ガーナ共和国
道　　路　　省（MRH）
ガーナ道路公社（GHA）

ガーナ国
国道８号線改修計画フェーズ２

準備調査報告書
（図面集）

平成 27 年 1 月
（2015 年）

独立行政法人
国際協力機構（JICA）

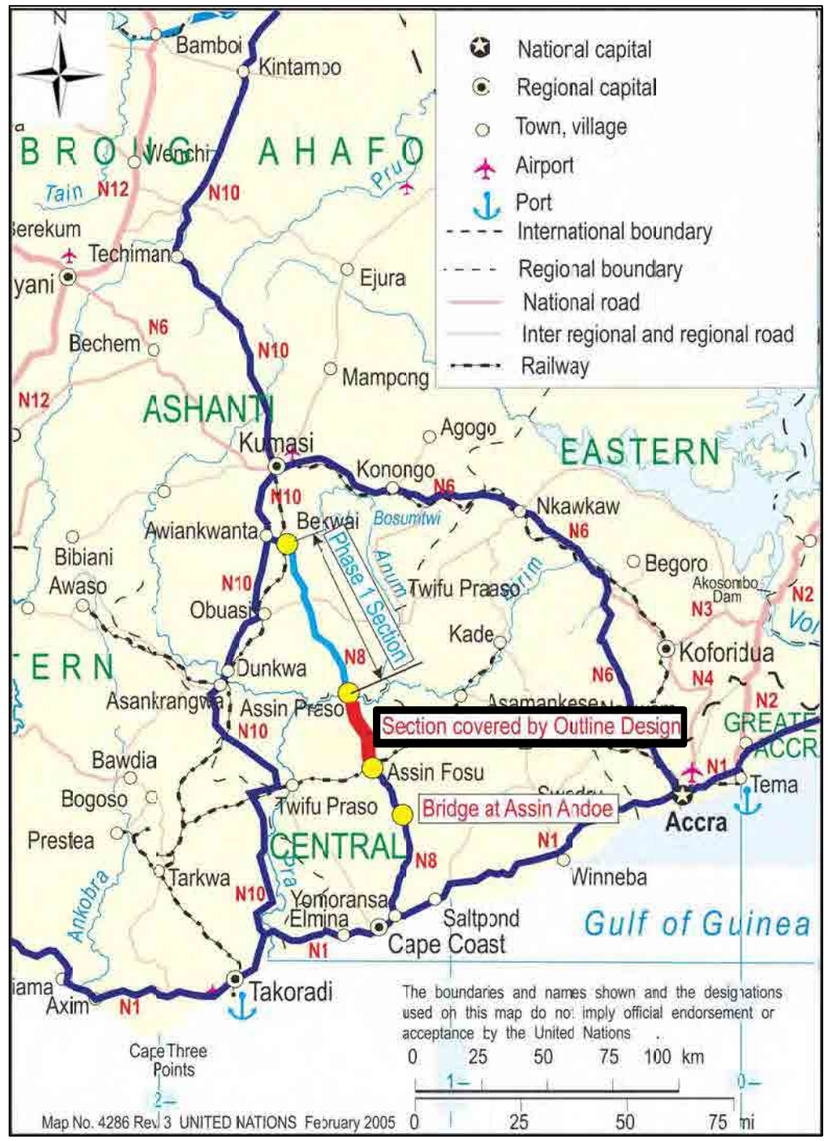
セントラルコンサルタント株式会社
株式会社エイト日本技術開発

基盤
CR(5)
15-001

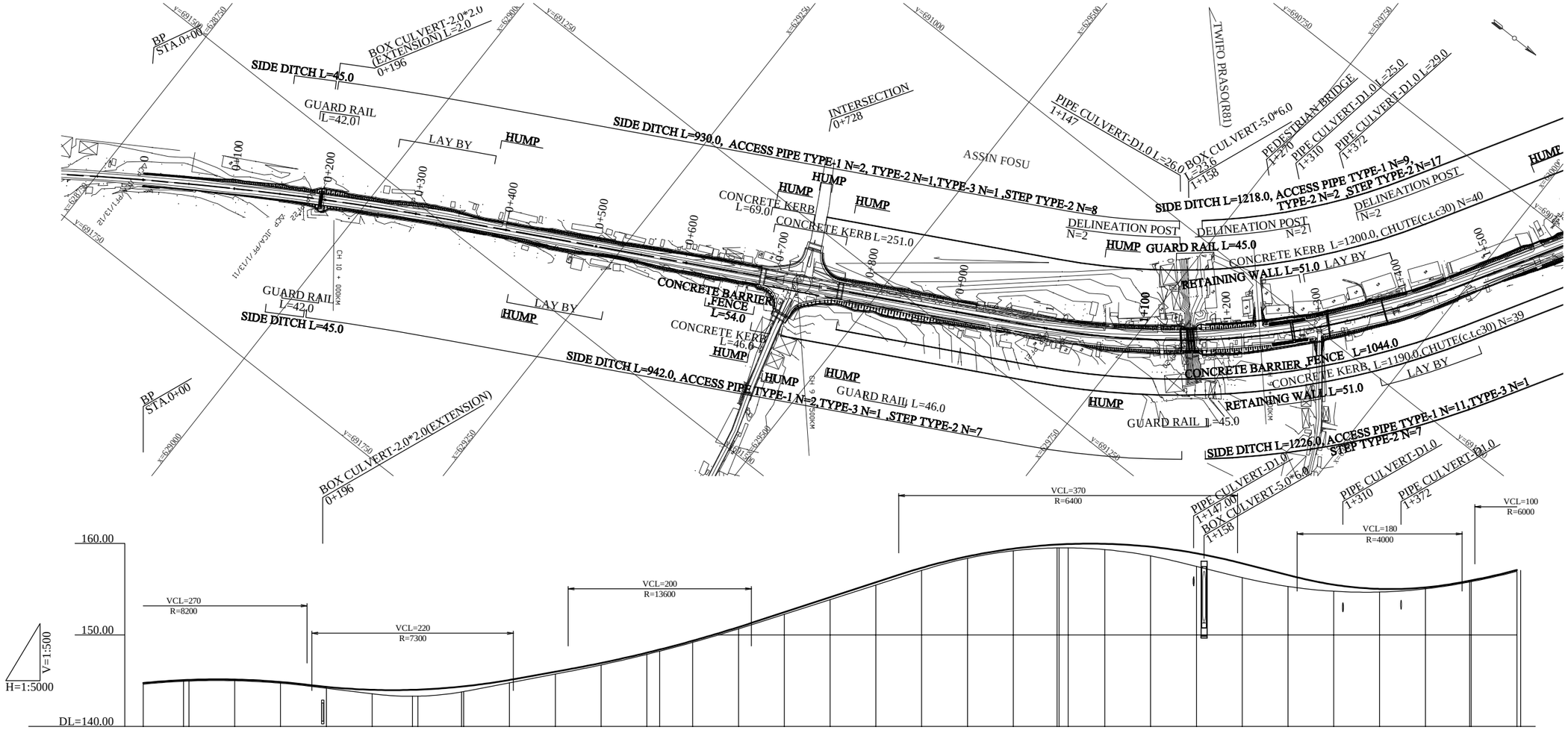
目　次

アシンフォスーアシンプラソ間の道路改修

LOCATION MAP

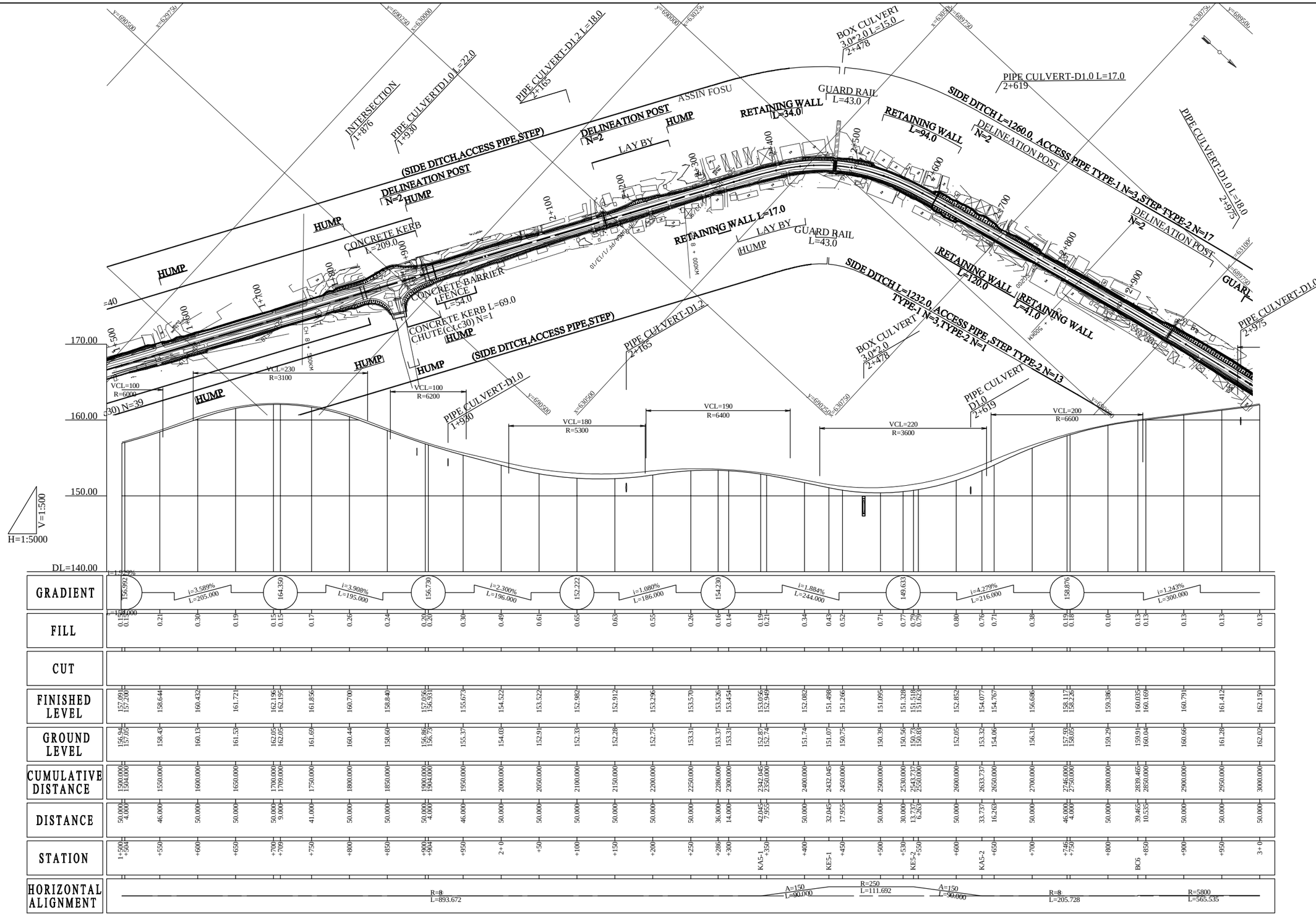


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: LOCATION MAP	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 01

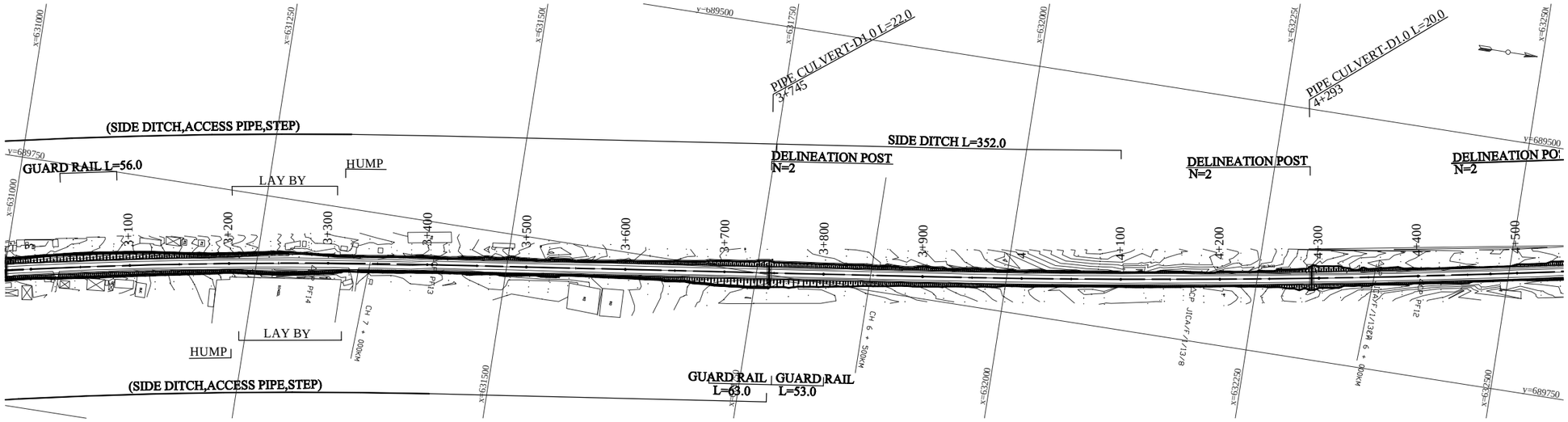


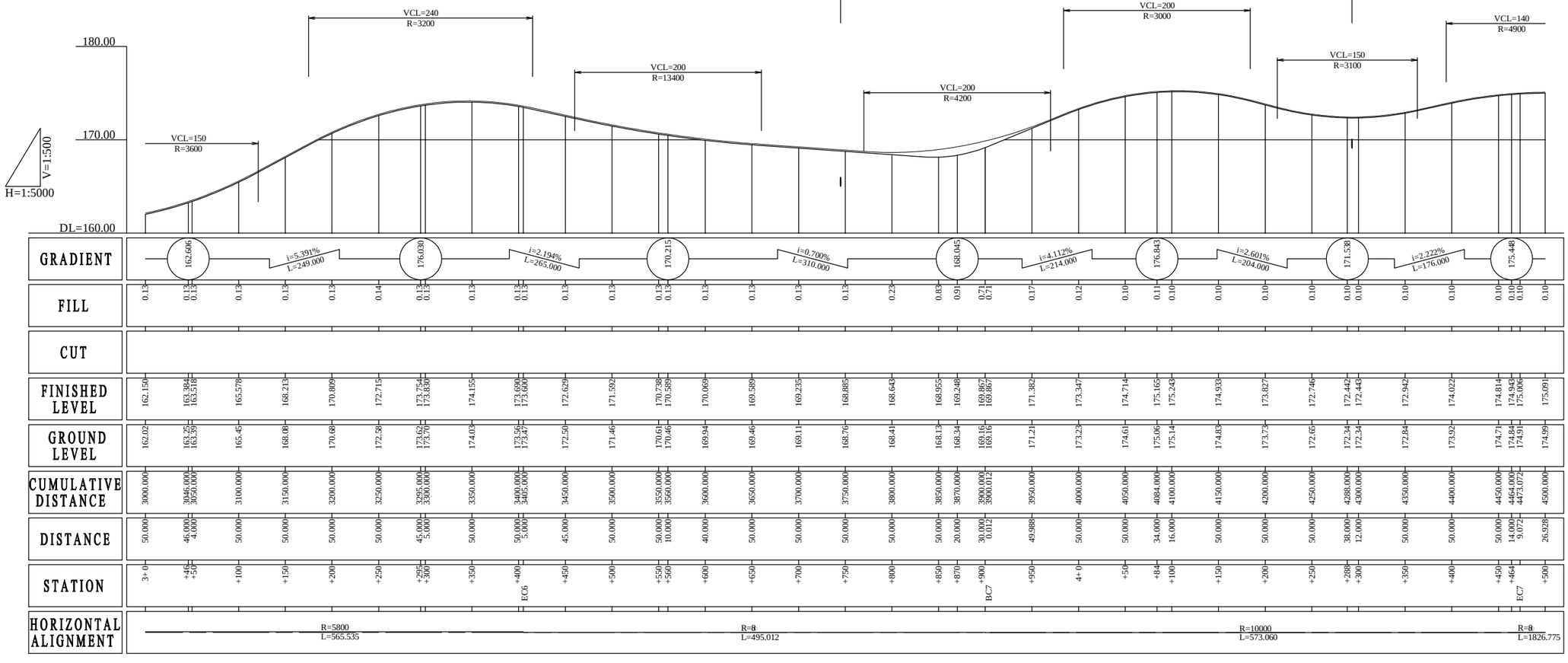
GRADIENT	145.254	145.148% L=269.850	146.182	i=1.200% L=250.150	143.179
	i=1.800% L=269.850	148.037	i=3.265% L=446.000	162.600	i=2.523% L=340.000
	154.022	i=1.929% L=154.000			
FILL	0.13 0.13	0.13	0.13	0.15	0.43
	0.70 0.72	0.58 0.58	0.32	0.26	0.21
	0.18	0.17	0.17	0.19	0.23
	0.26	0.30	0.29	0.20	0.23
	0.37 0.36	0.41	0.63	0.99	1.43
	1.55	1.26	0.71	0.34	0.15
	0.13 0.13	0.15			
CUT					
FINISHED LEVEL	144.747	145.055 145.090	145.127	144.857	144.326
	144.005	144.004 144.025	144.361 144.365	145.086	145.985
	146.932	148.056	148.403	149.362	150.852
	152.477	154.110	155.743	157.326	158.568
	159.419	159.866 159.923	159.946	159.623	158.910
	157.806	156.545	155.481	155.024	155.184
	155.919 155.957	157.091			
GROUND LEVEL	144.75	144.94 144.96	145.00	144.73	144.18
	143.98	143.30 143.31	143.77 143.81	144.77	145.73
	146.72	147.88	148.23	149.19	150.66
	152.25	153.85	155.44	157.04	158.37
	159.19	159.50 159.50	159.51	159.32	158.63
	157.40	156.26	155.29	154.77	154.68
	155.03	155.79 155.82	156.94		
CUMULATIVE DISTANCE	0.000	44.000 50.000	100.000	150.000	200.000
	250.000	294.150 300.000	347.666 350.000	400.000	450.000
	500.000	550.000	564.000	600.000	650.000
	700.000	750.000	800.000	850.000	900.000
	950.000	997.787 1007.787	1010.000	1050.000	1100.000
	1150.000	1200.000	1250.000	1300.000	1350.000
	1400.000	1448.373 1450.000	1500.000		
DISTANCE	50.000	44.000 6.000	50.000	50.000	50.000
	50.000	44.150 5.850	47.666 2.334	50.000	50.000
	50.000	50.000	14.000	36.000	50.000
	50.000	50.000	50.000	50.000	50.000
	50.000	47.787 2.213	10.000	40.000	50.000
	50.000	50.000	50.000	50.000	50.000
	50.000	48.373 1.627	50.000		
STATION	0+ 0	+44 +50	+100	+150	+200
	+250	+294.150 +300	EC3 +350	+400	+450
	+500	+550	+564	+600	+650
	+700	+750	+800	+850	+900
	+950	BC4 1+ 0 +10	+50	+100	+150
	+200	+250	+300	+350	+400
	EC4 +450	+500			
HORIZONTAL ALIGNMENT	R=3500 L=566.305	R=∞ L=650.120	R=820 L=450.587	R=∞ L=893.672	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（1）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 02



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（2）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 03





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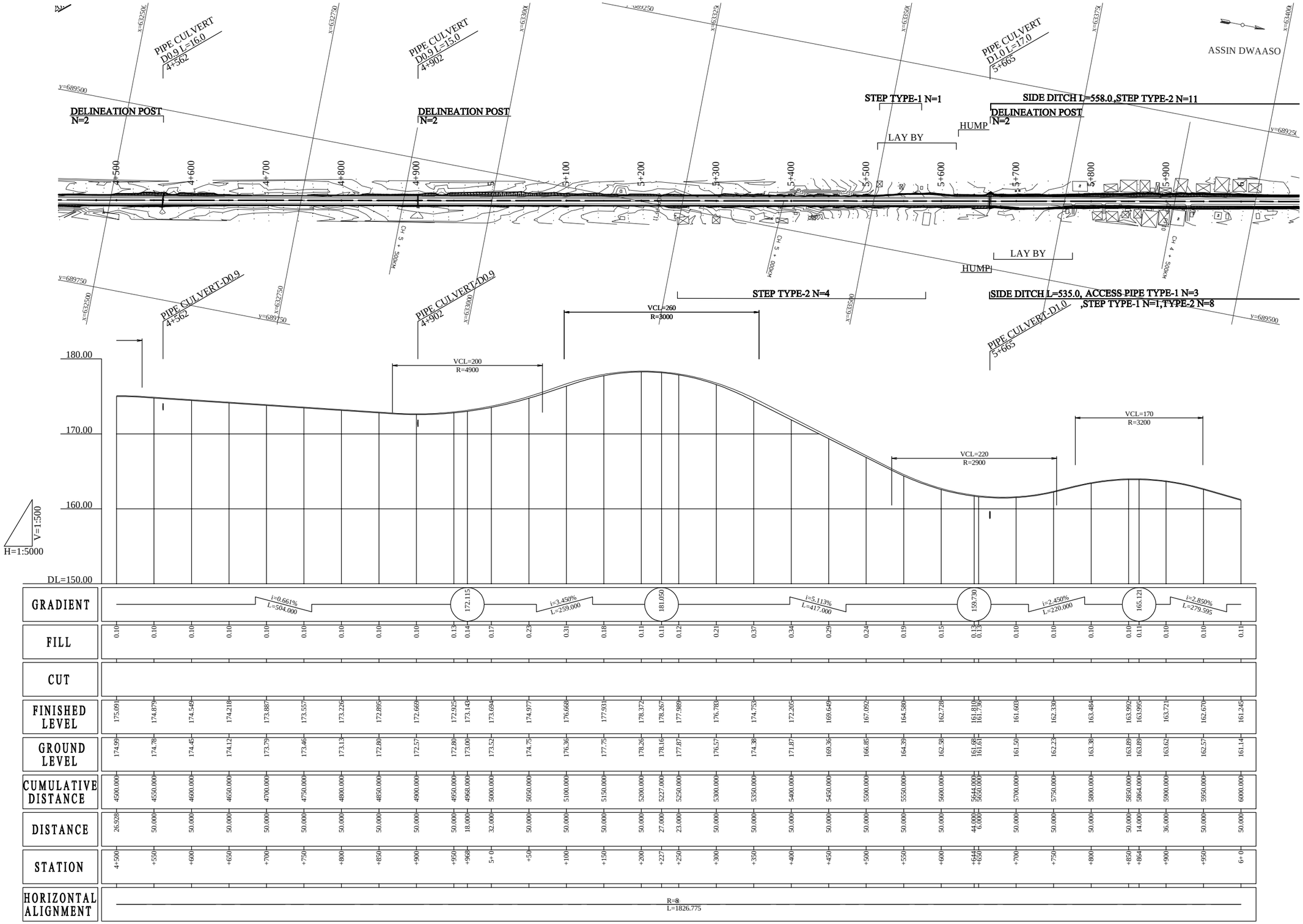
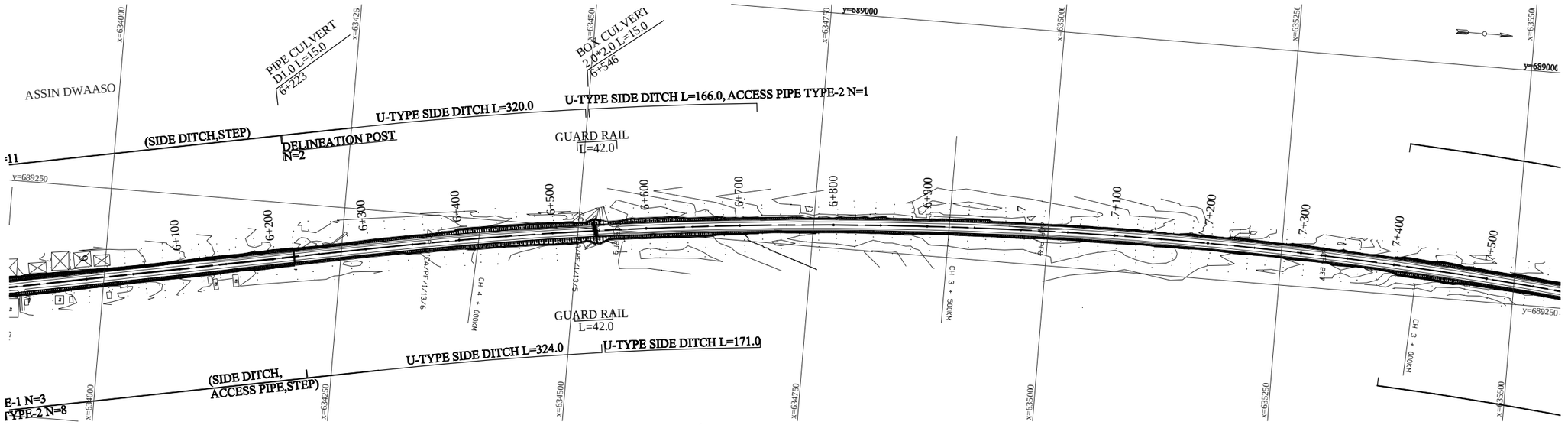
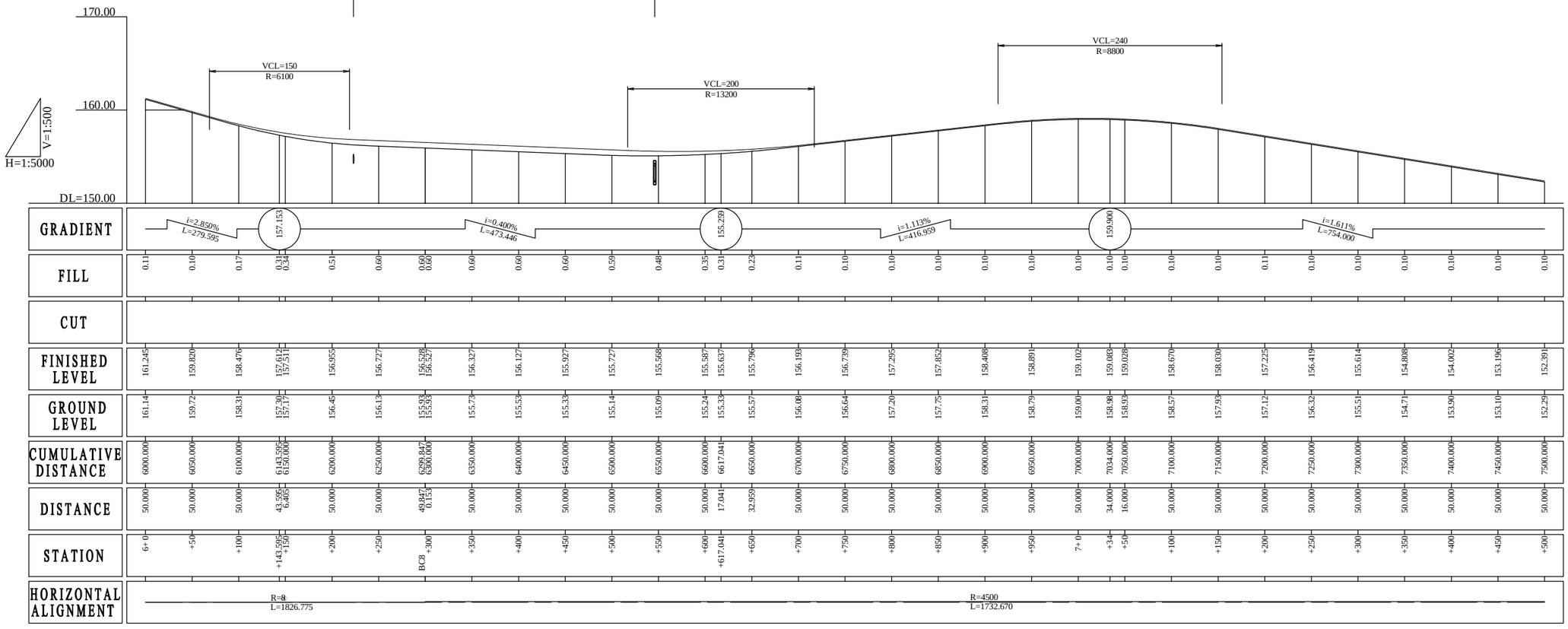
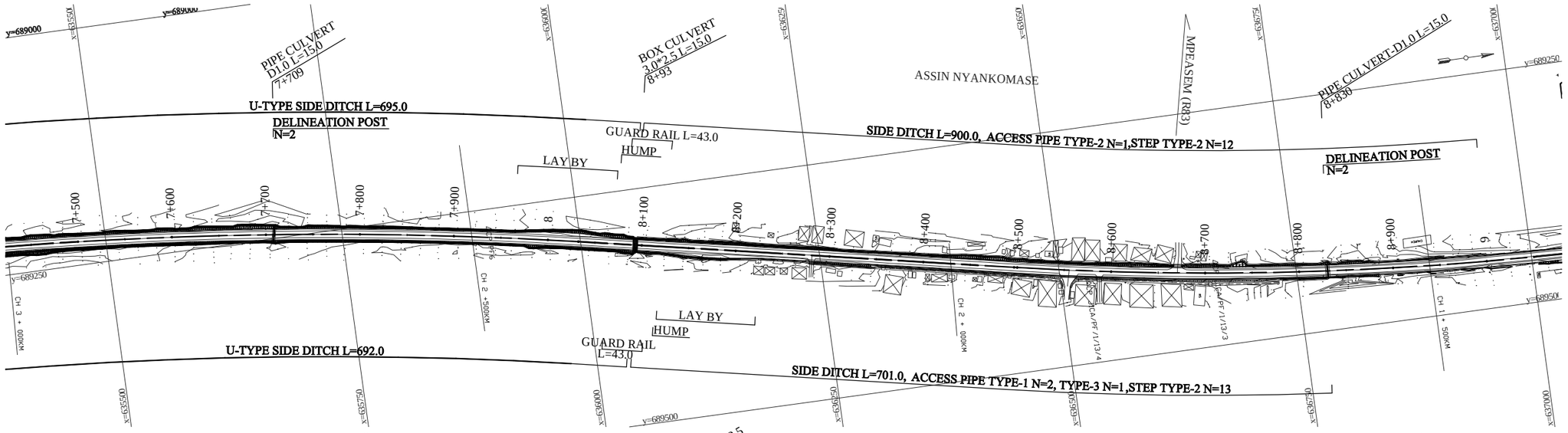


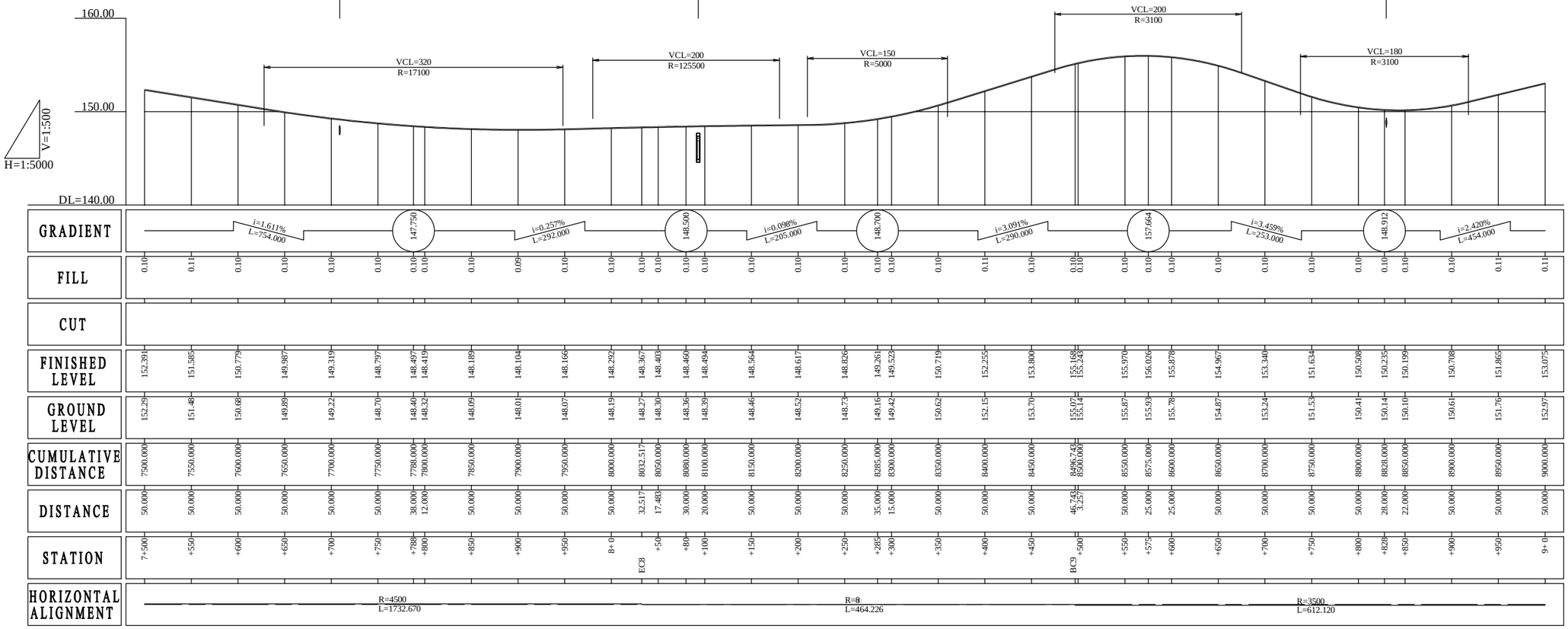
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（4）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 05



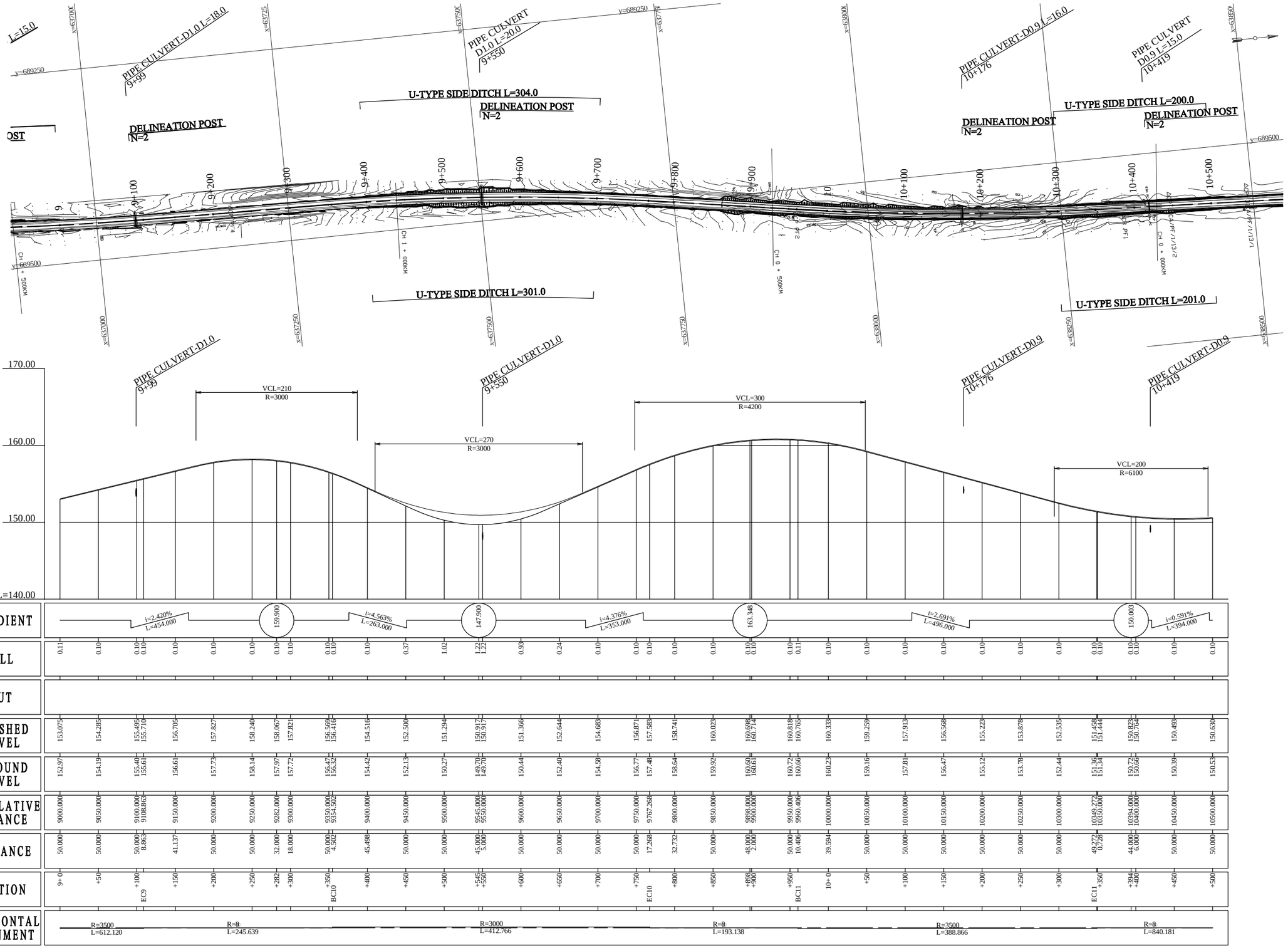


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（5）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 06

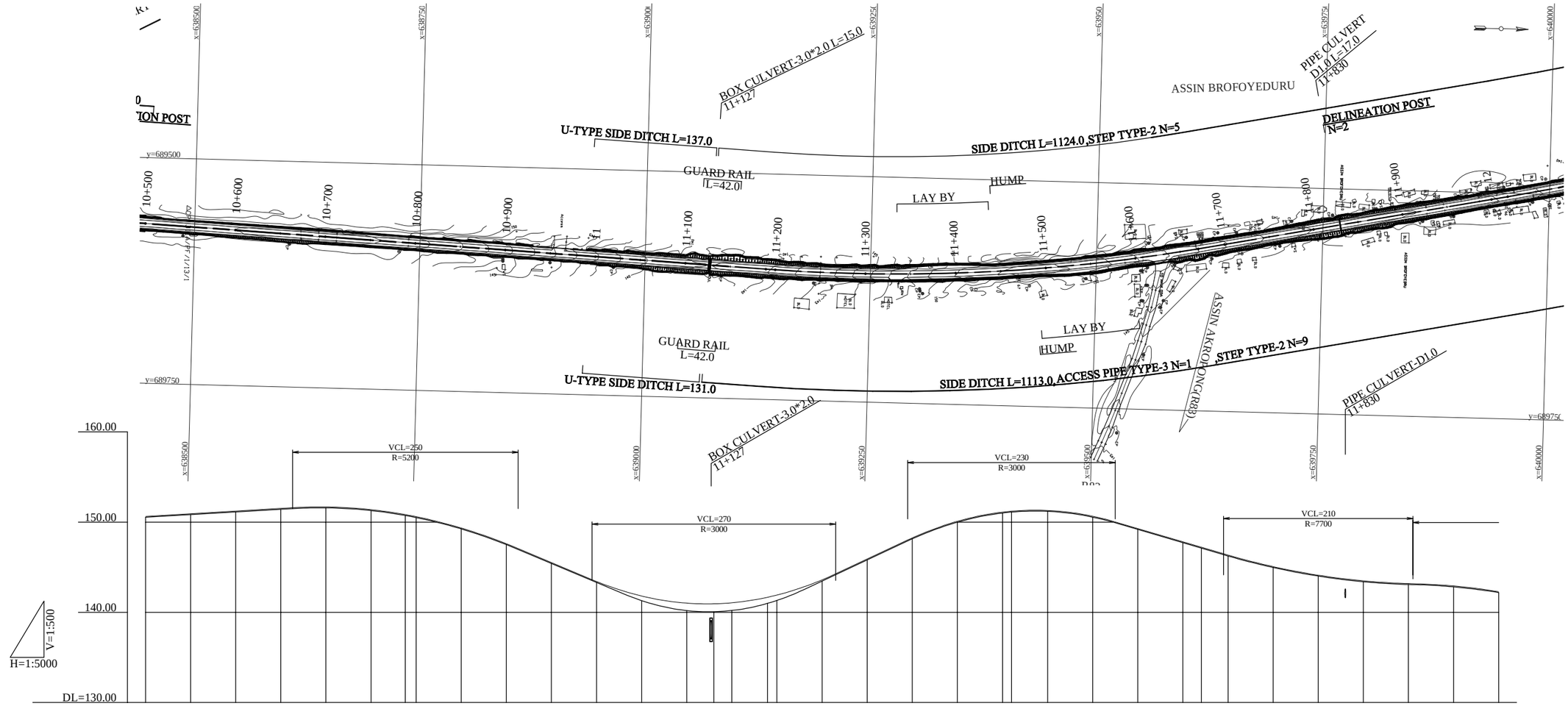




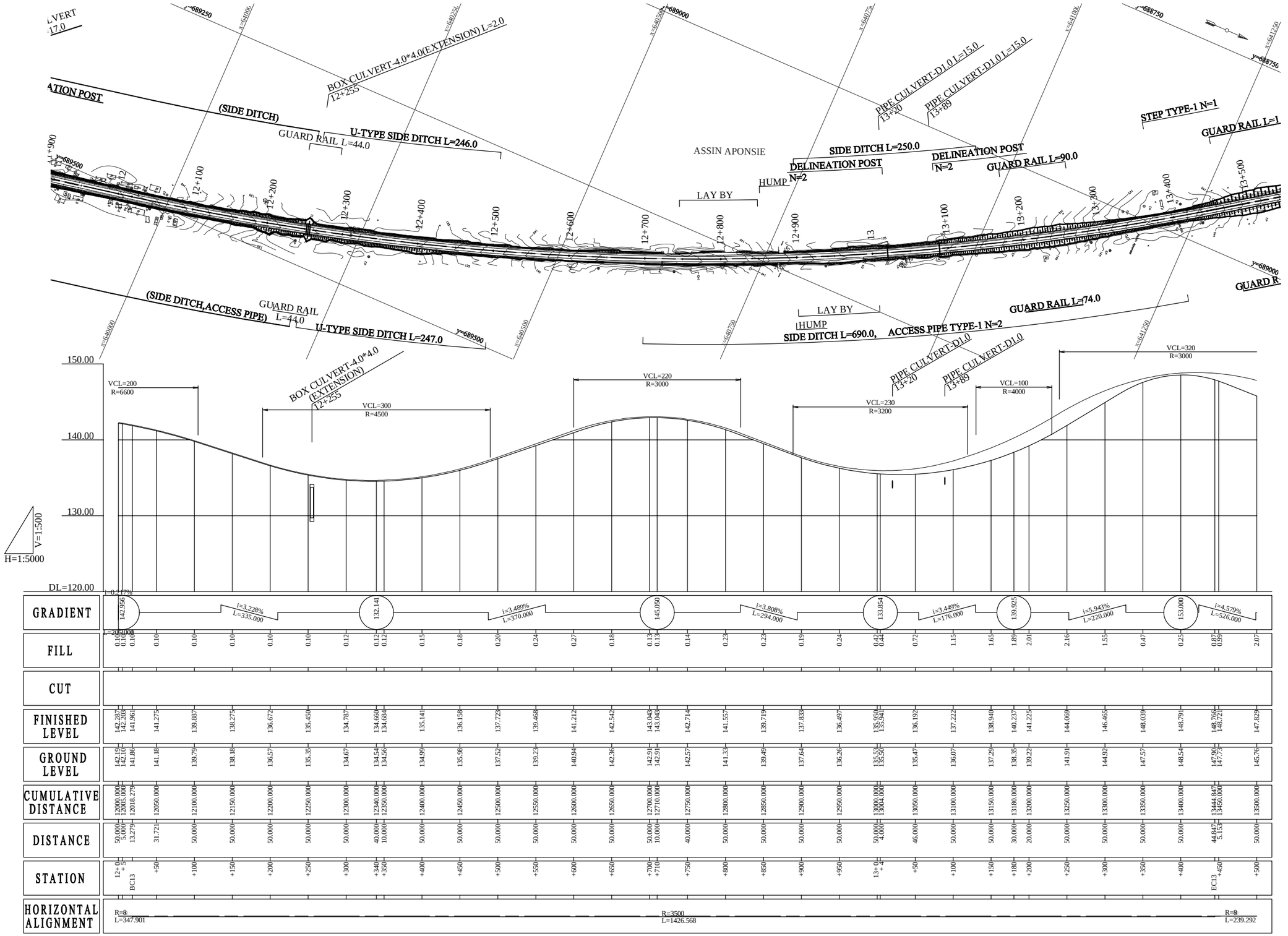
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（6）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 07



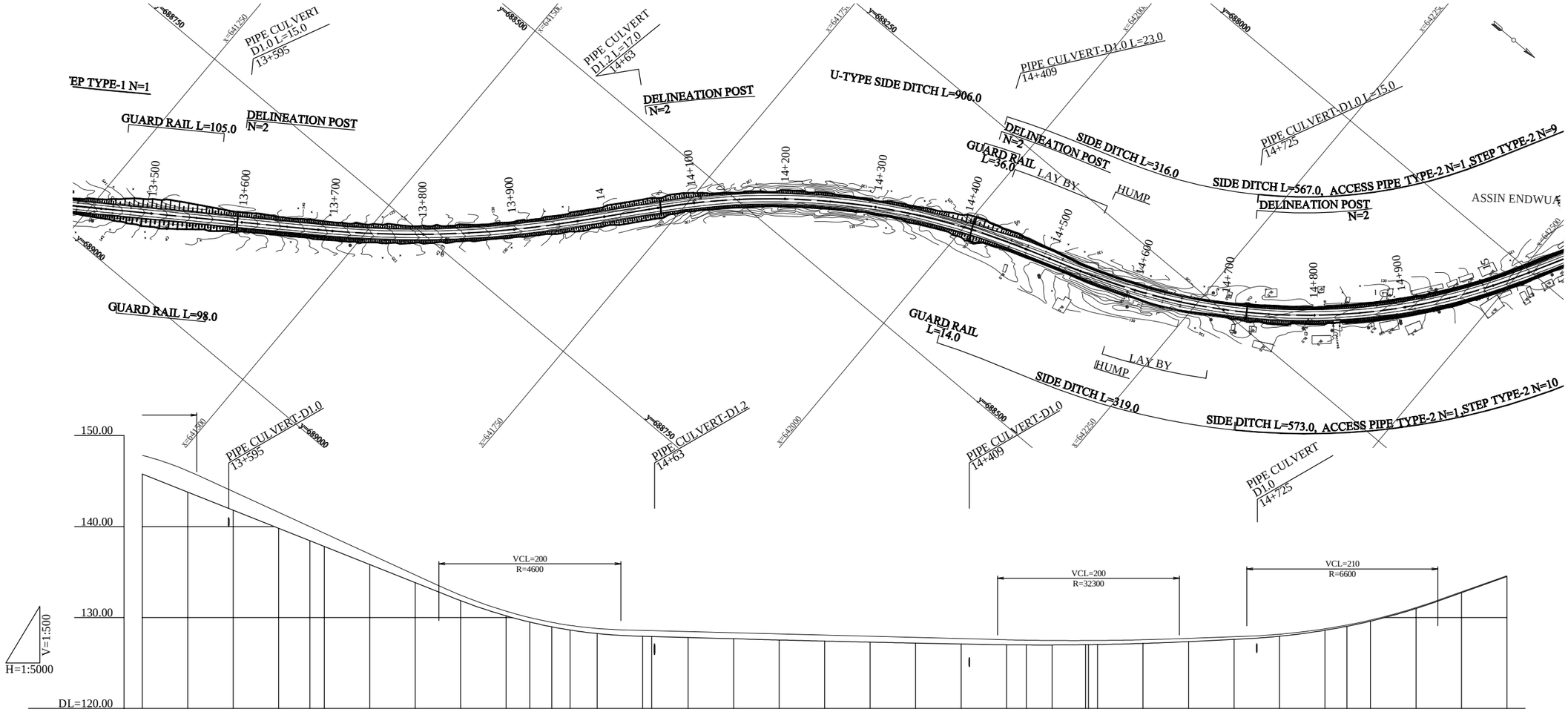
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（7）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 08



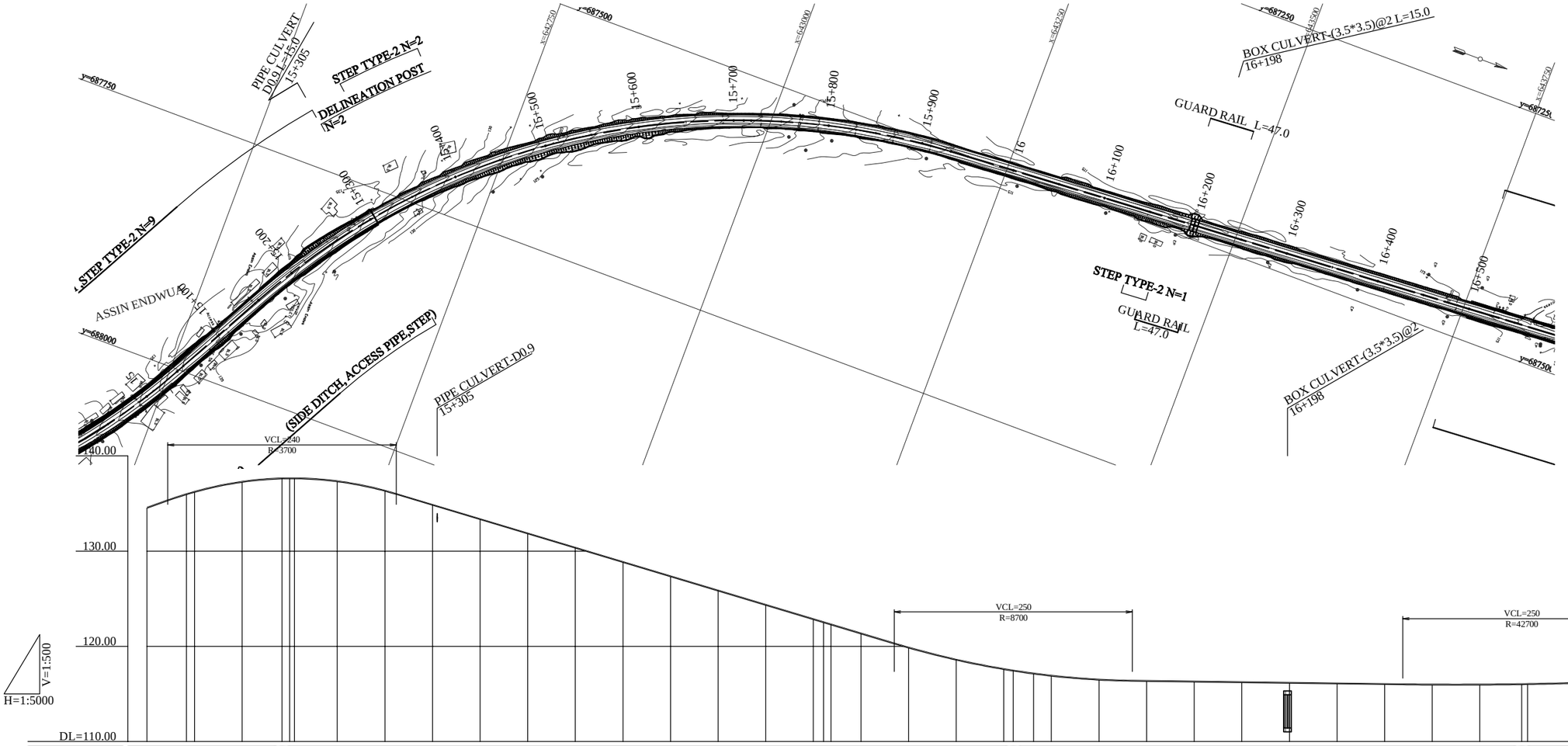
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（8）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 09



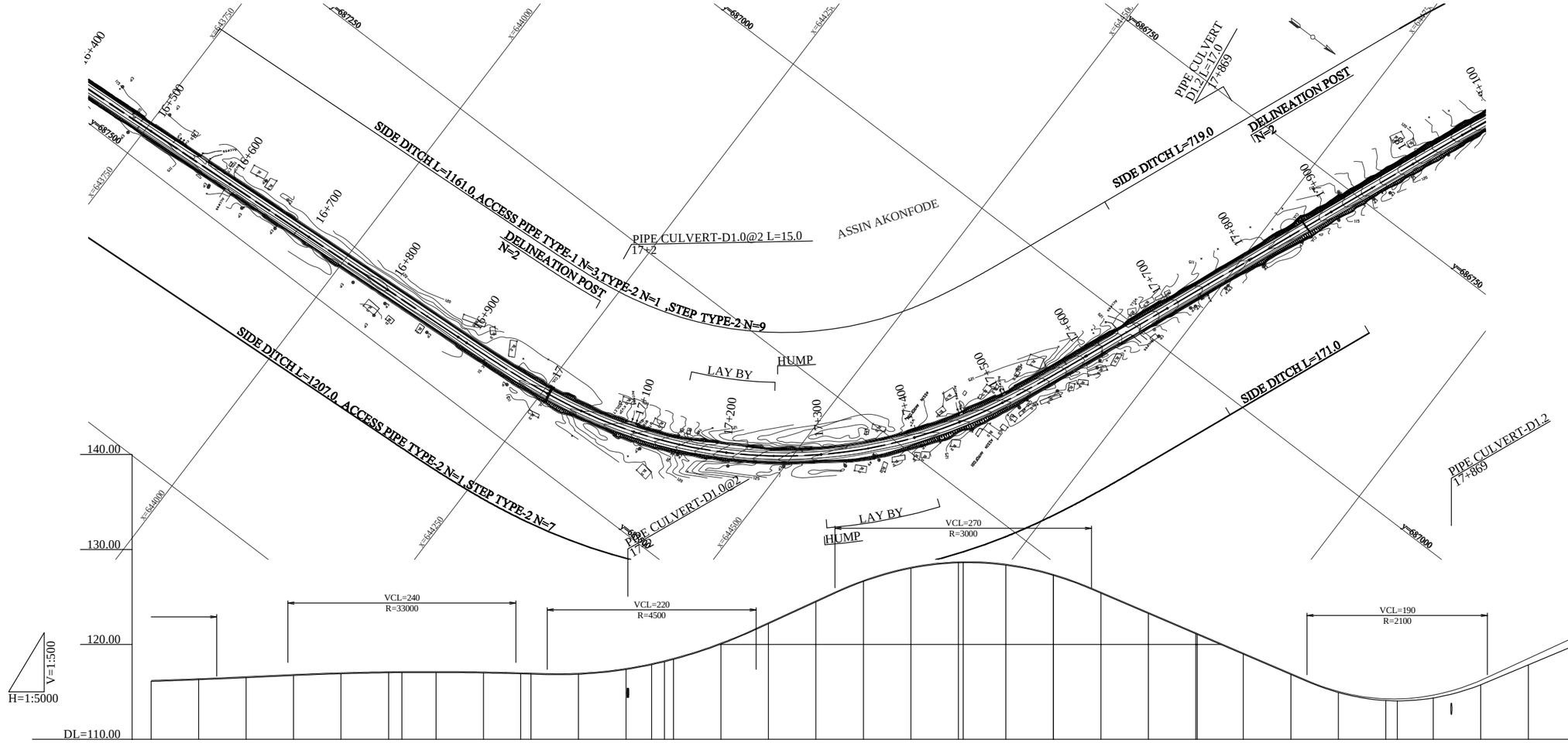
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（9）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 10



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（10）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 11



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(11)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 12



GRADIENT			i=0.453% L=320.000				117.350				i=0.274% L=263.000		
FILL	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
CUT													
FINISHED LEVEL	116.210	116.384	116.607	116.832	117.012	117.117	117.132	117.144	117.096	117.007	116.977	116.961	117.465
GROUND LEVEL	116.11	116.28	116.51	116.73	116.91	117.02	117.03	117.04	117.00	116.91	116.88	116.86	117.37
CUMULATIVE DISTANCE	16500.000	16550.000	16600.000	16650.000	16700.000	16750.000	16764.000	16800.000	16850.000	16889.227	16900.000	16950.000	17000.000
DISTANCE	50.000	50.000	50.000	50.000	50.000	50.000	14.000	36.000	50.000	39.227	10.773	50.000	50.000
STATION	16+500	+550	+600	+650	+700	+750	+764	+800	+850	KA19-1	+900	+950	17+ 0
HORIZONTAL ALIGNMENT					R=8 L=957.970							A=275 L=151.250	

GRADIENT	116.629					i=4.595% L=328.000				131.700			
FILL	0.10	0.10	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
CUT													
FINISHED LEVEL	117.968	118.279	118.524	120.134	122.281	124.578	126.727	128.121	128.692	128.705	128.443	127.371	127.366
GROUND LEVEL	117.87	118.18	118.42	120.04	122.18	124.48	126.63	128.02	128.59	128.61	128.34	127.27	127.27
CUMULATIVE DISTANCE	17027.000	17040.477	17050.000	17100.000	17150.000	17200.000	17250.000	17300.000	17350.000	17355.000	17400.000	17450.000	17450.164
DISTANCE	27.000	13.477	9.523	50.000	50.000	50.000	50.000	50.000	50.000	5.000	45.000	50.000	0.164
STATION	+27	KE19-1	+50	+100	+150	+200	+250	+300	+350	+355	+400	+450	KE19-2
HORIZONTAL ALIGNMENT							R=500 L=409.687						

GRADIENT			i=4.280% L=457.000						112.140		i=4.618% L=338.000		
FILL	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.18	0.19	0.30	0.47	0.67	0.88
CUT													
FINISHED LEVEL	125.494	123.354	121.214	121.153	119.074	116.934	115.049	114.267	114.253	114.656	116.215	118.514	120.823
GROUND LEVEL	125.39	123.25	121.11	121.05	118.97	116.83	114.94	114.09	114.06	114.36	115.75	117.84	119.94
CUMULATIVE DISTANCE	17500.000	17550.000	17600.000	17601.414	17650.000	17700.000	17750.000	17800.000	17812.000	17850.000	17900.000	17950.000	18000.000
DISTANCE	49.836	50.000	50.000	1.414	48.586	50.000	50.000	50.000	12.000	38.000	50.000	50.000	50.000
STATION	+500	+550	+600	KA19-2	+650	+700	+750	+800	+812	+850	+900	+950	18+ 0
HORIZONTAL ALIGNMENT		A=275 L=151.250						R=8 L=458.553					

GHANA HIGHWAY AUTHORITY
THE REPUBLIC OF GHANA

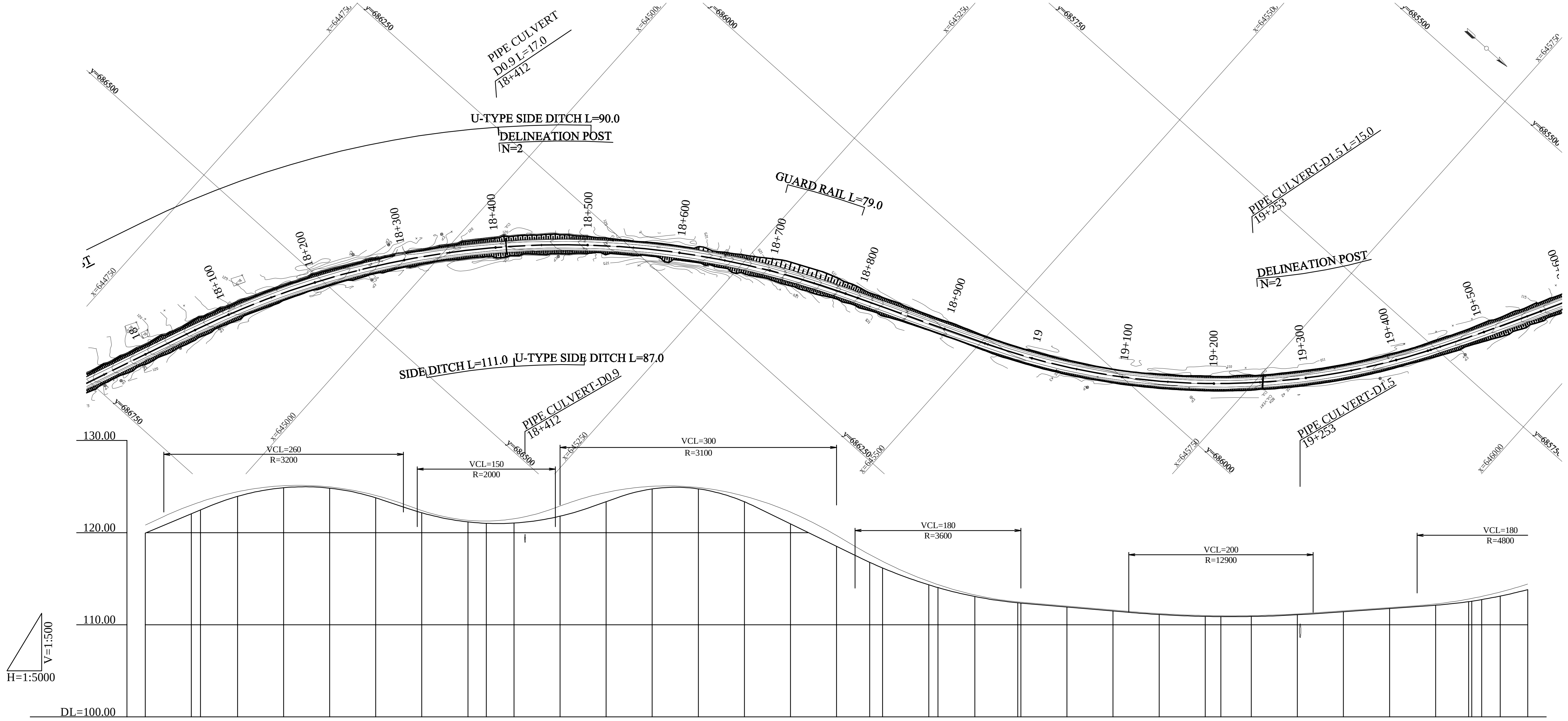
CONSULTANTS:
CENTRAL CONSULTANTINC.
EIGHT-JAPAN ENGINEERING CONSULTANTSINC.

PROJECT NAME:
PREPARATORY SURVEY ON
REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)

DRAWING TITLE:
PLAN AND PROFILE(12)

DATE:
PREPARED BY:
CHECKED BY:

DRAWING No. :
13



GRADIENT

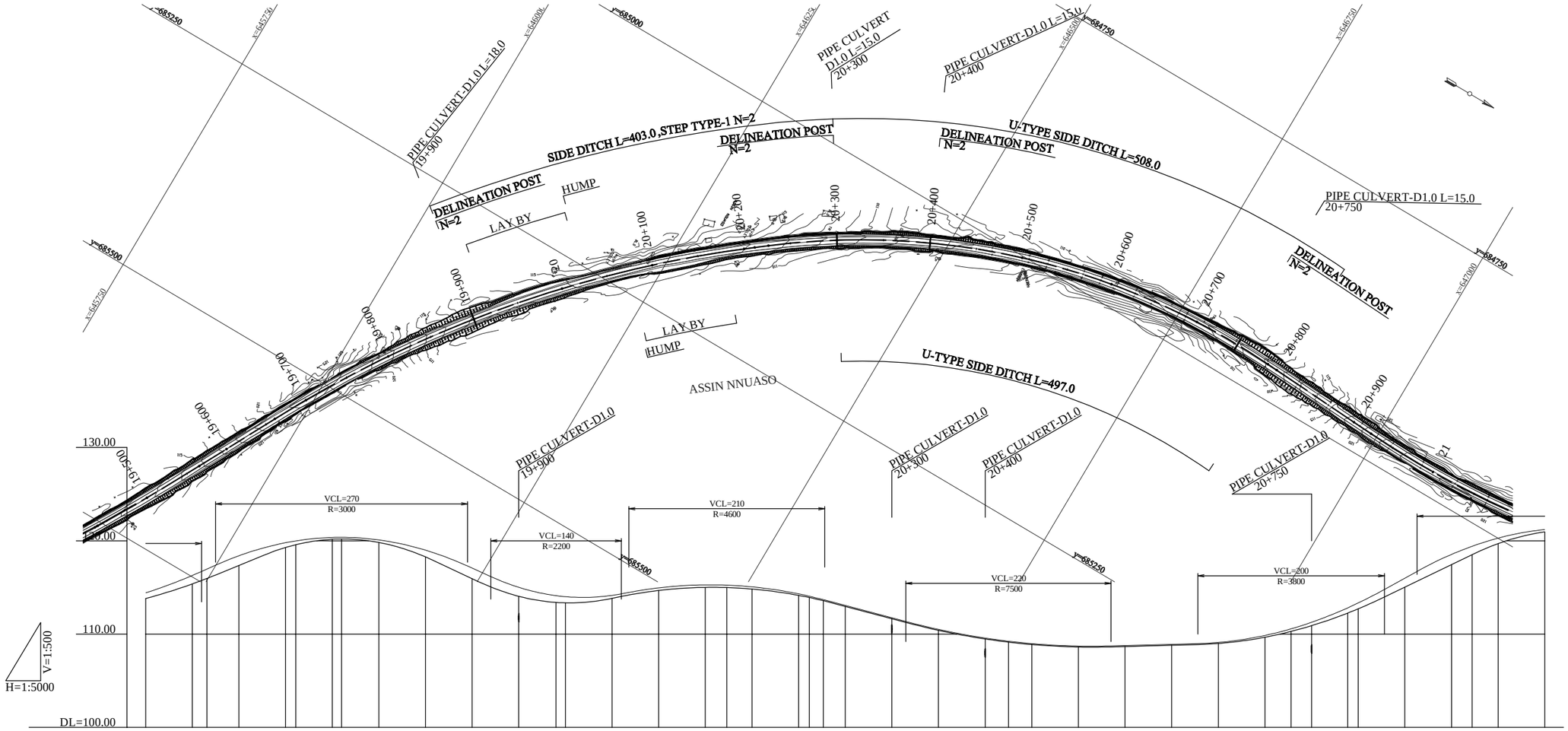
i=4.618%
L=338.000
127.750
i=3.573%
L=220.000
119.889
i=3.744%
L=230.000
128.500
i=5.873%
L=260.000
113.231
i=0.858%
L=307.000
110.596
i=0.696%
L=303.000
112.706

STATION	DISTANCE	CUMULATIVE DISTANCE	GROUND LEVEL	FINISHED LEVEL	CUT	FILL
18+ 0	50.000	18000.000	119.94	120.823		0.88
+50	50.000	18050.000	122.04	122.990		0.95
BC20	9.967	18059.967	122.46	123.340		0.88
+100	40.033	18100.000	123.93	124.433		0.50
+150	50.000	18150.000	124.87	125.088		0.22
+200	50.000	18200.000	124.82	124.955		0.14
+250	50.000	18250.000	123.78	124.035		0.26
+300	50.000	18300.000	122.15	122.396		0.25
+350	50.000	18350.000	121.16	121.342		0.18
+370	20.000	18370.000	121.01	121.261		0.25
+400	30.000	18400.000	121.04	121.506		0.47
+450	50.000	18450.000	121.78	122.884		1.10
+500	50.000	18500.000	123.36	124.355		1.00
+550	50.000	18550.000	124.74	125.025		0.29
+600	50.000	18600.000	124.75	124.894		0.14
+650	50.000	18650.000	123.35	123.961		0.61
+700	50.000	18700.000	120.95	122.226		1.28
+750	50.000	18750.000	118.50	119.691		1.19
EC20	35.990	18785.990	116.77	117.613		0.84
+800	14.010	18800.000	116.16	116.879		0.72
+850	50.000	18850.000	114.34	114.710		0.37
+860	10.000	18860.000	114.04	114.359		0.32
+900	40.000	18900.000	113.07	113.235		0.17
BC21	46.555	18946.555	112.39	112.490		0.10
+950	3.445	18950.000	112.36	112.458		0.10
19+ 0	50.000	19000.000	111.93	112.029		0.10
+50	50.000	19050.000	111.50	111.600		0.10
+100	50.000	19100.000	111.11	111.213		0.10
+150	50.000	19150.000	110.91	111.010		0.10
+167	17.000	19167.000	110.89	110.985		0.10
+200	33.000	19200.000	110.90	111.000		0.10
+250	50.000	19250.000	111.09	111.185		0.10
+300	50.000	19300.000	111.42	111.522		0.10
+350	50.000	19350.000	111.77	111.870		0.10
+400	50.000	19400.000	112.12	112.260		0.14
EC21	35.889	19435.889	112.51	112.794		0.28
BC22	3.187	19439.076	112.56	112.854		0.29
+450	10.924	19450.000	112.73	113.078		0.35
+470	20.000	19470.000	113.11	113.552		0.44
+500	30.000	19500.000	113.82	114.418		0.60

HORIZONTAL ALIGNMENT

R=∞
L=458.553
R=910
L=726.023
R=∞
L=160.565
R=750
L=489.334
R=∞
L=3.187
R=2300
L=126.518

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(13)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 14



GRADIENT: i=4.456% L=240.000 — 123.400 — i=4.522% L=230.000 — 113.000 — i=1.875% L=183.000 — 116.430 — i=2.647% L=302.000 — 108.437 — i=0.268% L=303.000 — 109.250 — i=5.532% L=310.000

STATION	DISTANCE	CUMULATIVE DISTANCE	GROUND LEVEL	FINISHED LEVEL	FILL	CUT
19+500	30.000	19500.000	113.82	114.418	0.60	
+550	50.000	19550.000	115.38	116.280	0.90	
EC22	15.594	19565.594	115.96	116.965	1.01	
+600	34.406	19600.000	117.36	118.394	1.03	
+650	50.000	19650.000	119.28	119.791	0.51	
BC23	10.951	19660.951	119.57	119.986	0.42	
+700	39.049	19700.000	120.16	120.356	0.20	
+710	10.000	19710.000	120.19	120.370	0.18	
+750	40.000	19750.000	119.82	120.091	0.27	
+800	50.000	19800.000	118.27	118.993	0.72	
+850	50.000	19850.000	115.94	117.070	1.13	
+900	50.000	19900.000	114.05	115.015	0.97	
+940	40.000	19940.000	113.39	114.119	0.73	
+950	10.000	19950.000	113.35	114.009	0.66	
20+ 0	50.000	20000.000	113.83	114.148	0.32	
+50	50.000	20050.000	114.67	114.952	0.28	
+100	50.000	20100.000	115.00	115.275	0.28	
+123	23.000	20123.000	114.99	115.243	0.25	
+150	27.000	20150.000	114.83	115.061	0.23	
+200	50.000	20200.000	114.15	114.308	0.16	
EC23	11.571	20211.571	113.92	114.057	0.14	
BC24	14.853	20226.424	113.58	113.693	0.11	
+250	23.576	20250.000	112.97	113.069	0.10	
+300	50.000	20300.000	111.65	111.745	0.10	
+350	50.000	20350.000	110.40	110.503	0.10	
+400	50.000	20400.000	109.48	109.577	0.10	
+425	25.000	20425.000	109.14	109.239	0.10	
+450	25.000	20450.000	108.88	108.983	0.10	
+500	50.000	20500.000	108.62	108.719	0.10	
+550	50.000	20550.000	108.67	108.772	0.10	
+600	50.000	20600.000	108.81	108.906	0.10	
+650	50.000	20650.000	109.00	109.105	0.11	
+700	50.000	20700.000	109.67	109.857	0.19	
+728	28.000	20728.000	110.29	110.566	0.28	
+750	22.000	20750.000	110.90	111.268	0.37	
EC24	38.799	20788.799	112.26	112.816	0.56	
+800	11.201	20800.000	112.71	113.336	0.63	
+850	50.000	20850.000	115.03	115.999	0.97	
+900	50.000	20900.000	117.44	118.539	1.10	
BC25	22.039	20922.039	118.51	119.411	0.90	
+950	27.961	20950.000	119.69	120.285	0.60	
21+ 0	50.000	21000.000	120.95	121.206	0.26	

HORIZONTAL ALIGNMENT: R=2300 L=126.518 — R=∞ L=95.356 — R=1280 L=550.621 — R=∞ L=14.852 — R=780 L=562.375 — R=∞ L=133.241 — R=1000 L=646.680

GHANA HIGHWAY AUTHORITY
THE REPUBLIC OF GHANA

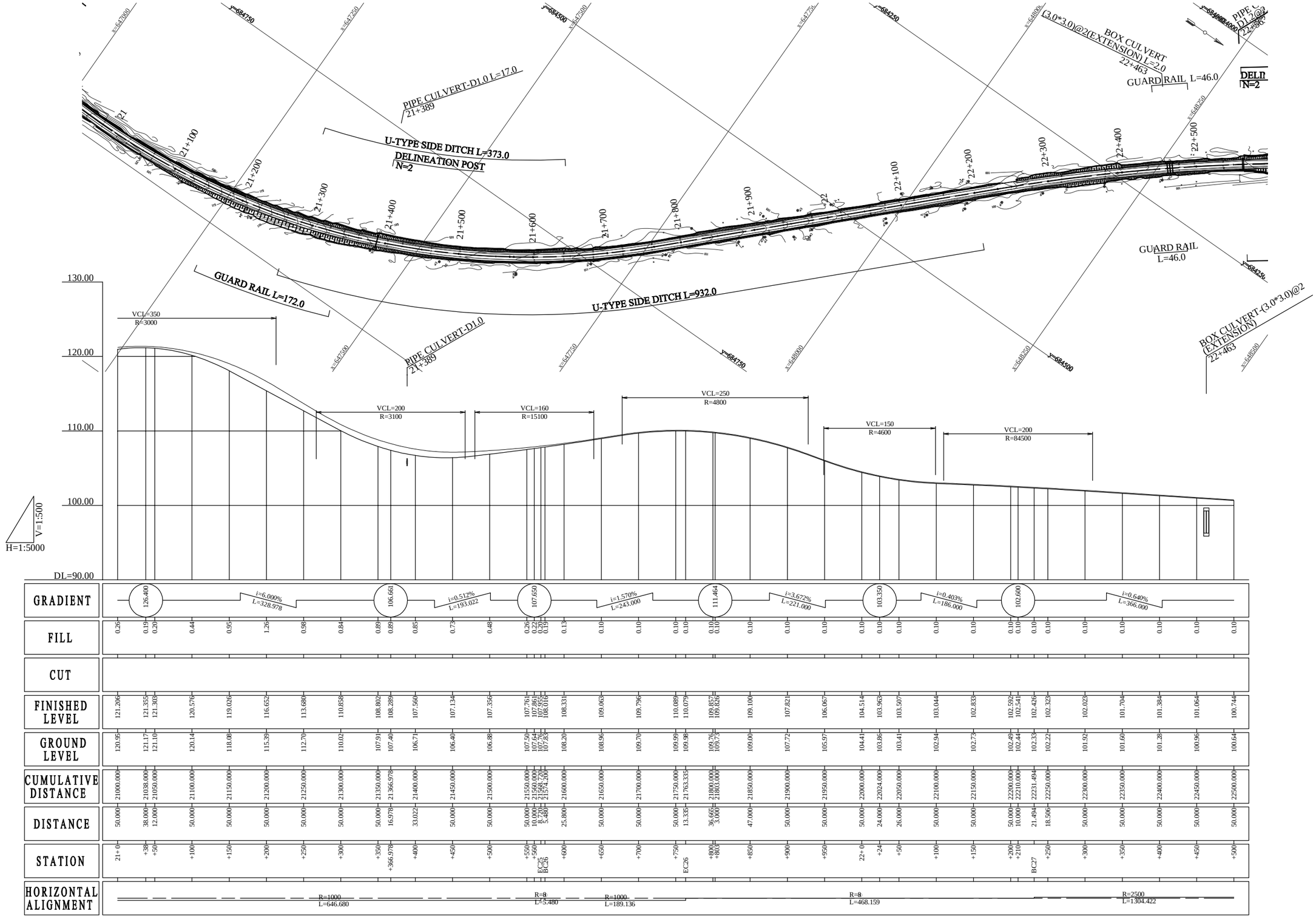
CONSULTANTS:
CENTRAL CONSULTANTINC.
EIGHT-JAPAN ENGINEERING CONSULTANTSINC.

PROJECT NAME:
PREPARATORY SURVEY ON
REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)

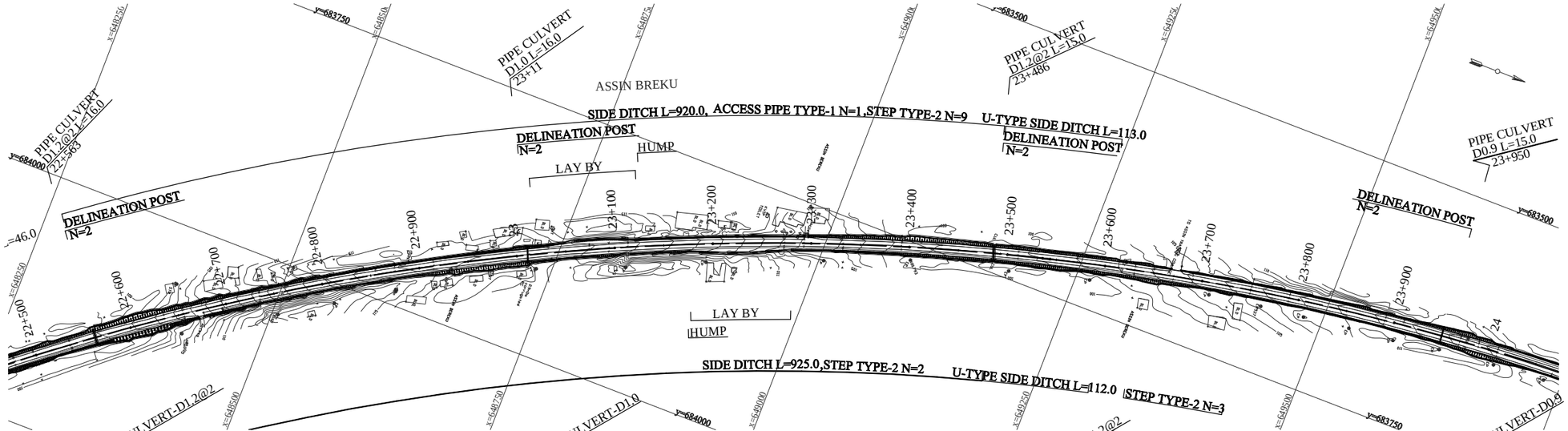
DRAWING TITLE:
PLAN AND PROFILE（14）

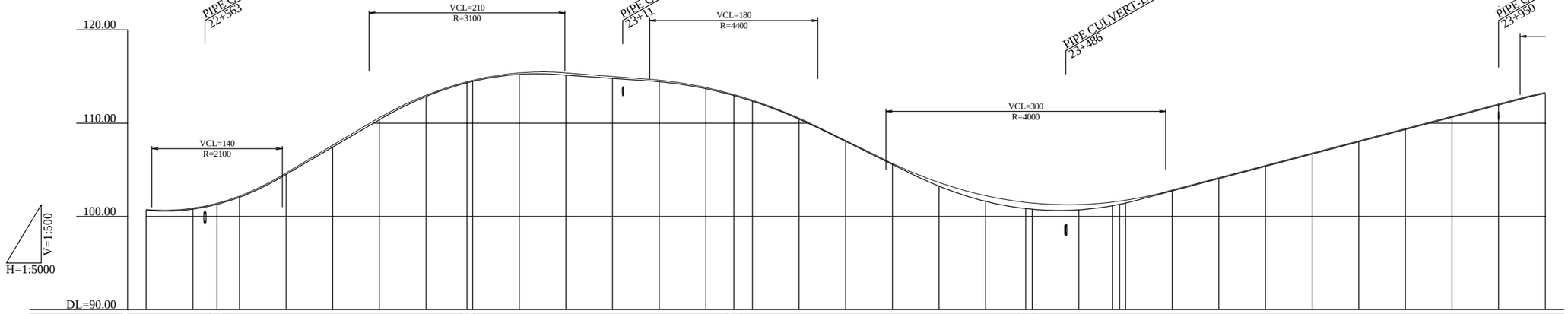
DATE:
PREPARED BY:
CHECKED BY:

DRAWING No. :
15



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(15)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 16





GRADIENT			100.258			i=5.949% L=268.000			116.200			
FILL	0.10	0.11	0.11	0.12	0.16	0.20	0.23	0.14	0.12	0.12	0.16	0.25
CUT												
FINISHED LEVEL	100.744	100.880	101.411	102.183	104.660	107.634	110.589	112.988	114.437	114.586	115.385	115.385
GROUND LEVEL	100.64	100.77	101.30	102.06	104.50	107.43	110.36	112.85	114.32	114.47	115.23	115.14
CUMULATIVE DISTANCE	22500.000	22550.000	22576.000	22600.000	22650.000	22700.000	22750.000	22800.000	22844.000	22850.000	22900.000	22950.000
DISTANCE	50.000	50.000	26.000	24.000	50.000	50.000	50.000	50.000	44.000	6.000	50.000	50.000
STATION	22+500	+550	+576	+600	+650	+700	+750	+800	+844	+850	+900	+950
HORIZONTAL ALIGNMENT												

GRADIENT	i=0.769% L=286.000			114.000				i=4.895% L=313.000			98.679		
FILL	0.20	0.16	0.13	0.12	0.11	0.10	0.10	0.11	0.39	0.61	0.66	0.66	0.56
CUT													
FINISHED LEVEL	115.000	114.604	113.818	113.072	112.459	110.528	108.126	105.685	103.639	102.221	101.504	101.430	101.269
GROUND LEVEL	114.80	114.44	113.69	112.95	112.35	110.43	108.03	105.58	103.25	101.61	100.84	100.77	100.71
CUMULATIVE DISTANCE	23000.000	23050.000	23100.000	23130.000	23150.000	23200.000	23250.000	23300.000	23350.000	23400.000	23443.000	23450.000	23500.000
DISTANCE	50.000	50.000	50.000	30.000	20.000	50.000	50.000	50.000	50.000	50.000	43.000	7.000	50.000
STATION	23+ 0	+50	+100	+130	+150	+200	+250	+300	+350	+400	+443	+450	+500
HORIZONTAL ALIGNMENT	R=2500 L=1304.422												

GRADIENT							i=2.638% L=685.000					
FILL	0.39	0.35	0.30	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
CUT												
FINISHED LEVEL	101.539	101.640	101.734	102.821	104.140	105.459	106.778	108.097	109.416	110.735	112.054	113.289
GROUND LEVEL	101.15	101.29	101.43	102.72	104.04	105.36	106.68	108.00	109.32	110.64	111.95	113.19
CUMULATIVE DISTANCE	23535.916	23543.661	23550.000	23600.000	23650.000	23700.000	23750.000	23800.000	23850.000	23900.000	23950.000	24000.000
DISTANCE	35.916	7.745	6.339	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000
STATION	EC27	BC28	+550	+600	+650	+700	+750	+800	+850	+900	+950	24+ 0
HORIZONTAL ALIGNMENT	R=∞ L=7.745						R=2500 L=544.492					

GHANA HIGHWAY AUTHORITY
THE REPUBLIC OF GHANA

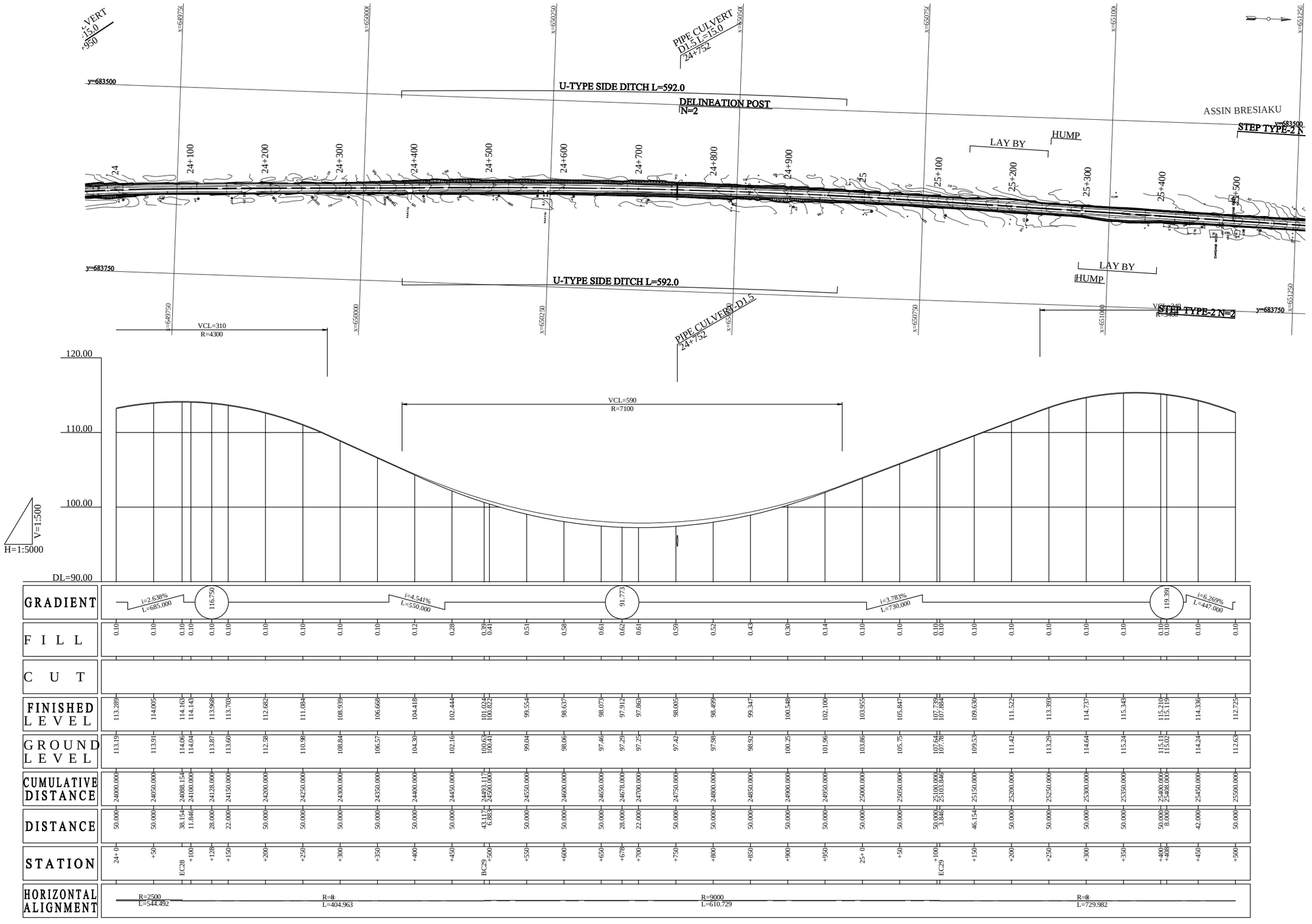
CONSULTANTS:
CENTRAL CONSULTANTINC.
EIGHT-JAPAN ENGINEERING CONSULTANTSINC.

PROJECT NAME:
PREPARATORY SURVEY ON
REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)

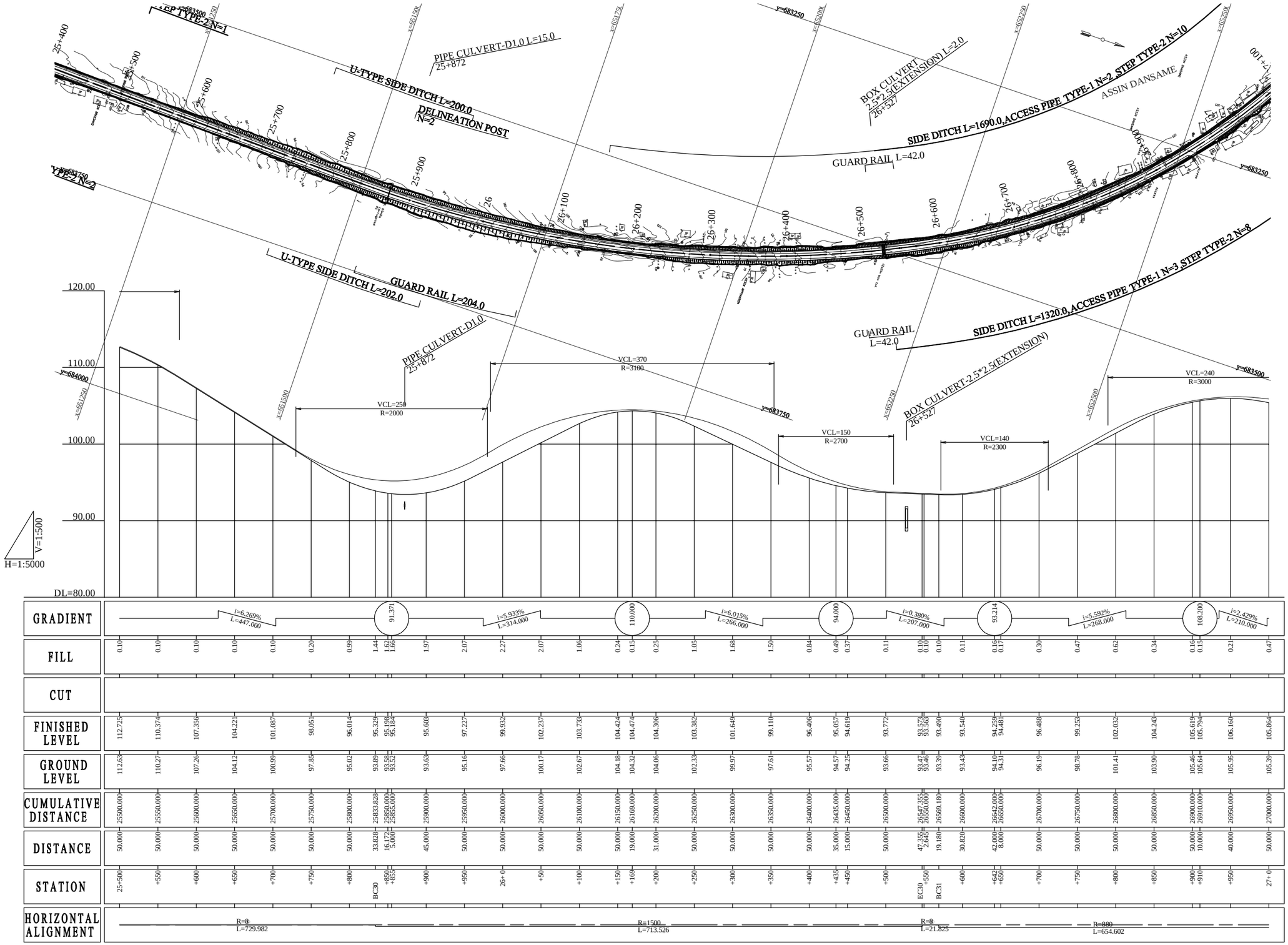
DRAWING TITLE:
PLAN AND PROFILE(16)

DATE:
PREPARED BY:
CHECKED BY:

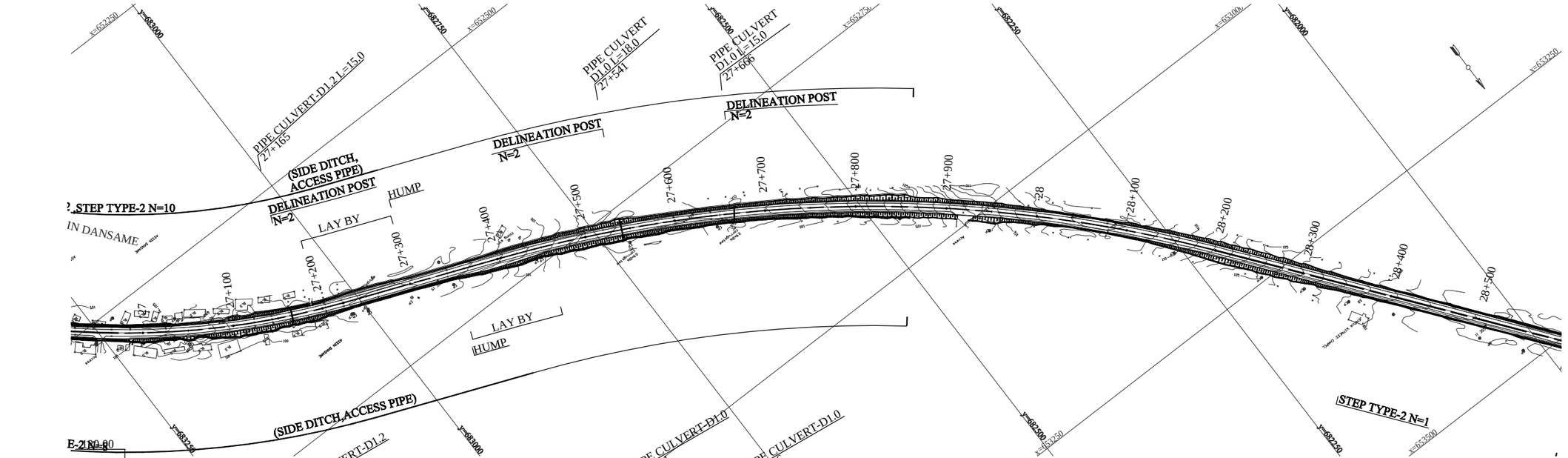
DRAWING No. :
17

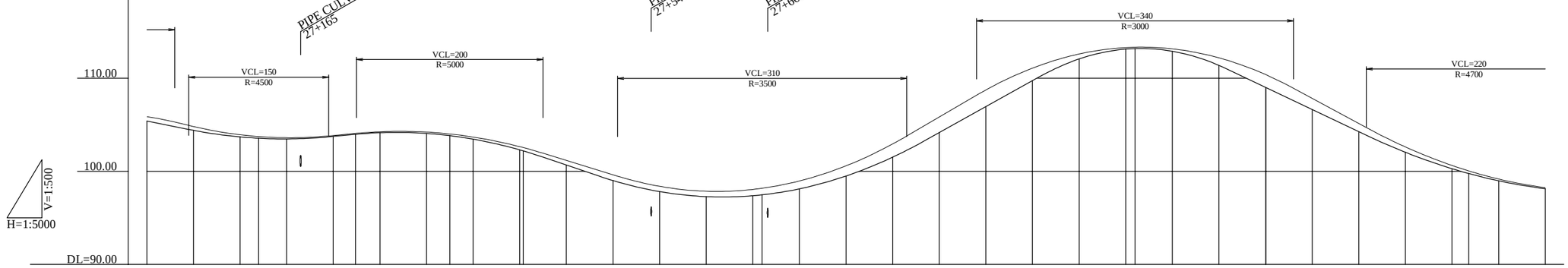


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(17)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 18



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(18)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 19





GRADIENT		i=2.429% L=210.000		103.100			i=0.930% L=205.000			105.006			
FILL	0.47	0.40	0.24	0.18	0.13	0.10	0.11	0.11	0.14	0.18	0.23	0.34	0.36
CUT													
FINISHED LEVEL	105.864	104.803	103.925	103.730	103.606	103.844	104.065	104.246	104.210	104.006	103.675	102.640	102.539
GROUND LEVEL	105.39	104.40	103.69	103.55	103.48	103.74	103.96	104.14	104.07	103.83	103.45	102.30	102.18
CUMULATIVE DISTANCE	27000.000	27050.000	27100.000	27120.000	27150.000	27200.000	27223.781	27250.000	27300.000	27325.000	27350.000	27400.000	27403.875
DISTANCE	50.000	50.000	50.000	20.000	30.000	50.000	23.781	26.219	50.000	25.000	25.000	50.000	3.875
STATION	27+ 0	+50	+100	+120	+150	+200	EC31	+250	+300	+325	+350	+400	BC32
HORIZONTAL ALIGNMENT				R=880 L=654.602						R=∞ L=180.093			

GRADIENT		i=3.070% L=335.000				94.720				i=5.845% L=400.000			
FILL	0.50	0.63	0.57	0.58	0.67	0.71	0.84	1.09	1.42	1.68	1.79	1.35	0.53
CUT													
FINISHED LEVEL	101.168	99.633	98.388	97.860	98.050	98.175	98.960	100.589	102.935	105.826	108.731	111.075	112.591
GROUND LEVEL	100.67	99.00	97.82	97.28	97.38	97.47	98.12	99.50	101.52	104.15	106.94	109.73	112.06
CUMULATIVE DISTANCE	27450.000	27500.000	27550.000	27600.000	27650.000	27660.000	27700.000	27750.000	27800.000	27850.000	27900.000	27950.000	28000.000
DISTANCE	46.125	50.000	50.000	50.000	50.000	10.000	40.000	50.000	50.000	50.000	50.000	50.000	50.000
STATION	+450	+500	+550	+600	+650	+660	+700	+750	+800	+850	+900	+950	28+ 0
HORIZONTAL ALIGNMENT									R=1500 L=796.465				

GRADIENT		118.100					i=5.405% L=358.000				98.750	i=0.725% L=302.000	
FILL	0.16	0.15	0.25	0.82	1.37	1.38	1.20	0.87	0.57	0.34	0.28	0.20	0.11
CUT													
FINISHED LEVEL	113.281	113.319	113.142	112.176	110.384	110.369	107.830	105.128	102.613	100.623	100.037	99.165	98.238
GROUND LEVEL	113.12	113.17	112.89	111.36	109.01	108.99	106.63	104.26	102.04	100.28	99.76	98.97	98.13
CUMULATIVE DISTANCE	28050.000	28060.000	28100.000	28150.000	28200.000	28200.340	28250.000	28300.000	28350.000	28400.000	28418.000	28450.000	28500.000
DISTANCE	50.000	10.000	40.000	50.000	50.000	0.340	49.660	50.000	50.000	50.000	18.000	32.000	50.000
STATION	+50	+60	+100	+150	+200	EC32	+250	+300	+350	+400	+418	+450	+500
HORIZONTAL ALIGNMENT									R=∞ L=646.516				

GHANA HIGHWAY AUTHORITY
THE REPUBLIC OF GHANA

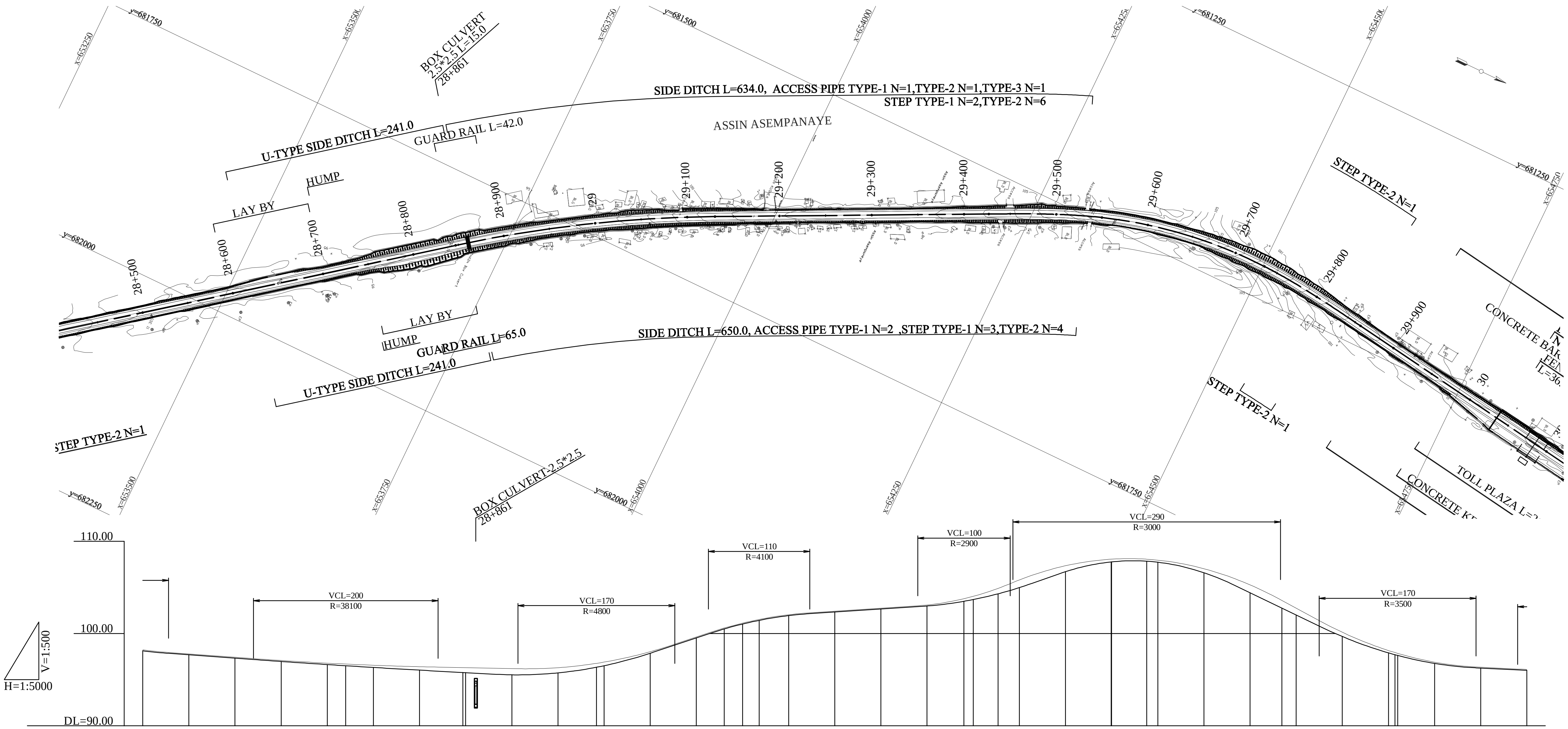
CONSULTANTS:
CENTRAL CONSULTANTINC.
EIGHT-JAPAN ENGINEERING CONSULTANTSINC.

PROJECT NAME:
PREPARATORY SURVEY ON
REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)

DRAWING TITLE:
PLAN AND PROFILE(19)

DATE:
PREPARED BY:
CHECKED BY:

DRAWING No. :
20

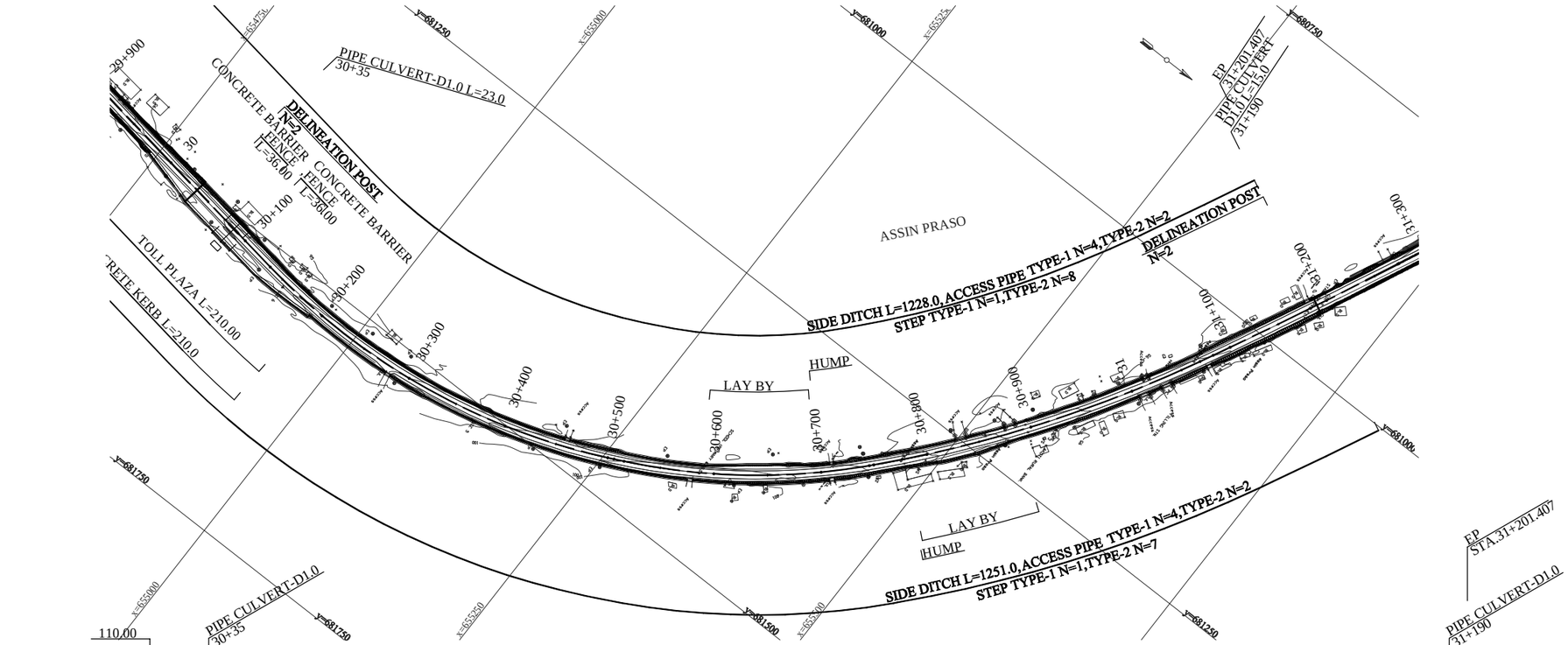


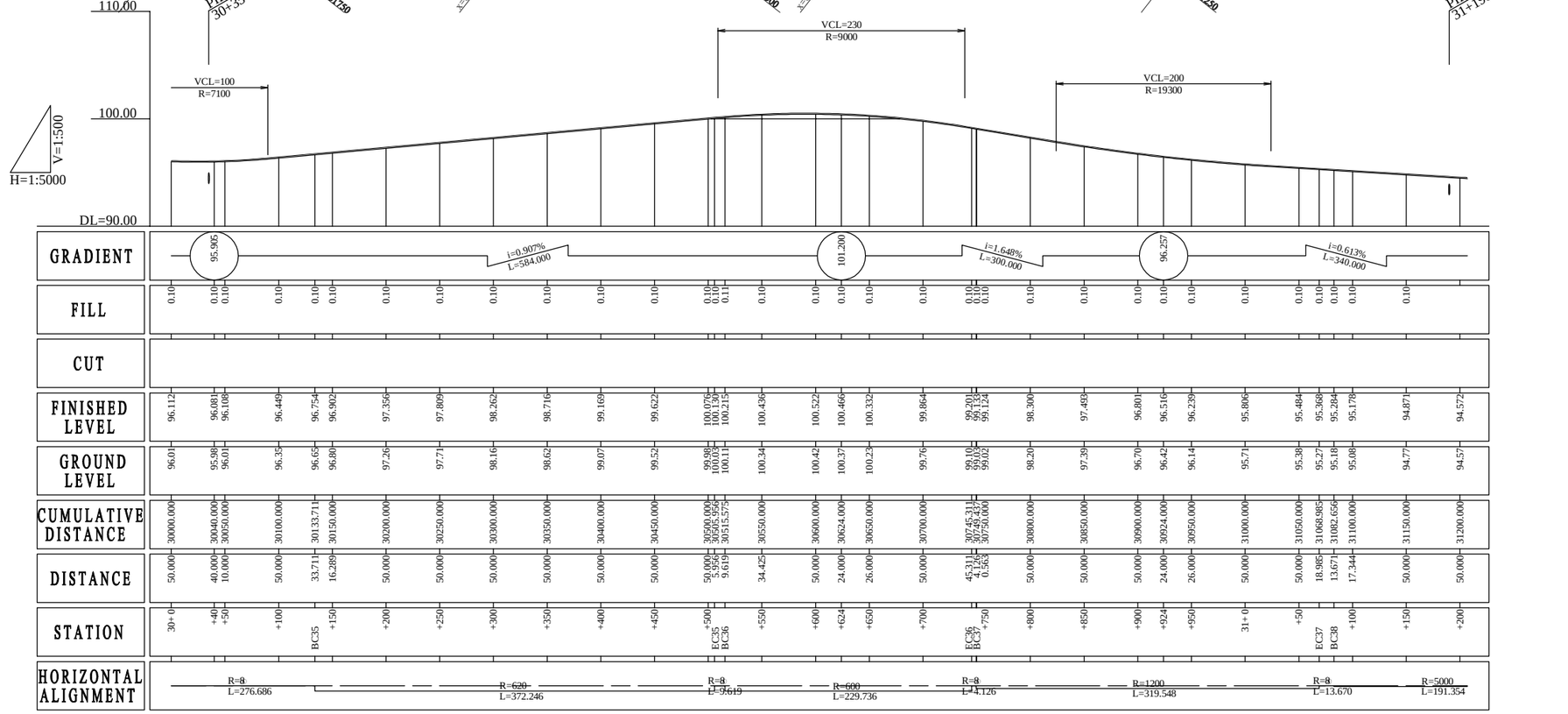
GRADIENT: i=0.725% L=302.000 | 96.560 | i=0.200% L=271.715 | 96.017 | i=3.334% L=176.285 | 101.893 | i=0.650% L=222.000 | 103.335 | i=4.124% L=198.000 | 111.500 | i=5.403% L=272.000 | 96.805 | i=0.500% L=180.000

STATION	FILL	CUT	FINISHED LEVEL	GROUND LEVEL	CUMULATIVE DISTANCE	DISTANCE
28+500	0.11		98.238	98.13	28500.000	50.000
+550	0.10		97.793	97.69	28550.000	50.000
+600	0.10		97.430	97.33	28600.000	50.000
+650	0.11		97.080	96.97	28650.000	50.000
+700	0.15		96.789	96.64	28700.000	50.000
+720	0.18		96.691	96.51	28720.000	20.000
+750	0.24		96.564	96.32	28750.000	30.000
+800	0.38		96.405	96.03	28800.000	50.000
BC33	0.53		96.306	95.78	28846.855	46.855
+850	0.54		96.300	95.76	28850.000	3.145
+900	0.68		96.200	95.52	28900.000	50.000
+950	0.57		96.295	95.73	28950.000	50.000
+991.715	0.43		96.768	96.34	28991.715	41.715
29+ 0	0.40		96.905	96.51	29000.000	8.285
+50	0.17		98.034	97.86	29050.000	50.000
+100	0.10		99.626	99.53	29100.000	50.000
EC33	0.11		100.595	100.49	29130.123	30.123
+150	0.10		101.126	101.03	29150.000	19.877
+168	0.10		101.524	101.42	29168.000	18.000
+200	0.10		102.036	101.94	29200.000	32.000
+250	0.10		102.426	102.33	29250.000	50.000
+300	0.10		102.751	102.65	29300.000	50.000
+350	0.11		103.092	102.98	29350.000	50.000
+390	0.28		103.769	103.49	29390.000	40.000
+400	0.35		104.025	103.68	29400.000	10.000
KA34-1	0.59		104.887	104.30	29426.902	26.902
+450	0.83		105.801	104.97	29450.000	23.098
+500	0.64		107.337	106.70	29500.000	50.000
KE34-1	0.30		108.049	107.75	29549.451	49.451
+550	0.29		108.053	107.76	29550.000	0.549
+588	0.22		108.047	107.83	29588.000	38.000
+600	0.23		107.947	107.72	29600.000	12.000
+650	0.44		107.019	106.58	29650.000	50.000
+700	0.86		105.270	104.41	29700.000	50.000
KE34-2	0.84		103.586	102.75	29734.476	34.476
+750	0.74		102.748	102.01	29750.000	15.524
+800	0.46		100.136	99.68	29800.000	50.000
+850	0.26		98.156	97.90	29850.000	50.000
KA34-2	0.24		97.936	97.70	29857.025	7.025
+860	0.23		97.847	97.62	29860.000	2.975
+900	0.14		96.897	96.76	29900.000	40.000
+950	0.10		96.355	96.26	29950.000	50.000
30+ 0	0.10		96.112	96.01	30000.000	50.000

HORIZONTAL ALIGNMENT: R=∞ L=646.516 | R=1400 L=283.268 | R=∞ L=296.778 | A=250 L=122.549 | R=510 L=185.026 | A=250 L=122.549 | R=∞ L=276.686

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE(20)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 21

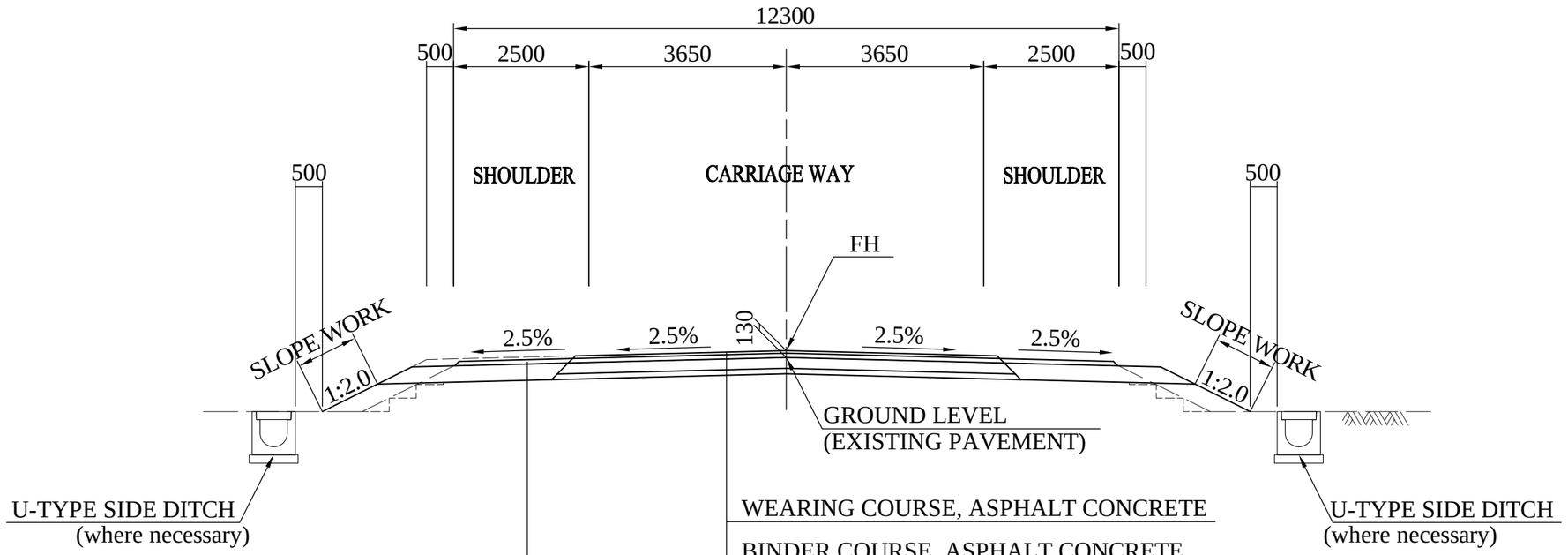




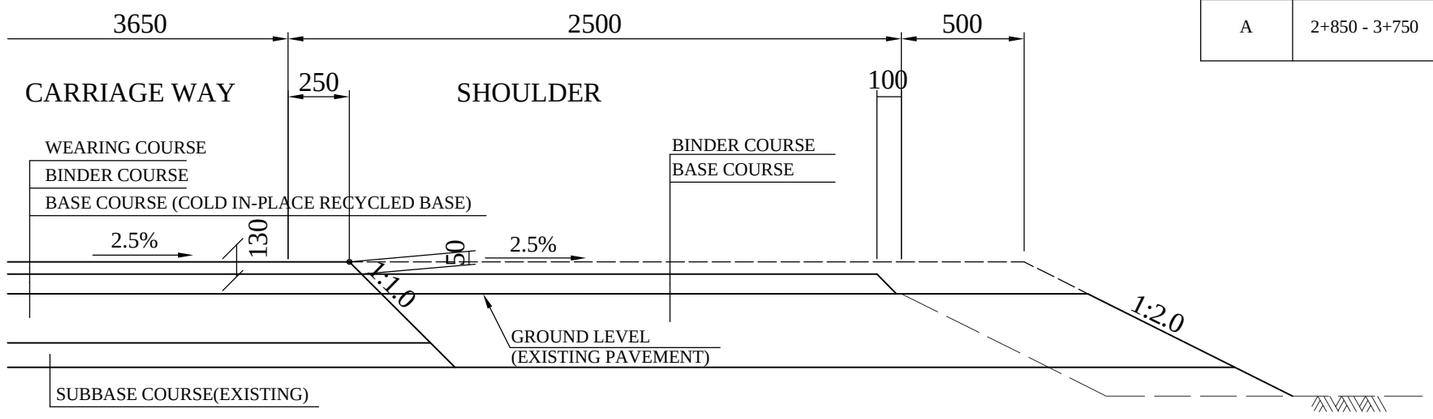
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（21）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 22

TYPICAL CROSS SECTION（1） SCALE A3 1:100

SECTION A



EDGE OF PAVEMENT SCALE A3 1:25



THICKNESS OF PAVEMENT LIST

SECTION	STA.	CARRIAGE WAY				SHOULDER	
		WEARING (mm)	BINDER (mm)	BASE (IN-PLACE RECYCLED) (mm)	SUBBASE (EXISTING) (mm)	BINDER (mm)	BASE (mm)
A	2+850 - 3+750	50	80	200	100	80	300

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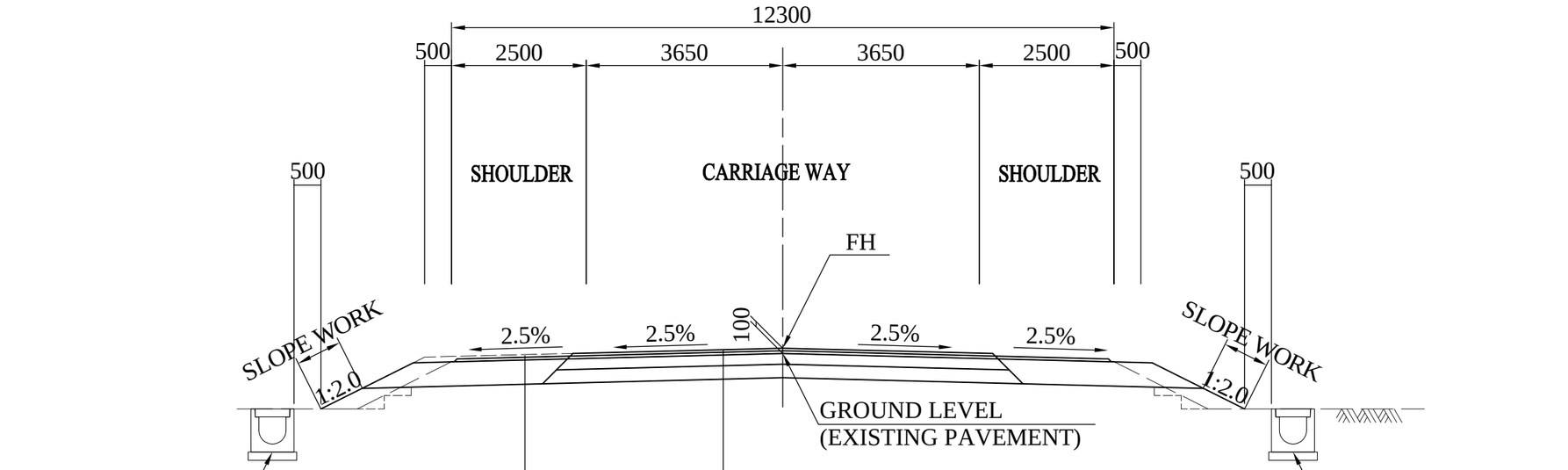
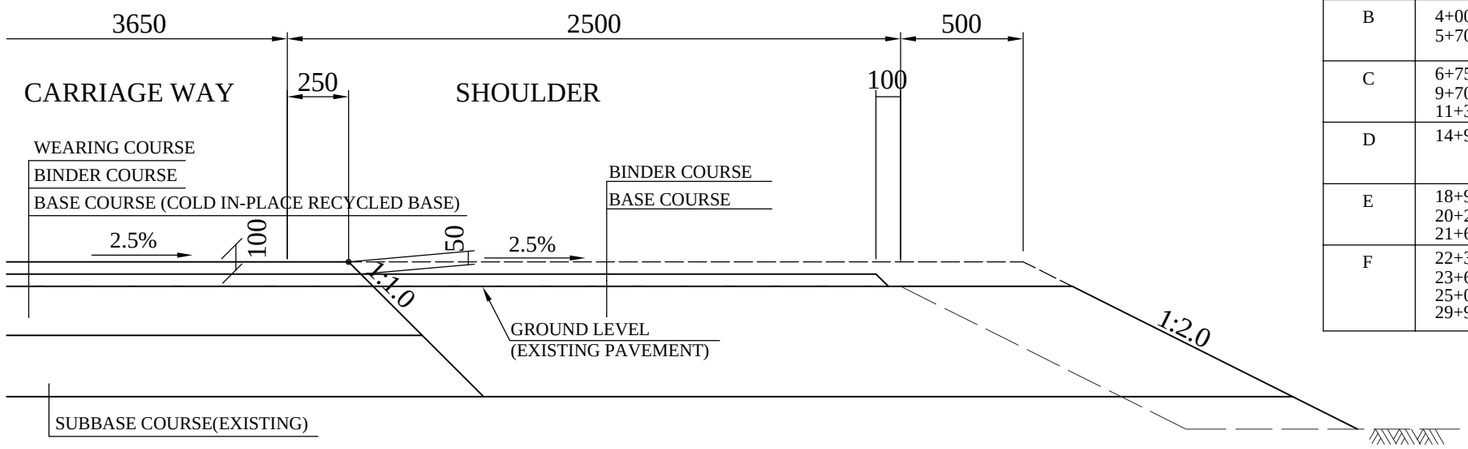
TYPICAL CROSS SECTION（2） SCALE A3 1:100

SECTION B-F



EDGE OF PAVEMENT SCALE A3 1:25



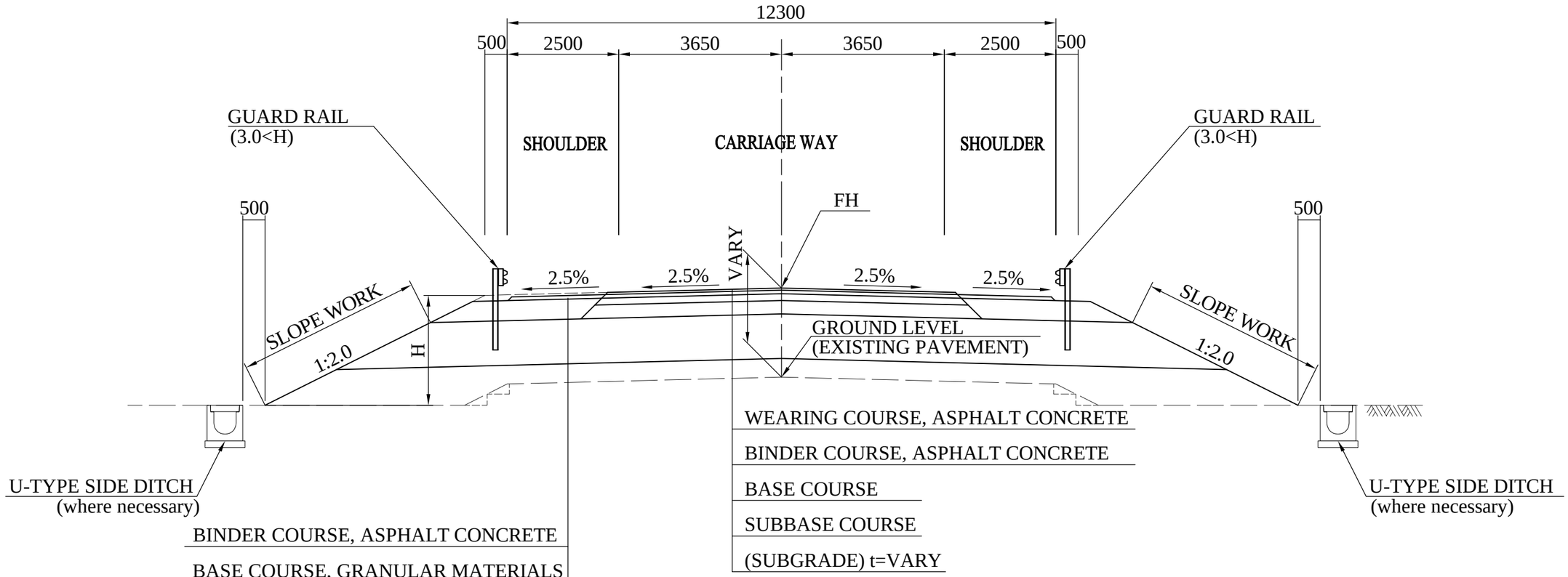
THICKNESS OF PAVEMENT LIST

SECTION	STA.	CARRIAGE WAY				SHOULDER	
		WEARING (mm)	BINDER (mm)	BASE (IN-PLACE RECYCLED) (mm)	SUBBASE (EXISTING) (mm)	BINDER (mm)	BASE (mm)
B	4+000 - 4+900 5+700 - 6+50	50	50	200	300	50	500
C	6+750 - 9+400 9+700 - 10+950 11+300 - 12+250				190		390
D	14+900 - 17+700				160		360
E	18+950 - 19+350 20+250 - 20+600 21+650 - 22+300			220	150		370
F	22+300 - 22+500 23+600 - 24+350 25+000 - 25+700 29+950 - 31+201			200	270		470

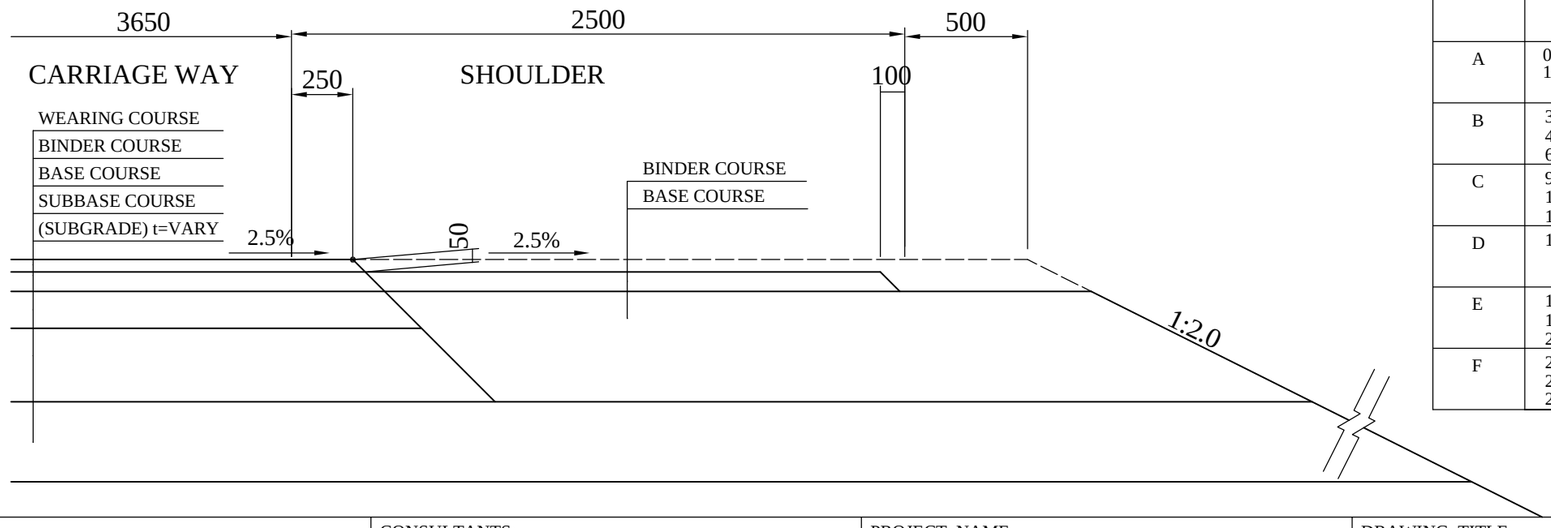
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION（2）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 24

TYPICAL CROSS SECTION(3)　SCALE　A3 1:100

ROAD RAISING SECTION



EDGE OF PAVEMENT　SCALE　A3 1:25



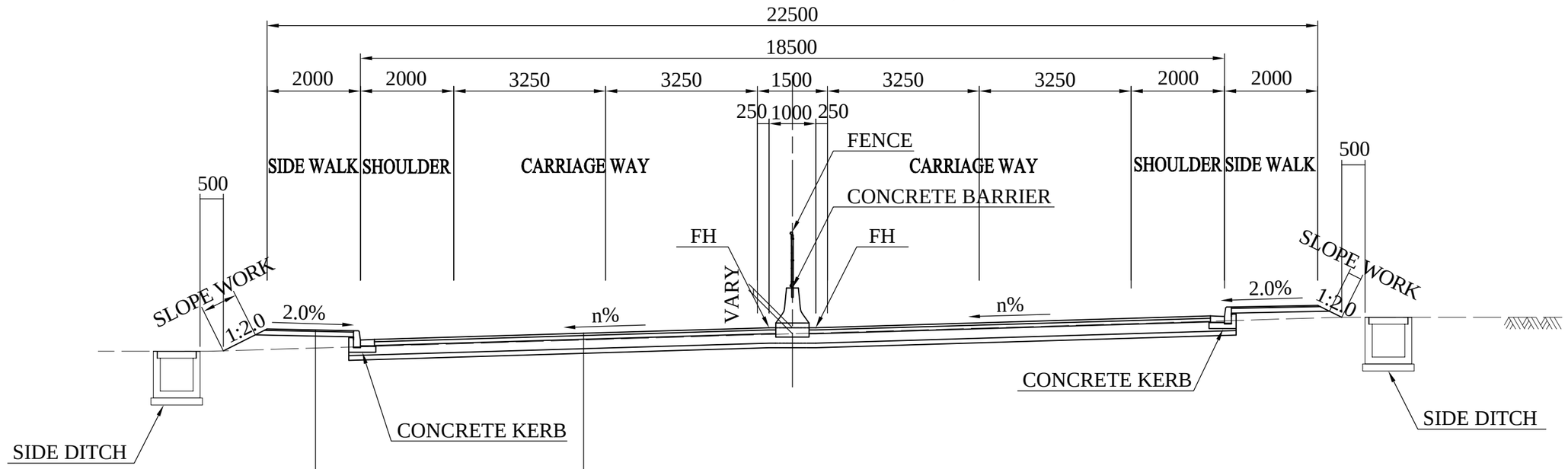
THICKNESS OF PAVEMENT LIST

SECTION	STA.	CARRIAGE WAY				SHOULDER	
		WEARING (mm)	BINDER (mm)	BASE (mm)	SUBBASE (mm)	BINDER (mm)	BASE (mm)
A	0+000 - 0+678 1+926 - 2+850	50	100	200	300	100	500
B	3+750 - 4+000 4+900 - 5+700 6+50 - 6+750		50		300	50	500
C	9+400 - 9+700 10+950 - 11+300 12+250 - 13+800		50		300	50	500
D	13+800 - 14+900		50		400	50	600
E	17+700 - 18+950 19+350 - 20+250 20+600 - 21+650		100		300	100	500
F	22+500 - 23+600 24+350 - 25+000 25+700 - 29+950		50		400	50	600

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION(3)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 25

TYPICAL CROSS SECTION（4） SCALE A3 1:100

URBAN AREA SECTION (ASSIN FOSU)



WEARING COURSE, ASPHALT CONCRETE

BASE COURSE

WEARING COURSE, ASPHALT CONCRETE

BINDER COURSE, ASPHALT CONCRETE

BASE COURSE

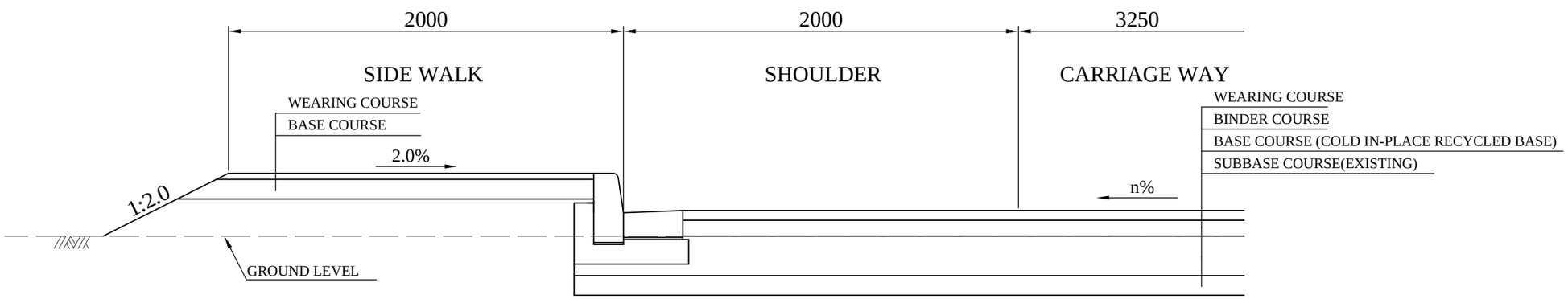
SUBBASE COURSE

(SUBGRADE) t=VARY

THICKNESS OF PAVEMENT LIST

SECTION	STA.	CARRIAGE WAY,SHOULDER				SIDE WALK	
		WEARING (mm)	BINDER (mm)	BASE (mm)	SUBBASE (mm)	WEARING (mm)	BASE (mm)
A	0+678 - 1+926	50	100	200	300	30	100

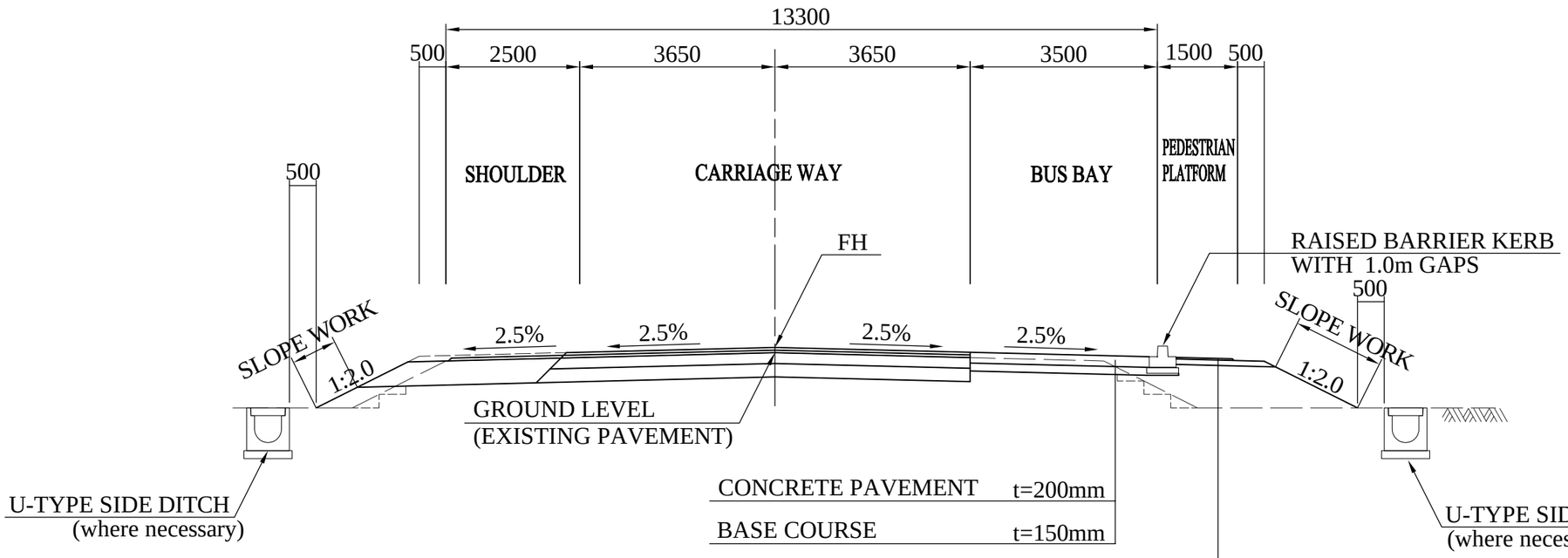
EDGE OF PAVEMENT SCALE A3 1:25



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION（4）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 26

TYPICAL CROSS SECTION(5)　SCALE　A3 1:100

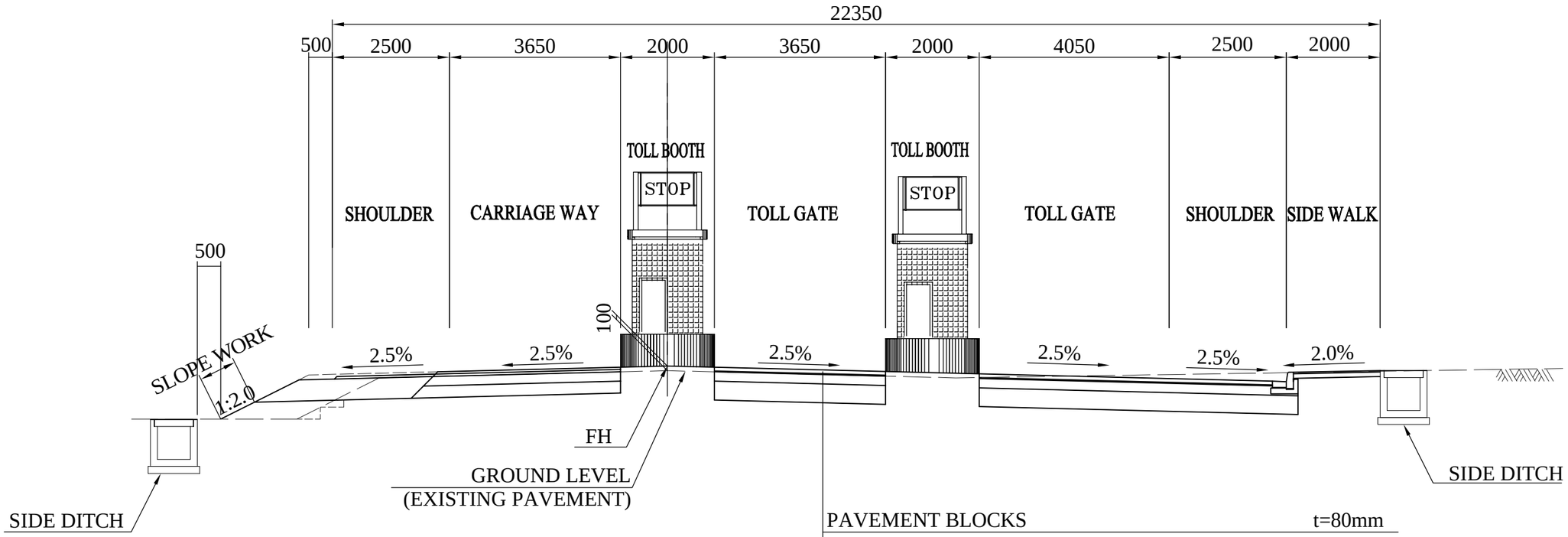
LAY BY



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION(5)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 27

TYPICAL CROSS SECTION（6） SCALE A3 1:100

TOLL PLAZA

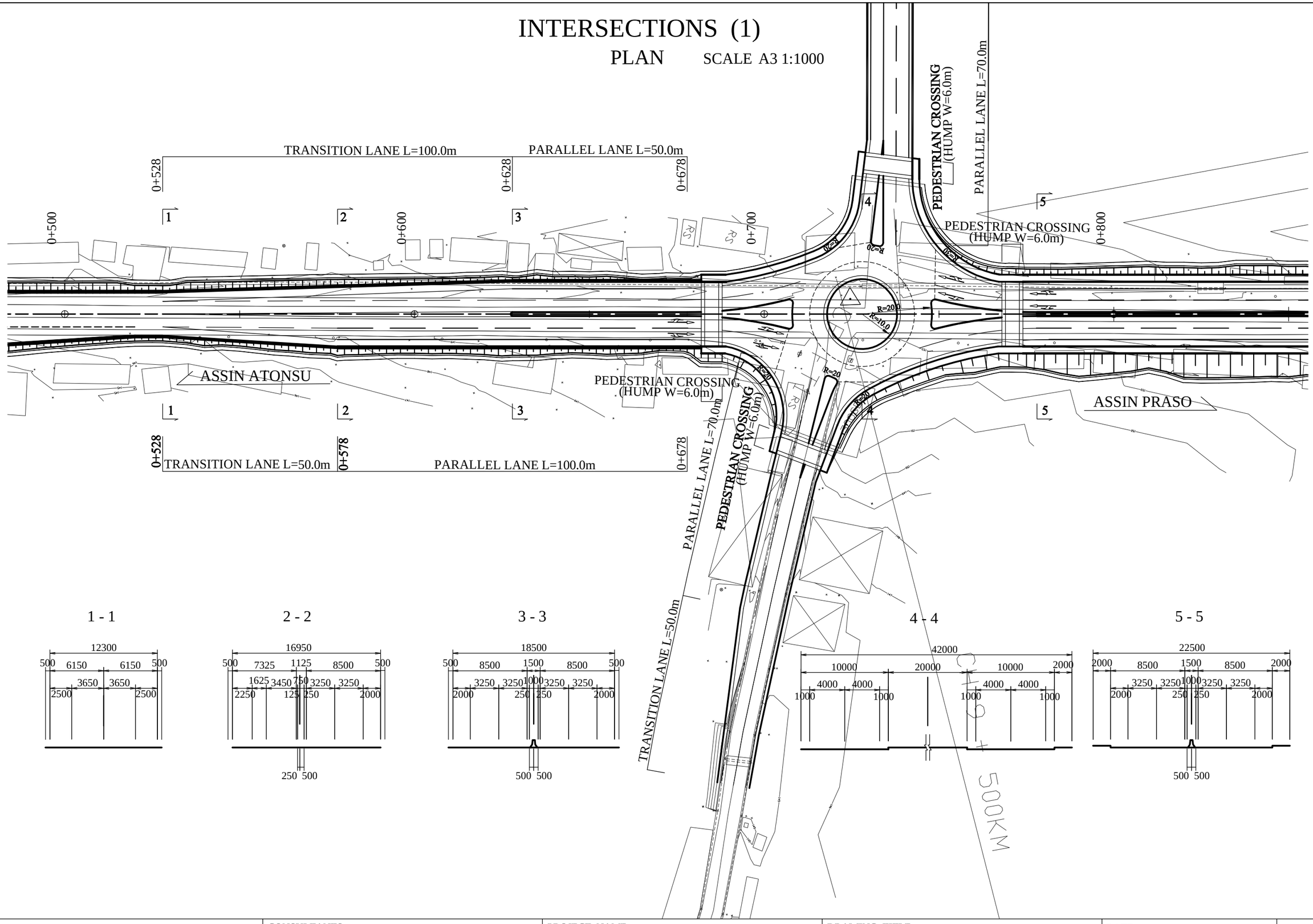


PAVEMENT BLOCKS	t=80mm
SAND	t=20mm
BASE COURSE, CEMENT STABILIZATION	t=200mm
SUBBASE COURSE	t=400mm

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION（6）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 28

INTERSECTIONS (1)

PLAN SCALE A3 1:1000



1 - 1

2 - 2

3 - 3

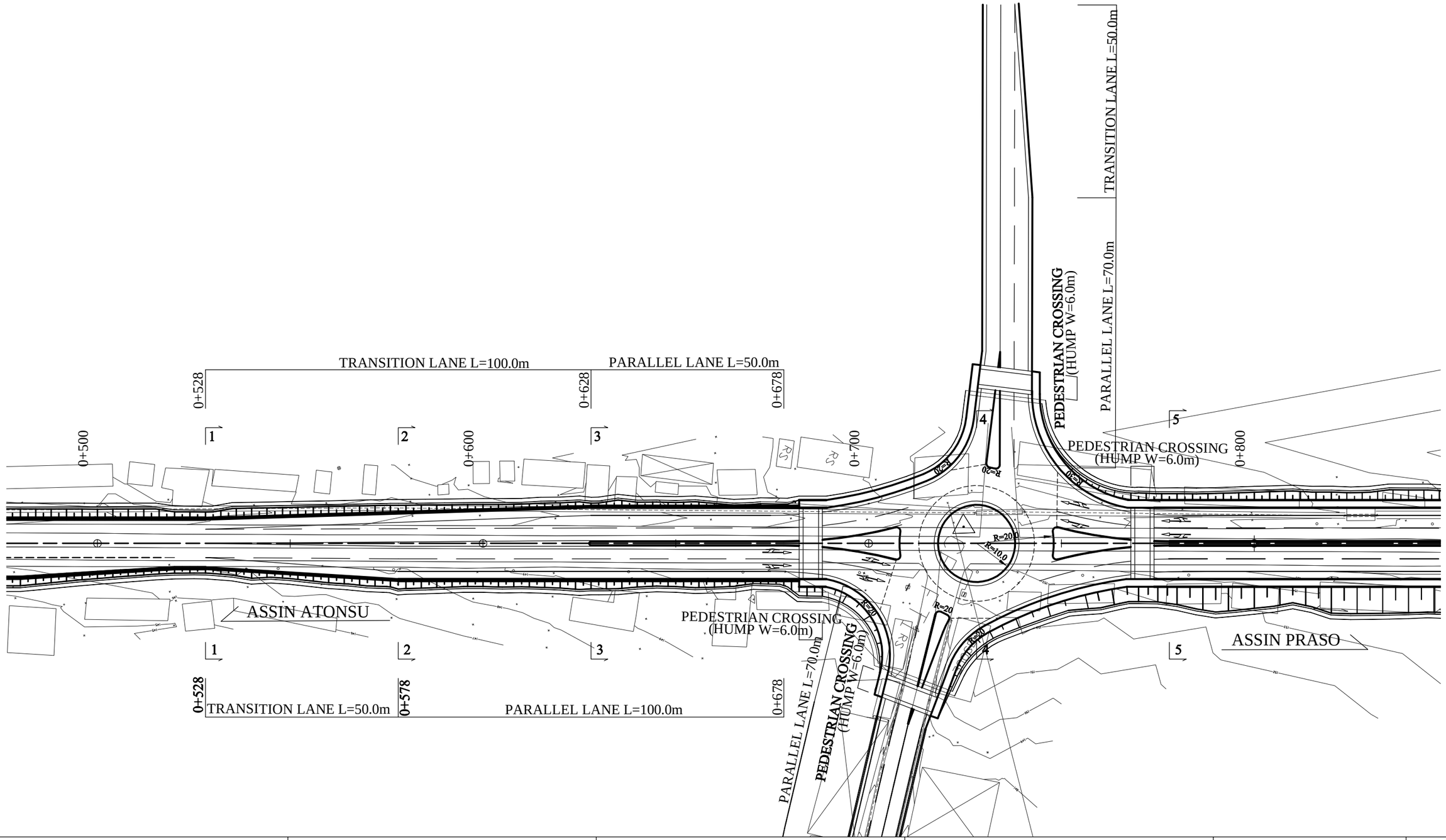
4 - 4

5 - 5

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: INTERSECTIONS (1)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 29

INTERSECTIONS (2)

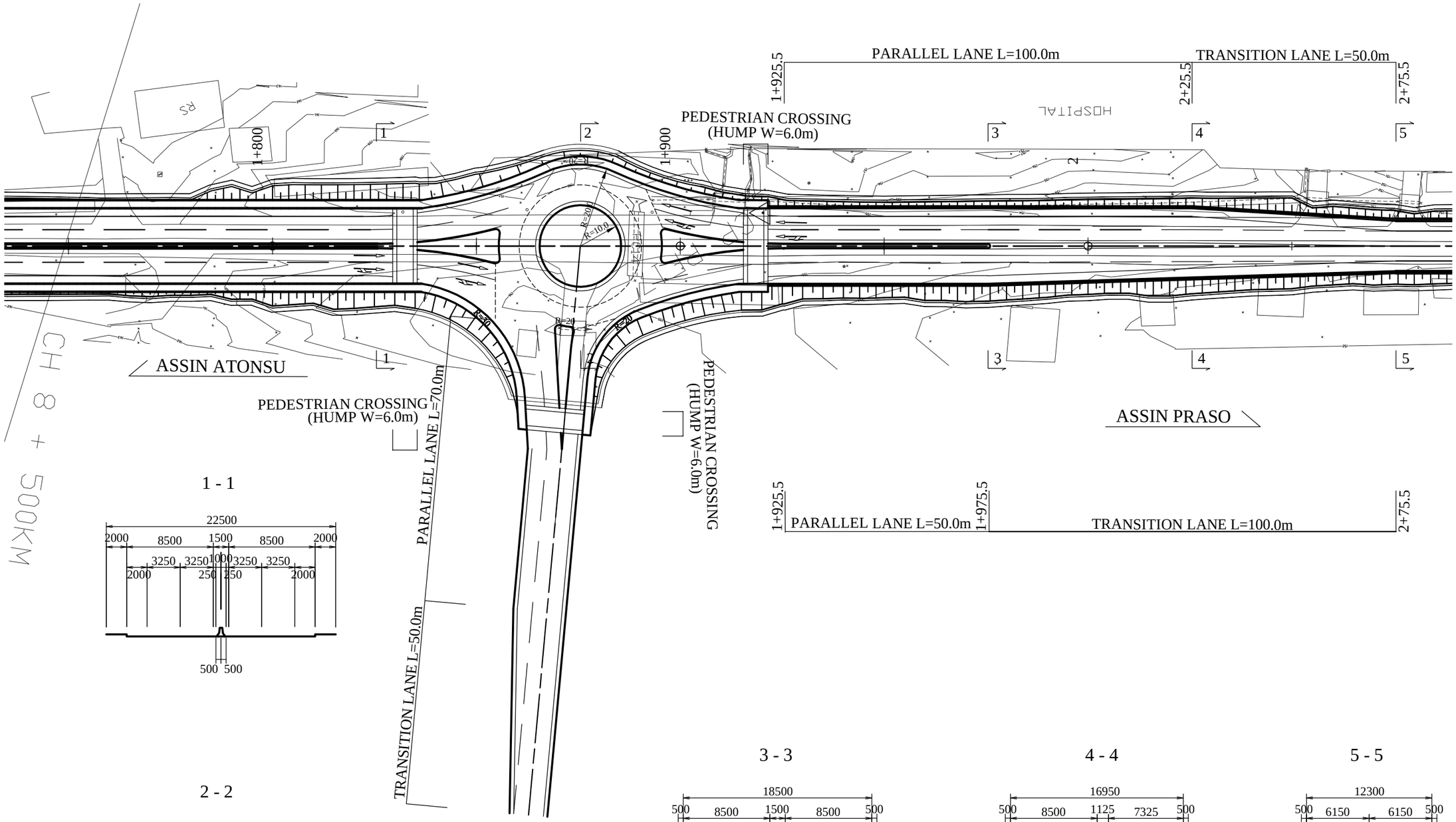
PLAN SCALE A3 1:1000



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: INTERSECTIONS (2)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 30

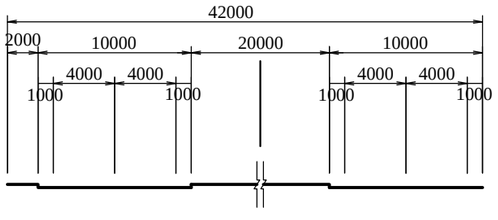
INTERSECTIONS (3)

PLAN SCALE A3 1:1000



1 - 1

2 - 2



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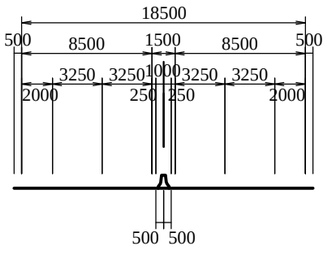

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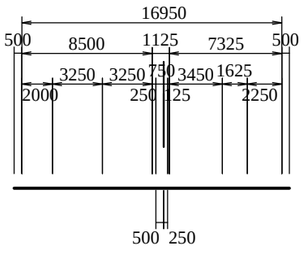

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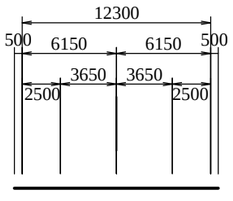
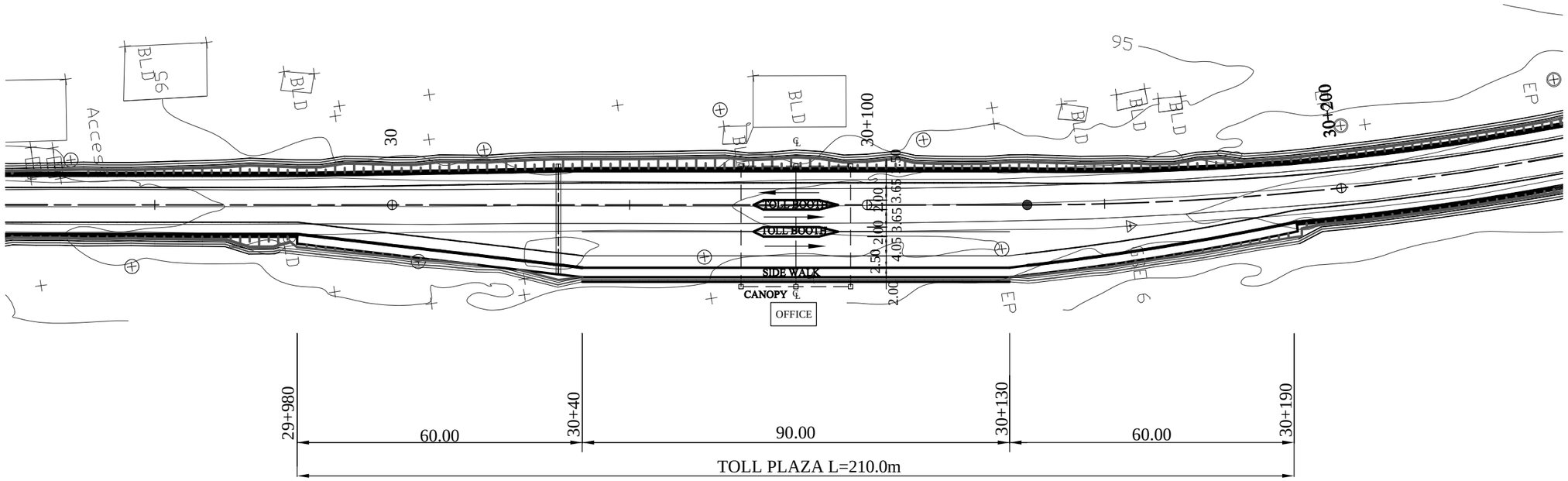


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: INTERSECTIONS (3)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 31

GENERAL ARRANGEMENT OF TOLL PLAZA SCALE A3 1:1000

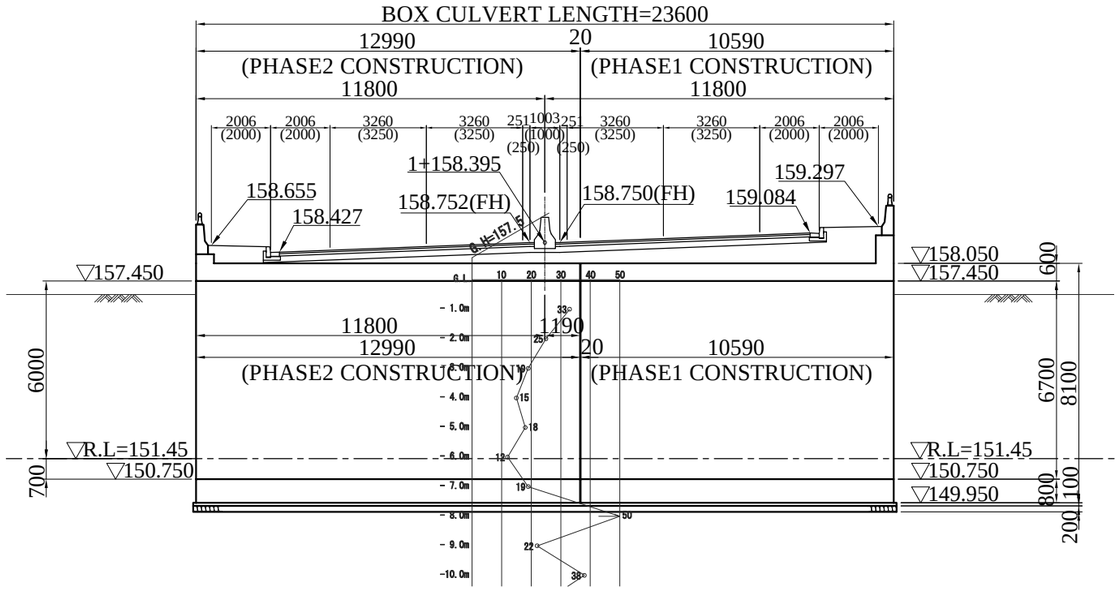


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: GENERAL ARRANGEMENT OF TOLL PLAZA	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 32

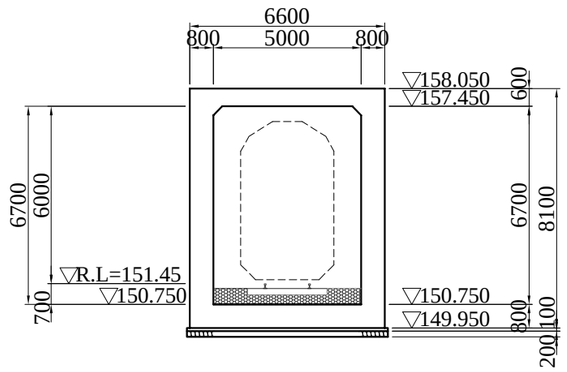
GENERAL PLAN OF CULVERT FOR RAILWAY UNDERPASS

< BOX CULVERT No.11+58.395 > SCALE A3 1:200

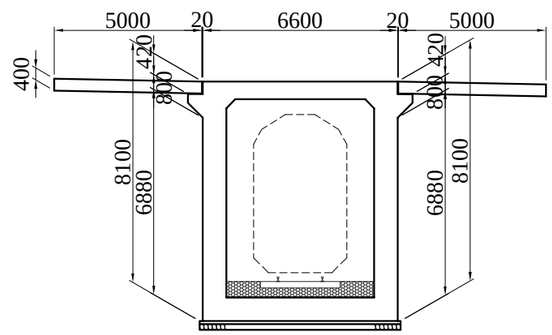
SIDE VIEW



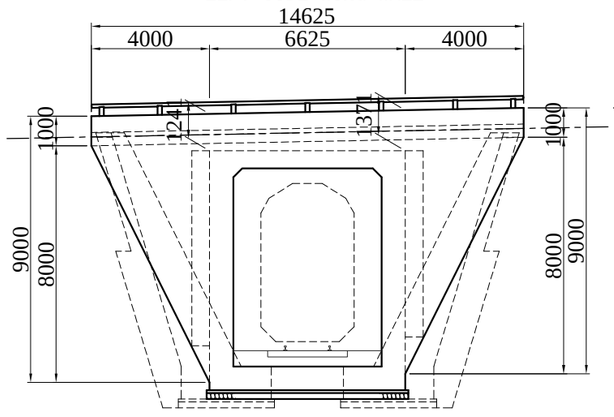
CROSS SECTION



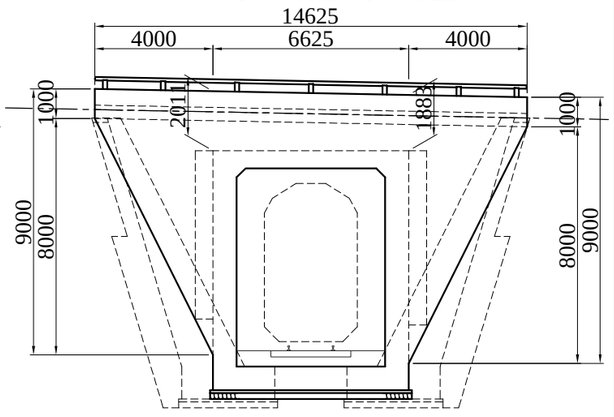
APPROACH SLAB



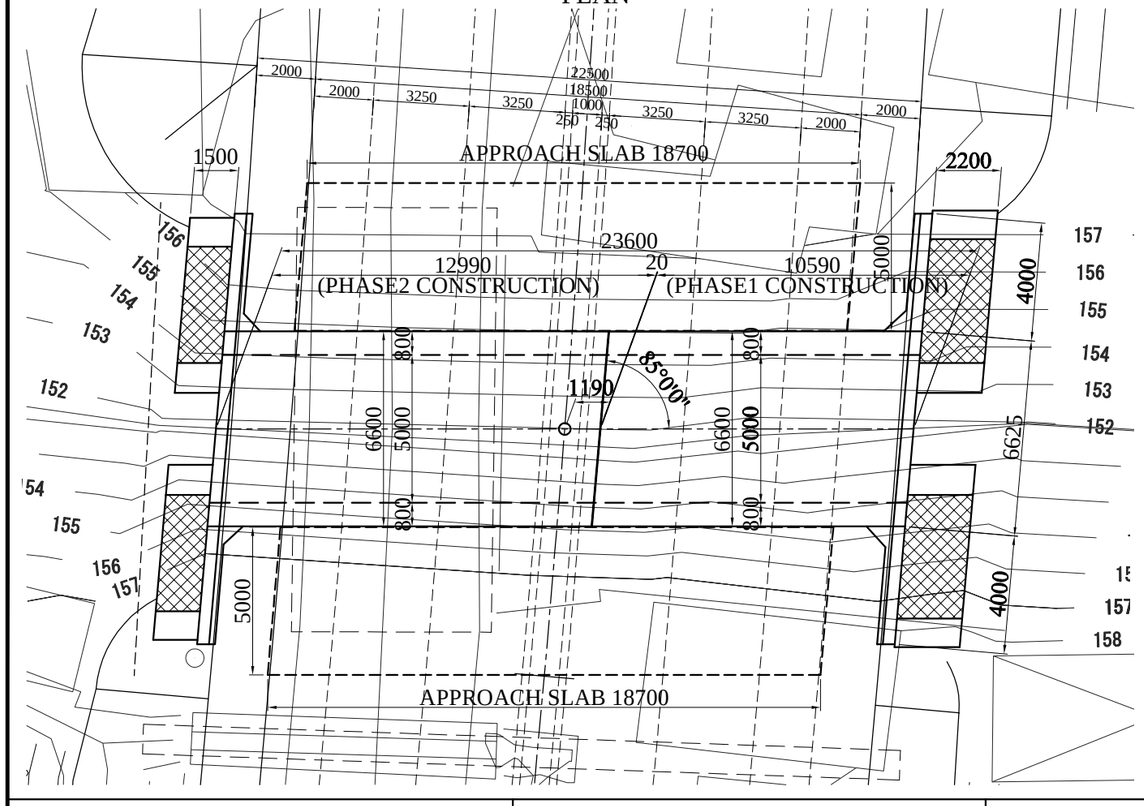
LEFT SIDE WING WALL



RIGHT SIDE WING WALL

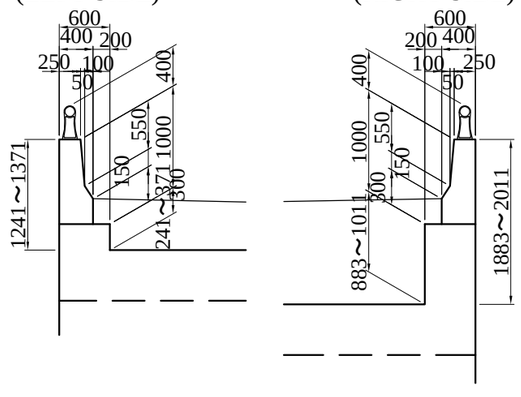


PLAN



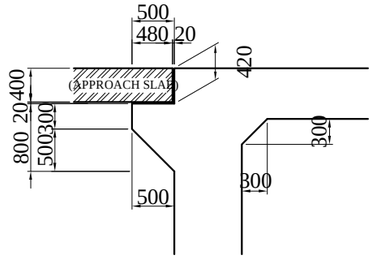
DETAIL OF CONCRETE BARRIER CURB

SCALE A3 1:70



DETAIL OF SUPPORT FOR APPROACH SLAB

SCALE A3 1:70

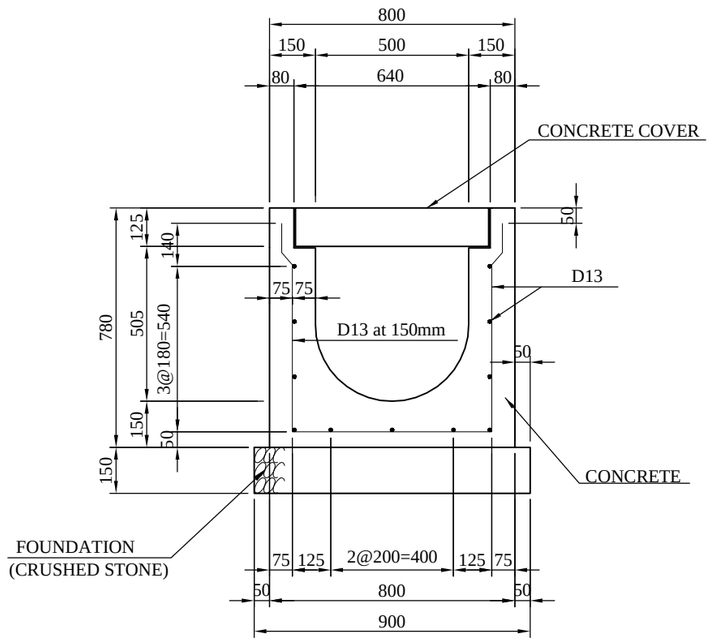


DESIGN CONDITION	
TYPE OF CULVERT	CAST-IN-PLACE BOX CULVERT
CULVERT LENGTH	23.600 m
SECTION SIZE	B=5000×H=6700
SKEW ANGLE	85°00'00"

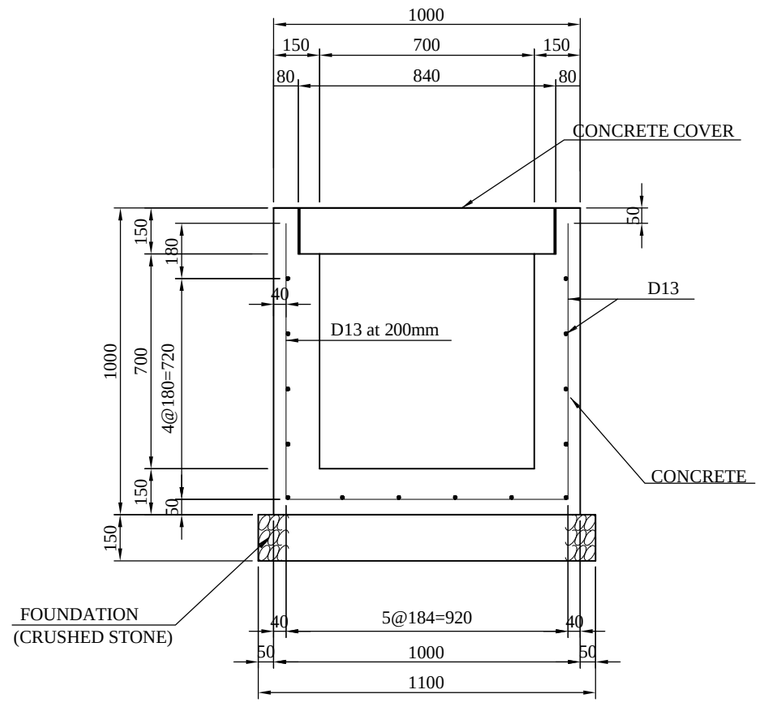
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS:	PROJECT NAME:	DRAWING TITLE:	DATE:	DRAWING No. :
	CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	GENERAL VIEW (BOX CULVERT No.11+58.395)	PREPARED BY:	33
				CHECKED BY:	

DRAINAGE STRUCTURE (1) SCALE A3 1:20

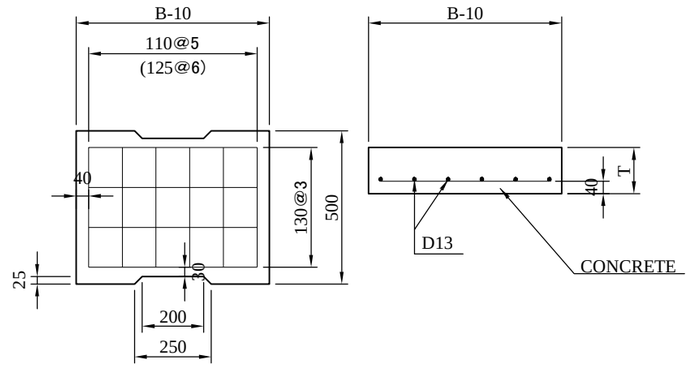
U-TYPE SIDE DITCH



SIDE DITCH



CONCRETE COVER



DIMENSION LIST

TYPE	B	T
500 x 500	640	125
700 x 700	840	150

MATERIAL LIST (U-TYPESIDE DITCH) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
			500 x 500	
CONCRETE		cu.m	0.32	
FORM		sq.m	3.89	
FOUNDATION	CRUSHED STONE	cu.m	0.14	
REINFORCING BAR	D13	kg	23.38	
CONCRETE COVER	500 x 500	nos	2.00	

MATERIAL LIST (SIDE DITCH) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
			700 x 700	
CONCRETE		cu.m	0.38	
FORM		sq.m	3.70	
FOUNDATION	CRUSHED STONE	cu.m	0.17	
REINFORCING BAR	D13	kg	27.46	
CONCRETE COVER	700 x 700	nos	2.00	

MATERIAL LIST (CONCRETE COVER) PER nos

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			500 x 500	700 x 700	
CONCRETE		cu.m	0.03	0.05	
FORM		sq.m	0.28	0.40	
REINFORCING BAR	D13	kg	4.52	5.70	

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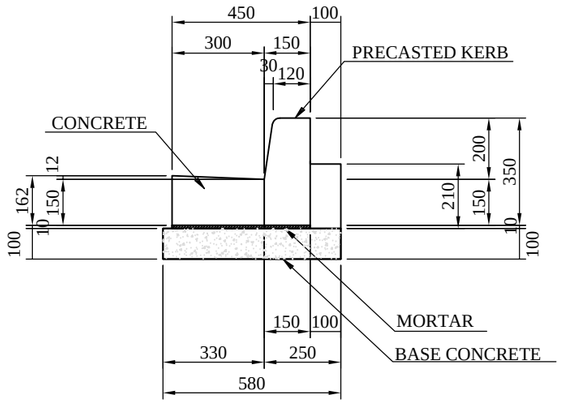
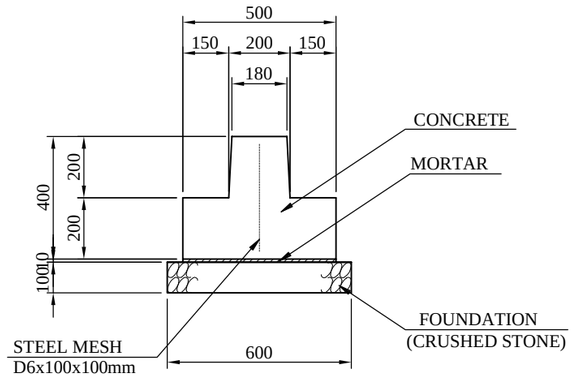
DRAINAGE STRUCTURE (2) SCALE A3 1:20

CONCRETE KERB

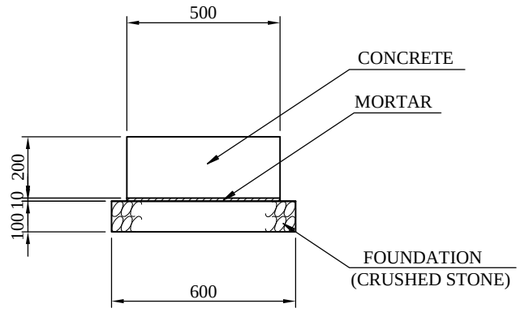


RAISED BARRIER KERB

for LAY BY



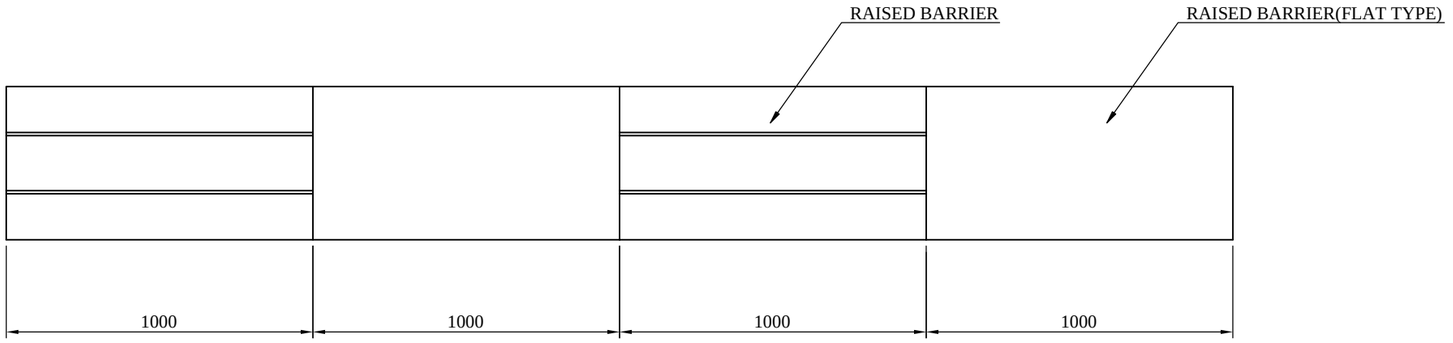
(FLAT TYPE)



MATERIAL LIST (CONCRETE KERB) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	0.07	
FORM		sq.m	0.37	
MORTAR		cu.m	0.005	
BASE CONCRETE		cu.m	0.06	
FORM	BASE CONCRETE	sq.m	0.20	

ARRANGEMENT PLAN



MATERIAL LIST (RASED BARRIER KERB) PER m

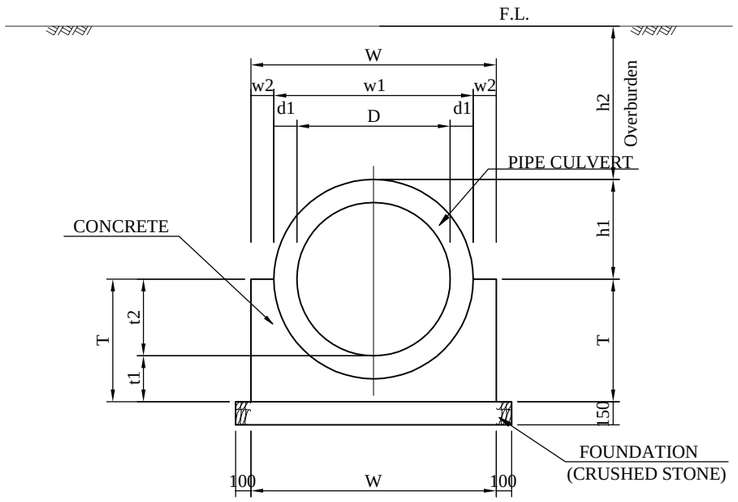
ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			STANDERD	FLAT TYPE	
CONCRETE		cu.m	0.14	0.10	
FORM		sq.m	1.38	0.60	
STEEL MESH	D6 x 100 x 100mm	kg	1.62	———	
MORTAR		cu.m	0.01	0.01	
FOUNDATION	CRUSHED STONE	cu.m	0.06	0.06	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (2)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 35

DRAINAGE STRUCTURE (3) SCALE A3 1:40

PIPE CULVERT

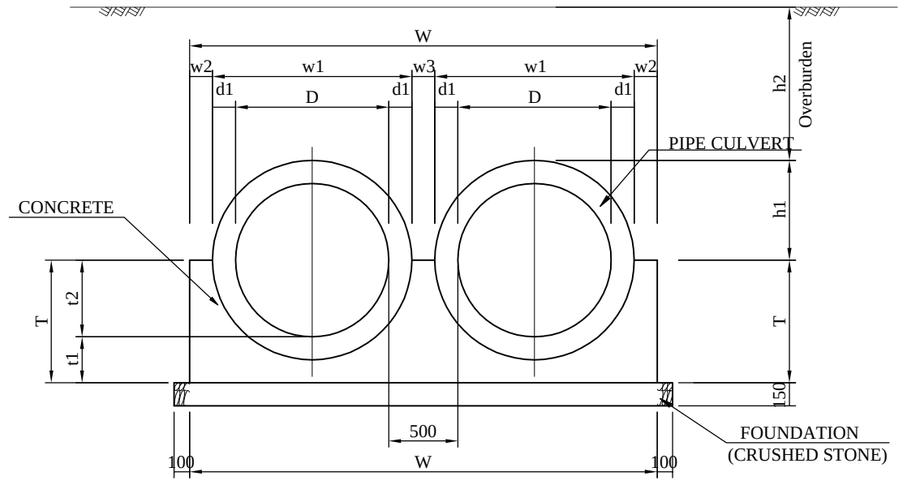
SINGLE CELL TYPE



DIMENSION LIST

D	d1	W	w1	w2	T	t1	t2	h1
900	100	1400	1100	150	700	250	450	550
1000	120	1540	1240	150	770	270	500	620
1200	140	1780	1480	150	890	290	600	740
1500	170	2140	1840	150	1070	320	750	920

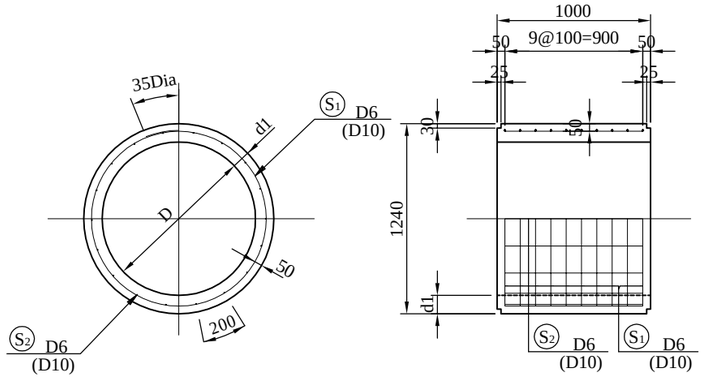
MULTI CELL TYPE



DIMENSION LIST

D	d1	W	w1	w2	w3	T	t1	t2	h1
1000	120	3040	1240	150	260	770	270	500	620
1200	140	3480	1480	150	220	890	290	600	740

REINFORCED CONCRETE PIPE



Note:( )=For more than 1200mm pipe

MATERIAL LIST (SINGLE CELL TYPE) PER m

ITEM	STANDARD	UNIT	QUANTITY				REMARKS
			D900	D1000	D1200	D1500	
CONCRETE		cu.m	0.51	0.58	0.72	0.96	
FORM		sq.m	1.40	1.54	1.78	2.14	
FOUNDATION	CRUSHED STONE	cu.m	0.24	0.26	0.30	0.35	
PIPE CULVERT	φ900	nos.	1.00	——	——	——	
	φ1000	nos.	——	1.00	——	——	
	φ1200	nos.	——	——	1.00	——	
	φ1500	nos.	——	——	——	1.00	

MATERIAL LIST (MULTI CELL TYPE) PER m

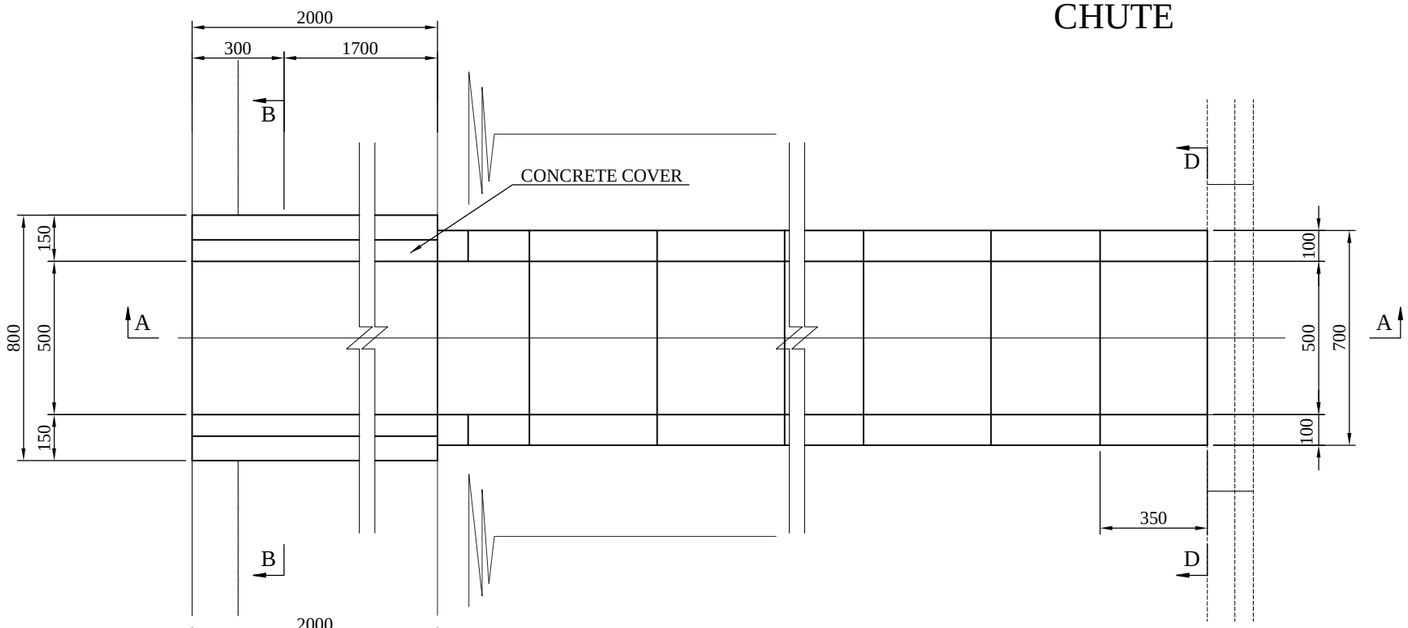
ITEM	STANDARD	UNIT	QUANTITY				REMARKS
			D1000	D1200			
CONCRETE		cu.m	1.13	1.38			
FORM		sq.m	1.54	1.78			
FOUNDATION	CRUSHED STONE	cu.m	0.49	0.55			
PIPE CULVERT	φ1000	nos.	2.00	——			
	φ1200	nos.	——	2.00			

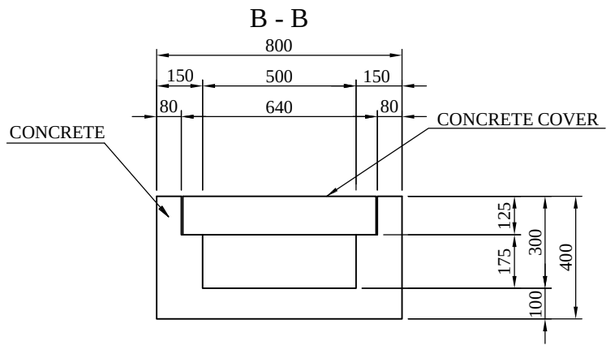
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (3)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 36

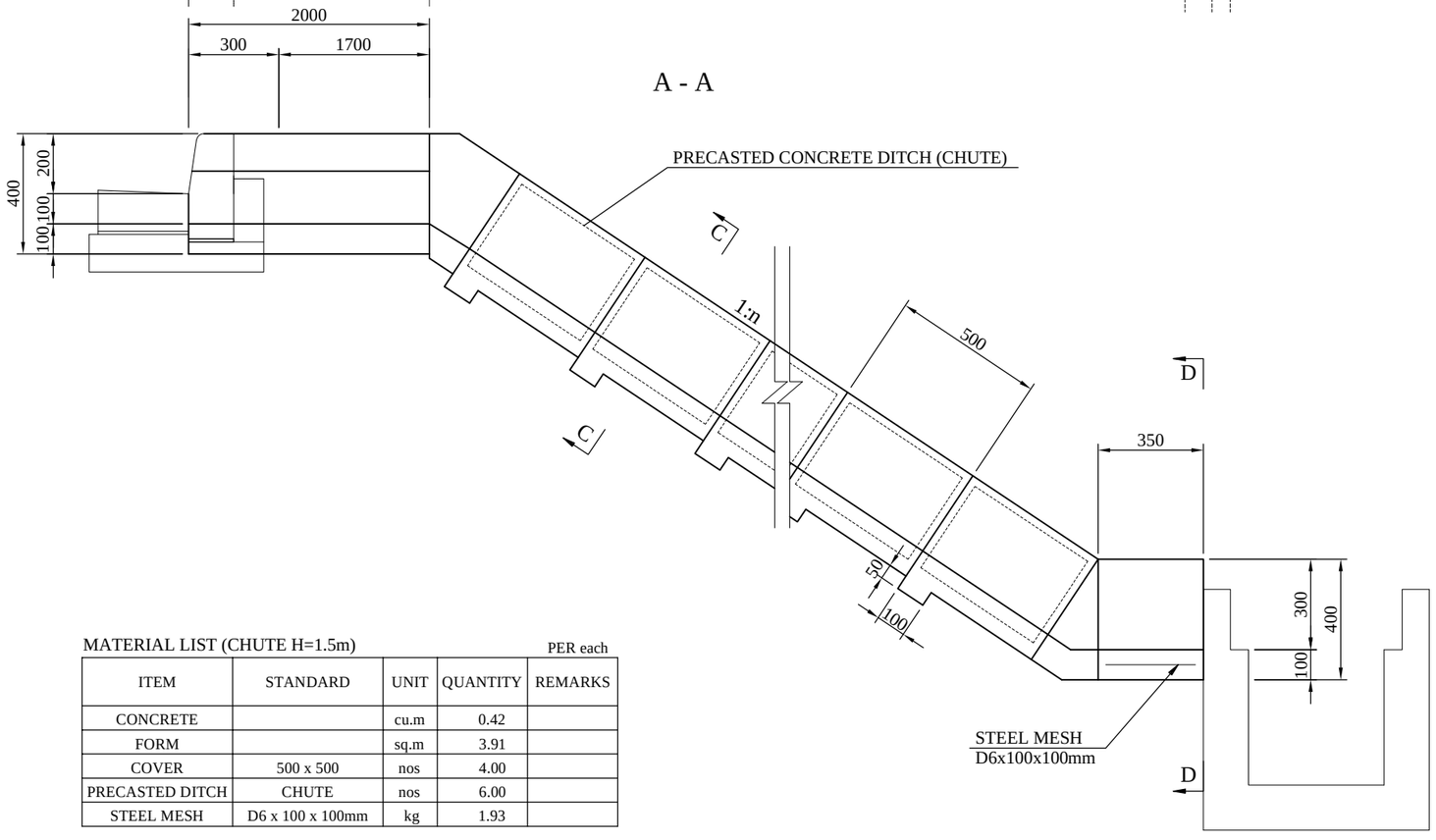
DRAINAGE STRUCTURE (4)

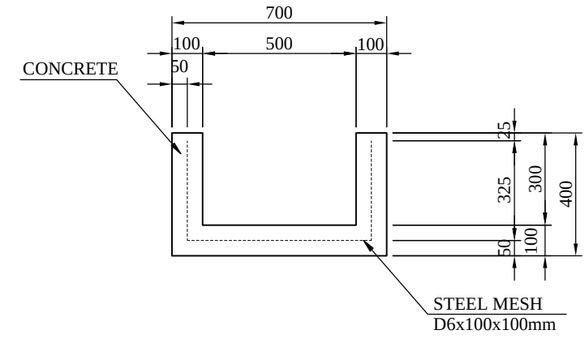
SCALE A3 1:20

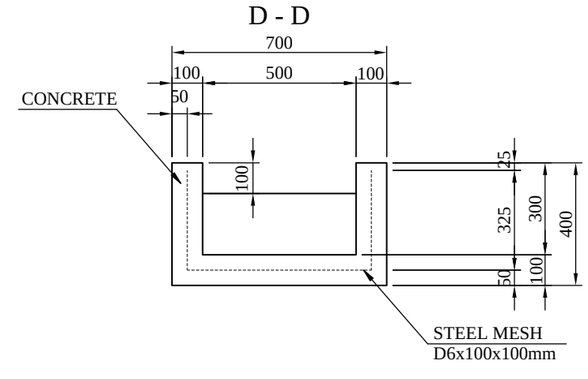
CHUTE











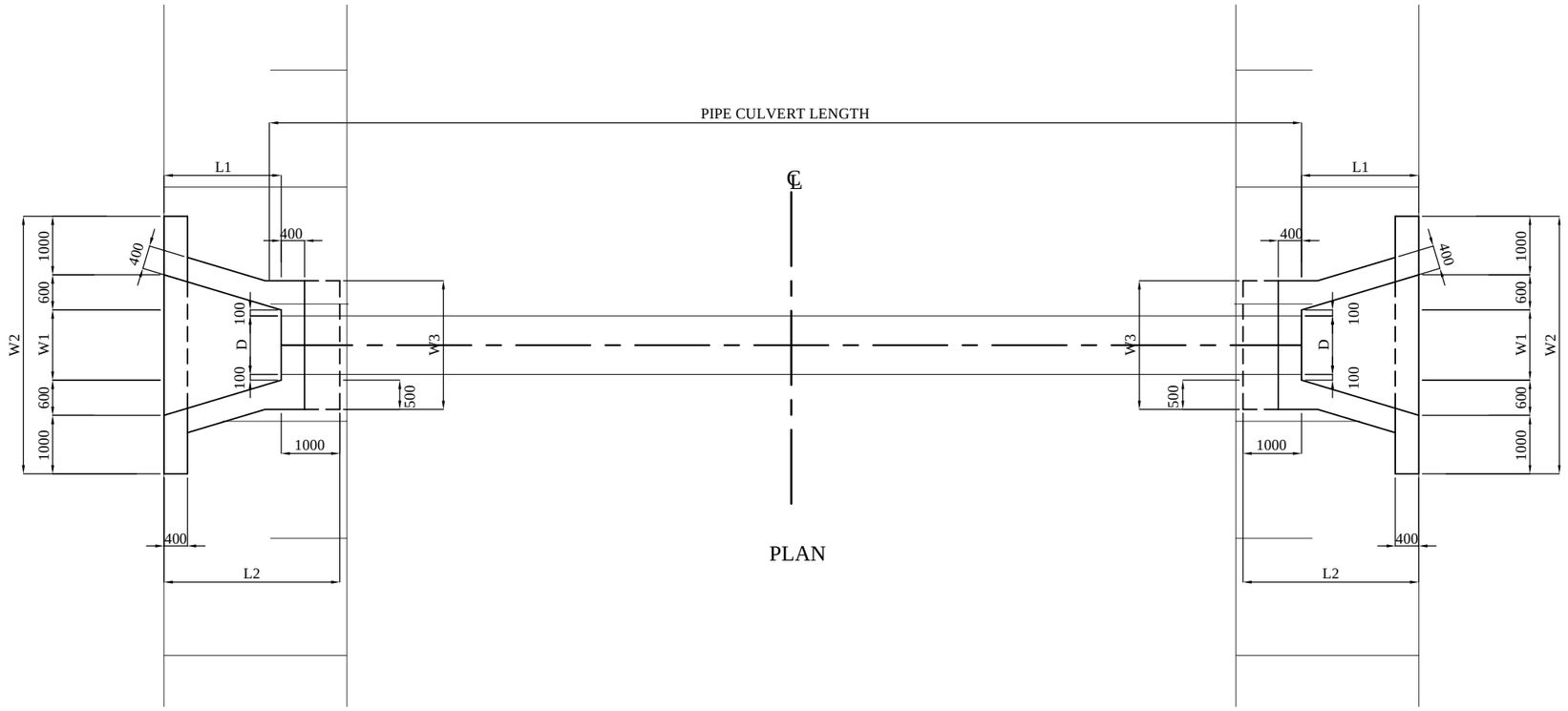
MATERIAL LIST (CHUTE H=1.5m) PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	0.42	
FORM		sq.m	3.91	
COVER	500 x 500	nos	4.00	
PRECASTED DITCH	CHUTE	nos	6.00	
STEEL MESH	D6 x 100 x 100mm	kg	1.93	

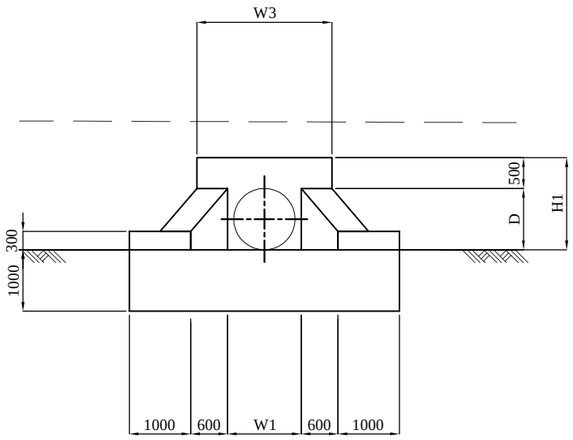
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (4)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 37

DRAINAGE STRUCTURE (5) SCALE A3 1:100

INLET OUTLET (SINGLE CELL TYPE)



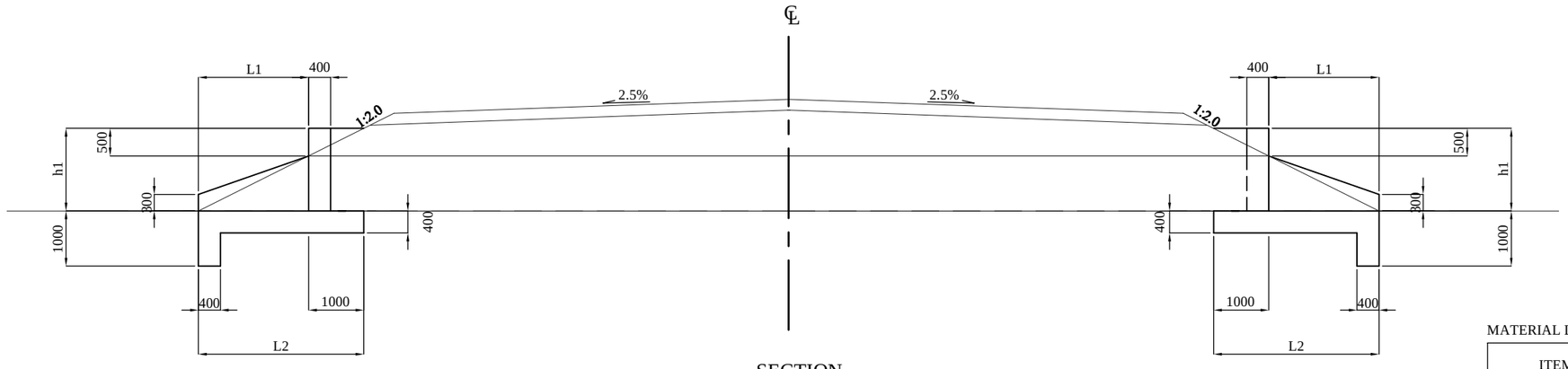
PLAN



ELEVATION

DIMENSION LIST

D	L1	L2	W1	W2	W3	H1
900	1800	2800	1100	4300	2100	1400
1000	2000	3000	1200	4400	2200	1500
1200	2400	3400	1400	4600	2400	1700
1500	3000	4000	1700	4900	2700	2000



SECTION

INLET

OUTLET

MATERIAL LIST (INLET OUTLET)

PER each

ITEM	STANDARD	UNIT	QUANTITY				REMARKS
			D900	D1000	D1200	D1500	
CONCRETE		cu.m	5.76	6.33	7.56	9.66	
FORM		sq.m	18.51	19.88	22.97	28.16	
REINFORCING BAR	D13	kg	177.24	194.70	232.58	297.05	

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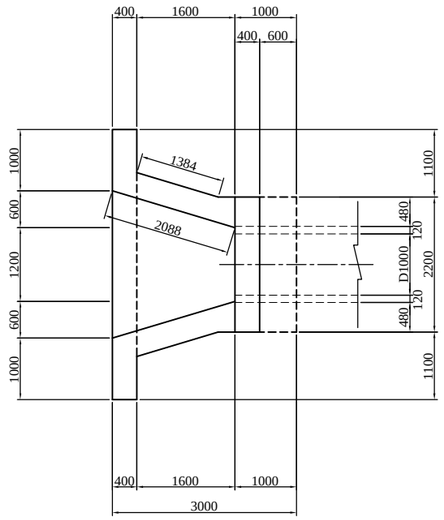
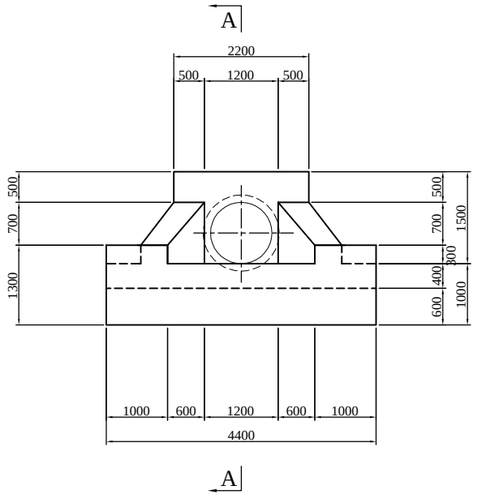
DRAINAGE STRUCTURE (6) SCALE A3 1:100

DETAIL OF INLET OUTLET (SINGLE CELL TYPE)

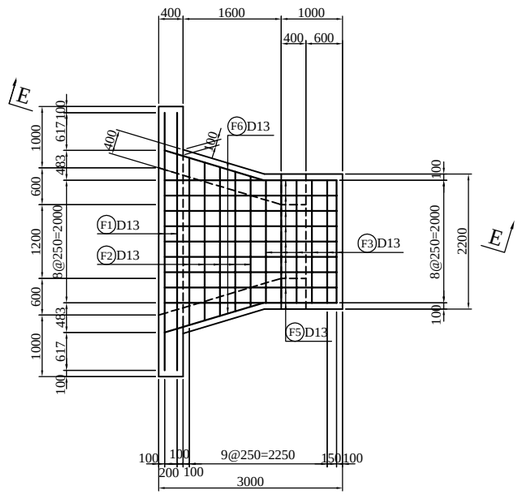


Plan

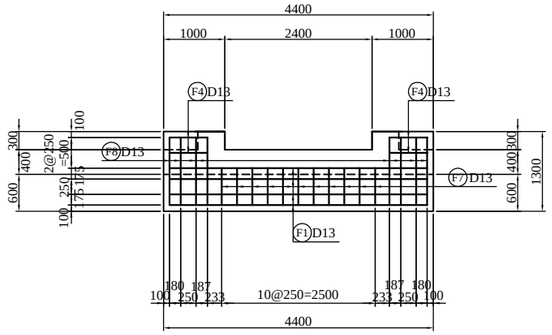


Elevation

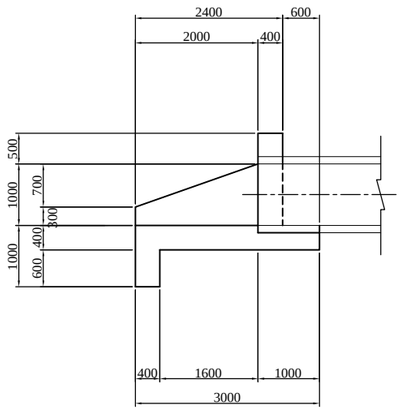
B-B



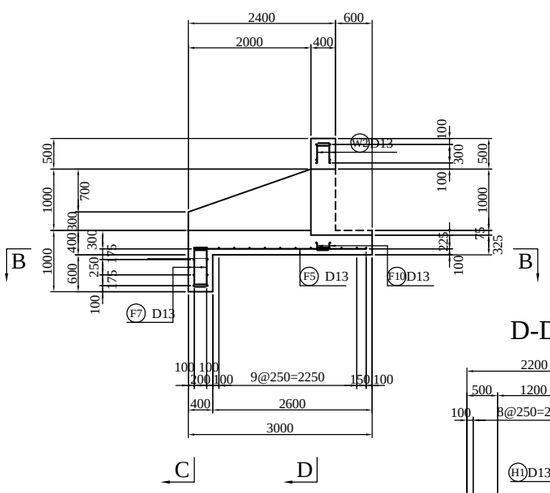
C-C



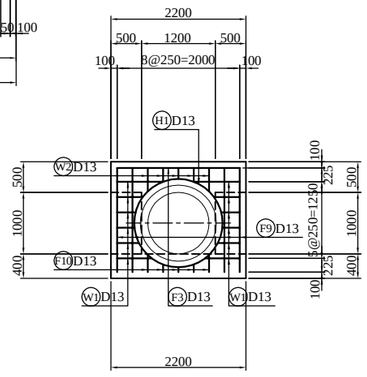
A-A



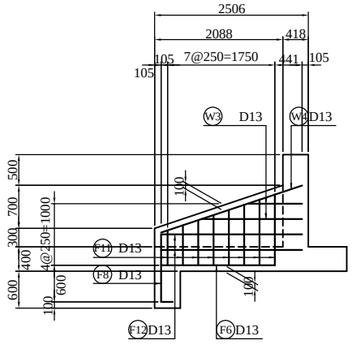
Profile



D-D

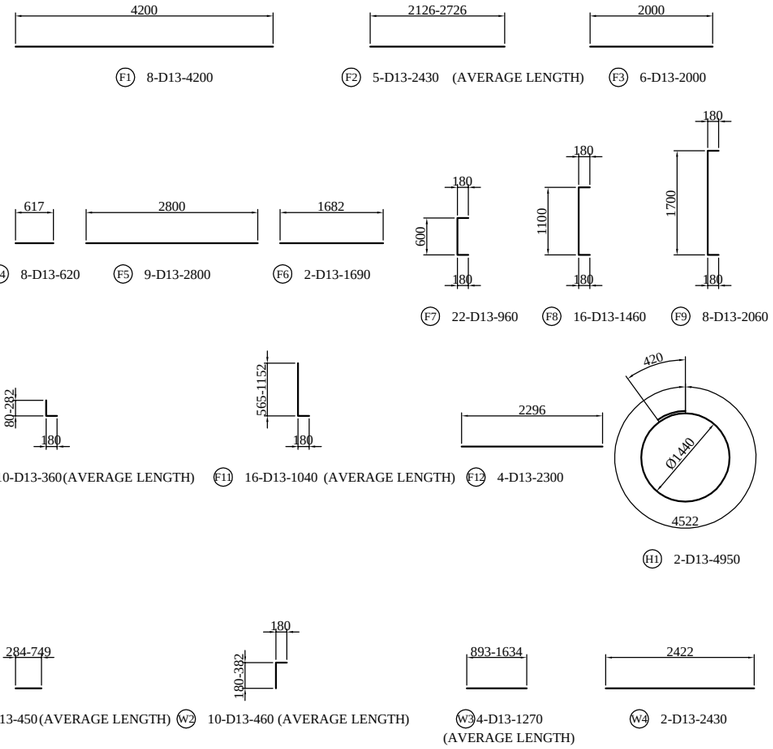


E-E



List of Bars

Items	Dia	Length (mm)	Unit	kg/m	Kg/Unit	Mass (kg)	Remarks
F1	D13	4200	8	0.995	4.179	12.2	
F2	D13	2430	5	0.995	2.418	12.1	(AVE.L)
F3	D13	2000	6	0.995	1.990	11.9	
F4	D13	620	8	0.995	0.617	4.9	
F5	D13	2800	9	0.995	2.786	25.1	
F6	D13	1690	2	0.995	1.682	3.4	
F7	D13	960	22	0.995	0.955	21.0	
F8	D13	1460	16	0.995	1.453	23.2	
F9	D13	2060	8	0.995	2.050	16.4	
F10	D13	360	10	0.995	0.358	3.6	(AVE.L)
F11	D13	1040	16	0.995	1.035	16.6	(AVE.L)
F12	D13	2300	4	0.995	2.289	9.2	
W1	D13	450	24	0.995	0.448	10.7	(AVE.L)
W2	D13	460	10	0.995	0.458	4.6	(AVE.L)
W3	D13	1270	4	0.995	1.264	5.1	(AVE.L)
W4	D13	2430	2	0.995	2.418	4.8	
H1	D13	4950	2	0.995	4.925	9.9	
					D13	194.7	kg
					Total	194.7	kg

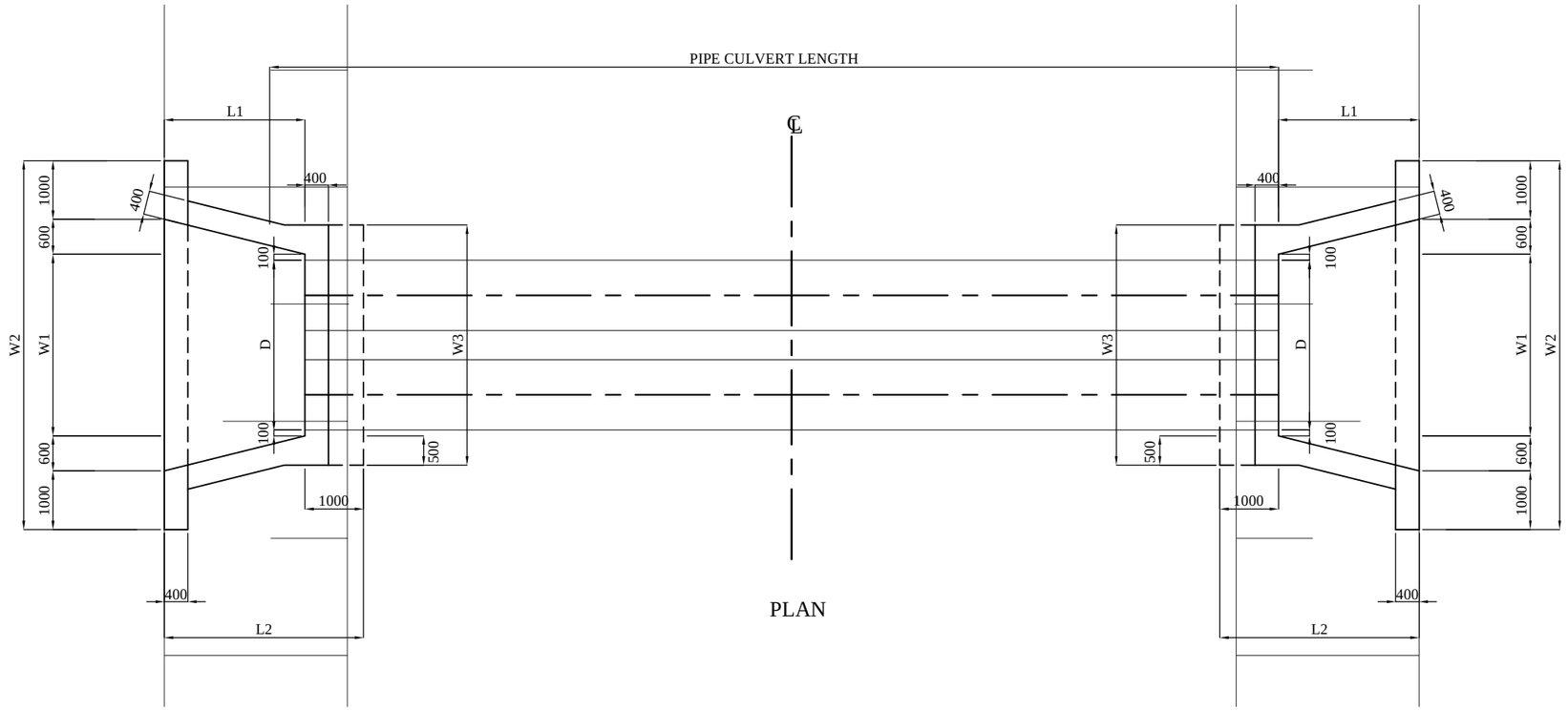


Bar arrangement (Inlet Outlet)

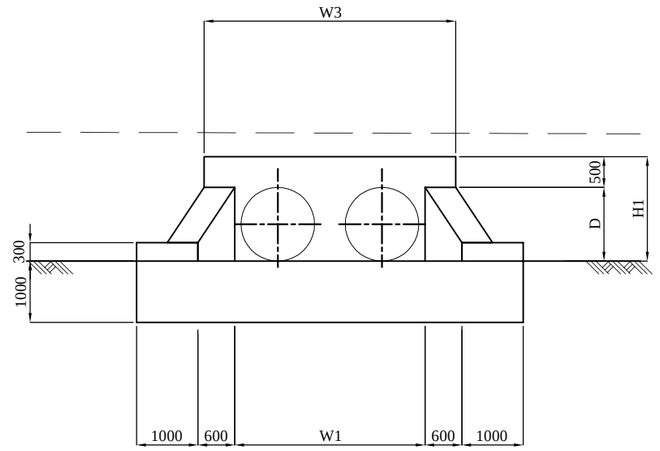
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (6)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 39

DRAINAGE STRUCTURE (7) SCALE A3 1:100

INLET OUTLET (MULTI CELL TYPE)



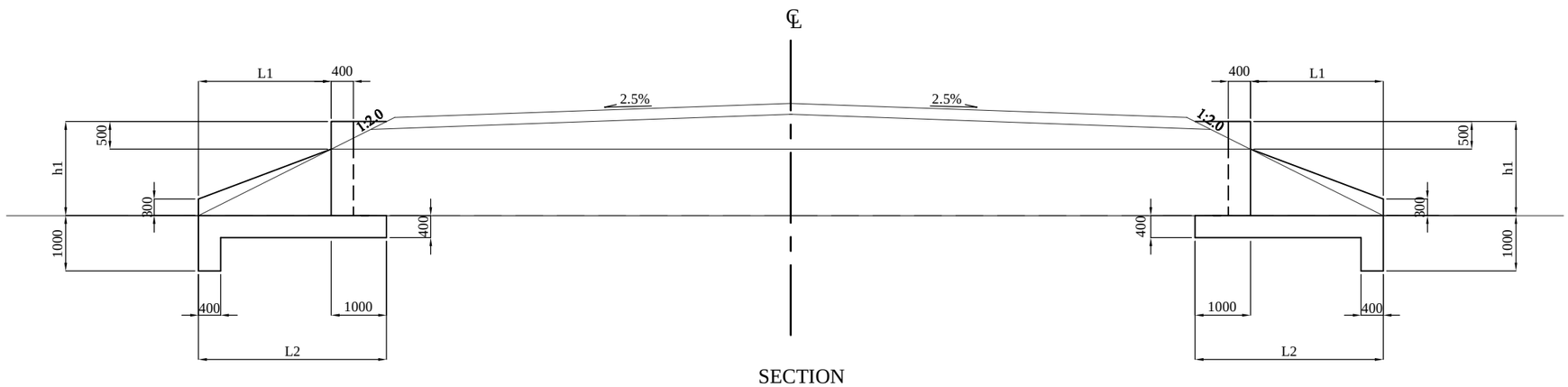
PLAN



ELEVATION

DIMENSION LIST

D	L1	L2	W1	W2	W3	H1
1000@2	2000	3000	2700	5900	3700	1500
1200@2	2400	3400	3100	6300	4100	1700



SECTION

INLET

OUTLET

MATERIAL LIST (INLET OUTLET)

PER each

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			D1000@2	D1200@2	
CONCRETE		cu.m	8.90	10.75	
FORM		sq.m	24.96	28.71	
REINFORCING BAR	D13	kg	277.0	334.0	

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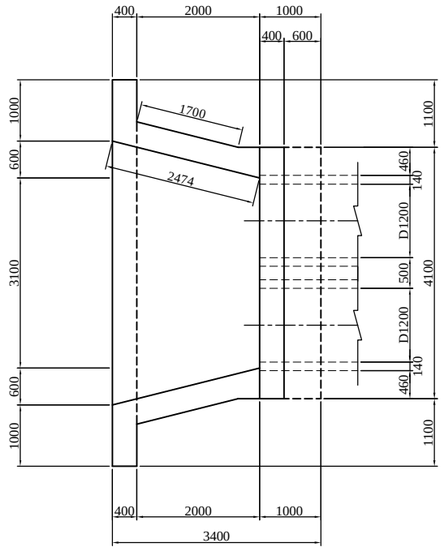
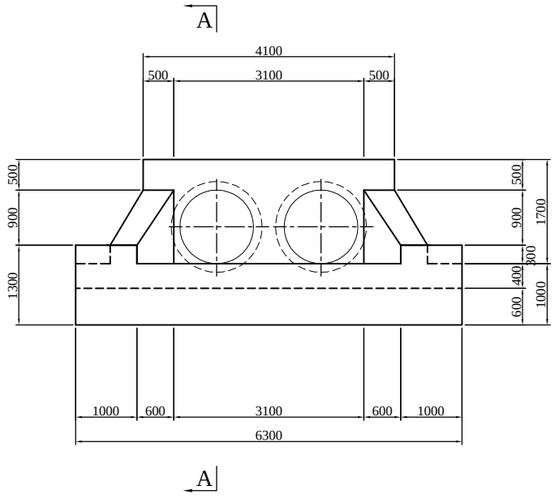
DRAINAGE STRUCTURE (8) SCALE A3 1:100

DETAIL OF INLET OUTLET (MULTI CELL TYPE)

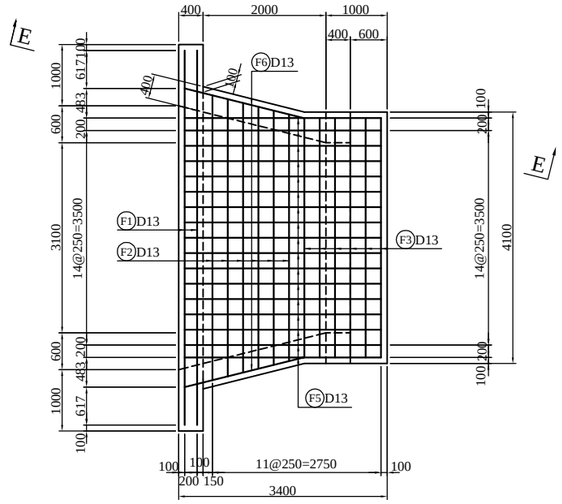


Plan



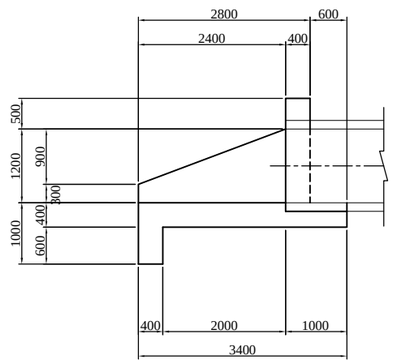
Elevation

B-B

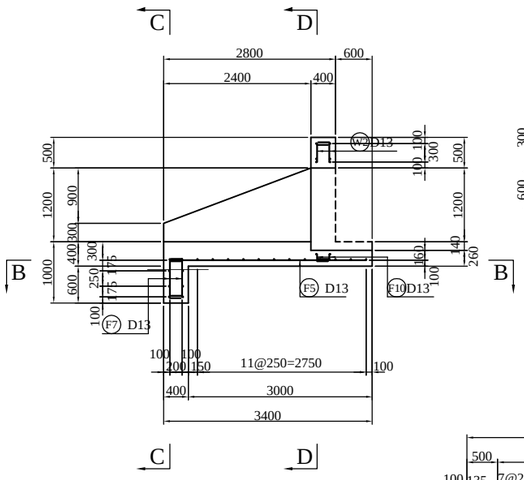


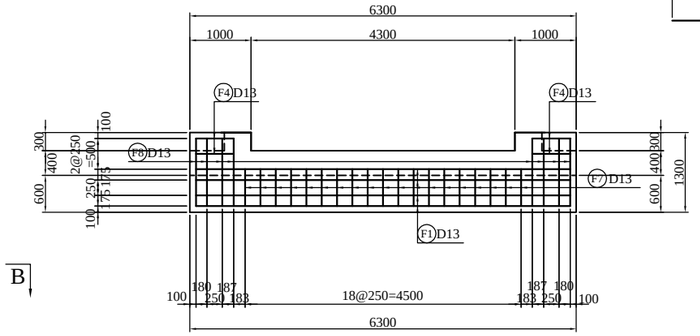
C-C

A-A

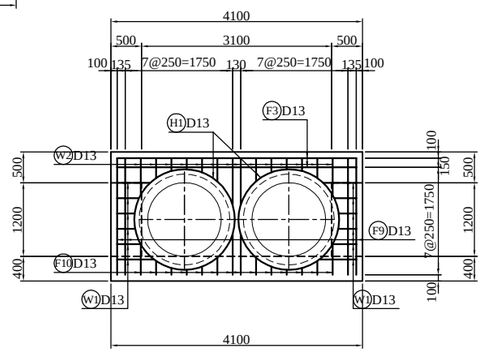


Profile

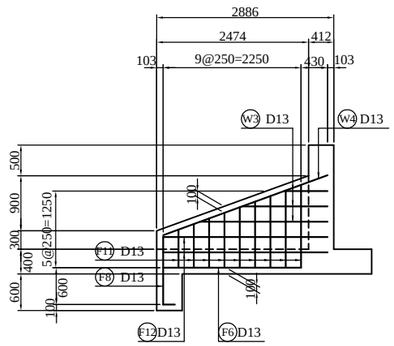




D-D



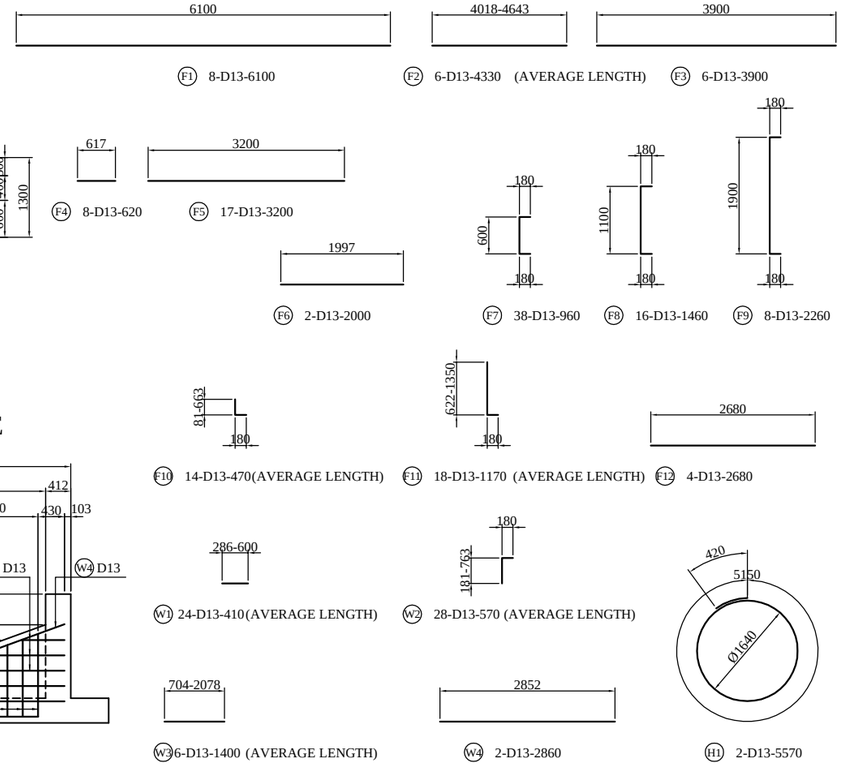
E-E



Bar arrangement (Inlet Outlet)

List of Bars

Items	Dia	Length (mm)	Unit	kg/m	Kg/Unit	Mass (kg)	Remarks
F1	D13	6100	8	0.995	6.070	48.6	
F2	D13	4330	6	0.995	4.308	25.9	(AVE.L)
F3	D13	3900	6	0.995	3.881	23.3	
F4	D13	620	8	0.995	0.617	4.9	
F5	D13	3200	17	0.995	3.184	54.1	
F6	D13	2000	2	0.995	1.990	4.0	
F7	D13	960	38	0.995	0.955	36.3	
F8	D13	1460	16	0.995	1.453	23.2	
F9	D13	2260	8	0.995	2.249	18.0	
F10	D13	470	28	0.995	0.468	13.1	(AVE.L)
F11	D13	1170	18	0.995	1.164	21.0	(AVE.L)
F12	D13	2680	4	0.995	2.667	10.7	
W1	D13	410	24	0.995	0.408	9.8	(AVE.L)
W2	D13	570	28	0.995	0.567	15.9	(AVE.L)
W3	D13	1400	6	0.995	1.393	8.4	(AVE.L)
W4	D13	2860	2	0.995	2.846	5.7	
H1	D13	5570	2	0.995	5.542	11.1	
					D13	334.0	kg
					Total	334.0	kg

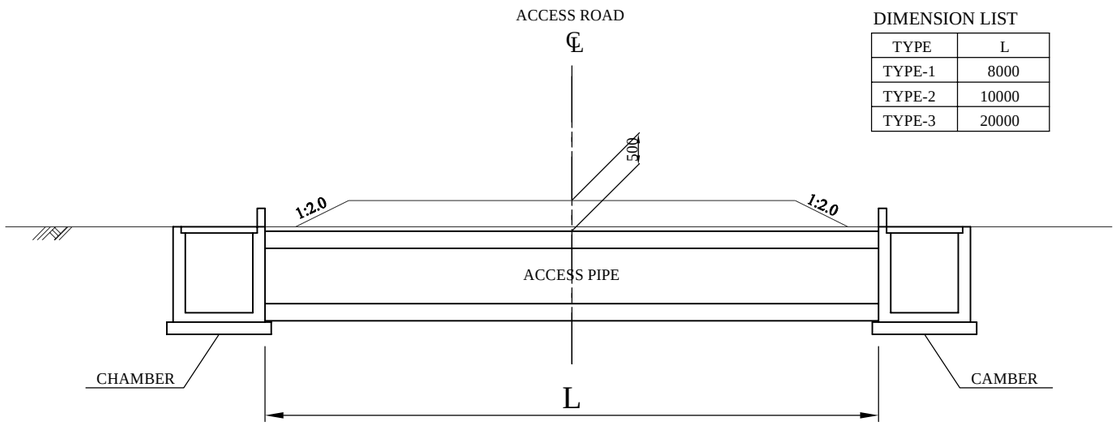


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (8)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 41

DRAINAGE STRUCTURE (9) SCALE AS SHOWN

ACCESS PIPE

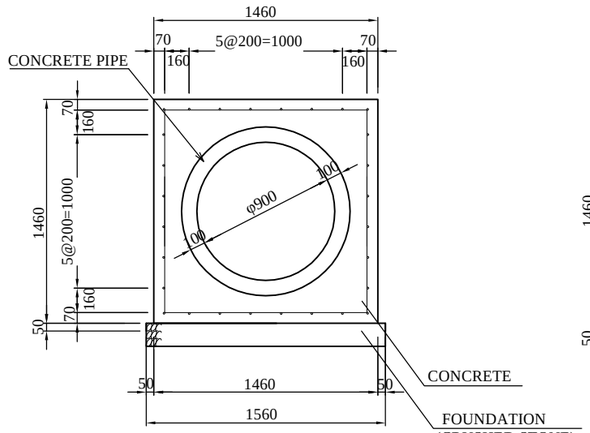
SECTION SCALE A3 1:20

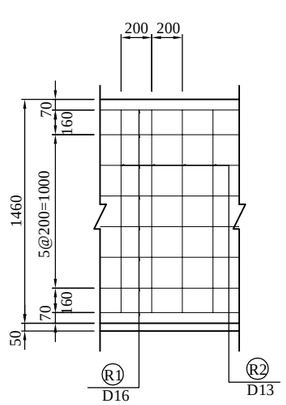


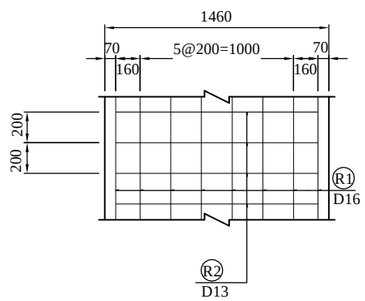
DIMENSION LIST

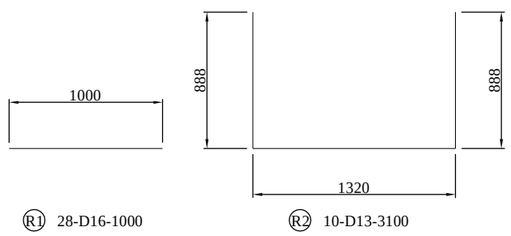
TYPE	L
TYPE-1	8000
TYPE-2	10000
TYPE-3	20000

ACCESS PIPE SCALE A3 1:40





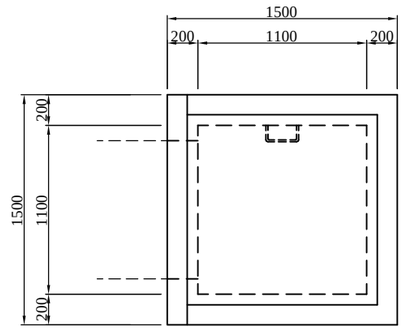


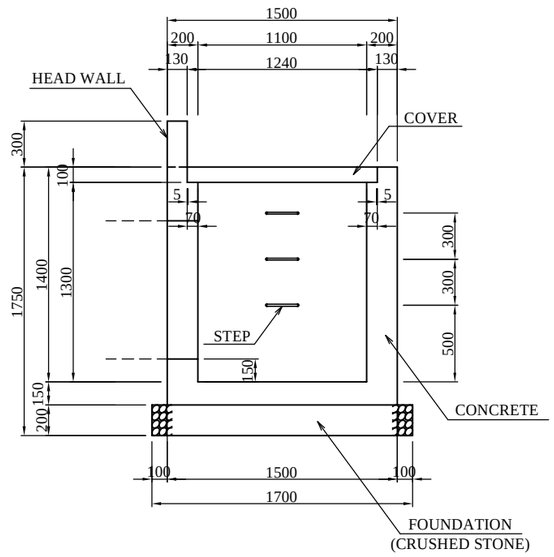


R1 28-D16-1000

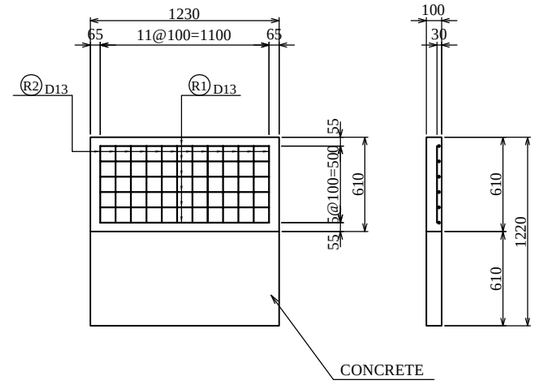
R2 10-D13-3100

CHAMBER SCALE A3 1:40

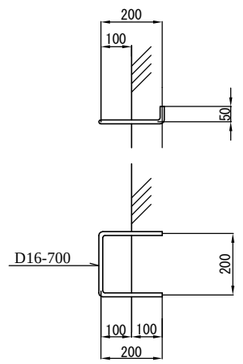




COVER SCALE A3 1:40



STEP

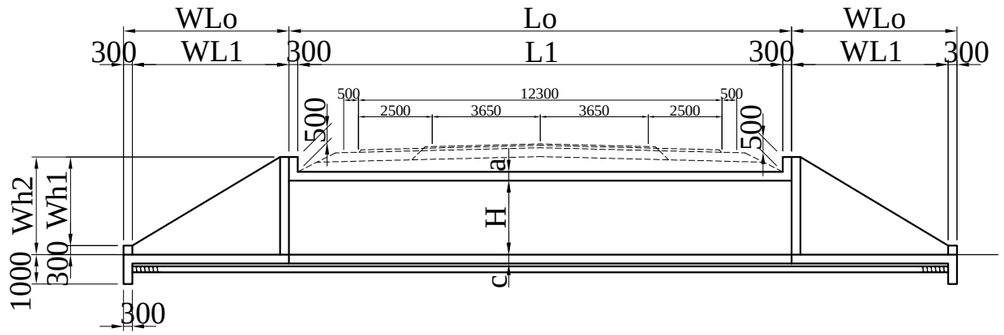


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (9)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 42

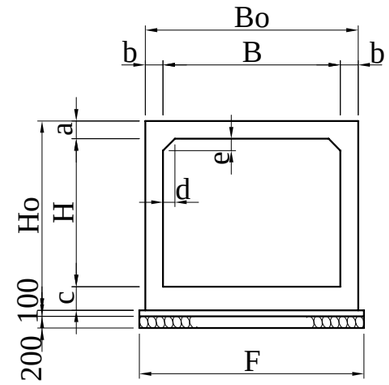
DRAINAGE STRUCTURE (10)

<NEW CONSTRUCTION BOX CULVERT SINGLE TYPE>

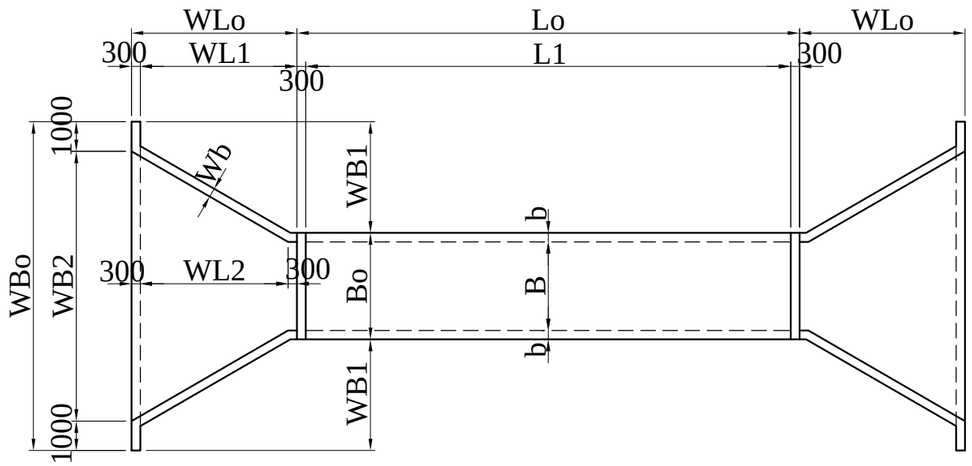
SIDE VIEW SCALE A3 1:200



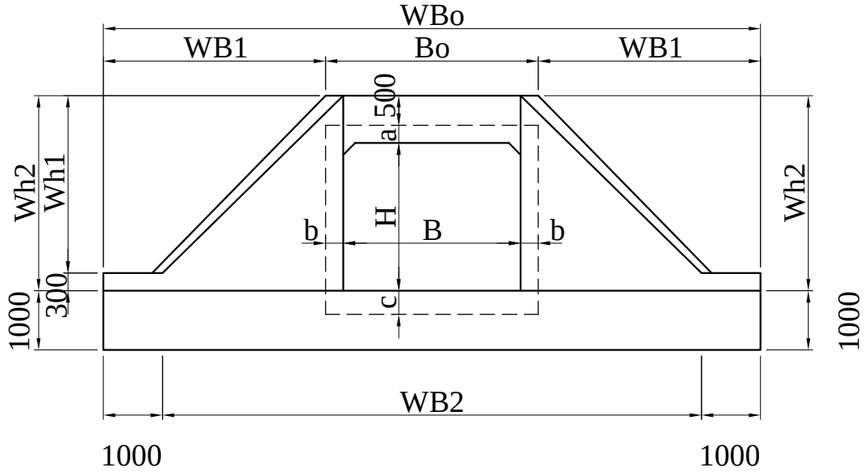
CROSS SECTION SCALE A3 1:100



PLAN SCALE A3 1:200



FRONT VIEW SCALE A3 1:100



Dimension of Box Culvert (mm)

No.	SIZE	B	H	a	b	c	d	e	Bo	Ho	F	L1	Lo
2+478	3000×2000	3000	2000	300	300	400	200	200	3600	2700	3800	16400	17000
6+546	2000×2000	2000	2000	300	300	300	200	200	2600	2600	2800	16400	17000
8+ 93	3000×2500	3000	2500	300	300	400	200	200	3600	3200	3800	15400	16000
11+127	2000×2000	2000	2000	300	300	300	200	200	2600	2600	2800	18400	19000
28+861	2500×2500	2500	2500	300	300	300	200	200	3100	3100	3300	17400	18000

Dimension of dimension of Inlet and outlet (mm)

No.	SIZE	B	H	WB1	WB2	WBo	Wb	WL1	WL2	WLo	Wh1	Wh2
2+478	3000×2000	3000	2000	3183	7965	9965	300	4300	4000	4600	2500	2800
6+546	2000×2000	2000	2000	3183	6965	8965	300	4300	4000	4600	2500	2800
8+ 93	3000×2500	3000	2500	3760	9120	11120	300	5300	5000	5600	3000	3300
11+127	2000×2000	2000	2000	3183	6965	8965	300	4300	4000	4600	2500	2800
28+861	2500×2500	2500	2500	3760	8620	10620	300	5300	5000	5600	3000	3300

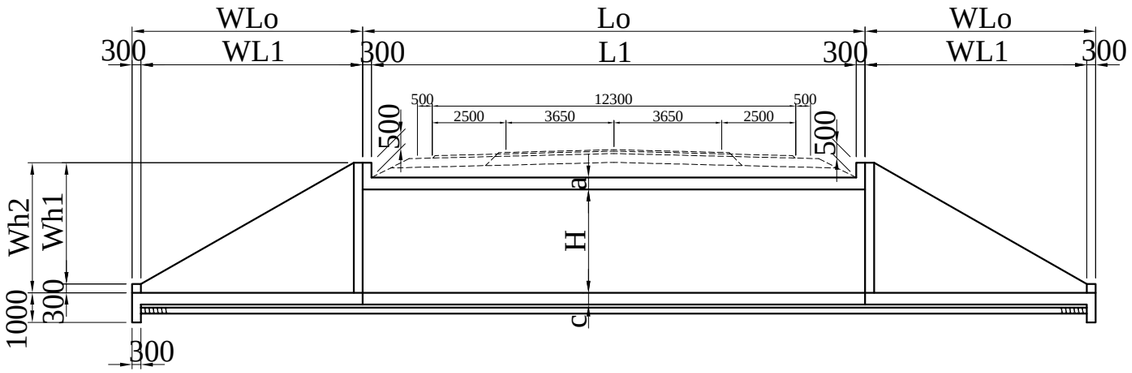
DESIGN CONDITION	
TYPE OF CULVERT	CAST-IN-PLACE BOX CULVERT
LENGTH	See to the dimension table
SECTION SIZE	See to the dimension table
SKEW ANGLE	90°00'00"

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (10)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 43

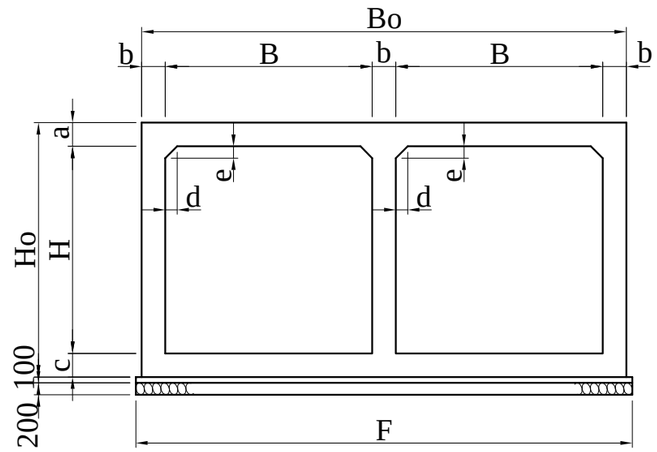
DRAINAGE STRUCTURE (11)

<NEW CONSTRUCTION BOX CULVERT DOUBLE TYPE>

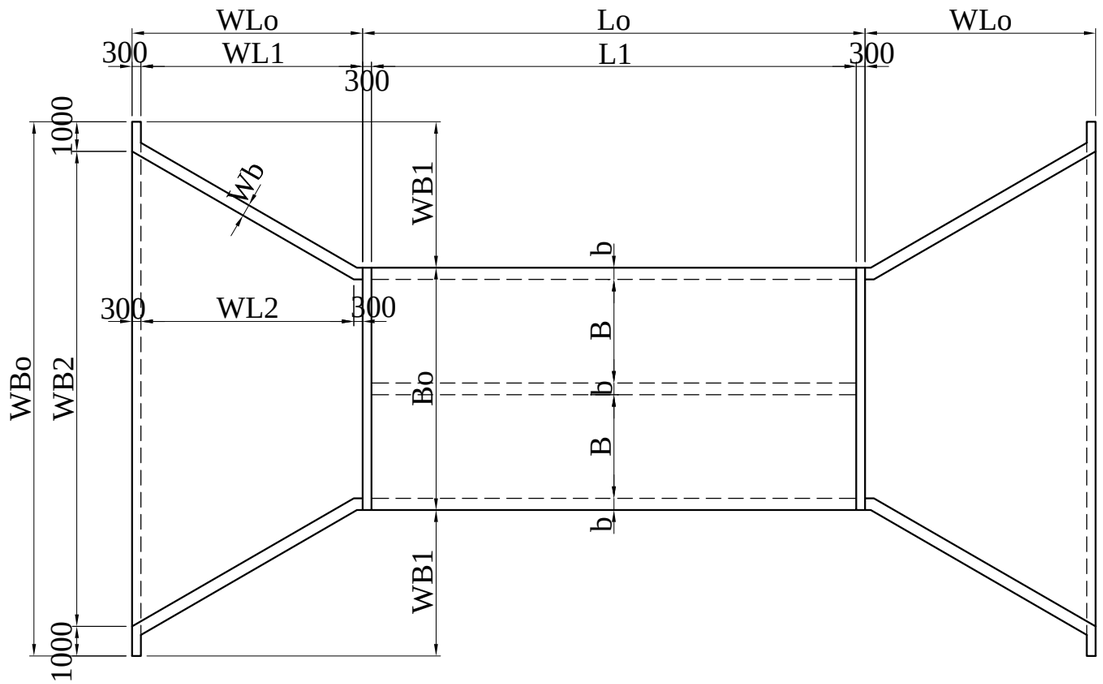
SIDE VIEW SCALE A3 1:200



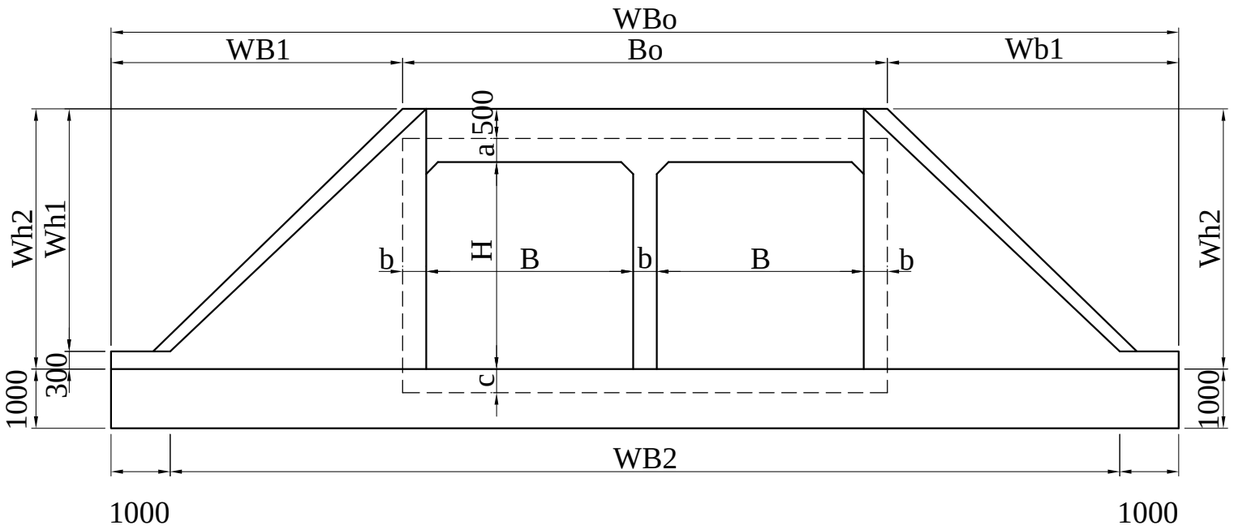
CROSS SECTION SCALE A3 1:100



PLAN SCALE A3 1:200



FRONT VIEW SCALE A3 1:100



Dimension of Box Culvert (mm)													
No.	SIZE	B	H	a	b	c	d	e	Bo	Ho	F	L1	Lo
16+198	3500×3500	3500	3500	400	400	400	200	200	8200	4300	8400	16400	17000

Dimension of dimension of Inlet and outlet (mm)												
No.	SIZE	B	H	WB1	WB2	WBo	Wb	WL1	WL2	WLo	Wh1	Wh2
16+198	3500×3500	3500	3500	4930	16060	18060	400	7500	7200	7800	4100	4400

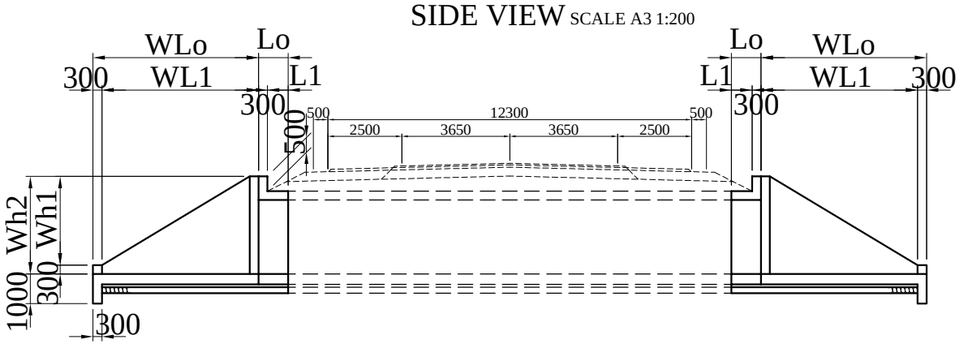
DESIGN CONDITION	
TYPE OF CULVERT	CAST-IN-PLACE BOX CULVERT
LENGTH	See to the dimension table
SECTION SIZE	See to the dimension table
SKEW ANGLE	90°00'00"

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (11)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 44

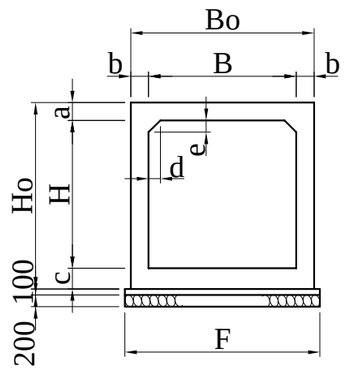
DRAINAGE STRUCTURE (12)

<EXTENSION BOX CULVERT SINGLE TYPE>

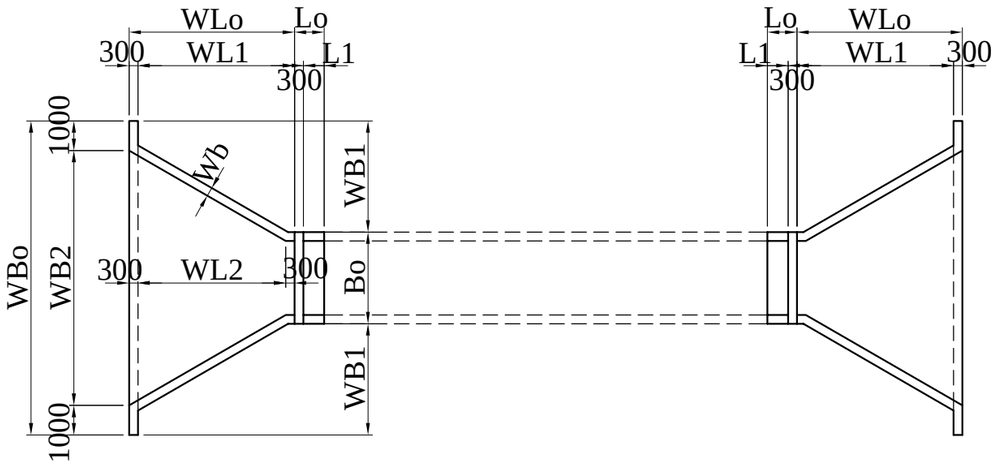
SIDE VIEW SCALE A3 1:200



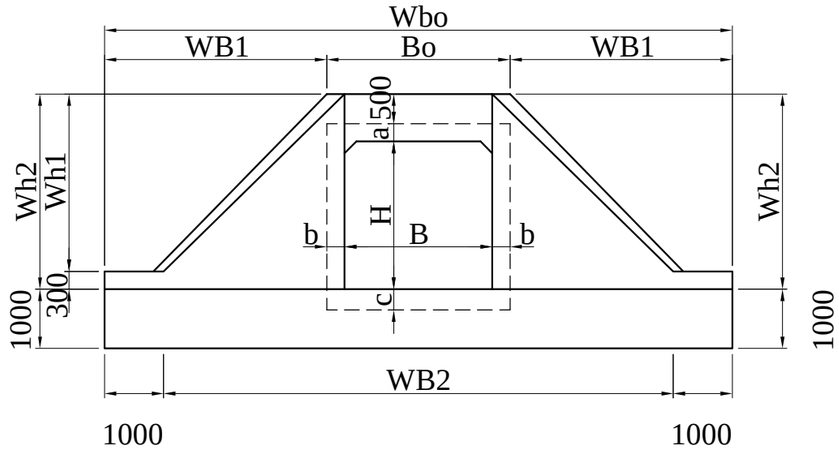
CROSS SECTION SCALE A3 1:100



PLAN SCALE A3 1:200



FRONT VIEW SCALE A3 1:100



Dimension of Box Culvert (mm)

No.	SIZE	B	H	a	b	c	d	e	Bo	Ho	F	L1	Lo
0+196	2000×2000	2000	2000	300	300	350	150	150	2600	2650	2800	700	1000
12+255	4000×4000	4000	4000	400	400	500	300	300	4800	4900	5000	700	1000
26+527	2500×2500	2500	2500	300	300	350	200	200	3100	3150	3300	1700	2000

Dimension of dimension of Inlet and outlet (mm)

No.	SIZE	B	H	WB1	WB2	WBo	Wb	WL1	WL2	WLo	Wh1	Wh2
0+196	2000×2000	2000	2000	3183	6965	8965	300	4300	4000	4600	2500	2800
12+255	4000×4000	4000	4000	5507	13815	15815	400	8500	8200	8800	4600	4900
26+527	2500×2500	2500	2500	3760	8620	10620	300	5300	5000	5600	3000	3300

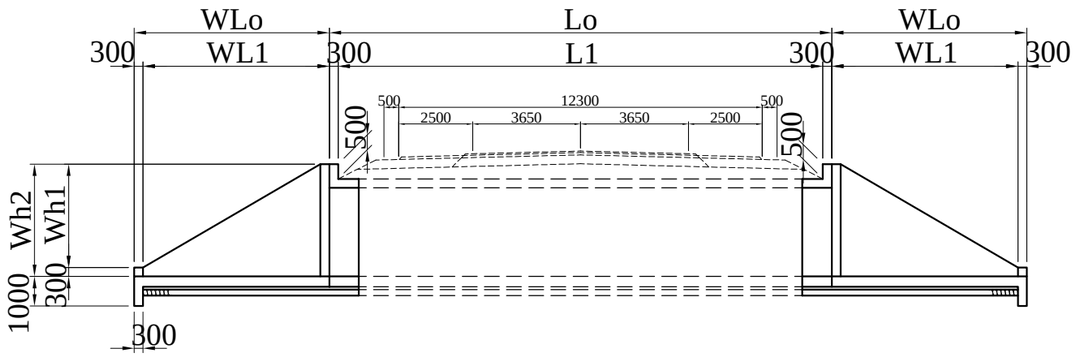
DESIGN CONDITION	
TYPE OF CULVERT	CAST-IN-PLACE BOX CULVERT
LENGTH	See to the dimension table
SECTION SIZE	See to the dimension table
SKEW ANGLE	90°00'00"

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (12)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 45

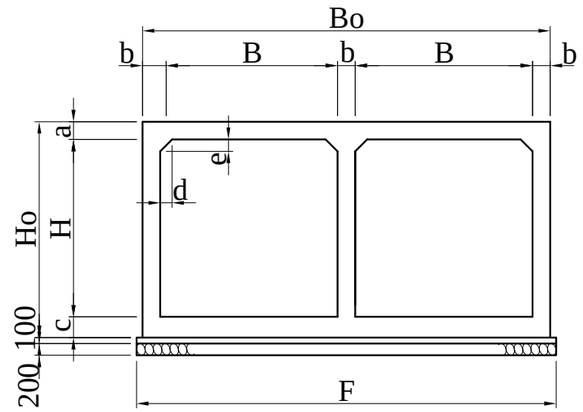
DRAINAGE STRUCTURE (13)

<EXTENSION BOX CULVERT DOUBLE TYPE>

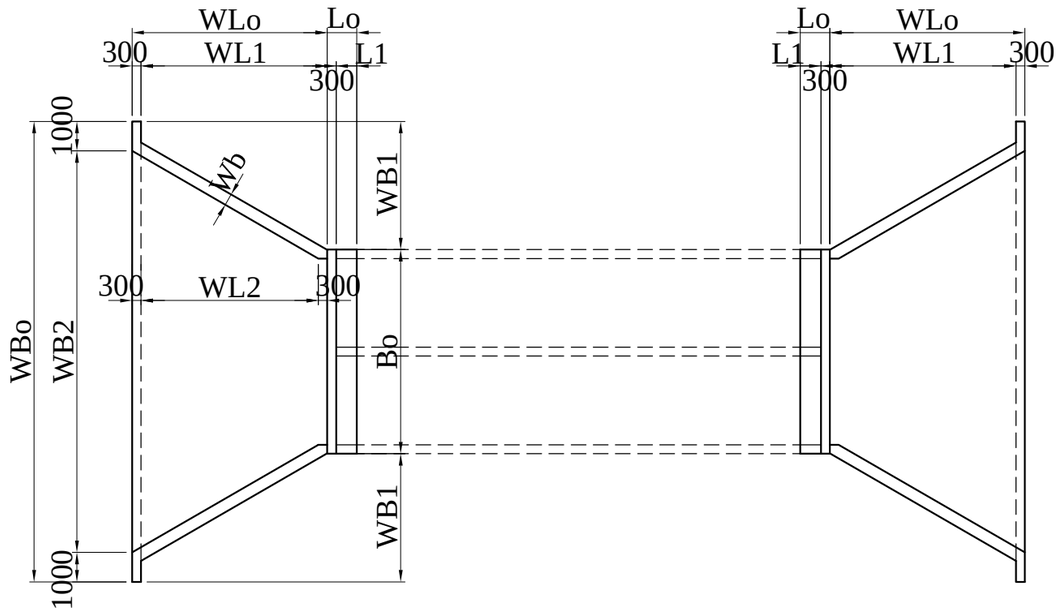
SIDE VIEW SCALE A3 1:200



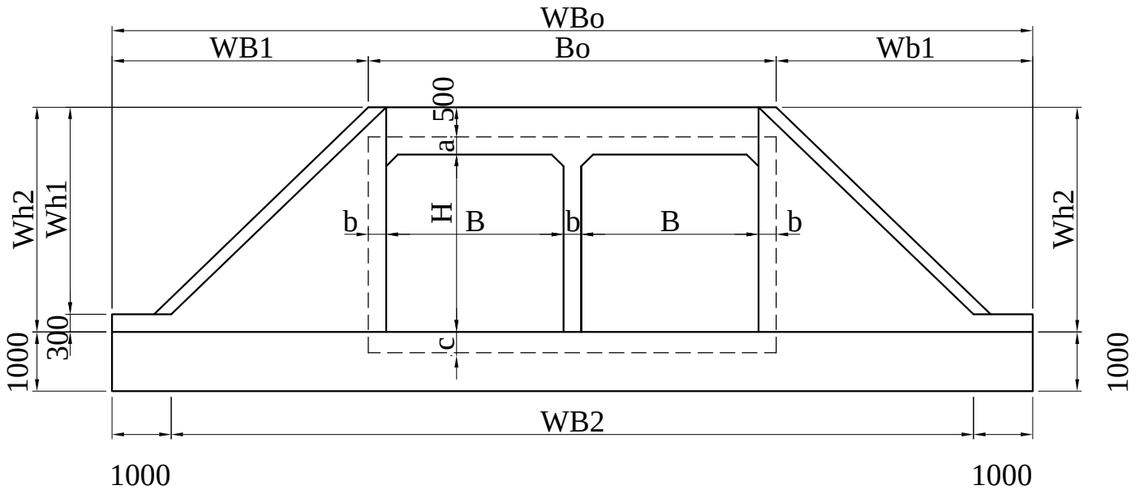
CROSS SECTION SCALE A3 1:100



PLAN SCALE A3 :200



FRONT VIEW SCALE A3 1:100



Dimension of Box Culvert (mm)													
No.	SIZE	B	H	a	b	c	d	e	Bo	Ho	F	L1	Lo
22+463	3000×3000	3000	3000	300	300	350	200	200	6900	3650	7100	1700	2000

Dimension of dimension of Inlet and outlet (mm)												
No.	SIZE	B	H	WB1	WB2	WBo	Wb	WL1	WL2	WLo	Wh1	Wh2
22+463	3000×3000	3000	3000	4337	13575	15575	400	6300	6000	6600	3500	3800

DESIGN CONDITION	
TYPE OF CULVERT	CAST-IN-PLACE BOX CULVERT
LENGTH	See to the dimension table
SECTION SIZE	See to the dimension table
SKEW ANGLE	90°00'00"

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (13)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 46

DRAINAGE STRUCTURE (14)

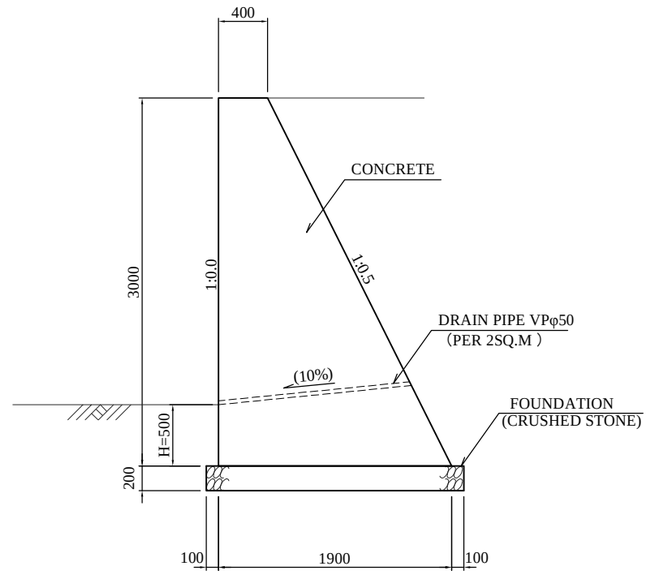
LOCATION OF BOX AND PIPE CULVERTS

STA.	Pipe Culvert			Box Culvert BXH				Remarks
	Sangle	Double	Length, (m)	Single	Double	Length, (m)	Extension Length (m)	
0 + 196				2.00x2.00			2.00	Existing L. 16.5
1 + 147	1.00		26.00					
1 + 158				5.00×6.00		23.60		
1 + 310	1.00		25.00					
1 + 372	1.00		29.00					
1 + 930	1.00		22.00					
2 + 165	1.20		18.00					
2 + 478				3.00×2.00		17.00		
2 + 619	1.00		17.00					
2 + 975	1.00		18.00					
3 + 745	1.00		22.00					
4 + 293	1.00		20.00					
4 + 562	0.90		16.00					
4 + 902	0.90		15.00					
5 + 665	1.00		17.00					
6 + 223	1.00		15.00					
6 + 546				2.00×2.00		17.00		
7 + 709	1.00		15.00					
8 + 93				3.00×2.50		16.00		
8 + 830	1.00		15.00					
9 + 99	1.00		18.00					
9 + 550	1.00		20.00					
10 + 176	0.90		16.00					
10 + 419	0.90		15.00					
11 + 127				2.00×2.00		19.00		
11 + 830	1.00		17.00					
12 + 255				4.00X4.00			2.00	Existing L. 14.8
13 + 20	1.00		15.00					
13 + 89	1.00		15.00					
13 + 505	1.00		15.00					
14 + 63	1.20		17.00					
14 + 409	1.00		23.00					
14 + 725	1.00		15.00					
15 + 305	0.90		15.00					
16 + 198					3.50X3.50	17.00		
17 + 2		1.00	15.00					
17 + 809	1.20		17.00					
18 + 412	0.90		17.00					
19 + 253	1.50		15.00					
19 + 900	1.00		18.00					
20 + 300	1.00		15.00					
20 + 400	1.00		15.00					
20 + 750	1.00		15.00					
21 + 389	1.00		17.00					
22 + 403					3.00X3.00		4.00	Existing L. 15.3
22 + 503		1.20	16.00					
23 + 11	1.00		16.00					
23 + 486		1.20	15.00					
23 + 950	0.90		15.00					
24 + 752	1.50		15.00					
25 + 872	1.00		15.00					
26 + 527				2.50X2.50			4.00	Existing L. 16.3
27 + 165	1.20		15.00					
27 + 541	1.00		18.00					
27 + 666	1.00		15.00					
28 + 801				2.50X2.50		18.00		
30 + 35	1.00		23.00					
31 + 190	1.00		15.00					

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (14)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 47

RETAINING WALL SCALE AS SHOWN

GRAVITY TYPE RETAINING WALL SCALE A3 1:50



MATERIAL LIST (GRAVITY WALL) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	3.45	
FORM		sq.m	6.35	
FOUNDATION	CRUSHED STONE	cu.m	0.42	
DRAIN PIPE	VP φ50	m	1.98	

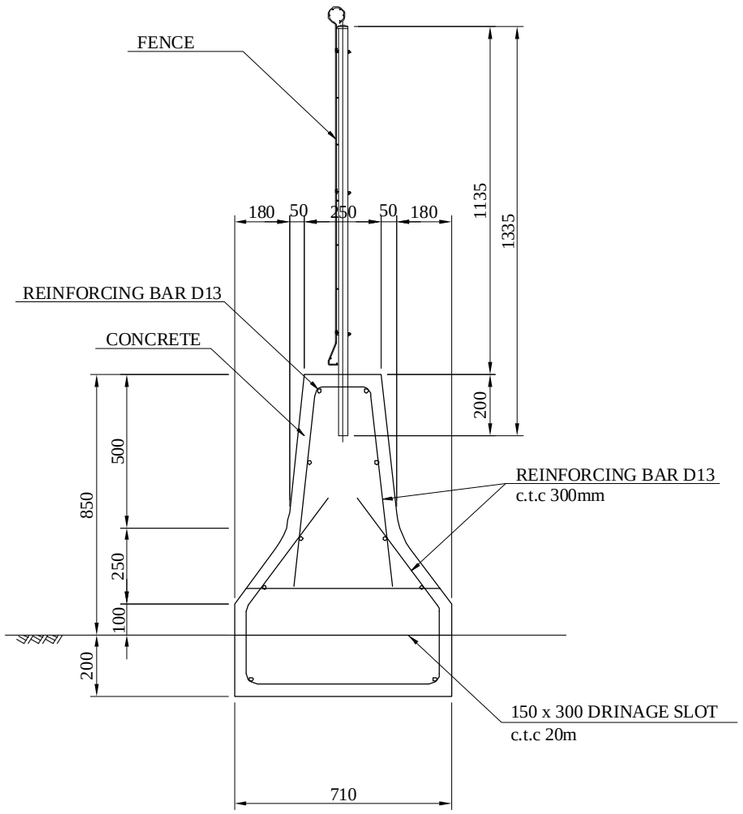
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: RETAINING WALL	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 48

TRAFFIC SAFETY DEVICES (1)

TRAFFIC FURNITURE

SCALE AS SHOWN

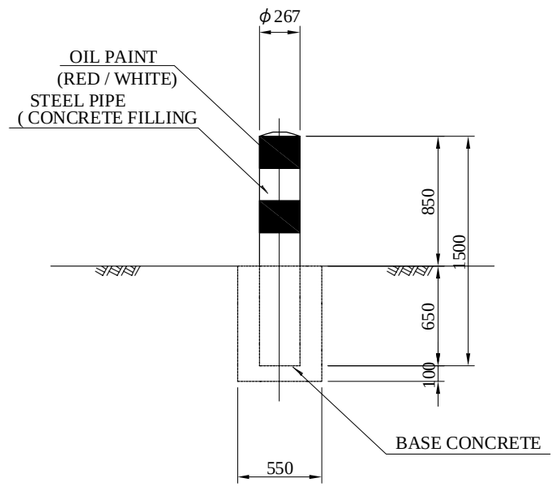
CONCRETE BARRIER SCALE A3 1:20



MATERIAL LIST (CONCRETE BARRIER) PER m

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			STANDARD	SLOT	
CONCRETE		cu.m	0.50	0.46	
FORM		sq.m	3.21	3.85	
REINFORCING BAR	D13	kg	22.73	22.73	
FENCE	H=1.10m	m	1.00	1.00	

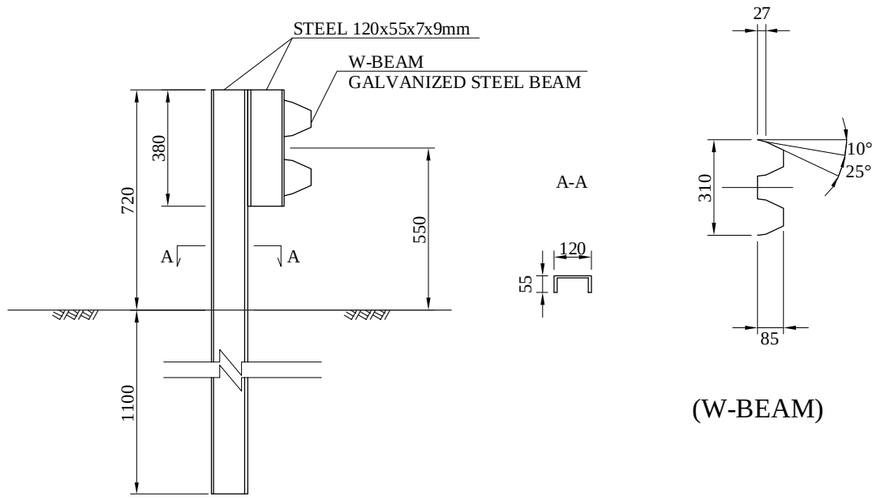
DELINEATION POST SCALE A3 1:40



MATERIAL LIST (DELINEATION POST) PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
STEEL PIPE	φ267	m	1.50	
CONCRETE	FILLING	cu.m	0.08	
	BASE CONCRETE	cu.m	0.19	
OIL PAINT		sq.m	0.71	

GUARD RAIL SCALE A3 1:20

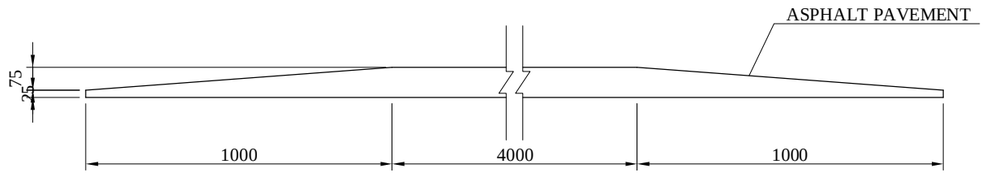


(W-BEAM)

MATERIAL LIST (GUARD RAIL) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
GUARD RAIL		m	1.00	

HUMP SCALE A3 1:20



MATERIAL LIST (HUMP) PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
ASPHALT PAVEMENT		cu.m	6.46	W=12.3m

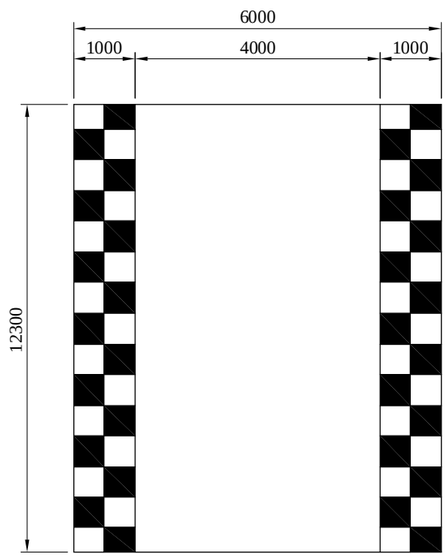
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY DEVICES (1)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 49

TRAFFIC SAFETY DEVICES (2)

SCALE AS SHOWN

TRAFFIC MARKING

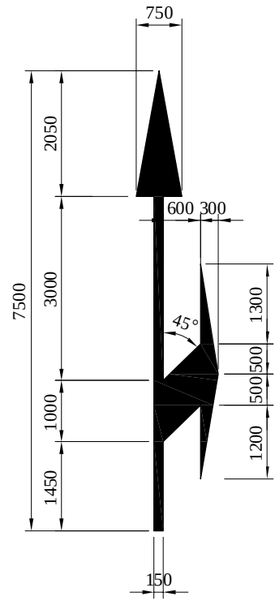
PEDESTRIAN-CROSSING(HUMP) SCALE A3 1:100



a=12.3m2/each

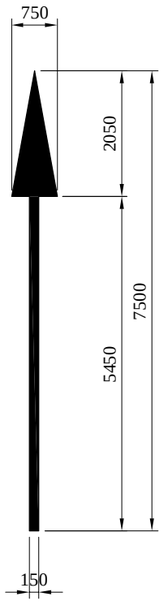
ARROW MARK SCALE A3 1:100

STRAIGHT-TURN



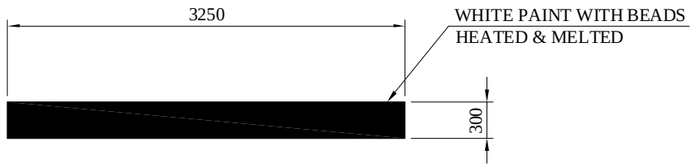
a=2.7m2/each

STRAIGHT

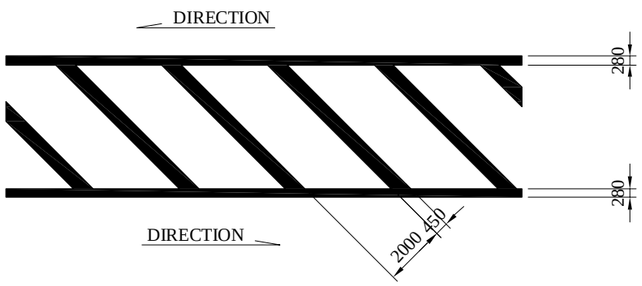


a=1.6m2/each

STOP LINE SCALE A3 1:50



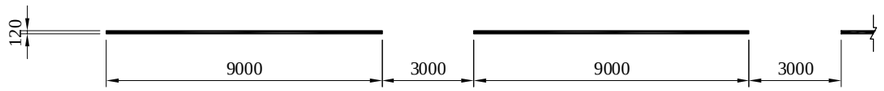
ZEBRA MARKING SCALE A3 1:200



CONTINUOUS LINE -WHITE SCALE A3 1:200

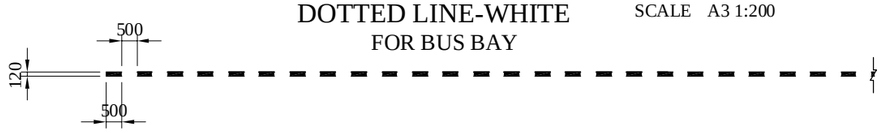
DASHED LINE -WHITE SCALE A3 1:200

FOR SPEED 80Km/h



DOTTED LINE-WHITE SCALE A3 1:200

FOR BUS BAY

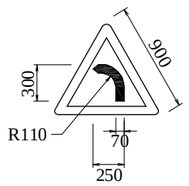


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY DEVICES (2)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 50

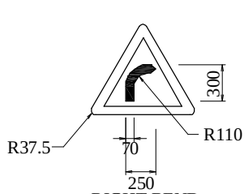
TRAFFIC SAFETY DEVICES (3)

SCALE AS SHOWN

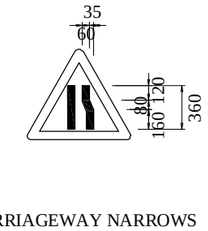
TRAFFIC SIGN

① 

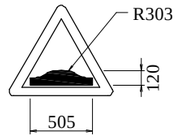
LEFT BEND
WS 1

② 

RIGHT BEND
WS 2

③ 

CARRIAGEWAY NARROWS
(FROM RIGHT)
WS 9

④ 

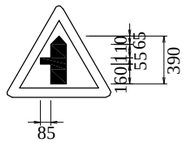
HUMP
WS 14

⑤ 

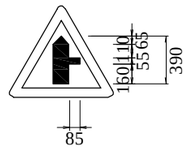
PEDESTRIAN CROSSING
WS 19

⑥ 

ROUNDABOUT
WS 33

⑦ 

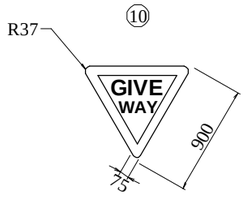
MINOR ROAD FROM LEFT
WS 36

⑧ 

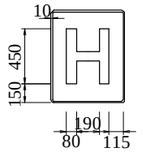
MINOR ROAD FROM RIGHT
WS 37

⑨ 

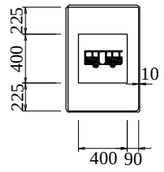
MAXIMUM SPEED LIMIT AS SHOWN
PS 22

⑩ 

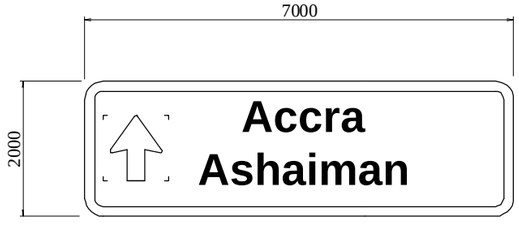
GIVEWAY MAJOR ROAD AHEAD
MS 13

⑪ 

HOSPITAL
IS 2

⑫ 

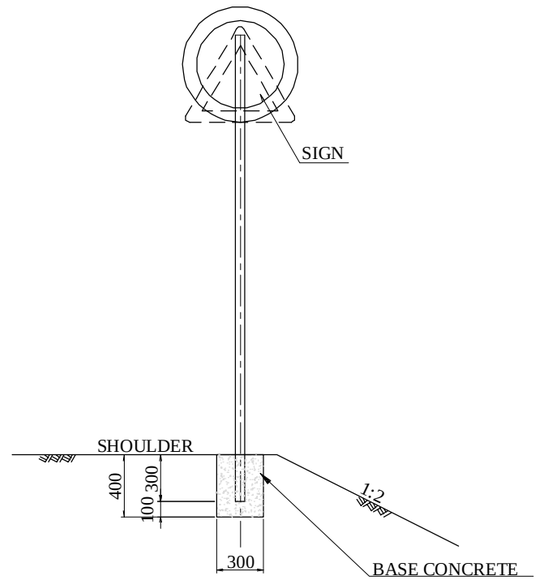
BUS STOP / TERMINAL
IS 11



ADVANCE DIRECTION SIGNS

TOWN GATE

SIGN POST DETAILS SCALE A3 1:40



Note: The size , shape and dimensions of Road Signs
shall be in accordance to The Standard of Ghana

MATERIAL LIST (SIGN POST) PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
BASE CONCRETE		cu.m	0.04	
SIGN POST		nos	1.00	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY DEVICES (3)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 51

TRAFFIC SAFETY DEVICES (4)

TRAFFIC SIGN

(TRAFFIC SIGN) (1)

SECTION	STATION	DIRECTION	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	ADVANCE DIRECTION SIGNS	TOWN GATE	REMARKS
	0 + 150	R														1	
	0 + 320	L												1			
	0 + 370	L				1	1										
	0 + 410	R				1	1										
	0 + 470	R												1			
	0 + 500	LR													2		
	0 + 728	LR			1	4	4	4									
	1 + 0	LR									2						
	1 + 235	L										1					
	1 + 280	L				1	1										
	1 + 350	L								1				1			
	1 + 400	R												1			
	1 + 460	R				1	1										
A	1 + 876	LR			1	3	3	3									
	2 + 0	LR									2						
	2 + 100	L											1				
	2 + 220	L												1			
	2 + 280	L				1	1										
	2 + 300	R		1													
	2 + 330	R				1	1										
	2 + 380	R												1			
	2 + 700	L	1														
	3 + 0	LR									2						
	3 + 200	R				1	1										
	3 + 260	LR												2			
	3 + 310	L				1	1										
	+																
	4 + 0	LR									2						
	4 + 100	L														1	
	5 + 0	LR									2						
	5 + 650	LR				2	2							2			
	5 + 650	R														1	
B	6 + 0	LR									2						
	6 + 220	L														1	
SUB TOTAL			1	1	2	17	17	7	0	1	12	1	1	10	2	4	TOTAL
TOTAL			1	1	2	17	17	7	0	1	12	1	1	10	2	4	76

(TRAFFIC SIGN) (2)

SECTION	STATION	DIRECTION	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	ADVANCE DIRECTION SIGNS	TOWN GATE	REMARKS
	7 + 0	LR									2						
	8 + 0	LR									2						
	8 + 90	R														1	
	8 + 100	LR				2	2							2			
	8 + 670	LR							1	1		1					
	9 + 0	LR									2					1	
	10 + 0	LR									2						
	11 + 0	LR									2						
C	11 + 130	R														1	
	11 + 470	LR				2	2							2			
	11 + 630	LR							1	1		1					
	12 + 0	LR									2						
	12 + 260	L														1	
	12 + 700	R														1	
	12 + 870	LR				2	2							2			
	13 + 0	LR									2						
	13 + 400	L														1	
	+																
	14 + 0	LR									2						
	14 + 410	R														1	
	14 + 560	LR				2	2							2			
	15 + 0	LR									2						
D	15 + 300	L														1	
	16 + 0	LR									2						
	16 + 500	R														1	
	17 + 0	LR									2						
	17 + 270	LR				2	2							2			
	+																
	18 + 0	LR									2						
	18 + 400	L														1	
	19 + 0	LR									2						
	19 + 900	R														1	
E	20 + 0	LR									2						
	20 + 50	LR				2	2							2			
	20 + 300	L														1	
	21 + 0	LR									2						
	22 + 0	LR									2						
SUB TOTAL			0	0	0	12	12	0	2	2	32	2	0	12	0	12	TOTAL
TOTAL			1	1	2	29	29	7	2	3	44	3	1	22	2	16	162

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY DEVICES (4)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 52

TRAFFIC SAFETY DEVICES (5)

TRAFFIC SIGN

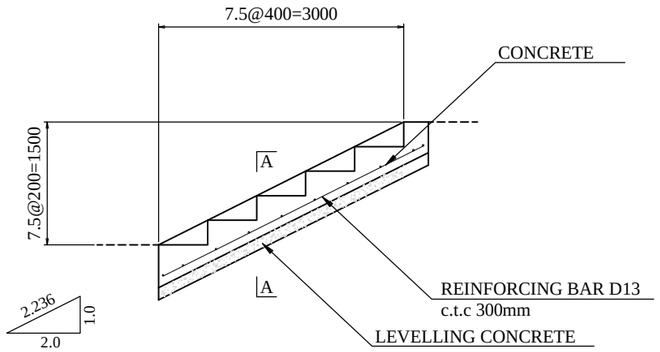
(TRAFFIC SIGN) (3)

SECTION	STATION	DIRECTION	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	ADVANCE DIRECTION SIGNS	TOWNGATE	REMARKS
	22 + 560	R														1	
	23 + 0	LR									2						
	23 + 150	LR				2	2							2			
	23 + 490	L														1	
	24 + 0	LR									2						
	25 + 0	LR									2						
	25 + 270	LR				2	2							2			
	26 + 0	LR									2						
	26 + 150	R														1	
	27 + 0	LR									2						
	27 + 320	LR				2	2							2			
	27 + 860	L														1	
	28 + 0	LR									2						
	28 + 600	R														1	
	28 + 720	LR				2	2							2			
	29 + 0	LR									2						
	29 + 550	L														1	
	29 + 900	LR													2	1	
F	30 + 0	LR									2						
	30 + 750	LR				2	2							2			
	31 + 0	LR									2						
	31 + 200	L														1	
SUB TOTAL			0	0	0	10	10	0	0	0	18	0	0	10	2	8	TOTAL
TOTAL			1	1	2	39	39	7	2	3	62	3	1	32	4	24	220

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY DEVICES (5)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 53

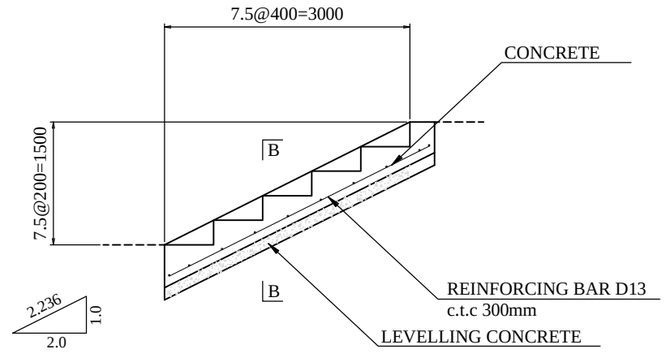
STEP SCALE A3 1:50

TYPE-1

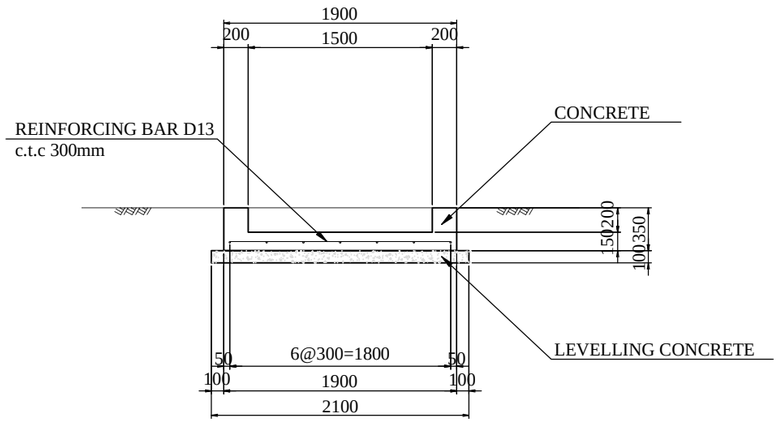


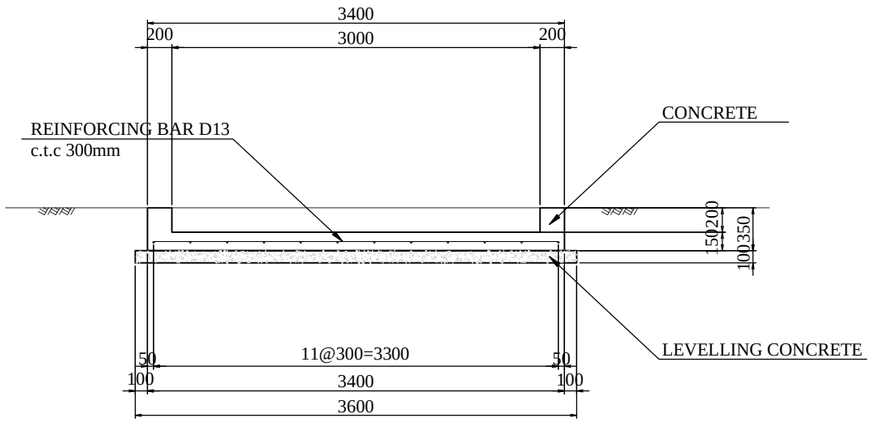
A-A

TYPE-2



B-B



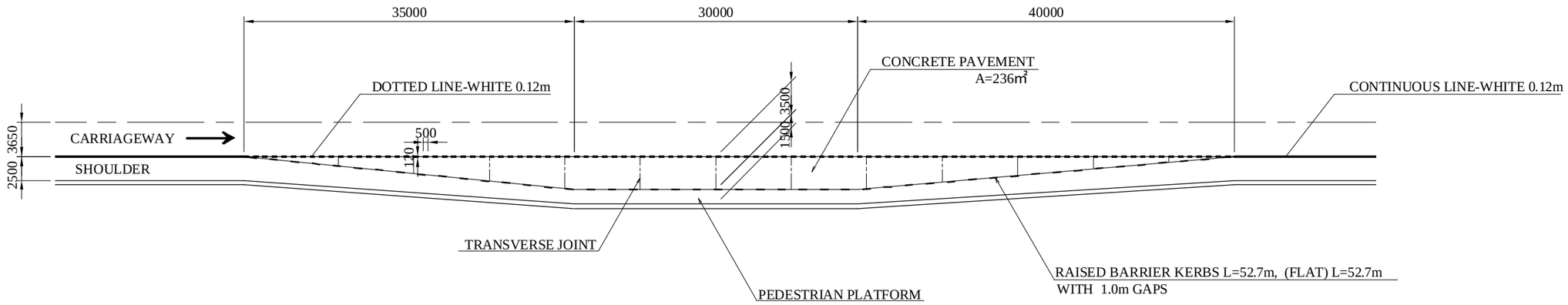


MATERIAL LIST (STEP) PER each

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			TYPE1	TYPE2	
CONCRETE		cu.m	1.55	2.67	
FORM		sq.m	4.95	7.20	
REINFORCING BAR	D13	kg	44.85	79.45	
LEVELING Co		cu.m	0.63	1.08	
FORM	LEVELING Co	sq.m	1.02	1.32	

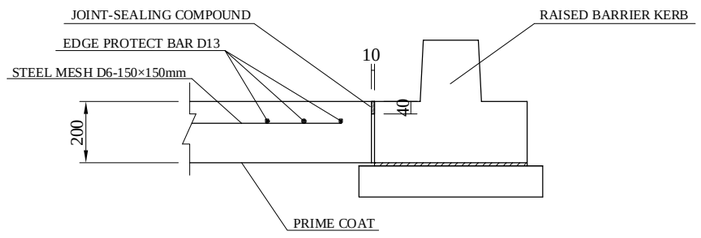
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: STEP	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 54

BUS STOP SCALE A3 1:500

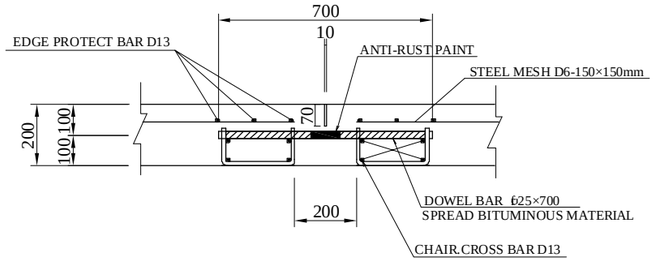


DETAIL OF JOINT SCALE A3 1:20

LONGITUDINAL JOINT



TRANSVERSE JOINT



MATERIAL LIST (BUS BAY) PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	47.25	
FORM		sq.m	42.07	
STEEL MESH	D6-150×150mm	kg	812.70	
REINFORCING BAR	D13	kg	1255.61	
JOINT	TRANSVERSE	m	28.10	
	LONGITUDINAL	m	210.32	

MATERIAL LIST (JOINT) PER 10m

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			TRANSVERSE	LONGITUDINAL	
REINFORCING BAR	φ25	kg	91.63	———	
	D13	kg	25.17	———	
	TOTAL	kg	116.80	———	
CUTTER	t=70	m	10.00	———	
SEALING COMPOUND	t=70	cu.m	———	0.004	
BOARD	t=70	sq.m	———	1.60	

LOCATION OF BUS BAY

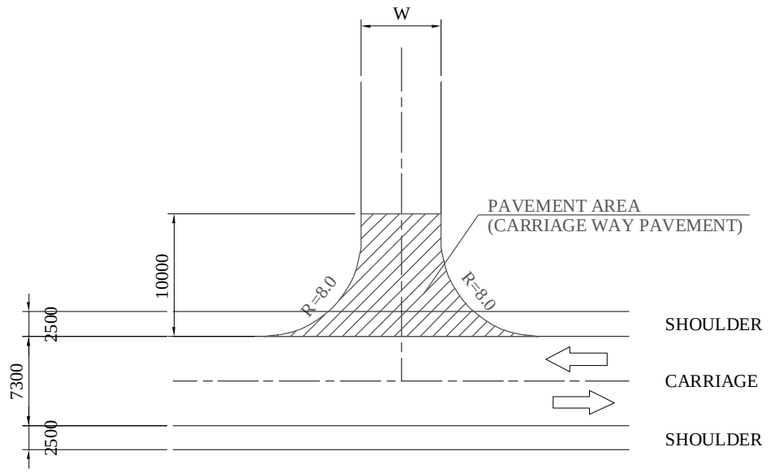
COMMUNITY	LHS	RHS
ASSIN FOSU	0+323	0+468
	1+348	1+400
	2+223	2+378
(SCHOOL)	3+259	
ASSIN DWAASO	5+570	5+720
ASSIN NYANKOMASE	8+020	8+170
ASSIN BROFOYEDURU	11+390	11+540
ASSIN APONSIEU	12+800	12+950
ASSIN ENDWUA	14+487	14+637
ASSIN AKONFODE	17+200	17+350
ASSIN NNUASO	19+975	20+125
ASSIN BREKU	23+075	23+225
ASSIN BRESIAKU	25+195	25+345
ASSIN DANSAME	27+250	27+400
ASSIN ASEMPANAYE	28+650	28+800
ASSIN PRASO	30+645	30+830

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: BUS STOP	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 55

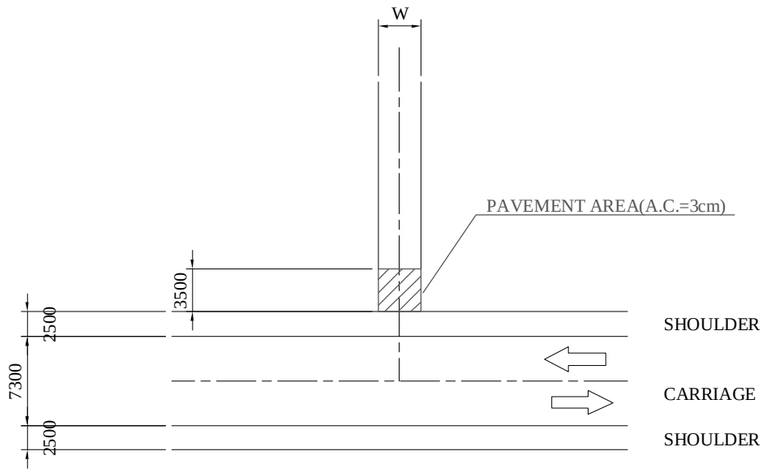
THREE-LEG INTERSECTIONS

SCALE A3 1:500

APPROACH TYPE



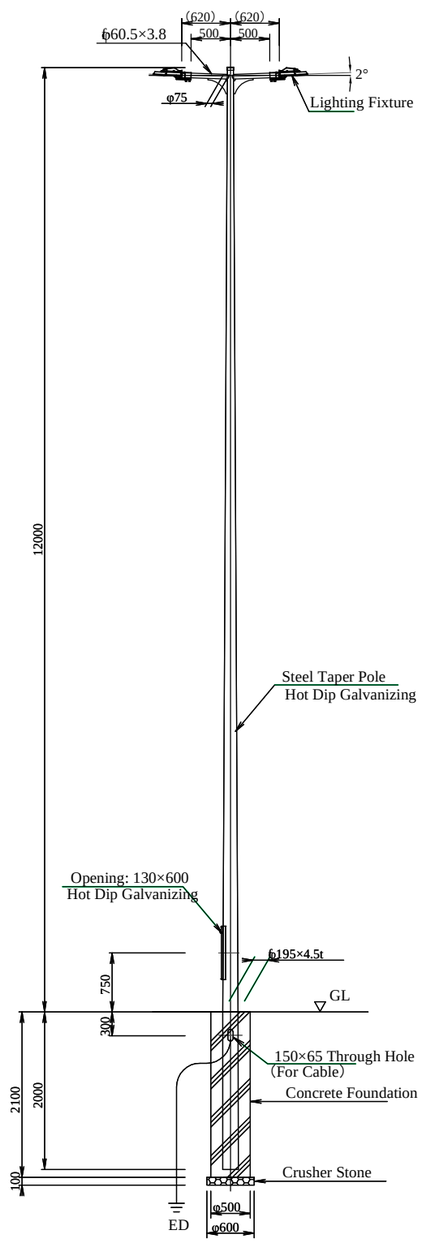
ENTRANCE TYPE



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: THREE-LEG INTERSECTIONS	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 56

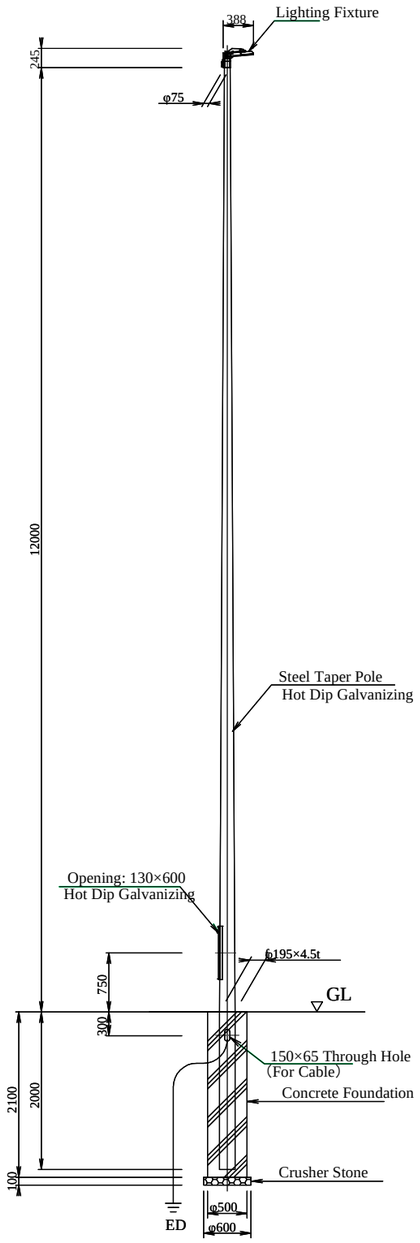
STREET LIGHTING

DUALISED FOUR-LANE SECTION (AT THE CENTRE)

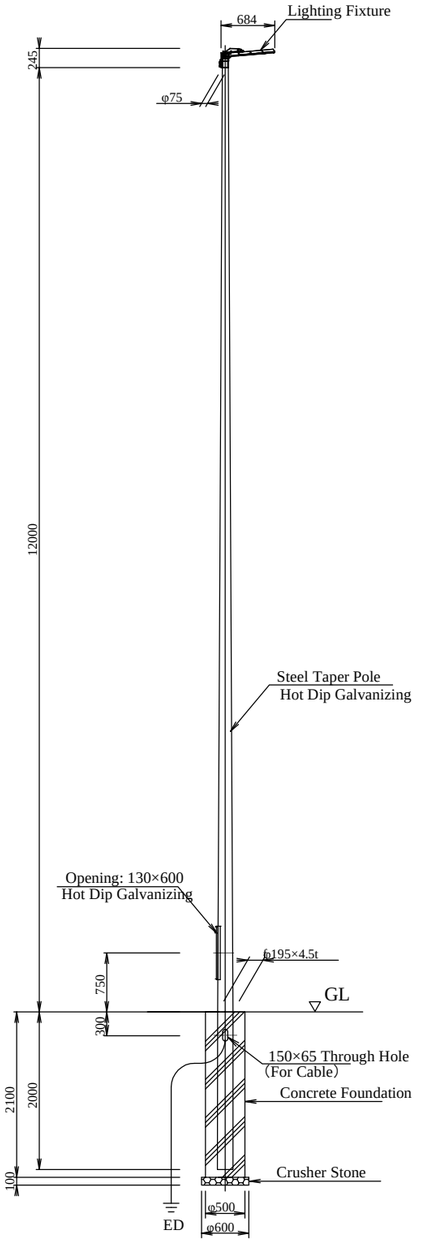


TWO-LANE SECTION (AT ONE SIDE)

TOLL-PLAZA



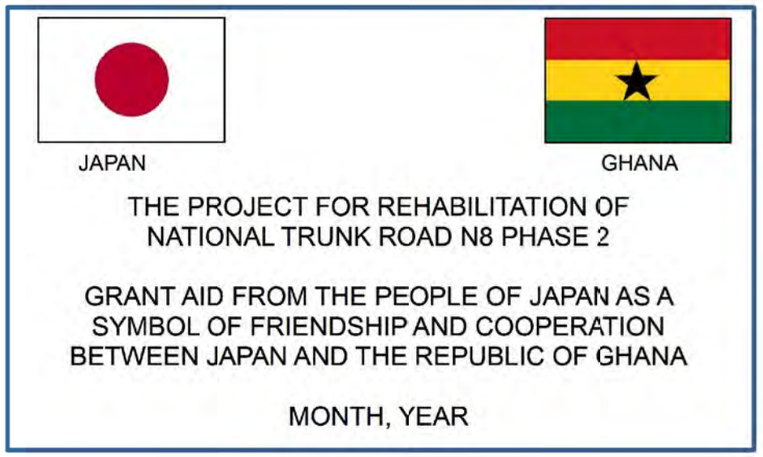
INTERSECTION (AT ROUNDABOUT)



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: STREET LIGHTING	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 57

ANCILLARY WORK

MONUMENT



MATERIAL LIST PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
MONUMENT	W800 x H600	nos.	1.00	

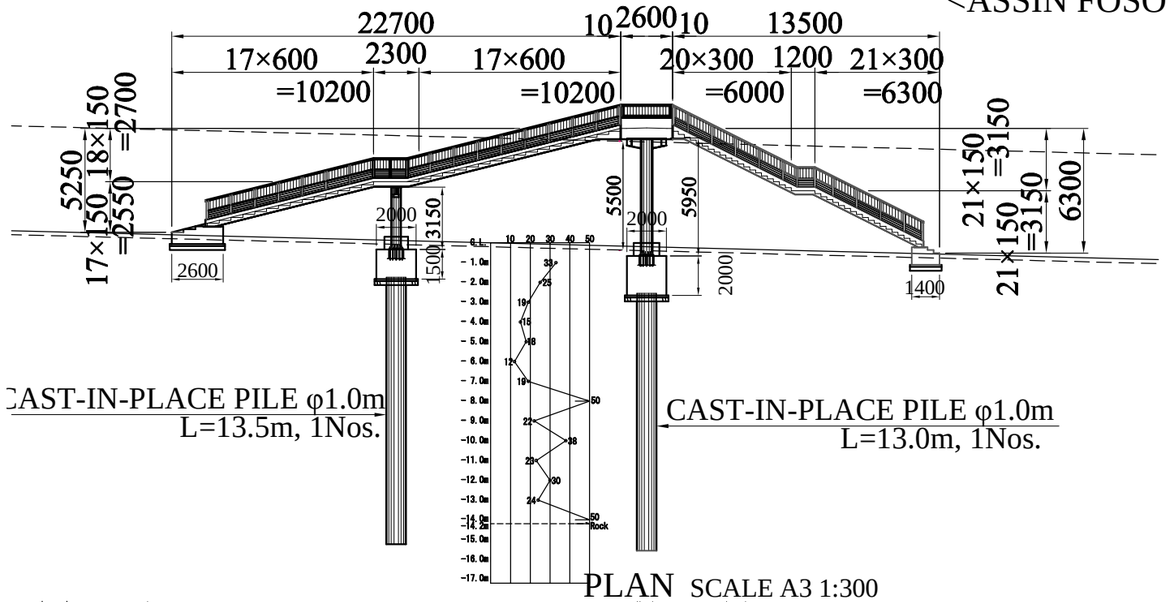
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: ANCILLARY WORK	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 58

PEDESTRIAN BRIDGE

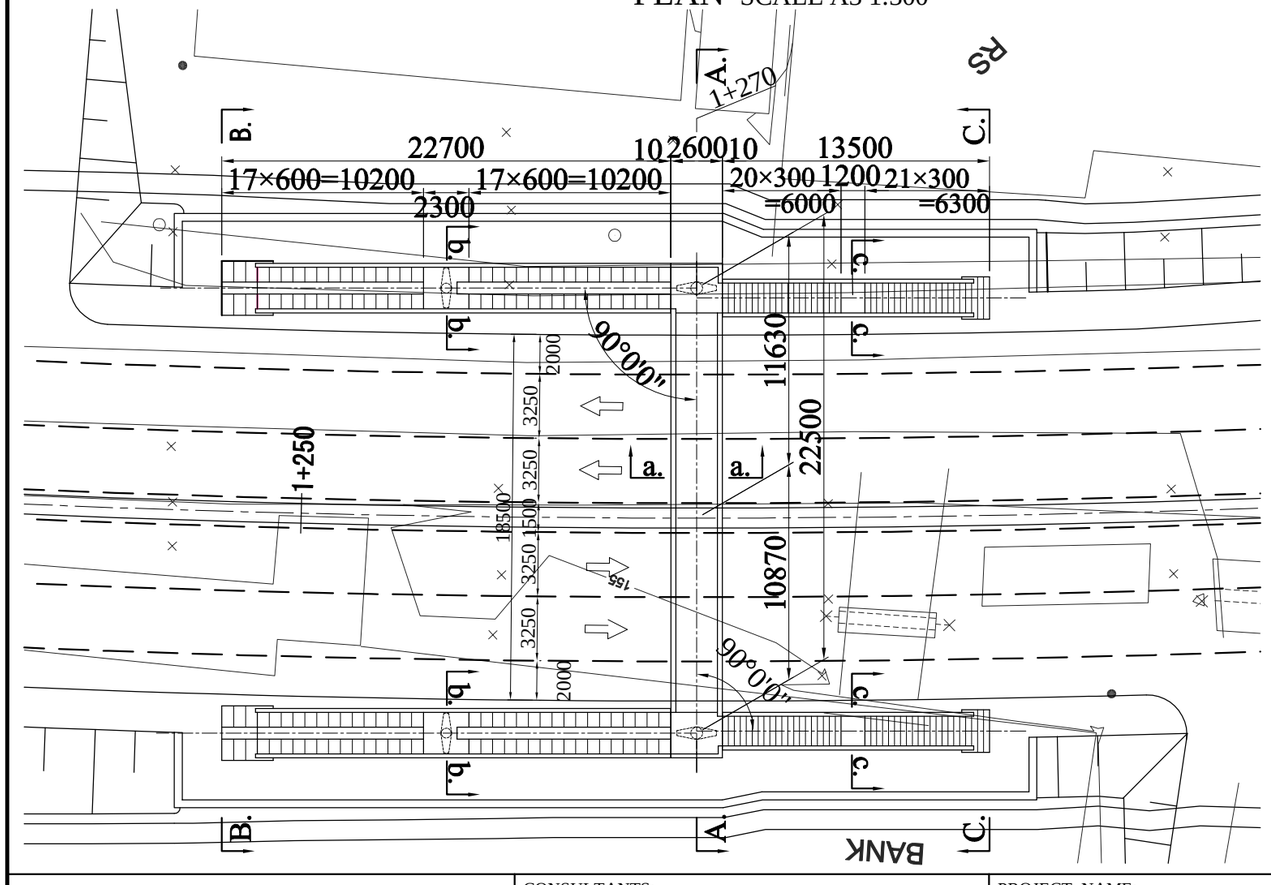
<ASSIN FOSO NO.1+270>

SIDE VIEW OF STAIRWAY

SCALE A3 1:300

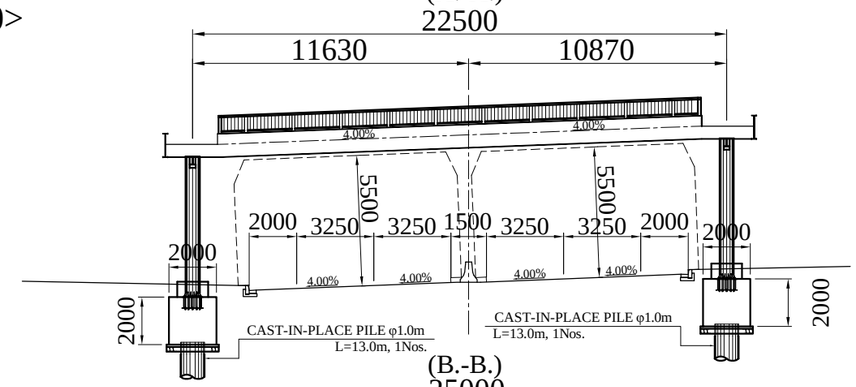


PLAN SCALE A3 1:300

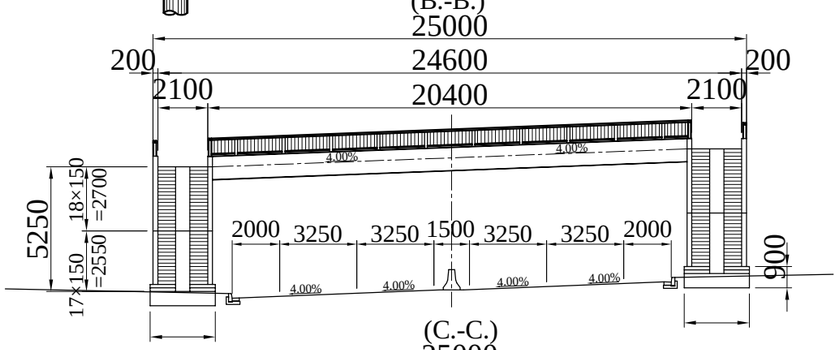


SECTION SCALE A3 1:250

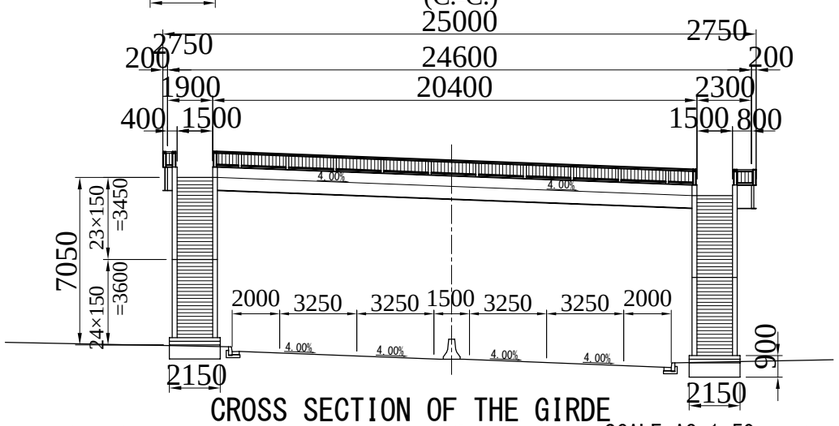
(A.-A.)



(B.-B.)



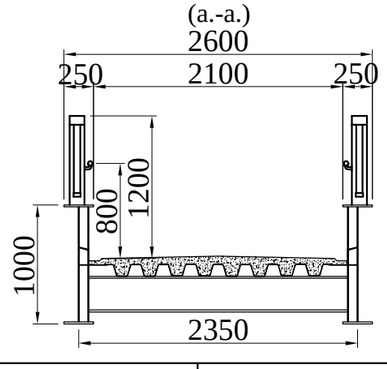
(C.-C.)



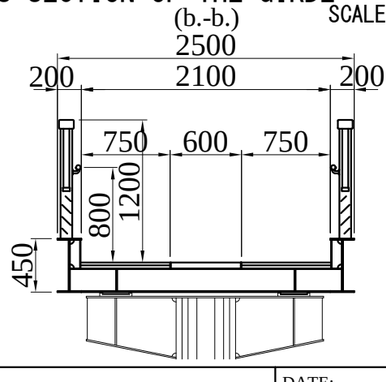
CROSS SECTION OF THE GIRDE

SCALE A3 1:50

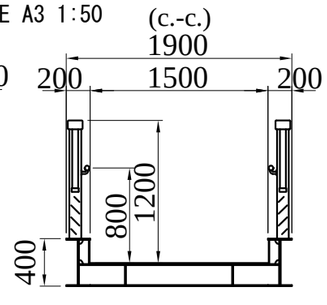
(a.-a.)



(b.-b.)



(c.-c.)

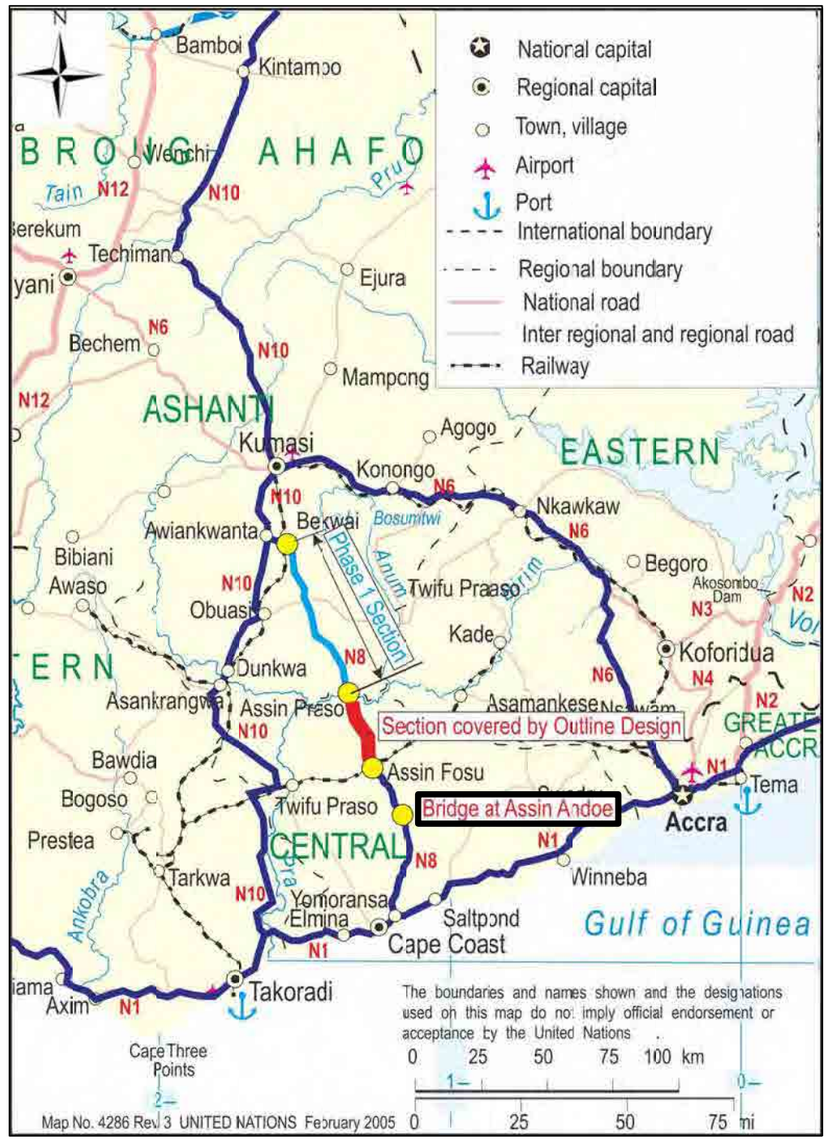


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: GENERAL VIEW (Assin Foso Pedestrian bridge)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 59

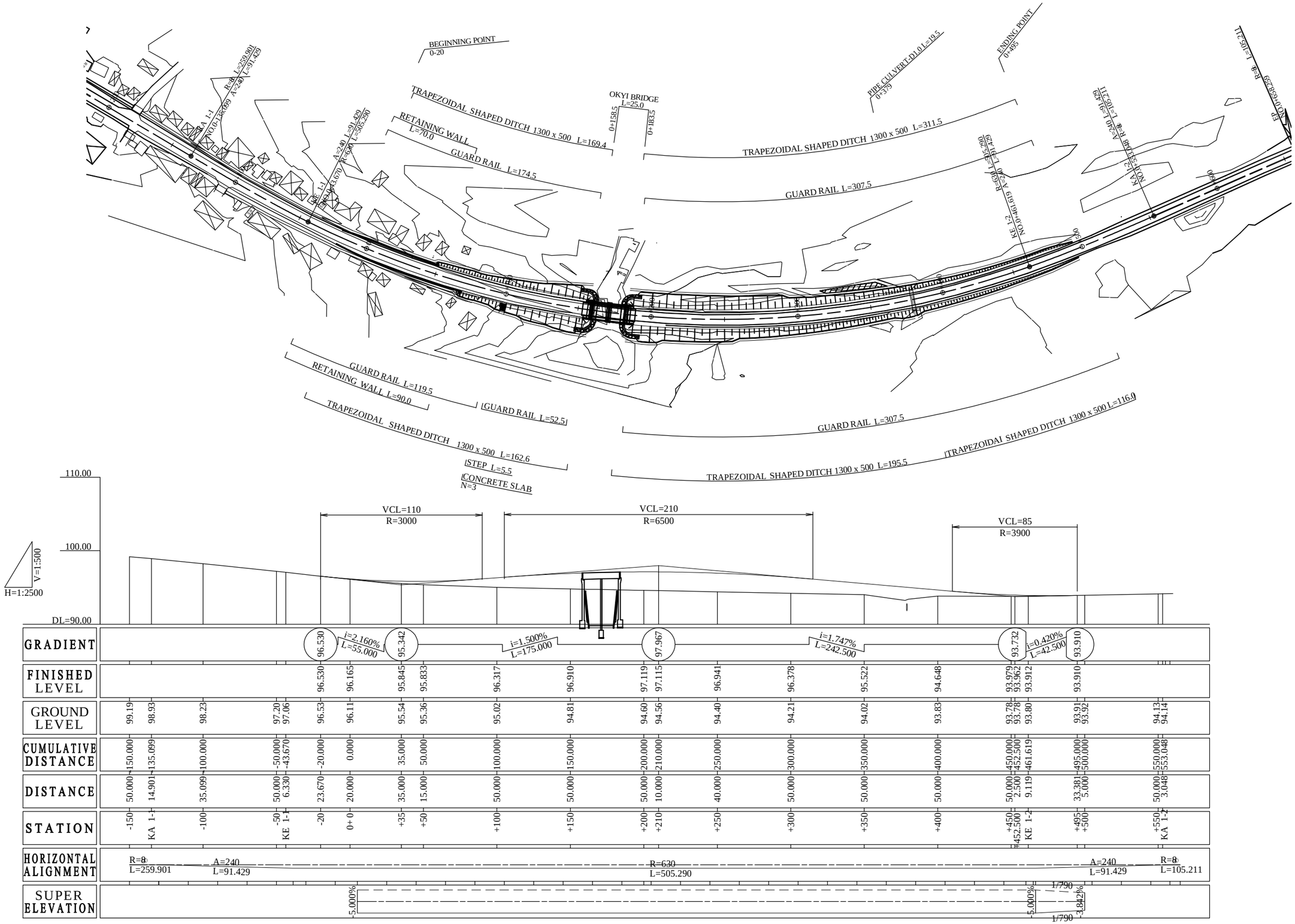
目　次

アシンアンドエの橋梁架替

LOCATION MAP



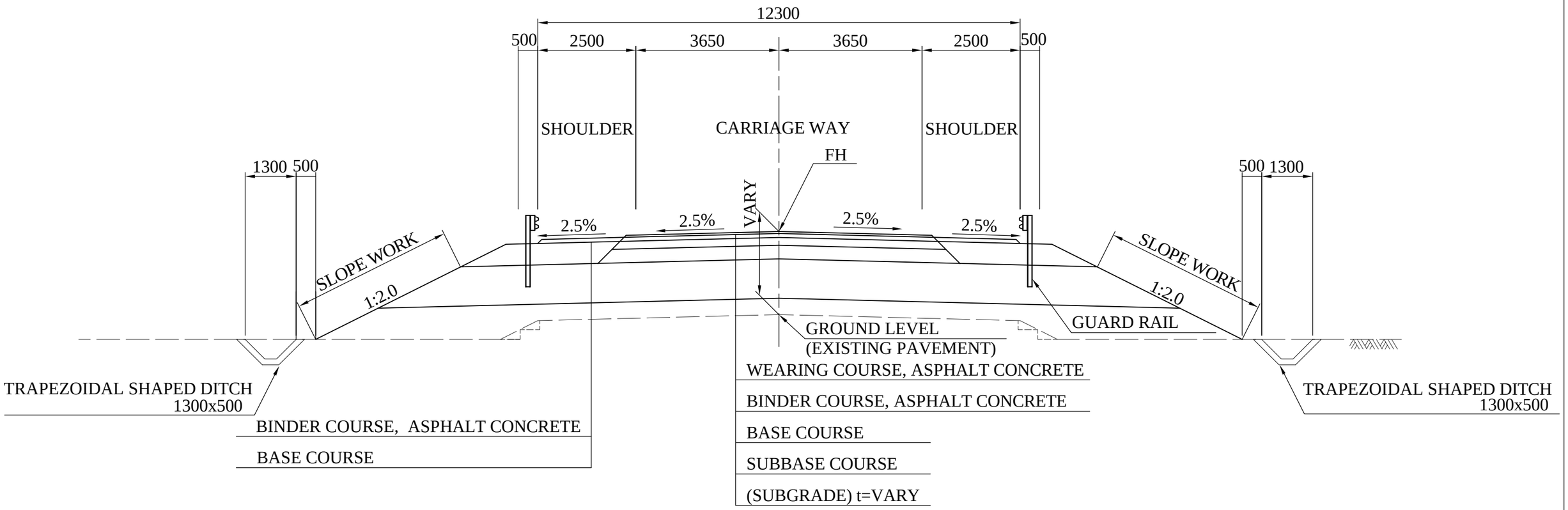
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: LOCATION MAP	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 01



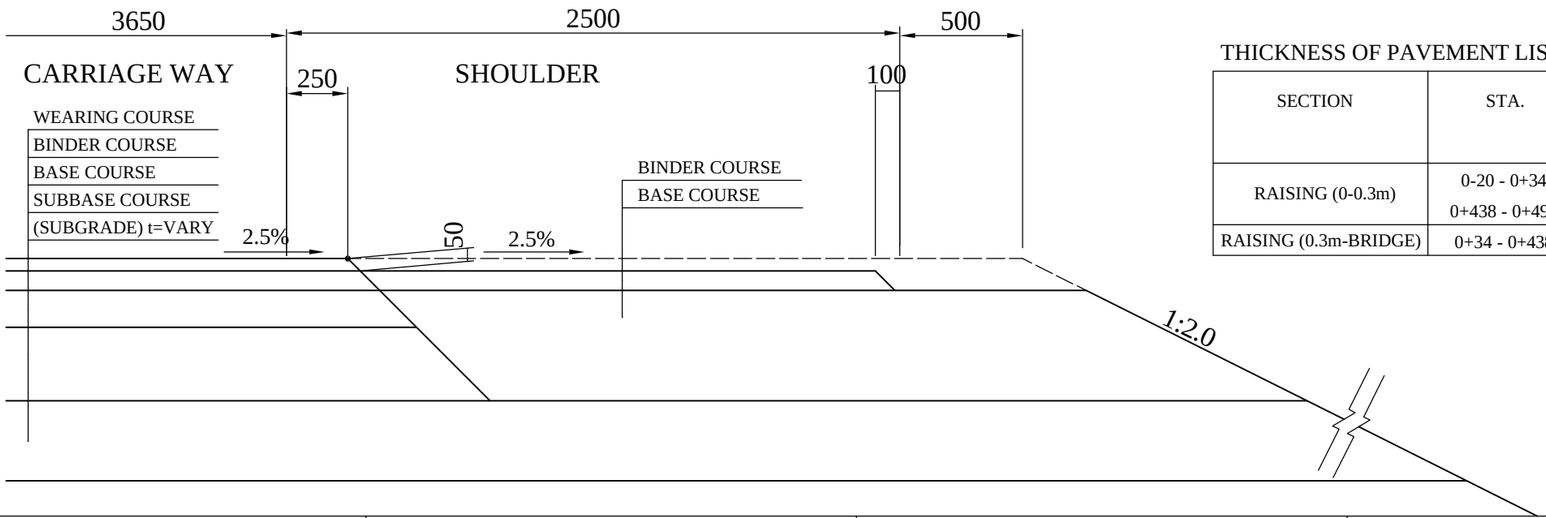
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 02

TYPICAL CROSS SECTION

SCALE A3 1:100



EDGE OF PAVEMENT SCALE A3 1:25



THICKNESS OF PAVEMENT LIST

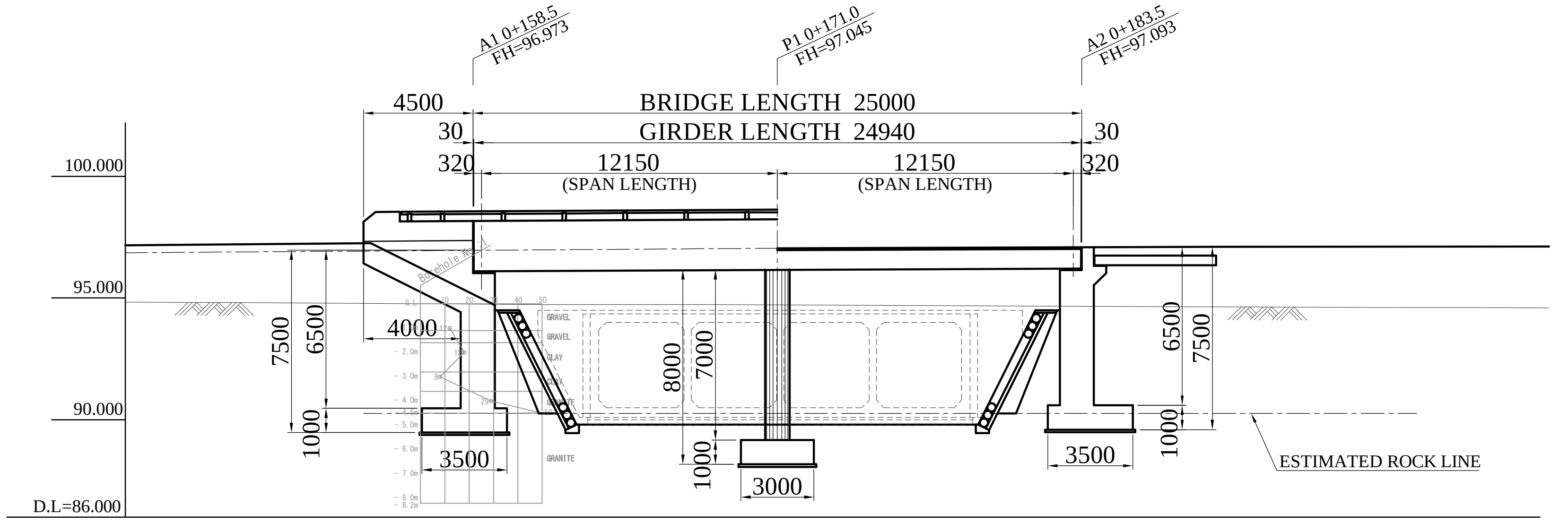
SECTION	STA.	CARRIAGE WAY				SHOULDER	
		WEARING (mm)	BINDER (mm)	BASE (mm)	SUBBASE (mm)	BINDER (mm)	BASE (mm)
RAISING (0-0.3m)	0-20 - 0+34 0+438 - 0+495	50	100	200	-	100	200
RAISING (0.3m-BRIDGE)	0+34 - 0+438	50	100	200	350	100	550

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION (OKYI BRIDGE)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 03

GENERAL PLAN OF BRIDGE (OKYI RIVER BRIDGE)

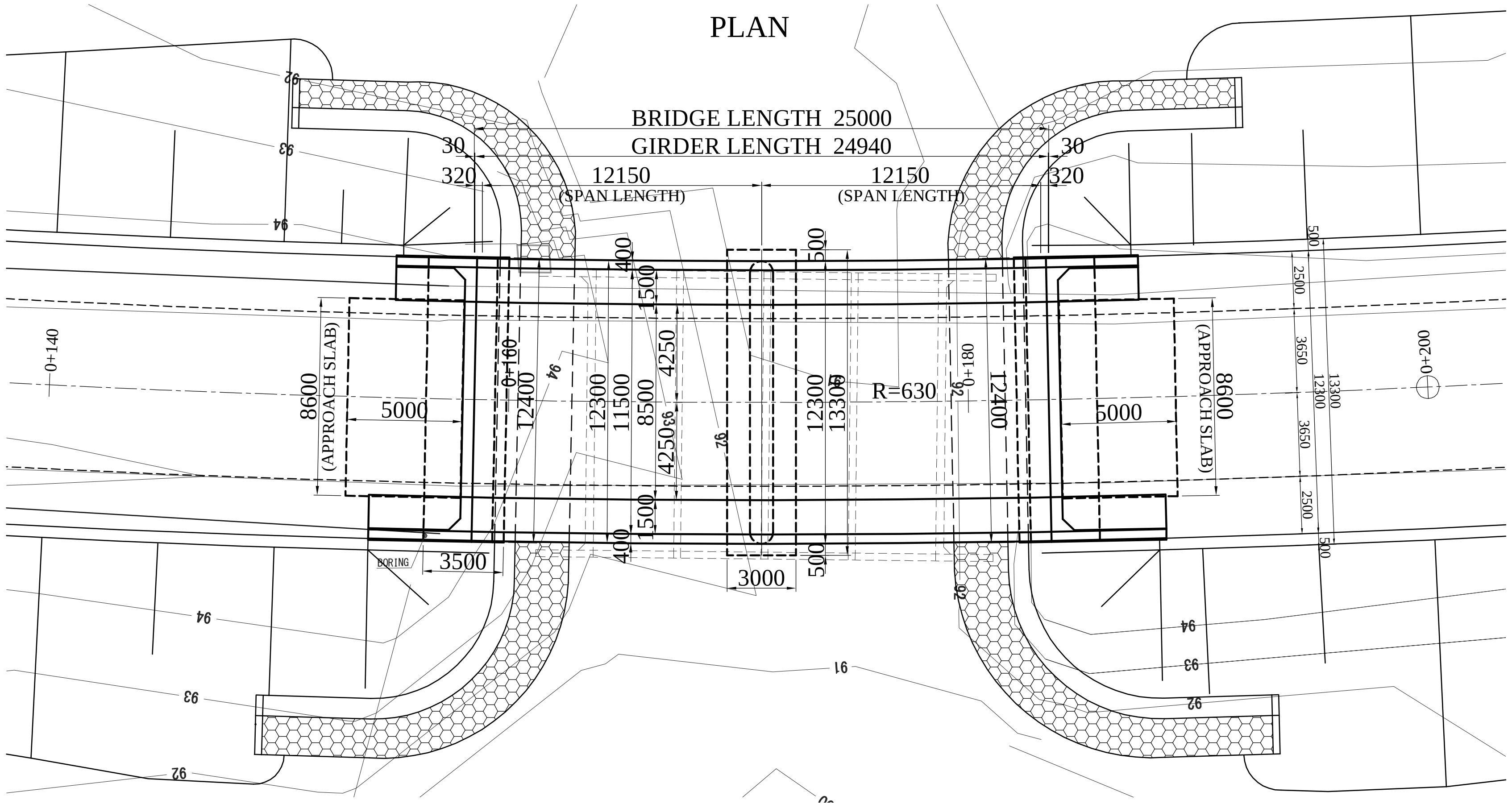
SCALE A3 1:300

SIDE VIEW

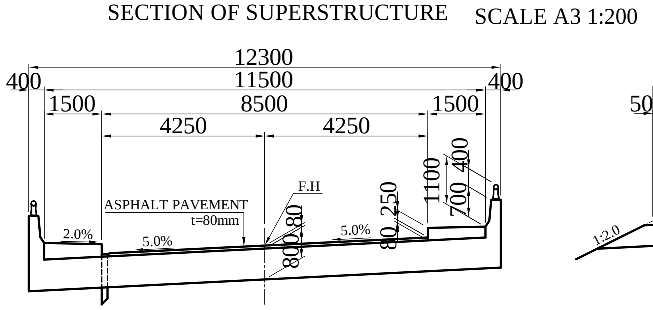


GRADIENT	95.342		i=1.500% L=175.000	(VCL=210.000) (R=6500)		97.967	i=1.747% L=242.500
DESIGN LEVEL		96.973	96.983	97.045	97.082	97.093	
GROUND HEIGHT		94.75	94.74	94.72	94.67	94.66	
DISTANCE			1.500	11.000	9.000	3.500	
STATION	0+35	Ⓐ1 0+158.50	0+160	Ⓟ1 0+171.0	0+180	Ⓐ2 0+183.50	0+210
ALIGNMENT	R=630.000m L=505.290m						

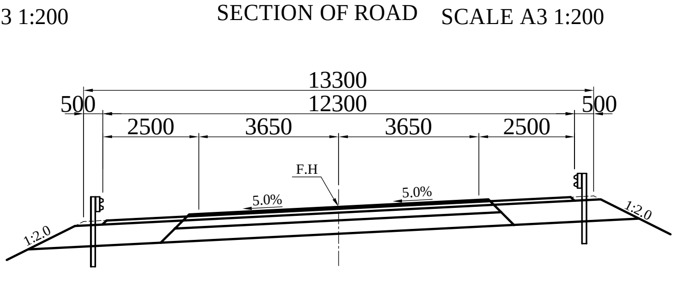
PLAN



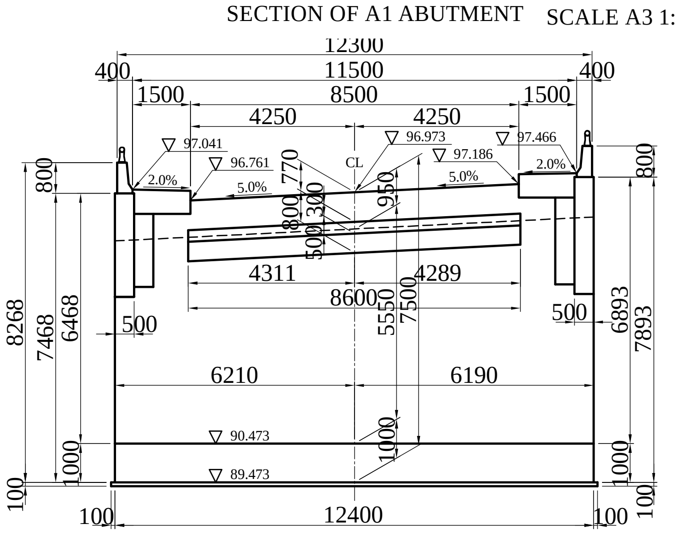
SECTION OF SUPERSTRUCTURE SCALE A3 1:200



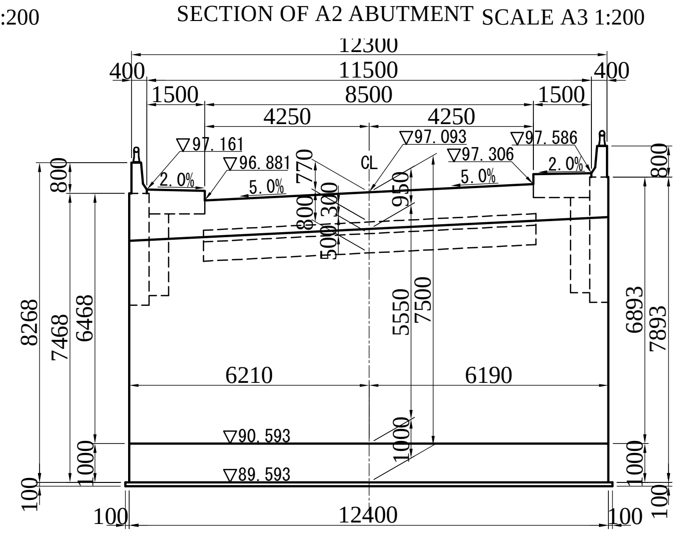
SECTION OF ROAD SCALE A3 1:200



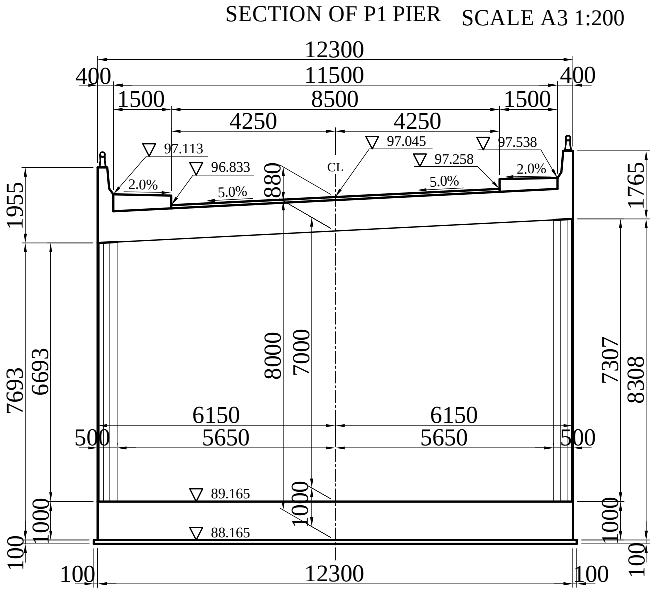
SECTION OF A1 ABUTMENT SCALE A3 1:200



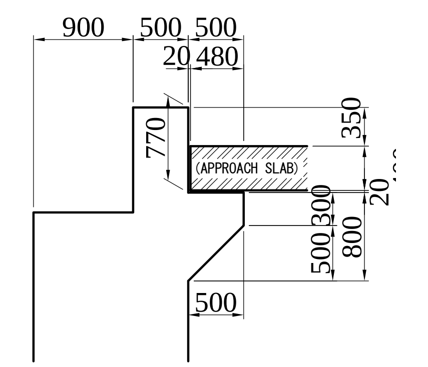
SECTION OF A2 ABUTMENT SCALE A3 1:200



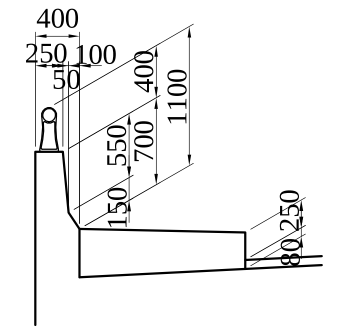
SECTION OF P1 PIER SCALE A3 1:200



DETAIL OF SUPPORT FOR APPROACH SLAB
SCALE A3 1:70



DETAIL OF CONCRETE BARRIER CURB SCALE A3 1:70

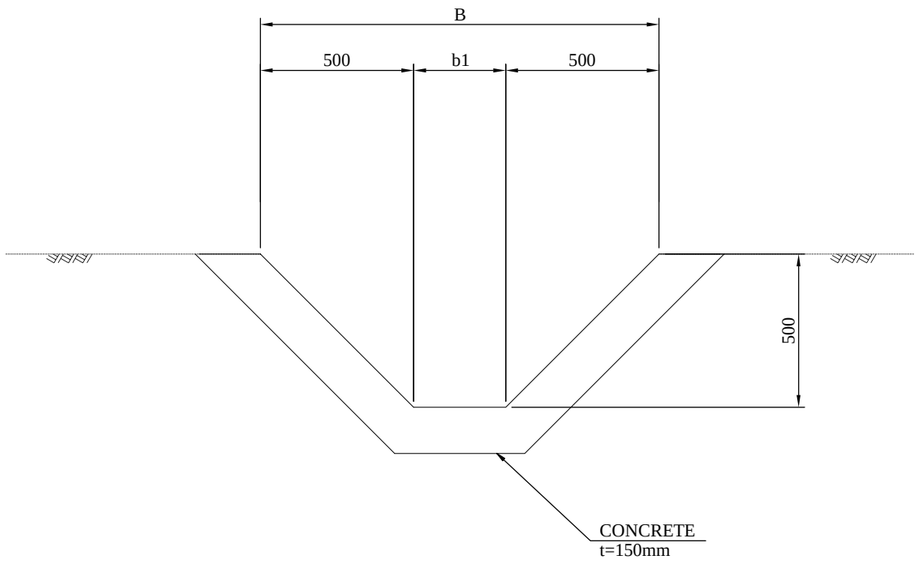


DESIGN CONDITION	
TYPE OF BRIDGE	RC 2SPANS T-RAHMEN BRIDGE
BRIDGE LENGTH	25.000 m
GIRDER LENGTH	24.940 m
SPAN LENGTH	2@12.150 m
WIDTH OF BRIDGE	12.300 m
SKEW ANGLE	90°00'00"
LIVE LOAD	LIVE LOAD B (JAPANESE STANDARDS)

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: GENERAL PLAN OF BRIDGE (OKYI RIVER BRIDGE)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 04

DRAINAGE STRUCTURE (1) SCALE A3 1:20

TRAPEZOIDAL SHAPED DITCH
1300x500
1500x500



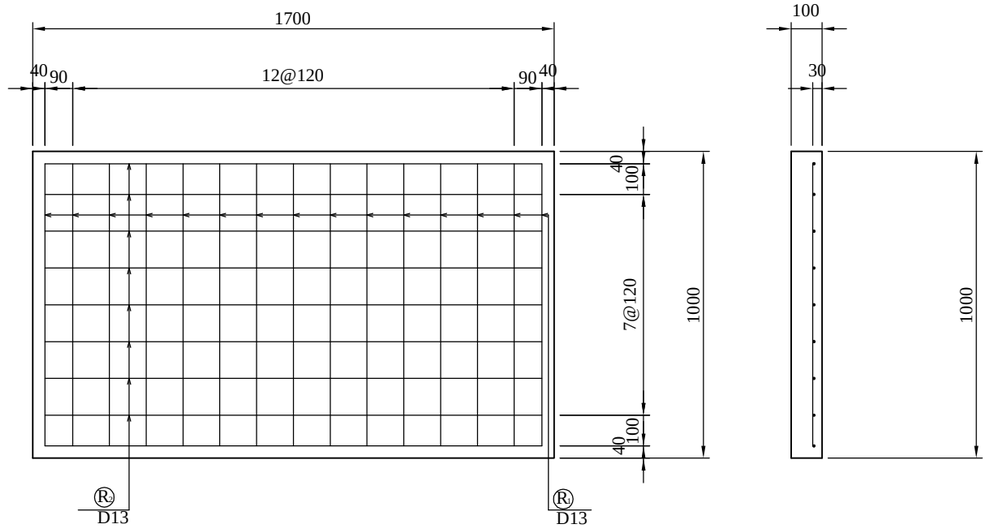
DIMENSION LIST

BxH	B	b1
1300x500	1300	300
2000x500	2000	1000

MATERIAL LIST PER m

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			1300 x 500	2000 x 500	
CONCRETE		cu.m	0.30	0.40	

CONCRETE SLAB



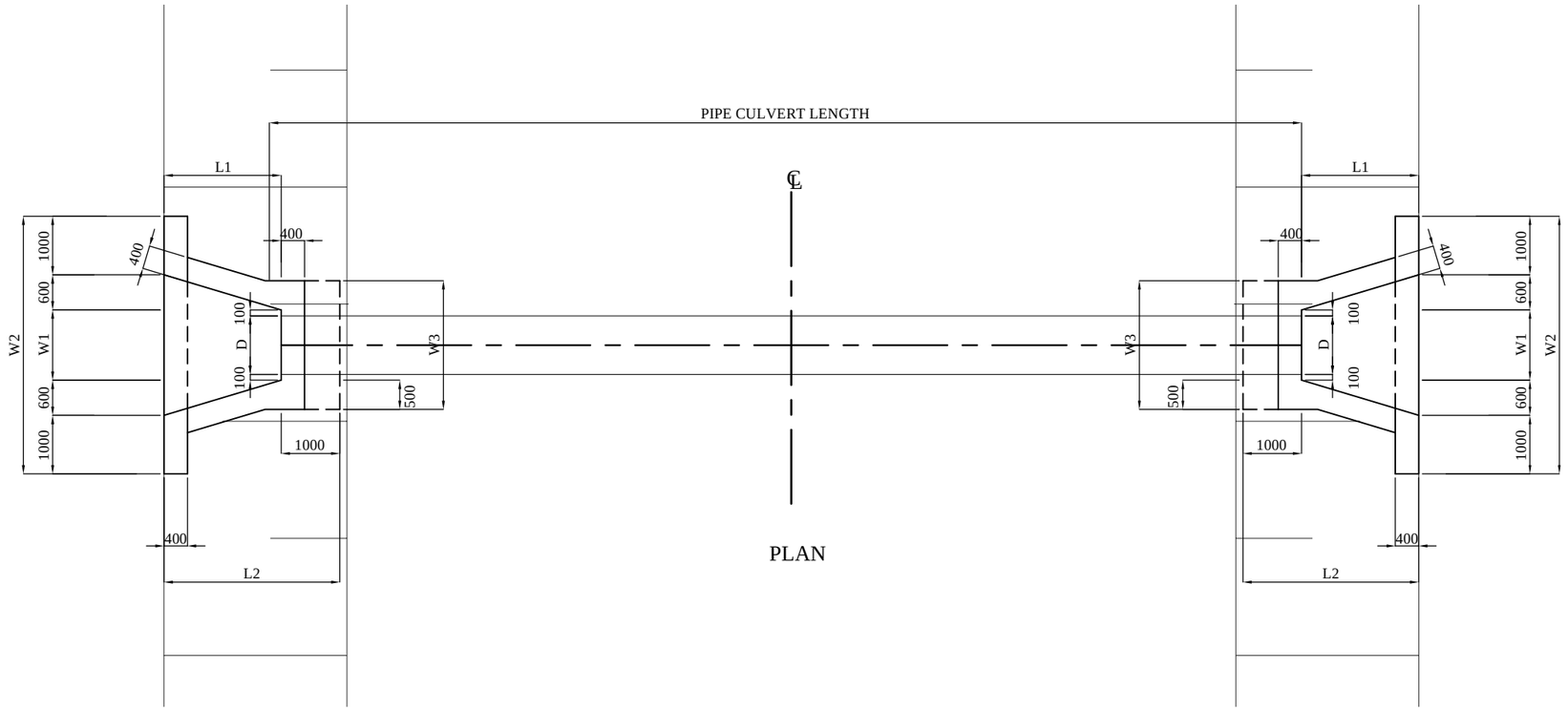
MATERIAL LIST PER nos

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	0.17	
FORM		sq.m	0.54	
REINFORCING BAR	D13	kg	28.24	

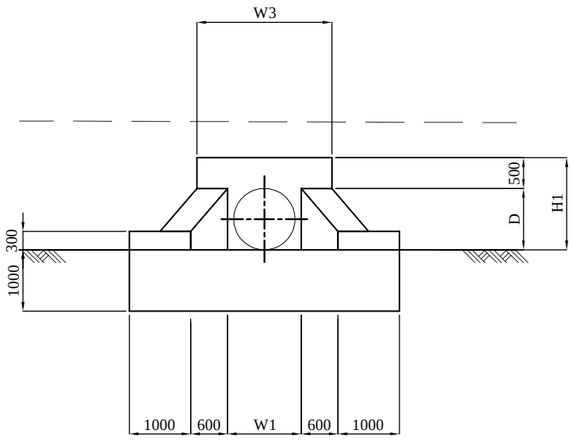
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (1) （OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 05

DRAINAGE STRUCTURE (2) SCALE A3 1:100

INLET OUTLET (SINGLE CELL TYPE)



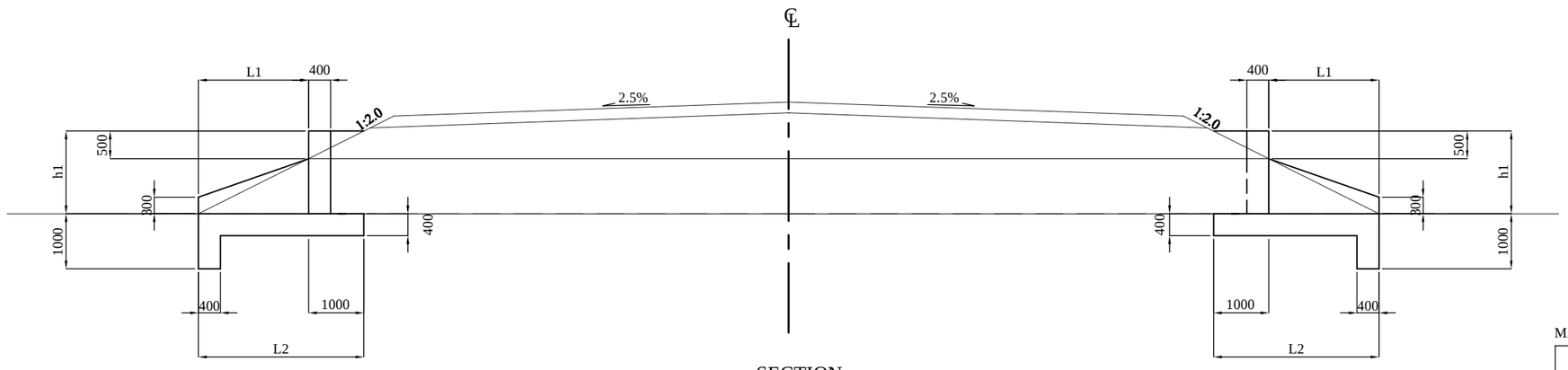
PLAN



ELEVATION

DIMENSION LIST

D	L1	L2	W1	W2	W3	H1
1000	2000	3000	1200	4400	2200	1500



SECTION

INLET OUTLET

MATERIAL LIST (INLET OUTLET)

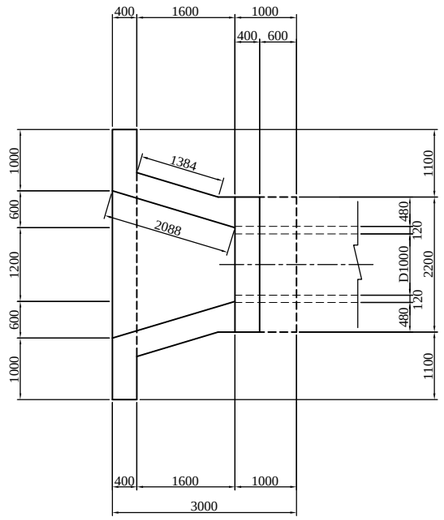
PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
			D1000	
CONCRETE		cu.m	6.33	
FORM		sq.m	19.88	
REINFORCING BAR	D13	kg	194.70	

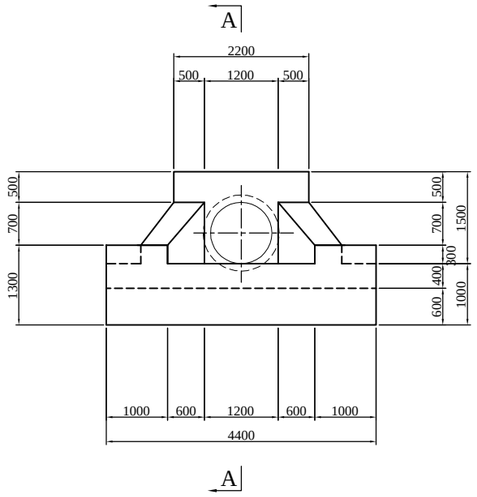
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (2) （OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 06

DRAINAGE STRUCTURE (3) SCALE A3 1:100

DETAIL OF INLET OUTLET (SINGLE CELL TYPE)

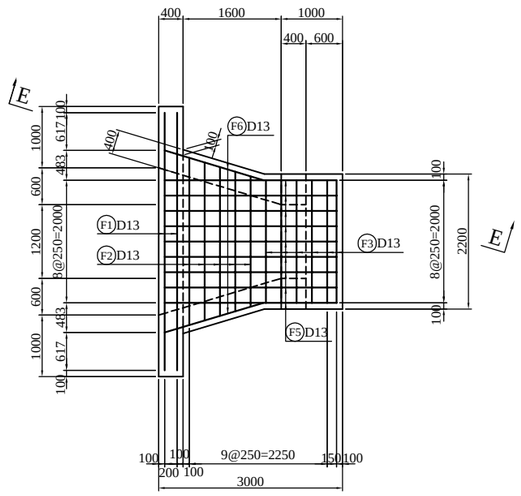


Plan



Elevation

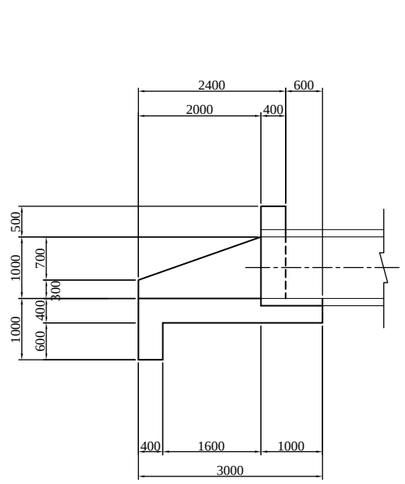
B-B



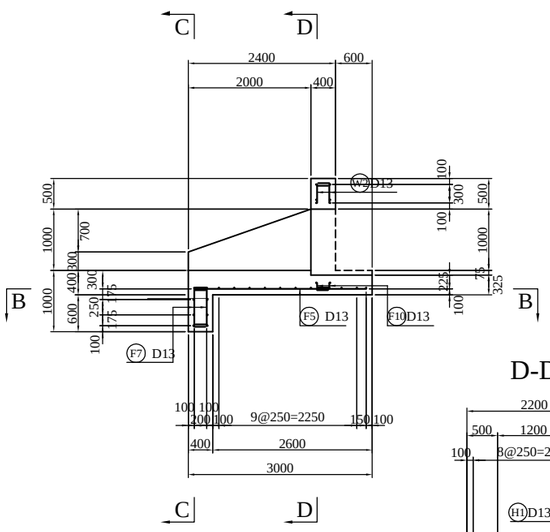
List of Bars

Items	Dia	Length (mm)	Unit	kg/m	Kg/Unit	Mass (kg)	Remarks
F1	D13	4200	8	0.995	4.179	12.2	
F2	D13	2430	5	0.995	2.418	12.1	(AVE.L)
F3	D13	2000	6	0.995	1.990	11.9	
F4	D13	620	8	0.995	0.617	4.9	
F5	D13	2800	9	0.995	2.786	25.1	
F6	D13	1690	2	0.995	1.682	3.4	
F7	D13	960	22	0.995	0.955	21.0	
F8	D13	1460	16	0.995	1.453	23.2	
F9	D13	2060	8	0.995	2.050	16.4	
F10	D13	360	10	0.995	0.358	3.6	(AVE.L)
F11	D13	1040	16	0.995	1.035	16.6	(AVE.L)
F12	D13	2300	4	0.995	2.289	9.2	
W1	D13	450	24	0.995	0.448	10.7	(AVE.L)
W2	D13	460	10	0.995	0.458	4.6	(AVE.L)
W3	D13	1270	4	0.995	1.264	5.1	(AVE.L)
W4	D13	2430	2	0.995	2.418	4.8	
H1	D13	4950	2	0.995	4.925	9.9	
					D13	194.7	kg
					Total	194.7	kg

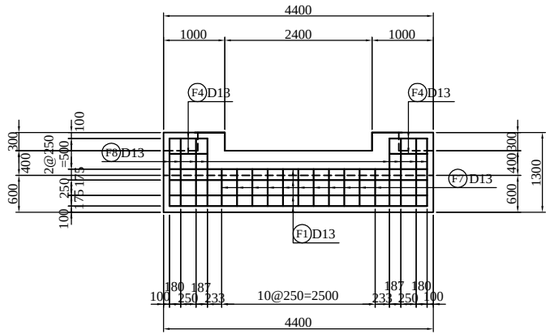
A-A



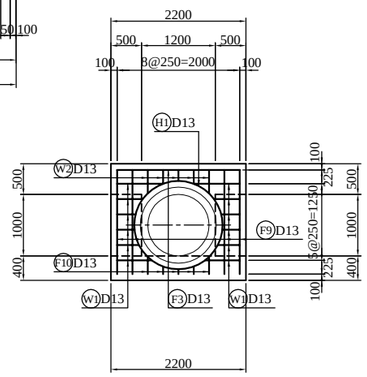
Profile



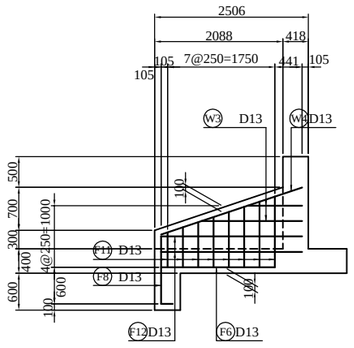
C-C



D-D



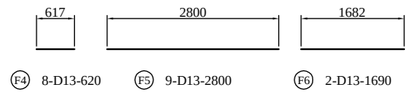
E-E



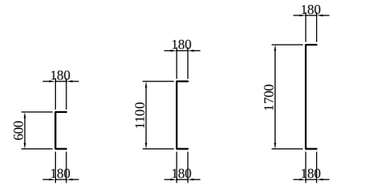
F1 8-D13-4200

F2 5-D13-2430 (AVERAGE LENGTH)

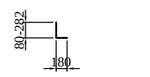
F3 6-D13-2000



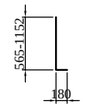
F4 8-D13-620 F5 9-D13-2800 F6 2-D13-1690



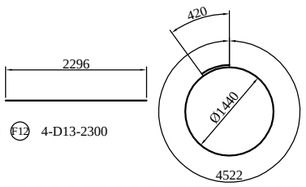
F7 22-D13-960 F8 16-D13-1460 F9 8-D13-2060



F10 10-D13-360(AVERAGE LENGTH)



F11 16-D13-1040 (AVERAGE LENGTH)



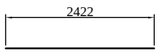
F12 4-D13-2300

H1 2-D13-4950

W1 24-D13-450(AVERAGE LENGTH)

W2 10-D13-460 (AVERAGE LENGTH)

W3 4-D13-1270 (AVERAGE LENGTH)



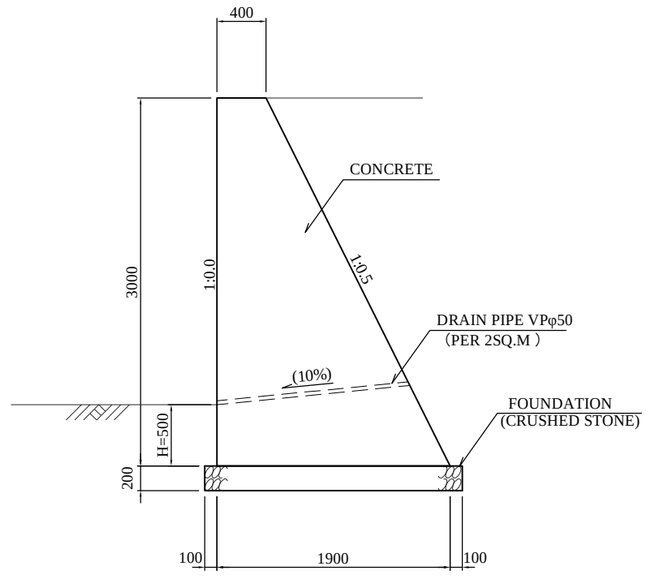
W4 2-D13-2430

Bar arrangement (Inlet Outlet)

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (3) （OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 07

RETAINING WALL SCALE AS SHOWN

GRAVITY TYPE RETAINING WALL SCALE A3 1:50



MATERIAL LIST (GRAVITY WALL) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	3.45	
FORM		sq.m	6.35	
FOUNDATION	CRUSHED STONE	cu.m	0.42	
DRAIN PIPE	VP φ50	m	1.98	

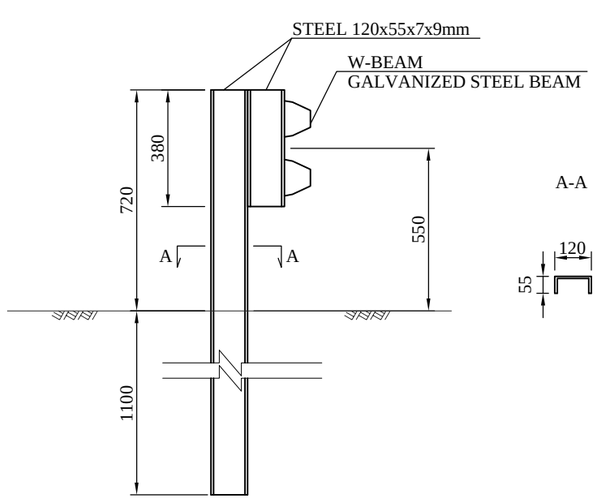
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: RETAINING WALL (OKYI BRIDGE)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 08

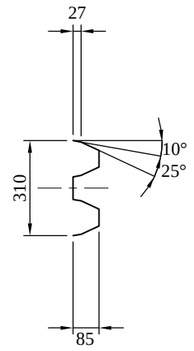
TRAFFIC SAFETY STRUCTURE

TRAFFIC FURNITURE

SCALE A3 1:20

GUARD RAIL





(W-BEAM)

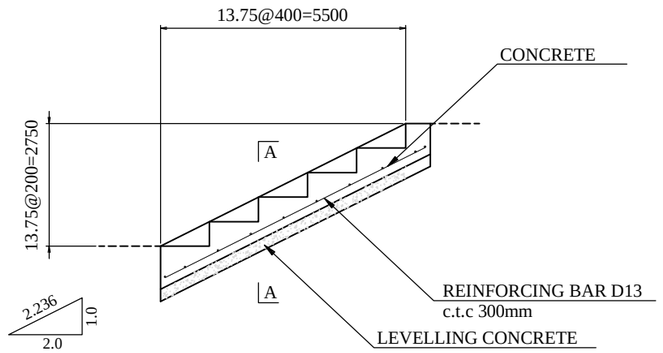
MATERIAL LIST (GUARD RAIL) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
GUARD RAIL		m	1.00	

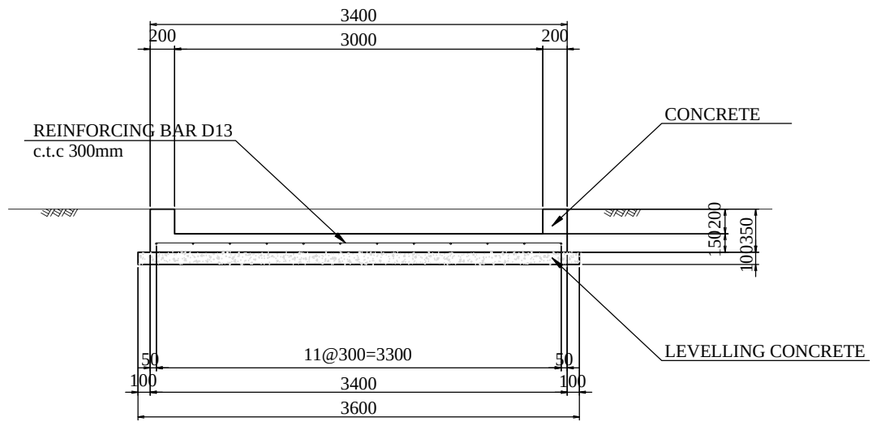
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY STRUCTURE （OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 09

STEP　SCALE　A3 1:50

STEP
L=5.5m



A-A

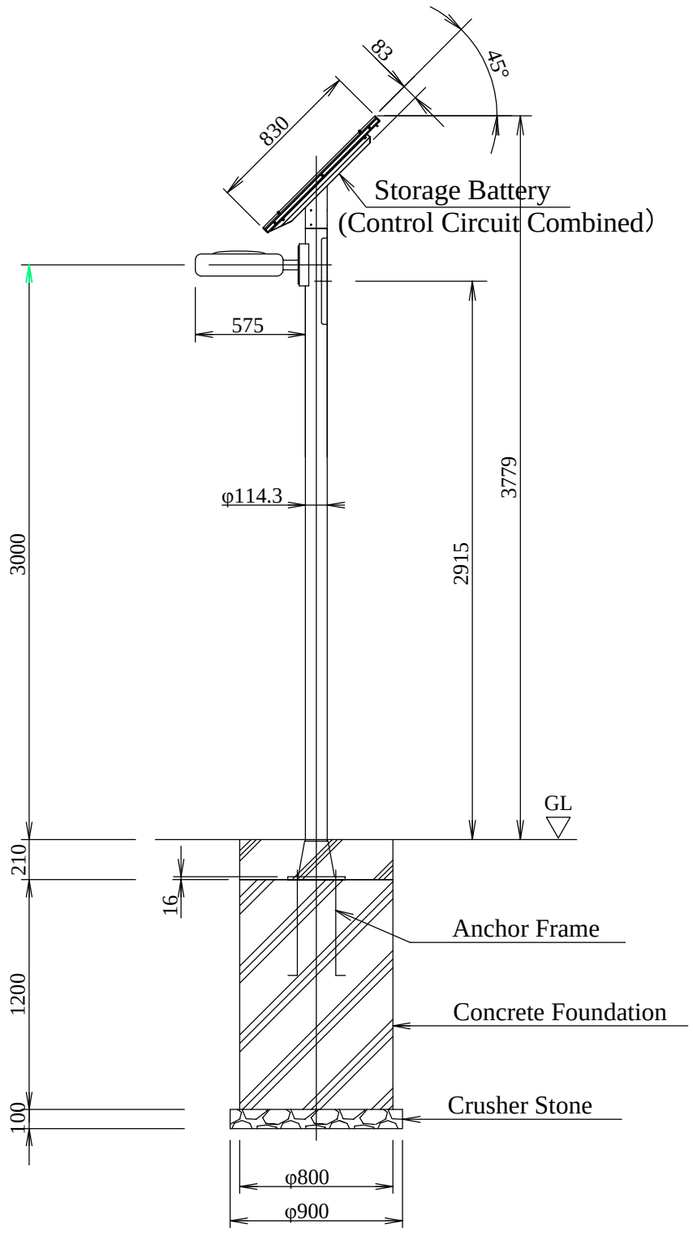


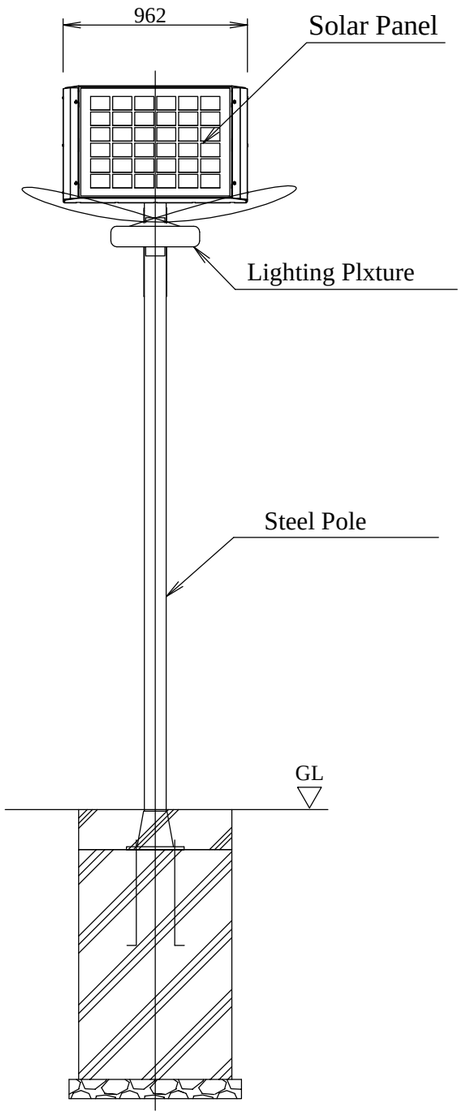
MATERIAL LIST (STEP)　PER each

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
CONCRETE		cu.m	4.90	
FORM		sq.m	13.20	
REINFORCING BAR	D13	kg	142.37	
LEVELING Co		cu.m	1.98	
FORM	LEVELING Co	cu.m	1.82	

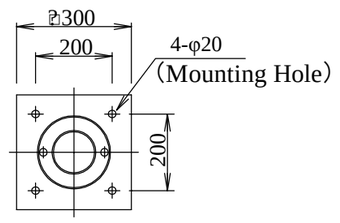
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: STEP （OKYI BRIDGE）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 10

STREET LIGHTING

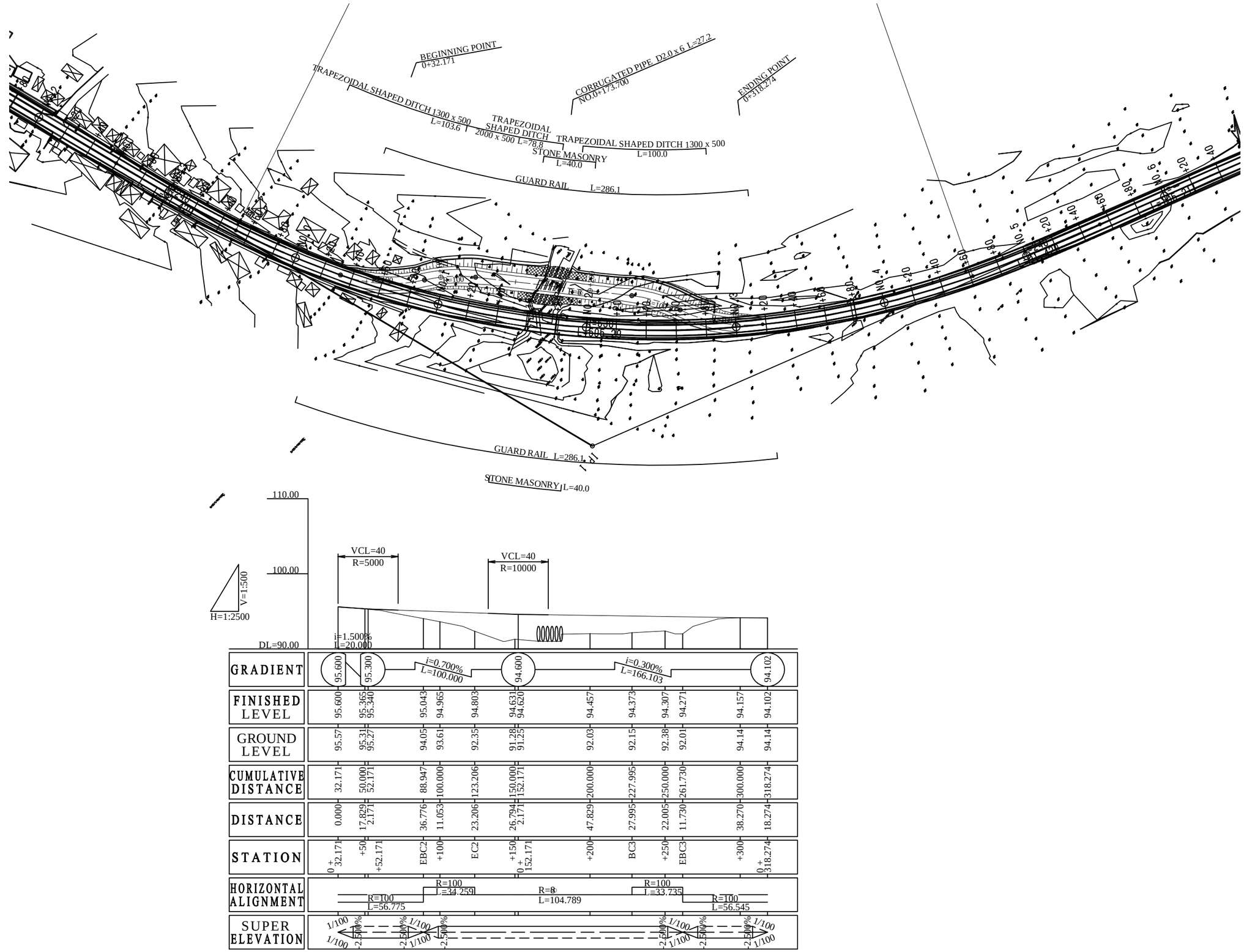




BASE PLATE DETAILS



GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: (OKYI BRIDGE)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 11

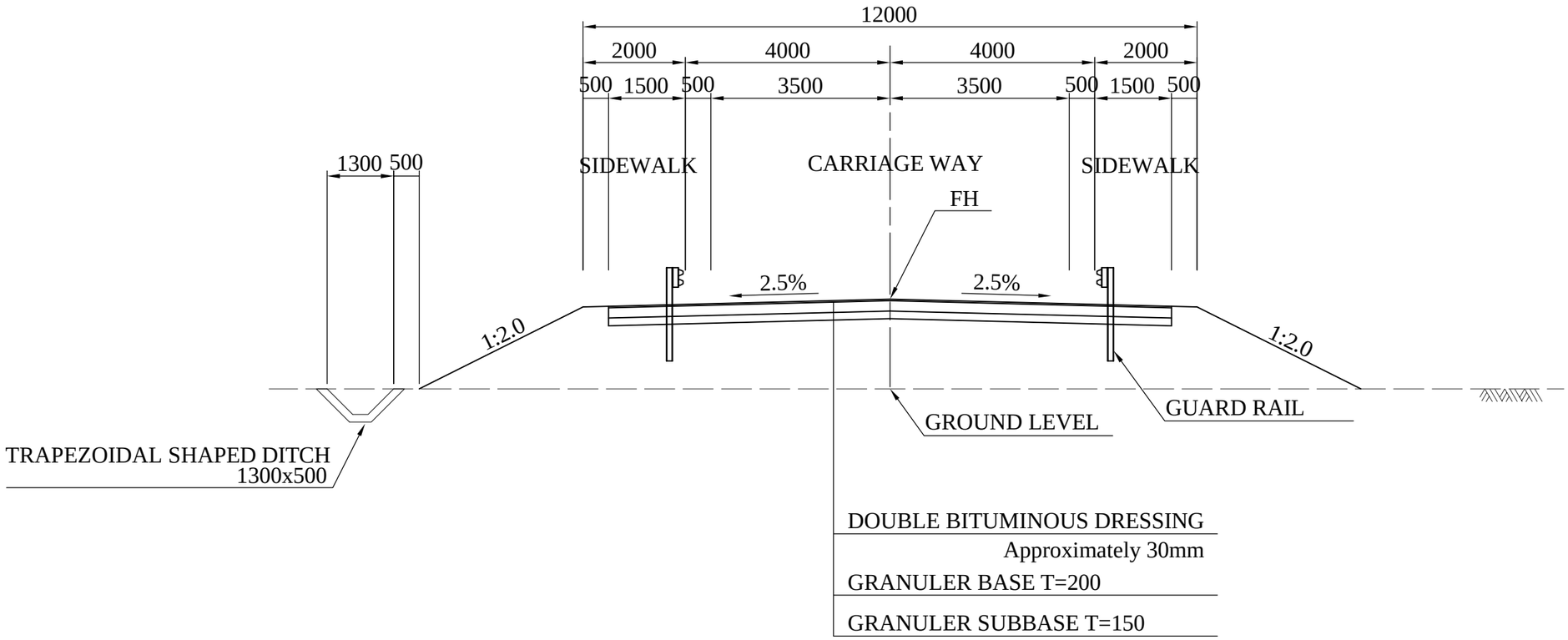


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: PLAN AND PROFILE（DETOUR PLAN）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 12

TYPICAL CROSS SECTION

SCALE A3 1:100

DETOUR

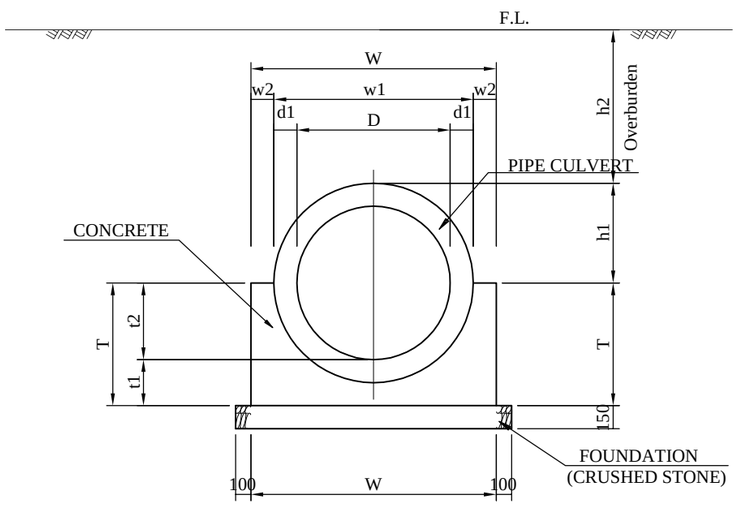


GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TYPICAL CROSS SECTION （DETOUR PLAN）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 13

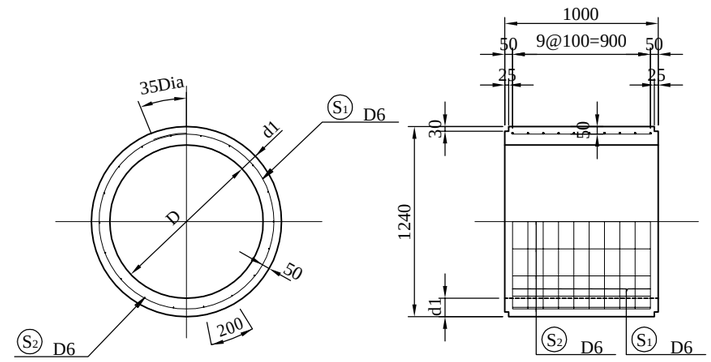
DRAINAGE STRUCTURE (1) SCALE AS SHOWN

PIPE CULVERT SCALE A3 1:40

SINGLE CELL TYPE



REINFORCED CONCRETE PIPE



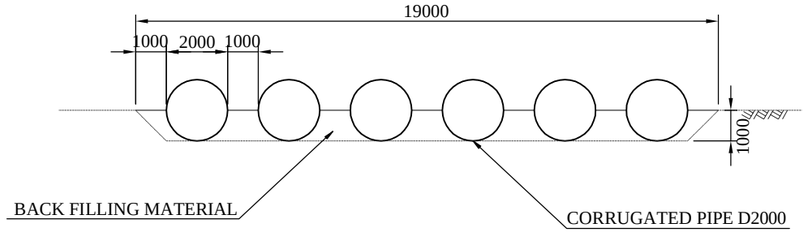
DIMENSION LIST

D	d1	W	w1	w2	T	t1	t2	h1
1000	120	1540	1240	150	770	270	500	620

MATERIAL LIST (SINGLE CELL TYPE) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
			D1000	
CONCRETE		cu.m	0.58	
FORM		sq.m	1.54	
FOUNDATION	CRUSHED STONE	cu.m	0.26	
PIPE CULVERT	φ1000	nos.	1.00	

CORRUGATED PIPE D2000x6 SCALE A3 1:200



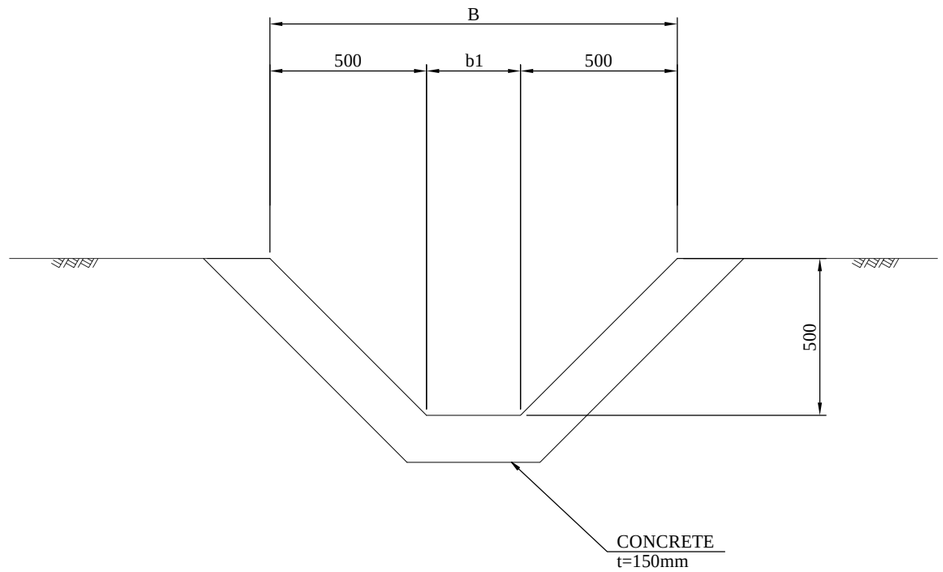
MATERIAL LIST PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
BACK FILLING MATERIAL		cu.m	8.57	
CORRUGATED PIPE	D2000	m	6.00	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (1) (DETOUR PLAN)	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 14

DRAINAGE STRUCTURE (2) SCALE A3 1:20

TRAPEZOIDAL SHAPED DITCH
1300x500
1500x500



DIMENSION LIST

BxH	B	b1
1300x500	1300	300
2000x500	2000	1000

MATERIAL LIST PER m

ITEM	STANDARD	UNIT	QUANTITY		REMARKS
			1300 x 500	2000 x 500	
CONCRETE		cu.m	0.30	0.40	

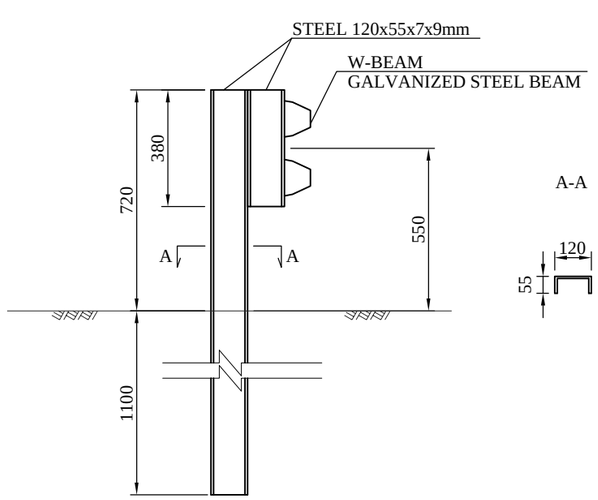
GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: DRAINAGE STRUCTURE (2) （DETOUR PLAN）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 15

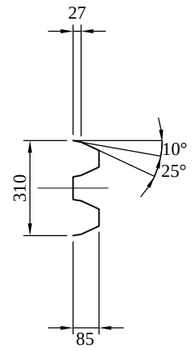
TRAFFIC SAFETY STRUCTURE

SCALE A3 1:20

TRAFFIC FURNITURE

GUARD RAIL





(W-BEAM)

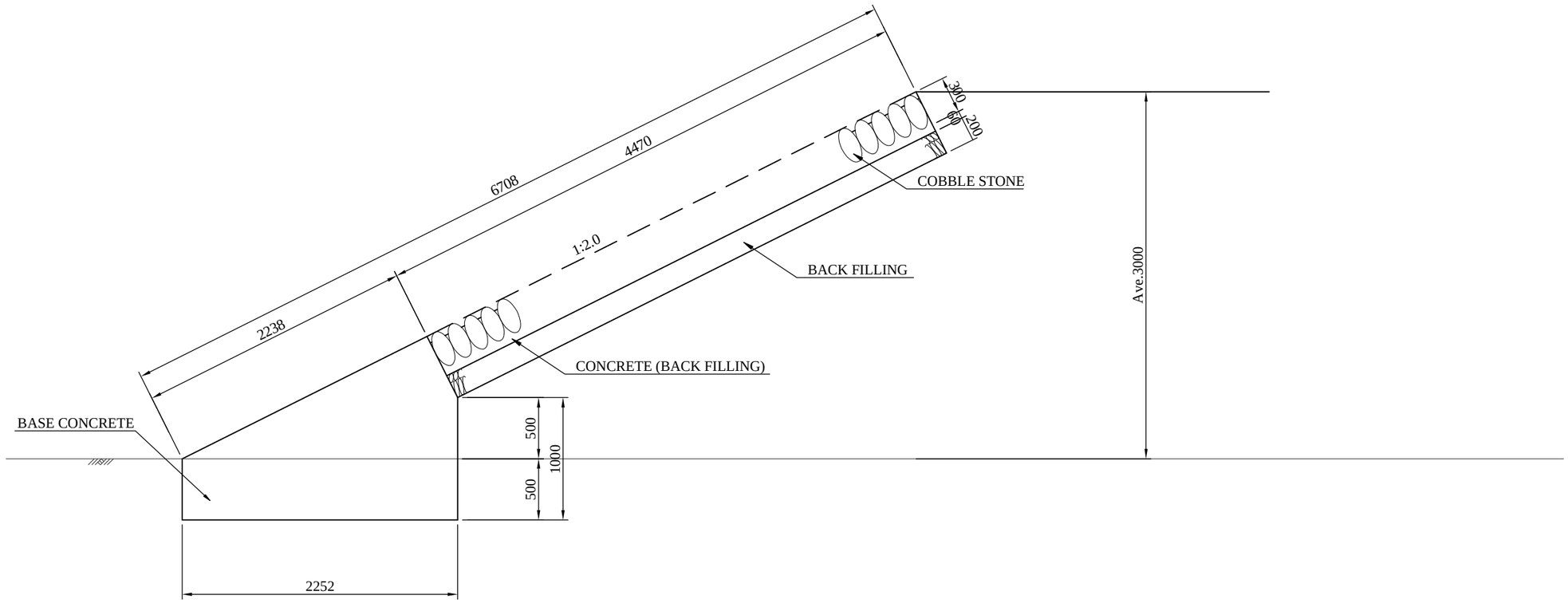
MATERIAL LIST (GUARD RAIL) PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
GUARD RAIL		m	1.00	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: TRAFFIC SAFETY STRUCTURE （DETOUR PLAN）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 16

STONE MASONRY

SCALE A3 1:40



MATERIAL LIST

PER m

ITEM	STANDARD	UNIT	QUANTITY	REMARKS
COBBLE STONE		sq.m	4.47	
CONCRETE		cu.m	0.45	
CONCRETE (BACK FILLING)		cu.m	0.27	
FORM(BACK FILLING)		sq.m	4.50	
BASE CONCRETE		cu.m	2.32	
FORM(BASE CONCRETE)		sq.m	1.50	
BACK FILLING		cu.m	0.89	

GHANA HIGHWAY AUTHORITY THE REPUBLIC OF GHANA	CONSULTANTS: CENTRAL CONSULTANTINC. EIGHT-JAPAN ENGINEERING CONSULTANTSINC.	PROJECT NAME: PREPARATORY SURVEY ON REHABILITATION OF NATIONAL TRUNK ROAD NO.8 (PHASE 2)	DRAWING TITLE: STONE MASONRY （DETOUR PLAN）	DATE: PREPARED BY: CHECKED BY:	DRAWING No. : 17