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	APRON CONCRETE PAVEMENT	**Pay Item No. (BOQ)**	2B - 1006
Quantity Item	ELAS TIGH BOARD	**Unit**	m^2

Calculation Procedure Applied

Elas high board orca was computed Container apron pavement. Arca was computed multiplying the lenght of elas high by the width.

References, Calculation Base and Revisions

Rctcrences : Tender Drawings :

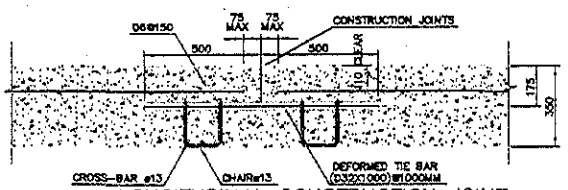
DW - QW - 01 - 009 Details of Concrete Pavement

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla G.	4 July 2002		Mr. Inuma		Mr. Ando		
1								
2								
3								

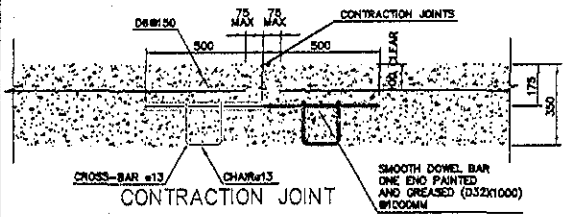
FN : Calculation_Cover_Sheet_020504_seg cover

DETAILS OF JOINT

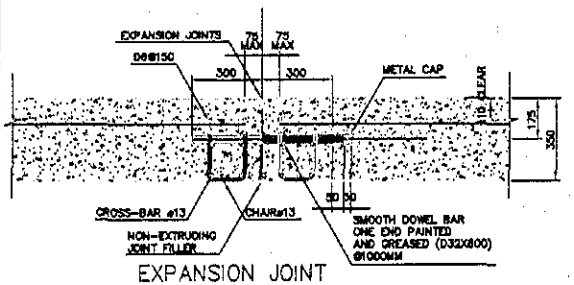
CONCRETE PAVEMENT (TYPE–1)
SCALE 1:20



LONGITUDINAL CONSTRUCTION JOINT

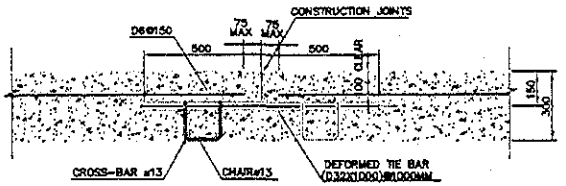


CONTRACTION JOINT

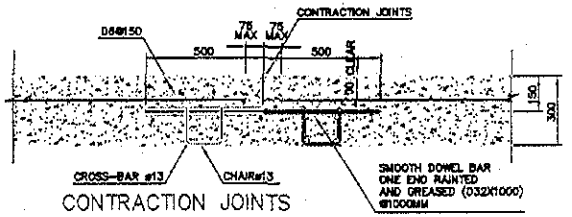


EXPANSION JOINT

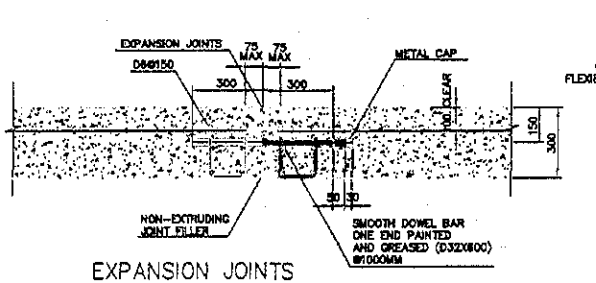
CONCRETE PAVEMENT (TYPE–2)
SCALE 1:20



LONGITUDINAL CONSTRUCTION JOINT

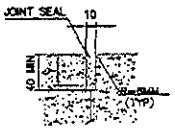


CONTRACTION JOINTS

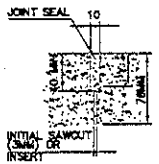


EXPANSION JOINTS

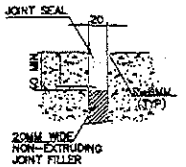
DETAILS OF JOINT SEALING
SCALE1:5



CONSTRUCTION JOINTS

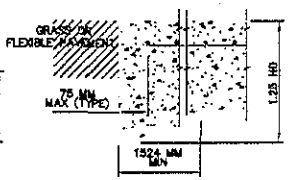


CONTRACTION JOINTS

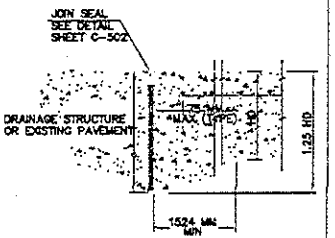


EXPANSION JOINTS

JOINTS BETWEEN CONCRETE PAVEMENT AND OTHERS



THICKENED EDGE BUTT CONSTRUCTION JOINT



THICKENED EDGE EXPANSION JOINT

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	APRON CONCRETE PAVEMENT (CONT. BERTH).	Calc. Index No.	
Subject	[illegible]	Page No.	Rev.

[illegible]

- [illegible] :

$L = 60\ m$

[illegible] = 30 cm

$A = (0.30\ m)(60\ m) = 18\ m^2 \approx 20\ m^2$

- Joint with existing [illegible] :

$L = 700\ m$

width = 30 cm

$A = (0.30 m)(700\ m) = 210\ m^2$

$A_T = (20 + 210)\ m^2 = 230\ m^2$

References/ Notes

$A = 20\ m^2$

$A = 210\ m^2$

$A_T = 230\ m^2$

		Prepared by		Checked by	
		Kala G.	4 / July /2002		/ /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	APRON CONCRETE PAVEMENT	**Pay Item No. (BOQ)**	2B-1007
Quantity Item	JOINT FILLER	**Unit**	m^2

Calculation Procedure Applied

Joint filler area was computed for container Apron pavement. Area was computed multiplying the lenght of joint filler by the width.

References, Calculation Base and Revisions

DW-PV-02-009

References: Tender Drawings:

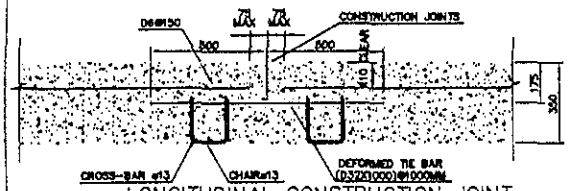
DW-PV-01-009 Details of Concrete Pavement

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla G.	4 July 2002		Mr. Inuma		Mr. Ando		
1								
2								
3								

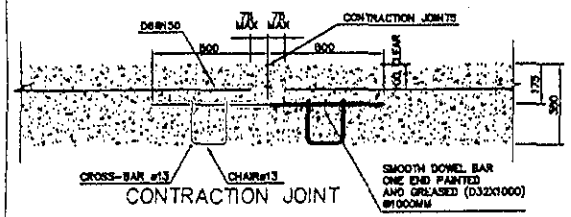
FN : Calculation_Cover_Sheet_020504_seg cover

DETAILS OF JOINT

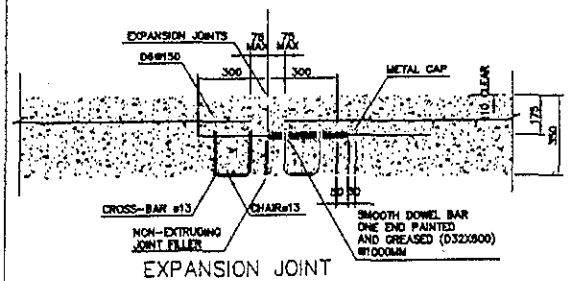
CONCRETE PAVEMENT (TYPE-1)
SCALE 1:20



LONGITUDINAL CONSTRUCTION JOINT

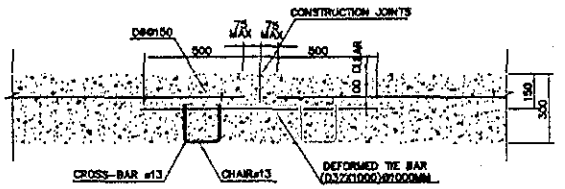


CONTRACTION JOINT

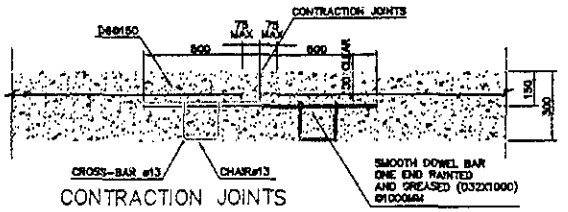


EXPANSION JOINT

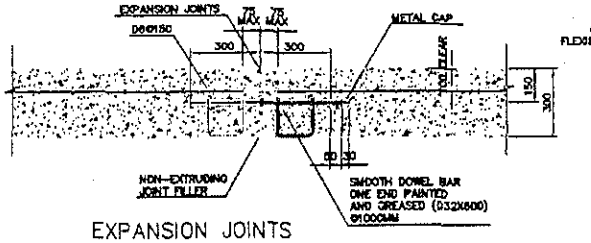
CONCRETE PAVEMENT (TYPE-2)
SCALE 1:20



LONGITUDINAL CONSTRUCTION JOINT

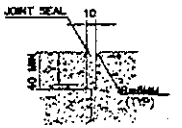


CONTRACTION JOINTS

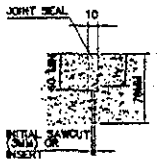


EXPANSION JOINTS

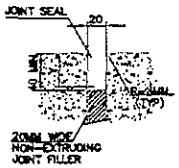
DETAILS OF JOINT SEALING
SCALE1:5



CONSTRUCTION JOINTS

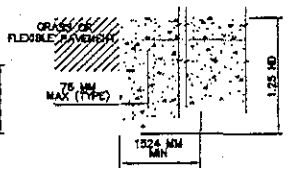


CONTRACTION JOINTS

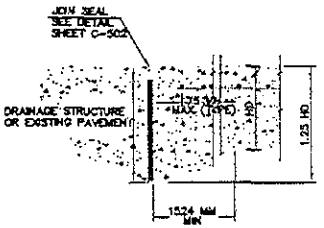


EXPANSION JOINTS

JOINTS BETWEEN CONCRETE
PAVEMENT AND OTHERS



THICKENED EDGE BUTT
CONSTRUCTION JOINT



THICKENED EDGE
EXPANSION JOINT

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	APRON CONCRETE PAVEMENT (CONT. BERTH)	Calc. Index No.	
Subject	JOINT FILLER	Page No.	Rev.

References/ Notes

Apron (Container Berth)

- Longitudinal Expansion Joint :

$l = 1,360$ m

Width = 4 cm

$A = (0.04\ m)(1,360\ m) = 54.40\ m^2 \simeq 60\ m^2$ → $A = 60\ m^2$

- Contraction Joint :

$L = 670$ m

Width = 4 cm

$A = (0.04\ m)(670\ m) = 26.80\ m^2 \simeq 30\ m^2$ → $A = 30\ m^2$

$A_T = (60 + 30)\ m^2 = 90\ m^2$ → $A_T = 90\ m^2$

	Prepared by		Checked by	
	Karla G.	4 July 2002		1 /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	APRON CONCRETE PAVEMENT	**Pay Item No. (BOQ)**	2B - 1008
Quantity Item	IRON MESH	**Unit**	m^2

Calculation Procedure Applied

Iron mesh area was computed for Container Apron Pavement. Area was computed using geometric formulas.

References, Calculation Base and Revisions

References : Tender Drawings :

DN-PN-01-006 Joint Arrangement of Concrete Pavement (2)

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla G. [illegible]	4 July 2002		Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

LEGEND:
LONGITUDINAL CONSTRUCTION
CONTRACTION
EXPANSION
CONCRETE PAVEMENT (TYPE-1)
CONCRETE PAVEMENT (TYPE-2)
WITHOUT CONCRETE PAVEMENT

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	APRON CONCRETE PAVEMENT (CONT. BERTH).	Calc. Index No.	
Subject	IRON MESH	Page No.	Rev.

References/ Notes

Apron (Container Berth):

$A = (340.00\,m)(21.15\,m)$

$A = 7,191\ m^2 \simeq 7,200\ m^2$

$A = 7,200\ m^2$

		Prepared by		Checked by	
		Karla G.	5 / July /2002		/ /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	SAND PROTECTION SHEET	**Pay Item No. (BOQ)**	2B-1101
Quantity Item	Sand Protection Sheet	**Unit**	m

Calculation Procedure Applied

Sand protection sheet was computed for Container Berth. The total length was computed multiplying the perimeter of sand protection sheet to the total of caissons for each type of cross section.

References, Calculation Base and Revisions

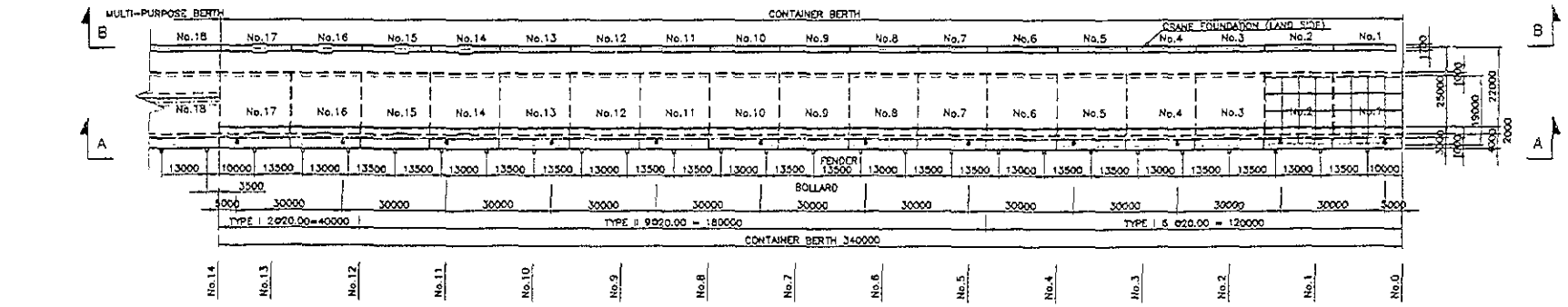
References: Tender Drawings :

DW-QW-01-001 Plan and Profile Container Berth

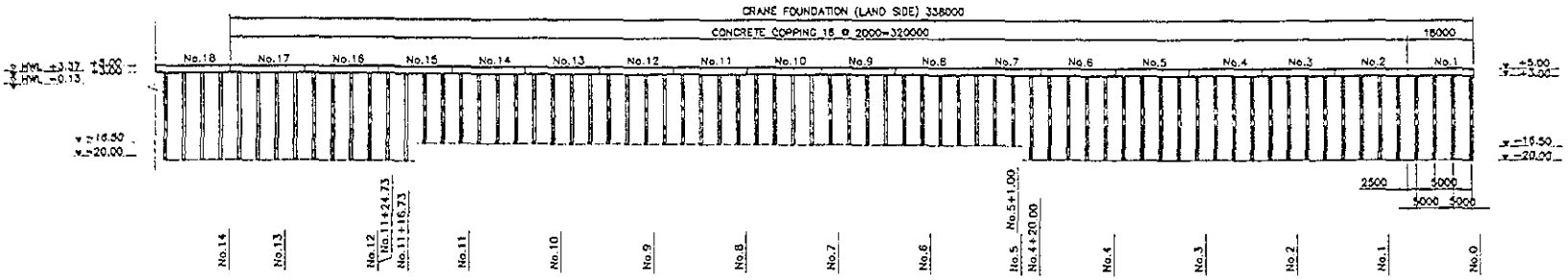
DW-QW-01-003 Typical Cross Section Type I Container Berth

DW-QW-01-004 Typical Cross Section Type II Container Berth

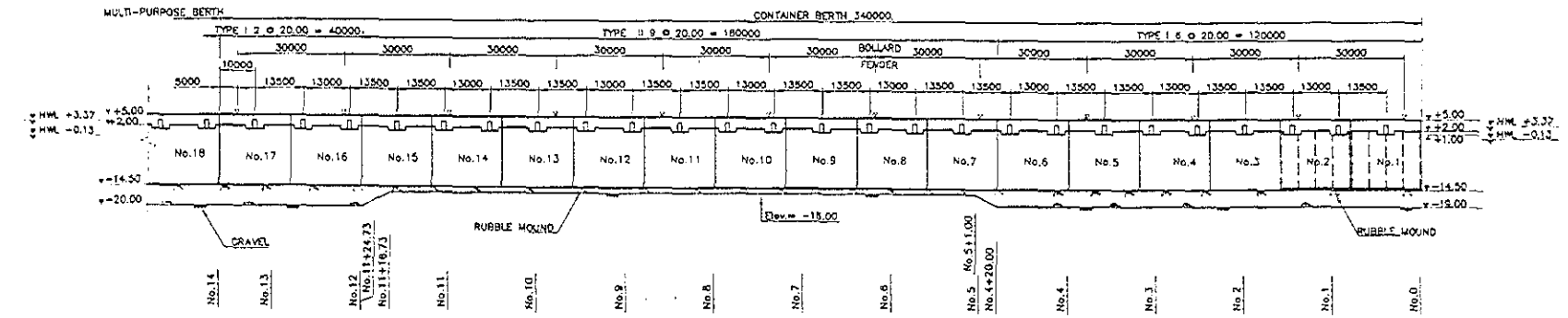
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Inoma		[redacted]		
1								
2								
3								



PLAN



PROFILE B–B

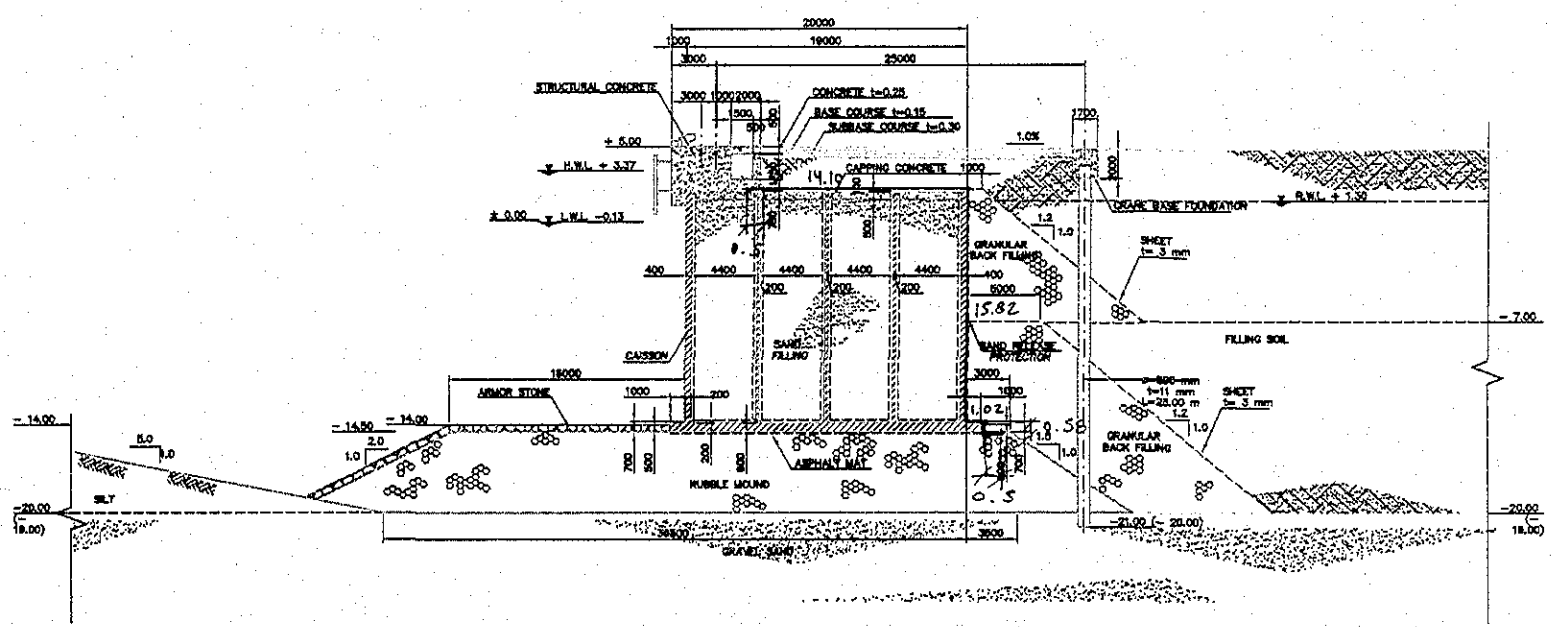


PROFILE A–A

SCALE 1:1250

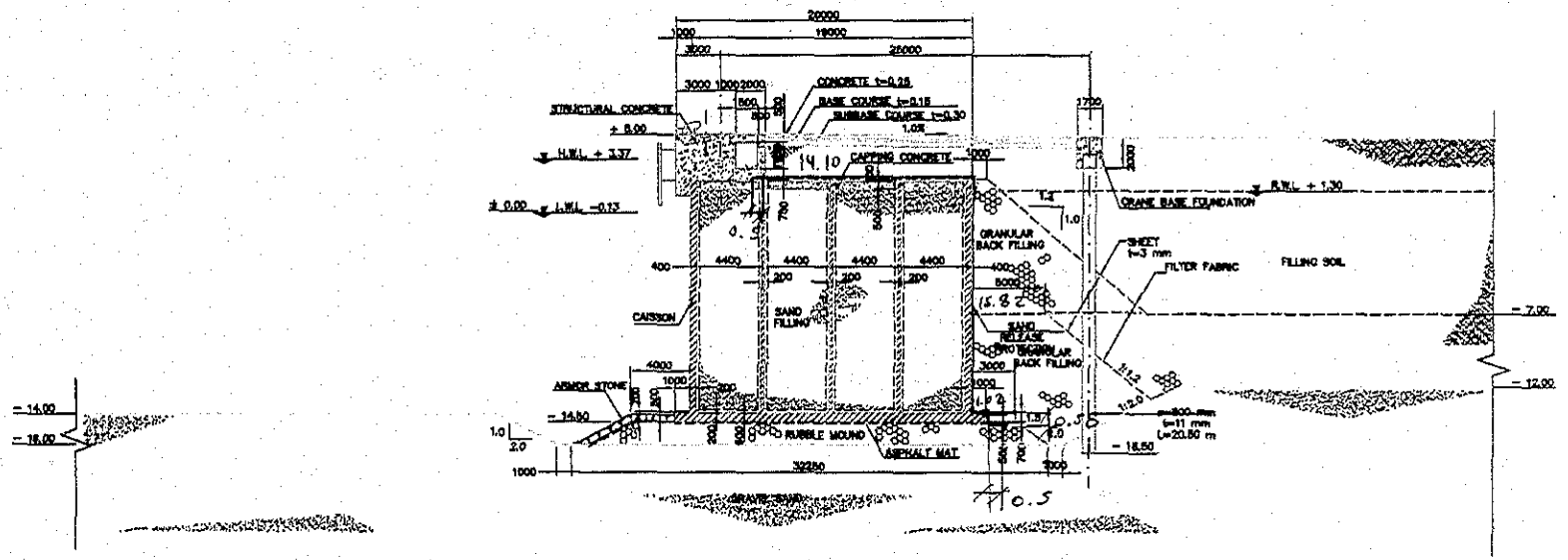
0 50 100

JICA / CEPA	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.	SECTION: QUAYWALL WORK SUB-SECTION: CONTAINER AND MULTI-PURPOSE BERTH TITLE: PLAN AND PROFILE CONTAINER BERTH	DATE: JULY/2002 SCALE: 1 : 1250



TYPICAL CROSS SECTION TYPE I
CONTAINER BERTH (−14.0 m)

SCALE 1:300 0 5.0 10.0 15.0 20.0 25.0 30.0



TYPICAL CROSS SECTION TYPE II
CONTAINER BERTH (−14.0m)

SCALE 1:300 0 5.0 10.0 15.0 20.0 25.0 30.0

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	SAND PROTECTION SHEET	Calc. Index No.	
Subject	CAISSON SAND PROTECTION SHEET	Page No.	Rev.

References/ Notes

Container Berth:

Cross Section Type I:

$L = (0.5m + 4.10m + 15.82m + 1.02m + 0.58m + 0.5m)\ (8)$ (32.52)

$L = 260.16\ m$

Cross Section Type II:

$L = (0.5m + 4.10m + 15.82m + 1.02m + 0.58m + 0.5m)\ (9)$

$L = 292.68\ m$

$L = 552.84\ m \simeq 553\ m$

$L = \boxed{553}\ m$

Multipurpose Berth:

Cross Section Type III:

$L = (0.5m + 4.90m + 15.82m + 1.02m + 0.58m + 0.5m)\ (10)$ (23.32)

$L = 233.20\ m$

Cross Section Type IV:

$L = (0.5m + 4.90m + 15.82m + 1.02m + 0.58m + 0.5m)\ (2)$

$L = 46.64\ m$

$L = 279.84\ m \simeq 280\ m$

$L = 280\ m$

	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	Sand Protection Sheet	**Pay Item No. (BOQ)**	23-1102
Quantity Item	Steel Plate	**Unit**	kg

Calculation Procedure Applied

Steel plate will be used for base plate of sand protection sheet. Two steel plates will be used on each edge of sand protection sheet.

References, Calculation Base and Revisions

「Sand Protection Sheet」

References: Tender Drawing:

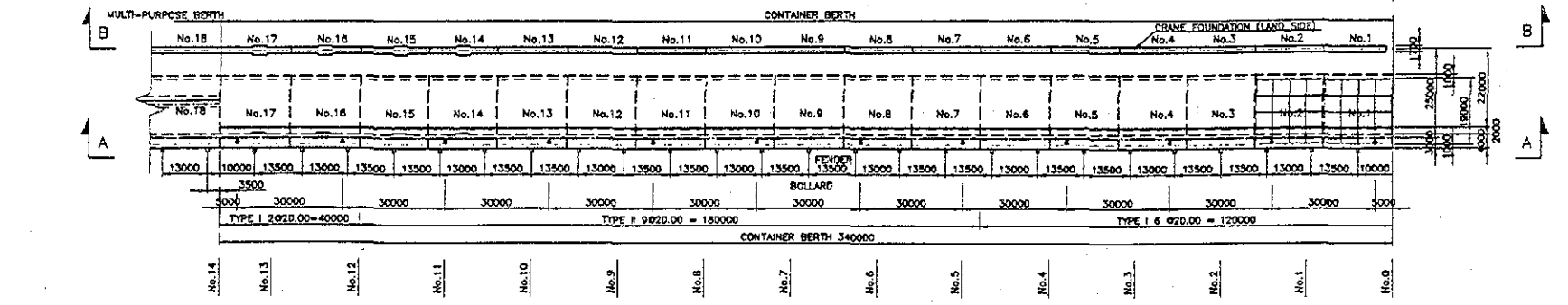
DW-QW-01-001 Plan and Profile Container Berth

DW-QW-01-003 Typical Cross Section Type I Container Berth

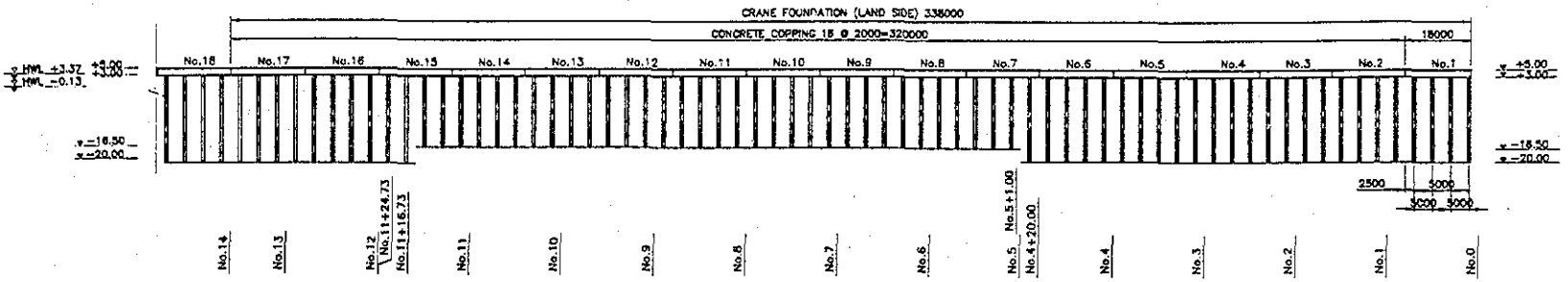
DW-QW-01-004 Typical Cross Section Type II Container Berth

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								

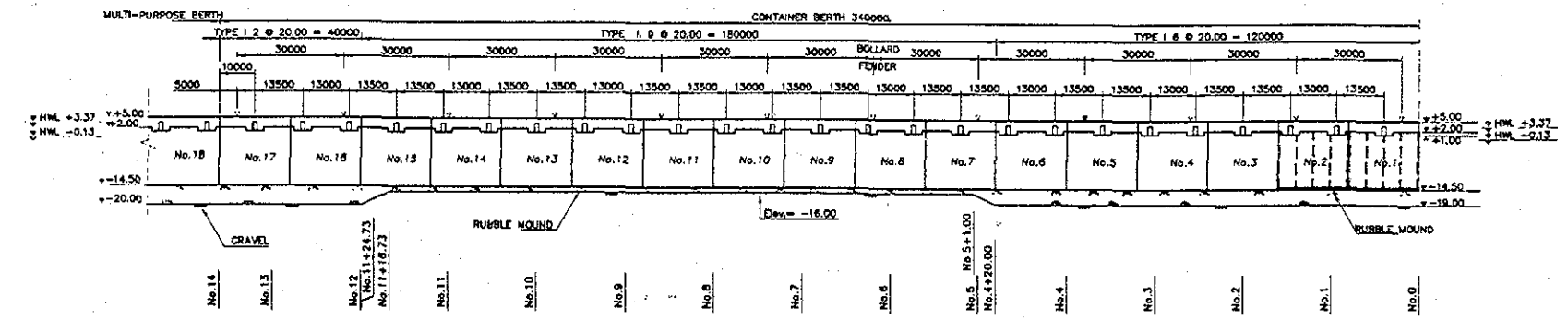
FN : Calculation_Cover_Sheet_020504_seg cover



PLAN



PROFILE B–B

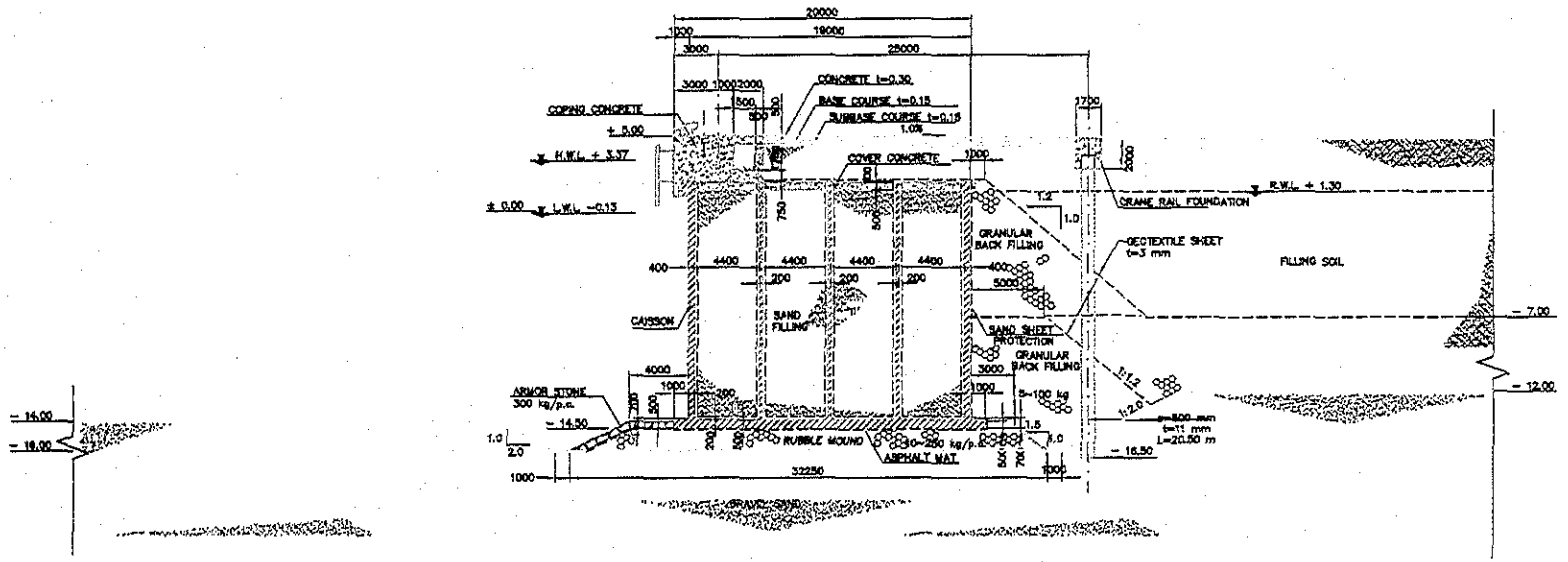


PROFILE A–A

SCALE 1:1250

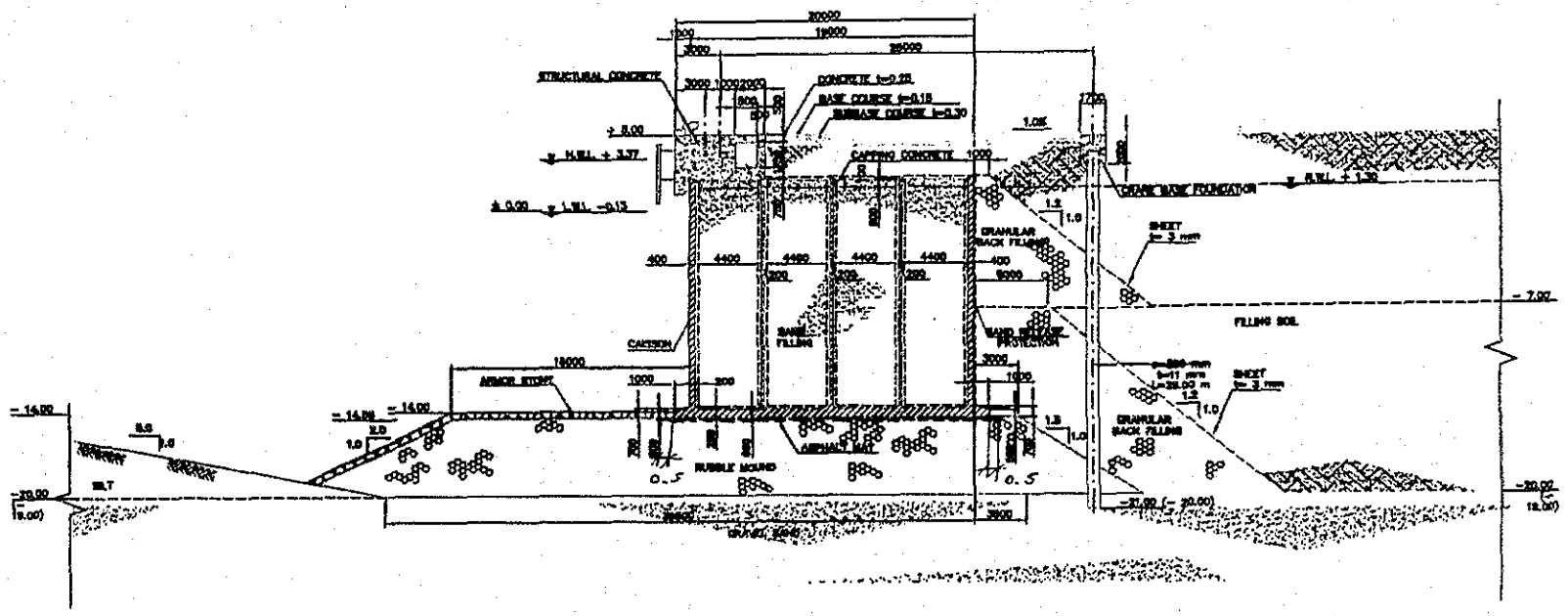
0 50 100

JICA / CEPA	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 : CONTAINER AND MULTI-PURPOSE BERTH TITLE : PLAN AND PROFILE CONTAINER BERTH	DATE : JULY/2002 SCALE : 1 : 1250 DRAWING NO.



TYPICAL CROSS SECTION TYPE II
CONTAINER BERTH (−14.0m)

SCALE 1:300 0 5.0 10.0 15.0 20.0 25.0 30.0



TYPICAL CROSS SECTION TYPE I
CONTAINER BERTH (−14.0 m)

SCALE 1:300 0 5.0 10.0 15.0 20.0 25.0 30.0

		JICA / CDPA				DW-GW-01-C03

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Sand Protection Sheet (Container berth)	Calc. Index No.	
Subject	Steel Plate	Page No.	Rev.

References/ Notes

L = 555 m.

w = 10 cm.

t = 0.5 cm.

d = 7.85 g/cm³ = 7850 kg/m³

W = 555 × 0.1 × 0.005 × 7850

= 2177 kg

≒ 2180 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	Back Filling behind Caisson	**Pay Item No. (BOQ)**	2B – 1201
Quantity Item	BACKFILLING STONE	**Unit**	m^3

Calculation Procedure Applied

1. Calculation of Areas of Sections
2. Average of Areas of Sections
3. Calculation of Volume : Average of Areas of Sections times distance between Sections

(Excel)

References, Calculation Base and Revisions

References : Tender Drawings :

From DW-QW-01-011 Cross Section 3 (Caisson)

To DW-QW-01-018 Cross Section 10 (Caisson)

(Same as "Rubble Mound of Caisson")

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0								
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

OContainer Berth

9. Backfill Rubble

Section No.	Area (m^2)	Average Area *of 2 Sections* (m^2)	Distance *Between* Sections (m)	Volume (m^3)
No.0+8.00	0.00			
		87.36	19.20	1,677.22
No.1+2.20	174.71			
		174.71	22.80	3,983.39
No.2	174.71			
		174.71	25.00	4,367.76
No.3	174.71			
		174.71	25.00	4,367.75
No.4	174.71			
		174.71	20.00	3,494.20
No.4+20.00	174.71			
		152.44	5.00	762.18
No.5	130.16			
		130.16	1.00	130.16
No5+1.00	130.16			
		130.16	24.00	3,123.84
No.6	130.16			
		130.16	25.00	3,254.00
No.7	130.16			
		130.16	25.00	3,254.00
No.8	130.16			
		130.16	25.00	3,254.00
No.9	130.16			
		130.16	25.00	3,254.00
No.10	130.16			
		130.16	25.00	3,254.00
No.11	130.16			
		130.16	16.73	2,177.58
No.11+16.73	130.16			
		157.19	8.00	1,257.48
No.11+24.73	184.21			
		184.21	0.27	49.74
No.12	184.21			
		184.21	25.00	4,605.25
No.13	184.21			
		184.21	15.00	2,763.15
No.14	184.21			
Total		2,689.73	332.00	49,029.67

$\simeq$ 49,100 m^3

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	Back Filling behind Caisson	**Pay Item No. (BOQ)**	2B-1202
Quantity Item	Leveling	**Unit**	m^3

Calculation Procedure Applied

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

References, Calculation Base and Revisions

References : Tender Drawings :

From DW-2N1-01-011 Caisson Both 02

To DW-2N1-01-013 Caisson Both 10

(Same as Backfilling Stone)

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

○Container Berth

10. Trimming of Backfill Rublle

Section No.	Length (m)	Average Length of 2 Sections (m)	Distance Between Sections (m)	Area (m^2)
No.0+8.00	0.00			
		20.30	19.20	389.76
No.1+2.20	40.60			
		40.60	22.80	925.68
No.2	40.60			
		40.60	25.00	1,015.00
No.3	40.60			
		40.60	25.00	1,015.00
No.4	40.60			
		40.60	20.00	812.00
No.4+20.00	40.60			
		35.93	5.00	179.65
No.5	31.26			
		31.26	1.00	31.26
No5+1.00	31.26			
		31.26	24.00	750.24
No.6	31.26			
		31.26	25.00	781.50
No.7	31.26			
		31.26	25.00	781.50
No.8	31.26			
		31.26	25.00	781.50
No.9	31.26			
		31.26	25.00	781.50
No.10	31.26			
		31.26	25.00	781.50
No.11	31.26			
		31.26	16.73	522.98
No.11+16.73	31.26			
		36.72	8.00	293.72
No.11+24.73	42.17			
		42.17	0.27	11.39
No.12	42.17			
		42.17	25.00	1,054.25
No.13	42.17			
		42.17	15.00	632.55
No.14	42.17			
Total		631.94	332.00	11,540.98

≒ 11600 m^2

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	Back Filling behind Caisson	**Pay Item No. (BOQ)**	2B-1203
Quantity Item	Geotextile Sheet	**Unit**	m^2

Calculation Procedure Applied

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

References, Calculation Base and Revisions

References : Tender Drawings :

From DW - QW - 01 - 011 Container Berth 01

To DW - QW - 01 - 018 Container Berth 10

(Some of Rubble Mound of Caisson)

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

○Container Berth

11. Filter Fabric (Backfill Rublle)

Section No.	Length (m)	Average Length of 2 Sections (m)	Distance Between Sections (m)	Area (m^2)
No.0+8.00	0.00			
		22.30	19.20	428.16
No.1+2.20	44.60			
		44.60	22.80	1,016.88
No.2	44.60			
		44.60	25.00	1,115.00
No.3	44.60			
		44.60	25.00	1,115.00
No.4	44.60			
		44.60	20.00	892.00
No.4+20.00	44.60			
		39.93	5.00	199.65
No.5	35.26			
		35.26	1.00	35.26
No5+1.00	35.26			
		35.26	24.00	846.24
No.6	35.26			
		35.26	25.00	881.50
No.7	35.26			
		35.26	25.00	881.50
No.8	35.26			
		35.26	25.00	881.50
No.9	35.26			
		35.26	25.00	881.50
No.10	35.26			
		35.26	25.00	881.50
No.11	35.26			
		35.26	16.73	589.90
No.11+16.73	35.26			
		41.22	8.00	329.72
No.11+24.73	47.17			
		47.17	0.27	12.74
No.12	47.17			
		47.17	25.00	1,179.25
No.13	47.17			
		47.17	15.00	707.55
No.14	47.17			
Total		705.44	332.00	12,874.85

○Container Berth

12. Filter Fabric (Rubble Mound)

Section No.	Length (m)	Average Length of 2 Sections (m)	Distance Between Sections (m)	Area (m^2)
No.0-64.66	0.00			
		2.76	10.46	28.87
No.0-54.20	5.52			
		7.82	13.62	106.44
No.0-40.58	10.11			
		10.11	14.93	150.94
No.0-25.65	10.11			
		10.11	25.65	259.32
No.0	10.11			
		10.86	0.00	0.00
No.0'	11.61			
		11.61	17.91	207.94
No.0+17.91	11.61			
Total		53.27	82.57	753.51

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	BACKFILLING BEHIND CAISSON (CONT. BERTH)	Calc. Index No.	
Subject	Geotextile Sheet	Page No.	Rev.

References/ Notes

Backfill Rubble 12,874.85 m²

Rubble Mound 953.51 m²

13,828.36

≒ 13,700 m²

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	STEEL PIPE PILE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	28-1301
Quantity Item	CRANE BASE PILE	**Unit**	Lm

Calculation Procedure Applied

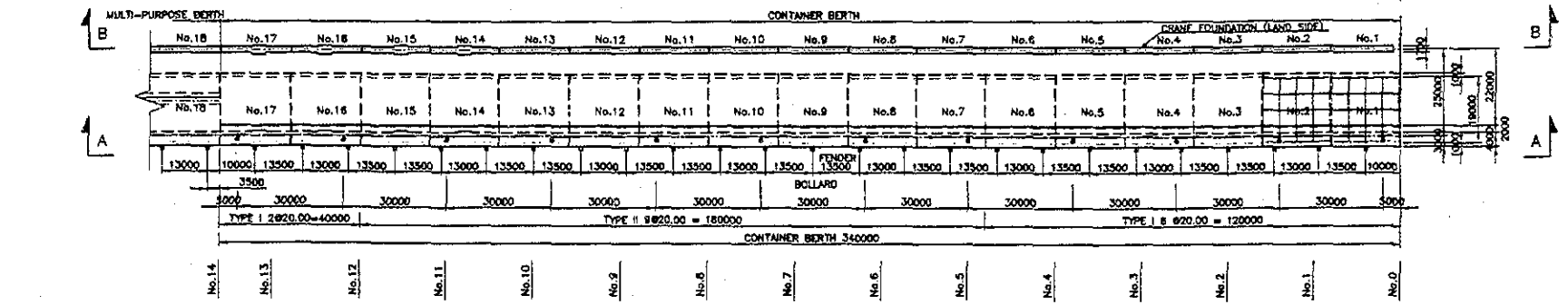
Pile lenght and weight was computed for each type of pile, including diameter and thickness.
Length was computed by Inkilicad and multiplied to the total number of pile in Container Berth.
The unit and total weight for each type of pile was computed, using Weight Tables. lenght and weight was computed with 2 decimal for each type of section and zero decimal for total.

References, Calculation Base and Revisions

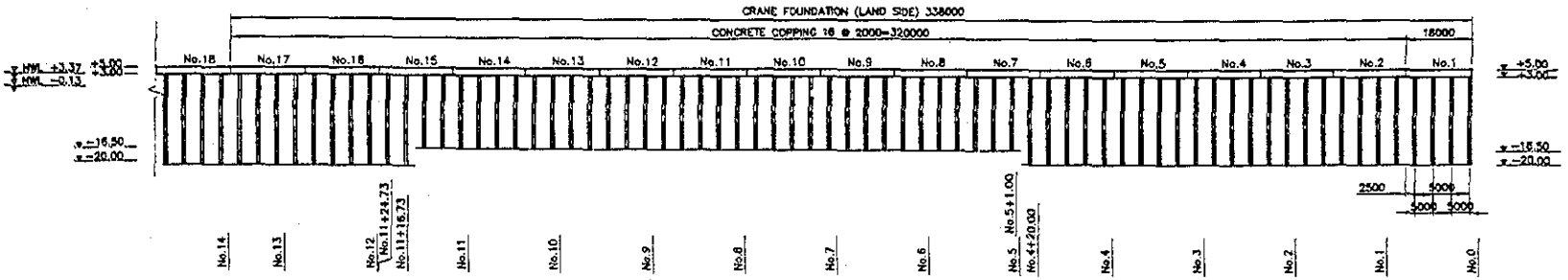
References : Tender Drawings :

CW-2W-01-001 Plan and Profile Container Berth
CW-2W-01-056 Crane foundation (land Side)

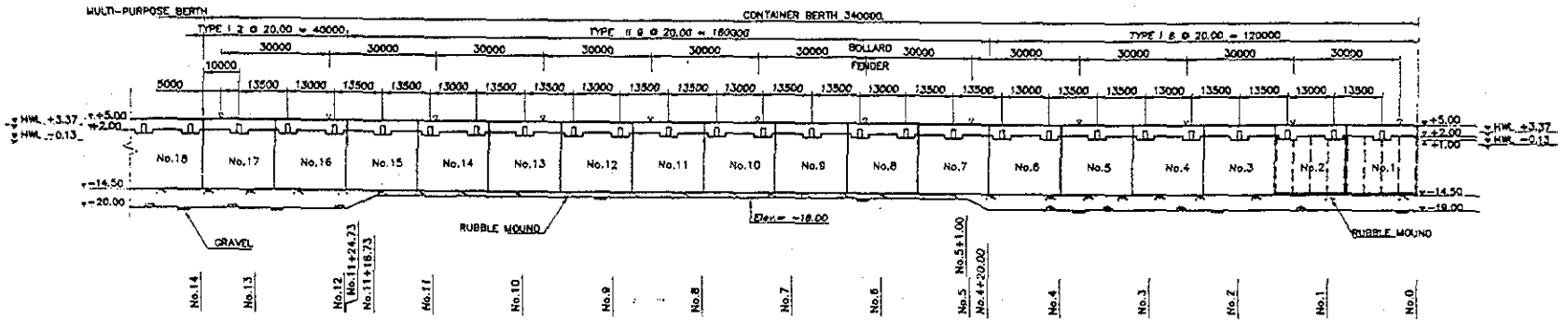
Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	Karla Garcia	020524	9	Mr. Inuma		Mr. Ando		
1								
2								
3								



PLAN



PROFILE B–B

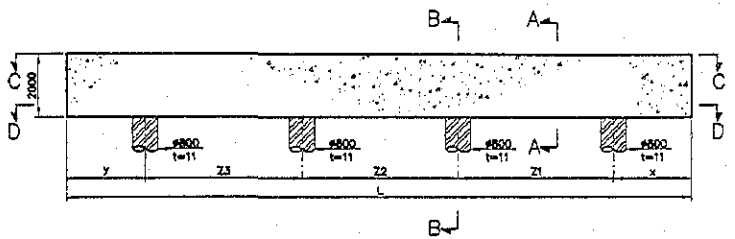


PROFILE A–A

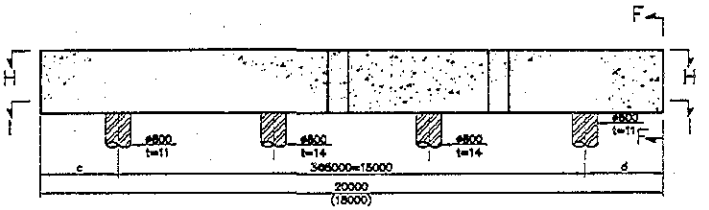
SCALE 1:1250

0 50 100

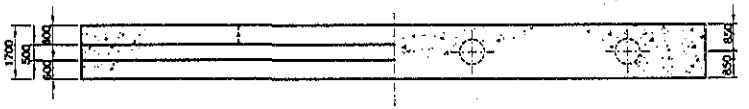
JICA / CEPA	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA); COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	DESIGNED BY : DRAWN BY : APPROVED BY :	SECTION : QUAYWALL WORK; SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH; TITLE : PLAN AND PROFILE CONTAINER BERTH
NK	NIPPON KOEI CO., LTD.			DATE : JULY/2002; SCALE : 1 : 1250; DRAWING NO.



SECTION E–E
SCALE 1:150

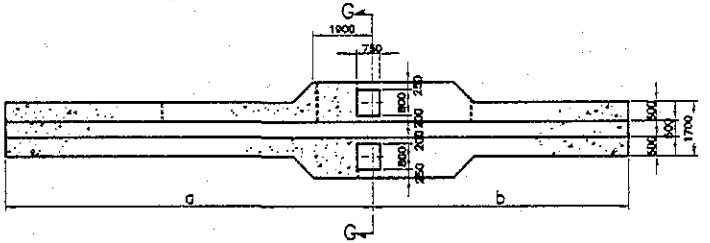


SECTION J–J
SCALE 1:150



C–C

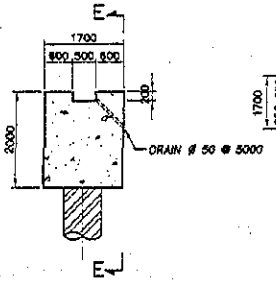
D–D
SCALE 1:150



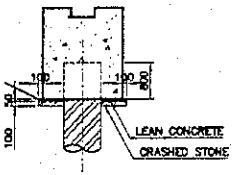
SECTION H–H
SCALE 1:150

VARIABLE LENGHT OF CRANE FOUNDATION

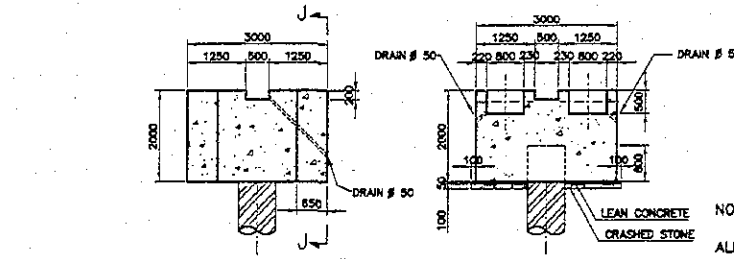
	LENGTH (L)	a	b	c	d	X	Y	Z1	Z2	Z3
No.1	18000	—	—	—	—	1000	2000	5000	5000	5000
No.2	20000	—	—	—	—	2500	3000	5000	4500	5000
No.3~ No.13	20000	—	—	—	—	2500	2500	2500	2500	—
No.14	20000	8600	11400	2500	2500	—	—	—	—	—
No.15	20000	11400	8600	2500	2500	—	—	—	—	—
No.16	20000	8600	11400	2500	2500	—	—	—	—	—
No.17	20000	11400	8600	2500	2500	—	—	—	—	—
No.18~ No.26	20000	—	—	—	—	2500	2500	2500	2500	—
No.27	20000	8600	11400	2500	2500	—	—	—	—	—
No.28	18000	9400	8600	1000	2000	—	—	—	—	—



SECTION A–A
SCALE 1:100



SECTION B–B
SCALE 1:100



SECTION F–F
SCALE 1:100

SECTION G–G
SCALE 1:100

NOTE:

ALL DIMENSIONS ARE IN MILLIMETER.

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 : CONTAINER AND MULTI-PURPOSE BERTH
TITLE :

CRANE FOUNDATION (LAND SIDE)

DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-01-C56

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	STEEL PIPE PILE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	STEEL PIPE PILE	Page No.	Rev.

References/ Notes

Container Berth:

No. piles = 68 ; ϕ = 800 mm ;

L_1 = 23.0m ; L_2 = 19.50 m ; L_3 = 24.0 m

t = 11 mm ; 14 mm

For : t = 11 mm ; ϕ = 800mm ; L_1 = 23.0m No piles = 25 — No = 25

⇒ w = 214 Kg/m

⇒ Unit weight = (214 Kg/m)(23.0m) = 4,922 Kg/pile

⇒ W = (4,922 Kg/pile)(25 pile) = 123,050 Kg — W = 123,050 Kg

⇒ L = (23.0m)(25) = 575 m — L = 575 m

For t = 11mm ; ϕ = 800 mm L_2 = 19.50 m No piles = 30 — No. = 30

⇒ Unit weight = (214 Kg/m)(19.50 m) = 4,173 Kg

⇒ W = (4,173 Kg)(30) = 125,190 Kg — W = 125,90 Kg

⇒ L = (19.50 m)(30) = 585 m — L = 585 m

For t = 11m ; ϕ = 800mm ; L_3 = 24.0m ; No piles = 5 — No piles = 5

⇒ Unit weight = (214 Kg/m)(24.0m) = 5,136 Kg

⇒ W = (5,136 Kg)(5) = 25,680 Kg — W = 25,680 Kg

⇒ L = (24.0m)(5) = 120 m — L = 120 m

For t = 14mm ; ϕ = 800 mm ; L_2 = 19.50m ; No piles = 3 — No pile = 3

⇒ w = 271 Kg/m

⇒ Unit weight = (271 Kg/m)(19.50m) = 5,284.5 Kg

⇒ W = (5,284.5 Kg)(3) = 15,853.5 Kg ≈ 15,854 Kg — W = 15,854 Kg

⇒ L = (19.50 m)(3) = 58.50 m ≈ 59 m — L = 59 m

	Prepared by	Checked by
	/ /200	/ /200

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	STEEL PIPE PILE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	STEEL PIPE PILE	Page No.	Rev.

References/ Notes

For t = 9 mm ; ϕ = 800 mm ; L_3 = 24.0 m No piles = 5

⇒ Unit weight = (271 Kg/m)(24.0m) = 6,504 Kg

⇒ W = (6,504 Kg)(5) = 32,520 Kg

⇒ L = (24.0 m)(5) = 120 m

No piles = 5

W = 32,520 Kg

L = 120 m

W_T = 322,294 Kg

L_T = 1,459 m

Multipurpose Berth:

No piles = 44 ; ϕ = 800 mm

L_1 = 24.0 m ; L_2 = 21.5 m ; t = 11 mm, 19 mm

For t = 11 mm ; ϕ = 800 mm ; L_1 = 24.0 m, No piles = 29

⇒ w = 214 Kg/m

⇒ Unit weight = (214 Kg/m)(24.0m) = 5,136 Kg

⇒ W = (5,136 Kg)(29) = 148,944 Kg

⇒ L = (24.0 m)(29) = 696 m

No piles = 29

W = 148,944 Kg

L = 696 m

For t = 11 mm ; ϕ = 800 mm ; L_2 = 21.5 m ; No piles = 9

⇒ Unit weight = (214 Kg/m)(21.5 m) = 4,601 Kg

⇒ W = (4,601 Kg)(9) = 41,409 Kg

⇒ L = (21.5 m)(9) = 193.50 m ≃ 194 m

No piles = 9

W = 41,409 Kg

L = 194 m

For t = 11 mm ; ϕ = 800 mm ; L_1 = 24 m ; No piles = 6

⇒ w = 271 Kg/m

⇒ Unit weight = (271 Kg/m)(24 m) = 6,504 Kg

⇒ W = (6,504 Kg)(6) = 39,024 Kg

⇒ L = (24.0 m)(6) = 144 m

No piles = 6

W = 39,024 Kg

L = 144 m

W_T = 229,377 Kg

L_T = 1,034 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	CONCRETE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	23-1302
Quantity Item	Steel Plate	**Unit**	kg.

Calculation Procedure Applied

Steel plates will be used for connection between steel pipe pile and Re-bar.

References, Calculation Base and Revisions

References : Tender Drawings :

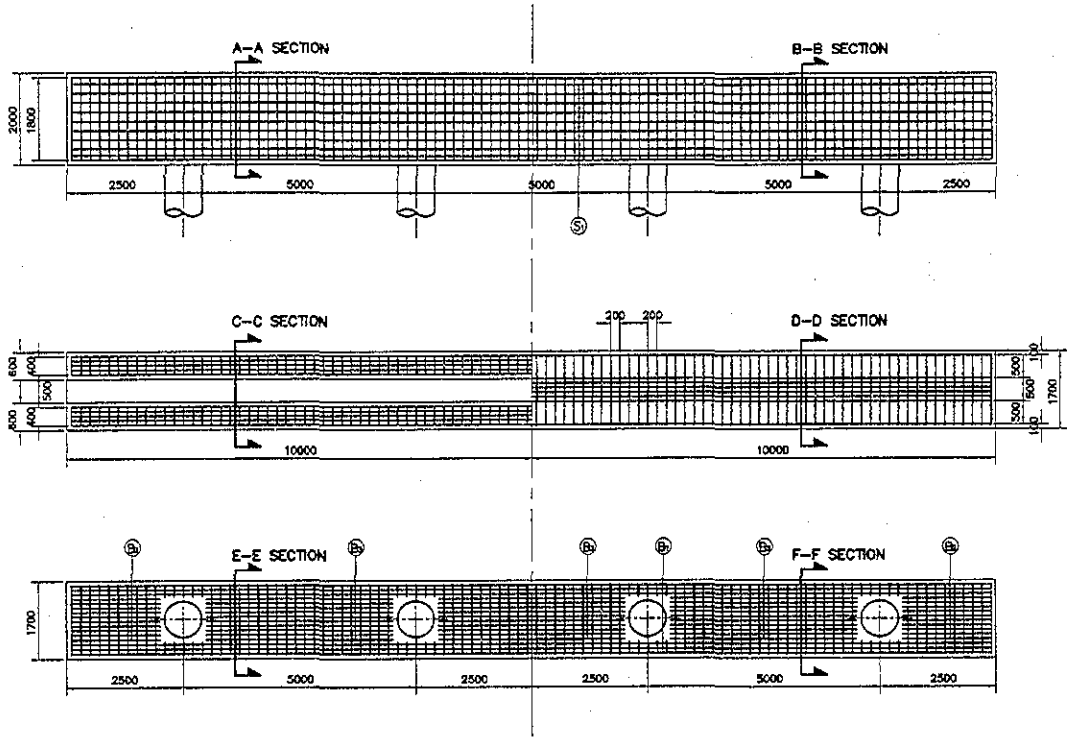
DW-QW-01-057 Reinforcement of Crane Foundation (1)

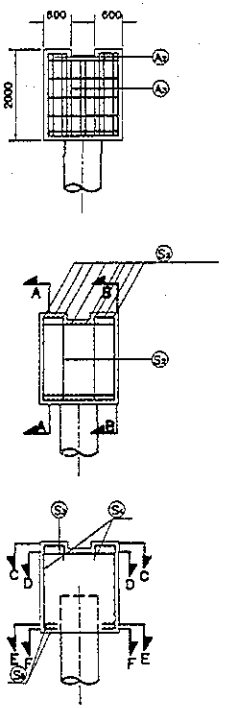
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Koji Garcia			H. Inuma		H. Ando		
1								
2								
3								

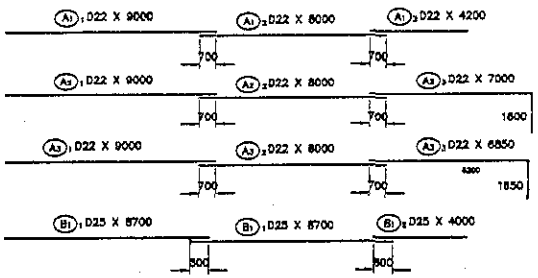
FN : Calculation_Cover_Sheet_020504_seg cover

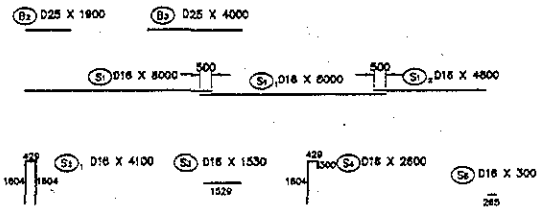
REINFORCEMENT OF CRANE FOUNDATION
(TYPICAL SECTION)

SCALE 1:1000





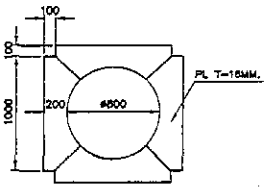




SCALE 1:200

PLATE DETAIL

SCALE 1:40



NOTES:
1- ALL DIMENSIONS ARE IN MILLIMETER
2- THIS REINFORCEMENT IS APPLIED TO TYPICAL SECTION. THOUGH ANOTHER SECTION WILL BE ALMOST SAME, *SHOP DRAWINGS SHALL BE PREPARED* BY THE CONTRACTOR.
3- JOIN POINTS OF REINFORCING BAR SHOULD BE TAKEN INTO ACCOUNT, AS THEY ARE NOT CONCENTRATED ON THE SMALL AREA.

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 : CONTAINER AND MULTI-PURPOSE BERTH

TITLE :

REINFORCEMENT OF CRANE FOUNDATION (1)

DATE : JULY/2002

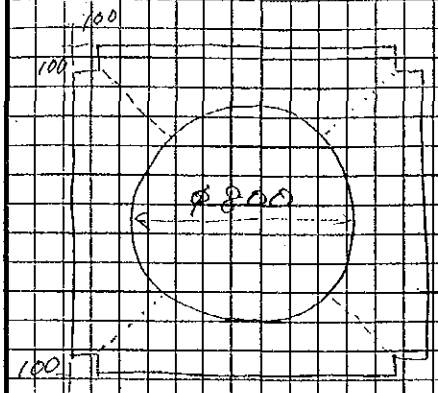
SCALE : INDICATED

DRAWING NO. DW-QW-01-057

Col. B

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	Steel Plate	Page No.	Rev.

References/ Notes



$t = 16$ mm

$$A = 1.2 \times 1.2 - 0.1 \times 0.1 \times 4$$
$$= (0.4)^2 \times \pi$$
$$= 0.8976$$
$$\simeq 0.898$$

$$W = 0.898 \times 0.016 \times 7850$$
$$= 112.98$$
$$\simeq 112.8 \text{ kg}$$

$$W_T = 112.8 \times 4 \times 17$$
$$= 7673$$
$$\simeq \boxed{7680} \text{ kg}$$

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	CONCRETE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	2B - 1401
Quantity Item	Concrete (Container berth)	**Unit**	m^3

Calculation Procedure Applied

Concrete volume of crane rail foundation was computed on each type. Crane accessories were considered in the calculation. See the attached summary.

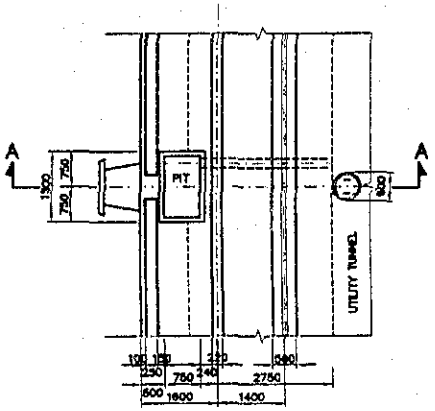
References, Calculation Base and Revisions

References : Tender Drawings.

DW - QW - 01 - 045 Detail of Coping (4)
DW - QW - 01 - 056 Crane Foundation (Land Side)
DW - QW - 01 - 059 Detail of Indoor - Footup Plate
DW - QW - 01 - 060 Detail of Crane End Stopper.

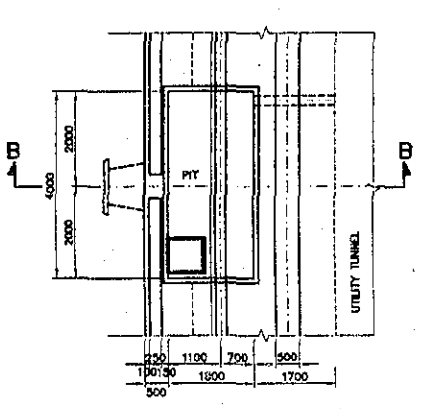
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla Garcia			Mr. Inoma		Mr. Ando		
1								
2								
3								

WATER HAIDLANT & FIRE FITING PIT CAISSON
No.3 No.7 No.11 No.15 No.19 No.23 No.27



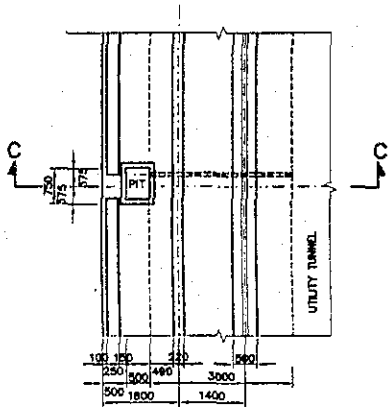
PLAN

ELECTRIC CABLEJUNCTION PIT
CAISSON No.12 No.20



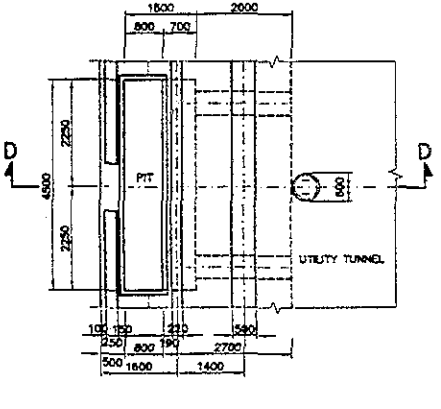
PLAN

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

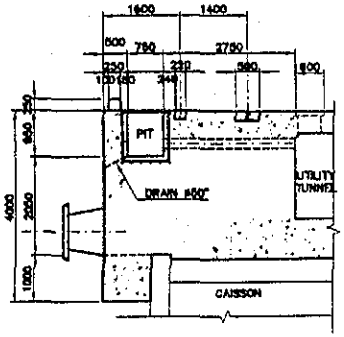


PLAN

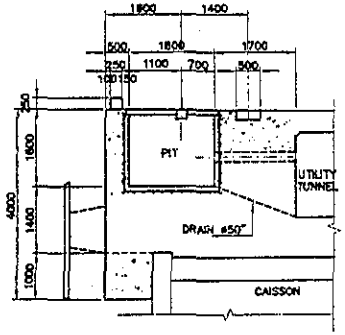
LOADING PIT (MULTI-PURPOSE BERTH)
CAISSON No.21 No.22 No.23 No.24 No.25



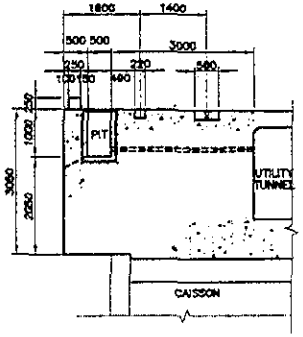
PLAN



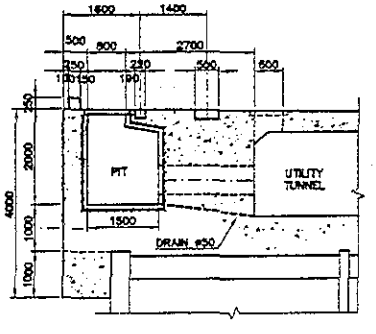
SECTION A–A



SECTION B–B



SECTION C–C

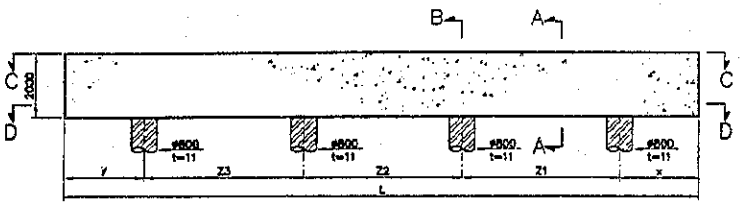


SECTION D–D

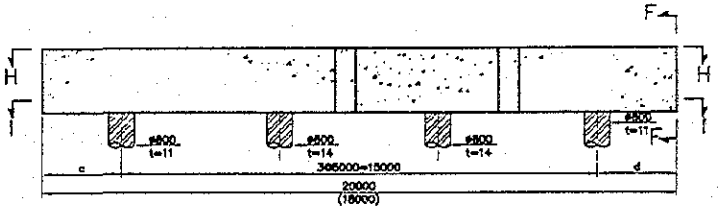
NOTE:
-DETAIL OF ELECTRIC SERVICE PIT IS SHOWN IN DW-??
-DETAIL OF ELECTRIC CABLE JUNCTION IS SHOWN IN DW-??
-DETAIL OF WATER HYDRANT FIREFIGHTING IS SHOWN IN DW-??

	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 : / CHECKED BY : / APPROVED BY :	SECTION : QUAYWALL WORK SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH TITLE : DETAIL OF COPING (4)	DATE : JULY/2002 SCALE : 1 : 100 DRAWING NO. DW-QW-01-045

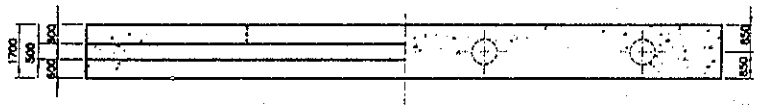
NIPPON KOEI CO., LTD.



SECTION E–E
SCALE 1:150

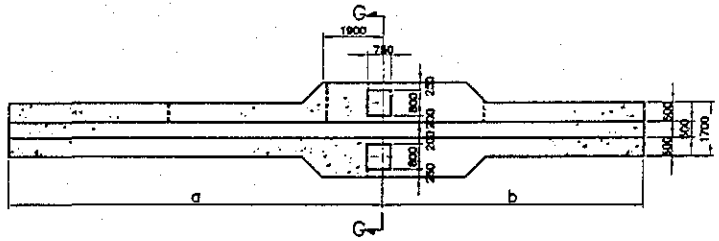


SECTION J–J
SCALE 1:150



C–C

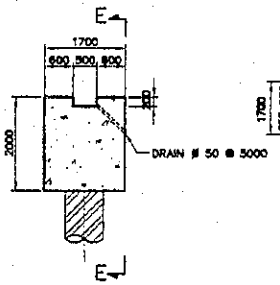
D–D
SCALE 1:150



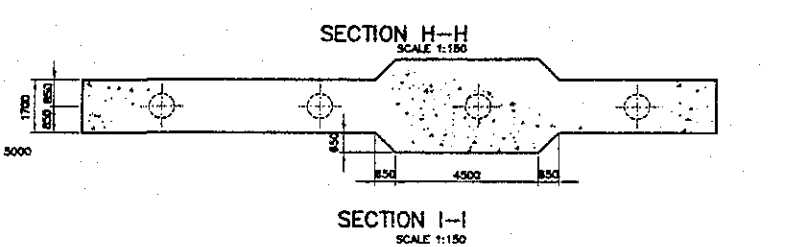
SECTION H–H
SCALE 1:150

VARIABLE LENGHT OF CRANE FOUNDATION

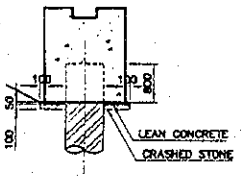
	LENGTH (L)	a	b	c	d	X	Y	Z1	Z2	Z3
No.1	18000	—	—	—	—	1000	2000	5000	5000	5000
No.2	20000	—	—	—	—	2500	3000	5000	4500	5000
No.3~ No.13	20000	—	—	—	—	2500	2500	2500	2500	—
No.14	20000	8600	11400	2500	2500	—	—	—	—	—
No.15	20000	11400	8600	2500	2500	—	—	—	—	—
No.16	20000	8600	11400	2500	2500	—	—	—	—	—
No.17	20000	11400	8600	2500	2500	—	—	—	—	—
No.18~ No.26	20000	—	—	—	—	2500	2500	2500	2500	—
No.27	20000	8600	11400	2500	2500	—	—	—	—	—
No.28	18000	9400	8600	1000	2000	—	—	—	—	—



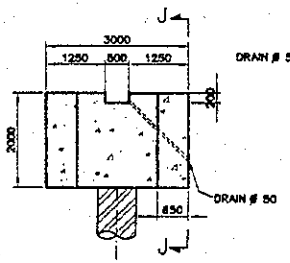
SECTION A–A
SCALE 1:100



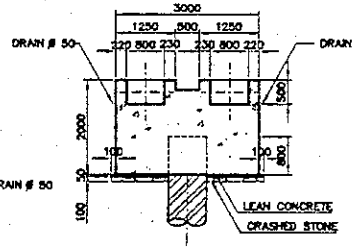
SECTION I–I
SCALE 1:150



SECTION B–B
SCALE 1:100



SECTION F–F
SCALE 1:100



SECTION G–G
SCALE 1:100

NOTE:

ALL DIMENSIONS ARE IN MILLIMETER.

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.

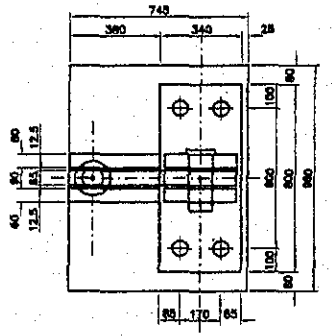
DESIGNED BY :
CHECKED BY :
APPROVED BY :

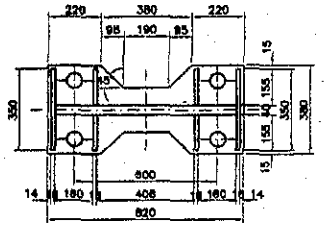
SECTION : QUAYWALL WORK
SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH
TITLE :

CRANE FOUNDATION (LAND SIDE)

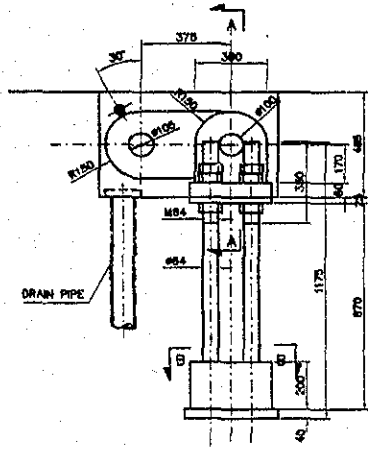
DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. : DW-CW-01-056

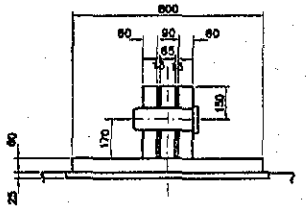
DETAIL OF ANCHORING FRAME
SCALE 1:20





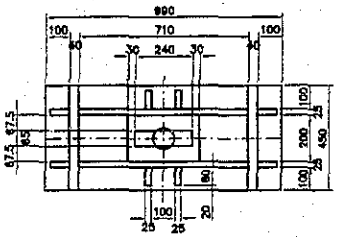
SECTION B–B



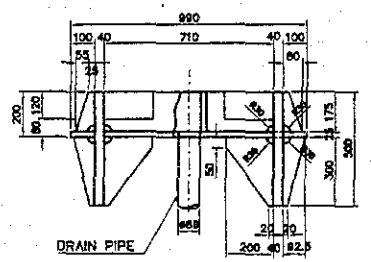


SECTION A–A

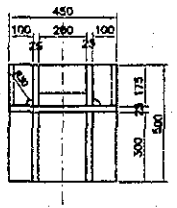
DETAIL OF SOCKET BLOCK
SCALE 1:20



PLAN

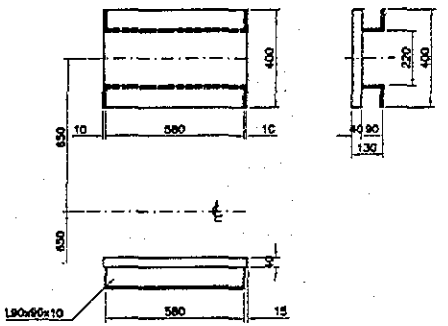


FRONT VIEW

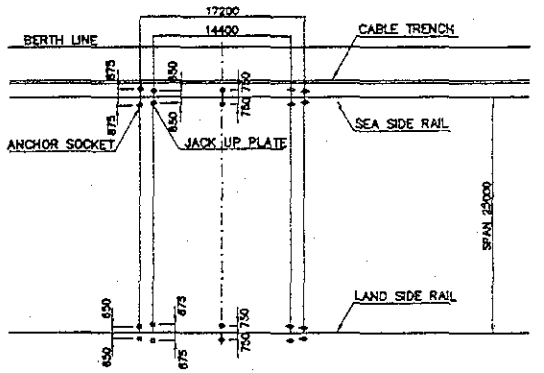


LATERAL VIEW

DETAIL OF JACK UP PLATE
SCALE 1:20



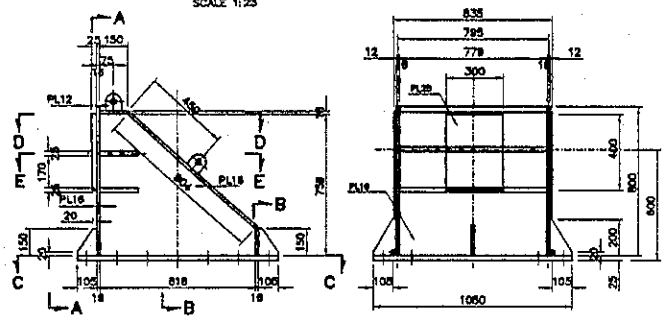
PLAN OF ANCHOR AND JACK UP PLATE
SCALE 1:500



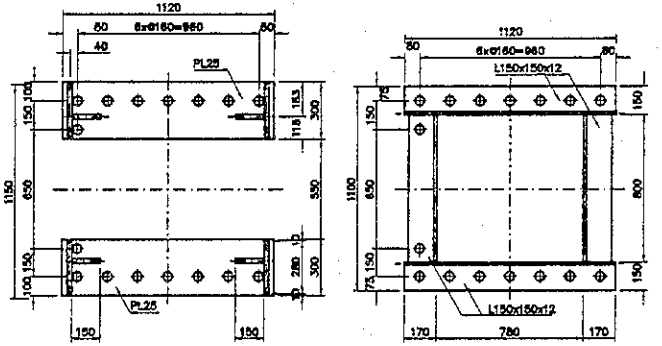
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	SECTION : QUAYWALL WORK	DATE : JULY/2002
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH	SCALE : INDICATED
		TITLE : DETAIL OF ANCHOR-JACK UP PLATE & SOCKET BLOCK	DRAWING NO. DW-QW-01-059

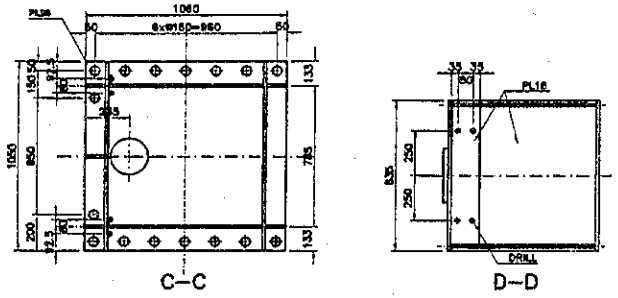
DETAIL OF CRANE END STOPPER EAST SIDE (CONTAINER)

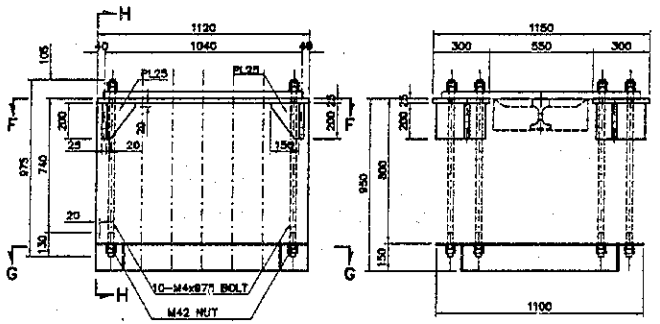
CRANE END STOPPER
SCALE 1:25

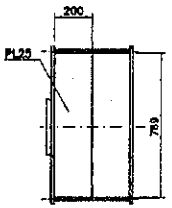


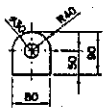
STOPPER BASE
SCALE 1:25





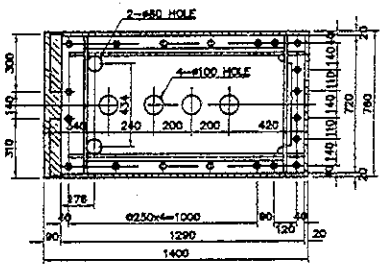


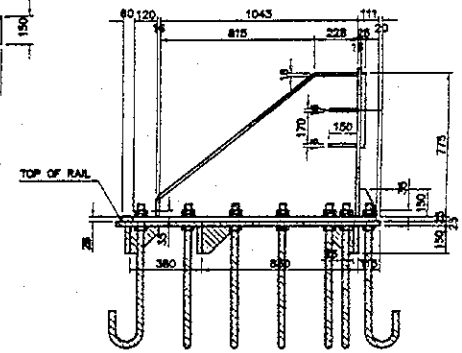


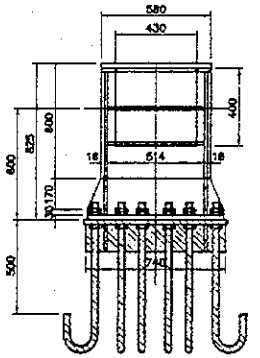


SCALE 1:10

DETAILS OF CRANE END STOPPER WEST SIDE (CONTAINER)
SCALE 1:25







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.	SECTION : QUAYWALL WORK SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH TITLE : DETAILS OF CRANE END STOPPER	DATE : JULY/2002 SCALE : INDICATED DRAWING NO. DW-QW-01-060
	DESIGNED BY :			
	CHECKED BY :			
	APPROVED BY :			

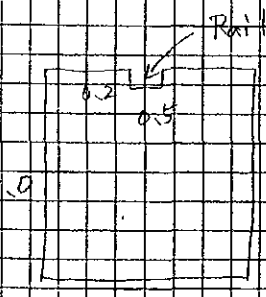
Concrete Volume of Crane Rail Foundation

			anchoring fram	socket block	stopper	Volume	
Container Berth	No.1	56.3			0.73	55.6	
	No.2	66				66.0	
	No.3	66				66.0	
	No.4	66				66.0	
	No.5	66				66.0	
	No.6	66				66.0	
	No.7	66				66.0	
	No.8	66				66.0	
	No.9	66				66.0	
	No.10	66				66.0	
	No.11	66				66.0	
	No.12	66				66.0	
	No.13	66				66.0	
	No.14	79.4	1.68	0.14		77.6	
	No.15	79.4	1.68	0.14		77.6	
	No.16	79.4	1.68	0.14		77.6	
	No.17	79.4	1.68	0.14	0.73	76.9	
	Total					1,160	m3
Multi-purpose Berth	No.18	66				66.0	
	No.19	66				66.0	
	No.20	66				66.0	
	No.21	66				66.0	
	No.22	66				66.0	
	No.23	66				66.0	
	No.24	66				66.0	
	No.25	66				66.0	
	No.26	66				66.0	
	No.27	79.4	1.68	0.14		77.6	
	No.28	79.4	1.68	0.14	0.73	76.9	
	Total					750	m3

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	Concrete (CONTAINER BERTH)	Page No. /	Rev.

References/ Notes

No. 1



$2.0 \times 1.7 \times 19.0 = 57.8\ m^3$

Rail pit

$0.2 \times 0.5 \times 15.0 = 1.5\ m^3$

Stopper

$0.8 \times 1.4 \times 0.65 = 0.73\ m^3$

$57.8 - 1.5 - 0.73 = 55.57$

$\simeq 55.6\ m^3$

No. 2 ~ No. 13

$2.0 \times 1.7 \times 20.0 = 68\ m^3$

Rail pit

$0.2 \times 0.5 \times 20.0 = 2.0\ m^3$

$68.0 - 2.0 = 66.0\ m^3/No.$

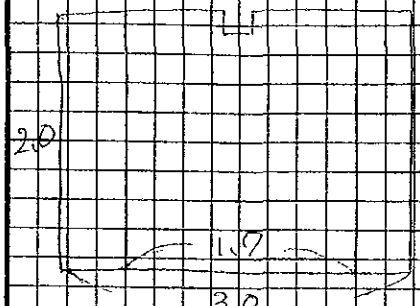
Prepared by		Checked by	
	/ /200		/ /200

FN: Calculation_Sheet

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	Concrete (container berth.)	Page No. 2	Rev.

References/ Notes

[No.14 ~ No.16]



$2.0 \times 1.7 \times 14.2$

$+ 4.5 \times 3.0 \times 2.0$

$+ (1.7+3.0) \times 2.65 \div 2 \times 2.0 \times 2$

$= 81.4\ m^3$

Rail pit

$0.2 \times 0.5 \times 20.0 = 2.0\ m^3$

Anchoring frame

$0.8 \times 0.75 \times 1.4 \times 2 = 1.68\ m^3$

Socket block

$0.45 \times 1.0 \times 0.3 \times 1 = 0.135$

$\simeq 0.14\ m^3$

[No.17]

Stopper

$0.8 \times 1.4 \times 0.65 \times 1 = 0.73\ m^3$

	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	CONCRETE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	23 - 1402
Quantity Item	Elas Tigh Board _ Container berth	**Unit**	m^2

Calculation Procedure Applied

Elas Tigh Board will be used for construction joints.

This elas tigh board was computed for container berth.

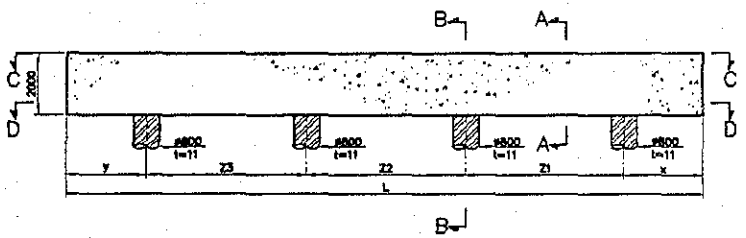
based on every 20m pitch.

References, Calculation Base and Revisions

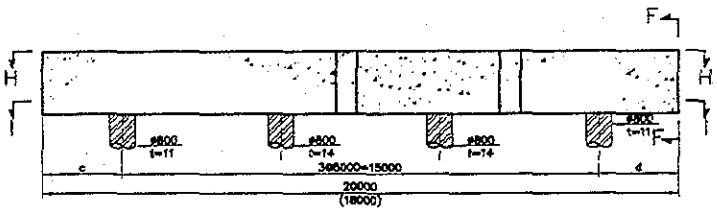
References : Tender Drawings :

DW-QW-01 - 056 Crane foundation (land Side)

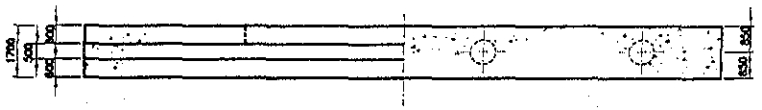
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								



SECTION E–E
SCALE 1:150

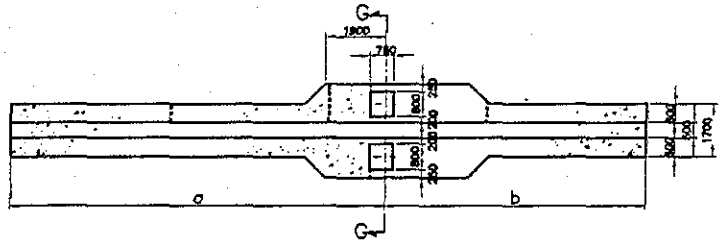


SECTION J–J
SCALE 1:150



C–C

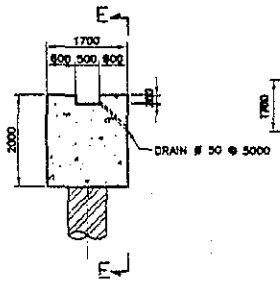
D–D
SCALE 1:150



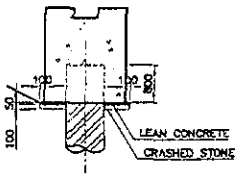
SECTION H–H
SCALE 1:150

VARIABLE LENGHT OF CRANE FOUNDATION

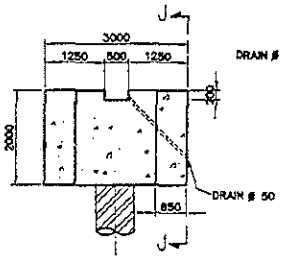
	LENGTH (L)	a	b	c	d	X	Y	Z1	Z2	Z3
No.1	18000	—	—	—	—	1000	2000	5000	5000	5000
No.2	20000	—	—	—	—	2500	3000	5000	4500	5000
No.3~ No.13	20000	—	—	—	—	2500	2500	2500	2500	—
No.14	20000	8600	11400	2500	2500	—	—	—	—	—
No.15	20000	11400	8800	2500	2500	—	—	—	—	—
No.16	20000	8600	11400	2500	2500	—	—	—	—	—
No.17	20000	11400	8600	2500	2500	—	—	—	—	—
No.18~ No.26	20000	—	—	—	—	2500	2500	2500	2500	—
No.27	20000	8600	11400	2500	2500	—	—	—	—	—
No.28	18000	9400	8600	1000	2000	—	—	—	—	—



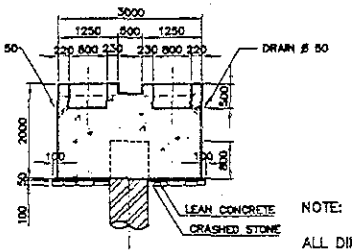
SECTION A–A
SCALE 1:100



SECTION B–B
SCALE 1:100



SECTION F–F
SCALE 1:100



SECTION G–G
SCALE 1:100

NOTE:

ALL DIMENSIONS ARE IN MILLIMETER.

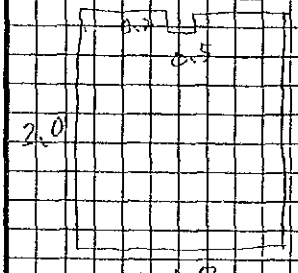
JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) / CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	NIPPON KOEI CO., LTD.	SECTION : QUAYWALL WORK SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH TITLE : CRANE FOUNDATION (LAND SIDE)	DATE : JULY/2002 SCALE : INDICATED DRAWING NO. DW-QW-01-056

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	Elas Tight Board (Container berth)	Page No.	Rev.

References/ Notes

L = 340 m.

340 ÷ 20 = 17



$A = 2.0 \times 1.7 - 0.2 \times 0.5$

$= 3.3$

$3.3 \times 17 = 56.1\ m^2$

	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	CONCRETE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	2B-1403
Quantity Item	Reinforcement (Container Berth)	**Unit**	t

Calculation Procedure Applied

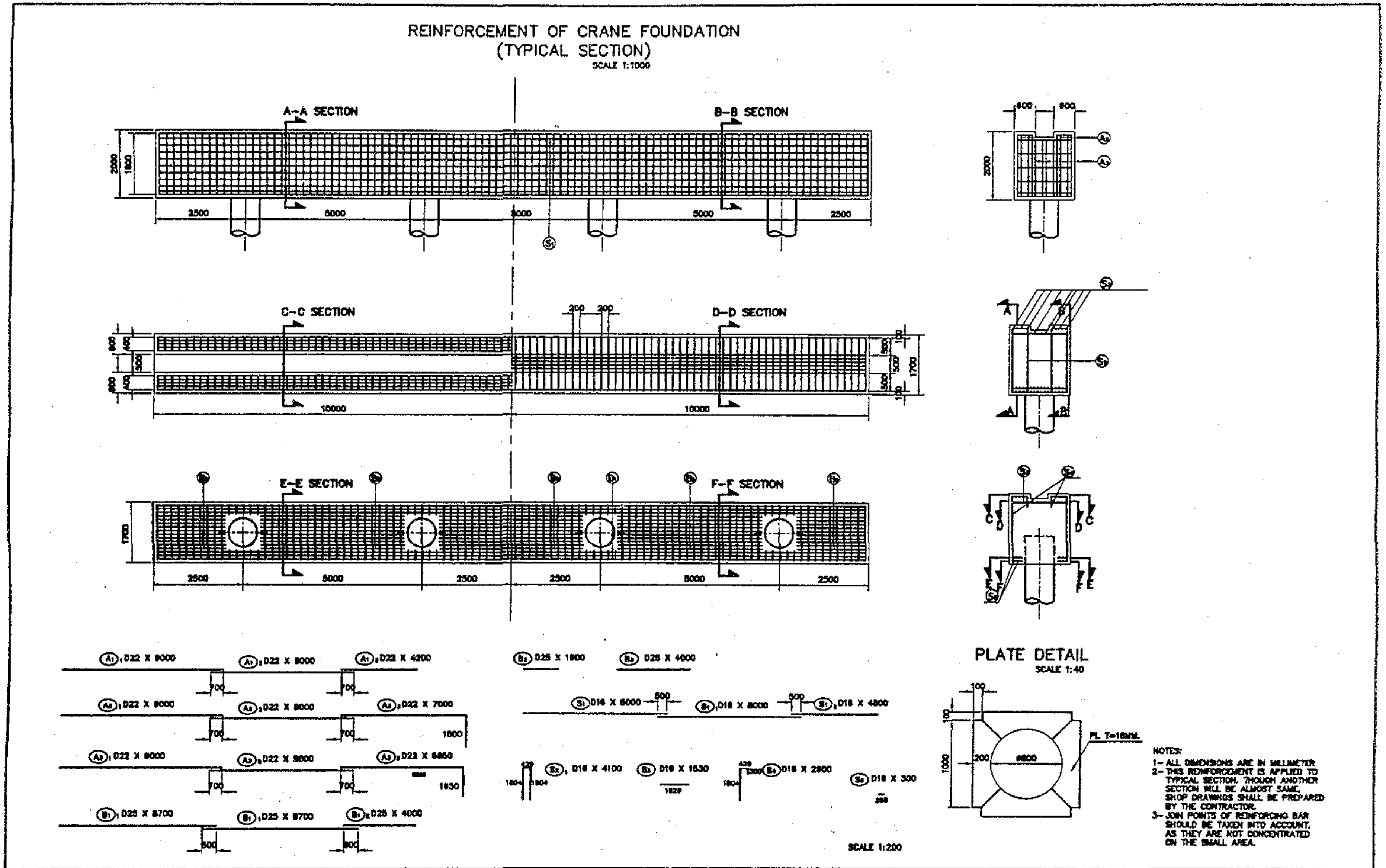
Total weight of reinforcement for crane rail foundation was computed by using Excel.
This calculation was carried out based on typical section.

References, Calculation Base and Revisions

References: Tender Drawings:
DW-QW-01-057 Reinforcement of Crane foundation (1)

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

FN : Calculation_Cover_Sheet_020504_seg cover


REINFORCEMENT OF CRANE FOUNDATION
(TYPICAL SECTION)
SCALE 1:1000
A-A SECTION
B-B SECTION
C-C SECTION
D-D SECTION
E-E SECTION
F-F SECTION
PLATE DETAIL
SCALE 1:40
PL T=16MM
SCALE 1:200
NOTES:
1- ALL DIMENSIONS ARE IN MILLIMETER
2- THIS REINFORCEMENT IS APPLIED TO TYPICAL SECTION, THOUGH ANOTHER SECTION WILL BE ALMOST SAME. SHOP DRAWINGS SHALL BE PREPARED BY THE CONTRACTOR.
3- JOIN POINTS OF REINFORCING BAR SHOULD BE TAKEN INTO ACCOUNT, AS THEY ARE NOT CONCENTRATED ON THE SMALL AREA.

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.

SECTION : QUAYWALL WORK

SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH

TITLE : REINFORCEMENT OF CRANE FOUNDATION (1)

DATE : JULY/2002

SCALE : INDICATED

DRAWING NO. DW-QW-01-057

TABLE OF REINFORCEMENT

No.	D	L (m)	Qty	W/bar (kg)	W (kg)	Remarks
A1-1	D22	9.00	8	27.36	218.88	
A1-2	D22	8.00	8	24.32	194.56	
A1-3	D22	4.20	8	12.768	102.144	
A2-1	D22	9.00	4	27.36	109.44	
A2-2	D22	8.00	4	24.32	97.28	
A2-3	D22	7.00	4	21.28	85.12	
A3-1	D22	9.00	4	27.36	109.44	
A3-2	D22	8.00	4	24.32	97.28	
A3-3	D22	6.85	4	20.824	83.296	
B1-1	D25	8.70	24	34.626	831.024	
B1-2	D25	4.00	12	15.92	191.04	
B2	D25	1.90	40	7.562	302.48	
B3	D25	4.00	60	15.92	955.2	
S1-1	D16	8.00	32	12.48	399.36	
S1-2	D16	4.80	16	7.488	119.808	
S2	D16	4.10	160	6.396	1023.36	
S3	D16	1.53	260	2.3868	620.568	
S4	D16	2.60	40	4.056	162.24	
S5	D16	0.30	80	0.468	37.44	
				Total / Block	5740.0 kg	
	Container Berth		17 Block	Total	97.60 t	
	Multi-purpose Berth		11 Block	Total	63.20 t	

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	CONCRETE FOR CRANE RAIL FOUNDATION	**Pay Item No. (BOQ)**	2B - 1404
Quantity Item	Form (Container berth)	**Unit**	m^2

Calculation Procedure Applied

Form for crane rail foundation was computed for every type of container berth. Crane accessories were considered in the calculation. (Refer to attached summary.)

References, Calculation Base and Revisions

References : Tender Drawings :

DW - QW - 01 - 045 Detail of Coping (4)

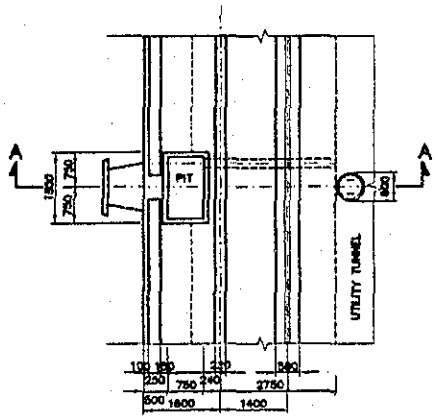
DW - QW - 01 - 056 Crane foundation (land side)

DW - QW - 01 - 059 Detail of Anchor - Jack up Plate & Socket Block

DW - QW - 01 - 060 Details of Crane End Stopper

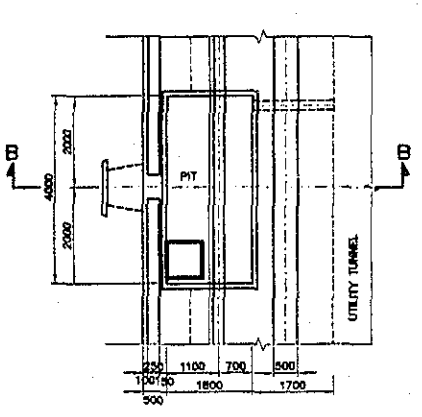
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla G.			Mr. Tsuma		Mr. Ando		
1								
2								
3								

WATER HAIDLANT & FIRE FITING PIT CAISSON
No.3 No.7 No.11 No.15 No.19 No.23 No.27



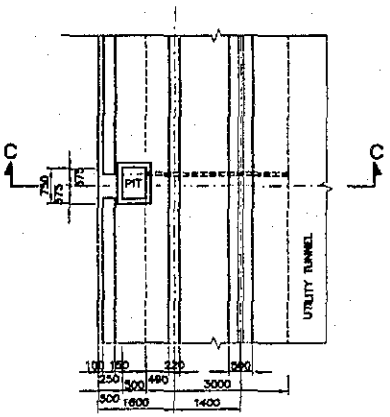
PLAN

ELECTRIC CABLEJUNCTION PIT
CAISSON No.12 No.20



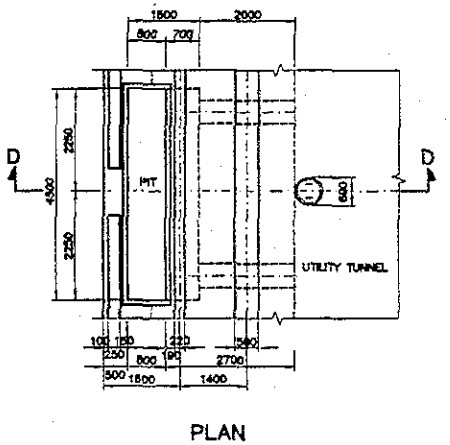
PLAN

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

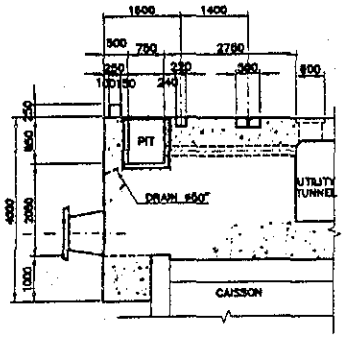


PLAN

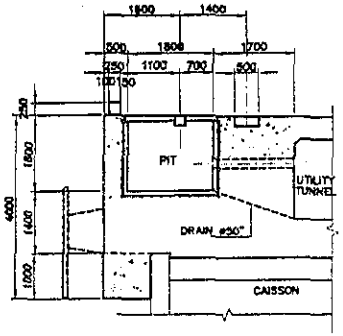
LOADING PIT (MULTI-PURPOSE BERTH)
CAISSON No.21 No.22 No.23 No.24 No.25



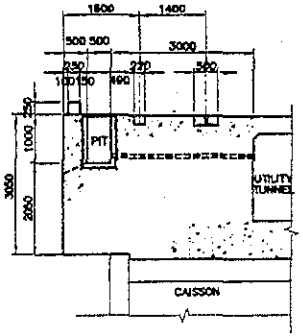
PLAN



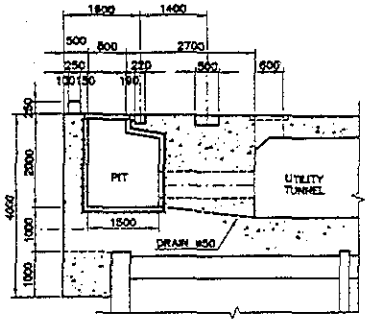
SECTION A-A



SECTION B-B



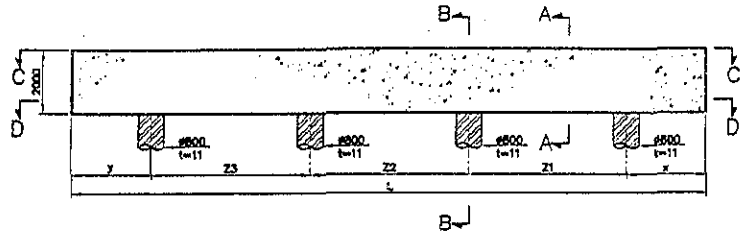
SECTION C-C



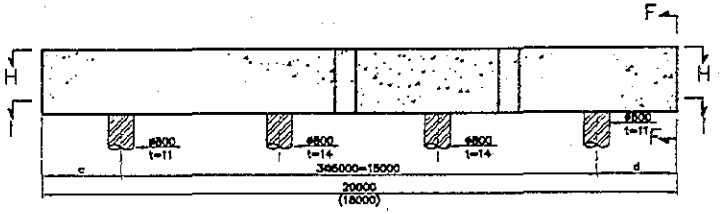
SECTION D-D

NOTE:
-DETAIL OF ELECTRIC SERVICE PIT IS SHOWN IN DW-??
-DETAIL OF ELECTRIC CABLE JUNCTION IS SHOWN IN DW-??
-DETAIL OF WATER HYDRANT FIREFIGHTING IS SHOWN IN DW-??

	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 SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH	DATE : JULY/2002
	COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	CHECKED BY :	TITLE : DETAIL OF COPING (4)	SCALE : 1 : 100
			APPROVED BY :		DRAWING NO. DW-QW-01-045



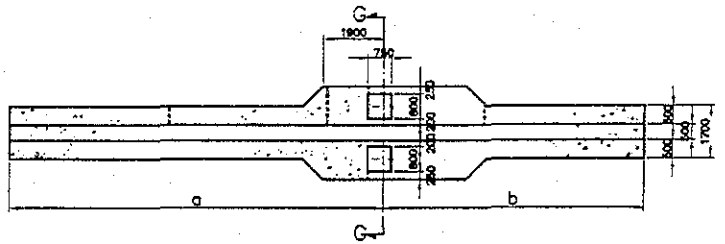
SECTION E–E
SCALE 1:150



SECTION J–J
SCALE 1:150

C–C

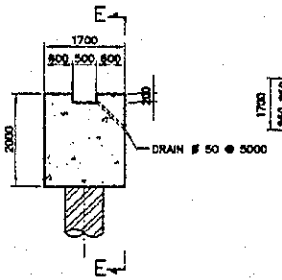
D–D
SCALE 1:150



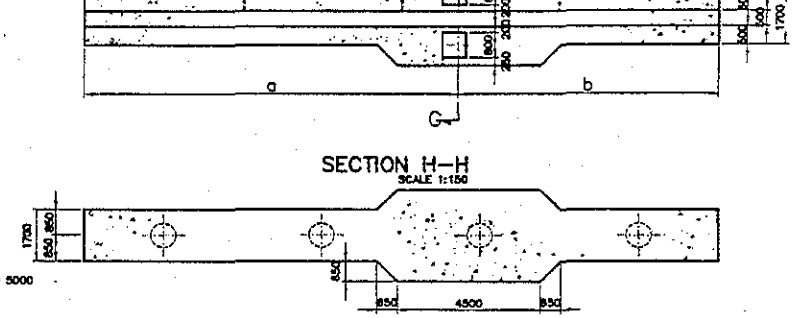
SECTION H–H
SCALE 1:150

VARIABLE LENGHT OF CRANE FOUNDATION

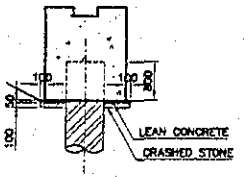
	LENGTH (L)	a	b	c	d	X	Y	Z1	Z2	Z3
No.1	18000	—	—	—	—	1000	2000	5000	5000	5000
No.2	20000	—	—	—	—	2500	3000	5000	4500	5000
No.3~ No.13	20000	—	—	—	—	2500	2500	2500	2500	—
No.14	20000	8600	11400	2500	2500	—	—	—	—	—
No.15	20000	11400	8600	2500	2500	—	—	—	—	—
No.16	20000	8600	11400	2500	2500	—	—	—	—	—
No.17	20000	11400	8600	2500	2500	—	—	—	—	—
No.18~ No.26	20000	—	—	—	—	2500	2500	2500	2500	—
No.27	20000	8600	11400	2500	2500	—	—	—	—	—
No.28	18000	9400	8600	1000	2000	—	—	—	—	—



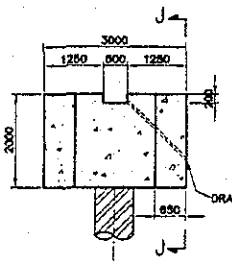
SECTION A–A
SCALE 1:100



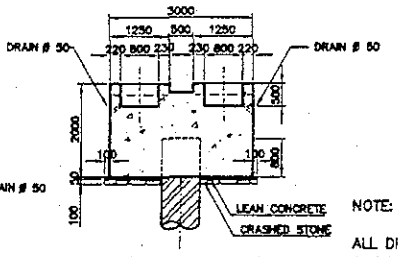
SECTION I–I
SCALE 1:150



SECTION B–B
SCALE 1:100



SECTION F–F
SCALE 1:100



SECTION G–G
SCALE 1:100

NOTE:

ALL DIMENSIONS ARE IN MILLIMETER.

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.

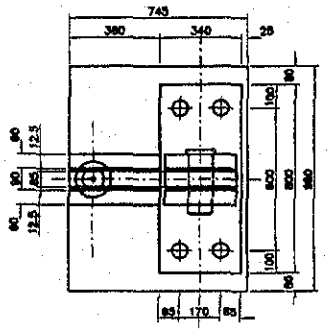
DESIGNED BY :
CHECKED BY :
APPROVED BY :

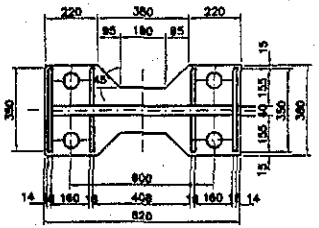
SECTION : QUAYWALL WORK
SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH
TITLE :

CRANE FOUNDATION (LAND SIDE)

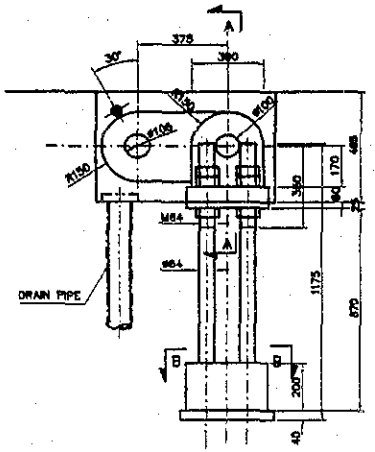
DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-QW-01-056

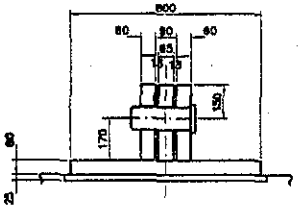
DETAIL OF ANCHORING FRAME
SCALE 1:20





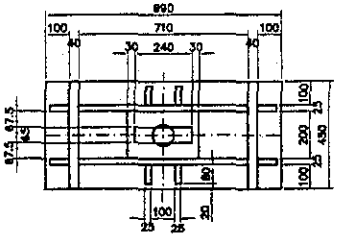
SECTION B–B



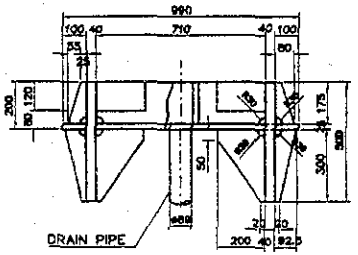


SECTION A–A

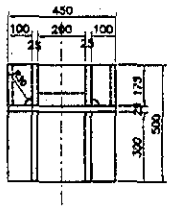
DETAIL OF SOCKET BLOCK
SCALE 1:20



PLAN

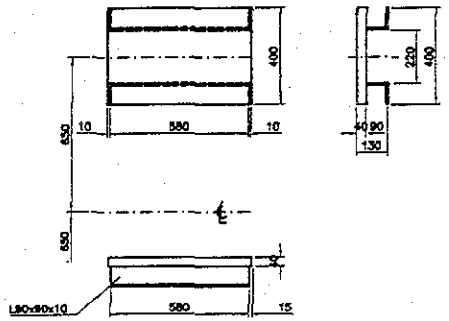


FRONT VIEW

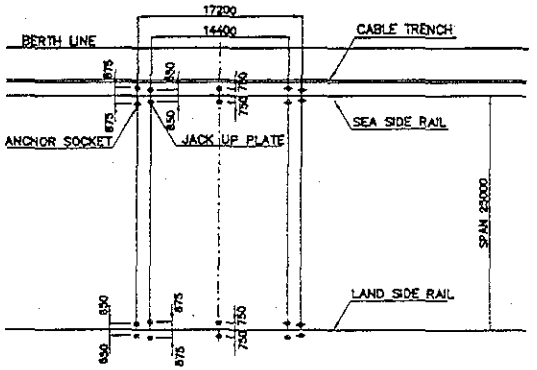


LATERAL VIEW

DETAIL OF JACK UP PLATE
SCALE 1:20



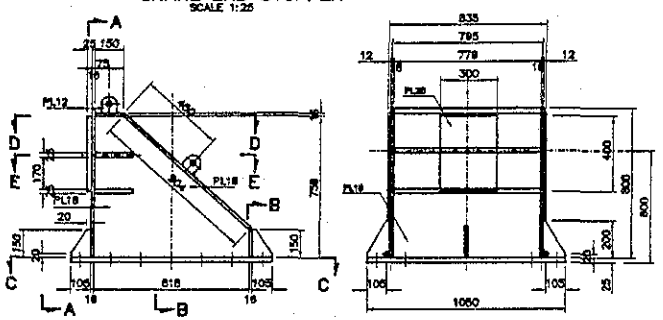
PLAN OF ANCHOR AND JACK UP PLATE
SCALE 1:500



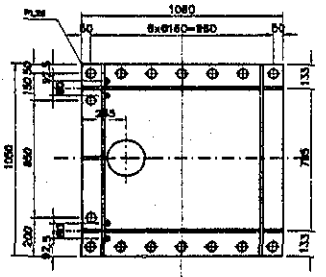
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	SECTION : QUAYWALL WORK	DATE : JULY/2002
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH	SCALE : INDICATED
		TITLE : DETAIL OF ANCHOR-JACK UP PLATE & SOCKET BLOCK	DRAWING NO. : DW-GW-01-050

DETAIL OF CRANE END STOPPER EAST SIDE (CONTAINER)

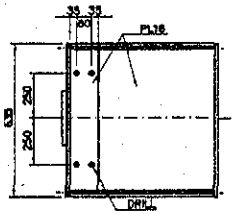
CRANE END STOPPER
SCALE 1:25



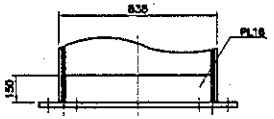
A–A



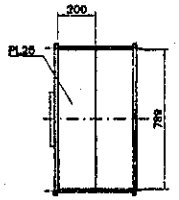
C–C



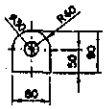
D–D



B–B

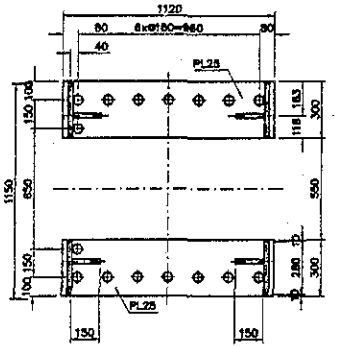


E–E

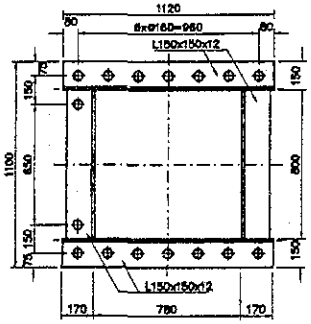


SCALE 1:10

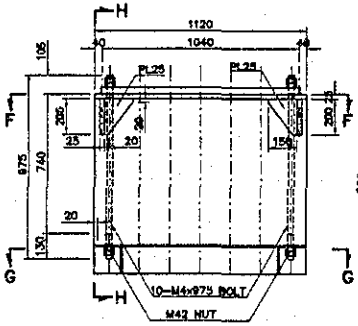
STOPPER BASE
SCALE 1:25



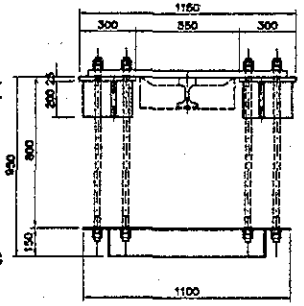
F–F

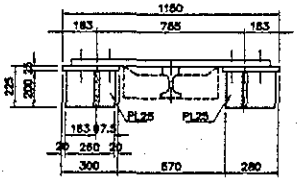


G–G



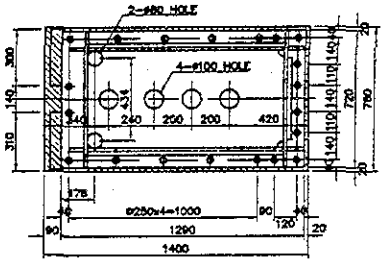
H–H

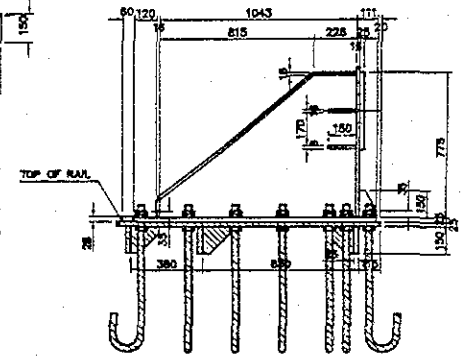


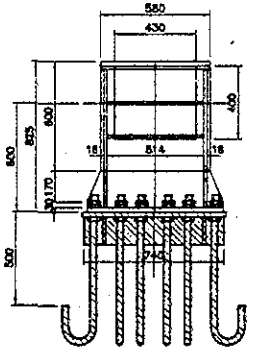


I–I

DETAILS OF CRANE END STOPPER WEST SIDE (CONTAINER)
SCALE 1:25







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.	SECTION : QUAYWALL WORK SUB-SECTION : CONTAINER AND MULTI-PURPOSE BERTH TITLE : DETAILS OF CRANE END STOPPER	DATE : JULY/2002 SCALE : INDICATED	DRAWING NO. DW-QW-01-060

Form of Crane Rail Foundation

			anchoring fram	socket block	Stopper	sqm
Container Berth	No.1	77.5			2.86	80.4
	No.2	88				88
	No.3	88				88
	No.4	88				88
	No.5	88				88
	No.6	88				88
	No.7	88				88
	No.8	88				88
	No.9	88				88
	No.10	88				88
	No.11	88				88
	No.12	88				88
	No.13	88				88
	No.14	90.2	8.68	0.87		99.8
	No.15	90.2	8.68	0.87		99.8
	No.16	90.2	8.68	0.87		99.8
	No.17	90.2	8.68	0.87	2.86	102.6
	End Block					0
	Total					1,540 m2
Multi-purpose Berth	No.18	88				88
	No.19	88				88
	No.20	88				88
	No.21	88				88
	No.22	88				88
	No.23	88				88
	No.24	88				88
	No.25	88				88
	No.26	88				88
	No.27	90.2	8.68	0.87		99.8
	No.28	82.5	8.68	0.87	2.86	94.9
	End Block					0
	Total					990 m2

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	Form (Container berth)	Page No. /	Rev.

References/ Notes

[No.1]

Side $2.0 \times 17.0 \times 2 = 68.0\ m^2$

End $2.0 \times 1.7 = 3.4\ m^2$

Rail pit $0.2 \times 15.0 \times 2 = 6.0\ m^2$

Rail Pt end $0.2 \times 0.5 = 0.1\ m^2$

total $77.5\ m^2$

Stopper:

$(0.8 \times 2 + 1.4 \times 2) \times 0.65 = 2.86\ m^2$

[No.2 ~ No.13]

Side $2.0 \times 20.0 \times 2 = 80.0\ m^2$

Rail pit $0.2 \times 20.0 \times 2 = 8.0\ m^2$

total $88.0\ m^2$

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	CONCRETE FOR CRANE RAIL FOUNDATION	Calc. Index No.	
Subject	FORM (CONTAINER BERTH).	Page No. 2	Rev.

References/ Notes

No.14 ~ No.16

Side (14.2 + 0.92 + 4.5) × 2.0 × 2

= 89.2 m² ——— / 90.2 m²

Rail pit 0.2 × 20.0 × 2 = 8.0 m²

Anchoring frame (0.8 × 2 + 0.25 × 2) × 1.4 × 2

= 8.68 m²

Socket block (0.45 × 2 + 1.0 × 2) × 0.3 × 1

= 0.89 m²

No.17

Stopper (0.8 × 2 + 1.4 × 2) × 0.05

= 2.86 m²

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet