NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BREASTING DOLPHIN	**Pay Item No. (BOQ)**	2D - BD0103
Quantity Item	RIBBAND	**Unit**	Kg

Calculation Procedure Applied

Ribbond was computed for both Breashing Dolphin.
The outside and inner side ribbond were computed.

References, Calculation Base and Revisions

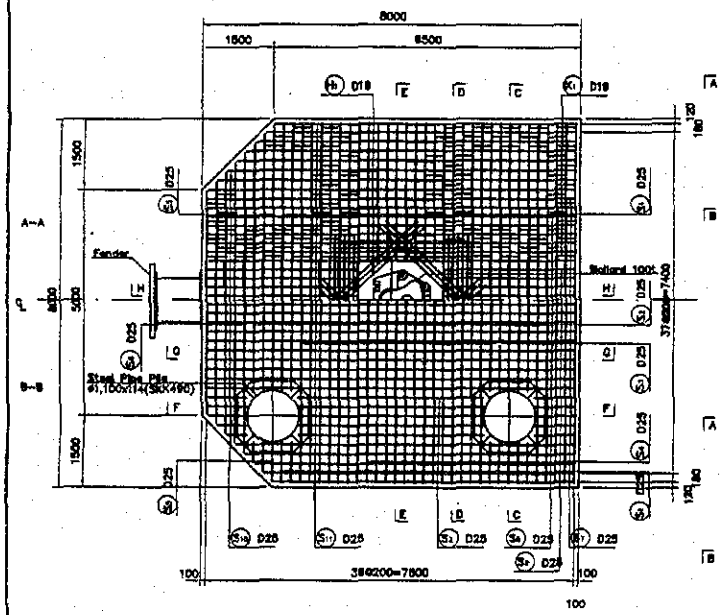
Refrances : Tender Drawings :
DW - GW - 02 - 006 Bar Arrangement for Breashing Dolphin

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.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

FN : Calculation_Cover_Sheet_020504_seg cover

BAR ARRANGEMENT FOR BREASTING DOLPHIN

Plan



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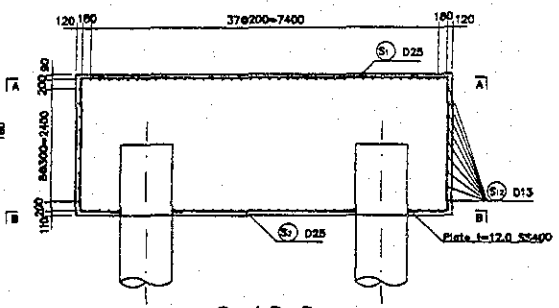

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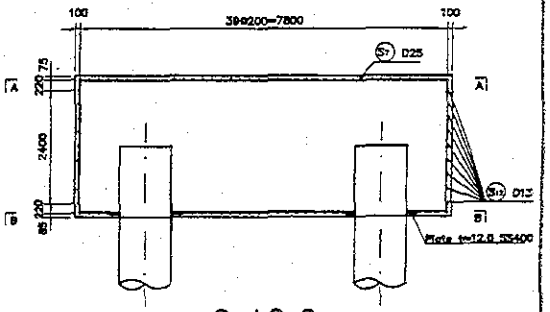

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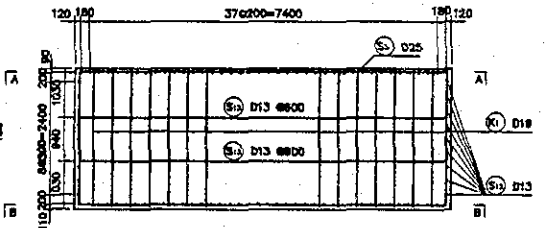

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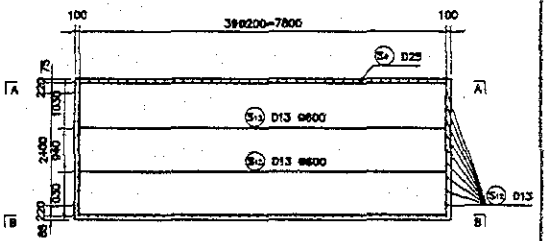
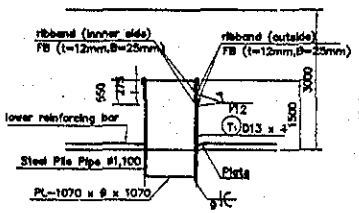
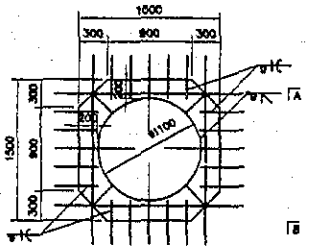


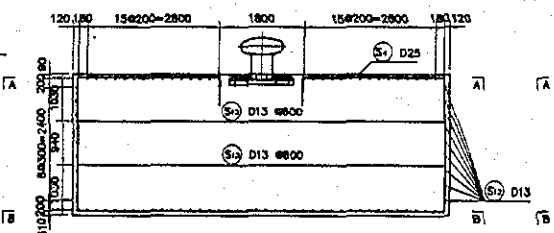
areangement of ribband for pile head



Detail of Plate



Sect.E-E



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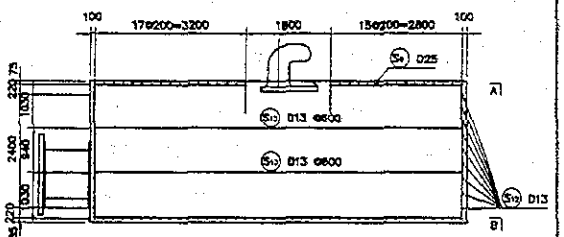


JICA — JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA — 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 : PASSENGER BERTH

TITLE :

BAR ARRANGEMENT FOR BREASTING DOLPHIN

DATE : JULY/2002

SCALE : 1 : 100

DRAWING NO. DW-QW-02-006

BAR SCHEDULE FOR BREASTING DOLPHIN

BAR No.		DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
S1	1	D25	8,640	3.98	7	34.387	241		
	2	〃	7,290	〃	7	29.014	203		
S2		〃	3,900	〃	20	15.522	310		
S3	1	〃	7,790	〃	17	31.004	527		
	2	〃	6,440	〃	17	25.631	436		
	3	〃	9,000	〃	17	35.820	609		
S4	1	〃	6,460	〃	16	25.711	411		
	2	〃	9,000	〃	8	35.820	287		
S5	1	〃	8,160	〃	3	32.477	97		average
	2	〃	6,810	〃	3	27.104	81		〃
S6	1	〃	6,750	〃	5	26.865	134		〃
	2	〃	5,400	〃	5	21.492	107		〃
	3	〃	6,920	〃	5	27.542	138		〃
S7	1	〃	8,600	〃	4	34.228	137		
	2	〃	7,250	〃	4	28.855	115		
S8	1	〃	7,750	〃	12	30.845	370		
	2	〃	6,400	〃	12	25.472	306		
	3	〃	9,000	〃	12	35.820	430		
S9	1	〃	6,600	〃	8	26.268	210		
	2	〃	6,200	〃	8	24.676	197		
	3	〃	9,000	〃	8	35.820	287		
S10	1	〃	8,120	〃	6	32.318	194		average
	2	〃	7,250	〃	6	28.855	173		〃
S11	1	〃	6,710	〃	10	26.706	267		〃
	2	〃	6,400	〃	10	25.472	255		〃
	3	〃	7,960	〃	10	31.681	317		〃
S12	1	D13	5,740	0.995	9	5.711	51		
	2	〃	8,440	〃	18	8.398	151		
	3	〃	8,640	〃	9	8.597	77		
S13		D13	8,200	0.995	14	8.159	114		

D25	6,840	
D19 D13	394	
TOTAL	7,234	kg

BAR No.	DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
K1	D19	6,530	2.25	198	14.693	2,909		

D19	2,909	
TOTAL	2,909	kg

K2	D25	3,000	3.98	24	11.940	287		

D25	287	
TOTAL	287	kg

TOTAL

D25	7,126	
D19	2,909	
D13	394	
TOTAL	10,430	kg

PLATE(SS400)	
105.5 kg × 4 pieces =	422 kg

ribband(SS400)outside	2.36 kg/m x 3.46m x 8 pieces = 65.3kg
ribband(SS400)inner side	2.36 kg/m x 3.30m x 8 pieces = 62.3kg
TOTAL	127.6 kg

CONCRETE VOLUME	185.3 m3
FORM	148.7 m2

	DIA							
T1	D13	2,375	0.995	16	2.363	38		

D13	38	
TOTAL	38	kg

PLATE(SS400)	
63.5 kg × 4 pieces =	254 kg

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BREASTING DOLPHIN	Calc. Index No.	
Subject	RIBBAND	Page No.	Rev.

References/ Notes

$W = 127.60$ kg

$W_T = (127.60 \text{ kg})(2) = 255.20$ kg

$\simeq \boxed{256 \text{ kg}}$

		Prepared by		Checked by	
			/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BREASTING DOLPHIN	**Pay Item No. (BOQ)**	2D-BD0201
Quantity Item	CONCRETE	**Unit**	m^3

Calculation Procedure Applied

Concrete volume was computed for both breasting dolphin.
Volume was computed using geometric formulas.

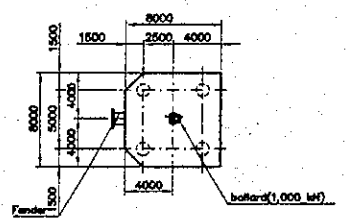
References, Calculation Base and Revisions

References: Tender Drawings:

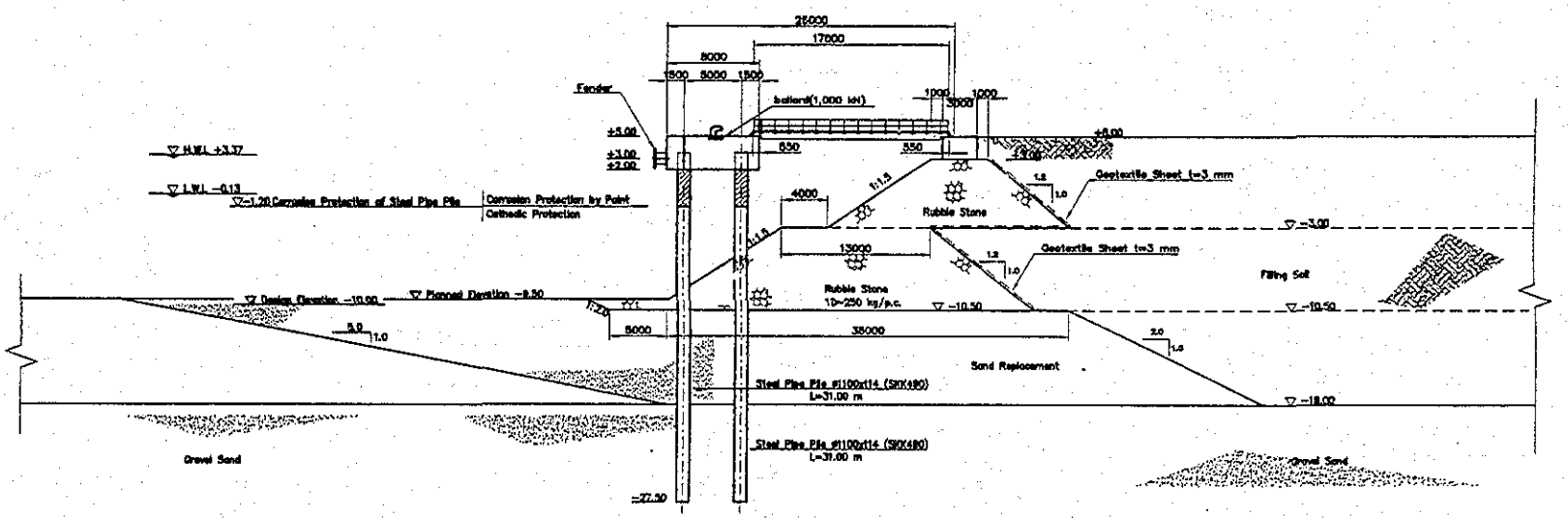
DWG-GN-02-004 Passenger Berth, Breasting Dolphin Plan & Typical cross Section.

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

FN : Calculation_Cover_Sheet_020504_seg cover



PLAN BREASTING DOLPHIN



TYPICAL CROSS SECTION

SCALE 1:400 0 5.0 10.0 15.0 20.0 25.0 30.0

REV. NO.	DATE	CONTENTS	BY	APPROVED	DATE

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

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE :

PASSENGER BERTH BREASTING DOLPHIN PLAN & TYPICAL CROSS SECTION

DATE : JULY/2002
SCALE : 1 : 400
DRAWING NO. : DW-QW-02-004

BAR SCHEDULE FOR BREASTING DOLPHIN

BAR No.	DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
S1 - 1	D25	8,640	3.98	7	34.387	241		
S1 - 2	"	7,290	"	7	29.014	203		
S2	"	3,900	"	20	15.522	310		
S3 - 1	"	7,790	"	17	31.004	527		
S3 - 2	"	6,440	"	17	25.631	436		
S3 - 3	"	9,000	"	17	35.820	609		
S4 - 1	"	6,460	"	16	25.711	411		
S4 - 2	"	9,000	"	8	35.820	287		
S5 - 1	"	8,160	"	3	32.477	97		average
S5 - 2	"	6,810	"	3	27.104	81		"
S6 - 1	"	6,750	"	5	26.865	134		"
S6 - 2	"	5,400	"	5	21.492	107		"
S6 - 3	"	6,920	"	5	27.542	138		"
S7 - 1	"	8,600	"	4	34.228	137		
S7 - 2	"	7,250	"	4	28.855	115		
S8 - 1	"	7,750	"	12	30.845	370		
S8 - 2	"	6,400	"	12	25.472	306		
S8 - 3	"	9,000	"	12	35.820	430		
S9 - 1	"	6,600	"	8	26.268	210		
S9 - 2	"	6,200	"	8	24.676	197		
S9 - 3	"	9,000	"	8	35.820	287		
S10 - 1	"	8,120	"	6	32.318	194		average
S10 - 2	"	7,250	"	6	28.855	173		"
S11 - 1	"	6,710	"	10	26.706	267		"
S11 - 2	"	6,400	"	10	25.472	255		"
S11 - 3	"	7,960	"	10	31.681	317		"
S12 - 1	D13	5,740	0.995	9	5.711	51		
S12 - 2	"	8,440	"	18	8.398	151		
S12 - 3	"	8,640	"	9	8.597	77		
S13	D13	8,200	0.995	14	8.159	114		
					D25	6,840		
					D19 D13	394		
					TOTAL	7,234	kg	

BAR No.	DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
K1	D19	6,530	2.25	198	14.693	2,909		
					D19	2,909		
					TOTAL	2,909	kg	
H1	D25	3,000	3.98	24	11.940	287		
					D25	287		
					TOTAL	287	kg	
TOTAL					D25	7,126		
					D19	2,909		
					D13	394		
					TOTAL	10,430	kg	
					PLATE(SS400)			
					105.5 kg x 4 pieces =	422	kg	
					ribband(SS400)outside	2.36 kg/m x 3.46m x 8 pieces =	65.3kg	
					ribband(SS400)inner side	2.36 kg/m x 3.30m x 8 pieces =	62.3kg	
					TOTAL		127.6kg	
					CONCRETE VOLUME	185.3	m3	
					FORM	148.7	m2	
T1	D13	2,375	0.995	16	2.363	38		
					D13	38		
					TOTAL	38	kg	
					PLATE(SS400)			
					63.5 kg x 4 pieces =	254	kg	

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BREASTING DOLPHIN	Calc. Index No.	
Subject	CONCRETE	Page No.	Rev.

References/ Notes

$$A = (8\,m)(8\,m) - \frac{(1.50\,m)(1.50\,m)}{2}(2)$$

$$A = 61.75\ m^2$$

$$V = (61.75\ m^2)(3\,m)$$

$$= 185.25\ m^3 \approx 185.30\ m^3$$

$$V_T = (185.30\ m^3)(2) = 370.60\ m^3$$

$$\approx \boxed{371\ m^3}$$

		Prepared by		Checked by	
			/ /200		/ /200

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NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BREASTING DOLPHIN	**Pay Item No. (BOQ)**	2D-BD0202
Quantity Item	FORM	**Unit**	m2

Calculation Procedure Applied

Form area was computed for breasting dolphin.
Area was computed by geometric formulas, multiplying the lenght by the width of the sections

References, Calculation Base and Revisions

References : Tender Drawings.

DW-QW-02-02__004 Passenger Berth Breasting Dolphin Plan & Typical Cross Section

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Inuma		Mr. Ando		
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NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project In La Union	Calc. File No.	
Section	BREASTING DOLPHIN	Calc. Index No.	
Subject	FORM	Page No.	Rev.

References/ Notes

$$A_1 = (8\,m)(6\,m) - \frac{(1.50\,m)(1.5\,m)}{2}(12) + \pi(0.55)^2(9)$$

$$= 57.95\ m^2$$

$$A_2 = (6.50)(3)(2) = 39\ m^2$$

$$A_3 = (8\,m)(3\,m) = 24\ m^2$$

$$A_4 = (5\,m)(3\,m) = 15\ m^2$$

$$A_5 = (2.12\,m)(3m)(2) = 12.72\ m^2$$

$$A = 148.67\ m^2$$

$$A_T = (148.67\ m^2)(2) = 297.34\ m^2$$

$$\simeq \boxed{298\ m^2}$$

	Prepared by		Checked by	
		/ /200		/ /200

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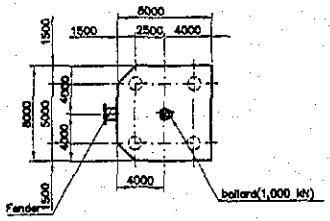
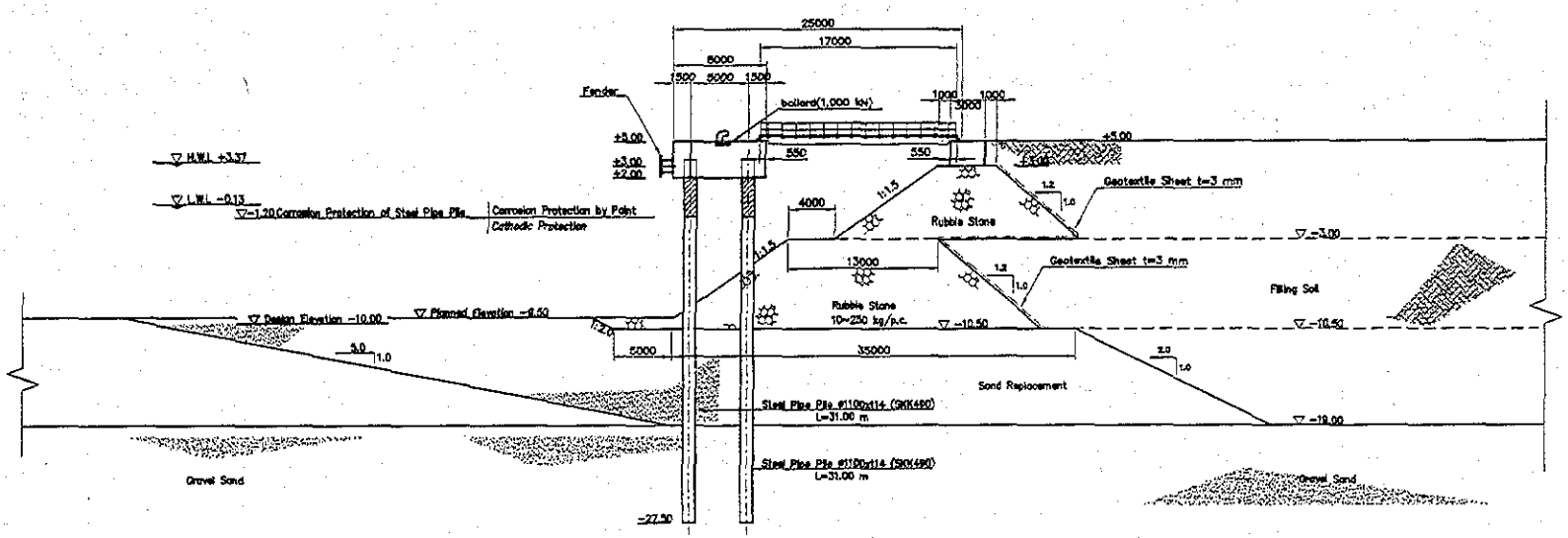


PLAN BREASTING DOLPHIN



TYPICAL CROSS SECTION

SCALE 1:400 0 5.0 10.0 15.0 20.0 25.0 30.0

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	DESIGNED BY :	SECTION : QUAYWALL WORK	DATE : JULY/2002	
						COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD	CHECKED BY :	SUB-SECTION : PASSENGER BERTH	SCALE : 1 : 400	
								APPROVED BY :	TITLE : PASSENGER BERTH BREASTING DOLPHIN PLAN & TYPICAL CROSS SECTION	DRAWING NO. DW-GW-02-004	

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BREASTING DOLPHIN	**Pay Item No. (BOQ)**	2D - BD0203
Quantity Item	REINFORCEMENT	**Unit**	ton

Calculation Procedure Applied

Reinforcement was computed for breasting dolphin. It was computed summarizing all bar lenght and multiplied by the weight.

References, Calculation Base and Revisions

References: Tender Drawings:

SW-GW-02-006 Bar Arrangement for Breasting Dolphin

SW-GW-02-020 Bar Bending Schedule for Breasting Dolphin

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

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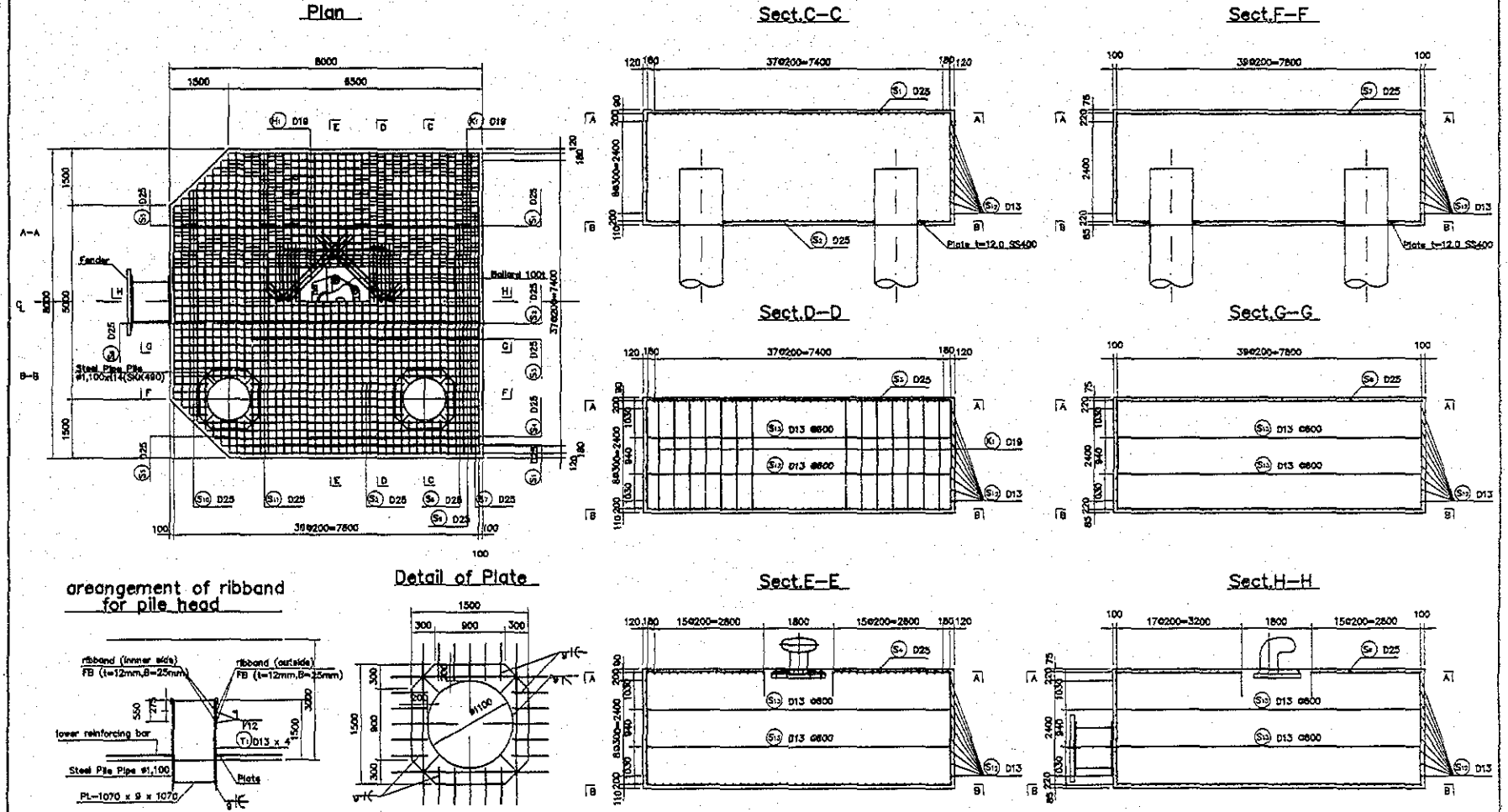
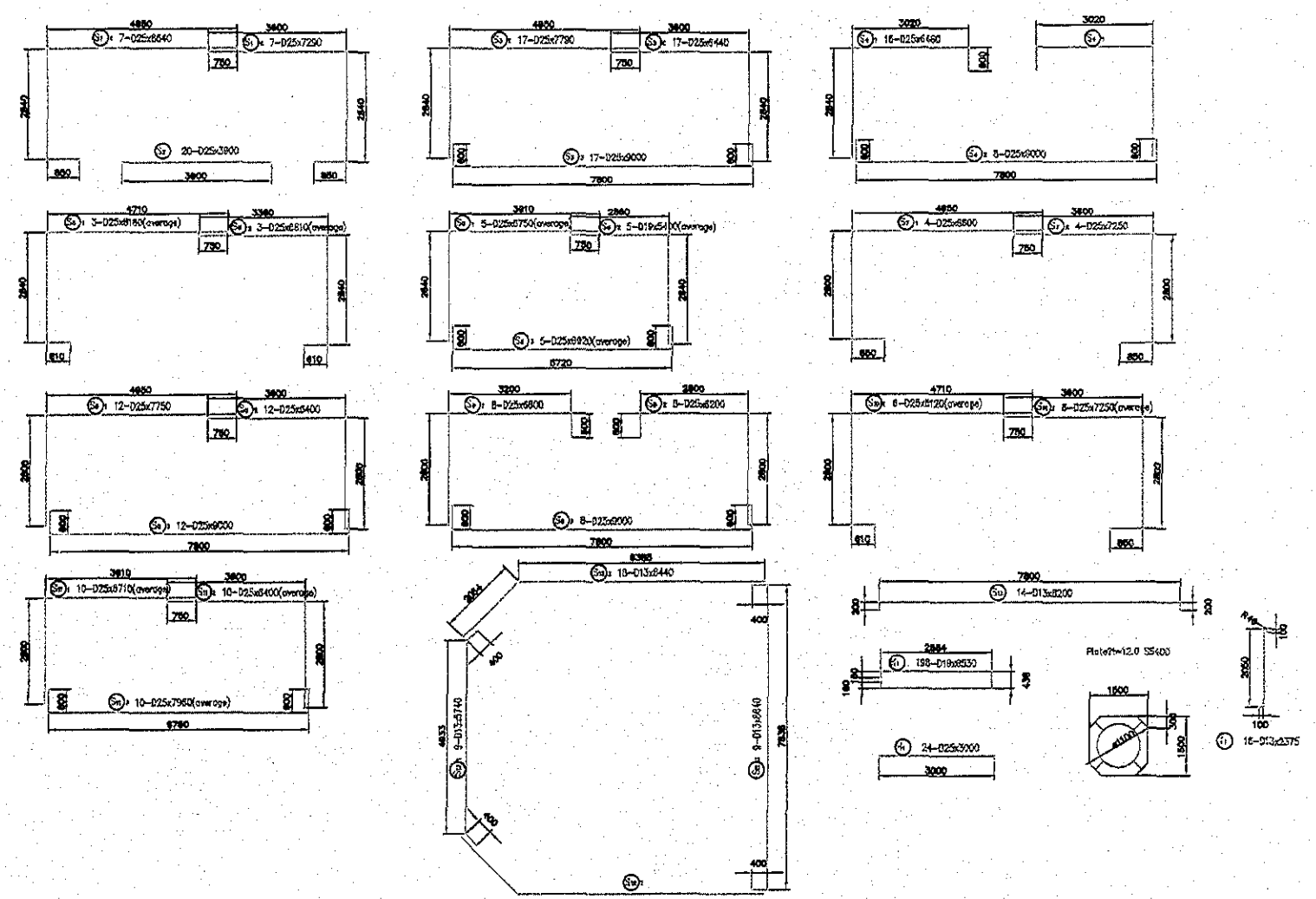
BAR ARRANGEMENT FOR BREASTING DOLPHIN



JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	DESIGNED BY :	SECTION : QUAYWALL WORK	DATE : JULY/2002
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	CHECKED BY :	SUB-SECTION : PASSENGER BERTH	SCALE : 1 : 100
		APPROVED BY :	TITLE : BAR ARRANGEMENT FOR BREASTING DOLPHIN	DRAWING NO. DW-DW-02-005

BAR BENDING SCHEDULE FOR BREASTING DOLPHIN



BAR SCHEDULE FOR BREASTING DOLPHIN

BAR No.		DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
S1	1	D25	8,640	3.98	7	34.387	241		
	2	"	7,290	"	7	29.014	203		
S2		"	3,900	"	20	15.522	310		
S3	1	"	7,790	"	17	31.004	527		
	2	"	6,440	"	17	25.631	436		
	3	"	9,000	"	17	35.820	609		
S4	1	"	6,460	"	16	25.711	411		
	2	"	9,000	"	8	35.820	287		
S5	1	"	8,160	"	3	32.477	97		average
	2	"	6,810	"	3	27.104	81		"
S6	1	"	6,750	"	5	26.865	134		"
	2	"	5,400	"	5	21.492	107		"
	3	"	6,920	"	5	27.542	138		"
S7	1	"	8,600	"	4	34.228	137		
	2	"	7,250	"	4	28.855	115		
S8	1	"	7,750	"	12	30.845	370		
	2	"	6,400	"	12	25.472	306		
	3	"	9,000	"	12	35.820	430		
S9	1	"	6,600	"	8	26.268	210		
	2	"	6,200	"	8	24.676	197		
	3	"	9,000	"	8	35.820	287		
S10	1	"	8,120	"	6	32.318	194		average
	2	"	7,250	"	6	28.855	173		"
S11	1	"	6,710	"	10	26.706	267		"
	2	"	6,400	"	10	25.472	255		"
	3	"	7,960	"	10	31.681	317		"
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	2	"	8,440	"	18	8.398	151		
	3	"	8,640	"	9	8.597	77		
S13		D13	8,200	0.995	14	8.159	114		

D25	6,840	
D19 D13	394	
TOTAL	7,234	kg

BAR No.	DIA	LENGTH (mm)	UNIT WT. (kg/m)	Q.T.Y	WEIGHT (kg)	TOTAL WT. (kg)	SHAPE	REMARKS
K1	D19	6,530	2.25	198	14.693	2,909		

D19	2,909	
TOTAL	2,909	kg

H1	D25	3,000	3.98	24	11.940	287		

D25	287	
TOTAL	287	kg

TOTAL

D25	7,126	
D19	2,909	
D13	394	
TOTAL	10,430	kg

PLATE(SS400)		
105.5 kg x 4 pieces =	422	kg

ribband(SS400)outside	2.36 kg/m x 3.46m x 8 pieces =	65.3kg
ribband(SS400)inner side	2.36 kg/m x 3.30m x 8 pieces =	62.3kg
TOTAL		127.6kg

CONCRETE VOLUME	185.3	m3
FORM	148.7	m2

T1	D13	2,375	0.995	16	2.363	38		

D13	38	
TOTAL	38	kg

PLATE(SS400)		
63.5 kg x 4 pieces =	254	kg

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

COMISION EJECUTIVA [illegible]

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

BAR SCHEDULE FOR

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BREASTING DOLPHIN	Calc. Index No.	
Subject	REINFORCEMENT	Page No.	Rev.

References/ Notes

D25 = 6,840 Kg + 287 Kg = 7,127 Kg
≈ 7.20 ton

D19 = 2,909 Kg ≈ 3.00 ton

D13 = 394 Kg

W = 7,127 Kg + 2,909 Kg + 394 Kg =
= 10,430 Kg

W_T = (10,430 Kg)(2) = 20,860 Kg
≈ 20.90 ton

		Prepared by		Checked by	
			/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BREASTING DOLPHIN	**Pay Item No. (BOQ)**	2D-BD0204
Quantity Item	CORNER PROTECTION	**Unit**	m

Calculation Procedure Applied

Corner protection lenght was computed for breashing dolphin. It was applied around the sides of the breashing dolphin.

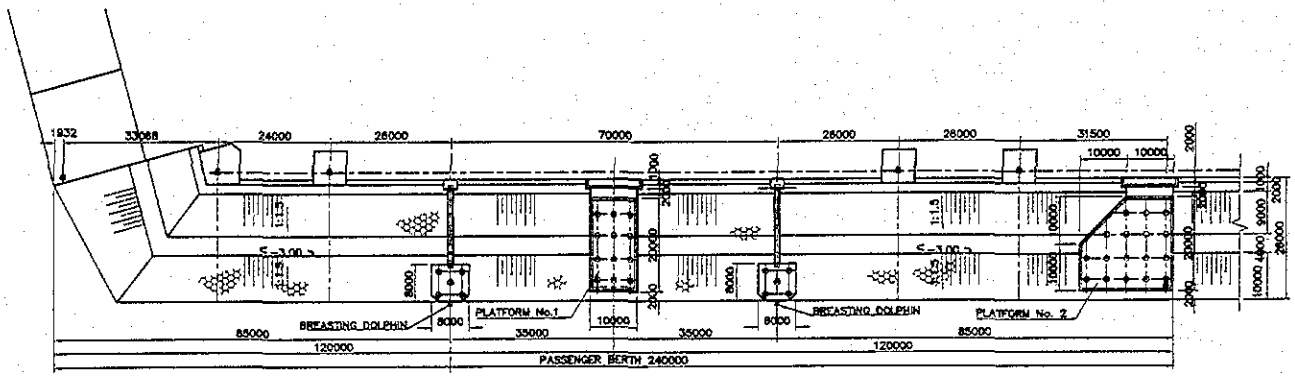
References, Calculation Base and Revisions

References: Tender Drawings:

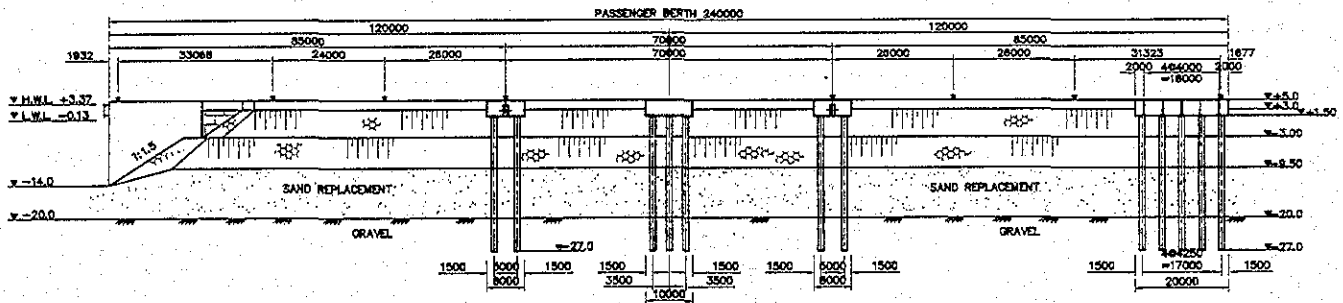
QW - QW - 02 - 001 Plan and Profile of Passenger Berth.

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

FN : Calculation_Cover_Sheet_020504_seg cover



PLAN



PROFILE

PASSENGER BERTH

SCALE 1:1,000 0 10.0 20.0 30.0 40.0 50.0 60.0

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE

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.

DESIGNED BY :

CHECKED BY :

APPROVED BY :

SECTION : QUAYWALL WORK

SUB-SECTION : PASSENGER BERTH

TITLE :

PLAN AND PROFILE OF PASSENGER BERTH

DATE : JULY/2002

SCALE : 1 : 1,000

DRAWING NO. : DW-QW-02-001

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BREASTING DOLPHIN	Calc. Index No.	
Subject	CORNER PROTECTION	Page No.	Rev.

References/ Notes

$$L = (7m)(2) + 6m + (1.41m)(2)$$

$$= 22.82\ m$$

$$L_T = (22.82\ m)(2) = 45.64\ m$$

$$\approx \boxed{46\ m}$$

	Prepared by	Checked by
	/ /200	/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CORROSION - PROOF	**Pay Item No. (BOQ)**	2D-0301
Quantity Item	ALUMINIUM ANODE (3.0 A X 20 YEARS)	**Unit**	pcs

Calculation Procedure Applied

Aluminium Anode was computed in Passenger Berth. They were computed by the number of pieces in each platform and breasting dolphin.

(See attached drawing).

References, Calculation Base and Revisions

References: Tender Drawings:

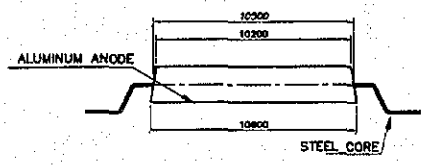
DW - QW - 02 - 032 Cathodic Protection System (1)

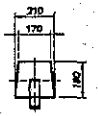
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

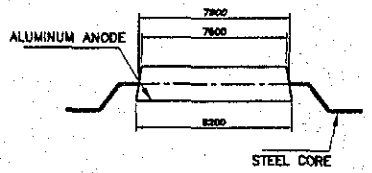
ALUMINUM ALLOY ANODE

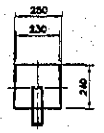
SCALE 1:250





3.0AX20YEAR





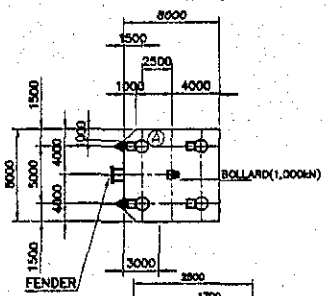
3.5AX20YEAR

CATHODIC PROTECTION SYSTEM

NAME	SYMBOL	INSTALLATION LEVEL	INSTALLATION	BREASTING DOLPHIN (2-UNITS)	PIER-1 (1-UNIT)	PIER-2 (1-UNIT)	TOTAL
ALUMINUM ANODE 3.0AX20YEAR	▲	-1.80	VERTICAL INSTALLATION	———	6 PCS/01 = 6 PCS	10 PCS/01 =10 PCS	16 PCS
	△	-4.00			3 PCS/01 = 3 PCS	5 PCS/01 = 5 PCS	8 PCS
	▬	-1.30	HORIZONTAL INSTALLATION	———	3 PCS/01 = 3 PCS	4 PCS/01 = 4 PCS	7 PCS
TOTAL					12 PCS	19 PCS	31 PCS
3.5AX20YEAR	□	-1.80	VERTICAL INSTALLATION	4 PCS/02 = 8 PCS	———	———	8 PCS
	⚠	-4.00	HORIZONTAL INSTALLATION	2 PCS/02 = 4 PCS	———	———	4 PCS
TOTAL				12 PCS			12 PCS
MEASURING TERMINAL	Ⓜ			1 PC X 2 = 2 PCS	1 PC X 1 = 1 PC	1 PC X 1 = 1 PC	4 PCS

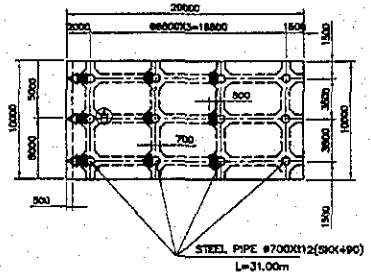
PLAN BREASTING DOLPHIN

SCALE 1:400



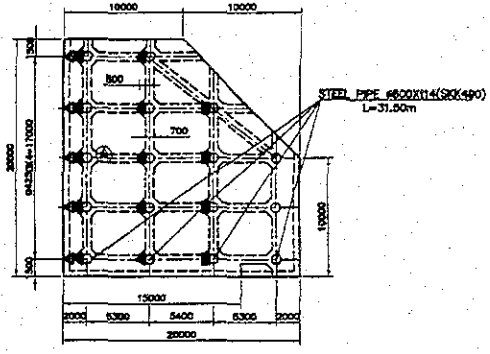
PIER 1

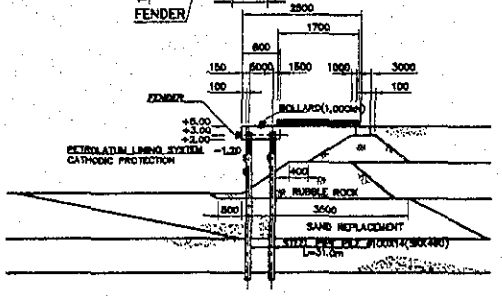
SCALE 1:400



PIER 2

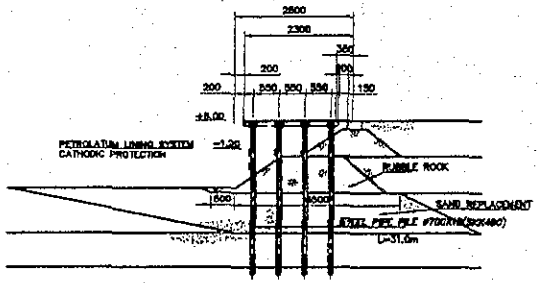
SCALE 1:400





TYPICAL CROSS SECTION

SCALE 1:1000



TYPICAL CROSS SECTION

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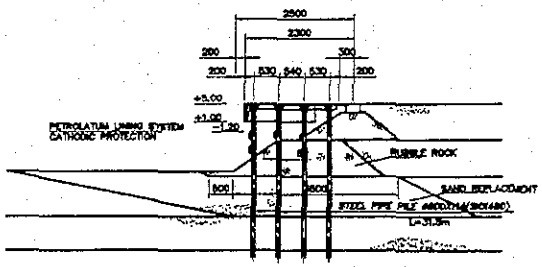


TYPICAL CROSS SECTION

SCALE 1:1000

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE		

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.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE : CATHODIC PROTECTION SYSTEM (1)

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. : DW-QW-02-032

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CORROSION - PROOF	Calc. Index No.	
Subject	ALUMINIUM ANODE (3.0A x 20 YEARS)	Page No.	Rev.

References/ Notes

Platform 1 = 12 pcs

Platform 2 = 19 pcs

31 pcs

		Prepared by		Checked by	
			/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CORROSION – PROOF	**Pay Item No. (BOQ)**	2D - 0302
Quantity Item	ALUMINUM ANODE (3.5A x 20 YEARS)	**Unit**	pcs

Calculation Procedure Applied

Aluminium Anode was computed in Passenger Berth. They were computed by the number of pieces in each platform and breasting dolphin.
(See attached drawing).

References, Calculation Base and Revisions

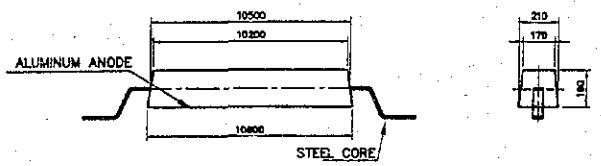
References : Tender Drawings :
DW - QW - 02 - 032 Cathodic Protection System (1)

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

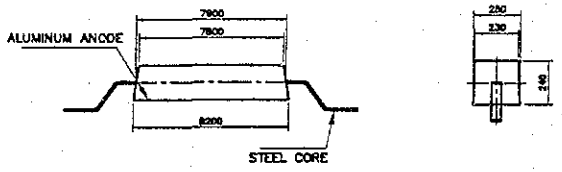
FN : Calculation_Cover_Sheet_020504_seg cover

ALUMINUM ALLOY ANODE

SCALE 1:250



3.0AX20YEAR



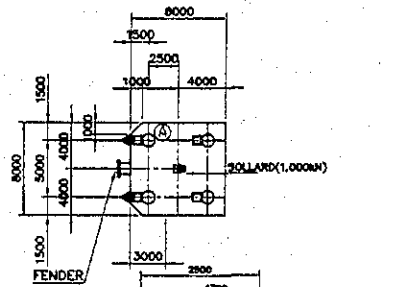
3.5AX20YEAR

CATHODIC PROTECTION SYSTEM

NAME	SYMBOL	INSTALLATION LEVEL	INSTALLATION	BREASTING DOLPHIN (2-UNITS)	PIER-1 (1-UNIT)	PIER-2 (1-UNIT)	TOTAL
ALUMINUM ANODE 3.0AX20YEAR	▲	-1.80	VERTICAL INSTALLATION	———	8 PCSX1 = 8 PCS	10 PCSX1 =10 PCS	18 PCS
	△	-4.00			3 PCSX1 = 3 PCS	5 PCSX1 = 5 PCS	8 PCS
	▬	-1.38	HORIZONTAL INSTALLATION	———	3 PCSX1 = 3 PCS	4 PCSX1 = 4 PCS	7 PCS
TOTAL					12 PCS	19 PCS	31 PCS
3.5AX20YEAR	□	-1.80	VERTICAL INSTALLATION	4 PCSX2 = 8 PCS	———	———	8 PCS
	△	-4.00	HORIZONTAL INSTALLATION	2 PCSX2 = 4 PCS	———	———	4 PCS
TOTAL				12 PCS			12 PCS
MEASURING TERMINAL	Ⓜ			1 PC X 2 = 2 PCS	1 PC X 1 = 1 PC	1 PC X 1 = 1 PC	4 PCS

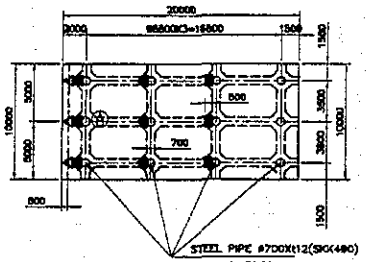
PLAN BREASTING DOLPHIN

SCALE 1:100



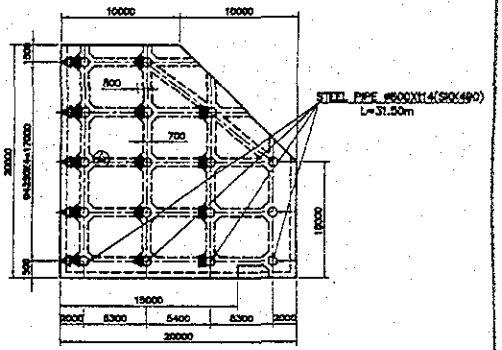
PIER 1

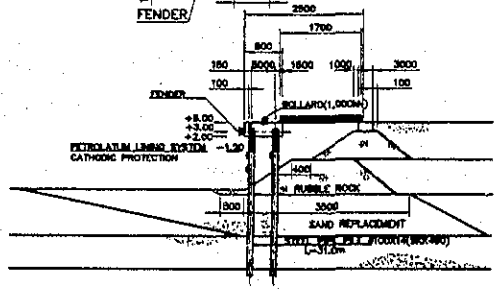
SCALE 1:400



PIER 2

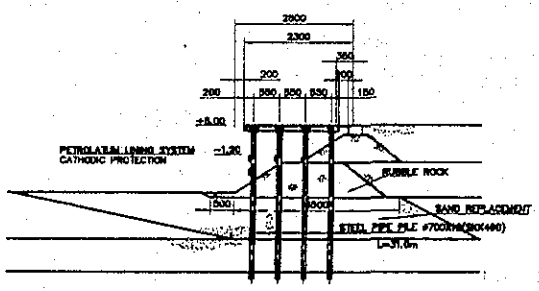
SCALE 1:400





TYPICAL CROSS SECTION

SCALE 1:1000



TYPICAL CROSS SECTION

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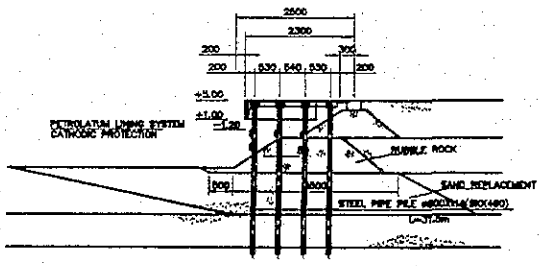

TYPICAL CROSS SECTION

SCALE 1:1000

REV. NO.	DATE	DESCRIPTION	BY	APPROVED	DATE

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.

DESIGNED BY :

CHECKED BY :

APPROVED BY :

SECTION : QUAYWALL WORK

SUB-SECTION : PASSENGER BERTH

TITLE : CATHODIC PROTECTION SYSTEM (1)

DATE : JULY/2002

SCALE : INDICATED

DRAWING NO. : DW-QW-02-032

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CORROSION - PROOF	Calc. Index No.	
Subject	ALUMINIUM ANODE (3.5A x 20 YEARS)	Page No.	Rev.

References/ Notes

Breasting Dolphin = [12] pieces

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CORROSION - PROOF	**Pay Item No. (BOQ)**	2D – 0303
Quantity Item	MEASURING TERMINAL	**Unit**	pcs

Calculation Procedure Applied

Measuring terminals were computed for Passenger Berth. They were computed by number of pieces in each platform and breathing dolphin. (See attached drawing).

References, Calculation Base and Revisions

References : Tender Drawings :

DW – QW – 02 – 032 Cathodic Protection System (1)

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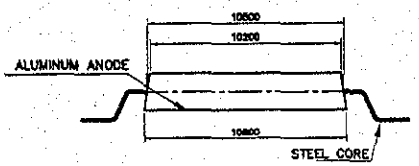
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

ALUMINUM ALLOY ANODE

SCALE 1:250



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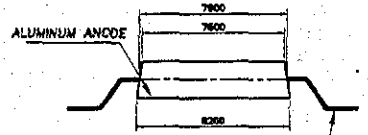

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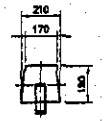
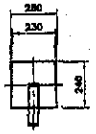


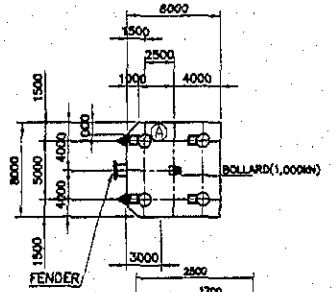


CATHODIC PROTECTION SYSTEM

NAME	SYMBOL	INSTALLATION LEVEL	INSTALLATION	BREASTING DOLPHIN (2-UNITS)	PIER-1 (1-UNITS)	PIER-2 (1-UNITS)	TOTAL
ALUMINUM ANODE 3.0AX20YEAR	▲	-1.50	VERTICAL INSTALLATION	———	6 PCS01 = 6 PCS	10 PCS01 =10 PCS	16 PCS
"	△	-4.00			3 PCS01 = 3 PCS	5 PCS01 = 5 PCS	8 PCS
"	■	-1.30	HORIZONTAL INSTALLATION	———	3 PCS01 = 3 PCS	4 PCS01 = 4 PCS	7 PCS
TOTAL					12 PCS	19 PCS	31 PCS
3.5AX20YEAR	□	-1.50	VERTICAL INSTALLATION	4 PCS02 = 8 PCS	———	———	8 PCS
"	△	-4.00	HORIZONTAL INSTALLATION	2 PCS03 = 4 PCS	———	———	4 PCS
TOTAL				12 PCS			12 PCS
MEASURING TERMINAL	Ⓐ			1 PC X 2 = 2 PCS	1 PC X 1 = 1 PC	1 PC X 1 = 1 PC	4 PCS

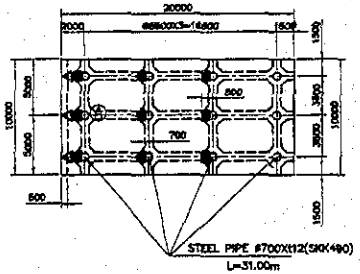
PLAN BREASTING DOLPHIN

SCALE 1:400



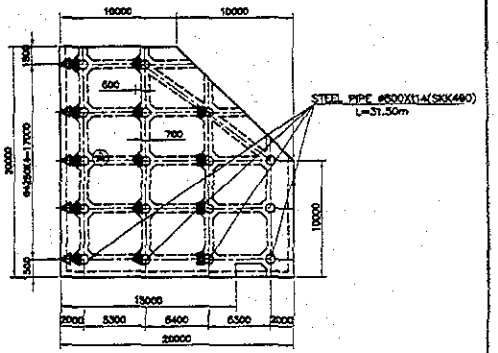
PIER 1

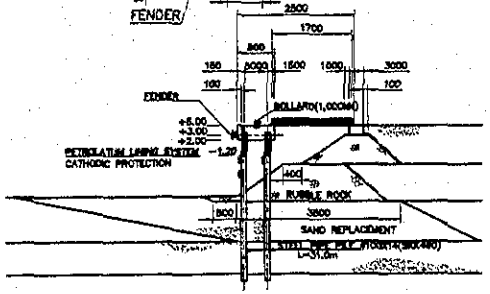
SCALE 1:400



PIER 2

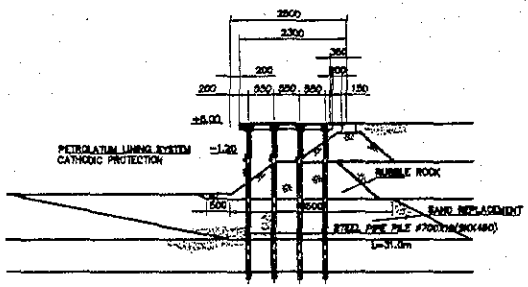
SCALE 1:400





TYPICAL CROSS SECTION

SCALE 1:1000



TYPICAL CROSS SECTION

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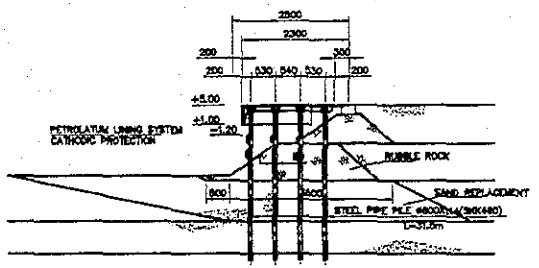


TYPICAL CROSS SECTION

SCALE 1:1000

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE

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.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE : CATHODIC PROTECTION SYSTEM (1)

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. : DW-QW-02-032

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CORROSION - PROOF	Calc. Index No.	
Subject	MEASURING TERMINAL	Page No.	Rev.

References/ Notes

Platform 1 = 1 pc

Platform 2 = 1 pc

Breasting Dolphin = 1 (2) = 2

N_o = 4 pcs.

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CORROSION - PROOF	**Pay Item No. (BOQ)**	2D-0304
Quantity Item	FRP PROTECTION	**Unit**	M2

Calculation Procedure Applied

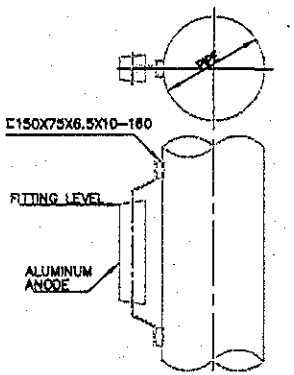
Frp protection area was computed for Passenger Berth. It is applied to Breasting dolphins and Piers piles.
(See attached drawing).

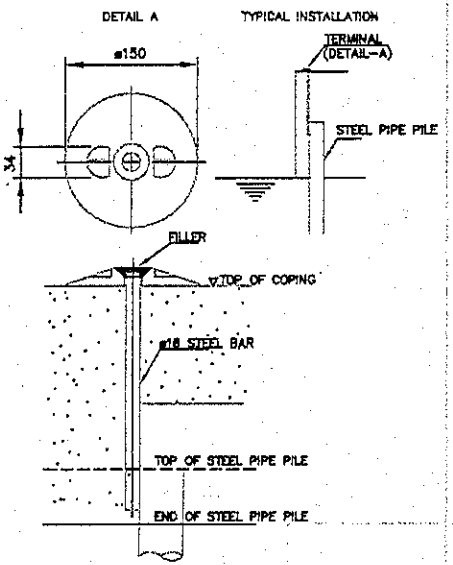
References, Calculation Base and Revisions

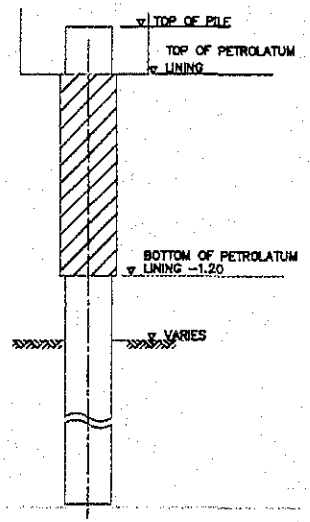
DW - QW - 02 - 033 Cathodic Protection System (2)

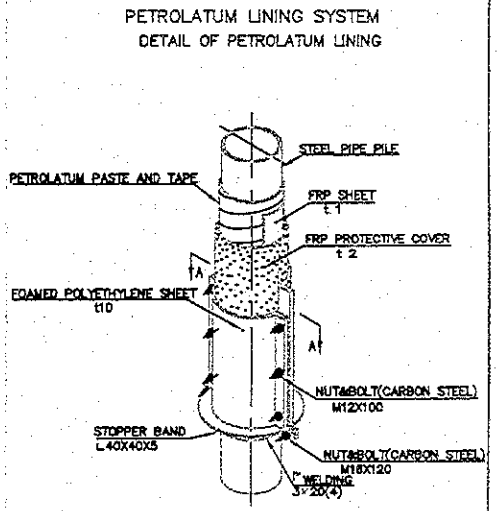
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover



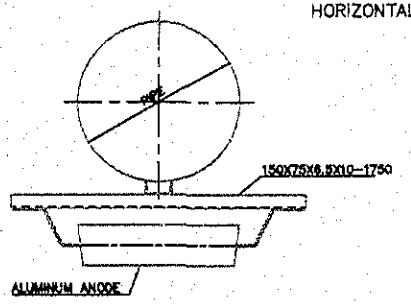


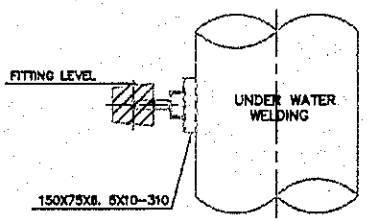


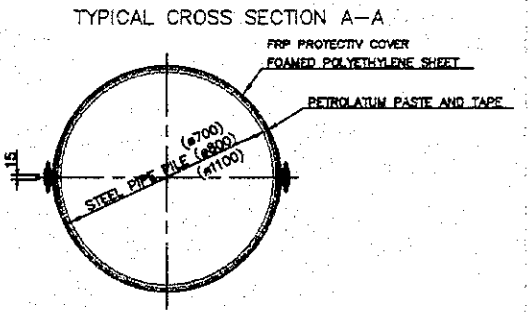


LIST OF STEEL PIPE PILES

LOCATION	PIPE SIZE	NOS.	TOP OF PETROLATUM LINING	BOTTOM OF PETROLATUM LINING	No.OF STRUCTURE
BREASTING DOLPHIN	ø1100X14	4	+2.00	-1.20	2-UNITS
PIER-1	ø 700X12	12	+3.50	-1.20	1-UNITS
PIER-2	ø 800X14	17	+3.50	-1.20	1-UNITS







FRP Protection

		Nos	Top Level	Bottom Level	Distance	Area
Platform 1	ϕ 700	12	3.5	-1.2	4.7	124.1
Platform 2	ϕ 800	17	3.5	-1.2	4.7	200.9
Bresting Dolphin	ϕ 1100	8	2.0	-1.2	3.2	88.5

Total 414 m2

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CAT WALK	**Pay Item No. (BOQ)**	2D - 0401
Quantity Item	BASE STEEL	**Unit**	Kg

Calculation Procedure Applied

Base steel was computed for Passenger Berth.
The result was multiplied by the total number of catwalk.
(See attached drawing).

References, Calculation Base and Revisions

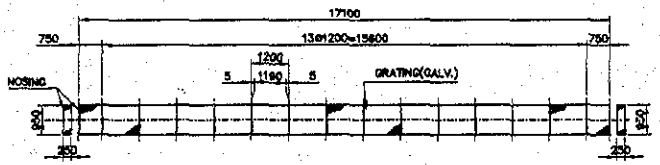
Reference: Tender Drawings:
DW - QW - 02 025 Detail of Catwalk

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

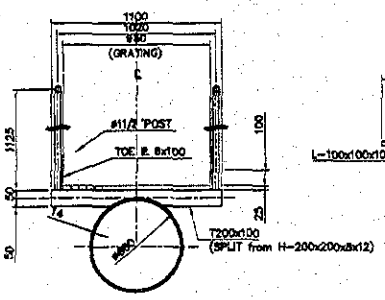
FN : Calculation_Cover_Sheet_020504_seg cover

DETAIL OF CATWALK

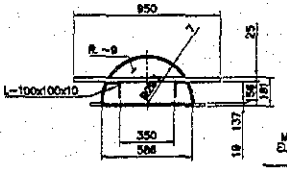
GRATING PLAN S=1/150



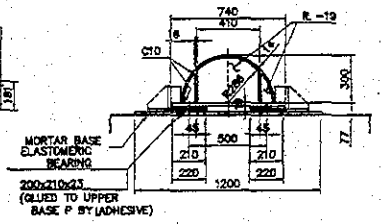
VIEW B–B S=1/300



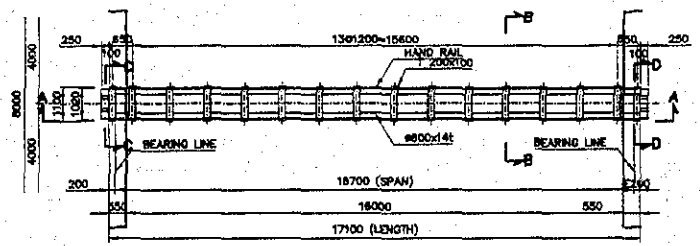
VIEW C–C S=1/300



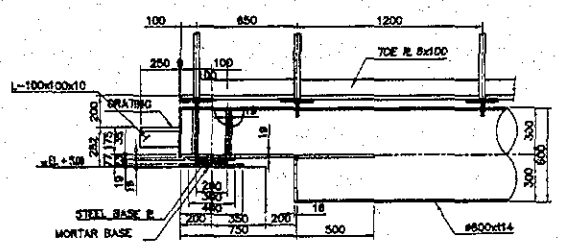
VIEW D–D S=1/300



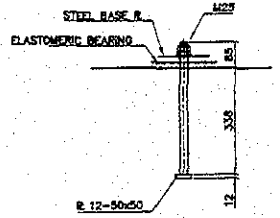
PLAN S=1/150



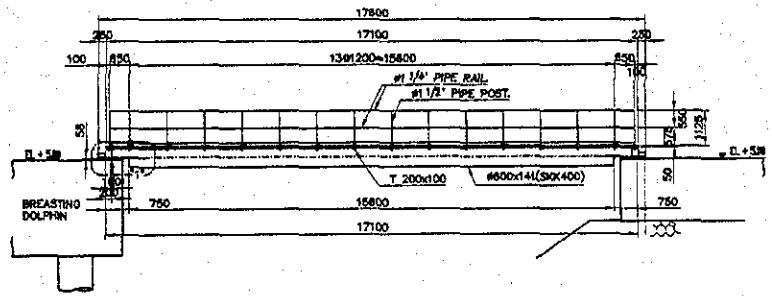
DETAIL "1" S=1/300



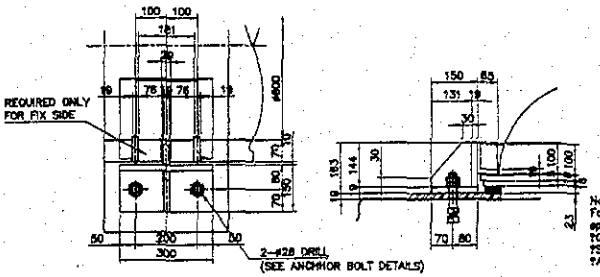
ANCHOR BOLT DETAILS S=1/15



VIEW A–A S=1/150



STOPPER DETAILS S=1/15



COMPONENT	MEMO	MATERIAL	WEIGHT(KG)
			(JIS)
PILE	ø600x14t	SKK400	3151.20
H	H-200x200x8x12	SS400	439.12
PIPE RAIL	#1 1/4"	SGP	228.49
PIPE POST	#1 1/2"	SGP	140.04
GRATING	t=25mm	SS400	749.42
PLATE	PL8x100	SS400	159.20
ANGLE	L-100x100x10	SS400	14.90
HALF-CIRCLE	R293	SS400	19.08
HALF-CIRCLE	R288 t16	SS400	64.06
PLATE	200x250xt19	SS400	78.07
STOPPER	t19	SS400	48.22
BASE	200x220xt16	SS400	22.61
PLATE	740x1250xt19	SS400	255.05
HALF-CIRCLE	R300 t16	SS400	35.17
			5403.63

Note.
Following items shall be galvanized in accordance with relevant specification.
†Grating
†Stopper
†Anchor bolt

All members of metal material without above items shall be coated in accordance with relevant specification.

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE

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.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE : DETAIL OF CATWALK

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-02-025

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CATWALK	Calc. Index No.	
Subject	BASE STEEL	Page No.	Rev.

References/ Notes

No catwalk = 2

Base steel per 1 catwalk:

W_1 = 4285.68 Kg

W_T = (4285.68 Kg)(2) = 8571.36 Kg

≈ 8,580 Kg

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CATWALK	**Pay Item No. (BOQ)**	2D - 0402
Quantity Item	PIPE RAIL	**Unit**	Kg

Calculation Procedure Applied

Pipe rail was computed for Passenger Berth, it was computed per one catwalk and the result multiplied by the total number of catwalk.
(See attached drawing).

References, Calculation Base and Revisions

References: Tender Drawings:

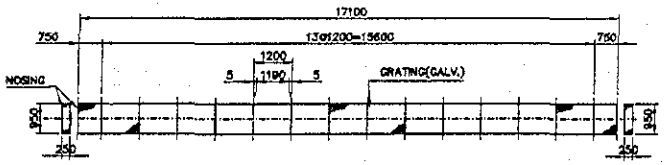
DW-QW-02-C25 Detail of Catwalk

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

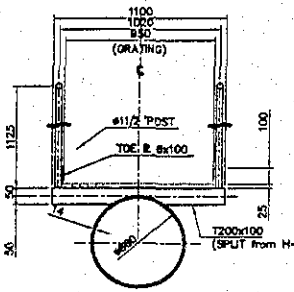
FN : Calculation_Cover_Sheet_020504_seg cover

DETAIL OF CATWALK

GRATING PLAN S=1/150



VIEW B–B S=1/300



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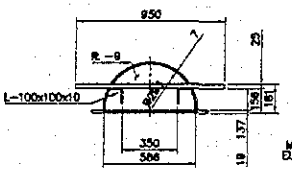
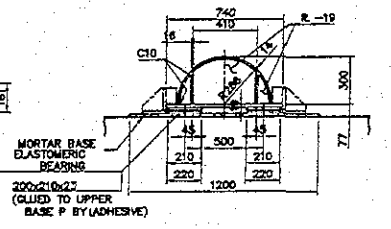
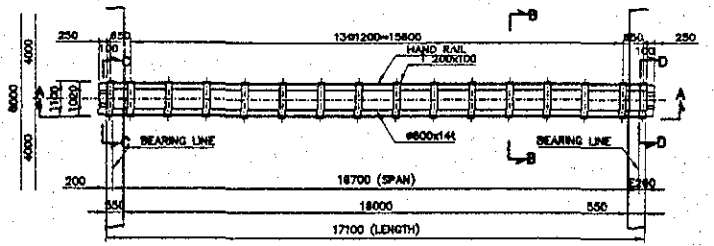


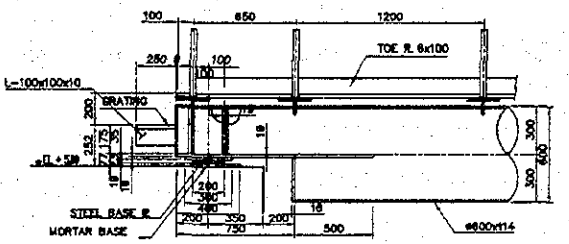
VIEW D–D S=1/300



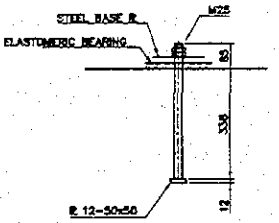
PLAN S=1/150



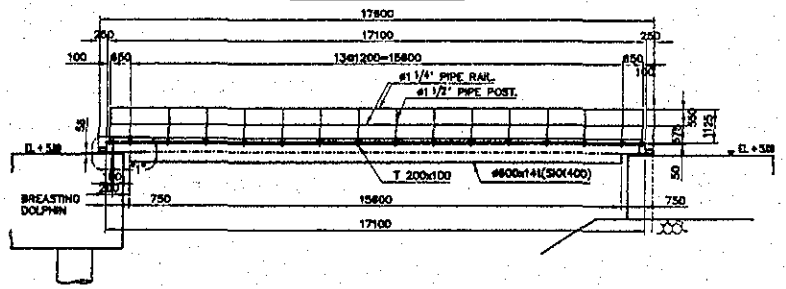
DETAIL "1" S=1/300



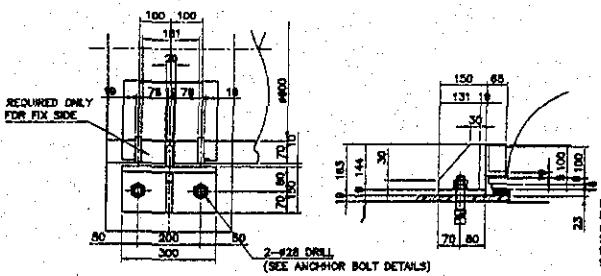
ANCHOR BOLT DETAILS S=1/15



VIEW A–A S=1/150



STOPPER DETAILS S=1/15



(JIS)

COMPONENT	MEMO	MATERIAL	WEIGHT(KG)
PILE	#800x14t	SKK400	3151.20
H	H-200x200x8x12	SS400	439.12
PIPE RAIL	#1 1/4"	SGP	226.48
PIPE POST	#1 1/2"	SGP	140.04
GRATING	t=25mm	SS400	749.42
PLATE	PL8x100	SS400	159.20
ANGLE	L-100x100x10	SS400	14.90
HALF-CIRCLE	R283	SS400	19.08
HALF-CIRCLE	R258 t16	SS400	64.08
PLATE	200x250x16	SS400	76.07
STOPPER	t19	SS400	46.22
BASE	200x220x16	SS400	22.81
PLATE	740x1250x19	SS400	255.06
HALF-CIRCLE	R300 t16	SS400	35.17
			5403.63

Note.
Following items shall be galvanized in accordance with relevant specification.
1)Grating
2)Stopper
3)Anchor bolt

All members of metal material without above items shall be coated in accordance with relevant specification.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	DESIGNED BY :	SECTION : QUAYWALL WORK	DATE : JULY/2002
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	CHECKED BY :	SUB-SECTION : PASSENGER BERTH	SCALE : INDICATED
		APPROVED BY :	TITLE : DETAIL OF CATWALK	DRAWING NO. DW-QW-02-025

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CATWALK	Calc. Index No.	
Subject	PIPE RAIL	Page No.	Rev.

References/ Notes

No. catwalk = 2

Pipe rail per 1 catwalk :

W Pipe rail + pipe post = 228.49 kg + 140.04 kg

= 368.53 kg

$W_T = (368.53\ kg)(2) = 737.06\ kg$

≒ 738 kg

		Prepared by		Checked by	
			/ /200		/ /200

FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	CATWALK	**Pay Item No. (BOQ)**	2D-0403
Quantity Item	GRATING	**Unit**	Kg

Calculation Procedure Applied

Grating was computed for Passenger Berth. The result was multiplied by the total number of catwalk. (See attached drawing).

References, Calculation Base and Revisions

References: Tender Drawings:

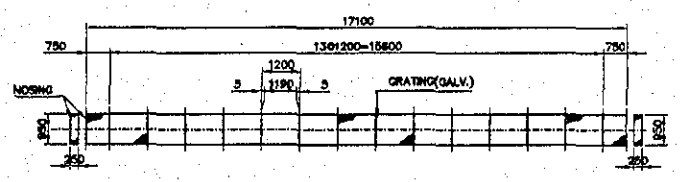
DW-QW-02-025 Detail of Catwalk

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

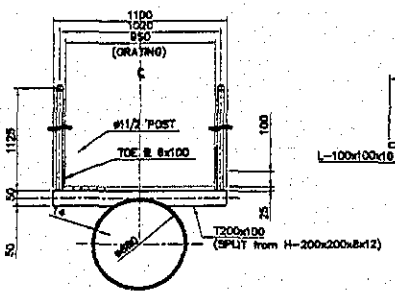
FN : Calculation_Cover_Sheet_020504_seg cover

DETAIL OF CATWALK

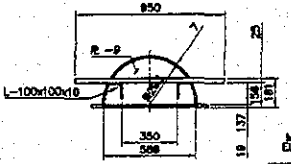
GRATING PLAN S=1/150



VIEW B-B S=1/300



VIEW C-C S=1/300



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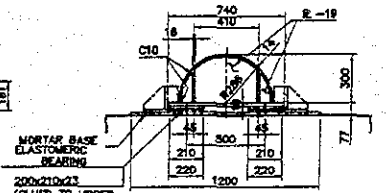
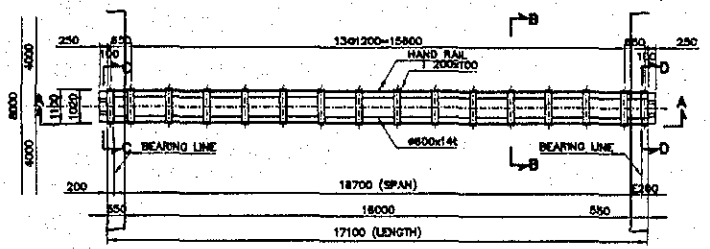
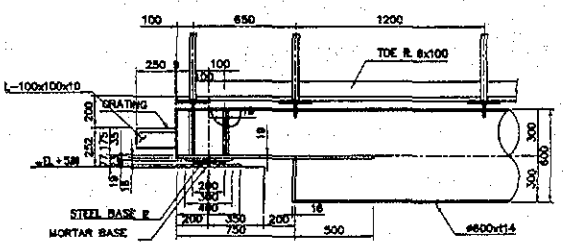


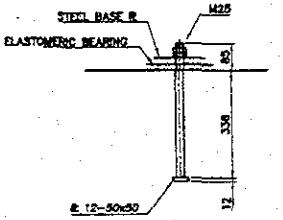
PLAN S=1/150



DETAIL "1" S=1/300



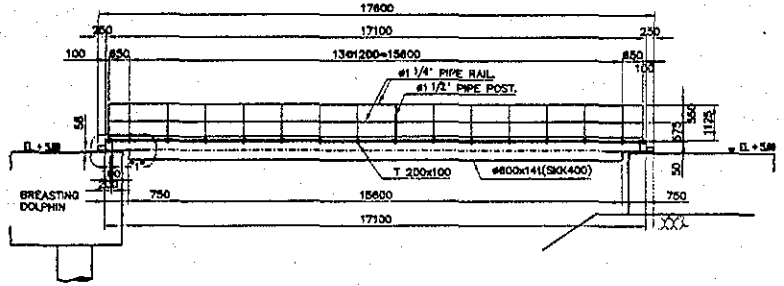
ANCHOR BOLT DETAILS S=1/15



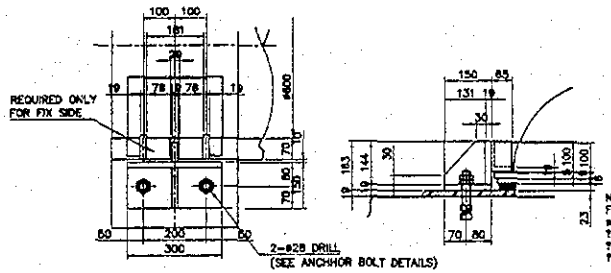
(JIS)

COMPONENT	MEMO	MATERIAL	WEIGHT(KG)
PILE	#600x14t	SKK400	3151.20
H	H-200x200x8x12	SS400	439.12
PIPE RAIL	#1 1/4'	SGP	228.49
PIPE POST	#1 1/2'	SGP	140.04
GRATING	t=25mm		746.42
PLATE	PL8x100	SS400	156.20
ANGLE	L-100x100x10	SS400	14.90
HALF-CIRCLE	R203	SS400	18.08
HALF-CIRCLE	R288 t16	SS400	64.06
PLATE	200x250xt19	SS400	78.07
STOPPER	t19	SS400	49.22
BASE	200x220xt16	SS400	23.81
PLATE	740x1250xt19	SS400	255.05
HALF-CIRCLE	R300 t16	SS400	35.17
			5403.83

VIEW A-A S=1/150



STOPPER DETAILS S=1/15



Note.
Following items shall be galvanized in accordance with relevant specification.
†Grating
‡Stopper
†Anchor bolt

All members of metal material without above items shall be coated in accordance with relevant specification.

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE		

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA 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 : PASSENGER BERTH
TITLE :

DETAIL OF CATWALK

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-02-025

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project In La Union	Calc. File No.	
Section	CATWALK	Calc. Index No.	
Subject	GRATING	Page No.	Rev.

References/ Notes

No. Catwalk = 2

Grating per 1 catwalk :

$W = 749.42 \text{ kg}$

$W_T = (749.42 \text{ kg})(2) = 1,498.84 \text{ kg}$

$\approx \boxed{1,500 \text{ kg}}$

		Prepared by		Checked by	
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FN: Calculation_Sheet

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	FENDER	**Pay Item No. (BOQ)**	2D - 0501
Quantity Item	TYPE - B	**Unit**	Nos

Calculation Procedure Applied

Fender was computed per unit in Passenger Berth.

References, Calculation Base and Revisions

References : Tender Drawings :

LW-GW-02-005 Detail layout Plan Passenger Berth

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Gloria			M. Inuma		M. Ando		
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2								
3								

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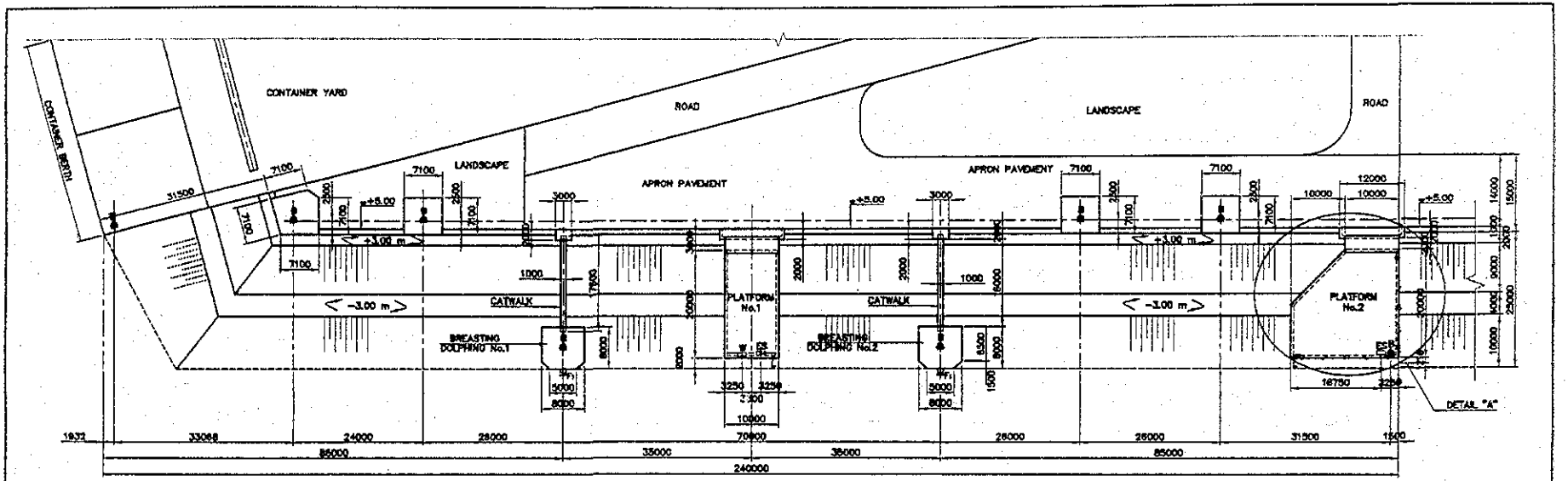

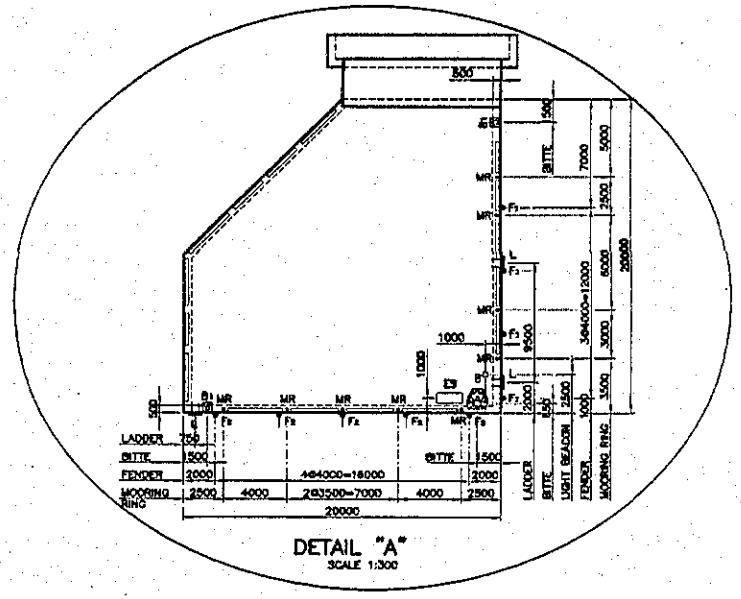

LEGEND:

- ES — ELECTRIC SERVICE
- W — WATER (HAIDLANT, FIREFITTING)
- F1 — FENDER (H=800)
- F2 — FENDER (H=150)
- B — BOLLARD (1000 KN)
- B1 — BOLLARD (150 KN)
- L — LADDER
- MR — MOORING RING

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE		

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.

DESIGNED BY : A. MORIOKA
CHECKED BY : N. NISHIMURA
APPROVED BY : T. ONUKI

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE :

DETAIL LAYOUT PLAN PASSENGER BERTH

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. : DW-GW-02-005

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	FENDER	Calc. Index No.	
Subject	TYPE - B	Page No.	Rev.

References/ Notes

No = 2

	Prepared by	Checked by
	/ /200	/ /200

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	FENDER	**Pay Item No. (BOQ)**	2D - 0502
Quantity Item	TYPE - C	**Unit**	Nos

Calculation Procedure Applied

Fender was computed per unit in Passenger Berth.

References, Calculation Base and Revisions

References : Tender Drawings :

LW-2N-02-005 Detail Layout Plan Passenger Berth.

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
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2								
3								

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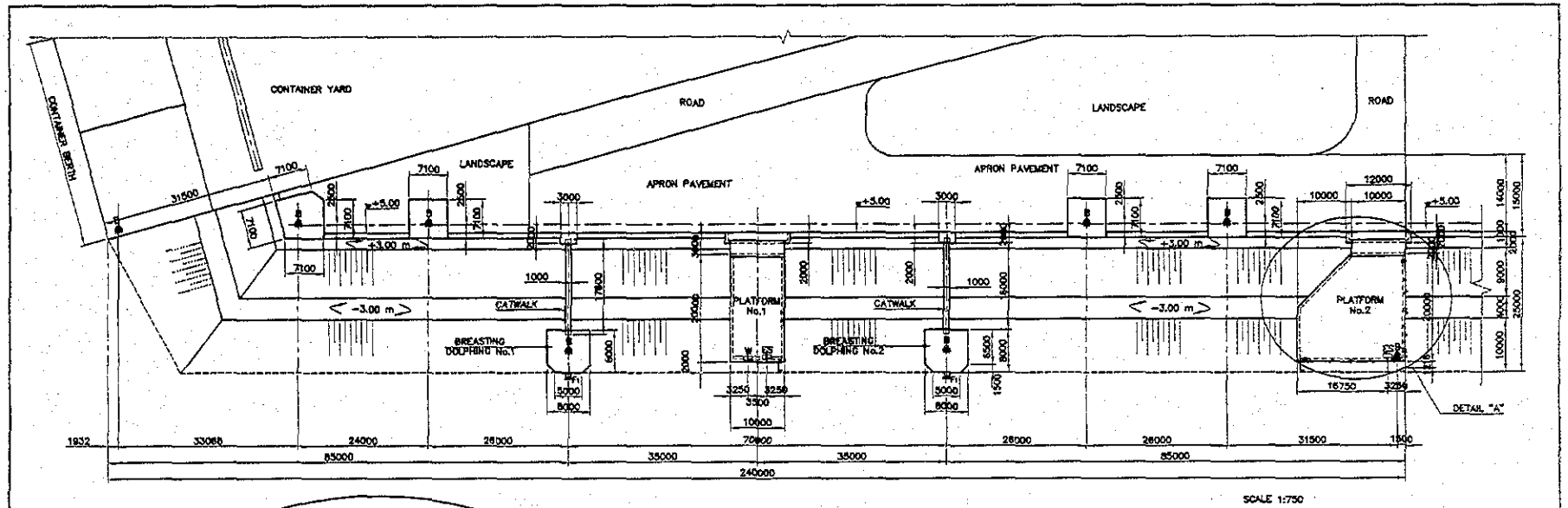

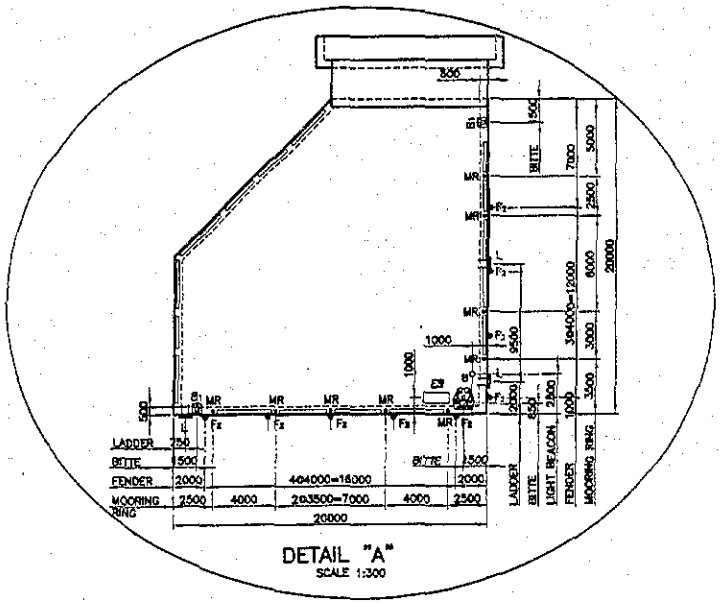

LEGEND:

ES	ELECTRIC SERVICE
W	WATER (HAIDLANT, FIREFITING)
F_1	FENDER (H=800)
F_2	FENDER (H=150)
B	BOLLARD (1000 KN)
B1	BOLLARD (150 KN)
L	LADDER
MR	MOORING RING

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	DESIGNED BY : A. MORIOKA CHECKED BY : N. NISHIMURA APPROVED BY : T. OKUKI	SECTION : QUAYWALL WORK SUB-SECTION : PASSENGER BERTH TITLE : DETAIL LAYOUT PLAN PASSENGER BERTH
NIPPON KOEI CO., LTD.			DATE : JULY/2002 SCALE : INDICATED DRAWING NO: DW-QW-02-005

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	FENDER	Calc. Index No.	
Subject	TYPE - C	Page No.	Rev.

References/ Notes

No = ~~9~~ 16

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NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BOLLARD	**Pay Item No. (BOQ)**	2D-0601
Quantity Item	BOLLARD 100 t WITH ANCHOR BOLT	**Unit**	Sets.

Calculation Procedure Applied

Bollards 100 t were computed for Passenger Berth. They were computed summarizing all sets included in passenger Berth.

References, Calculation Base and Revisions

References: Tender Drawings:

DWG-QW-02-005 Detail Layout Plan Passenger Berth

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
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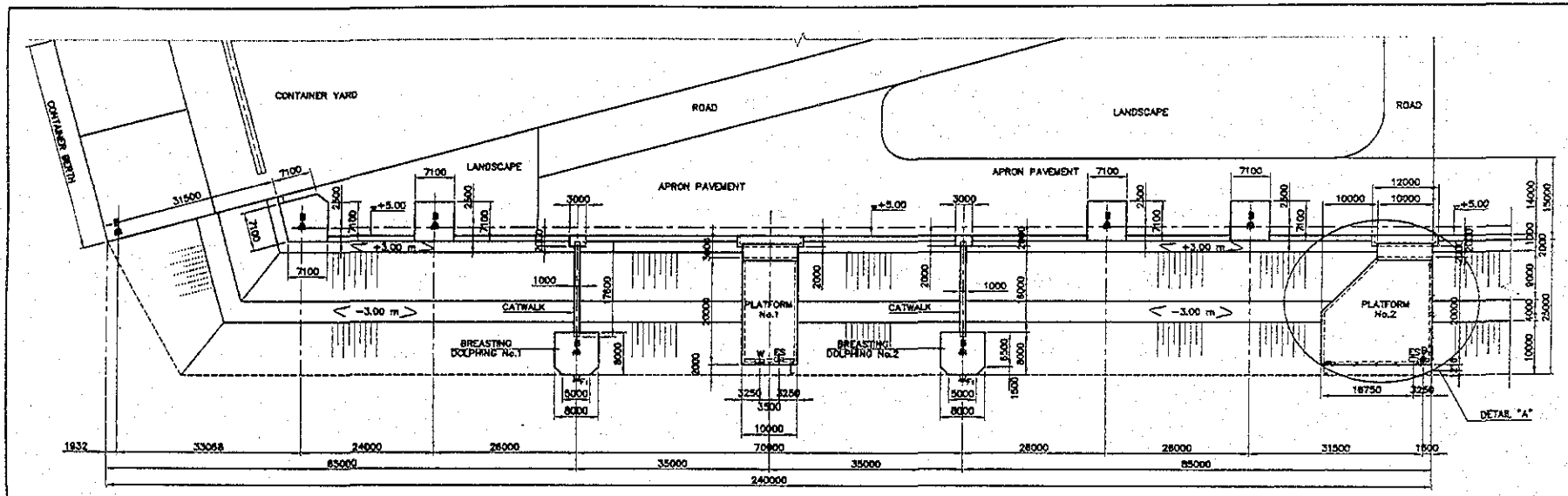

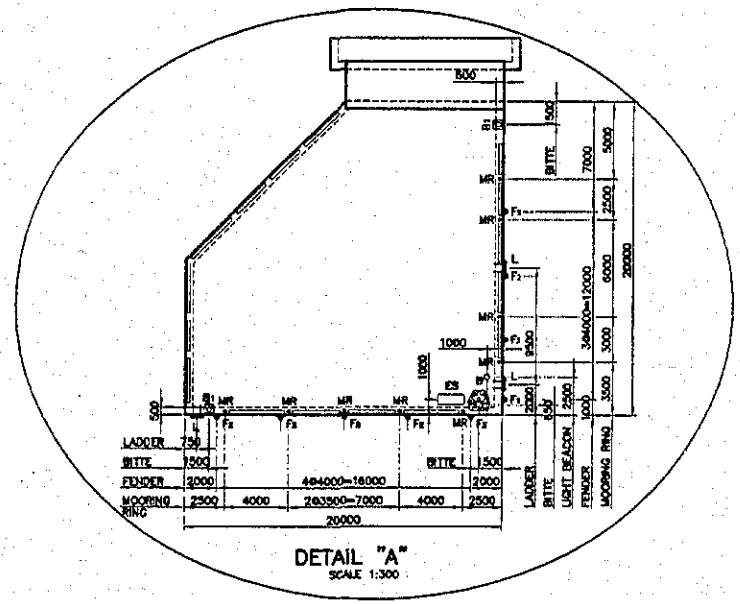

LEGEND:

ES	ELECTRIC SERVICE
W	WATER (HAIDLANT, FIREFITTING)
F_1	FENDER (H=800)
F_2	FENDER (H=150)
B	BOLLARD (1000 KN)
B_1 B_2	BOLLARD (150 KN)
L	LADDER
MR	MOORING RING

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.

DESIGNED BY : A. MORIOKA
CHECKED BY : N. NISHIMURA
APPROVED BY : T. ONUKI

SECTION : QUAYWALL WORK
SUB-SECTION : PASSENGER BERTH
TITLE :

DETAIL LAYOUT PLAN PASSENGER BERTH

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-02-005

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BOLLARD	Calc. Index No.	
Subject	BOLLARD 100 t WITH ANCHOR BOLT	Page No.	Rev.

References/ Notes

N_o = 7 Sets

		Prepared by		Checked by	
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NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BOLLARD	**Pay Item No. (BOQ)**	20-0602
Quantity Item	FORM	**Unit**	m^2

Calculation Procedure Applied

Form area was computed for base of bollard in Passenger Berth.

Area was computed using geometric formulas, multiplying the length of the sides by the thickness of the base. The result was multiplied by the total number of bases.

References, Calculation Base and Revisions

References: Tender Drawings:

SW-QW-02-030 Arrangement and structure of foundation of Bollard

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
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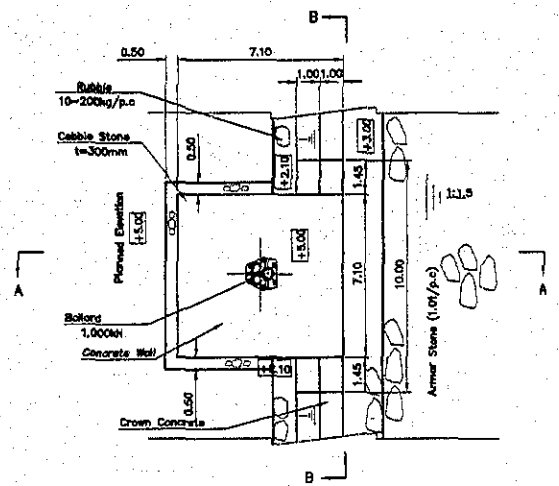

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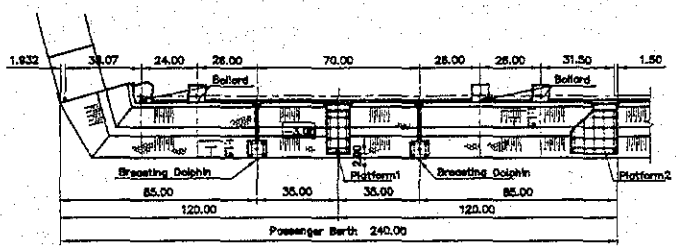

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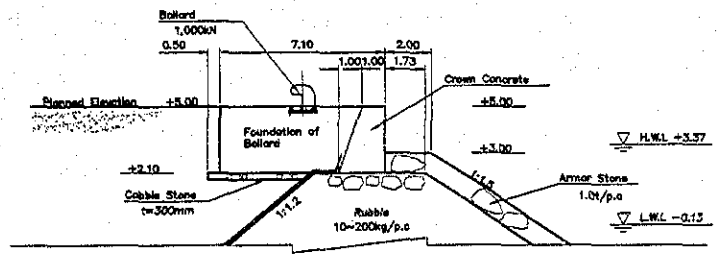
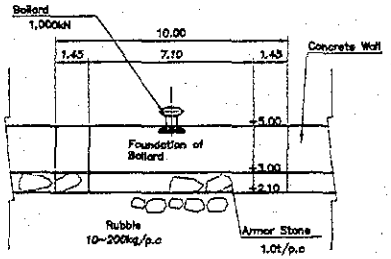


Sect A–A
S=1/200



Sect B–B
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REV. NO.	DATE	CORRIGENDA	BY	APPROVED	DATE

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.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL
SUB-SECTION : PASSENGER BERTH
TITLE : ARRANGEMENT AND STRUCTURE OF FOUNDATION OF BOLLARD

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-02-030

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BOLLARD	Calc. Index No.	
Subject	FORM	Page No.	Rev.

References/ Notes

No. Bases = 4

Per 1 Base :

$A = (7.1\ m)(4)(2.9\ m) = 82.36\ m^2$

$\approx 82.40\ m^2$

$A_T = (82.40\ m^2)(4)$

$= 329.60\ m^2$

$\approx \boxed{330\ m^2}$

	Prepared by	Checked by
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NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BOLLARD	**Pay Item No. (BOQ)**	2D-0603
Quantity Item	CONCRETE	**Unit**	m^3

Calculation Procedure Applied

Concrete volume was computed for base of bollard in Passenger Berth.
Concrete volume was computed using geometric formulas, multiplying the area by the thickness of the base.
The result was multiplied by the total number of bases.

References, Calculation Base and Revisions

References : Tender Drawings :

DW-QW-02-C30 Arrangement and Structure of foundation of Bollard

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
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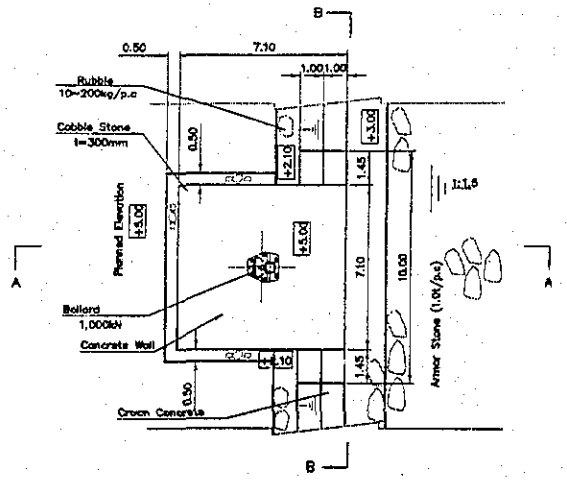

PLAN
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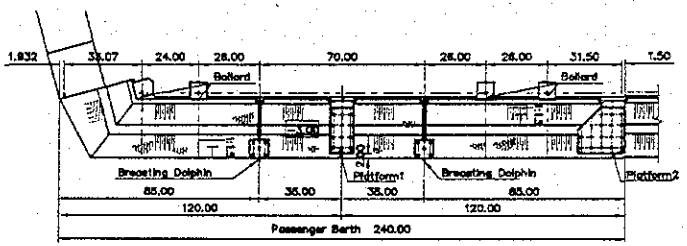

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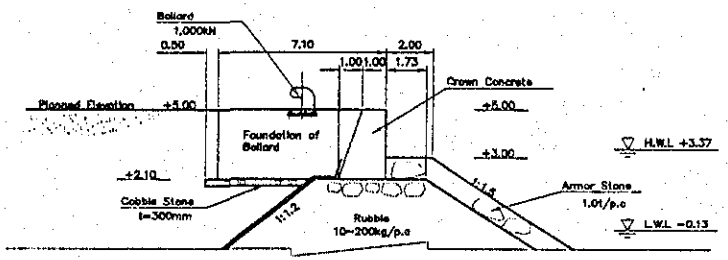

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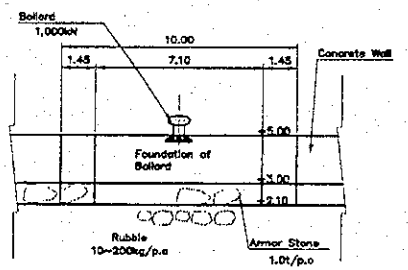

Sect B–B
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REV. NO.	DATE	COMMENTS	BY	APPROVED	DATE	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR NIPPON KOEI CO., LTD.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : QUAYWALL
SUB-SECTION : PASSENGER BERTH
TITLE : ARRANGEMENT AND STRUCTURE OF FOUNDATION OF BOLLARD

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. : DW-QW-02-030

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BOLLARD	Calc. Index No.	
Subject	CONCRETE	Page No.	Rev.

References/ Notes

No. Bases = 4

Per 1 Base :

$V = (7.10\,m)(7.10\,m)(2.9\,m) = 146.189\,m^3$

$\approx 146.20\,m^3$

$V_T = (146.20\,m^3)(4) = 584.80\,m^3$

$\approx$ **585 m^3**

Prepared by		Checked by	
	/ /200		/ /200

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NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	BOLLARD	**Pay Item No. (BOQ)**	2D-0604
Quantity Item	BITTE 15 t	**Unit**	Sets

Calculation Procedure Applied

Bittes 15 t were computed for Passenger Berth.
They were computed summarizing all sets included in Passenger Berth.

References, Calculation Base and Revisions

References: Tender Drawings:

DW-GW-02-005 Details layout plan Passenger Berth

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
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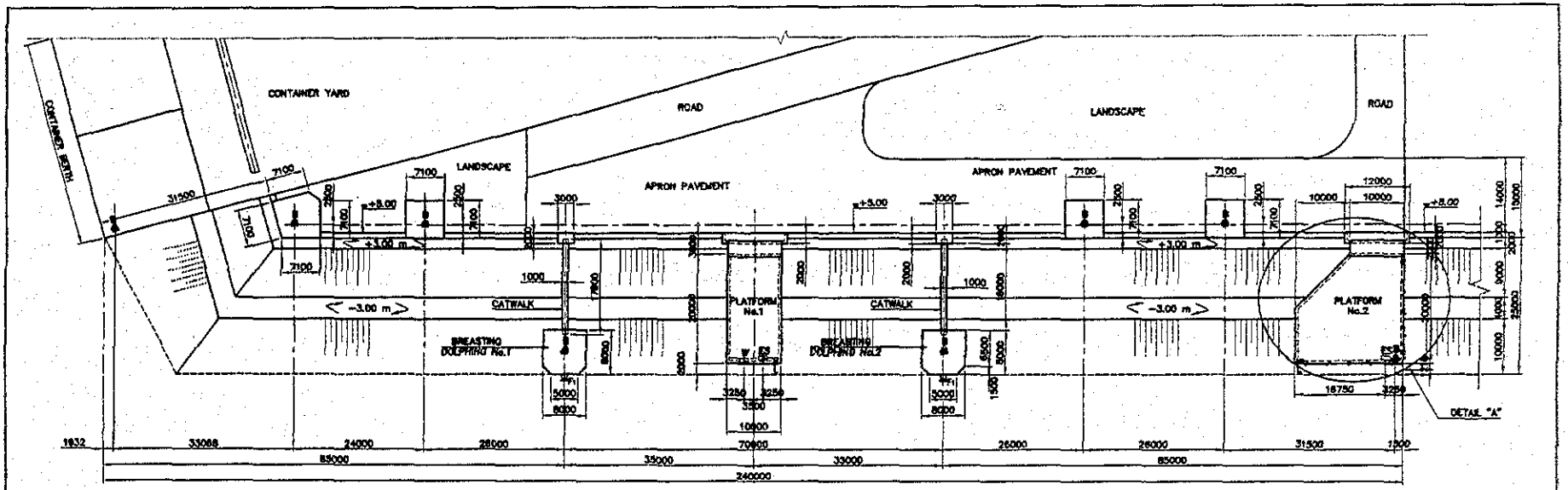

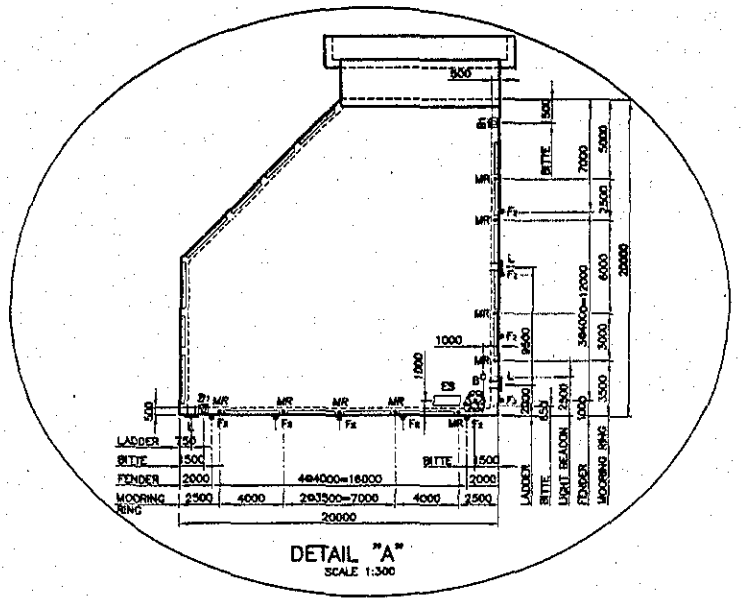

LEGEND:

- ES — ELECTRIC SERVICE
- W — WATER (HAIDLANT, FIREFITING)
- F_1 — FENDER (H=800)
- F_2 — FENDER (H=150)
- B — BOLLARD (1000 KN)
- B_1 — BOLLARD (150 KN)
- LADDER
- MR — MOORING RING

JICA	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
CEPA	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 :	A. MORIOKA
CHECKED BY :	N. NISHIMURA
APPROVED BY :	T. ONUKI
SECTION :	QUAYWALL WORK
SUB-SECTION :	PASSENGER BERTH
TITLE :	DETAIL LAYOUT PLAN PASSENGER BERTH
DATE :	JULY/2002
SCALE :	INDICATED
DRAWING NO.	SW-QW-02-005

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BOLLARD	Calc. Index No.	
Subject	BITTE 15t	Page No.	Rev.

References/ Notes

$No = \boxed{\cancel{2}\ 10}$ Sets

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			/ /200		/ /200

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