QUANTITY CALCULATION COVER SHEET

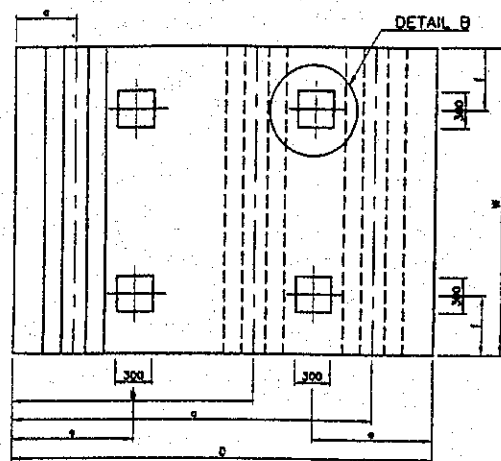| Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	*West Revetment*	**Pay Item No. (BOQ)**	*2E-010307*
Quantity Item	*Lifting Bar for Concrete Block*	**Unit**	*kg*

Calculation Procedure Applied

Calculation is carried out based on the attached drawing.
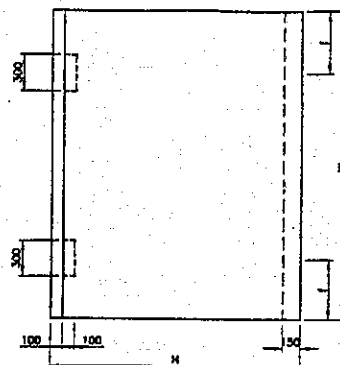
References, Calculation Base and Revisions
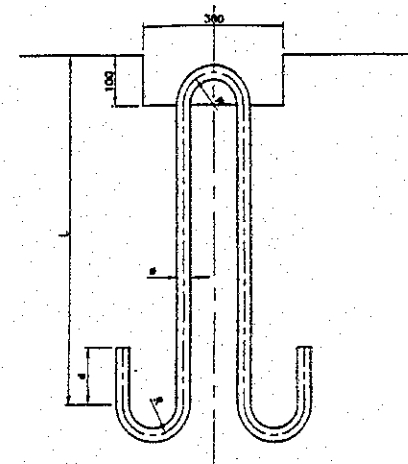
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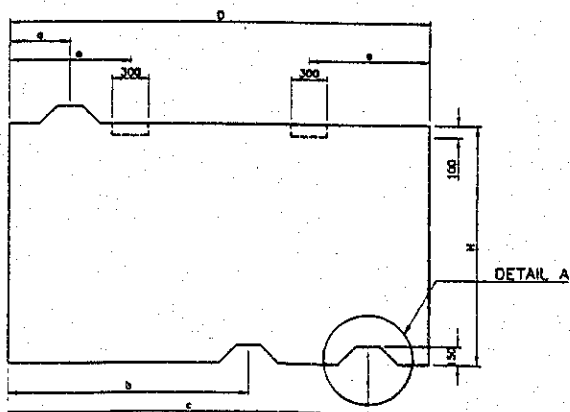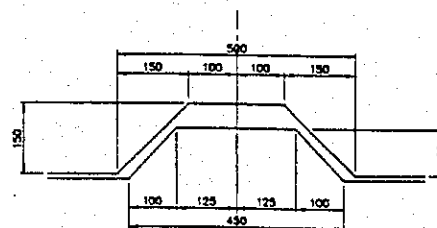| Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
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0	Karla Garcia			Mr. Inuma		Hr. Ando		
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DETAIL B

PLAN
SCALE 1:40

FRONT VIEW
SCALE 1:40

DETAIL B LIFTING BAR
SCALE 1:10

SIDE VIEW
SCALE 1:40

DETAIL A
SCALE 1:10

DETAIL A

DIMENSION OF CONCRETE BLOCK

BLOCK	A	B	C
D	2000	3500	2500
W	3500	2500	3000
H	2000	2000	2000
a	–	500	500
b	500	2000	–
c	–	3000	–
e	1000	1000	1000
f	1000	500	1500

DIMENSION OF LIFTING BAR

BLOCK	A	B	C
ø	28	32	30
R	56	64	50
d	120	130	120
L	710	650	650
l	1924	1852	1823

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Lifting Bar for Concrete Block	Page No. 1	Rev.

Type A

$\phi 28 \rightarrow 4.83$ kg/m

$L_A = (610 + 120) \times 2 + 56 \times 3.14 \times 3$

$= 1988$ mm

$\simeq 2.0$ m

$4.83 \times 2.0 \times 4 \times 3$ pieces $= 115.92$

$\simeq 116$ kg

Type B

$\phi 32 \rightarrow 6.31$ kg/m

$L_B = (550 + 130) \times 2 + 64 \times 3.14 \times 3$

$= 1963$ mm

$\simeq 2.0$ m

$6.31 \times 2.0 \times 4 \times 3 = 151.44$

$\simeq 152$ kg

Prepared by		/ /200	Checked by		/ /200

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Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Lifting Bar for Concrete Block	Page No. 2	Rev.

References/Notes

Type C

$\phi 30 \rightarrow 5.55 \, kg/m$

$L_c = (550 + 120) \times 2 + 60 \times 3.14 \times 3$

$= 1905 \, mm$

$\doteqdot 2.0 \, m$

$5.55 \times 2.0 \times 4 \times 4 = 177.6$

$\doteqdot 178 \, kg$

$116 + 152 + 178$

$= 446$

Total $\boxed{446 \, kg}$

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2E-01040/
Quantity Item	Concrete Wall	Unit	m³

Calculation Procedure Applied

1 Calculation of Areas of Sections (Excel)

2. Average of Areas of Sections (Excel)

3. Calculation of Volume : Average of Areas of Sections
times distance between Sections
(Excel)

References, Calculation Base and Revisions

See the item of offshore dumping of west revetment
(QA-10).

Rev	Prepared		No. of	Checked		Reviewed		Superseded
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○West Revetment

13. Concrete Volume

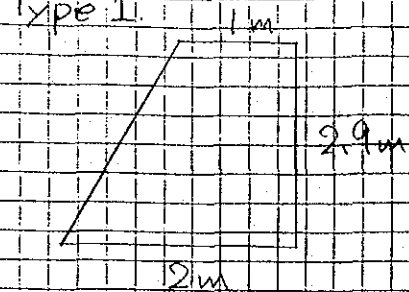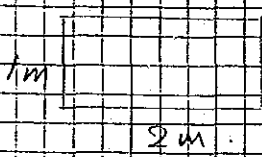| Section No.	Area (m²)	Average Area of 2 Sections (m²)	Distance Between Sections (m)	Volume (m³)
No.0	4.35			
		4.35	225.83	982.36
No.10+10.00	4.35			
		3.18	6.00	19.05
No.10+16.00	2.00			
		2.00	84.00	168.00
No.14	2.00			
Total			315.83	1,169.41

14. Form

Section No.	Length (m)	Average Length of 2 Sections (m)	Distance Between Sections (m)	Area (m²)
No.0	5.97			
		5.97	225.83	1,348.21
No.10+10.00	5.97			
		3.99	6.00	23.91
No.10+16.00	2.00			
		2.00	84.00	168.00
No.14	2.00			
Total			315.83	1,540.12

j

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2E-010402
Quantity Item	Form of Concrete Wall	Unit	m²

Calculation Procedure Applied

1. Calculation of Lengths of Sections (Excel)

2. Average of Lengths of Sections (Excel)

3. Calculation of Area : Average of Lengths of Sections times distance between Sections (Excel)

References, Calculation Base and Revisions

See the item of offshore dumping of west revetment

(2A-10)

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○West Revetment

13. Concrete Volume

Section No.	Area (m²)	Average Area of 2 Sections (m²)	Distance Between Sections (m)	Volume (m³)
No.0	4.35			
		4.35	225.83	982.36
No.10+10.00	4.35			
		3.18	6.00	19.05
No.10+16.00	2.00			
		2.00	84.00	168.00
No.14	2.00			
Total			315.83	1,169.41

14. Form

Section No.	Length (m)	Average Length of 2 Sections (m)	Distance Between Sections (m)	Area (m²)
No.0	5.97			
		5.97	225.83	1,348.21
No.10+10.00	5.97			
		3.99	6.00	23.91
No.10+16.00	2.00			
		2.00	84.00	168.00
No.14	2.00			
Total			315.83	1,540.12

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2E-010403
Quantity Item	Elas Tigh Board	Unit	m²

Calculation Procedure Applied

Elas Tigh Board will be used as a joint plate.
This arrangement is every 20m.

References, Calculation Base and Revisions

See the item of offshore dumping of west revetment

(2A - 10)

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Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Elas Tigh Board	Page No.	Rev.

Type 1

$A = (1+2) \times 2.9 \div 2$

2.9 m

$= 4.35 \ m^2$

2 m

$N = 12$

$A_T = 4.35 \times 13$

$= 56.55$

$≈ 57 \ m^2$

Type 2

1 m

$A = 1.0 \times 2.0 = 2.0 \ m^2$

$N = 5$

2 m

$A_T = 2.0 \times 5 = 10 \ m^2$

total $\boxed{67 \ m^2}$

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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	West Revetment	Pay Item No. (BOQ)	2E - 01050/
Quantity Item	Rubble Mound	Unit	~~No.~~ m³

Calculation Procedure Applied

Volume of rubble mound was computed by multiplying section area by the length.

References, Calculation Base and Revisions

See the item of offshore dumping of west revetment.
(2A ...)

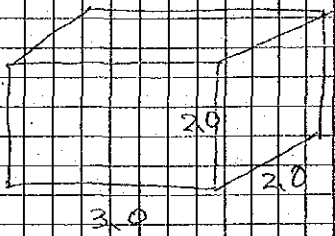| Rev	Prepared		No. of	Checked		Reviewed		Superseded
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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Rubble Mound	Page No.	Rev.

$$13.0 \times 1.5 \times 78 = 1521 \quad m^3$$

$$A = \frac{1}{2} \times 8.0 \times (4.0 + 23.2) = 124.8$$

$$124.8 \times 35 + 124.8 \times \frac{1}{2} \times 13.0$$

$$+ 124.8 \times 90 = 16339 \quad m^3$$

$$1,521 + 16,339 = \boxed{17860} \quad m^3$$

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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	West Revetment	Pay Item No. (BOQ)	2E-010502
Quantity Item	Leveling of Rubble Mound	Unit	~~No.~~ m²

Calculation Procedure Applied

Leveling area of rubble mound was computed

by multiplying the width by the length.

References, Calculation Base and Revisions

See the item of offshore dumping of west revetment.

(2A—10)

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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Leveling of Rubble Mound	Page No.	Rev.

References/

$$13.0 \times 78 = 1014 \quad m^2$$

$$= \boxed{1020} \quad m^2$$

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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	West Revetment	Pay Item No. (BOQ)	2E-0.05.03
Quantity Item	Back filling	Unit	No. m³

Calculation Procedure Applied

Volume of back filling was computed by multiplying section area by the length.

References, Calculation Base and Revisions

See the item of offsore dumping of west revetment.

(2A-10)

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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Back filling	Page No.	Rev.

$$A = \frac{1}{2}(7.0 - 21.0) \times 11.0$$

$$+ \frac{1}{2} \times 8 \times 1.5$$

$$-\left\{\frac{1}{2}(0.5 + 1.5) \times 2 + 2 \times 2 + 2.5 \times 5 + 2.5 \times 6\right\}$$

$$- \frac{1}{2} \times 2.5 \times (8 + 13.0) - 0.5 \times 7.0$$

$$= 96.75 \ m^2$$

$$V = 96.75 \times 22.0 + \frac{1}{2} \times 12.5 \times 14.0 \times 14.0$$

$$= 8771 \ m^3$$

$$\simeq \boxed{8700} \ m^3$$

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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	West Revetment	Pay Item No. (BOQ)	2E-010504
Quantity Item	Geotextile Sheet	Unit	~~No.~~ m²

Calculation Procedure Applied

Area of geotextile sheet was computed by multiplying the width by the length.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provin	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Geotextile Sheet	Page No.	Rev.

References/

$$A = 21.0 \times (78.0 + 14.0)$$

$$+ 19.0 \times (35.0 + 55 + 90)$$

$$= 1652 + 2669.5$$

$$= 4321.5$$

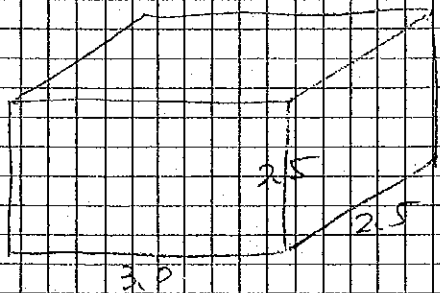$$= \boxed{4330} \ m^2$$

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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	West Revetment	Pay Item No. (BOQ)	2E- 0106 01
Quantity Item	Concrete Block (D)	Unit	~~No.~~ m³

Calculation Procedure Applied

Total volume of concrete block was computed by multiplying unit volume by the number.
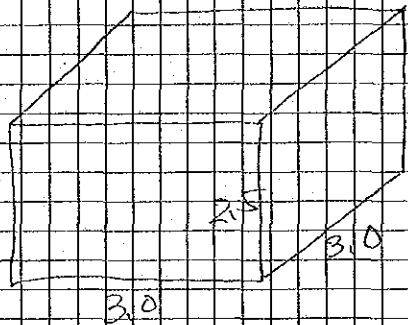
References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provir	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Concrete Block (D)	Page No.	Rev.

$$V = 20 \times 20 \times 30 = 120 \ m^3$$

$$n = 27$$

$$12 \times 27 = \boxed{324} \ m^3$$

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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	West Revetment	Pay Item No. (BOQ)	2E-010602
Quantity Item	Concrete Block (E)	Unit	~~No.~~ m³

Calculation Procedure Applied

Total volume of concrete block was computed by multiplying unit volume by the number.

References, Calculation Base and Revisions

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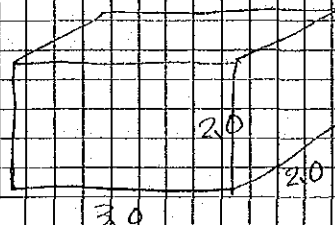| Project	Detailed Design on Port Reactivation Project in La Union Provir	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Concrete Block (E)	Page No.	Rev.

$$V = 3.0 \times 2.5 \times 2.5 = 18.75 \ m^3$$

$$n = 60$$

$$18.75 \times 60 = \boxed{1125} \ m^3$$

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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	West Revetment	Pay Item No. (BOQ)	2E-010603
Quantity Item	Concrete Block (F)	Unit	~~No.~~ m³

Calculation Procedure Applied

Total volume of concrete block (F) was computed by multiplying unit volume by the number.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provin	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Concrete Block (F)	Page No.	Rev.

$$V = 3.0 \times 2.5 \times 3.0 = 22.5 \ m^3$$

$$N = 52$$

$$22.5 \times 52 = \boxed{1170} \ m^3$$

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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	West Revetment	Pay Item No. (BOQ)	2F-010604
Quantity Item	Form for (D')	Unit	~~No.~~ m²

Calculation Procedure Applied

Area of form for (D) was computed based on the drawing.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provir	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Form for (D)	Page No.	Rev.
		References/	

$$A = 30 \times 20 + (30 + 20) \times 2 \times 20$$

$$= 26.0 \ m^2$$

$$n = 27$$

$$26 \times 27 = \boxed{702} \ m^2$$

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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	West Revetment	Pay Item No. (BOQ)	2E-010605
Quantity Item	Form for (E).	Unit	No. m²

Calculation Procedure Applied

Area of form for (E) was computed based on the drawing.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
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Subject	Form for (E)	Page No.	Rev.

References/

$$A = 3.0 \times 2.5 + (3.0 + 2.5) \times 2 \times 2.5$$

$$= 35 \ m^2$$

$$n = 60$$

$$35 \times 60 = \boxed{2100} \ m^2$$
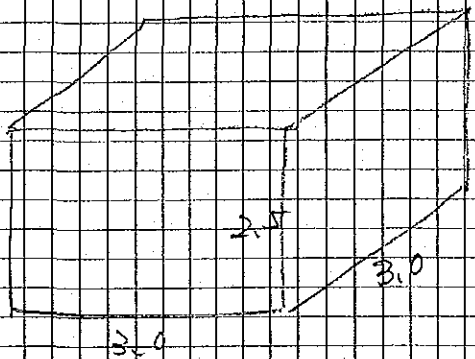
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2F-010606
Quantity Item	Form for (F)	Unit ~~No.~~	m²

Calculation Procedure Applied

Area of form for (F) was computed based on the drawing.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
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Subject	Form for (F)	Page No.	Rev.

References/

$$A = 30 \times 3.0 + (30 + 30) \times 2 \times 2.5$$

$$= 390 \ m^2$$

$$n = 52$$

$$39.0 \times 52 = 2028$$

$$= 2030 \ m^2$$

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2E-010607
Quantity Item	Lifting Bar for Concrete Block	Unit No.	kg

Calculation Procedure Applied

Total weight of lifting bar was computed based on the drawing.

References, Calculation Base and Revisions

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Section	West Revetment	Calc. Index No.	
Subject	Lifting bar for Concrete Block	Page No.	Rev.
		References/	

Type D

$\phi 28 \longrightarrow 4.83$ kg/m

$L_D = 2.0$ m

$n = 27$

$4.83 \times 2.0 \times 4 \times 27 = 1043.3$

$\simeq 1044$ kg

Type E

$\phi 32 \longrightarrow 6.31$ kg/m

$L_E = 2.0$ m

$n = 60$

$6.31 \times 2.0 \times 4 \times 60 = 3028.8$

$\simeq 3029$ kg

Type F

$\phi 38 \longrightarrow 8.90$ kg/m

$L_F = 2.0$ m

$n = 52$

$8.9 \times 2.0 \times 4 \times 52 = 3702.4$

$\simeq 3703$ kg

total [7776] kg

10783.

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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	West Revetment	Pay Item No. (BOQ)	2E-010701
Quantity Item	Concrete Wall	Unit	No. M³

Calculation Procedure Applied

Volume of concrete wall was computed based on the drawing.

References, Calculation Base and Revisions

Rev	Prepared by	Date	No. of Pages	Checked by	Date	Reviewed by	Date	Superseded by Calc No.
0	Kala Goria			Iinuma		Ando		
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Project	Detailed Design on Port Reactivation Project in La Union Provin	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Concrete wall	Page No.	Rev.

$$V = \frac{1}{2} \times (0.5 + 1.5) \times 2 \times 70.5$$

$$= \boxed{141} \ m^3$$

| | | Prepared by | | Checked by | |

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	West Revetment	Pay Item No. (BOQ)	2E-010702
Quantity Item	Form of Concrete Wall	Unit	No. m²

Calculation Procedure Applied

Area of form for concrete wall was computed based on the drawing.

References, Calculation Base and Revisions

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Project	Detailed Design on Port Reactivation Project in La Union Provi	Calc. File No.	
Section	West Revetment	Calc. Index No.	
Subject	Form of concrete wall	Page No.	Rev.

References/

$$A = (1.0 + 1.(1)) \times 20.5$$

$$= 149.46$$

$$= \boxed{150} \ m^2$$

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