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	TRAFFIC MARKING	**Pay Item No. (BOQ)**	2G-12
Quantity Item		**Unit**	m^2

Calculation Procedure Applied

The area of each type of traffic marking was computed. Also, the total number of signs was computed. Total area was computed multiplying the number of sign by the area.

References, Calculation Base and Revisions

References: Tender Drawings:

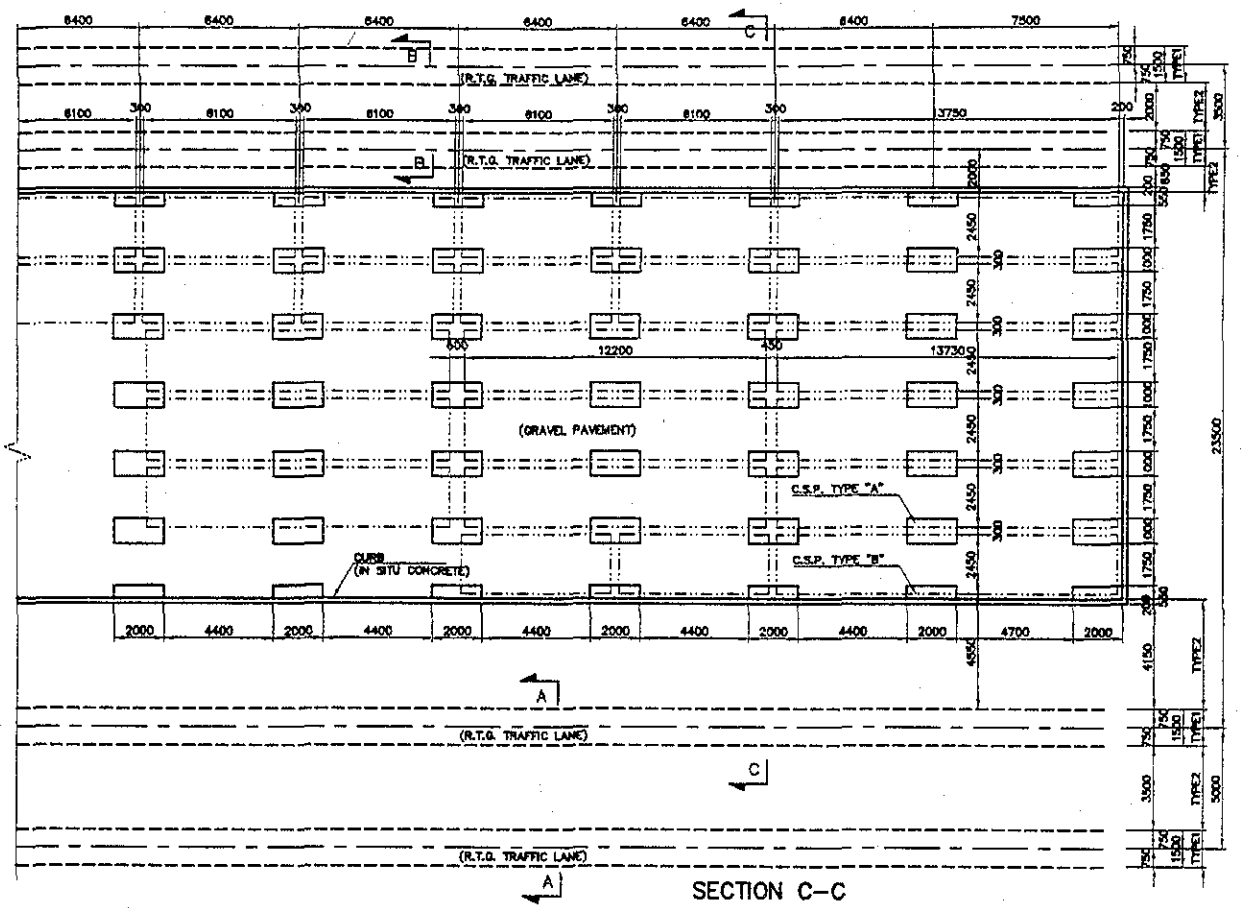
DW - PV - 01 - 002 Location of Container Stacking Plot for Dry Container
DW - PV - 03 - 001 Traffic Sign and Marking (1/3)
DW - PV - 03 - 002 " " (2/3)
DW - PV - 03 - 003 " " (3/3)
DW - PV - 03 - 004 Details of Traffic Sign and Marking

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.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

FN : Calculation_Cover_Sheet_020504_seg cover

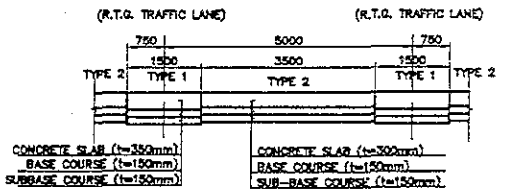
LOCATION OF CONTAINER STACKING PLATE FOR DRY CONTAINER

SCALE 1:200



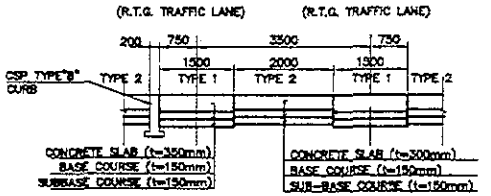
SECTION A–A

SCALE 1:100



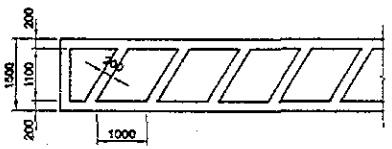
SECTION B–B

SCALE 1:100



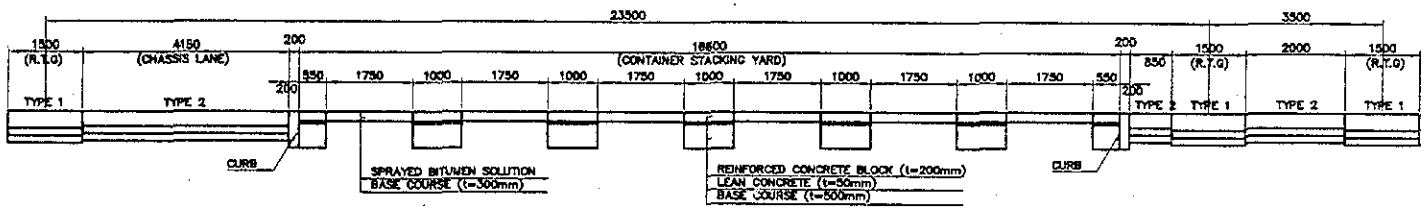
MARKING FOR R.T.G. TRAFFIC LANE

SCALE 1:100

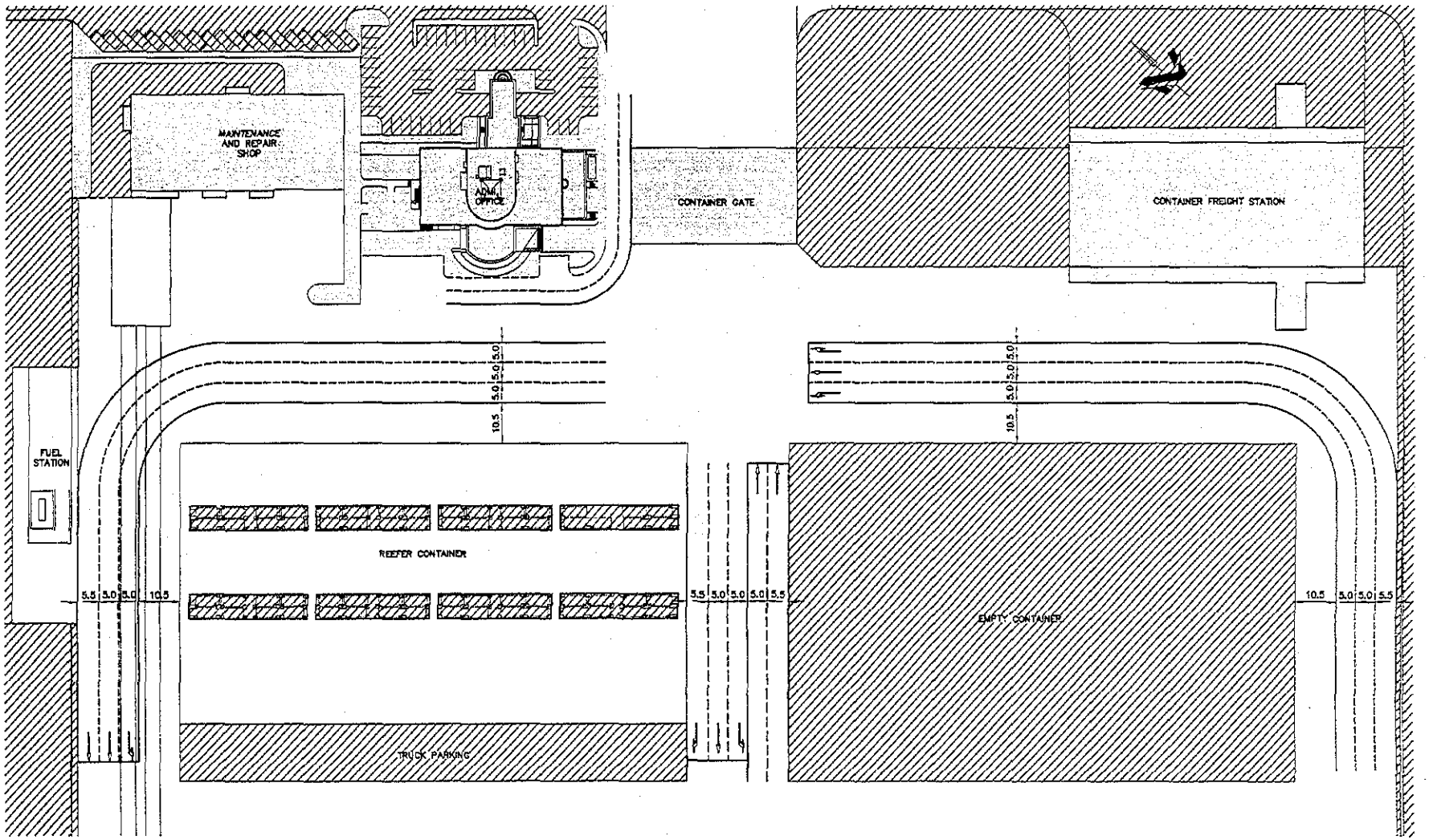


SECTION C–C

SCALE 1:100



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 : ROAD AND PAVEMENT SUB-SECTION : PORT SERVICE ROAD AND CONTAINER YARD PAVEMENT TITLE : LOCATION OF CONTAINER STACKING PLATE FOR DRY CONTAINER	DATE : JUNE/2002 SCALE : INDICATED DRAWING NO. DW-PV-01-002



LEGEND:

——— ROADWAY MIDDLE AND EDGE MARKING AND STOP LINE (W= 150mm)
——— DIVISION LINE MARKING (W= 150mm)

CONCRETE PAVEMENT

WITHOUT CONCRETE PAVEMENT

REV. NO.	DATE	COORDINATE	BY	APPROVED	DATE

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

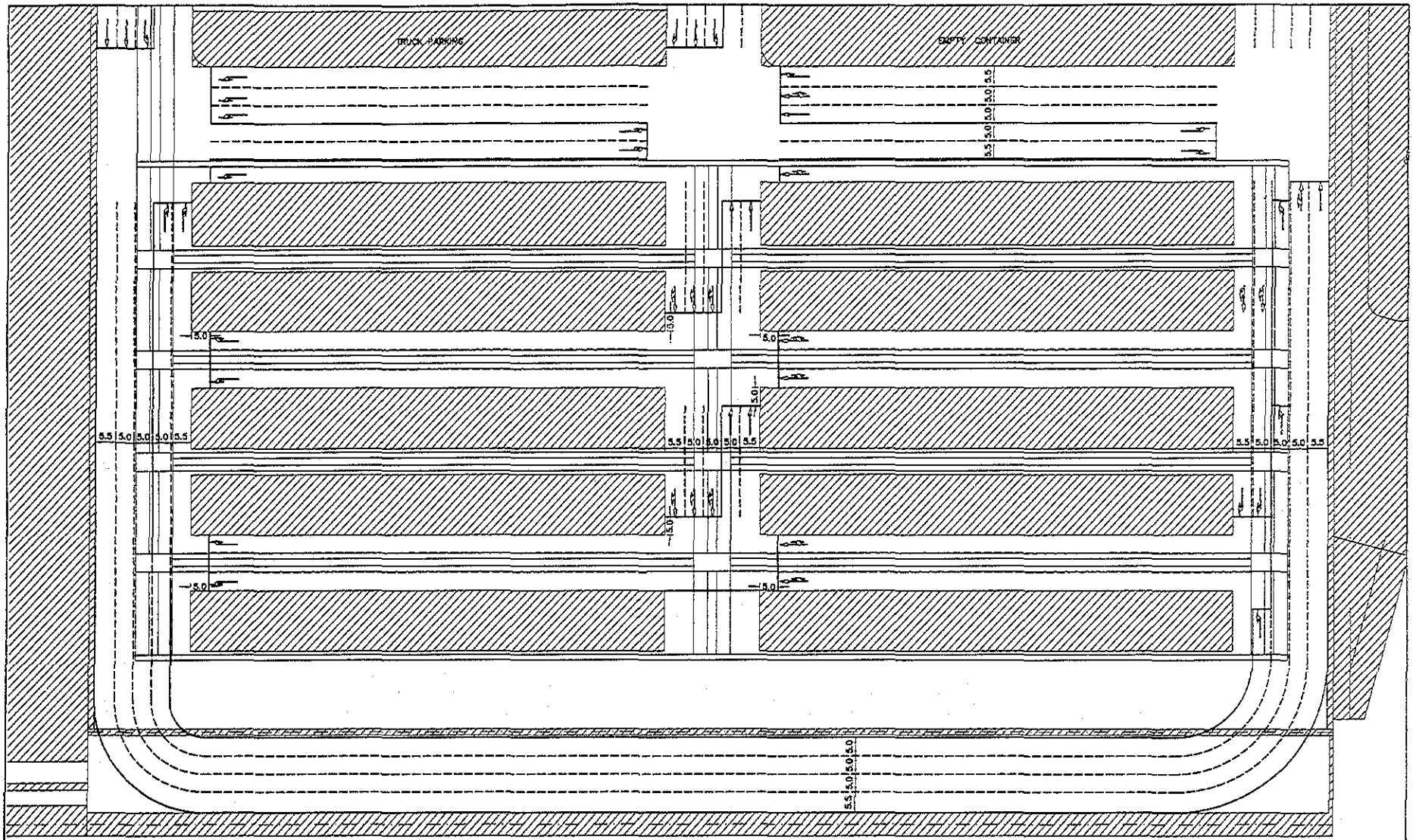
DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

NIPPON KOEI CO., LTD.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE : TRAFFIC SIGN AND MARKING (1/3)

DATE : JULY/2002
SCALE : 1 : 1000
DRAWING NO: DW-PV-03-001



LEGEND:

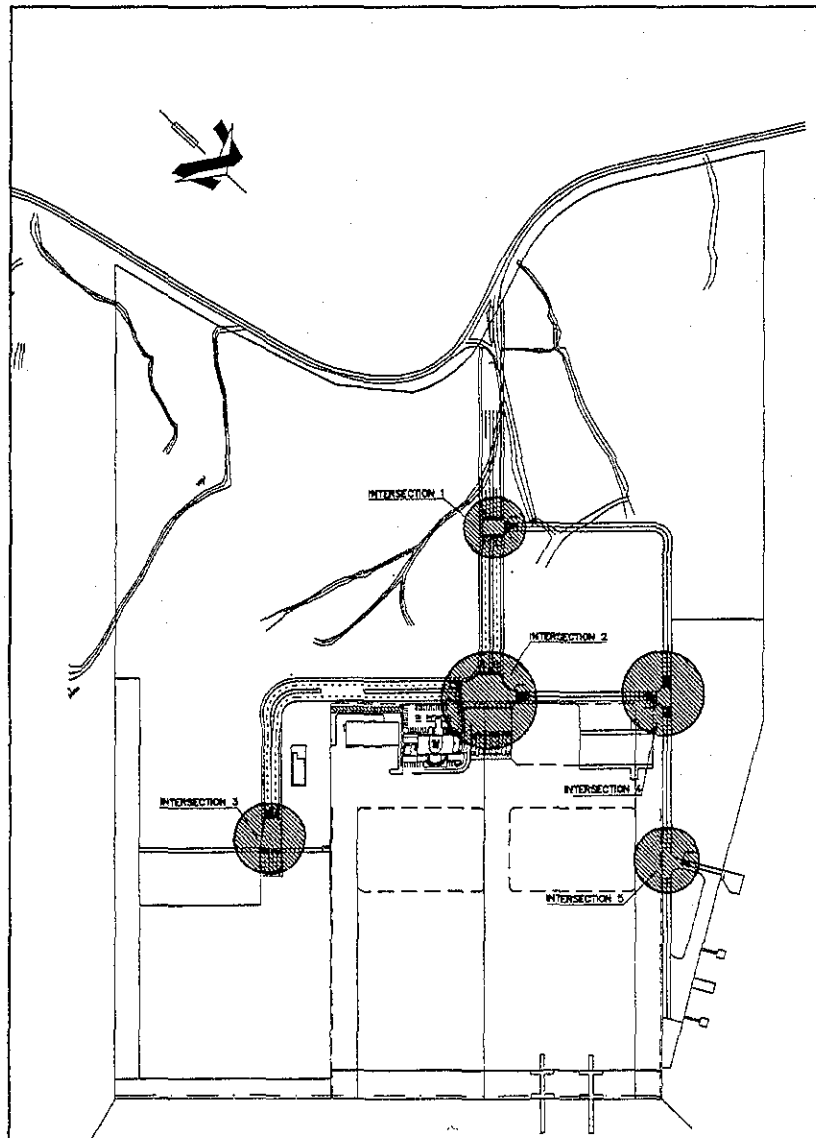
CONCRETE PAVEMENT

ROADWAY MIDDLE AND EDGE MARKING AND STOP LINE (W= 150mm)

DIVISION LINE MARKING (W= 150mm)

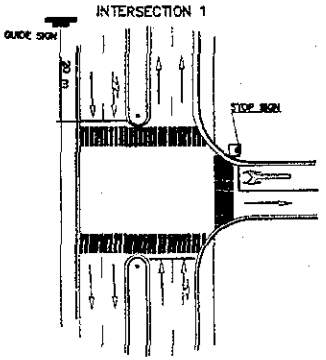
WITHOUT CONCRETE PAVEMENT

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 : ROAD AND PAVEMENT SUB-SECTION : INCIDENTAL WORK TITLE : TRAFFIC SIGN AND MARKING (2/3)	DATE : JULY/2002 SCALE : 1 : 1000 DRAWING NO. DW-PV-03-002

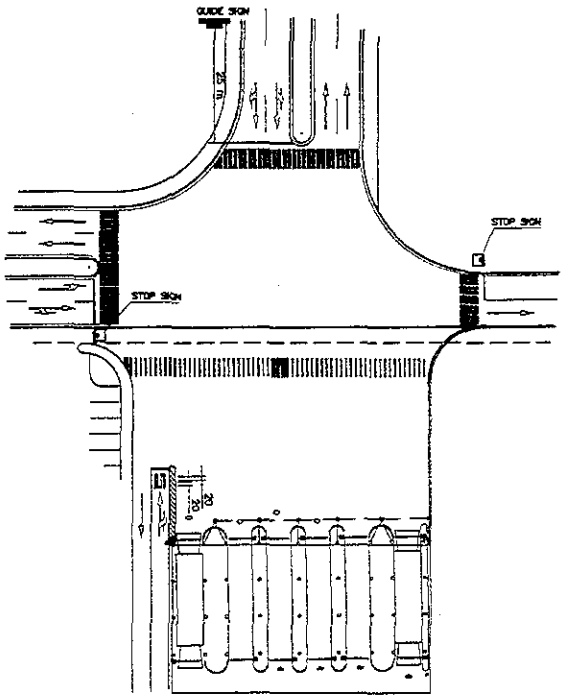


GENERAL PLAN
SCALE: 1:5,000

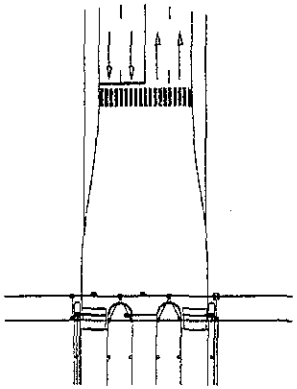
INTERSECTION 1



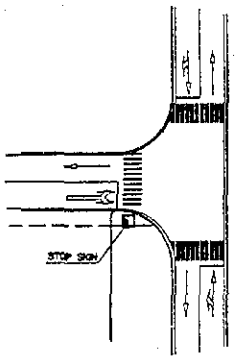
INTERSECTION 2



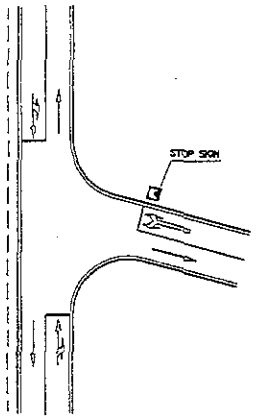
INTERSECTION 3



INTERSECTION 4



INTERSECTION 5



Note:
Detail of Marking is shown in Detail of traffic sign Roads and Marking

Legend:
- Guide Sign
- Stop Sign

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.

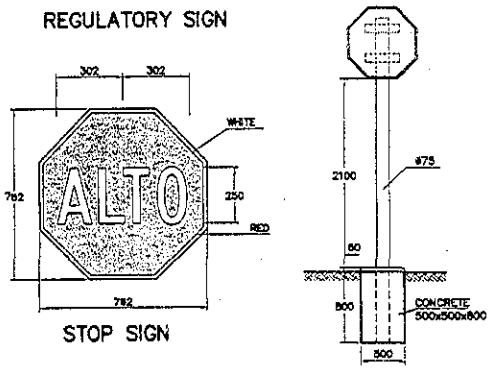
DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE :

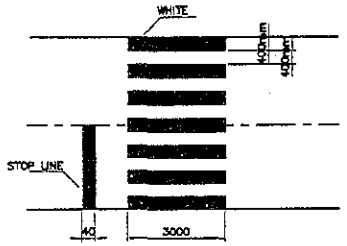
TRAFFIC SIGN AND MARKING (3/3)

DATE : JULY/2002
SCALE : NO TO SCALE
DRAWING NO: DW-PV-03-003

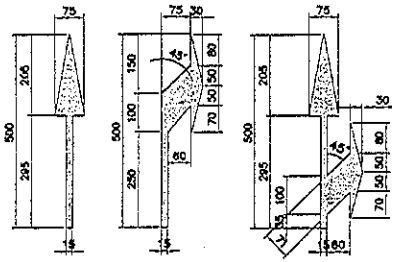
REGULATORY SIGN



MARKINGS



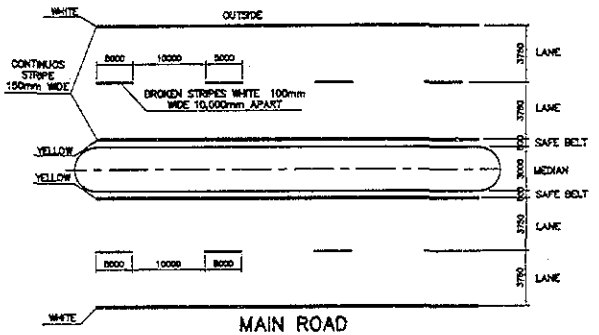
CROSS WALK



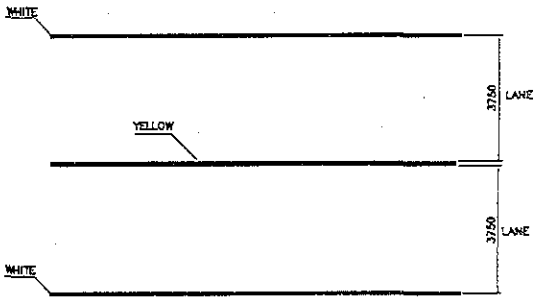
LANE-USE ARROW PAVEMENT MARKING

NOTE: THEY SHALL BE WHITE IN COLOR

MARKINGS

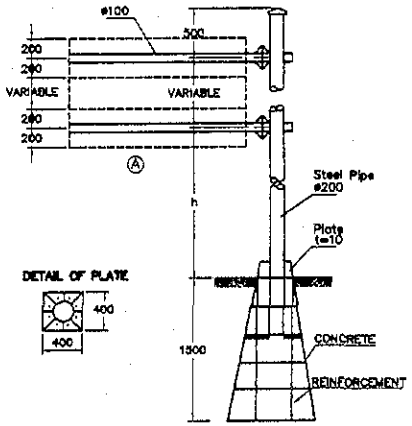


MAIN ROAD

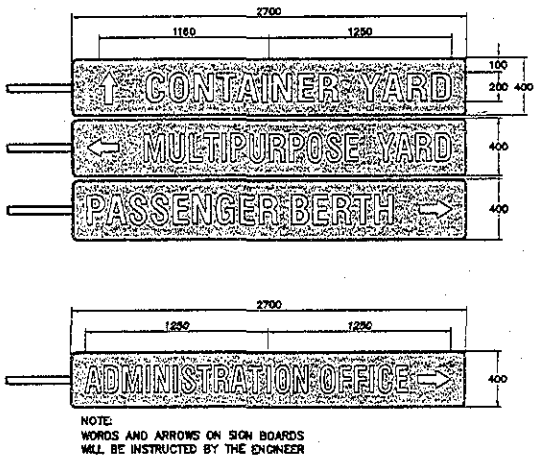


FEEDER ROAD
PAVEMENT LINES

ELEVATION OF TYPICAL GUIDE SIGNS

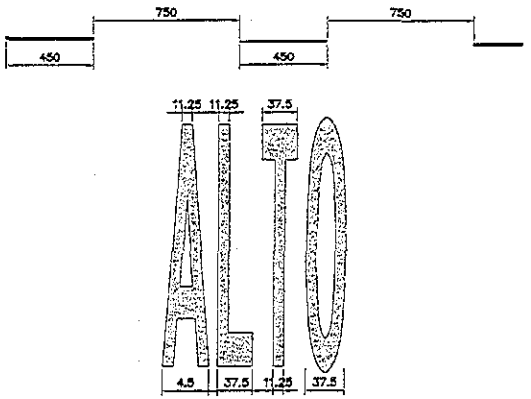


GUIDE SIGN



NOTE:
WORDS AND ARROWS ON SIGN BOARDS
WILL BE INSTRUCTED BY THE ENGINEER

DETAILS OF TRAFFIC MARKING FOR YARD

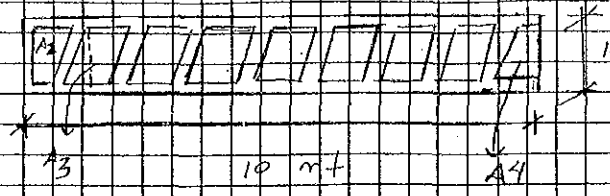


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) / COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	NIPPON KOEI CO., LTD.	DESIGNED BY : / CHECKED BY : / APPROVED BY :	SECTION : ROAD AND PAVEMENT SUB-SECTION : INCIDENTAL WORK TITLE : DETAILS OF TRAFFIC SIGN ROADS AND MARKING	DATE : JULY/2002 SCALE : NOT TO SCALE DRAWING NO. DW-PV-03-004

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

References/ Notes

Marking for RTG lane :



$A_1 = (10\,m)(1.50\,m) = 15\,m^2$

$A_2 = \left(\frac{0.94 + 0.30}{2}\right)(1.10) = 0.68\,m^2$

$A_3 = \left[\frac{(1.10)(0.64)}{2} + \left(\frac{1 + 0.35}{2}\right)(1.10)\right](7.5)$

$= 7.70\,m^2$

$A_4 = \left(\frac{0.65 + 0.018}{2}\right)(1.10) = 0.37\,m^2$

$A = 8.75\,m^2$

$\Rightarrow \frac{8.75\,m^2}{15\,m^2} = 0.58\,\%$

$A_{pavement} = 8,600\,m^2$

$A_T = (8,600\,m^2)(0.58) = 1,988\,m^2$

	Prepared by		Checked by	
		/ /200		/ /200

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

References/ Notes

Cross walk :

$A_1 = (18.80\,m)(3\,m) + \left(\frac{3m+0.70m}{2}\right)(1.60m) = 59.36\ m^2$

$A_2 = (10.60\,m)(3\,m) + \left(\frac{3m+1.24m}{2}\right)(0.80m) = 60.59\ m^2$

$A_3 = (8.80\,m)(3) + \left(\frac{3m+0.28m}{2}\right)(1.60m) + \left(\frac{3m+0.86}{2}\right)(1.20m) = 31.34\ m^2$

$A_4 = (19\,m)(3\,m) = 57\ m^2$

$A_5 = (22m)(3m) + \left(\frac{2.91m+0.69m}{2}\right)(1.60m) = 68.88\ m^2$

$A_6 = (8m)(3) + \left(\frac{3m+1.31m}{2}\right)(0.40m) + \left(\frac{1.50m)(1.26m}{2}\right) = 25.06\ m^2$

$A_7 = (22.50m)(2m) + \left(\frac{2.97m+1.30m}{2}\right)(0.40m) = 68.19\ m^2$

$A_8 = (14.80m)(3m) = 44.40\ m^2$

$A_9 = (7.60m)(3) + \left(\frac{0.23m+0.40m}{2}\right)(4.87m) + (0.40m)(2.13m) + \left(\frac{2.13m+1.11m}{2}\right)(0.40m)$

$= 24.57\ m^2$

$A_{10} = (7.60\,m)(3m) + \left(\frac{0.162m+0.40m}{2}\right)(1.33m) + (1.97m)(0.40m) + \left(\frac{1.67m+0.36m}{2}\right)(0.40m)$

$= 24.25\ m^2$

$A_{11} = (8m)(3) + \left(\frac{3+0.55}{2}\right)(1.27) = 26.25\ m^2$

$A_T = 489.80\ m^2$

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet

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

References/ Notes

Arrows :

Type 1 : $N_o = 35$

$A = (0.75\,m)(5\,m) = 3.75\,m^2$

$A_T = (3.75\,m^2)(35) = 131.25\,m^2$

Type 2 : $N_o = 10$

$A = (0.75\,m + 0.30\,m)(5\,m) = 5.25\,m^2$

$A_T = (5.25\,m^2)(10) = 52.50\,m^2$

Type 3 : $N_o = 18$

$A = (0.30\,m + 0.15\,m + 0.60\,m + 0.30\,m)(5\,m) = 6.75\,m^2$

$A_T = (6.75\,m^2)(18) = 121.50\,m^2$

Type 4 : $N_o = 15$

$A = (0.75\,m + 0.30\,m)(5\,m) = 5.25\,m^2$

$A_T = (5.25\,m^2)(15) = 78.75\,m^2$

Type 5 : $N_o = 4$

$A = (0.30\,m + 0.15\,m + 0.60\,m + 0.30\,m)(5\,m) = 6.75\,m^2$

$A_T = (6.75\,m^2)(4) = 27\,m^2$

Type 6 : $N_o = 4$

$A = (0.30\,m + 0.15\,m + 0.60\,m + 0.30\,m)(5\,m) + (2.50\,m)(0.90\,m)$

$= 7.50\,m^2$

$A_T = (7.50\,m^2)(4) = 30\,m^2$

$A_T = 441\,m^2$

		Prepared by		Checked by	
		Kaila G.	26 / June / 2002		1 /200

FN: Calculation_Sheet

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

References/ Notes

Pavement Lines:

Broken Stripes (White) $W = 10$ cm

$L = (1,115.90 + 3,075.15 + 963.18)\,m = 5154.23\,m$

$A = (5154.23\,m)(0.10\,m)(1/3) = 171.81\,m^2$

Continuous Stripe (White) $W = 15$ cm

$L = (1,122.14 + 1813.36 + 2,258.37)\,m$

$= 5193.87\,m$

$A = (5193.87\,m + (37.29\,m)(2))(0.15\,m) = 790.25\,m^2$

Continuous Stripe (White) $W = 40$ cm

$L = 335.20\,m$

$A = (335.80\,m + 3m)(0.40\,m) = 135.28\,m^2$

Continuous Stripe (Yellow) $W = 15$ cm

$L = 2,423.09\,m$

$A = (2,423.09\,m)(0.15m) + (1.41\,m)(0.20\,m)(15) + (36.79\,m)(0.15\,m)$

$= 373.20\,m^2$

$A_T = 5,470.54\,m^2$

Stop Sign on Pavement:

$A = (2.47\,m)(1.83\,m)(1) = 4.52\,m^2$

$\Sigma A = 1,988 + 489.80 + 411 + 1,470.54 + 4.52$

$= 4,373.86\,m^2 \approx$ **7,400 m^2**

	Prepared by		Checked by	
		1 /200		1 /200

FN: Calculation_Sheet

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	2G-130101
Quantity Item	EXCAVATION	**Unit**	m^3

Calculation Procedure Applied

Excavation volume was computed using geometric formulas.
The volume was computed multiplying the excavation area by the lenght of the excavation.

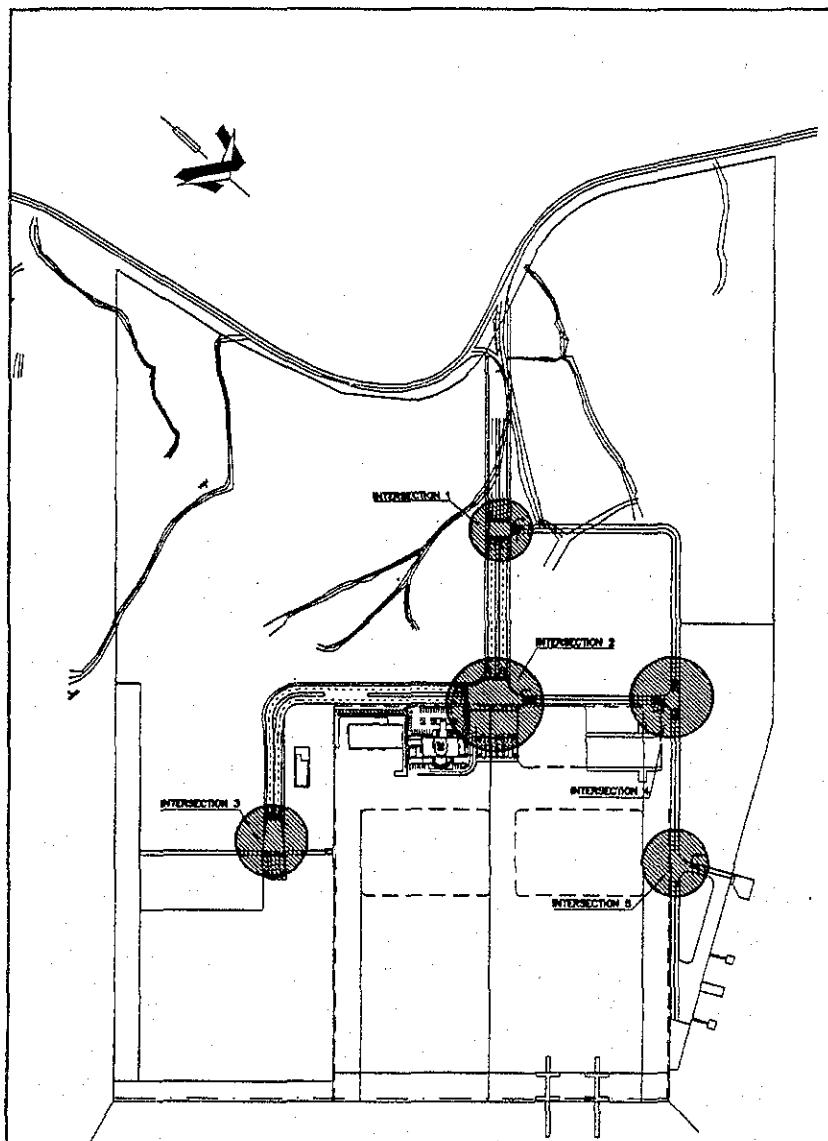
References, Calculation Base and Revisions

References: Tender Drawings:

DW - PV - 03 - 003 Traffic Sign and Marking (2/3)
DW - PV - 03 - 004 Details of Traffic Sign and Marking

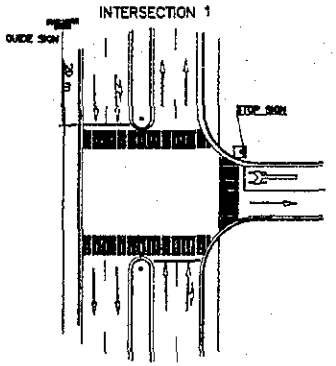
Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	Karla G.	3 July 2002		Mr. Inuma		Mr. Ando.		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

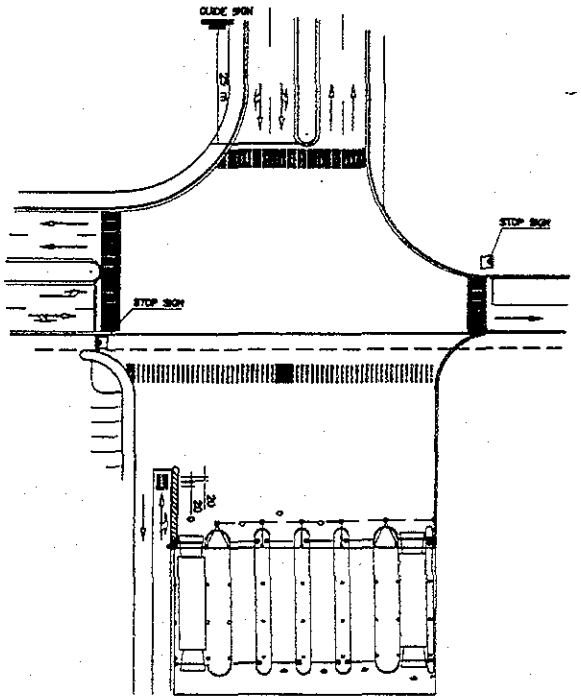


GENERAL PLAN
SCALE: 1:5,000

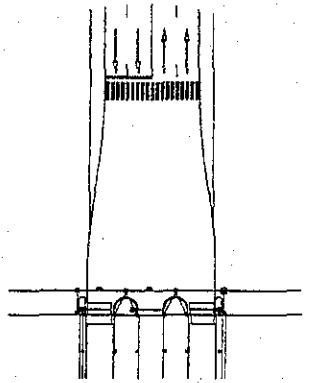
INTERSECTION 1



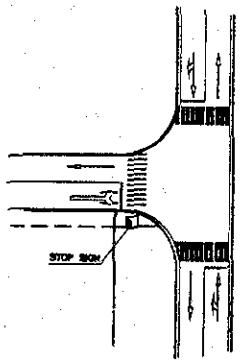
INTERSECTION 2



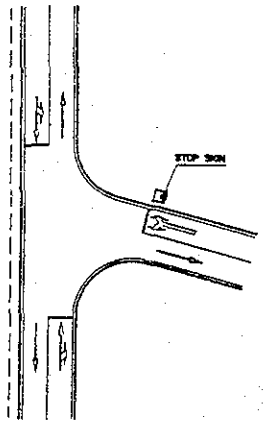
INTERSECTION 3



INTERSECTION 4



INTERSECTION 5

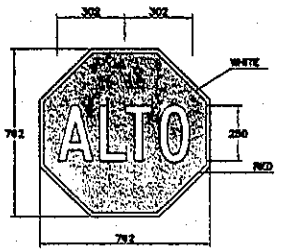


Note:
Detail of Marking is shown in Detail of traffic sign Roads and Marking

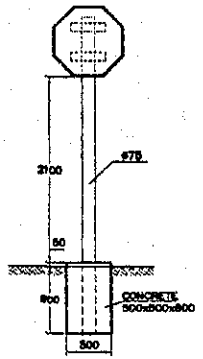
Legend:
- Guide Sign
- Stop Sign

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 : ROAD AND PAVEMENT SUB-SECTION : INCIDENTAL WORK TITLE : TRAFFIC SIGN AND MARKING (3/3)	DATE : JULY/2002 SCALE : NO TO SCALE DRAWING NO. DW-PV-03-003

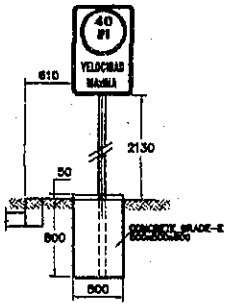
REGULATORY SIGN



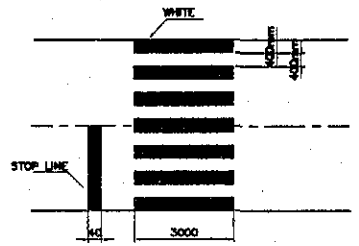
STOP SIGN



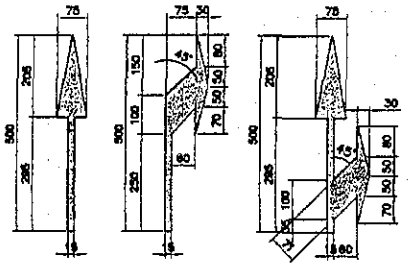
SPEED LIMIT SIGN



MARKINGS



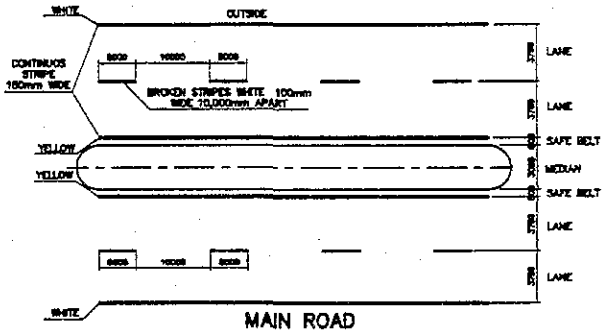
CROSS WALK



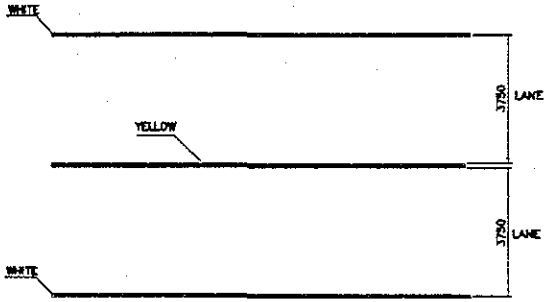
LANE–USE ARROW PAVEMENT MARKING

NOTE: THEY SHALL BE WHITE IN COLOR

MARKINGS

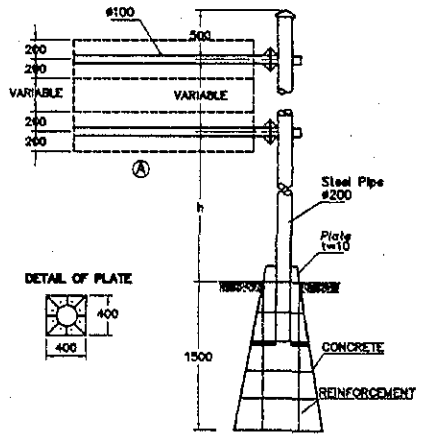


MAIN ROAD

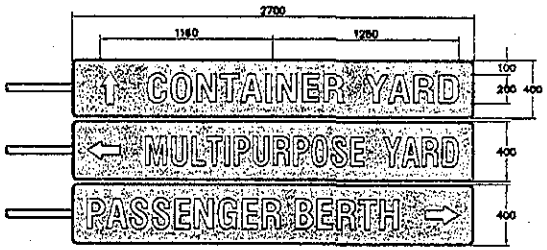


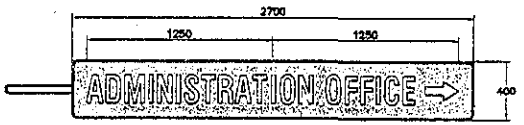
FEEDER ROAD
PAVEMENT LINES

ELEVATION OF TYPICAL GUIDE SIGNS



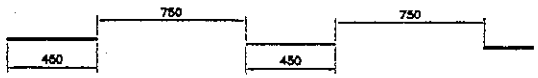
GUIDE SIGN

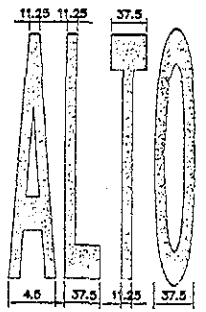




NOTE:
WORDS AND ARROWS ON SIGN BOARDS
WILL BE INSTRUCTED BY THE ENGINEER

DETAILS OF TRAFFIC MARKING FOR YARD





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 : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE : DETAILS OF TRAFFIC SIGN ROADS AND MARKING

DATE : JULY/2002
SCALE : NOT TO SCALE
DRAWING NO: DW-PV-03-004

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (GUIDE POST)	Calc. Index No.	
Subject	EXCAVATION	Page No.	Rev.

References/ Notes

Per 1 Guide Post.

$$A = \frac{(0.75\,m)(1.50\,m)}{2}(2) + (0.90\,m)(1.50\,m)$$

$$A = 2.48\ m^2$$

$$V = (2.48\ m^2)(0.90\ m) = 2.23\ m^3$$

No = 2

$$V_T = (2.23\ m^3)(2) = 4.46\ m^3$$

$$\approx \boxed{5\ m^3}$$

	Prepared by		Checked by	
	Karla G.	3 / July / 2002		/ /200

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	2G-130102
Quantity Item	FORM	**Unit**	m^2

Calculation Procedure Applied

Form area was computed using geometric formulas.
Form area was applied to the bottom and sides.
The area was computed with 2 decimal for section and zero decimal for total.

References, Calculation Base and Revisions

References : Tender Drawings :
DW - PV - 03 - 004 Details of Traffic Sign and Marking
(Same as "Excavation")

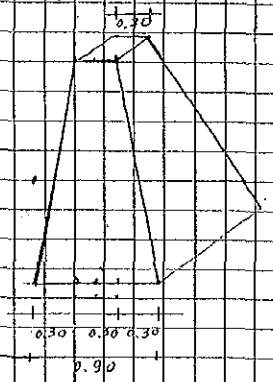
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla G. [illegible]	3 July 2002		Mr. Tsuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (GUIDE POST)	Calc. Index No.	
Subject	FORM	Page No.	Rev.

References/ Notes

Per 1 Guide Post.



$$A = \left[\frac{(0.30\,m)(1.60\,m)}{2}(2) + (0.30\,m)(1.60\,m)\right](4) + (0.90\,m)(0.90\,m) + \pi(0.15\,m)^2(0.60\,m)$$

$$= 4.69\ m^2$$

$$No = 2$$

$$A_T = (4.69\ m^2)(2) = 9.381\ m^2$$

$$\simeq \boxed{10\ m^2}$$

		Prepared by		Checked by	
		Koila G.	3 / 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	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	8G-130103
Quantity Item	CONCRETE	**Unit**	m^3

Calculation Procedure Applied

Concrete volume was computed using geometric formulas. The volume was computed multiplying area by the height of the concrete base.

References, Calculation Base and Revisions

References : Tender Drawings:

LW - FY - 03 - C04 Details of Traffic Sign and Marking

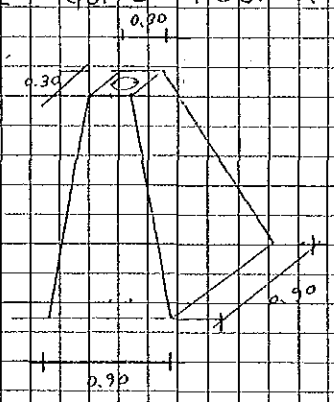
(Same as "Excavation")

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

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (GUIDE POST)	Calc. Index No.	
Subject	CONCRETE	Page No.	Rev.

References/ Notes

Per 1 Guide Post :



$$V = \frac{h\left(ab + cd + \sqrt{abcd}\right)}{3} - \pi r^2 h$$

$$= \frac{(1.60)\left((0.90)(0.90) + (0.30)(0.30) + \sqrt{(0.90)(0.90)(0.30)(0.30)}\right)}{3} - \pi (0.10)^2 (0.60)$$

$$= 0.83\ m^3 - 0.019\ m^3$$

$$= 0.81\ m^3$$

$$No = 2$$

$$V_T = (0.81\ m^3)(2) = 1.62\ m^3$$

$$\approx \boxed{2\ m^3}$$

		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	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	2G-130109
Quantity Item	BACK FILL	**Unit**	m^3

Calculation Procedure Applied

Backfill volume was computed using geometric formulas.

References, Calculation Base and Revisions

References: Tender Drawings:

DW - PV - 03 - 004 Details of Traffic Sign and Marking

(Same as "Excavation")

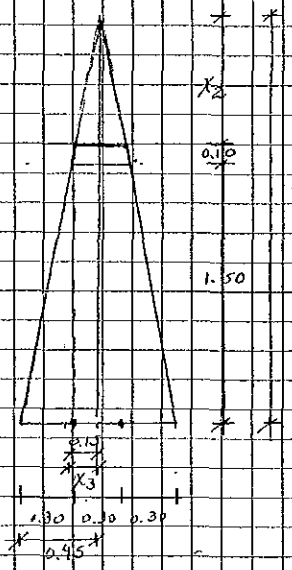
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karlo G. [illegible]	3 July 2002		Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (GUIDE POST)	Calc. Index No.	
Subject	BACKFILL	Page No.	Rev.

References/ Notes

Per 1 Guide Post :



$X_1 = ?$

$\frac{0.45}{X_1} = \frac{0.30}{1.50}$

$X_1 = 2.25\ m$

$X_2 = ?$

$\frac{0.15}{X_2} = \frac{0.45}{2.25}$

$X_2 = 0.75$

$X_3 = ?$

$\frac{0.15}{0.75} = \frac{X_3}{(0.75 + 0.10)}$

$X_3 = 0.17$

Concrete Volume :

$V = h\left(ab + cd + \sqrt{ab\,cd}\right) - \pi r^2 h$

$= \frac{(1.50)\left((0.90)(0.90) + (0.34)(0.34) + \sqrt{(0.90)(0.90)(0.34)(0.34)}\right)}{3} - \pi (0.10)^2 (0.50)$

$= 0.62 - 0.019$

$= 0.60\ m^3$

$V_{Backfill} = V_{exc} - V_{cons} = 2.23\ m^3 - 0.60\ m^3 = 1.63\ m^3$

No = 2

$V_T = (1.63\ m^3)(2) = 3.26\ m^3$

$\approx \boxed{4\ m^3}$

	Prepared by		Checked by	
	Karla C.	3 / 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	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	29-130105
Quantity Item	COMPACTION	**Unit**	m^2

Calculation Procedure Applied

Compaction area was computed using geometric formulas. The area was computed multiplying the lenght of the concrete base by the thickness of 1.50 m.

References, Calculation Base and Revisions

References : Tender Drawings :

D-N - PV - 03 - 004 Details of Traffic Sign and Marking

(Same as "Excavation")

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

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (GUIDE POST)	Calc. Index No.	
Subject	COMPACTION	Page No.	Rev.

References/ Notes

Per 1 Guide Post :

$A = (1.50\ m)(0.90\ m)$

$A = 1.35\ m^2$

$No = 2$

$A_T = (1.35\ m^2)(2) = 2.70\ m^2$

$\simeq \boxed{3\ m^2}$

		Prepared by		Checked by	
		Karla G.	3 / July /2002		/ /200

FN: Calculation_Sheet

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	TRAFFIC SIGN BOARD (SIGN POST)	**Pay Item No. (BOQ)**	2G -130201
Quantity Item	EXCAVATION	**Unit**	m^3

Calculation Procedure Applied

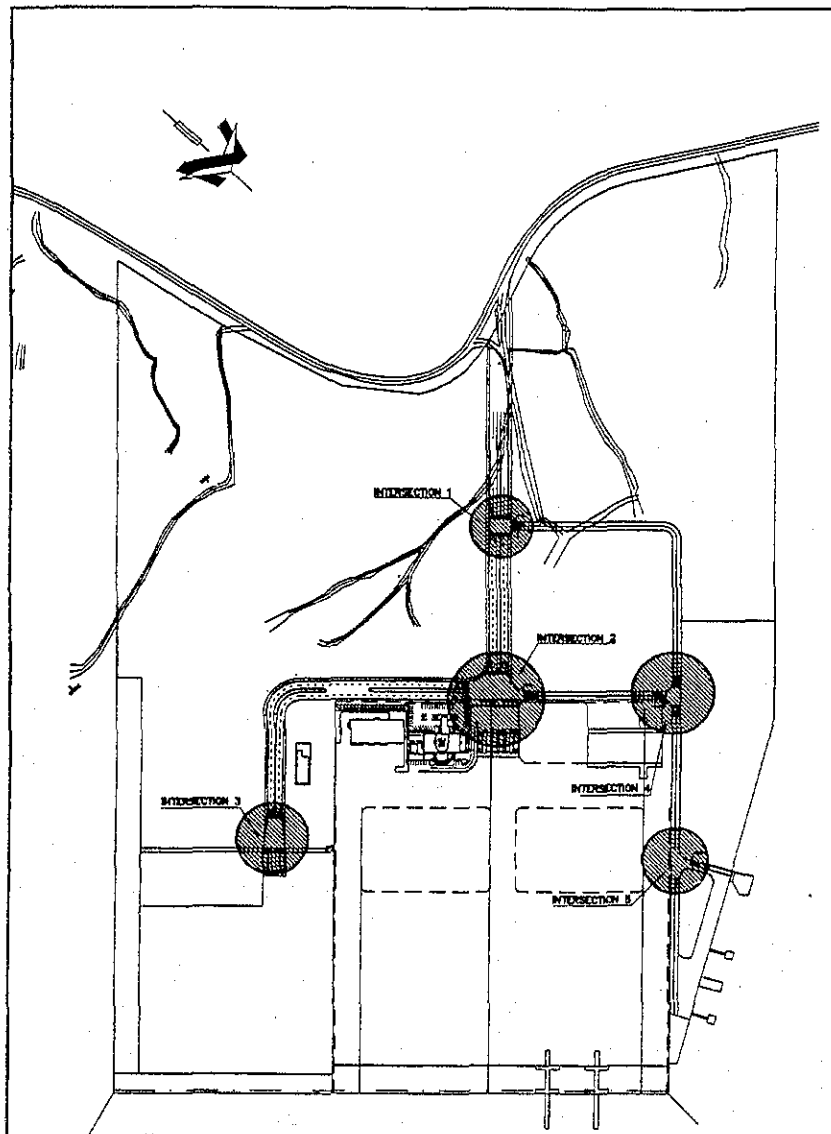
Excavation volume was computed using geometric formulas.
The volume was computed multiplying the excavation area by the lenght of the excavation.

References, Calculation Base and Revisions

References: Tender Drawings:
DW-PV-03-003 Traffic Sign and Marking
DW-PV-03-004 Details of Traffic Sign and Marking

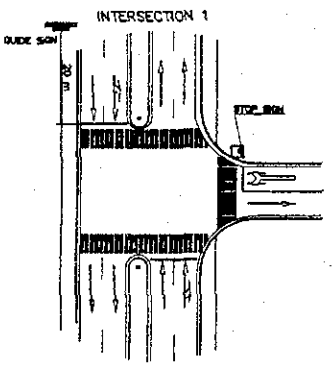
Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	Kaila G.	3 July 2002						
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

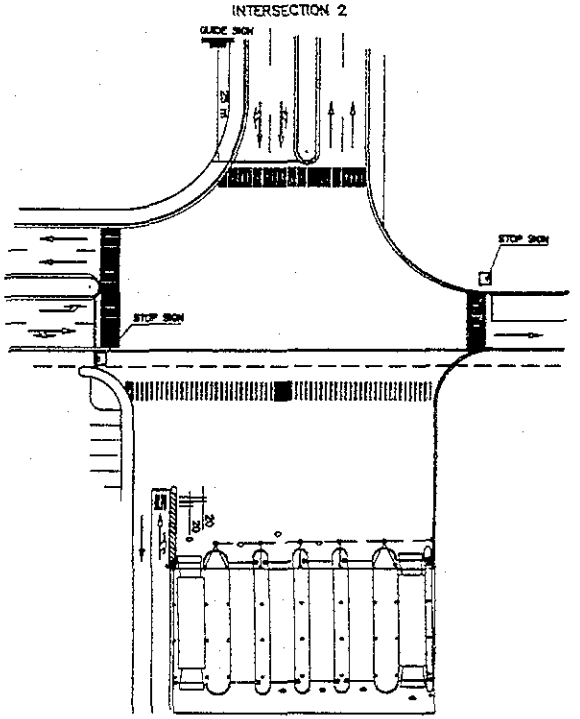


GENERAL PLAN
SCALE: 1:5,000

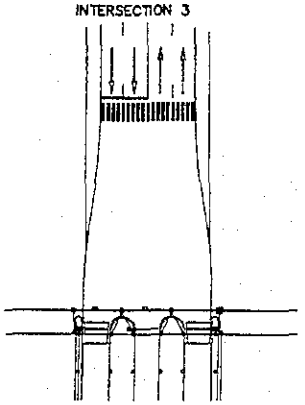
INTERSECTION 1



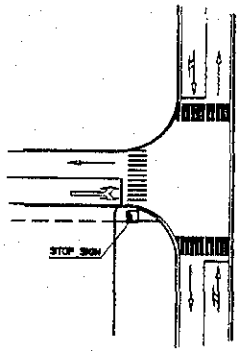
INTERSECTION 2



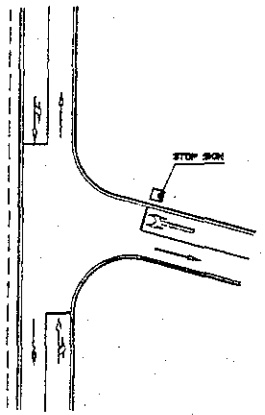
INTERSECTION 3



INTERSECTION 4



INTERSECTION 5



Note:
Detail of Marking is shown in Detail of traffic sign Roads and Marking

Legend:
- Guide Sign
- Stop Sign

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.

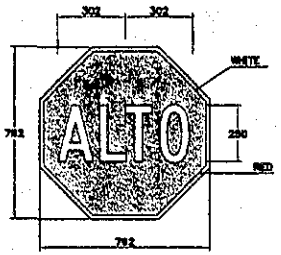
DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE :

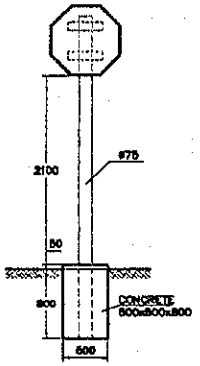
TRAFFIC SIGN AND MARKING (3/3)

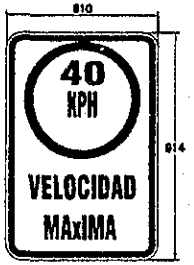
DATE : JULY/2002
SCALE : NO TO SCALE
DRAWING NO. DW-PV-03-003

REGULATORY SIGN

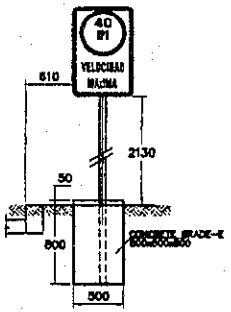


STOP SIGN

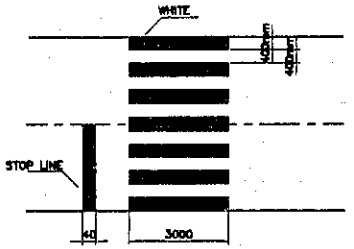




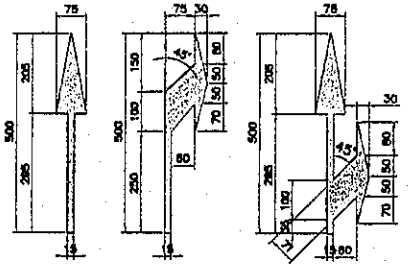
SPEED LIMIT SIGN



MARKINGS



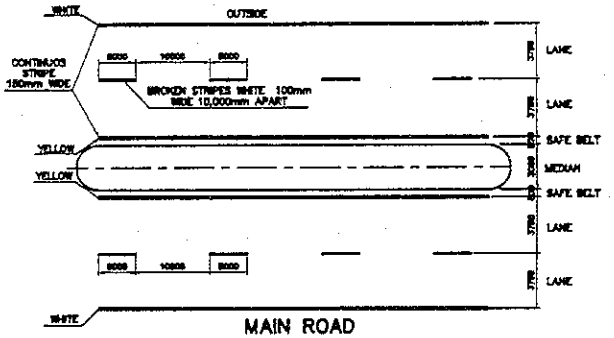
CROSS WALK



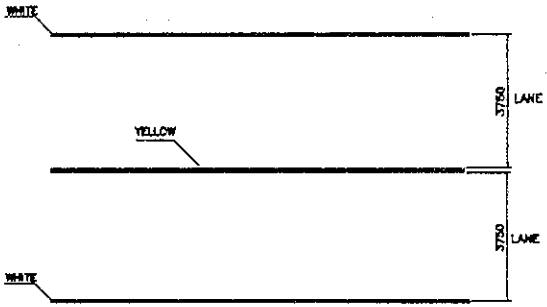
LANE–USE ARROW PAVEMENT MARKING

NOTE: THEY SHALL BE WHITE IN COLOR

MARKINGS

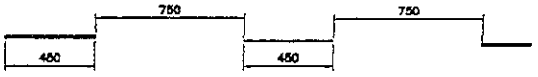


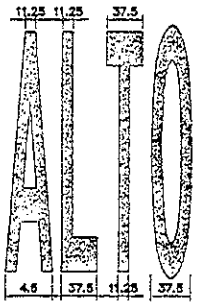
MAIN ROAD



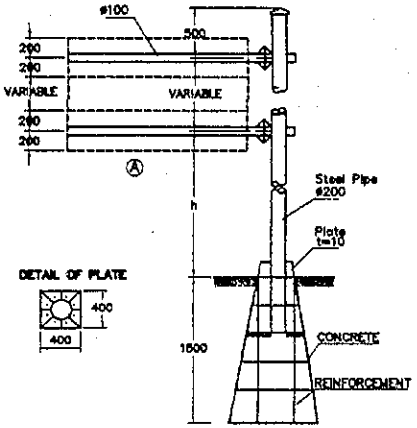
FEEDER ROAD
PAVEMENT LINES

DETAILS OF TRAFFIC MARKING FOR YARD

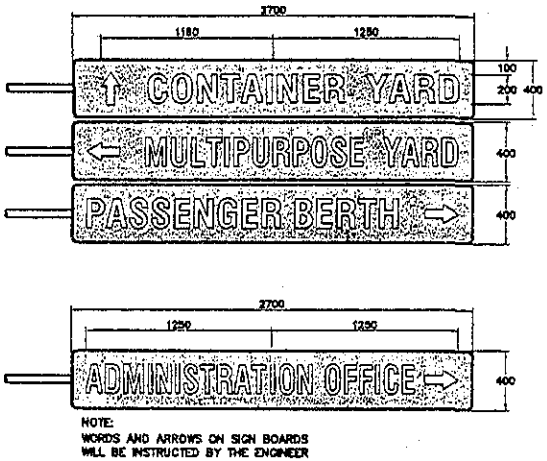




ELEVATION OF TYPICAL GUIDE SIGNS



GUIDE SIGN



NOTE:
WORDS AND ARROWS ON SIGN BOARDS WILL BE INSTRUCTED BY THE ENGINEER

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 : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE : DETAILS OF TRAFFIC SIGN ROADS AND MARKING

DATE : JULY/2002
SCALE : NOT TO SCALE
DRAWING NO. DW-PV-03-004

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (SIGN POST)	Calc. Index No.	
Subject	EXCAVATION	Page No.	Rev.

References/ Notes

Per 1 Sign Post :

$$A = (0.50\,m)(0.80\,m) + \left(\frac{2.40\,m + 0.80\,m}{2}\right)(2)$$

$$= 0.72\,m^2$$

$$V = (0.72\,m^2)(0.50\,m)$$

$$= 0.36\,m^3$$

$$No = 5$$

$$V_T = (0.36\,m^3)(5) = 1.80\,m^3$$

$$\approx \boxed{2\,m^3}$$

		Prepared by		Checked by	
		Kalo G.	3 / 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	TRAFFIC SIGN BOARD (GUIDE POST)	**Pay Item No. (BOQ)**	2G-130202
Quantity Item	FORM	**Unit**	m^2

Calculation Procedure Applied

Form area was computed using geometric formulas.
Form area was applied to the bottom and sides.
The area was computed with 2 decimal for section and zero decimal for total.

References, Calculation Base and Revisions

References : Tender Drawings:

DW-F1-03-004 Details of Traffic Sign and Marking

(Same as "Excavation")

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

FN : Calculation_Cover_Sheet_020504_seg cover

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (SIGN POST)	Calc. Index No.	
Subject	FORM	Page No.	Rev.

References/ Notes

Per 1 Sign Post :

$A = (0.50m)(0.80m)(2) + (0.50m)(0.80m)(2) + (0.50m)(0.30m) +$

$\pi (0.038m)^2 (0.80m)$ (0.0036)

$= 2.00\ m^2$

$No = 5$

$A_T = (2.00\ m^2)(5) = \boxed{10\ m^2}$

		Prepared by		Checked by	
		Karlo G.	3 July 2012		7 /2012

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	TRAFFIC SIGN BOARD (SIGN POST)	**Pay Item No. (BOQ)**	2G-130203
Quantity Item	CONCRETE	**Unit**	m^3

Calculation Procedure Applied

Concrete volume was computed using geometric formulas.
Volume was computed per one sign post and then multiplied by the total number of posts.

References, Calculation Base and Revisions

References : Tender Drawings:
0 W - PV - 03 - C04 Details of Traffic Sign and Marking

(Same as "Excavation")

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

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (SIGN POST)	Calc. Index No.	
Subject	CONCRETE	Page No.	Rev.

References/ Notes

Per 1 Sign Post :

$V = (0.30m)(0.30m)(0.80m) - \pi(0.038m)^2(0.80m)$

$V = 0.196\ m^3$

$No. = 5$

$V_T = (0.196\ m^3)(5) = 0.98\ m^3$

$\simeq \boxed{1\ m^3}$

	Prepared by		Checked by	
	Karla G.	3 / 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	TRAFFIC SIGN BOARD (SIGN POST)	**Pay Item No. (BOQ)**	2G-130204
Quantity Item	BACK FILL	**Unit**	m^3

Calculation Procedure Applied

Backfill volume was computed using geometric formulas. Volume was computed per one sign post and then multiplied by the total number of sign posts.

References, Calculation Base and Revisions

References: Tender Drawings:

LN - PU - 03 - 014 Details of Traffic Sign and Marking

(Same as "Excavation")

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karlo G.	3 July 2002		M. Izuma		M. Ando		
1								
2								
3								

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (SIGN POST)	Calc. Index No.	
Subject	BACK FILL	Page No.	Rev.

References/ Notes

Per 1 Sign Post :

$V_{Back} = V_{exc} - V_{conc}$

$V = 0.86\ m^2 - 0.19\ m^3$

$V = 0.669\ m^3$

$No = 5$

$V_T = (0.669\ m^3)(5) = 0.82\ m^3$

$\approx \boxed{1\ m^3}$

	Prepared by		Checked by	
	Kalo G.	21 / June/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	TRAFFIC SIGN BOARD (SIGN POST)	**Pay Item No. (BOQ)**	2G-130205
Quantity Item	COMPACTION	**Unit**	m^2

Calculation Procedure Applied

Compaction area was computed using geometric formulas. The area was computed multiplying the lenght of the fine concrete base to the thickness of 80 cm.

References, Calculation Base and Revisions

References : Tender Drawings :

LJ-PI -03-024 Details of Traffic Sign and Marking

(Same as "Excavation")

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

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	TRAFFIC SIGN BOARD (SIGN POST)	Calc. Index No.	
Subject	COMPACTION	Page No.	Rev.

References/ Notes

Per 1 Sign Post :

$A = (0.50\,m)(0.80\,m)$

$= 0.40\,m^2$

$\approx 0.40\,m^2$

$No = 5$

$A_T = (0.40\,m^2)(5) = 2.00\,m^2$

$\Rightarrow$ **2 m^2**

	Prepared by		Checked by	
	Kris S.	3 July 2012		1 /2012

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	ROAD SIGN	**Pay Item No. (BOQ)**	26-1303
Quantity Item	/	**Unit**	m^2

Calculation Procedure Applied

The area of each type of sign was computed. Also, the total number of signs was computed. Total area was computed multiplying the number of signs by the area.

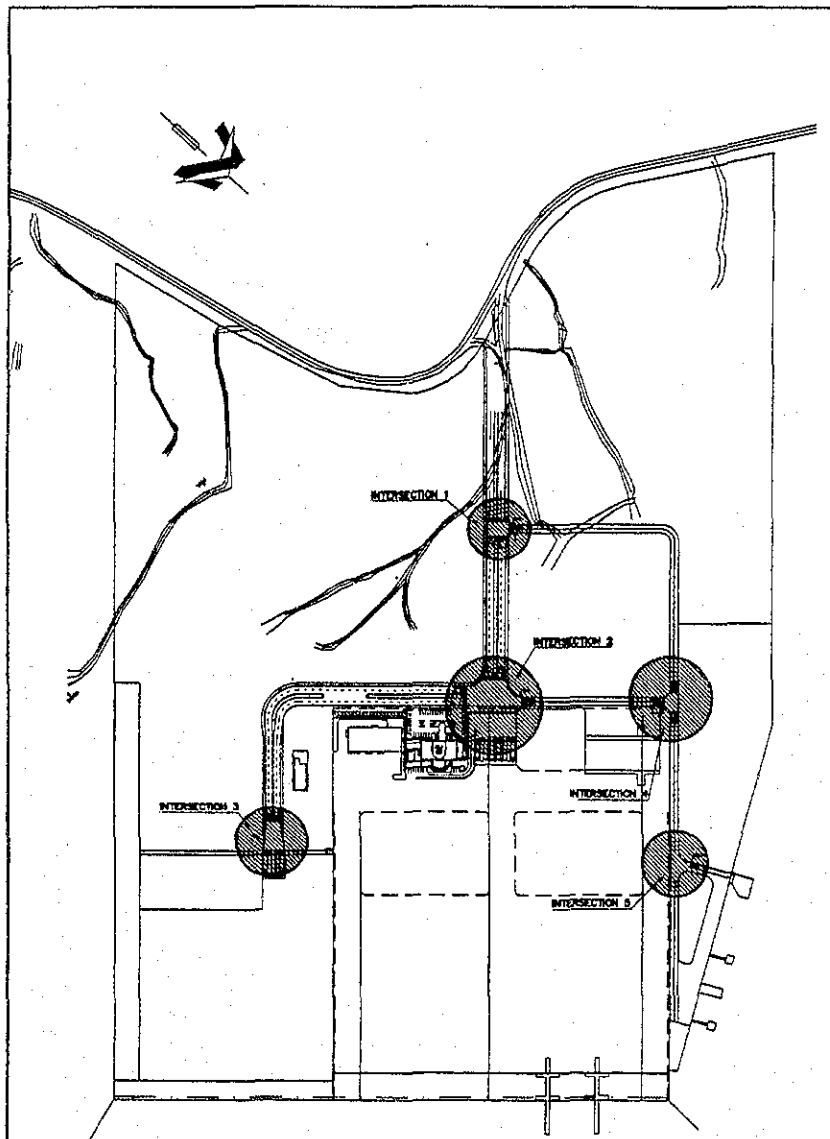
References, Calculation Base and Revisions

References : Tender Drawings :

DW-PV-03-003 Traffic Sign and Marking (3/3)

DW-PV-03-004 Details of Traffic Sign and Marking

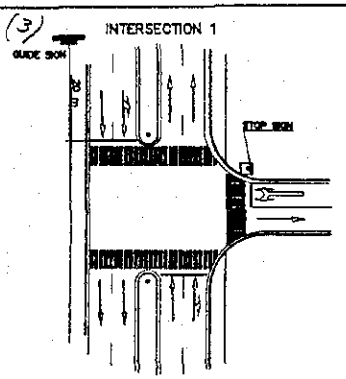
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla G.	3 July 2002		Mr. Izuma		Mr. Ando		
1								
2								
3								



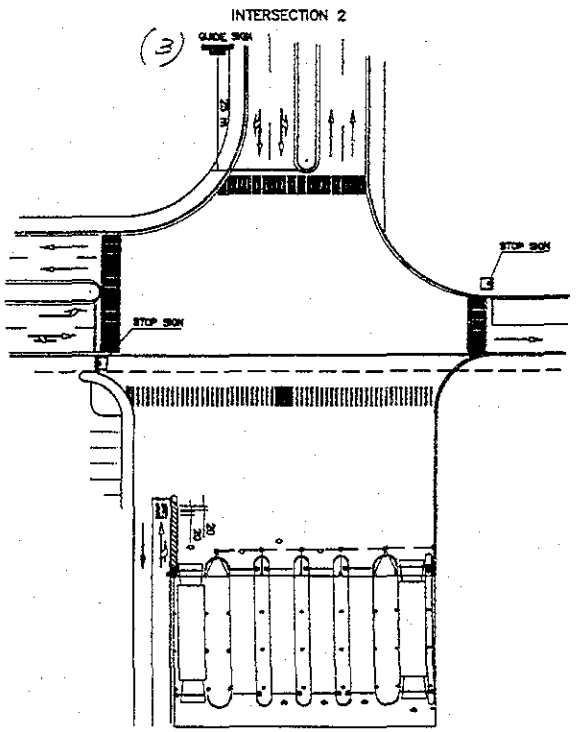
GENERAL PLAN
SCALE: 1:5,000

(3) GUIDE SIGN

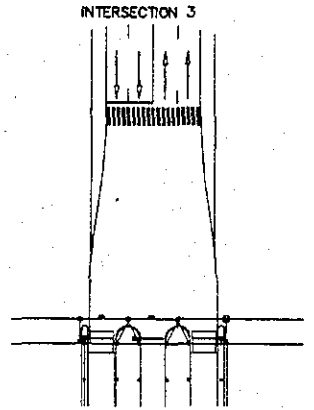
INTERSECTION 1



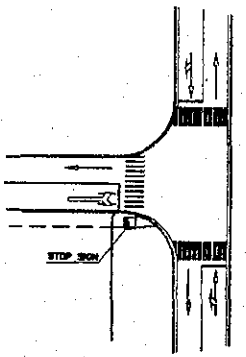
INTERSECTION 2



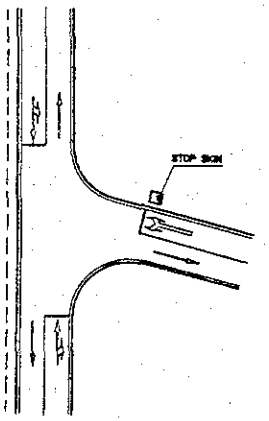
INTERSECTION 3



INTERSECTION 4



INTERSECTION 5



Note:
Detail of Marking is shown in Detail of traffic sign Roads and Marking

Legend:
- Guide Sign
- Stop Sign

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.

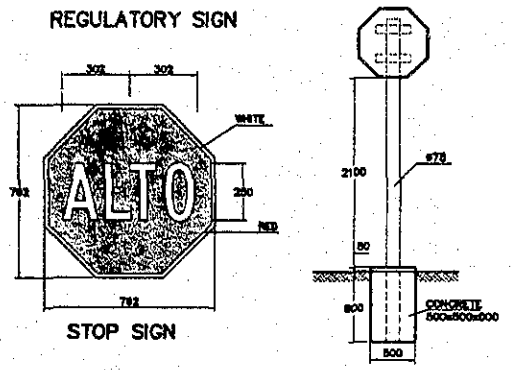
DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : ROAD AND PAVEMENT
SUB-SECTION : INCIDENTAL WORK
TITLE :

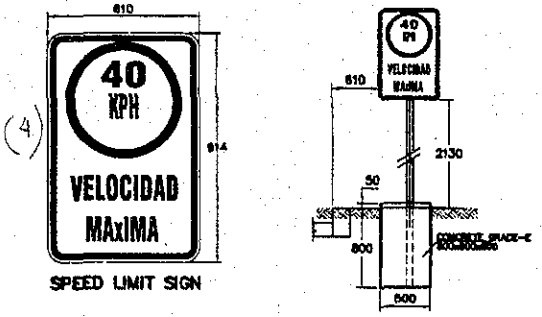
TRAFFIC SIGN AND MARKING (3/3)

DATE : JULY/2002
SCALE : NO TO SCALE
DRAWING NO. : DW-PV-03-003

REGULATORY SIGN

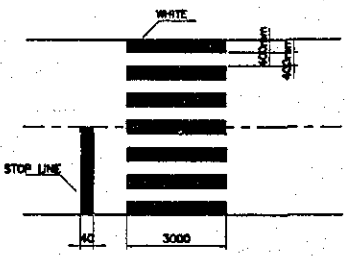


STOP SIGN

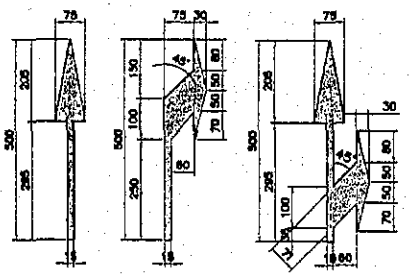


SPEED LIMIT SIGN

MARKINGS



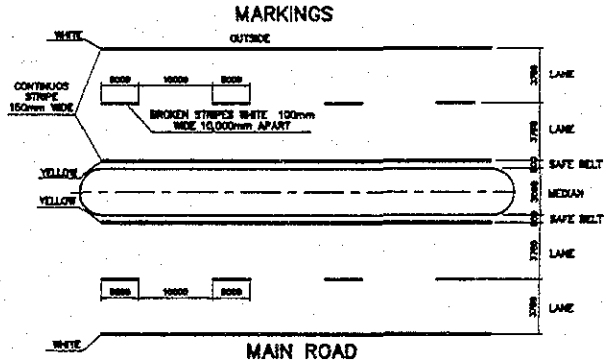
CROSS WALK



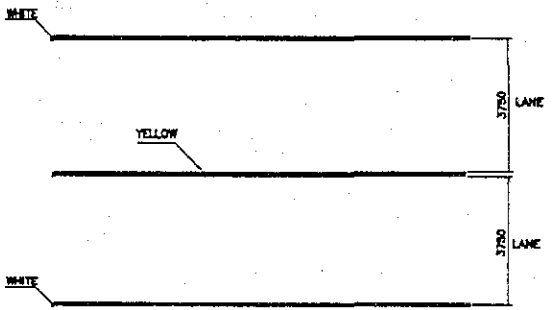
LANE–USE ARROW PAVEMENT MARKING

NOTE: THEY SHALL BE WHITE IN COLOR

MARKINGS

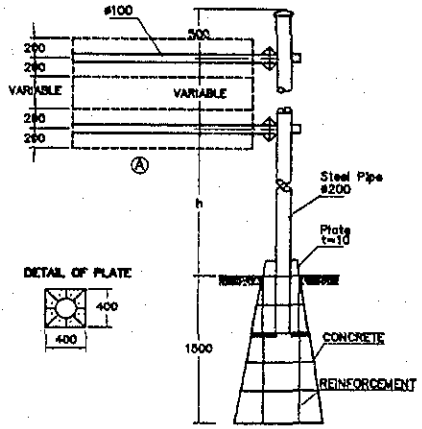


MAIN ROAD

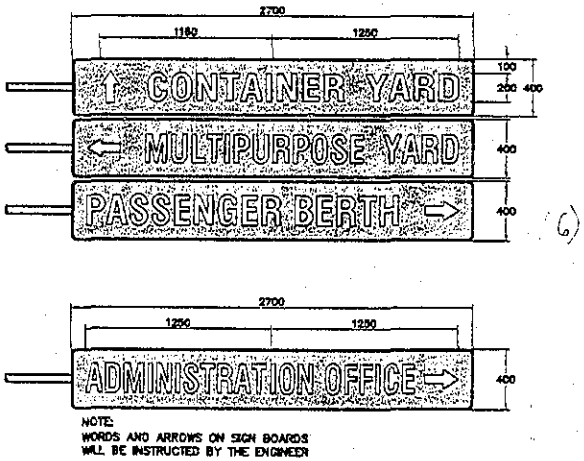


FEEDER ROAD
PAVEMENT LINES

ELEVATION OF TYPICAL GUIDE SIGNS

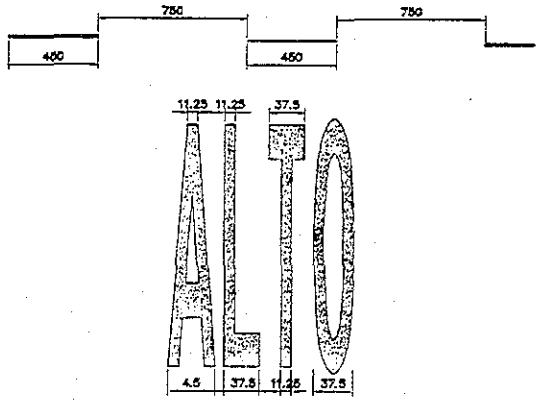


GUIDE SIGN



NOTE:
WORDS AND ARROWS ON SIGN BOARDS WILL BE INSTRUCTED BY THE ENGINEER

DETAILS OF TRAFFIC MARKING FOR YARD



				JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	DESIGNED BY :	SECTION : ROAD AND PAVEMENT
				COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	CHECKED BY :	SUB-SECTION : INCIDENTAL WORK
						APPROVED BY :	TITLE : DETAILS OF TRAFFIC SIGN ROADS AND MARKING
							DATE : JULY/2002
							SCALE : NOT TO SCALE
							DRAWING NO. DW-PV-03-004

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

References/ Notes

Stop Sign :

$No = 5$

$A = (0.762\ m)(0.762\ m) - \frac{(0.224\ m)(0.224\ m)}{2}(4)$

$= 0.481\ m^2$

$A_T = (0.481\ m^2)(5) = 2.41\ m^2$

Destination Sign :

$No = 6$

$A = (2.70\ m)(0.40\ m) - \left[(0.038\ m)(0.038\ m) - \frac{\pi(0.038\ m)^2}{4}(4)\right]$

$= 1.08\ m^2$

$A_T = (1.08\ m^2)(6) = 6.48\ m^2$

Speed Limit Sign :

$No = 4$

$A = (0.91\ m)(0.914\ m) - \frac{\pi(0.0610\ m)^2}{4}$

$= 0.557\ m^2$

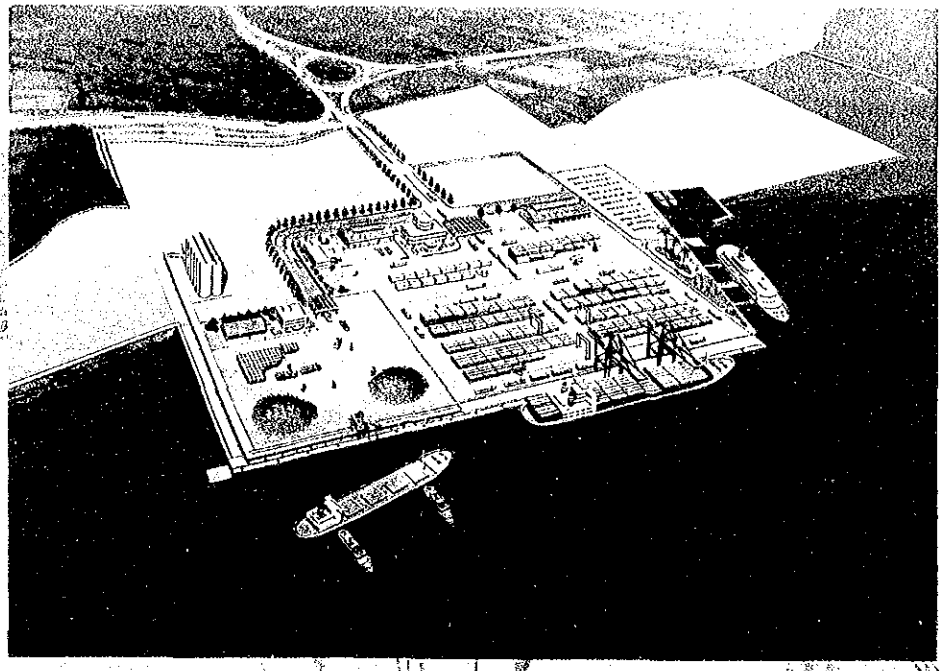
$A_T = (0.557\ m^2)(4) = 2.23\ m^2$

$A_T = (2.41 + 6.48 + 2.23)\ m^2 = 11.12\ m^2$

$\simeq \boxed{12\ m^2}$

	Prepared by		Checked by	
		/ /200		/ /200

FN: Calculation_Sheet



JICA