JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

THE DETAILED DESIGN
ON
PORT REACTIVATION PROJECT IN LA UNION PROVINCE
OF
THE REPUBLIC OF EL SALVADOR

FINAL REPORT

QUANTITY GALCULATION REPORT

Civil Works (1/4)



OCTOBER 2002

NIPPON KOEI CO., LTD.

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THE DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

FINAL REPORT

QUANTITY CALCULATION REPORT

Civil Works (1/4)

OCTOBER 2002

NIPPON KOEI CO., LTD.

Summary of Quantity Calculation

BOQ Item	Work Section Title	Quantity Item	Quantity	Unit	Remarks
	Dredging Work				
2A-01	Outer Channel Dredging	offshore dumping	3,120,000	m3	
2A-02		onshore dumping	1,040,000	m3	
2A-03	Inner Channel Dredging	offshore dumping	3,352,000	m3	
2A-04		onshore dumping	1,117,000	m3	
2A-05	Turning Basin Dredging	offshore dumping	2,092,000	m3	
2A-06		onshore dumping	698,000	m3	
2A-07	Passenger Turning Basin	offshore dumping	70,000	m3	
2A-08	Container Berth	offshore dumping	243,000	m3	
2A-09	Multi-purpose Berth	offshore dumping	279,000	m3	
2 A -10	West Revelment	offshore dumping	385,000	m3	
2A-11	East Revetment	offshore dumping	198,000	m3	
2A-12	Reclamation area	offshore dumping	481,000	m3	
2A-1301	Temporary Revetment A-North		420	m	
2A-130101	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sand	34,700	m3	
2A-130102		Rubble	4,710	m3	10~250kg/pc
2A-130103		Geotextile Sheet	5,800	m2	
2A-1302	Temporary Revelment A-West		440.0	m	
2A-130201		Sand	20,500	 m3	-
2A-130202		Rubble	4,050	ш3	10~250kg/pc
2A-130203		Geotextile Sheet	4,670	m2	10 Boolege
2A-1303	Temporary Revetment B		530.0	m	
2A-130301	Tomporary November D	Sand	40,300		
2A-130302		Rubble	5,940	m3	10~250kg/pc
2A-130302 2A-130303		Geotextile Sheet	7,190		10 - 230курс
2A-130303	West Bund	Geolexine Sheet	- 		
2A-130401	west Bullu	Sand	200.0		
2A-130402		Rubble	7,760 1,740	m3 m3	10~250kg/pc
2A-130402		Geotextile Sheet	1,960		10 -230kg/pc
2A-1305	East Bund	Geolexine direct	50.0		
2A-130501	East Duild	Sand	2,730	m m3	
2A-130501		Rubble	490	m3	10~250kg/pc
2A-130502		Geotextile Sheet	570	m2	10 - 250kg/pc
ZA-130303	Container Berth Work	Geolexine officer	340.0		
2B-0101	Rubble Mound of Caisson	Rubble	54,600	 m3	10~250kg/pc
2B-0102	Rubble Would of Caissoil				10 °230kg/pc
		Leveling	18,500	m2	
2B-0103	A 1. 16 3 f . 46	Compaction	7,850		<u> </u>
2B-02	Asphalt Matt	77.17.1	7,480		
2B-0301	Armor Stone	Rubble	3,820	m3	200~300kg/pc
2B-0302	G . CO . L.	Leveling	7,870		
2B-0401	Scaffolding	Outer	22,000	m2	1290m2 / 1caisson
2B-0402		Inner	8,910	m2	524m2 / Icaisson
					per 1 Caisson
2B-0403	Reinforcement of Caisson		2890	t	D25 18.1t D22 48.8t
			Incld, Lifting Bar 8.9t	•	D19 24.7t D16 52.0t
			<u> </u>		D13 25.6t
2B-0404	Concrete of Caisson		19,000	m3	
2B-0405	Form of Caisson		98,900	m2	

BOQ Item	Work Section Title	Quantity Item	Quantity	Unit	Remarks
2B-05	Temporary anchoring of Caisson		17	Nos	
2B-06	Placing of Caisson		17	Nos	
2B-07	Sand Filling into Caisson		84,500	m3	
2B-08	Cover Concrete of Caisson		2,780	m3	
2B-0901	Coping Concrete of Caisson	Concrete	5,460	m3	
2B-0902		Elas Tigh Board	259	m2	
2B-0903	T VICE THE RESERVE OF THE PARTY	Reinforcement	368	t	21.6t / 1block
2B-0904		Form	4,550	m2	
2B-0905		Corner Protection	340	m	
2B-0906		Concrete for Curb	16.7	m3	. "
2B-0907		Form for Curb	159	. m2	
2B-0908		Reinforcement for Curb	4,790	kg	
			2,03m x 34		
2B-0909		Drain Pipe	0.55m x 9	m	j .
213-0707		Drain ripe	1.82m x 1	111	
			Total 76.0m		1
2B-10	Apron Concrete Pavement		7,200	m2	
2B-1001	<u> </u>	Concrete	2,160	m3	t=30cm
2B-1002		Base Concrete	1,080	m3	t=15cm
2B-1003		Sub-Base Concrete	1,080	m3	t=15cm
2B-1004	* .	Prime Coating	7,200	m2	
2B-1005		Reinforcement and joint bar	19,300	kg	
2B-1006		Elas Tigh Board	230	m2	
2B-1007		Joint filter	90.0	m2	
2B-1008		Iron mesh	7,200	m2	
2B-1101	Sand Protection Sheet	Sand Protection Sheet	553	m	
2B-1102		Steel Plate	2,180	kg	
2B-1201	Back Filling behind Caisson	Back filling stone	49,100	m3	·
2B-1202		Leveling	11,600	m2	
2B-1203		Geotextile Sheet	13,700	m2	
2B-1301	Steel Pipe Pile for Crane Rail Foundation	Steel Pipe Pile	L1=23.0m t=11; 25 L2=19.5m t=11; 30 L3=24.0m t=11; 5 L4=19.5m t=14; 3 L5=24.0m t=14; 5 Total 323t	Nos	φ 800 W1=4930kg W2=4180kg W3=5140kg W4=5290kg W5=6510kg
2B-1302		Steel Plate	7,680	kg	112.8kg x 68sets
2B-1401	Concrete for Crane Rail Foundation	Concrete	1,160	m3	
2B-1402		Elas Tigh Board	56.1	m2	
2B-1403		Reinforcement	97.6	t '	
2B-1404		Form	1,540	m2	
2B-1405		Crushed Stone	63.3	m3	t=10cm
2B-1406		Leveling of Crushed Stone	633	m2	
2B-1407		Lean Concrete	31.7	m3	t=5cm
2B-1408		Drain Pipe	0.85m x 47 1.76m x 4 0.31m x 8 Total 50.0m	m	
2B-1501	Crane Rail with Accessories	Crane Rail with Accessories	670	m	Rail Weight 73kg/m

BOQ Item	Work Section Title	Quantity Item	Quantity	Unit	Remarks
2B-1502		Asphalt Mixture	33.5	m3	
2B-1503		Corner Angle	6,110	kg	
2B-1504		Re-Bar	1,670	kg	
2B-1601	Cable Trench	Corner Angle	6,100	kg	
2B-1602		Re-Bar	1,670	kg	
2B-1701	Jack-up base	Steel Plate	16	Nos	400x600 t=40mm
2B-1702		Base Angle	32	Nos	I.90x90x10 I.≈580
2B-1801	End Stopper	Steel Plate & Bolt	4	Sets	938kg / 1spot
2B-1802		Concrete	2.92	m3	0.73m3 / 1spot
2B-1901	Socket block	Steel Plate & Bolt	8	Sets	407kg / 1spot
2B-1902		Concrete	1.12	m3	0.14m3 / 1spot
2B-2001	Crane anchoring frame	Steel Plate & Bolt	16	Sets	683kg / 1spot
2B-2002		Concrete	8.70	m3	0.54m3 / 1spot
2B-2003		Angle & Re-Bar	263	kg	16.4kg / 1spot
2B-2004		Form for cover	16.50	m2	1.03m2/N
2B-2005		Concrete for cover	0.64	m3	0.04m3 / N
2B-21	Fender	Туре-А	25	Sets	
2B-22	Bollard	Bollard	13	Sets	
2B-23	Ladder		4	Sets	

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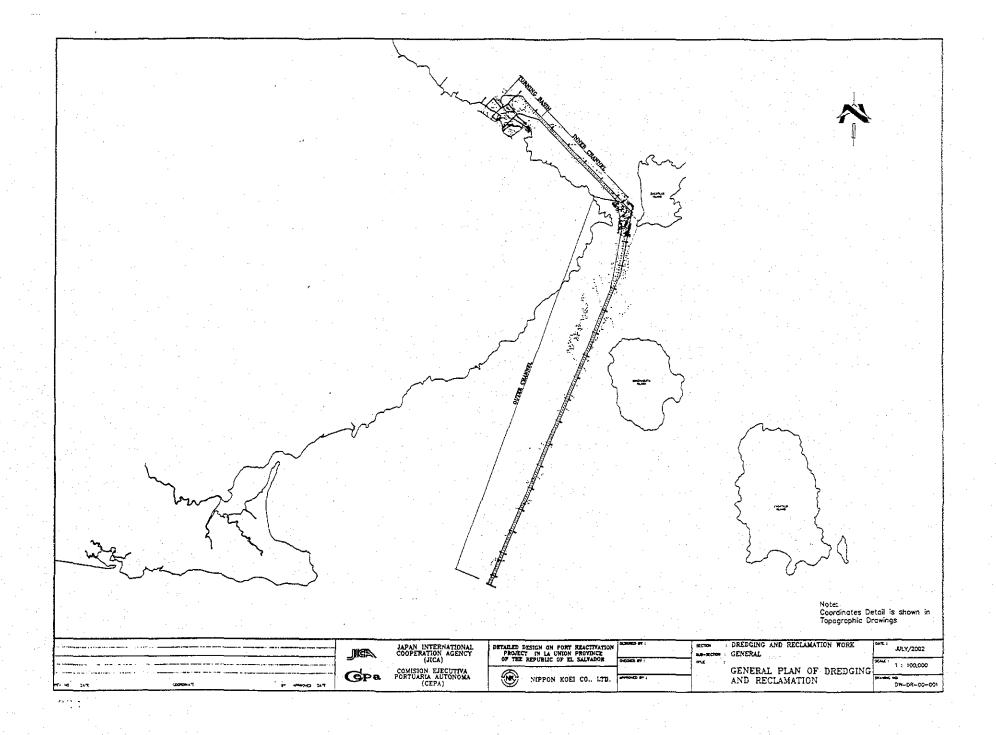
	QUANTITY CALCULATION C		
Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Dredains Work	Pay Item No. (BOQ)	2A-0/
Quantity Item	Oxfor Channel Drodging	Unit	w ≥
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Calculation Procedure Applied

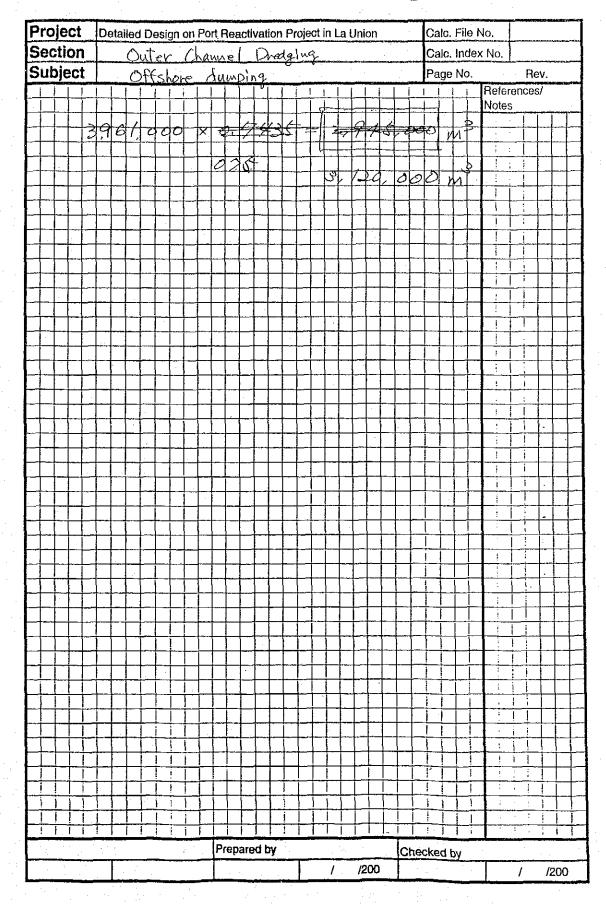
References. Calculation Base and Revisions

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QUANTITY CALCULATION COVER SHEET									
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Work Section Title	Dredging Work.	Pay Item No. (BOQ)	2A-02						
Quantity Item	re Applied (onshore dum	Unit	m3						
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References. Calculation Base and Revisions

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and calculation by Excel.

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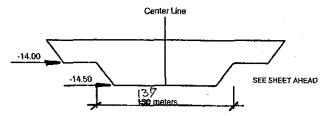
QUANTITY CALCULATION COVER SHEET									
Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code							
Work Section Title	Dredging Work	Pay Item No. (BOQ)							
Quantity Item	Outer Channel Dredging (from Sec.50-217)	Unit	cubic meter						

Calculation Procedure Applied

- 1. Calculation of Areas of Sections (Excel)
- 2. Average of Areas of Sections (Excel)
- 3. Calculation of Volume: Average of area of sections times distance between sections: (Excel)

References, Calculation Base and Revisions

1. Typical Section of Outer Channel:



- 2. Area and Volumes have been calculated starting from Section 92 up to section 215, in accordance with the General Plan of Outer Channel Dredging Nº DW-DR-00-003 From section 50 to 92 no dredging due to deeper than dredging elevation planned.
- 3. Design Information:

Slope:

1:5 (vertical: horizontal)

Depth: -14.5 meters

Width:

130 meters

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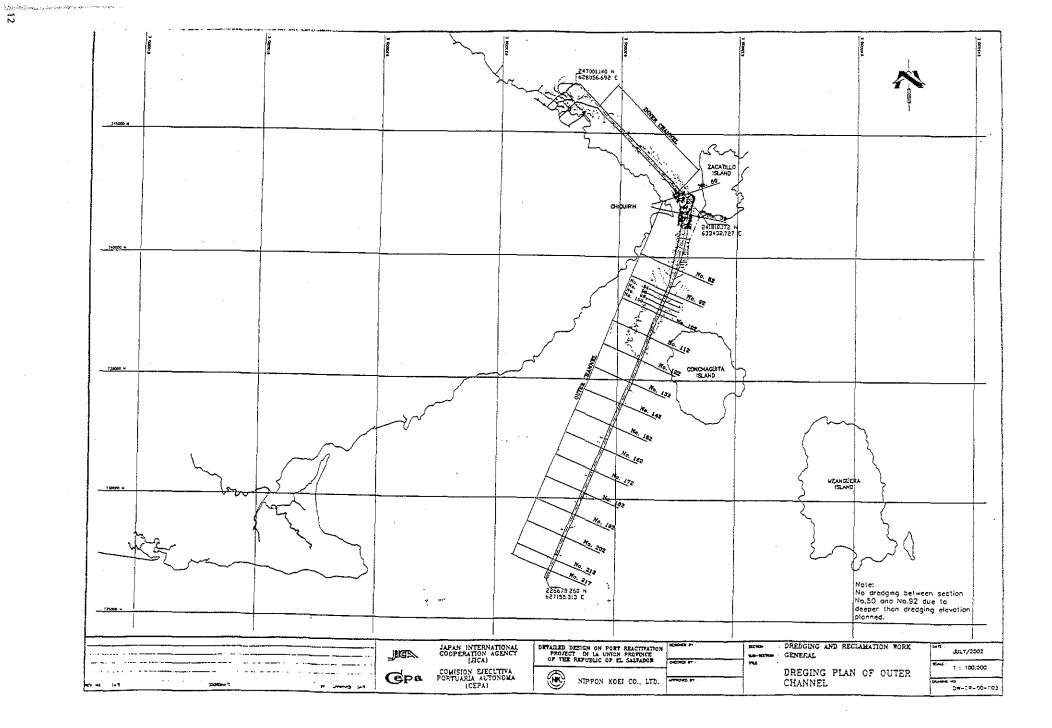
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93	15.0			
94	15.8	15.4	100.0	1,538.4
34	10.0	12.9	100.0	1,285.9
95	9.9			
96	32.7	21.3	100.0	2,132.0
30	32.1	45.3	100.0	4,533.2
97	57.9			
98	62.4	60.2	100.0	6,017.5
	02.1	79.9	100.0	7,992.2
99	97.4	64.0	100.0	0.405.0
100	71.1	84.3	100.0	8,425.9
.00	7.1.1	80.9	100.0	8,086.0
101	90.6	000	100.0	0.0004
102	83.2	86.9	100.0	8,693.1
102	00.2	93.4	100.0	9,344.0
103	103.7	50.4	100.0	0.040.0
104	93.2	98.4	100.0	9,840,8
		91.9	100.0	9,188.0
105	90.6	00.5	100.0	0.053.5
106	82.5	86.5	100.0	8,653.5
		79.9	100.0	7,990.7
107	77.4	70.0	100.0	7,020.2
108	81.2	79.3	100.0	7,928.2
		81.0	100.0	8,103.7
109	80.9	75.2	100.0	7.526.4
110	69.7	_75.3	100.0	7,526.4
		59.8	100.0	5,979.7
111	49.9	_45.1 _	100.0	4,510.4
112	40.3	40.1	100.0	7,010.7
		53.5	100.0	5,346.4
113	66.6	77.3	100.0	7,733.6
114	88.0		100.0	7,700.0
	25.1	86.5	100.0	8,654.1
115	85.1	81.1	100.0	8,113.6
116	77.2		100.0	
		79.6	100.0	7,955.8
117	81.9	85.0	100.0	8,501.8
118	88.1	00.0	.00.0	
		104.8	100.0	10,484.4
119	121.6	120.9	100.0	12,088.8
120	120.2			
101	1040	127.6	100.0	12,755.1
121	134.9	170.7	100.0	17,073.1
122	206.6			
100	015.4	211.0	100.0	21,097.9
123	215.4	215.7	100.0	21,570.7
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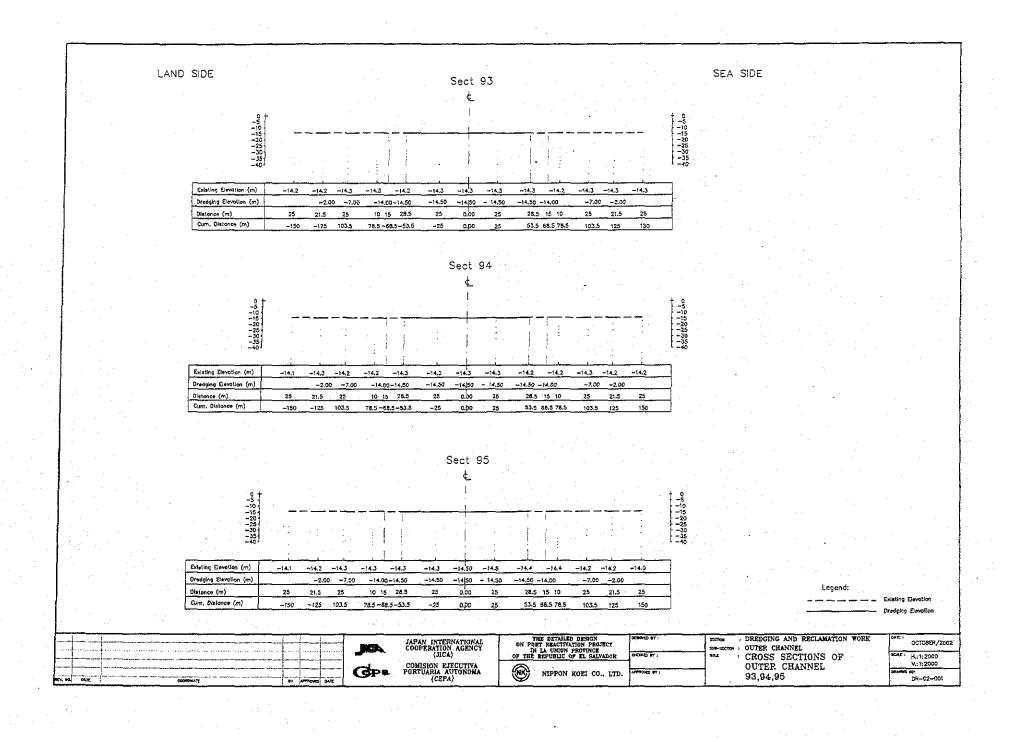
SECTION	AREA		DISTANCE	VOLUME
124	m2 216.0	m2	m	m3
125	264.9	240.5	100,0	24,048.0
	204.5	259.5	100,0	25,954.5
126	254.2	270.2	100,0	27,018.5
127	286.2	290.4	100.0	
128	294.6			29,038.1
129	323.1	308.8	100.0	30,883.3
130	348.8	335.9	100.0	33,593.8
		359.5	100.0	35,947.5
131	370.2	383.3	100.0	38,325.3
132	396.3	419.2	100.0	41,923.0
133	442.1			
134	465.6	453.9	100.0	45,387.7
135	492.7	479.2	100.0	47,917.5
	·	511.4	100.0	51,136.2
136	530.0	545.6	100.0	54,560.4
137	561.2	572.1	100.0	57,210.4
138	583.0			
139	611.9	597.4	100.0	59,742.5
140	642.6	627.2	100.0	62,721.3
		652.6	100.0	65,262.5
141	662.7	674.2	100.0	67,423.6
142	685.8	693.0	100.0	69,303.0
143	700.3			
144	693.4	696.8	100.0	69,683.8
145	731.3	712.4	100.0	71,236.2
		741.8	100.0	74,177.1
146	752.2	749.5	100.0	74,954.0
147	746.9	749.4	100.0	74,938.9
148	751.9	750.6	100.0	75,063.9
149	749.4			
150	770.1	759.7	100.0	75,970.8
151	718.7	744.4	100.0	74,437.1
		715.9	100.0	71,587.0
152	713.1	724.1	100.0	72,414.5
153	735.2	730.2		73,022.4
154	725.2		100.0	
155	726.1	725.6	100.0	72,564.9
		723.6	100.0	72,362.6

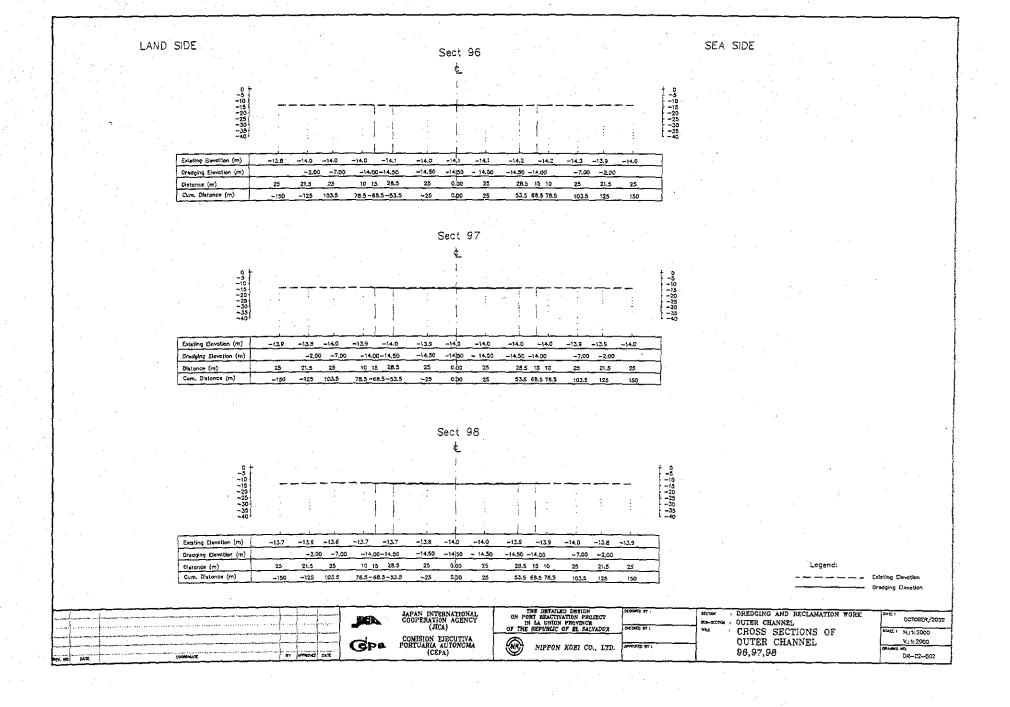
SECTION	AREA	AVERAGE	DISTANCE	VOLUME
	m2	m2	ın	m3
156	721.2	707.2	100.0	70,723.8
157	693.3		100.0	00 555 0
158	677.8	685.6	100.0	68,555.0
		660.4	100.0	66,036.0
159	642.9	648.5	100.0	64,651.0
160	650.1	0.00.0	700.0	0 1,00 1.0
161	647.9	649.0	100.0	64,899.0
101	041.5	645.1	100.0	64,506.2
162	642.2	ean t	100.0	62.246.0
163	622.7	632.5	100.0	63,246.0
104	000.0	643.2	100.0	64,321.6
164	663.8	628.5	100.0	62,846.6
165	593.2			
166	615.3	604.3	100.0	60,425.1
		599.2	100.0	59,922.7
167	583.1	584.6	100.0	58,456.0
168	586.0	004.0	100.0	00,100,0
169	592.9	589.5	100.0	58,946.6
100	002.5	582.3	100.0	58,225.7
170	571.6	EE4 0	100.0	EE 100.2
171	532.3	551.9	100.0	55,193.3
470	C10.0	522.6	100.0	52,259.3
172	512.9	529.8	100.0	52,980.7
173	546.7			
174	493.7	520.2	100.0	52,023.4
		490.4	100.0	49,041.2
175	487.1	476.0	100.0	47,602.5
176	465.0	470.0	100.0	47,002.0
177	463.4	464.2	100.0	46,420.5
	-,00.4	444.0	100.0	44,396.4
178	424.5	410.2	100.0	41 022 4
179	414.2	419.3	100.0	41,933.4
100		405.8	100.0	40,580.2
180	397.4	391.8	100.0	39,180.4
181	386.2			
182	361.2	373.7	100.0	37,367.7
		367.4	100.0	36,743.8
183	373.7	361.2	100.0	36,115.0
184	348.6			50,110.0
		346.2	100.0	34,620.0
185	343.8	321.7	100.0	32,173.8
186	299.7	321.7	100.0	32,173.8
107	215 /	307.4	100.0	30,738.8
187	315.1	313.8	100.0	31,382.5

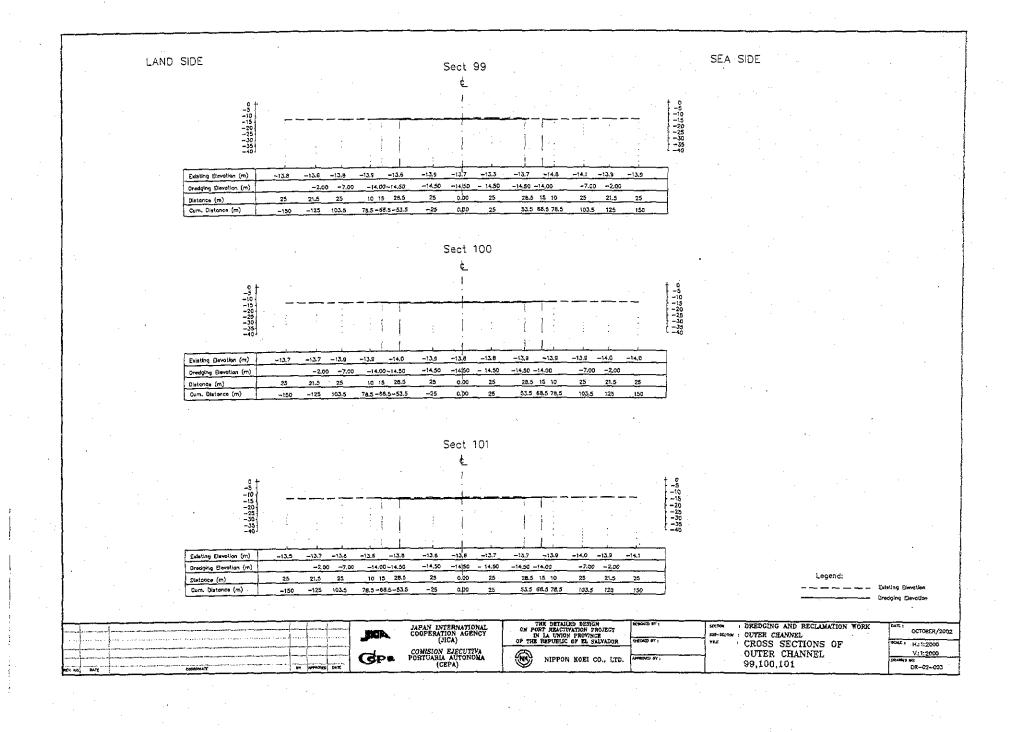
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SECTION	AREA		DISTANCE	NOLUME
100	m2 312.6	m2	m	m3
188	312.0	304.1	100.0	20.400.0
189	295.6	304.1	100.0	30,406.9
109	230.0	284.2	100.0	29 422 0
190	272.9	204.2	100.0	28,422.9
190	414.0	274,3	100.0	27,431.0
191	275.8	214.0	100.0	21,431.0
191	273.0	267.1	100.0	26,712.5
192	258.5	207.1	100.0	20,712.0
182	2,00,0	250.4	100.0	25,036.3
193	242.2	230.7	100.0	20,030.3
133	272.2	243.6	100.0	24,364.9
194	245.1	270.0	100.0	24,504.5
104	270.1	237.6	100.0	23,757.4
195	230.1	207.0	100.0	20,101.4
100	2,00.1	228.2	100.0	22,821.3
196	226.4	220.2	100.0	24,081.0
100	220.7	219.5	100.0	21,951.3
197	212.7	210.0	100.0	21,001.0
	*****	209.0	100.0	20,896.3
198	205.3	200.0	100.0	20,030.0
100	200.0	190.8	100.0	19,082.0
199	176.4		1000	70,002.0
100	170.7	173.2	100.0	17,324.4
200	170.1	170.2	100.0	11,02,4.4
200	.,,,,,	165.8	100.0	16,583.8
201	161.6	100.5	100.0	10,000.0
	10120	162.8	100.0	16,282.5
202	164.1	102.0	100.0	10,202.0
2.02	7.0.7.7	154.4	100.0	15,438.8
203	144.7	19 1.1		10,100.0
		138.8	100.0	13,877.6
204	132.9	1,5,512	7,00,0	19,01110
		130.1	100.0	13,007.0
205	127.3			
		118.8	100.0	11,882.0
206	110.4			
		98.9	100.0	9,887.5
207	87.4			
		84.5	100.0	8,450.2
208	81.6			
		71.6	100.0	7,164.0
209	61.7			
		63.5	100.0	6,352.5
210	65.4			
		53.6	100.0	5,361.6
211	41.9			
		34.7	100.0	3,473.0
212	27.6			
		24.2	100.0	2,421.4
213	20.8			
		23.7	100.0	2,371.7
214	26.6			
		17.0	100.0	1,701.9
215	7.4			
		3.7	100.0	371.5
	0.0	l	L	

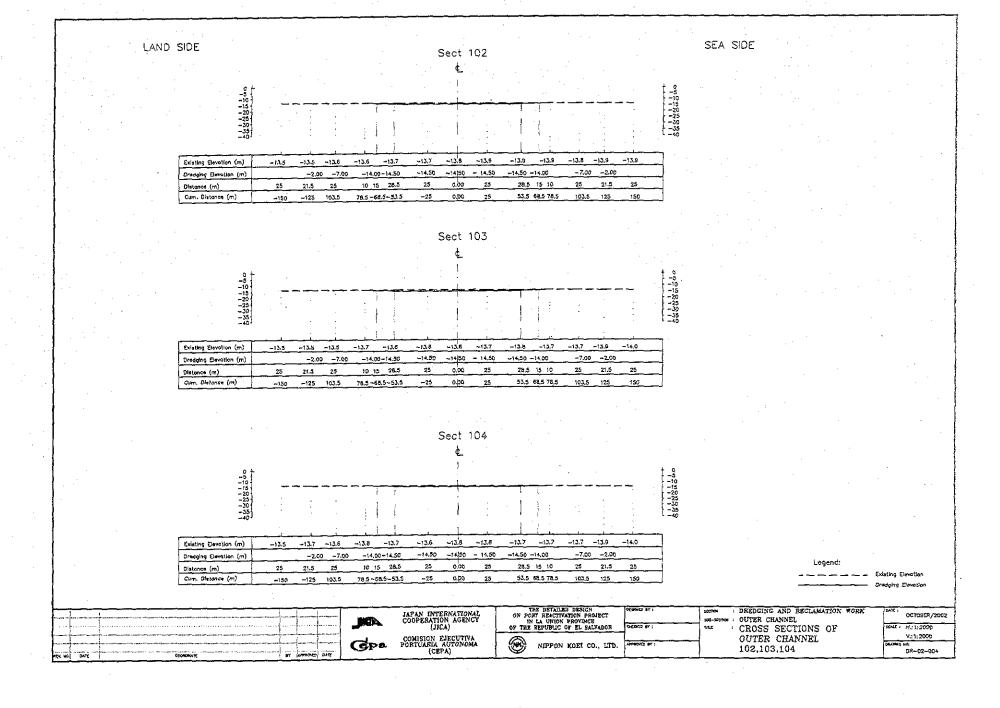
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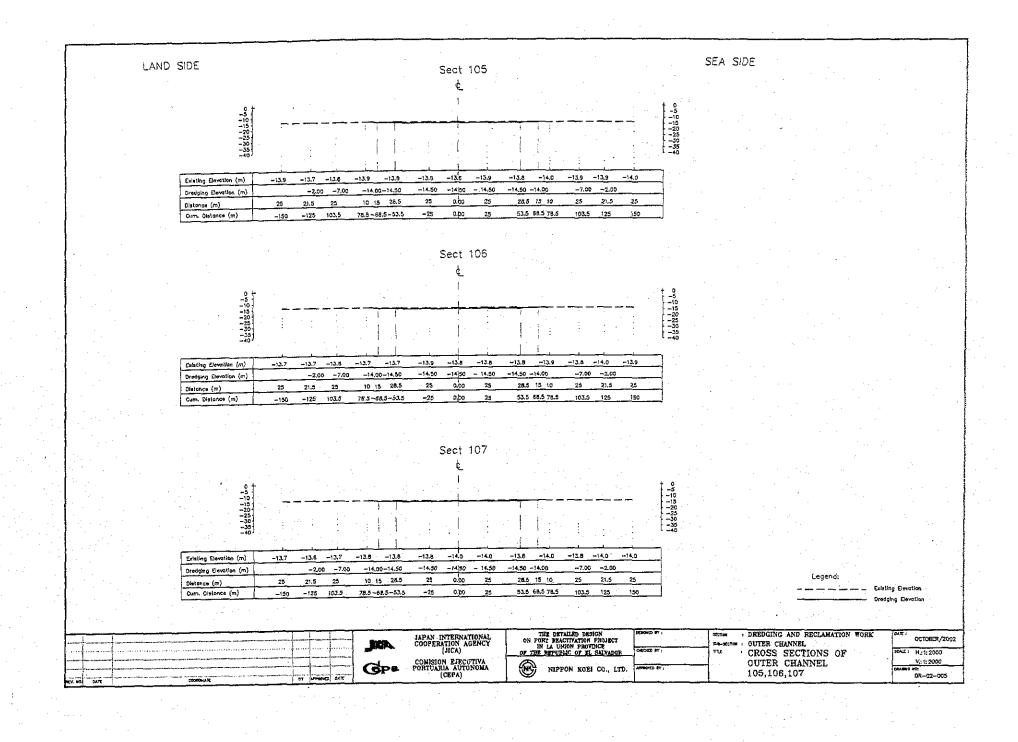


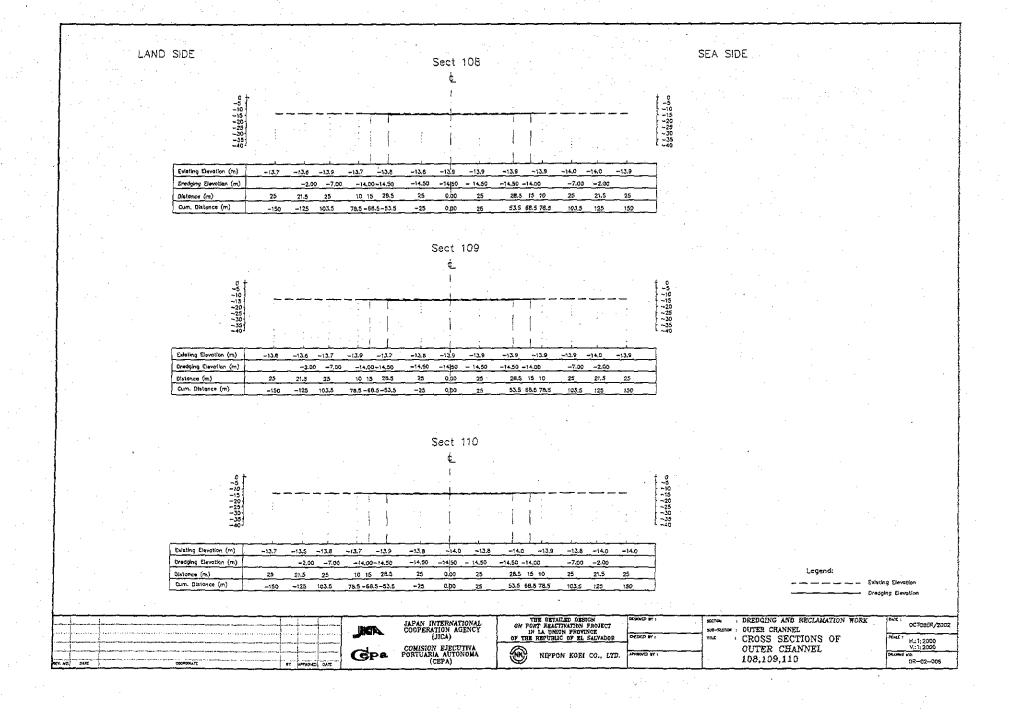


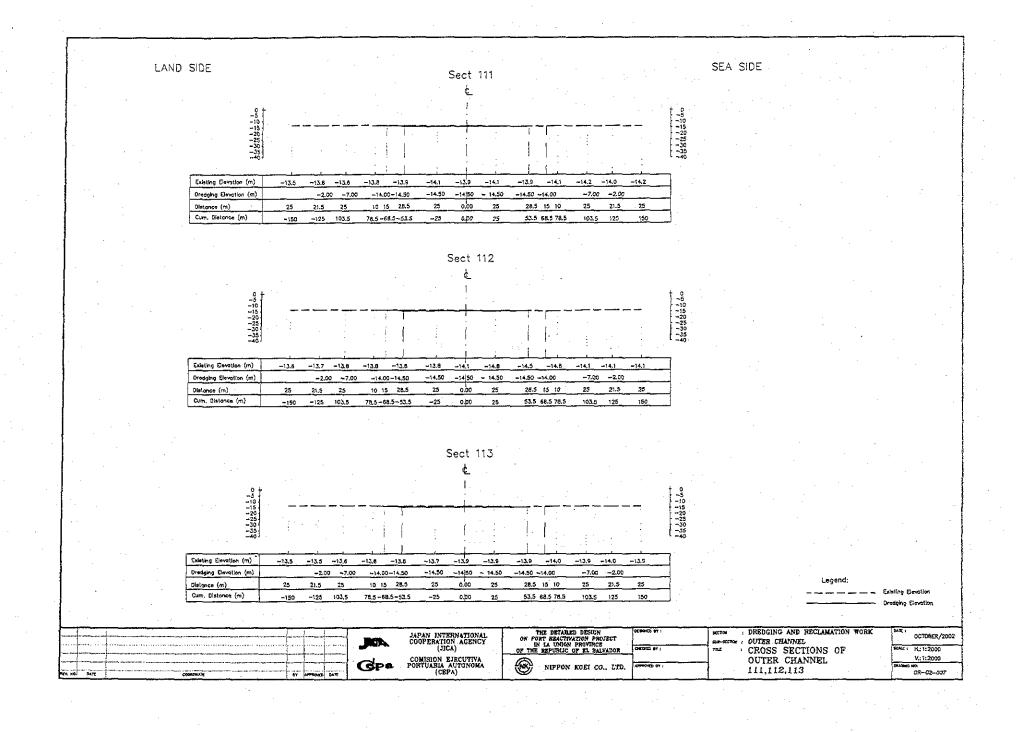


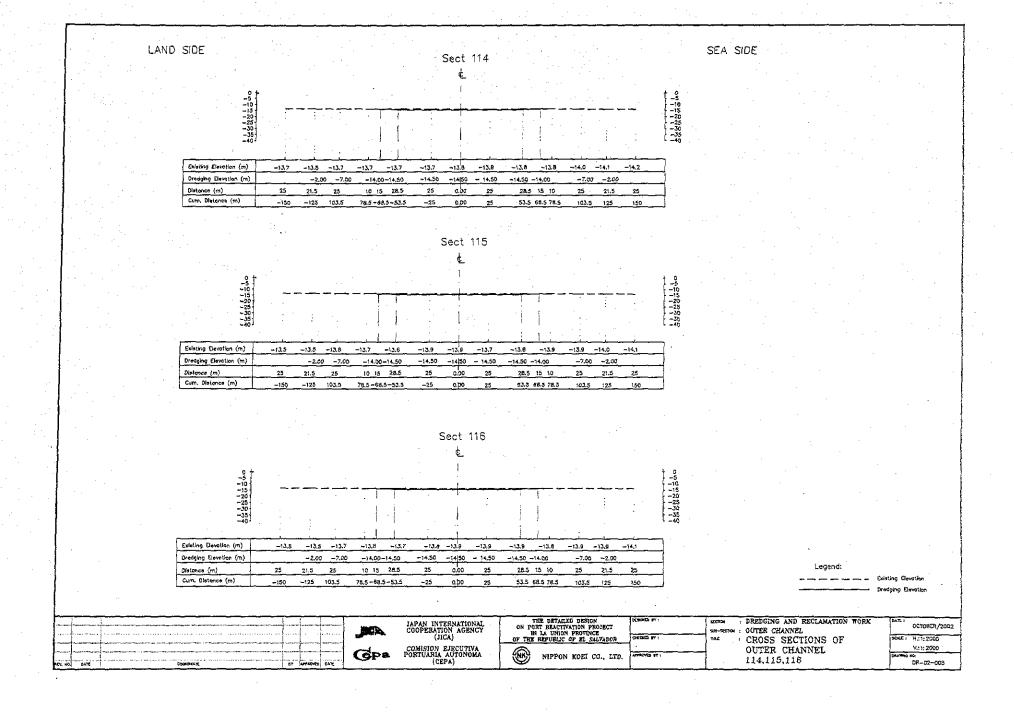


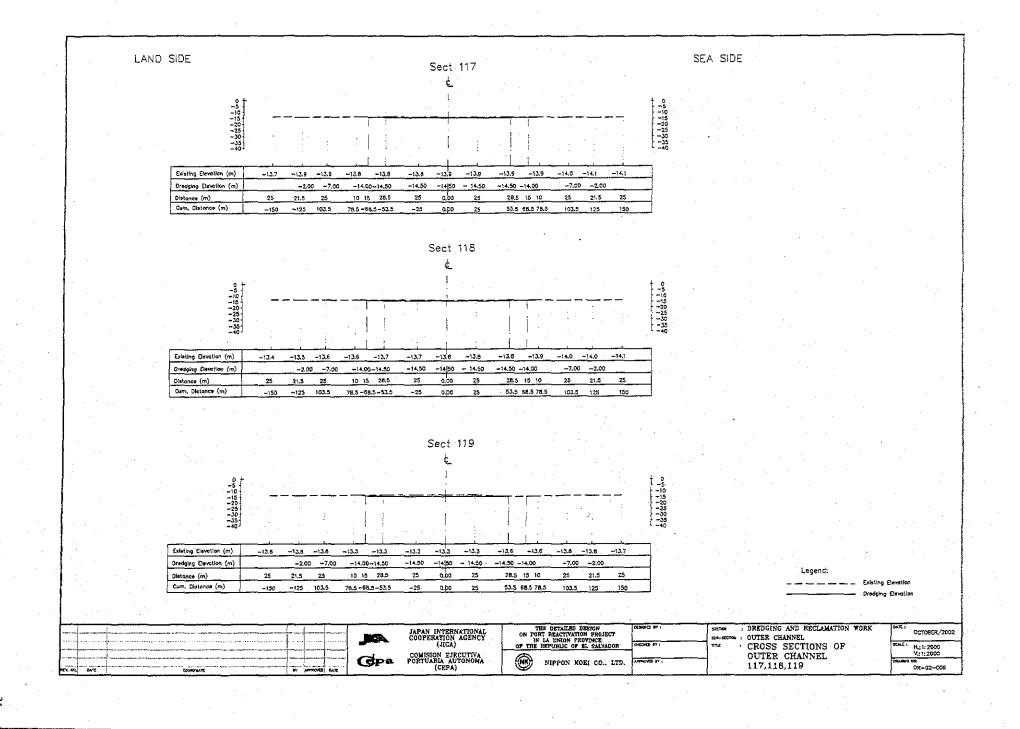


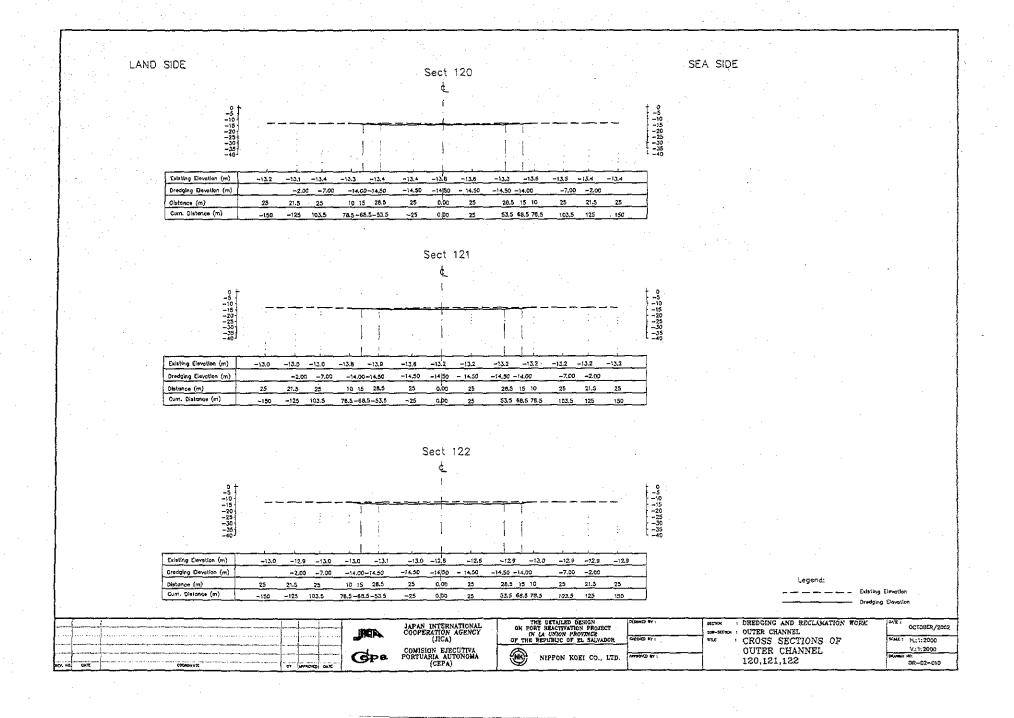


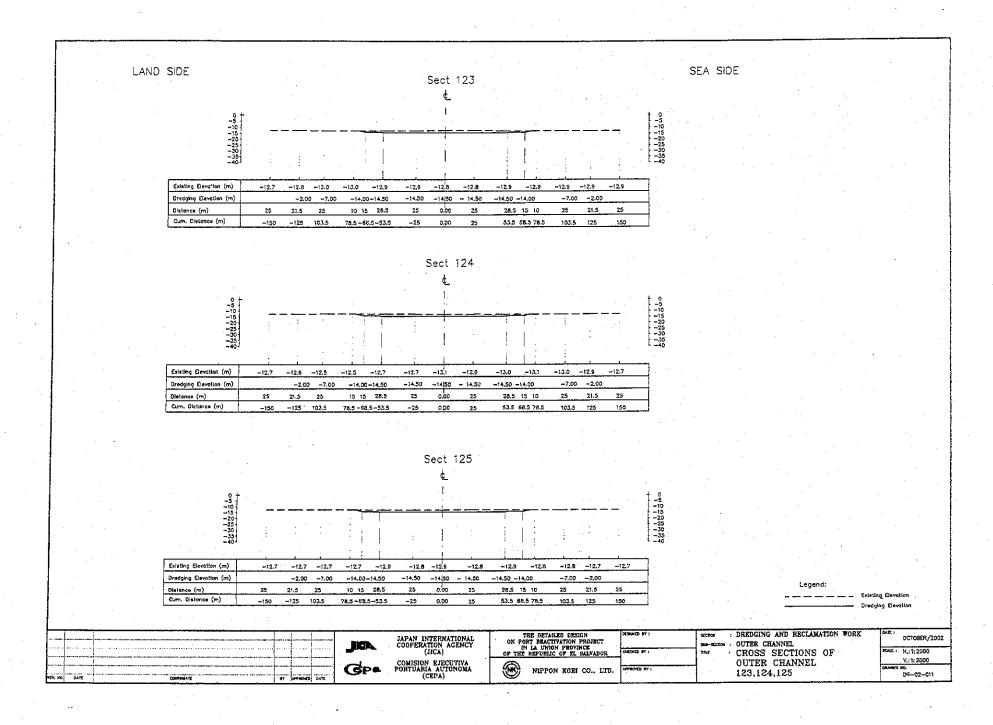


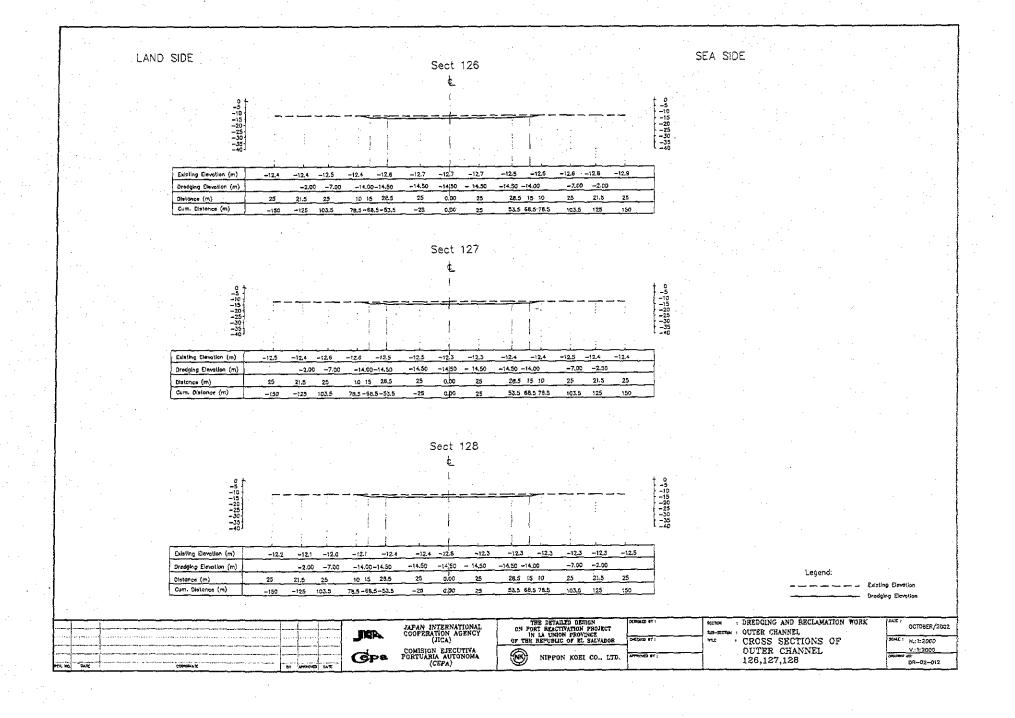


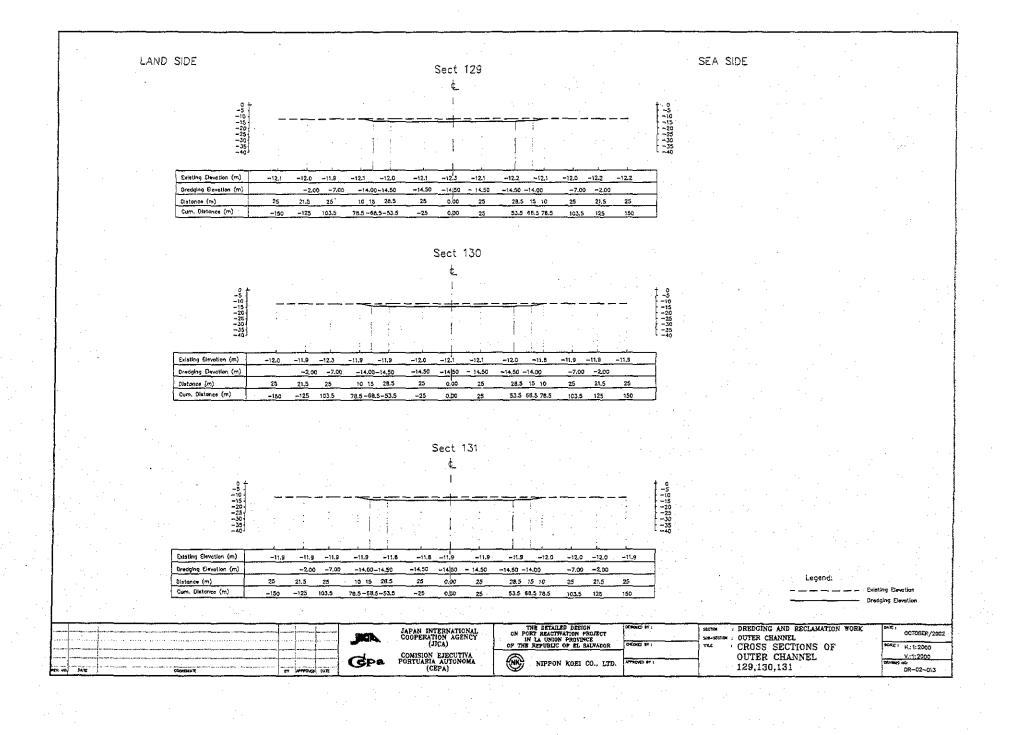


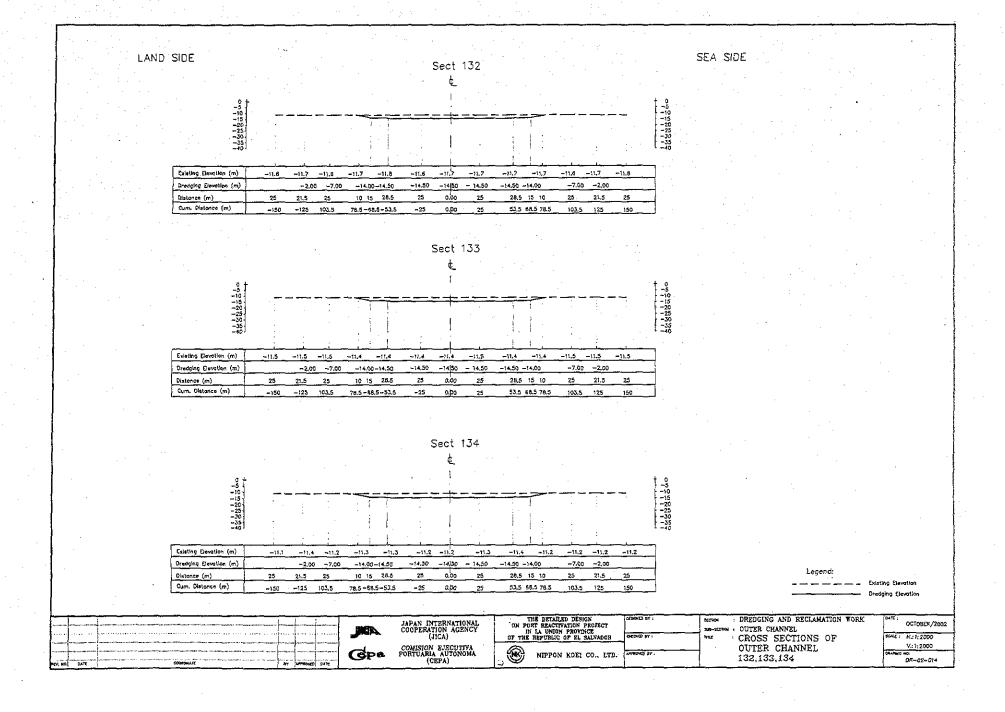


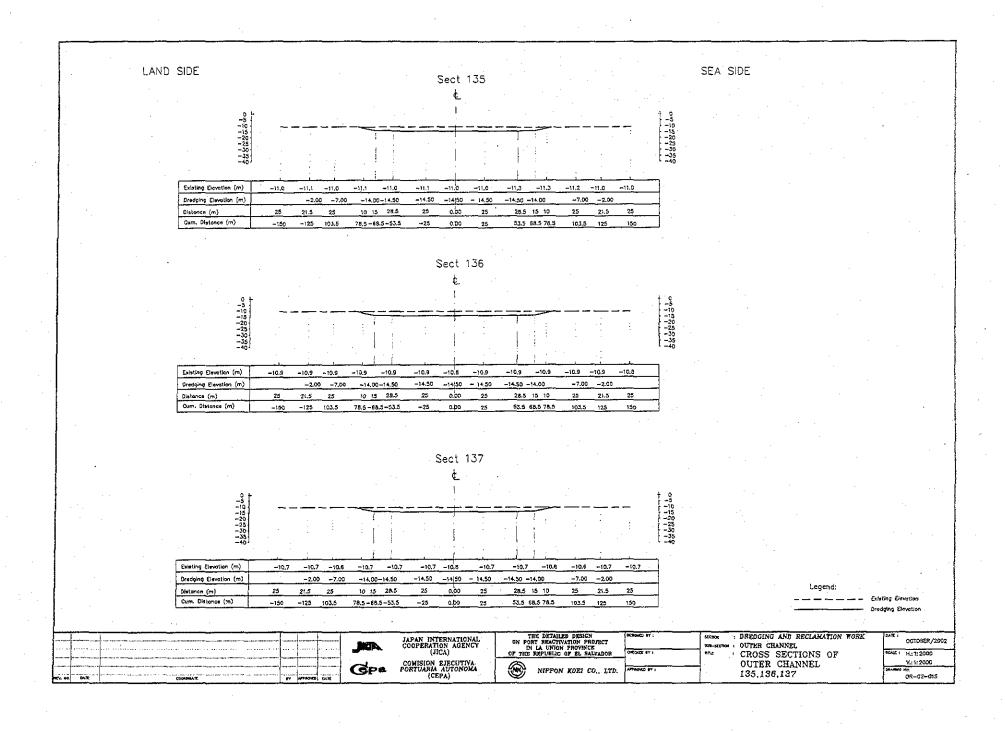


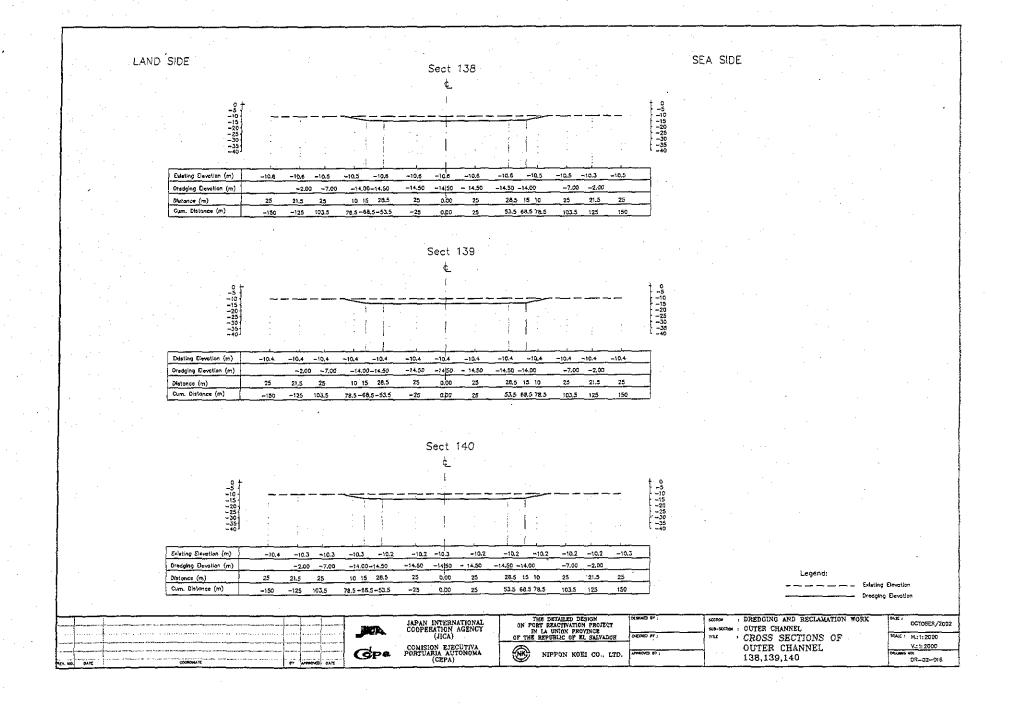


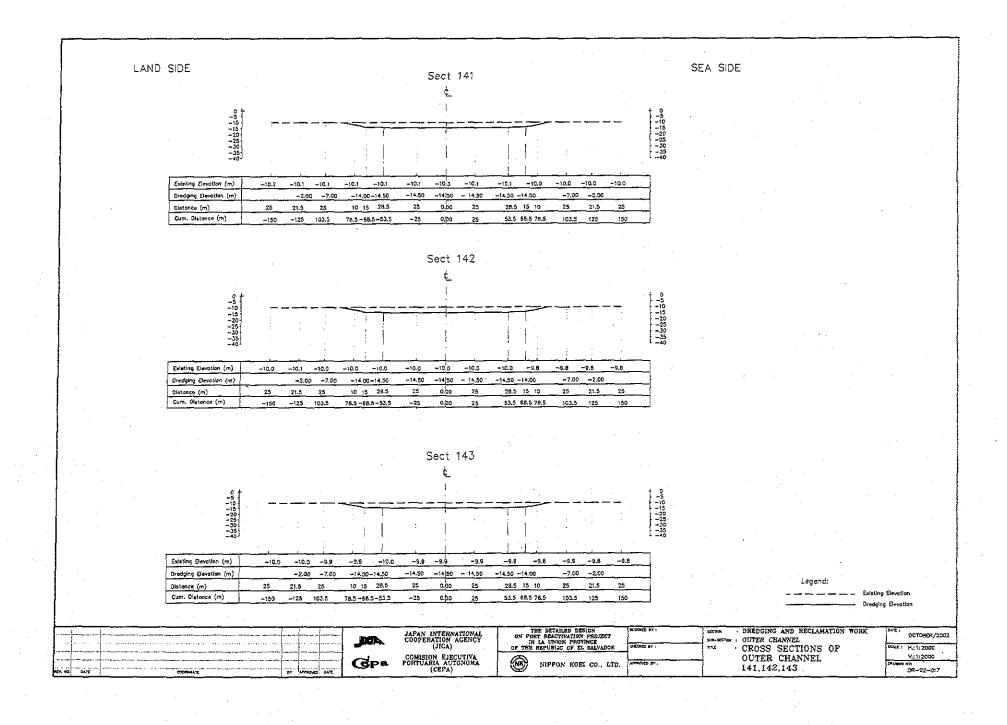


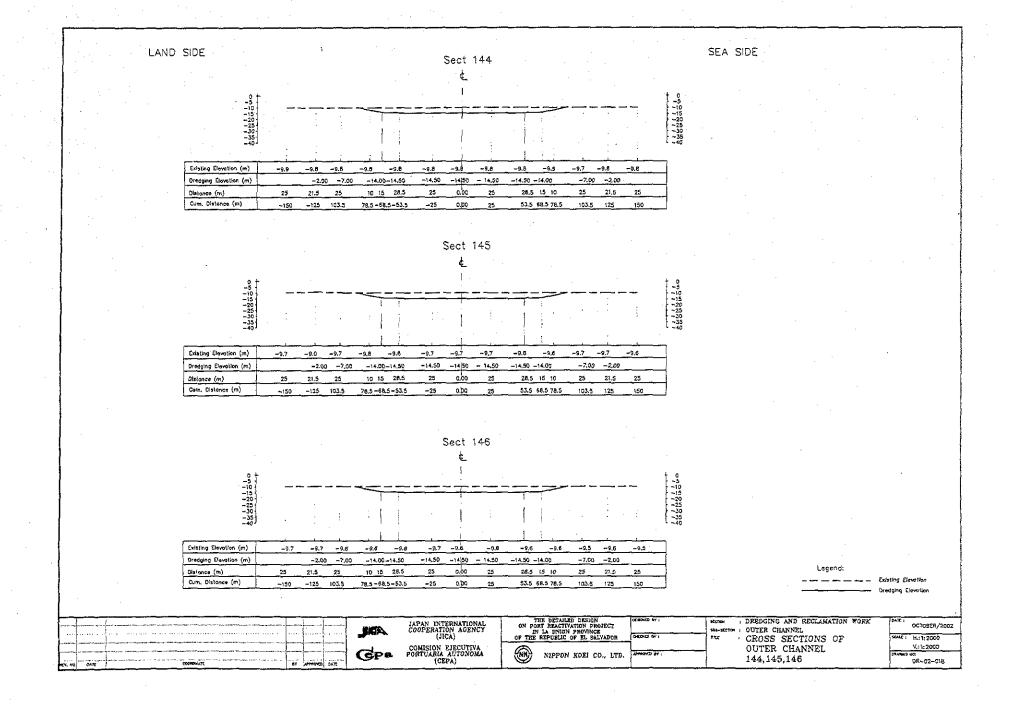


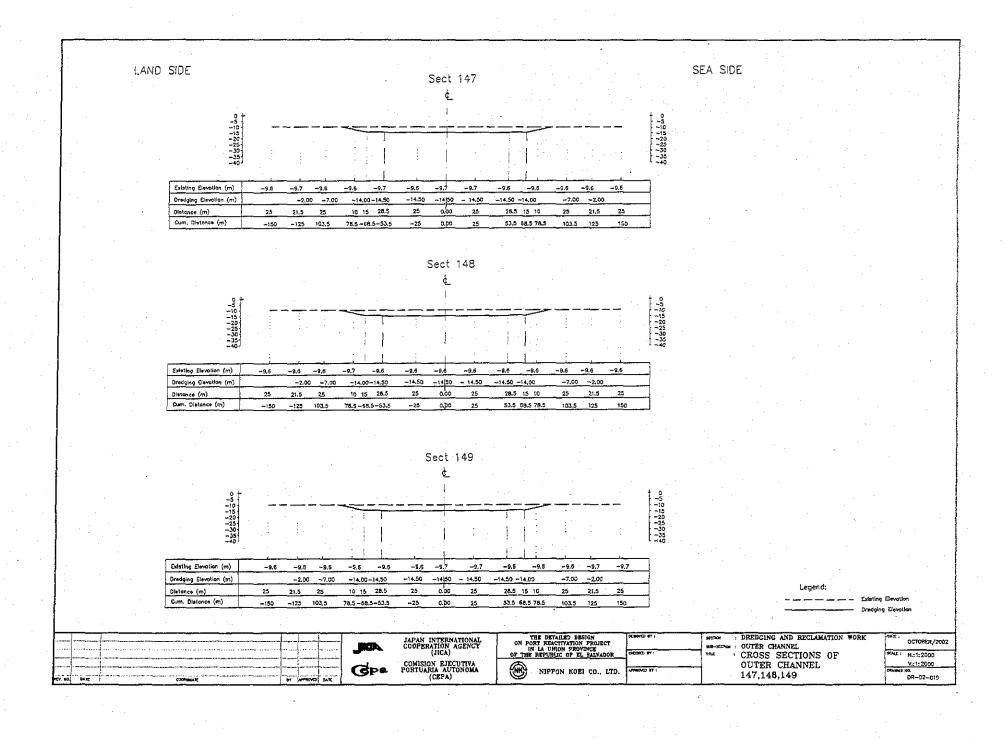


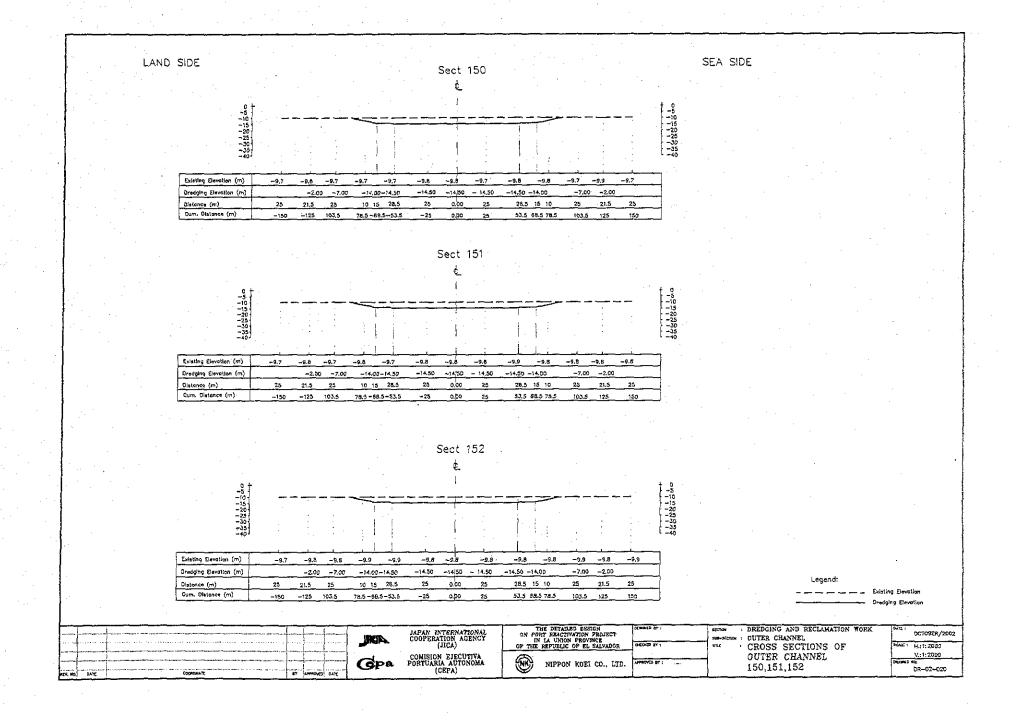


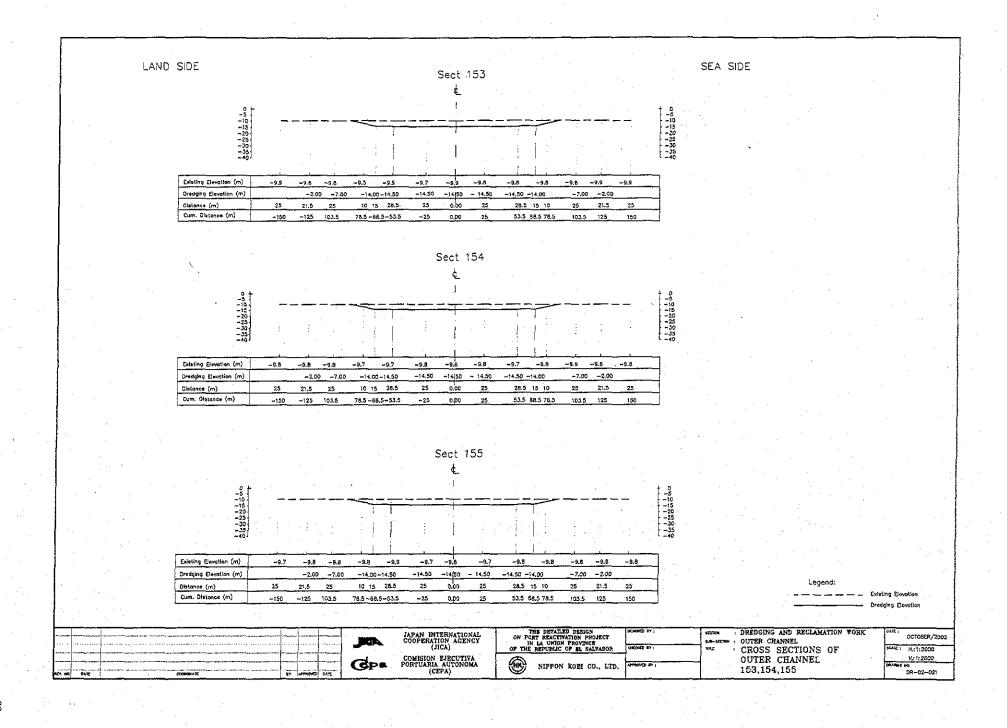


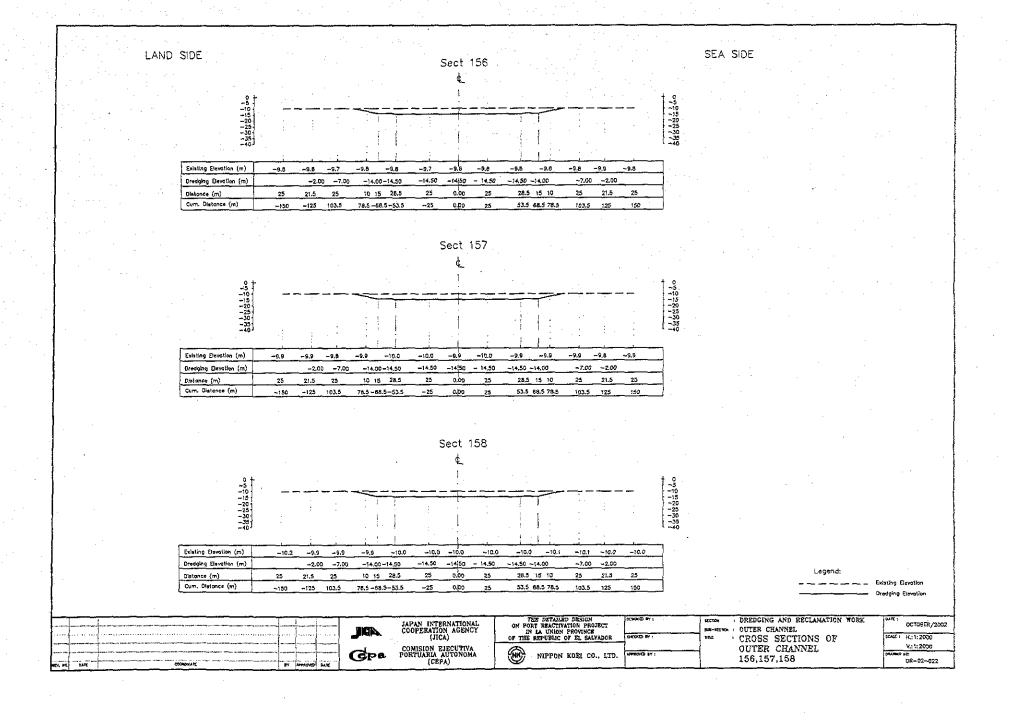


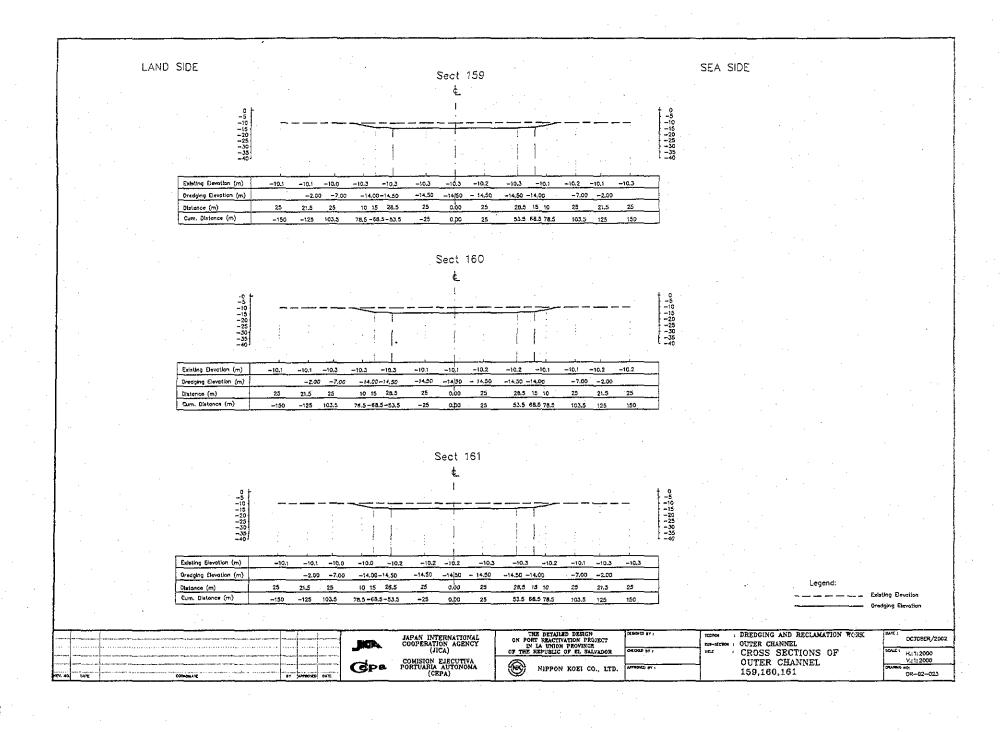


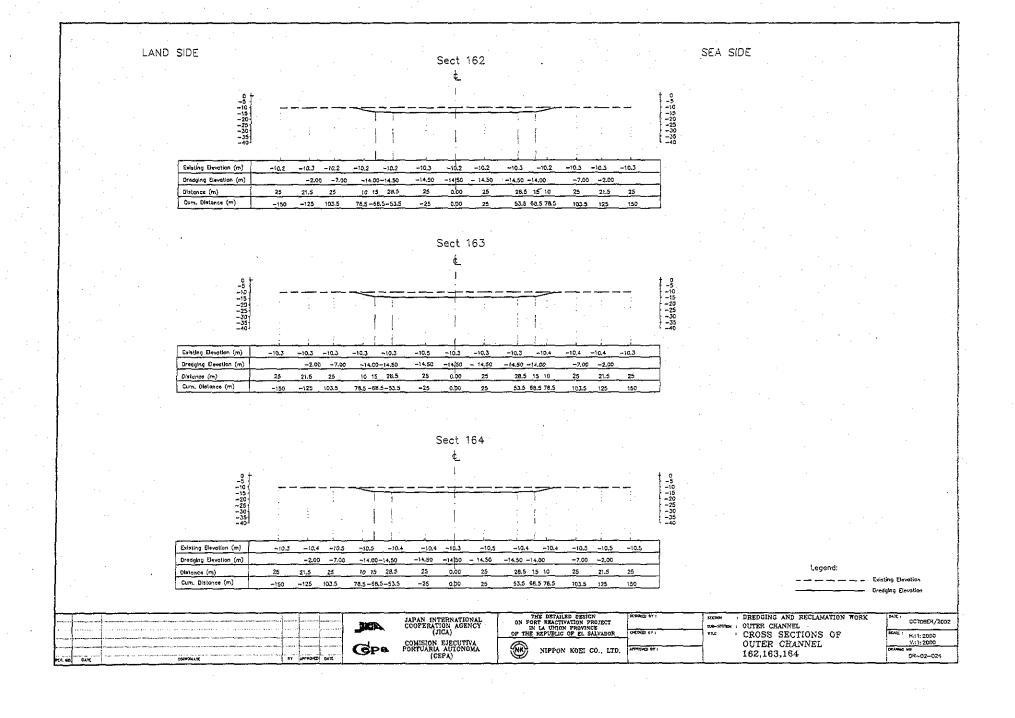


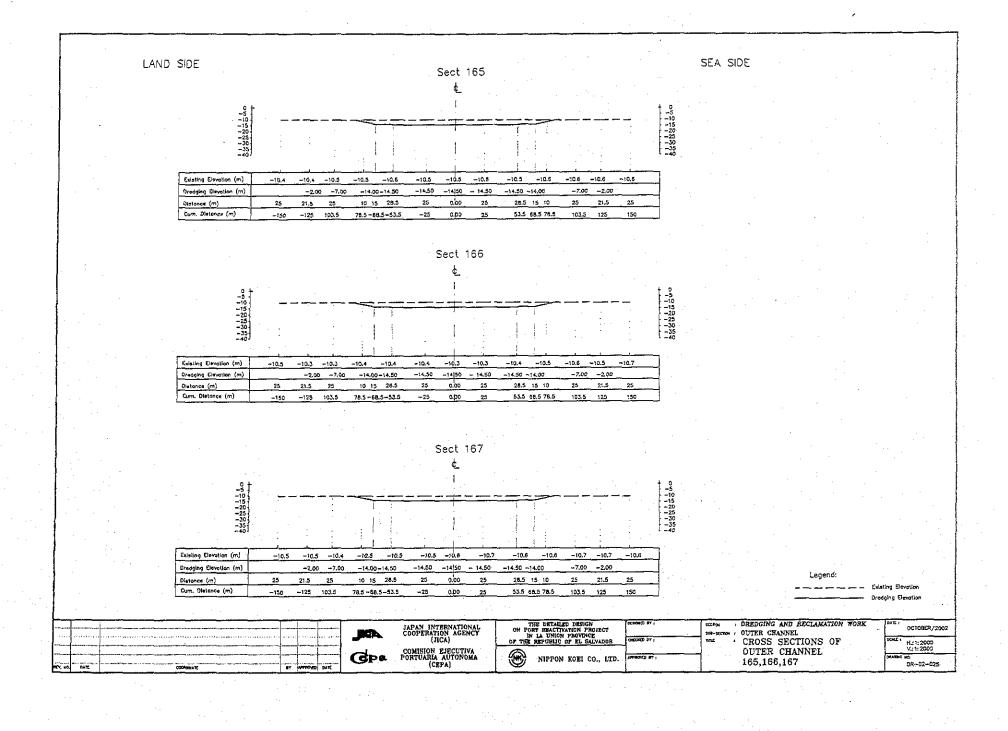


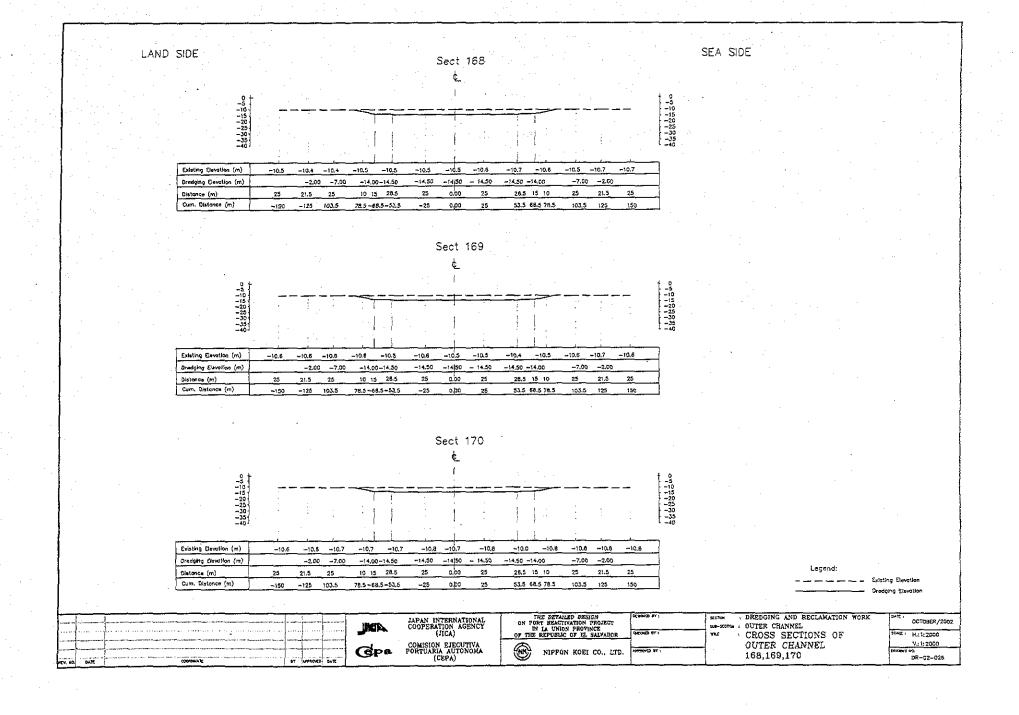


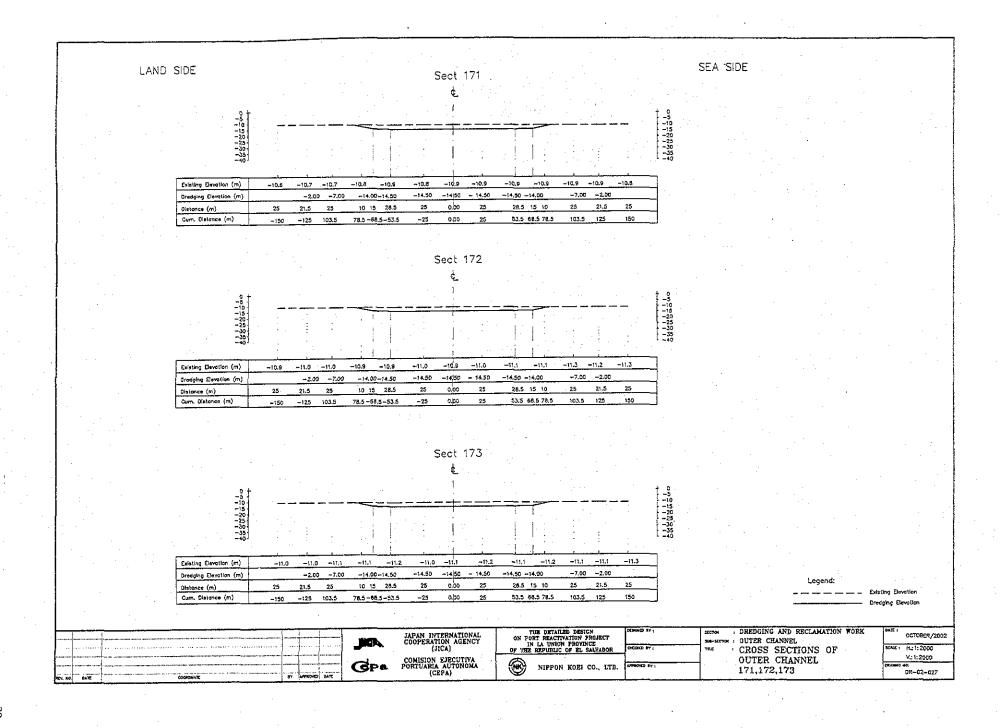


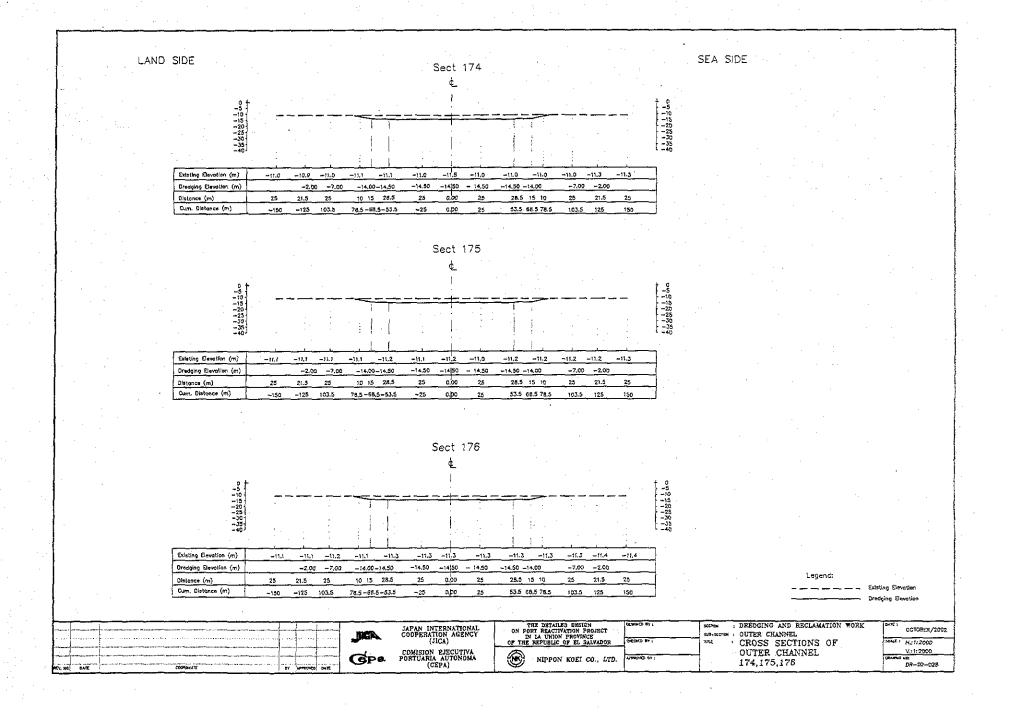


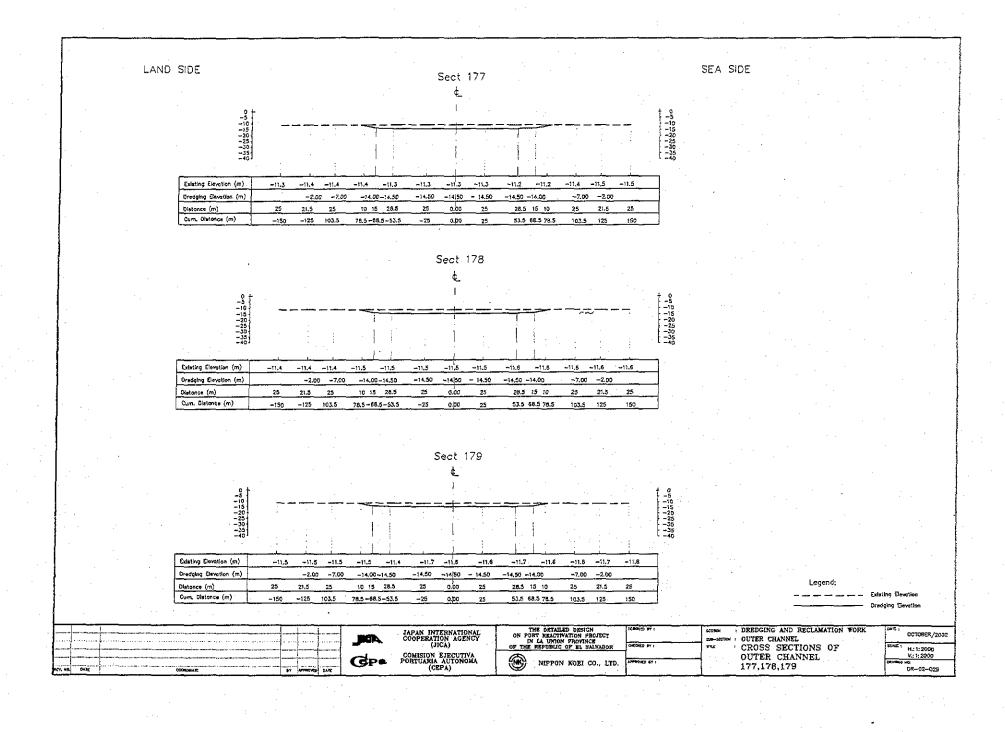


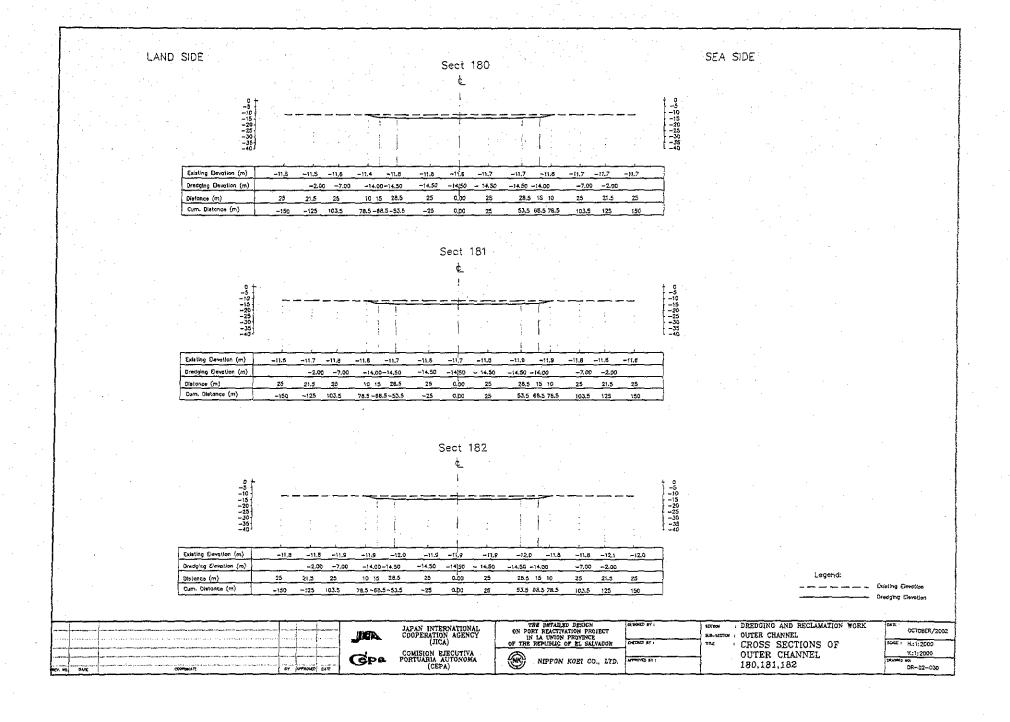


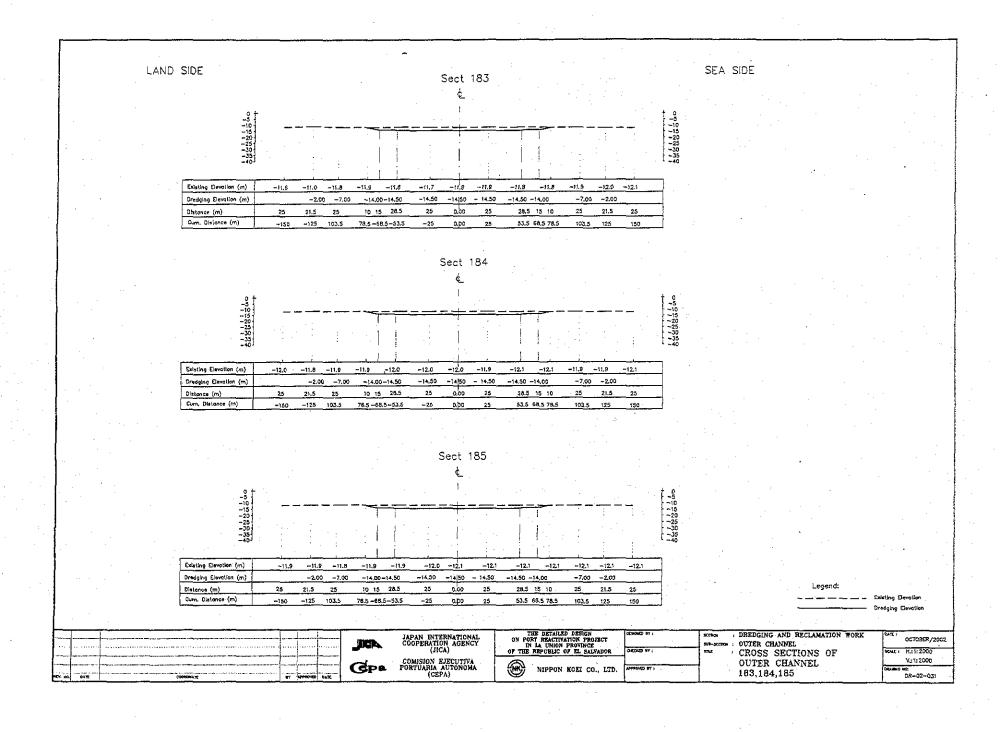


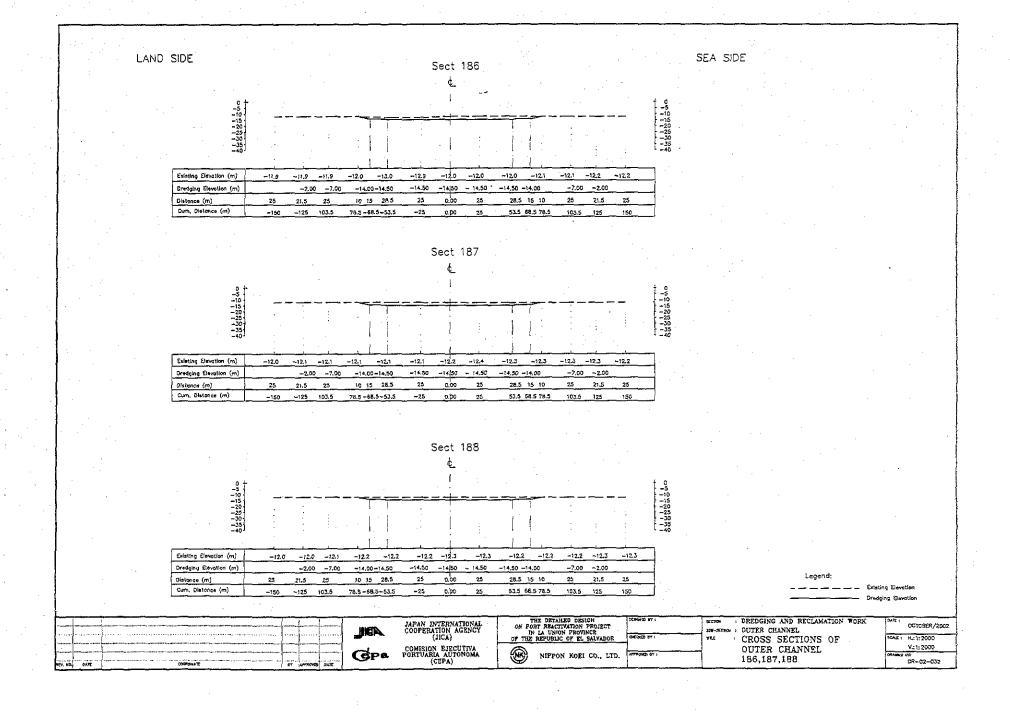


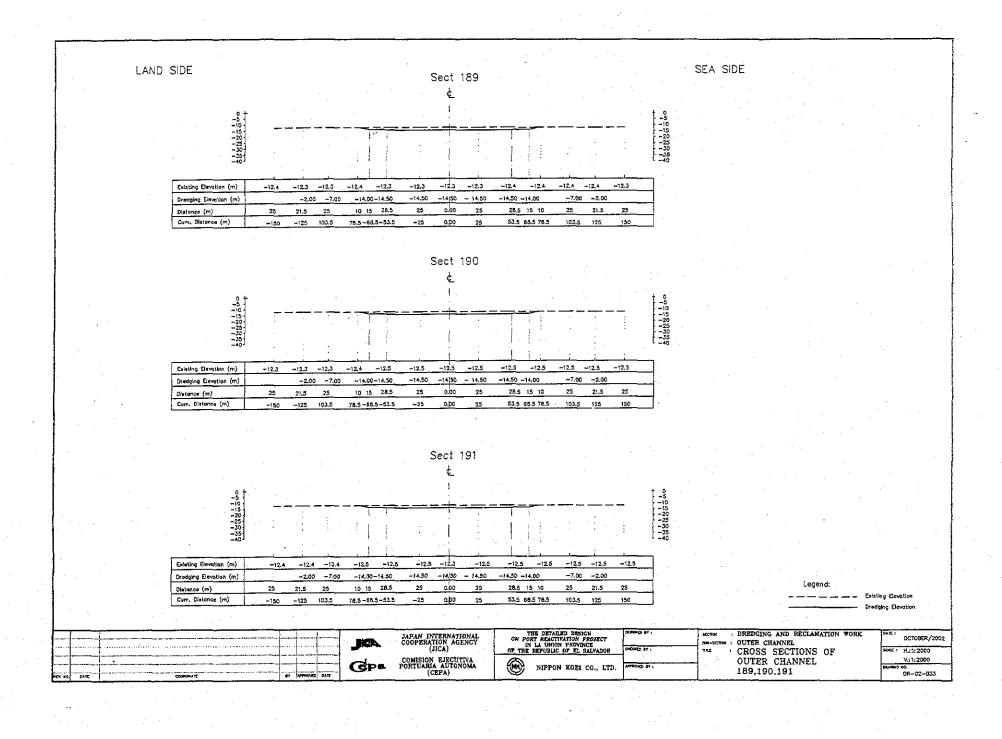


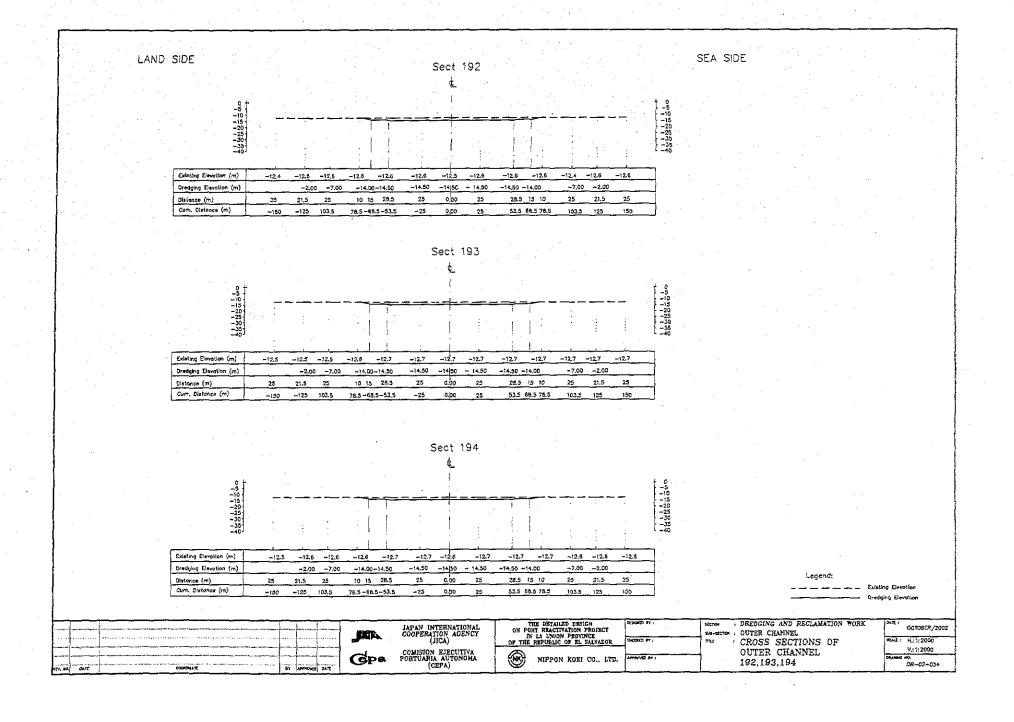


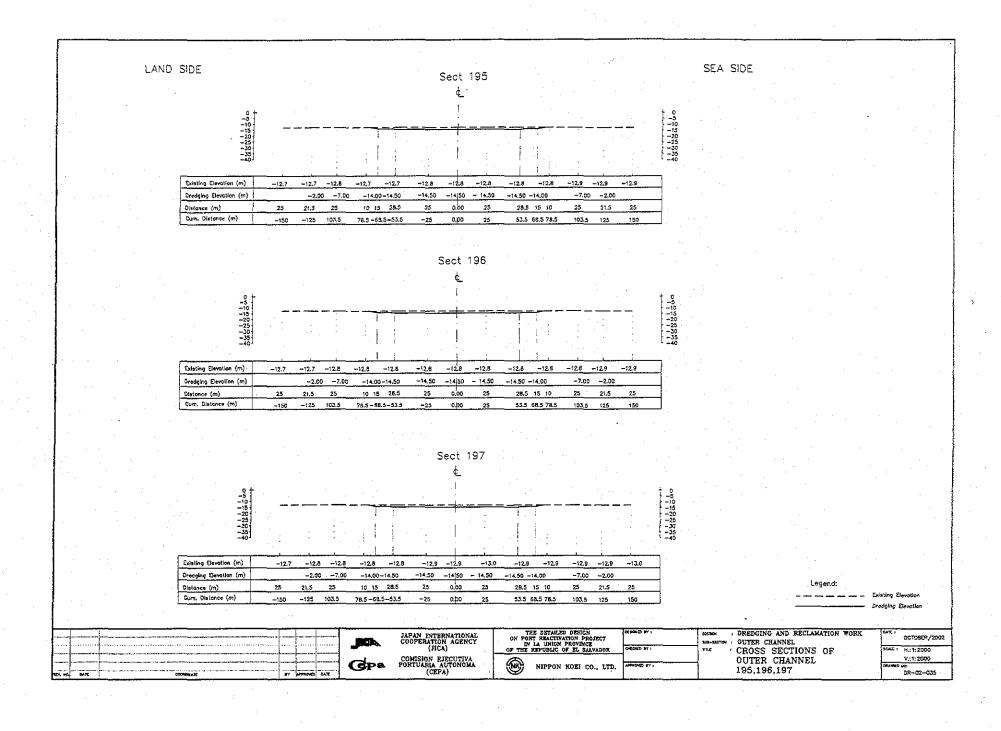


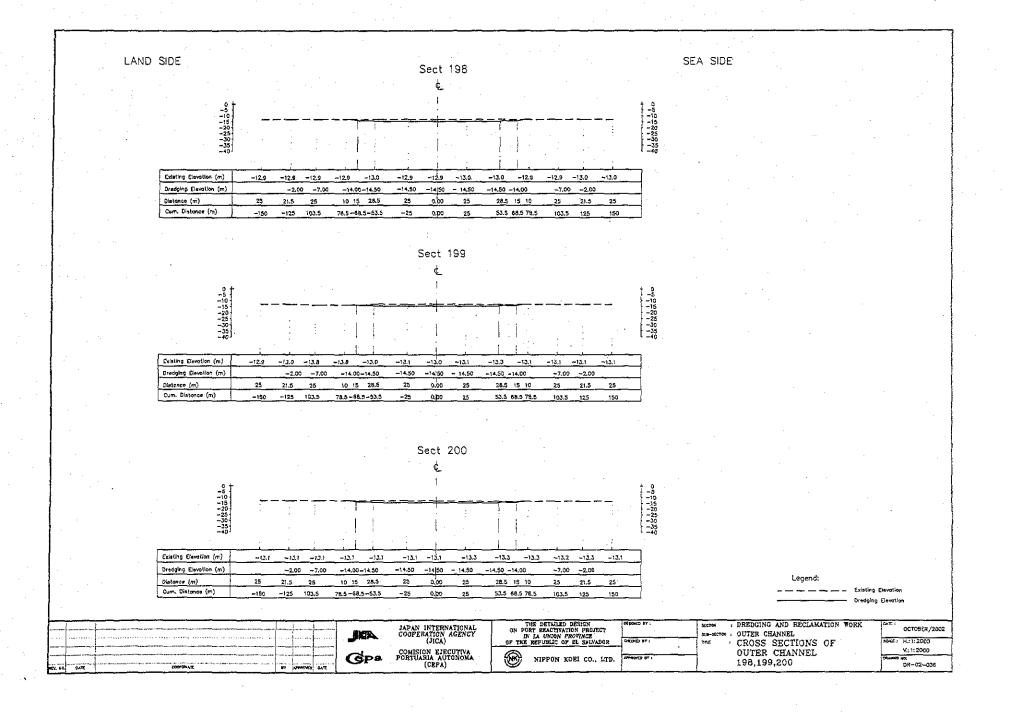


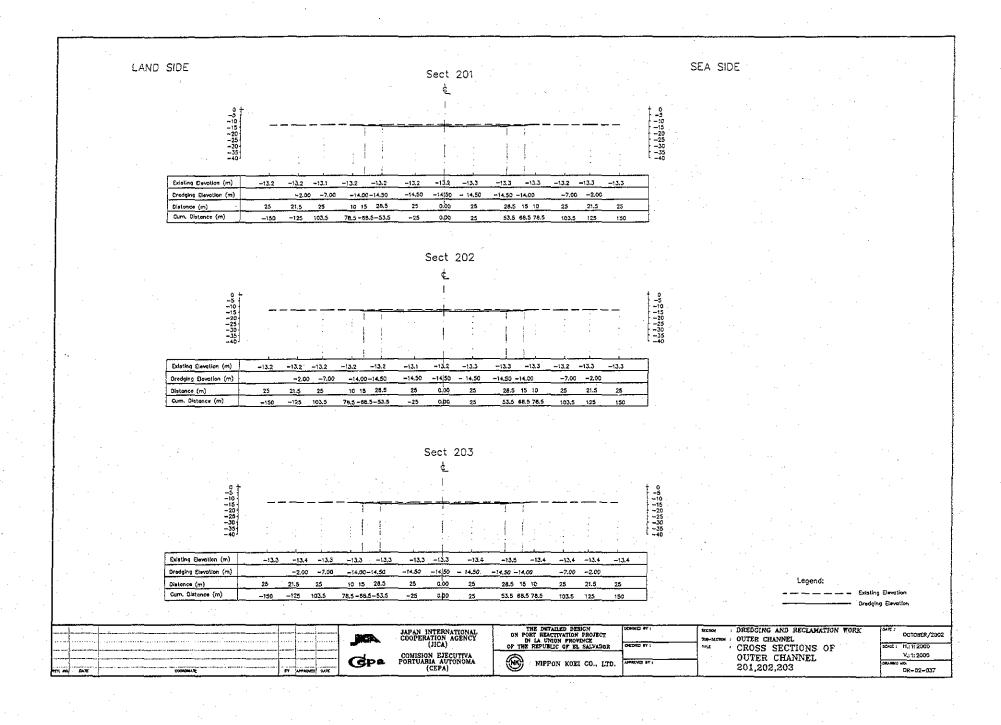


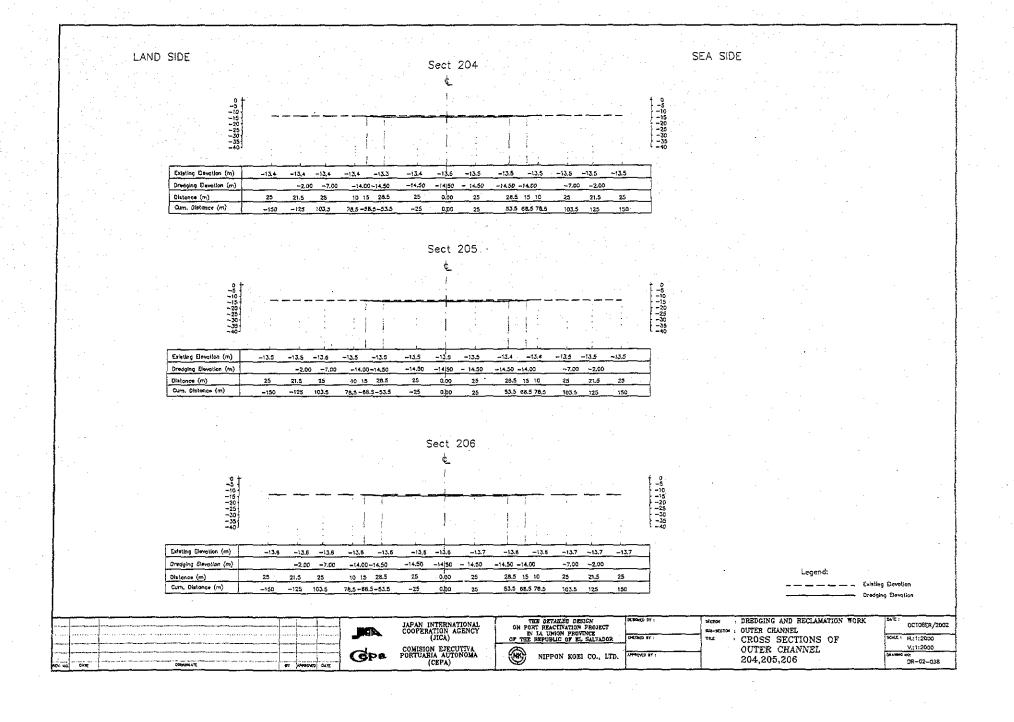


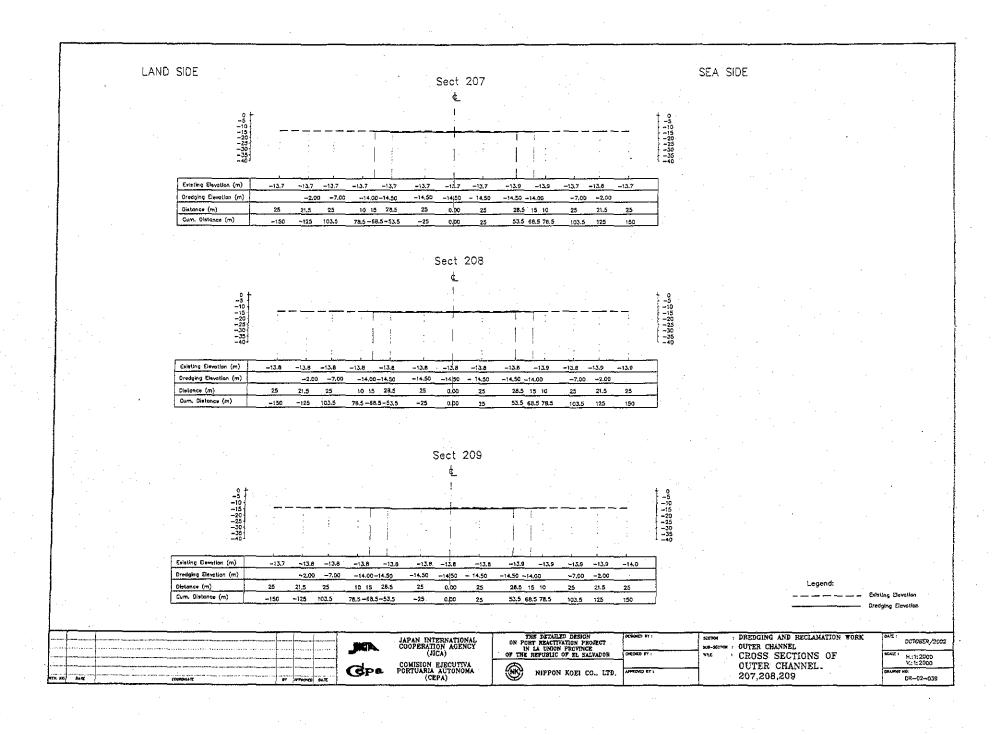


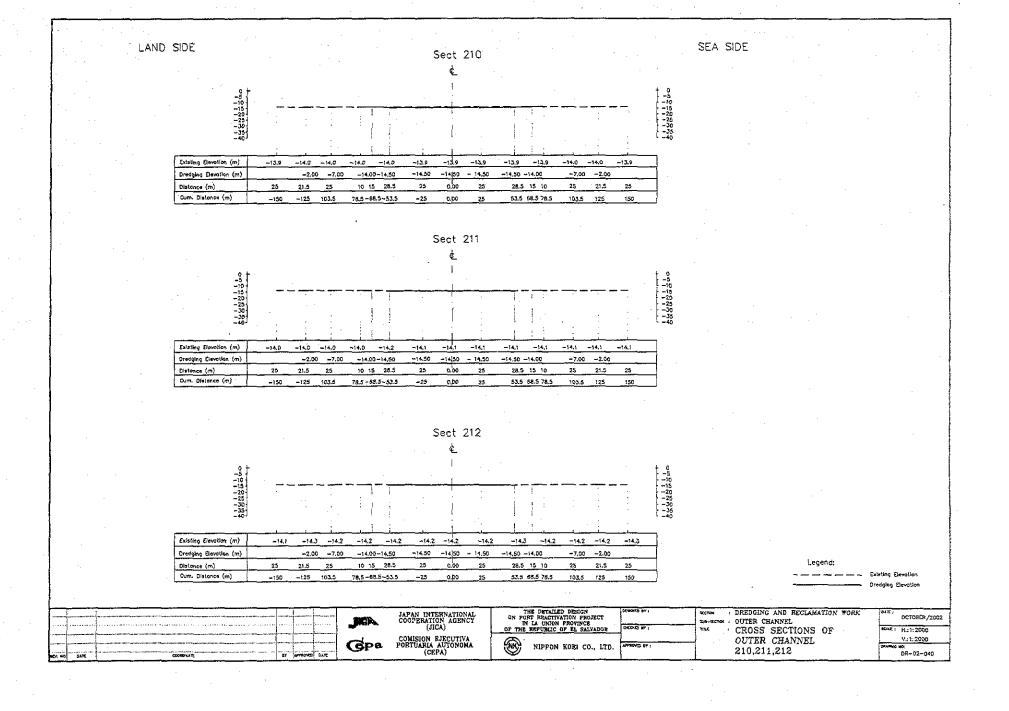


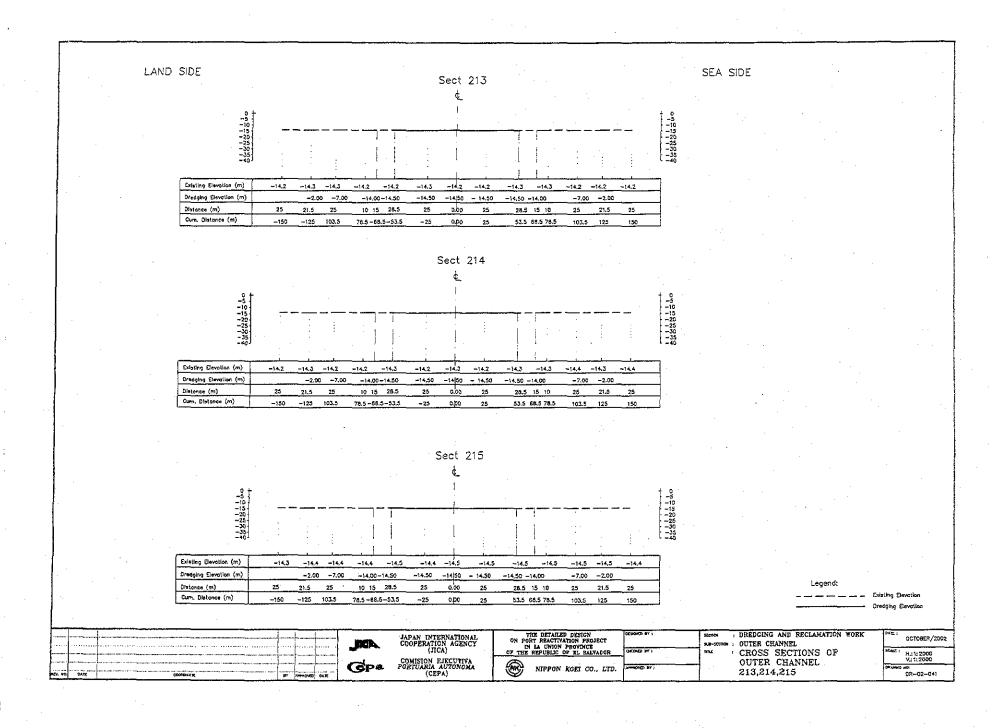












QUANTITY CALCULATION COVER SHEET										
Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001							
Work Section Title	Credgiva Work	Pay Item No. (BOQ)	2A-03							
Quantity Item	Inner Channel Dredging.	Unit	ms							
Calculation Procedu	re Applied (offshore dumping unping volume usas compated		he assumption							
	ove dumping volume was 74		• •							

References, Calculation Base and Revisions

Inner Channel Dredging (calculation by Errol)

Rev	Prer	ared	No. of	Chec	ked	Revi	ewed	Superseded
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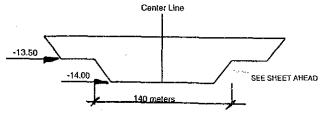
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Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code										
Work Section Title	Dredging Work	Pay Item No. (BOQ)	· · · · · · · · · · · · · · · · · · ·									
Quantity Item	Inner Channel Dredging (Sect. 0 to 50)	Unit	cubic meter									

Calculation Procedure Applied

- 1. Calculation of Areas of Sections (Excel)
- 2. Average of Areas of Sections (Excel)
- 3. Calculation of Volume: average of sections times distance between sections (Excel).

References, Calculation Base and Revisions

1. Typical Section of Inner Channel



- 2. Area and Volumes have been calculated starting from Section 0 up to Section 44, in accordance with the General Plan of Inner Channel dredging N° DW-DR-00-002. From Section 45 to 50 no dredging due to deeper than dredging elevation planned.
- 3. Design Information

Slope:

1:5 (vertical:horizontal)

Depth:

-14.0 meters

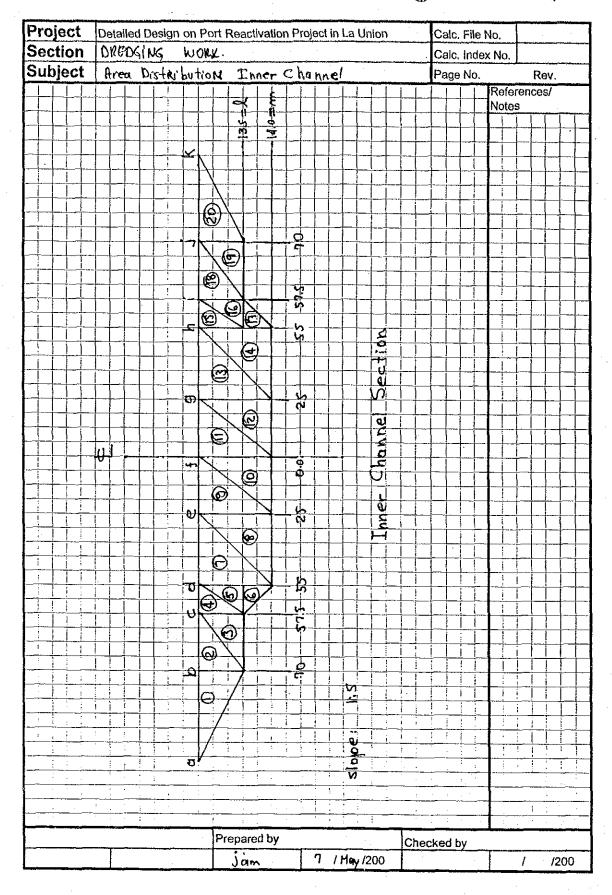
Width:

140 meters

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Project	Detailed Design on Port Reactivation P	oject in La Union	Calc, File N	lo.
Section	Dredging Work		Calc. Index	No.
	Area Calculation Inner Channel		Page No.	Rev.
				References/ Notes
_	area 1 = [(13.5 - b) x (13.5 - b) x (1/2		
	area 2 = [(13.5 - b) x 12.5] / 2			
	area 3 = [(13.5 - c) x 12.5] / 2			
	area 4 = [(13.5 - c) x 2.5] / 2			
_	area 5 = [(13.5 - d) x 2.5] / 2			
	area 6 = [(14.0 - 13.5) x 2.5] / 2			
	area 7 = [(14.0 - d) x 30] / 2			
	area 8 = [(14.0 - e) x 30] / 2			
	area 9 = [(14.0 - e) x 25] / 2			
	area 10 = [(14.0 - f) x 25] / 2			
	area 11 = [(14.0 - f) x 25] / 2			
	area 12 = [(14.0 - g) x 25] / 2			
	area 13 = [(14.0 - g) x 30] / 2			
	area 14 = [(14.0 - h) x 30] / 2			
1, 1, 1	area 15 = [(13.5 - h) x 2.5] / 2			
	area 16 = [(13.5 - i) x 2.5] / 2			
	area 17 = [(14.0 - 13.5) x 2.5] / 2			
	area 18 = [(13.5 - i) x 12.5] / 2			
	area 19 = [(13.5 - j) x 12.5] / 2			
	area 20 = [(13.5 - j) x (13.5 - j) x 5	1/2	 	
		- [
	In the second	1 1 1 1 1 1	}	
	Prepared by		Checked by	<u> </u>
	jam	7 / May /200	<u> </u>	/ /200