

Fig. 3.18 Area Mojada en función de la pendiente S_0 , $m = 1.5$ para diferentes caudales.

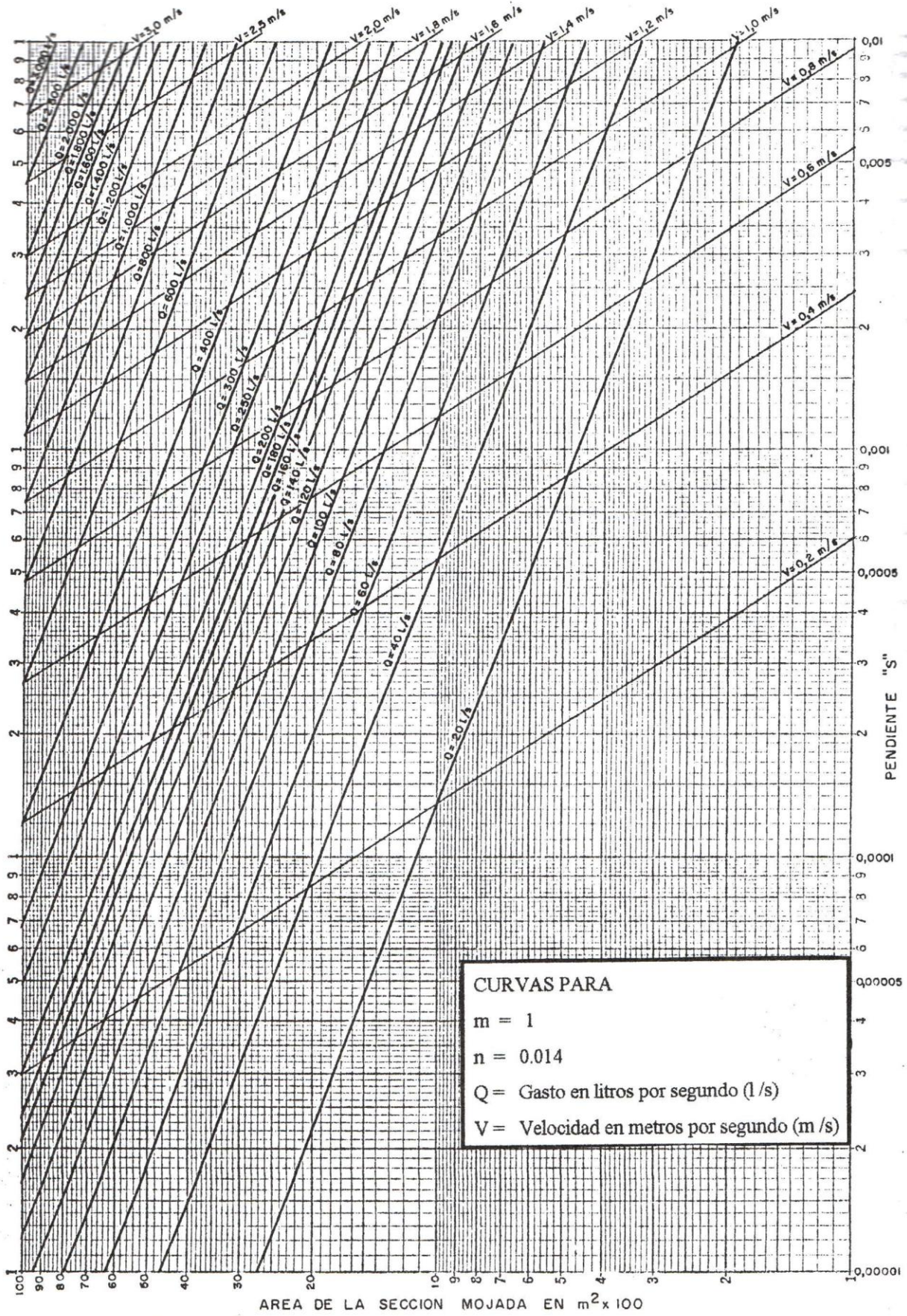


Fig. 3.19 Area Mojada en función de la pendiente S_0 , $m = 1$ para diferentes caudales.

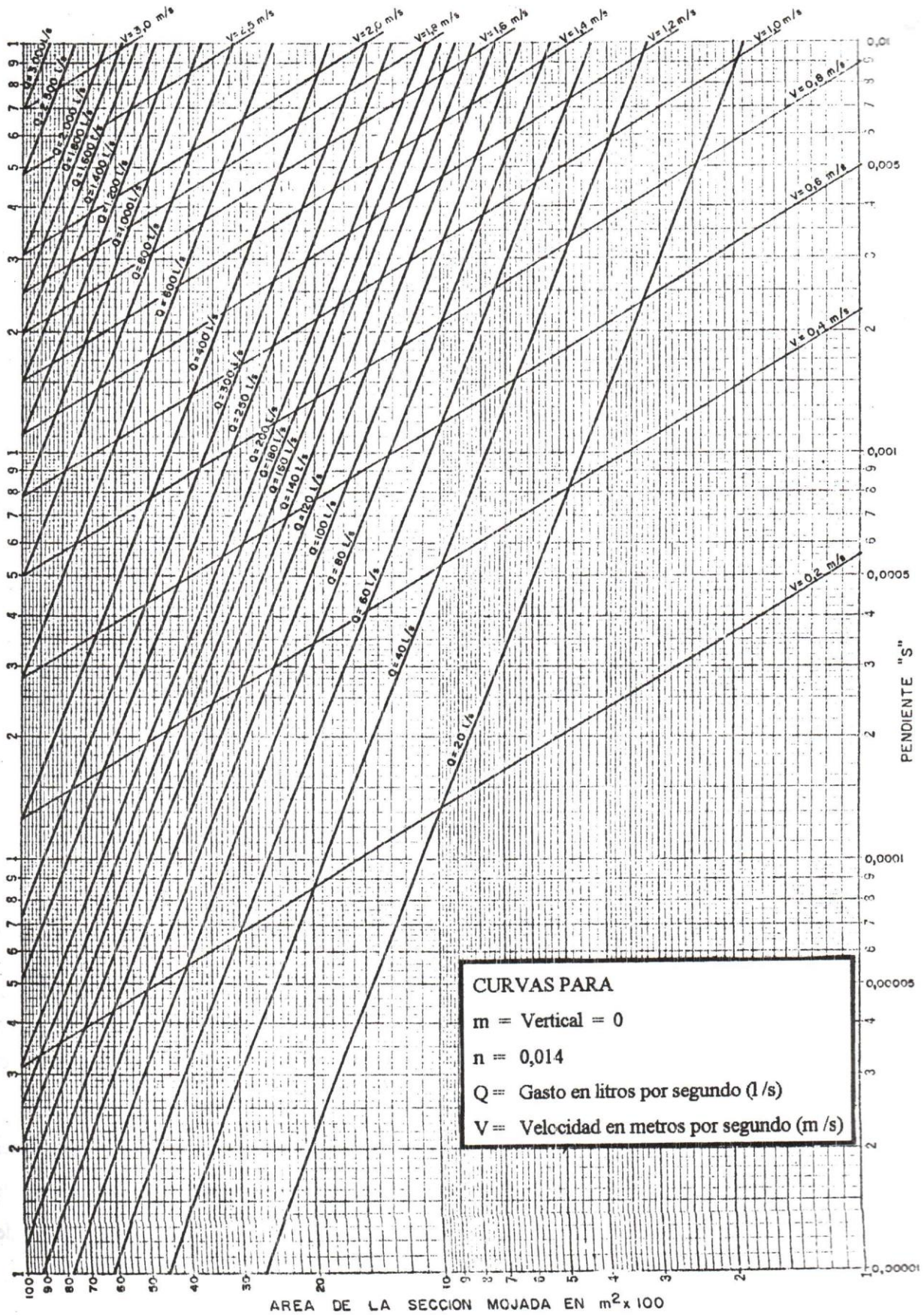
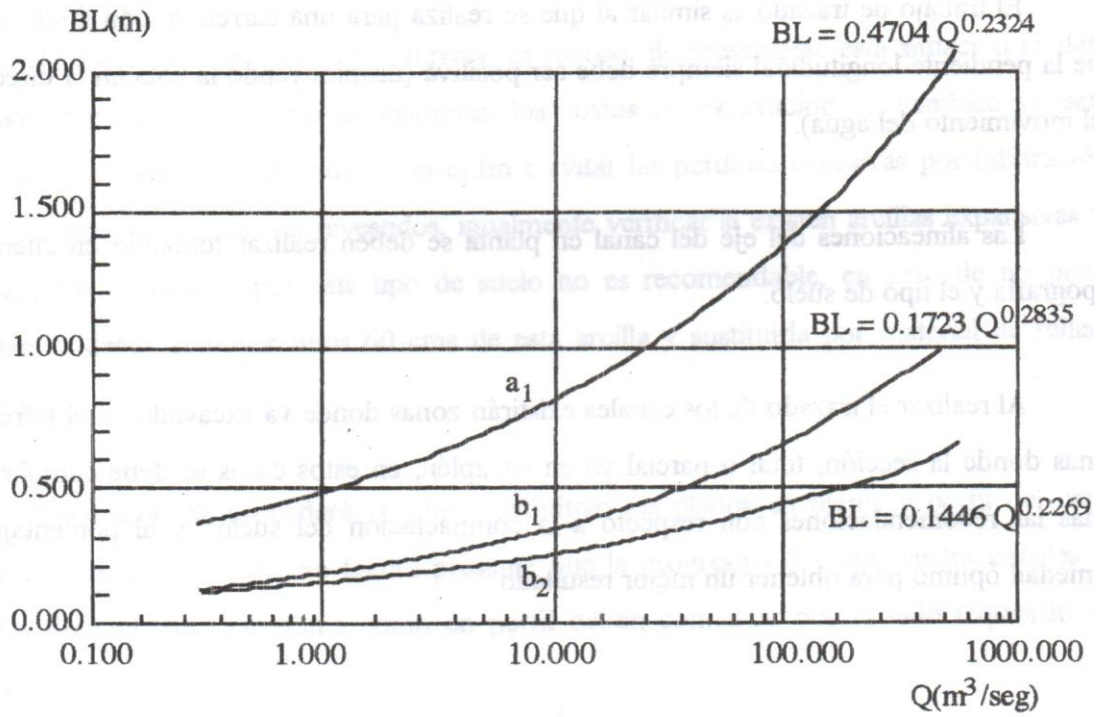
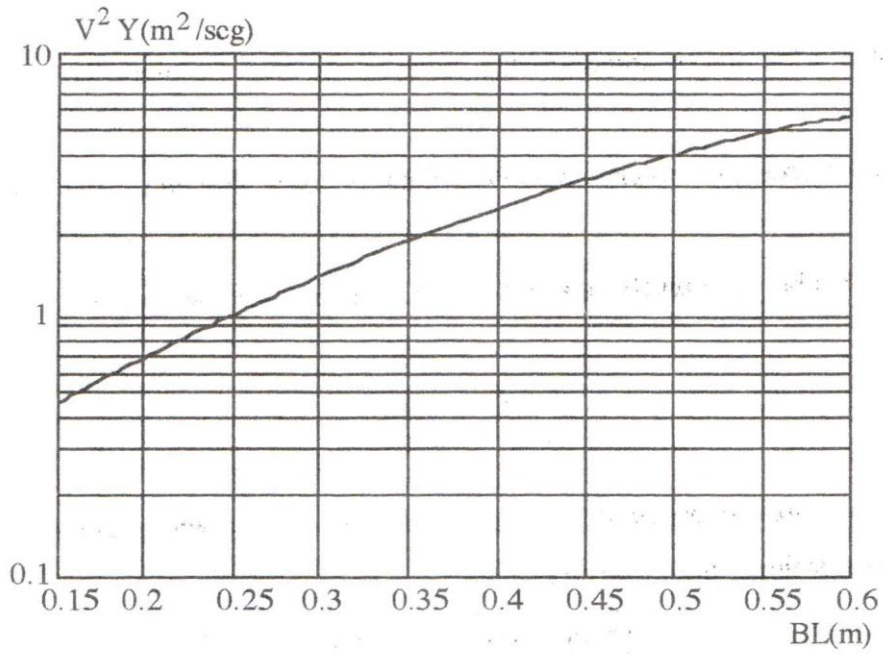


Fig. 3.20 Area Mojada en función de la pendiente S_0 , $m = 0$ para diferentes caudales.



	Diámetro Medio de las Partículas en mm.	Profundidad Media de la Corriente en m.					
		0.40	1.00	2.00	3.00	5.00	Más de 10
Polvo y limo	0.005 - 0.05	0.15-0.2	0.2 -0.30	0.25-0.40	0.30-0.45	0.40-0.55	0.45-0.65
Arena fina	0.05 - 0.25	0.20-0.35	0.3 -0.45	0.40-0.55	0.45-0.60	0.55-0.70	0.65-0.80
Arena media	0.25 - 1.0	0.35-0.50	0.45-0.60	0.55-0.70	0.60-0.75	0.70-0.85	0.80-0.95
Arena Gruesa	1.0 - 2.5	0.50-0.65	0.60-0.75	0.70-0.80	0.75-0.90	0.80-1.00	0.95-1.20
Gravilla fina	2.5 - 5.0	0.65-0.80	0.75-0.85	0.80-1.00	0.90-1.10	2.00-1.20	1.20-1.50
Gravilla media	5.0 - 10	0.80-0.90	0.85-1.05	1.00-1.15	1.10-1.30	1.20-1.45	1.50-1.75
Gravilla gruesa	10 - 15	0.90-1.10	1.05-1.20	1.15-1.35	1.30-1.50	1.45-1.65	1.75-2.00
Grava fina	15 - 25	1.10-1.25	1.20-1.45	1.35-1.65	1.50-1.85	1.65-2.00	2.00-2.30
Grava media	25 - 40	1.25-1.50	1.45-1.85	1.65-2.10	1.85-2.30	2.00-2.45	2.30-2.70
Grava gruesa	40 - 75	1.50-2.00	1.85-2.40	2.10-2.75	2.30-3.10	2.45-3.30	2.70-3.60
Guljarro fino	75 - 100	2.00-2.45	2.40-2.80	2.75-3.20	3.10-3.50	3.30-3.80	3.60-4.20
Guljarro medio	100 - 150	2.45-3.00	2.80-3.35	3.20-3.75	3.50-4.10	3.80-4.40	4.20-4.50
Guljarro grueso	150 - 200	3.00-3.50	3.35-3.80	3.75-4.30	4.10-4.65	4.40-5.00	4.50-5.40
Canto rodado fino	200 - 300	3.50-3.85	3.80-4.35	4.30-4.70	4.65-4.90	5.00-5.50	5.40-5.90
Canto rodado medio	300 - 400		4.35-4.75	4.70-4.95	4.90-5.30	5.50-5.60	5.90-6.00
Canto rodado grueso	400 - 500			4.95-5.35	5.30-5.50	5.60-6.00	6.00-6.20
	o más						

Tabla 3.13 Velocidad media admisible para suelos no cohesivos, en m/seg.

Denominación de los suelos	Porcentaje del contenido de partículas		Profundidades medias de la corriente en m															
			Suelos pocos compactos, peso volumétrico del material seco hasta 1.20 t/m ³				Suelos mediante compactados, peso volumétrico del material seco 1.20 - 1.56 t/m ³				Suelos compactos peso volumétrico del material seco 1.66 - 2.04 t/m ³				Suelos muy compactos el peso volumétrico del material seco 2.04 - 2.14 t/m ³			
			0.4	1.0	2.0	3.0	0.4	1.0	2.0	3.0	0.4	1.0	2.0	3.0	0.4	1.0	2.0	3.0
Arcillas	30 - 50	70 - 50	0.35	0.4	0.45	0.5	0.7	0.85	0.95	1.1	1.0	1.2	1.4	1.5	1.4	1.7	1.9	2.1
Tierras fuertemente arcillosas	20 - 30	80 - 70																
Tierras ligeramente arcillosas	10 - 20	90 - 80	0.35	0.4	0.45	0.5	0.65	0.8	0.9	1.1	0.95	1.2	1.4	1.5	1.4	1.7	1.9	2.1
Suelos de aluvión																		
Arcillas margosas							0.6	0.7	0.8	0.85	0.8	1.0	1.2	1.3	1.1	1.3	1.5	1.7
Tierras arenosas	5 - 10	20 - 40	Según la Tabla 3.13 en relación con el tamaño de las fracciones arenosas.															

Tabla 3.14 Velocidad media admisible para suelos cohesivos, en m/seg.

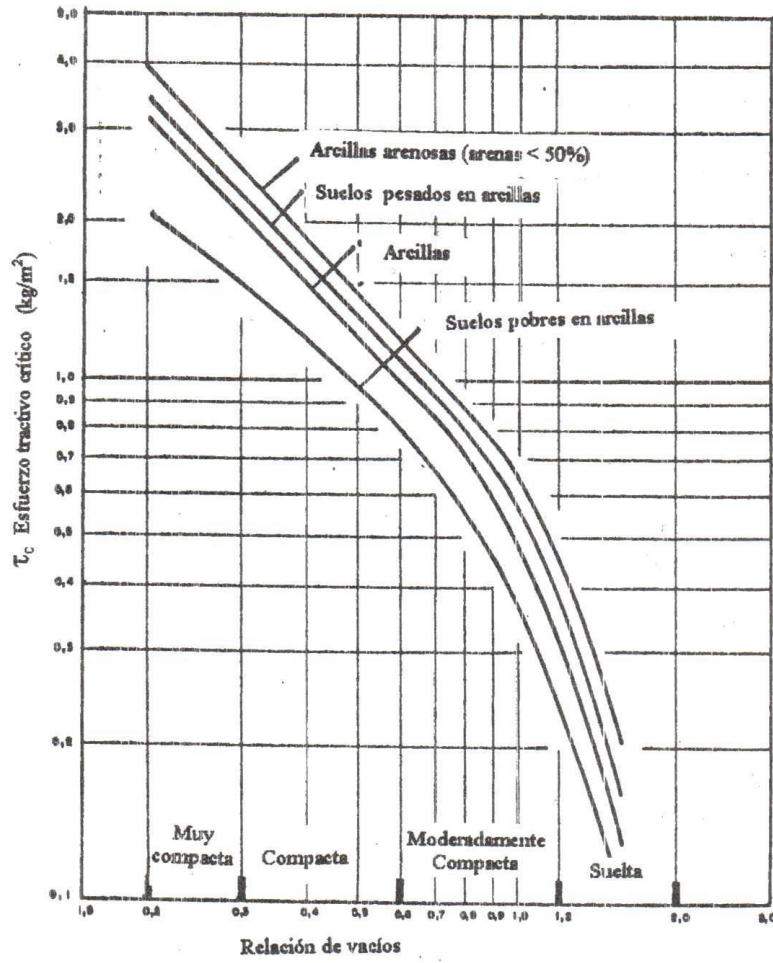


Fig. 3.17 Esfuerzo cortante crítico en suelos cohesivos según U.R.S.S. 1936.

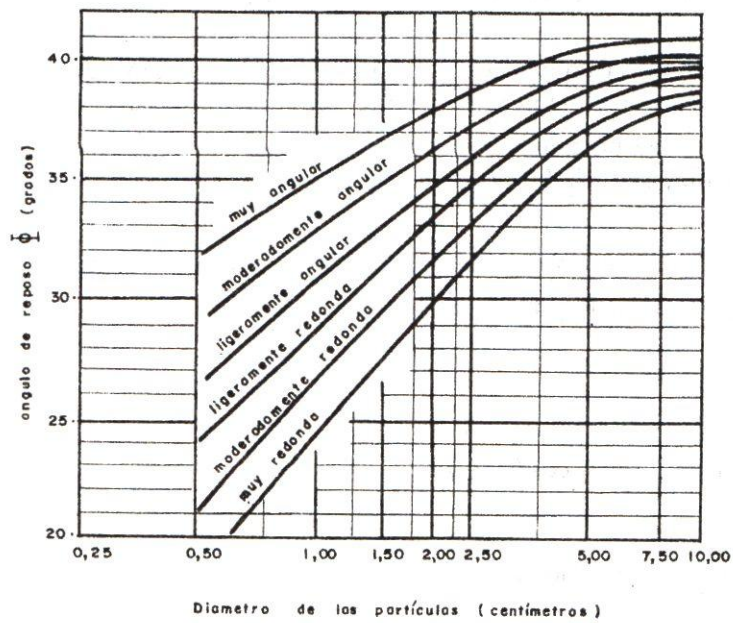


FIG. 3.11 Ángulo de reposo de material no cohesivo, según el U.S. Bureau of Reclamation

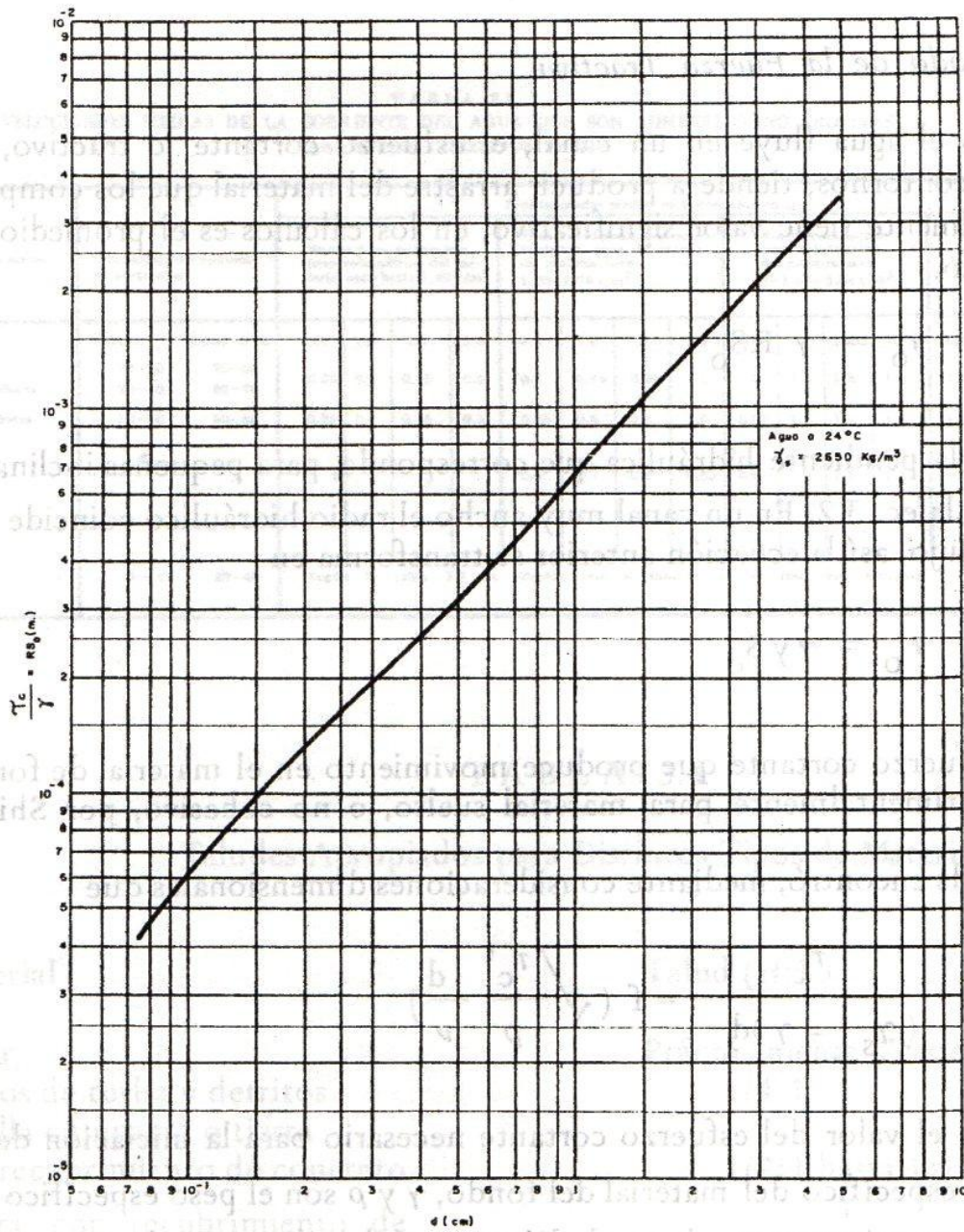


FIG. 3.8 Esfuerzo cortante crítico, obtenido de la información experimental de Shieds, en función del diámetro del material no cohesivo del fondo.

$\Delta H/Y_c$.0		.1		.2		.3		.4		.5		.6		.7		.8		.9	
	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c	Y_2/Y_1	Y_1/Y_c
0	1.00	1.00	2.07	.680	2.48	.614	2.81	.572	3.09	.541	3.35	.516	3.60	.494	3.82	.447	4.04	.461	4.24	.448
1	4.44	.436	4.64	.425	4.82	.415	5.00	.405	5.18	.397	5.36	.389	5.53	.381	5.69	.375	5.86	.368	6.02	.362
2	6.18	.356	6.33	.351	6.49	.345	6.64	.340	6.79	.336	6.94	.331	7.09	.327	7.23	.323	7.38	.319	7.52	.315
3	7.66	.311	7.80	.308	7.94	.304	8.07	.301	8.21	.298	8.34	.295	8.48	.292	8.61	.289	8.74	.286	8.87	.284
4	9.00	.281	9.13	.278	9.26	.276	9.39	.274	9.51	.271	9.64	.269	9.76	.267	9.89	.265	10.01	.263	10.13	.261
5	10.25	.259	10.38	.257	10.50	.255	10.62	.253	10.73	.251	10.85	.250	10.97	.248	11.09	.246	11.21	.244	11.32	.243
6	11.44	.241	11.55	.240	11.67	.238	11.78	.237	11.90	.235	12.01	.234	12.22	.233	12.24	.231	12.35	.230	12.46	.228
7	12.57	.227	12.68	.226	12.79	.226	12.90	.223	13.01	.222	13.12	.221	13.23	.220	13.34	.219	13.45	.218	13.56	.216
8	13.66	.215	13.77	.214	13.88	.213	13.98	.212	14.09	.211	14.19	.210	14.30	.209	14.41	.208	14.51	.207	14.61	.206
9	14.72	.205	14.82	.204	14.93	.203	15.03	.202	15.13	.202	15.23	.201	15.34	.200	15.44	.199	15.54	.198	15.64	.197
10	15.74	.197	15.84	.196	15.95	.195	16.05	.194	16.15	.193	16.25	.193	16.35	.192	16.45	.191	16.54	.191	16.64	.190
11	16.74	.189	16.84	.188	16.94	.187	17.04	.187	17.13	.186	17.23	.185	17.33	.185	17.43	.184	17.52	.183	17.62	.183
12	17.72	.182	17.81	.181	17.91	.181	18.01	.180	18.10	.180	18.20	.179	18.29	.178	18.39	.178	18.48	.177	18.58	.176
13	18.67	.176	18.77	.176	18.86	.175	18.95	.174	19.05	.174	19.14	.173	19.24	.173	19.33	.172	19.42	.171	19.52	.171
14	19.61	.170	19.70	.170	19.79	.169	19.89	.169	19.98	.168	20.07	.168	20.16	.167	20.25	.167	20.34	.166	20.44	.166
15	20.53	.165	20.62	.165	20.71	.164	20.80	.164	20.89	.163	21.07	.163	21.07	.163	21.16	.162	21.25	.162	21.34	.161
16	21.43	.161	21.52	.160	21.61	.160	21.70	.160	21.79	.159	21.88	.159	21.97	.158	22.05	.158	22.14	.157	22.23	.157
17	22.32	.157	22.41	.166	22.50	.156	22.58	.155	22.67	.155	22.76	.155	22.85	.154	22.93	.154	23.02	.154	23.11	.153
18	23.19	.153	23.28	.162	23.37	.152	23.45	.152	23.54	.151	23.63	.151	23.71	.151	23.80	.150	23.89	.150	23.97	.150
19	24.06	.149	24.14	.149	24.23	.148	24.31	.148	24.40	.147	24.49	.147	24.57	.147	24.66	.147	24.74	.146	24.83	.146
20	24.91	.146	24.99	.145	25.08	.145	25.16	.145	25.25	.145	25.33	.144	25.42	.144	25.50	.144	25.58	.143	25.67	.143
21	25.75	.143	25.83	.142	25.92	.142	26.00	.142	26.08	.141	26.16	.141	26.25	.141	26.33	.141	26.42	.140	26.50	.140
22	26.58	.140	26.66	.139	26.75	.139	26.83	.139	26.91	.139	26.99	.138	27.08	.138	27.16	.138	27.24	.138	27.32	.137
23	27.40	.137	27.48	.137	27.57	.136	27.65	.136	27.73	.136	27.81	.136	27.89	.135	27.97	.135	28.05	.135	28.13	.135
24	28.22	.134	28.30	.134	28.38	.134	28.46	.134	28.54	.133	28.62	.133	28.70	.133	28.78	.133	28.86	.132	28.94	.132
25	29.02	.132	29.10	.132	29.18	.131	29.26	.131	29.34	.131	29.42	.131	29.50	.131	29.58	.130	29.66	.130	29.74	.130
26	29.82	.130	29.89	.129	29.97	.129	30.05	.129	30.13	.129	30.21	.128	30.29	.128	30.37	.128	30.45	.128	30.52	.128
27	30.60	.127	30.68	.127	30.76	.127	30.84	.127	30.92	.127	31.00	.126	31.07	.126	31.15	.126	31.23	.126	31.31	.126
28	31.38	.125	31.46	.125	31.54	.125	31.62	.125	31.69	.125	31.77	.124	31.85	.124	31.93	.124	32.00	.124	32.08	.124
29	32.16	.123	32.23	.123	32.31	.123	32.39	.123	32.46	.123	32.54	.122	32.62	.122	32.69	.122	32.77	.122	32.85	.122
30	32.92	.121	33.00	.121	33.08	.121	33.15	.121	33.23	.121	33.31	.121	33.38	.120	33.46	.120	33.53	.120	33.61	.120
31	33.68	.120	33.76	.119	33.84	.119	33.91	.119	33.99	.119	34.06	.119	34.14	.119	34.21	.118	34.29	.118	34.36	.118
32	34.44	.118	34.51	.118	34.59	.118	34.66	.117	34.74	.117	34.81	.117	34.89	.117	34.95	.117	34.04	.117	35.11	.116
33	35.19	.116	35.26	.116	35.34	.116	35.41	.116	35.49	.116	35.56	.115	35.63	.115	35.71	.115	35.78	.115	35.86	.115
34	35.93	.115	36.00	.115	36.08	.114	36.15	.114	36.23	.114	36.30	.114	36.37	.114	36.45	.114	36.52	.113	36.59	.113
35	36.67	.113	36.74	.113	36.81	.113	36.89	.113	36.96	.112	37.03	.112	37.11	.112	37.18	.112	37.25	.112	37.33	.112
36	37.40	.112	37.47	.112	37.55	.111	37.62	.111	37.69	.111	37.76	.111	37.84	.111	37.91	.111	37.98	.111	38.05	.110
37	38.13	.110	38.20	.110	38.27	.110	38.34	.110	38.42	.110	38.49	.110	38.56	.109	38.63	.109	38.70	.109	38.78	.109
38	38.85	.109	38.92	.109	38.99	.109	39.06	.109	39.14	.108	39.21	.108	39.28	.108	39.35	.108	39.42	.108	39.49	.108
39	39.56	.108	39.64	.107	39.71	.107	39.78	.107	39.85	.107	39.92	.107	39.99	.107	40.06	.107	40.14	.107	40.21	.106
40	40.28	.106	40.35	.106	40.42	.106	40.49	.106	40.56	.106	40.63	.106	40.70	.106	40.77	.105	40.84	.105	40.91	.105

Tabla 4.6 Valores de Y_2/Y_1 e Y_1/Y_c en función de $\Delta H/Y_c$ para resaltos.

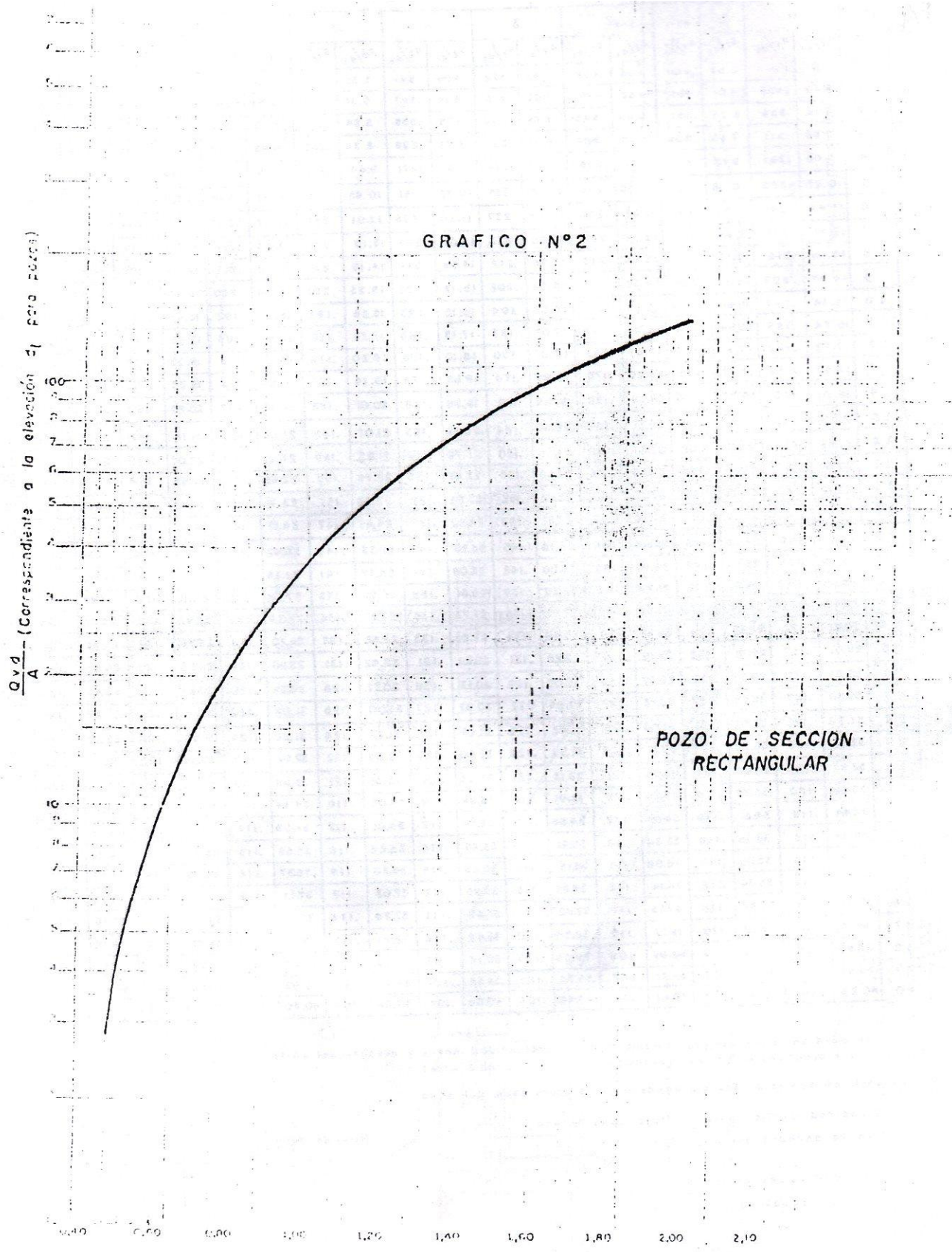
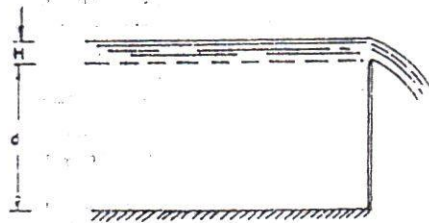


Fig. 4-8 BORDE LIBRE EN METROS

T A B L A 4-2

Valores de "C" (coeficiente de gasto) para el cálculo de retenciones.

d	H							
	0,06	0,15	0,30	0,46	0,61	0,91	1,22	1,52
0,15	1,97	2,08	2,26	2,44	2,45	2,59	2,71	2,81
0,30	1,92	1,94	2,04	2,15	2,25	2,42	2,44	2,51
0,61	1,91	1,89	1,93	1,99	2,04	2,14	2,23	2,32
0,91	1,90	1,87	1,89	1,92	1,96	2,03	2,10	2,17
1,52	1,90	1,86	1,86	1,87	1,89	1,94	1,98	2,03
3,05	1,90	1,85	1,84	1,84	1,84	1,86	1,88	1,91
	1,90	1,85	1,83	1,82	1,82	1,81	1,81	1,81



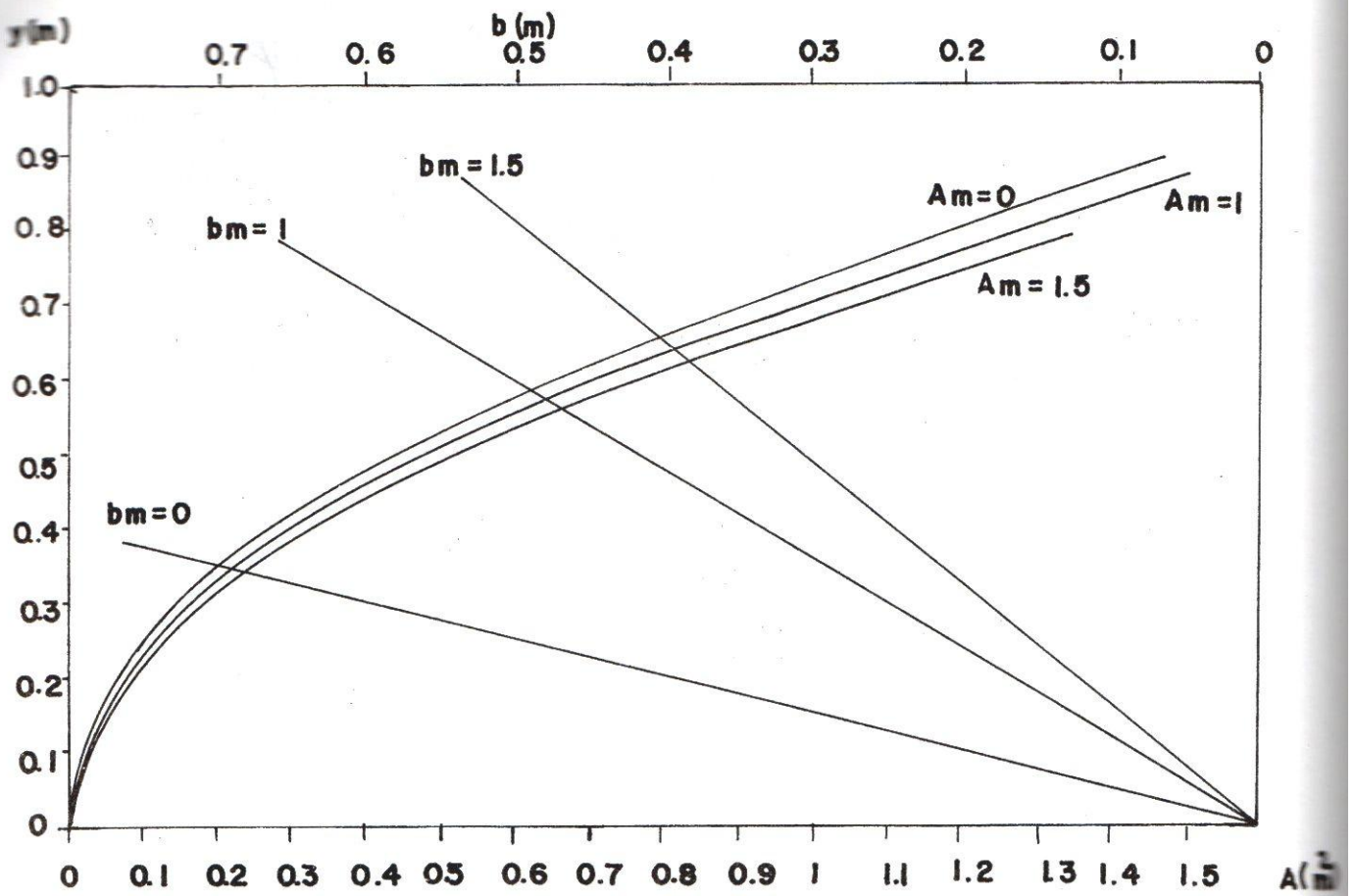


Fig. 3.21 Area mojada en función de la profundidad Y y la base b para diferentes valores de m .

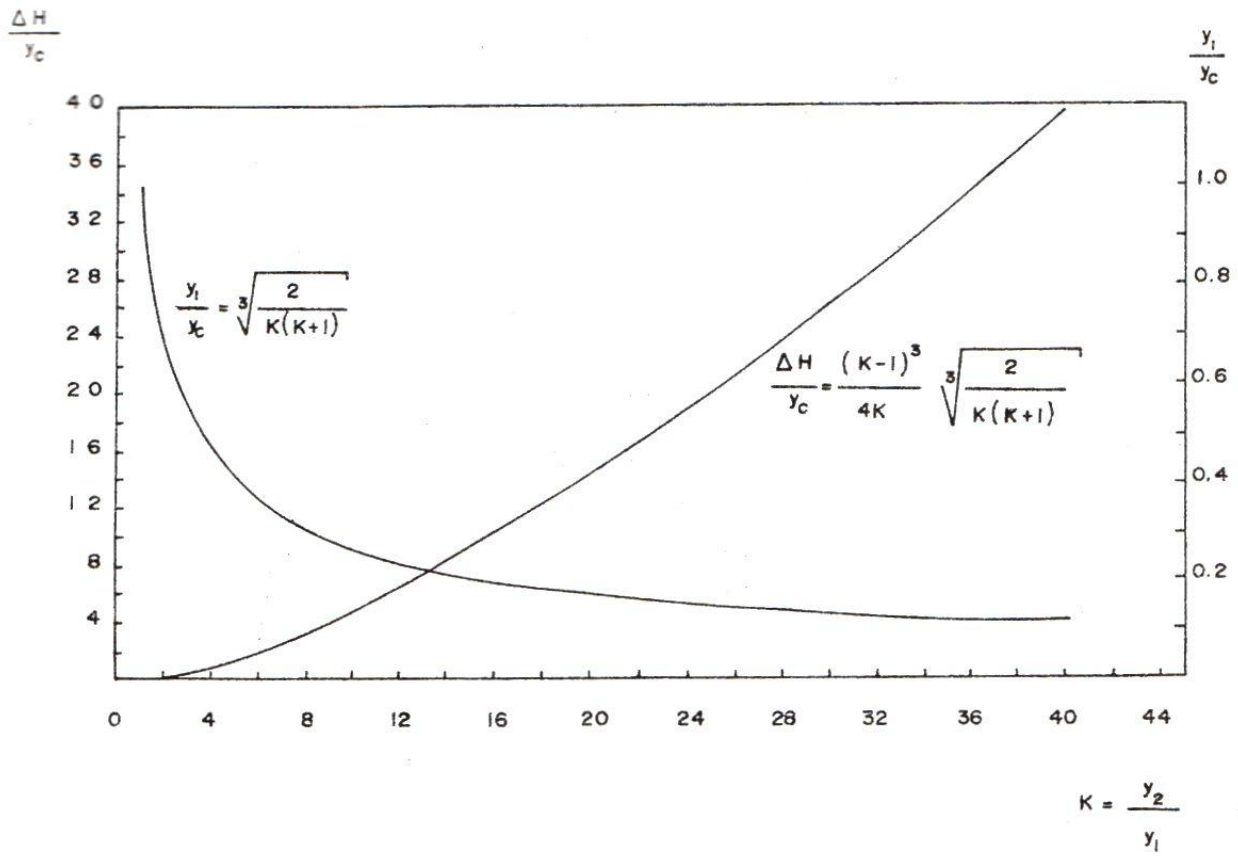


Fig. 4.13 Curvas adimensionales para resalto hidráulico.