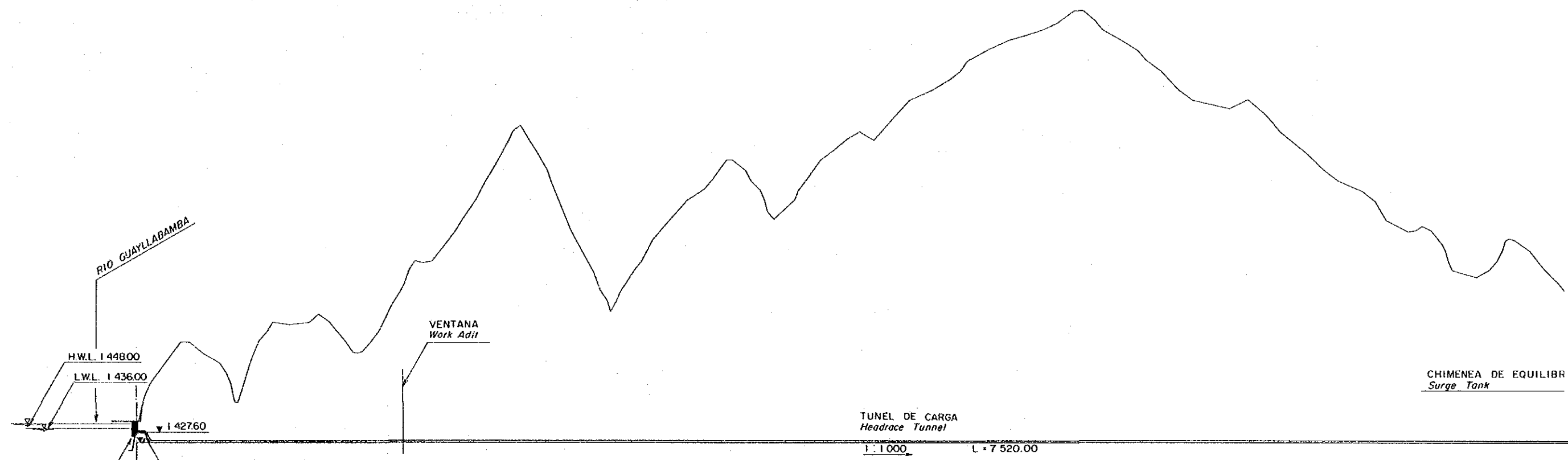
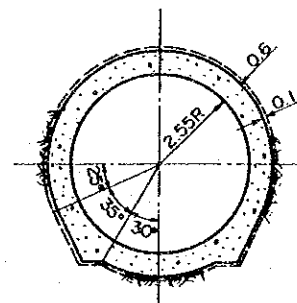


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Profile

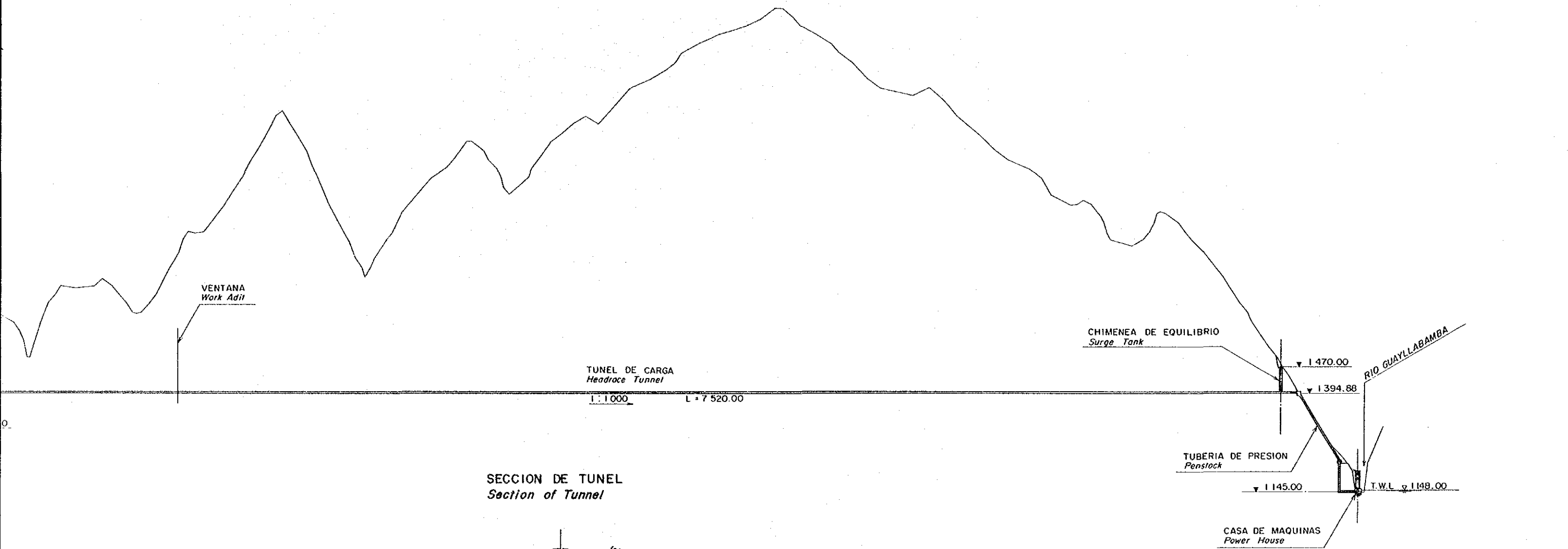
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2 000  
1 500  
1 000



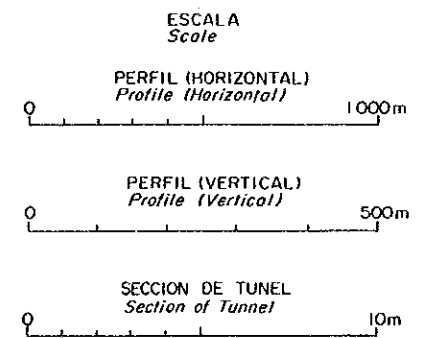
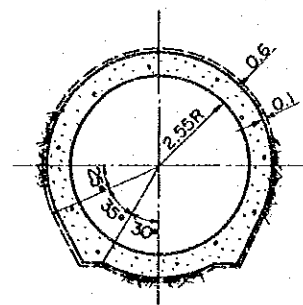
SECCION DE TUNEL  
Section of Tunnel



PERFIL  
Profile



SECCION DE TUNEL  
Section of Tunnel



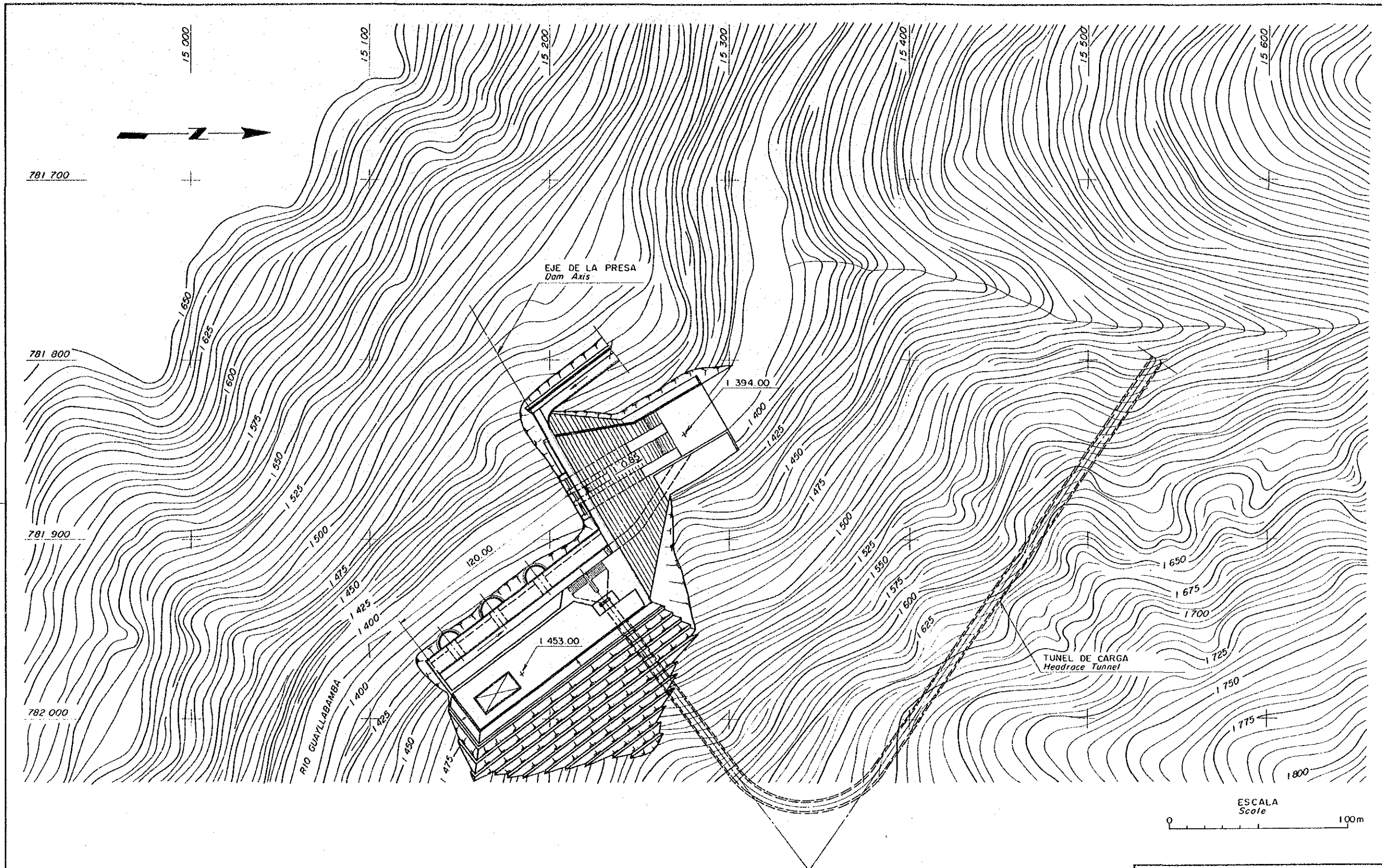
CHESPI HYDROELECTRIC POWER PROJECT

PERFIL LONGITUDINAL  
Longitudinal Profile

Dwg. 1-12

Jun. 1985

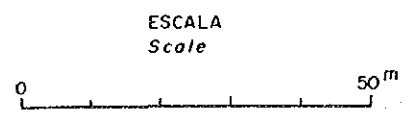
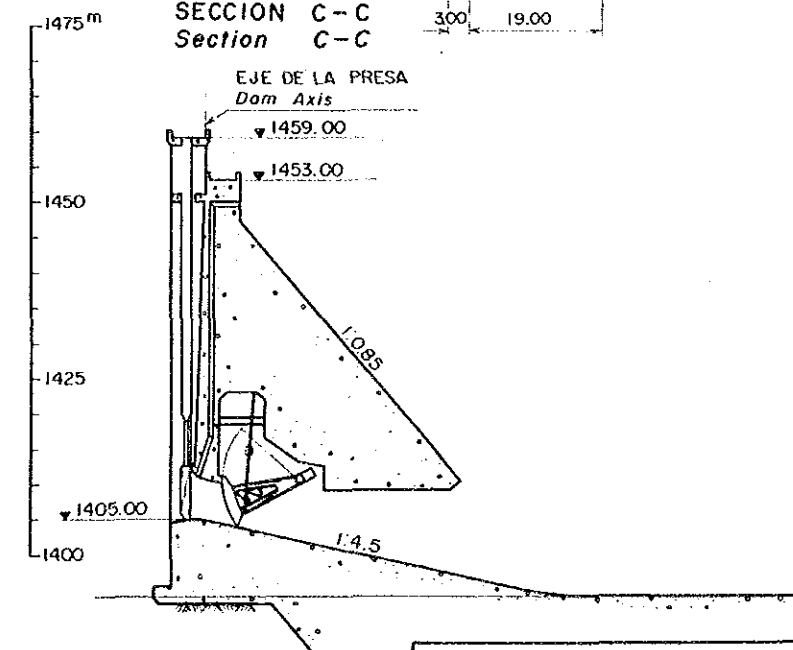
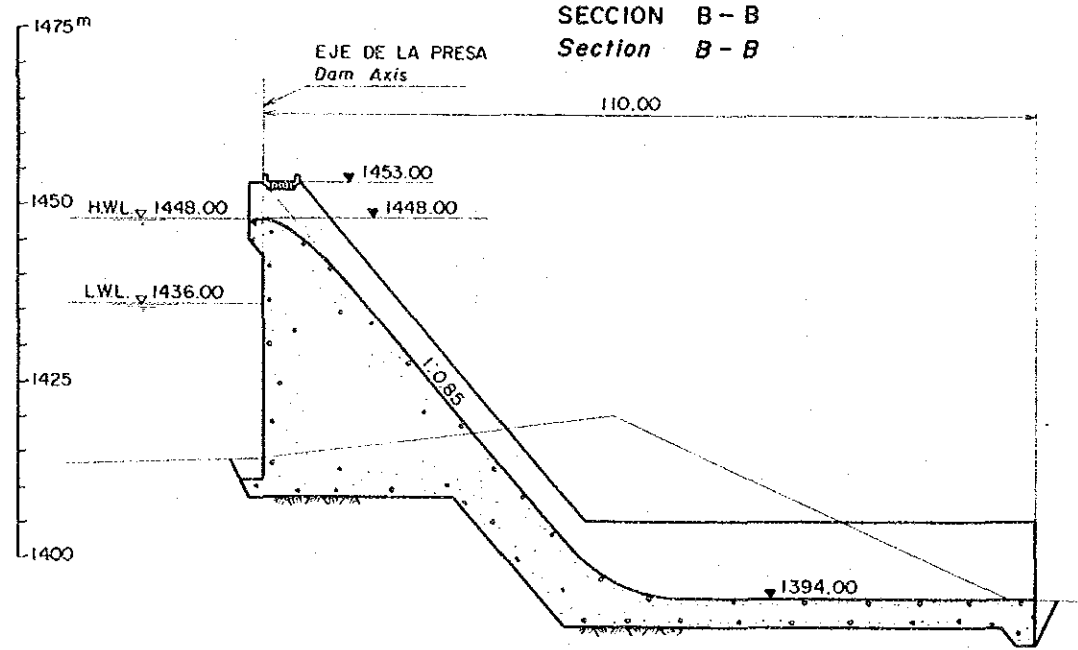
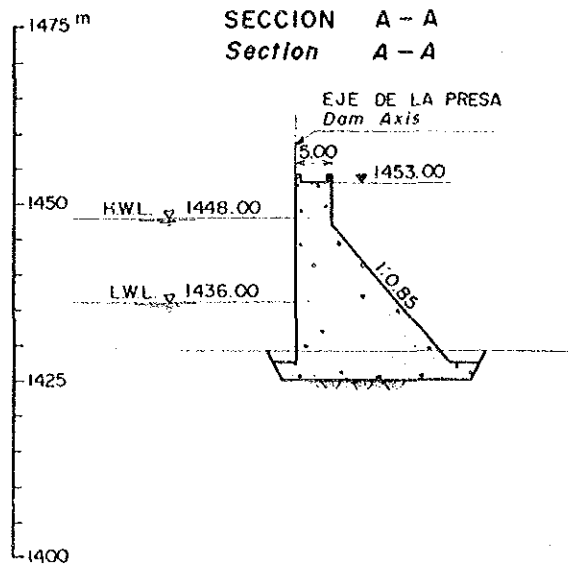
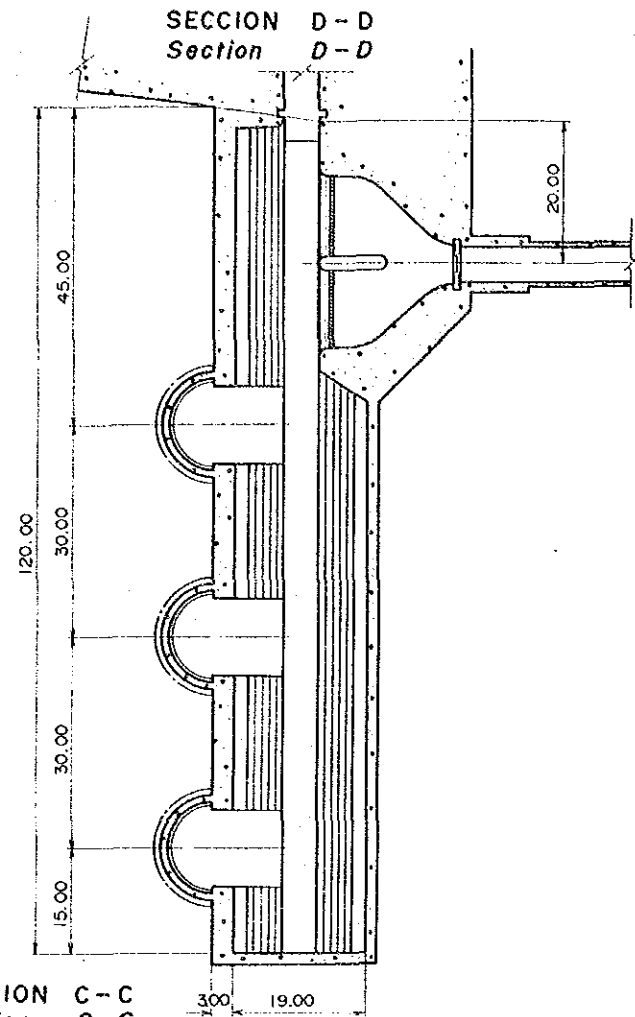
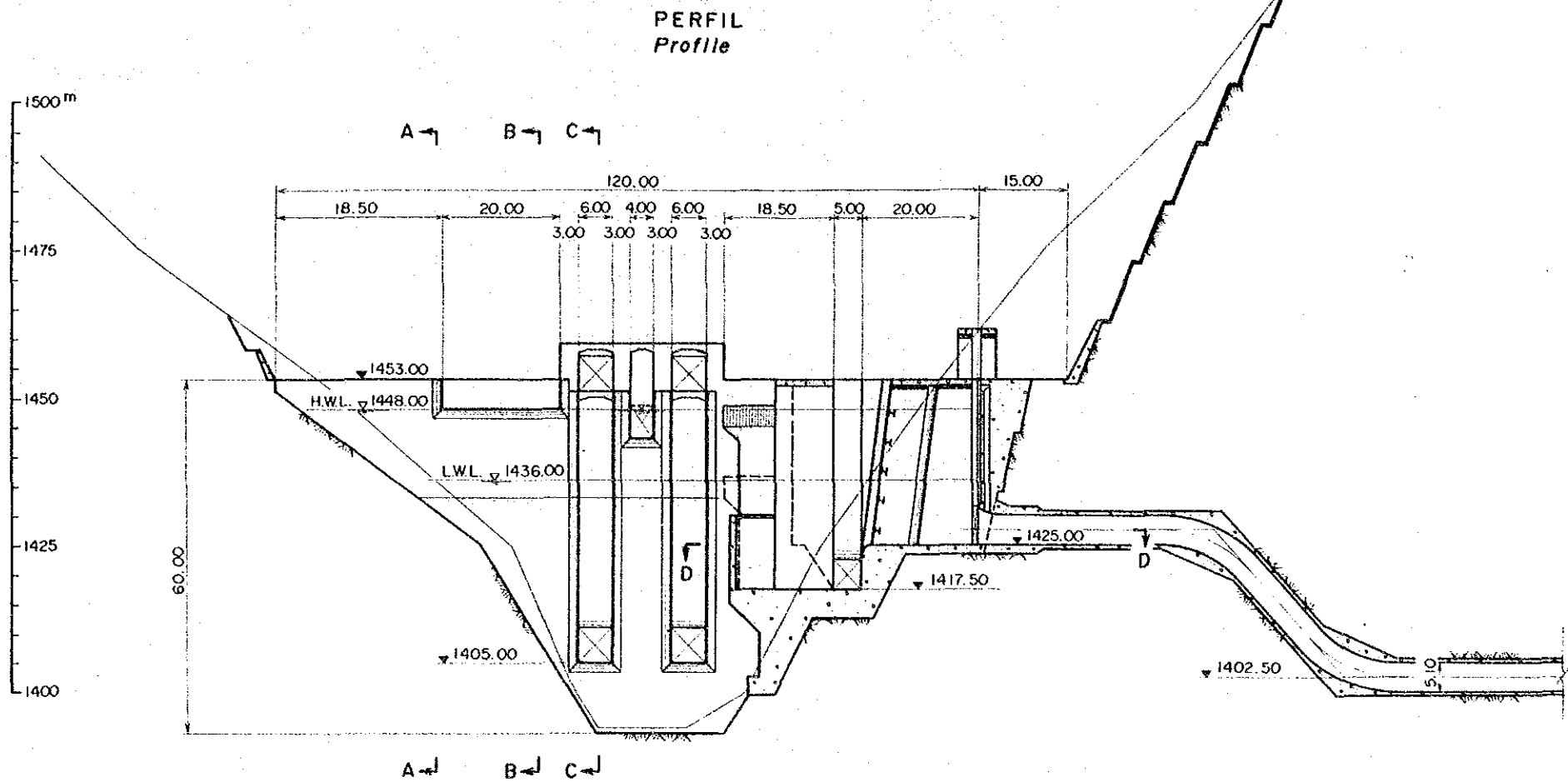




ESCALA  
Scale  
0 100m

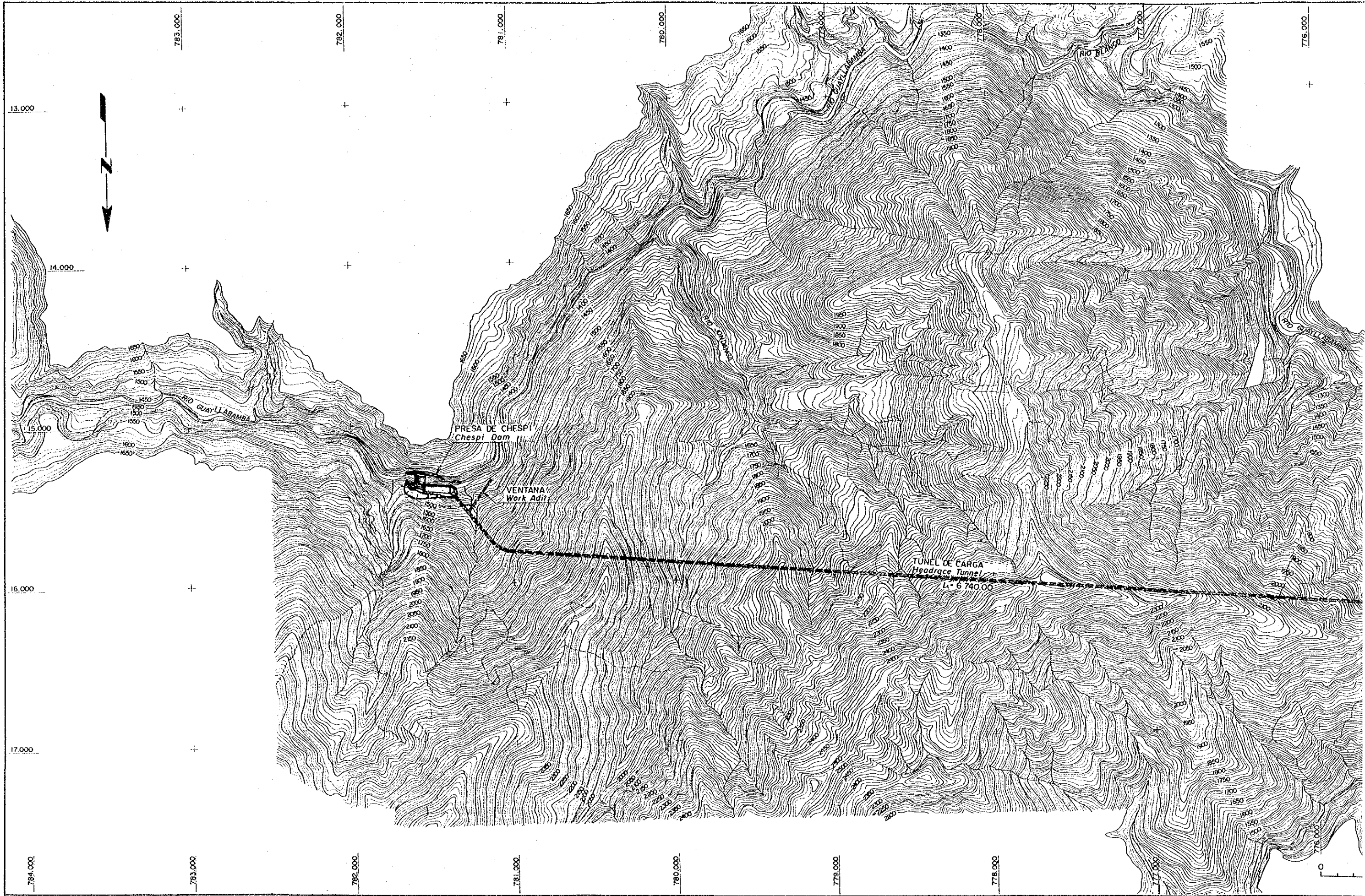
CHESPI HYDROELECTRIC POWER PROJECT	
PRESA DE CHESPI (2-1)	
Chespi Dam (2-1)	
Dwg. 1-13	Jun. 1985



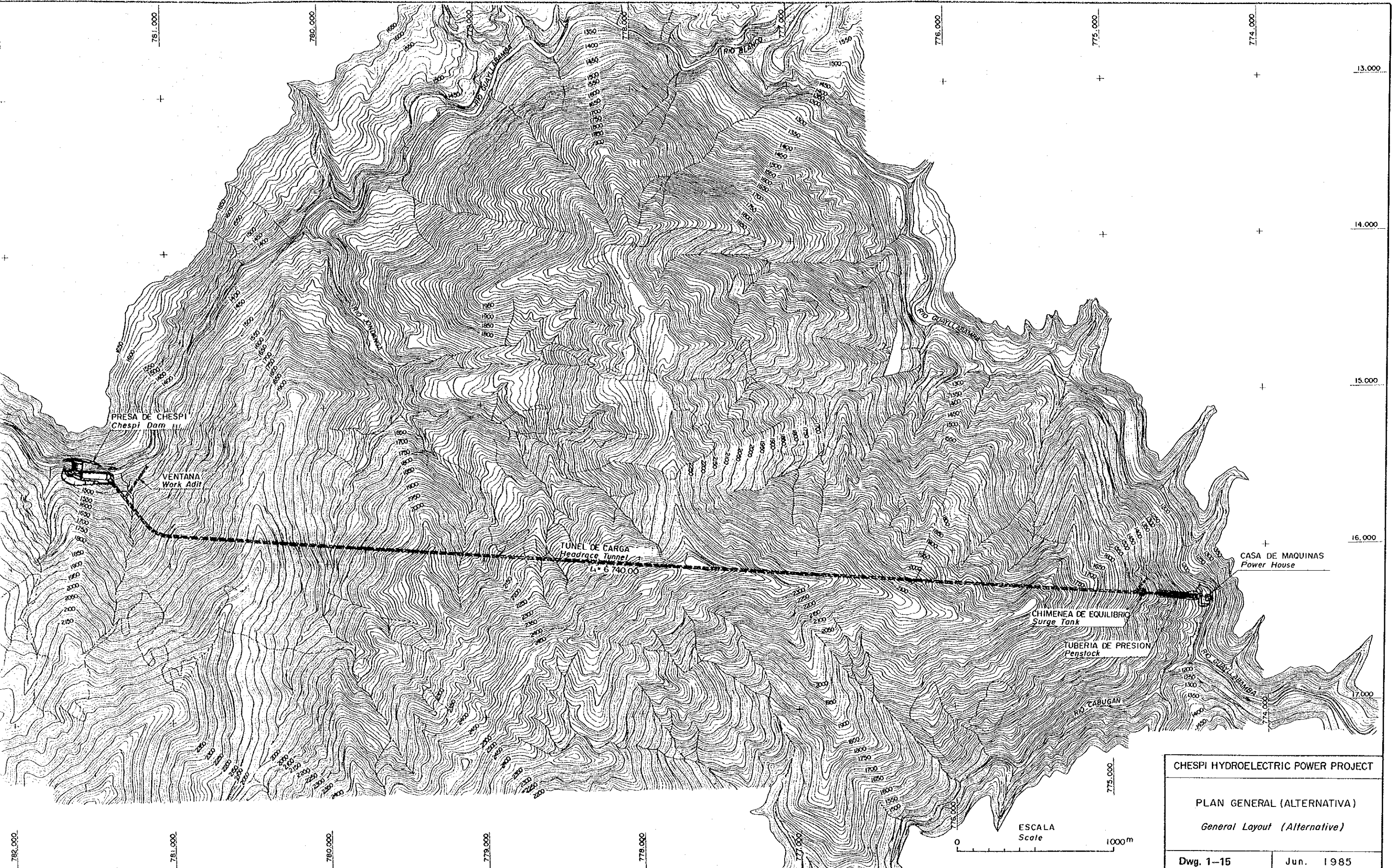


CHESPI HYDROELECTRIC POWER PROJECT	
PRESA DE CHESPI (2-2)	
<i>Chespi Dam (2-2)</i>	
Dwg. 1-14	Jun. 1985









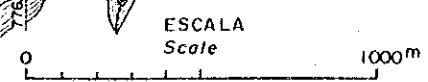
CHESPI HYDROELECTRIC POWER PROJECT

PLAN GENERAL (ALTERNATIVA)

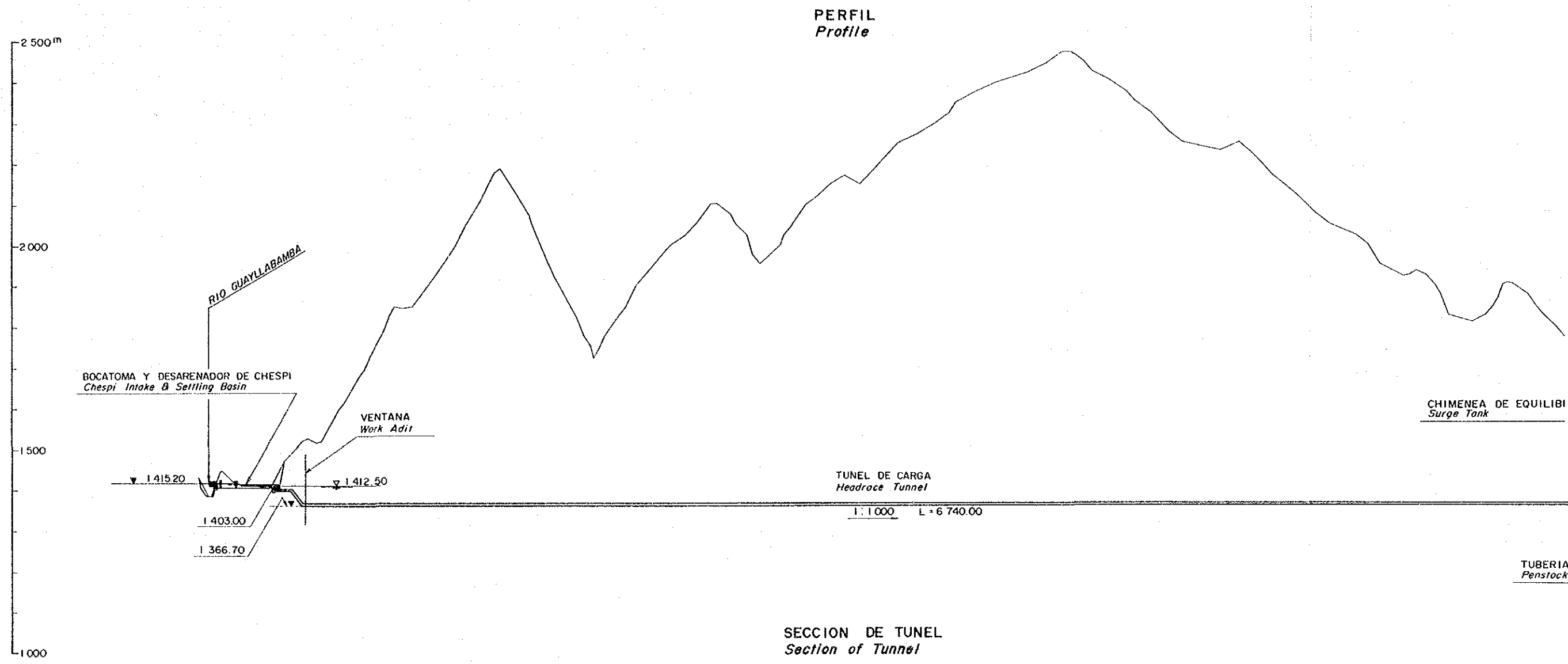
General Layout (Alternative)

Dwg. 1-15

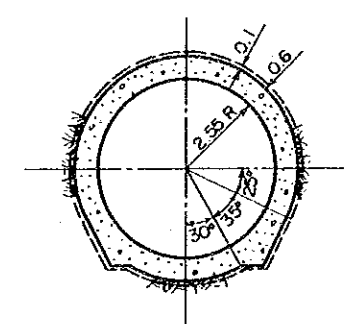
Jun. 1985



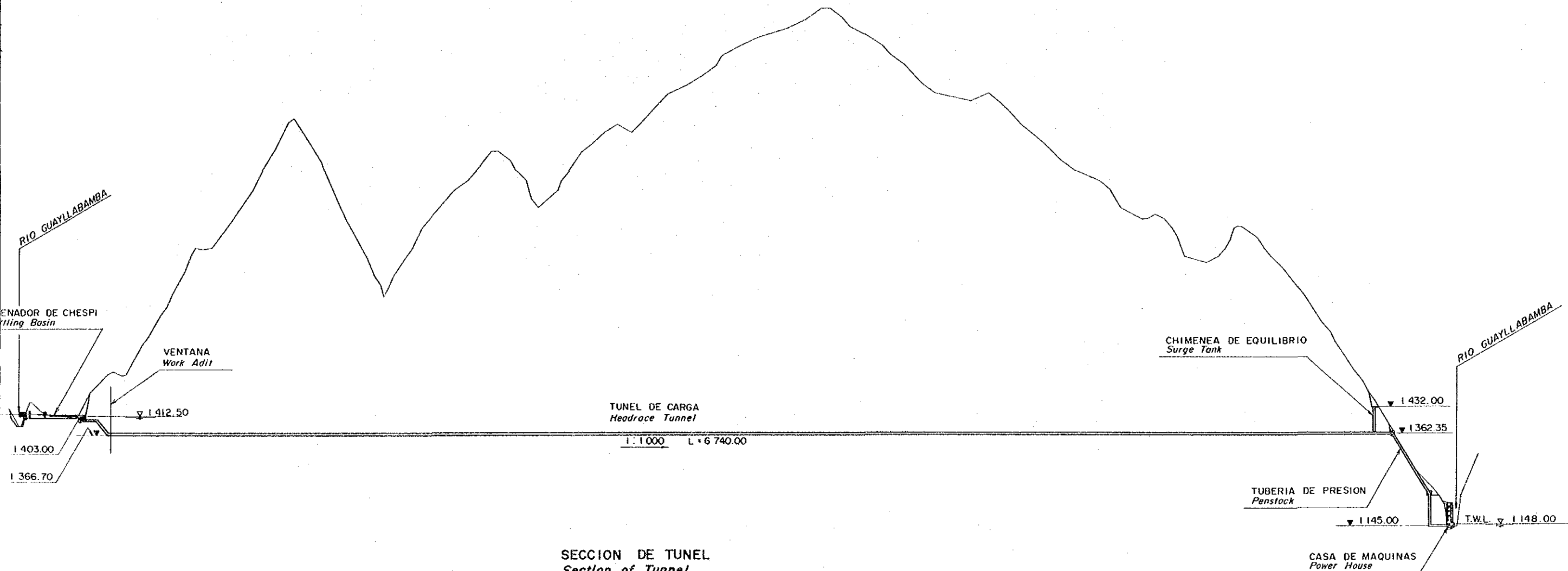




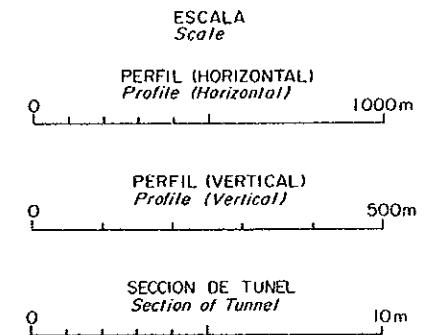
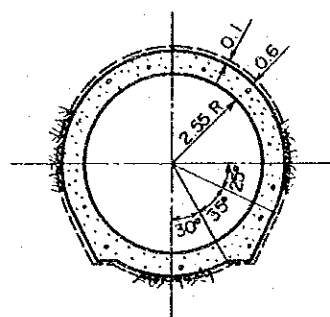
**SECCION DE TUNEL**  
*Section of Tunnel*



PERFIL  
Profile

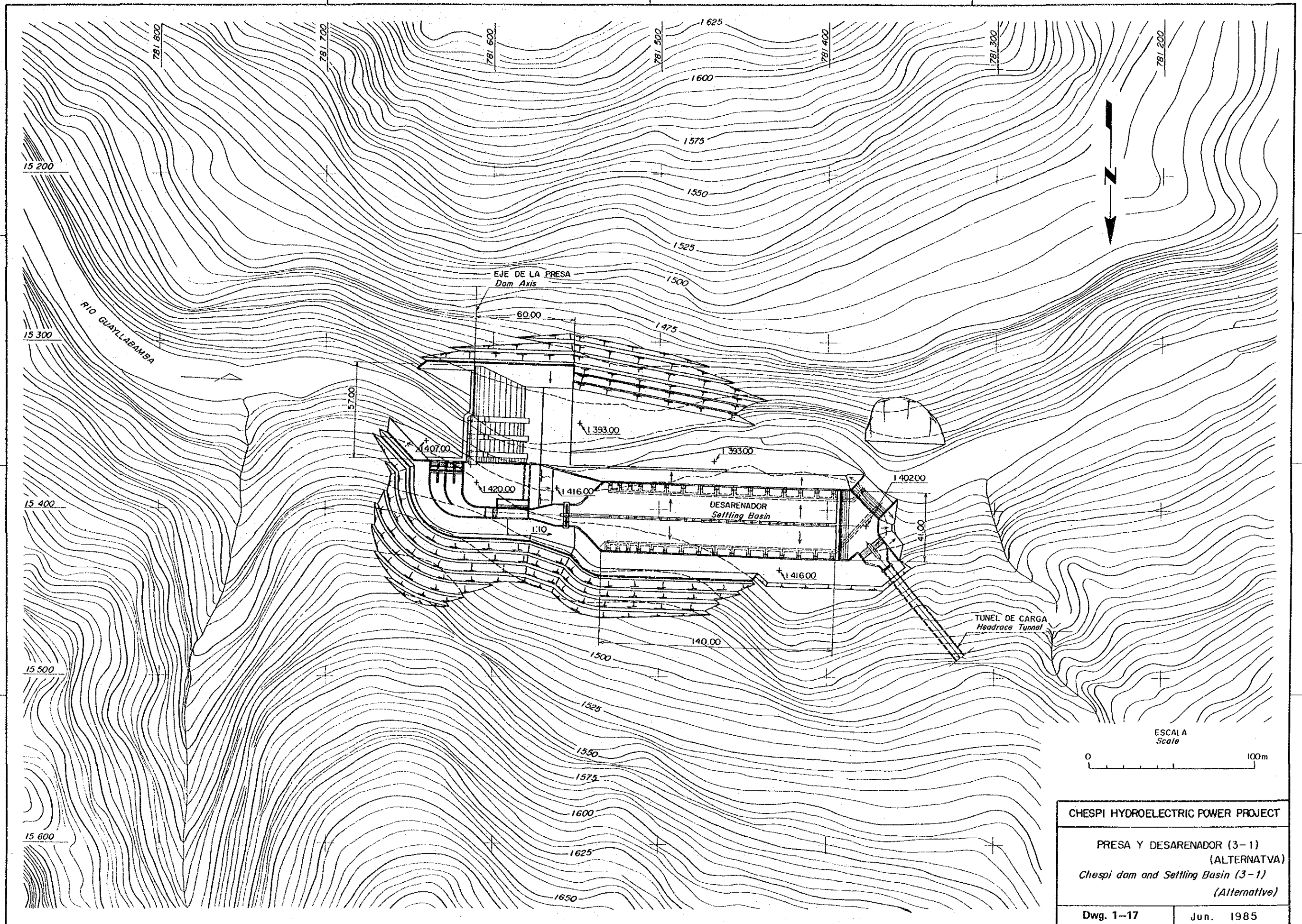


SECCION DE TUNEL  
Section of Tunnel



CHESPI HYDROELECTRIC POWER PROJECT	
PERFIL LONGITUDINAL (ALTERNATIVA) <i>Longitudinal Profile (Alternative)</i>	
Dwg. 1-16	Jun. 1985

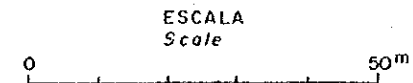
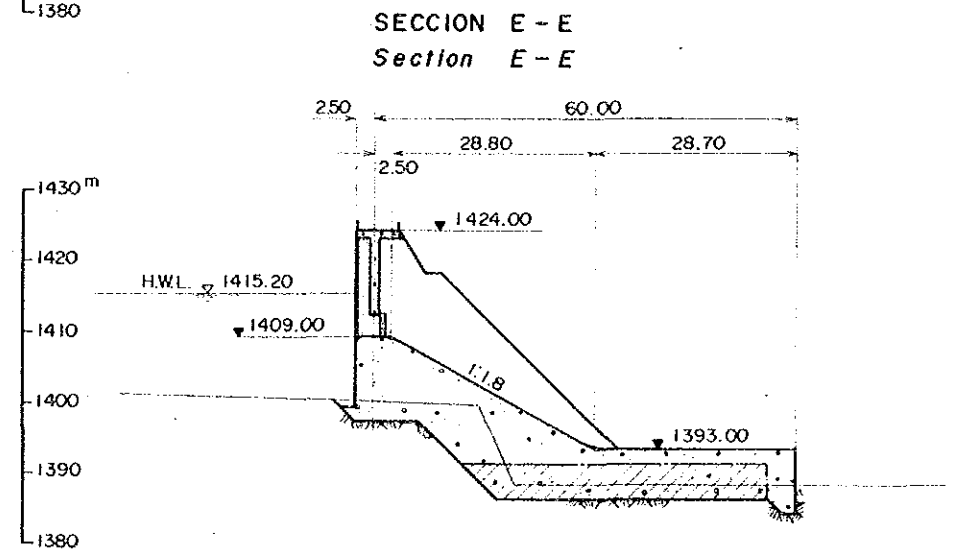
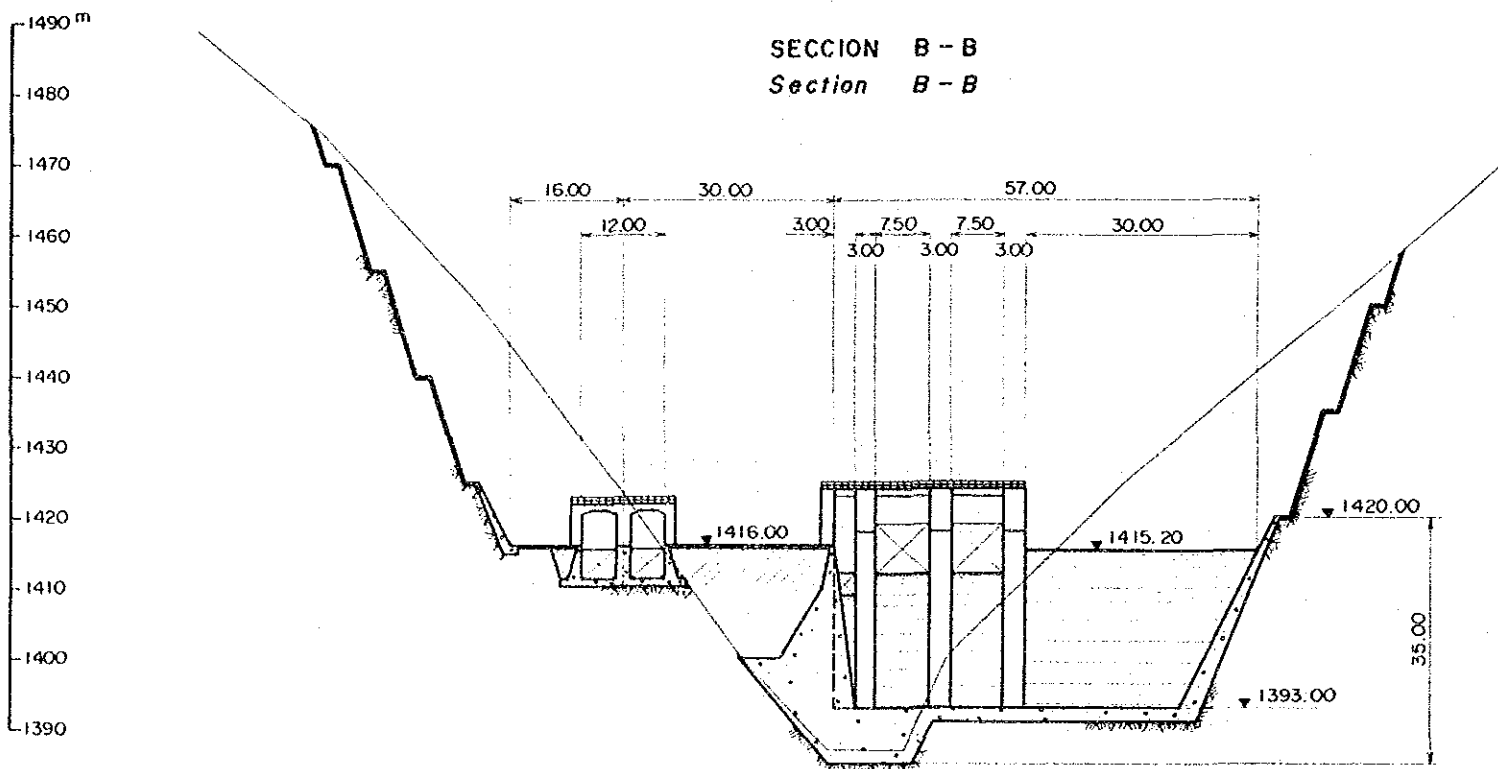
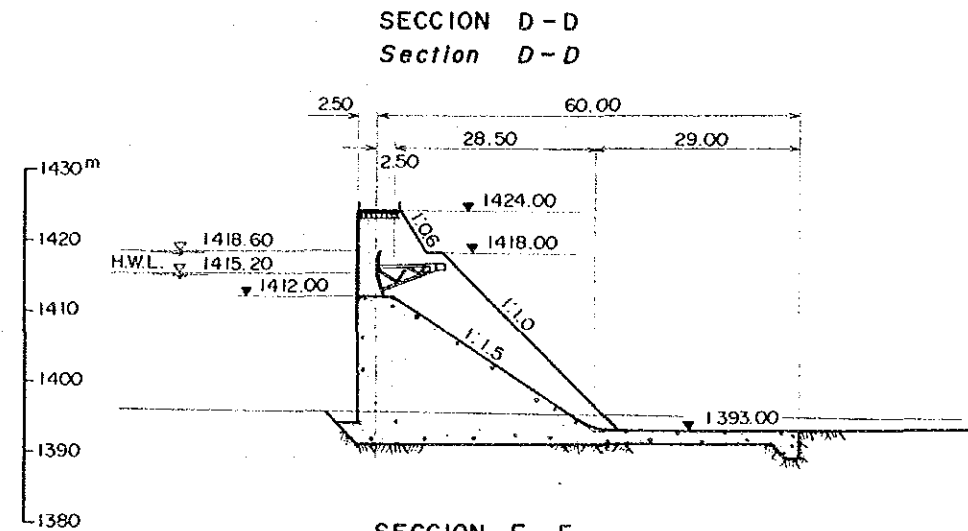
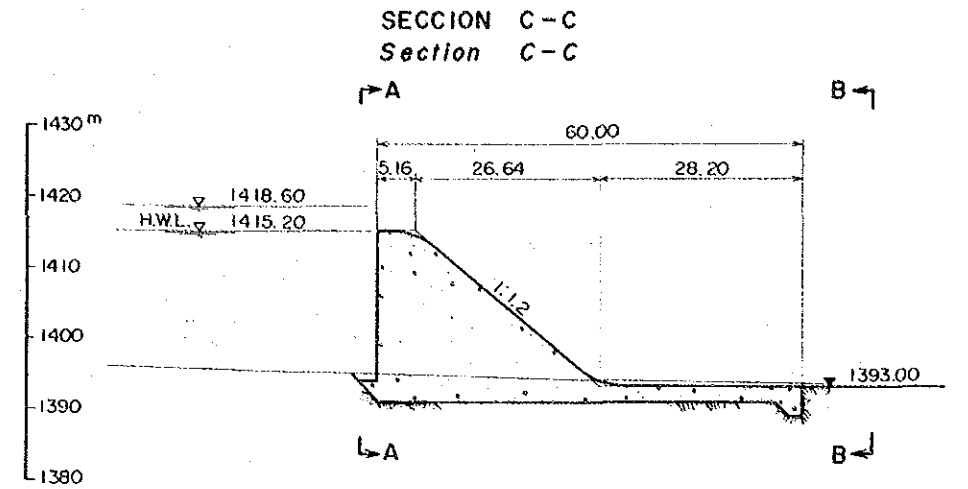
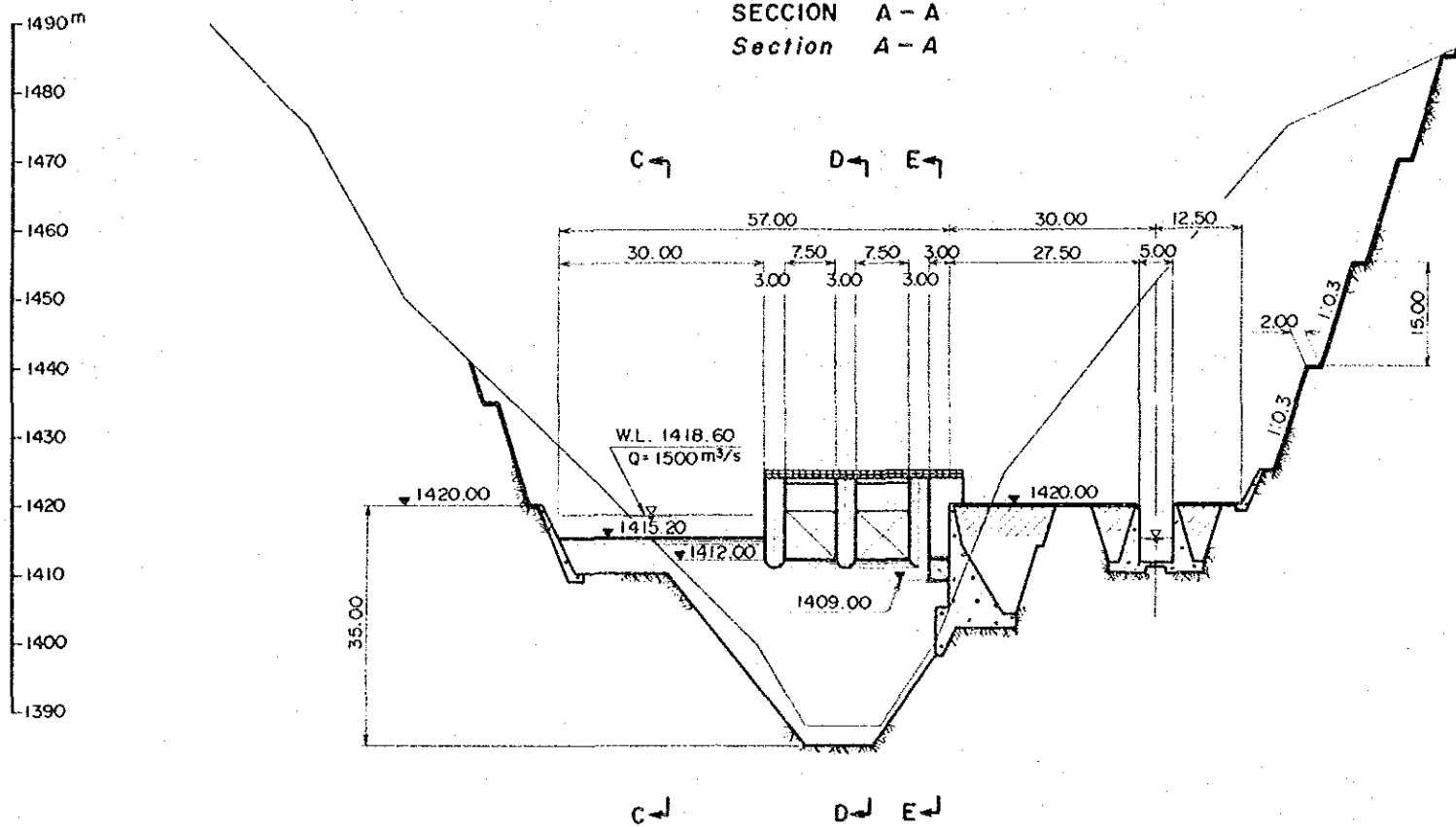




CHESPI HYDROELECTRIC POWER PROJECT	
PRESA Y DESARENADOR (3-1) (ALTERNATVA)	
Chespi dam and Settling Basin (3-1) (Alternative)	
Dwg. 1-17	Jun. 1985





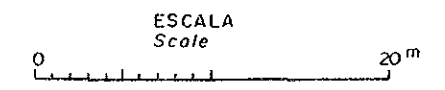
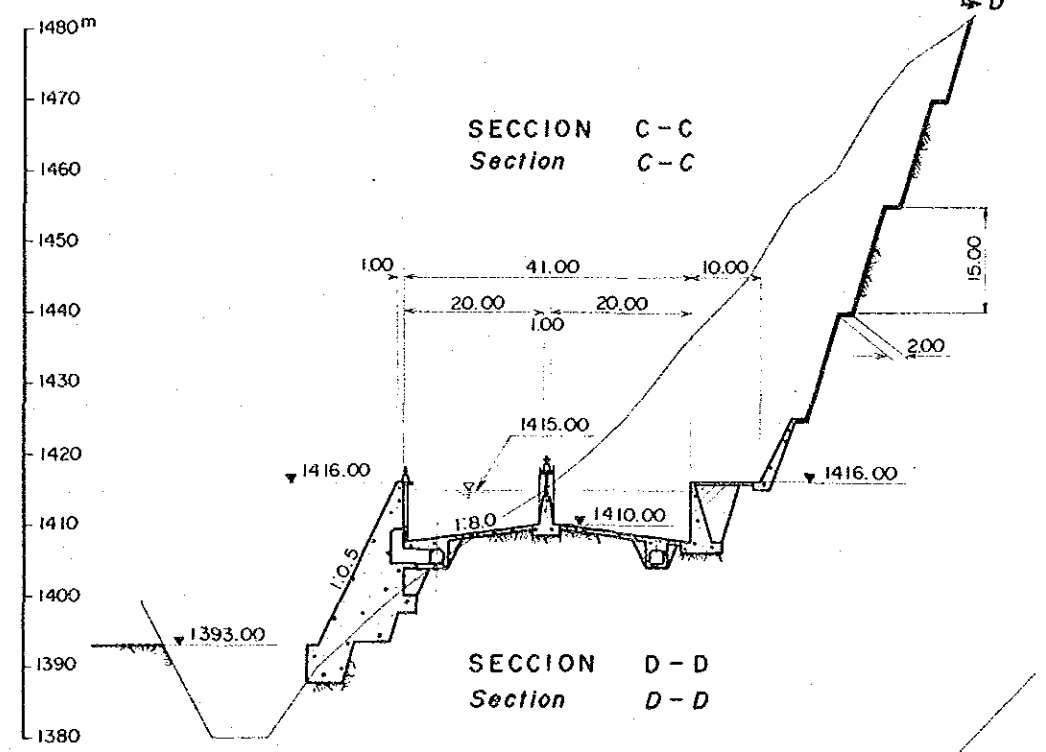
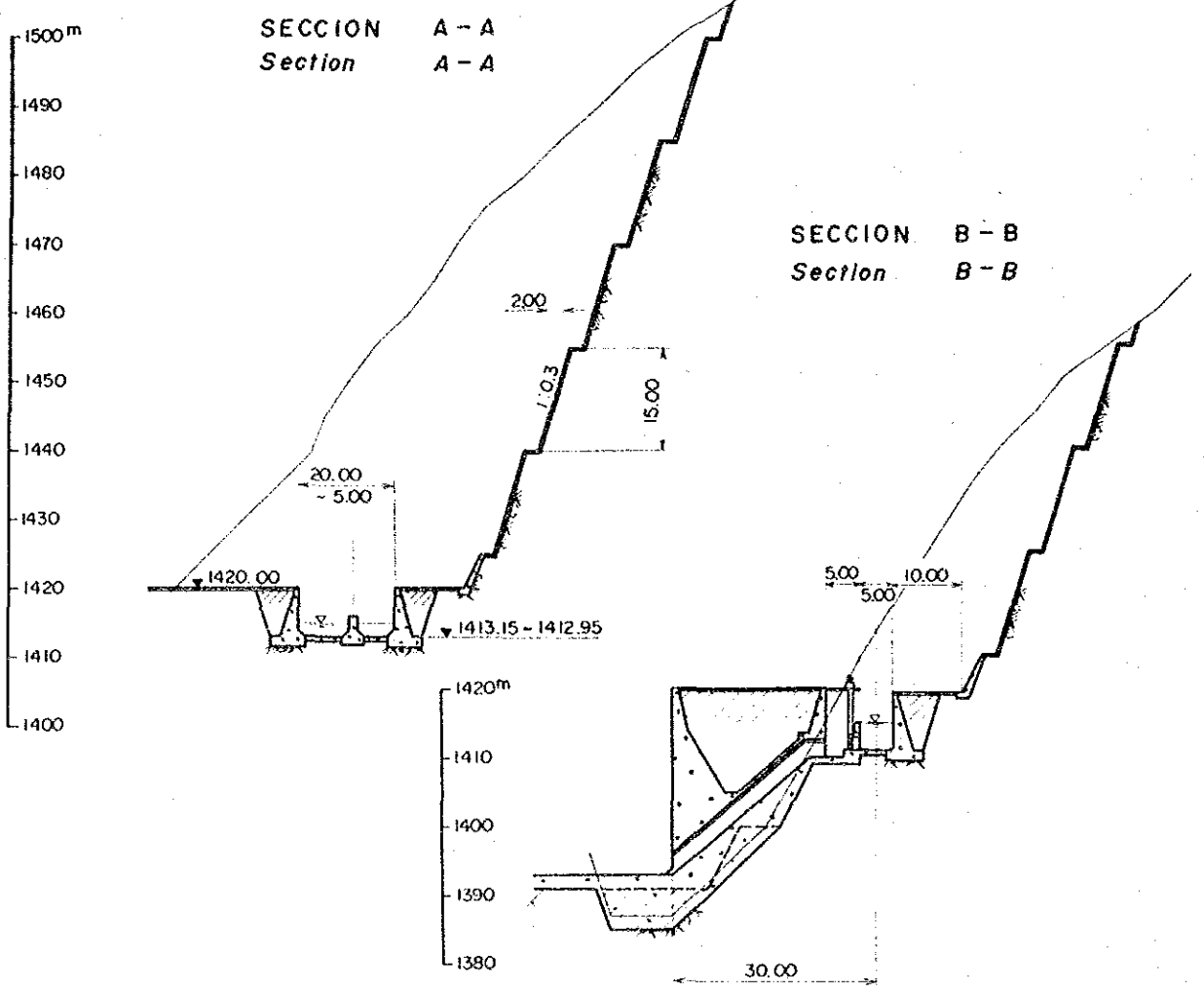
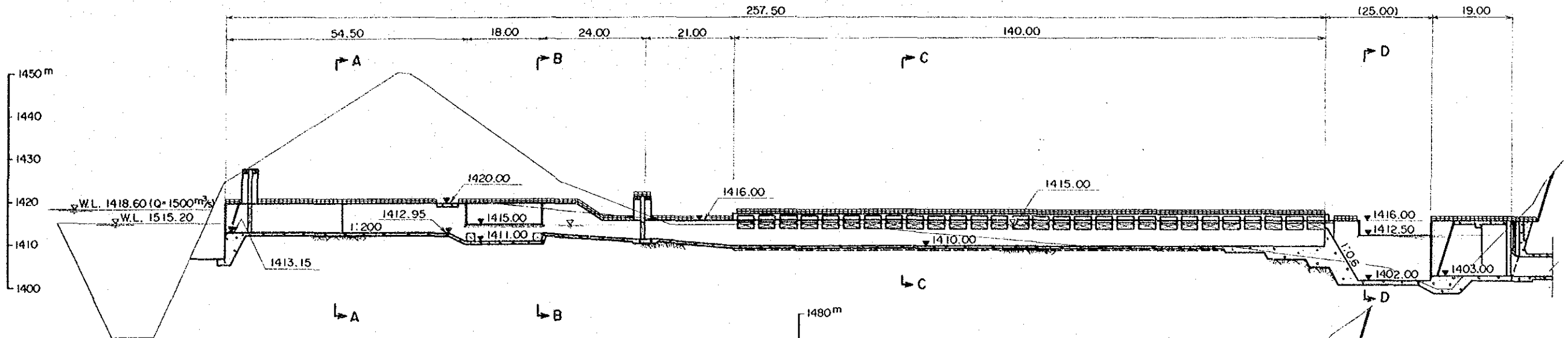


CHESPI HYDROELECTRIC POWER PROJECT	
PRESA Y DESARENADOR (3-2) (ALTERNATIVA) Chespi dam and Settling Basin (3-2) (Alternative)	
Dwg. 1-18	Jun , 1985



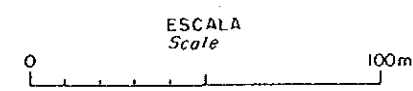
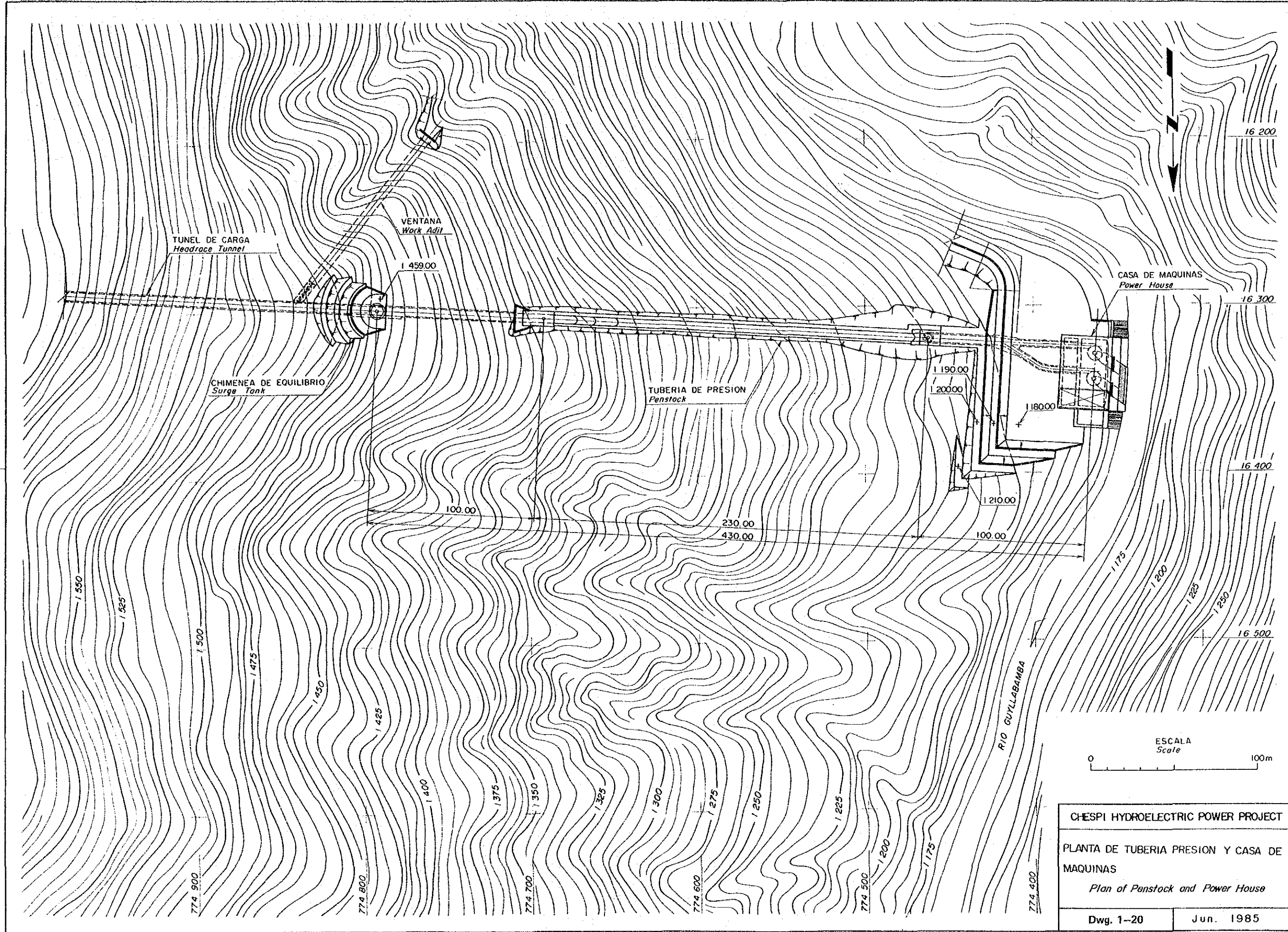


PERFIL  
Profile



CHESPI HYDROELECTRIC POWER PROJECT  
PRESA Y DESARENADOR (3-3)  
(ALTERNATVA)  
Chespi dam and Settling Basin (3-3)  
(Alternative)  
Dwg. 1-19 Jun. 1985

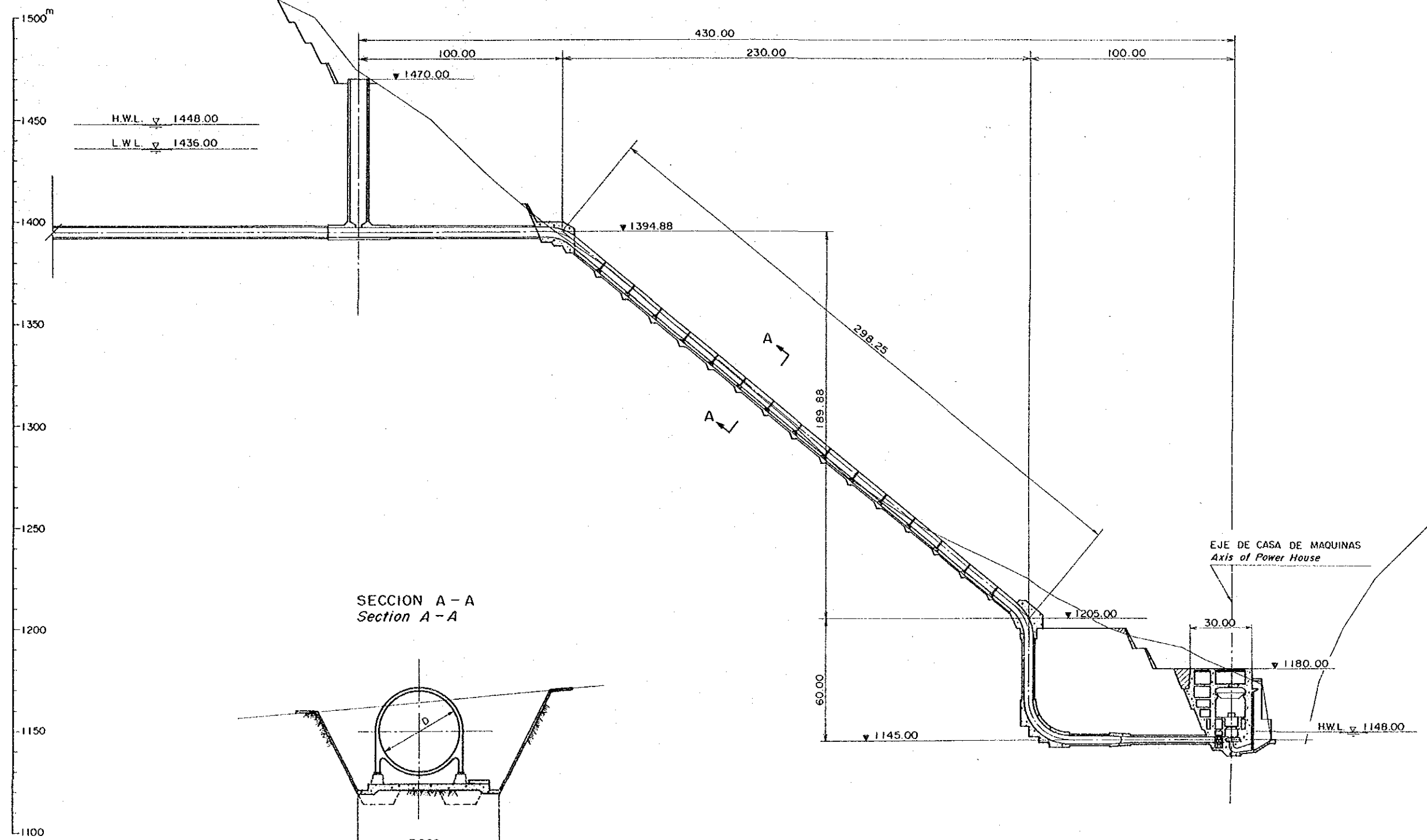




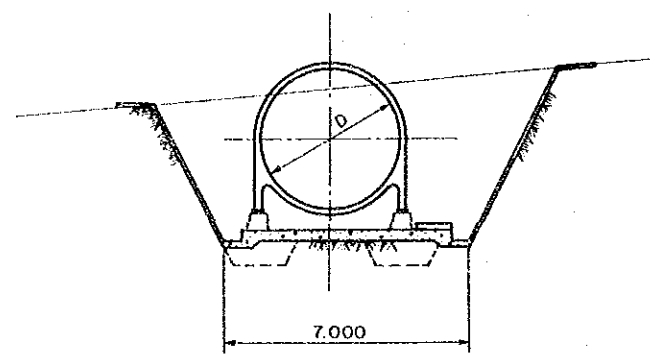
CHESPI HYDROELECTRIC POWER PROJECT	
PLANTA DE TUBERIA PRESION Y CASA DE MAQUINAS	
Plan of Penstock and Power House	
Dwg. 1-20	Jun. 1985



PERFIL  
Profile



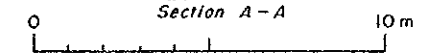
SECCION A - A  
Section A - A



ESCALA  
Scale



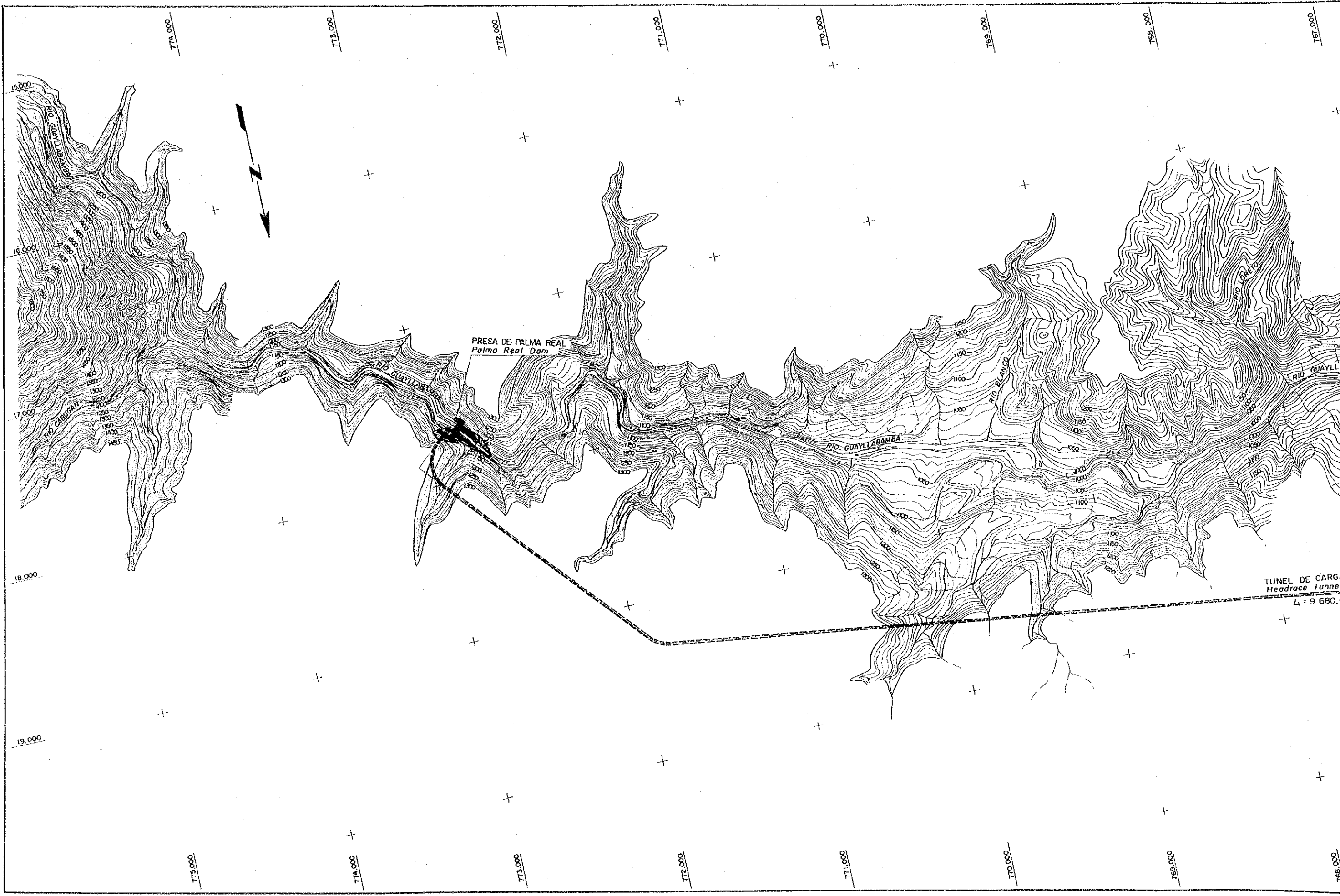
SECCION A - A  
Section A - A



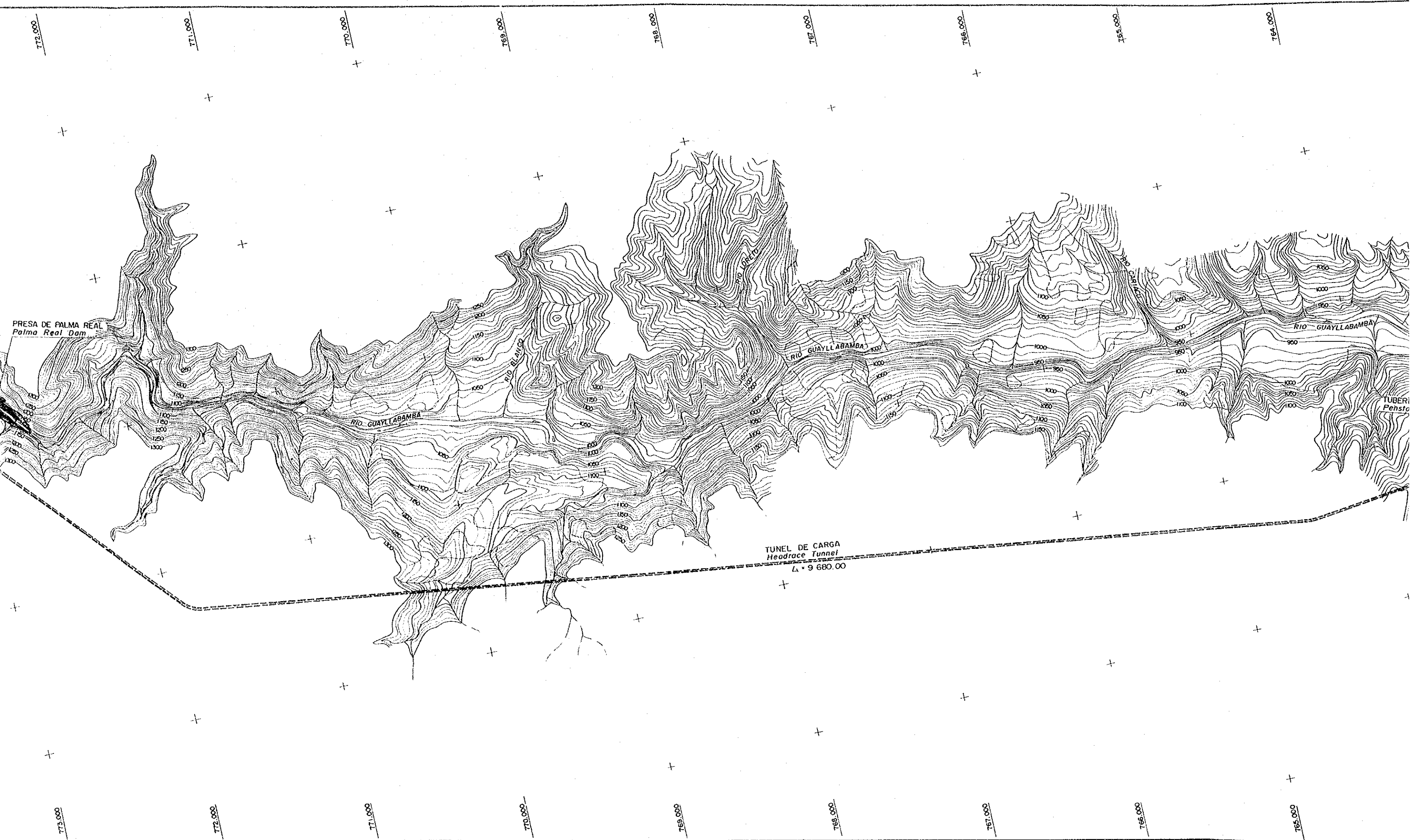
EJE DE CASA DE MAQUINAS  
Axis of Power House

CHESPI HYDROELECTRIC POWER PROJECT	
PERFIL DE TUBERIA PRESION Y CASA DE MAQUINAS	
Profile of Penstock and Power House	
Dwg. 1-21	Jun. 1985









PRESA DE PALMA REAL  
Palma Real Dam

RIO GUAYLLABAMBA

RIO BLANCO

RIO LLORITO

RIO GUAYLLABAMBA

RIO CAPUR

RIO GUAYLLABAMBA

TUBERIA  
Penstock

TUNEL DE CARGA  
Headrace Tunnel  
L = 9 680.00

772.000

771.000

770.000

769.000

768.000

767.000

766.000

765.000

764.000

773.000

772.000

771.000

770.000

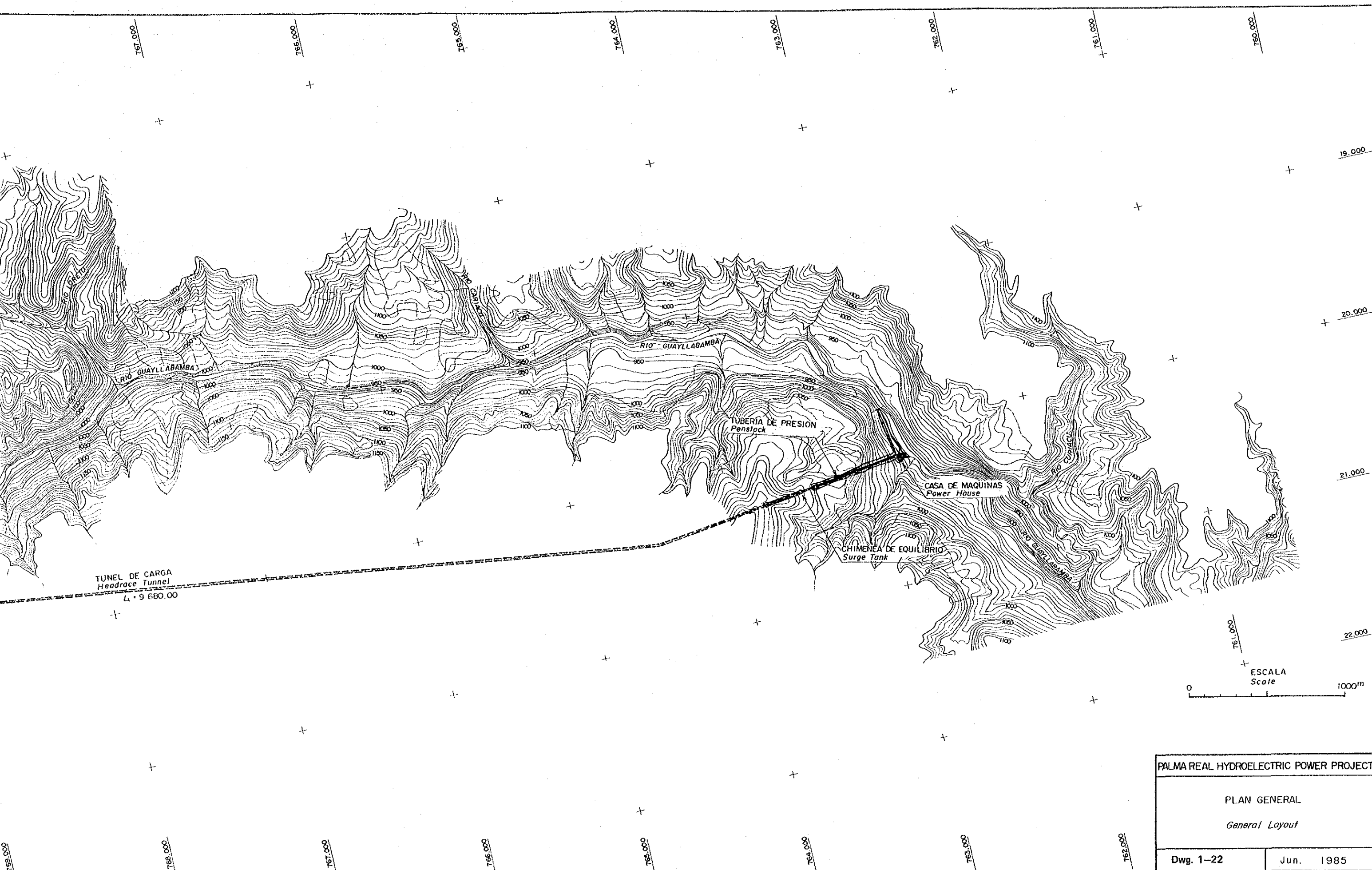
769.000

768.000

767.000

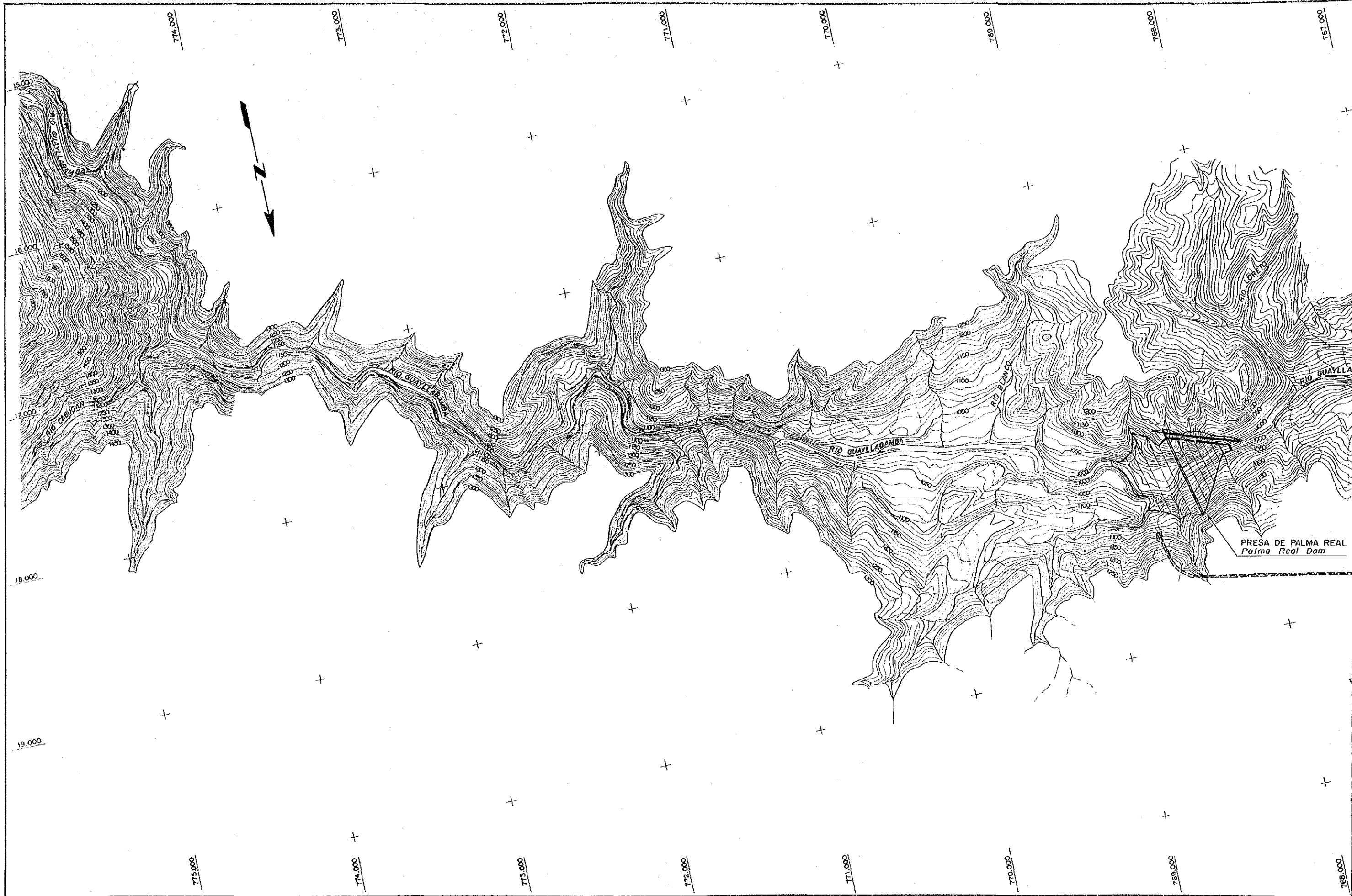
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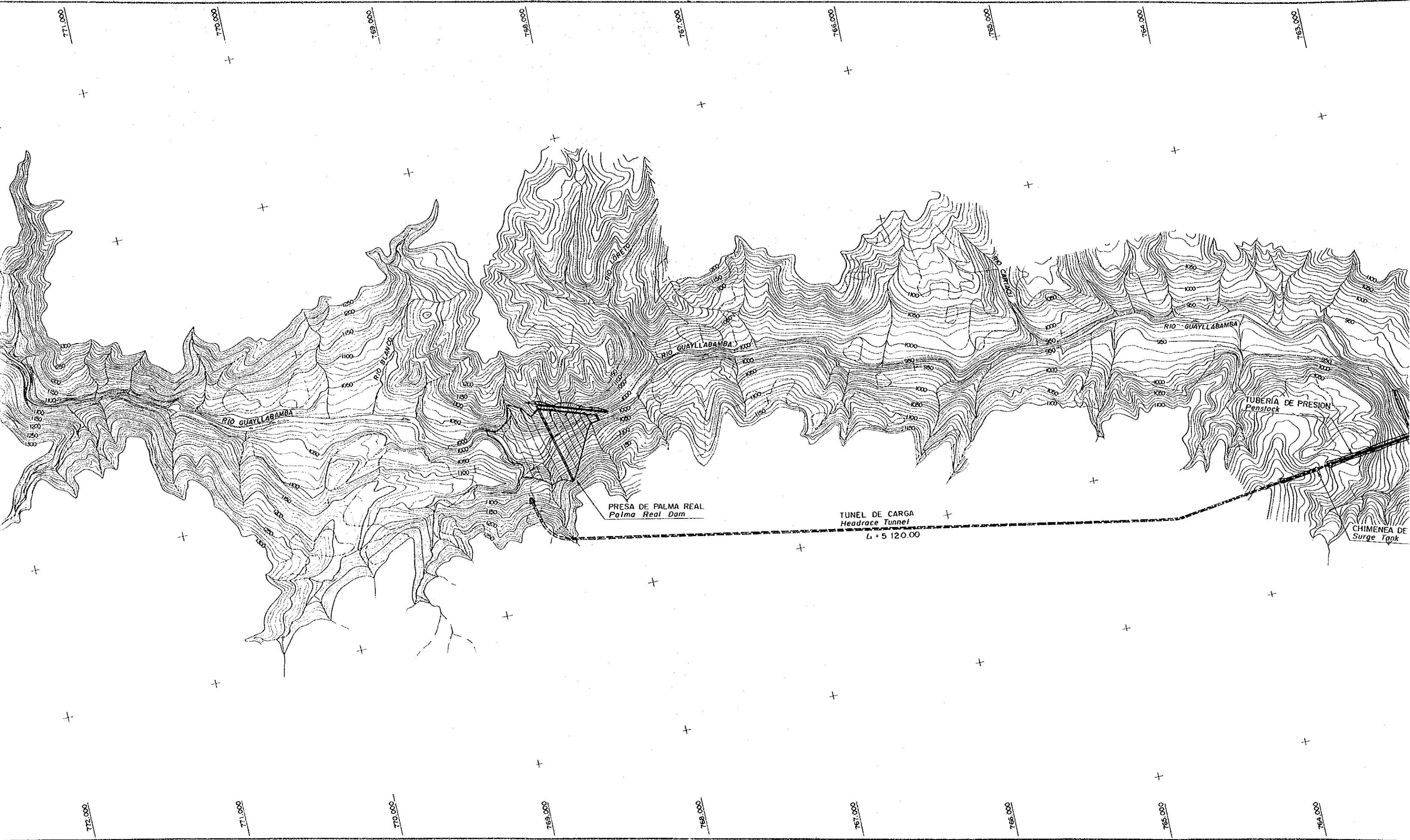
765.000



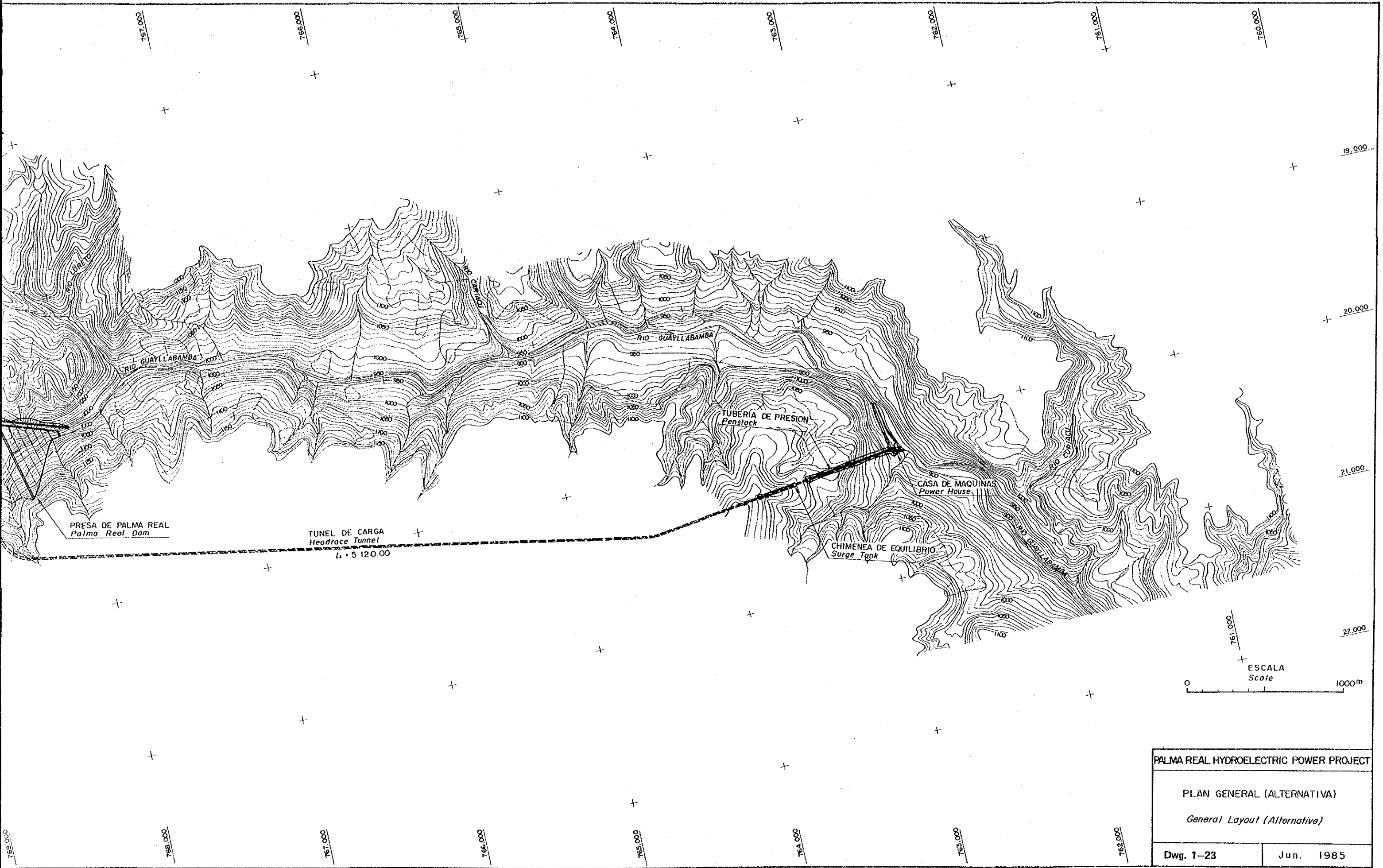
PALMA REAL HYDROELECTRIC POWER PROJECT	
PLAN GENERAL	
General Layout	
Dwg. 1-22	Jun. 1985









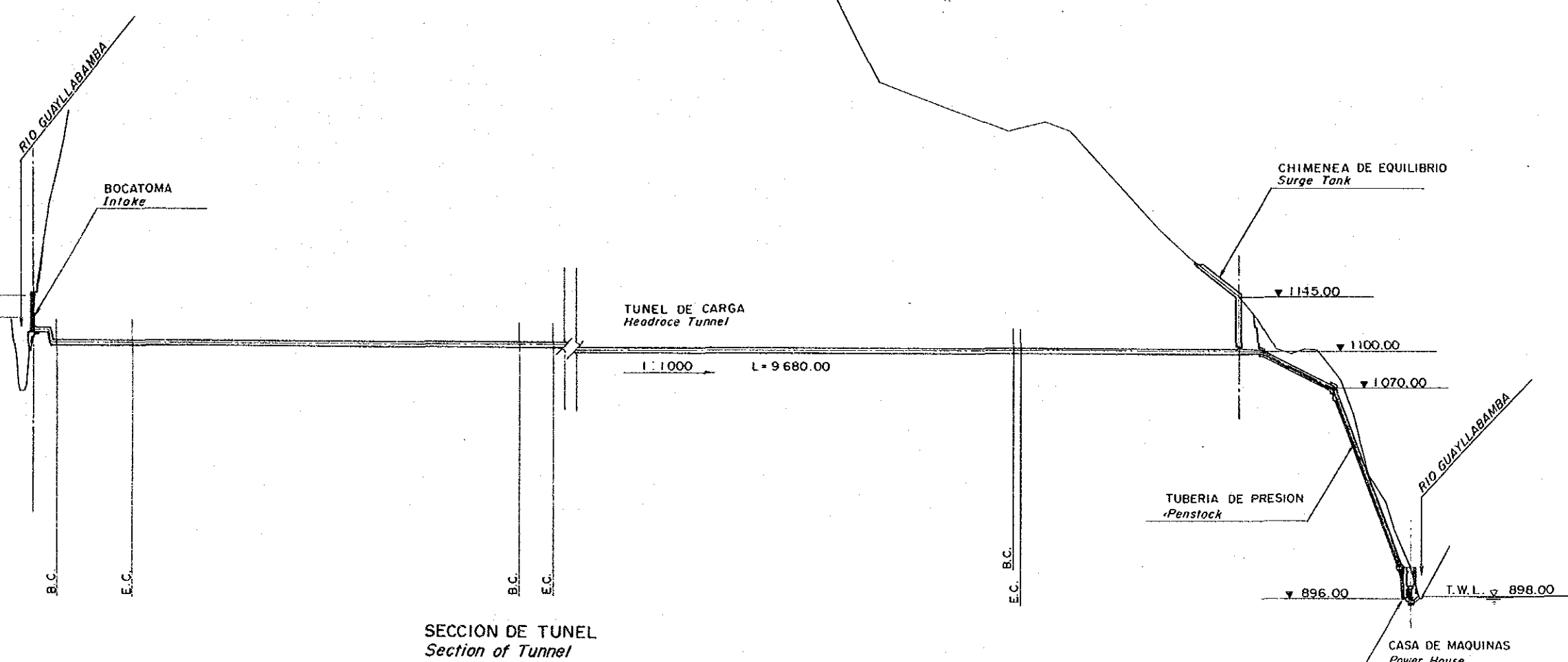


PALMA REAL HYDROELECTRIC POWER PROJECT	
PLAN GENERAL (ALTERNATIVA)	
<i>General Layout (Alternative)</i>	
Dwg. 1-23	Jun. 1985

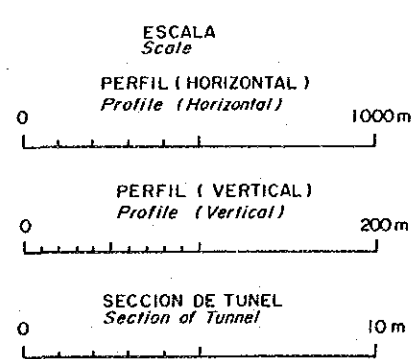
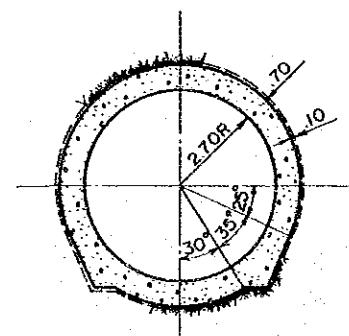


1500<sup>m</sup>  
1400  
1300  
1200  
1100  
1000  
900  
800

PERFIL  
Profile



SECCION DE TUNEL  
Section of Tunnel

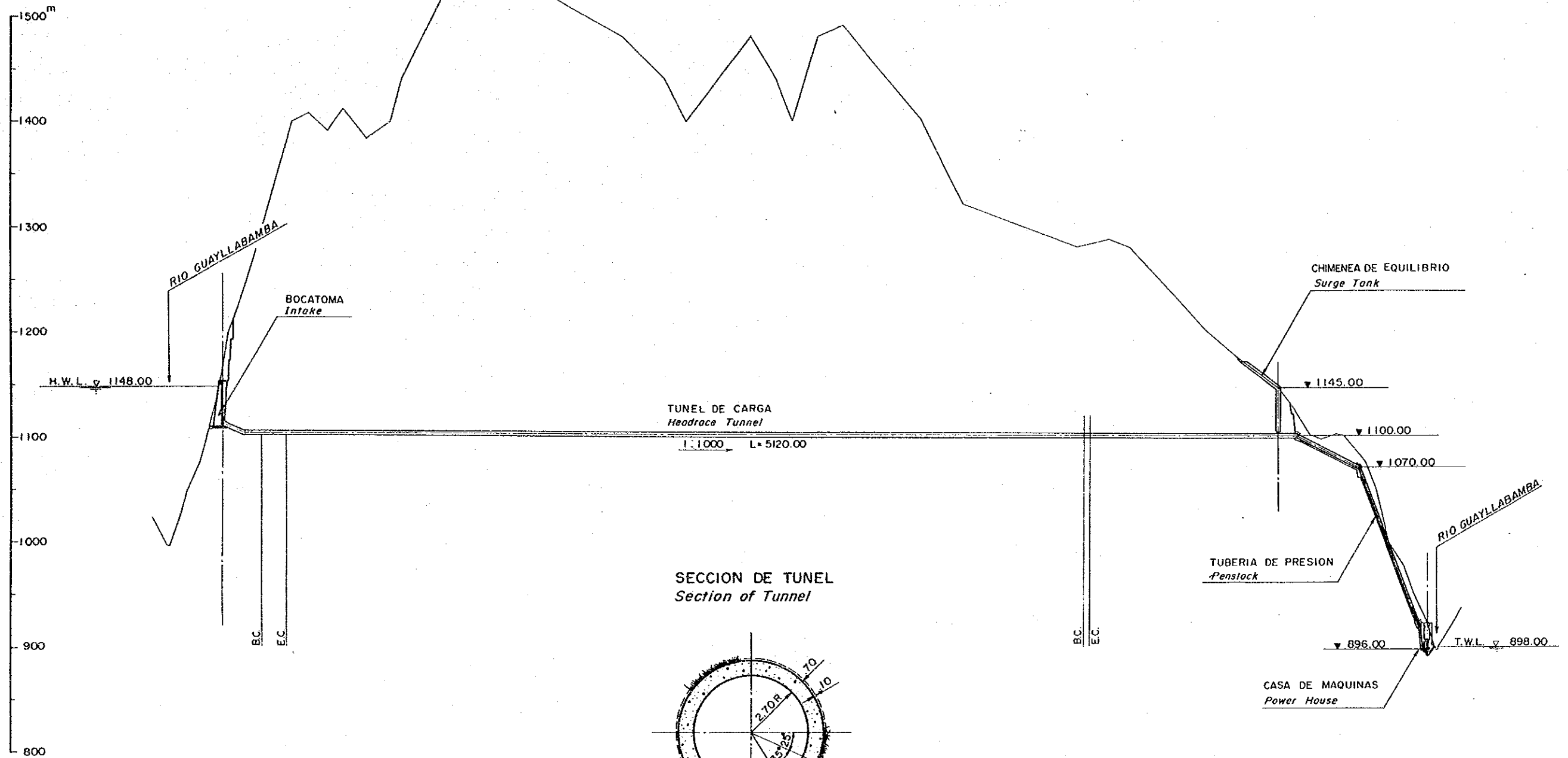


PALMA REAL HYDROELECTRIC POWER PROJECT	
PERFIL LONGITUDINAL Longitudinal Profile	
Dwg. 1-24	Jun. 1985

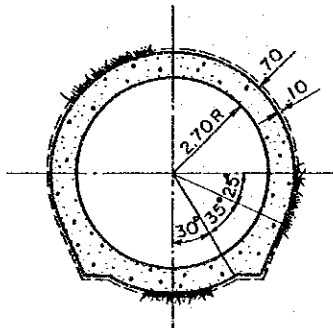




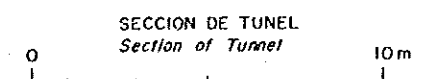
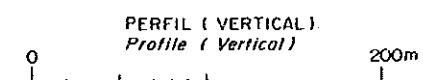
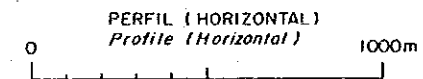
PERFIL  
Profile



SECCION DE TUNEL  
Section of Tunnel



ESCALA  
Scale



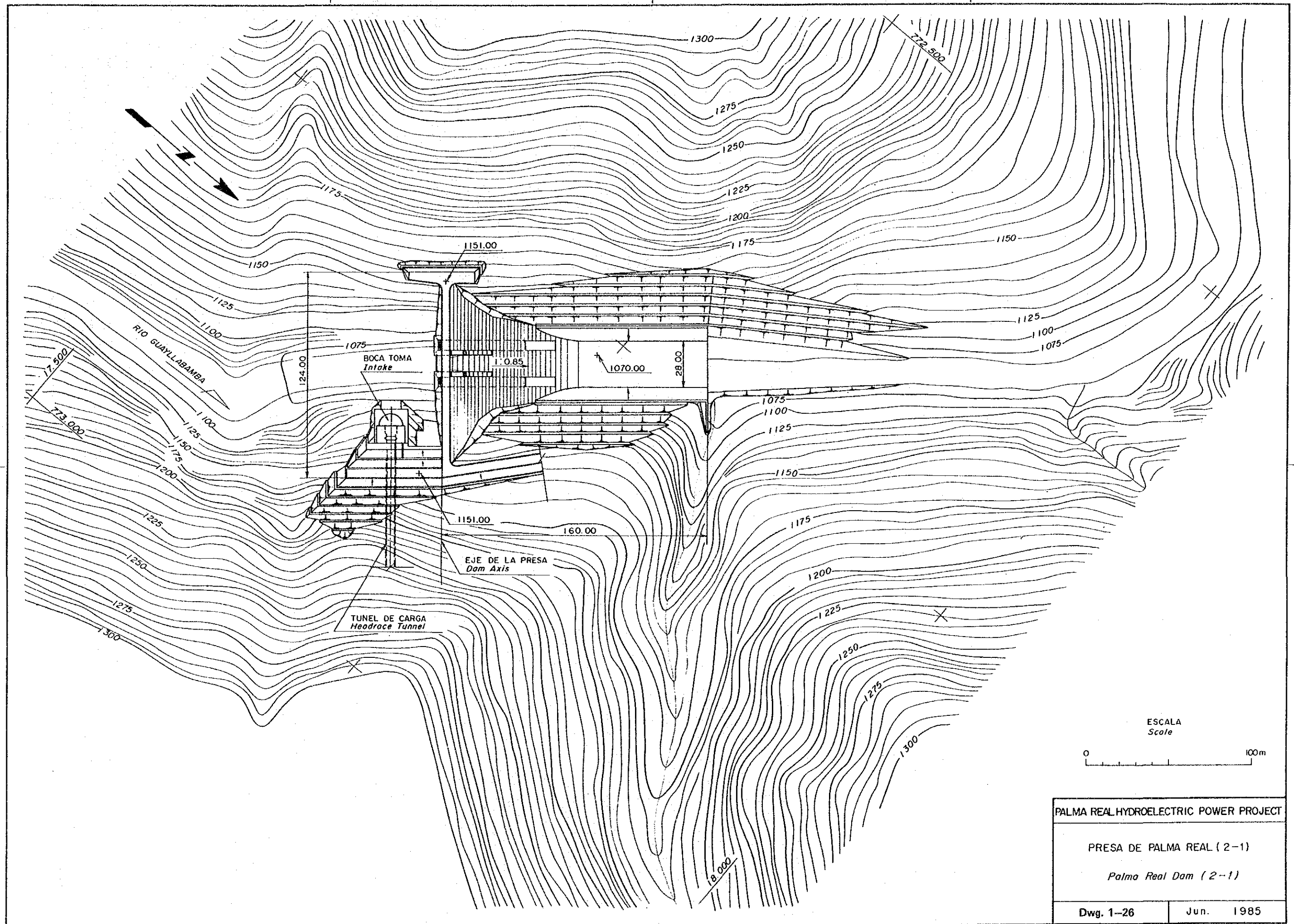
FALMA REAL HYDROELECTRIC POWER PROJECT

PERFIL LONGITUDINAL (ALTERNATIVA)  
Longitudinal Profile (Alternative)

Dwg. 1-25

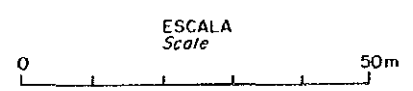
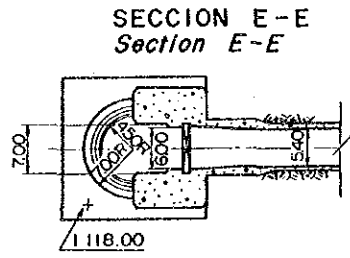
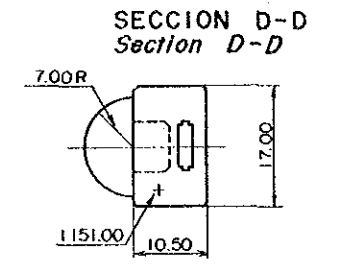
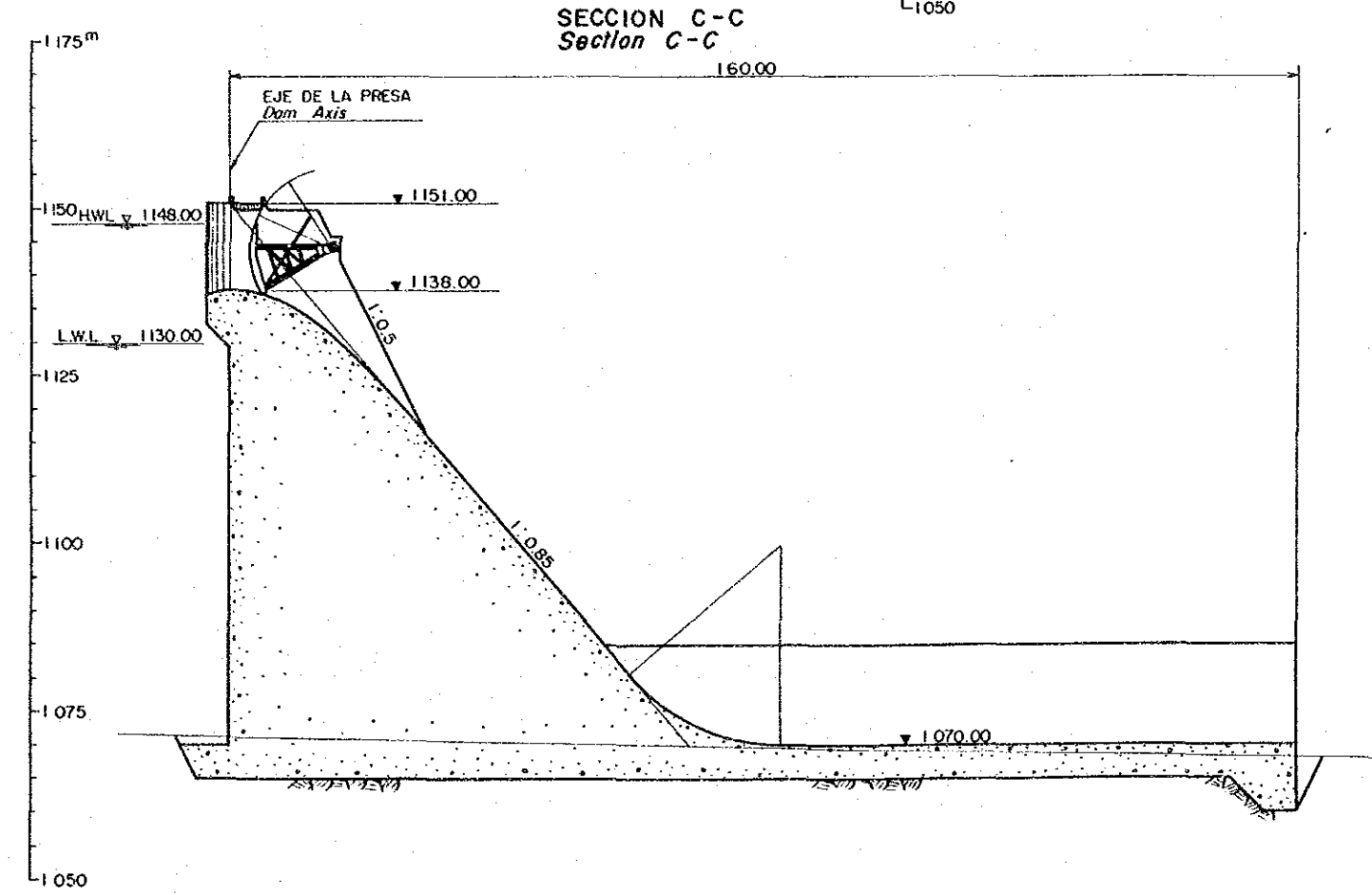
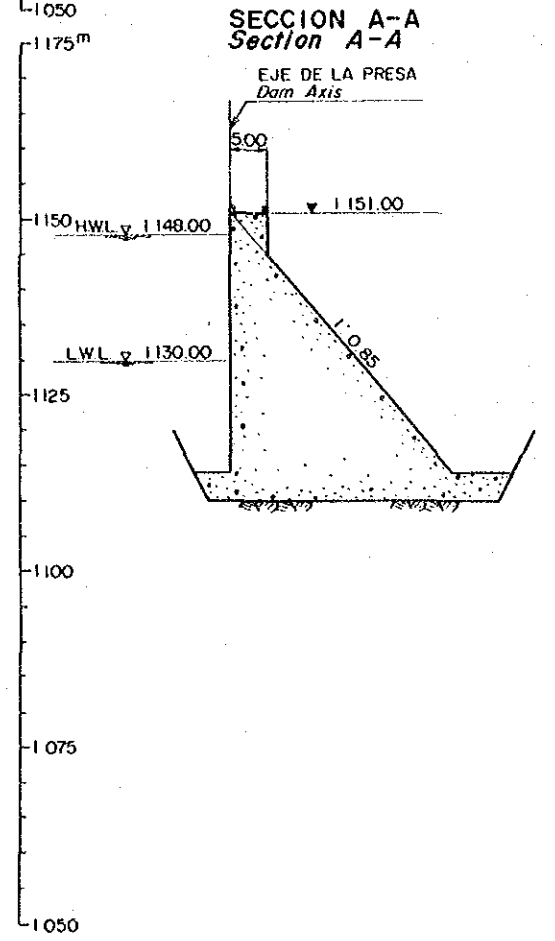
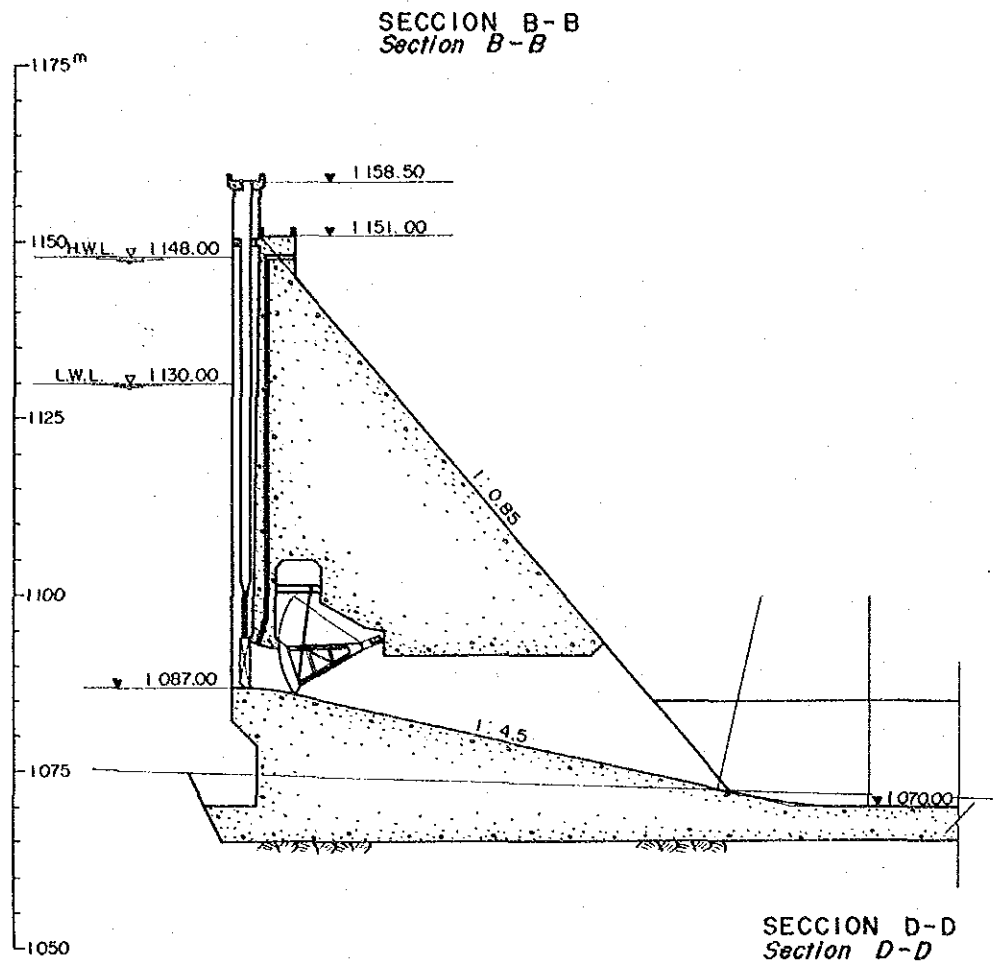
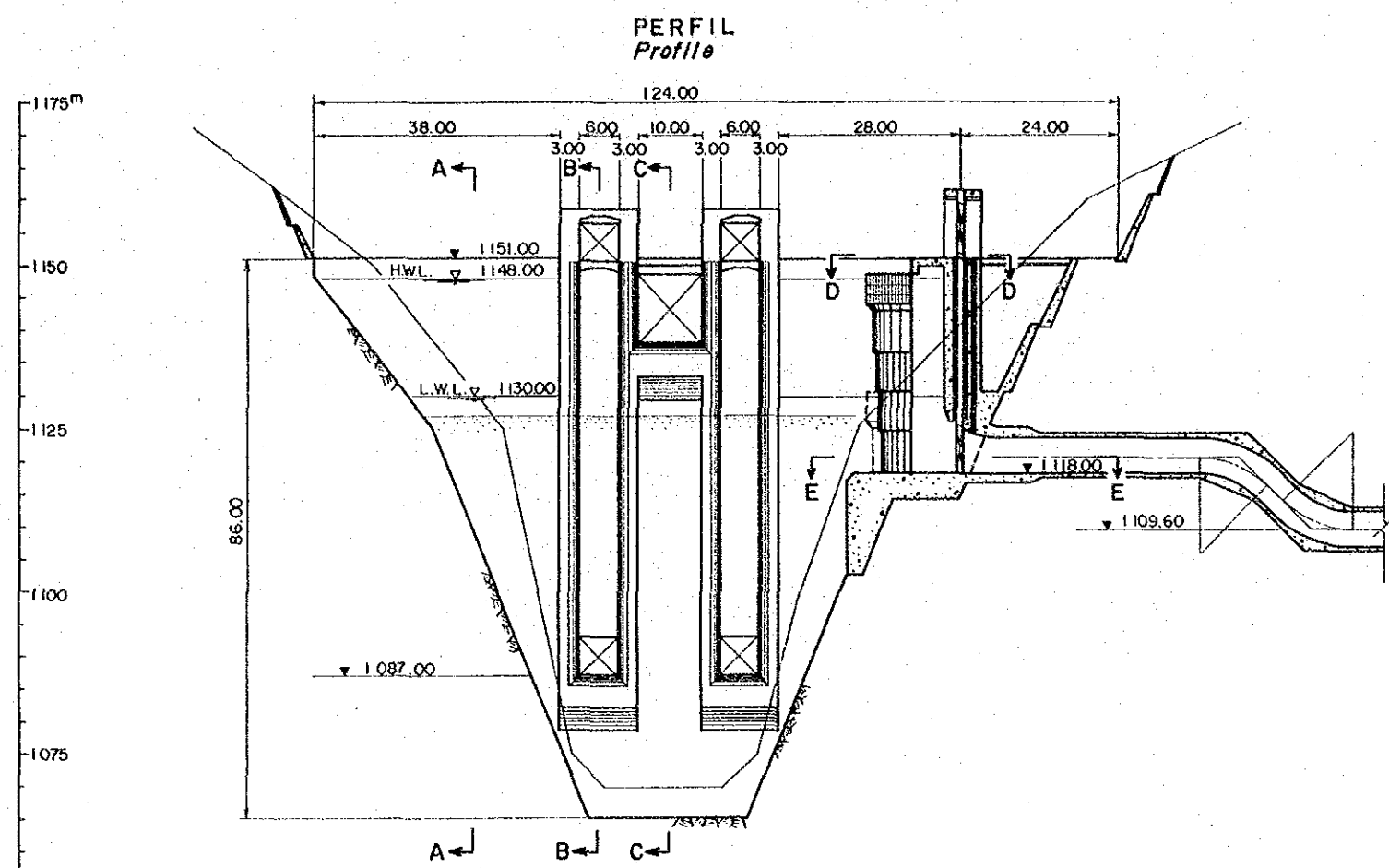
Jun. 1985





PALMA REAL HYDROELECTRIC POWER PROJECT	
PRESA DE PALMA REAL (2-1)	
<i>Palma Real Dam (2-1)</i>	
Dwg. 1-26	Jun. 1985

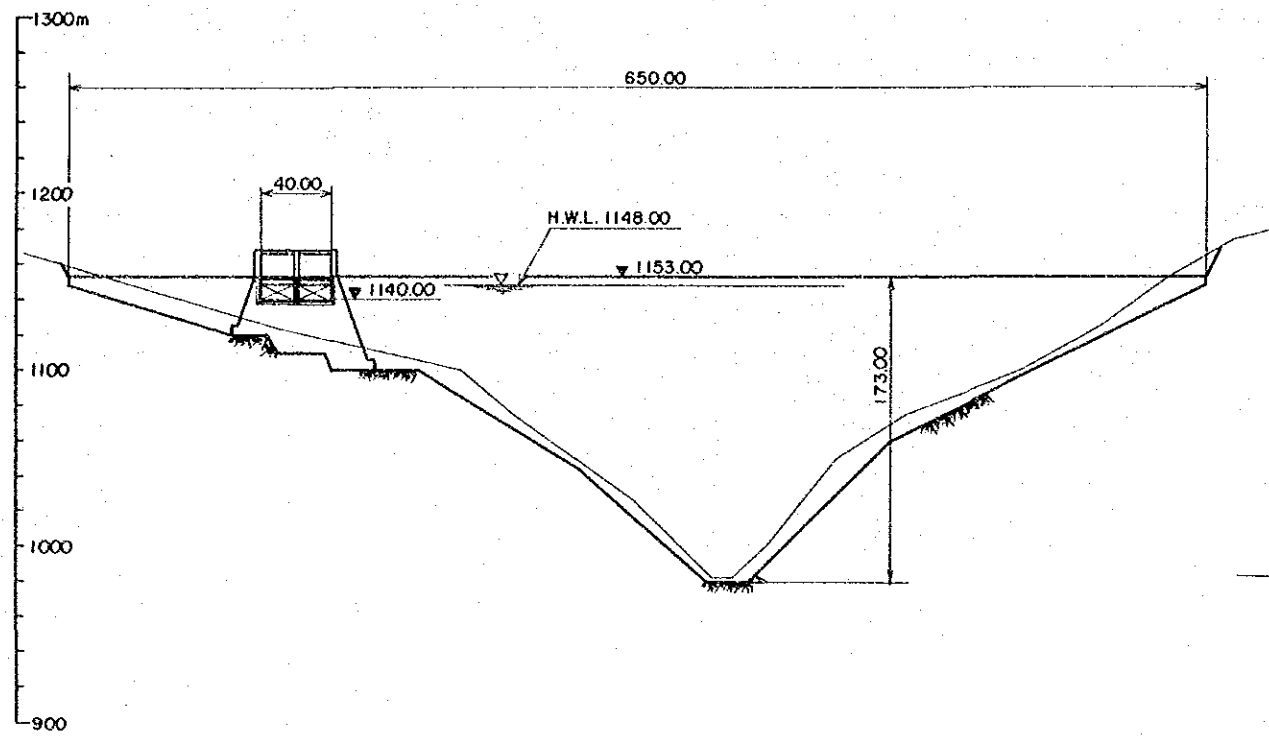




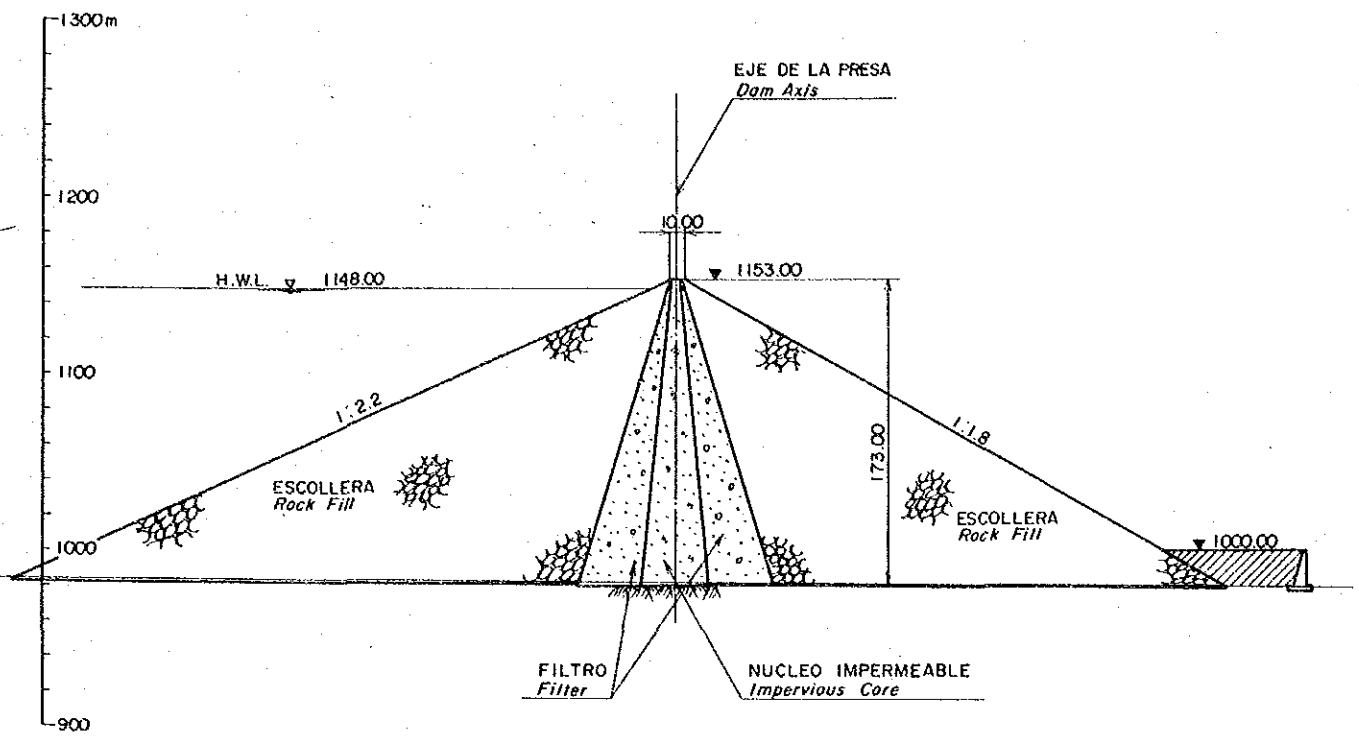
PALMA REAL HYDROELECTRIC POWER PROJECT	
PRESA DE PALMA REAL (2-2)	
<i>Palma Real Dam (2-2)</i>	
Dwg. 1-27	Jun. 1985



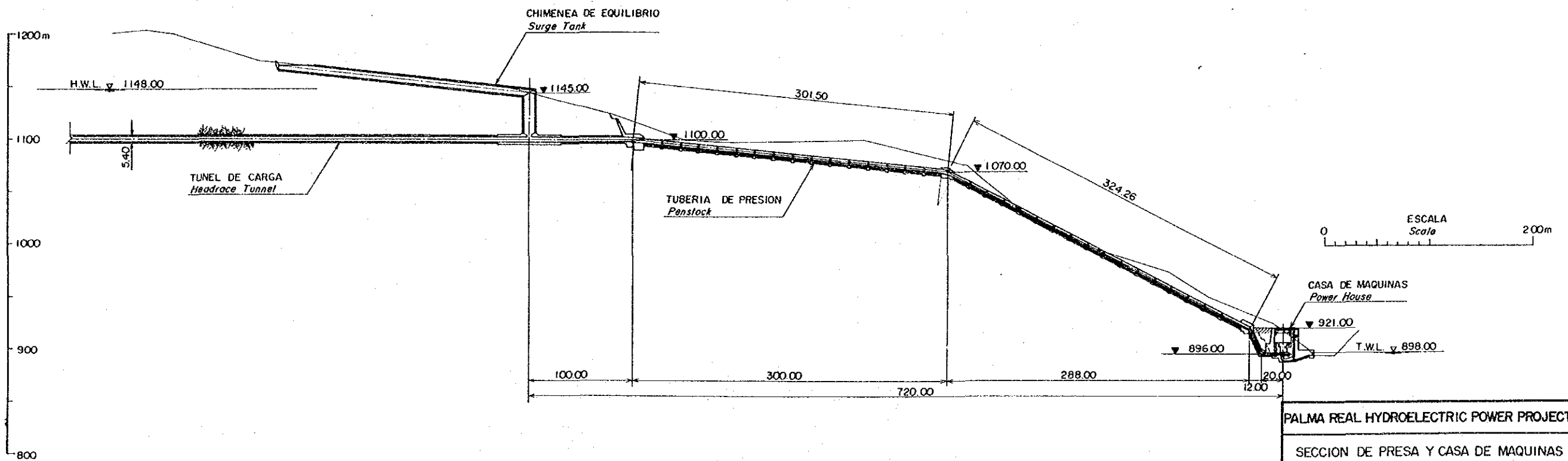
PERFIL DE PRESA  
Dam Profile



SECCION DE PRESA  
Dam Section



PERFIL DE CASA DE MAQUINAS  
Profile of Power House



PALMA REAL HYDROELECTRIC POWER PROJECT  
SECCION DE PRESA Y CASA DE MAQUINAS  
(ALTERNATIVA)  
Section of Dam and Power House  
(Alternative)

Dwg. 1-28

Jun. 1985





## **(2) DATA OF HYDROLOGY**

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Table 2-1 Monthly Rainfall Data at the Quito Meteorological Gauging Station (1-2)

EQUITA

YYYY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	CUMUL.
1891	222.40	134.60	188.40	247.50	67.30	71.80	0.80	8.20	73.70	172.70	42.00	155.40	1326.10
1892	120.90	119.90	239.90	277.10	157.50	12.50	3.80	12.20	125.50	118.00	187.50	65.10	1429.50
1893	50.20	232.80	218.80	150.70	173.70	78.80	16.30	30.70	51.70	210.00	233.50	68.50	1617.30
1894	125.10	129.30	50.80	148.10	172.70	27.00	15.60	25.40	38.10	108.60	64.20	134.60	959.00
1895	106.00	103.20	97.40	140.60	112.20	21.70	5.00	15.60	26.00	113.80	67.30	53.40	836.40
1896	212.70	65.60	117.70	188.10	117.60	24.30	17.40	26.40	108.20	124.80	41.60	175.50	1222.40
1897	53.90	106.10	237.60	172.30	134.30	22.50	18.50	25.10	83.80	282.90	82.20	82.20	1403.00
1898	117.00	270.70	186.70	174.50	128.90	54.70	8.20	47.40	98.20	122.30	148.00	62.00	1425.10
1899	101.80	154.60	228.10	167.70	138.00	42.60	25.20	49.20	76.40	127.60	177.20	71.40	1372.00
1900	66.50	156.80	278.10	156.80	147.10	71.50	42.20	51.00	58.60	126.80	106.50	76.80	1360.70
1901	71.20	55.50	208.00	147.80	156.20	71.40	55.10	52.50	164.10	181.50	66.00	85.20	1370.30
1902	214.00	75.80	134.20	216.60	108.50	27.10	8.00	26.20	14.80	36.70	107.80	122.20	1137.00
1903	139.00	85.60	131.90	86.50	131.20	40.50	1.20	10.50	60.50	104.50	120.30	117.20	1060.40
1904	203.20	172.70	125.10	263.20	166.20	17.00	5.50	6.70	98.00	38.50	52.10	58.60	1248.90
1905	119.60	46.40	126.00	176.80	147.60	2.40	13.00	12.50	142.50	162.60	74.70	119.10	1062.70
1906	62.50	74.50	128.00	246.60	147.60	27.50	20.50	35.20	64.20	132.10	63.20	158.60	1022.50
1907	148.60	100.60	285.60	177.60	125.40	54.00	5.20	10.60	60.00	146.40	98.60	84.20	1261.00
1908	202.10	86.70	189.90	168.30	145.40	2.10	35.20	36.10	98.00	110.40	189.40	153.20	1425.80
1909	128.50	295.70	111.30	205.70	225.00	50.50	15.80	25.50	28.50	107.00	86.20	62.20	1328.10
1910	85.10	142.00	151.30	148.20	141.10	25.10	25.00	16.60	35.20	164.50	54.40	113.60	1122.10
1911	82.10	58.60	120.20	161.20	85.70	55.50	4.50	10.40	45.50	174.50	42.50	165.00	1065.10
1912	75.10	55.10	109.20	174.20	64.20	28.80	19.50	10.60	105.20	123.40	190.40	219.20	1107.60
1913	151.20	141.50	150.90	178.20	178.10	11.50	1.30	13.20	154.60	187.50	249.30	163.60	1582.50
1914	117.90	134.60	86.30	205.70	53.60	33.70	0.50	1.10	51.40	47.60	106.70	181.50	1020.90
1915	222.50	245.20	48.20	165.00	127.40	82.70	26.20	10.80	55.60	165.80	156.60	48.20	1468.40
1916	136.80	198.90	168.70	155.50	126.50	85.10	15.80	26.60	19.30	107.90	157.80	68.60	1368.38
1917	137.80	164.10	88.90	309.00	201.50	33.00	76.40	26.40	136.40	205.40	174.80	248.30	1805.20
1918	82.00	145.80	275.50	212.10	177.50	27.20	21.80	1.20	92.80	120.90	57.20	52.50	1371.60
1919	168.10	83.80	121.50	145.80	177.10	21.00	0.80	18.50	154.00	75.80	180.60	101.40	1252.40
1920	54.40	92.00	119.00	126.80	69.40	23.10	15.60	5.10	153.00	92.20	66.00	42.20	855.70
1921	51.80	135.60	224.50	227.20	179.20	33.80	25.60	28.10	45.20	40.60	131.00	138.50	1314.60
1922	135.00	101.60	264.70	51.60	124.20	22.50	0.50	15.80	26.90	82.10	63.50	101.70	1904.90
1923	57.50	94.40	228.40	117.40	88.20	63.00	1.50	5.20	51.50	62.10	103.00	23.40	501.10
1924	105.30	87.10	192.10	141.60	111.40	52.50	43.10	17.20	85.10	137.00	171.40	122.60	1279.20
1925	71.10	198.10	242.60	188.20	48.80	63.20	20.50	20.40	149.60	37.10	134.40	86.20	1270.80
1926	38.00	67.40	53.50	65.80	79.60	86.60	21.50	15.40	15.20	142.20	83.20	14.70	692.20
1927	226.70	69.40	152.80	170.30	193.70	45.60	16.50	40.80	203.40	141.70	274.80	5.40	1424.50
1928	126.20	224.70	239.10	172.10	111.50	47.00	7.80	25.50	115.60	151.60	195.60	127.50	1489.50
1929	133.50	123.00	236.70	224.70	152.60	28.30	13.10	24.60	53.50	135.80	112.60	88.10	1337.50
1930	71.70	134.70	153.90	160.60	37.80	122.00	14.40	61.20	28.70	170.40	113.70	104.70	1180.80
1931	74.60	101.80	175.80	206.00	131.90	72.10	28.00	1.20	54.00	134.20	61.80	138.70	1175.10
1932	108.80	115.60	206.30	223.50	203.20	33.00	42.10	73.60	52.20	151.40	151.40	118.50	1467.48
1933	284.90	89.20	193.60	180.40	78.40	45.50	10.50	44.80	108.10	150.00	87.00	117.60	1345.40
1934	14.40	163.50	278.50	176.10	151.70	52.60	22.00	24.60	231.40	231.40	151.50	74.70	1505.40
1935	128.30	162.50	166.50	146.00	127.30	57.10	27.80	21.50	118.20	165.40	177.40	69.70	1347.20
1936	131.90	134.40	111.20	151.50	138.80	58.00	19.20	18.20	54.00	69.40	47.70	66.00	884.40
1937	55.10	168.80	162.40	95.40	105.60	47.40	5.10	32.20	165.20	117.20	76.40	140.60	1177.70
1938	184.40	175.20	136.50	245.20	228.00	41.50	6.10	56.80	41.20	117.20	76.40	140.60	1405.10
1939	73.00	72.40	175.80	115.40	132.60	68.50	24.80	5.10	144.20	190.80	73.20	73.70	1154.10
1940	121.50	63.10	121.60	115.80	120.70	45.40	5.70	0.00	111.00	157.60	111.10	75.30	1057.30

Table 2-1 Monthly Rainfall Data at the Quito Meteorological Gauging Station (2-2)

YYYY	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	GRUPEI
1941	126.80	165.10	176.40	179.60	143.20	42.73	1.60	14.73	22.50	65.80	21.40	110.60	1087.10
1942	56.30	154.80	130.50	150.20	170.70	24.40	14.20	15.30	106.70	97.18	77.20	88.60	1075.60
1943	149.20	215.10	238.10	250.40	221.50	41.40	29.10	18.50	40.70	141.20	164.40	101.20	1547.70
1944	83.50	87.80	186.68	57.60	226.00	52.70	0.0	5.60	104.60	65.60	7.80	11.10	966.78
1945	102.40	136.40	47.90	224.50	172.60	6.60	10.70	2.60	26.40	194.00	78.00	144.80	1171.30
1946	106.90	145.60	133.40	197.30	176.00	15.20	15.10	5.60	11.10	127.40	98.60	62.70	986.20
1947	76.20	162.10	153.00	141.87	138.30	14.20	16.80	49.50	84.40	185.50	97.00	57.60	1267.27
1948	55.40	123.90	123.90	228.10	127.70	25.60	7.00	22.50	51.50	172.00	57.60	41.40	1016.10
1949	144.30	106.10	159.20	174.10	77.50	13.20	22.10	22.50	56.50	115.30	94.40	37.60	1153.20
1950	175.70	188.00	222.60	221.10	159.60	115.00	4.50	20.50	142.30	145.70	88.80	171.50	1667.30
1951	214.10	141.40	112.10	120.30	173.80	43.70	17.40	33.20	75.70	124.20	188.70	164.80	1476.10
1952	207.30	166.70	86.60	213.40	173.40	16.50	11.70	10.40	86.40	92.00	109.10	123.40	1237.30
1953	121.30	180.70	171.40	205.40	99.00	55.50	14.00	0.70	194.40	265.80	229.20	105.20	1454.00
1954	152.30	59.20	263.90	216.10	84.50	52.80	14.20	20.40	55.50	191.20	155.20	86.50	1384.00
1955	209.40	115.10	216.80	225.90	98.40	46.70	64.70	27.60	66.10	94.50	56.00	88.20	1354.40
1956	58.20	124.80	138.80	221.00	46.50	81.70	21.20	22.00	63.80	210.40	28.60	50.30	1108.50
1957	87.10	129.50	155.10	292.70	67.10	15.50	6.40	25.70	105.20	116.80	51.70	67.80	1164.70
1958	135.50	78.20	96.20	265.80	107.10	32.80	3.20	41.20	22.70	51.80	45.00	128.00	1022.50
1959	60.40	77.00	63.50	182.80	163.10	56.50	2.00	42.50	38.20	102.60	184.40	138.40	1082.90
1960	68.20	109.00	156.90	58.50	63.10	25.00	39.70	45.20	48.20	120.60	77.20	67.20	886.90
1961	108.00	34.80	165.10	184.10	51.70	60.60	73.10	5.60	171.50	17.50	75.40	46.10	1044.20
1962	135.80	98.90	173.70	181.50	106.10	51.50	0.60	2.40	37.30	65.20	149.40	46.10	1073.40
1963	148.90	120.20	219.90	170.90	106.60	44.40	47.40	2.30	38.70	81.20	145.00	121.60	1264.60
1964	19.10	60.00	43.80	193.40	83.20	62.50	46.60	75.10	45.00	105.00	169.50	51.20	1017.30
1965	60.70	52.50	92.80	262.30	171.00	6.00	2.60	5.40	138.50	154.50	254.20	103.50	1276.40
1966	82.60	60.60	130.00	107.20	153.90	53.50	44.40	32.50	61.00	98.10	75.30	86.40	985.50
1967	82.50	218.60	84.30	58.50	62.70	25.50	15.10	3.50	65.00	191.20	34.50	28.60	904.10
1968	106.80	134.20	140.90	172.20	47.50	55.10	4.40	47.20	131.20	223.10	104.00	72.80	1259.80
1969	123.30	101.60	129.40	285.10	111.00	75.10	5.10	6.70	85.00	155.50	183.40	114.10	1366.30
1970	114.90	215.40	68.60	120.80	150.50	42.80	5.00	7.30	86.90	171.50	182.50	61.60	1174.60
1971	148.50	217.00	280.40	148.40	118.80	48.50	2.60	17.60	66.60	215.80	101.60	86.10	1452.80
1972	70.90	162.70	185.70	134.50	165.90	125.30	17.80	41.00	154.20	98.10	28.40	102.60	1407.50
1973	70.90	82.10	98.60	250.50	87.20	31.30	17.70	78.00	113.60	81.10	28.40	107.70	1082.70
1974	57.50	182.20	135.60	176.80	125.60	45.60	74.50	5.00	111.30	215.00	103.80	83.00	1278.10
1975	100.00	256.20	254.90	101.60	117.50	67.20	115.20	72.60	52.70	216.60	118.20	94.40	1548.60
1976	105.20	72.60	115.10	152.10	104.00	21.90	7.20	1.60	93.00	88.70	120.20	145.00	1041.60
1977	60.50	57.20	158.20	58.20	45.70	72.20	12.60	27.70	116.60	148.10	24.50	64.20	922.40
1978	28.70	108.50	130.80	257.80	113.50	14.60	63.40	10.40	125.20	20.50	61.20	70.20	1015.50
1979	56.60	37.80	111.50	162.80	176.70	25.60	15.50	43.80	107.50	85.50	68.50	27.60	920.70
1980	87.50	155.66	64.80	131.60	91.50	25.60	10.30	27.60	177.70	183.10	183.10	133.80	1119.58
1981	15.80	103.60	166.70	207.40	91.50	25.10	26.20	100.10	52.50	59.20	177.10	135.60	1173.10
1982	104.40	119.10	173.70	231.00	191.60	5.60	25.20	1.60	127.60	211.60	192.50	272.50	1661.00
YC	10818.10	12031.38	14394.18	16361.57	11520.90	4547.80	1873.36	2344.70	7389.50	12256.38	10277.20	9520.70	1113036.87
AV	114.33	130.78	156.46	177.84	125.22	49.43	20.25	25.49	80.32	133.77	111.72	103.59	1228.66
AC	3.65	4.62	5.05	5.63	4.04	1.65	0.65	0.82	2.68	4.30	3.72	3.26	3.26
MA	284.90	349.20	280.40	309.00	228.00	132.00	115.20	100.10	203.60	310.60	254.20	348.20	349.20
MI	14.40	33.80	43.80	51.60	37.60	2.10	0.0	0.0	11.10	13.10	7.60	5.40	0.0