

### QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	COPING CONCRETE OF CAISSON	Pay Item No. (BOQ)	2C - 0901
Quantity Item	CONCRETE	Unit	m <sup>3</sup>

**Calculation Procedure Applied**

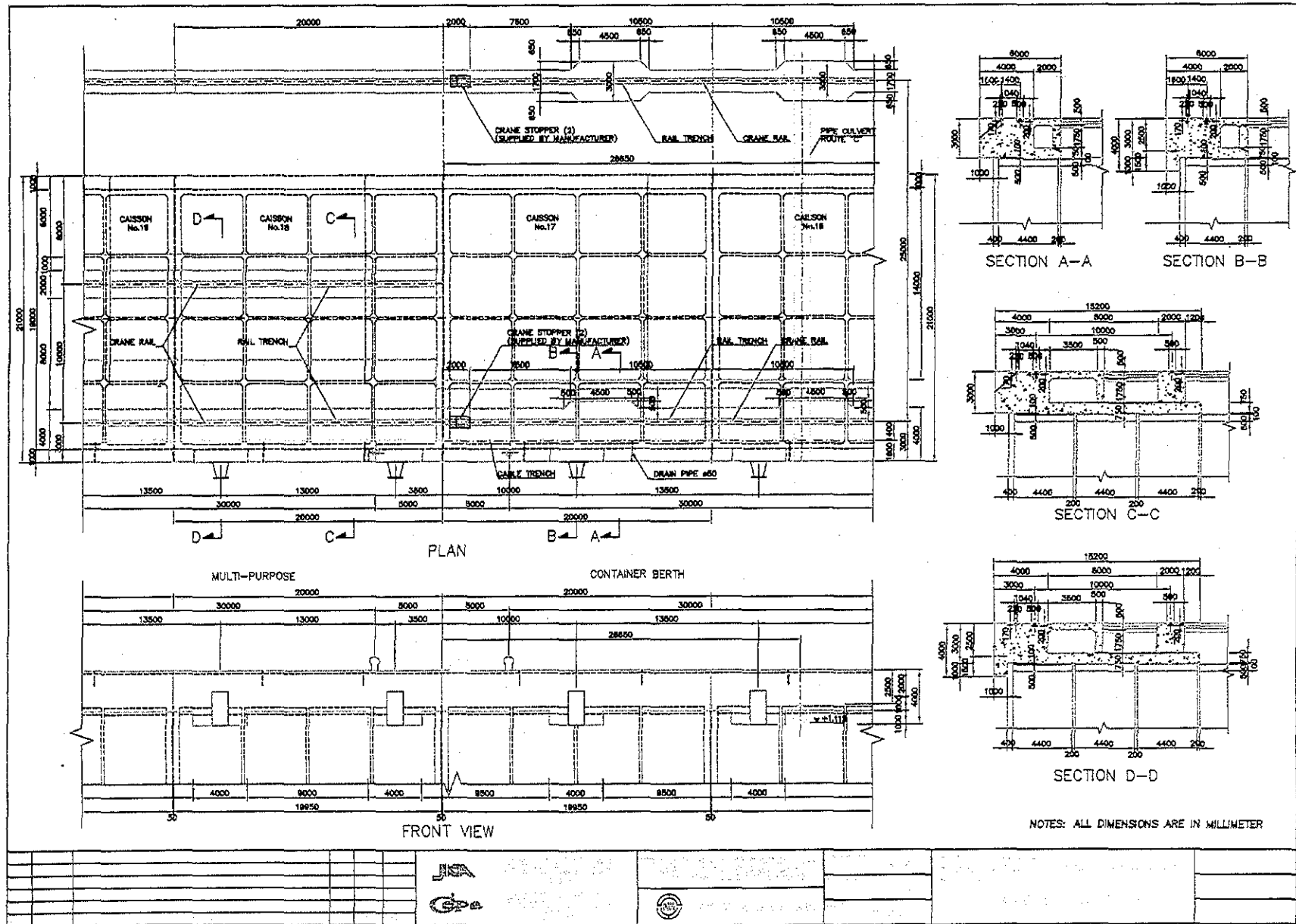
Concrete volume was computed for each type of coping.  
On the coping there are crane accessories, utility  
pits and so on. Concrete volume needs to be  
reduced by them.

**References, Calculation Base and Revisions**

References : Tender Drawings :

DW - QW - 01 - 043 Detail of Coping (2)  
 DW - QW - 01 - 044 Detail of Coping (3)  
 DW - QW - 01 - 045 Detail of Coping (4)  
 DW - QW - 01 - 059 Detail of Anchor - Jack up plate  
 DW - QW - 01 - 060 Detail of Crane End Support

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								







[illegible]

Technical drawing of a rectangular box. The main view shows a box with a width of 500 and a height of 400. The top flange has a thickness of 10. The side view shows a height of 630. A detail view of the top flange shows a width of 500 and a height of 10. The detail view also shows a section line with a break symbol.

Technical drawing of a mechanical part, likely a bracket or support, showing dimensions in millimeters. The drawing includes a top view and a side view. Key dimensions include: overall width 220, overall height 380, central width 350, and various internal features like holes and slots. The side view shows a total height of 135 and a base width of 150.

DRAIN PIPE

Plan view of the berth structure. The diagram shows a rectangular structure with a central 'JACK UP PLATE' and a 'SEA SIDE RAIL' on the right. Dimensions include a total width of 17200, a central width of 14400, and a distance of 1500 from the left edge to the start of the jack up plate. Other dimensions shown are 675, 750, and 750. Labels include 'BERTH LINE', 'ANCHOR SOCKET', 'CABLE TRENCH', 'SEA SIDE RAIL', and 'LAND SIDE RAIL'. A vertical dimension of 25000 is indicated on the right side.

**SECTION A-A**

65

DETAIL OF CRANE END STOPPER EAST SIDE (CONTAINER)

[illegible]

TABLE OF REINFORCEMENT (Multi-purpose Berth Coping )

	D	L (m)	Qty	W/bar (kg)	W (kg)	Remarks
D1-1	D16	8.00	216 ✓	12.48	2695.68	
D1-2	D16	8.00	216 ✓	12.48	2695.68	
D1-3	D16	4.80	216 ✓	7.488	1617.408	
D2-1	D16	8.00	6 /	12.48	74.88	
D2-2	D16	8.00	6 /	12.48	74.88	
D2-3	D16	4.95	6 /	7.722	46.332	
D3-1	D22	8.00	80 /	24.32	1945.6	
D3-2	D22	8.00	80 /	24.32	1945.6	
D3-3	D22	5.20	80 /	15.808	1264.64	
D4-1	D25	8.00	76 /	31.84	2419.84	
D4-2	D25	8.00	76 /	31.84	2419.84	
D4-3	D25	5.30	76 /	21.094	1603.144	
D5 /	D16	3.60	26 /	5.616	146.016	
E1 /	D16	3.80	38 ✓	5.928	225.264	
E2 /	D16	2.80	102 /	4.368	445.536	
E3 /	D16	2.70	200 /	4.212	842.4	
E4 /	D16 /	2.65	200 /	4.134	826.8	
F1 /	D25 /	4.70	300 /	18.706	5611.8	
F2 /	D25 /	8.00	100 /	31.84	3184	
F3 /	D16 /	2.00 /	100 /	3.12	312	
F4-1 /	D19 /	7.80 /	200 /	17.55	3510	
F4-2 /	D19 /	8.00 /	200 /			
Y1	D16	1.01 /	2100 /	1.58184	3321.864	
Y2	D16	2.90	38 /	4.524	171.912	
Y3	D16	1.70 /	100 /	2.652	265.2	
Y4	D16	1.50 /	300 /	2.34	702	
Y5	D16	0.95 /	100 /	1.482	148.2	
Y6	D16	2.70 /	300 /	4.212	1263.6	
Y7	D16	2.65 /	200 /	4.134	826.8	
Y8	D16	0.95 /	1800 /	1.482	2667.6	
Y9	D16	1.00 /	400 /	1.56	624	
Y10	D16	1.80 /	100 /	2.808	280.8	
H2	D16	1.02 /	200 /	1.5912	318.24	
				Sub Total	44497.6 kg	
					44.50 ton	(11) = 489.50 ton

≈ 490 ton

04 June /2002



## Concrete Volume of Coping of Caisson

		Crane	Pit	Other	Volume
Container Berth	No.1	316.8	0.73	0.69	316.76
	No.2	320.8			320.8
	No.3	316.8	1.07		315.73
	No.4	320.8			320.8
	No.5	316.8			316.8
	No.6	320.8			320.8
	No.7	316.8	1.07		315.73
	No.8	320.8			320.8
	No.9	316.8			316.8
	No.10	320.8			320.8
	No.11	316.8	1.07		315.73
	No.12	320.8	11.52		309.28
	No.13	316.8			316.8
	No.14	320.8	1.82		318.98
	No.15	316.8	1.82	1.07	313.91
	No.16	320.8	1.82		318.98
	No.17	316.8	2.55		314.25
	End Block	64.6			64.6
	Total				5,460 m3
Multi-purpose Berth	No.18	586.8			586.8
	No.19	582.8	1.07		581.73
	No.20	586.8	16.2		570.6
	No.21	582.8			582.8
	No.22	586.8	12.08		574.72
	No.23	582.8	13.15		569.65
	No.24	586.8	12.08		574.72
	No.25	582.8			582.8
	No.26	586.8			586.8
	No.27	582.8	1.82	1.07	579.91
	No.28	586.8	2.55		584.25
	End Block	50.8			50.8
	Total				6,430 m3

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	CONCRETE	Page No. 2	Rev.

$  \begin{aligned}  A &= (3m)(1m) + (1m)(1m) + (14.20)(0.75) + (4.4)(0.1)(3) + \\  &\quad (2.25)(0.48) + (0.23)(2.08) + (2.25)(1.04) + (0.5)(2.05) + (2.25)(0.75) + \\  &\quad (0.70 + 0.50)(0.30)(2) + (2.90)(0.50) + (0.50) \\  &\quad (2.25) + (0.75)(2.25)(2) + (4.5)(2.05) \\  &= 29.94 \text{ m}^2 \\  A_2 &= 29.94 - (1)(1) = 28.94 \text{ m}^2 \\  V_1 &= (29.94 \text{ m}^2)(8m) + (28.94 \text{ m}^2)(12m) = 586.80 \text{ m}^3 \\  V_2 &= (29.94 \text{ m}^2)(4m) + (28.94 \text{ m}^2)(16m) = 582.80 \text{ m}^3  \end{aligned}  $	References/ Notes
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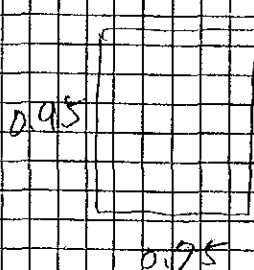
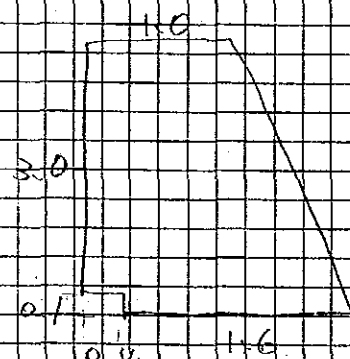
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<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	CODING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	CONCRETE	Page No. 3	Rev.
<p>Socket Block (1 hole)</p> $0.45 \times 1.0 \times 0.3 = 0.135$ <p>Cone Anchoring frame (2 holes)</p> $0.80 \times 0.75 \times 1.4 \times 2 = 1.68$ $1.68 + 0.135 = 1.82 \text{ m}^3$ <p>And Stopper :</p> $0.8 \times 1.40 \times 0.65 = 0.73 \text{ m}^3$		References/Notes	
Prepared by		Checked by	
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W.L.P.

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of caisson.	Calc. Index No.	
<b>Subject</b>	CONCRETE (PIT AND END BLOCK)	Page No. 4	Rev.

References/Notes	
<p>Water Pit</p>  $0.95 \times 0.95 \times 1.5$ $= 1.07 \text{ m}^3$	
<p>End Block</p>  $A = 3.0 \times 0.4 + \frac{(2.6 + 1.6) \times 3.0}{2}$ $= 4.61$ $4.61 \times 11 = 50.8 \text{ m}^3$	

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Mult. P

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	CONCRETE (PIT)	Page No. 5	Rev.

<p>Loading Pit</p>	<p>Cross Section</p> $A = 0.8 \times 0.4 + (0.8 + 1.5) \times 0.1 + 1.5 \times 1.5$ $= 2.685 \text{ m}^2$ $V = 2.685 \times 4.5$ $= 12.08 \text{ m}^3$	References/Notes
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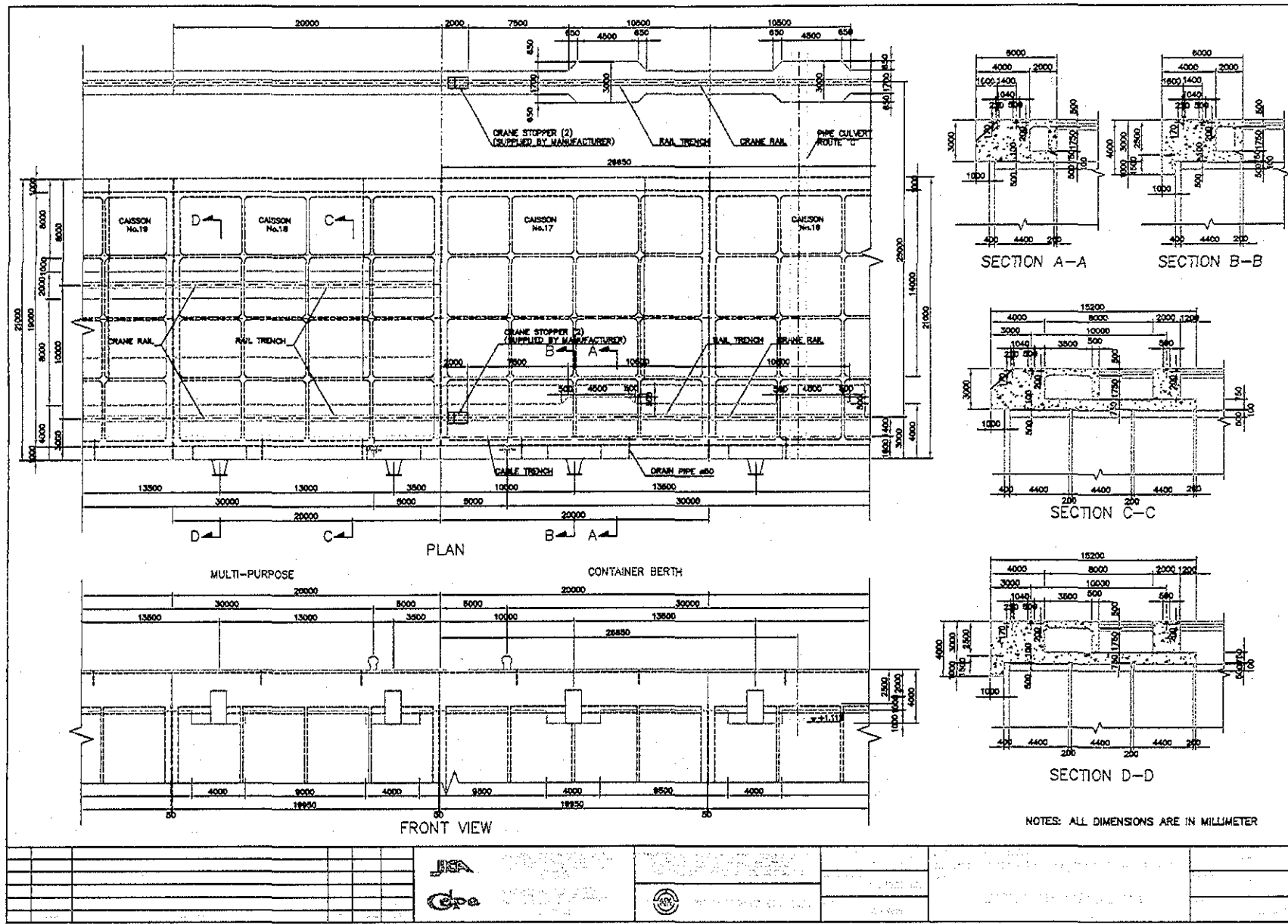
  

<p>Electrical Pit (large)</p>	$2.0 \times 1.8 \times 4.5$ $= 16.2 \text{ m}^3$	
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QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0902			
<b>Quantity Item</b>	ELAS TIGH BOARD (MULTI-PURPOSE BEATH)			<b>Unit</b>	m <sup>2</sup>			
<b>Calculation Procedure Applied</b> <div style="margin-top: 10px;"> <p>Elas tigh board will be used on every 20 m as a joint.</p> </div>								
<b>References, Calculation Base and Revisions</b> <div style="margin-top: 10px;"> <p>References: Tender Drawings: bw - 2w - 01 - 043 Detail of coping (2)</p> </div>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Kaila Garcia			Mr. Inuma		Mr. Ando		
1								
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<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	ELAS TIGH BOARD	Page No.	Rev.

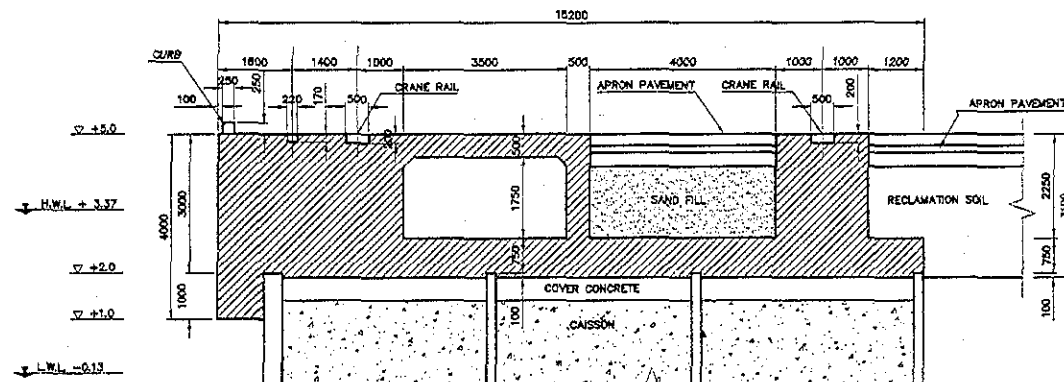
References/Notes	References/Notes
$  \begin{aligned}  A &= (3.00)(15.20) - (0.17)(0.22) - (0.20)(0.50) - \\  &\quad (3.50)(1.75) + \frac{(0.20)(0.30)}{2}(2) - (2.25)(4) - \\  &\quad (0.30)(0.20) - (2.25)(1.20) \\  &= 27.60 \text{ m}^2  \end{aligned}  $ $  A = (27.60 \text{ m}^2)(10) = \boxed{276 \text{ m}^2}  $	

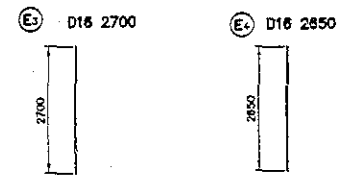
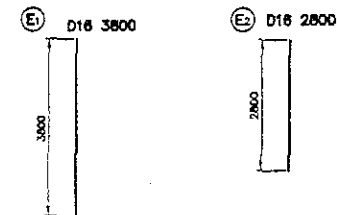
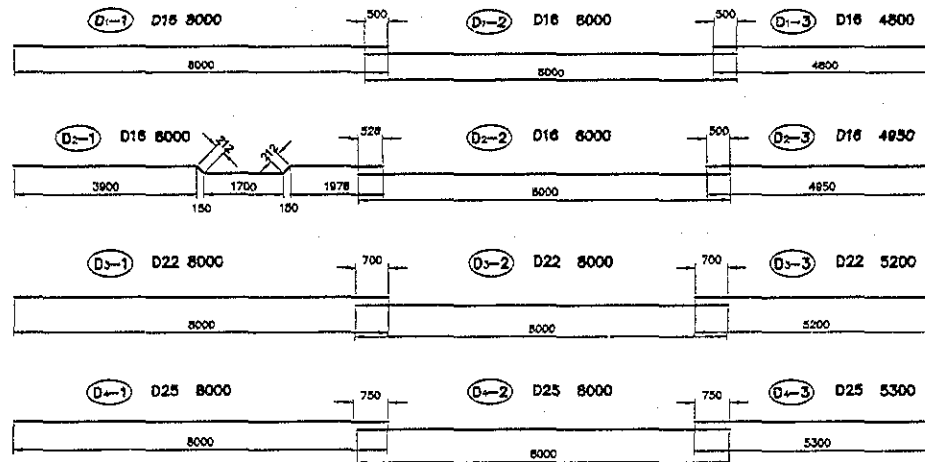
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QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0903			
<b>Quantity Item</b>	REINFORCEMENT			<b>Unit</b>	ton			
<b>Calculation Procedure Applied</b>  Reinforcement was computed using the details of coping bars with the types lengths. From reinforcement plans, the detail of number of bars per each type was obtained.								
<b>References, Calculation Base and Revisions</b>  Reference : Tender Drawings: From DW - AW - 01 - 050 Reinforcement of Coping Concrete (4) To DW - AW - 01 - 055 " " (9)								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Sonia G. S.	4 June/02		Mr. Inuma		Mr. Ando		
1								
2								
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TYPICAL SECTION



NOTES:  
 -THIS DRAWING IS APPLIED  
 FOR CAISSON No. (8), OF  
 CONTAINER BERTH  
 -THE SHOP DRAWING FOR  
 OTHER COPING SHALL BE  
 PREPARED THE CONTRACTOR

REV.	NO.	DATE	DESCRIPTION	BY	APPROVED	DATE

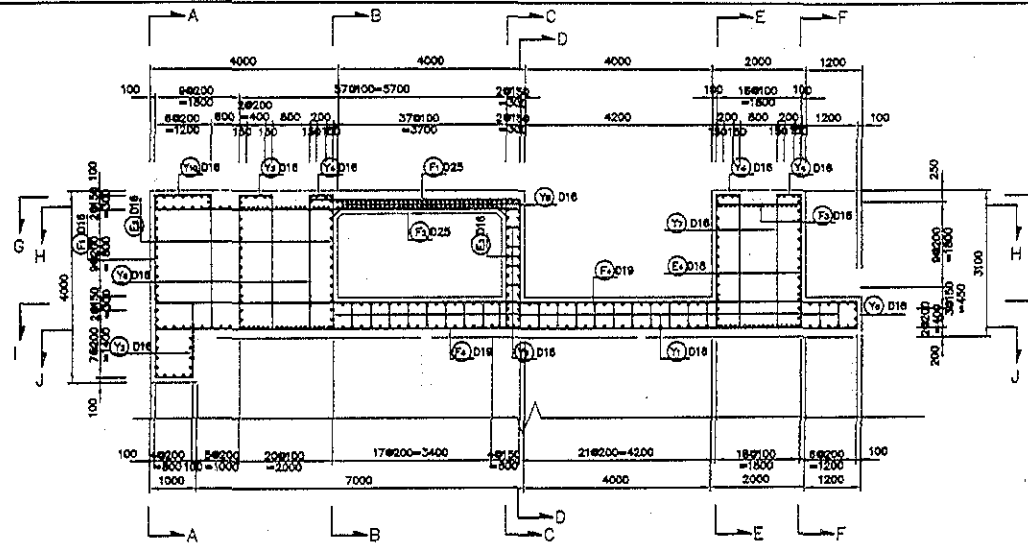
**JICA**  
 JAPAN INTERNATIONAL  
 COOPERATION AGENCY  
 (JICA)  
**GP**  
 COMISION EJECUTIVA  
 PORTUARIA AUTONOMA  
 (CEPA)

DETAILED DESIGN ON PORT REACTIVATION  
 PROJECT IN LA UNION PROVINCE  
 OF THE REPUBLIC OF EL SALVADOR  
**NIPPON KOEI CO., LTD.**

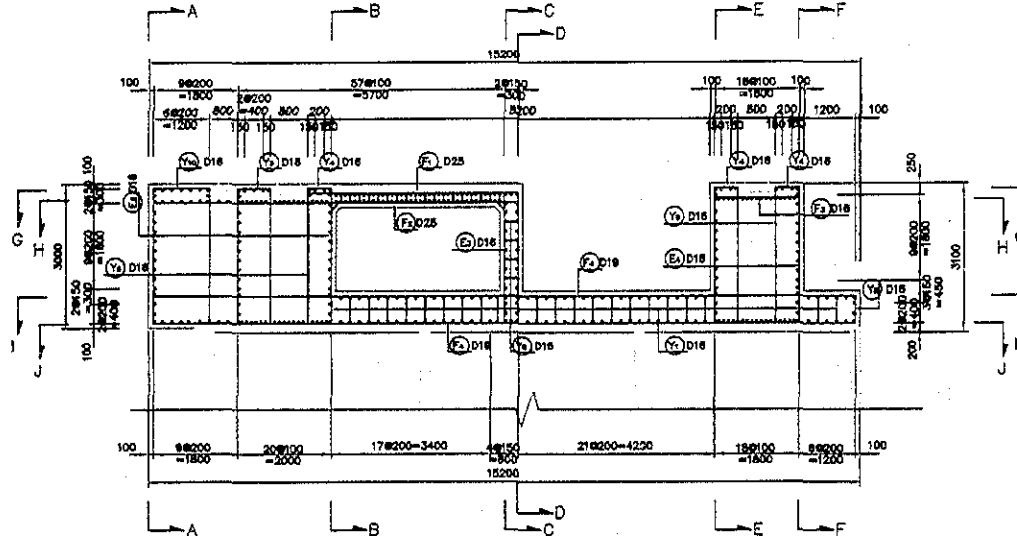
DESIGNED BY:  
 CHECKED BY:  
 APPROVED BY:

SECTION : QUAYWALL WORK  
 SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH  
 TITLE : REINFORCEMENT OF COPING  
 CONCRETE (4)  
 (MULTI-PURPOSE)

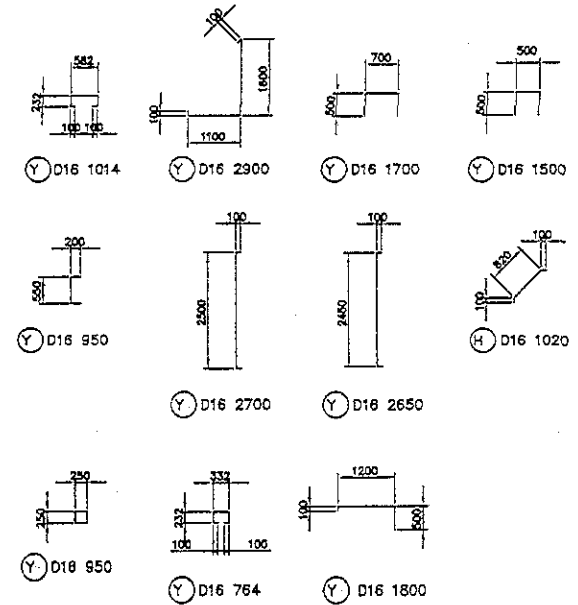
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SECTION K-K



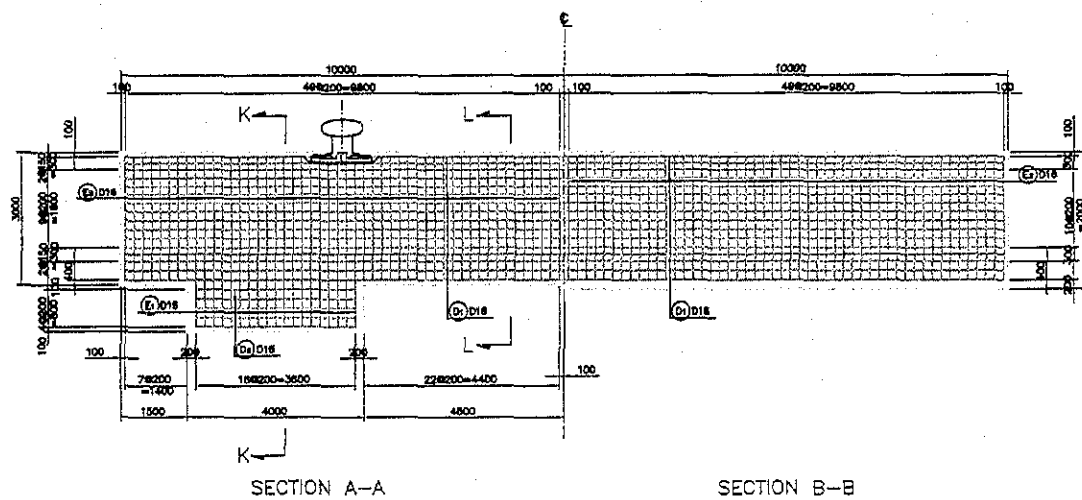
SECTION L-L



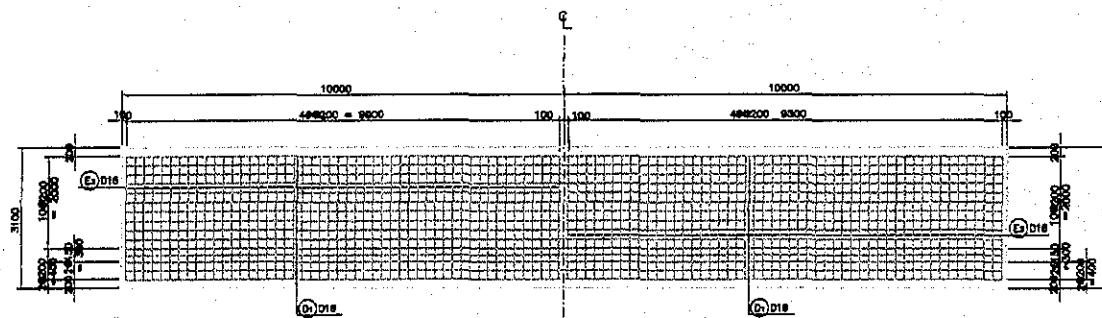
NOTES:  
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FOR CAISSON No. (8), OF  
CONTAINER BERTH  
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OTHER COPING SHALL BE  
PREPARED THE CONTRACTOR

JICA  
GPO



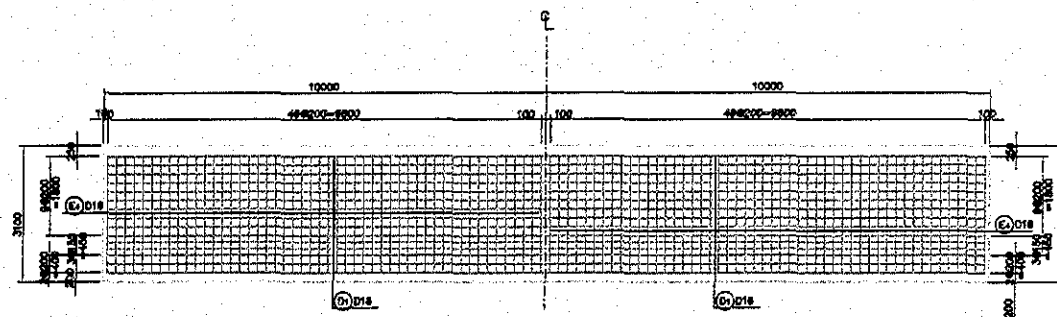


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SECTION C-C

SECTION D-D

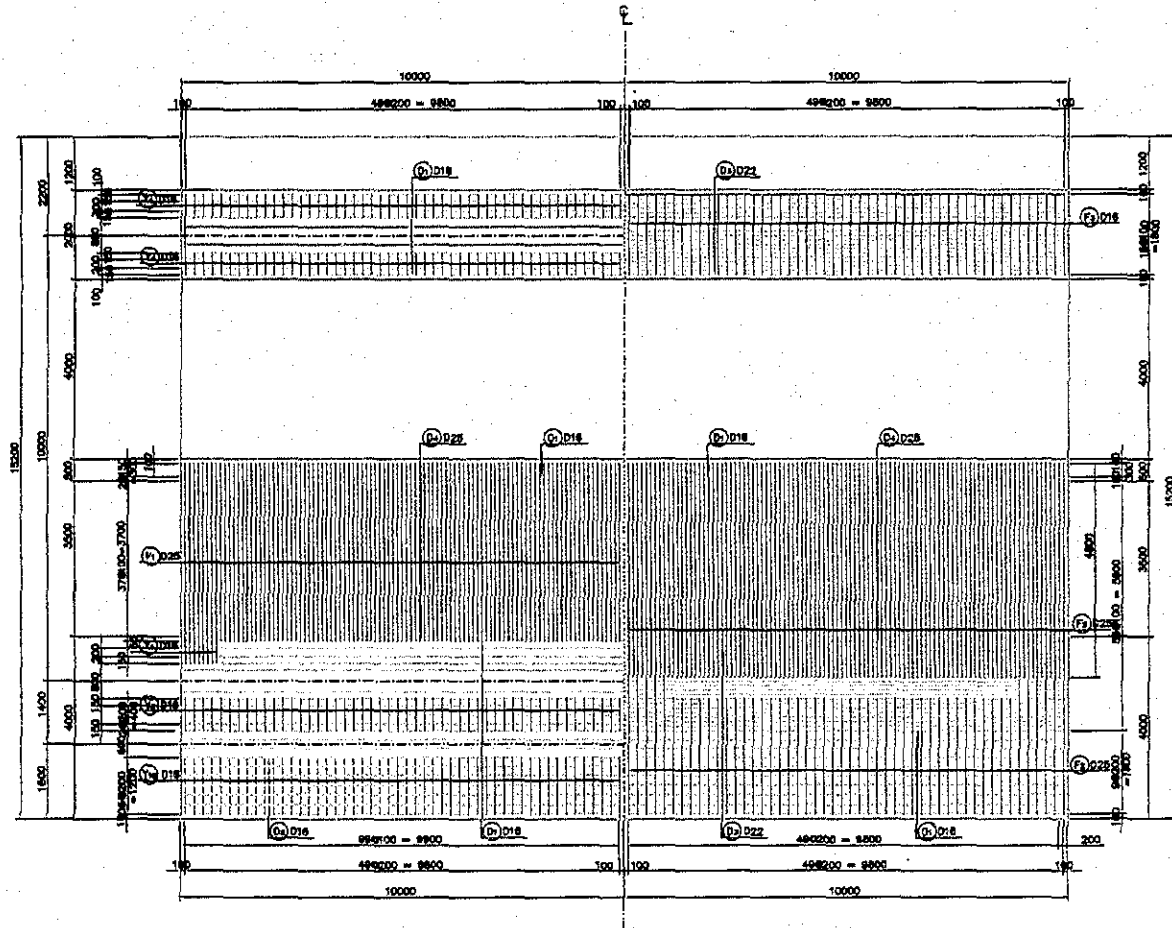


SECTION E-E

SECTION F-F

NOTES:  
 -THIS DRAWING IS APPLIED  
 FOR CAISSON No. (2), OF  
 CONTAINER BERTH  
 -THE SHOP DRAWING FOR  
 OTHER COPING SHALL BE  
 PREPARED THE CONTRACTOR

JICA																
Gpa																



SECTION G-G

SECTION H-H

NOTES:  
 -THIS DRAWING IS APPLIED  
 FOR CAISSON No. (B), OF  
 CONTAINER BERTH  
 -THE SHOP DRAWING FOR  
 OTHER COPING SHALL BE  
 PREPARED THE CONTRACTOR

JIA  
 GPa



MINISTRY OF TRANSPORT AND INFRASTRUCTURE  
 REPUBLIC OF VIETNAM



<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	REINFORCEMENT	Page No.	Rev.

$W = (44.50 \text{ kg}) (11) = 489.50 \text{ ton}$		References/ Notes
$\approx 490 \text{ ton}$		

Prepared by		Checked by	
	/ /200		/ /200



### QUANTITY CALCULATION COVER SHEET

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province	<b>Project Code</b>	JC1N004/2N001
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON	<b>Pay Item No. (BOQ)</b>	20-0904
<b>Quantity Item</b>	Form	<b>Unit</b>	m <sup>2</sup>

Calculation Procedure Applied

Form of coping concrete was computed for  
Multi-purpose berth.

References, Calculation Base and Revisions

References : Tender Drawings :

DW-QW-01-043 Detail of Coping (2)  
 DW-QW-01-044 Detail of Coping (3)  
 DW-QW-01-045 Detail of Coping (4)  
 DW-QW-01-059 Detail of Anchor-Jack up Plate  
 DW-QW-01-060 Detail of Crane End Stopper

(Same as "Concrete")

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	CODING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	FORM	Page No.	Rev.

References/  
Notes

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/ /200	/ /200

# Volume Coping of Caisson

## Form of Coping of Caisson

		Crane	Stopper	Other	sqm
Container Berth	No.1	270.65	2.9		274
	No.2	262			262
	No.3	256			256
	No.4	262			262
	No.5	256			256
	No.6	262			262
	No.7	256			256
	No.8	262			262
	No.9	256			256
	No.10	262			262
	No.11	256			256
	No.12	262			262
	No.13	256			256
	No.14	262	9.6		271.6
	No.15	256	9.6		265.6
	No.16	262	9.6		271.6
	No.17	256	9.6	2.9	268.5
	End Block	87.7			87.7
	Total				4,550 m <sup>2</sup>
Multi-purpose Berth	No.18	396			396
	No.19	390			390
	No.20	396			396
	No.21	390			390
	No.22	396		26.2	422.2
	No.23	390		26.2	416.2
	No.24	396		26.2	422.2
	No.25	390			390
	No.26	396			396
	No.27	390	9.6		399.6
	No.28	423.6	9.6	2.9	436.1
	End Block	68.9			68.9
	Total				4,530 m <sup>2</sup>

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	Form	Page No. 2	Rev.
		References/Notes	
No. 18, 20, 22, 24, 26			
side $3 \times 20 + 2.25 \times 20 \times 3 + 0.75 \times 20$ $+ 4 \times 1 \times 2 + 1 \times 1 \times 4$ $= 222 \text{ m}^2$			
Bottom $1 \times 20 = 20 \text{ m}^2$			
Crane cable pit			
$0.17 \times 20 \times 2 = 6.8 \text{ m}^2$			
Crane rail pit (2 lines)			
$0.2 \times 20 \times 2 \times 2 = 16 \text{ m}^2$			
Utility Tunnel			
$(1.55 \times 2 + 0.28 \times 2 + 2.9) \times 20$ $= 131.2 \text{ m}^2$			
Total <u>396 m<sup>2</sup></u>			
Prepared by		Checked by	
/ /200		/ /200	

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	Form	Page No. 3	Rev.

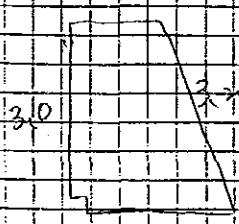
<p>No. 19, 21, 23, 25, 27 (End Stopper)</p> <p>Side</p> $3 \times 20 + 2.25 \times 20 \times 3 + 0.75 \times 20$ $+ 4 \times 1 + 1 \times 1 \times 2 = 216 \text{ m}^2$ <p>Bottom <math>\quad \quad \times 20 = 20 \text{ m}^2</math></p> <p>Cable Pit <math>\quad \quad 6.8 \text{ m}^2</math></p> <p>raill Pit <math>\quad \quad 16 \text{ m}^2</math></p> <p>Utility <math>\quad \quad 131.2 \text{ m}^2</math></p> <p>total. <math>\quad \quad (390) \text{ m}^2</math></p>	<p>References/ Notes</p>
---	------------------------------

	Prepared by	Checked by
	/ /200	/ /200

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	Form	Page No. 4	Rev.

References/ Notes
<p>No. 28</p> <p>Side <math>3 \times 20 + 2.25 \times 20 \times 3 + 0.75 \times 20</math>  <math>+ 4 \times 1 \times 2 + 1 \times 1 \times 4 + 3 \times 8</math>  <math>- 0.17 \times 0.22 - 0.2 \times 0.5</math>  <math>+ 0.75 \times 4 + 3 \times 2 - 0.2 \times 0.5</math>  <math>+ 0.75 \times 1.2 - (1.55 \times 3.5 +</math>  <math>(3.5 + 2.9) \times 0.7 \div 2)</math>  <math>= 249.6 \text{ m}^2</math></p> <p>Bottom <math>1 \times 20 = 20 \text{ m}^2</math></p> <p>Cable Pit <math>0.17 \times 20 \times 2 = 6.8 \text{ m}^2</math></p> <p>Rail Pit <math>0.2 \times 20 \times 2 \times 2 = 16 \text{ m}^2</math></p> <p>Utility <math>131.2 \text{ m}^2</math></p> <p>Stopper <math>(0.8 \times 2 + 1.4 \times 2) \times 0.65</math>  <math>= 2.88 \text{ m}^2</math></p> <p>Total <math>(426.5 \text{ m}^2)</math></p> <p>End Block</p>  <p><math>3 \times 11 + 3.26 \times 11 = 68.9 \text{ m}^2</math></p>

Prepared by		Checked by	
	/ /200		/ /200

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Coping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	Form	Page No. 5	Rev.

References/ Notes
Crane accessories
Socket block
$(0.45 \times 2 + 1.0 \times 2) \times 0.8 = 2.07 \text{ m}^2$
Crane anchoring frame
$(0.8 \times 2 + 0.75 \times 2) \times 1.4 \times 2$
$= 8.68 \text{ m}^2$
total 9.55 $\approx$ <u>9.6</u> m <sup>2</sup>

Prepared by		Checked by	
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<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	Capping Concrete of Caisson	Calc. Index No.	
<b>Subject</b>	Form	Page No. 6	Rev.

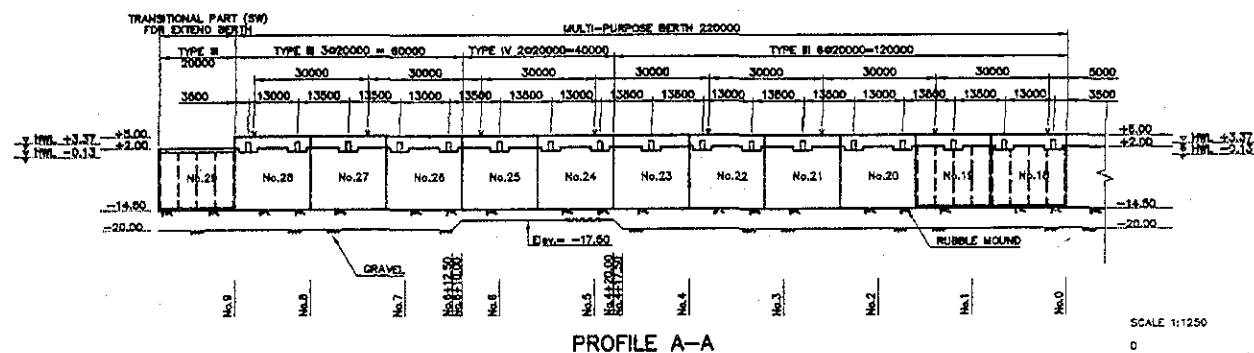
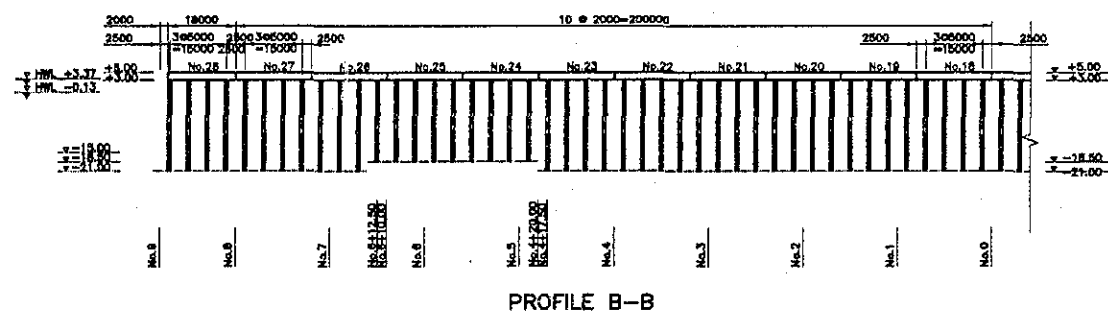
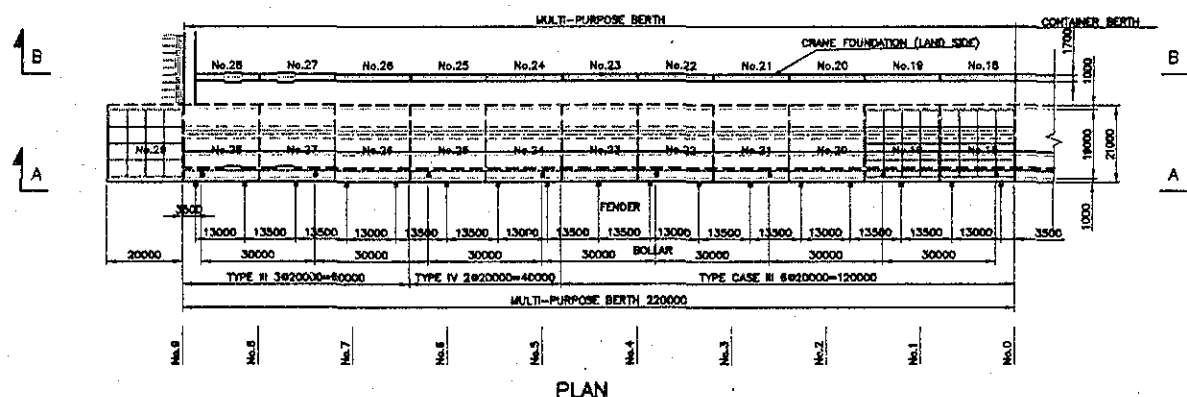
References/ Notes
<p>Loading Pit</p> <p> <math display="block">A_1 = 0.8 \times 0.4 + (0.8 + 1.5) \times 0.1 + 2 \times 1.5 \times 1.5</math> <math display="block">= 2.685 \text{ m}^2</math> </p> <p> <math display="block">A_2 = (2.0 + 1.5 + 0.7 + 0.4) \times 4.5</math> <math display="block">= 20.745 \text{ m}^2</math> </p> <p> <math display="block">A_1 \times 2 + A_2 = 26.2 \text{ m}^2</math> </p>

Prepared by		Checked by	
	/ /200		/ /200



QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0905			
<b>Quantity Item</b>	CORNER PROTECTION			<b>Unit</b>	m			
<b>Calculation Procedure Applied</b>  <div style="font-family: cursive; font-size: 1.2em; padding: 10px;">           Corner protection will be set in the corner of coping concrete.         </div>								
<b>References, Calculation Base and Revisions</b>  <div style="font-family: cursive; font-size: 1.2em; padding: 10px;">           Reference = Tender Drawings :             SW - GWL - 01 - 002 Plan and Profile            Multipurpose Bulk         </div>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla Gera			Mr. Inoma		Mr. Ando		
1								
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[illegible]

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	CORNER PROTECTION	Page No.	Rev.

References/  
Notes

Multi-Purpose Berth :  
  
 $L = 220 \text{ m}$

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QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0906			
<b>Quantity Item</b>	CONCRETE FOR CURB			<b>Unit</b>	m <sup>3</sup>			
<b>Calculation Procedure Applied</b>								
<p>Lengths of curbs are 4 Types (3.5 m, 3.0 m, 3.5 m, 2.0 m).  Regarding the arrangement, see the attached drawing.  Calculation was computed by using Excel.</p>								
<b>References, Calculation Base and Revisions</b>								
<p>References: Tender Drawings:  DW-GW-01-061 Detail of Curb &amp; Corner Protection</p>								
Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

SCALE 1:40



**SCALE 1:40**



SCALE 1:40



SCALE 1:40



SCALE 1:250



**SCALE 1:10**

SCALE 1:200



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

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



NIPPON KOEI CO., LTD.

DELETED BY

CHECKED BY

APPROVED BY

SECTION :	QUAYWALL WORK
SUB-SECTION :	CONTAINER AND MULTI-PURPOSE BERTH
WORK :	

### DETAIL OF CURB & CORNER PROTECTION

DATE: JULY/2002

INDICATED

DATE: 10/10/10  
DW-QW-01-

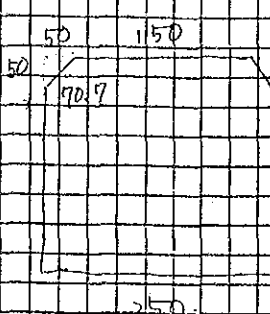
# Concrete for curb (Multi-P.)

Curb on the Gaisson					Concrete (m3), Form (m2) Re-Bar (kg)		
No	3.5m	3.0m	2.5m	2.0m			
1	4	6	1	1	2.19	20.92	633.1
2	2	2	1		0.93	8.87	268
3		3	2		0.84	7.96	241.5
4	2	2	1		0.93	8.87	268
5	2	2	1		0.93	8.87	268
6		3	2		0.84	7.96	241.5
7	2	2	1		0.93	8.87	268
8	2	2	1		0.93	8.87	268
9		3	2		0.84	7.96	241.5
10	2	2	1		0.93	8.87	268
11	2	2	1		0.93	8.87	268
12		3	2		0.84	7.96	241.5
13	2	2	1		0.93	8.87	268
14	2	2	1		0.93	8.87	268
15		3	2		0.84	7.96	241.5
16	2	2	1		0.93	8.87	268
17	2	2	1		0.93	8.87	268
Total					16.7	159.0	4790.0
18	2	2	1		0.93	8.87	268
19	2	2	1		0.93	8.87	268
20		3	2		0.84	7.96	241.5
21	2	2	1		0.93	8.87	268
22	2	2	1		0.93	8.87	268
23		3	2		0.84	7.96	241.5
24	2	2	1		0.93	8.87	268
25	2	2	1		0.93	8.87	268
26		3	2		0.84	7.96	241.5
27	2	2	1		0.93	8.87	268
28	4	4	1	1	1.83	17.52	528.1
Total					10.9	104.0	3130.0

	Concrete m3	Form m2	Re-Bar kg
L=3.5m	0.21	2.02	60.5
L=3.0m	0.18	1.7	52.5
L=2.5m	0.15	1.43	42.0
L=2.0m	0.12	1.21	34.1

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	Concrete for Curb	Page No.	Rev.

References/Notes
<p><u>3.5 m type</u></p>  $A = 0.25 \times 0.25 - 0.05 \times 0.05$ $= 0.06 \text{ m}^2$ $V = 0.06 \times 3.5 = 0.21 \text{ m}^3$
<p><u>3.0 m type</u></p> $A = 0.06 \text{ m}^2$ $V = 0.06 \times 3.0 = 0.18 \text{ m}^3$
<p><u>2.5 m type</u></p> $A = 0.06 \text{ m}^2$ $V = 0.06 \times 2.5 = 0.15 \text{ m}^3$
<p><u>2.0 m type</u></p> $A = 0.06 \text{ m}^2$ $V = 0.06 \times 2.0 = 0.12 \text{ m}^3$
<p>total <math>\boxed{0.9} \text{ m}^3</math></p>

Prepared by		Checked by	
	/ /200		/ /200





QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0907			
<b>Quantity Item</b>	FORM FOR CURB			<b>Unit</b>	m <sup>2</sup>			
<b>Calculation Procedure Applied</b>  <p>lengths of curb are 4 types (3.50 m, 3.0 m, 2.50 m, 2.00 m).</p> <p>Calculation was computed by using Excel.</p> <p>Regarding numbers of each type, see the attached summary.</p>								
<b>References, Calculation Base and Revisions</b>  <p>References: Tender Drawings:</p> <p style="padding-left: 40px;">DW-GW-01-061 Detail of Curb &amp; Corner Protection</p> <p style="padding-left: 40px;">(Same as Concrete for curb)</p>								
Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	Mark Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

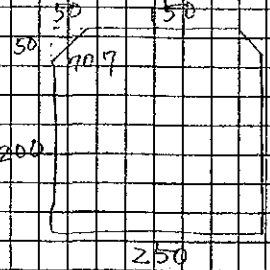
form for curb (Hulhi-P.)

Curb on the Gaisson					Concrete (m3), Form (m2) Re-Bar (kg)		
No	1	3.5m	3.0m	2.5m	2.0m		
1	4	6	1	1	2.19	20.92	633.1
2	2	2	1		0.93	8.87	268
3		3	2		0.84	7.96	241.5
4	2	2	1		0.93	8.87	268
5	2	2	1		0.93	8.87	268
6		3	2		0.84	7.96	241.5
7	2	2	1		0.93	8.87	268
8	2	2	1		0.93	8.87	268
9		3	2		0.84	7.96	241.5
10	2	2	1		0.93	8.87	268
11	2	2	1		0.93	8.87	268
12		3	2		0.84	7.96	241.5
13	2	2	1		0.93	8.87	268
14	2	2	1		0.93	8.87	268
15		3	2		0.84	7.96	241.5
16	2	2	1		0.93	8.87	268
17	2	2	1		0.93	8.87	268
Total					16.7	159.0	4790.0
18	2	2	1		0.93	8.87	268
19	2	2	1		0.93	8.87	268
20		3	2		0.84	7.96	241.5
21	2	2	1		0.93	8.87	268
22	2	2	1		0.93	8.87	268
23		3	2		0.84	7.96	241.5
24	2	2	1		0.93	8.87	268
25	2	2	1		0.93	8.87	268
26		3	2		0.84	7.96	241.5
27	2	2	1		0.93	8.87	268
28	4	4	1	1	1.83	17.52	528.1
Total					10.9	104.0	3130.0

	Concrete	Form	Re-Bar
	m3	m2	kg
L=3.5m	0.21	2.02	60.5
L=3.0m	0.18	1.7	52.5
L=2.5m	0.15	1.43	42.0
L=2.0m	0.12	1.21	34.1

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	Form for Curb	Page No. /	Rev.

References/ Notes
<p><u>3.5 m type</u></p>  $A = 0.25 \times 0.25 - 0.05 \times 0.05$ $= 0.06 \text{ m}^2$ $A_T = (0.2 \times 2 + 0.071 \times 2) \times 3.5$ $+ 0.06 \times 2$ $= 2.017$ $\approx 2.02 \text{ m}^2$ <p><u>3.0 m type</u></p> $A = 0.06 \text{ m}^2$ $A_T = (0.2 \times 2 + 0.071 \times 2) \times 3.0$ $+ 0.06 \times 2$ $= 1.70 \text{ m}^2$ <p><u>2.5 m type</u></p> $A = 0.06 \text{ m}^2$ $A_T = (0.2 \times 2 + 0.071 \times 2) \times 2.5$ $+ 0.06 \times 2$ $= 1.43 \text{ m}^2$

Prepared by		Checked by	
	/ /200		/ /200

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	Form for Curb	Page No.	2 Rev.
<p>2.0 m type</p> $A = 0.06 \text{ m}^2$ $A_T = (0.2 \times 2 + 0.07 \times 2) \times 2.0$ $+ 0.06 \times 2$ $= 1.21 \text{ m}^2$ <p>total <span style="border: 1px solid black; padding: 2px;">109.0</span> <math>\text{m}^2</math></p>		References/ Notes	
Prepared by		Checked by	
/ /200		/ /200	

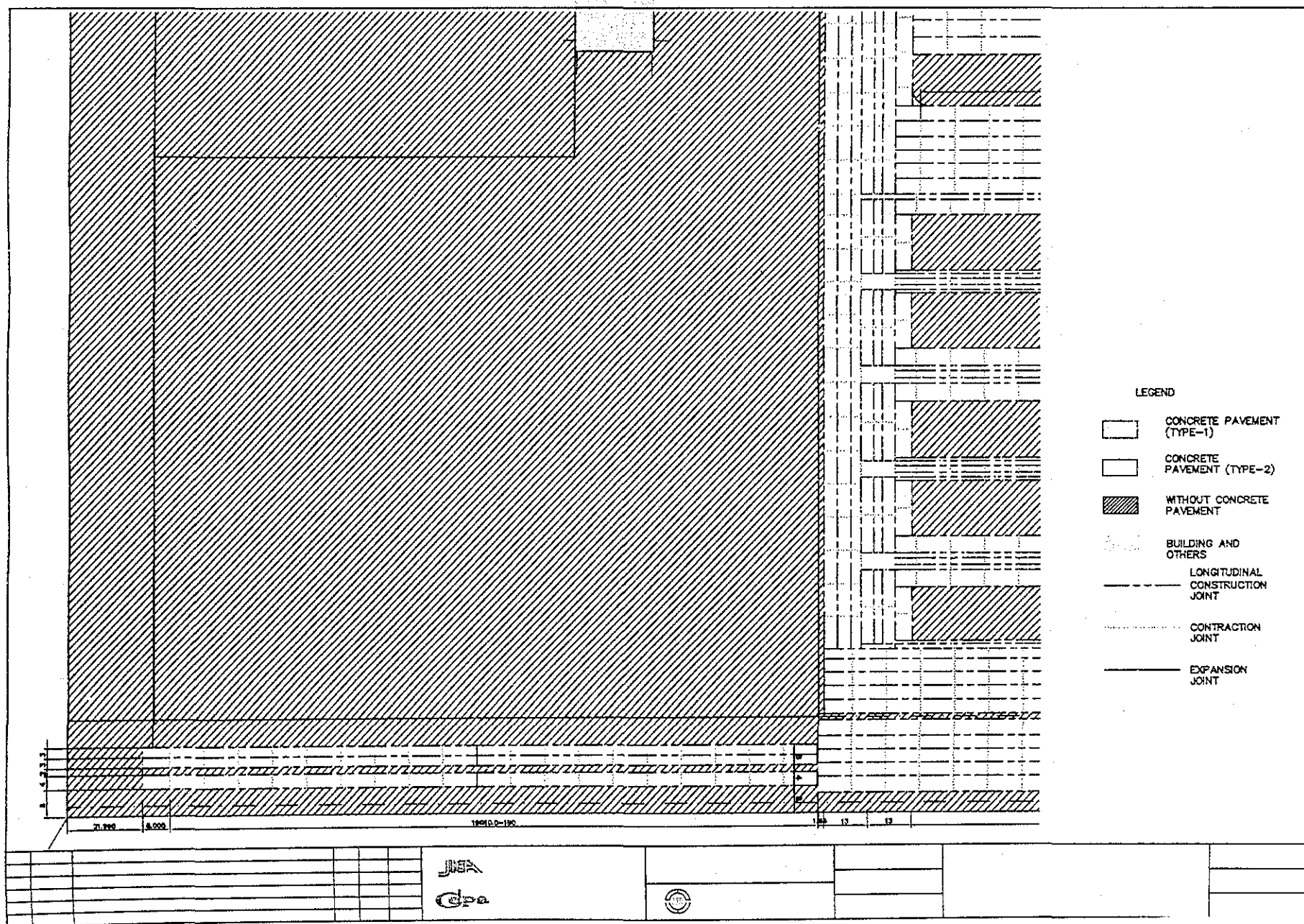
QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project In La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	20-0908			
<b>Quantity Item</b>	REINFORCEMENT FOR CURB			<b>Unit</b>	t			
<b>Calculation Procedure Applied</b>  <div style="font-family: cursive; padding-left: 20px;">           Lengths for curb are 4 types (3.50 m, 3.00 m, 2.50 m, 2.00 m).            Calculation was computed by using Excel.            Regarding numbers of each type, see attached summary.         </div>								
<b>References, Calculation Base and Revisions</b>  <div style="font-family: cursive; padding-left: 20px;">           References: Tender Drawings:            DW-AW-01-061 Detail of Curb &amp; Corner Protection            (Same as Concrete for Curb)         </div>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karlito Garcia	[Signature]		M. Inuma		H. Ando		
1								
2								
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# Reinforcement for curb (Holt-P.)

Curb on the Caisson					Concrete (m3), Form (m2) Re-Bar (kg)		
No	3.5m	3.0m	2.5m	2.0m			
1	4	6	1	1	2.19	20.92	633.1
2	2	2	1		0.93	8.87	268
3		3	2		0.84	7.96	241.5
4	2	2	1		0.93	8.87	268
5	2	2	1		0.93	8.87	268
6		3	2		0.84	7.96	241.5
7	2	2	1		0.93	8.87	268
8	2	2	1		0.93	8.87	268
9		3	2		0.84	7.96	241.5
10	2	2	1		0.93	8.87	268
11	2	2	1		0.93	8.87	268
12		3	2		0.84	7.96	241.5
13	2	2	1		0.93	8.87	268
14	2	2	1		0.93	8.87	268
15		3	2		0.84	7.96	241.5
16	2	2	1		0.93	8.87	268
17	2	2	1		0.93	8.87	268
Total					16.7	159.0	4790.0
18	2	2	1		0.93	8.87	268
19	2	2	1		0.93	8.87	268
20		3	2		0.84	7.96	241.5
21	2	2	1		0.93	8.87	268
22	2	2	1		0.93	8.87	268
23		3	2		0.84	7.96	241.5
24	2	2	1		0.93	8.87	268
25	2	2	1		0.93	8.87	268
26		3	2		0.84	7.96	241.5
27	2	2	1		0.93	8.87	268
28	4	4	1	1	1.83	17.52	528.1
Total					10.9	104.0	3130.0

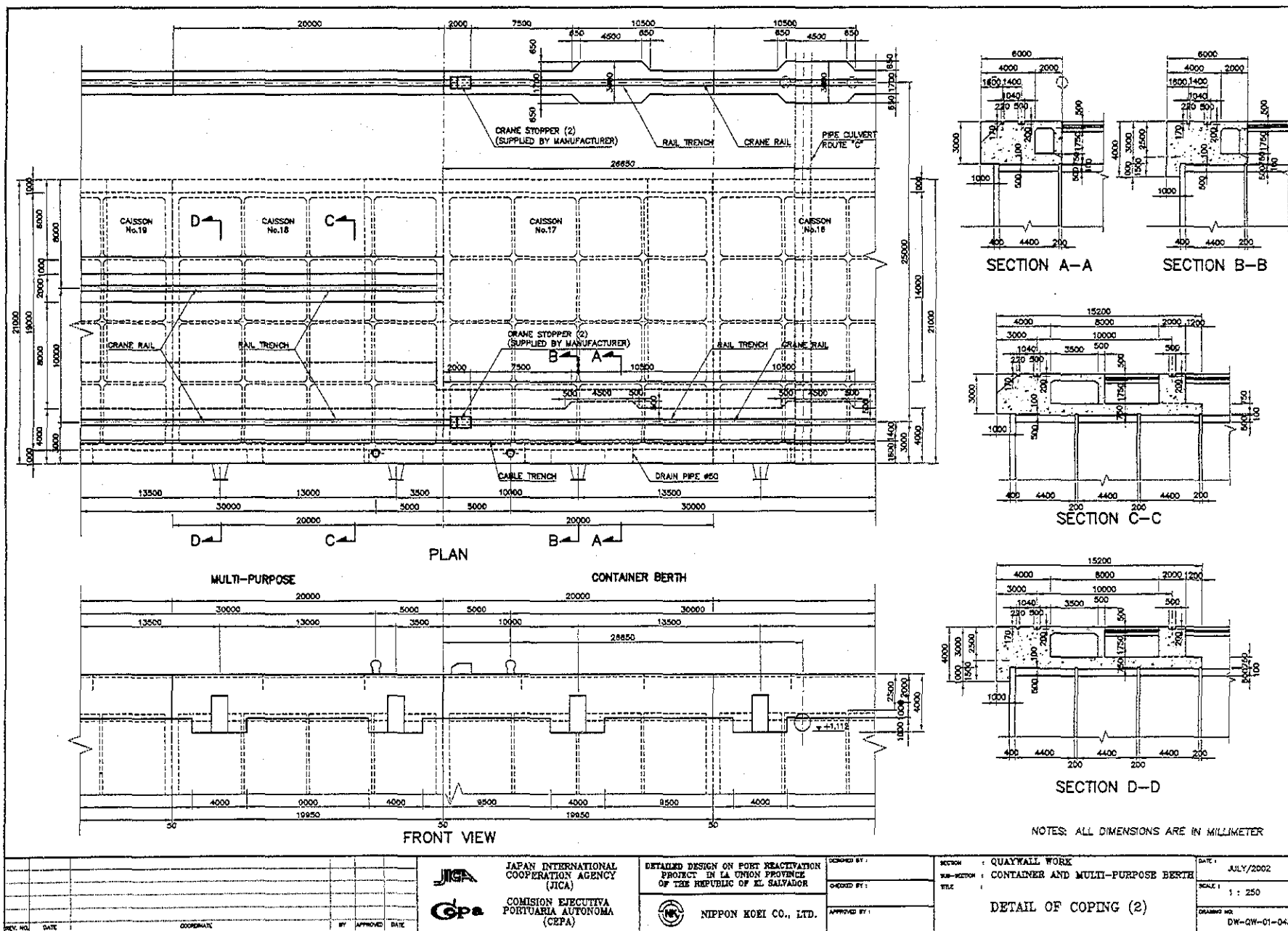
	Concrete m3	Form m2	Re-Bar kg
L=3.5m	0.21	2.02	60.5
L=3.0m	0.18	1.7	52.5
L=2.5m	0.15	1.43	42.0
L=2.0m	0.12	1.21	34.1

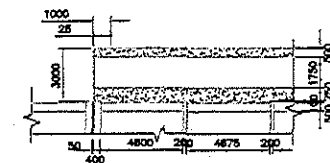
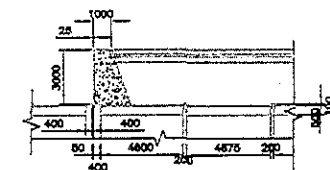
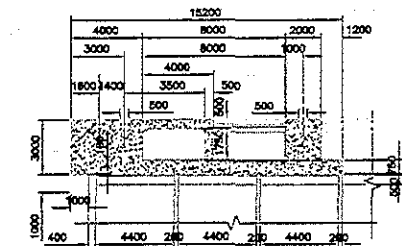
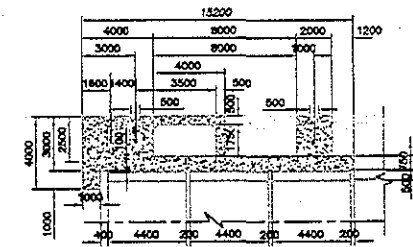
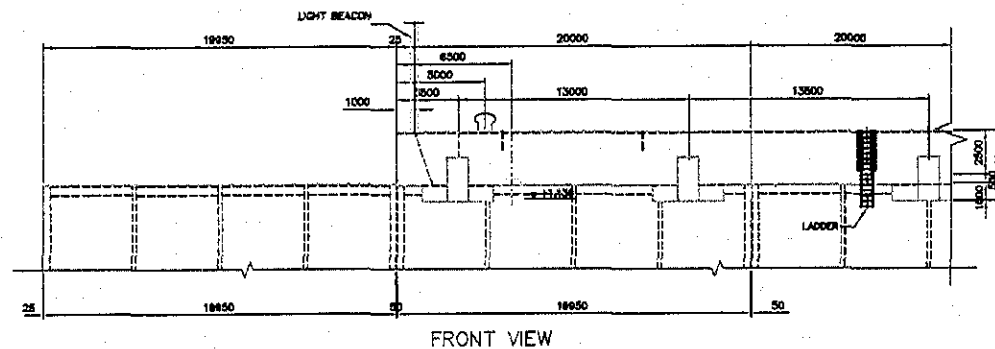
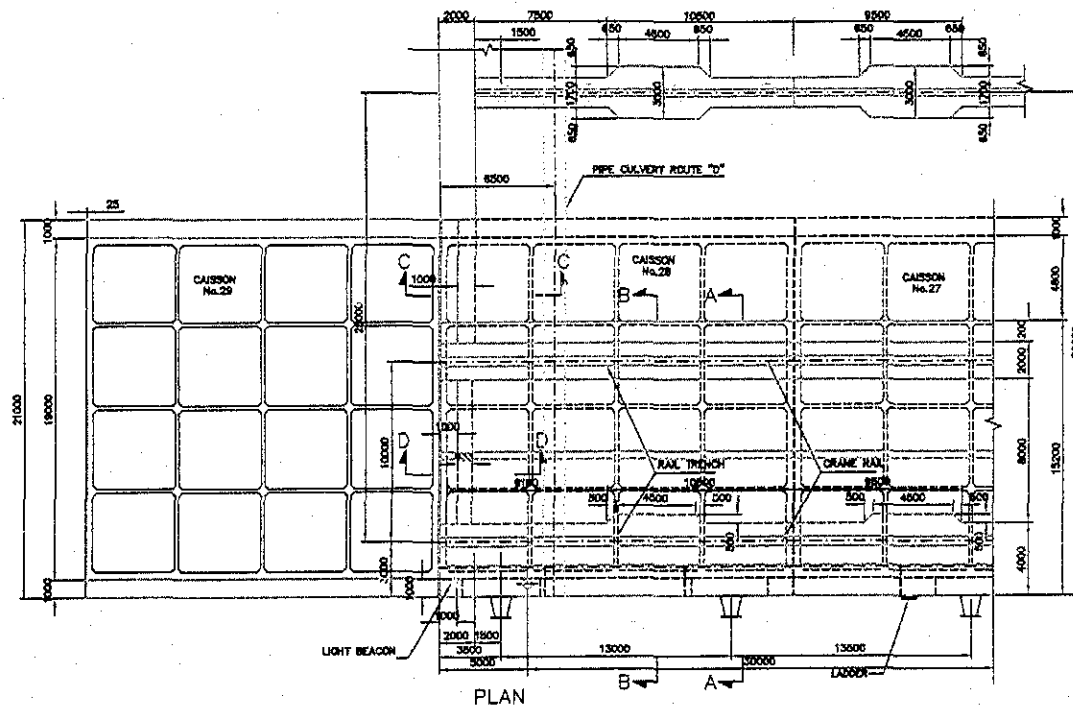
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	Reinforcement for Curb	Page No.	Rev.
		References/Notes	
3.5m type			
$D16 \times 23 = 1.56 \text{ kg/m} \times 1.5 \text{ m} \times 23$			
$= 53.9 \text{ kg}$			
$D13 \times 2 = 0.995 \text{ kg/m} \times 3.3 \text{ m} \times 2$			
$= 6.6 \text{ kg}$			
$W_1 = 60.5 \text{ kg}$			
3.0m type			
$D16 \times 20 = 1.56 \times 1.5 \times 20 = 46.8 \text{ kg}$			
$D13 \times 2 = 0.995 \times 2.85 \times 2 = 5.7$			
$W_2 = 52.5 \text{ kg}$			
2.5m type			
$D16 \times 16 = 1.56 \times 1.5 \times 16 = 37.5 \text{ kg}$			
$D13 \times 2 = 0.995 \times 2.25 \times 2 = 4.5$			
$W_3 = 42.0 \text{ kg}$			
2.0m type			
$D16 \times 13 = 1.56 \times 1.5 \times 13 = 30.5 \text{ kg}$			
$D13 \times 2 = 0.995 \times 1.8 \times 2 = 3.6$			
$W_4 = 34.1 \text{ kg}$			
total			
$3.130 \text{ kg}$			
Prepared by		Checked by	
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QUANTITY CALCULATION COVER SHEET								
<b>Project</b>	Detailed Design on Port Reactivation Project in La Union Province			<b>Project Code</b>	JC1N004/2N001			
<b>Work Section Title</b>	COPING CONCRETE OF CAISSON			<b>Pay Item No. (BOQ)</b>	2C-0909			
<b>Quantity Item</b>	DRAIN PIPE			<b>Unit</b>	Lm			
<b>Calculation Procedure Applied</b>  <div style="border: 1px solid black; padding: 10px; min-height: 150px;"> Coping drain pipe was computed multiplying the length of cope to the number of pipe contained in one caisson and multiplied to the total of caissons in Container and Multipurpose Berth, including water hardport, electric cable junction and roading pit. </div>								
<b>References, Calculation Base and Revisions</b>  <div style="border: 1px solid black; padding: 10px; min-height: 150px;"> Reference : Tender Drawings :  DW-AW-01-043 Detail of coping (2)  DW-AW-01-044 Detail of coping (3)  DW-AW-01-045 Detail of coping (4) </div>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Kaila Genio			Mr. Inuma		Mr. Ando		
1								
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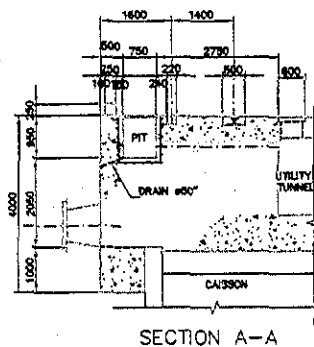
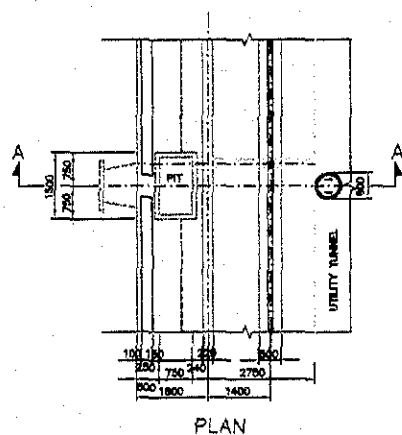




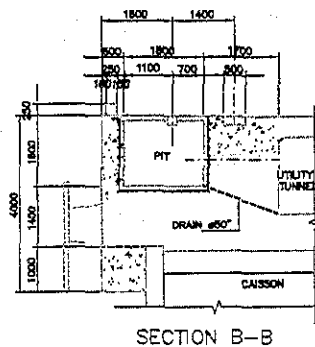
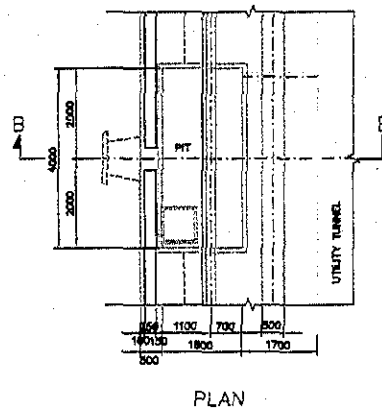
NOTES: ALL DIMENSIONS ARE IN MILLIMETER

[illegible]

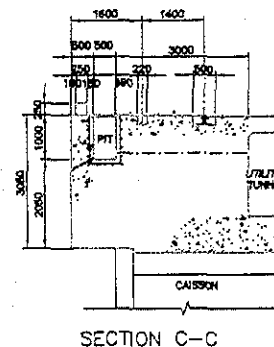
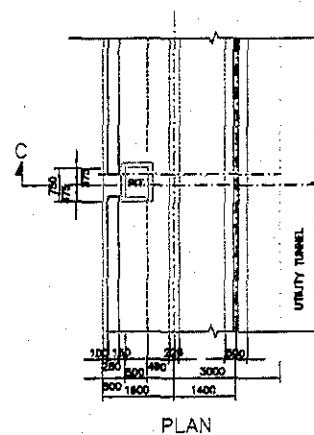
WATER HAULANT & FIRE FIGHTING PIT CAISSON  
No.3 No.7 No.11 No.15 No.19 No.23 No.27



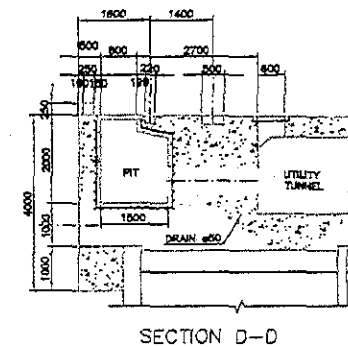
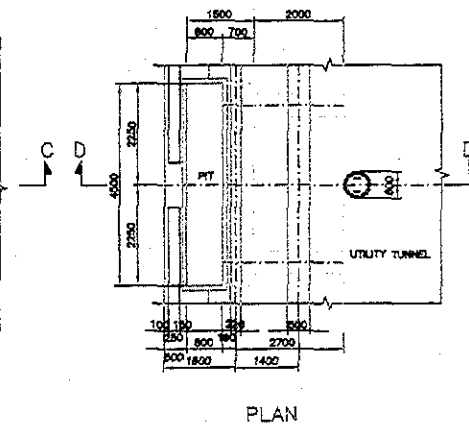
ELECTRIC CABLE JUNCTION PIT  
CAISSON No.12 No.20



ELECTRIC SERVICE PIT CAISSON  
No.2 No.14 No.16 No.26 No.28



LOADING PIT (MULTI-PURPOSE BERTH)  
CAISSON No.21 No.22 No.23 No.24 No.25



NOTE:

- DETAIL OF ELECTRIC SERVICE PIT IS SHOWN IN DW-??
- DETAIL OF ELECTRIC CABLE JUNCTION IS SHOWN IN DW-??
- DETAIL OF WATER HYDRANT FIRE FIGHTING IS SHOWN IN DW-??

JEA  
Gpa



<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	DRAIN PIPE	Page No.	Rev.

<p>Container Berth:</p> <p>Coping Drain Pipe:</p> <p>Caisson 1-17. <math>L_1 = 2.03 \text{ m}</math>. <math>N_0 = (2)(17) = 34</math></p> <p><math>L = (2.03 \text{ m})(2)(17) = 69.02 \text{ m}</math></p> <p>Water Hardport and Fire Fitting Pit.</p> <p>Caisson No 3, 7, 11, 15</p> <p><math>L_1 = 0.55 \text{ m}</math> <math>N_0 = 4</math></p> <p><math>L_2 = 0.55 \text{ m}</math> <math>N_0 = 4</math></p> <p><math>L = (0.55 \text{ m})(2)(4) = 4.40 \text{ m}</math></p> <p>Electric Cable Junction Pit</p> <p>Caisson No 12:</p> <p><math>L_1 = 1.82 \text{ m}</math> <math>N_0 = 1</math></p> <p><math>L_2 = 0.55 \text{ m}</math> <math>N_0 = 1</math></p> <p><math>L = (1.82 \text{ m} + 0.55 \text{ m})(1) = 2.37 \text{ m}</math></p> <p><math>\therefore L = 75.79 \approx 76 \text{ m}</math></p>	<p>References/ Notes</p>
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Multipurpose Berth

Coping Drain Pipe:

Caisson 18-28

$L_1 = 2.03 \text{ m}$   $N_0 = (2)(11) = 22$

$L_2 = 2.0 \text{ m}$   $N_0 = 4$

$L_3 = 0.5 \text{ m}$   $N_0 = 4$

$L = 2.03 \times 22 + 2.0 \times 4 + 0.5 \times 4$

$= 54.66 \text{ m}$

	Prepared by	Checked by	
	/	/	/200

<b>Project</b>	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
<b>Section</b>	COPING CONCRETE OF CAISSON	Calc. Index No.	
<b>Subject</b>	DRAIN PIPE	Page No.	Rev.
<p>Water Haulport and Fire Filling Pit.</p> <p>Caisson No. 19, 23, 27</p> <p><math>L_1 = 0.55 \text{ m}</math>      <math>N_0 = 3</math></p> <p><math>L_2 = 0.50 \text{ m}</math>      <math>N_0 = 3</math></p> <p><math>L_3 = 2.00 \text{ m}</math>      <math>N_0 = 3</math></p> <p><math>L = (0.55 \text{ m} + 0.50 \text{ m} + 2.0 \text{ m})(3) = 9.15 \text{ m}</math></p>		References/Notes	
<p>Rooding Pit.</p> <p>Caisson 22, 23, 24. Caisson No 23 has 2 Rooding Pits.</p> <p><math>L_1 = 2.02 \text{ m}</math>      <math>N_0 = 4</math></p> <p><math>L_2 = 0.50 \text{ m}</math>      <math>N_0 = 4</math></p> <p><math>L_3 = 2.00 \text{ m}</math>      <math>N_0 = 4</math></p> <p><math>L = (2.02 \text{ m} + 0.50 \text{ m} + 2.0 \text{ m})(4) = 18.08 \text{ m}</math></p>			
<p>Electric Cable Junction Pit.</p> <p>Caisson No 20</p> <p><math>L_1 = 1.72 \text{ m}</math>      <math>N_0 = 1</math></p> <p><math>L_2 = 0.50 \text{ m}</math>      <math>N_0 = 1</math></p> <p><math>L_3 = 2.00 \text{ m}</math>      <math>N_0 = 1</math></p> <p><math>L = (1.72 \text{ m} + 0.50 \text{ m} + 2.0 \text{ m})(1) = 4.22 \text{ m}</math></p>			
<p><math>L = 86.11 \text{ m} \approx 87 \text{ m}</math></p>		<p><math>L = 87 \text{ m}</math></p>	
Prepared by		Checked by	
/ /200		/ /200	