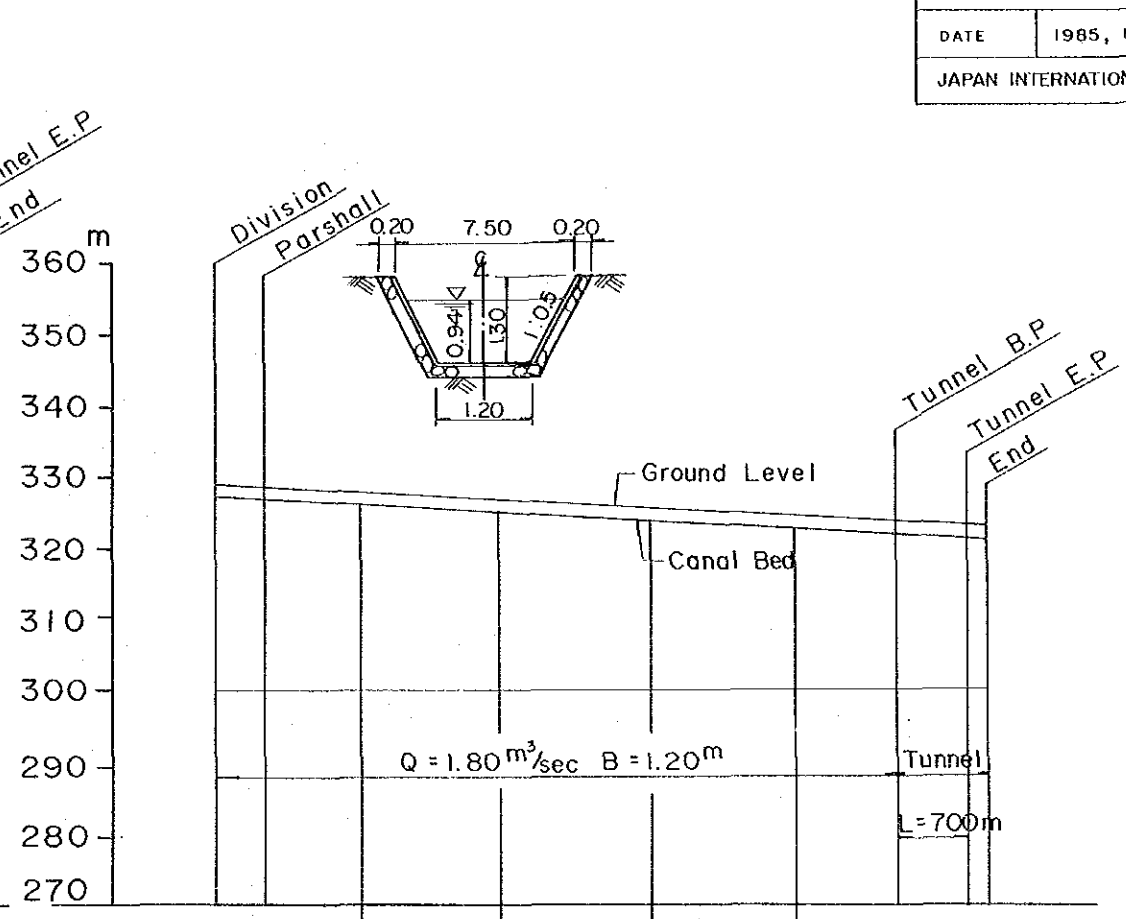
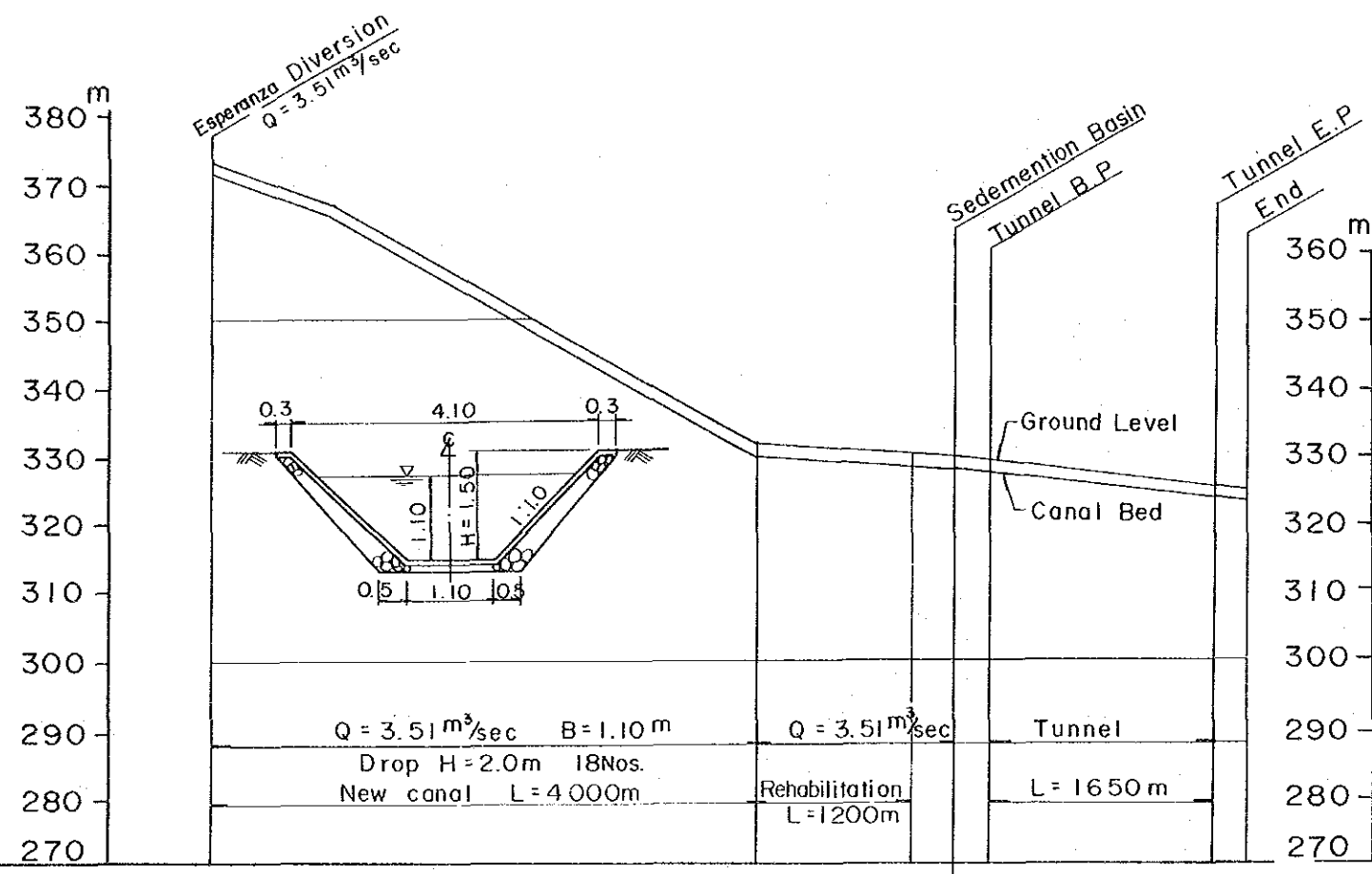


ESPERANZA

CABUYAL

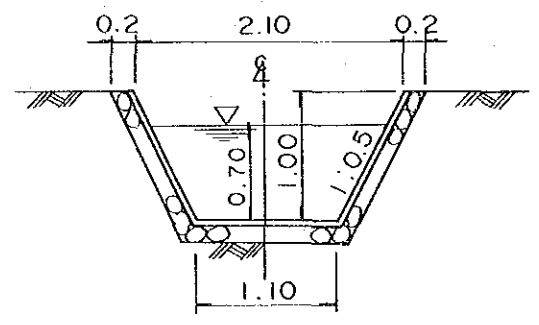
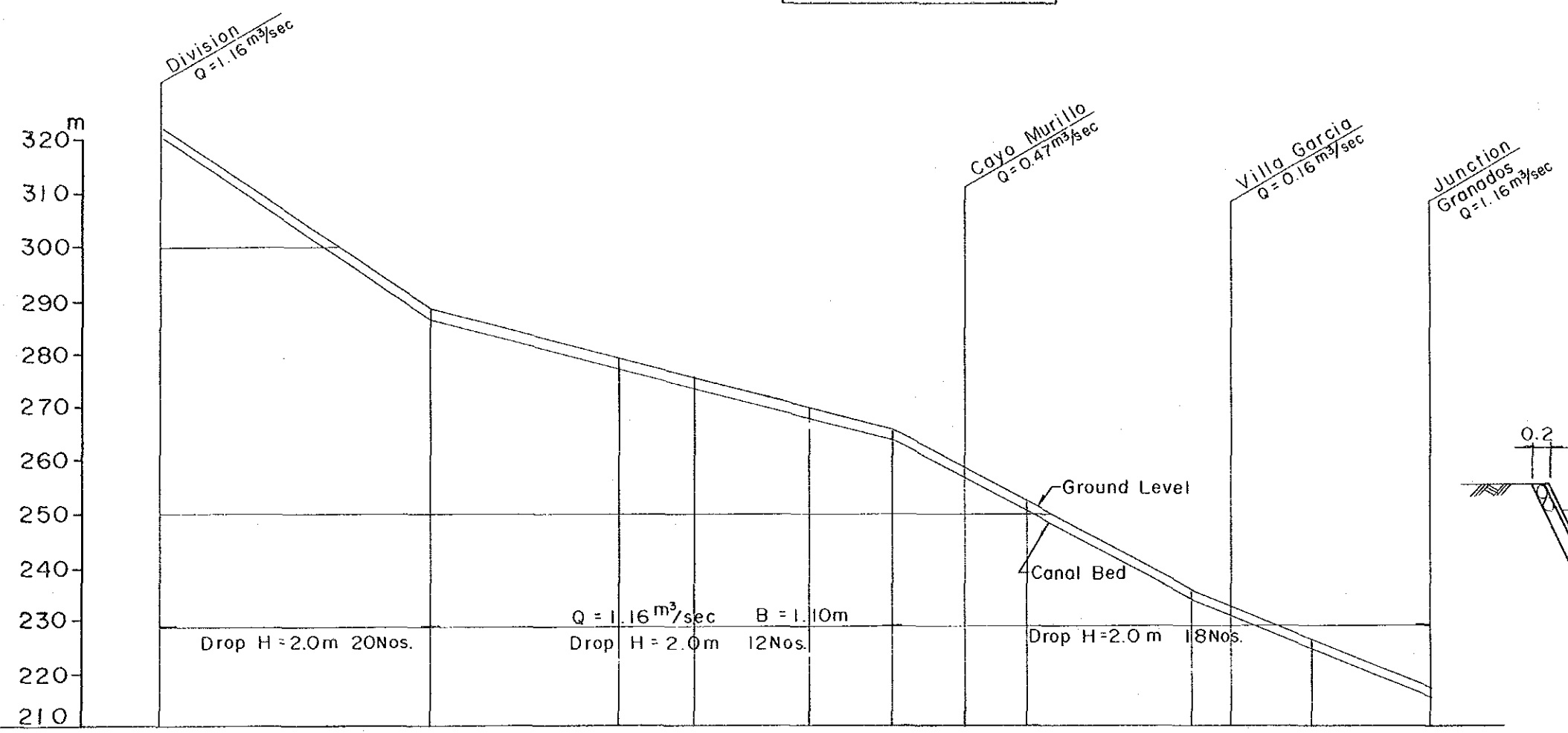


SLOPE	I = 1/1000										I = 1/537		I = 1/1000
HIGH WATER LEVEL (m)	372.5	366.6			331.6			329.6					324.2
PLANNING CANAL BED (m)	371.4	365.5			330.5			328.5					323.1
SLOPE	I = 1/98				I = 1/537								
GROUND LEVEL (m)	372.9	367.0			332.0			330.0					325.3
LENGTH (m)	0	850	1000	2000	3000	4000	5000	5200	5450	6000	7000	7600	
DISTANCE (m)	0	850	1000	1000	1000	1000	1000	450	550	1000	600		
STATION NO.	0	1	2	3	4	5	6	7	4				

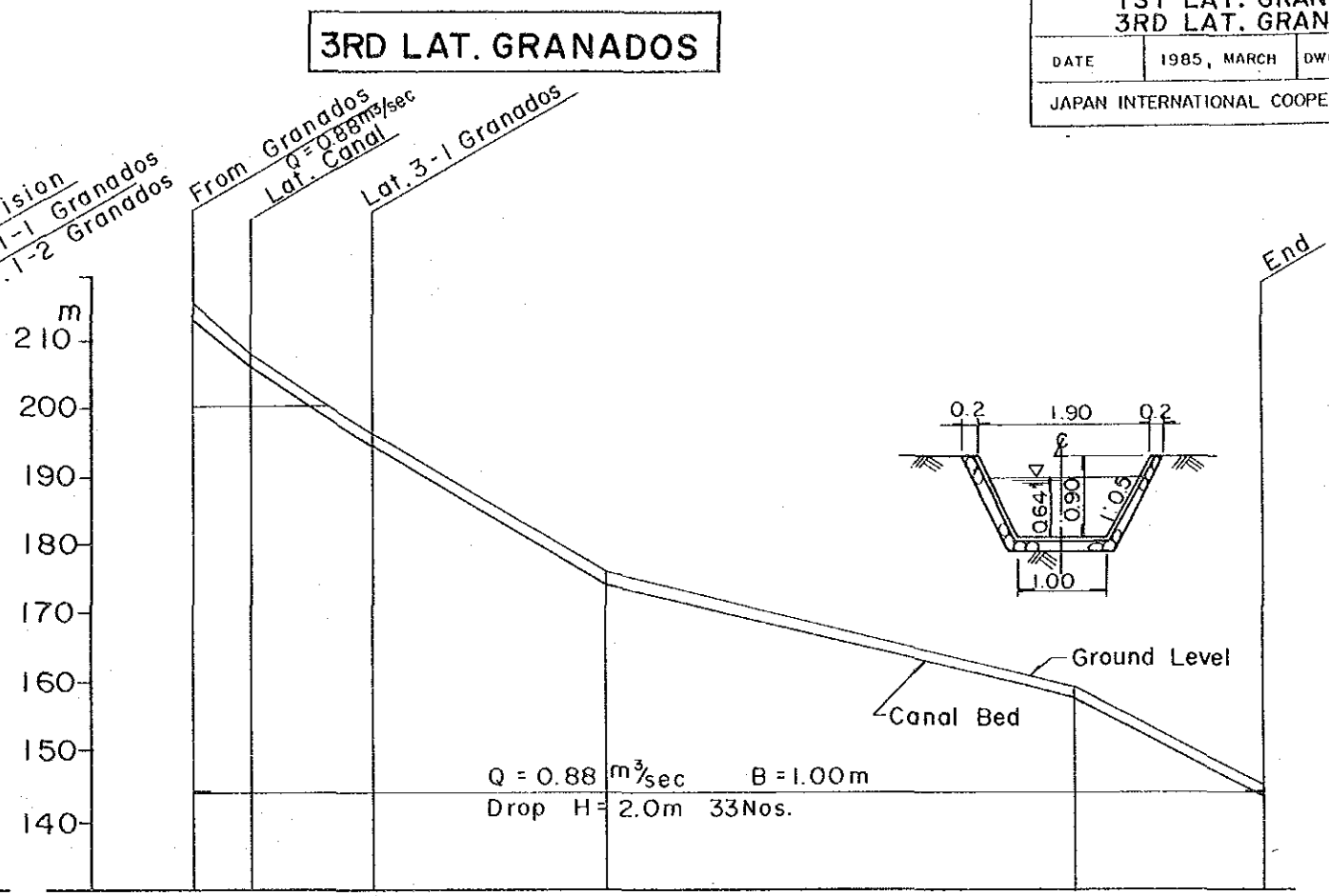
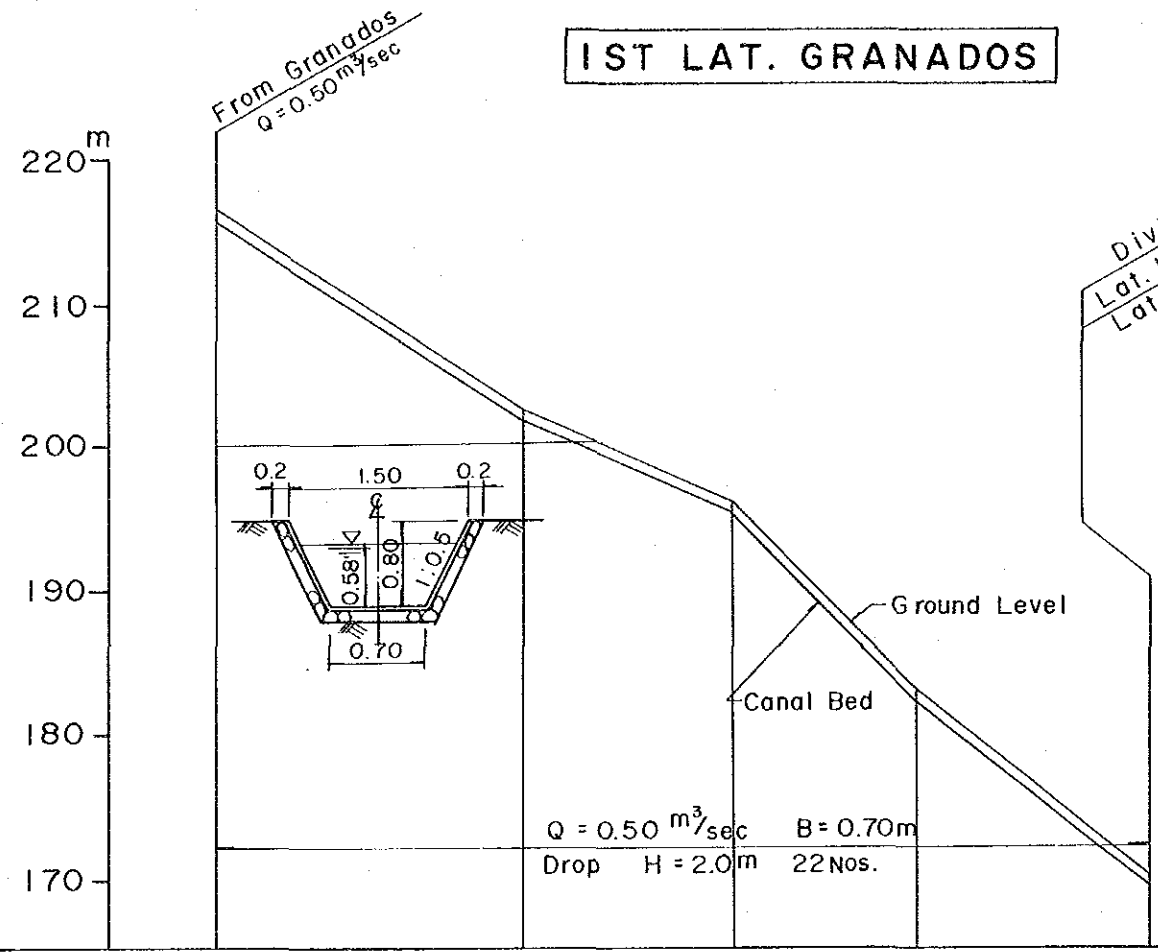
SLOPE	I = 1/1000											
HIGH WATER LEVEL (m)	326.3				322.3			321.3			321.7	
PLANNING CANAL BED (m)	325.3				321.3			320.3			320.7	
SLOPE	I = 1/1150											
GROUND LEVEL (m)	327.0	325.8	324.3		323.7			323.0		322.0	322.4	
LENGTH (m)	0	330	1000		2000			3000		4000	5000	5350
DISTANCE (m)	0	330	1000		1000			1000		1000	1000	350
STATION NO.	0	1	2		3			4		5		

CABUYAL BAJO

REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANCAY - HUARAL VALLEY
 REHABILITATION PROJECT
CANAL PROFILE
CABUYAL BAJO
 DATE 1985, MARCH DWG. NO 26
 JAPAN INTERNATIONAL COOPERATION AGENCY



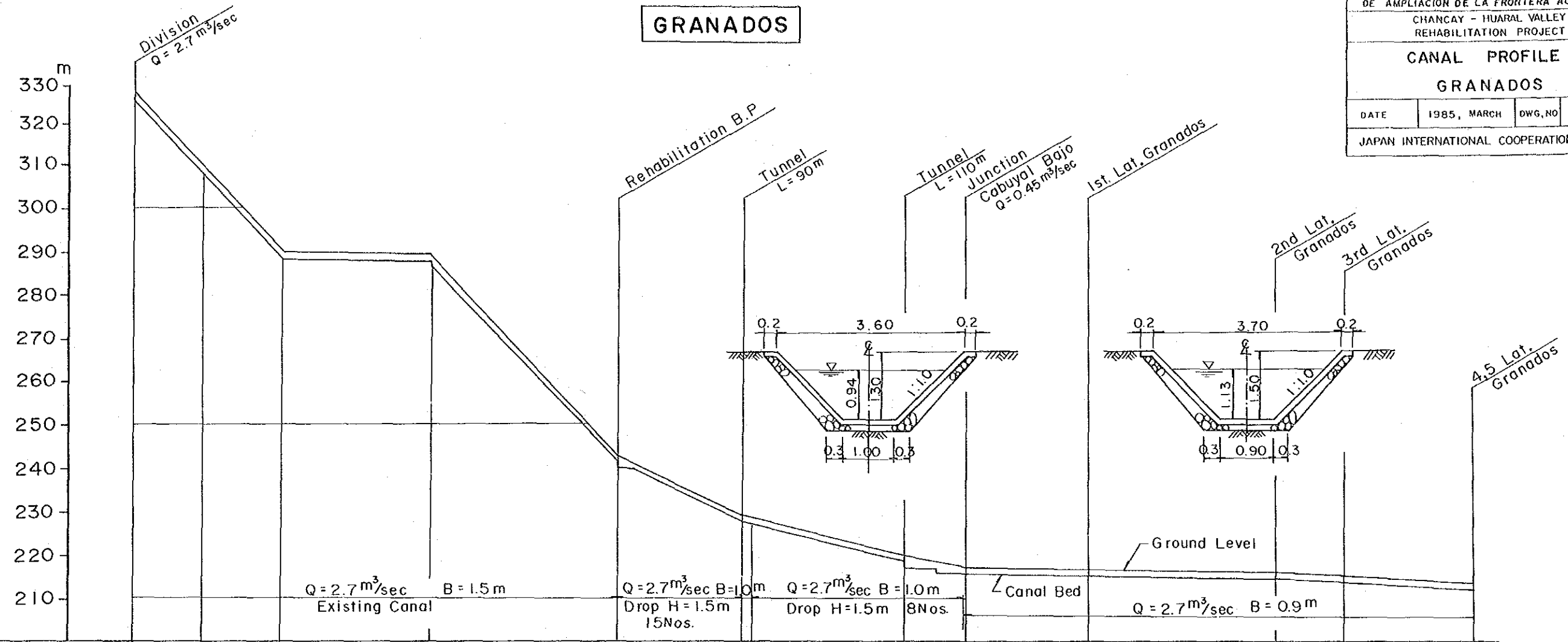
SLOPE	I = 1/800												
HIGH WATER LEVEL (m)	322.13	290.0	287.2	278.3	275.1	269.1	264.8	257.2	252.0	234.7	231.9	225.7	216.7
PLANNING CANAL BED(m)	321.4	298.3	286.5	277.6	274.4	268.4	264.1	256.5	251.3	234.0	231.2	225.0	216.0
SLOPE	I = 1/33		I = 1/84					I = 1/39		I = 1/55			
GROUND LEVEL (m)	322.4	299.3	287.5	278.6	275.4	269.4	265.1	257.5	252.3	235.0	232.2	226.0	217.0
LENGTH (m)	0	670	1000	1700	2000	2400	270	3000	3210	3860	4000	42	4730
DISTANCE (m)	0	670	330	700	300	460	320	270	590	140	250	480	
STATION NO.	0	1	2	3	4								



SLOPE	I = 1/1000				
HIGH WATER LEVEL (m)	216.1	202.4	195.6	182.6	169.7
PLANNING CANAL BED (m)	215.5	201.8	195.0	182.0	169.0
SLOPE	I = 1/62		I = 1/88		I = 1/50
GROUND LEVEL (m)	216.5	202.8	196.0	183.0	170.0
LENGTH (m)	0	850	1000	1450	1950
DISTANCE (m)	0	850	150	450	500
STATION NO.	0				2

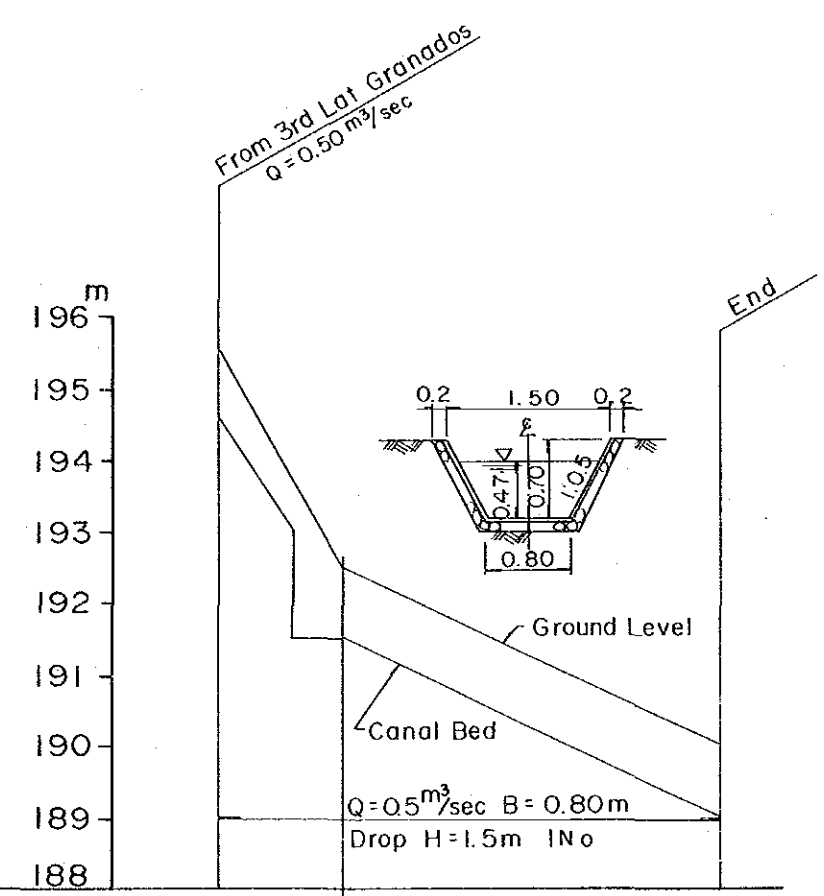
SLOPE	I = 1/900				
HIGH WATER LEVEL (m)	214.9	207.4	195.4	175.9	159.9
PLANNING CANAL BED (m)	214.3	206.8	194.8	175.3	159.3
SLOPE	I = 1/31			I = 1/84	
GROUND LEVEL (m)	215.0	207.5	195.5	176.0	160.0
LENGTH (m)	0	160	520	1000	1200
DISTANCE (m)	0	160	360	480	200
STATION NO.	0			1	

GRANADOS

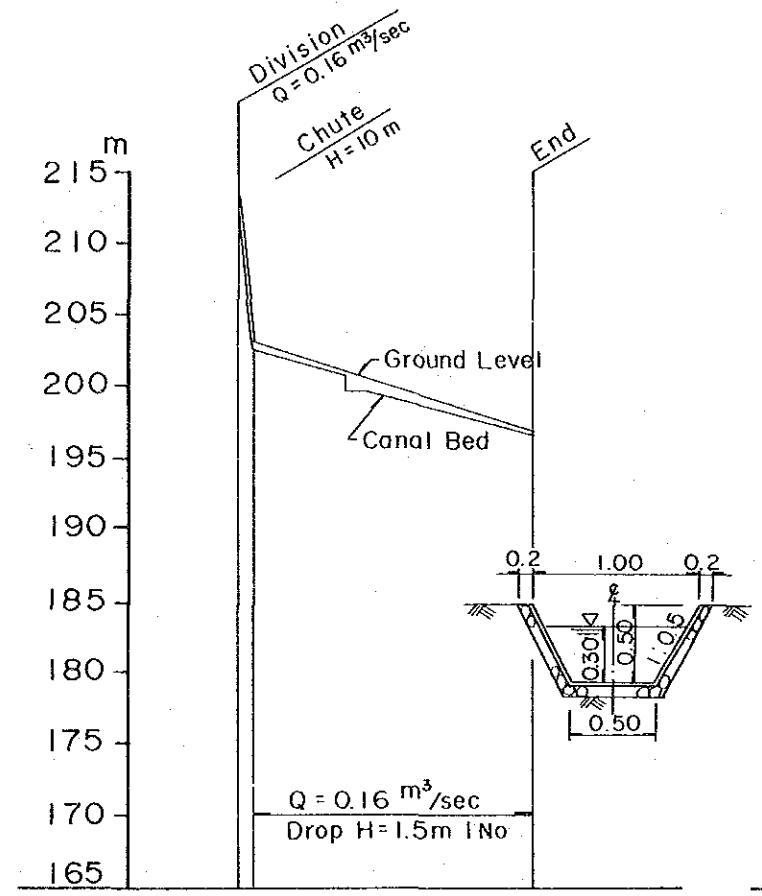


SLOPE	$I = 1/800$															$I = 1/1500$									
HIGH WATER LEVEL (m)	326.4	309.7	290.7	289.2	242.9	228.9	219.5	216.5	216.2	215.7	214.7	212.7													
PLANNING CANAL BED (m)	325.2	308.5	289.5	288.0	241.7	227.9	218.5	215.5	215.0	214.5	213.5	211.5													
SLOPE	$I = 1/47$ $Q = 4.0$		$I = 1/1147$ $Q = 4.0$			$I = 1/47$ $Q = 3.2$		$I = 1/154$ $Q = 2.6$		$Q = 3.01$		$Q = 1.36$		$I = 1/1470$ $Q = 1.10$		$Q = 0.41$									
GROUND LEVEL (m)	326.7	310.0	291.0	289.5	243.2	229.4	220.0	217.0	216.5	216.0	215.0	213.0													
LENGTH (m)	0	820	1000	1680	2000	3000	3400	4000	5000	5580	6000	7000	8000	8900	9000	9620	10000	11000	11030	12000	13000	14000	15000	15500	
DISTANCE (m)	0	820	180	180	320	1000	400	600	1000	580	420	1000	1000	900	100	620	380	1000	300	970	1000	200	800	1000	500
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15									

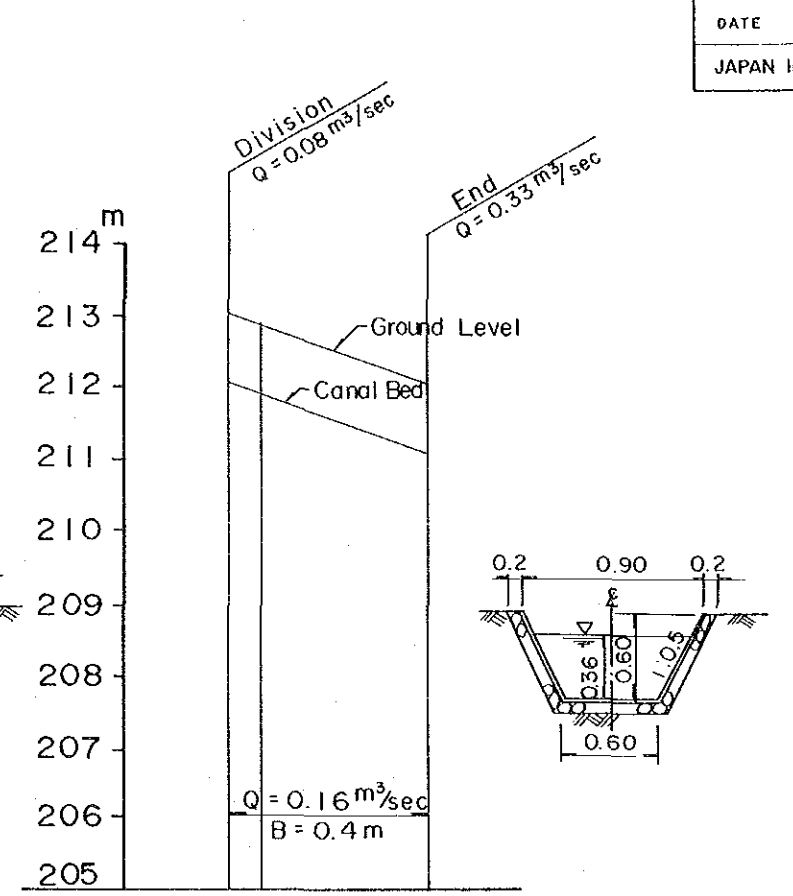
3-1 LAT. GRANADOS



4TH LAT. GRANADOS



5TH LAT. GRANADOS



SLOPE	I = 1/600		I = 1/1000	
HIGH WATER LEVEL (m)	195.0	192.0		189.5
PLANNING CANAL BED (m)	194.5	191.5		189.0
SLOPE	I = 1/283		I = 1/1040	
GROUND LEVEL (m)	195.5	192.5		190.0
LENGTH (m)	0	850	1000	3000
		1000	2000	3450
DISTANCE (m)	0	850	1000	1000
		150	1000	450
STATION NO.	0	1	2	3

SLOPE	I = 1/8		I = 1/400	
HIGH WATER LEVEL (m)	212.3	202.5		195.8
PLANNING CANAL BED (m)	212.0	202.0		195.5
SLOPE	I = 1/8		I = 1/303	
GROUND LEVEL (m)	213.0	203.0		196.5
LENGTH (m)	0	80	1000	2000
		2050		
DISTANCE (m)	0	80	920	1000
			50	
STATION NO.	0	1	2	

SLOPE	I = 1/1400			
HIGH WATER LEVEL (m)	212.4	212.2		211.5
PLANNING CANAL BED (m)	211.7	211.5		210.8
SLOPE	I = 1/1400			
GROUND LEVEL (m)	213.0	212.7		212.0
LENGTH (m)	0	250	1000	1400
DISTANCE (m)	0	250	750	400
STATION NO.	0	1		

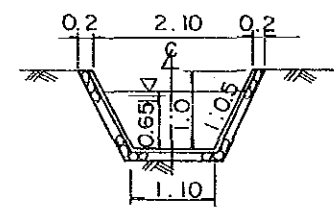
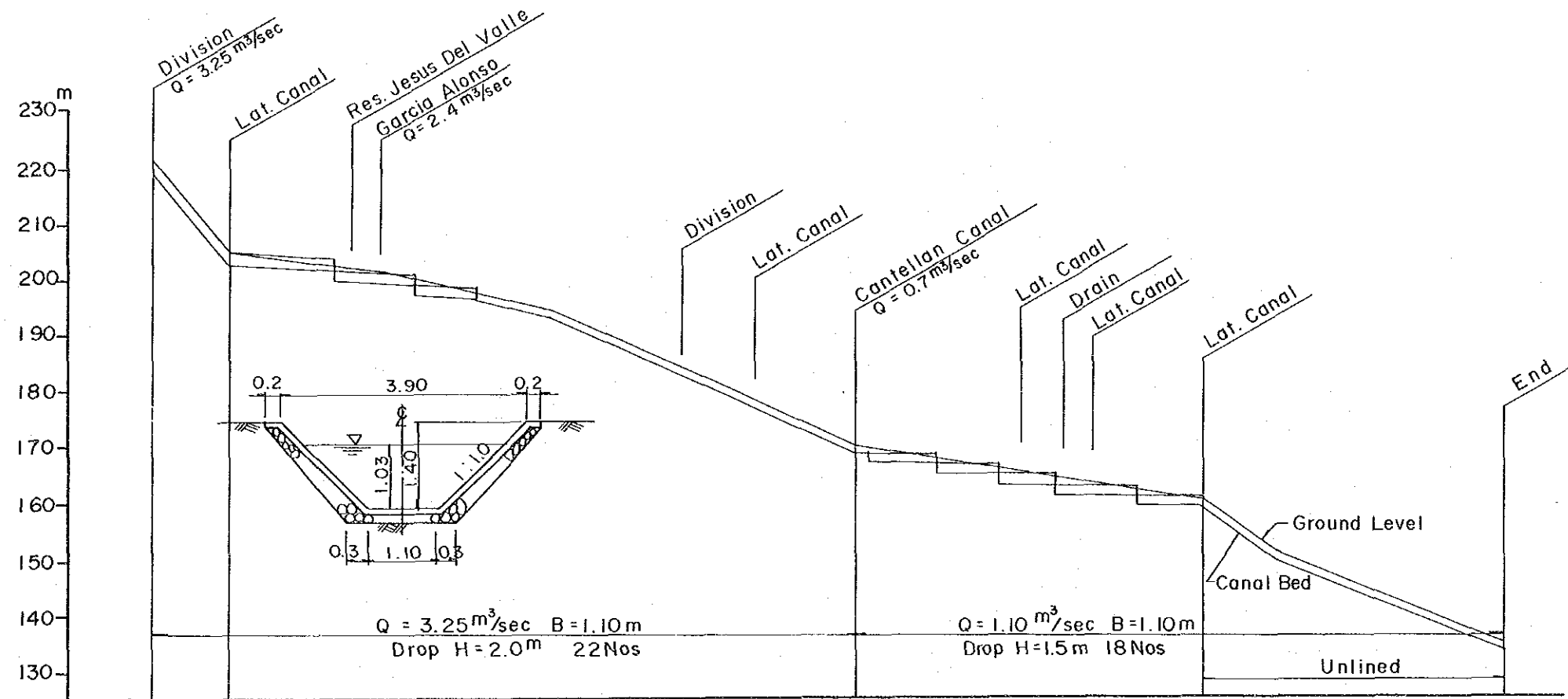
HUARAL

REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANCAY - HUARAL VALLEY
 REHABILITATION PROJECT

CANAL PROFILE
HUARAL

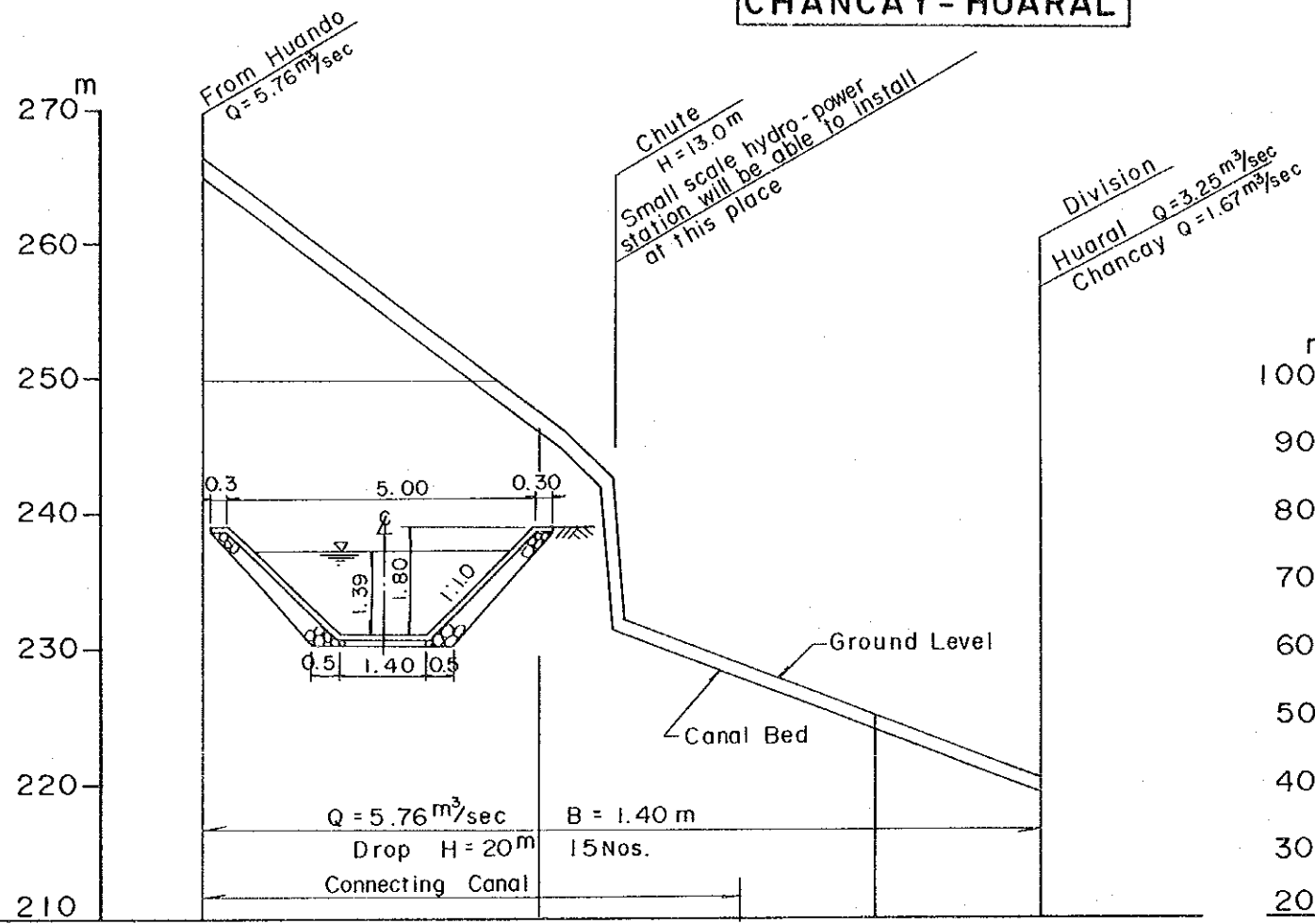
DATE 1985, MARCH DWG. NO 31

JAPAN INTERNATIONAL COOPERATION AGENCY

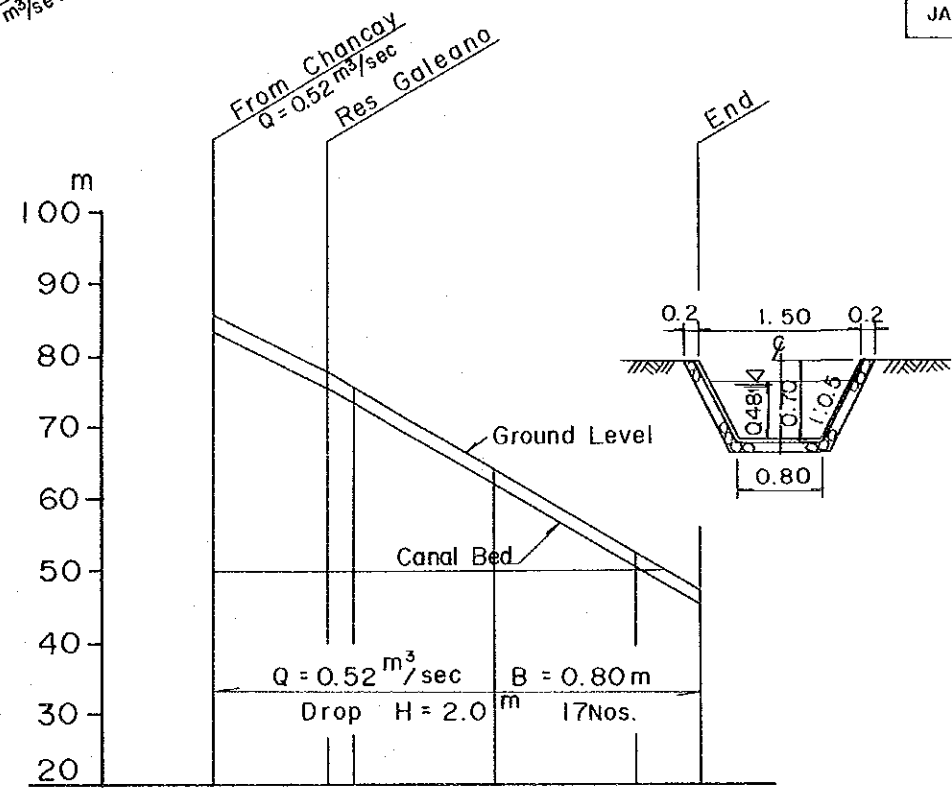


SLOPE	I = 1/900						I = 1/700																		
HIGH WATER LEVEL (m)	219.5	207.0	204.	201.3	199.8	194.8	193.8	184.4	177.7	168.7	163.9	162.0	158.2	134.7											
PLANNING CANAL BED (m)	218.5	206.0	203.3	200.3	198.8	193.8	192.8	183.4	176.7	167.7	163.2	161.3	157.5	134.0											
SLOPE	I=1/45	I = 1/267			I = 1/112			I = 1/323			I = 1/105														
GROUND LEVEL (m)	2205	207.0	205.0	202.0	201.5	195.5	194.5	184.0	178.4	170.0	165.0	164.0	163.4	160.5	135.0										
LENGTH (m)	0	450	700	1000	1750	2000	3000	3280	3500	400	4720	5000	5350	6000	6250	7000	7700	8000	8100	8250	9000	9320	10000	11000	12000
DISTANCE (m)	0	450	250	300	750	250	1000	1300	220	1220	280	630	400	250	750	700	300	100	230	990	1000	1000	1000	1000	1000
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	11	12												

CHANCAY - HUARAL



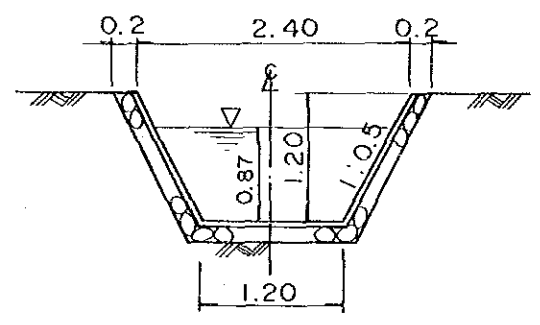
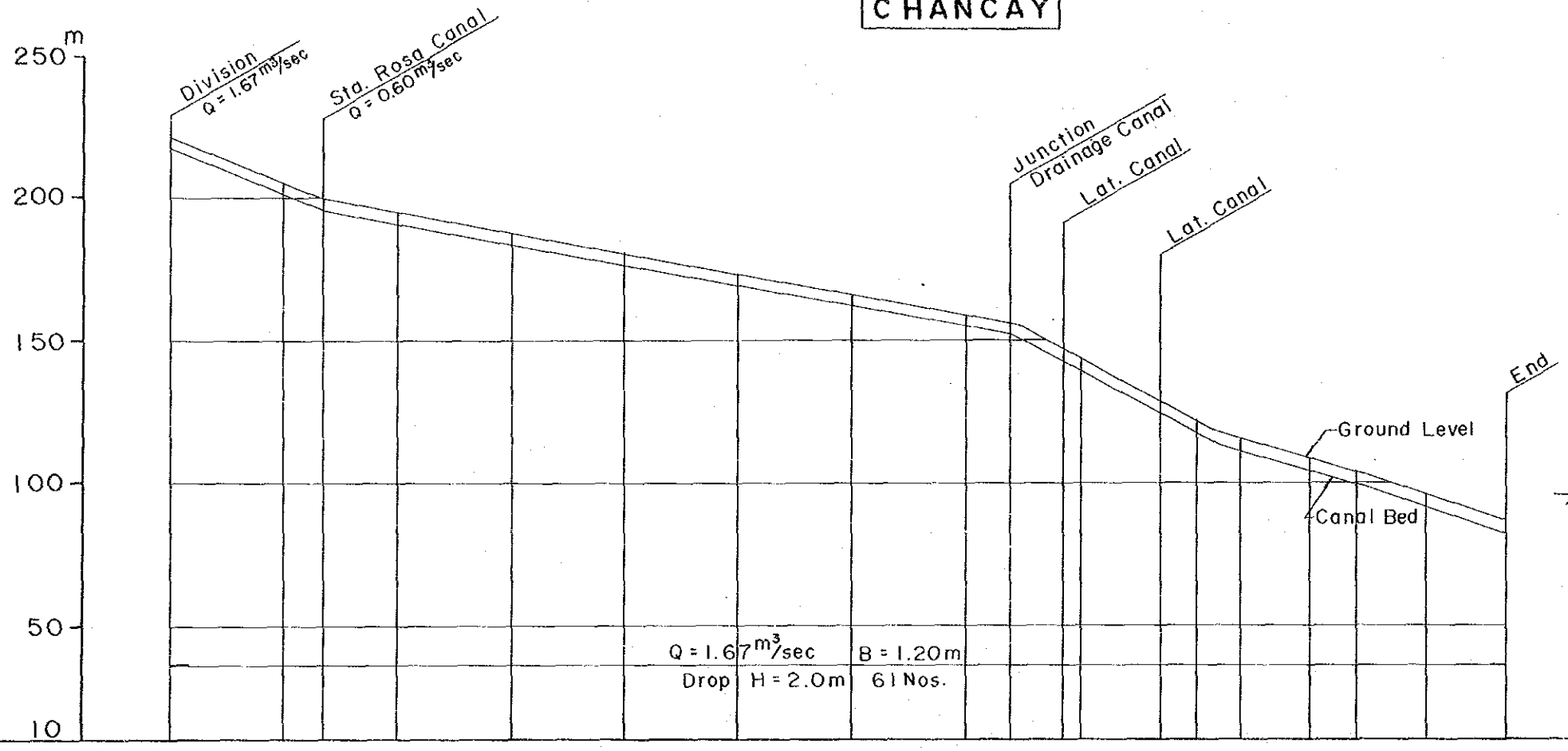
GALEANO



SLOPE	I = 1/1300		I = 1/1300					
HIGH WATER LEVEL (m)	263.8	244.4	229.4		219.9			
PLANNING CANAL BED (m)	262.4	243.0	228.0		218.5			
SLOPE	I = 1/70		I = 1/125	I = 1/105				
GROUND LEVEL (m)	266.5	245.5	245.0	230.0		220.5		
LENGTH (m)	0	1000	1100	1220	1500	1600	2000	2500
DISTANCE (m)	0	1000	100	120	280	100	750	500
STATION NO.	0	1			2			

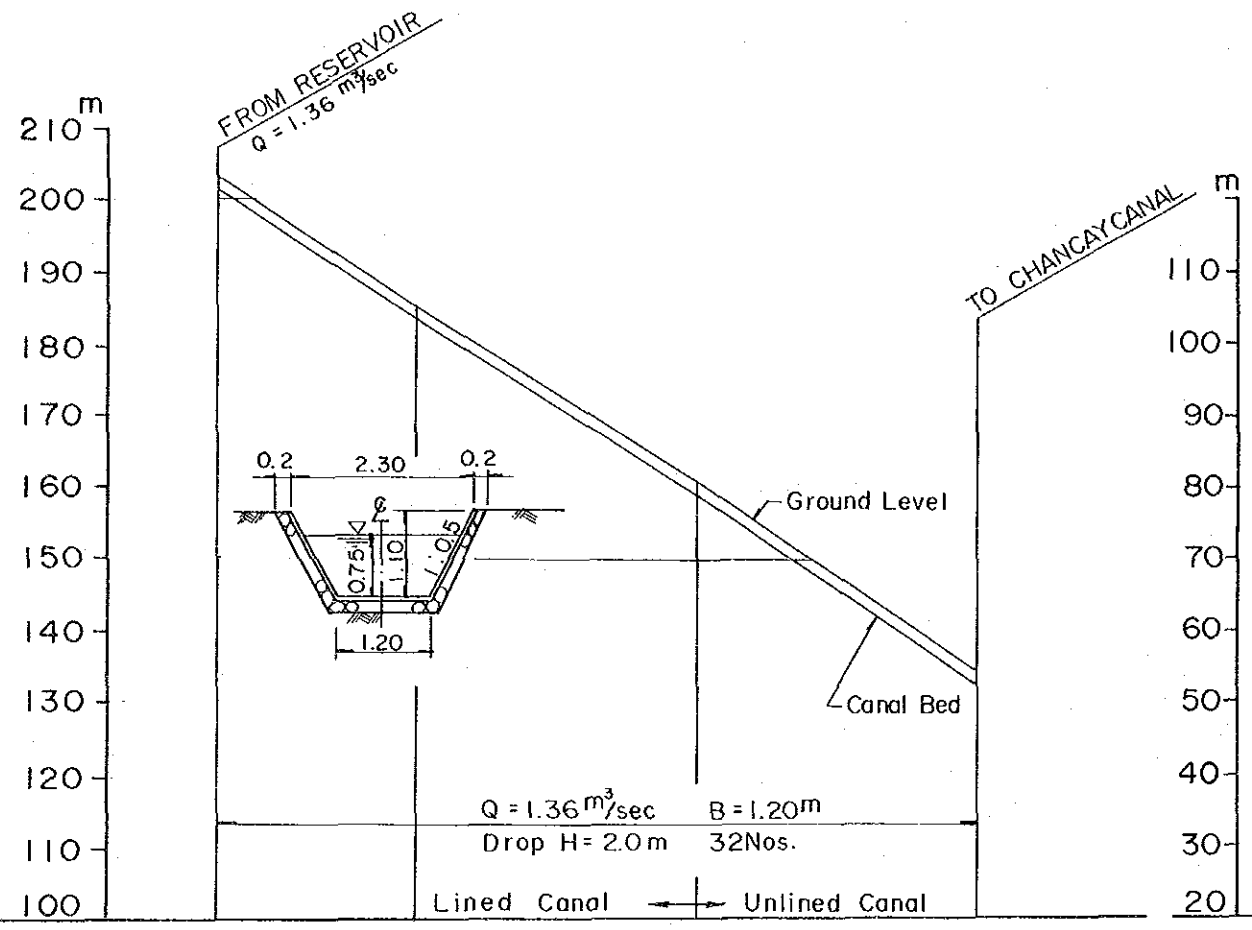
SLOPE	I = 1/600					
HIGH WATER LEVEL (m)	84.5	76.5			46.0	
PLANNING CANAL BED (m)	84.0	76.0			45.5	
SLOPE	I = 1/90					
GROUND LEVEL (m)	85.5	77.5			47.0	
LENGTH (m)	0	820	1000	2000	5000	3450
DISTANCE (m)	0	820	180	1000	1000	480
STATION NO.	0	1	2	3		

CHANCAY

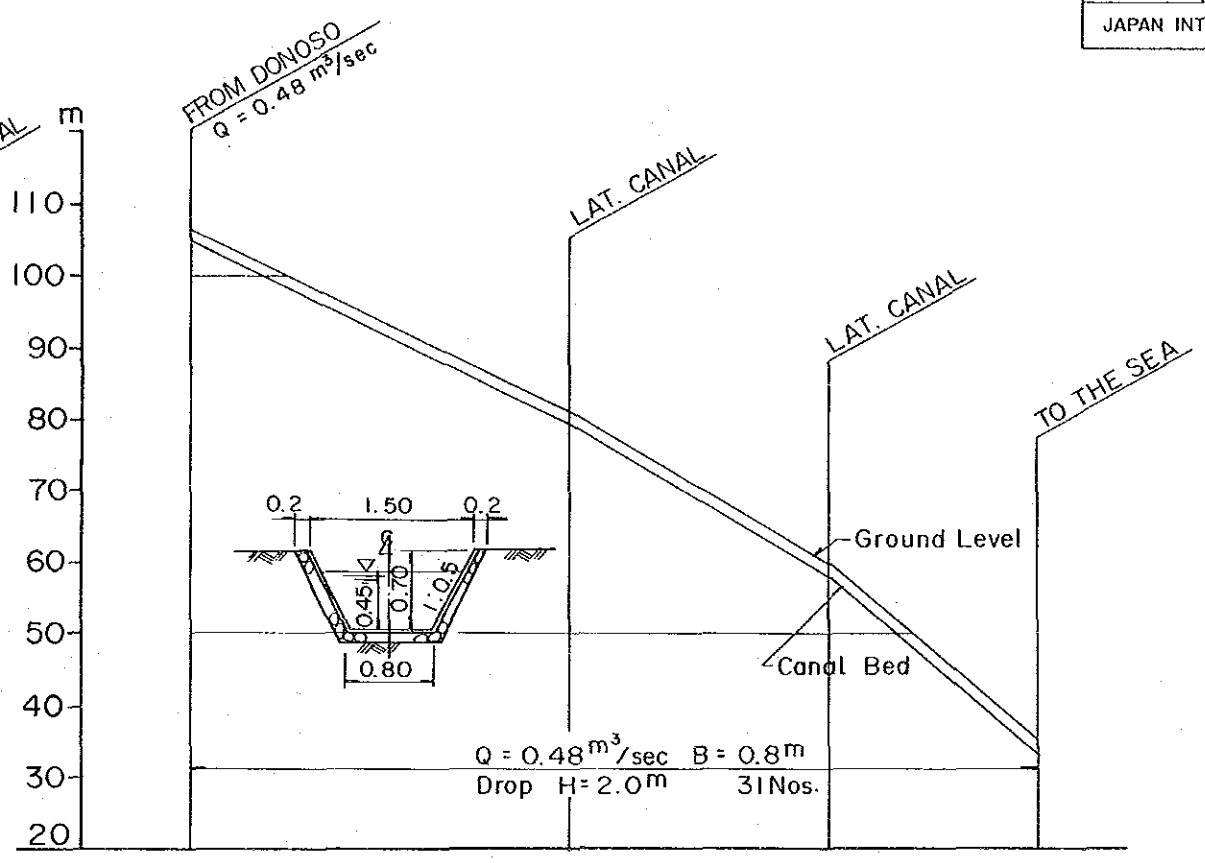


SLOPE	I = 1/1000																		
HIGH WATER LEVEL (m)	219.7	198.2							154.2	149.2	127.2	113.2	102.7	84.7					
PLANNING CANAL BED (m)	218.8	197.3							153.3	148.3	126.3	112.3	101.8	83.8					
SLOPE	I = 1/63		I = 1/138						I = 1/61										
GROUND LEVEL (m)	220.5	199.0							155.0	150.0	128.0	114.0	103.5	85.5					
LENGTH (m)	0	1000	1350	2000	3000	4000	5000	6000	7000	7400	7840	8000	8700	9000	9400	10000	10380	11000	11670
DISTANCE (m)	0	1000	350	650	1000	1000	1000	1000	1000	400	440	160	700	300	400	600	380	620	670
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	11							

JESUS DEL VALLE



LOS LAURELES

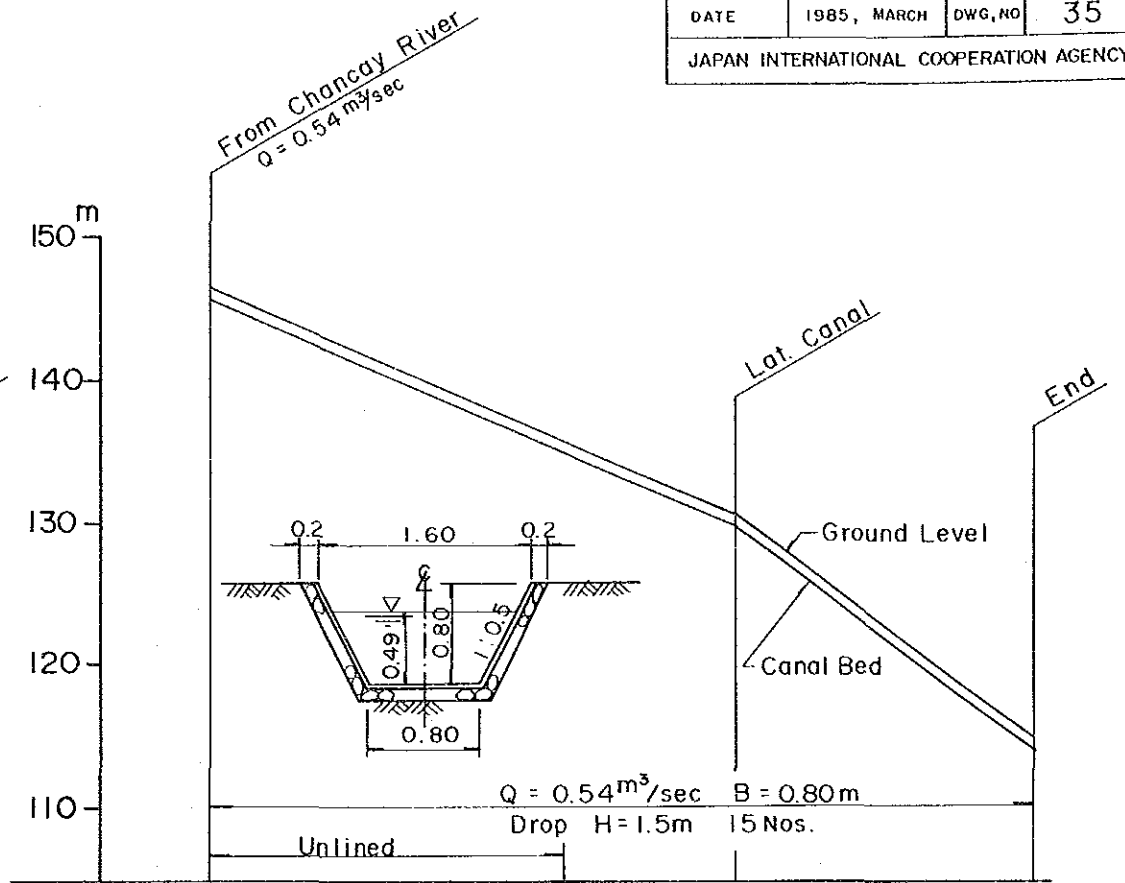
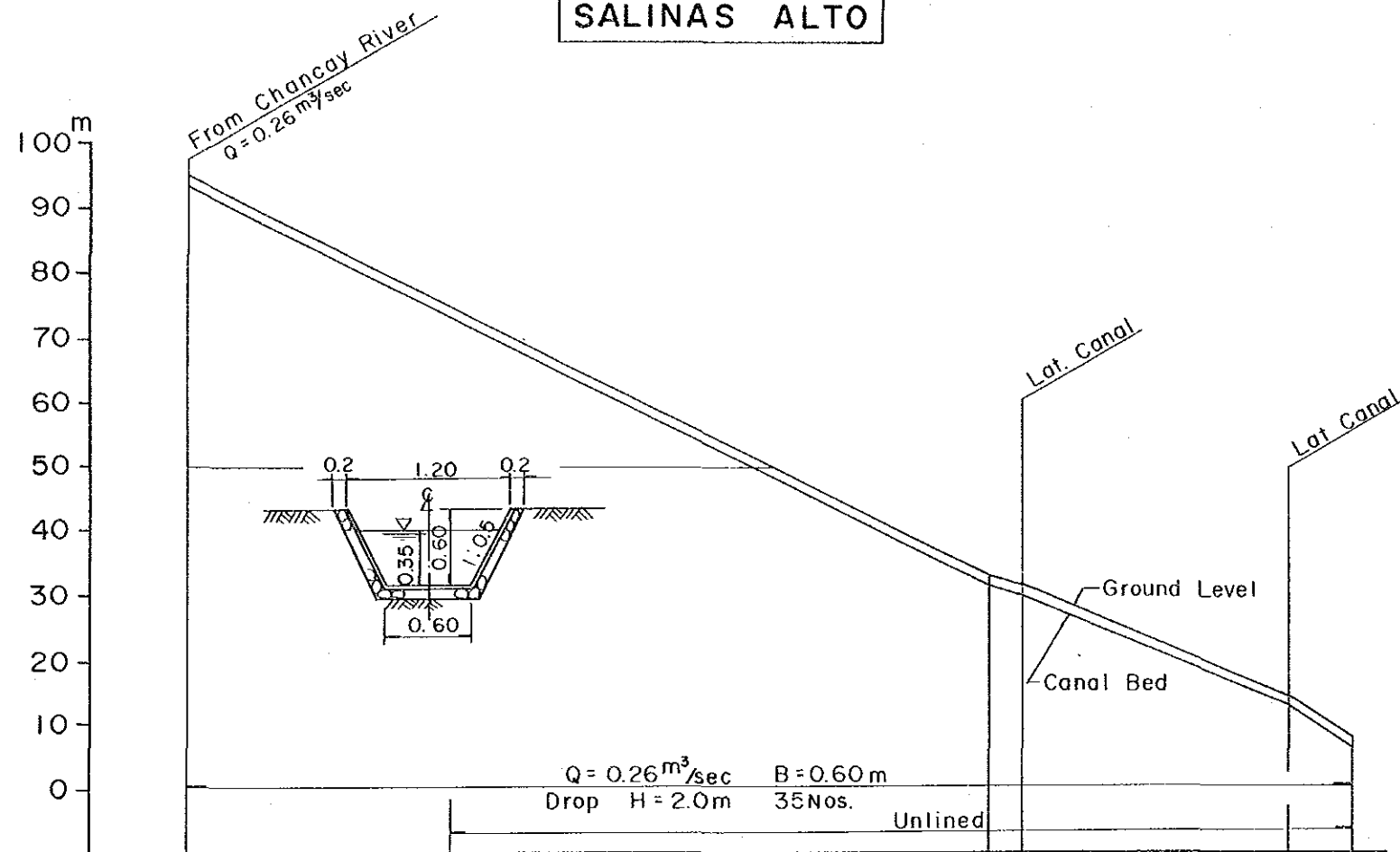


SLOPE	I = 1/900					
HIGH WATER LEVEL (m)	202.8	182.8	158.3			134.1
PLANNING CANAL BED (m)	202.0	182.0	157.5			133.3
SLOPE	I = 1/77					
GROUND LEVEL (m)	203.2	184.8	160.8			134.5
LENGTH (m)	0	1000	1420	2000	3000	5290
DISTANCE (m)	0	1000	420	580	1000	290
STATION NO.	0	1	2	3	4	5

SLOPE	I = 1/600					
HIGH WATER LEVEL (m)	105.5		79.5		57.0	34.0
PLANNING CANAL BED (m)	105.0		79.0		56.5	33.5
SLOPE	I = 1/95			I = 1/59		
GROUND LEVEL (m)	106.5		81.0		59.5	35.0
LENGTH (m)	0	1000	2000	2650	3000	5900
DISTANCE (m)	0	1000	1000	650	350	900
STATION NO.	0	1	2	3	4	5

SALINAS ALTO

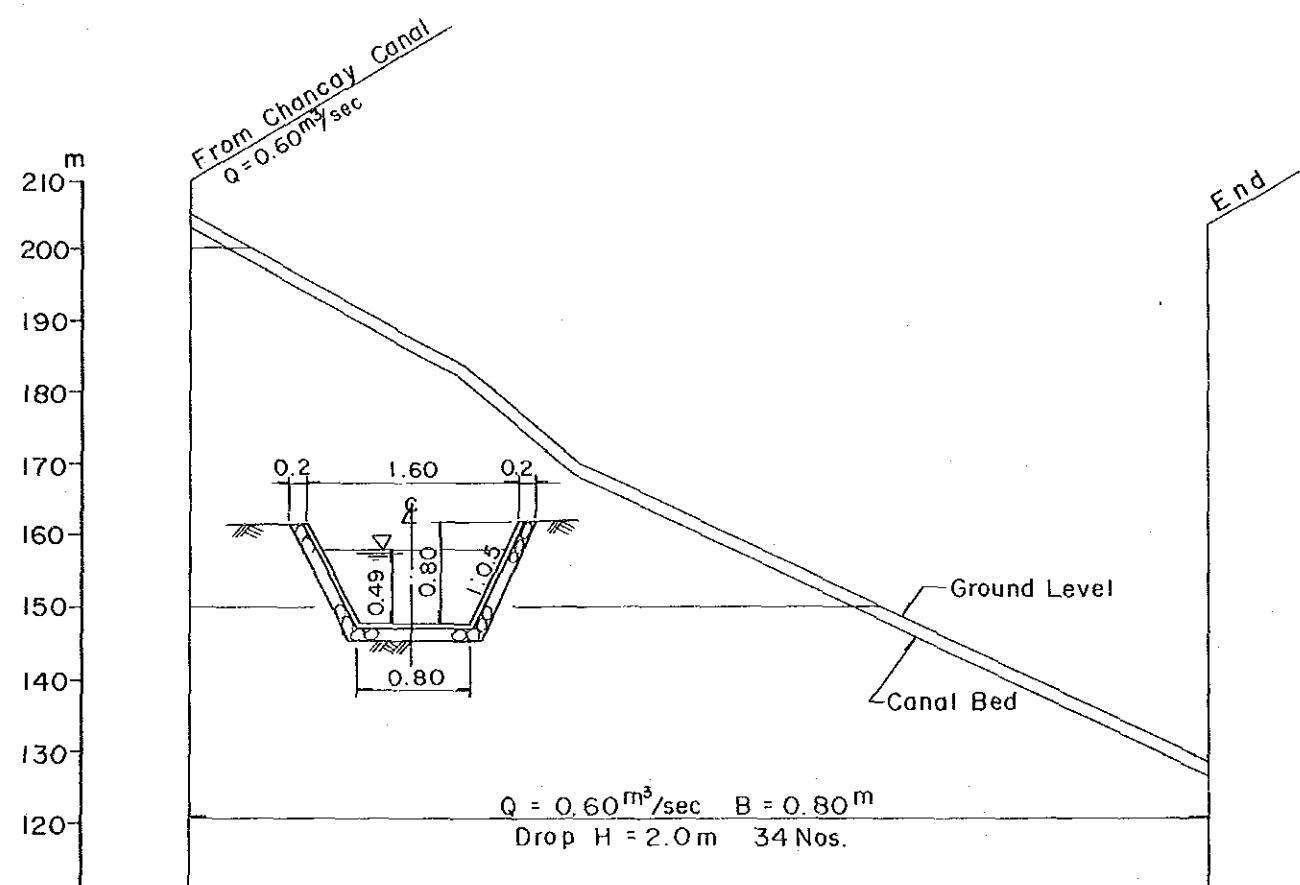
BOZA ALTO



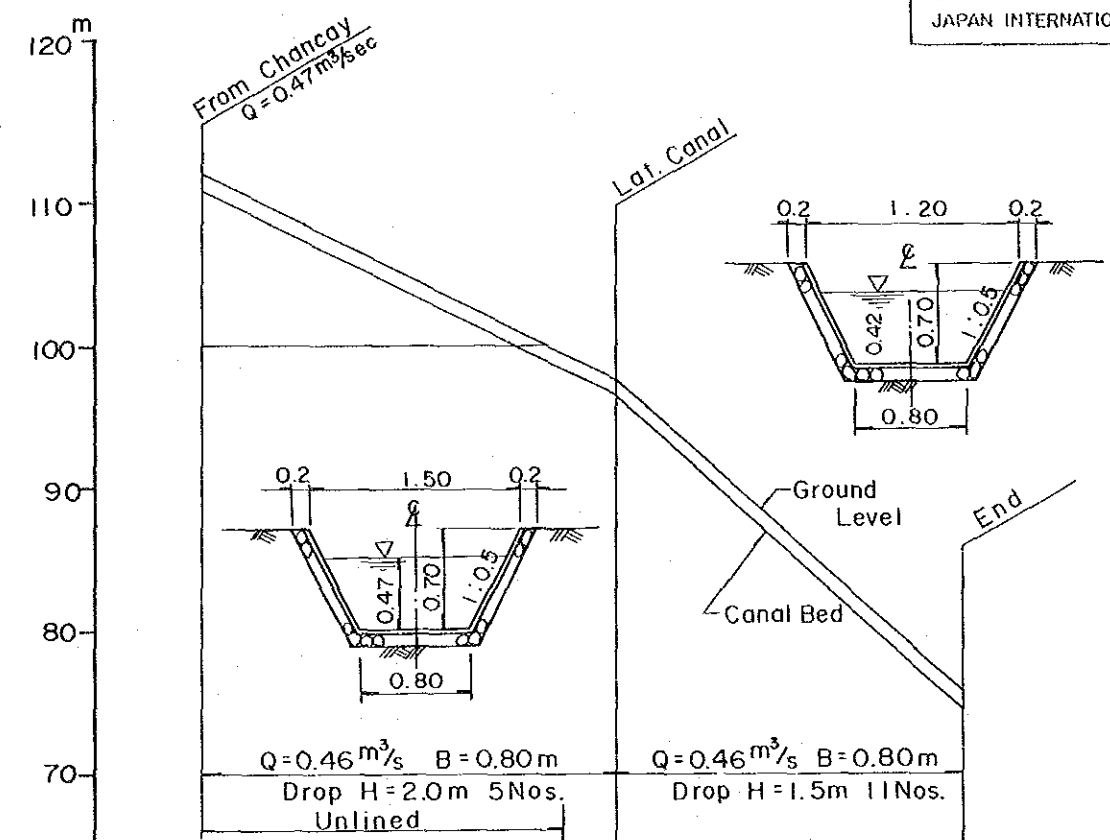
SLOPE	I = 1/500												
HIGH WATER LEVEL (m)	94.4						31.9	29.4		11.4	7.4		
PLANNING CANAL BED(m)	14.0						31.5	29.0		11.0	7.0		
SLOPE	I = 1/99						I = 1/119						
GROUND LEVEL (m)	95.0						32.5	29.5		14.0	8.0		
LENGTH (m)	0	1000	2000	3000	4000	5000	6000	6200	6450	7000	8000	8500	9000
DISTANCE (m)	0	1000	1000	1000	1000	1000	1000	200	250	650	1000	500	500
STATION NO.	0	1	2	3	4	5	6	7	8	9			

SLOPE	I = 1/600										
HIGH WATER LEVEL (m)	145.5						129.6			114.7	
PLANNING CANAL BED(m)	144.3						128.4			113.5	
SLOPE	I = 1/231						I = 1/132				
GROUND LEVEL (m)	146.3						130.5				
LENGTH (m)	0	1000	2000	2500	3000	3650	4000	5000	5700		
DISTANCE (m)	0	1000	1000	500	500	650	350	1000	700		
STATION NO.	0	1	2	3	4	5					

SANTA ROSA



BOZA BAJO

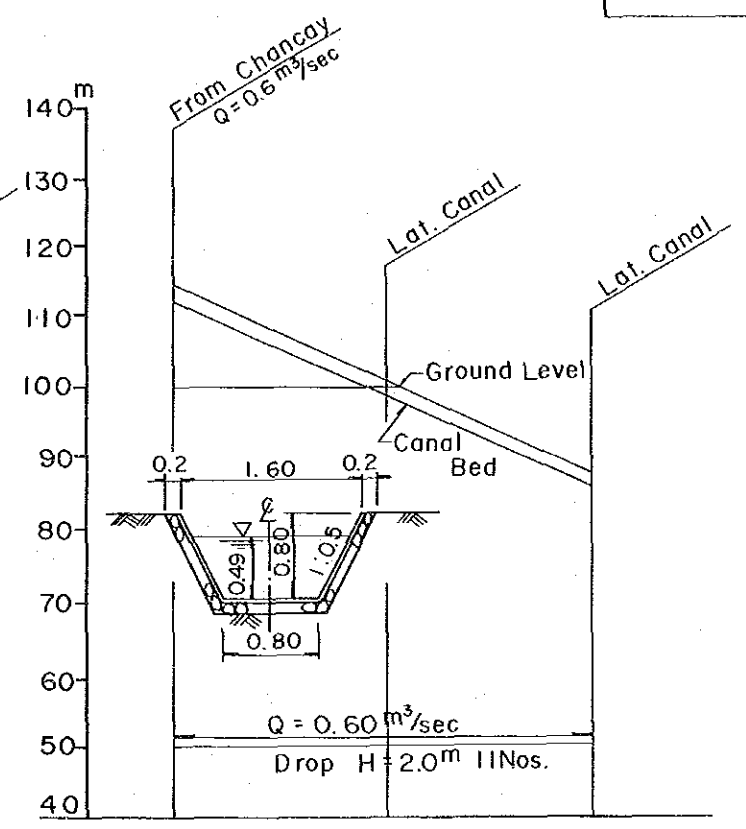
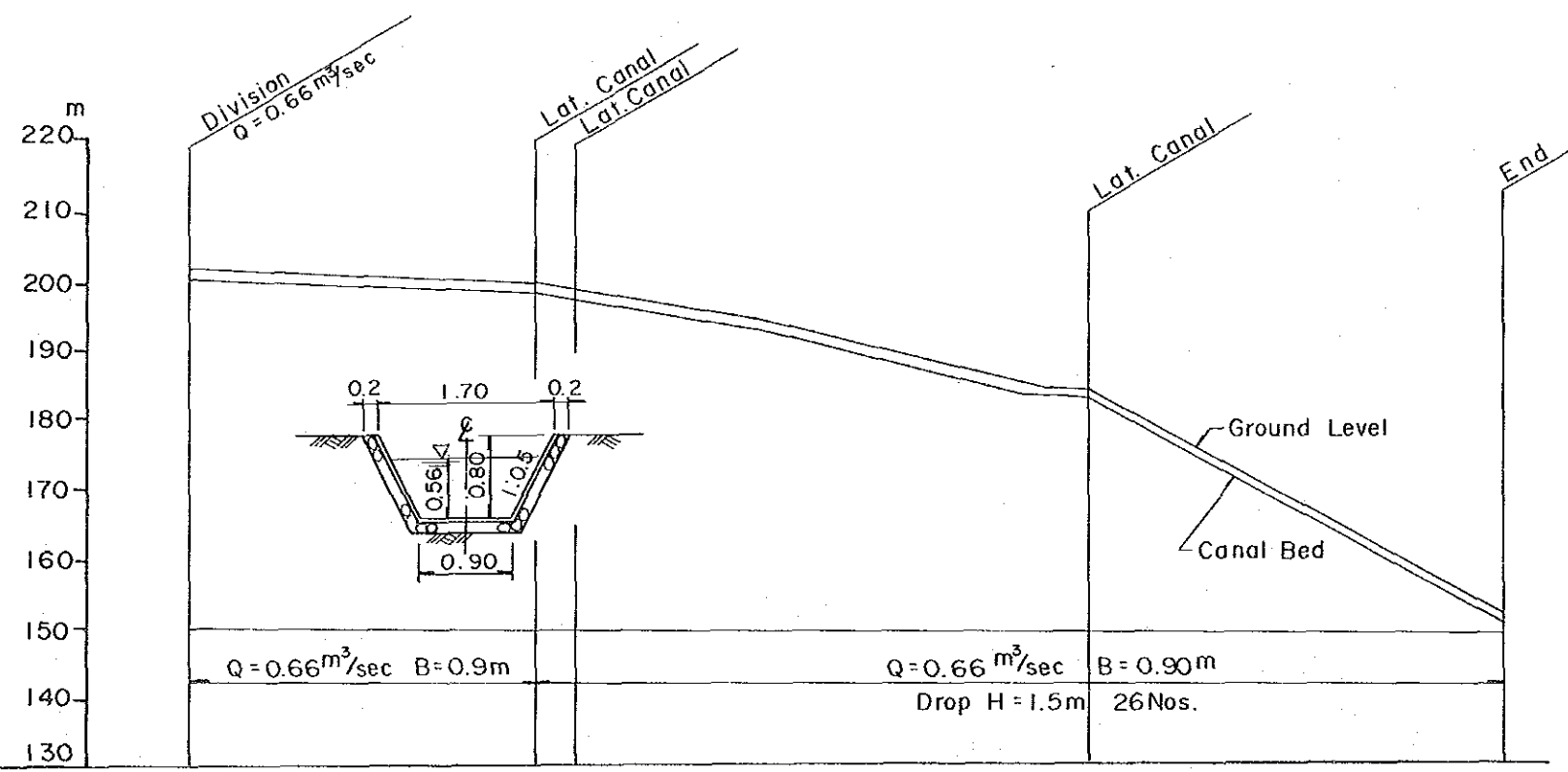


SLOPE	I = 1/700						
HIGH WATER LEVEL (m)	204.9	182.6	169.6				127.9
PLANNING CANAL BED (m)	204.3	182.0	169.0				127.3
SLOPE	I = 1/93						
GROUND LEVEL (m)	205.0	183.7	170.5				128.0
LENGTH (m)	0	1000	1900 2000	2700	3000	4000	5000 6000 7000 7150
DISTANCE (m)	0	1000	900 100	700 300	1000	1000	1000 150
STATION NO.	0	1	2	3	4	5	6 7

SLOPE	I = 1/600			I = 1/500			
HIGH WATER LEVEL (m)	111.6		96.6			75.6	
PLANNING CANAL BED (m)	111.0		95.8			74.8	
SLOPE	I = 1/200			I = 1/111			
GROUND LEVEL (m)	112.0		97.5			75.8	
LENGTH (m)	0	1000	2000	2500	2900 3000	4000	5000 5300
DISTANCE (m)	0	1000	1000	500	400 100	1000	1000 300
STATION NO.	0	1	2	3	4	5	

GARCIA ALONSO

QUEPEPAMPA

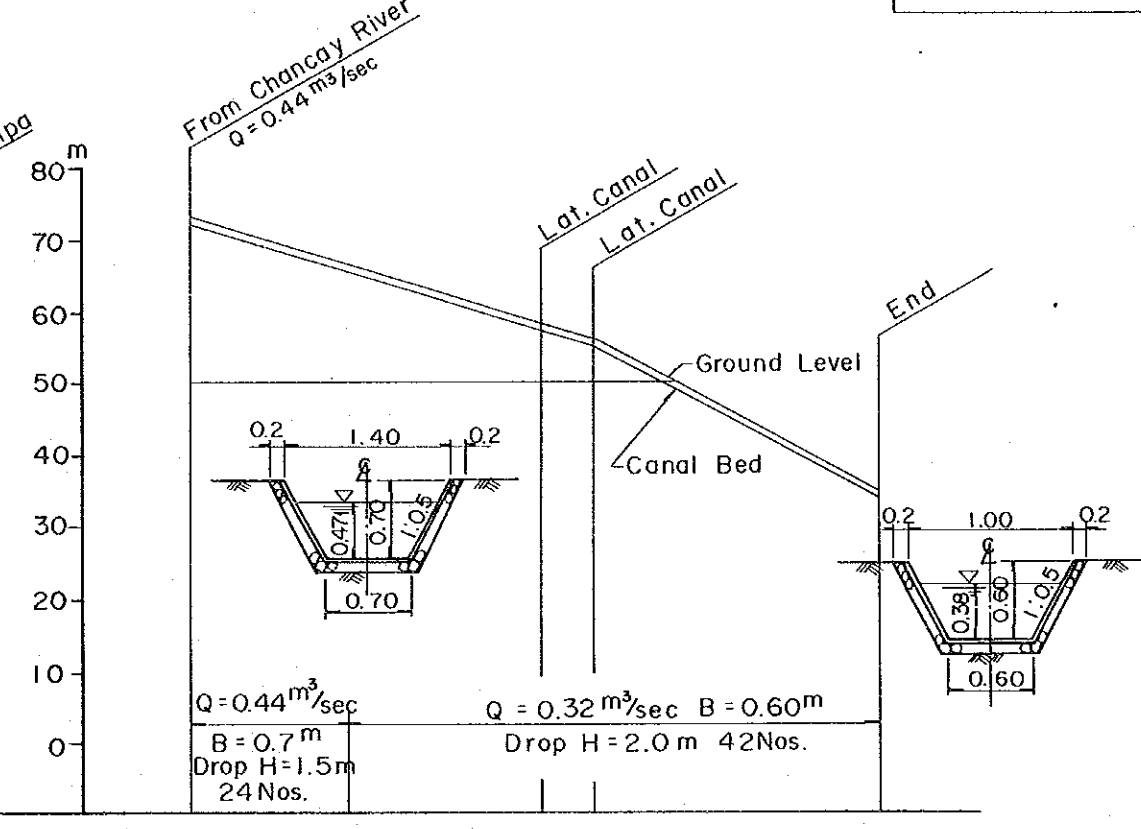
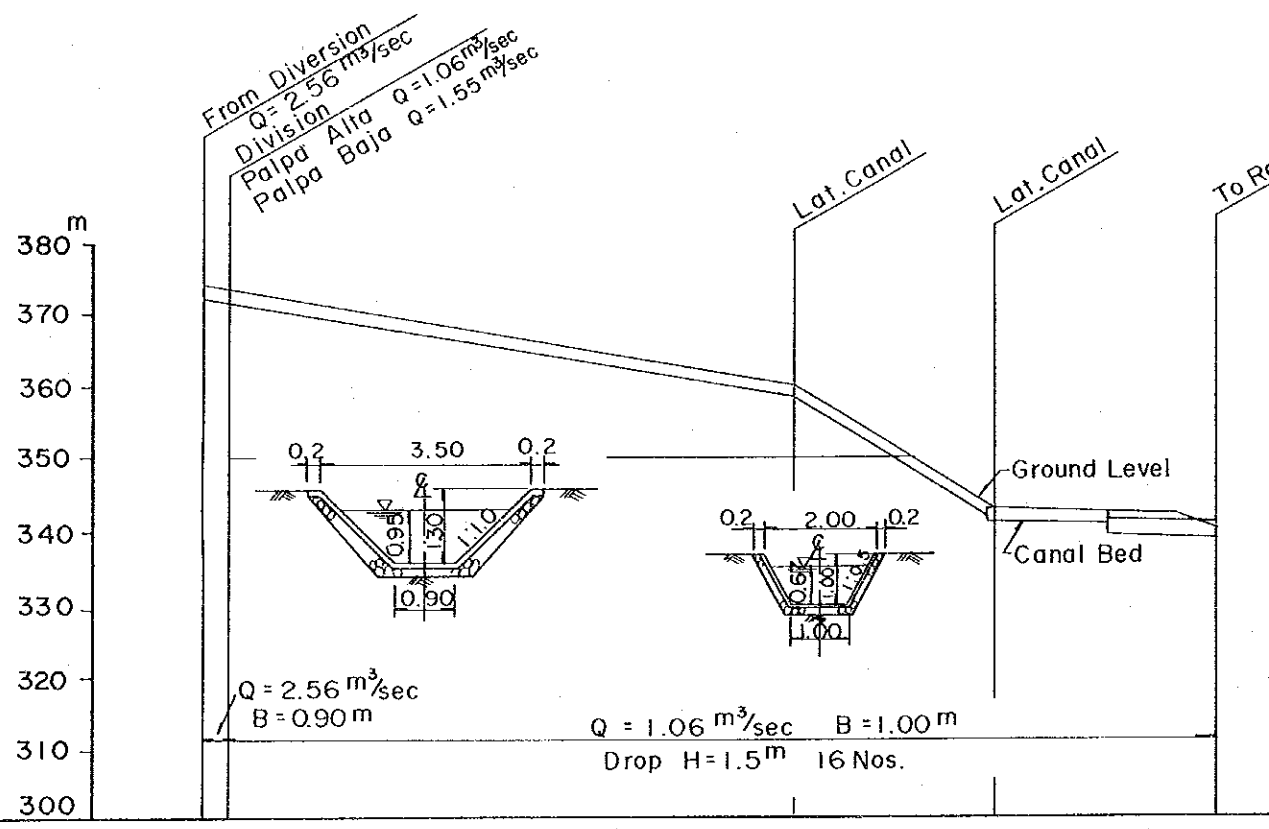


SLOPE	I = 1/1240		I = 1/800												
HIGH WATER LEVEL (m)	200.6		198.8	197.6	192.6		183.8	182.1	151.1						
PLANNING CANAL BED (m)	200.0		198.2	197.0	192.0		183.2	181.5	150.5						
SLOPE	I = 1/1240		I = 1/260				I = 1/93								
GROUND LEVEL (m)	201.5		199.5	198.5	194.5		184.5	184.0	152.0						
LENGTH (m)	0	1000	2000	2480	2780	3000	4000	5000	6000	6200	6500	7000	8000	9000	9480
DISTANCE (m)	0	1000	1000	480	300	220	1000	1000	1000	200	300	500	1000	1000	480
STATION NO.	0	1	2	3	4	5	6	7	8	9					

SLOPE	I = 1/700			
HIGH WATER LEVEL (m)	114.4	109.1	100.4	87.9
PLANNING CANAL BED (m)	113.8	108.5	99.8	87.3
SLOPE	I = 1/109			
GROUND LEVEL (m)	114.5	109.2	100.5	88.0
LENGTH (m)	0	520	1000	2890
DISTANCE (m)	0	520	480	890
STATION NO.	0	1	2	

PALPA ALTA

PASAMAYO BAJO



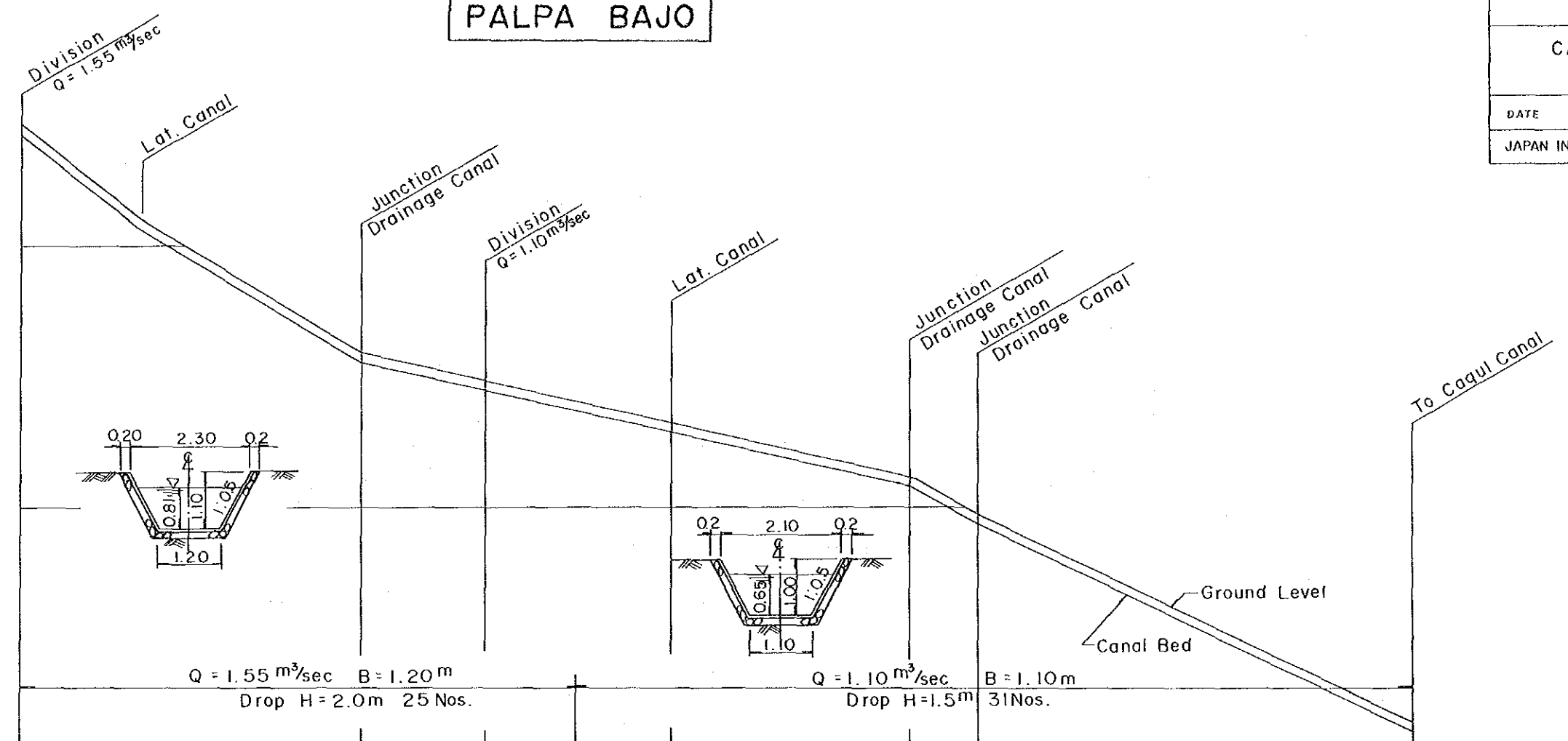
SLOPE	I = 1/800		I = 1/700					
HIGH WATER LEVEL (m)	373.9	372.9		359.0		342.0	340.2	339.5
PLANNING CANAL BED (m)	372.9	371.9		358.0		341.0	339.2	338.5
SLOPE	I = 1/283			I = 1/82	I = 1/517			
GROUND LEVEL (m)	374.5	373.5		360.0		343.0	342.2	340.0
LENGTH (m)	0	180	1000	2000	3000	4000	4100	5000
DISTANCE (m)	0	180	820	1000	1000	1000	100	900
STATION NO.	0		1	2	3	4	5	6
								7

SLOPE	I = 1/600		I = 1/400					
HIGH WATER LEVEL (m)	72.5		57.5	55.5	34.7			
PLANNING CANAL BED (m)	72.0		57.0	55.0	34.2			
SLOPE	I = 1/170			I = 1/94				
GROUND LEVEL (m)	73.0		58.0	56.5	35.2			
LENGTH (m)	0	1000	2000	2450	2800	3000	4000	4800
DISTANCE (m)	0	1000	1000	450	350	200	500	800
STATION NO.	0	1	2	3	4			

PALPA BAJO

REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANGAY - HUARAL VALLEY
 REHABILITATION PROJECT
CANAL PROFILE
PALPA BAJO
 DATE 1985, MARCH DWG. NO 39
 JAPAN INTERNATIONAL COOPERATION AGENCY

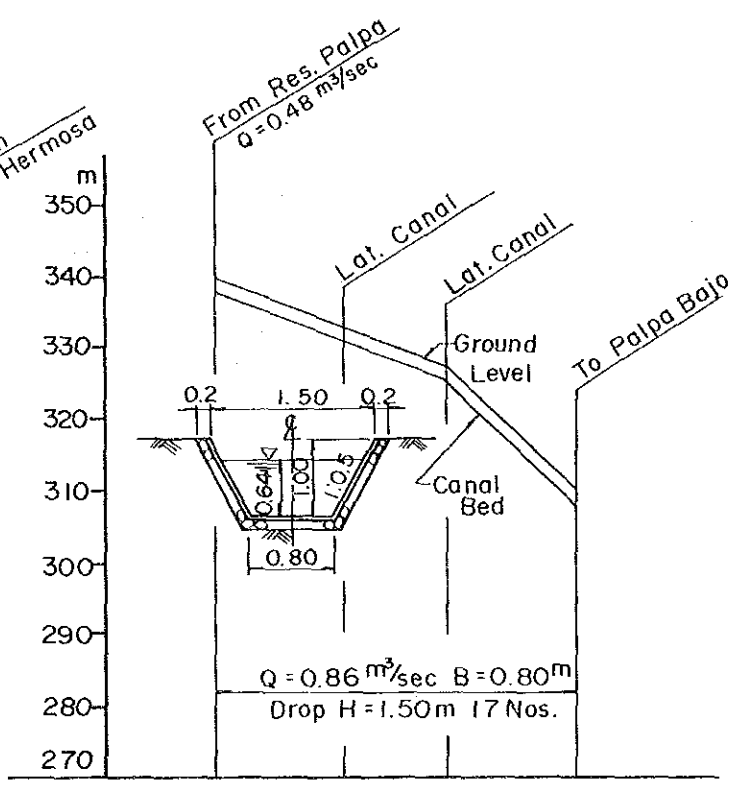
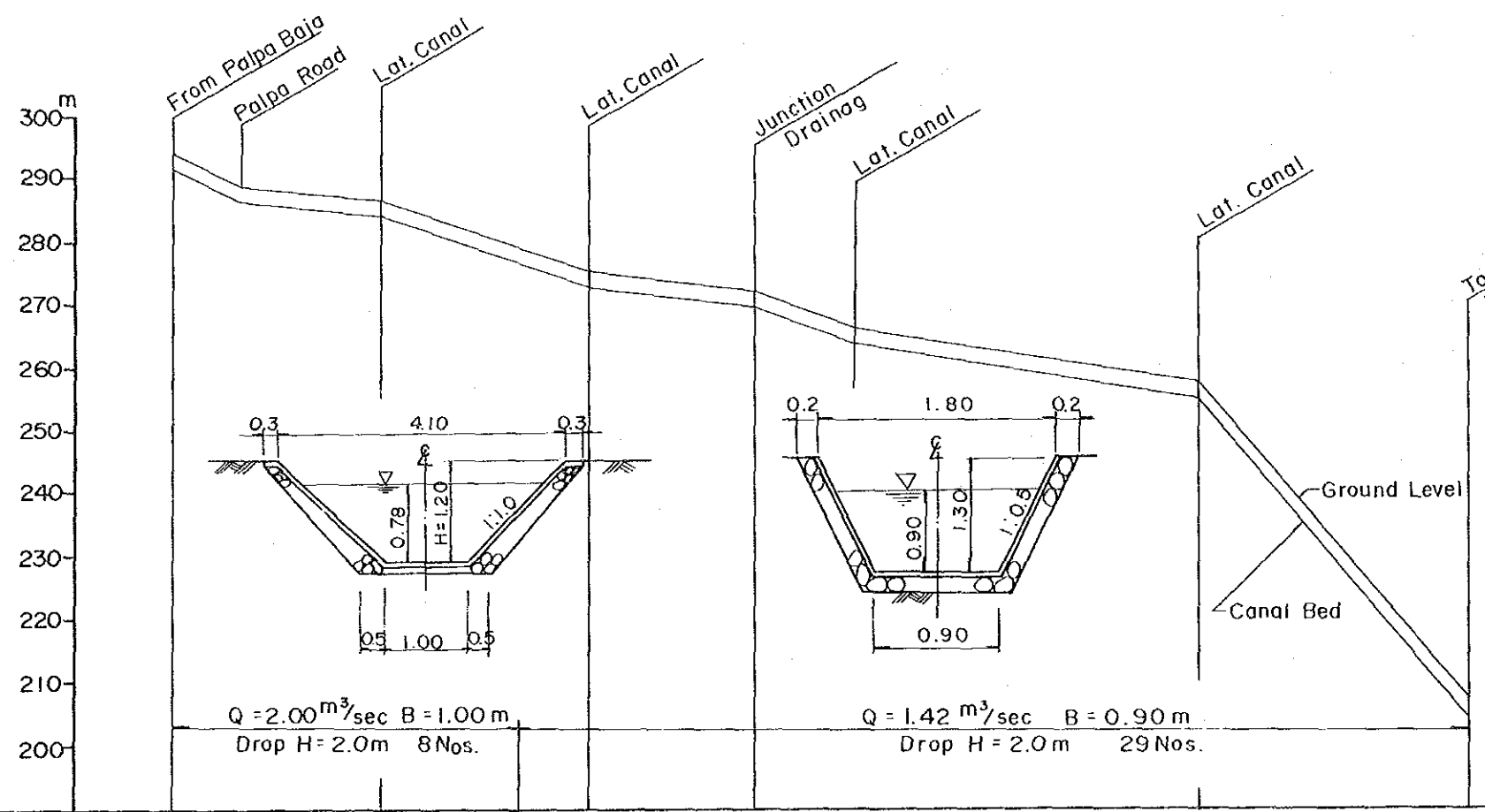
380m
370
360
350
340
330
320
310
300
290
280
270
260



SLOPE	I = 1/900													I = 1/700							
HIGH WATER LEVEL (m)	372.8	354.8		329.3				314.3			304.8	298.8			258.3						
PLANNING CANAL BED(m)	372.0	354.0		328.5				313.5			304.0	298.0			257.5						
SLOPE	I = 1/75				I = 1/224						I = 1/103										
GROUND LEVEL (m)	373.5	355.5		330.0				315.5			306.5	299.5			259.0						
LENGTH (m)	0	1000	1100	2000	3000	3250	4000	5000	5300	6000	6220	7000	8000	8520	9000	9150	10000	11000	12000	13000	13410
DISTANCE (m)	0	1000	100	900	1000	250	750	1000	300	700	220	780	1000	520	480	150	850	1000	1000	1000	410
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

CAQUI

TERASA



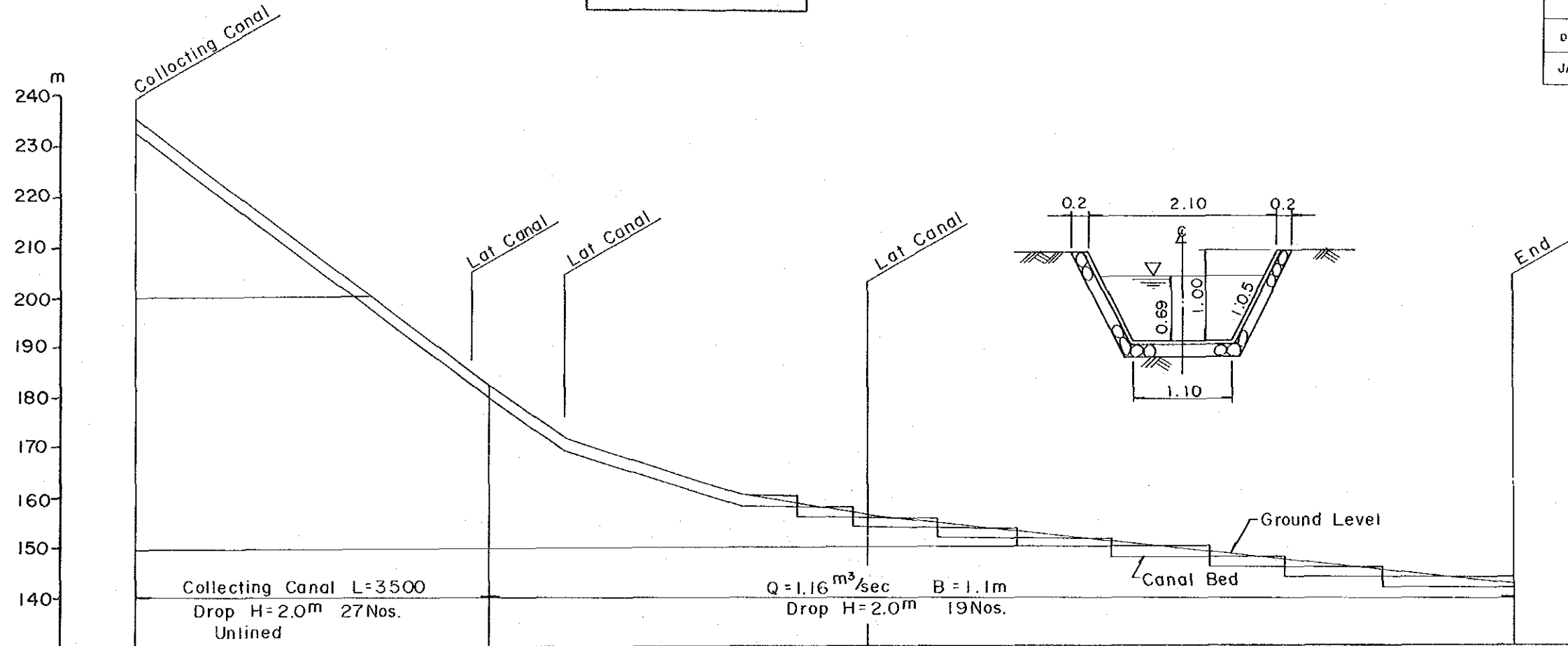
SLOPE	I = 1/700										I = 1/900																			
HIGH WATER LEVEL (m)	292.7	288.7	285.2	274.5	271.1	264.7	255.2	206.2	292.0	288.0	284.5	273.8	270.4	264.0	254.5	205.5														
PLANNING CANAL BED (m)	292.0	288.0	284.5	273.8	270.4	264.0	254.5	205.5	292.0	288.0	284.5	273.8	270.4	264.0	254.5	205.5														
SLOPE	I = 1/171										I = 1/279										I = 1/43									
GROUND LEVEL (m)	294.0	289.0	286.5	274.8	272.4	266.0	257.5	207.5	294.0	289.0	286.5	274.8	272.4	266.0	257.5	207.5														
LENGTH (m)	0	520	1000	1640	2000	2750	3000	3290	4000	4580	5000	5410	6000	7000	8000	8110	9000	10000	10250											
DISTANCE (m)	0	520	480	640	360	750	250	290	710	580	420	410	560	1000	1000	110	890	1000	250											
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10								

SLOPE	I = 1/600									
HIGH WATER LEVEL (m)	339.0	332.5	326.0	319.5						
PLANNING CANAL BED (m)	338.5	332.0	325.5	319.0						
SLOPE	I = 1/85									
GROUND LEVEL (m)	339.5	333.5	327.5	310.0						
LENGTH (m)	0	900	1000	1600	2000	2500				
DISTANCE (m)	0	900	1000	600	400	500				
STATION NO.	0	1	2							

CANAL PROFILE
 SAN JOSE

DATE 1985 MARCH DWG,NO 41
 JAPAN INTERNATIONAL COOPERATION AGENCY

SAN JOSE

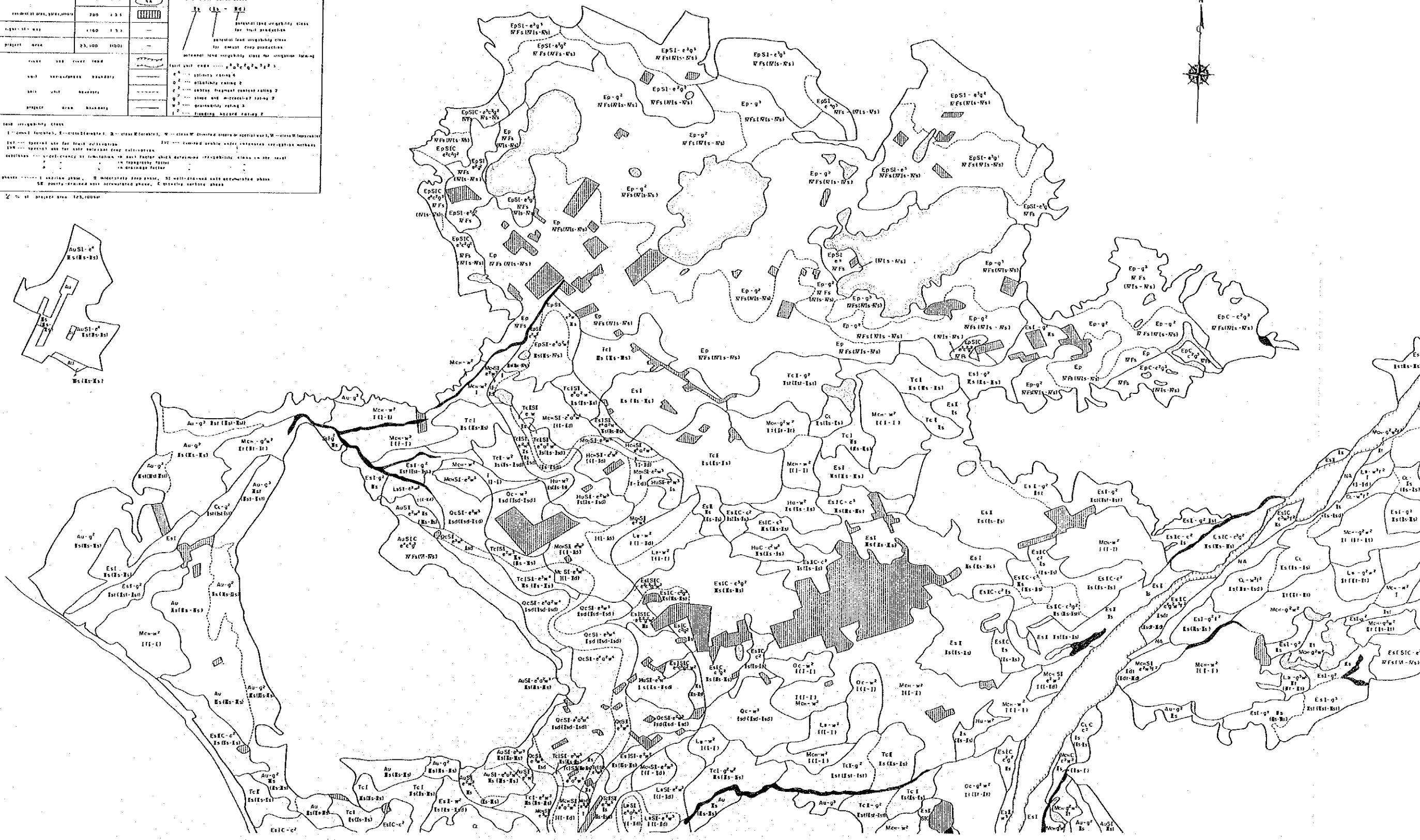
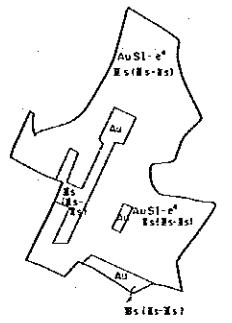


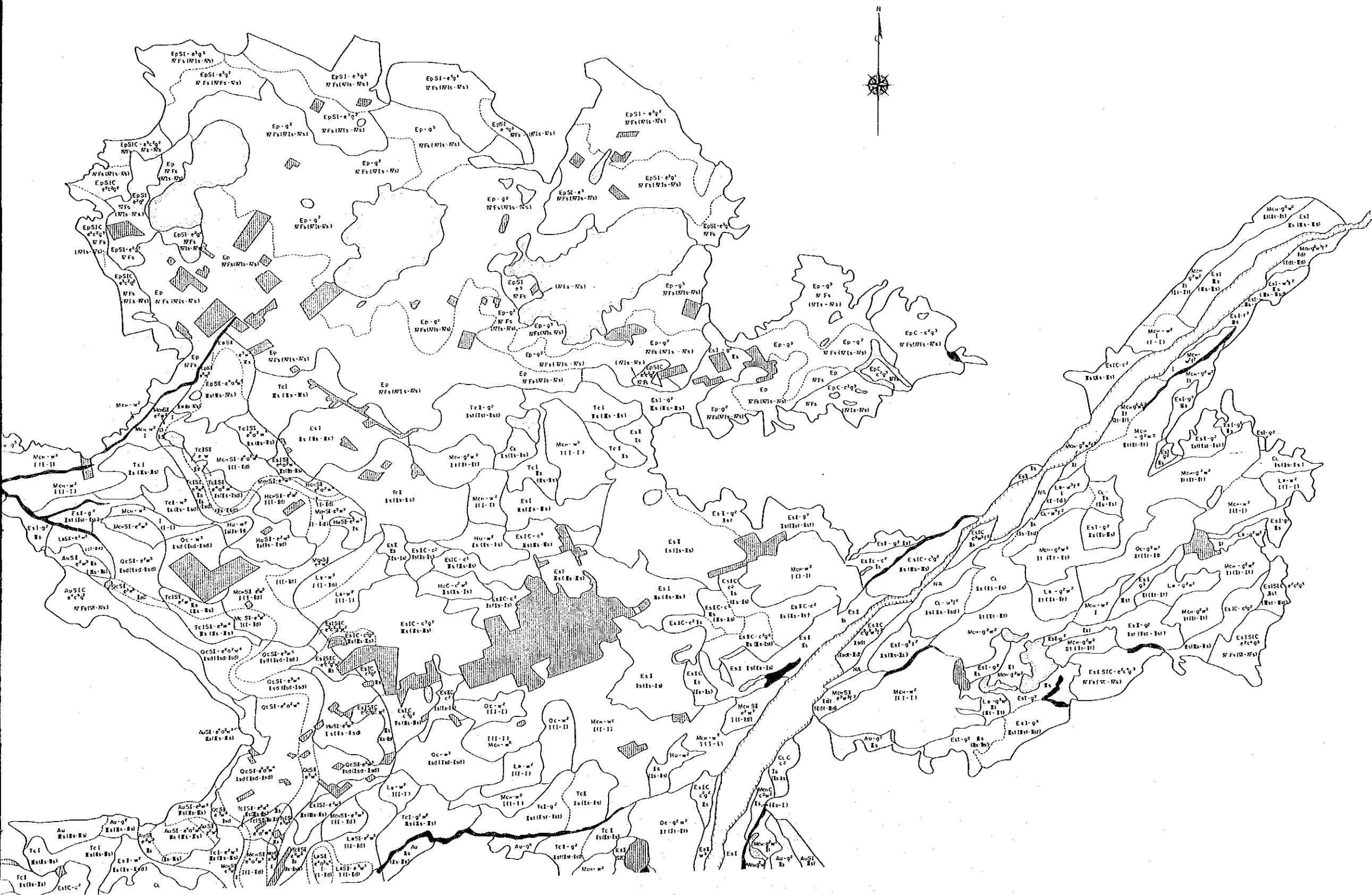
SLOPE	I = 1/800													I = 1/800					
HIGH WATER LEVEL (m)	234.6			184.6			171.1			160.6			156.1			142.1			
PLANNING CANAL BED(m)	234.0			184.0			170.5			160.0			155.5			141.5			
SLOPE	I = 1/68						I = 1/203						I = 1/461						
GROUND LEVEL (m)	235.0			185.0			171.5			161.0			156.5			142.5			
LENGTH (m)	0	1000	2000	3000	3350	3500	4000	4300	5000	6000	7000	7350	8000	9000	10000	11000	12000	13000	13800
DISTANCE (m)	0	1000	1000	1000	350	150	650	300	700	1000	1000	350	650	1000	1000	1000	1000	1000	800
STATION NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

LEGEND

TYPE	SYMBOL	DESCRIPTION
STRAIGHT LINE	—	20,000 (1:250,000)
WATER	—	20,000 (1:250,000)
ROAD	—	20,000 (1:250,000)
RAILROAD	—	20,000 (1:250,000)
BOUNDARY	—	20,000 (1:250,000)
...

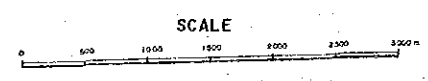
SYMBOL	DESCRIPTION
EpSI-c ¹ g ¹	EpSI-c ¹ g ¹ (Wfs(Wfs-Ns))
EpSI-c ² g ²	EpSI-c ² g ² (Wfs(Wfs-Ns))
EpSI-c ³ g ³	EpSI-c ³ g ³ (Wfs(Wfs-Ns))
EpSI-c ⁴ g ⁴	EpSI-c ⁴ g ⁴ (Wfs(Wfs-Ns))
EpSI-c ⁵ g ⁵	EpSI-c ⁵ g ⁵ (Wfs(Wfs-Ns))
EpSI-c ⁶ g ⁶	EpSI-c ⁶ g ⁶ (Wfs(Wfs-Ns))
EpSI-c ⁷ g ⁷	EpSI-c ⁷ g ⁷ (Wfs(Wfs-Ns))
EpSI-c ⁸ g ⁸	EpSI-c ⁸ g ⁸ (Wfs(Wfs-Ns))
EpSI-c ⁹ g ⁹	EpSI-c ⁹ g ⁹ (Wfs(Wfs-Ns))
EpSI-c ¹⁰ g ¹⁰	EpSI-c ¹⁰ g ¹⁰ (Wfs(Wfs-Ns))
EpSI-c ¹¹ g ¹¹	EpSI-c ¹¹ g ¹¹ (Wfs(Wfs-Ns))
EpSI-c ¹² g ¹²	EpSI-c ¹² g ¹² (Wfs(Wfs-Ns))
EpSI-c ¹³ g ¹³	EpSI-c ¹³ g ¹³ (Wfs(Wfs-Ns))
EpSI-c ¹⁴ g ¹⁴	EpSI-c ¹⁴ g ¹⁴ (Wfs(Wfs-Ns))
EpSI-c ¹⁵ g ¹⁵	EpSI-c ¹⁵ g ¹⁵ (Wfs(Wfs-Ns))
EpSI-c ¹⁶ g ¹⁶	EpSI-c ¹⁶ g ¹⁶ (Wfs(Wfs-Ns))
EpSI-c ¹⁷ g ¹⁷	EpSI-c ¹⁷ g ¹⁷ (Wfs(Wfs-Ns))
EpSI-c ¹⁸ g ¹⁸	EpSI-c ¹⁸ g ¹⁸ (Wfs(Wfs-Ns))
EpSI-c ¹⁹ g ¹⁹	EpSI-c ¹⁹ g ¹⁹ (Wfs(Wfs-Ns))
EpSI-c ²⁰ g ²⁰	EpSI-c ²⁰ g ²⁰ (Wfs(Wfs-Ns))
EpSI-c ²¹ g ²¹	EpSI-c ²¹ g ²¹ (Wfs(Wfs-Ns))
EpSI-c ²² g ²²	EpSI-c ²² g ²² (Wfs(Wfs-Ns))
EpSI-c ²³ g ²³	EpSI-c ²³ g ²³ (Wfs(Wfs-Ns))
EpSI-c ²⁴ g ²⁴	EpSI-c ²⁴ g ²⁴ (Wfs(Wfs-Ns))
EpSI-c ²⁵ g ²⁵	EpSI-c ²⁵ g ²⁵ (Wfs(Wfs-Ns))
EpSI-c ²⁶ g ²⁶	EpSI-c ²⁶ g ²⁶ (Wfs(Wfs-Ns))
EpSI-c ²⁷ g ²⁷	EpSI-c ²⁷ g ²⁷ (Wfs(Wfs-Ns))
EpSI-c ²⁸ g ²⁸	EpSI-c ²⁸ g ²⁸ (Wfs(Wfs-Ns))
EpSI-c ²⁹ g ²⁹	EpSI-c ²⁹ g ²⁹ (Wfs(Wfs-Ns))
EpSI-c ³⁰ g ³⁰	EpSI-c ³⁰ g ³⁰ (Wfs(Wfs-Ns))
EpSI-c ³¹ g ³¹	EpSI-c ³¹ g ³¹ (Wfs(Wfs-Ns))
EpSI-c ³² g ³²	EpSI-c ³² g ³² (Wfs(Wfs-Ns))
EpSI-c ³³ g ³³	EpSI-c ³³ g ³³ (Wfs(Wfs-Ns))
EpSI-c ³⁴ g ³⁴	EpSI-c ³⁴ g ³⁴ (Wfs(Wfs-Ns))
EpSI-c ³⁵ g ³⁵	EpSI-c ³⁵ g ³⁵ (Wfs(Wfs-Ns))
EpSI-c ³⁶ g ³⁶	EpSI-c ³⁶ g ³⁶ (Wfs(Wfs-Ns))
EpSI-c ³⁷ g ³⁷	EpSI-c ³⁷ g ³⁷ (Wfs(Wfs-Ns))
EpSI-c ³⁸ g ³⁸	EpSI-c ³⁸ g ³⁸ (Wfs(Wfs-Ns))
EpSI-c ³⁹ g ³⁹	EpSI-c ³⁹ g ³⁹ (Wfs(Wfs-Ns))
EpSI-c ⁴⁰ g ⁴⁰	EpSI-c ⁴⁰ g ⁴⁰ (Wfs(Wfs-Ns))
EpSI-c ⁴¹ g ⁴¹	EpSI-c ⁴¹ g ⁴¹ (Wfs(Wfs-Ns))
EpSI-c ⁴² g ⁴²	EpSI-c ⁴² g ⁴² (Wfs(Wfs-Ns))
EpSI-c ⁴³ g ⁴³	EpSI-c ⁴³ g ⁴³ (Wfs(Wfs-Ns))
EpSI-c ⁴⁴ g ⁴⁴	EpSI-c ⁴⁴ g ⁴⁴ (Wfs(Wfs-Ns))
EpSI-c ⁴⁵ g ⁴⁵	EpSI-c ⁴⁵ g ⁴⁵ (Wfs(Wfs-Ns))
EpSI-c ⁴⁶ g ⁴⁶	EpSI-c ⁴⁶ g ⁴⁶ (Wfs(Wfs-Ns))
EpSI-c ⁴⁷ g ⁴⁷	EpSI-c ⁴⁷ g ⁴⁷ (Wfs(Wfs-Ns))
EpSI-c ⁴⁸ g ⁴⁸	EpSI-c ⁴⁸ g ⁴⁸ (Wfs(Wfs-Ns))
EpSI-c ⁴⁹ g ⁴⁹	EpSI-c ⁴⁹ g ⁴⁹ (Wfs(Wfs-Ns))
EpSI-c ⁵⁰ g ⁵⁰	EpSI-c ⁵⁰ g ⁵⁰ (Wfs(Wfs-Ns))
EpSI-c ⁵¹ g ⁵¹	EpSI-c ⁵¹ g ⁵¹ (Wfs(Wfs-Ns))
EpSI-c ⁵² g ⁵²	EpSI-c ⁵² g ⁵² (Wfs(Wfs-Ns))
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EpSI-c ⁵⁴ g ⁵⁴	EpSI-c ⁵⁴ g ⁵⁴ (Wfs(Wfs-Ns))
EpSI-c ⁵⁵ g ⁵⁵	EpSI-c ⁵⁵ g ⁵⁵ (Wfs(Wfs-Ns))
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EpSI-c ⁶¹ g ⁶¹	EpSI-c ⁶¹ g ⁶¹ (Wfs(Wfs-Ns))
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EpSI-c ⁷⁵ g ⁷⁵	EpSI-c ⁷⁵ g ⁷⁵ (Wfs(Wfs-Ns))
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EpSI-c ⁷⁹ g ⁷⁹	EpSI-c ⁷⁹ g ⁷⁹ (Wfs(Wfs-Ns))
EpSI-c ⁸⁰ g ⁸⁰	EpSI-c ⁸⁰ g ⁸⁰ (Wfs(Wfs-Ns))
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EpSI-c ⁸⁶ g ⁸⁶	EpSI-c ⁸⁶ g ⁸⁶ (Wfs(Wfs-Ns))
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EpSI-c ⁸⁹ g ⁸⁹	EpSI-c ⁸⁹ g ⁸⁹ (Wfs(Wfs-Ns))
EpSI-c ⁹⁰ g ⁹⁰	EpSI-c ⁹⁰ g ⁹⁰ (Wfs(Wfs-Ns))
EpSI-c ⁹¹ g ⁹¹	EpSI-c ⁹¹ g ⁹¹ (Wfs(Wfs-Ns))
EpSI-c ⁹² g ⁹²	EpSI-c ⁹² g ⁹² (Wfs(Wfs-Ns))
EpSI-c ⁹³ g ⁹³	EpSI-c ⁹³ g ⁹³ (Wfs(Wfs-Ns))
EpSI-c ⁹⁴ g ⁹⁴	EpSI-c ⁹⁴ g ⁹⁴ (Wfs(Wfs-Ns))
EpSI-c ⁹⁵ g ⁹⁵	EpSI-c ⁹⁵ g ⁹⁵ (Wfs(Wfs-Ns))
EpSI-c ⁹⁶ g ⁹⁶	EpSI-c ⁹⁶ g ⁹⁶ (Wfs(Wfs-Ns))
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EpSI-c ⁹⁸ g ⁹⁸	EpSI-c ⁹⁸ g ⁹⁸ (Wfs(Wfs-Ns))
EpSI-c ⁹⁹ g ⁹⁹	EpSI-c ⁹⁹ g ⁹⁹ (Wfs(Wfs-Ns))
EpSI-c ¹⁰⁰ g ¹⁰⁰	EpSI-c ¹⁰⁰ g ¹⁰⁰ (Wfs(Wfs-Ns))





SOIL CLASSIFICATION AND DISTRIBUTION

SOIL ORDER	SOIL SUBORDER	AREA (HA)	PERCENTAGE (%)
Entisols	Ent	2582	12.4
	Ent-1	1937	9.1
	Ent-2	47	0.2
	Ent-3	47	0.2
Mollisols	Mol	4020	18.9
	Mol-1	2427	11.4
	Mol-2	198	0.9
	Mol-3	195	0.9
Oxisols	Oxi	1987	9.2
	Oxi-1	147	0.7
	Oxi-2	845	3.9
	Oxi-3	995	4.6
Mollisols	Mol-1	1304	6.0
	Mol-2	1126	5.2
	Mol-3	155	0.7
	Mol-4	47	0.2
	Mol-5	105	0.5
	Mol-6	1077	5.0
	Mol-7	834	3.9
Entisols	Ent	130	0.6
	Ent-1	855	3.9
	Ent-2	403	1.9
	Ent-3	28	0.1
Mollisols	Mol	90	0.4
	Mol-1	24	0.1
	Mol-2	189	0.9
Oxisols	Oxi	1650	7.6
	Oxi-1	5109	23.7
	Oxi-2	432	2.0
Entisols	Ent	40	0.2
	Ent-1	180	0.8
	Ent-2	328	1.5
Mollisols	Mol	54	0.2
	Mol-1	628	2.9
	Mol-2	115	0.5
Entisols	Ent	189	0.9
	Ent-1	189	0.9
Oxisols	Oxi	158	0.7
	Oxi-1	431	2.0
TOTAL		20800	100.0



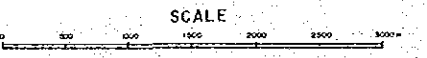
REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANCAY - HUARAL VALLEY
 REHABILITATION PROJECT
 SOIL CLASSIFICATION AND
 DISTRIBUTION (1)
 DATE 1985, MARCH (DW,MO) 42
 JAPAN INTERNATIONAL COOPERATION AGENCY

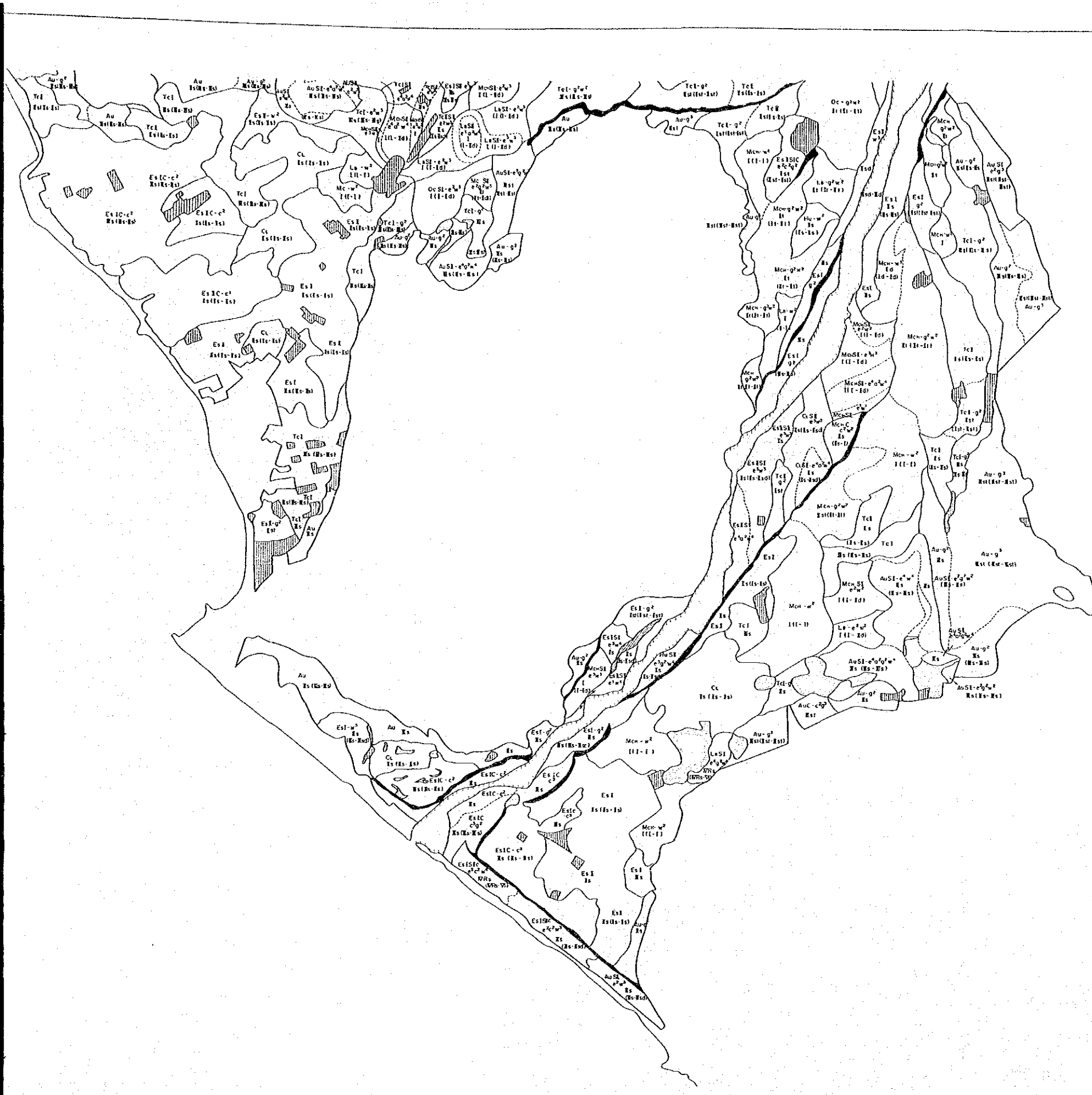


LEGEND					
Soil Type	Symbol	Color	Scale	Area (ha)	Notes
Au	Circle	White	100	1000	
Tc1	Square	White	100	1000	
Es1	Triangle	White	100	1000	
Es1C	Circle	White	100	1000	
Es1D	Square	White	100	1000	
Oc	Triangle	White	100	1000	
Mc	Square	White	100	1000	
AuSi	Circle	White	100	1000	

1. This legend is for the soil types only. It does not include the soil names and descriptions.
 2. The soil types are defined by the soil names and descriptions in the legend.
 3. The soil names and descriptions are given in the legend.
 4. The soil names and descriptions are given in the legend.
 5. The soil names and descriptions are given in the legend.

SOIL CLASSIFICATION AND DISTRIBUTION			
Soil Type	Area (ha)	Percentage (%)	Total Area (ha)
Au	1000	10.0	10000
Tc1	1000	10.0	10000
Es1	1000	10.0	10000
Es1C	1000	10.0	10000
Es1D	1000	10.0	10000
Oc	1000	10.0	10000
Mc	1000	10.0	10000
AuSi	1000	10.0	10000



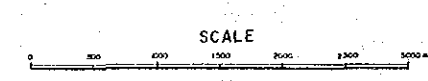


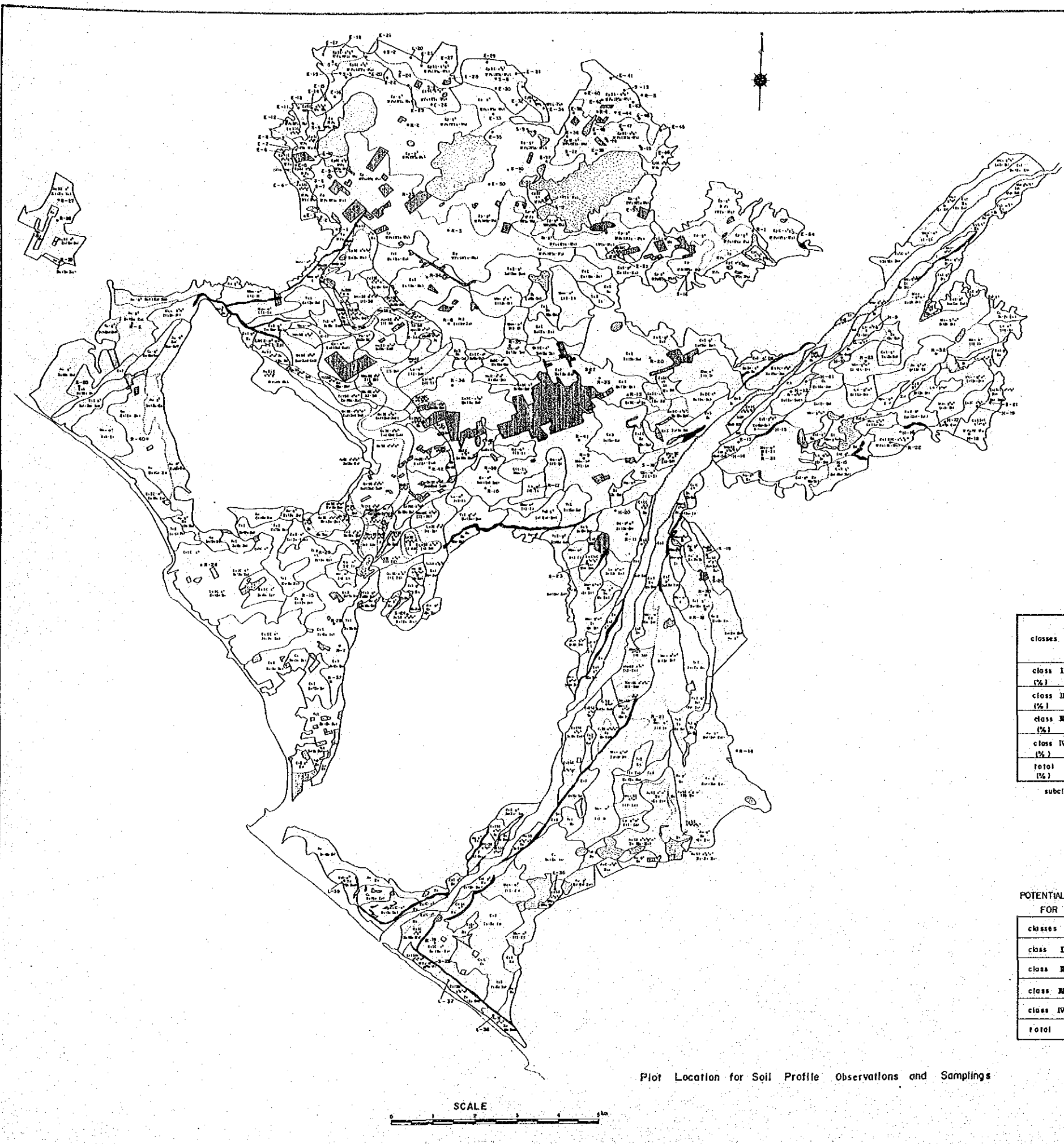
LEGEND

ROAD	1:50,000	1:50,000	1:50,000	1:50,000	1:50,000
RAILROAD	1:50,000	1:50,000	1:50,000	1:50,000	1:50,000
WATER	1:50,000	1:50,000	1:50,000	1:50,000	1:50,000
...

SOIL CLASSIFICATION AND DISTRIBUTION

SOIL CLASSIFICATION	AREA (HA)	PERCENTAGE (%)
Au	1852	9.1
AuS	212	1.0
AuSIC	87	0.4
AuSII	401	2.0
...
Total arable land	20200	100.0





LEGEND

land use categories	area (ha) (%)	symbol
arable land	20,200 (87)	Epsic
nonarable land		
dry area	810 (4)	(stippled)
precipices, drains, ponds	80 (-)	(wavy lines)
stone land	70 (-)	MA
residential areas, yards, others	790 (3)	(cross-hatched)
right-of-way	1160 (5)	(dashed)
project area	23,100 (100)	(thick solid)

Soil Phase, Soil Unit Code

TcISXc - a⁴c²q²w³

Tc: soil phase code
 a: texture series, poorly-drained salt accumulated, gravelly surface, moderately deep phase
 c: land classification code
 q: potential land irrigability class for fruit production
 w: potential land irrigability class for annual crop production
 x: potential land irrigability class for irrigation farming

Soil Unit Code: a⁴c²q²w³f²

a⁴: salinity rating 4
 c²: alkalinity rating 2
 q²: coarse fragment content rating 2
 w³: slope and microrelief rating 2
 f²: drainage hazard rating 2

Land Irrigability Class

I - class I (arable) II - class II (arable) III - class III (arable) IV - class IV (limited arable or special use) V - class V (nonarable)

IVF - special use for fruit cultivation IVI - limited arable under intensive irrigation methods

IVR - special use for salt tolerant crop cultivation

subclasses: s - deficiency or limitation in soil factor which determine irrigability class in the level
 t - in topography factor
 d - in drainage factor

phases: I - shallow phase, II - moderately deep phase, III - well-drained salt accumulated phase, C - gravelly surface phase

1/2 % of project area (123,100 ha)

classes	POTENTIAL LAND CLASSIFICATION																															
	for irrigation farming										for annual crop production																					
	class total ha	subclass ha									class total ha	subclass ha									class total ha	subclass ha										
(%)	s	d	t	sd	st	dt	sd t	st t	sd t	s	d	t	sd	st	dt	sd t	st t	sd t	s	d	t	sd	st	dt	sd t	s	d	t	sd	st	dt	sd t
class I	2987 (15)										2987 (15)										2153 (11)											
class II	6721 (33)	3537	47	1673	630	775	25	34		6721 (33)	3537	47	1673	630	775	25	34		7488 (37)	2636	1469	1605	626	824	68							
class III	6290 (31)	5487		24	779					6290 (31)	5487		24	779					6269 (31)	5218	W1	24	107	779								
class IV	4202 (21)										4202 (20)										4245 (21)											
total	20200 (100)										20200 (100)										20200 (100)											

subclasses: s - deficiency or limitation in soil factor which determine irrigability class in the level
 t - in topography factor
 d - in drainage factor

IVF - special use for fruit cultivation IVI - limited arable under intensive irrigation methods
 IVR - special use for salt tolerant crop cultivation

POTENTIAL LAND IRRIGABILITY CLASSES FOR IRRIGATION FARMING

classes	area (ha)	symbol
class I	2987	
class II	6721	
class III	6290	
class IV	4202	
total	20200	

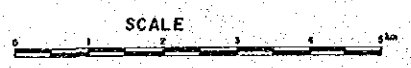
REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANCAY - HUARAL VALLEY
 REHABILITATION PROJECT

PLOT LOCATION FOR SOIL
 OBSERVATIONS AND SAMPLINGS MAP

DATE	1985, MARCH	DWG. NO	44
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JAPAN INTERNATIONAL COOPERATION AGENCY

Plot Location for Soil Profile Observations and Samplings





LEGEND

land use categories	area (% of total)	symbol	
arable land	20,200 (87)	EpSIC	
nonarable land			
alky area	810 (4)		
precipices, drains, ponds	80 (-)		
steep land	70 (-)	NA	
residential area, yards, others	790 (3)		
right-of-way	1,80 (1)		
project area	23,100 (100)		
river and river bank			
soil series/phase boundary			
soil unit boundary			
project area boundary			

$$Tc E S C = \frac{e^4 d^2 c^2 g^2 w^3}{f^2}$$

soil phase code
Tucuma series, poorly-drained salt accumulated, gravelly surface, moderately deep phase

soil unit code

$$I_s (E_s - W_d)$$
 potential land irrigability class for fruit production
 potential land irrigability class for annual crop production
 potential land irrigability class for irrigation farming

soil unit code $e^4 d^2 c^2 g^2 w^3 f^2$
 e⁴ salinity rating 4
 d² alkalinity rating 2
 c² coarse fragment content rating 2
 g² slope and microrelief rating 2
 w³ drainability rating 3
 f² flooding hazard rating 2

land irrigability class
 I - class I (arable) II - class II (arable) III - class III (arable) IV - class IV (limited arable or specialty) V - class V (nonarable)
 IVF - special use for fruit cultivation IVI - limited arable under intensive irrigation methods
 IVR - special use for salt tolerant crop cultivation
 subclasses: a: deficiency or limitation in soil factor which determines irrigability class in the level
 i: - in topography factor +
 d: - in drainage factor +
 phases: I: shallow phase, II: moderately deep phase, III: well-drained salt accumulated phase, III: poorly-drained salt accumulated phase, C: gravelly surface phase

∇ % of project area (23,100 ha)

POTENTIAL LAND CLASSIFICATION

classes	land irrigability classes																					
	for irrigation farming							for annual crop production				for fruit production										
	class total ha	s	d	i	sd	si	di	sd	si	di	sd	si	di	sd	si	di	sd	si	di	sd		
class I (%)	2987 (13)																					2153 (11)
class II (%)	6721 (33)	3537	47	1673	630	775	25	34														7488 (37)
class III (%)	6290 (31)	5487		24		779																6269 (31)
class IV (%)	4202 (21)								4157	45												4245 (21)
total (%)	20200 (100)																					20200 (100)

subclasses: a: deficiency or limitation in soil factor which determines irrigability class in the level
 i: - in topography factor +
 d: - in drainage factor +
 IVF special use for fruit cultivation IVI limited arable under intensive irrigation methods
 IVR special use for salt tolerant crop cultivation

POTENTIAL LAND IRRIGABILITY CLASSES FOR IRRIGATION FARMING

classes	area (ha)	symbol
class I	2987	[Symbol]
class II	6721	[Symbol]
class III	6290	[Symbol]
class IV	4202	[Symbol]
total	20200	

REPUBLICA DEL PERU
 MINISTERIO DE AGRICULTURA INSTITUTO NACIONAL
 DE AMPLIACION DE LA FRONTERA AGRICOLA
 CHANCAY - HUARAL VALLEY
 REHABILITATION PROJECT
 POTENTIAL LAND CLASSIFICATION MAP
 DATE 1985, MARCH DWG. NO 45
 JAPAN INTERNATIONAL COOPERATION AGENCY

JICA