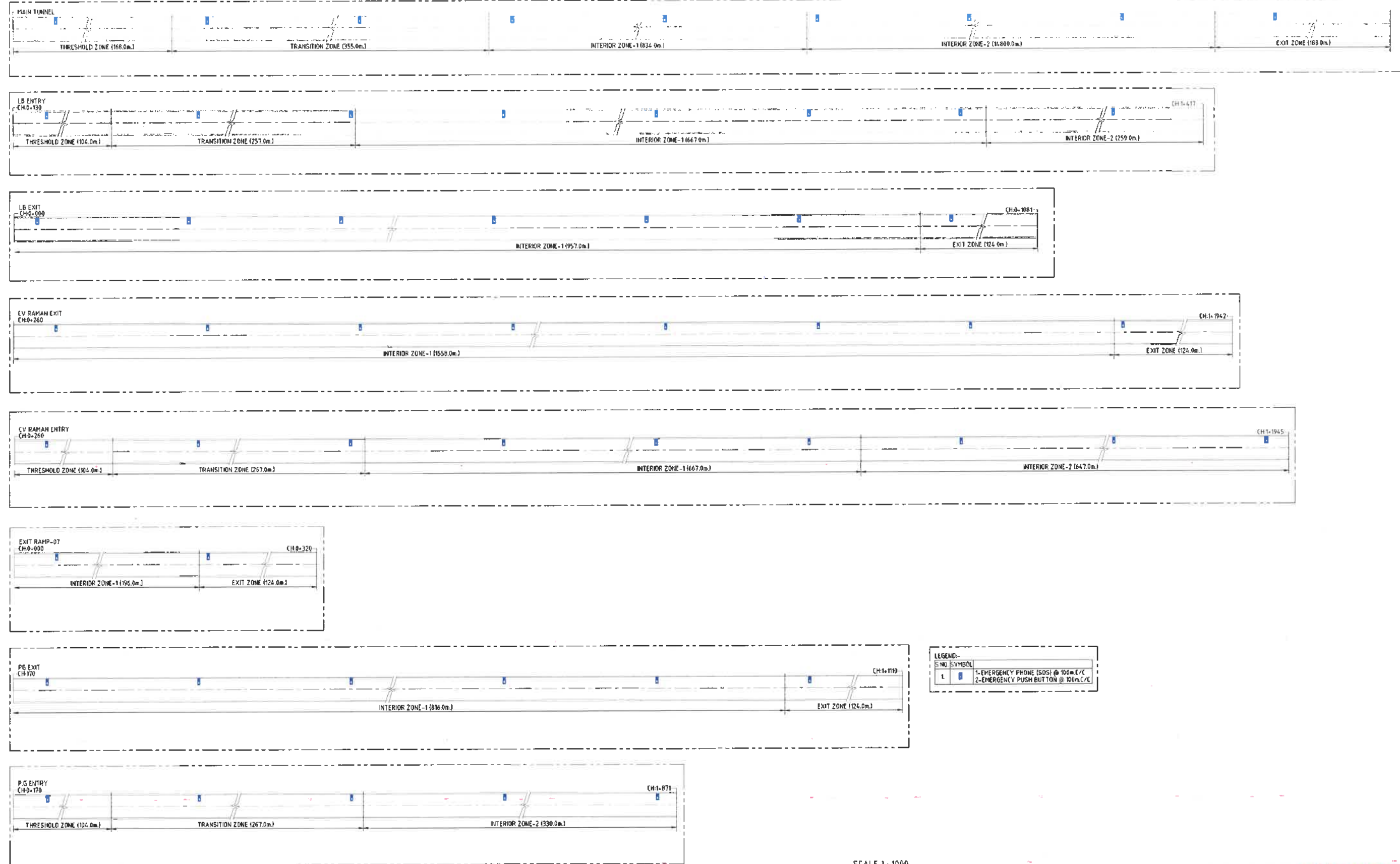
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						Name	MKA	HKr	Alfa				MAIN TUNNEL GENERAL SCHEMATIC DIAGRAM FOR CCTV SURVEILLANCE SYSTEM	
						Drawn	Designed	Approved		GEOCONSULT INDIA PVT. LIMITED 040106, WeWork Platina Tower, MG Road Near Silkandarapur Metro Station, Sector 28, Gurgaon , Haryana 122001 INDIA www.geconsult.co.in		Rodie Consultant Pvt. Ltd. 6, SAROJINI HOUSE, Agha Khan Hall (1st Floor) Bhagwan Dada Road, New Delhi-110001 (India) Ph: 011 69217800 , Fax : 011 48434500		
						Document Originators (First Issue)			PROJECT TITLE		CONSULTANCY SERVICES FOR PREPRATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION		PROJECT ID : I 40172	
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								Date	24.10.24	24.10.24	24.10.24	DRAWING TITLE TYPICAL IP TELEPHONE,SOS & PUBLIC ADDRESS SYSTEM				
								Name	MG	MR	MA					
								Drawn	Designed	Approved	PROJECT TITLE CONSULTANCY SERVICES FOR PREPRATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION					
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NORTHBOUND TUNNEL (TYPICAL FOR SOUTHBOUND TUNNEL)

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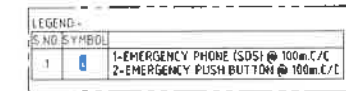
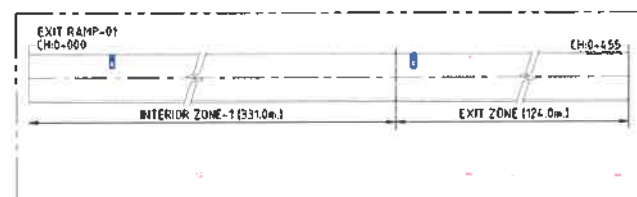
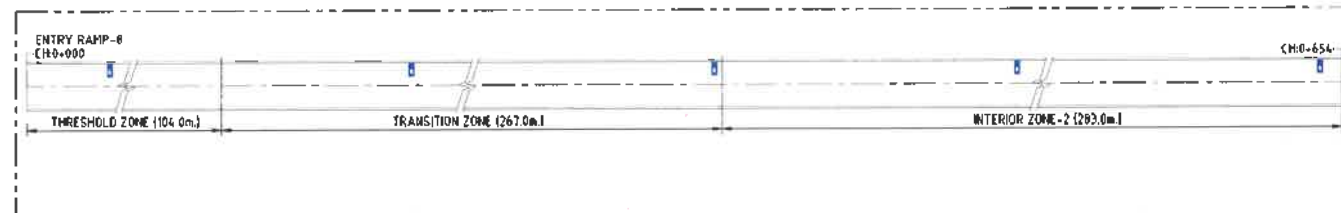
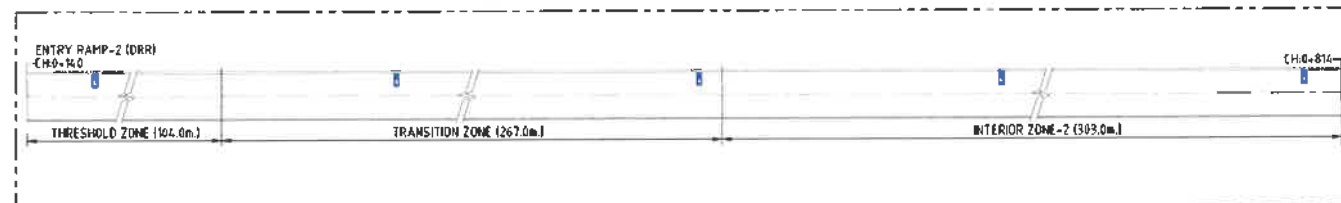
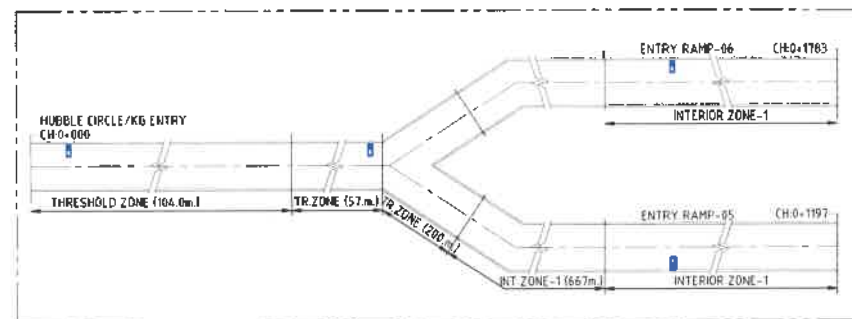
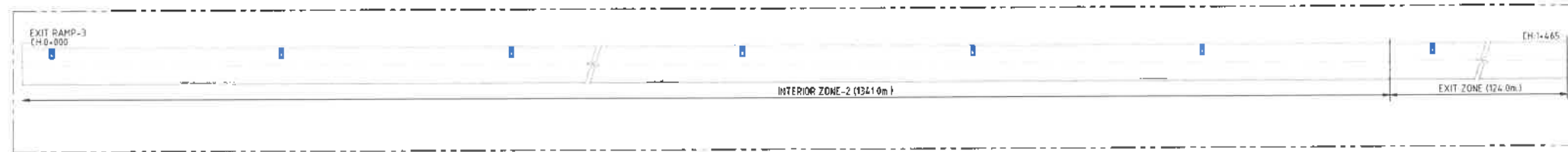
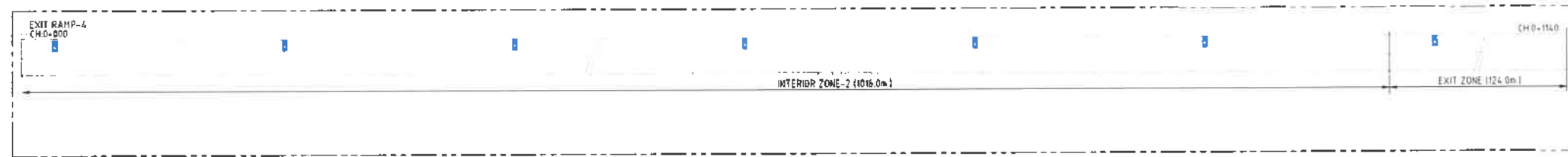
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**SOS STATIONS
EQUIPMENT
(Sheet-1/2)**

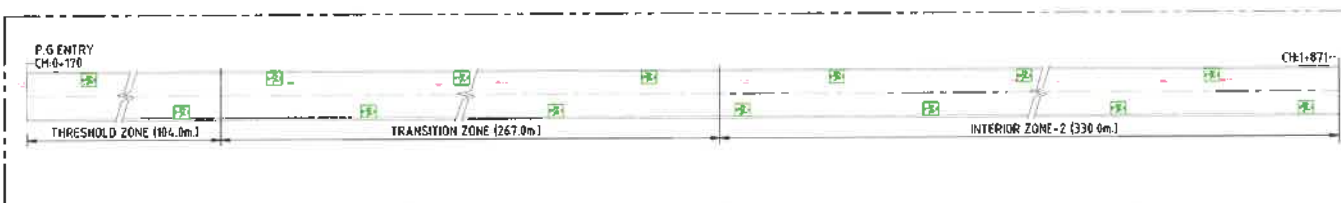
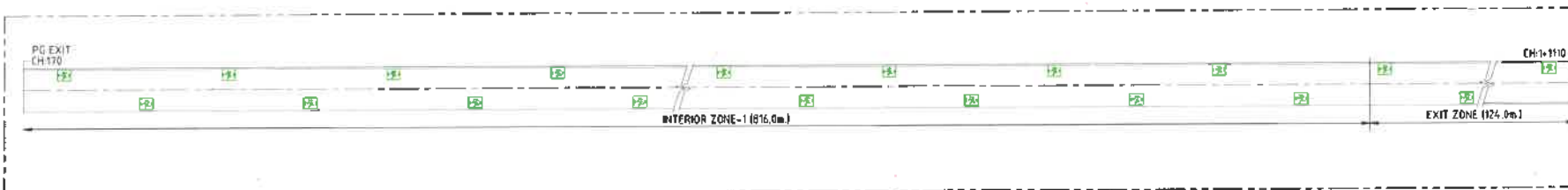
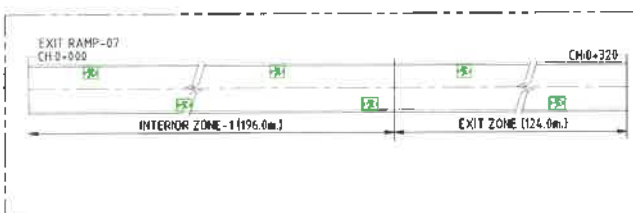
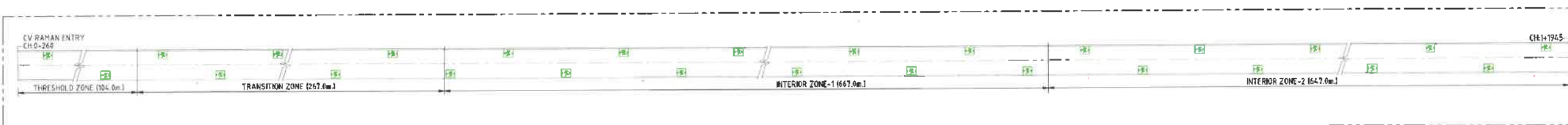
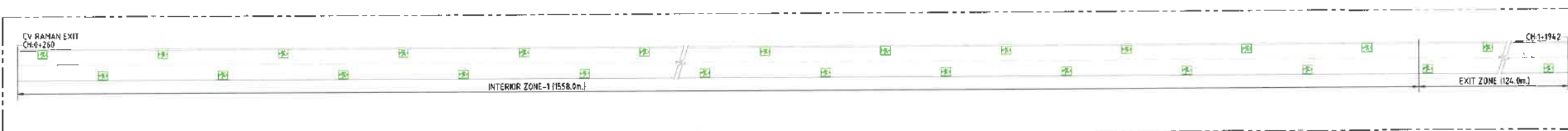
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CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION

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						Date	21.01.25	21.01.25	21.01.25	PROJECT TITLE CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK BOARD KSRP JUNCTION		DRAWING TITLE SOS STATIONS EQUIPMENT (Sheet-2/2)			
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NORTHBOUND TUNNEL (TYPICAL FOR SOUTHBOUND TUNNEL)



LEGEND:-	
S.NO.	SYMBOL
1.	EMERGENCY WAY FINDER (PSIEWF 5500)

SCALE 1: 1000

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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
 OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
 BOARD KSRP JUNCTION

CLIENT

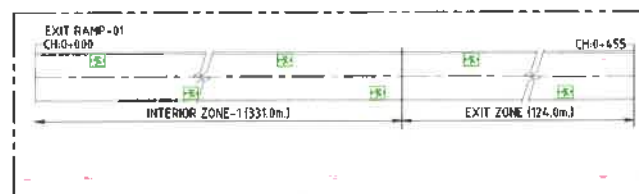
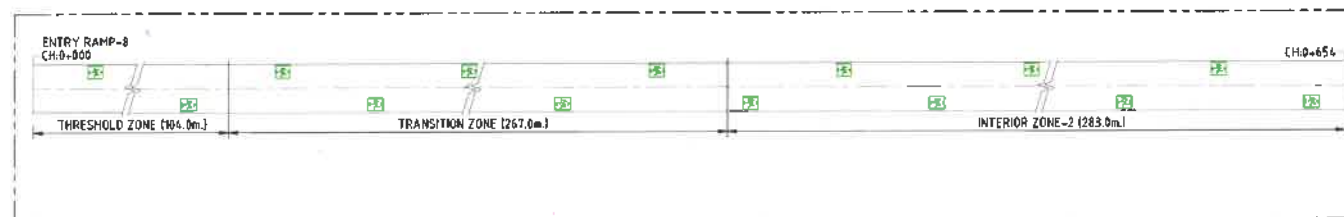
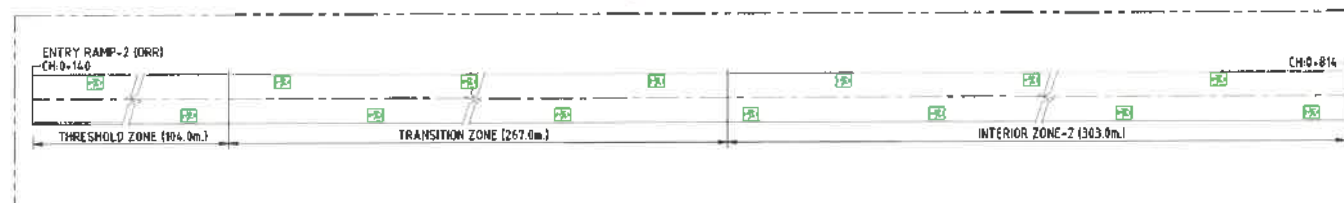
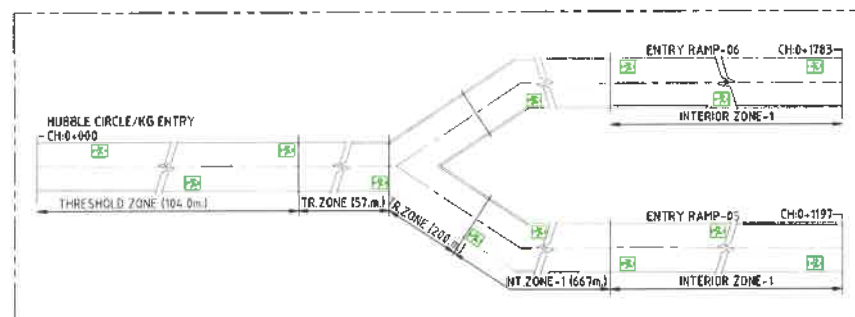
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DRAWING TITLE
**MAIN TUNNEL
 SIGNAGE LOCATION
 (Sheet-1/2)**

PROJECT ID: I 40172	DRAWING NUMBER: BBMP-EM-E020	REV A
SCALE 1000	DATE 27.01.2025	STATUS DPR



LEGEND:	
S.NO.	SYMBOL
1	EMERGENCY WAY FINDER (PSIEWF.5500)



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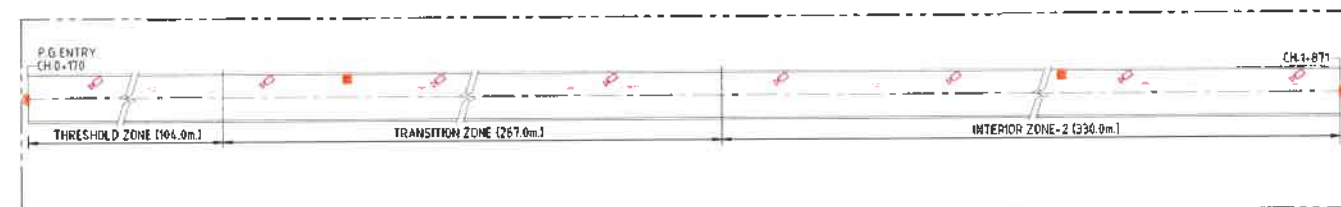
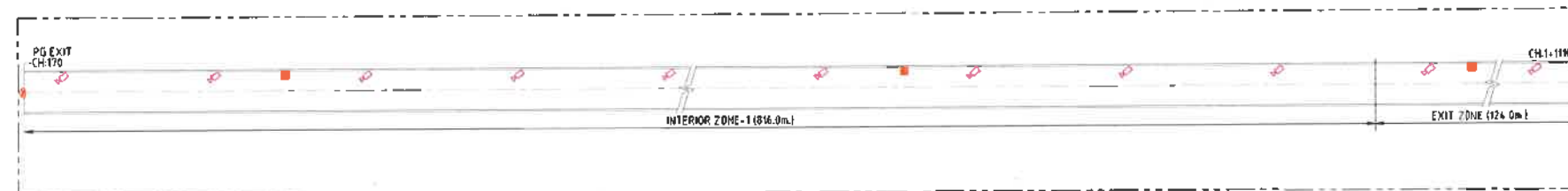
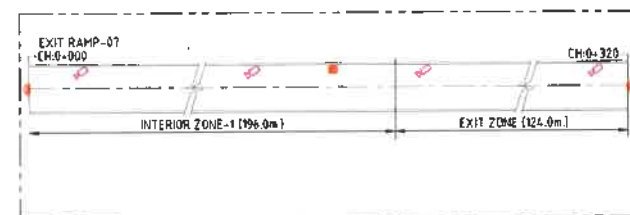
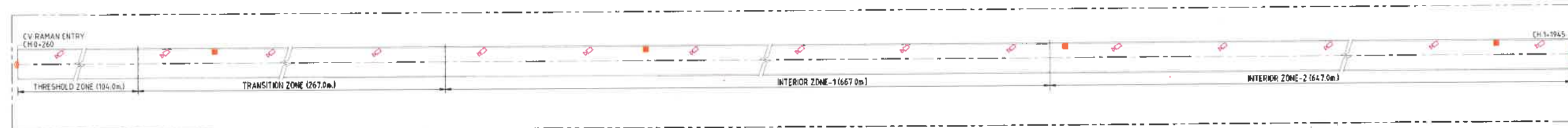
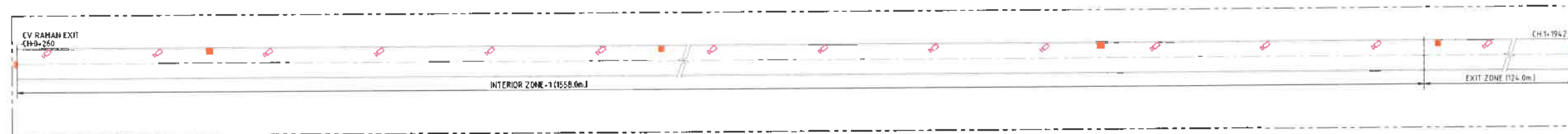
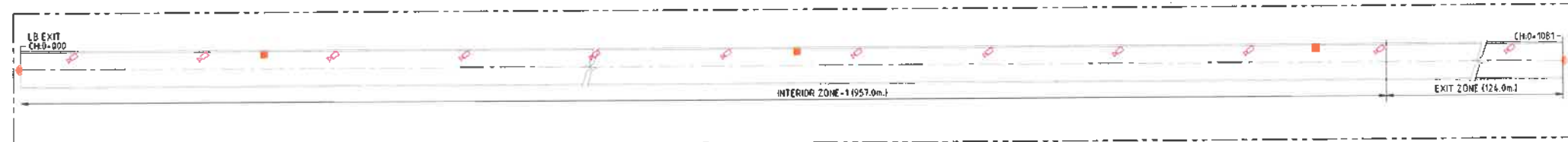
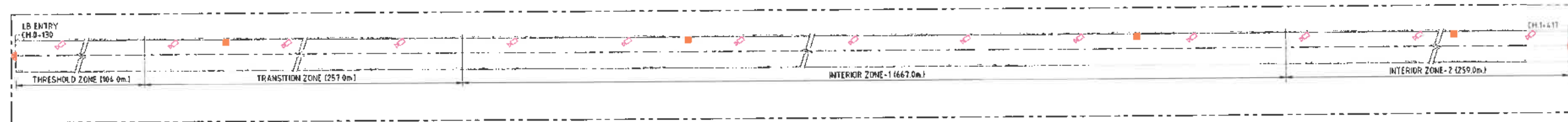
DRAWING TITLE
**MAIN TUNNEL
SIGNAGE LOCATION
(Sheet-2/2)**

PROJECT ID:	I 40172	DRAWING NUMBER	BBMP-EM-E020	REV	A
SCALE	1000	DATE	27.01.2025	STATUS	DPR

PROJECT TITLE

**CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
BOARD KSRP JUNCTION**

NORTHBOUND TUNNEL (TYPICAL FOR SOUTHBOUND TUNNEL)



LEGEND:-	
S.NO.	SYMBOL
1.	CCTV CAMERA @ 80m C/C NIGHT +5.0m.
2.	CCTV PTZ CAMERA AT PORTAL HEIGHT +5.0m.
3.	NETWORK PANEL FOR CCTV SYSTEM

SCALE 1 : 1000

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QUALITY ASSURANCE

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Name	MKS	MKR	ANA
	Drawn	Designed	Approved

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PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
 OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
 BOARD KSRP JUNCTION

CLIENT



Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

**MAIN TUNNEL CCTV. CAMERA
 LOCATION
 (Sheet-1/2)**

PROJECT ID:

I 40172

SCALE 1000

DRAWING NUMBER

BBMP-EM-E021

DATE (mm/dd/yyyy)

24.01.2025

STATUS

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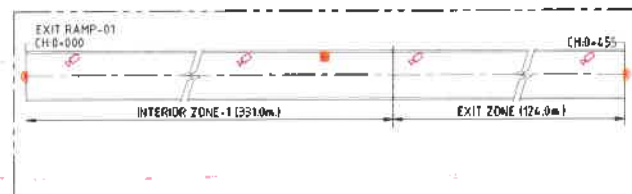
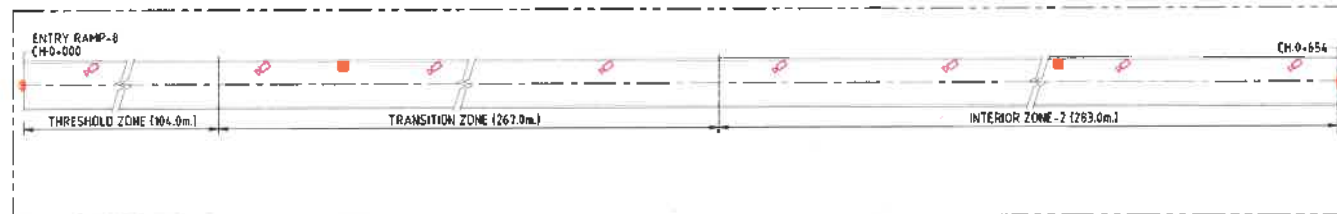
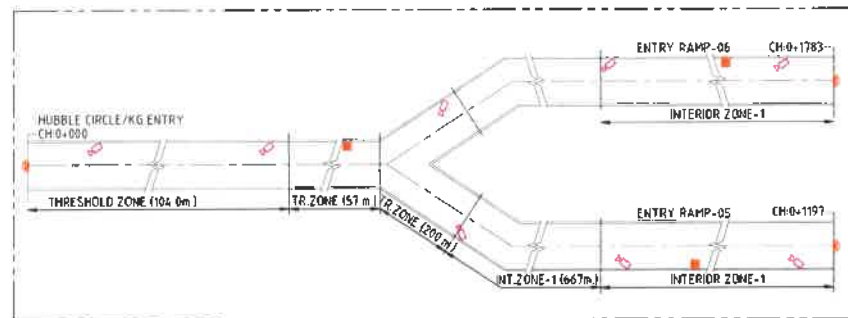
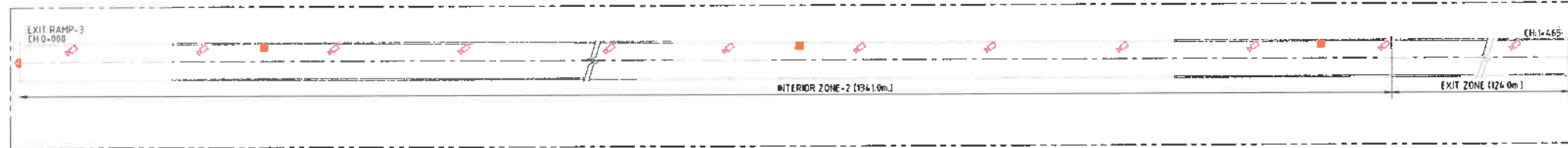
REV

A

DPR



LEGEND-	
S.NO	SYMBOL
1.	CCTV CAMERA @ 80m C/C HEIGHT = 5.0m.
2.	CCTV PTZ CAMERA AT PORTAL HEIGHT = 5.0m.
3.	NETWORK PANEL FOR CCTV SYSTEM



SCALE 1: 1000

**FOR DPR PURPOSE ONLY**

REFERENCE DRAWINGS

THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE LATEST REVISIONS OF THE FOLLOWING DRAWINGS.

REVISIONS

REV.	DATE	PARTICULARS	Drawn	Checked	Approved
A	24.01.25	REVISED DRAWING	MKa	MKr	ANa
O	21.01.25	FIRST SUBMISSION	MKa	MKr	ANa

QUALITY ASSURANCE

Date	21.01.25	21.01.25	21.01.25
Name	MKa	MKr	ANa
Drawn	Designed	Approved	

Document Originators (First Issue)

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 Sikanderpur Metro Station, Sector 28, Gurugram,
 Haryana 122001
 INDIA
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DPR CONSULTANT:

Rudic Consultant Pvt. Ltd.
 6, SAROJINI HOUSE, Agha Khan Hall (1st Floor)
 Bhagwan Dass Road, New Delhi-110001 (India)
 Ph: 011 68217800, Fax: 011 49434500

PROJECT TITLE

CONSULTANCY SERVICES FOR PREPARATION OF DPR FOR THE WORK OF CONSTRUCTION
 OF UNDERGROUND VEHICULAR TUNNEL FROM HEBBAL ESTEEM MALL JUNCTION TO SILK
 BOARD KSRP JUNCTION

CLIENT



Bruhat Bengaluru Mahanagara Palike

DRAWING TITLE

MAIN TUNNEL CCTV. CAMERA
 LOCATION
 (Sheet-2/2)

PROJECT ID:

I 40172

SCALE

1000

DRAWING NUMBER

BBMP-EM-E021

DATE OF ISSUE

24.01.2025

STATUS

DPR

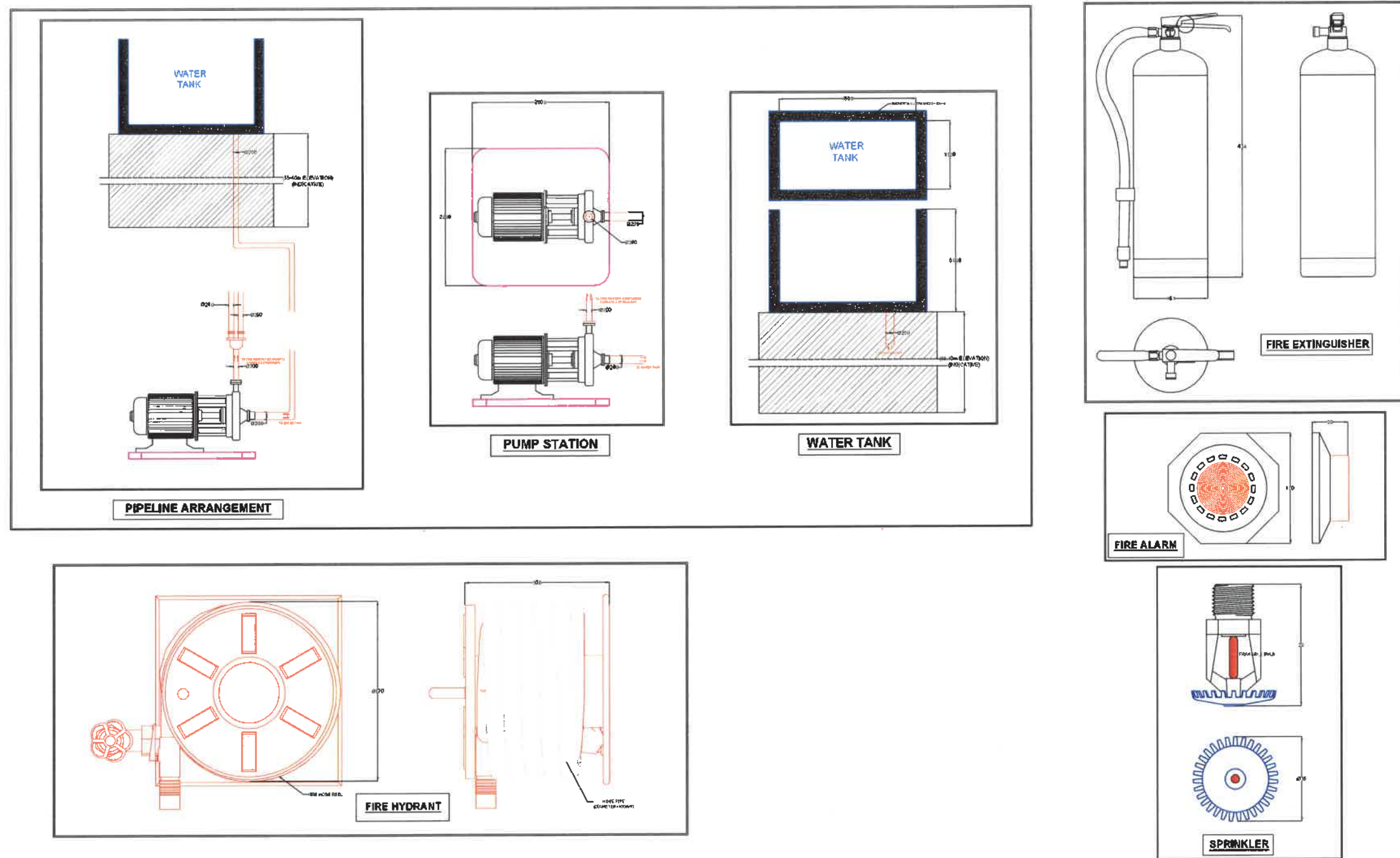
REV

A

DPR

DPR

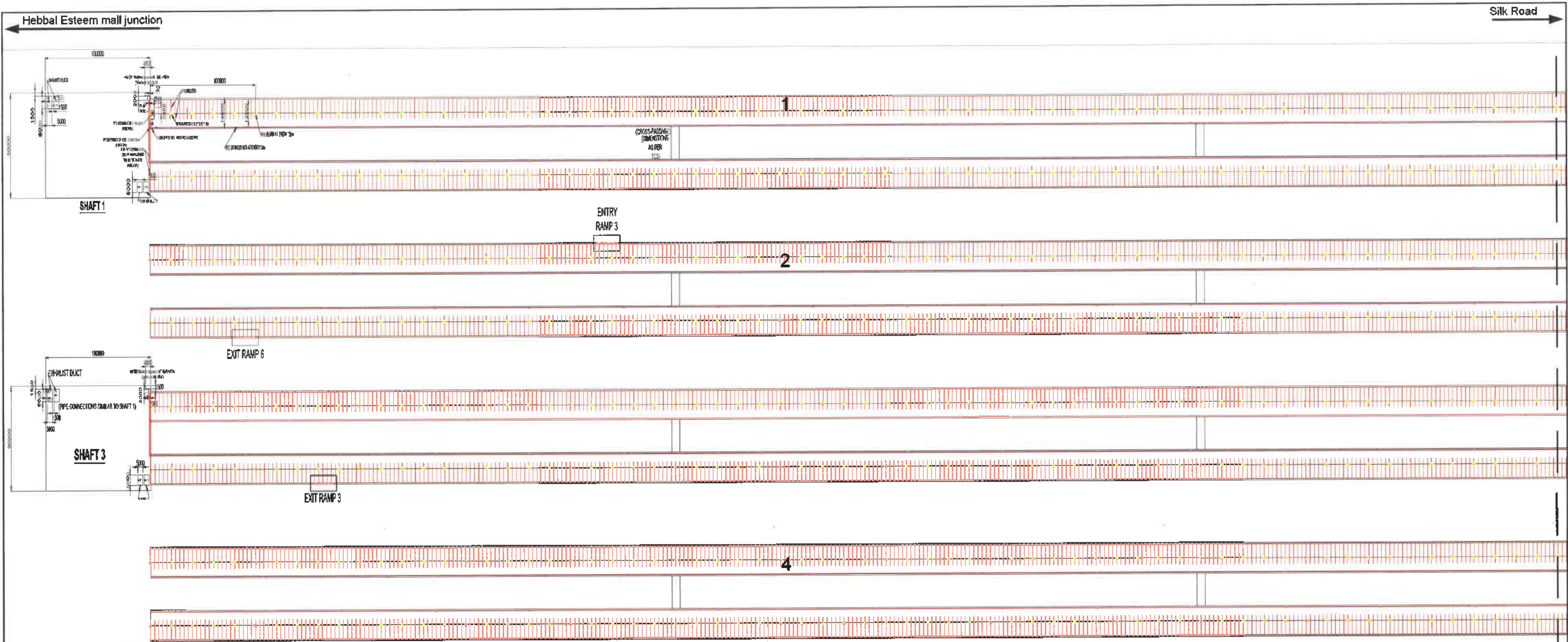
Handwritten signatures: Handwritten, Handwritten, Handwritten, Handwritten, Handwritten



- NOTE:**
1. ALL THE DIMENSTIONS ARE SCALED & ARE IN MM.
 2. WATER TANK AND PUMP STATION ALIGNMENT IS GIVEN IN SHEET 1B.
 3. PIPE CONNECTIONS IN DETAIL GIVEN IN SHEET 1B.
 4. FIRE ALARM AND SPRINKLER ARRANGEMENT ALIGNMENT ARE GIVEN IN SHEET 1A.

SHEET 1B MOUNTING SPECIFICATIONS

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	DRAFT DETAILED PROJECT REPORT	Project
R0	Jan.- 2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	Scale :- H:-1:2500 V:-1:250 Sheet size: A2	"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	OBEOCONSULTINDIA PRIVATE LIMITED 08106 WelPost, Phase 1, Terna MG Road 1st Floor, Terna Station, Sector 28, Cochin Kerala INDIA		FIRE FIGHTING SYSTEM SPECIFICATIONS
				EIC- BBMP			Drawing No. RC/1640/HO/HBT/TU/DWG/01/R0



DISTANCE BETWEEN TWO SHAFT

SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3900
SHAFT 4-5	3300
TOTAL	14600

DENOTON SYMBOLS WITH COLOUR CODES & DIMENSTIONS

S. NO.	SYMBOLS	NAMES	DIMENSION (in mm)	POSITIONS
1.		SPRINKLER	Ø15	EVERY 4000 mm
2.		FIRE ALARM SENSOR		EVERY 20000 mm
3.		FIRE ALARM		EVERY 100000 mm
4.		WATER TANK	4800X1500X5000	REFERENCE IN DRAWING
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	10000X5.0000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP		REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X6000	REFERENCE IN DRAWING
9.				
10.		PIPES	Ø32mm(B), Ø100mm(C), Ø200mm(A)	Ø32mm(B) AT EVERY 4000 mm
11.		CABINETS FOR FIRE FIGHTING EQUIPMENTS, FIRE EXTINGUISHER, HOSE PIPE	1000X1400X400	EVERY 90000mm
12.		FIRE EXTINGUISHER	Ø 151,H=343	EVERY 90000mm

NOTE: ALL THE DIMENSTIONS ARE IN MM

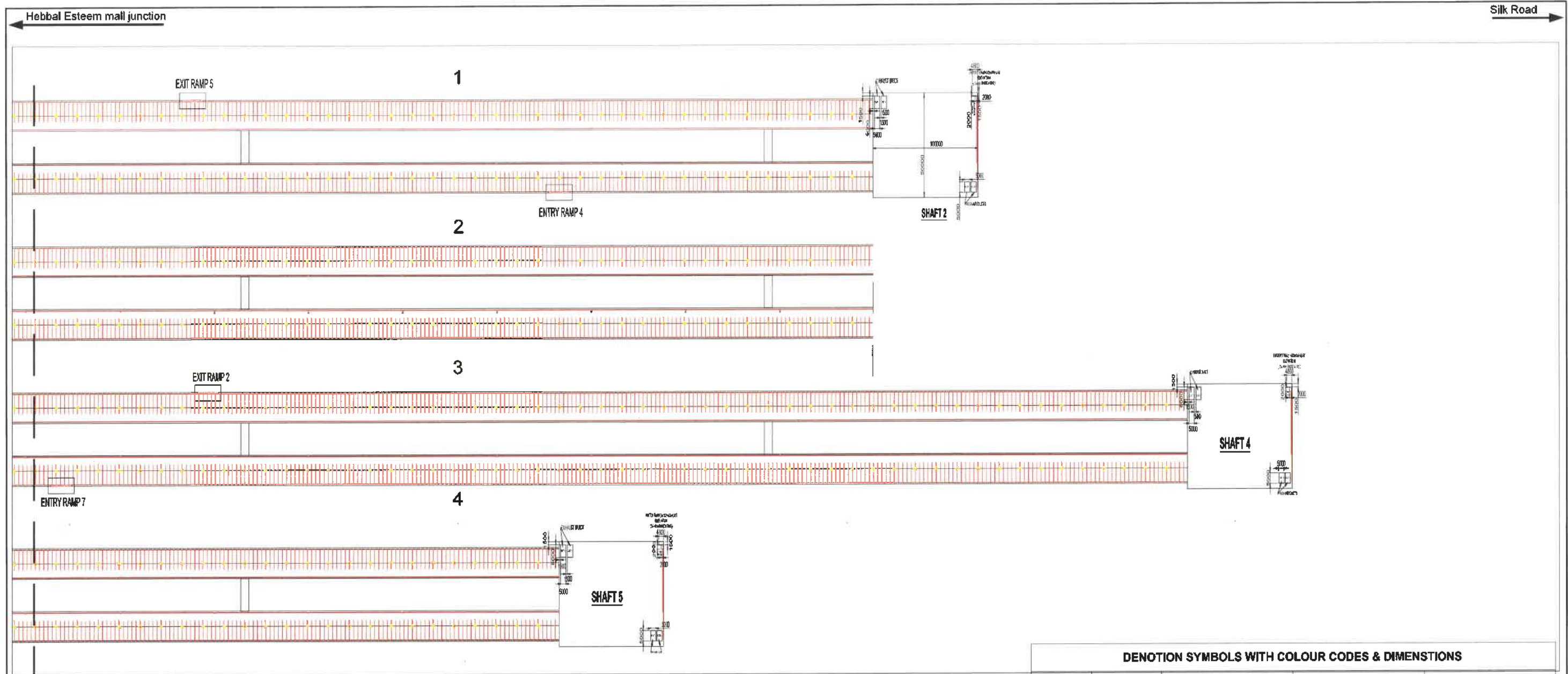
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/In-charge/RL/BMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project	Drawing Title	Drawing No.
RO	JAN-2025		GOVERNMENT OF KARNATAKA	AE/In-charge/RL/BMP	BOBAC CONSULTANTS PVT. LTD.		"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"	TUNNEL LINE DIAGRAM PIPE	RC/H/01/KM/ST/1/UD/WSD/01/RO
			Brukut Bangalore Mahanagara Palike	GE/In-charge/RL/BMP	BOBAC CONSULTANTS PVT. LTD.				
				EC- BMP					



DISTANCE BETWEEN TWO SHAFT	
SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3900
SHAFT 4-5	3300
TOTAL	14600

S. NO.	SYMBOLS	NAMES	DIMENSIONS(in mm)	POSITIONS
1.		SPRINKLER	Ø15	EVERY 4000 mm
2.		FIRE ALARM SENSOR		EVERY 20000 mm
3.		FIRE ALARM		EVERY 100000 mm
4.		WATER TANK	4800X1500X5000	REFERENCE IN DRAWING
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	100000X50000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP		REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X6000	REFERENCE IN DRAWING
9.				
10.		PIPES	Ø32mm(B), Ø100mm(C), Ø200mm(A)	Ø32mm(B) AT EVERY 4000 mm
11.		CABINET FOR FIRE FIGHTING EQUIPMENTS, FIRE EXTINGUISHER, HOSE PIPE	1000X1400X400	EVERY 90000mm
12.		FIRE EXTINGUISHER	Ø 151,H=343	EVERY 90000mm

[illegible]



DENOTON SYMBOLS WITH COLOUR CODES & DIMENSTIONS

S. NO.	SYMBOLS	NAMES	DIMENSTIONS(In mm)	POSITIONS
1.		SPRINKLER	Ø15	EVERY 4000 mm
2.		FIRE ALARM SENSOR		EVERY 20000 mm
3.		FIRE ALARM		EVERY 100000 mm
4.		WATER TANK	4000X1500X5000	REFERENCE IN DRAWING
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	100000X50000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP		REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X5000	REFERENCE IN DRAWING
9.		PIPES	Ø32mm(B), Ø100mm(C), Ø200mm(A)	Ø32mm(B) AT EVERY 4000 mm
10.		CABINATE FOR FIRE FIGHTING EQUIPMENTS, FIRE EXTINGUISHER, HOSE PIPE	1000X1400X400	EVERY 90000mm
11.		FIRE EXTINGUISHER	Ø 161,H=343	EVERY 90000mm

DISTANCE BETWEEN TWO SHAFT

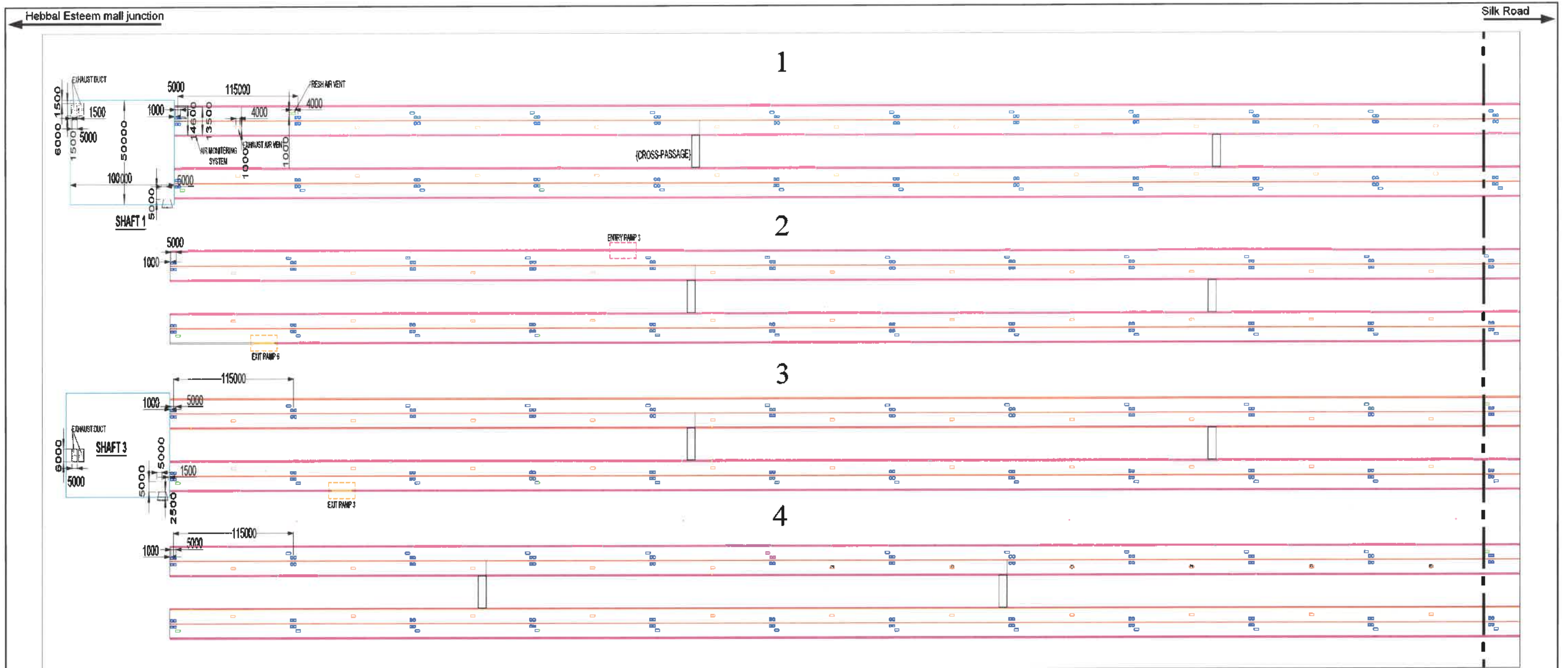
SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3800
SHAFT 4-5	3300
TOTAL	14800

NOTE: ALL THE DIMENSTIONS ARE IN MM

REVISION	DATE	AMENDMENT/ISSUE DESCRIPTION	CLIENT	AE/In-charge	CONSULTANT	Project	Drawing Title	Drawing No.
R0	JAN-2025		GOVERNMENT OF KARNATAKA	AE/In-charge-RLSBMP	ROBAC CONSULTANTS PVT. LTD.	FINAL DETAILED PROJECT REPORT	TUNNEL LINE DIAGRAM PIPE	RCN640H0001/TUNWSD/02/R0
			Bruhat Bangalore Mahanagara Palike	AE/In-charge-RLSBMP	ROBAC CONSULTANTS PVT. LTD.	Scale: AS SHOWN		
				EO/In-charge-RLSBMP	ROBAC CONSULTANTS PVT. LTD.	Sheet size: A0		
				EO/In-charge-RLSBMP	ROBAC CONSULTANTS PVT. LTD.			
				EO/In-charge-RLSBMP	ROBAC CONSULTANTS PVT. LTD.			

"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"

TUNNEL LINE DIAGRAM PIPE



DISTANCE BETWEEN TWO SHAFT

SHAFT	DISTANCE (mm)
SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3900
SHAFT 4-5	3300
TOTAL	14600

DENOTATION SYMBOLS WITH COLOUR CODES & DIMENSIONS

S. NO.	SYMBOLS	NAMES	DIMENSIONS (in mm)	POSITION
1.		JET-FAN	Ø1000, Ø=800, LENGTH=5000	AT EVERY 15000mm
2.		EXHAUST AIR VENT	2000X1200	AT EVERY 115000 mm
3.		FRESH AIR VENT	2000X1200	AT EVERY 115000 mm
4.		WATER TANK	2000X1000X4000	ELEVATION 85-90 m (INDICATIVE)
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	10000X50000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP		REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X5000	REFERENCE IN DRAWING
9.		AIR QUALITY MONITORING	Ø3X300	AT EVERY 115000mm
10.		AIR QUALITY MONITORING	Ø3X300	AT EVERY 115000mm

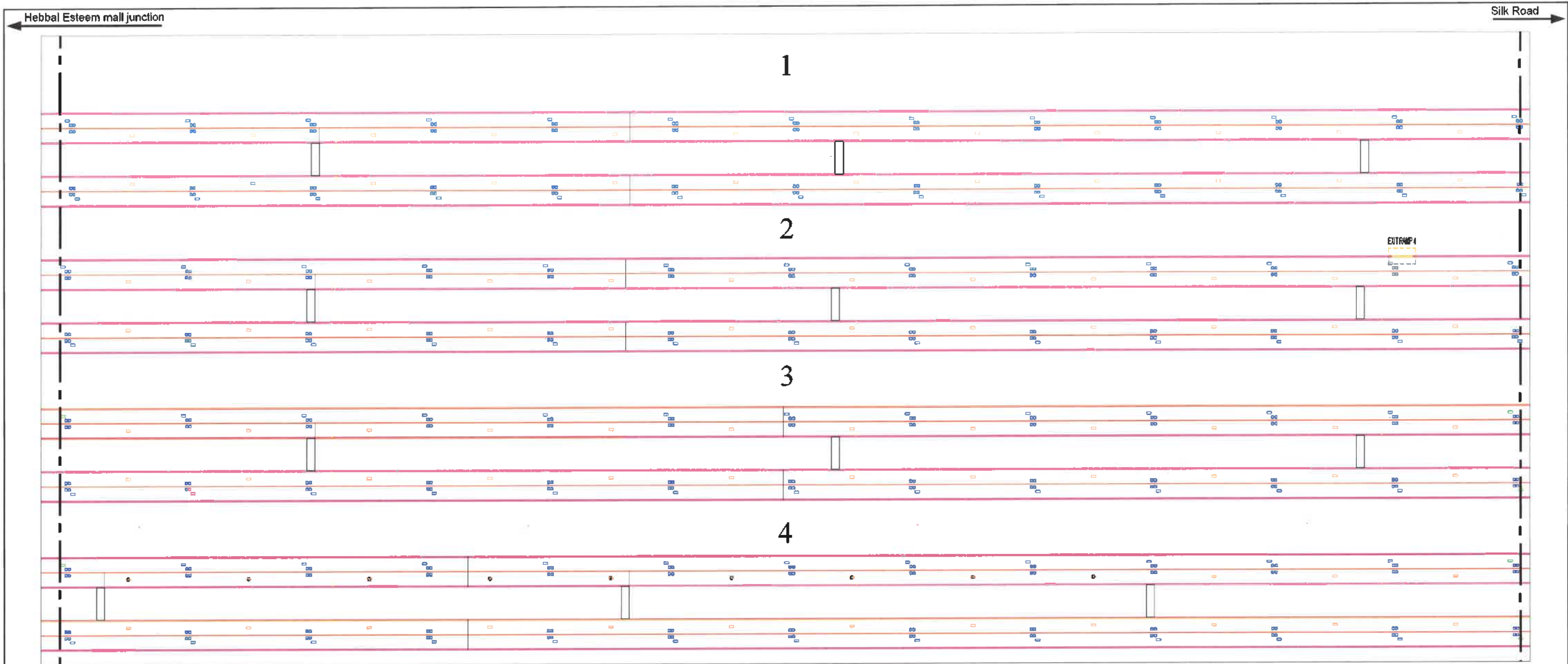
NOTE: ALL THE DIMENSIONS ARE IN MM

REVISION	DATE	AMENDMENT/ISSUE DESCRIPTION	CLIENT	DESIGNED BY	CHECKED BY	APPROVED BY	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project	Drawing Title	Drawing No.
R0	JAN-2025		GOVERNMENT OF KARNATAKA	AER/Infra Div.-R/BBMP	AER/Infra Div.-R/BBMP	EE/Infra Div.-R/BBMP	BOSHC CONSULTANTS PVT. LTD.	Scale: N.T.S.	Project	TUNNEL LINE DIAGRAM	RC/1640H0R087/TU/DWG0061/R0
			Bruhat Bangalore Mahanagara Palike	BIC- BBMP			BRUHAAT BANGALORE MAHANAGARA PALIKE	Sheet size: A0			

"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Road KSRP junction"

TUNNEL LINE DIAGRAM

[Signatures]



DISTANCE BETWEEN TWO SHAFT

SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3900
SHAFT 4-5	3300
TOTAL	14600

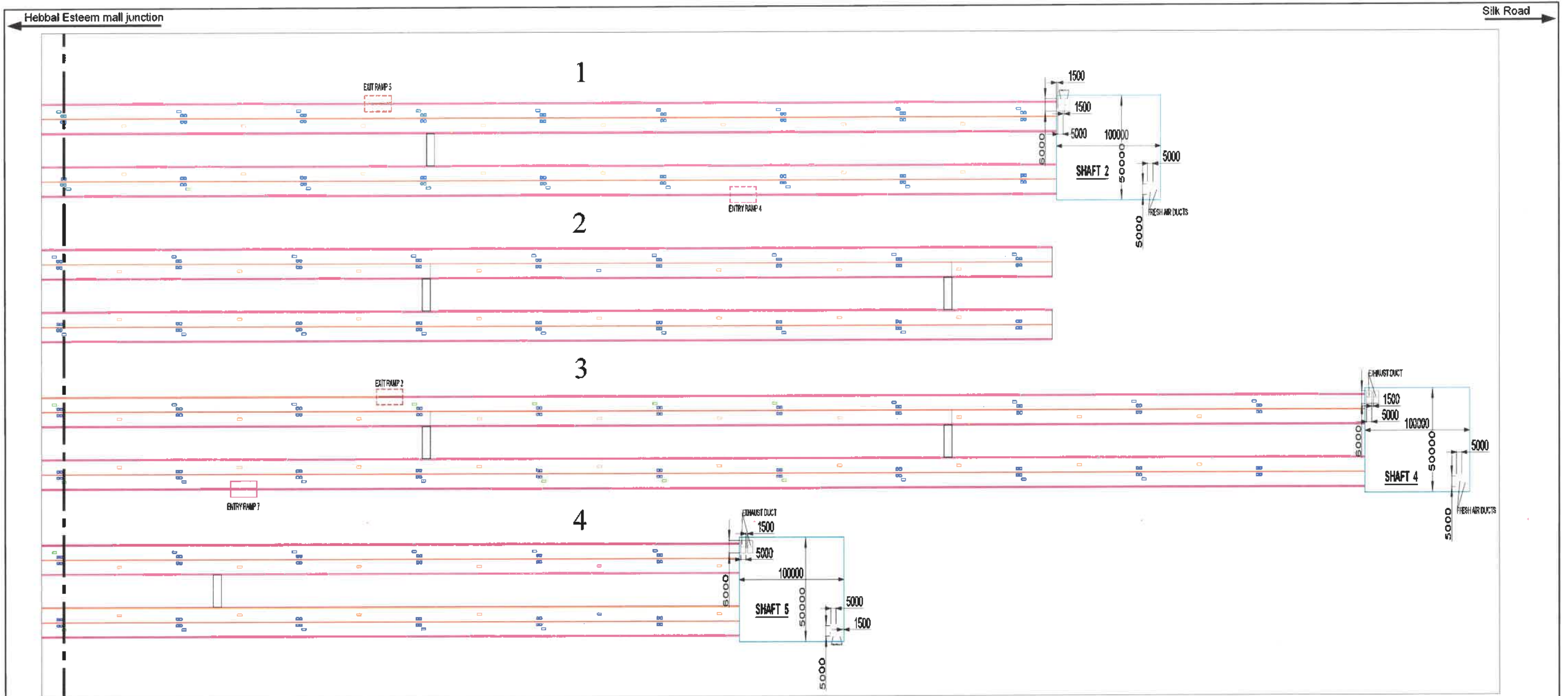
DENOTON SYMBOLS WITH COLOUR CODES & DIMENSTIONS

S. NO.	SYMBOLS	NAMES	DIMENSTIONS(in mm)	POSITION
1.		JET-FAN	21000, Ø=800, LENGTH=5000	AT EVERY 115000mm
2.		EXHAUST AIR VENT	2000X1200	AT EVERY 115000 mm
3.		FRESH AIR VENT	2000X1200	AT EVERY 115000 mm
4.		WATER TANK	2000X1000X4000	ELEVATION 35-40 m (INDICATIVE)
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	100000X50000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP		REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X6000	REFERENCE IN DRAWING
9.		AIR QUALITY SENSOR	Ø300	AT EVERY 115000 mm
10.		AIR QUALITY SENSOR	Ø300	AT EVERY 115000 mm

NOTE: ALL THE DIMENSTIONS ARE IN MM

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	DESIGNER	CHECKER	APPROVER	PROJECT	DRAWING TITLE	DRAWING NO.
R0	JAN-2025		GOVERNMENT OF KARNATAKA Bhutan Bangalore Mahanagara Palike	AE/Arka Div.-R/BBMP AE/Arka Div.-R/BBMP EE/Arka Div.-R/BBMP ED- BBMP			FINAL DETAILED PROJECT REPORT	TUNNEL LINE DIAGRAM	RC/640/HCHBT/7/UDWS0002R0

CONSULTANT: KONG CONSULTANTS PVT. LTD.
1, 2ND FLOOR, 1ST FLOOR, 142/1, 142/2, 142/3, 142/4, 142/5, 142/6, 142/7, 142/8, 142/9, 142/10, 142/11, 142/12, 142/13, 142/14, 142/15, 142/16, 142/17, 142/18, 142/19, 142/20, 142/21, 142/22, 142/23, 142/24, 142/25, 142/26, 142/27, 142/28, 142/29, 142/30, 142/31, 142/32, 142/33, 142/34, 142/35, 142/36, 142/37, 142/38, 142/39, 142/40, 142/41, 142/42, 142/43, 142/44, 142/45, 142/46, 142/47, 142/48, 142/49, 142/50, 142/51, 142/52, 142/53, 142/54, 142/55, 142/56, 142/57, 142/58, 142/59, 142/60, 142/61, 142/62, 142/63, 142/64, 142/65, 142/66, 142/67, 142/68, 142/69, 142/70, 142/71, 142/72, 142/73, 142/74, 142/75, 142/76, 142/77, 142/78, 142/79, 142/80, 142/81, 142/82, 142/83, 142/84, 142/85, 142/86, 142/87, 142/88, 142/89, 142/90, 142/91, 142/92, 142/93, 142/94, 142/95, 142/96, 142/97, 142/98, 142/99, 142/100, 142/101, 142/102, 142/103, 142/104, 142/105, 142/106, 142/107, 142/108, 142/109, 142/110, 142/111, 142/112, 142/113, 142/114, 142/115, 142/116, 142/117, 142/118, 142/119, 142/120, 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142/1108, 142/1109, 142/1110, 142/1111, 142/1112, 142/1113, 142/1114, 142/1115, 142/1116, 142/1117, 142/1118, 142/1119, 142/1120, 142/1121, 142/1122, 142/1123, 142/1124, 142/1125, 142/1126, 142/1127, 142/1128, 142/1129, 142/1130, 142/1131, 142/1132, 142/1133, 142/1134, 142/1135, 142/1136, 142/1137, 142/1138, 142/1139, 142/1140, 142/1141, 142/1142, 142/1143, 142/1144, 142/1145, 142/1146, 142/1147, 142/1148, 142/1149, 142/1150, 142/1151, 142/1152, 142/1153, 142/1154, 142/1155, 142/1156, 142/1157, 142/1158, 142/1159, 142/1160, 142/1161, 142/1162, 142/1163, 142/1164, 142/1165, 142/1166, 142/1167, 142/1168, 142/1169, 142/1170, 142/1171, 142/1172, 142/1173, 142/1174, 142/1175, 142/1176, 142/1177, 142/1178, 142/1179, 142/1180, 142/1181, 142/1182, 142/1183, 142/1184, 142/1185, 142/1186, 142/1187, 142/1188, 142/1189, 142/1190, 142/1191, 142/1192, 142/1193, 142/1194, 142/1195, 142/1196, 142/1197, 142/1198, 142/1199, 142/1200, 142/1201, 142/1202, 142/1203, 142/1204, 142/1205, 142/1206, 142/1207, 142/1208, 142/1209, 142/1210, 142/1211, 142/1212, 142/1213, 142/121



DENOTON SYMBOLS WITH COLOUR CODES & DIMENSTIONS

S. NO.	SYMBOLS	NAMES	DIMENSIONS(in mm)	POSITION
1.		JET-FAN	Ø1000, Ø=800, LENGTH=5000	AT EVERY 15000mm
2.		EX-HAUST AIR VENT	2000X1200	AT EVERY 115000 mm
3.		FRESH AIR VENT	2000X1200	AT EVERY 115000 mm
4.		WATER TANK	2000X1000X4000	ELEVATION 35-40 m (INDICATIVE)
5.		PUMP STATION	2000X2000	REFERENCE IN DRAWING
6.		SHAFT	100000X50000	REFERENCE IN DRAWING
7.		ENTRY/EXIT RAMP	-	REFERENCE IN DRAWING
8.		EXHAUST DUCT	5000X8000	REFERENCE IN DRAWING
9.		AIR QUALITY SENSOR	90X30	AT EVERY 10000 mm

DISTANCE BETWEEN TWO SHAFT

SHAFT 1-2	3700
SHAFT 2-3	3700
SHAFT 3-4	3900
SHAFT 4-5	3300
TOTAL	14600

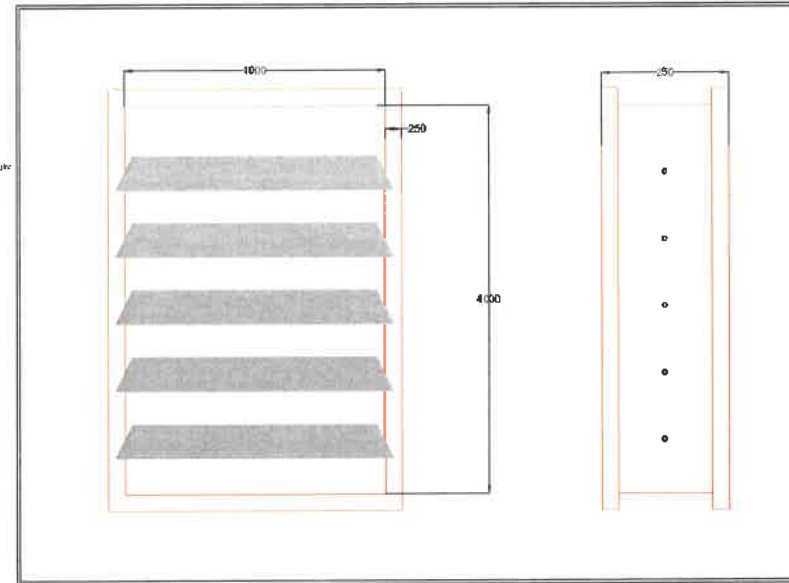
NOTE: ALL THE DIMENSTIONS ARE IN MM

REVISION NO.	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	DESIGNED	CHECKED	APPROVED	PROJECT	DRAWING NO.
01	10/11/2024		GOVERNMENT OF KARNATAKA Bhutat Bangalore Mahanagara Palike	AE/Inna Div.-RI, BBMP AE/Inna Div.-RI, BBMP EE/Inna Div.-RI, BBMP EC- BBMP			FINAL DETAILED PROJECT REPORT	RC/1640HMBT/TUOWGD/BBMP

"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"

TUNNEL LINE DIAGRAM

Signature: [Signatures]



Technical drawing of the P06 adapter, showing three views: front, side, and rear.

Front View: A square unit with a central circular port. Dimensions include a height of 90 mm and a width of 90 mm. Four mounting holes are located at the corners. A label "P06 adapter" points to the top of the unit, and a label "Installation hole" points to one of the corner holes.

Side View: Shows the profile of the unit. Dimensions include a total height of 110 mm, a mounting flange height of 24 mm, and a central port diameter of 3.5 mm. The unit is mounted on a vertical rod.

Rear View: Shows the back of the unit. Dimensions include a total height of 90 mm and a mounting flange height of 23.5 mm. The unit is mounted on a vertical rod.

NOTE: 1. ALL THE DIMENSTIONS ARE SCALED & ARE IN MM.
2. DUCT ALIGNMENT IS GIVEN IN SHEET 1A.

<u>FRESH AIR & EXHAUST AIR VENT</u>	
FRESH AIR VENT DIMENTION	1000X3000
EXHAUST AIR VENT DIMENTION	1000X3000
DISTANCE BETWEEN 2 VENTS	11500
AIR VENT OPENING SIZE WITH DAMPER	1000X4000
DAMPÉR THICKNESS	3

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	Project		"Consultancy services for preparation of DPR for the work of Construction of Underground Vehicular Tunnel from Hebbal Esteem mall junction to Silk Board KSRP junction"	
RO	Jan.- 2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	FINAL DETAILED PROJECT REPORT			
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOCONSULT INDIA PRIVATE LIMITED 408/01, WORTH, Phase-1, Tower 10D, Road No.2, Saketpur Metro Station Sector 28, Gurgaon Haryana INDIA	Designed: RR	Scale :- As Shown	Drawing Title	VENTILATION SYSTEM SPECIFICATIONS.
				EIC- BBMP		Drawn: SS		Drawing No	RC/1640/HO/HBT/TU/DWG/01/R0
						Checked: AT			
						Approved: HRY	Sheet size: A2		

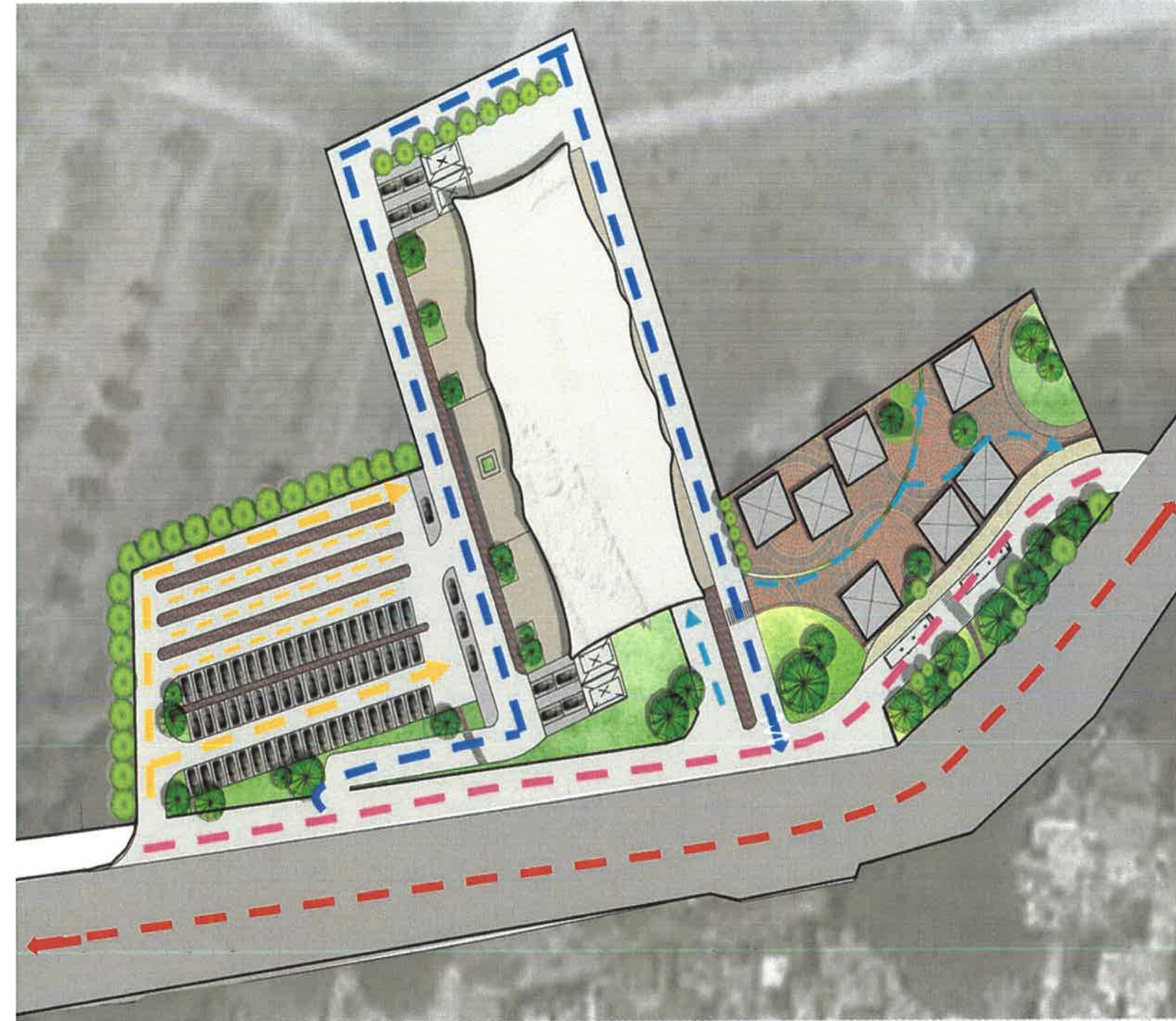
Appendix-B-VI

SHAFT PLAN

Shimulao ~~Adai~~ Robo ~~exadono~~ ~~Shimulao~~

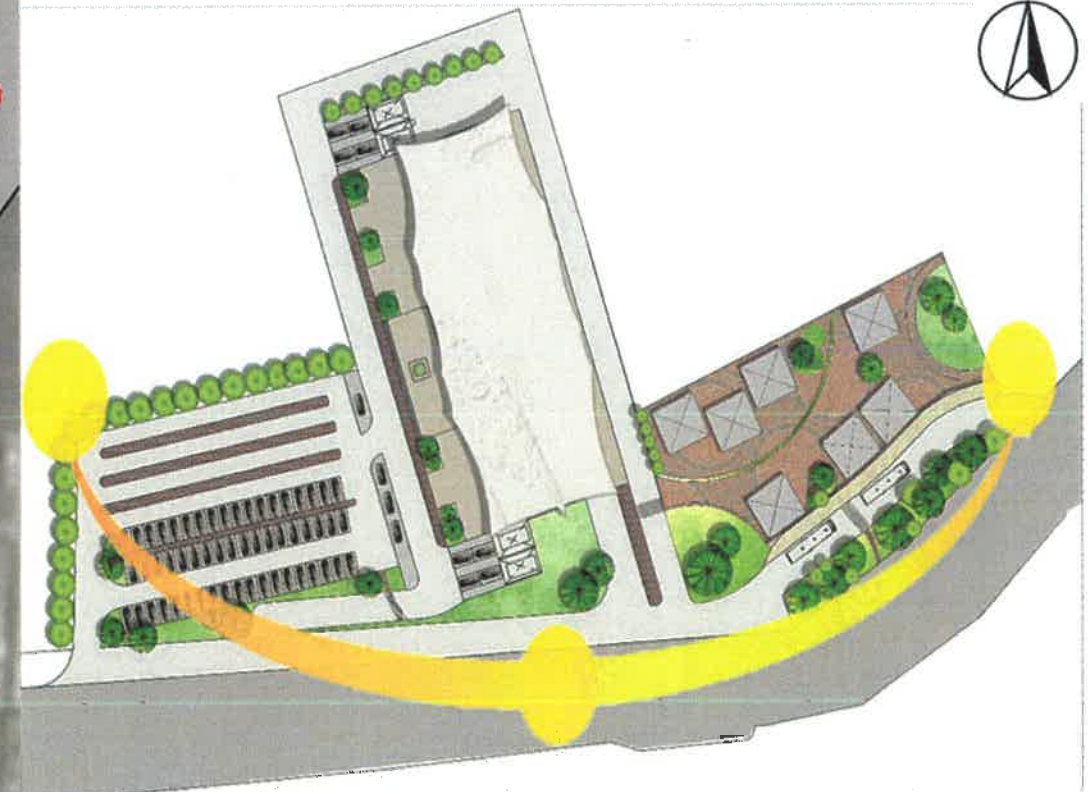
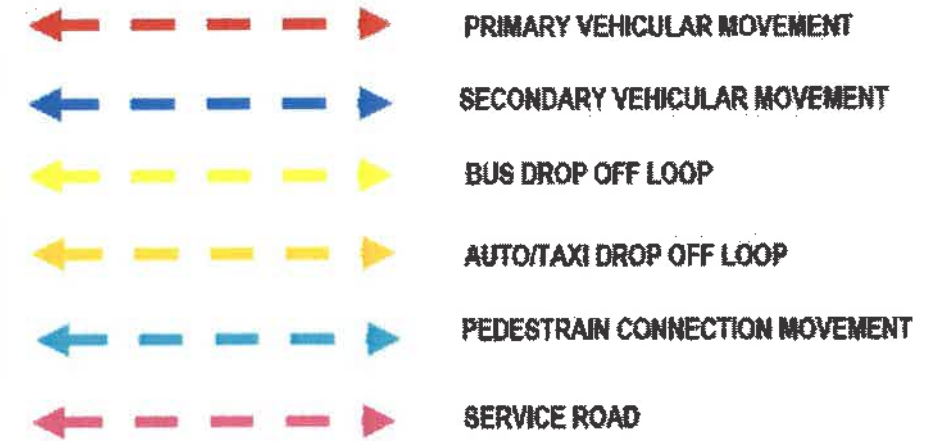
SHAFT 4 LALBAGH

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT		Project	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Eastern Mall Junction (Km. 0+000) to Shesadri Road, freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 6+105), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jaymahal road.
RO	Jan.-2025	-	 GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	 RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG, (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)			
			 Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	 GEOSCONSULT INDIA PRIVATE LIMITED 081166 NERUL, Phase Town MP Road Near Shesadri Metro Station Sector 28, Connaught Bayview INDIA	Designed: RR	Scale :-	Drawing Title	SHAFT-4 LALBACH - SITE PLAN
				EIC- BBMP		Drawn: SS	AS SHOWN	Drawing No.	
						Checked: AT	Sheet size: A2		
						Approved: HRY			



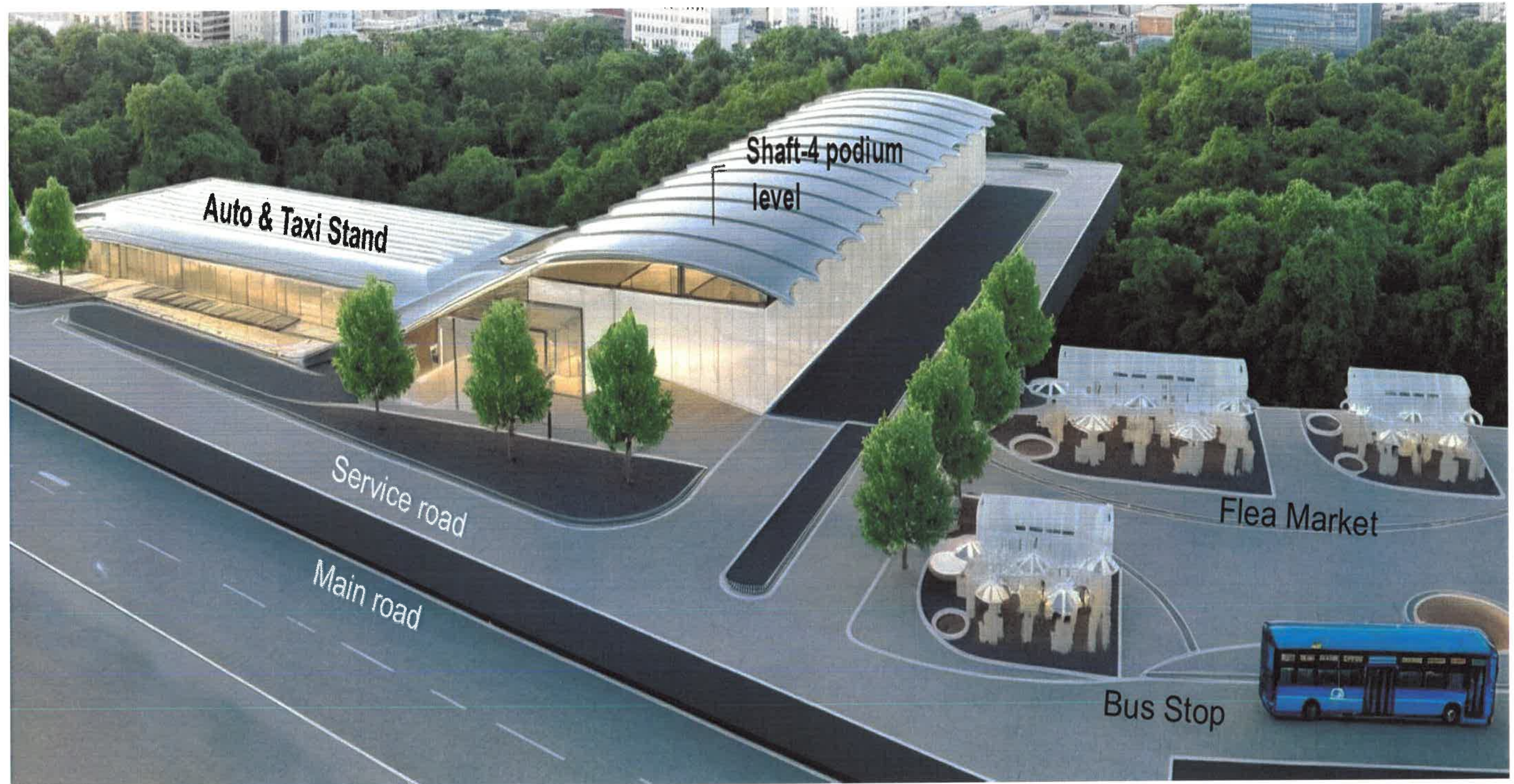
SHAFT 4- CIRCULATION PLAN

LALBAGH

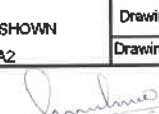
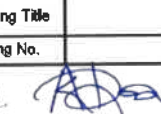
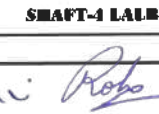


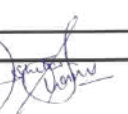
SUNPATH DIAGRAM

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RO	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Eastern Mall Junction (Km. 0+000) to Sheshadri Road, Freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jaymehar road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULT INDIA PRIVATE LIMITED D/1514 Wafat, Plasma Tower MG Road Near Sikandarpur Metro Station Sector 25, Gurgaon Haryana INDIA	Scale :- AS SHOWN	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No.



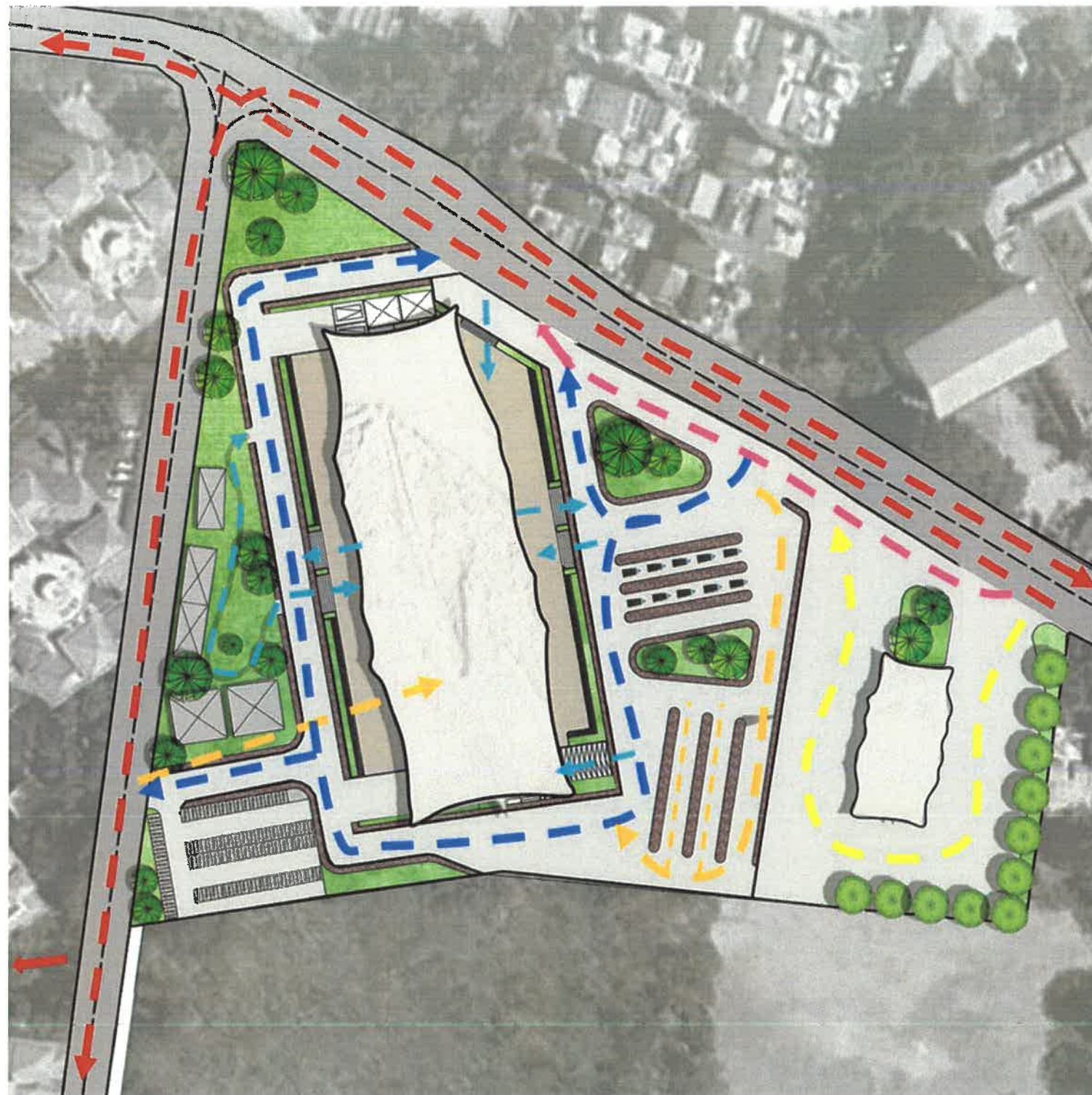
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-R1,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AE/Infra Div.-R1,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of two tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Eastern Mall Junction (Km. 0+000) to Shesadri Road, freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Exit ramps at CV Raman Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-R1,BBMP	GEOSCONSULT INDIA PRIVATE LIMITED 64B/65 Vidyut, Flavia, Tower M3 Road Near Sikandarpur Metro Station Sector 28, Gurgaon Haryana 122004	Scale :- AS SHOWN Sheet size: A2	SHAFT-4 LAUNCH - CONCEPTUAL 3D MASSING
				EIC- BBMP			



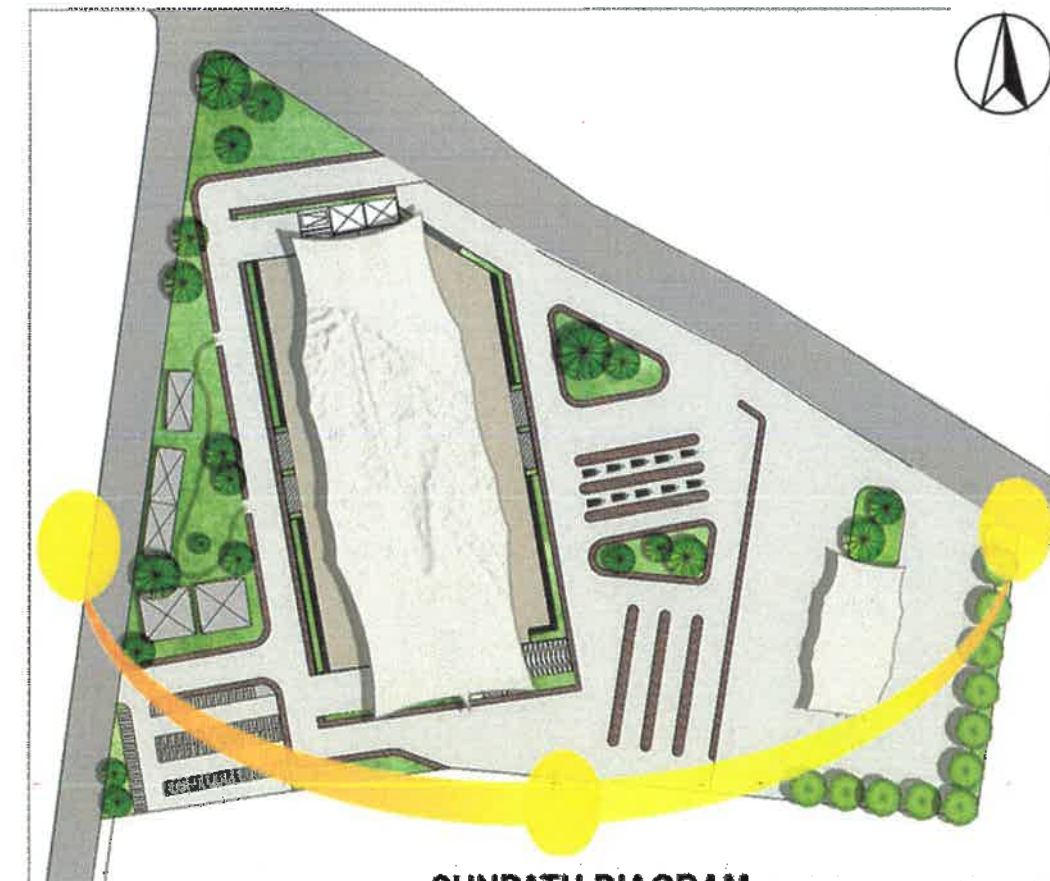
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esteem Mall Junction (Km. 0+000) to Shesadri Road, freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECON CONSULTANTS PRIVATE LIMITED 042164 Vellur, Phase 1, Tower 102 Road Near Siddhaganga Metro Station Sector 28, Bangalore Karnataka 560036	Scale :- AS SHOWN	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No.



SHAFT 5 – CIRCULATION PLAN

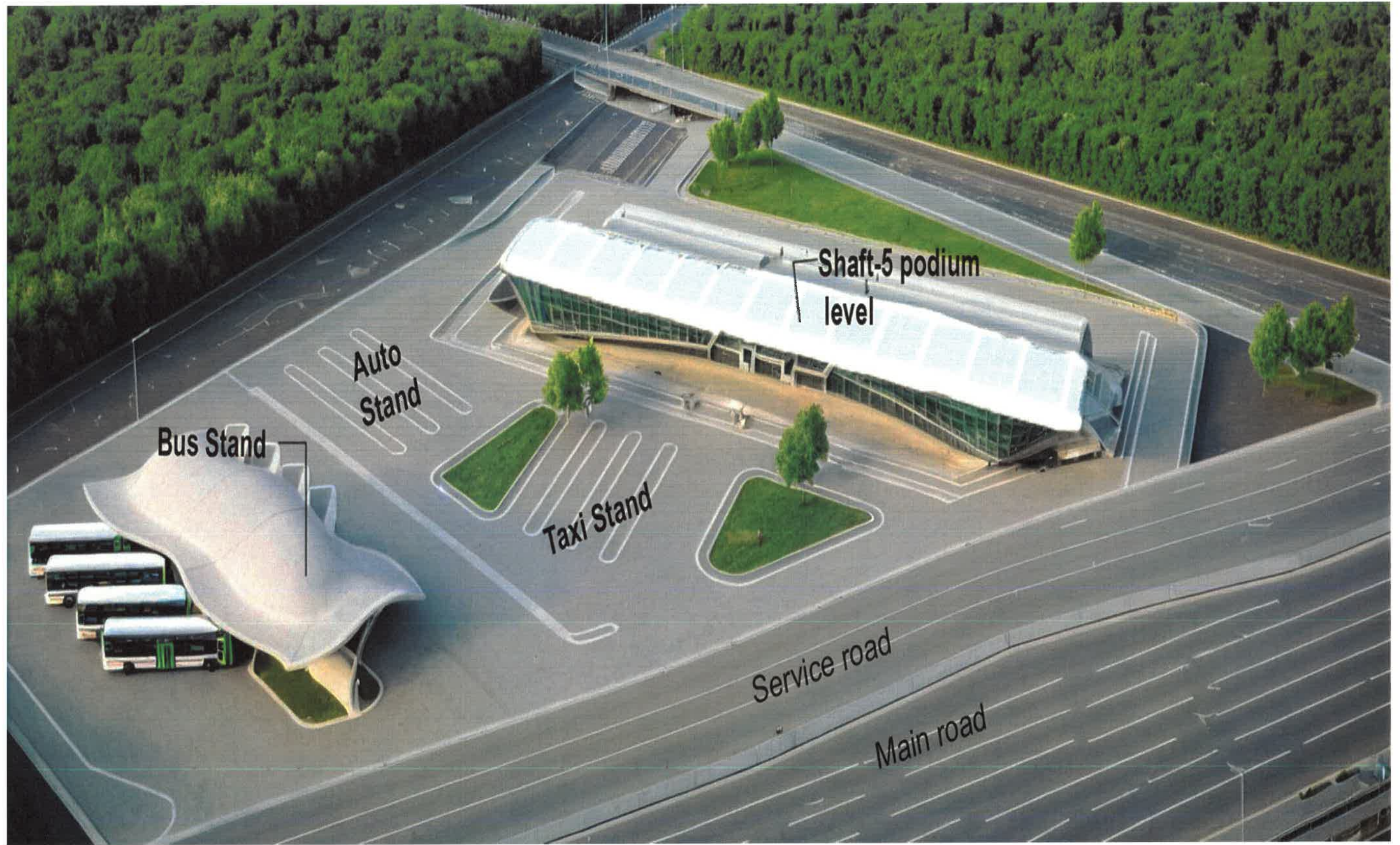
SILK BOARD

-  PRIMARY VEHICULAR MOVEMENT
-  SECONDARY VEHICULAR MOVEMENT
-  BUS DROP OFF LOOP
-  AUTO/TAXI DROP OFF LOOP
-  PEDESTRAIN CONNECTION MOVEMENT
-  SERVICE ROAD

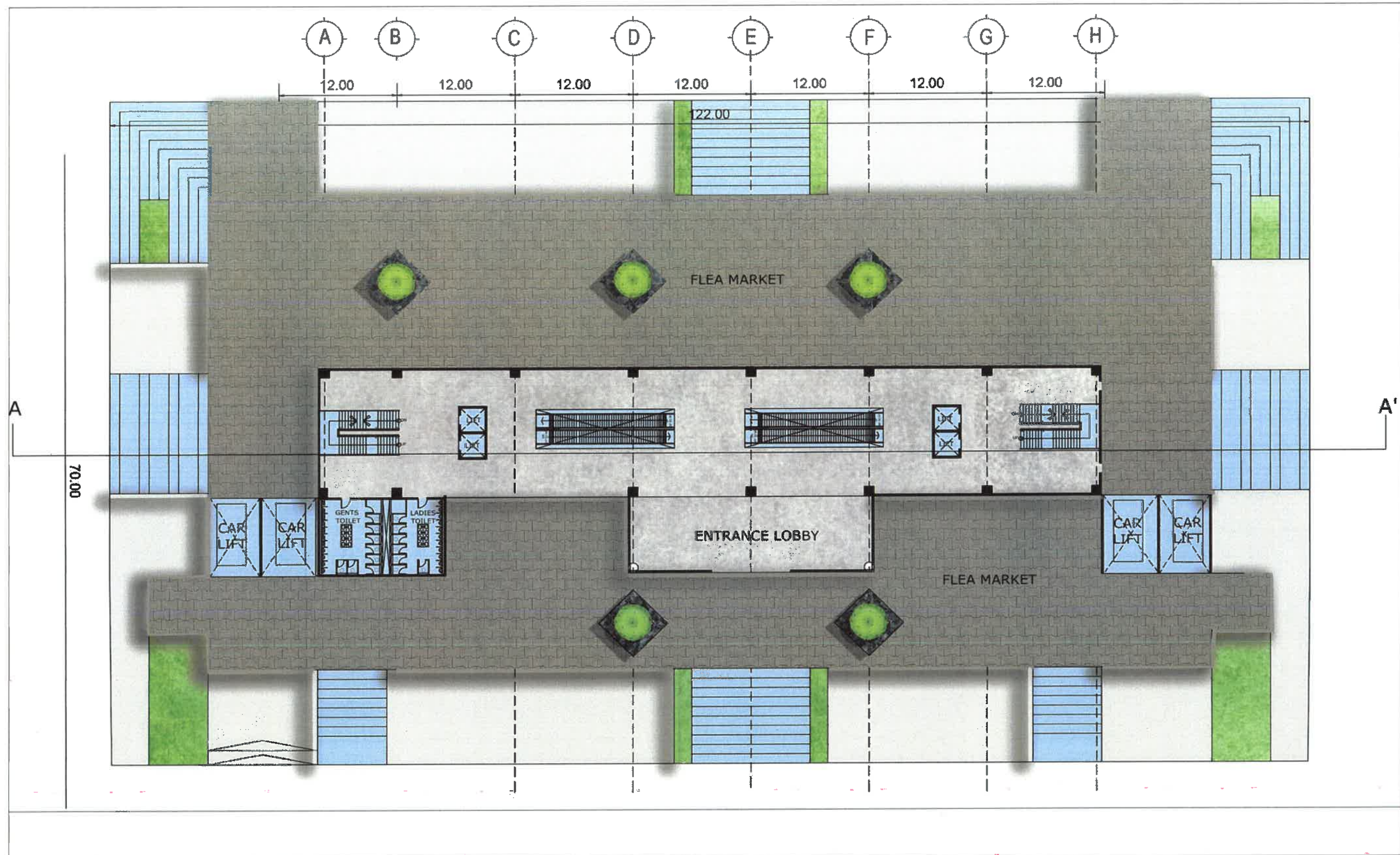


SUNPATH DIAGRAM

REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	Jan.- 2025	-	GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 6.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of two tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esteem Mall junction (Km. 0+000) to Shesadri Road, Freedom park (Km 6.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	OBODCONSULT INDIA PRIVATE LIMITED 643166, WeWork, Phase 1, Tower N0, Road New Silkboard Micro Station Sector 28, Gurgaon Haryana INDIA	Scale :- AS SHOWN Sheet size: A2	Drawing Title SHAFT-5 SILKBOARD - CIRCULATION PLAN AND SUNPATH
				EIC- BBMP		Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing No.



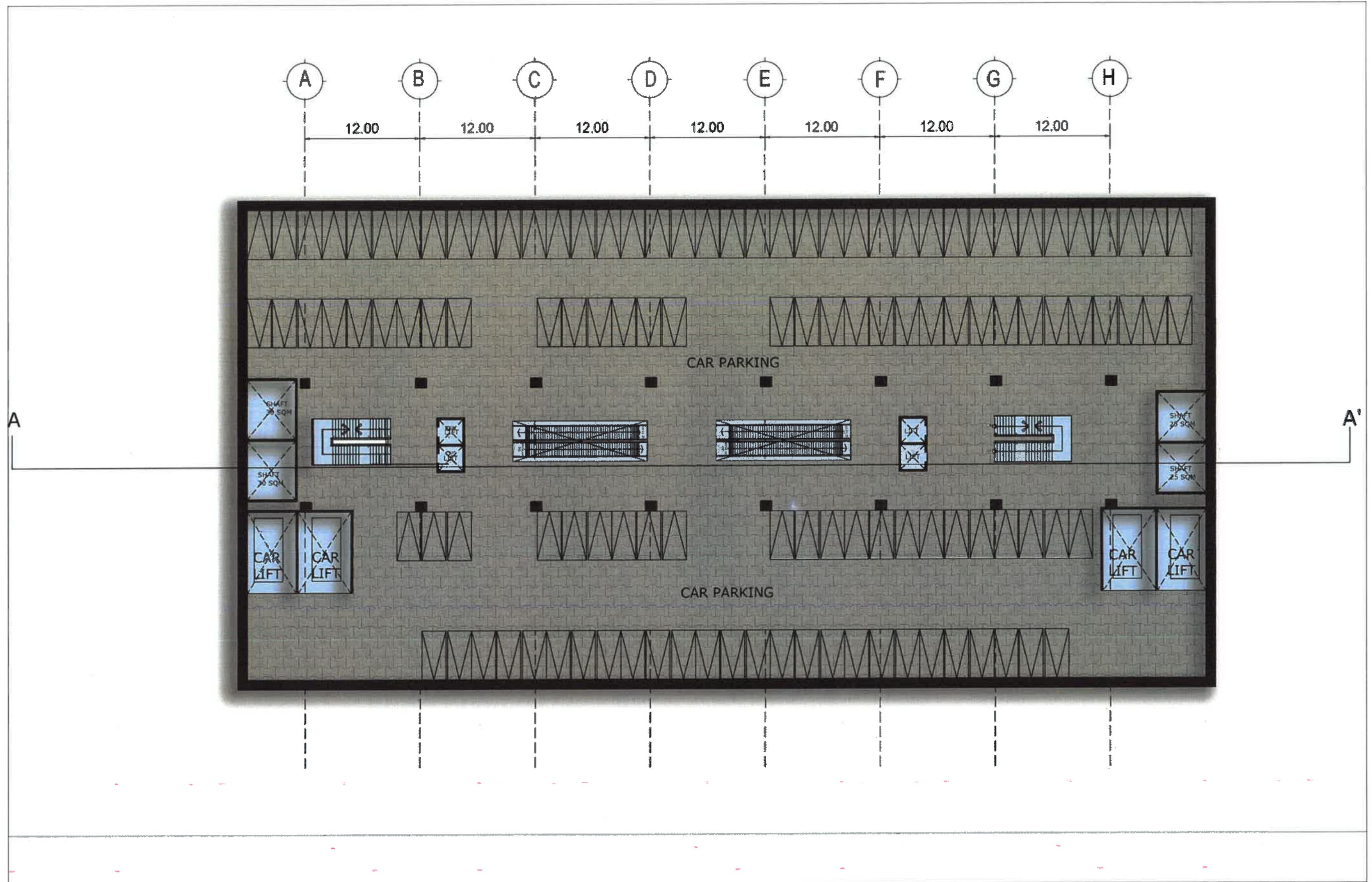
REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
Ro	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esteem Mall junction (Km. 0+000) to Shesadri Road, freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Exit ramps at CV Raman Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GEOCONSULT INEXIA PRIVATE LIMITED 64B/166 WeWork, Platina Tower B23 Road Near Subbappa Metro Station Sector 24, Gurgaon Haryana INDIA	Scale :- AS SHOWN	Drawing Title
				EIC- BBMP		Sheet size: A2	Drawing No.



REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to Km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esteem Mall junction (Km. 0+000) to Shesadri Road, freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GD&CONSLT INRIA PRIVATE LIMITED 98/101 Waford, Phase 2, Tower B&G, 3rd Floor Silk Board Metro Station Sector 24, Ganga Nagar Bengaluru (INDIA)	Scale :- AS SHOWN Sheet size: A2	Drawing Title SHAFT TYPICAL FLOOR PLANS - PODIUM GROUND LEVEL FLOOR PLAN
				EIC- BBMP		Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing No.

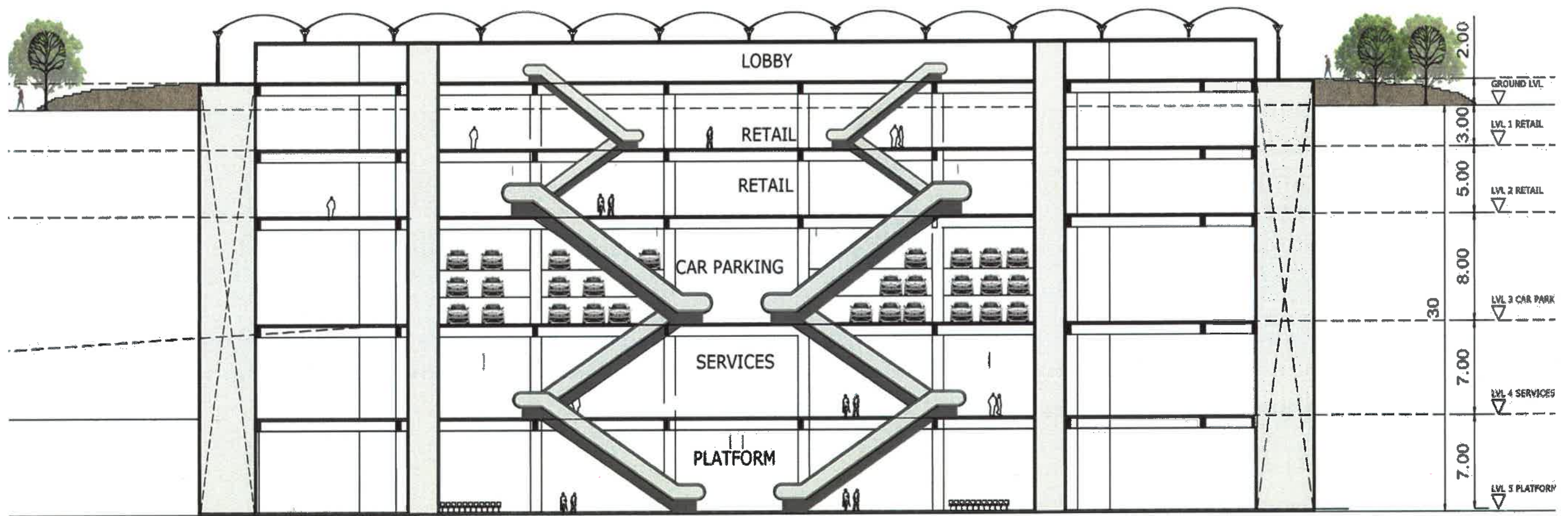
[Handwritten signatures and initials]





REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT:	FINAL DETAILED PROJECT REPORT	Project
RD	Jan.-2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	RODIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esieem Mall Junction (Km. 0+000) to Sheshadri Road, Freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Ramen Road and Jaymahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	GECONSTRUCT INDIA PRIVATE LIMITED 44/40rd Well, Padina Tower MO Road Near Silk Board Metro Station Sector 26, Gurgaon Haryana INDIA	Scale :- AS SHOWN Sheet size: A2	Drawing Title SHAFT TYPICAL FLOOR PLANS - LEVEL 3 FLOOR PLAN - RIICP (PARKING)
				EIC- BBMP		Designed: RR Drawn: SS Checked: AT Approved: HRY	Drawing No.





REVISION	DATE	AMENDMENT / ISSUE DESCRIPTION	CLIENT	AE/Infra Div.-RI,BBMP	CONSULTANT	FINAL DETAILED PROJECT REPORT	Project
R0	Jan.- 2025		GOVERNMENT OF KARNATAKA	AEE/Infra Div.-RI,BBMP	ROBIC CONSULTANTS PVT. LTD. 1, JAI SINGH MARG (FIRST FLOOR), YMCA CULTURAL CENTRE BUILDING NEW DELHI - 110001 (INDIA)	(Package 1 : Km 0.000 to km 8.748 of North South Corridor connecting Hebbal to Silk Board.)	Construction of twin tube Underground Vehicular Tunnel (3-lane Configuration each) from Hebbal near Esteem Mall Junction (Km. 0+000) to Shesadri Road, Freedom park (Km 8.748) of North South Corridor including launching and retrieval shaft (at Km 1+375 and Km 5+050), entry exit ramps at Hebbal (Km 0+000) and ORR, entry and Entry & exit ramps at CV Raman Road and Jayamahal road.
			Bruhat Bangalore Mahanagara Palike	EE/Infra Div.-RI,BBMP	OBROCONSULT INDIA PRIVATE LIMITED M3116 Wafra, Phase 2 Zone M3 Road 110a 99andopu Metro Station Sector 28, Changanarayana INDIA	Scale :- AS SHOWN Sheet size: A2	Drawing Title
				EIC- BBMP			Drawing No.

SHAFT TYPICAL SECTION



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