LIBRO DE DATOS

8: PLAN PARA EL MANEJO DE CUENCAS HIDROGRAFICAS

Libro de Datos 8

Lista de Cuadros: Plan para el Manejo de Cuencas Hidrograficas

Cuadro 8.1 EJEMPLO DE LA INTEGRACION DE COSTOS DIRECTOS ESTIMADOS PARA EL ESTABLECIMIENTO Y MANEJO DE UNA PLANTACION DE CASUARINA CUNNINGHAMIANA PURA (2,500 ARBOLES/HA)

Year	Task	Activity	Daily Wage/ha	Cost(US$)/ha
Year 1	PT	Cleaning	11	US$ 29.45
	PL	Hollow	15	US$ 29.45
	PL	Transport	5.9	US$ 15.58
	PL	Distribution	5.9	US$ 15.58
	PL	Plantation	5.9	US$ 15.58
	PL	Fertilization	5.9	US$ 15.58
	MT	Overgrowth cleaning	12.69	US$33.50
Year 2	MT	Replanting (10%)	12.69	US$ 33.50
	MT	Fertilization	12.69	US$ 33.50
	MT	Doble cutting	12.69	US$ 33.50
Year 3	MT	Triming	12.69	US$ 33.50
Year 5	MT	Triming	12.69	US$ 33.50
Year 6	RL	Triming (50%)		
	RL	Preparation	0.68	US$ 1.80
	RL	Marking	0.68	US$ 1.80
	RL	Felling	0.68	US$ 1.80
	RL	Branches cut off	0.68	US$ 1.80
	RL	Lodgging	0.68	US$ 1.80
	RL	Transport	0.68	US$ 1.80
TOTAL LABOR			Total	US$ 333.02

INPUTS:

Cathegory	Amount	Units	Price	Cost (US$)
Seedling	2,750.00	ea.		
Fertilizers	250.00	kg.		

Total Inputs:

* Labor and Inputs estimations are based on the management system recomended in the brocure ""Casuarina in agroforestry systems" MADELEÑA/CATIE/DGF, San José Costa Rica, 1989.

PT: Soil Preparation
MT: Maintainance
PL: Plantation
RL: Triming

Cuadro 8.2 RESUMEN REGIONAL DEL RENDIMIENTO Y COSTO DIRECTO, EN US$, EN TRABAJOS PARA LA PRODUCCION DE AUM (ARBOLES DE USO MULTIPLE), 1988-1989

		Countries - 1989				Central America Total or Pondered Average		
		GT	HN	SV	CR	1989	1988	TOTAL
NURSERIES								
Number of nurseries		5	5,5	77	15,5	32	23	55*
Aver daily wages/1000 seedlings		10,5	23,2	11,8	5,4	10,4	14,5	121,1
Aveverage cost/1,000 seedlings		31,7	73	56,2	72,1	62,4	66,9	64,3
SOIL PREPARATION								
Number of tasks			5	6	51	62	23	85*
Average daily wages/ha		3/	81,2	42,8	24	30,4	38,7	32,6
Average cost ($) 2/			232,6	69,9	140,1	140,8	127,2	137,1
PLANTATION								
Number of tasks			4	5	51	60	23	83*
Average daily wages/ha		3/	19,7	23,5	34,2	29,1	27,8	28,7
Average cost ($) 2/			307,9	177,3	300,6	290,8	252	2801
MAINTAINANCE								
Number of tasks			5	5	51	61	18	79*
Average daily wage/ha	Year 1		54,1(1)	-	4/	54,1(01)	28,9	30,2
	Year 2	IT	40,2(2)	-	25,4	26,0(53)	26,5	26,1
	Year 3	WASN'T	16,8(1)	38,6(3)	10,6	12,2(55)	14,8	12,8
	Year 4	-	-	8,6	8,6(51)	13,4	9,9	
	Year 5		17,1(1)	45,9(2)	3,1	4,9(54)	-	4,9
Average cost/ha ($) 2/	Year 1		162,2	-	2/	162,2	147,2	139,5
	Year 2	IT	120,7	-	159,8	157,5	100,7	143,1
	Year 3	WASN'T	50,5	71,9	56,2	57	48,1	54,8
	Year 4	-	-	46,7	46,7	39,2	44,7	
	Year 5	42,9	100,8	14,9	18,6	-	18,6	
TRIMING								
Number of tasks		7	8	7	IT	22	13	35*
Aver. daily wage/1000 trees 1/		35,1	15,1	36,5	WASN'T	28,3	32,7	29,9
Average cost/1000 trees ($) 2/		73	40	63,3		58	86	68,4
TOTAL EXPROITATION								
Number of tasks		5	4	5	IT	14	15	29*
Aver. daily wage/1000 trees 1/		45,2	24,8	29	WASN'T	33,6	74,9	55
Average cost/1000 trees ($) 2/		76,2	132,7	50,25		83,1	120,1	102,2

1/ Information for 1,000 extracted trees

2/ Currency conversion values 14US = 4.27Q; = 2.00 L; = 6.92¢ELS; = 88.30 ¢COS. This includes: labor and inputs. (SOURCE: ACAN-EFE, May, 1990). This costs only include direct costs of each task (Total value of labor and inputs).

3/ Tasks like soil preparation and alived borders were not included because the information correspond to pure plantations systems with seedlings in plastic bags.

4/ Labor and maintainance costs of the first year are included in the plantation costs

* It refers to the total adding of each type of task.

Cuadro 8.3 PREPARACION DE SUELOS

	Labor and costs by hectare (in US$)						
	2500 trees/ha			1600 tress/ha		1111 tress/ha	
		Daily Wage	($)	Daily Wage	($)	Daily Wage	($)
	1	0.05	0.15	0.05	0.15	0.05	0.15
	21	12.60	33.27	12.60	33.27	12.60	33.27
	1	4.11	10.85	4.11	10.85	4.11	10.85
	1	0.18	0.46	0.18	0.46	0.18	0.46
	1	5.93	15.67	5.93	15.67	5.93	15.67
	1	1.44	3.80	1.44	3.80	1.44	3.80
	12	2.76	7.28	2.76	7.28	2.76	7.28
	105	11.15	29.45	7.14	18.85	4.96	13.09
	11	12.95	34.18	8.29	21.88	5.75	15.19

Cuadro 8.4 ESPECIES PRINCIPALES PARA LA REFORESTACION EN LA CUENCA DEL RIO GRANDE DE SAN MIGUEL

COMMON NAME	SCIENTIFIC NAME	ALTITUDE (mosl)
Laurel	*Cordia alliodora*	0 - 1,000
Chaquiro	*Colubrina ferruginosa*	0 - 1,200
Leucaena	*Leucaena leucocephala*	0 - 700
Madrecacao	*Gliricidia sepium*	0 - 900
Memble	*Poeppigia procera*	0 - 900
Maquilishuat	*Tabebuia rosea*	0 - 800
Cedro	*Cedrela mexicana*	0 - 1,000
Caulote	*Guazuma ulmifolia*	0 - 1,000
Carbón	*Mimosa tenuiflora*	0 - 800
Paraíso	*Melia azederach*	0 - 800
Cortez Blanco	*Roseodendron*	0 - 800
Conacaste	*Enterolobium cyclocarpum*	0 - 900
Almendro de Río	*Andira inirmis*	500 - 1,000
Caoba	*Switenia humilis*	100 - 1,000
CONIFERAS		
Pino Caribe	*Pinus carbaea*	500 - 1,500
Pino Ocote	*Pinus oocarpa*	800 - 1,600
Ciprés	*Cupressus lusitanica*	1,300 - 3,300

Prepared by
EMPERA TRIZ DE MAYORGA
FOREST SERVICE
D.G.R.N.R., M.A.G.

Cuadro 8.5 PRINCIPALES ESPECIES EXOTICAS QUE SE PODRIAN UTILIZAR PARA LA REFORESTACION DE LA CUENCA DEL RIO GRANDE DE SAN MIGUEL

COMMON NAME	SCIENTIFIC NAME	ALTITUDE (mosl)
Teca	*Tectona grandis*	0 - 800
Cemaldulensis	*Eucalyptus camaldulensis*	500 - 1,400
Neem	*Azadirachta indica*	500 - 1,000
Eucalipto Citriodora	*Eucalyptus citriodura*	500 - 1,000
Flor Amarilla	*Cassia siamea*	500 - 1,000
Melina	*Gmelina arborea*	0 - 800
Mangium	*Acacia mangium*	500 - 1,000
Eucalipto	*Eucalyptus grandis*	500 - 1,000
Eucalipto	*Eucalyptus tereticornis*	500 - 1,000
Eucalipto	*Eucalyptus saligna*	500 - 1,000

Prepared by
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D.G.R.N.R., M.A.G.

LIBRO DE DATOS

9: RESULTADO DE LOS RECONOCIMIENTOS

Libro de Datos 9

Lista de Cuadros y Figuras: Resultado de los Reconocimientos

Cuadro 9.1 LISTA DE LOS CORTES TRANSVERSALES DEL RIO(1/2)

SAN MIGUEL RIVER

NO	INTERVAL (km)	D DISTANCE(km)	NO	INTERVAL (km)	ACCUMULATED DISTANCE(km)	NO	INTERVAL (km)	ACCUMULATED DISTANCE(km)	NO	INTERVAL (km)	ACCUMULATED DISTANCE(km)
0	10.52	10.52	51	0.40	36.32	101	0.30	66.82	151	0.60	95.32
1	0.70	11.22	52	0.40	36.72	102	0.30	67.12	152	0.50	95.82
2	0.40	11.62	53	0.40	37.12	103	0.50	67.62	153	0.60	96.42
3	0.40	12.02	54	0.40	37.52	104	0.50	68.12	154	0.50	96.92
4	0.40	12.42	55	0.50	38.02	105	0.60	68.72	155	0.50	97.42
5	0.80	13.22	56	0.60	38.62	106	0.50	69.22	156	0.50	97.92
6	0.50	13.72	57	0.50	39.12	107	0.60	69.82	157	0.50	98.42
7	0.20	13.92	58	0.50	39.62	108	0.50	70.32	158	0.10	98.52
8	0.60	14.52	58A	0.20	39.82	109	0.50	70.82	159	0.50	99.02
9	0.40	14.92	59	0.30	40.12	110	0.70	71.52	160	0.50	99.52
10	0.40	15.32	60	0.50	40.62	111	0.80	72.32	161	0.40	99.92
11	0.40	15.72	61	0.50	41.12	112	0.60	72.92	162	0.50	100.42
12	0.90	16.62	62	0.80	41.92	113	0.50	73.42	163	0.60	101.02
13	0.60	17.22	63	0.80	42.72	114	0.50	73.92	164	0.50	101.52
14	0.50	17.72	64	0.50	43.22	115	0.40	74.32	165	0.60	102.12
15	0.40	18.12	65	1.00	44.22	116	0.50	74.82	166	0.20	102.32
16	0.70	18.82	66	0.50	44.72	117	0.70	75.52	167	0.30	102.62
17	0.50	19.32	67	0.50	45.22	118	0.60	76.12	168	0.50	103.12
18	0.40	19.72	68	0.45	45.67	119	0.90	77.02	169	0.50	103.62
19	0.40	20.12	68A	0.20	45.87	120	0.50	77.52	170	0.50	104.12
20	0.50	20.62	69	0.45	46.32	121	0.70	78.22	171	0.50	104.62
21	0.50	21.12	70	0.60	46.92	122	0.70	78.92	172	1.00	105.62
22	0.60	21.72	71	0.80	47.72	123	0.70	79.62	173	0.60	106.22
23	0.50	22.22	72	0.30	48.02	124	0.80	80.42	174	0.60	106.82
24	0.70	22.92	73	0.40	48.42	125	0.60	81.02	175	0.80	107.62
25	0.50	23.42	74	1.50	49.92	126	0.60	81.62	176	0.60	108.22
26	0.40	23.82	75	0.40	50.32	127	0.60	82.22	177	0.50	108.72
27	0.50	24.32	76	1.00	51.32	128	0.30	82.52	178	0.50	109.22
28	0.50	24.82	77	1.00	52.32	129	0.70	83.22	179	0.50	109.72
29	0.40	25.22	78	0.60	52.92	130	0.80	84.02	180	0.50	110.22
30	0.50	25.72	79	0.50	53.42	131	0.60	84.62	181	0.40	110.62
31	0.80	26.52	80	1.00	54.42	132	0.50	85.12	182	0.60	111.22
32	0.70	27.22	81	0.50	54.92	133	0.50	85.62	183	0.50	111.72
33	0.50	27.72	82	0.40	55.32	134	0.60	86.22	184	0.30	112.02
34	0.30	28.02	83	0.65	55.97	135	0.50	86.72			
35	0.30	28.32	83A	0.15	56.12	136	0.60	87.32			
36	0.50	28.82	84	0.40	56.52	137	0.50	87.82			
37	0.50	29.32	85	0.90	57.42	138	0.50	88.32			
38	0.40	29.72	86	0.90	58.32	139	0.60	88.92			
39	0.50	30.22	87	0.50	58.82	140	0.50	89.42			
40	0.50	30.72	88	0.50	59.32	141	0.50	89.92			
41	0.50	31.22	89	0.60	59.92	142	0.60	90.52			
42	0.40	31.62	90	0.60	60.52	143	0.60	91.12			
43	0.60	32.22	91	0.60	61.12	144	0.50	91.62			
44	0.40	32.62	92	0.60	61.72	145	0.50	92.12			
45	0.40	33.02	93	0.50	62.22	146	0.60	92.72			
46	0.60	33.62	94	0.50	62.72	147	0.50	93.22			
47	0.50	34.12	95	0.60	63.32	148	0.50	93.72			
48	0.80	34.92	96	0.80	64.12	149	0.50	94.22			
49	0.50	35.42	97	0.60	64.72	150	0.50	94.72			
50	0.50	35.92	98	0.60	65.32						
			99	0.60	65.92						
			100	0.60	66.52						

JOGOTAL DRAINAGE

64			confluence of San Miguel River
	INTERVAL	ACCUMULATED DISTANCE	
1	1.00	44.22	from the river mouth of San Miguel River

OLOMEGA DRAINAGE

104			confluence of San Miguel River
	INTERVAL	ACCUMULATED DISTANCE	
1	0.20	68.32	from the river mouth of San Miguel River
2	1.00	69.32	
3	1.20	70.52	
4	1.60	72.12	
5	1.00	73.12	
6	0.50	73.62	
7	0.10	73.72	

Cuadro 9.1 LISTA DE LOS CORTES TRANSVERSALES DEL RIO(2/2)

PELOTA RIVER

5			confluence of Olomega Drainage
	INTERVAL	ACCUMULATED DISTANCE	
1	1.00	74.12	from the river mouth of San Miguel River
2	1.50	75.62	
3	1.30	76.92	
4	1.20	78.12	
5	0.10	78.22	

TAISIHUAT RIVER

165			confluence of San Miguel River
	INTERVAL	ACCUMULATED DISTANCE	
1	0.20	102.32	from the river mouth of San Miguel River
2	0.60	102.92	
3	0.50	103.42	

VILLERIAS RIVER

184			confluence of San Miguel River
	INTERVAL	ACCUMULATED DISTANCE	
1	0.20	112.22	from the river mouth of San Miguel River
2	0.50	112.72	
3	0.60	113.32	

GUAYABAL RIVER

184			confluence of San Miguel River
	INTERVAL	ACCUMULATED DISTANCE	
1	0.20	112.22	from the river mouth of San Miguel River
2	0.60	112.82	
3	0.60	113.42	

SAN MIGUEL RIVER (SUPPLEMENTARY SURVEY)

	No.102	67.12	
NAME	DISTANC	ACCUMULATED DISTANCE	
300	0.30	67.42	from the river mouth of San Miguel River
362	0.36	67.48	
371	0.37	67.49	
380	0.38	67.50	
386	0.39	67.51	
424	0.42	67.54	
439	0.44	67.56	
609	0.61	67.73	
617	0.62	67.74	
1117	1.12	68.24	
1135	1.14	68.26	

OLOMEGA DRAINAGE (SUPPLEMENTARY SURVEY)

	OL1	68.32	
NAME	DISTANC	ACCUMULATED DISTANCE	
300	0.30	68.62	from the river mouth of San Miguel River
490	0.49	68.81	
550	0.55	68.87	
650	0.65	68.97	
655	0.66	68.98	
735	0.74	69.06	
955	0.96	69.28	

JOCOTAL DRAINAGE (SUPPLEMENTARY SURVEY)

	N0.64	43.22	
NAME	DISTANC	ACCUMULATED DISTANCE	
50	0.05	43.27	from the river mouth of San Miguel River
450	0.45	43.67	
810	0.81	44.03	
2390	2.39	45.61	
2395	2.40	45.62	where the weir is located

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(1/8)

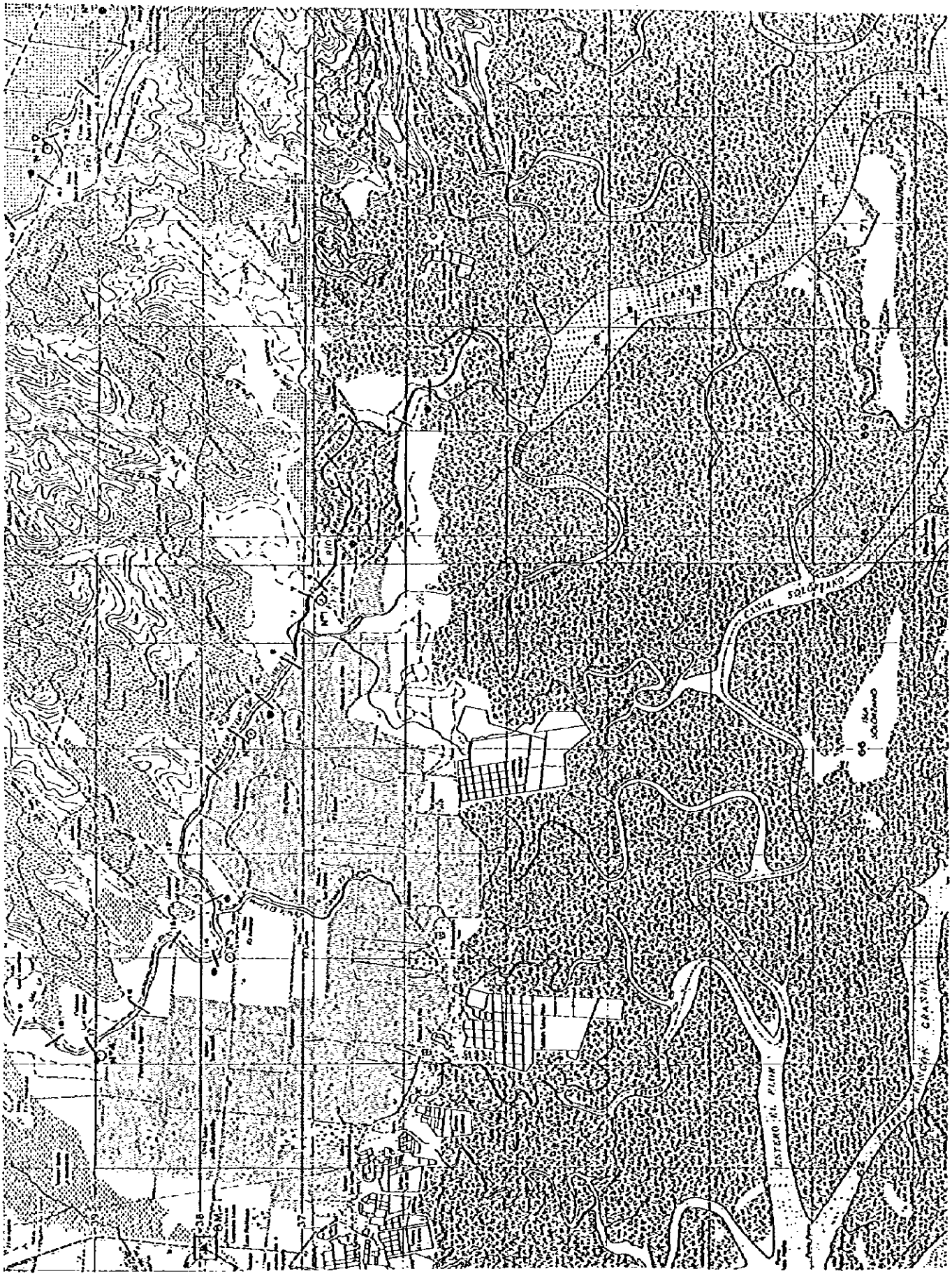

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(2/8)

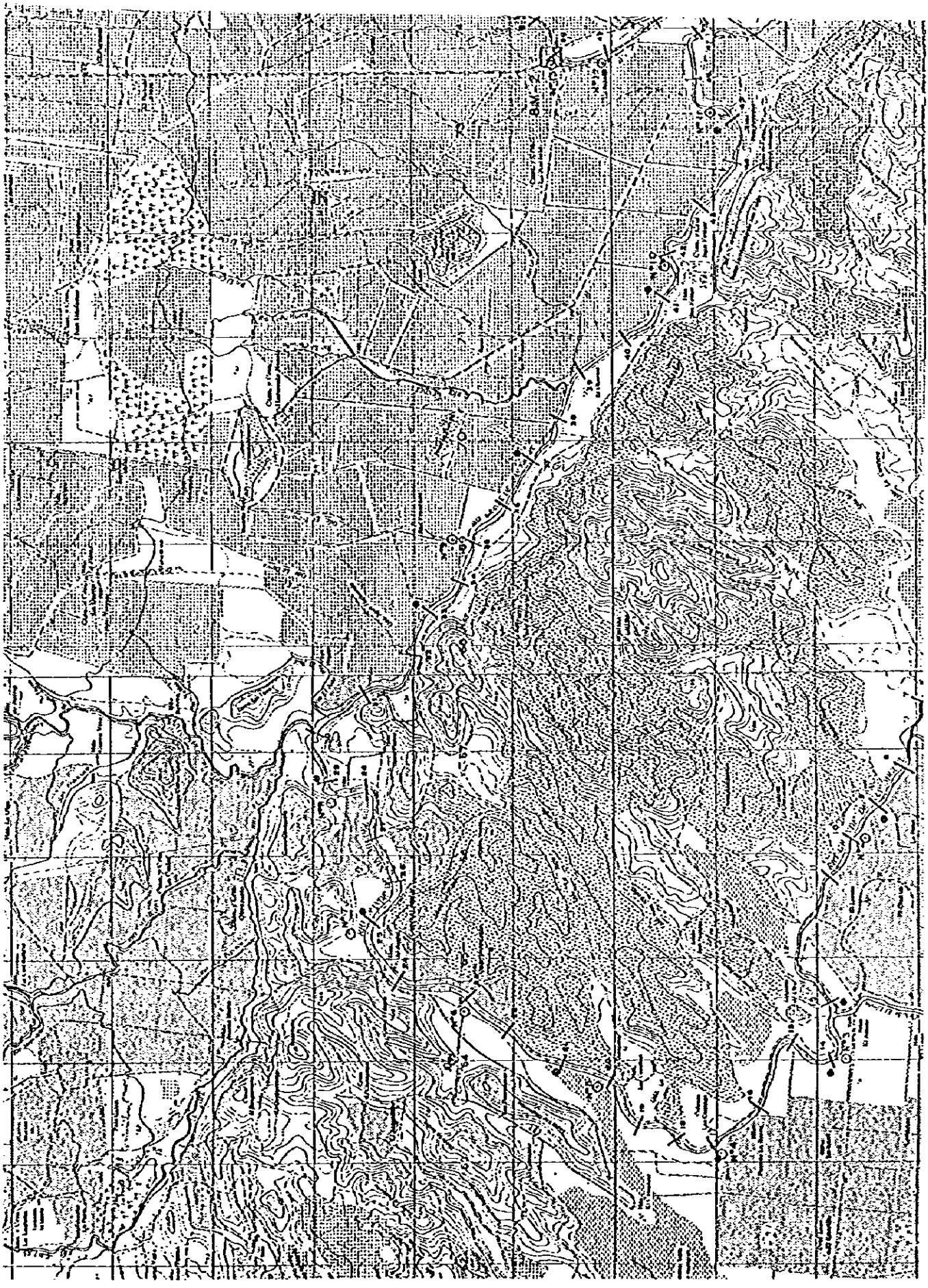

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(3/8)

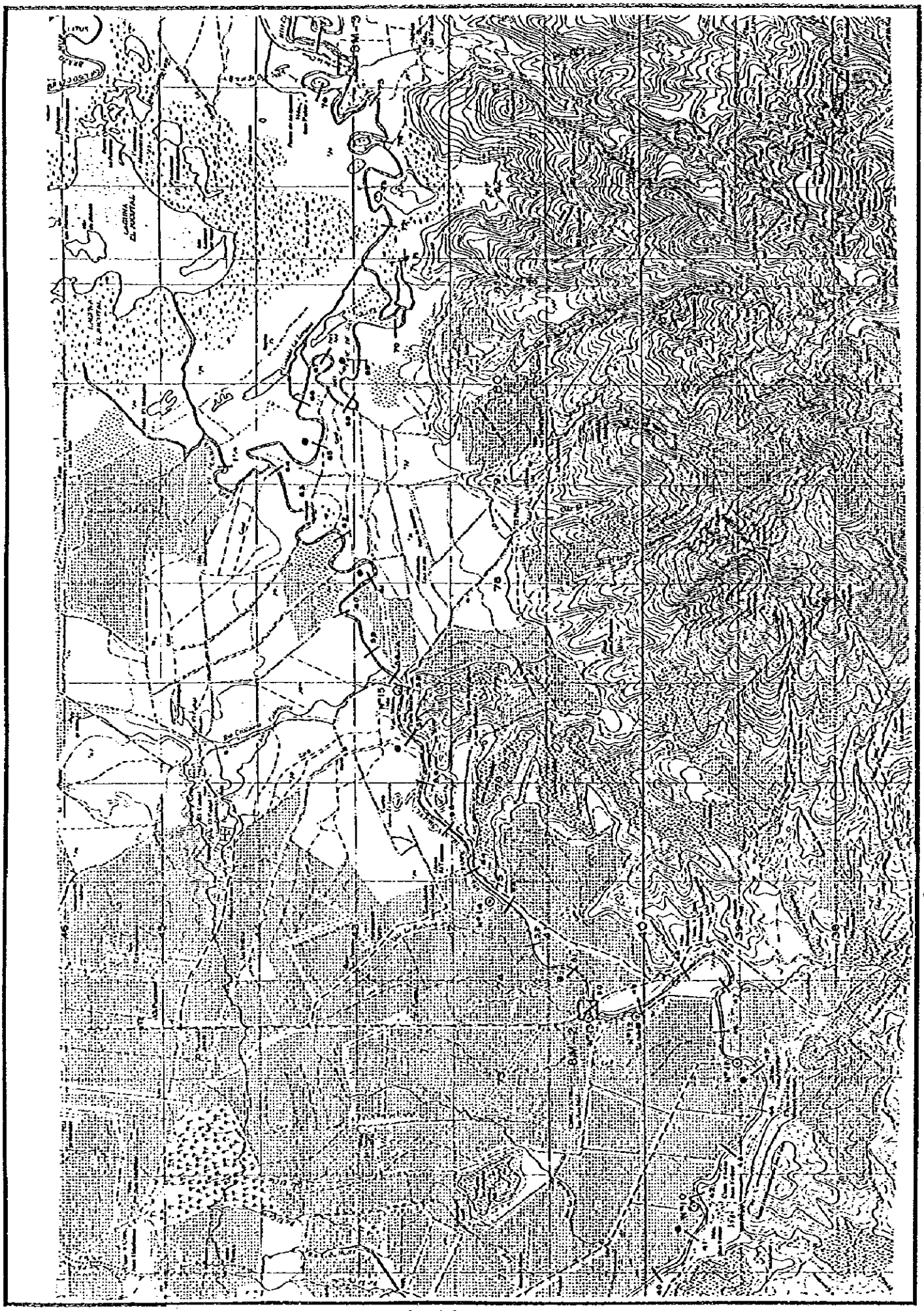

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(4/8)

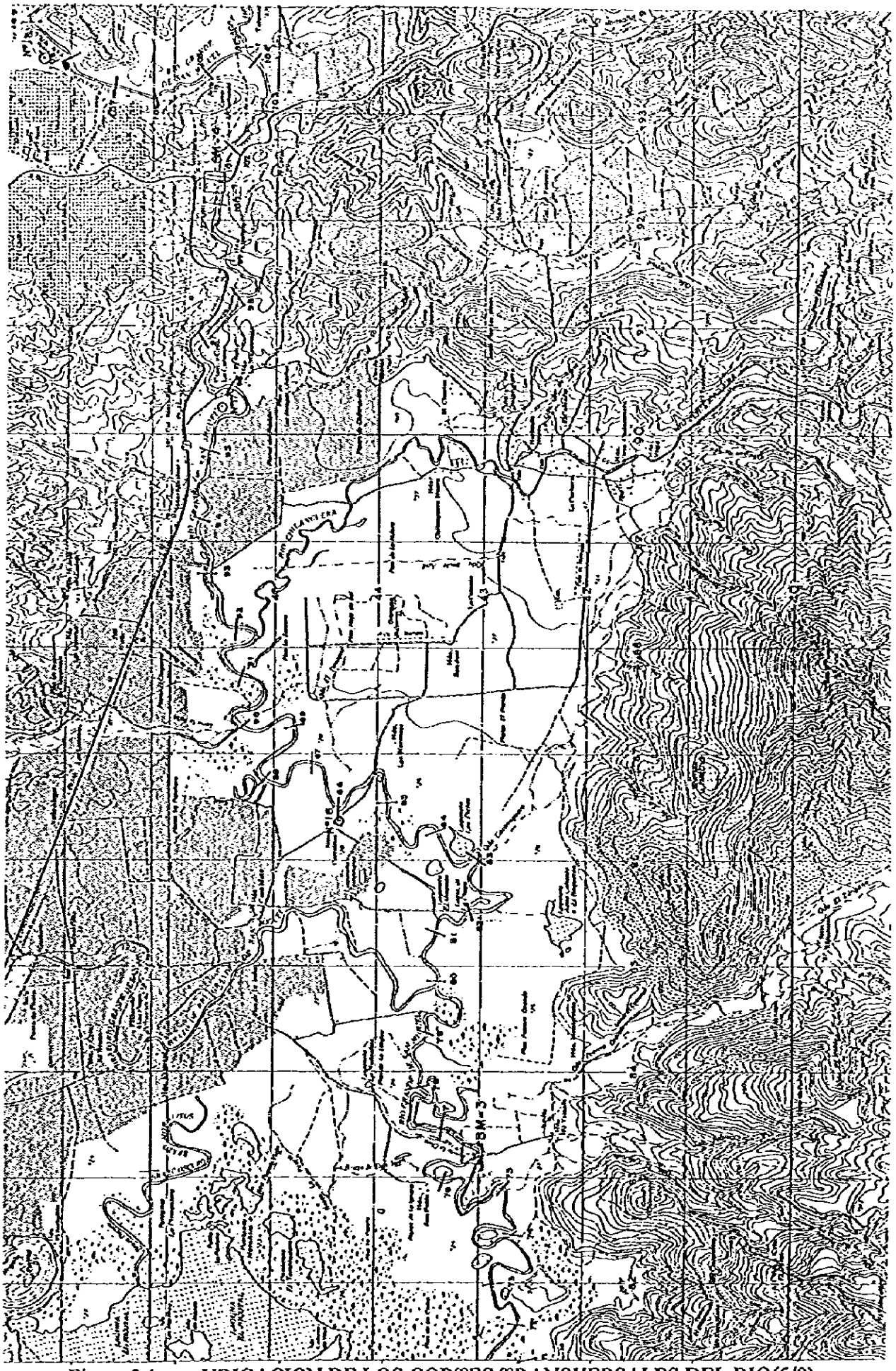

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(5/8)

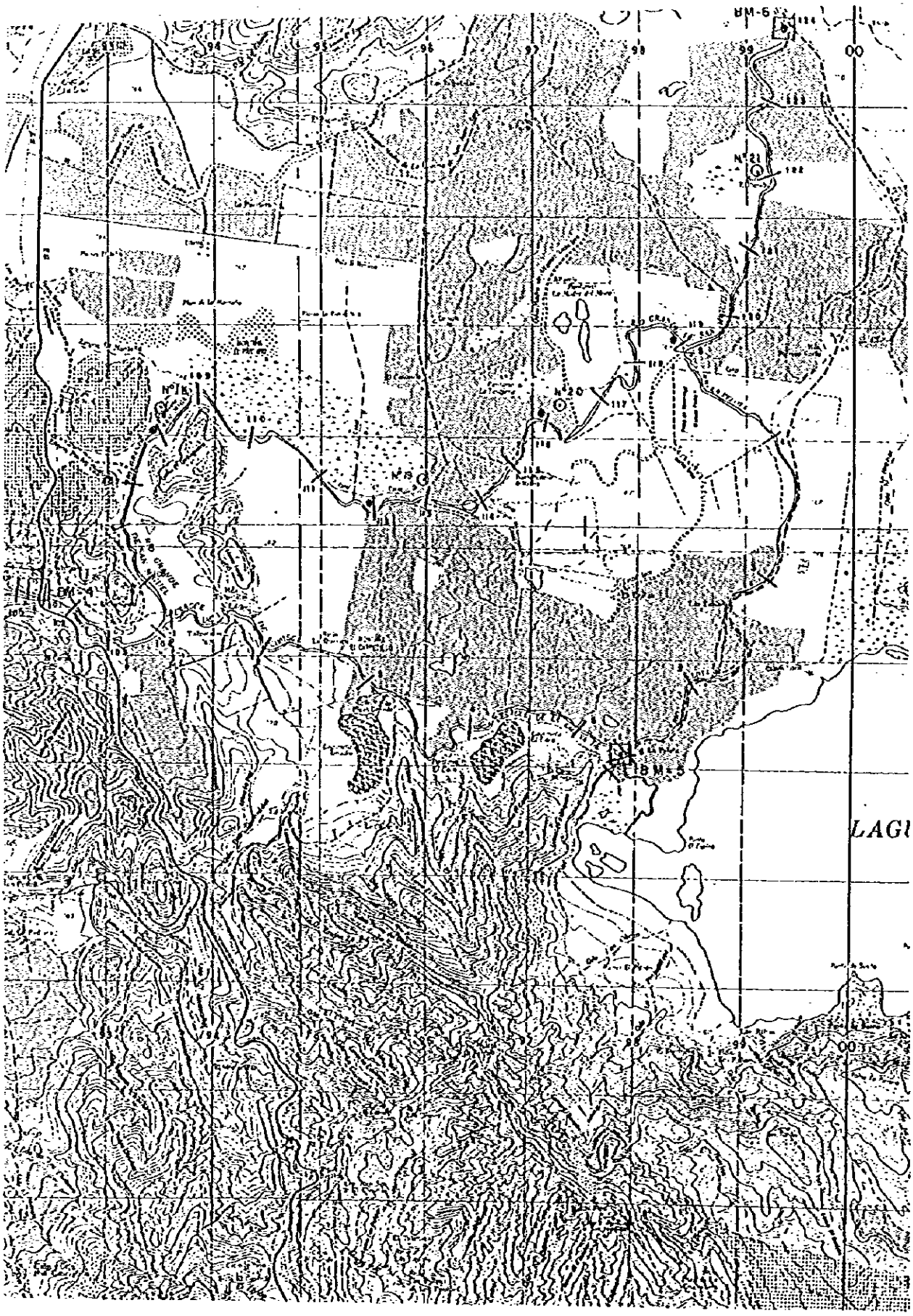

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(6/8)

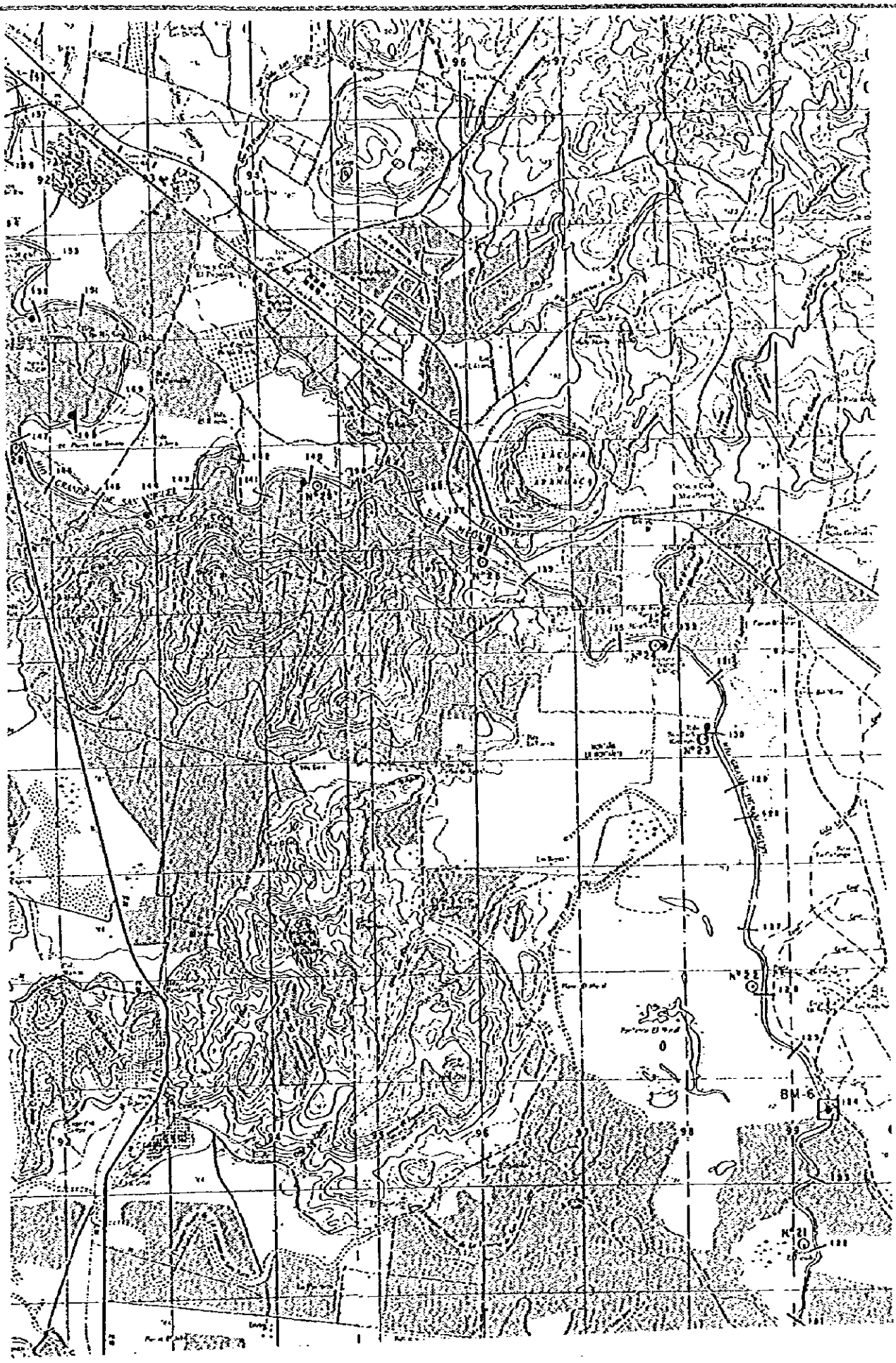

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(7/8)

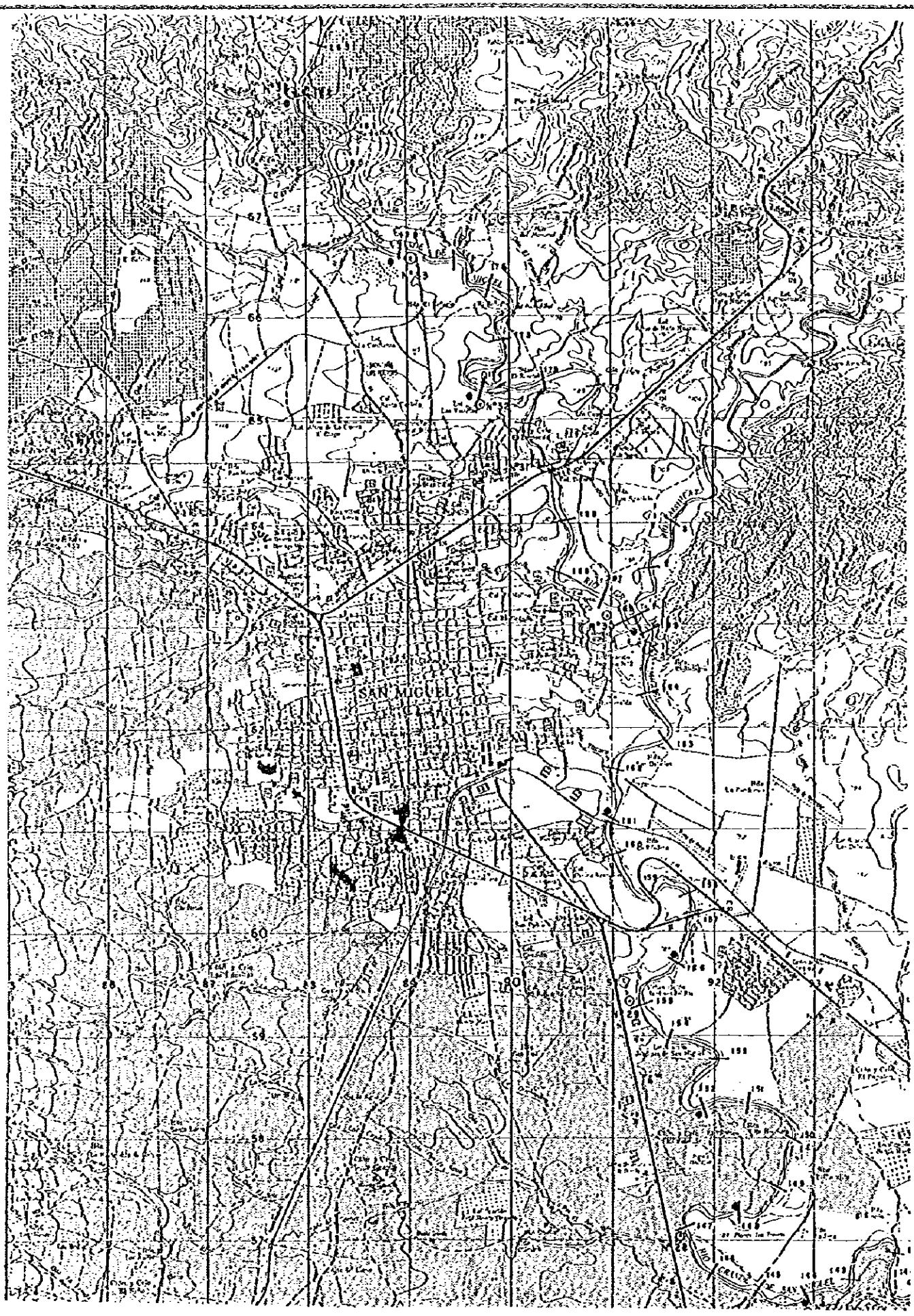

Figura 9.1 UBICACION DE LOS CORTES TRANSVERSALES DEL RIO(8/8)

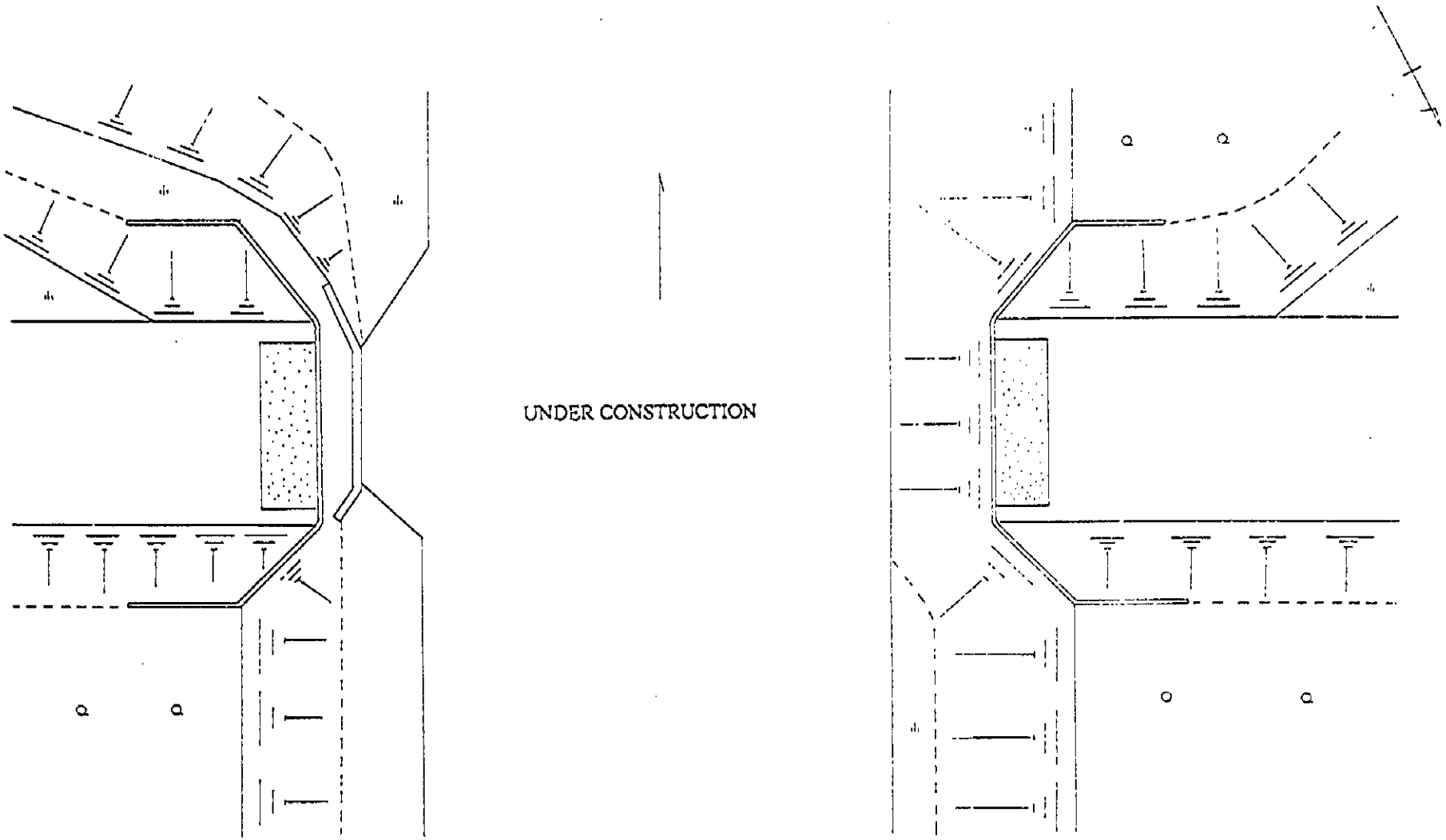

Figura 9.2 PUENTE VADO MARIN(1/2)

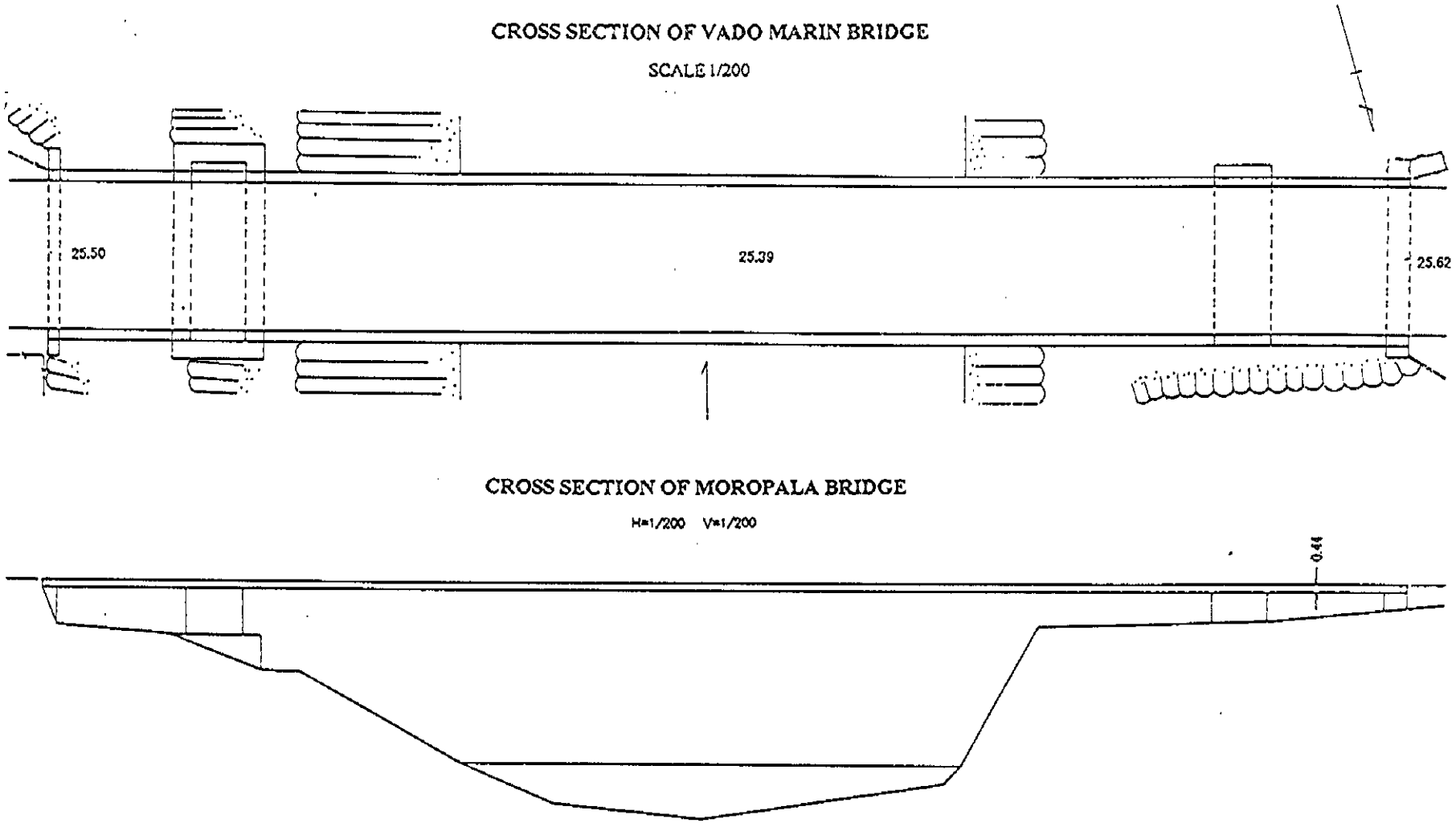

Figura 9.2 PUENTE VADO MARIN(2/2)

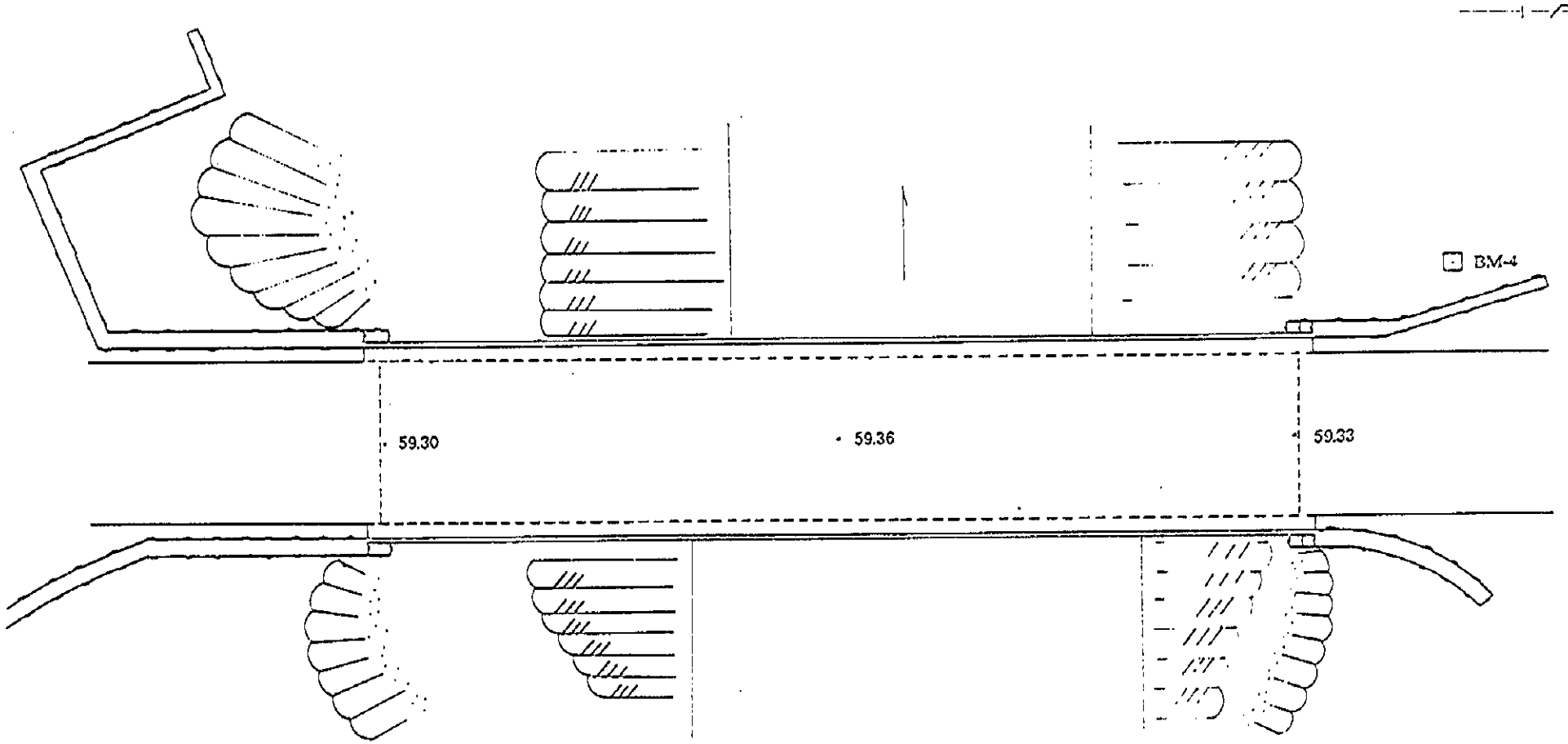

Figura 9.3 PUENTE EL DELIRIO(1/2)

CROSS SECTION OF EL DELIRIO BRIDGE

H=1/200 V=1/200

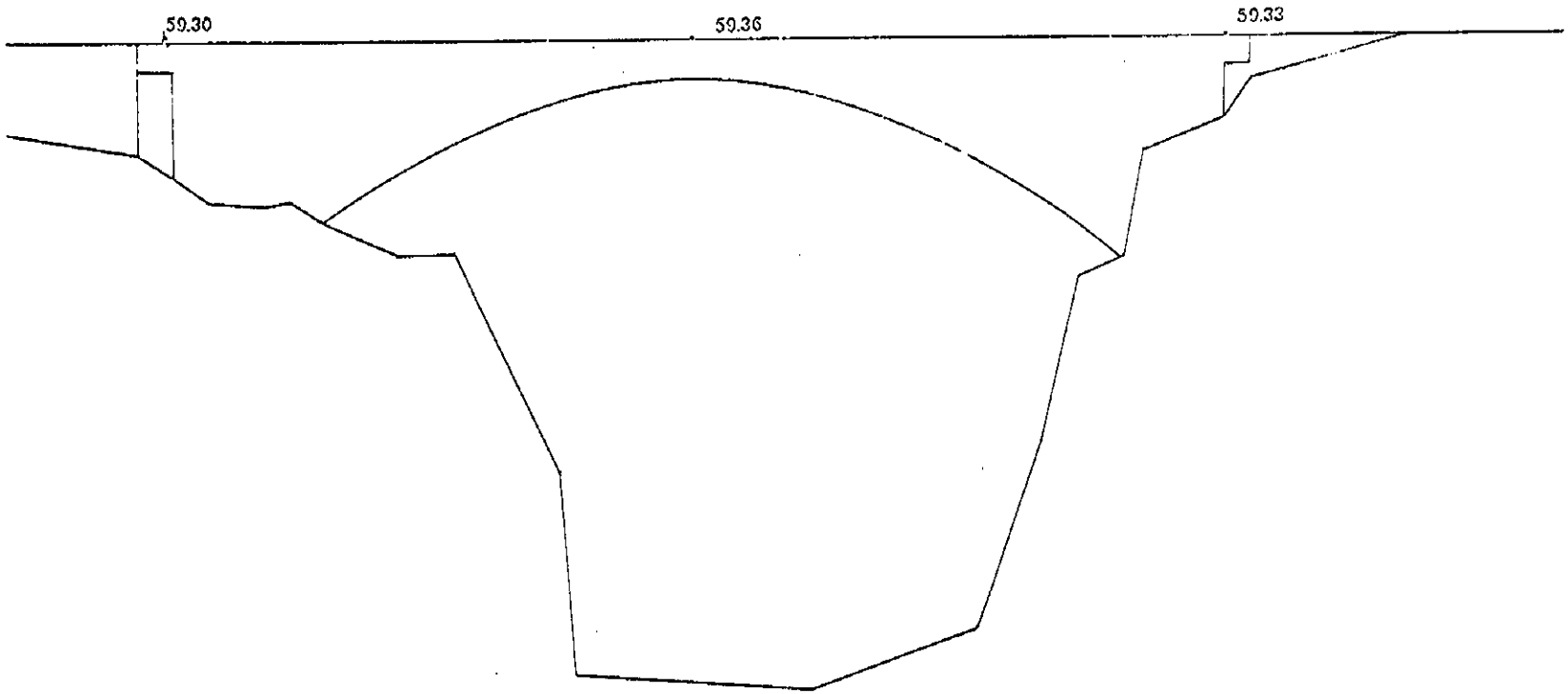

Figura 9.3 PUENTE EL DELIRIO(2/2)

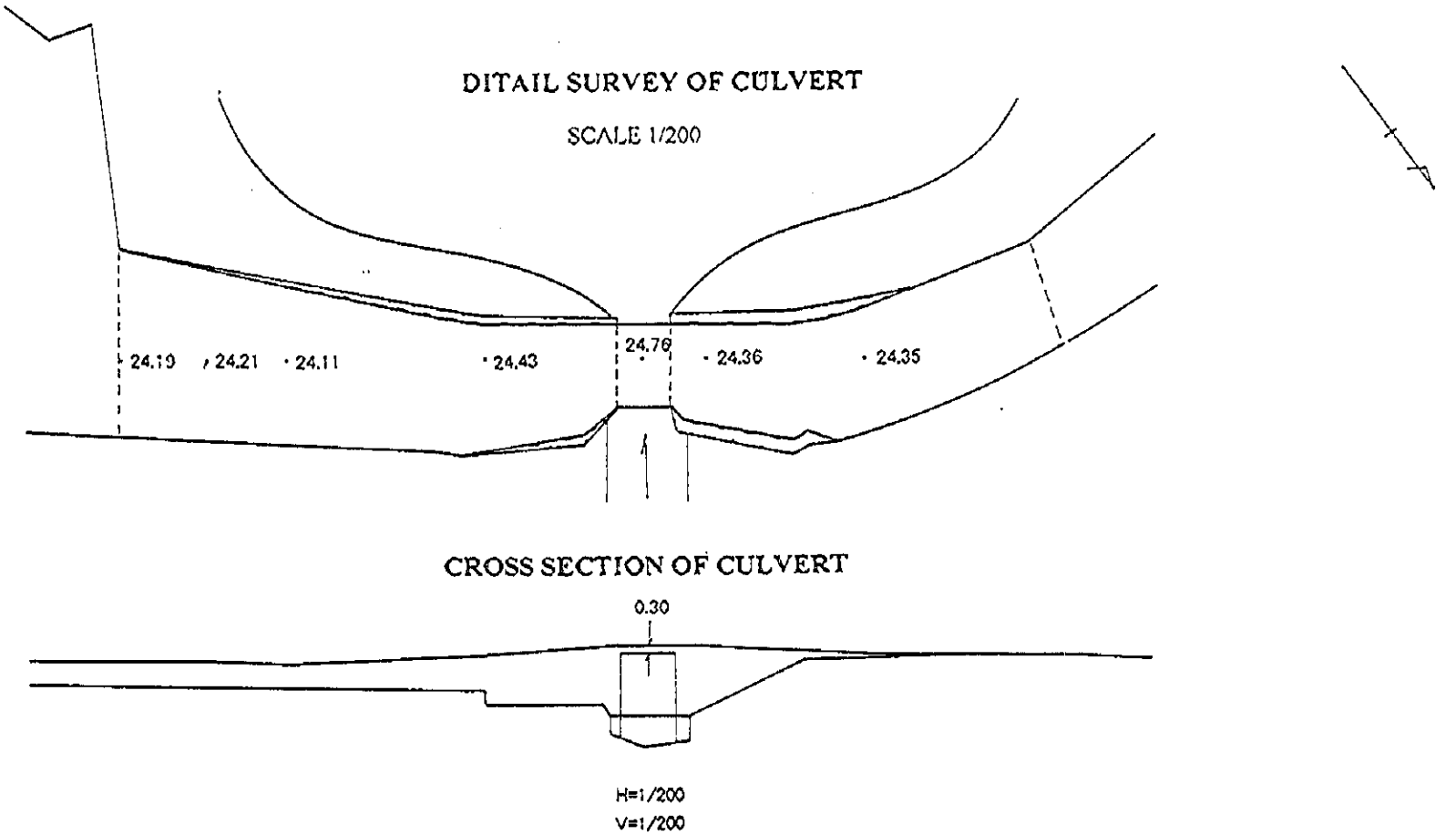

Figura 9.4 ALCANTARILLADO PARA DRENAJE EN EL JOCOTAL(1/2)

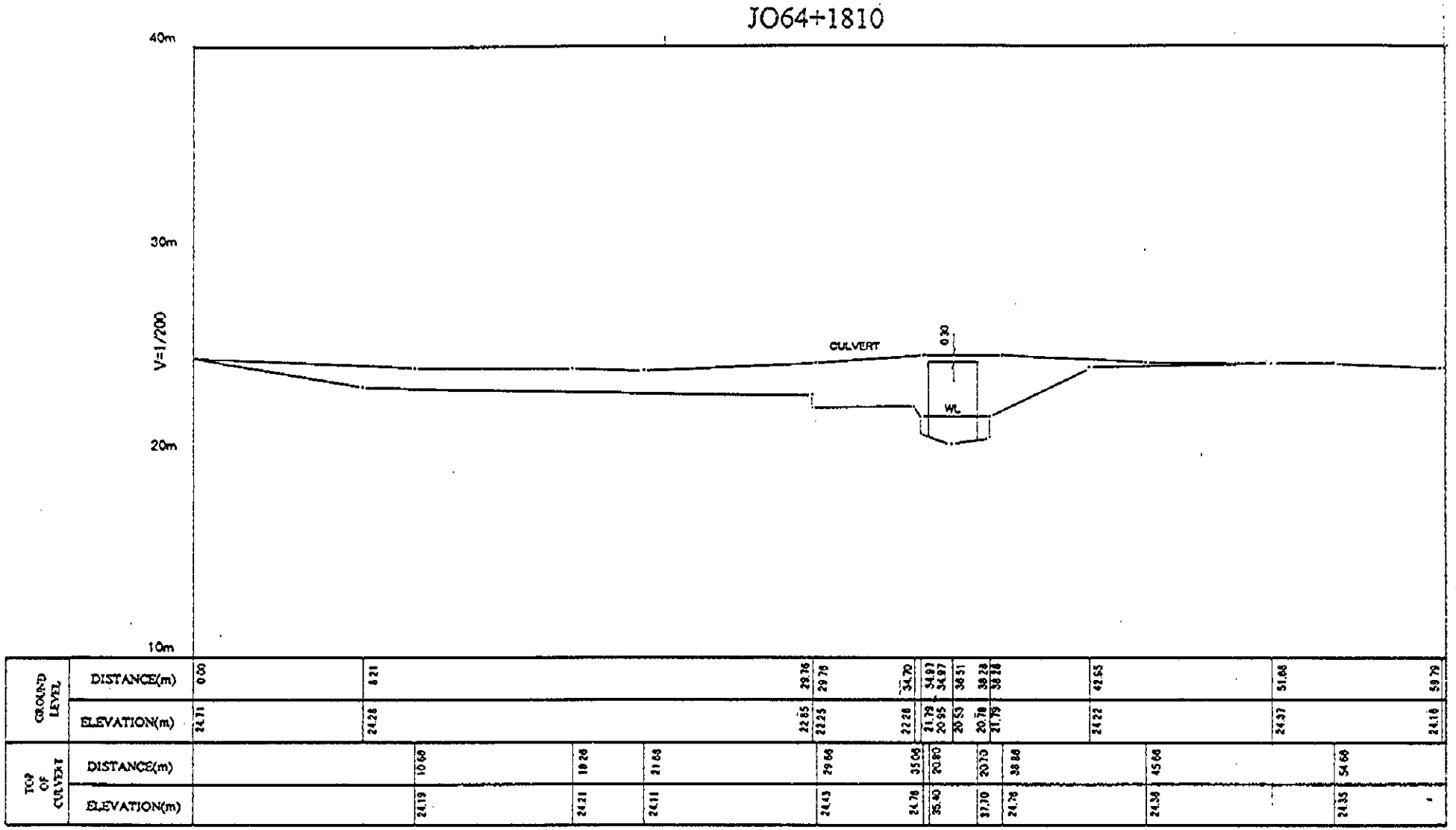

Figura 9.4 ALCANTARILLADO PARA DRENAJE EN EL JOCOTAL(2/2)

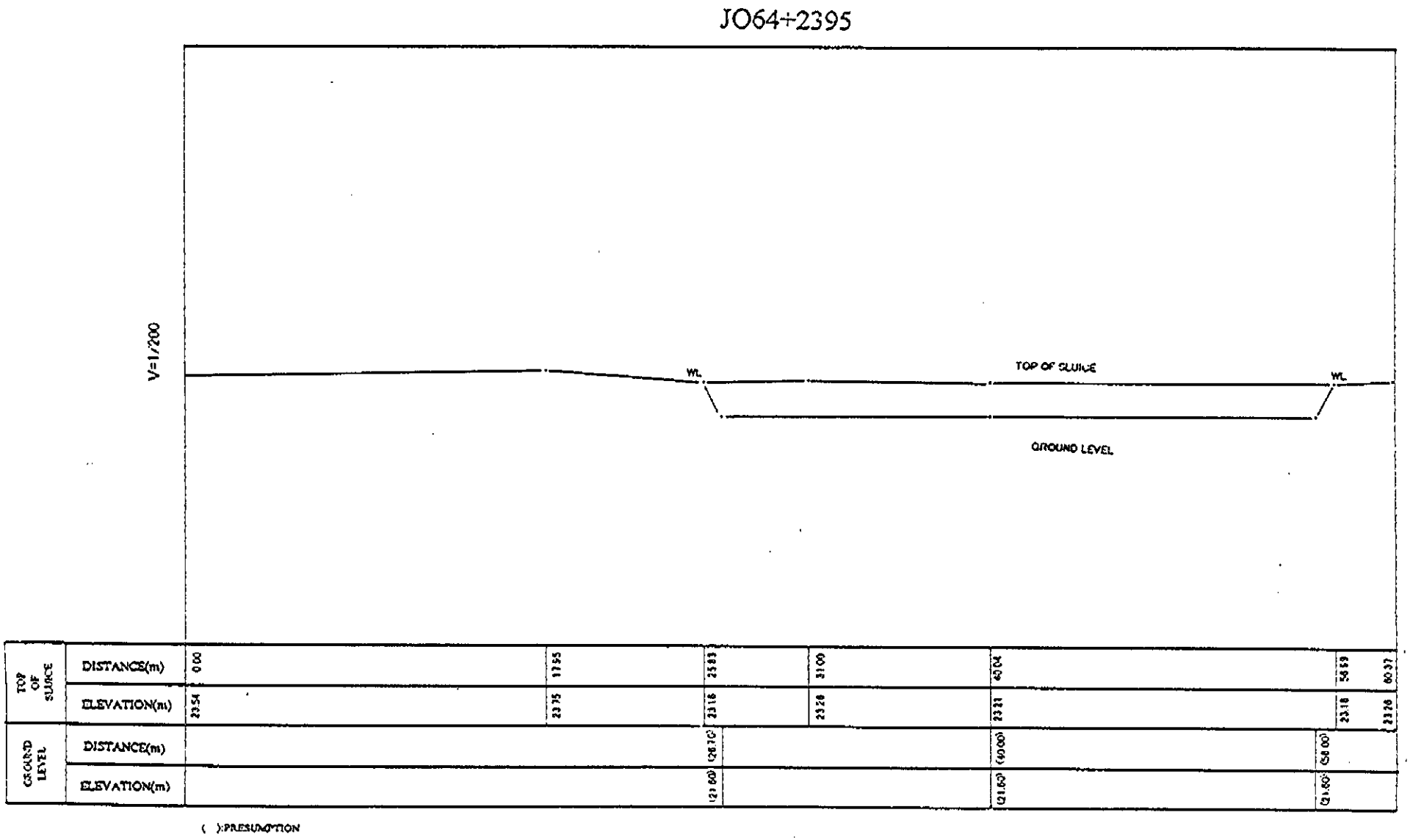

Figura 9.5 VERTEDERO DE DESAGUE (GAVION) EN EL JOCOTAL