

DEPARTMENT OF ROADS
MINISTRY OF WORKS AND TRANSPORT
KINGDOM OF NEPAL

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
CONSTRUCTION OF SINDHULI ROAD
(SECTION II : SINDHULI BAZAR - KHURKOT)
IN
KINGDOM OF NEPAL**

**FINAL REPORT
APPENDIX**

DECEMBER 1999

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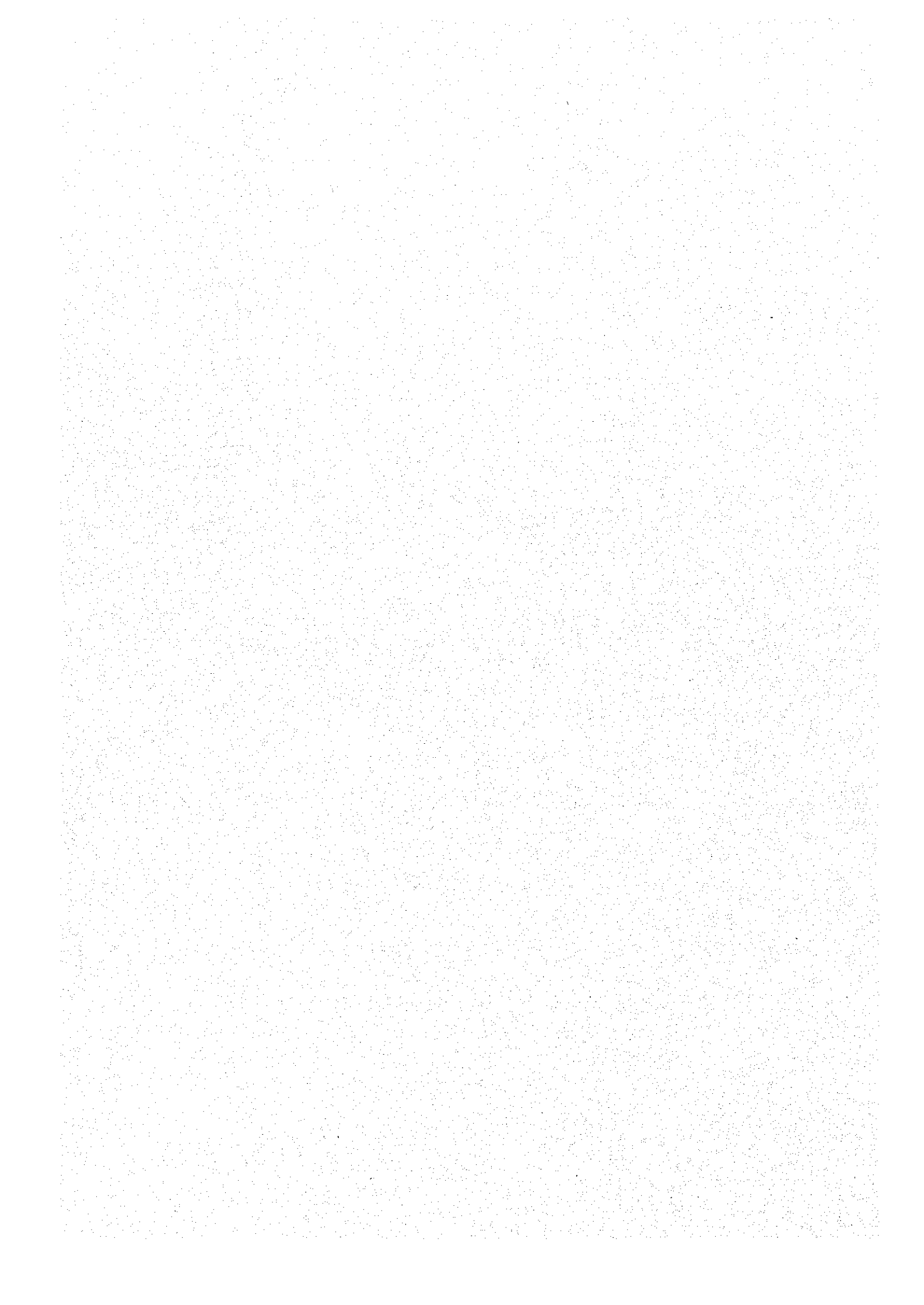


J 1156844 [1]

JAPAN INTERNATIONAL COOPERATION AGENCY

NIPPON KOEI CO., LTD.

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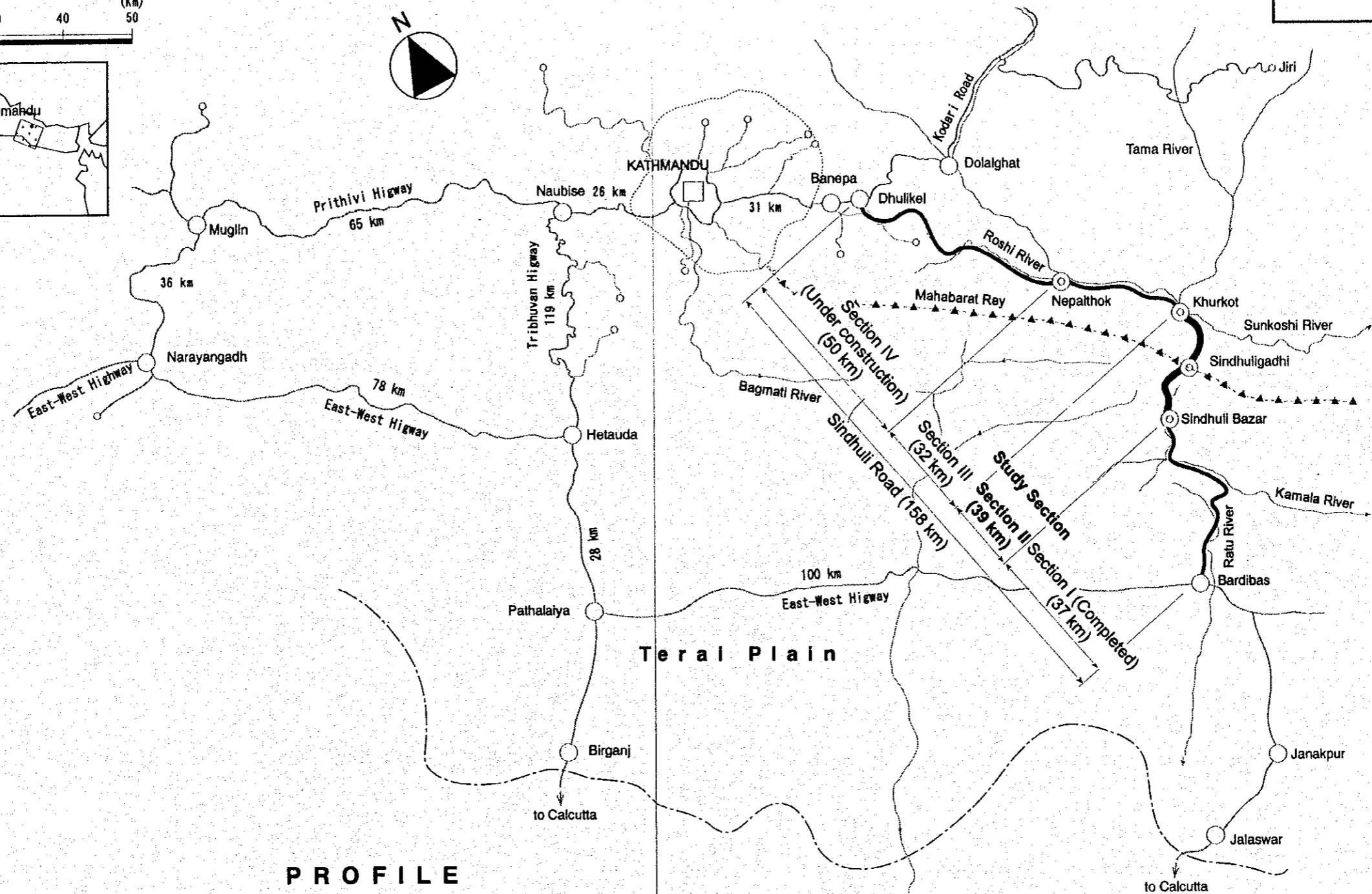
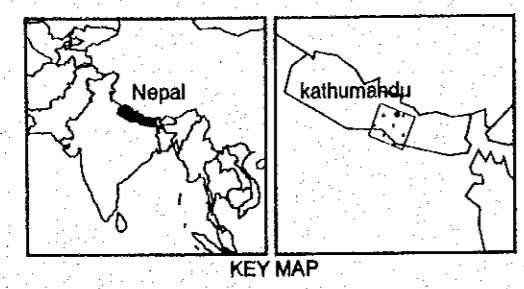
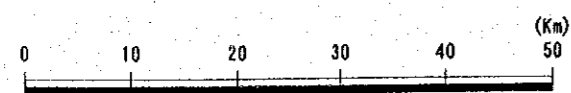
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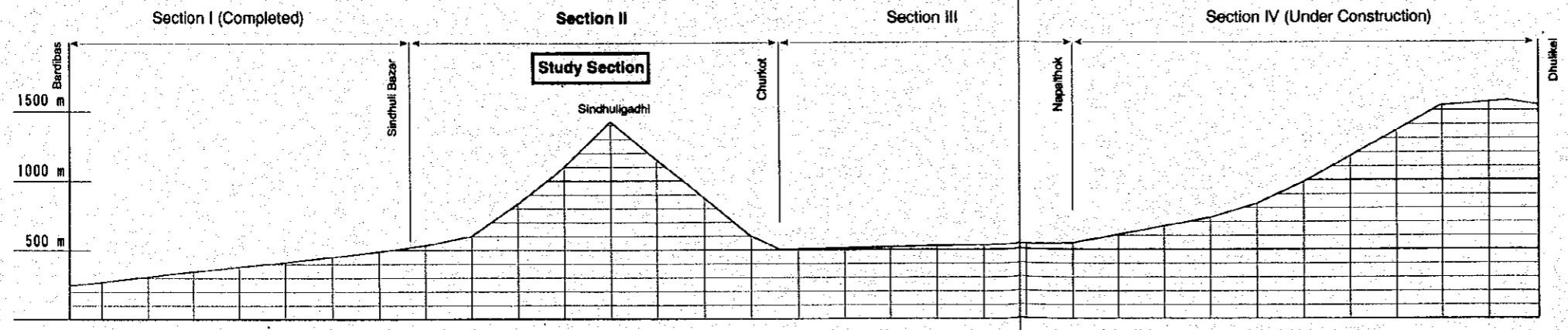


PLAN

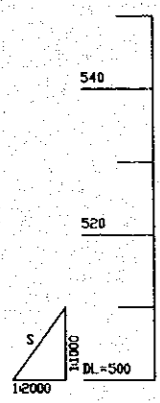
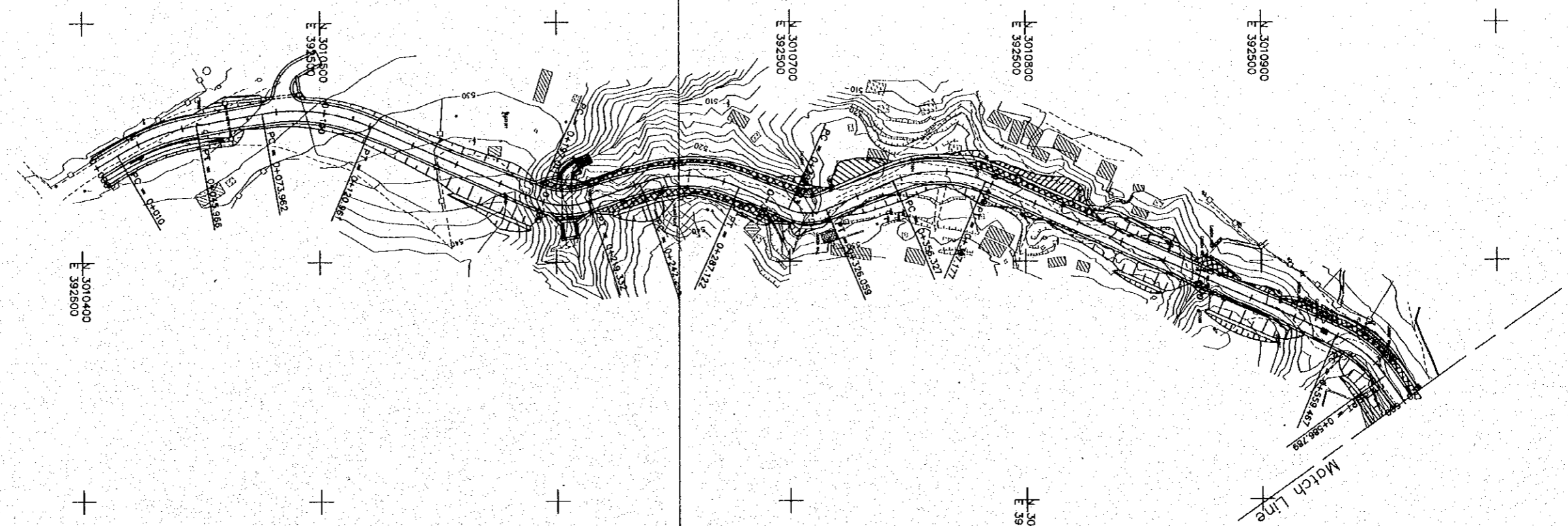


Teral Plain

PROFILE

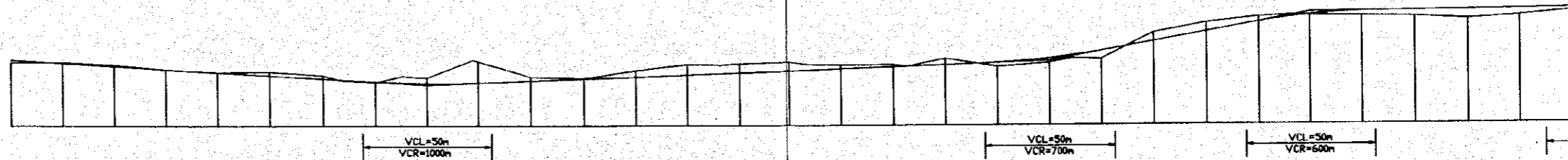
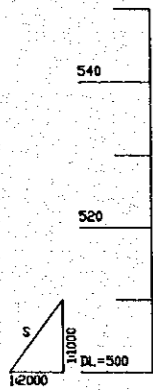
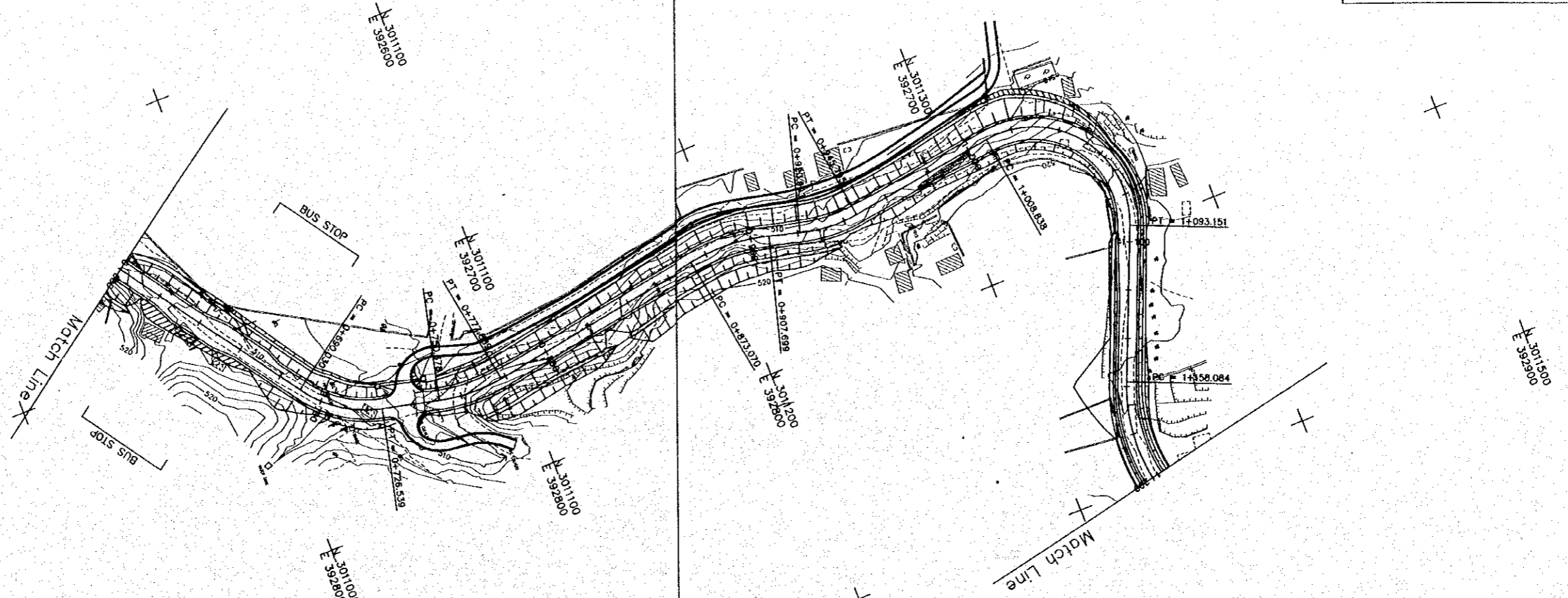


A-2-01 : PLAN AND PROFILE
 STA.0+000 - STA.0+600



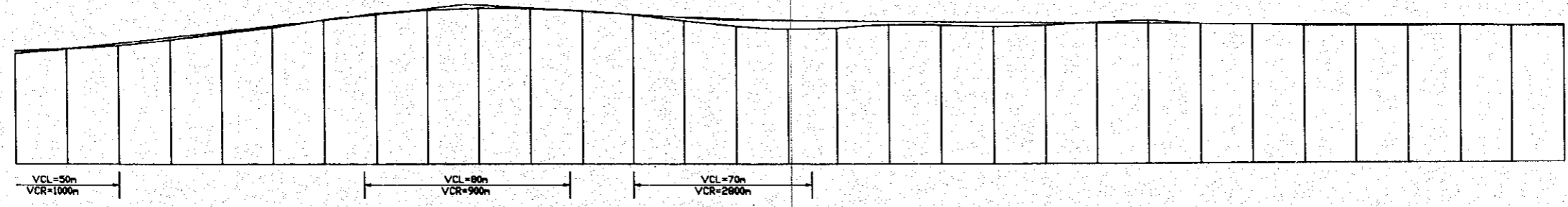
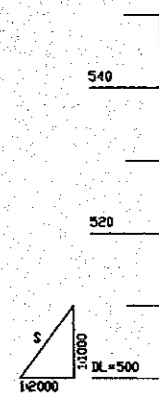
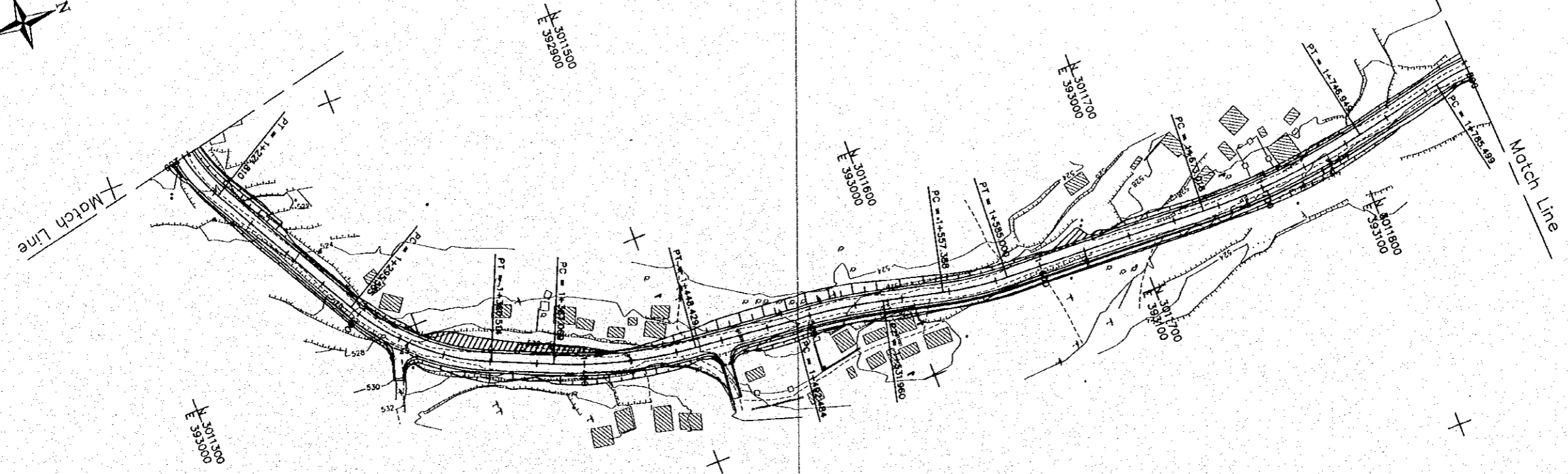
GRADE																															
PROPOSED HEIGHT	524.72	524.77	524.83	525.14	526.35	527.35	528.35	529.08	529.88	528.95	528.35	527.75	527.15	526.35	525.95	525.35	524.75	524.15	523.55	522.95	522.33	521.56	520.61	519.50	518.30	517.10	515.92	514.87	513.97	513.22	512.60
GROUND HEIGHT	524.81	524.68	524.77	525.39	526.81	528.61	529.87	531.83	533.33	534.71	525.68	527.01	527.84	526.64	526.63	526.63	522.70	523.92	523.85	523.19	522.59	521.25	520.50	519.88	519.71	516.49	516.25	514.78	511.62	513.36	512.08
STATION	STA0	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600
CURVE ELEMENT	R=100.00		L=28.00		R=80.00		L=76.00				L=22.87		R=60.00		L=2.50		L=30.27		R=50.00		L=162.29						R=50.00				
SUPER ELEVATION	2.5%										0%										2.5%						Left	Right			

A-2-02 : PLAN AND PROFILE
 STA.0+600 - STA.1+200



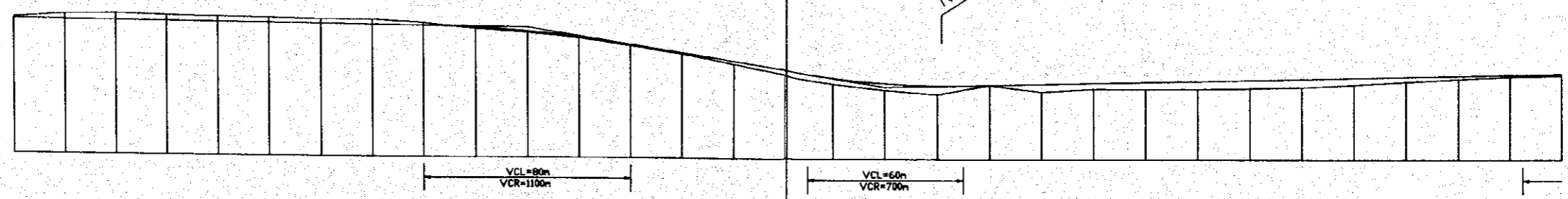
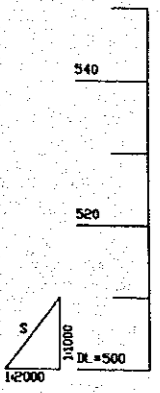
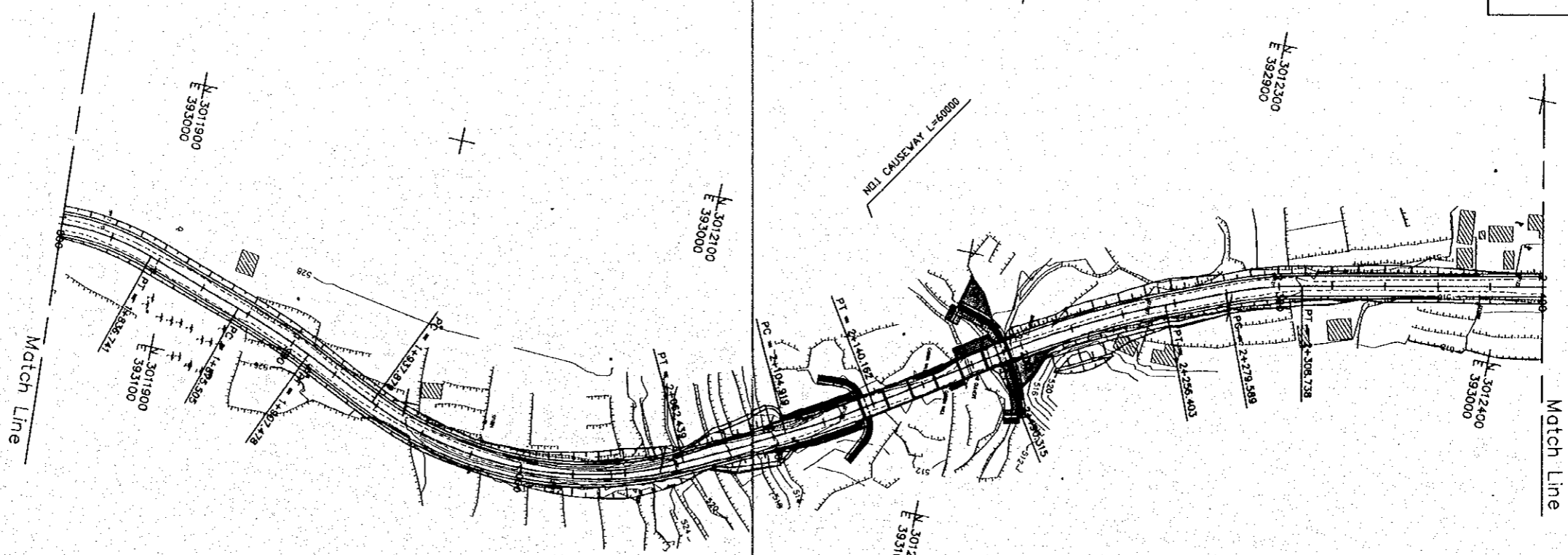
GRADE																																
PROPOSED HEIGHT	512.60	512.00	511.40	510.80	510.20	509.60	509.00	508.41	508.10	508.18	508.54	508.91	509.28	509.65	510.02	510.39	510.76	511.13	511.50	511.89	512.24	512.69	513.06	513.84	517.64	519.42	520.71	521.32	521.44	521.54	521.64	521.79
GROUND HEIGHT	512.08	512.16	511.63	510.74	510.19	510.32	509.60	508.27	509.15	512.23	509.28	508.99	510.32	511.66	511.79	512.66	511.49	511.53	512.67	511.11	511.84	512.51	517.47	519.33	520.39	520.63	520.43	520.29	519.76	520.39	521.24	521.79
STATION	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.1	+100	+1040	+1060	+1080	+1100	+1120	+1140	+1160	+1180	+1200	
CURVE ELEMENT																																
SUPER ELEVATION																																

A-2-03 : PLAN AND PROFILE
 STA.1+200 - STA.1+800



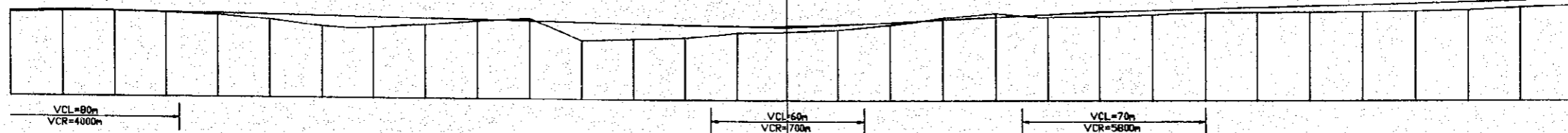
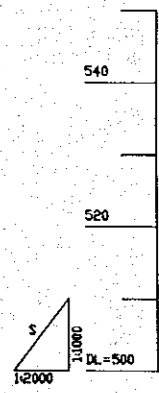
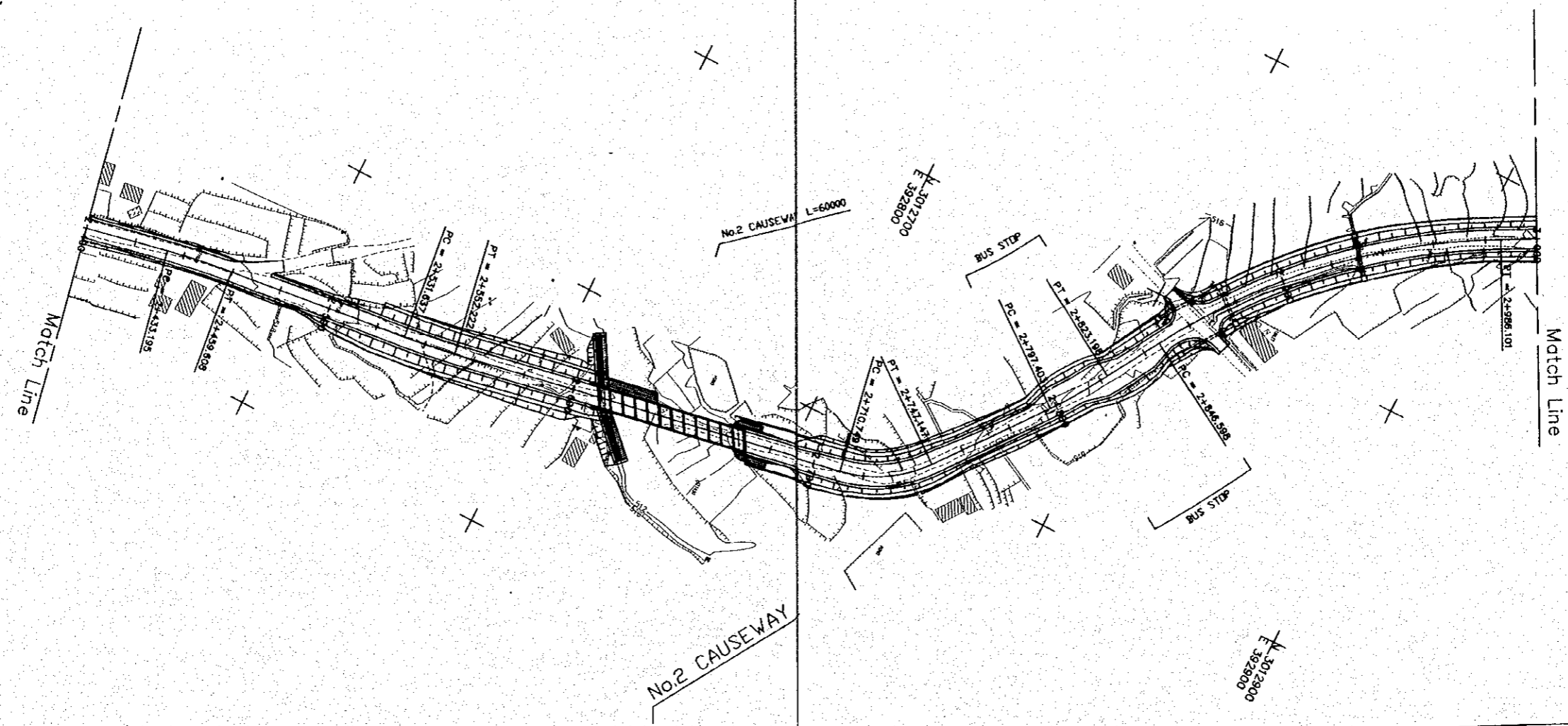
GRADE																																						
PROPOSED HEIGHT	521.79	522.29	523.19	524.29	525.39	526.49	527.59	528.68	529.46	529.81	529.74	529.26	528.66	528.13	527.75	527.51	527.39	527.29	527.19	527.09	526.99	526.89	526.79	526.69	526.59	526.49	526.39	526.29	526.19	526.09	525.99							
GROUND HEIGHT	521.24	522.09	522.76	523.81	524.99	526.14	527.64	528.90	529.50	529.90	529.89	529.43	528.60	527.42	526.40	525.84	526.01	526.62	526.50	526.25	526.49	527.04	527.37	526.70	526.59	526.59	526.28	526.23	526.13	526.33	526.08	526.25						
STATION	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800							
CURVE ELEMENT	R=70.00		L=73.75				R=100.00				L=26.55		R=200.00		L=44.06		R=300.00		L=25.43		R=150.00				L=88.02				R=300.00		L=38.55		R=100.00					
SUPER ELEVATION	2.50%		0.00%																																		2.50%	

A-2-04 : PLAN AND PROFILE
 STA.1+800 - STA.2+400



GRADE																																	
PROPOSED HEIGHT	523.99	523.89	523.79	523.69	523.59	523.49	523.39	523.29	523.19	523.09	522.99	522.89	522.79	522.69	522.59	522.49	522.39	522.29	514.32	514.47	514.62	514.77	514.92	515.07	515.22	515.37	515.52	515.67	515.82	515.97	516.12	516.27	
GROUND HEIGHT	526.25	526.90	527.06	526.79	526.60	526.46	526.24	526.23	525.69	524.66	523.98	523.20	521.55	519.94	518.00	516.07	514.32	513.19	512.39	514.17	512.96	513.46	513.41	513.47	513.60	513.81	514.29	514.83	515.11	515.81	516.07		
STATION	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.2	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400		
CURVE ELEMENT	R=100.00		L=38.77		R=300.00		L=38.40		R=140.00								L=42.48		R=300.00		L=30.15		R=350.00			L=23.19		R=150.00		L=124.46			
SUPER ELEVATION																		Left		Right													

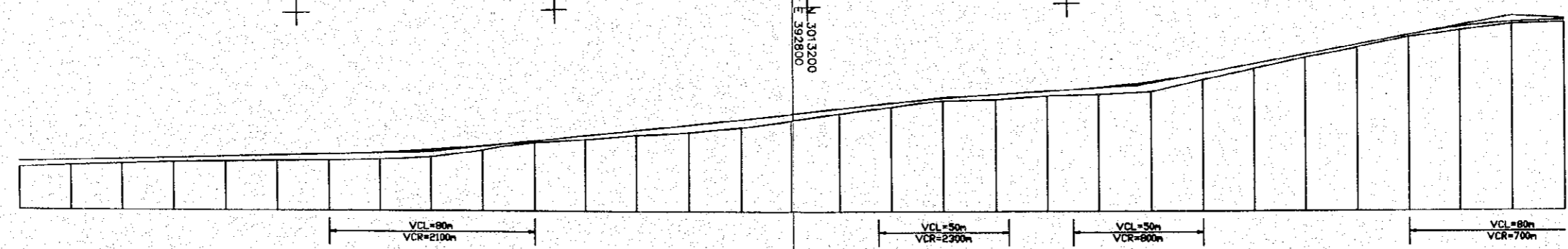
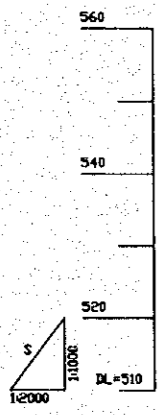
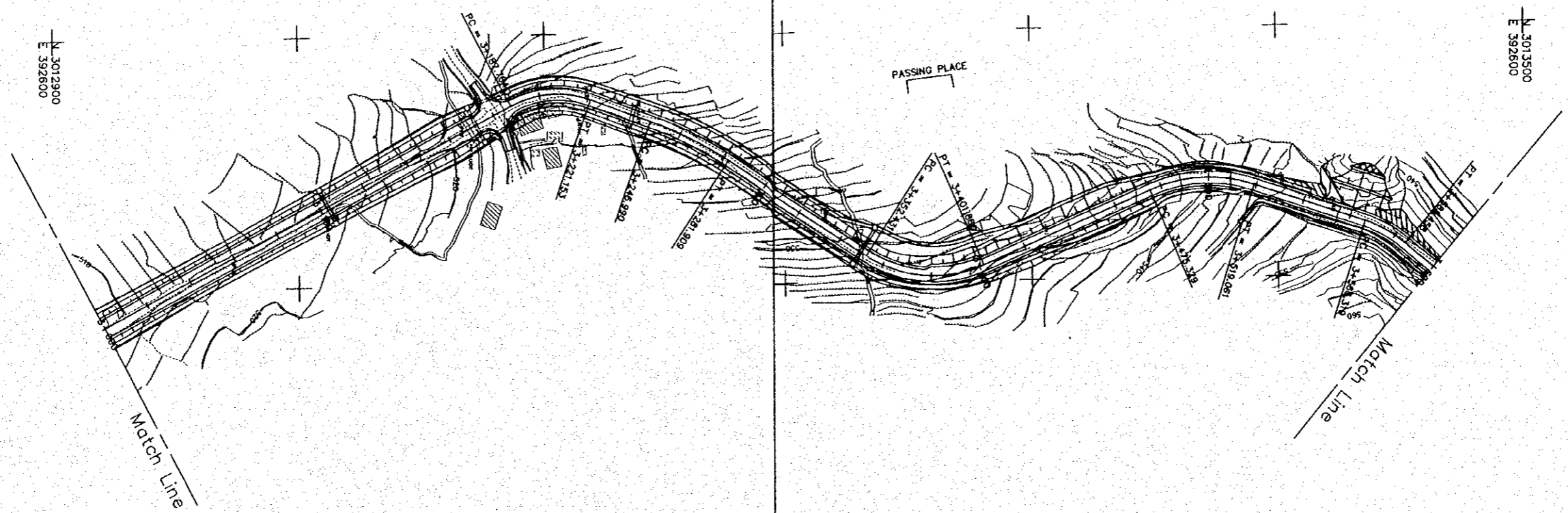
A-2-05 : PLAN AND PROFILE
 STA.2+400 - STA.3+000



GRADE	+1.00% 285.00m		516.64		-1.00% 275.00m		810.00		+2.50% 125.00m		517.01		+1.30% 335.00m																				
PROPOSED HEIGHT	516.36	516.44	516.41	516.29	516.09	515.89	515.69	515.49	515.29	515.09	514.89	514.69	514.49	514.29	514.12	513.99	513.46	514.42	514.89	515.39	515.89	516.38	516.81	517.18	517.47	517.73	517.99	518.25	518.51	518.77	519.03	519.29	
GROUND HEIGHT	516.07	516.39	516.38	516.14	515.76	514.94	513.65	513.47	514.03	514.77	515.26	511.17	511.54	511.85	512.84	515.99	513.46	514.42	514.89	515.74	516.58	515.89	516.38	516.81	517.18	516.72	516.77	517.03	517.25	517.51	517.77	518.03	518.29
STATION	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.3		
CURVE ELEMENT	L=124.46		R=300.00		L=72.03		R=300.00		L=158.53		R=50.00		L=50.25		R=200.00		L=23.40		R=250.00														
SUPER ELEVATION	2.5%																																

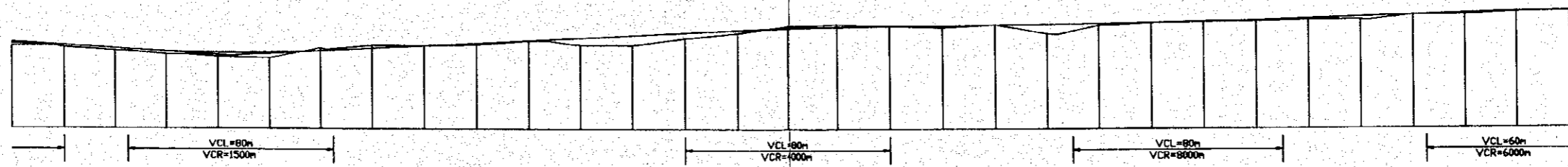
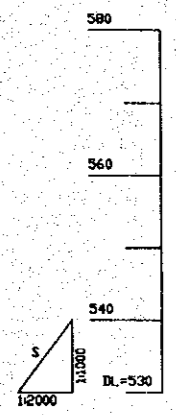
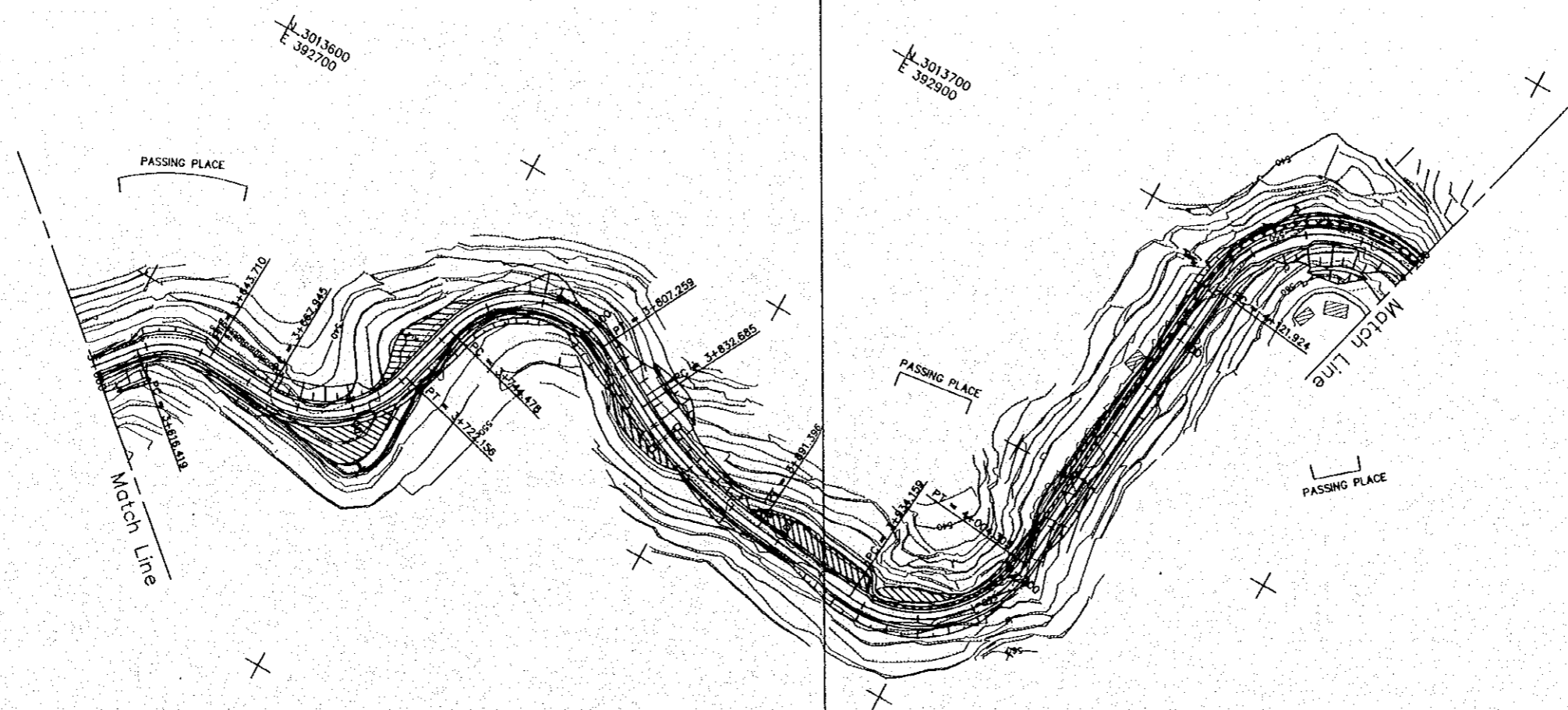
— Left
 - - - Right

A-2-06 : PLAN AND PROFILE
 STA.3+000 - STA.3+600



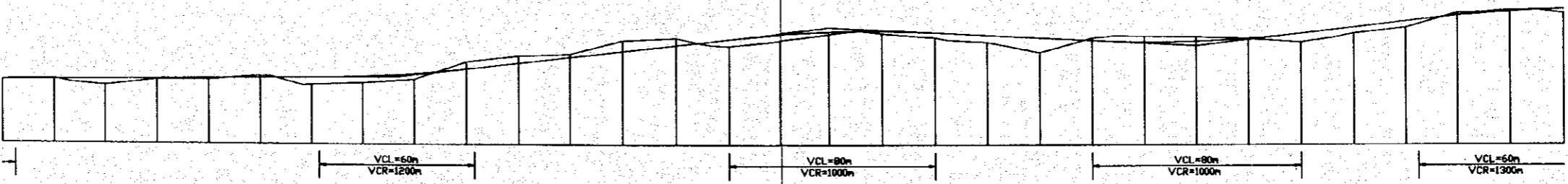
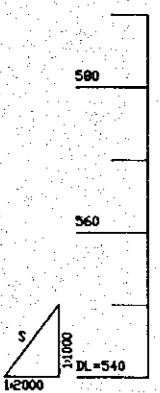
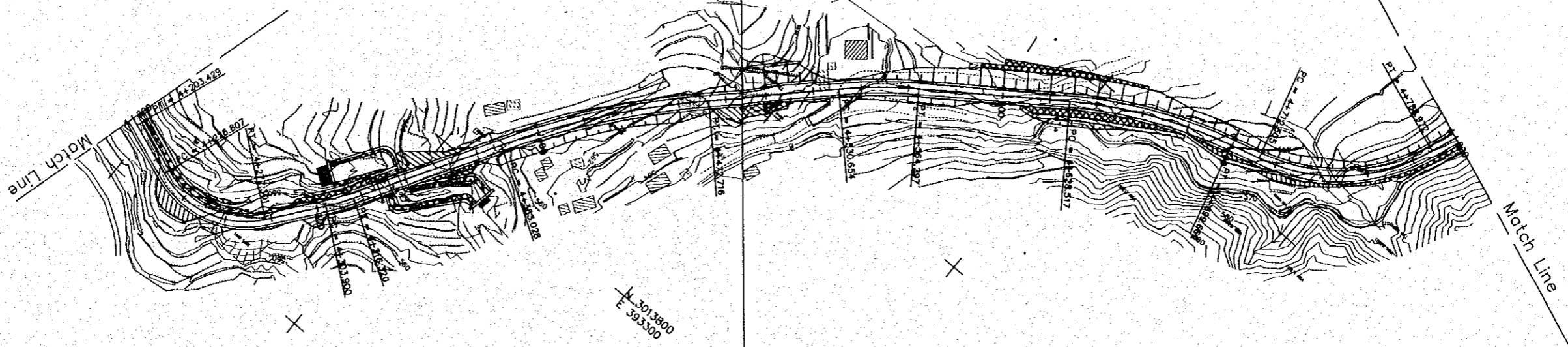
GRADE																															
PROPOSED HEIGHT	519.29	519.35	519.61	520.07	520.33	520.59	520.85	521.21	521.76	522.51	523.45	524.49	525.53	526.57	527.61	528.65	529.69	530.72	531.77	532.36	532.97	533.63	534.71	536.27	538.07	539.87	541.67	543.47	544.97	545.87	546.17
GROUND HEIGHT	518.13	518.60	518.91	519.24	519.36	519.33	519.64	519.89	520.35	521.61	523.10	523.73	524.58	525.15	526.05	527.27	528.73	529.94	531.15	531.36	532.06	532.30	532.78	533.05	537.15	539.26	541.15	543.05	544.28	545.46	545.74
STATION	STA.3	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600
CURVE ELEMENT																															
SUPER ELEVATION																															

A-2-07 : PLAN AND PROFILE
 STA.3+600 - STA.4+200



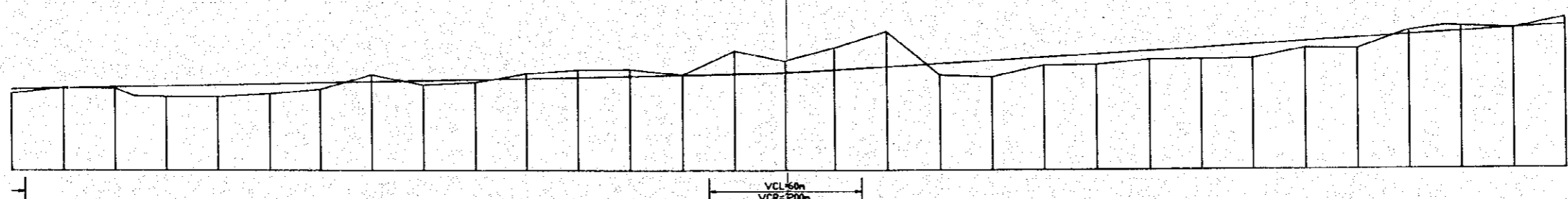
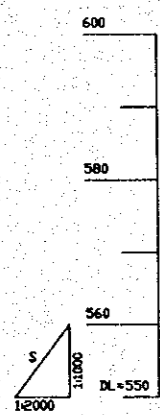
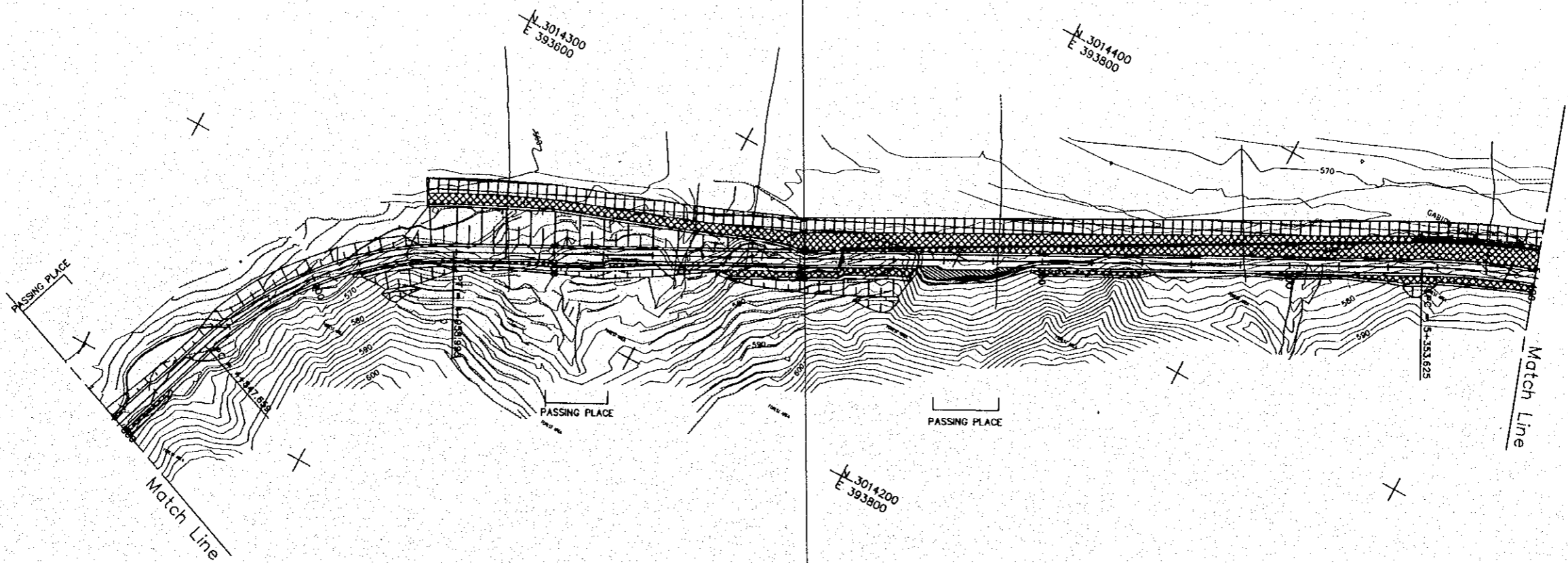
GRADE																																
PROPOSED HEIGHT	546.17	545.87	545.27	544.75	544.49	544.50	544.80	545.29	545.79	546.29	546.79	547.29	547.79	548.29	548.74	549.08	549.34	549.49	549.59	549.69	549.79	549.96	550.05	550.25	550.50	550.79	551.09	551.39	551.67	551.89	552.04	
GROUND HEIGHT	545.74	545.44	544.82	544.16	543.69	543.45	543.35	543.86	543.78	546.00	546.72	545.92	545.91	547.23	548.20	549.54	549.87	549.53	549.22	549.73	548.02	549.53	549.96	550.19	550.25	550.46	550.61	551.09	551.40	551.84	551.89	552.02
STATION	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA+4	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	
CURVE ELEMENT	R=30.00		L=24.23		R=40.00		L=22.32		R=35.00		L=25.43		R=150.00		L=42.76		R=45.00		L=117.62		R=45.00											
SUPER ELEVATION																			Left	Right												

A-2-08 : PLAN AND PROFILE
 STA.4+200 - STA.4+800



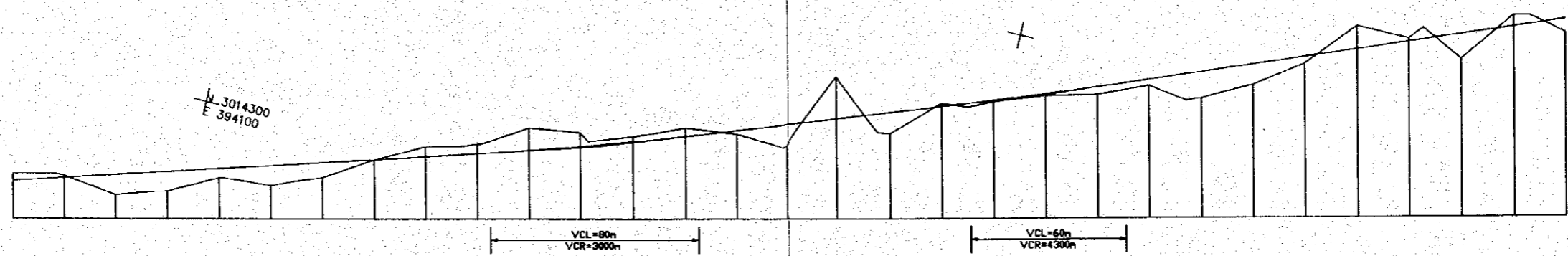
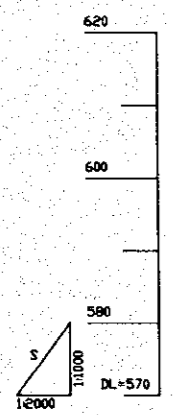
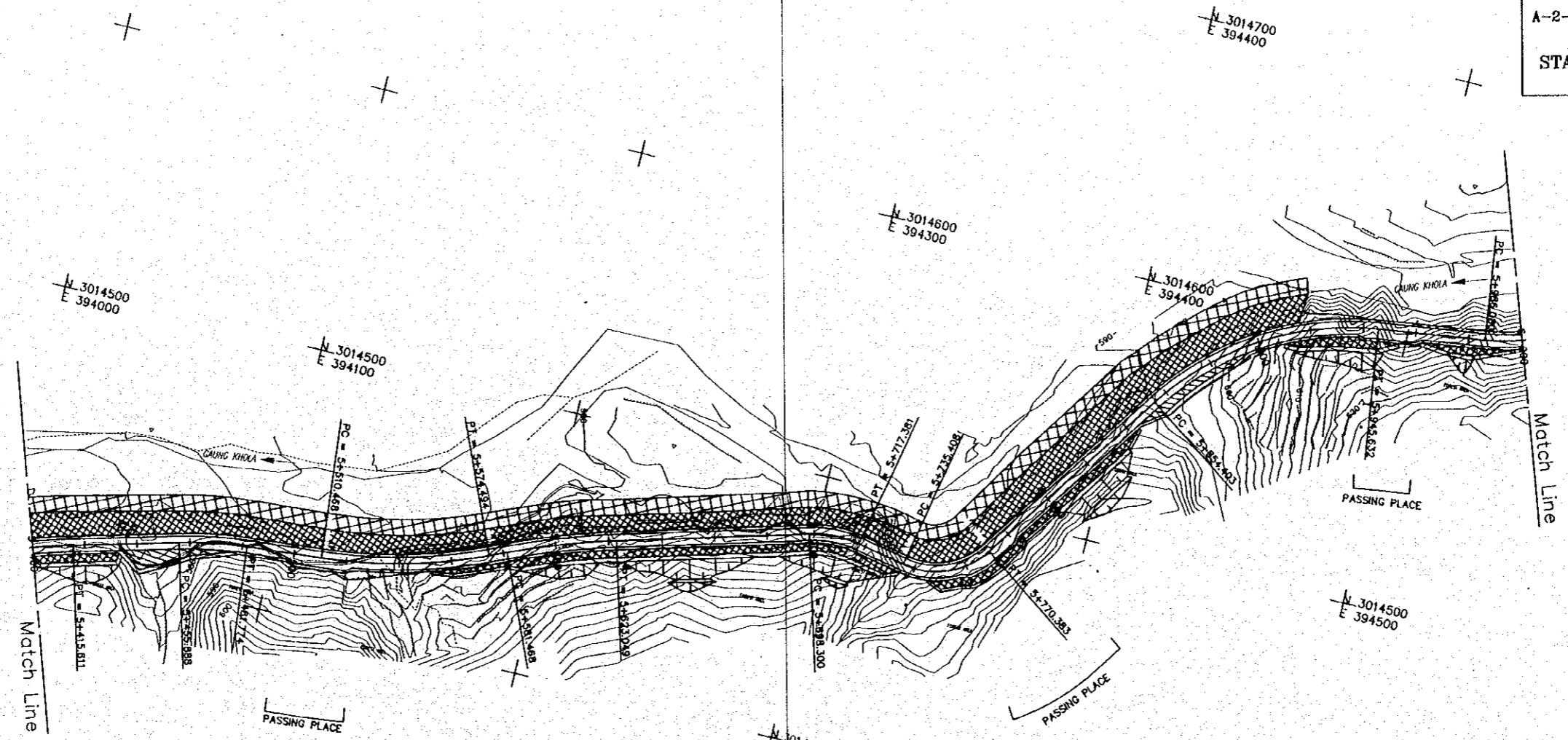
GRADE	+0.50% 178.00m																				+5.70% 167.00m																				-2.50% 140.00m																				+3.70% 115.00m																				+1.00% 325.00m																			
PROPOSED HEIGHT	552.04	552.14	552.24	552.34	552.44	552.54	552.64	552.87	553.44	554.35	555.49	556.63	557.77	558.91	560.05	560.88	561.33	560.83	559.30	557.32	560.33	559.83	559.54	559.65	560.18	561.11	562.25	563.39	564.44	565.19	565.62																																																																					
GROUND HEIGHT	552.02	552.25	551.06	552.20	552.19	553.00	551.31	551.65	552.33	553.68	556.87	557.23	559.80	560.28	559.76	559.28	561.03	561.16	560.38	559.30	557.32	560.27	560.39	560.31	560.10	559.44	561.12	562.15	563.00	563.21	564.87																																																																					
STATION	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800																																																																					
CURVE ELEMENT	R=45.00		L=23.38		R=40.00		L=26.60		R=100.00		L=66.71		R=350.00		L=51.94		R=200.00		L=64.22		R=200.00		R=80.00																																																																													
SUPER ELEVATION	Left																				Right																				Left																				Right																																							

A-2-00 : PLAN AND PROFILE
 STA.4+800 - STA.5+400



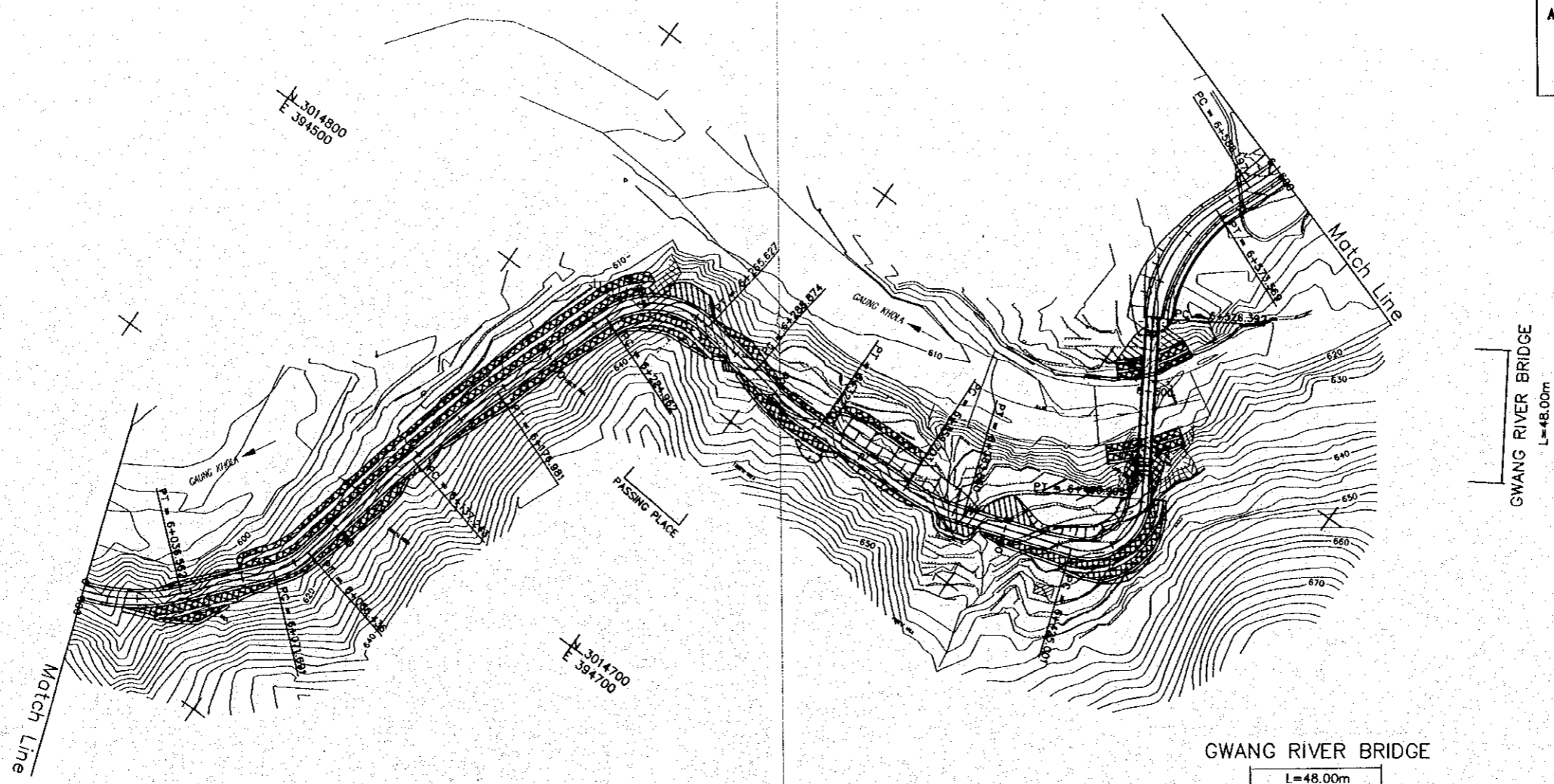
GRADE																																
PROPOSED HEIGHT	565.62	565.83	566.03	566.23	566.43	566.63	566.83	567.03	567.23	567.43	567.63	567.83	568.03	568.23	568.45	568.77	569.23	569.79	570.37	570.95	571.53	572.11	572.69	573.27	573.85	574.43	575.01	575.59	576.17	576.75	577.33	
GROUND HEIGHT	564.87	565.92	565.81	564.23	564.18	564.73	565.56	568.36	566.44	566.88	568.57	569.25	569.32	568.28	572.87	570.86	573.46	576.33	568.16	567.78	569.99	570.08	571.06	571.08	571.19	573.15	572.99	576.42	577.13	576.73	578.71	
STATION	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.5	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	
CURVE ELEMENT	L=50.69			R=150.00						L=394.63										R=300.00												
SUPER ELEVATION	— Left																— Right															

A-2-10 : PLAN AND PROFILE
 STA.5+400 - STA.6+000



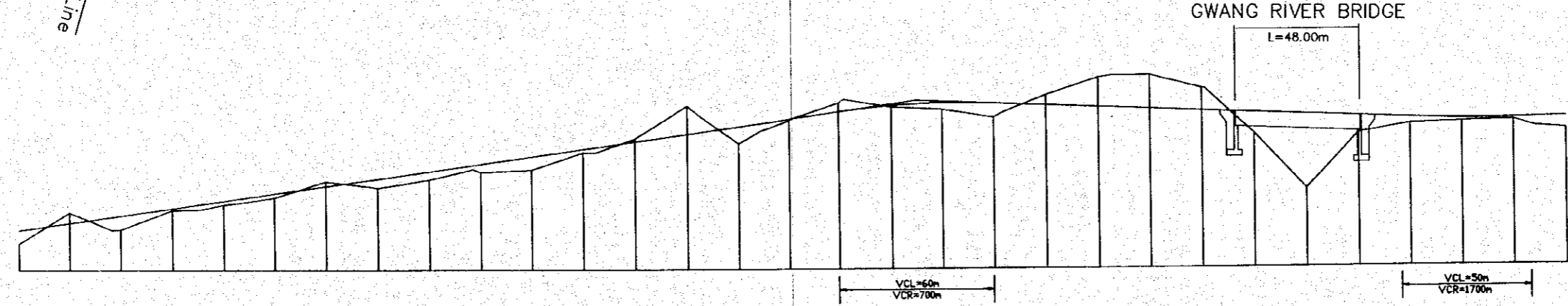
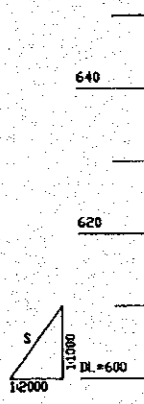
GRADE																																
PROPOSED HEIGHT	577.33	577.91	578.49	579.07	579.65	580.23	580.81	581.39	581.97	582.55	583.13	583.71	584.29	584.87	585.45	586.03	586.61	587.19	587.77													
GROUND HEIGHT	578.71	578.29	574.60	575.32	577.87	576.40	577.94	581.36	583.08	584.39	587.46	586.60	585.76	587.42	586.29	589.87	597.11	586.23	591.98													
STATION	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760													
CURVE ELEMENT	R=300.00		L=40.28		R=150.00		L=20.70		R=200.00				R=300.00		L=75.25		R=40.00		L=18.03		R=30.00				L=84.02		R=110.00		L=40.45		R=70.00	
SUPER ELEVATION																																

A-2-11 : PLAN AND PROFILE
 STA.6+000 - STA.6+600



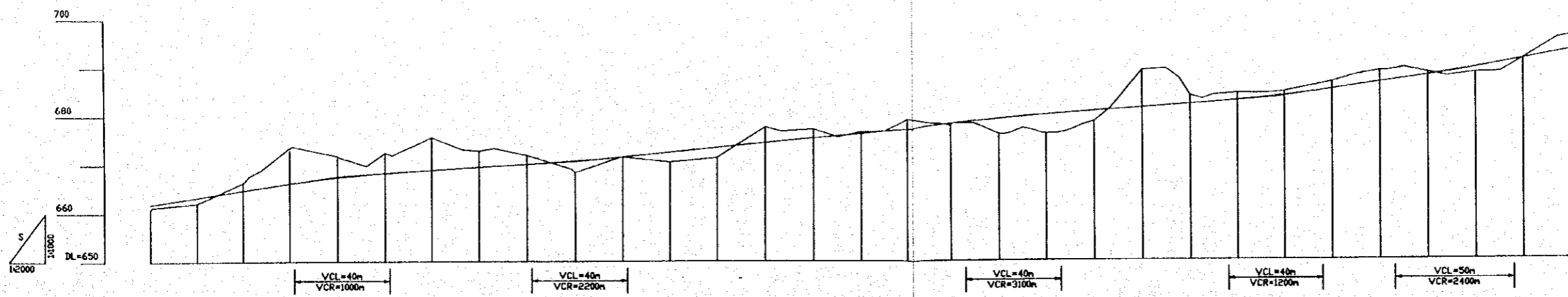
GWANG RIVER BRIDGE
 L=48.00m

GWANG RIVER BRIDGE
 L=48.00m

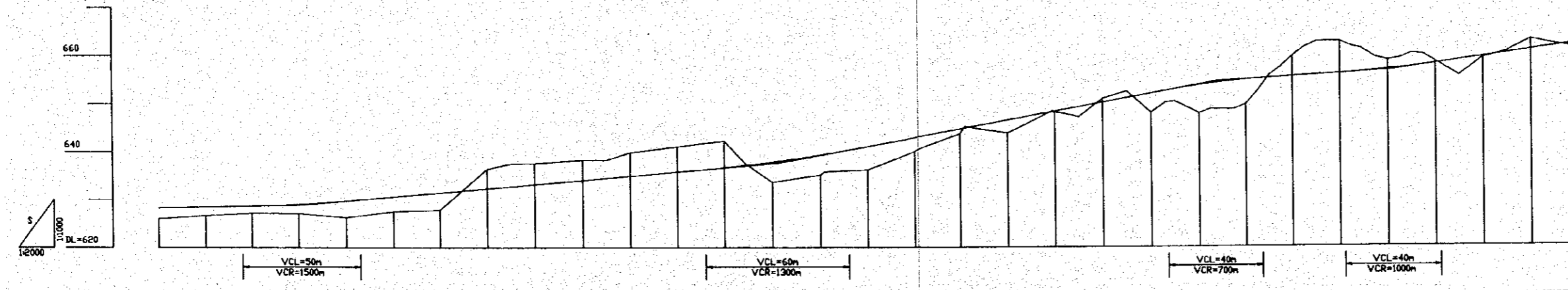


GRADE																																																																																																																																																																																																																																																																																										
PROPOSED HEIGHT	607.64	609.04	610.44	611.84	613.24	614.64	616.04	617.44	618.84	620.24	621.64	623.04	624.44	625.84	627.24	628.64	630.04	631.44	632.84	634.24	635.64	637.04	638.44	639.84	641.24	642.64	644.04	645.44	646.84	648.24	649.64	651.04	652.44	653.84	655.24	656.64	658.04	659.44	660.84	662.24	663.64	665.04	666.44	667.84	669.24	670.64	672.04	673.44	674.84	676.24	677.64	679.04	680.44	681.84	683.24	684.64	686.04	687.44	688.84	690.24	691.64	693.04	694.44	695.84	697.24	698.64	700.04	701.44	702.84	704.24	705.64	707.04	708.44	709.84	711.24	712.64	714.04	715.44	716.84	718.24	719.64	721.04	722.44	723.84	725.24	726.64	728.04	729.44	730.84	732.24	733.64	735.04	736.44	737.84	739.24	740.64	742.04	743.44	744.84	746.24	747.64	749.04	750.44	751.84	753.24	754.64	756.04	757.44	758.84	760.24	761.64	763.04	764.44	765.84	767.24	768.64	770.04	771.44	772.84	774.24	775.64	777.04	778.44	779.84	781.24	782.64	784.04	785.44	786.84	788.24	789.64	791.04	792.44	793.84	795.24	796.64	798.04	799.44	800.84	802.24	803.64	805.04	806.44	807.84	809.24	810.64	812.04	813.44	814.84	816.24	817.64	819.04	820.44	821.84	823.24	824.64	826.04	827.44	828.84	830.24	831.64	833.04	834.44	835.84	837.24	838.64	840.04	841.44	842.84	844.24	845.64	847.04	848.44	849.84	851.24	852.64	854.04	855.44	856.84	858.24	859.64	861.04	862.44	863.84	865.24	866.64	868.04	869.44	870.84	872.24	873.64	875.04	876.44	877.84	879.24	880.64	882.04	883.44	884.84	886.24	887.64	889.04	890.44	891.84	893.24	894.64	896.04	897.44	898.84	900.24	901.64	903.04	904.44	905.84	907.24	908.64	910.04	911.44	912.84	914.24	915.64	917.04	918.44	919.84	921.24	922.64	924.04	925.44	926.84	928.24	929.64	931.04	932.44	933.84	935.24	936.64	938.04	939.44	940.84	942.24	943.64	945.04	946.44	947.84	949.24	950.64	952.04	953.44	954.84	956.24	957.64	959.04	960.44	961.84	963.24	964.64	966.04	967.44	968.84	970.24	971.64	973.04	974.44	975.84	977.24	978.64	980.04	981.44	982.84	984.24	985.64	987.04	988.44	989.84	991.24	992.64	994.04	995.44	996.84	998.24	999.64	1000.04
GROUND HEIGHT	605.07	611.07	607.76	611.49	612.53	613.84	616.97	615.70	617.29	618.71	619.11	622.41	623.06	631.25	624.03	628.41	631.70	630.83	630.37	628.79	633.00	636.26	636.66	634.15	625.32	614.89	623.45	627.12	627.38	627.64	625.98	628.27																																																																																																																																																																																																																																																										
STATION	STA 6	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600																																																																																																																																																																																																																																																											
CURVE ELEMENT																																																																																																																																																																																																																																																																																										
SUPER ELEVATION																																																																																																																																																																																																																																																																																										

A-2-12 : PLAN AND PROFILE
 STA.6+600 - STA.7+800

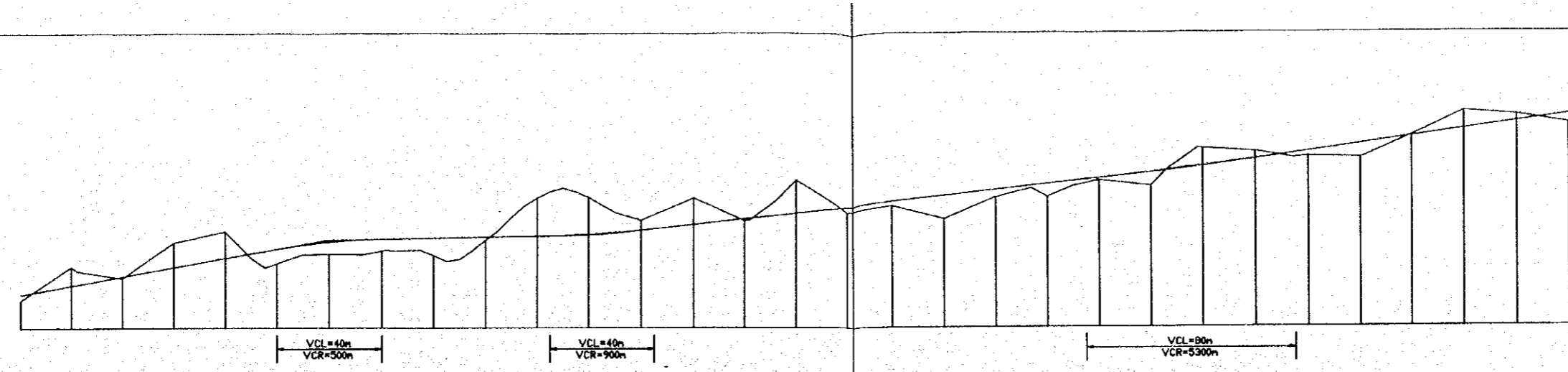
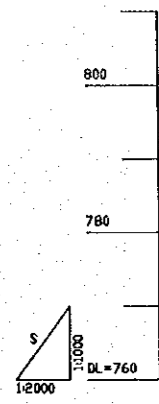


GRADE																															
PROPOSED HEIGHT	661.88	663.28	664.68	666.08	667.32	668.16	668.76	669.36	669.96	670.63	671.49	672.45	673.41	674.37	675.33	676.29	677.25	678.21	679.14	679.93	680.64	681.34	682.04	682.75	683.59	684.96	686.34	687.76	689.34	691.09	692.89
GROUND HEIGHT	660.85	662.09	664.23	673.43	671.69	672.31	675.48	675.69	671.80	668.29	671.47	670.41	671.23	677.59	677.11	676.64	679.29	677.87	676.01	676.04	678.20	689.08	683.86	684.22	684.45	686.44	688.70	688.36	688.32	691.12	695.91
STATION	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800
CURVE ELEMENT																															
SUPER ELEVATION																															

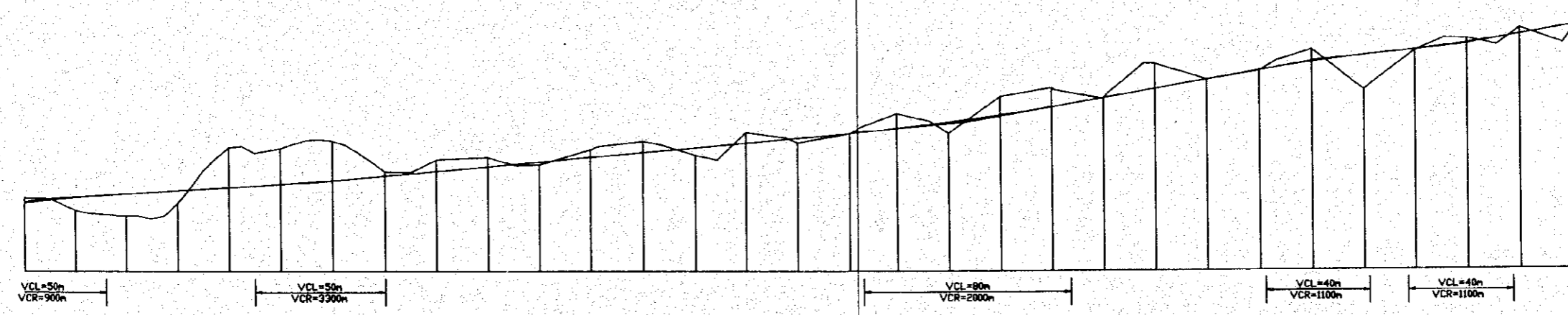
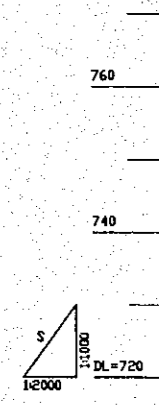


GRADE																															
PROPOSED HEIGHT	628.27	628.47	628.68	629.06	629.71	630.56	631.42	632.28	633.14	634.00	634.86	635.72	636.61	637.75	639.20	640.94	642.74	644.54	646.34	648.14	649.94	651.74	653.41	654.52	655.16	655.76	656.32	657.48	659.08	660.48	661.88
GROUND HEIGHT	625.98	626.69	627.16	627.10	626.28	627.50	627.87	626.34	627.23	628.22	629.74	630.98	632.15	633.56	635.09	636.11	639.92	643.24	643.61	648.02	650.69	647.76	647.60	649.48	659.32	662.34	658.42	658.10	658.88	662.61	660.85
STATION	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.7	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200
CURVE ELEMENT																															
SUPER ELEVATION																															

A-2-15 : PLAN AND PROFILE
 STA.8+400 - STA.9+600



GRADE																																
PROPOSED HEIGHT	766.33	768.03	769.73	771.43	773.13	774.83	776.53	778.23	779.93	781.63	783.33	785.03	786.73	788.43	790.13	791.83	793.53	795.23	796.93	798.63												
GROUND HEIGHT	765.28	771.58	769.40	776.07	778.18	772.15	773.88	774.49	773.66	776.54	784.58	784.70	780.27	784.49	780.19	787.93	781.72	782.91	784.87	785.95	787.03	788.11	789.25	790.46	791.75	793.11	794.49	795.87	797.25	798.63	799.99	800.00
STATION	STA.8	+020	+040	+060	+080	+100	+120	+140	+160	+180	+200	+220	+240	+260	+280	+300	+320	+340	+360	+380	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	
CURVE ELEMENT																																
SUPER ELEVATION																																



GRADE																																
PROPOSED HEIGHT	733.87	733.10	734.18	734.86	735.46	736.06	736.68	737.40	738.24	739.14	740.04	740.94	741.84	742.74	743.64	744.54	745.44	746.34	747.28	748.41	749.74	751.27	752.96	754.66	756.36	758.06	759.62	760.83	761.83	762.06	764.83	766.33
GROUND HEIGHT	734.09	731.72	730.69	733.06	743.72	743.36	744.96	739.06	741.32	741.81	740.04	740.94	743.24	744.89	742.22	746.54	744.58	746.32	750.08	746.30	749.74	754.91	752.77	759.37	756.31	757.96	761.95	754.34	761.64	763.98	765.83	765.28
STATION	+400	+420	+440	+460	+480	+500	+520	+540	+560	+580	+600	+620	+640	+660	+680	+700	+720	+740	+760	+780	+800	+820	+840	+860	+880	+900	+920	+940	+960	+980	STA.9	
CURVE ELEMENT																																
SUPER ELEVATION																																