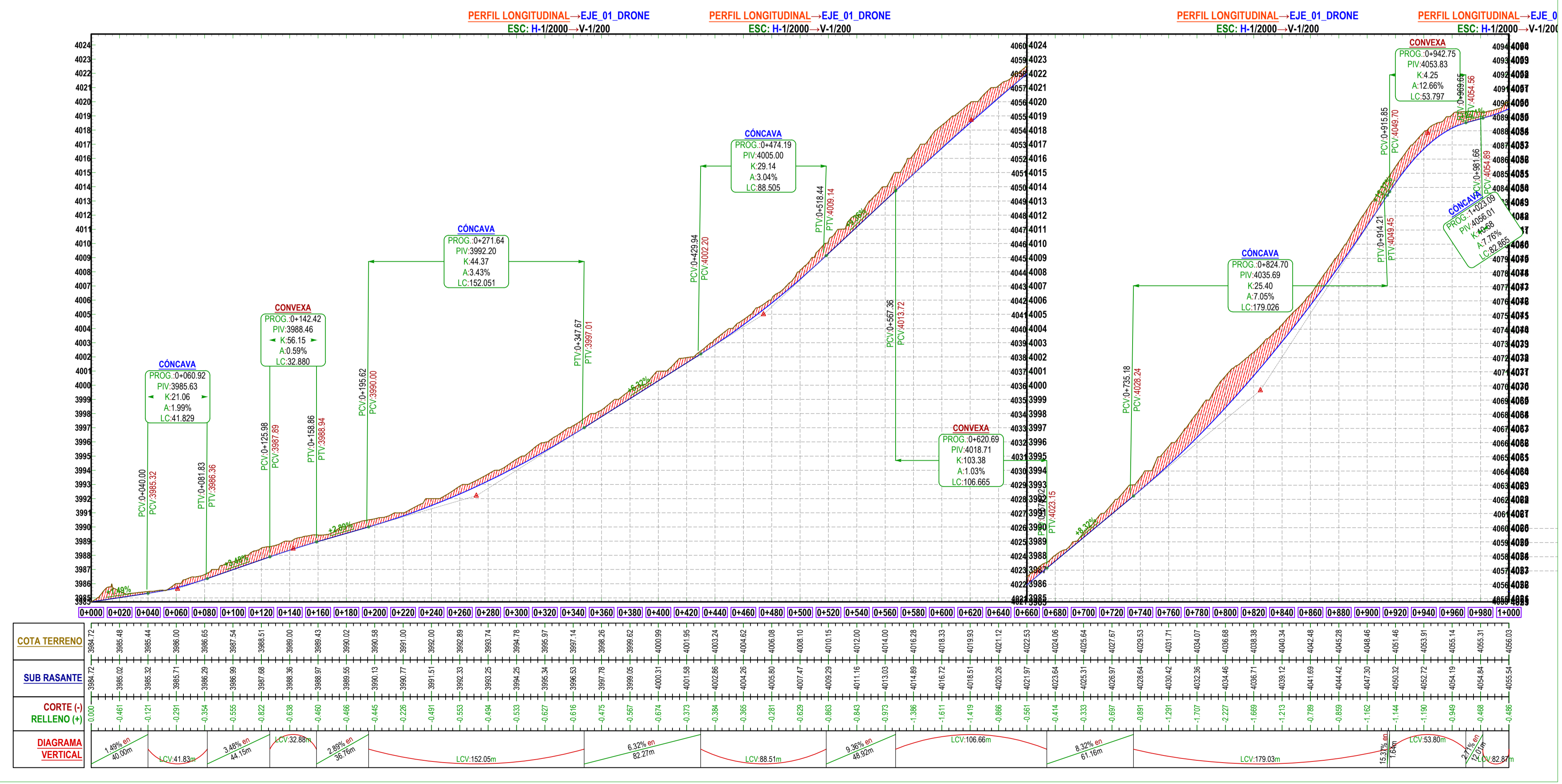


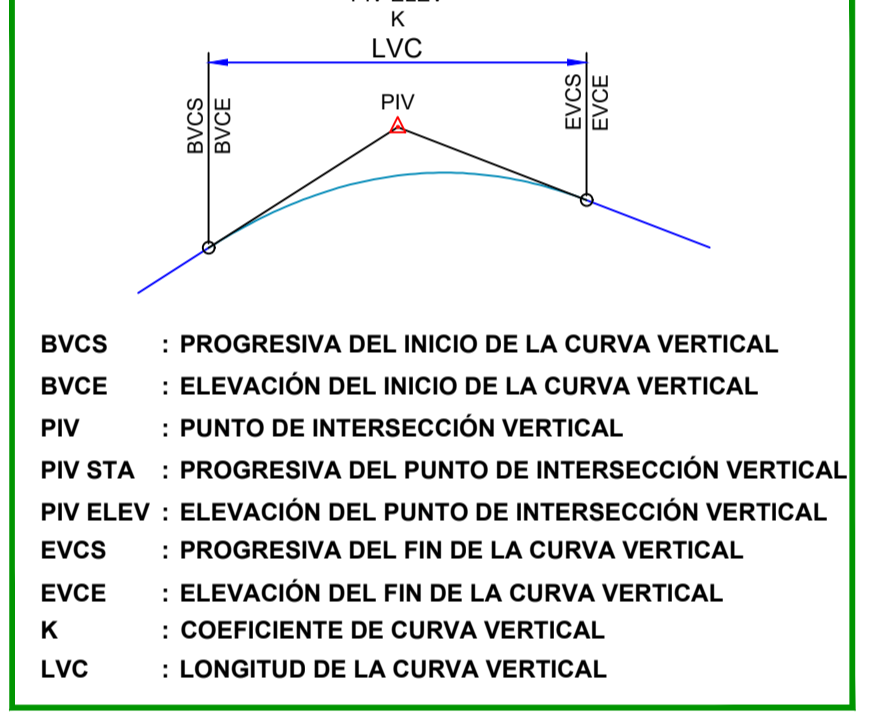
ELEMENTOS DE CURVA														
N°	S	R	L	T	Δ	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE	Sa	
PA-01	8	16.51	8.11	015°46'05"	16.46	0.57	0.57	0-196.23	0-212.74	389935.781	8242452.621	1.82		
PA-02	8	40	21.1	1.05	003°11'12"	2.11	0.01	1-798.78	1-800.89	390255.340	8243987.084	1.28		
PA-03	8	50	3.09	1.55	003°32'24"	3.09	0.02	2-265.38	2-268.47	390173.340	8244333.379	1.50		
PA-04	8	90	27.89	14.96	017°45'29"	27.78	1.08	0-474.19	0-502.08	390014.830	8242724.683	0.91		
PA-05	1	150	16.51	8.26	006°18'24"	16.50	0.23	2-616.55	2-833.06	390434.329	8244937.654	0.60		
PA-06	8	120	19.24	9.64	009°11'04"	19.22	0.39	2-741.16	2-760.40	390407.920	8244865.475	0.72		
PA-07	1	50	25.36	12.96	029°03'29"	25.09	1.65	1.60	2-679.41	2-704.77	390365.948	8244810.711	1.50	
PA-08	8	50	9.61	4.82	011°00'34"	9.59	0.23	2-637.86	2-647.46	390363.480	8244733.050	1.50		
PA-09	1	120	24.42	12.25	011°39'37"	24.38	0.62	2-545.05	2-569.47	390321.096	8244698.862	0.72		
PA-10	8	50	37.14	18.84	023°38'49"	36.88	1.95	1.91	2-491.71	2-528.86	390289.784	8244663.401	0.91	
PA-11	1	50	9.79	4.91	011°13'26"	9.78	0.24	2-434.41	2-444.20	390268.038	8244599.539	1.50		
PA-12	8	50	4.62	2.31	005°17'19"	4.61	0.05	0.05	2-407.18	2-411.79	390253.571	8244569.438	1.50	
PA-13	8	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	2-155.86	2-175.38	390211.094	8244332.002	1.50	
PA-14	1	50	8.78	4.40	010°03'43"	8.77	0.19	0.19	2-348.43	2-357.21	390219.647	8244302.812	1.50	
PA-15	1	60	18.22	9.18	017°24'01"	18.15	0.69	2-300.76	2-318.98	390236.643	8244472.174	1.28		
PA-16	1	60	7.53	3.77	007°11'15"	7.52	0.12	2-227.90	2-235.40	390218.054	8244397.808	1.28		
PA-17	8	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	2-155.86	2-175.38	390211.094	8244332.002	1.50	
PA-18	1	50	15.52	7.82	017°47'01"	15.46	0.61	0.60	2-127.63	2-143.15	390219.647	8244302.812	1.50	
PA-19	8	33	33.84	16.93	005°45'06"	33.82	0.42	1-973.93	2-007.76	390215.961	8244150.237	0.33		
PA-20	8	50	15.58	7.85	017°51'19"	15.52	0.61	1-954.89	1-970.48	390218.098	8244130.076	1.50		
PA-21	8	50	14.73	7.42	016°52'39"	14.67	0.55	0.54	1-904.68	1-919.40	390237.240	8244083.063	1.50	
PA-22	1	50	4.96	2.48	005°41'12"	4.96	0.06	0.06	1-881.97	1-886.93	390254.651	8244061.586	1.50	
PA-23	1	31	36.58	20.84	068°39'58"	34.44	6.31	1-821.91	1-858.49	390280.379	8244222.485	2.31		
PA-24	8	150	5.88	2.84	002°10'17"	5.88	0.03	1-726.28	1-731.96	390252.644	8243915.975	0.60		
PA-25	8	50	9.54	4.78	010°55'56"	9.53	0.23	1-630.36	1-639.90	390252.644	8243821.969	1.50		
PA-26	1	50	14.32	7.21	016°24'49"	14.27	0.52	0.51	1-600.04	1-614.36	390257.953	8243794.483	1.50	
PA-27	1	118	33.31	16.76	016°08'03"	33.20	1.18	1.17	1-562.36	1-595.67	390255.245	8243766.267	0.73	
PA-28	1	100	15.72	7.87	009°01'15"	15.70	0.31	1-535.45	1-551.17	390240.247	8243732.958	0.84		

ELEMENTOS DE CURVA														
N°	S	R	L	T	Δ	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE	Sa	
PA-29	1	50	12.32	6.19	014°06'48"	12.29	0.38	0.38	1-460.66	1-472.98	390203.063	8243667.094	1.50	
PA-30	8	50	22.97	11.69	028°19'09"	22.77	1.35	1.31	1-431.67	1-454.64	390186.240	8243650.113	1.50	
PA-31	8	49	24.14	12.32	028°13'31"	23.90	1.52	1.48	1-407.30	1-431.44	390178.581	8243627.109	1.50	
PA-32	1	50	11.21	5.63	012°50'48"	11.19	0.32	0.31	1-380.28	1-391.49	390184.333	8243593.846	1.50	
PA-33	1	234	40.58	20.34	009°55'14"	40.53	0.88	0.88	1-324	1-364.59	390182.127	8243552.243	0.43	
PA-34	8	168	35.96	18.05	012°14'13"	35.89	0.96	0.96	1-273.35	1-309.31	390170.226	8243500.506	0.55	
PA-35	1	100	6.11	3.06	003°30'31"	6.11	0.05	0.05	1-238.50	1-244.61	390169.601	8243450.667	0.84	
PA-36	1	100	2.64	1.32	001°30'39"	2.64	0.01	0.01	1-127.65	1-130.29	390161.312	8243338.386	1.50	
PA-37	1	150	24.74	12.40	009°28'56"	24.71	0.51	0.51	1-066.25	1-090.99	390156.280	8243288.264	0.60	
PA-38	8	120	17.91	8.97	008°33'06"	17.89	0.33	0.33	1-030.51	1-048.43	390146.014	8243250.434	0.72	
PA-39	8	100	23.70	11.90	013°34'41"	23.64	0.71	0.70	0-964.32	0-988.02	390136.697	8243187.485	0.84	
PA-40	1	120	29.56	14.84	014°06'46"	29.48	0.92	0.91	0-921.33	0-950.89	390143.559	8243147.592	0.72	
PA-41	8	120	13.34	6.68	006°22'17"	13.34	0.19	0.19	0-857.55	0-870.90	390134.582	8243106.178	0.72	
PA-42	1	60	28.50	14.53	027°13'04"	28.24	1.73	1.68	0-790.80	0-819.31	390133.759	8243016.183	1.28	
PA-43	8	100	9.54	4.78	005°11'46"	9.50	0.10	0.10	0-685.53	0-694.60	390079.626	8242914.976	0.84	
PA-44	8	100	15.60	7.82	008°56'26"	15.59	0.31	0.30	0-652.02	0-667.62	390067.889	8242877.076	0.84	
PA-45	1	100	3.41	1.71	001°57'20"	3.41	0.01	0.01	0-586.30	0-590.64	390050.664	8242817.342	0.84	
PA-46	1	100	7.58	3.79	004°19'39"	7.55	0.07	0.07	0-537.10	0-544.65	390037.808	8242772.001	0.84	
PA-47	1	50	10.55	5.30	012°02'41"	10.54	0.28	0.28	0-507.85	0-518.41	390028.238	8242745.931	1.50	
PA-48	8	100	1.30	0.65	000°14'39"	1.30	0.00	0.00	0-436.34	0-437.64	390002.000	8242675.057	0.84	
PA-49	1	100	14.09	7.06	008°04'20"	14.08	0.25	0.25	0-380.57	0-394.66	389990.259	8242627.086	0.84	
PA-50	8	150	5.22	2.61	001°50'42"	5.22	0.02	0.02	0-324.13	0-329.36	389967.826	8242570.568	0.60	
PA-51	8	50	12.86	6.47	014°44'32"	12.83	0.42	0.41	0-236.83	0-249.69	389939.292	8242491.997	1.50	
PA-52	1	50	9.31	4.67	010°40'12"	9.30	0.22	0.22	0-156.42	0-165.73	389898.350	8242414.673	1.50	
PA-53	1	60	24.21	12.21	023°07'22"	24.05	1.24	1.22	0-120.23	0-144.44	389898.270	8242387.510	1.28	
PA-54	8	335	23.13	11.57	003°57'06"	23.12	0.20	0.20	0-056.35	0-079.48	389864.824	8242323.005	0.33	
PA-55	8	50	40.22	20.12	048°05'09"	39.14	4.34	3.90	0-045.51	0-089.54	389856.504	8242328.339	1.50	

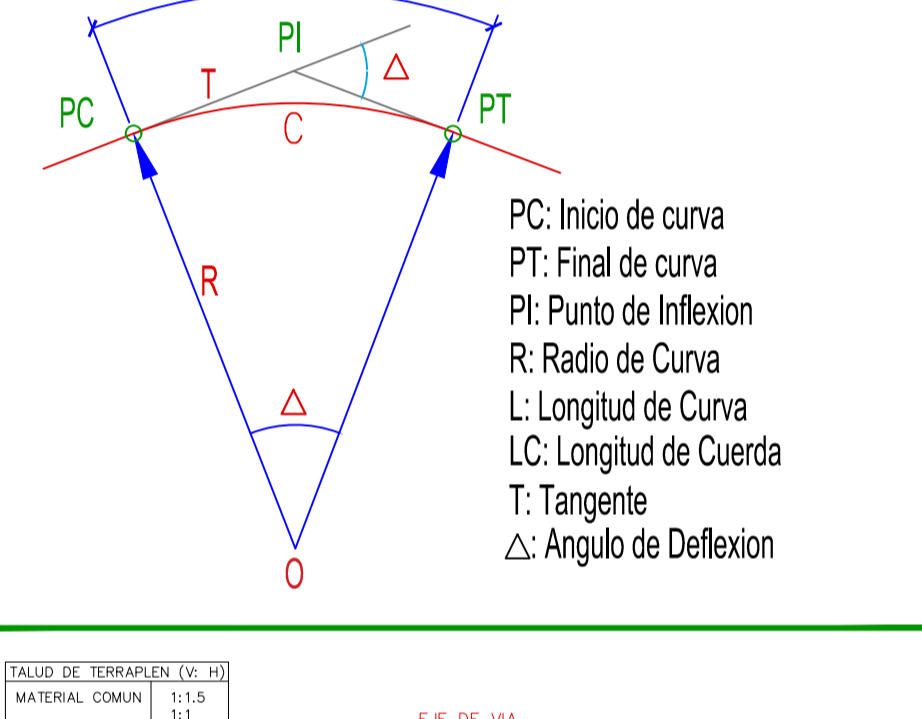
**PLANO DE PERFIL LONGITUDINAL** ESC: H: 1/2000 V: 1/200



**ELEMENTOS DE CURVA VERTICAL**



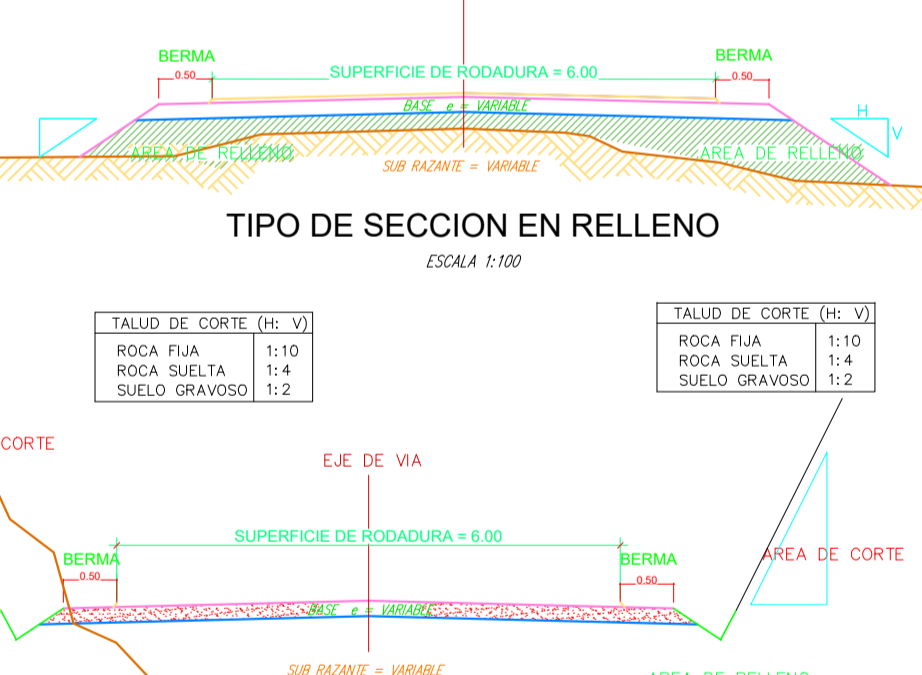
**ELEMENTOS DE CURVA HORIZONTAL**



**DATOS DE DISEÑO**

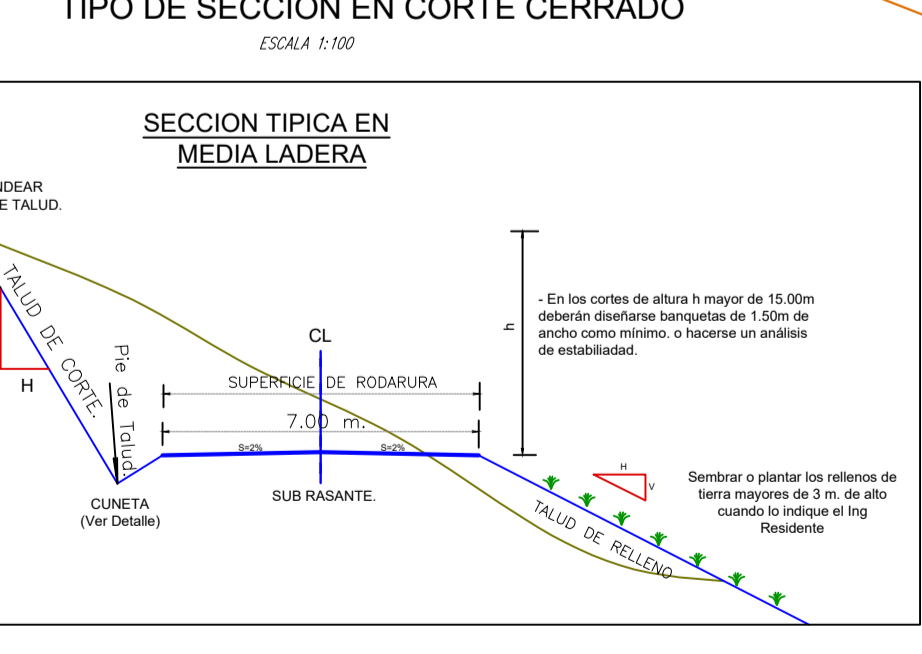
INDICE MEDIO DIARIO	: MENOR DE 50 VEH.
VELOCIDAD DIRECTRIZ	: 20 km/h
PENDIENTE MINIMA	: 0.50 %
PENDIENTE MAXIMA	: 12.00 %
RADIO MINIMO CURVATURA	: 15.00 mts.
RADIO MINIMO EXCEPCIONAL	: 12.00 mts.
SUPERFICIE DE RODADURA	: 4.50 mts.
ANCHO DE BERMA	: No somerseras
BOMBEO	: 2.00 %
PERALTE MINIMO	: 2.00 %
PERALTE MAXIMO NORMAL	: 6.00 %
PERALTE MAXIMO EXCEPCIONAL	: 10.00 %
TALUD EN RELLENO	: 1 : 2
ESPAZOR DE AFIRMANDO	: 0.50 x 0.30 mts.
CUNETAS	: 0.50 x 0.30 mts.
PLAZOLETA DE CRUCE	: 3.50 x 30.00 mts.

**TIPO DE TERRENO**  
ADJUNTO EN METRADO DE EXPLANACIONES



**LEYENDA**

- Curva Mayor C5m
- Curva Menor C1m
- Punto De Estacion
- Punto De Balz
- Bazon De Desague
- Canal
- Acceso
- Eje Proyectado



**UNIVERSIDAD NACIONAL DEL ALTIPLANO**  
**FACULTAD DE CIENCIAS AGRARIAS**  
**"ESCUELA PROFESIONAL DE INGENIERIA TOPOGRAFICA Y AGRIMENSURA"**

**PROYECTO:**  
**"COMPARACION DE VOLUMEN DE MOVIMIENTO DE TIERRAS EMPLEANDO VEHICULO AEREO NO TRIPULADO Y METODO CONVENCIONAL DEL BOTADERO MUNICIPAL A CAPILLA CANCHARANI DEL TRAMO KM 0+000 AL 2+950, PUNO."**

**TESISTAS:**  
 - EDUARD PILCO CONTRADO  
 - RONAL CALSINA GARCIA

**DATUM:** WGS 84  
**SISTEMA DE COORDENADAS:** UTM  
**HEMISFERIO:** Sur  
**ZONA:** 19

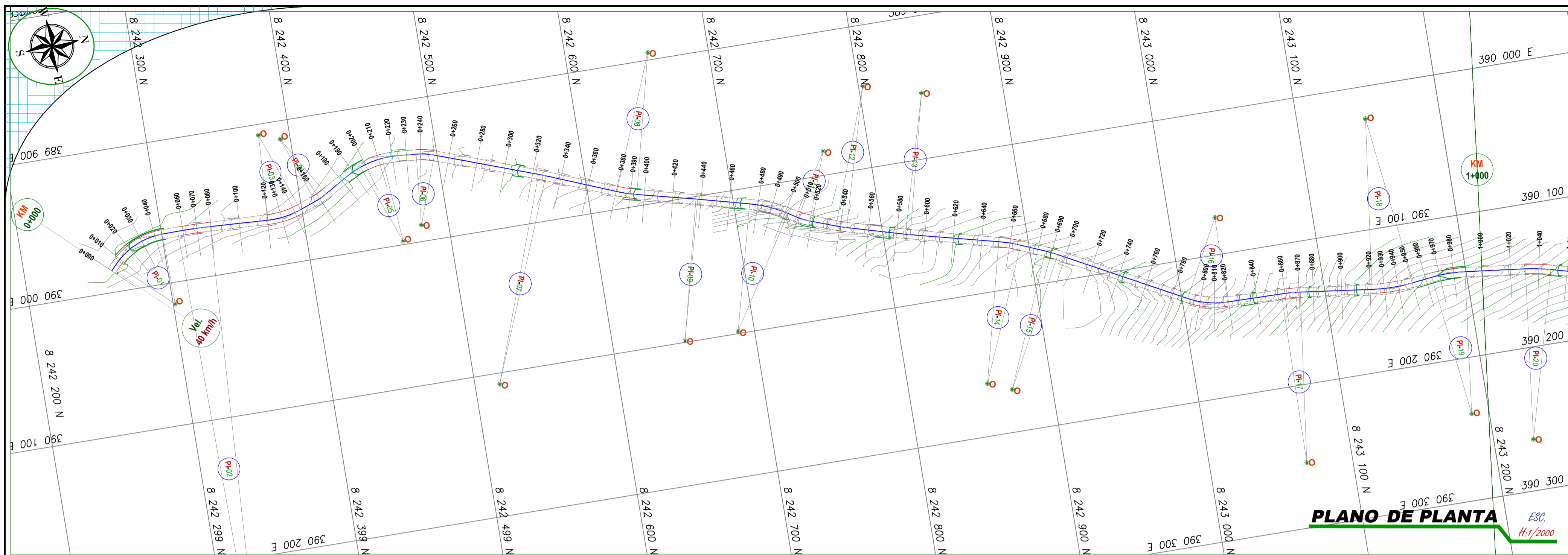
**DIBUJO Y DISEÑO:**  
 E.P.C.

**PLANO:**  
**PLANTA Y PERFIL LONGITUDINAL**  
 LEVANTAMIENTO TOPOGRAFICO CON DRON  
**KM: 00+000 - 1+000**

**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

**ESCALA:** INDICADA  
**FECHA:** miércoles, 14 de Agosto de 2024

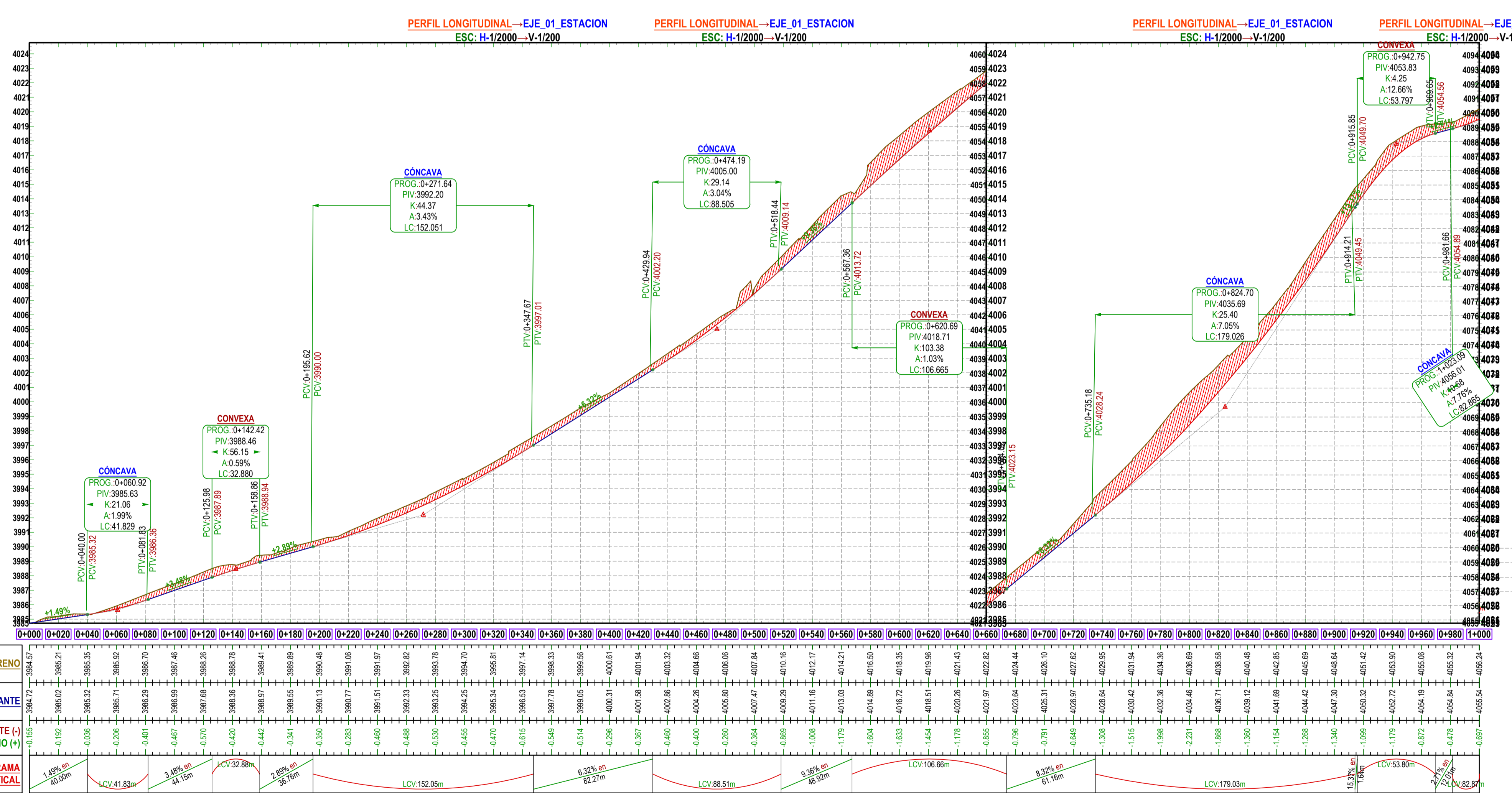
**LAMINA:**  
**PP-01**



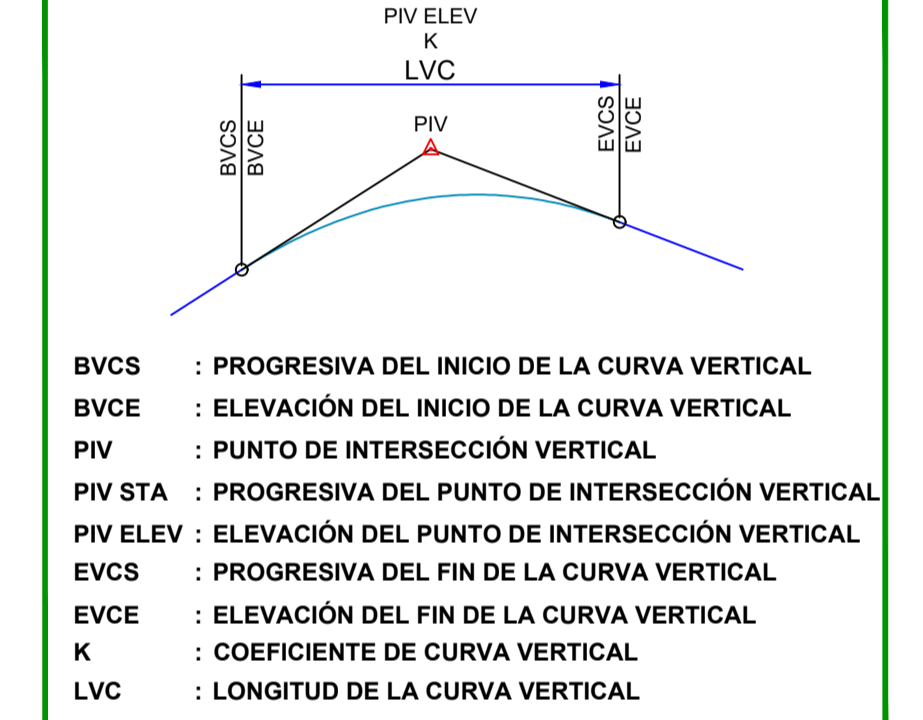
ELEMENTOS DE CURVA												
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE
PA-01	B	60	16.51	8.31	015°46'05"	16.46	0.57	0.57	0-196.23	0-212.74	389955.787	8242452.621
PA-02	B	40	2.11	1.05	003°03'12"	2.11	0.01	0.01	-1798.78	-1800.89	390255.340	8243987.084
PA-03	B	50	3.09	1.55	003°32'24"	3.09	0.02	0.02	-2265.38	-2268.47	390217.340	8244433.379
PA-04	B	90	27.89	14.06	017°45'29"	27.78	1.09	1.08	0-474.19	0-502.08	390014.830	8242724.683
PA-05	B	150	16.51	8.26	006°18'24"	16.50	0.23	0.23	-2416.55	-2433.06	390434.329	8244937.654
PA-06	B	120	19.24	9.64	009°11'04"	19.22	0.39	0.39	-2741.16	-2760.40	390407.920	8244865.475
PA-07	B	50	25.36	12.96	029°03'29"	25.09	1.65	1.60	-2479.41	-2704.77	390395.948	8244810.711
PA-08	B	50	9.61	4.82	011°00'34"	9.59	0.23	0.23	-2437.86	-2447.46	390363.480	8244733.050
PA-09	B	120	24.42	12.25	011°58'39"	24.38	0.62	0.62	-2545.05	-2569.47	390321.096	8244698.862
PA-10	B	90	37.14	18.84	023°38'49"	36.88	1.95	1.91	-2491.71	-2528.86	390289.784	8244653.401
PA-11	B	50	9.79	4.91	011°13'26"	9.78	0.24	0.24	-2434.41	-2444.20	390268.038	8244599.539
PA-12	B	50	4.62	2.31	005°17'19"	4.61	0.05	0.05	-2407.18	-2411.79	390253.571	8244569.438
PA-13	B	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	-2175.38	-2195.88	390211.094	8244332.002
PA-14	B	50	15.52	7.82	017°47'01"	15.46	0.61	0.60	-2127.63	-2143.15	390216.647	8244302.812
PA-15	B	60	18.22	9.18	017°24'01"	18.15	0.70	0.69	-2300.76	-2318.98	390236.643	8244472.174
PA-16	B	60	7.53	3.77	007°11'15"	7.52	0.12	0.12	-2227.90	-2235.42	390218.054	8244397.808
PA-17	B	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	-2175.38	-2195.88	390211.094	8244332.002
PA-18	B	50	15.52	7.82	017°47'01"	15.46	0.61	0.60	-2127.63	-2143.15	390216.647	8244302.812
PA-19	B	33	33.84	16.93	005°45'00"	33.82	0.43	0.42	-1973.93	-2007.76	390215.961	8244158.237
PA-20	B	50	15.52	7.82	017°47'01"	15.46	0.61	0.61	-1954.89	-1970.48	390218.098	8244130.076
PA-21	B	50	14.73	7.42	016°52'39"	14.67	0.55	0.54	-1904.68	-1919.40	390237.240	8244083.063
PA-22	B	50	4.96	2.48	005°41'12"	4.96	0.06	0.06	-1881.97	-1896.93	390254.651	8244061.586
PA-23	B	31	36.58	20.84	068°36'58"	34.44	6.43	5.31	-1621.91	-1858.49	390280.379	8240222.485
PA-24	B	150	5.88	2.84	002°10'17"	5.88	0.03	0.03	-1726.28	-1731.96	390252.644	8243915.975
PA-25	B	60	9.54	4.78	010°55'56"	9.53	0.23	0.23	-1630.36	-1639.90	390252.644	8243821.969
PA-26	B	50	14.32	7.21	016°24'49"	14.27	0.52	0.51	-1600.04	-1614.36	390257.953	8243794.483
PA-27	B	118	33.31	16.76	016°05'03"	33.20	1.18	1.17	-1562.36	-1596.67	390255.245	8243766.267
PA-28	B	100	15.72	7.87	009°00'10"	15.70	0.31	0.31	-1535.45	-1551.17	390240.247	8243732.958

ELEMENTOS DE CURVA												
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE
PA-29	B	50	12.32	6.19	014°06'48"	12.29	0.38	0.38	-1460.66	-1472.98	390203.063	8243667.094
PA-30	B	50	22.97	11.69	028°19'09"	22.77	1.35	1.31	-1431.67	-1454.64	390186.240	8243650.113
PA-31	B	49	24.14	12.32	028°13'31"	23.90	1.52	1.48	-1407.30	-1431.44	390178.581	8243627.109
PA-32	B	50	11.21	5.63	012°50'28"	11.19	0.32	0.31	-1380.28	-1391.49	390184.333	8243585.846
PA-33	B	1234	40.58	20.34	009°55'14"	40.53	0.88	0.88	-1324	-1364.59	390182.127	8243525.243
PA-34	B	168	35.96	18.05	012°14'13"	35.89	0.96	0.96	-1273.35	-1309.31	390170.226	8243500.506
PA-35	B	100	6.11	3.06	003°30'13"	6.11	0.05	0.05	-1238.50	-1244.61	390169.601	8243450.667
PA-36	B	100	2.64	1.32	001°30'39"	2.64	0.01	0.01	-1127.65	-1130.29	390161.312	8243385.386
PA-37	B	150	24.74	12.40	009°29'56"	24.71	0.51	0.51	-1066.25	-1090.99	390165.280	8243288.264
PA-38	B	120	17.91	8.97	008°33'06"	17.89	0.33	0.33	-1030.51	-1048.43	390146.014	8243250.434
PA-39	B	100	23.70	11.90	013°34'41"	23.64	0.71	0.70	-964.32	-988.02	390136.697	8243187.485
PA-40	B	120	29.56	14.86	014°06'48"	29.48	0.92	0.91	-921.03	-950.89	390143.559	8243147.592
PA-41	B	120	3.14	1.71	001°57'20"	3.14	0.01	0.01	-887.55	-890.90	390134.582	8243076.183
PA-42	B	60	28.50	14.53	027°12'34"	28.24	1.73	1.68	-790.80	-819.31	390133.759	8243076.183
PA-43	B	100	9.54	4.78	005°11'46"	9.50	0.10	0.10	-685.53	-694.60	390079.626	8242914.976
PA-44	B	100	15.60	7.82	008°56'28"	15.59	0.31	0.30	-652.02	-667.62	390067.889	8242877.076
PA-45	B	100	3.41	1.71	001°57'20"	3.41	0.01	0.01	-586.30	-589.71	390050.664	8242817.342
PA-46	B	100	7.55	3.78	001°30'39"	7.55	0.07	0.07	-537.10	-544.65	390037.808	8242772.001
PA-47	B	50	10.55	5.30	012°02'41"	10.54	0.28	0.28	-507.85	-518.41	390028.238	8242745.931
PA-48	B	100	1.30	0.65	000°44'39"	1.30	0.00	0.00	-436.34	-437.64	390002.000	8242675.057
PA-49	B	100	14.09	7.06	008°04'20"	14.08	0.25	0.25	-380.57	-394.66	389990.259	8242627.086
PA-50	B	50	5.22	2.61	001°59'42"	5.22	0.02	0.02	-324.13	-329.36	389967.626	8242570.568
PA-51	B	50	12.86	6.47	014°44'32"	12.83	0.42	0.41	-236.83	-249.69	389939.292	8242191.997
PA-52	B	50	9.31	4.67	010°40'12"	9.30	0.22	0.22	-156.42	-165.73	389896.350	8242141.673
PA-53	B	60	24.21	12.27	023°07'22"	24.05	1.24	1.22	-102.23	-104.44	389868.270	8242387.510
PA-54	B	335	23.13	11.57	003°57'06"	23.12	0.20	0.20	-56.35	-57.95	389864.824	8242323.005
PA-55	B	50	40.22	21.27	048°05'09"	39.14	4.34	3.90	-040.50	-045.51	389856.504	8242279.338

**PLANO DE PERFIL LONGITUDINAL** ESC: H: 1/2000 V: 1/200



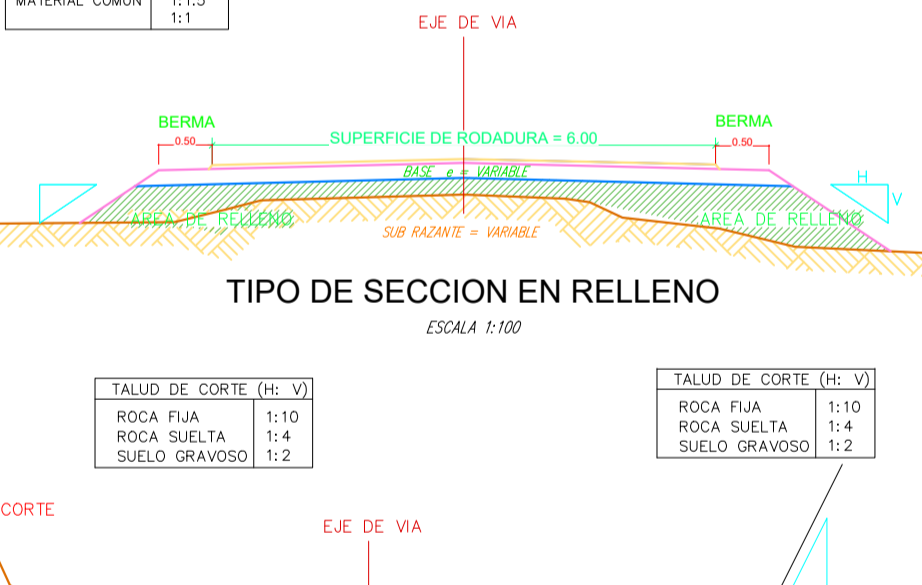
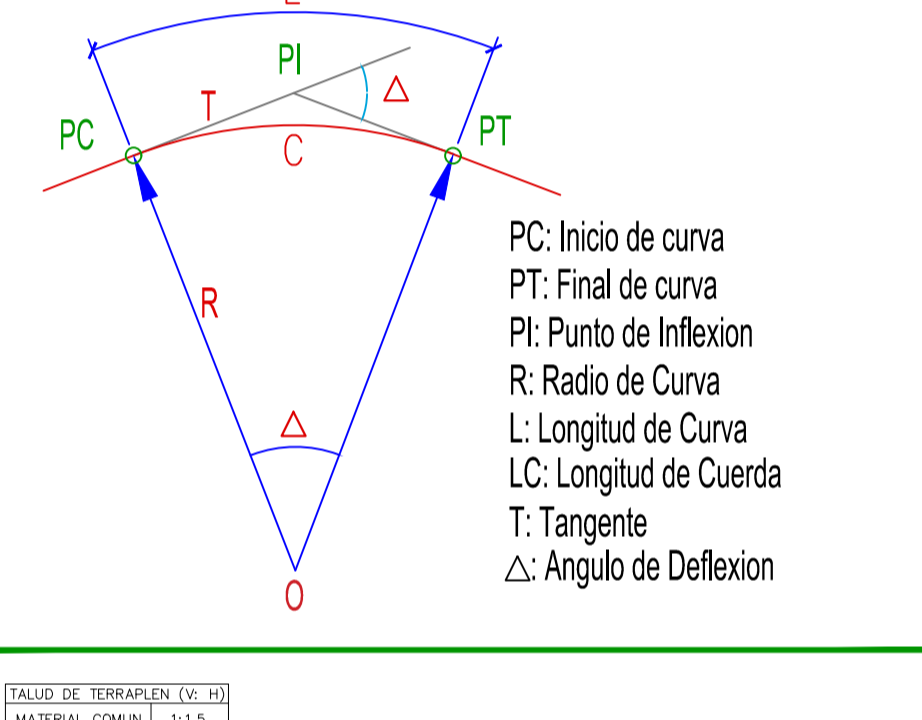
**ELEMENTOS DE CURVA VERTICAL**



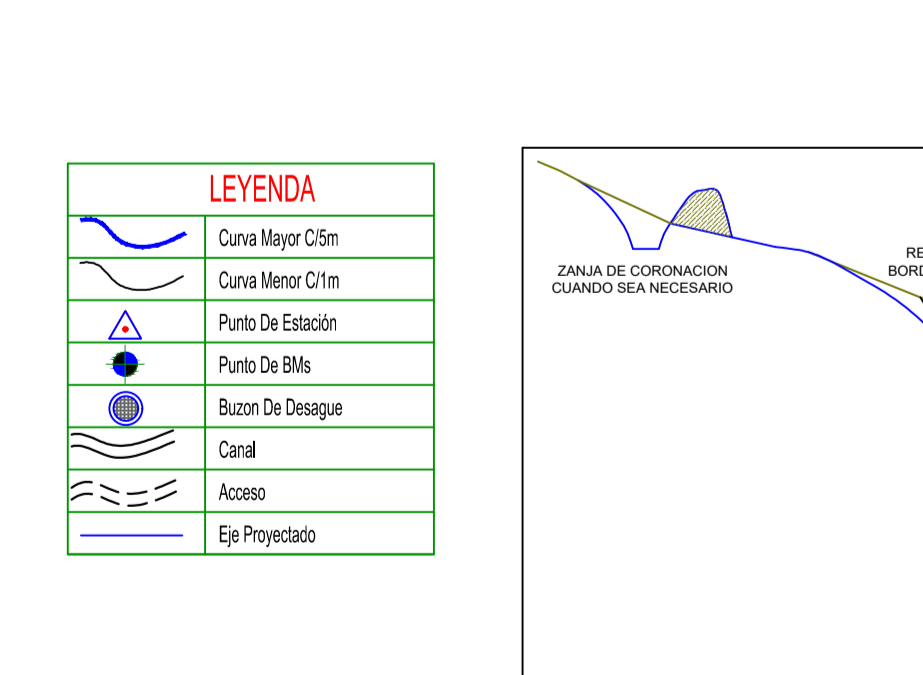
**DATOS DE DISEÑO**

INDICE MEDIO DIARIO	: MENOR DE 50 VEH.
VELOCIDAD DIRECTRIZ	: 20 km/h
PENDIENTE MINIMA	: 0.50 %
PENDIENTE MAXIMA	: 12.00 %
RADIO MINIMO CURVATURA	: 15.00 mts.
RADIO MINIMO EXCEPCIONAL	: 12.00 mts.
SUPERFICIE DE RODADURA	: 4.50 mts.
ANCHO DE BERMA	: No. considerado
BOMBEO	: 2.00 %
PERALTE MINIMO	: 2.00 %
PERALTE MAXIMO NORMAL	: 6.00 %
PERALTE MAXIMO EXCEPCIONAL	: 10.00 %
TALUD EN RELLENO	: 1:1 - 2
ESPAZOR DE AFIRMADO	: 0.50 x 0.30 mts.
CUNETAS	: 0.50 x 0.30 mts.
PLAZOLETA DE CRUCE	: 3.50 x 30.00 mts.

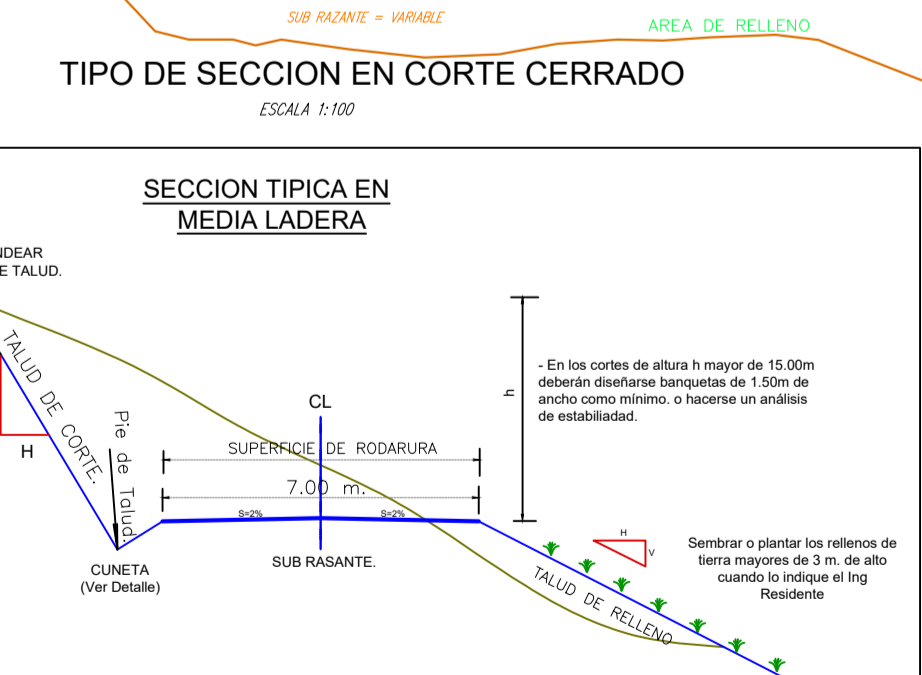
**ELEMENTOS DE CURVA HORIZONTAL**



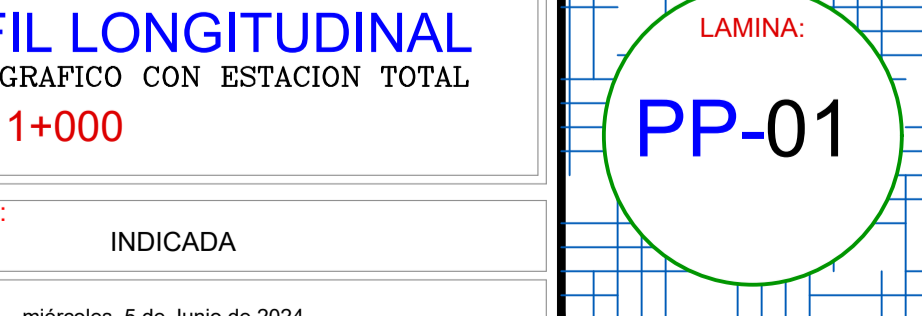
**TIPO DE TERRENO**



**TIPO DE SECCION EN CORTA CERRADO**



**SECCION TIPICA EN MEDIA LADERA**



**UNIVERSIDAD NACIONAL DEL ALTIPLANO**  
**FACULTAD DE CIENCIAS AGRARIAS**  
**"ESCUELA PROFESIONAL DE INGENIERIA TOPOGRAFICA Y AGRIMENSURA"**

**PROYECTO:**  
**"COMPARACIÓN DE VOLUMEN DE MOVIMIENTO DE TIERRAS EMPLEANDO VEHICULO AÉREO NO TRIPULADO Y MÉTODO CONVENCIONAL DEL BOTADERO MUNICIPAL A CAPILLA CANCHARANI DEL TRAMO KM 0+000 AL 2+950, PUNO."**

**TESISTAS:**  
 - EDUARD PILCO CONTRADO  
 - RONAL CALSINA GARCIA

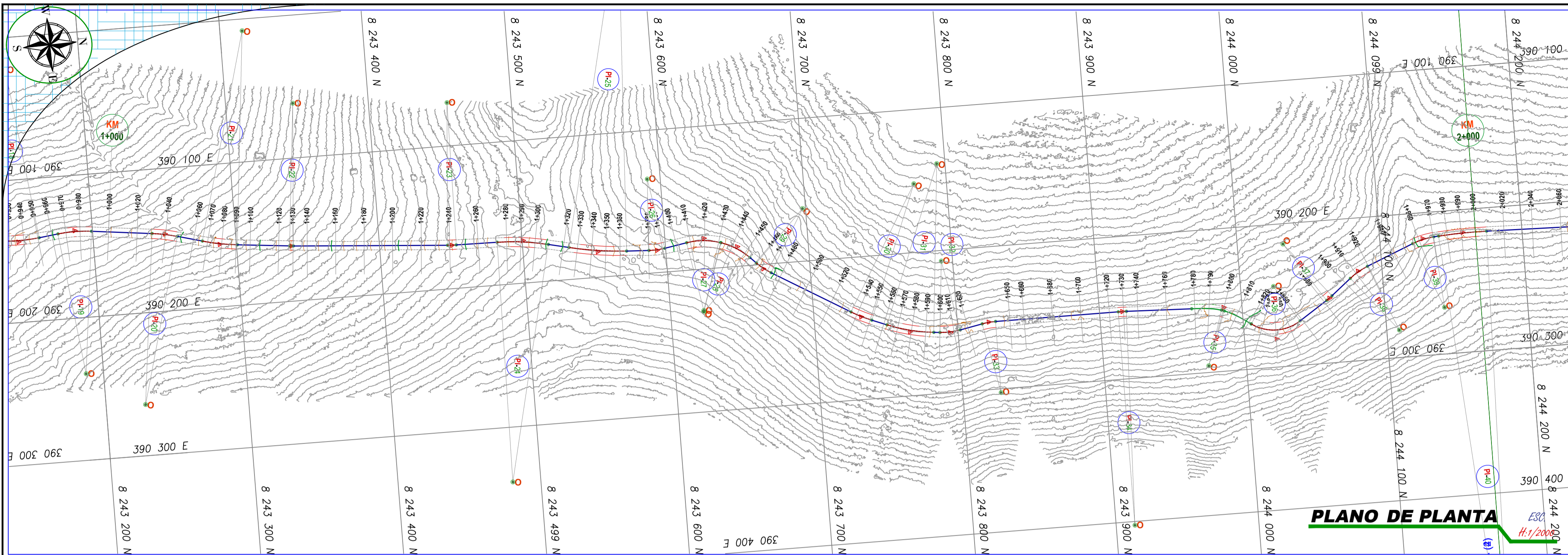
**DATUM:** WGS 84  
**SISTEMA DE COORDENADAS:** UTM  
**HEMISFERIO:** Sur  
**ZONA:** 19

**PLANO:**  
**PLANTA Y PERFIL LONGITUDINAL**  
 LEVANTAMIENTO TOPOGRAFICO CON ESTACION TOTAL  
**KM: 00+000 - 1+000**

**LAMINA:**  
**PP-01**

**DIBUJO Y DISEÑO:** E.P.C.  
**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

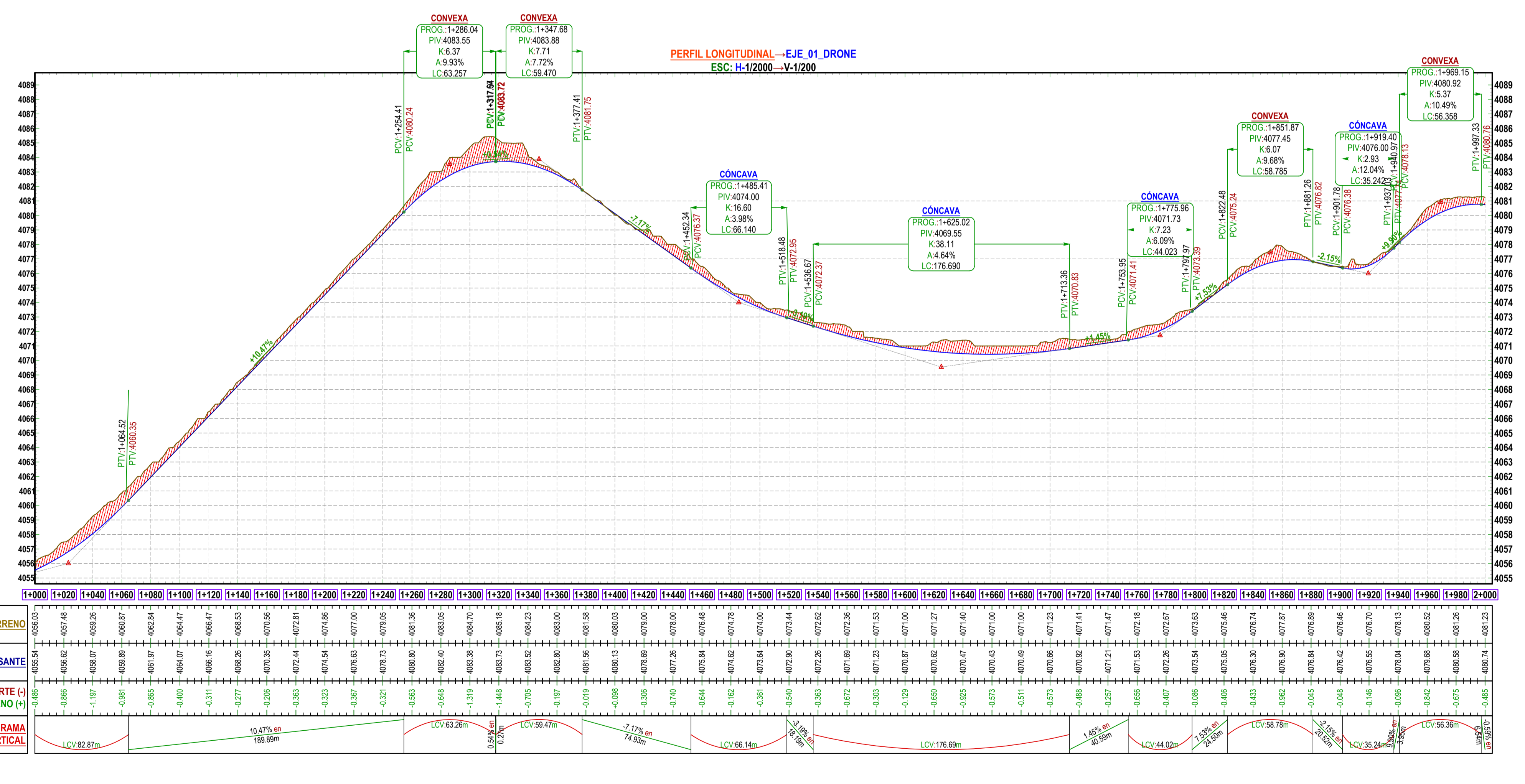
**ESCALA:** INDICADA  
**FECHA:** miércoles, 5 de Junio de 2024



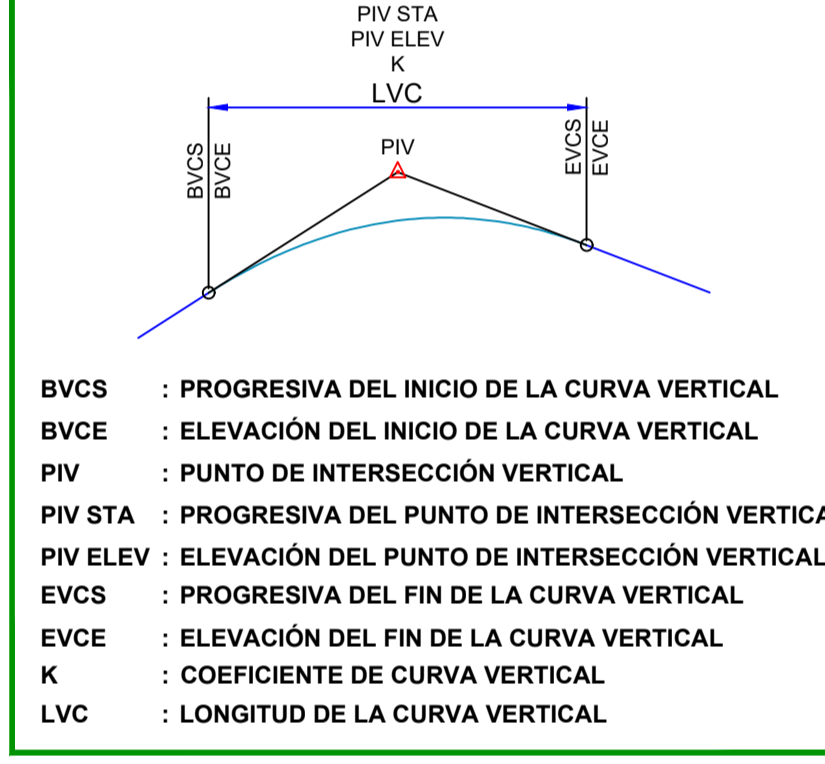
ELEMENTOS DE CURVA													
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.J. ESTE	P.J. NORTE	Sa
P41	8	60	16.51	8.31	015°46'05"	16.46	0.57	0.57	-0.196.23	-0.212.74	389955.787	824252.821	1.82
P42	8	40	2.11	1.05	003°04'12"	2.11	0.01	0.01	-1.798.78	-1.800.89	390255.340	824388.084	1.28
P43	8	50	3.09	1.55	003°32'24"	3.09	0.02	0.02	-2.265.38	-2.268.47	390217.340	824433.379	1.50
P44	8	90	27.89	14.96	017°45'25"	27.78	1.09	1.08	-0.474.19	-0.502.08	390014.830	824274.683	0.91
P45	1	150	16.51	8.26	006°18'24"	16.50	0.23	0.23	-2.615.55	-2.633.06	390434.329	824937.854	0.60
P46	8	120	19.24	9.64	009°11'04"	19.22	0.39	0.39	-2.741.16	-2.760.40	390407.920	824486.475	0.72
P47	1	50	25.36	12.96	029°03'29"	25.09	1.65	1.60	-2.679.41	-2.704.77	390395.948	824480.711	1.50
P48	8	50	9.61	4.82	011°00'34"	9.59	0.23	0.23	-2.637.86	-2.647.46	390363.480	824473.050	1.50
P49	1	120	24.42	12.25	011°39'37"	24.38	0.62	0.62	-2.545.05	-2.569.47	390321.096	824468.862	0.72
P50	8	30	37.14	18.84	023°38'49"	36.88	1.95	1.91	-2.491.71	-2.528.86	390289.784	824465.401	0.91
P51	1	50	9.79	4.91	011°13'26"	9.78	0.24	0.24	-2.434.41	-2.444.20	390288.039	824459.539	1.50
P52	8	50	4.82	2.31	005°11'39"	4.81	0.05	0.05	-2.407.18	-2.411.79	390253.571	824456.438	1.50
P53	8	120	13.84	6.88	004°42'48"	13.84	0.19	0.19	-2.372.28	-2.383.84	390242.879	824455.088	1.50
P54	1	50	8.78	4.40	010°03'43"	8.77	0.19	0.19	-2.343.43	-2.357.21	390241.415	824454.699	1.50
P55	1	60	18.22	9.16	017°24'01"	18.15	0.69	0.69	-2.300.76	-2.318.98	390236.643	824472.174	1.28
P56	1	60	7.53	3.77	007°11'59"	7.52	0.12	0.12	-2.227.90	-2.235.42	390218.054	824439.808	1.28
P57	8	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	-2.175.38	-2.175.38	390211.094	824432.002	1.50
P58	1	50	15.52	7.82	017°41'01"	15.46	0.61	0.60	-2.127.63	-2.143.15	390216.647	824430.812	1.50
P59	8	33	33.84	16.93	005°45'06"	33.82	0.42	0.42	-1.973.93	-2.007.76	390215.961	824419.237	0.33
P60	8	50	15.58	7.85	017°51'19"	15.52	0.61	0.61	-1.954.89	-1.970.48	390218.098	824413.076	1.50
P61	8	50	14.73	7.42	016°52'35"	14.67	0.55	0.54	-1.904.68	-1.919.40	390237.240	824403.063	1.50
P62	1	50	4.96	2.48	005°41'12"	4.96	0.06	0.06	-1.881.97	-1.886.93	390254.651	824401.586	1.50
P63	1	31	36.58	20.84	068°36'58"	34.44	4.31	4.31	-1.821.91	-1.858.49	390280.379	824322.485	2.31
P64	8	150	5.88	2.84	002°10'17"	5.88	0.03	0.03	-1.726.28	-1.731.96	390252.644	824315.975	0.60
P65	1	60	9.54	4.78	010°55'56"	9.53	0.23	0.23	-1.630.36	-1.639.90	390252.644	824382.969	1.50
P66	1	50	14.32	7.21	016°24'49"	14.27	0.52	0.51	-1.600.04	-1.614.36	390257.953	824379.483	1.50
P67	1	118	33.31	16.76	016°08'03"	33.20	1.18	1.17	-1.562.36	-1.596.67	390255.245	824376.267	0.73
P68	1	100	15.72	7.87	009°01'15"	15.70	0.31	0.31	-1.535.45	-1.551.17	390240.247	824373.958	0.84

ELEMENTOS DE CURVA													
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.J. ESTE	P.J. NORTE	Sa
P29	1	50	12.32	6.19	014°06'48"	12.29	0.38	0.38	-1.460.66	-1.472.98	390203.063	824367.094	1.50
P30	8	50	22.97	11.61	028°19'09"	22.77	1.31	1.31	-1.431.67	-1.454.64	390186.240	824365.113	1.50
P31	8	49	24.14	12.32	028°13'31"	23.90	1.52	1.48	-1.407.30	-1.431.44	390178.581	824362.109	1.53
P32	1	50	11.21	5.63	012°50'46"	11.19	0.32	0.31	-1.380.28	-1.391.49	390184.333	824359.846	1.50
P33	1	234	40.58	20.34	009°55'14"	40.53	0.88	0.88	-1.324	-1.364.59	390182.127	824355.243	0.43
P34	8	168	35.96	18.05	012°14'13"	35.89	0.96	0.96	-1.273.35	-1.309.31	390170.226	824350.506	0.55
P35	1	100	6.11	3.06	003°30'31"	6.11	0.05	0.05	-1.238.50	-1.244.61	390169.601	824345.667	0.84
P36	1	100	2.64	1.32	001°30'39"	2.64	0.01	0.01	-1.127.65	-1.130.29	390161.312	824338.385	0.84
P37	1	150	24.74	12.40	009°28'56"	24.71	0.51	0.51	-1.066.25	-1.090.99	390156.280	824328.264	0.60
P38	8	120	17.91	8.97	008°33'06"	17.89	0.33	0.33	-1.030.51	-1.048.43	390146.014	824325.434	0.72
P39	8	100	23.70	11.90	013°34'41"	23.64	0.71	0.70	-0.964.32	-0.988.02	390138.697	824317.485	0.84
P40	1	120	29.56	14.85	014°06'48"	29.48	0.92	0.91	-0.950.89	-0.971.53	390143.559	824314.592	0.72
P41	8	120	13.84	6.88	004°42'48"	13.84	0.19	0.19	-0.857.55	-0.870.90	390134.582	824306.178	0.72
P42	1	60	28.50	14.53	027°13'04"	28.24	1.73	1.68	-0.790.80	-0.819.31	390133.759	824306.178	1.28
P43	8	100	9.07	4.54	005°11'46"	9.07	0.10	0.10	-0.685.53	-0.694.60	390079.626	824294.976	0.84
P44	8	100	15.60	7.82	008°56'26"	15.59	0.31	0.30	-0.652.02	-0.667.62	390067.889	824287.076	0.84
P45	1	100	3.44	1.71	001°57'20"	3.44	0.01	0.01	-0.586.30	-0.589.71	390050.664	824281.342	0.84
P46	1	100	7.55	3.78	004°19'39"	7.55	0.07	0.07	-0.537.10	-0.544.65	390037.808	824272.001	0.84
P47	1	50	10.55	5.30	012°02'41"	10.54	0.28	0.28	-0.507.85	-0.518.41	390028.238	824274.931	1.50
P48	8	100	1.30	0.65	000°44'39"	1.30	0.00	0.00	-0.436.34	-0.436.34	390002.000	824267.057	0.84
P49	1	100	14.09	7.06	003°00'20"	14.08	0.25	0.25	-0.380.57	-0.394.66	389990.259	824267.086	0.84
P50	8	150	5.22	2.61	000°59'42"	5.22	0.02	0.02	-0.324.13	-0.329.36	389967.626	824250.568	0.60
P51	8	50	12.86	6.47	010°40'12"	12.83	0.42	0.41	-0.236.83	-0.249.69	389939.292	824241.997	1.50
P52	1	50	9.31	4.67	010°40'12"	9.30	0.22	0.22	-0.156.42	-0.165.73	389898.590	824244.673	1.50
P53	1	60	24.21	12.27	023°07'22"	24.05	1.24	1.22	-0.144.44	-0.144.44	389868.270	824232.005	0.33
P54	8	335	23.13	11.57	003°57'06"	23.10	0.20	0.20	-0.056.35	-0.079.48	389864.824	824232.005	0.33
P55	8	50	40.22	21.27	048°05'09"	39.14	4.34	3.99	-0.050.30	-0.045.51	389856.504	824232.005	0.33

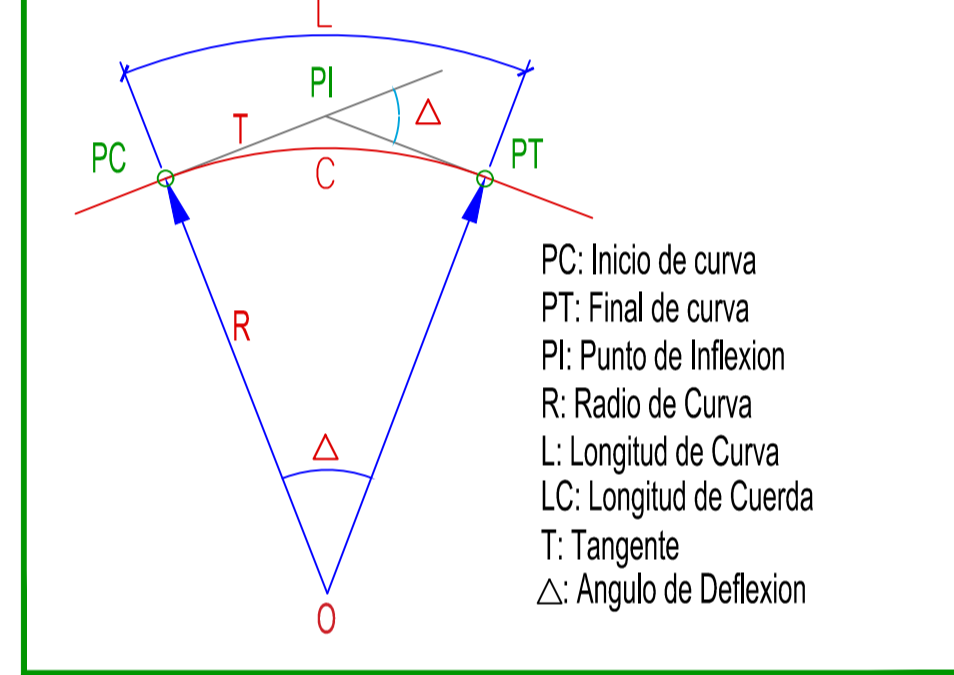
**PLANO DE PERFIL LONGITUDINAL**  
E.C. H: 1/2000 V: 1/200



**ELEMENTOS DE CURVA VERTICAL**



**ELEMENTOS DE CURVA HORIZONTAL**



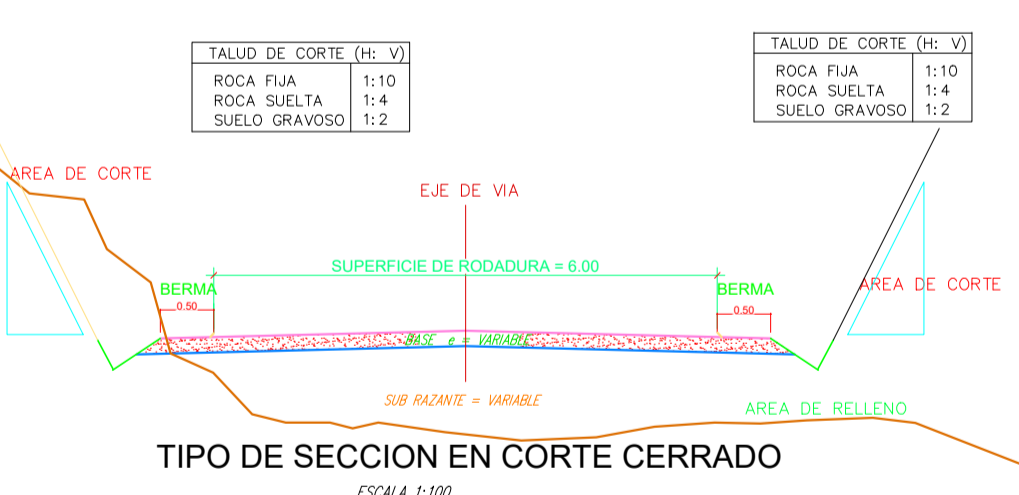
**DATOS DE DISEÑO**

INDICE MEDIO DIARIO	: MENOR DE 50 VEH.
VELOCIDAD DIRECTRIZ	: 20 km/h
PENDIENTE MINIMA	: 0.50 %
PENDIENTE MAXIMA	: 12.00 %
RADIO MINIMO CURVATURA	: 15.00 mts.
RADIO MINIMO EXCEPCIONAL	: 12.00 mts.
SUPERFICIE DE RODADURA	: 4.50 mts.
ANCHO DE BERMA	: No considerado
BOMBEO	: 2.00 %
PERALTE MINIMO	: 2.00 %
PERALTE MAXIMO NORMAL	: 6.00 %
PERALTE MAXIMO EXCEPCIONAL	: 10.00 %
TALUD EN RELLENO	: 1 : 2
ESPAZADOR DE AFIRMADO	: 0.50 x 0.30 mts.
CUNETAS	: 0.50 x 0.30 mts.
PLAZOLETA DE CRUCE	: 3.50 x 30.00 mts.

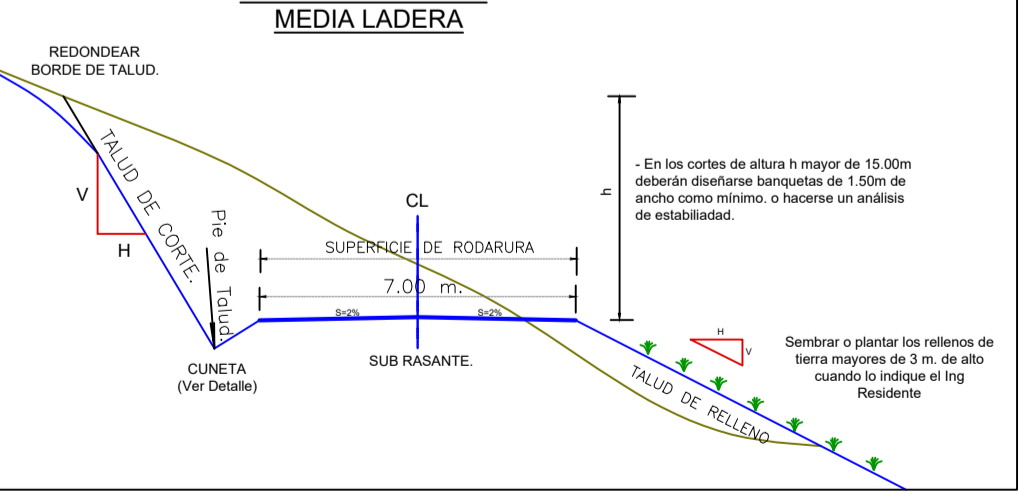
**TIPO DE TERRENO**

ADJUNTO EN METRADO DE EXPLANACIONES

**TIPO DE SECCION EN RELLENO**



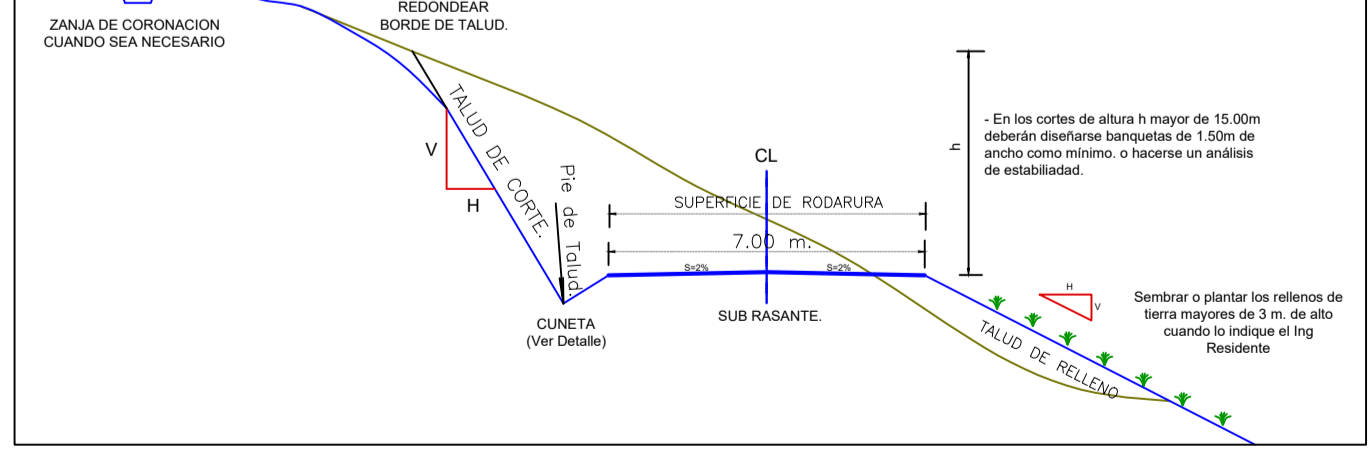
**TIPO DE SECCION EN CORTE CERRADO**



**LEYENDA**

- Curva Mayor C5m
- Curva Menor C1m
- Punto de Estacion
- Punto de Balas
- Buzon De Desague
- Canal
- Acceso
- Eje Proyectado

**SECCION TIPICA EN MEDIA LADERA**



**UNIVERSIDAD NACIONAL DEL ALTIPLANO**  
**FACULTAD DE CIENCIAS AGRARIAS**  
**"ESCUELA PROFESIONAL DE INGENIERIA TOPOGRAFICA Y AGRIMENSURA"**

**PROYECTO:**  
**"COMPARACION DE VOLUMEN DE MOVIMIENTO DE TIERRAS EMPLEANDO VEHICULO AEREO NO TRIPULADO Y METODO CONVENCIONAL DEL BOTADERO MUNICIPAL A CAPILLA CANCHARANI DEL TRAMO KM 0+000 AL 2+950, PUNO."**

**TESISTAS:**  
 - EDUARD PILCO CONTRADO  
 - RONAL CALSINA GARCIA

**PLANO:**  
**PLANTA Y PERFIL LONGITUDINAL**  
 LEVANTAMIENTO TOPOGRAFICO CON DRON  
**KM: 1+000 - 2+000**

**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

**DIBUJO Y DISEÑO:**  
 E.P.C.

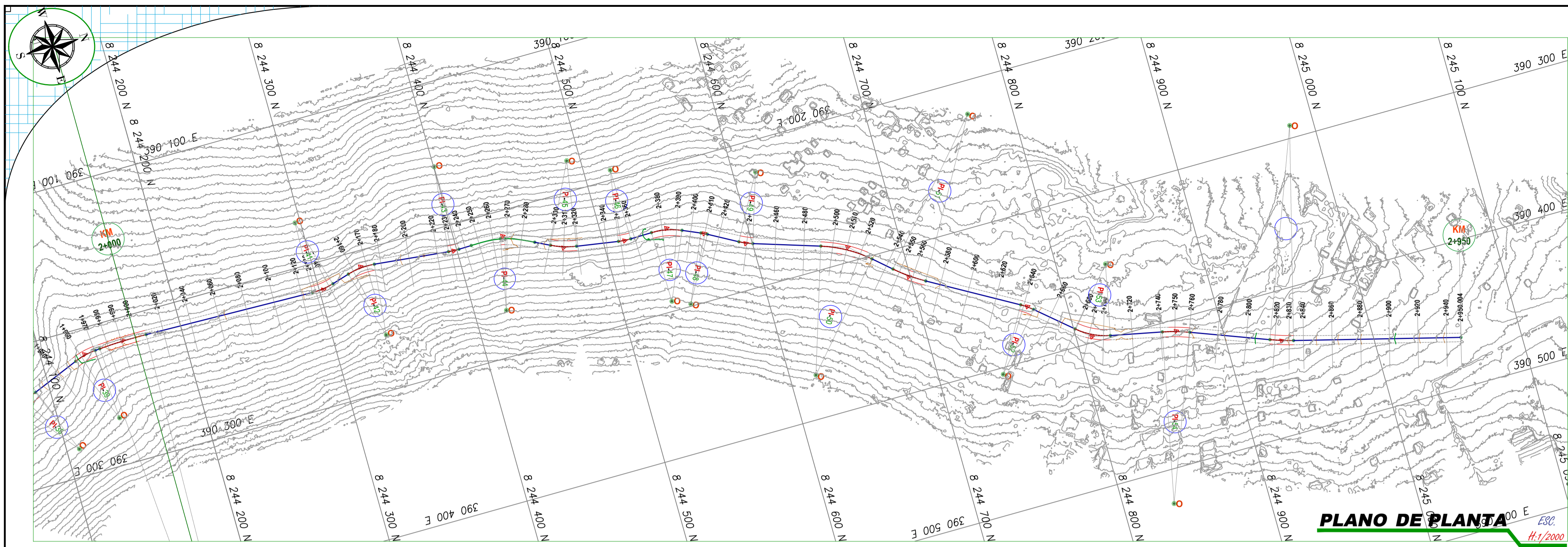
**DATUM:** WGS 84  
**SISTEMA DE COORDENADAS:** UTM  
**HEMISFERIO:** Sur  
**ZONA:** 19

**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

**ESCALA:** INDICADA  
**FECHA:** miércoles, 14 de Agosto de 2024

**LAMINA:**  
**PP-02**

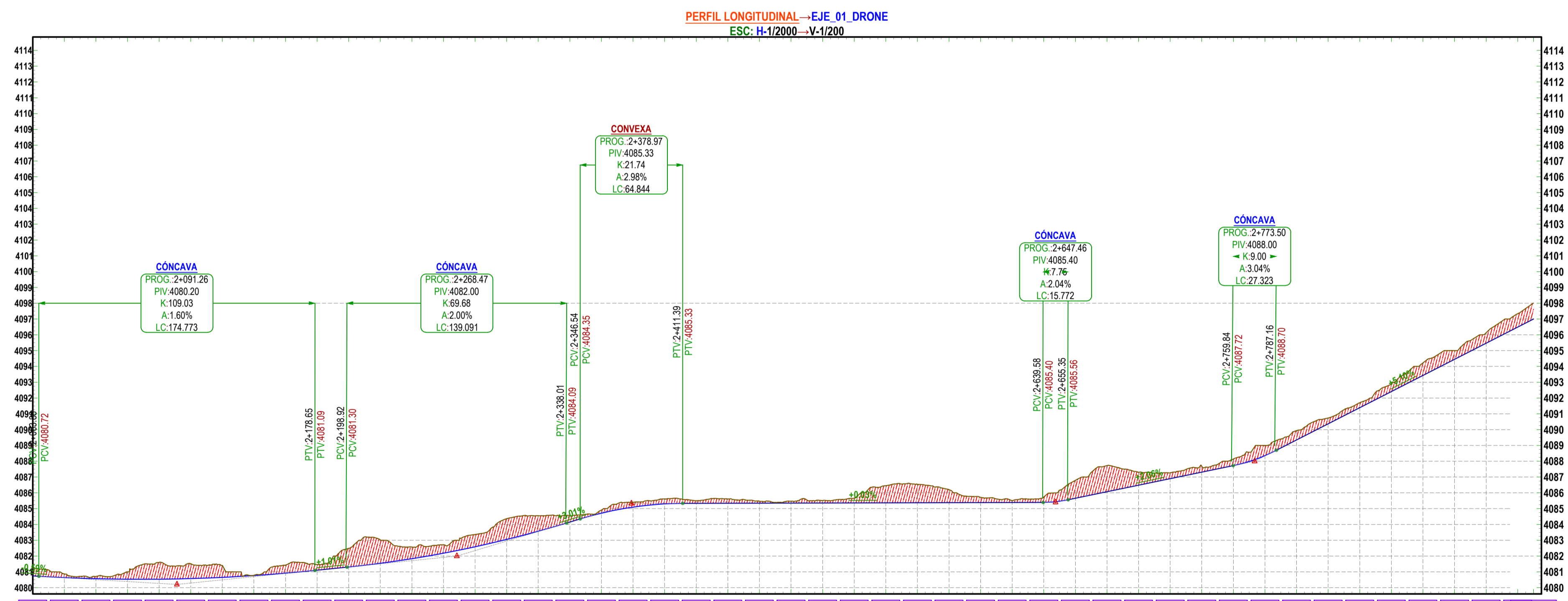




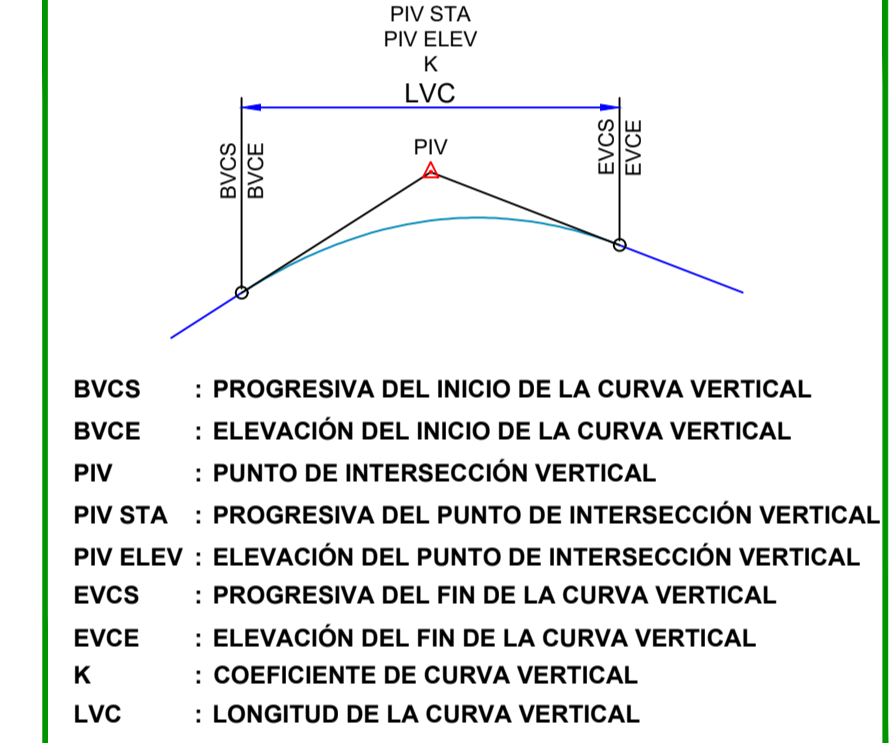
ELEMENTOS DE CURVA												
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE
PA-01	B	60	16.51	8.31	015°46'05"	16.46	0.57	0.57	0-196.23	0-212.74	389955.787	8242452.621
PA-02	B	40	21.11	1.05	003°01'12"	2.11	0.01	0.01	-1798.78	1-800.89	390255.340	8243987.084
PA-03	B	50	3.09	1.55	003°32'24"	3.09	0.02	0.02	2-265.38	2-268.47	390217.340	8244433.379
PA-04	B	90	27.89	14.96	017°45'29"	27.78	1.09	1.08	0-474.19	0-502.08	390014.830	8242724.883
PA-05	B	150	16.51	8.26	006°18'24"	16.50	0.23	0.23	2-616.55	2-833.06	390434.329	8244937.654
PA-06	B	120	19.24	9.64	009°11'04"	19.22	0.39	0.39	2-741.16	2-760.40	390407.920	8244868.475
PA-07	B	50	25.36	12.96	029°03'29"	25.09	1.65	1.60	2-679.41	2-704.77	390395.948	8244810.711
PA-08	B	50	9.61	4.82	011°00'34"	9.59	0.23	0.23	2-637.86	2-647.46	390363.480	8244773.050
PA-09	B	120	24.42	12.25	011°39'37"	24.38	0.62	0.62	2-545.05	2-569.47	390321.096	8244698.862
PA-10	B	90	37.14	18.84	023°38'49"	36.88	1.95	1.91	2-491.71	2-528.86	390289.784	8244663.401
PA-11	B	50	9.79	4.91	011°13'26"	9.78	0.24	0.24	2-434.41	2-444.20	390268.038	8244595.539
PA-12	B	50	4.62	2.31	005°17'19"	4.61	0.05	0.05	2-407.18	2-411.79	390253.571	8244569.438
PA-13	B	50	21.57	10.95	024°42'48"	21.40	1.19	1.16	2-372.28	2-393.84	390242.879	8244545.088
PA-14	B	150	8.78	4.40	010°03'43"	8.77	0.19	0.19	2-343.43	2-357.21	390243.415	8244514.669
PA-15	B	60	18.22	9.18	017°24'01"	18.15	0.70	0.69	2-300.76	2-318.98	390236.643	8244272.174
PA-16	B	60	7.53	3.77	007°11'15"	7.52	0.12	0.12	2-227.90	2-235.42	390218.054	8244397.808
PA-17	B	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	2-175.38	2-175.38	390211.094	8244332.002
PA-18	B	50	15.52	7.82	017°47'01"	15.46	0.61	0.60	2-127.63	2-143.15	390219.647	8244302.812
PA-19	B	33	33.84	16.93	005°45'06"	33.82	0.42	0.42	1-973.93	2-007.76	390215.961	8244150.237
PA-20	B	50	15.58	7.85	017°51'19"	15.52	0.61	0.61	1-954.89	1-970.48	390218.098	8244130.076
PA-21	B	50	14.73	7.42	016°52'35"	14.67	0.55	0.54	1-904.68	1-919.40	390237.240	8244083.063
PA-22	B	50	4.96	2.48	005°41'12"	4.96	0.06	0.06	1-881.97	1-886.93	390254.651	8244061.586
PA-23	B	31	36.58	20.84	068°36'58"	34.44	6.31	6.21	1-821.91	1-858.49	390280.379	8244022.485
PA-24	B	150	5.68	2.84	002°10'17"	5.68	0.03	0.03	1-726.28	1-731.96	390252.644	8243915.975
PA-25	B	50	9.54	4.78	010°55'56"	9.53	0.23	0.23	1-630.36	1-639.90	390252.644	8243821.969
PA-26	B	50	14.32	7.21	016°24'49"	14.27	0.52	0.51	1-600.04	1-614.36	390257.953	8243794.483
PA-27	B	118	33.31	16.76	016°08'03"	33.20	1.18	1.17	1-562.36	1-596.67	390255.245	8243766.267
PA-28	B	100	15.72	7.87	009°00'15"	15.70	0.31	0.31	1-535.45	1-551.17	390240.047	8243732.958

ELEMENTOS DE CURVA												
N°	S	R	L	T	A	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE
PA-29	B	50	12.32	6.19	014°06'48"	12.29	0.38	0.38	1-460.66	1-472.98	390203.063	8243667.094
PA-30	B	50	22.67	11.69	028°10'12"	22.77	1.35	1.31	1-431.67	1-454.64	390186.240	8243650.113
PA-31	B	49	24.14	12.32	028°13'31"	23.90	1.52	1.48	1-407.30	1-431.44	390176.581	8243627.109
PA-32	B	50	11.21	5.63	012°50'46"	11.19	0.32	0.31	1-380.28	1-391.49	390184.333	8243593.846
PA-33	B	124	40.58	20.34	009°50'14"	40.53	0.88	0.88	1-324	1-364.59	390182.127	8243552.243
PA-34	B	168	35.96	18.05	012°14'13"	35.89	0.96	0.96	1-273.35	1-309.31	390170.226	8243500.506
PA-35	B	100	6.11	3.06	003°30'13"	6.11	0.05	0.05	1-238.50	1-244.61	390169.601	8243450.667
PA-36	B	100	2.64	1.32	001°30'39"	2.64	0.01	0.01	1-127.65	1-130.29	390161.312	8243338.385
PA-37	B	150	24.74	12.40	009°28'56"	24.71	0.51	0.51	1-066.25	1-090.99	390156.280	8243288.264
PA-38	B	120	17.91	8.97	008°33'06"	17.89	0.33	0.33	1-030.51	1-048.43	390146.014	8243250.434
PA-39	B	100	23.70	11.90	013°34'41"	23.64	0.71	0.70	0-964.32	0-988.02	390136.697	8243187.485
PA-40	B	120	29.56	14.85	014°06'48"	29.48	0.92	0.91	0-921.33	0-950.89	390143.559	8243147.592
PA-41	B	100	12.30	6.68	006°22'17"	12.30	0.19	0.19	0-857.55	0-870.90	390134.582	8243076.183
PA-42	B	60	28.55	14.53	007°13'04"	28.24	1.73	1.68	0-790.80	0-819.31	390133.759	8243016.728
PA-43	B	100	9.07	4.54	005°11'46"	9.07	0.10	0.10	0-685.53	0-694.60	390079.626	8242914.976
PA-44	B	100	15.60	7.82	008°56'26"	15.59	0.31	0.30	0-652.02	0-667.62	390067.889	8242887.076
PA-45	B	100	3.41	1.71	001°57'20"	3.41	0.01	0.01	0-586.30	0-589.71	390050.664	8242817.342
PA-46	B	100	7.55	3.78	004°19'39"	7.55	0.07	0.07	0-537.10	0-544.65	390037.808	8242772.001
PA-47	B	50	10.55	5.30	012°02'41"	10.54	0.28	0.28	0-507.85	0-518.41	390028.238	8242745.931
PA-48	B	100	1.30	0.65	000°44'39"	1.30	0.00	0.00	0-436.34	0-437.64	390002.000	8242675.057
PA-49	B	100	14.09	7.06	008°04'20"	14.08	0.25	0.25	0-380.57	0-394.66	389990.259	8242607.086
PA-50	B	150	5.22	2.61	001°59'42"	5.22	0.02	0.02	0-324.13	0-329.36	389967.626	8242570.568
PA-51	B	50	12.86	6.47	014°44'32"	12.83	0.42	0.41	0-236.83	0-249.69	389939.292	8242491.997
PA-52	B	50	9.31	4.67	010°40'12"	9.30	0.22	0.22	0-156.42	0-163.73	389898.350	8242414.673
PA-53	B	60	24.21	12.27	023°07'22"	24.20	1.22	1.20	0-144.44	0-144.44	389868.270	8242387.510
PA-54	B	335	23.13	11.57	003°57'06"	23.12	0.20	0.20	0-056.35	0-079.48	389864.824	8242323.005
PA-55	B	50	40.22	21.27	048°05'09"	39.14	4.34	3.99	0-040.30	0-045.51	389856.504	8242329.338

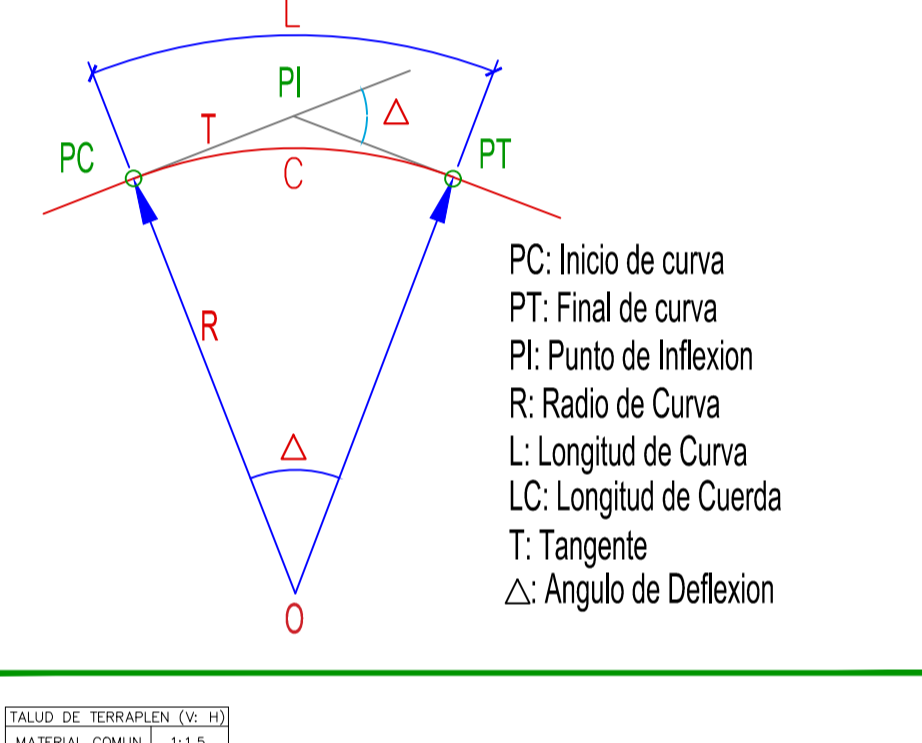
### PLANO DE PERFIL LONGITUDINAL



### ELEMENTOS DE CURVA VERTICAL



### ELEMENTOS DE CURVA HORIZONTAL

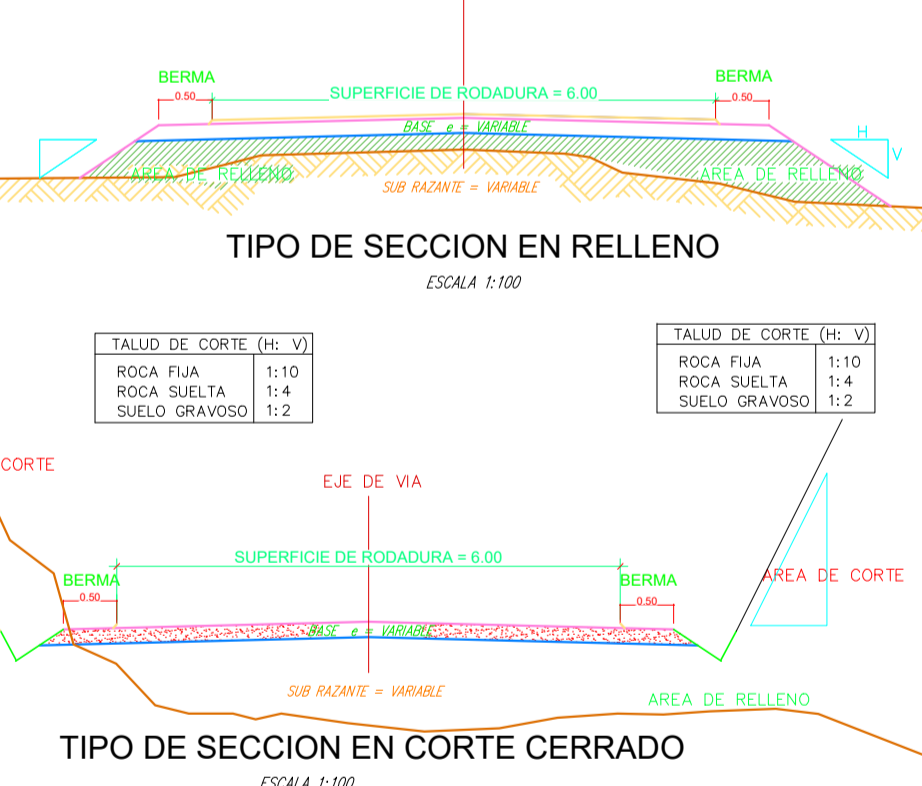


#### DATOS DE DISEÑO

INDICE MEDIO DIARIO	: MENOR DE 50 VEH.
VELOCIDAD DIRECTRIZ	: 20 km/h
PENDIENTE MINIMA	: 0.50 %
PENDIENTE MAXIMA	: 12.00 %
RADIO MINIMO CURVATURA	: 15.00 mts.
RADIO MINIMO EXCEPCIONAL	: 12.00 mts.
SUPERFICIE DE RODADURA	: 4.50 mts.
ANCHO DE BERMA	: No considerado
BOMBEO	: 2.00 %
PERALTE MINIMO	: 2.00 %
PERALTE MAXIMO NORMAL	: 6.00 %
PERALTE MAXIMO EXCEPCIONAL	: 10.00 %
TALUD EN RELLENO	: 1:1 - 2
ESPAZOR DE AFIRMADO	: 0.50 x 0.30 mts.
CUNETAS	: 0.50 x 0.30 mts.
PLAZOLETA DE CRUCE	: 3.50 x 30.00 mts.

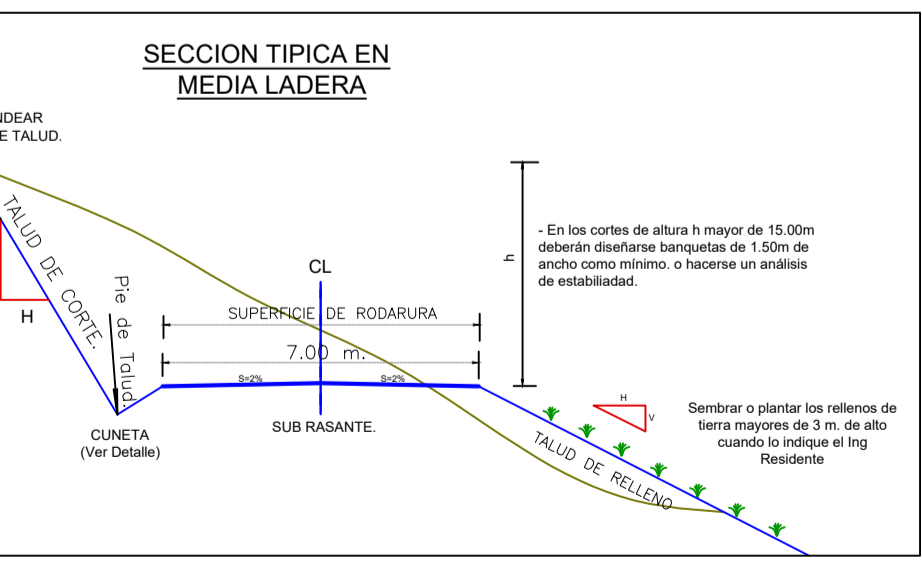
#### TIPO DE TERRENO

ADJUNTO EN METRADO DE EXPLANACIONES



#### LEYENDA

- Curva Mayor C5m
- Curva Menor C1m
- Punto De Estacion
- Punto De BMs
- Buzco De Desague
- Canal
- Acceso
- Eje Proyectado



**UNIVERSIDAD NACIONAL DEL ALTIPLANO**  
**FACULTAD DE CIENCIAS AGRARIAS**  
**"ESCUELA PROFESIONAL DE INGENIERIA TOPOGRAFICA Y AGRIMENSURA"**

**PROYECTO:**  
**"COMPARACIÓN DE VOLUMEN DE MOVIMIENTO DE TIERRAS EMPLEANDO VEHICULO AÉREO NO TRIPULADO Y MÉTODO CONVENCIONAL DEL BOTADERO MUNICIPAL A CAPILLA CANCHARANI DEL TRAMO KM 0+000 AL 2+950, PUNO."**

**TESISTAS:**  
 - EDUARD PILCO CONTRADO  
 - RONAL CALSINA GARCIA

**DATUM:** WGS 84  
**SISTEMA DE COORDENADAS:** UTM  
**HEMISFERIO:** Sur  
**ZONA:** 19

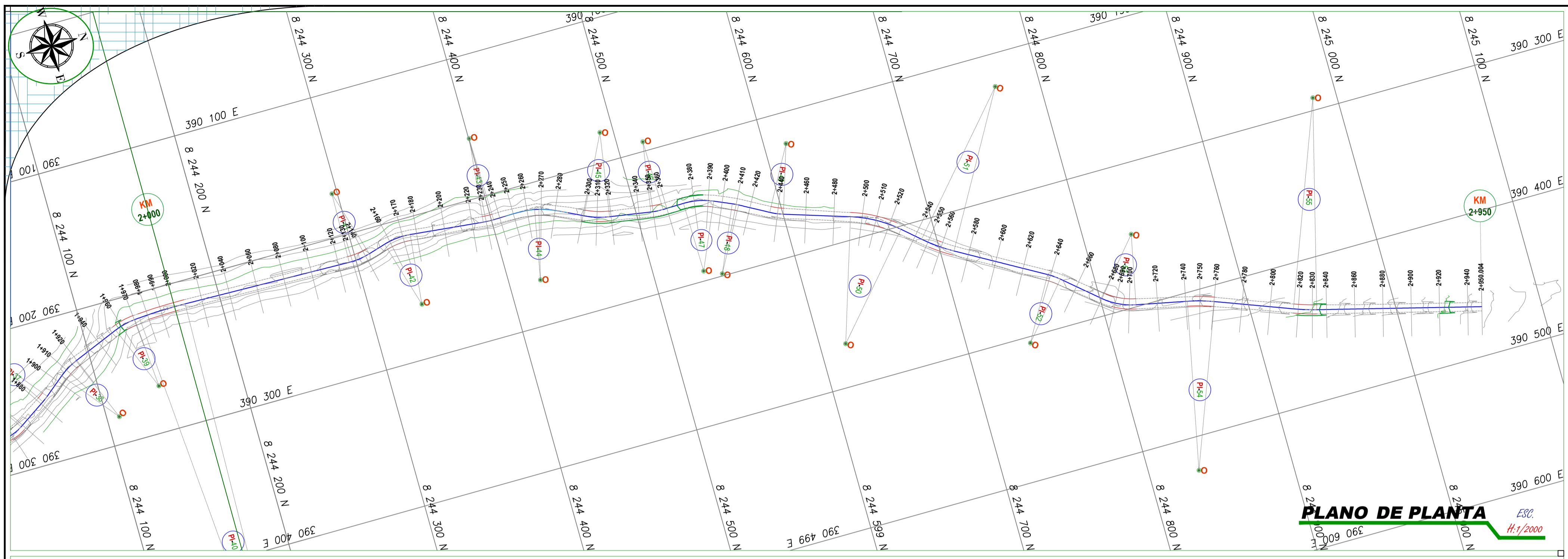
**DIBUJO Y DISEÑO:**  
 E.P.C.

**PLANO:**  
**PLANTA Y PERFIL LONGITUDINAL**  
 LEVANTAMIENTO TOPOGRAFICO CON DRON  
**KM: 2+000 - 2+950**

**LAMINA:**  
**PP-03**

**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

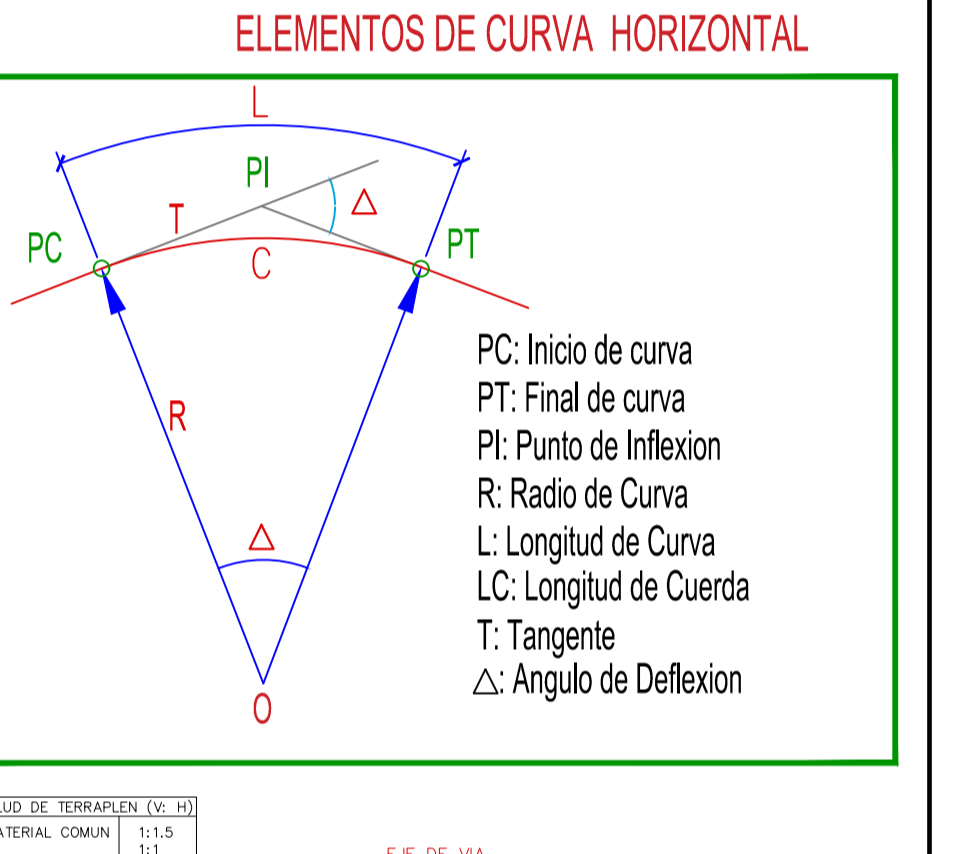
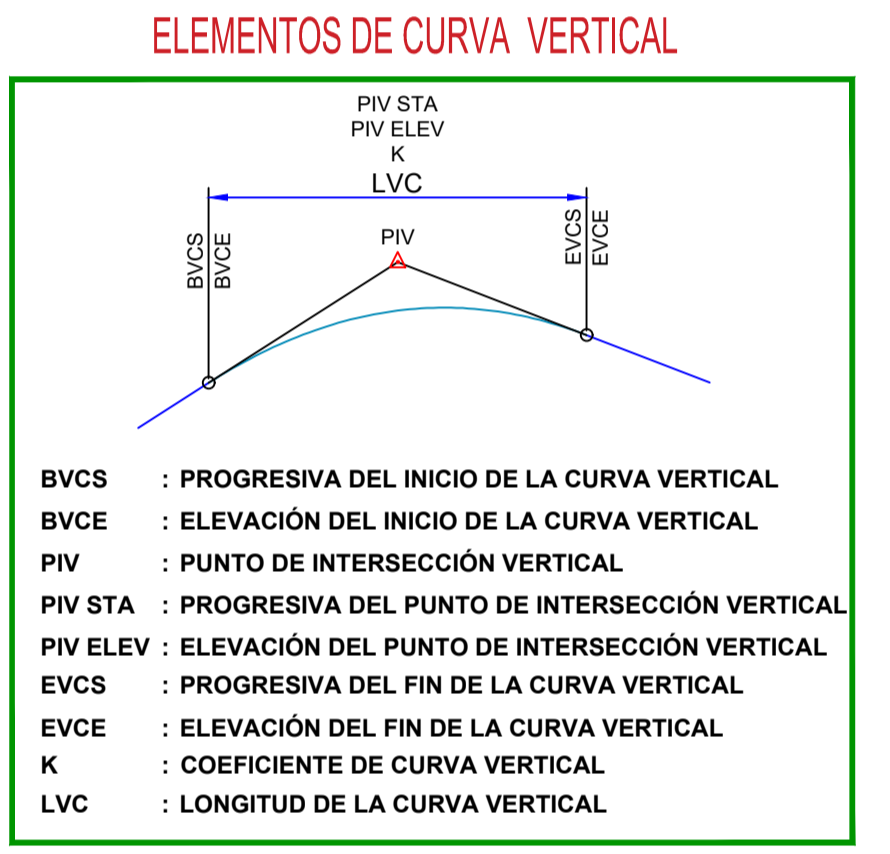
**ESCALA:** INDICADA  
**FECHA:** miércoles, 14 de Agosto de 2024



**PLANO DE PERFIL LONGITUDINAL**  
 ESC. H: 1/2000  
 V: 1/200

ELEMENTOS DE CURVA													
N°	S	R	L	T	Δ	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE	Sa
P1	8	60	16.51	8.31	015°46'05"	16.46	0.57	0.57	0-196.23	0-212.74	389955.787	8242452.621	1.28
P2	8	40	2.11	1.05	003°01'12"	2.11	0.01	0.01	1-798.78	1-800.89	390255.340	8243987.084	1.82
P3	8	50	3.09	1.55	003°32'24"	3.09	0.02	0.02	2-265.38	2-268.47	390117.340	8244433.379	1.50
P4	8	90	27.89	14.06	017°45'25"	27.78	1.09	1.08	0-474.19	0-502.08	390144.830	8242724.683	0.91
P5	1	150	16.51	8.26	006°18'24"	16.50	0.23	0.23	2-616.55	2-633.06	390434.329	8244937.654	0.60
P6	8	120	19.24	9.64	009°11'04"	19.22	0.39	0.39	2-741.16	2-760.40	390407.920	8244868.475	0.72
P7	1	50	25.36	12.96	029°03'29"	25.09	1.68	1.60	0-479.41	2-704.77	390395.948	8244810.711	1.50
P8	8	50	9.61	4.82	011°00'34"	9.59	0.23	0.23	2-637.86	2-647.46	390363.480	8244773.050	1.50
P9	1	120	24.42	12.25	011°59'37"	24.38	0.62	0.62	2-545.05	2-569.47	390321.096	8244698.862	0.72
P10	8	90	37.14	18.84	023°38'49"	36.88	1.95	1.91	2-491.71	2-528.86	390289.784	8244653.401	0.91
P11	1	50	9.79	4.91	011°13'26"	9.78	0.24	0.24	2-434.41	2-444.20	390288.038	8244595.539	1.50
P12	8	50	4.82	2.31	005°17'19"	4.81	0.05	0.05	2-407.18	2-411.79	390253.571	8244569.438	1.50
P13	8	50	21.57	10.95	024°42'48"	21.40	1.19	1.16	2-372.28	2-393.84	390242.879	8244545.088	1.50
P14	1	50	8.78	4.40	010°03'43"	8.77	0.19	0.19	2-343.43	2-357.21	390243.415	8244514.669	1.50
P15	1	60	18.22	9.18	017°24'01"	18.15	0.70	0.69	2-300.76	2-318.98	390236.643	8244472.174	1.28
P16	1	60	7.53	3.77	007°11'15"	7.52	0.12	0.12	2-227.90	2-235.40	390218.054	8244397.808	1.28
P17	8	50	19.52	9.89	022°22'07"	19.40	0.97	0.95	2-155.86	2-175.38	390211.094	8244332.002	1.50
P18	1	50	15.52	7.82	017°47'01"	15.46	0.61	0.60	2-127.63	2-143.15	390210.647	8244302.812	1.50
P19	8	33	33.84	16.93	005°45'06"	33.82	0.43	0.42	1-973.93	2-007.76	390215.961	8244158.237	0.33
P20	8	50	15.58	7.85	017°51'19"	15.52	0.61	0.61	1-954.89	1-970.48	390218.098	8244130.076	1.50
P21	8	50	14.73	7.42	016°52'35"	14.67	0.55	0.54	1-904.68	1-919.40	390237.240	8244083.063	1.50
P22	1	50	4.82	2.48	005°41'12"	4.96	0.06	0.06	1-881.97	1-886.93	390254.651	8244061.586	1.50
P23	1	31	36.58	20.84	088°36'58"	34.44	6.43	5.31	1-821.91	1-858.49	390280.379	8244022.485	2.31
P24	8	150	5.88	2.84	002°10'17"	5.88	0.03	0.03	1-726.28	1-731.96	390252.644	8243915.975	0.60
P25	8	50	9.54	4.78	010°55'56"	9.53	0.23	0.23	1-630.36	1-639.90	390252.644	8243821.969	1.50
P26	1	50	14.32	7.21	016°24'49"	14.27	0.52	0.51	1-600.04	1-614.36	390257.953	8243794.483	1.50
P27	1	118	33.31	16.76	016°08'03"	33.20	1.18	1.17	1-562.36	1-596.67	390255.245	8243766.267	0.73
P28	1	100	15.72	7.87	009°00'15"	15.70	0.31	0.31	1-535.45	1-551.17	390240.247	8243732.958	0.84

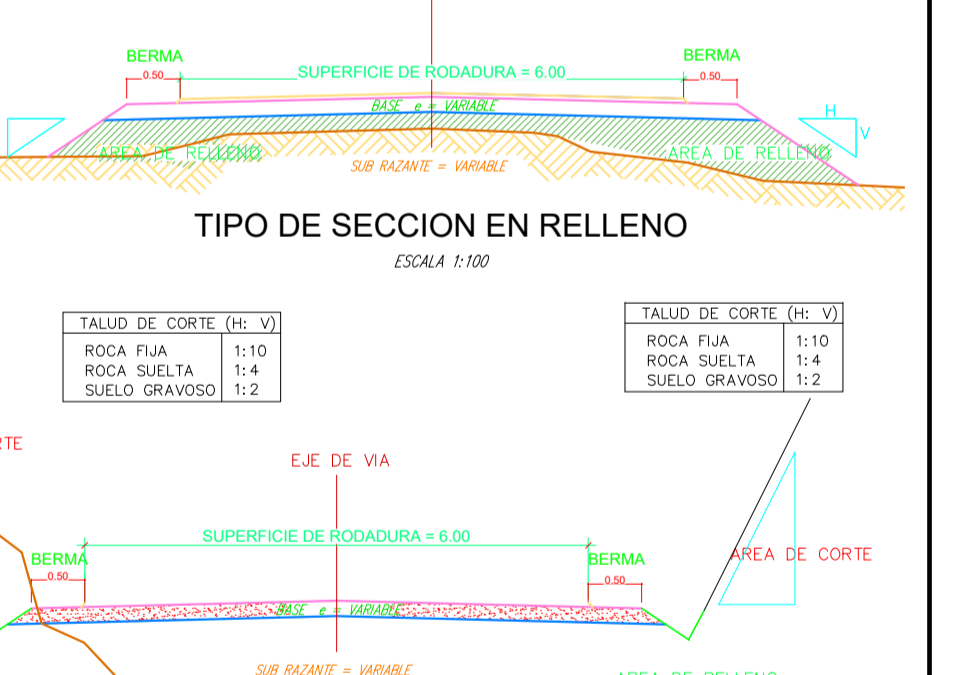
ELEMENTOS DE CURVA													
N°	S	R	L	T	Δ	C	E	M	P.C.	P.T.	P.I. ESTE	P.I. NORTE	Sa
P29	1	50	12.32	6.19	014°06'48"	12.29	0.38	0.38	1-460.66	1-472.98	390203.063	8243667.094	1.50
P30	8	50	22.97	11.69	028°19'09"	22.77	1.35	1.31	1-431.67	1-454.64	390186.240	8243650.113	1.50
P31	8	49	24.14	12.32	028°19'31"	23.90	1.52	1.48	1-407.30	1-431.44	390178.581	8243627.109	1.50
P32	1	50	11.21	5.63	017°50'46"	11.19	0.32	0.31	1-380.28	1-391.49	390184.333	8243593.846	1.50
P33	1	234	40.58	20.34	009°50'14"	40.53	0.88	0.88	1-324	1-364.59	390182.127	8243552.243	0.43
P34	8	168	35.96	18.05	012°14'13"	35.89	0.96	0.96	1-273.35	1-309.31	390170.226	8243500.506	0.55
P35	1	100	6.11	3.06	003°30'13"	6.11	0.05	0.05	1-238.50	1-244.61	390169.601	8243450.667	0.84
P36	1	100	2.64	1.32	001°30'39"	2.64	0.01	0.01	1-127.65	1-130.29	390161.312	8243338.385	0.84
P37	1	150	24.74	12.40	009°28'56"	24.71	0.51	0.51	1-066.25	1-090.99	390156.280	8243288.264	0.60
P38	8	120	17.91	8.97	008°33'06"	17.89	0.33	0.33	1-030.51	1-048.43	390146.014	8243250.434	0.72
P39	8	100	23.70	11.90	013°34'41"	23.64	0.71	0.70	0-964.32	-0-988.02	390138.697	8243187.485	0.84
P40	1	120	29.56	14.86	014°06'46"	29.48	0.92	0.91	0-921.33	-0-950.89	390143.559	8243147.592	0.72
P41	8	120	13.34	6.68	006°22'17"	13.34	0.19	0.19	0-857.55	-0-870.90	390134.582	8243076.183	0.72
P42	1	60	28.50	14.53	007°13'04"	28.24	1.73	1.68	0-790.80	-0-819.31	390133.759	8243016.738	1.28
P43	8	100	9.74	4.85	005°11'46"	9.70	0.10	0.10	0-685.53	-0-694.60	390079.626	8242914.976	0.84
P44	8	100	15.60	7.82	008°56'26"	15.59	0.31	0.30	0-652.02	-0-667.62	390067.889	8242887.076	0.84
P45	1	100	3.41	1.71	001°57'20"	3.41	0.01	0.01	0-586.30	-0-589.71	390050.664	8242817.342	0.84
P46	1	100	7.58	3.79	004°19'39"	7.55	0.07	0.07	0-537.10	-0-544.65	390037.808	8242772.001	0.84
P47	1	50	10.55	5.30	012°02'41"	10.54	0.28	0.28	0-507.85	-0-518.41	390028.238	8242745.931	1.50
P48	8	100	1.30	0.65	000°44'35"	1.30	0.00	0.00	0-436.34	-0-437.64	390002.000	8242675.057	0.84
P49	1	100	14.09	7.06	008°04'20"	14.08	0.25	0.25	0-380.57	-0-394.66	389990.259	8242627.086	0.84
P50	8	150	5.22	2.61	001°59'42"	5.22	0.02	0.02	0-324.13	-0-329.36	389967.626	8242570.568	0.60
P51	8	50	12.86	6.47	014°44'32"	12.83	0.42	0.41	0-236.83	-0-249.69	389939.292	8242491.997	1.50
P52	1	50	9.31	4.67	010°40'12"	9.30	0.22	0.22	0-156.42	-0-165.73	389898.350	8242414.673	1.50
P53	1	60	24.21	12.27	023°07'22"	24.20	1.22	1.20	0-120.23	-0-144.44	389868.270	8242323.005	1.28
P54	8	335	23.13	11.57	003°57'06"	23.12	0.20	0.20	0-056.35	-0-079.48	389864.824	8242323.005	0.33
P55	8	50	40.22	21.07	048°09'09"	39.14	4.34	3.90	0-045.51	-0-089.54	389856.504	8242323.338	1.50



**DATOS DE DISEÑO**

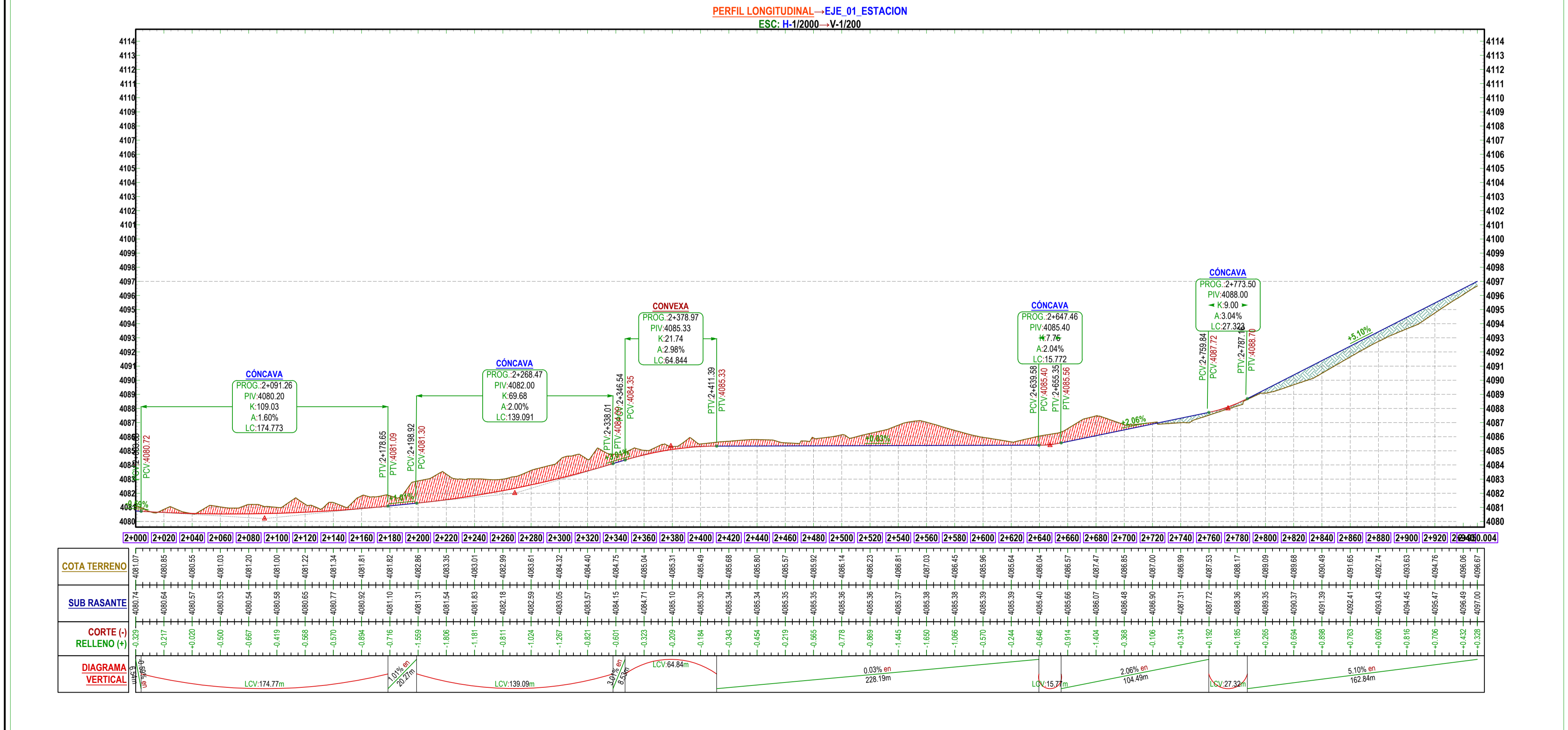
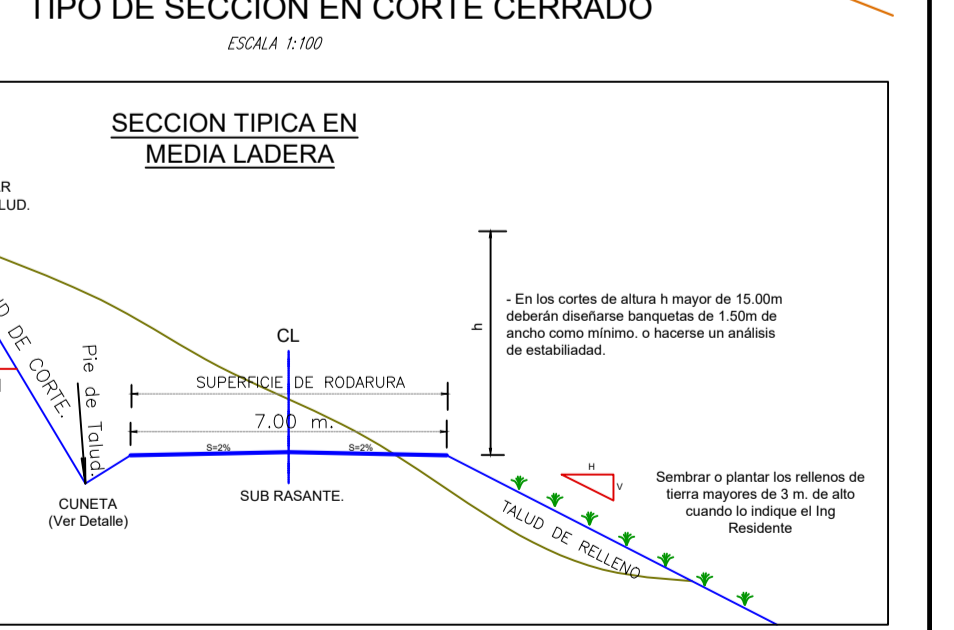
INDICE MEDIO DIARIO	: MENOR DE 50 VEH.
VELOCIDAD DIRECTRIZ	: 20 km/h
PENDIENTE MINIMA	: 0.50 %
PENDIENTE MAXIMA	: 12.00 %
RADIO MINIMO CURVATURA	: 15.00 mts.
RADIO MINIMO EXCEPCIONAL	: 12.00 mts.
SUPERFICIE DE RODADURA	: 4.50 mts.
ANCHO DE BERMA	: No considerado
BOMBEO	: 2.00 %
PERALTE MINIMO	: 2.00 %
PERALTE MAXIMO NORMAL	: 6.00 %
PERALTE MAXIMO EXCEPCIONAL	: 10.00 %
TALUD EN RELLENO	: 1:1 - 2
ESPESOR DE AFIRMADO	
CUNETAS	: 0.50 x 0.30 mts.
PLAZOLETA DE CRUCE	: 3.50 x 30.00 mts.

**TIPO DE TERRENO**  
 ADJUNTO EN METRADO DE EXPLICACIONES



**LEYENDA**

- Curva Mayor C5m
- Curva Menor C1m
- Punto De Estacion
- Punto De Balas
- Buzon De Desague
- Canal
- Acceso
- Eje Proyectado



**UNIVERSIDAD NACIONAL DEL ALTIPLANO**  
**FACULTAD DE CIENCIAS AGRARIAS**  
**"ESCUELA PROFESIONAL DE INGENIERIA TOPOGRAFICA Y AGRIMENSURA"**

**PROYECTO:**  
**"COMPARACION DE VOLUMEN DE MOVIMIENTO DE TIERRAS EMPLEANDO VEHICULO AEREO NO TRIPULADO Y METODO CONVENCIONAL DEL BOTADERO MUNICIPAL A CAPILLA CANCHARANI DEL TRAMO KM 0+000 AL 2+950, PUNO."**

**TESISTAS:**  
 - EDUARD PILCO COTRADO  
 - RONAL CALSINA GARCIA

**PLANO:**  
**PLANTA Y PERFIL LONGITUDINAL**  
 LEVANTAMIENTO TOPOGRAFICO CON ESTACION TOTAL  
**KM: 2+000 - 2+950**

**LAMINA:**  
**PP-03**

**DATUM:** WGS 84  
**SISTEMA DE COORDENADAS:** UTM  
**HEMISFERIO:** Sur  
**ZONA:** 19

**DIBUJO Y DISEÑO:**  
**E.P.C.**

**REGION:** PUNO  
**PROVINCIA:** PUNO  
**DISTRITO:** PUNO

**ESCALA:** INDICADA  
**FECHA:** miércoles, 5 de Junio de 2024