

WASTEWATER SYSTEM

QUANTITY CALCULATION COVER SHEET								
Project	Detailed Design on Port Reactivation Project in La Union Province			Project Code		JC1N004/2N001		
Work Section Title	Wastewater System			Pay Item No. (BOQ)		4C01		
Quantity Item	Pipe Work			Unit		m		
<u>Calculation Procedure Applied</u>								
<p>Quantity Calculation was divided per location of pipes first and then per type of material and diameter of pipe.</p> <p>The quantity of each type of pipe was established by summarizing the quantity of each type per location.</p>								
<u>References, Calculation Base and Revisions</u>								
<p>Drawings N°: UT-01-001</p> <p> BD-01-069 to 080</p> <p> BD-02-030 to 032</p> <p> BD-03-030 to 033</p> <p> BD-06-017</p>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iroh <i>CP</i>	02/07/18	23	S. Endo	18 July 02	<i>[Signature]</i>	30 July 02	
1								
2								
3								

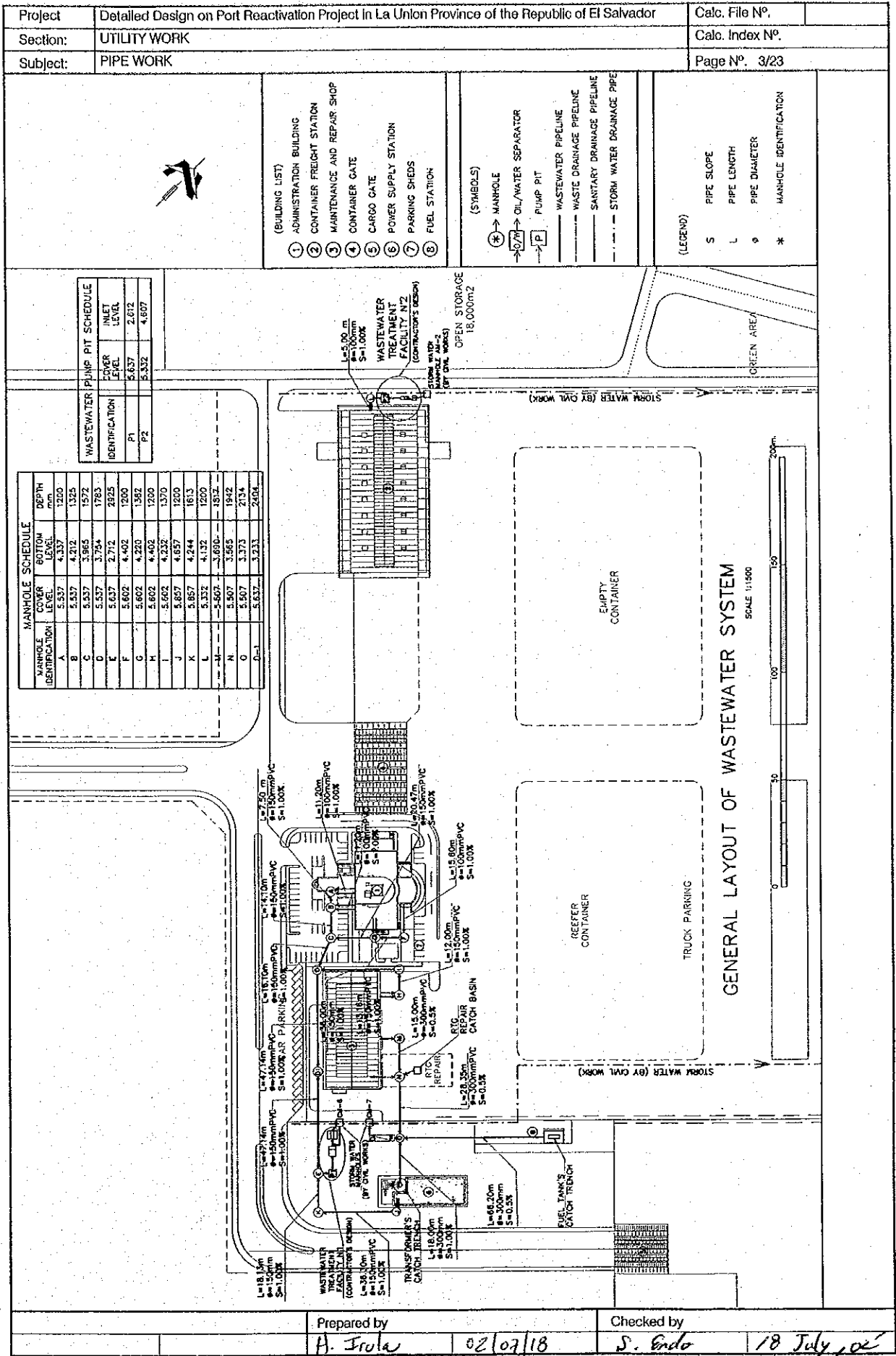
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pipe Work	Page No.	2/23 Rev.
		References/	

Description	Administration Building + Power Station																	Subtotal						
	Count																							
PIPE WORK																								
PVC pipe, diameter 50 mm	6.00	9.40	14.00	10.80	18.90	1.20	15.20	1.30	5.50	0.70	6.50	7.70	4.70	22.40	19.00	13.20	48.40	14.00	27.00	20.50	10.00	276.90		
PVC pipe, diameter 63 mm	7.00	12.50	5.50	19.60	8.80	19.60	12.50	21.00	23.60	21.00	0.90	0.40											152.40	
PVC pipe, diameter 75 mm	7.50	37.80	2.60	5.00	51.60	8.30	18.00	36.00	1.20	19.00	1.60	12.20	6.50	11.50	11.00	1.20	4.40	5.60	4.40					245.30
PVC pipe, diameter 100 mm	2.70	2.00	1.60	44.80	61.60																		112.60	
PVC pipe, diameter 150 mm																							0.00	
PVC pipe, diameter 200 mm																							0.00	
PVC pipe, diameter 300 mm																							0.00	

Description	Outdoors											Subtotal	
	Count												
PIPE WORK													
PVC pipe, diameter 50 mm												0.00	
PVC pipe, diameter 63 mm												0.00	
PVC pipe, diameter 75 mm												0.00	
PVC pipe, diameter 100 mm												0.00	
PVC pipe, diameter 150 mm		7.50	14.10	16.10	94.28	18.13	36.30	13.16	20.47	12.00	38.00	5.00	275.04
PVC pipe, diameter 200 mm													0.00
PVC pipe, diameter 300 mm		66.20	18.00	15.00	28.35	5.00	12.00						144.55

Description	CFS					M&RS				Total	
	Count					Subtotal					
PIPE WORK											
PVC pipe, diameter 50 mm	13.60	12.60	4.60	6.70	10.00	47.40	15.25	32.20	7.90	55.35	379.65
PVC pipe, diameter 63 mm	1.60	20.10	1.00			22.60	3.50	3.00	40.60	47.10	222.10
PVC pipe, diameter 75 mm	38.25	3.20				39.45	15.50	2.40		17.90	302.65
PVC pipe, diameter 100 mm	17.50					17.50	5.50	10.00	4.00	19.50	149.60
PVC pipe, diameter 150 mm						0.00	58.90	30.00		88.90	363.94
PVC pipe, diameter 200 mm						0.00	23.60			23.60	23.50
PVC pipe, diameter 300 mm						0.00			0.00	0.00	144.55

Prepared by		Checked by	
H. Trub	02/07/18	S. Endo	18 July, 2018



Prepared by

A. Irola

02/07/18

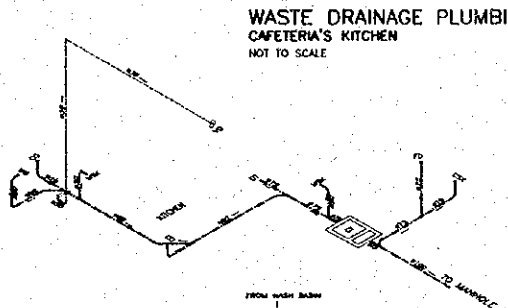
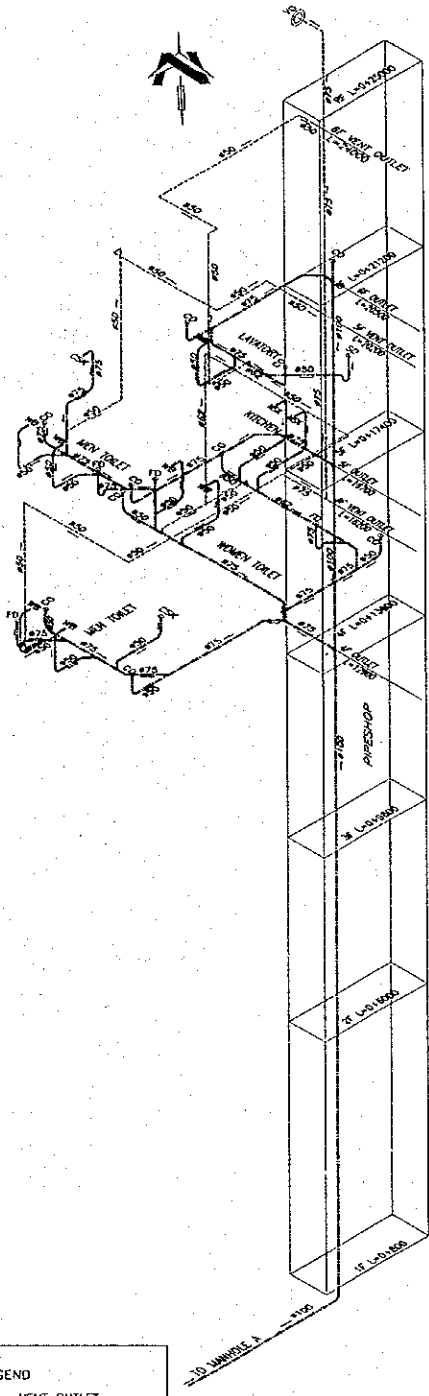
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S. Endo

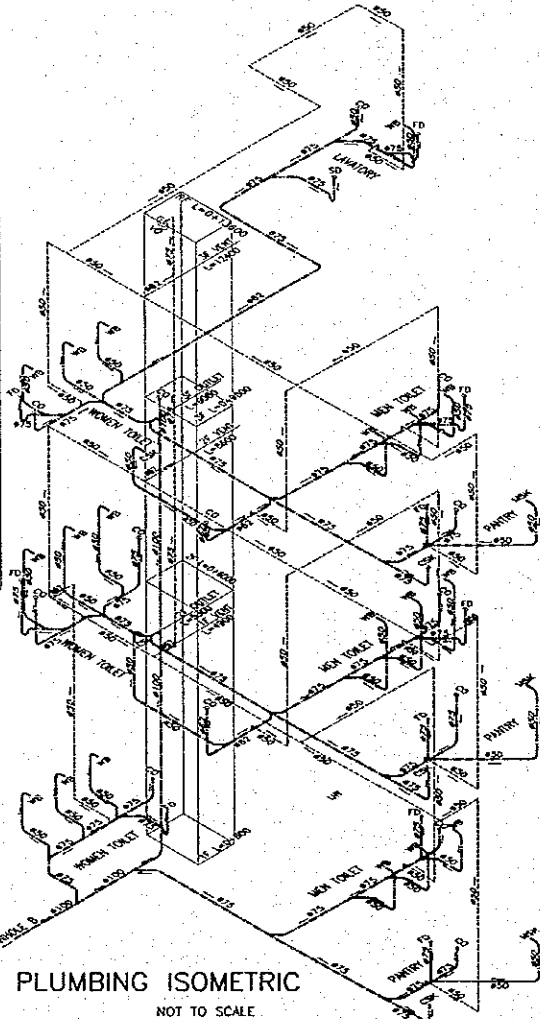
18 July, 2018



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WASTE DRAINAGE PLUMBING ISOMETRIC
CAFETERIA'S KITCHEN
NOT TO SCALE



WASTE DRAINAGE PLUMBING ISOMETRIC
FIRST-AID LAVATORY
NOT TO SCALE

WASTE DRAINAGE PLUMBING ISOMETRIC
GENERAL
NOT TO SCALE

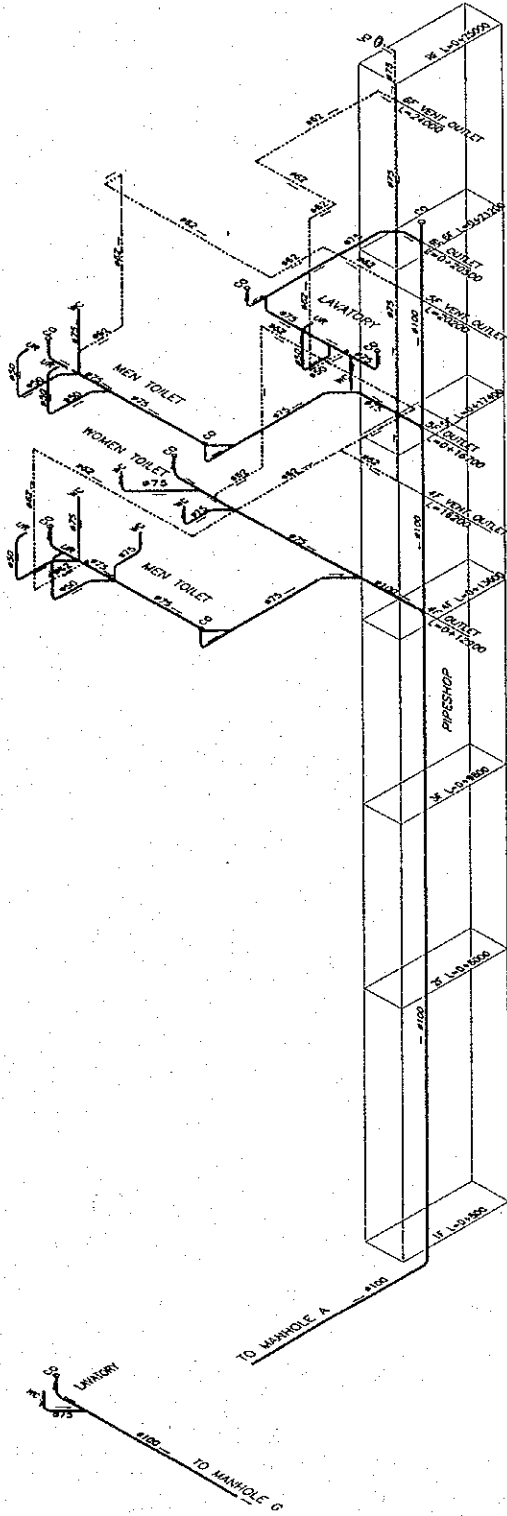
LEGEND

VO	VENT OUTLET
CO	CLEAN OUT
WB	WASH BASIN
MSK	METAL SINK
CSK	CONCRETE SINK
FD	FLOOR DRAIN
SD	SHOWER DRAIN
☒	GREASE TRAP
DT	DRAIN TRENCH
└	TRAP
---	WASTE DRAINAGE PIPE
---	VENT PIPE
→	FLOW DIRECTION

Prepared by	H. Iruku	02/07/18	Checked by	S. Endo	18 July, 02
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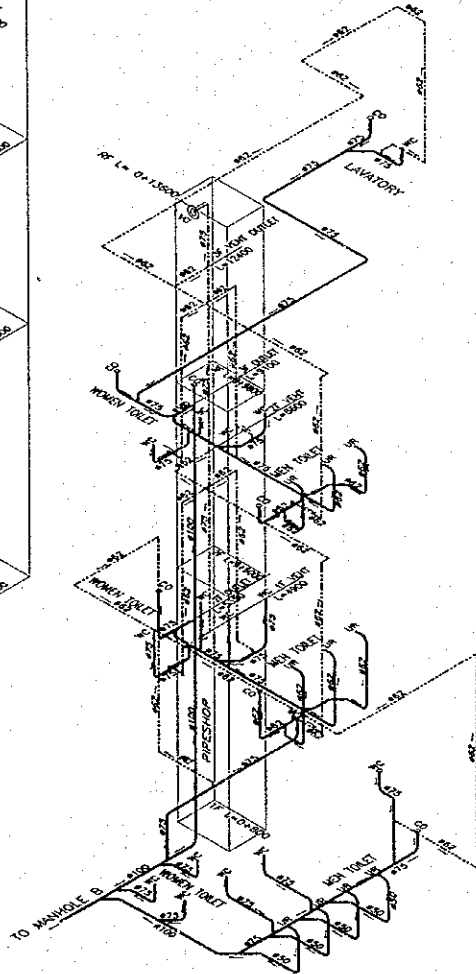


LEGEND

VO	VENT OUTLET
CO	CLEAN OUT
WC	WATER CLOSET
UR	URINAL
—	SANITARY DRAINAGE
—	VENT PIPE
—	FLOW DIRECTION

SANITARY DRAINAGE PLUMBING
ISOMETRIC
GENERAL

NOT TO SCALE



SANITARY DRAINAGE PLUMBING
ISOMETRIC
FIRST-AID LAVATORY

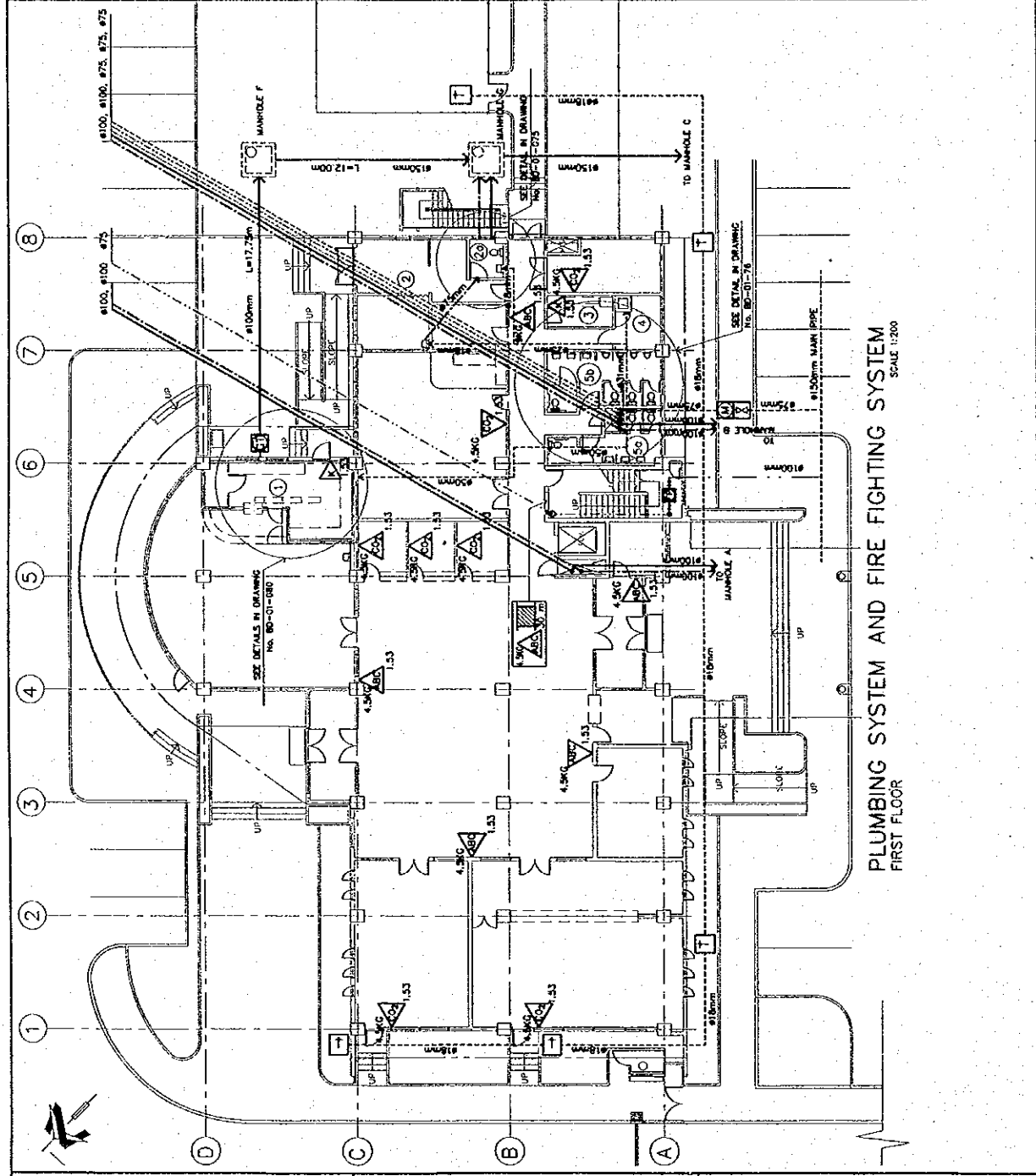
NOT TO SCALE

Prepared by	H. Iruke	02/07/18	Checked by	S. Indo	18 July, 02
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Subject:	PIPE WORK	Page N°:	6/23

<p>ROOM LIST</p> <ul style="list-style-type: none"> ① CATERER'S KITCHEN ② FIRST AID ROOM ③ FIRST AID LAVATORY ④ PANTRY ⑤ JANITOR'S ROOM ⑥ TOILET (WOMEN) ⑦ TOILET (MEN) 	<p>PLUMBING SYMBOLS</p> <ul style="list-style-type: none"> VERTICAL PIPE DOWN VERTICAL PIPE UP METER INSIDE PIT VALVE INSIDE PIT SHUT OFF VALVE HOSE FAUCET INSIDE PIT CHECK VALVE CLEAN OUT FIRE PUMP GREASE TRAP WATER SUPPLY PIPE WASTE DRAINAGE SANITARY DRAINAGE WASTE VENT PIPE SANITARY VENT PIPE FIRE FIGHTING PIPE 	<p>NOTES</p> <ol style="list-style-type: none"> 1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC 2) WATER SUPPLY PIPES TO BE PVC 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON <p>FIRE FIGHTING SYSTEM SYMBOLS</p> <ul style="list-style-type: none"> ABC CLASS DRY POWDER EXTINGUISHER BC CLASS CO2 EXTINGUISHER KITCHEN CLASS EXTINGUISHER RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER <p>LEGEND</p> <ul style="list-style-type: none"> c CHARGE h PLACEMENT HEIGHT m LENGTH OF HOSE (meters)
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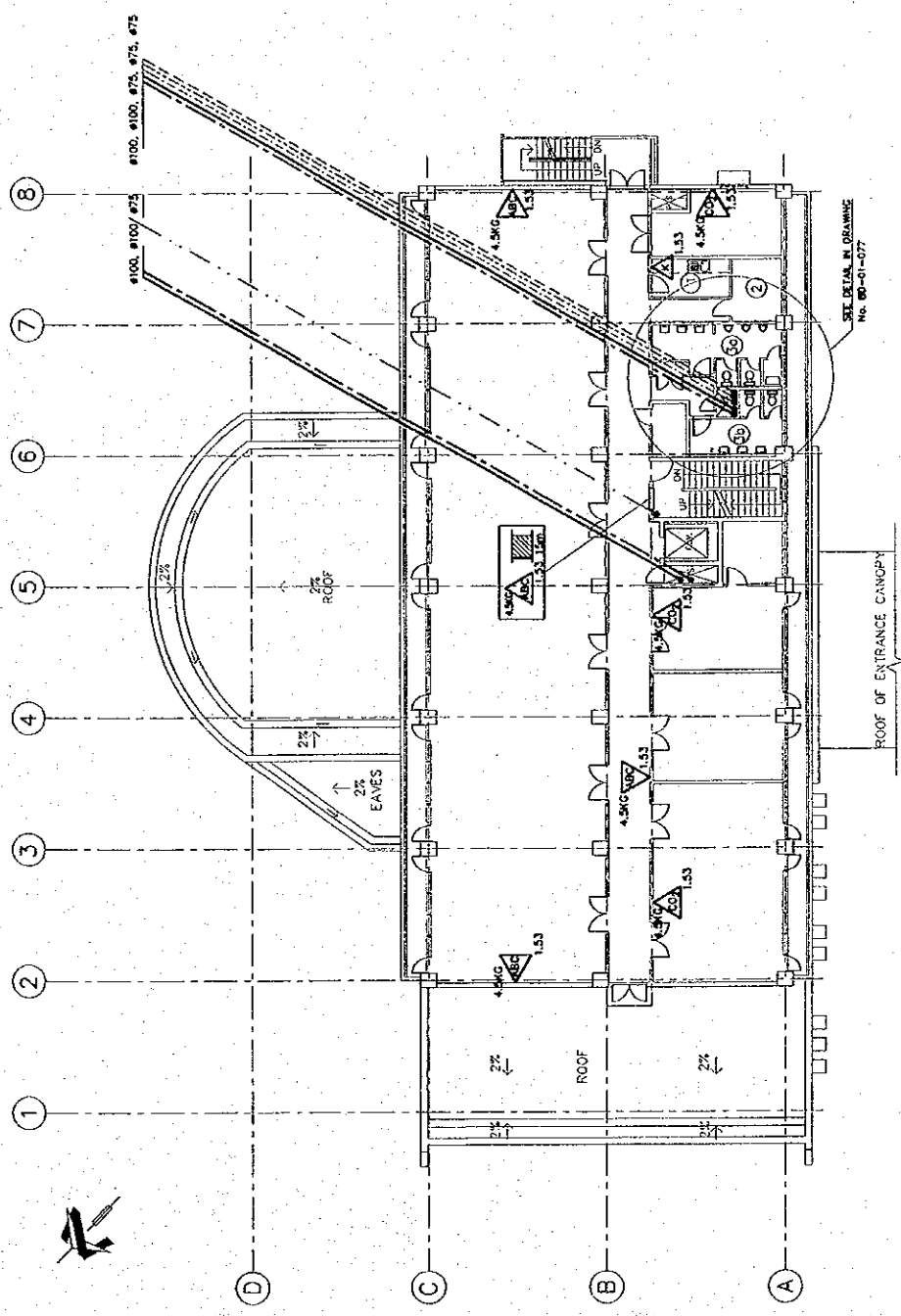


Prepared by	H. Irua	02/07/18	Checked by	S. Ende	18 July, 2018
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Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File No.	
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<p>ROOM LIST</p> <p>① PANTRY</p> <p>② JANITOR'S ROOM</p> <p>③ TOILET (MEN)</p> <p>④ TOILET (WOMEN)</p> <p>⑤ MANAGER'S LAVATORY</p>	<p>PLUMBING SYMBOLS</p> <p>VERTICAL PIPE DOWN</p> <p>VERTICAL PIPE UP</p> <p>METER INSIDE PIT</p> <p>VALVE INSIDE PIT</p> <p>SHUT OFF VALVE</p> <p>HOSE FAUCET INSIDE PIT</p> <p>CHECK VALVE</p> <p>CLEAN OUT</p> <p>FIRE PUMP</p> <p>GREASE TRAP</p> <p>WATER SUPPLY PIPE</p> <p>WASTE DRAINAGE</p> <p>SANITARY DRAINAGE</p> <p>WASTE VENT PIPE</p> <p>SANITARY VENT PIPE</p> <p>FIRE FIGHTING PIPE</p>	<p>NOTES</p> <p>1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC</p> <p>2) WATER SUPPLY PIPES TO BE PVC</p> <p>3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON</p>	<p>FIRE FIGHTING SYSTEM SYMBOLS</p> <p>ABC CLASS DRY POWDER EXTINGUISHER</p> <p>BC CLASS CO2 EXTINGUISHER</p> <p>KITCHEN CLASS EXTINGUISHER</p> <p>RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER</p> <p>LEGEND</p> <p>c CHARGE</p> <p>h PLACEMENT HEIGHT</p> <p>m LENGTH OF HOSE (meters)</p>
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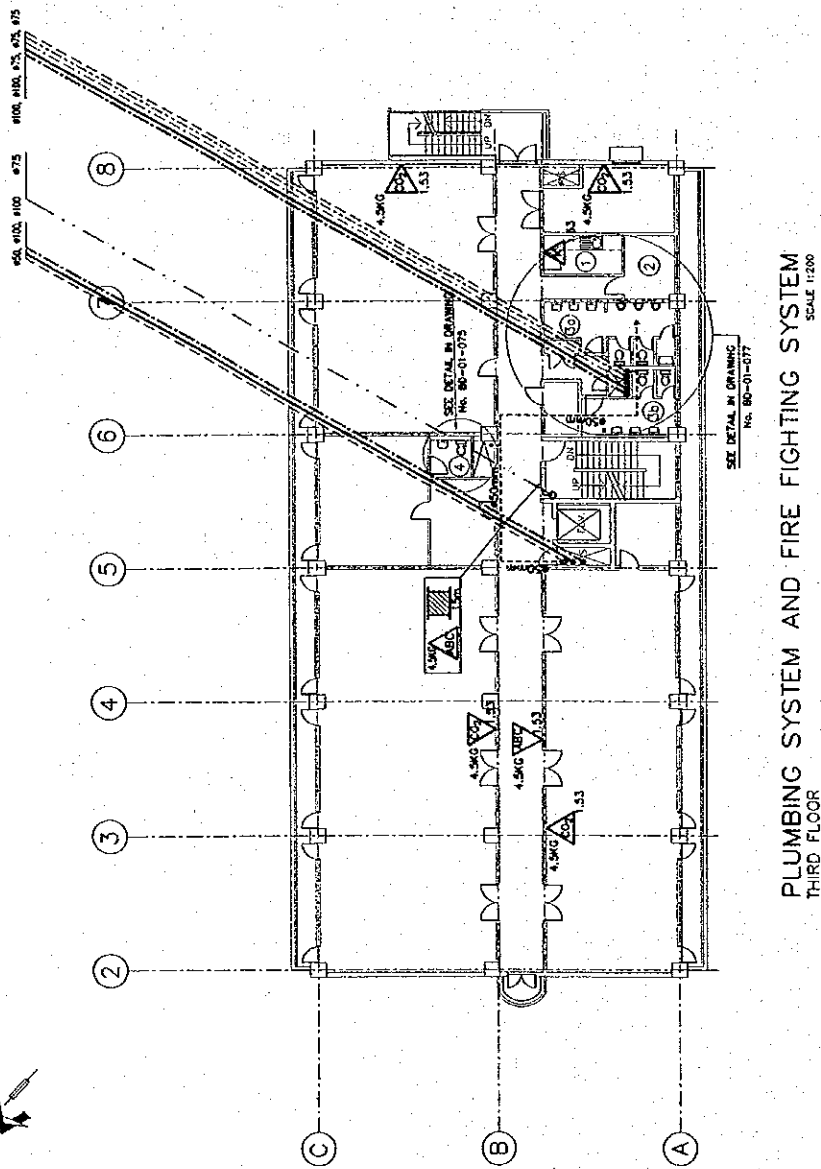
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
SECOND FLOOR
SCALE 1:200

Prepared by	H. Erula	02/07/18	Checked by	S. Enda	18 July, 02
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<p>ROOM LIST</p> <p>① PANTRY</p> <p>② JANITOR'S ROOM</p> <p>③ TOILET (MEN)</p> <p>④ TOILET (WOMEN)</p> <p>⑤ MANAGER'S LAVATORY</p>	<p>PLUMBING SYMBOLS</p> <p>● VERTICAL PIPE DOWN</p> <p>○ VERTICAL PIPE UP</p> <p>⊠ METER INSIDE PIT</p> <p>⊡ VALVE INSIDE PIT</p> <p>⊞ SHUT OFF VALVE</p> <p>⊞ HOSE FAUCET INSIDE PIT</p> <p>⊞ CHECK VALVE</p> <p>⊞ CLEAN OUT</p> <p>⊞ FIRE PUMP</p> <p>⊞ GREASE TRAP</p> <p>⊞ WATER SUPPLY PIPE</p> <p>⊞ WASTE DRAINAGE</p> <p>⊞ SANITARY DRAINAGE</p> <p>⊞ WASTE VENT PIPE</p> <p>⊞ SANITARY VENT PIPE</p> <p>⊞ FIRE FIGHTING PIPE</p>	<p>NOTES</p> <p>1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC</p> <p>2) WATER SUPPLY PIPES TO BE PVC</p> <p>3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON</p>	<p>FIRE FIGHTING SYSTEM SYMBOLS</p> <p>△ ABC CLASS DRY POWDER EXTINGUISHER</p> <p>△ BC CLASS CO2 EXTINGUISHER</p> <p>△ KITCHEN CLASS EXTINGUISHER</p> <p>△ RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER</p> <p>LEGEND</p> <p>c CHARGE</p> <p>h PLACEMENT HEIGHT</p> <p>m LENGTH OF HOSE (meters)</p>
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PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
THIRD FLOOR
SCALE 1:200

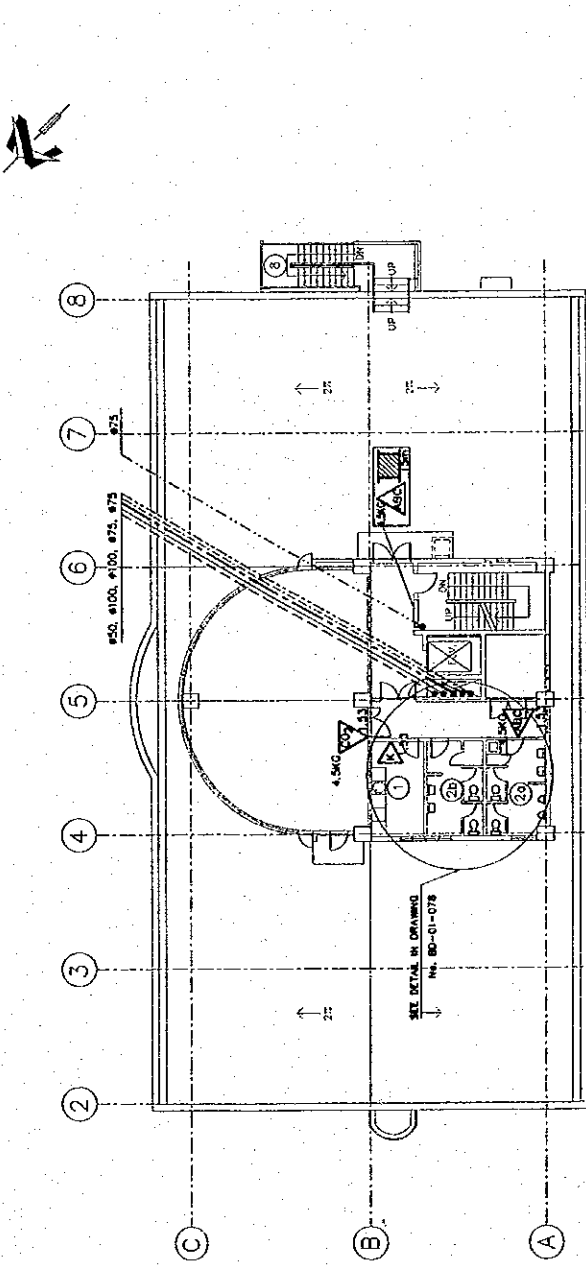
Prepared by	H. Irala	02/07/18	Checked by	S. Endo	18 July, 02
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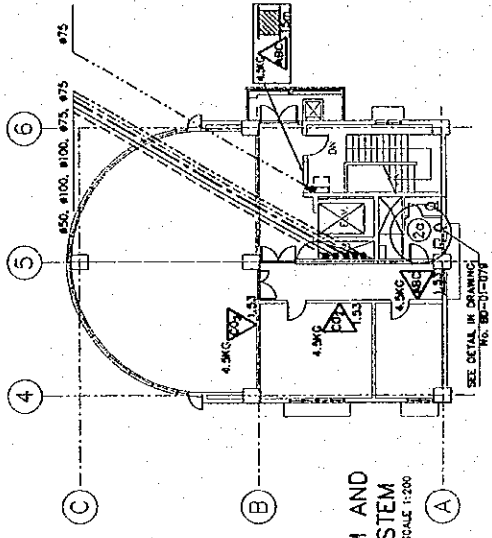
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<p>ROOM LIST</p> <p>1 PANTRY</p> <p>2 TOILET (MEN)</p> <p>2b TOILET (WOMEN)</p>	<p>PLUMBING SYMBOLS</p> <p>VERTICAL PIPE DOWN</p> <p>VERTICAL PIPE UP</p> <p>METER INSIDE PIT</p> <p>VALVE INSIDE PIT</p> <p>SHUT OFF VALVE</p> <p>HOSE FAUCET INSIDE PIT</p> <p>CHECK VALVE</p> <p>CLEAN OUT</p> <p>FIRE PUMP</p> <p>GREASE TRAP</p> <p>WATER SUPPLY PIPE</p> <p>WASTE DRAINAGE</p> <p>SANITARY DRAINAGE</p> <p>WASTE VENT PIPE</p> <p>SANITARY VENT PIPE</p> <p>FIRE FIGHTING PIPE</p>
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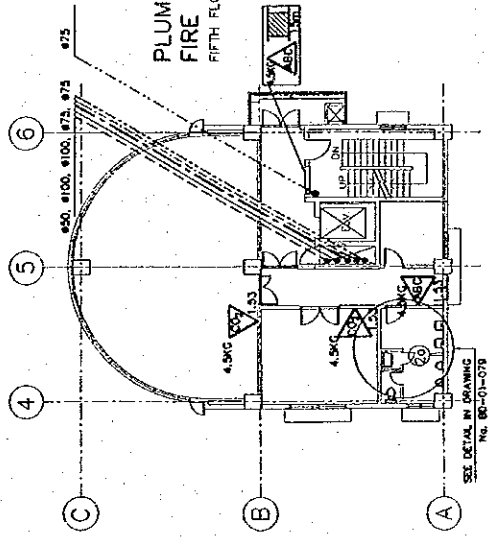
<p>NOTES</p> <p>1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC</p> <p>2) WATER SUPPLY PIPES TO BE GALVANIZED IRON</p> <p>3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON</p>	<p>FIRE FIGHTING SYSTEM SYMBOLS</p> <p>ABC CLASS DRY POWDER EXTINGUISHER</p> <p>BC CLASS CO2 EXTINGUISHER</p> <p>KITCHEN CLASS EXTINGUISHER</p> <p>RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER</p>
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PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
FOURTH FLOOR
SCALE 1:200



PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
FIFTH FLOOR
SCALE 1:200



PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
SIXTH FLOOR
SCALE 1:200

Prepared by	H. Irua	02/07/18	Checked by	S. Indu	18 July, 02
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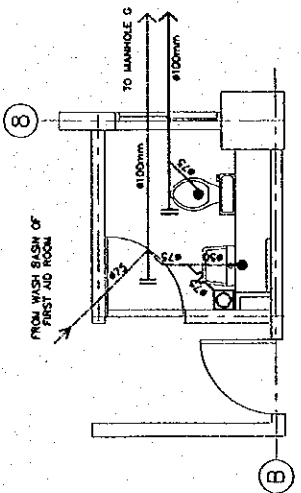
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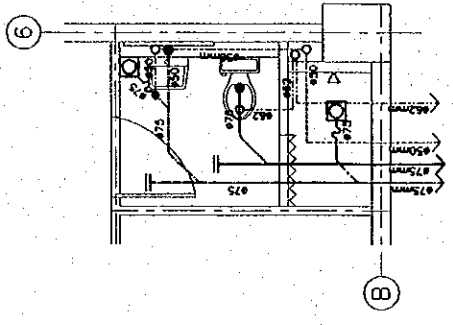
PLUMBING SYMBOLS

●	VERTICAL PIPE DOWN
○	VERTICAL PIPE UP
⊙	METER INSIDE PIT
⊕	VALVE INSIDE PIT
⊗	SHUT OFF VALVE
⊘	HOSE FAUCET INSIDE PIT
⊚	FLOOR/SHOWER DRAIN
⊛	CLEAN OUT
⊜	TRAP
⊝	CREASE TRAP
⊞	WATER SUPPLY PIPE (AT CEILING LEVEL)
⊟	WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
⊠	WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
⊡	WASTE VENTILATION PIPE (AT CEILING LEVEL)
⊢	SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
⊣	SANITARY DRAINAGE PIPE (AT CEILING LEVEL)
⊤	VENTILATION PIPE (AT CEILING LEVEL)

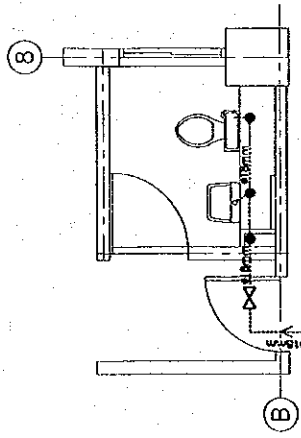
- NOTES
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



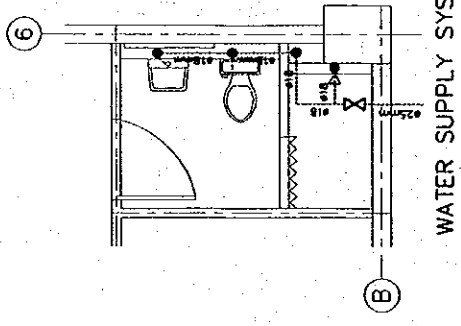
WASTEWATER SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50



WASTEWATER SYSTEM
MANAGER'S LAVATORY
THIRD FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50

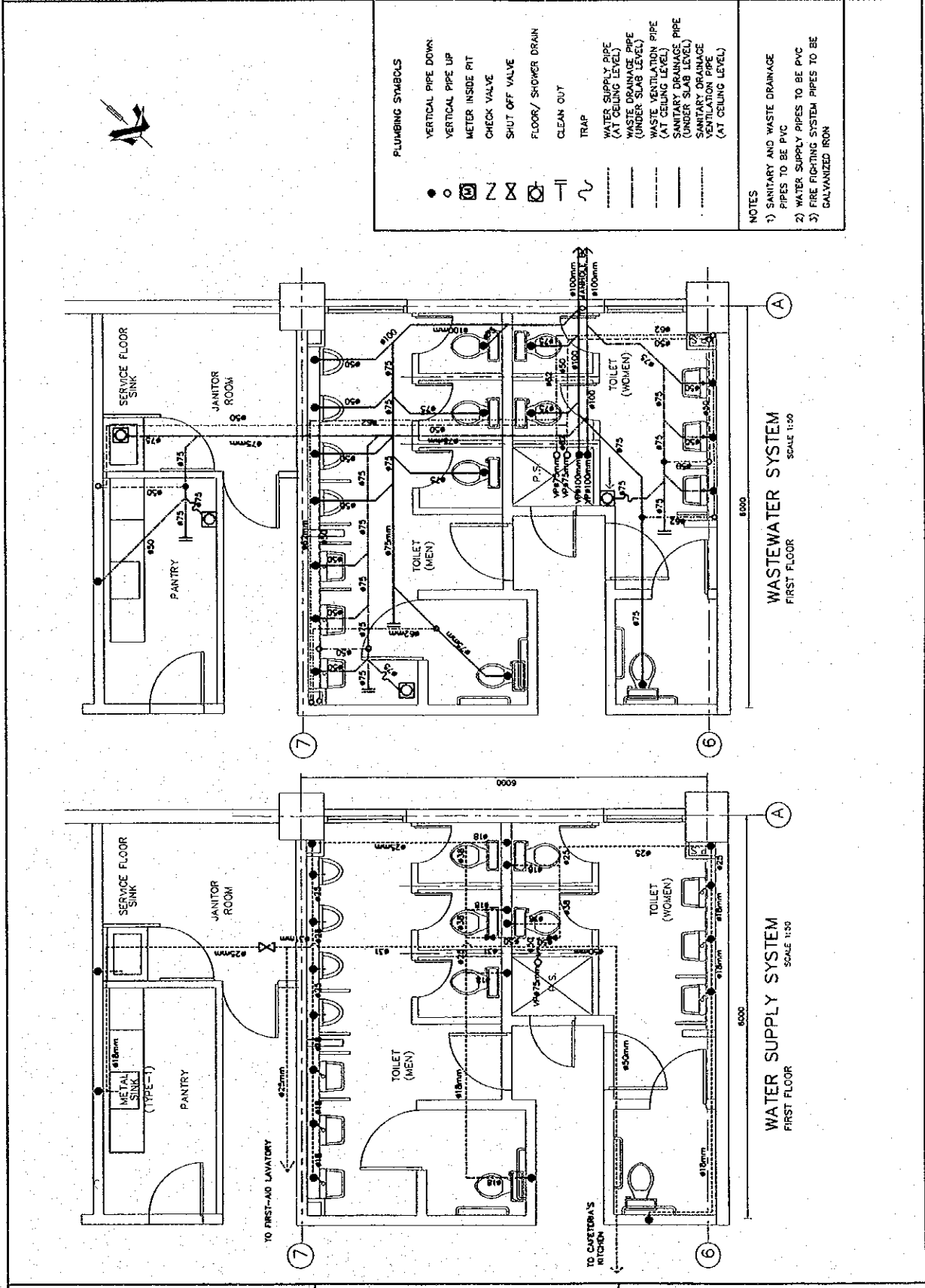


WATER SUPPLY SYSTEM
MANAGER'S LAVATORY
THIRD FLOOR
SCALE 1:50

Prepared by	A. Irula	02/07/18	Checked by	S. Endo	18 July, 02'
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Prepared by	H. Irwin	02/07/18	Checked by	S. Ende	18 July, 02
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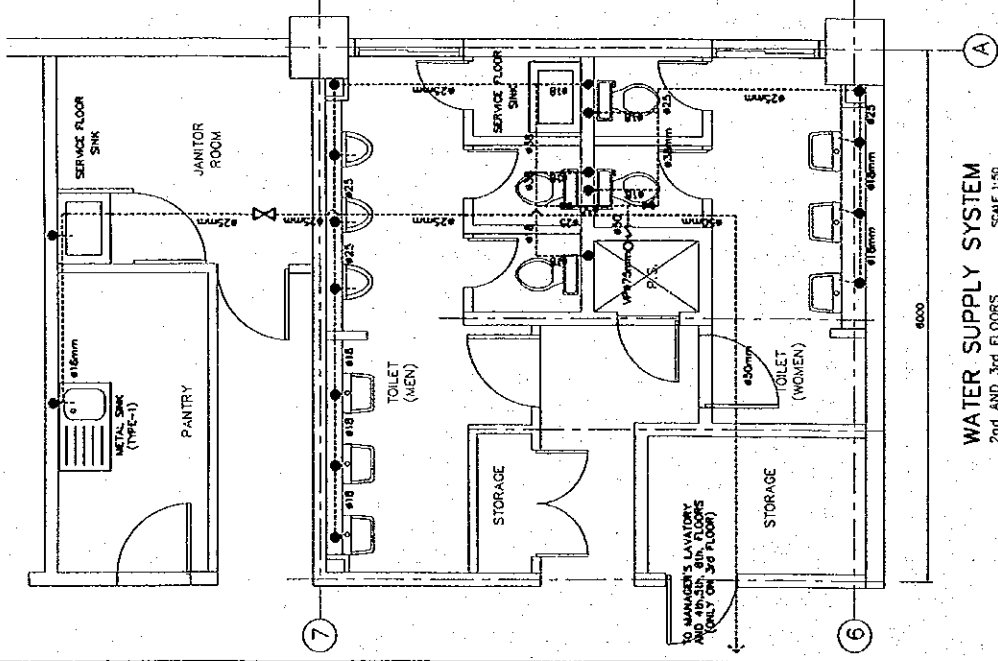
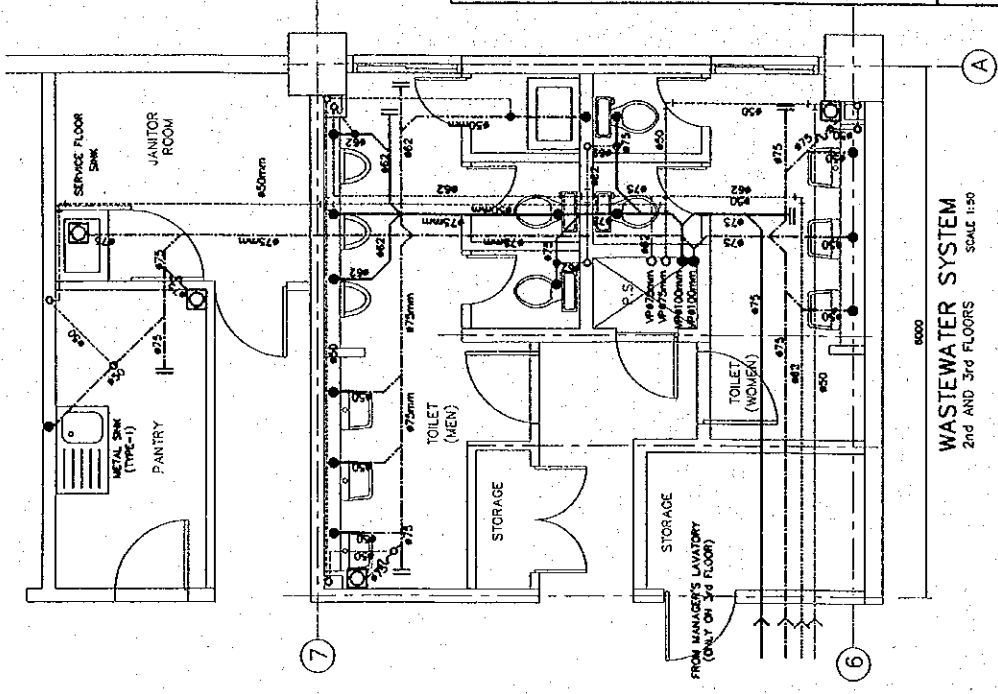


PLUMBING SYMBOLS

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- METER INSIDE FIT
- CHECK VALVE
- SHUT OFF VALVE
- FLOOR/SHOWER DRAIN
- CLEAN OUT
- GREASE TRAP
- TRAP
- WATER SUPPLY PIPE (AT CEILING LEVEL)
- WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
- WASTE VENTILATION PIPE (AT CEILING LEVEL)
- SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
- SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL)

NOTES

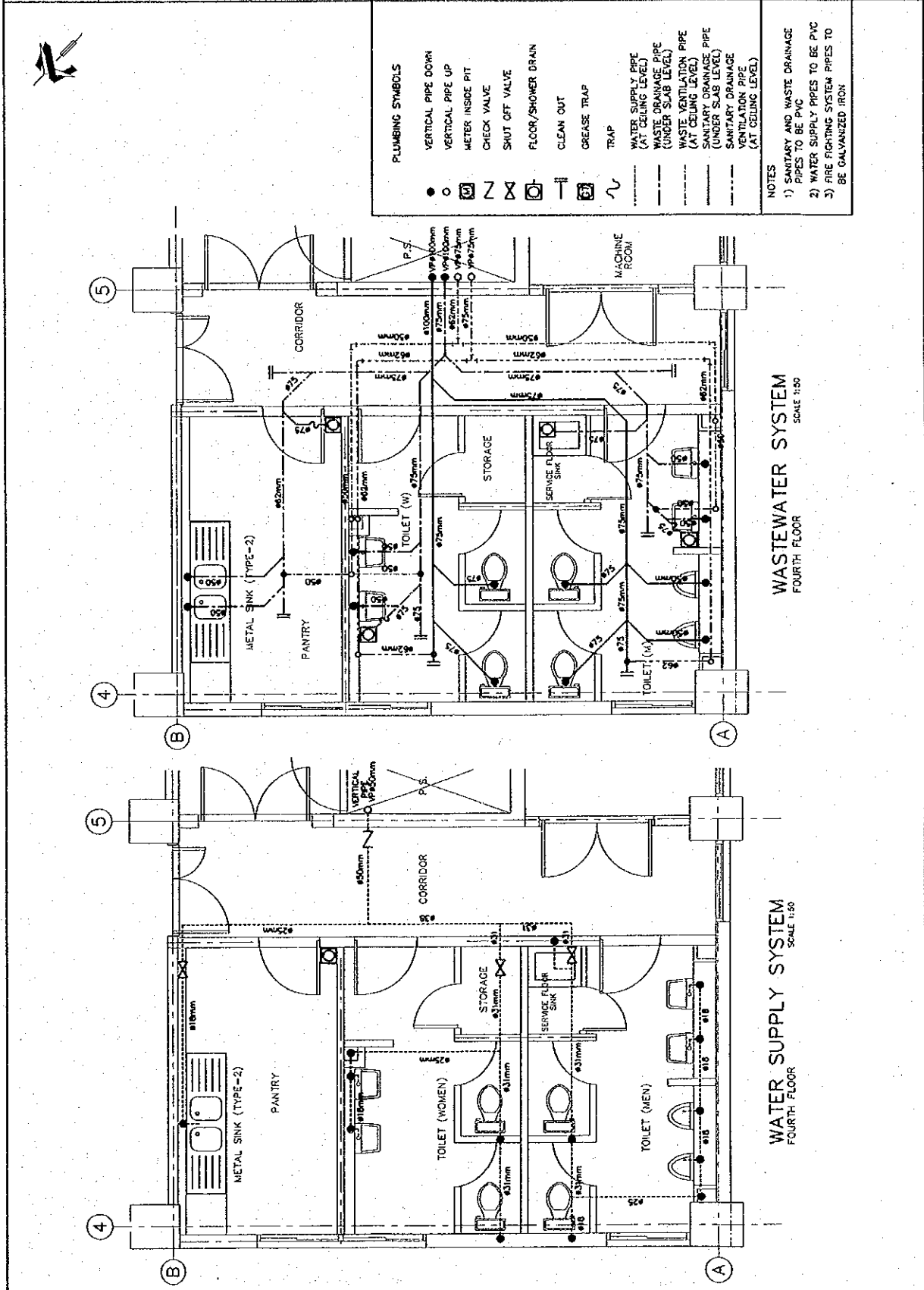
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
- 2) WATER SUPPLY PIPES TO BE PVC
- 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



Prepared by	H. Irula	02/07/02	Checked by	P. Endo	18 July, 02
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Prepared by	H. Irida	02/07/18	Checked by	S. Endo	18 July, 2018
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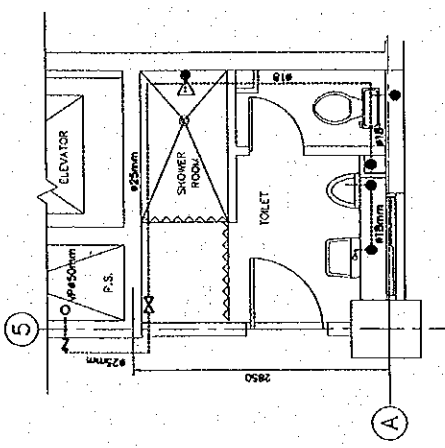


PLUMBING SYMBOLS

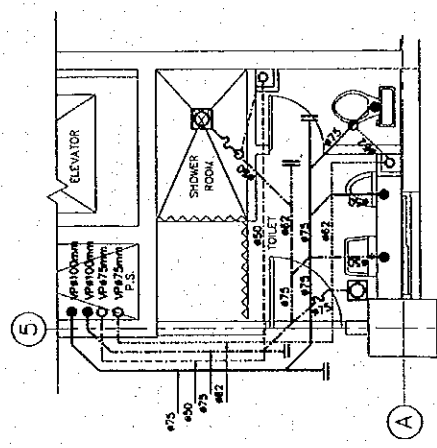
●	VERTICAL PIPE DOWN
○	VERTICAL PIPE UP
~	TRAP
△	SHOWER HEAD
⊗	SHUT OFF VALVE
⊕	FLOOR/SHOWER DRAIN
⊖	CLEAN DOT
⊕	CHECK VALVE
—	WATER SUPPLY PIPE (AT CEILING LEVEL)
—	WATER SUPPLY PIPE (UNDER SLAB LEVEL)
—	WASTE VENTILATION PIPE (AT CEILING LEVEL)
—	SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
—	SANITARY DRAINAGE PIPE (AT CEILING LEVEL)
—	VENTILATION PIPE (AT CEILING LEVEL)

NOTES

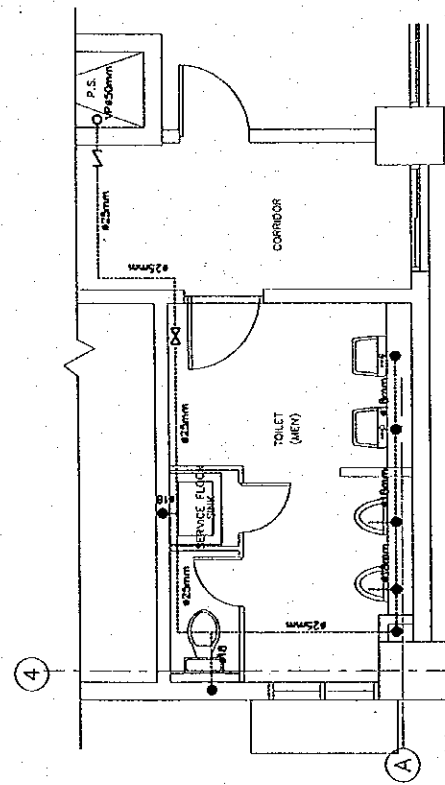
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
- 2) WATER SUPPLY PIPES TO BE PVC
- 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



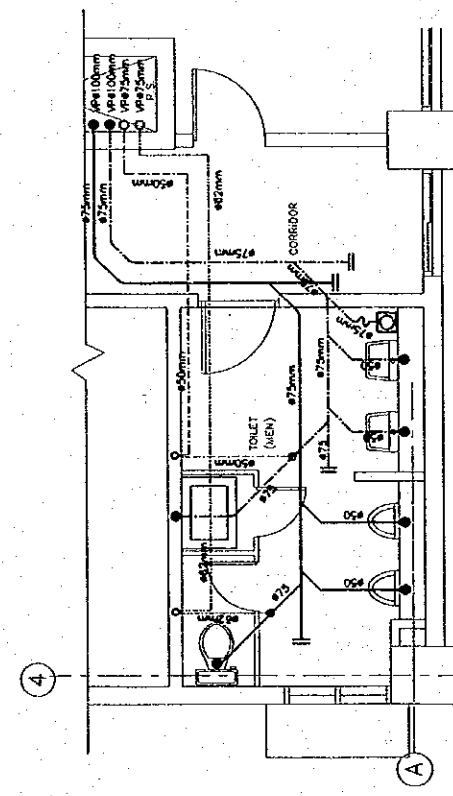
WATER SUPPLY SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WASTEWATER SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

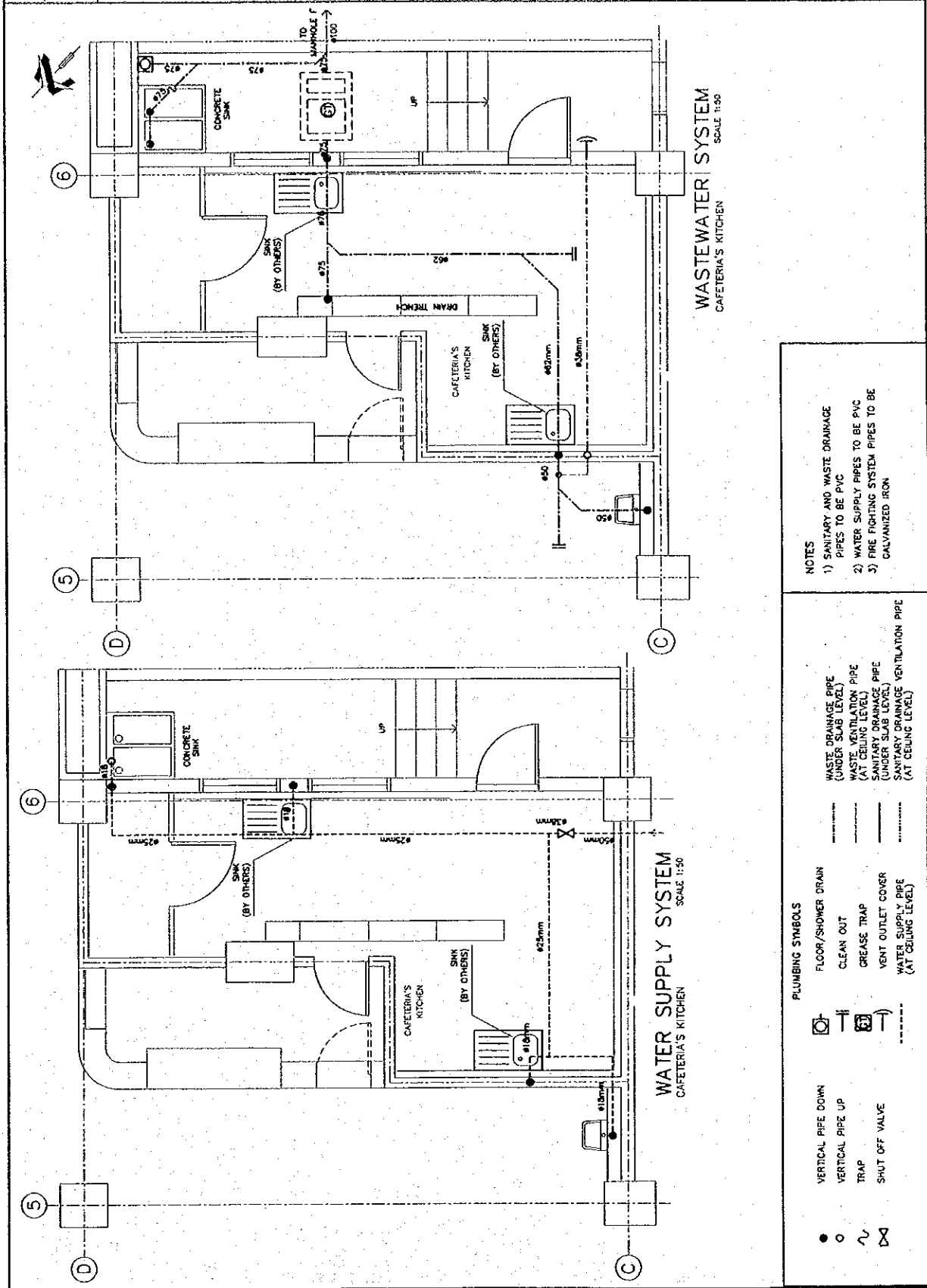


WASTEWATER SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

Prepared by	H. Iruw	02/07/18	Checked by	J. Endre	18 July, 2018
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Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	15/23



- NOTES**
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

- PLUMBING SYMBOLS**
- FLOOR/SHOWER DRAIN
 - CLEAN OUT
 - GREASE TRAP
 - VENT OUTLET COVER
 - WATER SUPPLY PIPE (AT CEILING LEVEL)
 - WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
 - WASTE VENTILATION PIPE (AT CEILING LEVEL)
 - SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
 - SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL)

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- TRAP
- SHUT OFF VALVE
-
-
- ~
- ∞

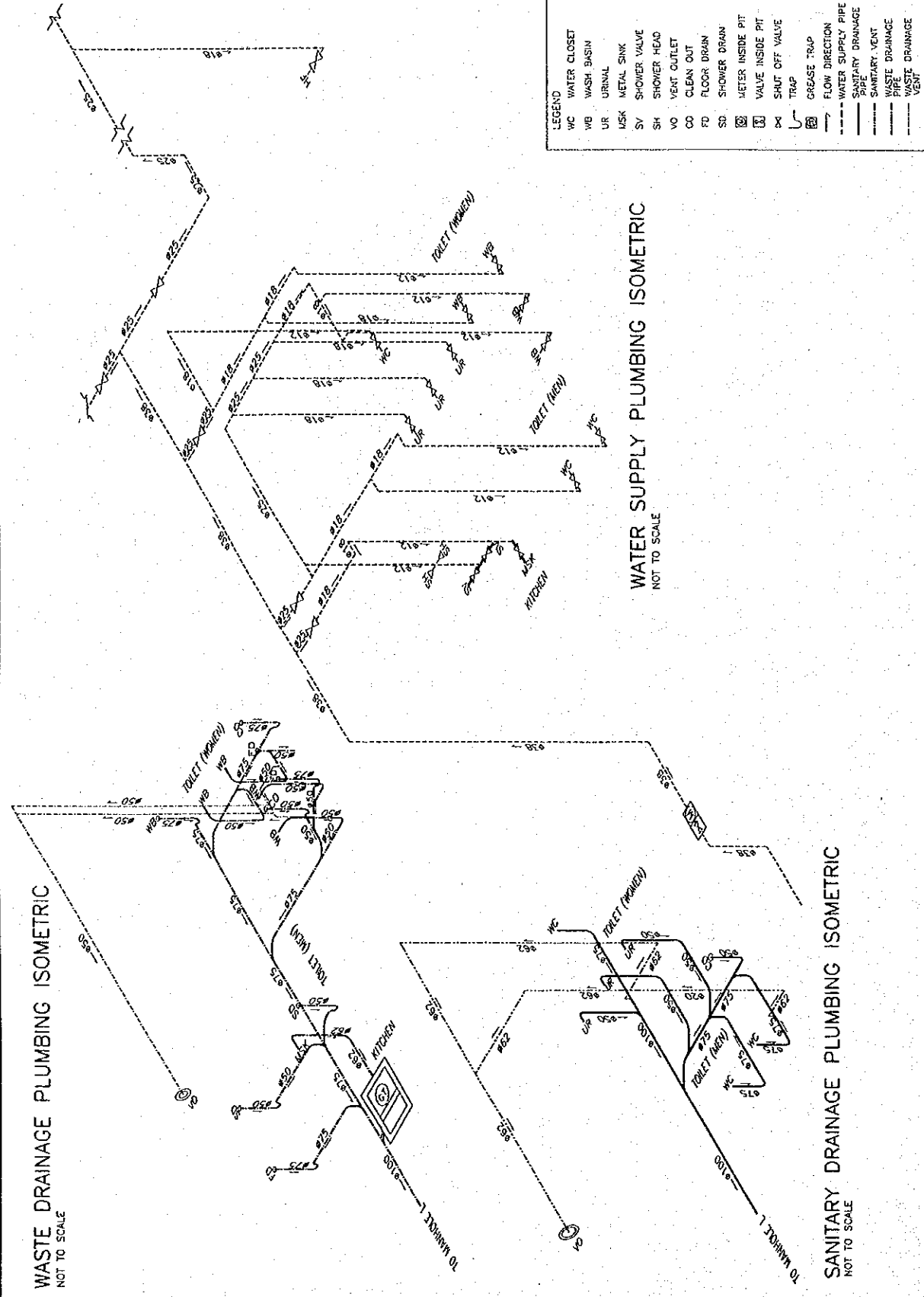
Prepared by	H. Iruka	02/07/18	Checked by	S. Edo	18 July, 2018
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Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	PIPE WORK	Page N°	16/23

LEGEND

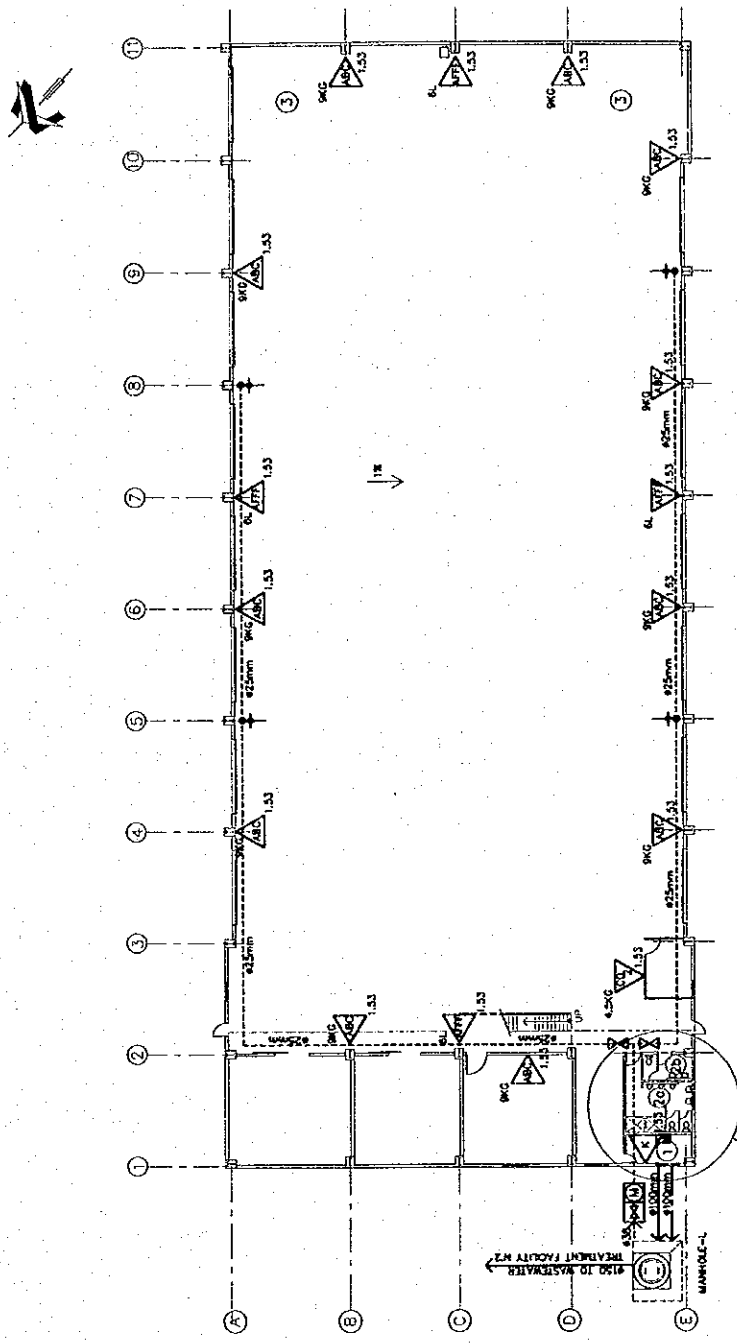
WC	WATER CLOSET
WB	WASH BASIN
UR	URINAL
MSK	METAL SINK
SV	SHOWER VALVE
SH	SHOWER HEAD
VO	VENT OUTLET
CO	CLEAN OUT
FD	FLOOR DRAIN
SD	SHOWER DRAIN
⊗	METER INSIDE PIT
⊠	VALVE INSIDE PIT
⊕	SHUT OFF VALVE
⊖	TRAP
⊗	GREASE TRAP
---	FLOW DIRECTION
---	WATER SUPPLY PIPE
---	SANITARY DRAINAGE PIPE
---	SANITARY VENT
---	WASTE DRAINAGE PIPE
---	WASTE DRAINAGE VENT



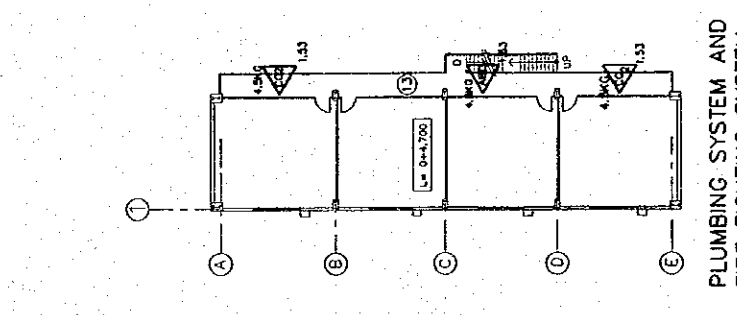
Prepared by	A. Iruka	Checked by	S. Endo
	02/07/18		18 July, 2018



Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	17/23



PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM LAYOUT
FIRST FLOOR
SCALE 1:300



PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
MEZZANINE FLOOR
SCALE 1:300

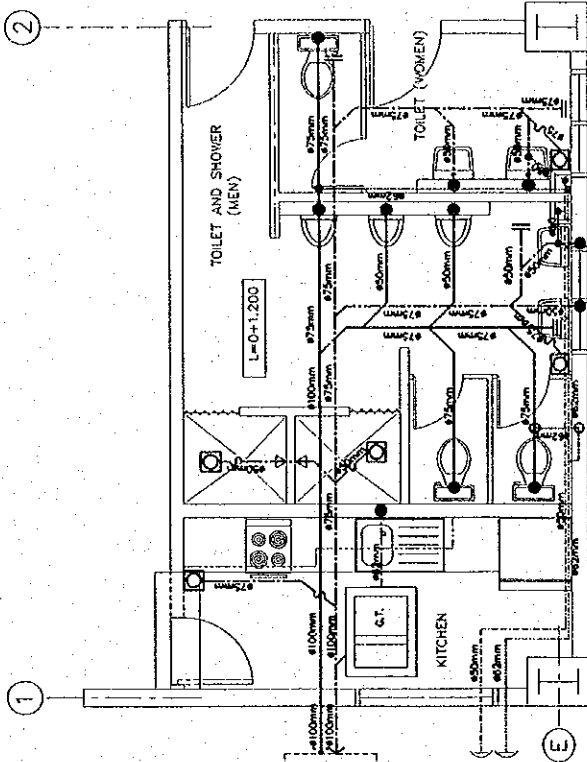
<p>ROOM LIST</p> <p>① KITCHEN ② TOILET (MEN) ③ TOILET (WOMEN)</p>	<p>(PLUMBING SYMBOLS)</p> <p>METER INSIDE PIT VALVE INSIDE PIT SHUT OFF VALVE HOSE FAUCET #150mm WATER SUPPLY PIPE VERTICAL PIPE DOWN VERTICAL PIPE UP</p>	<p>FIRE FIGHTING SYMBOLS</p> <p>ABC (MULTIPURPOSE) DRY POWDER EXTINGUISHER AB CLASS AFF EXTINGUISHER AS CLASS AFF CO2 EXTINGUISHER KITCHEN CLASS EXTINGUISHER</p> <p>LEGEND</p> <p>CHARGE PLACEMENT HEIGHT</p>
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- NOTES**
- 1) SEWERAGE/WASTE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

Prepared by	H. Iruca	02/07/18	Checked by	S. Endo	18 July, 02'
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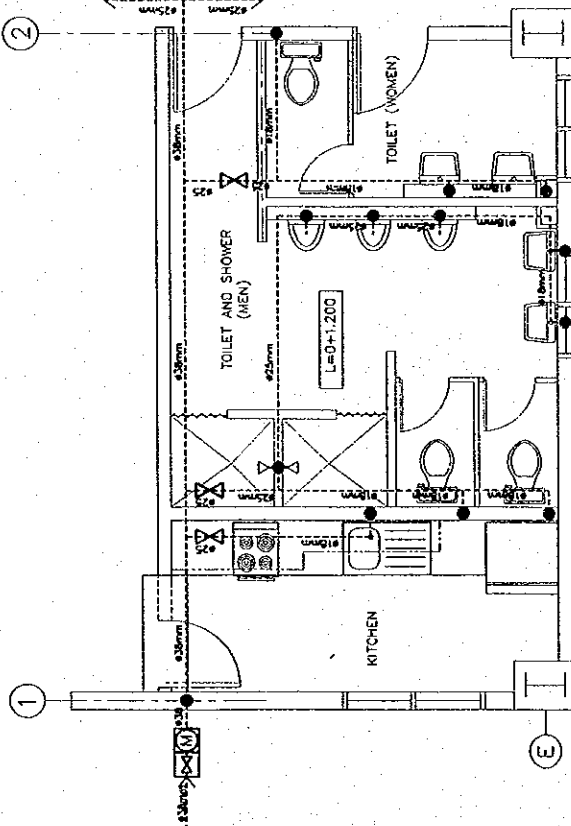
Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File Nº.	
Section:	UTILITY WORK	Calc. Index Nº.	
Subject:	PIPE WORK	Page Nº.	18/23



WASTEWATER SYSTEM
SCALE 1:50

PLUMBING SYMBOLS

	WATER SUPPLY PIPE
	WASTE DRAINAGE PIPE
	WASTE VENTILATION PIPE
	SANITARY DRAINAGE PIPE
	SANITARY DRAINAGE VENTILATION PIPE
	VERTICAL PIPE DOWN
	VERTICAL PIPE UP
	METER INSIDE RT
	VALVE INSIDE RT
	SHUT OFF VALVE
	FLOOR/SHOWER DRAIN
	VENT OUTLET



WATER SUPPLY SYSTEM
SCALE 1:50

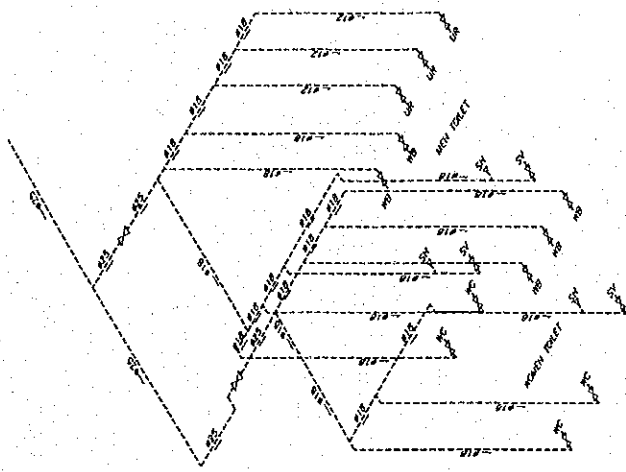
Prepared by	H. Irola	02/07/18	Checked by	J. Endo	18 July, 2018
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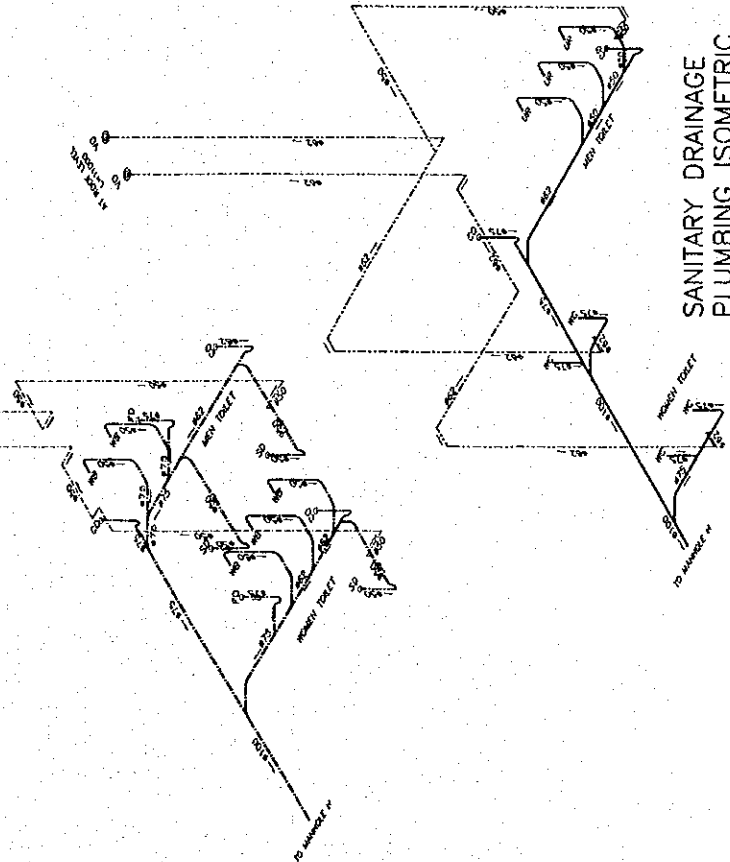
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	PIPE WORK	Page No.	19/23

LEGEND

WC	WATER CLOSET
WB	WASH BASIN
UR	URINAL
MSK	METAL SINK
SV	SHOWER VALVE
SH	SHOWER HEAD
VO	VENT OUTLET
CO	CLEAN OUT
FD	FLOOR DRAIN
SD	SHOWER DRAIN
⊗	METER INSIDE PIT
⊕	VALVE INSIDE PIT
D4	SHUT OFF VALVE
⌋	TRAP
⊞	GREASE TRAP
→	FLOW DIRECTION
---	WATER SUPPLY PIPE
----	SANITARY DRAINAGE PIPE
----	SANITARY VENT PIPE
----	WASTE DRAINAGE PIPE
----	WASTE VENT PIPE



WATER SUPPLY PLUMBING ISOMETRIC
NOT TO SCALE



SANITARY DRAINAGE PLUMBING ISOMETRIC
NOT TO SCALE

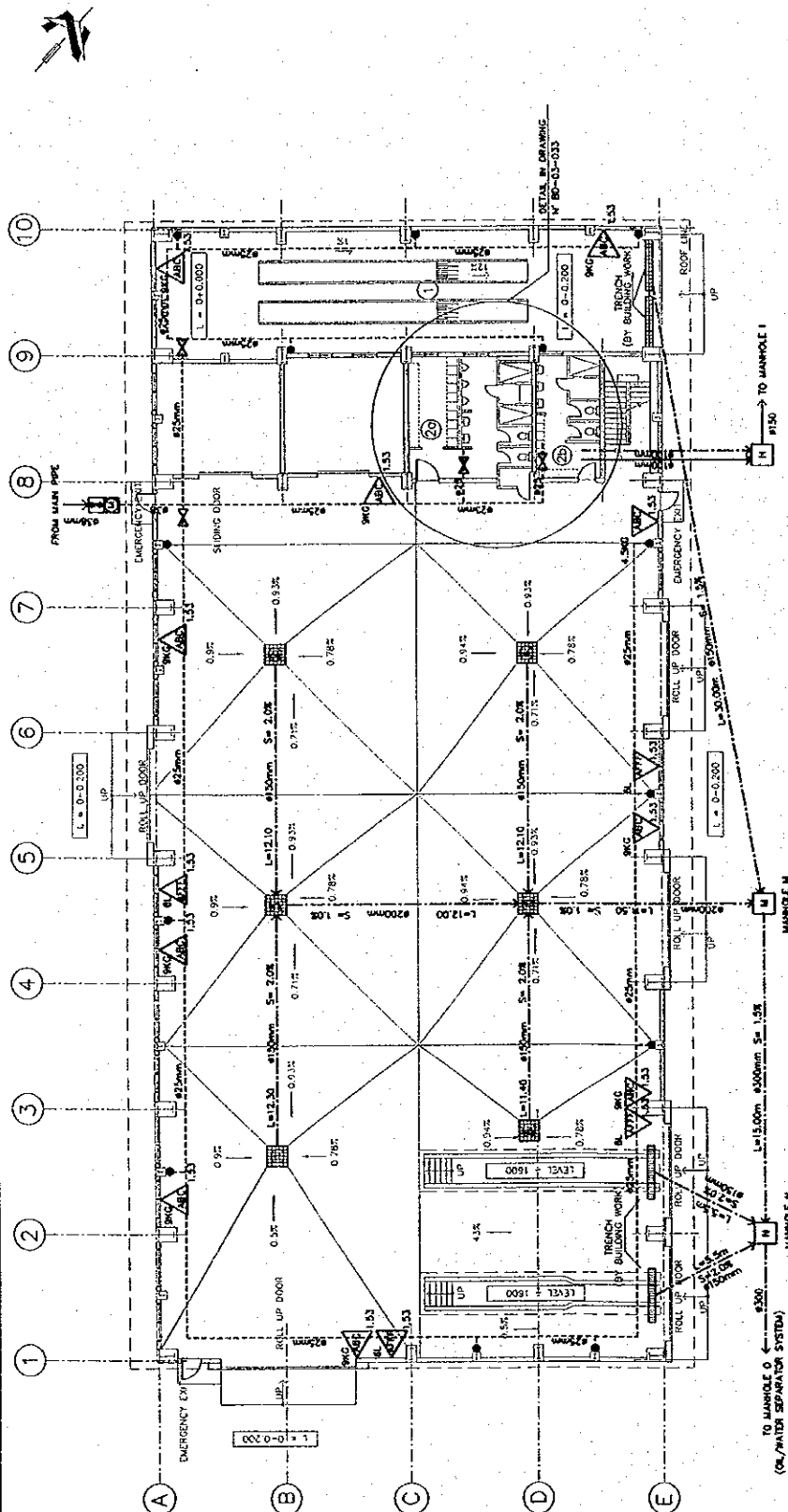


WASTE DRAINAGE PLUMBING ISOMETRIC
NOT TO SCALE

Prepared by	A. Irua	02/07/10	Checked by	S. Endo	18 July, 10
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Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File No.	
Section:	UTILITY WORK	Calc. Index No.	
Subject:	PIPE WORK	Page No.	20/23



PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM LAYOUT (FIRST FLOOR)

SCALE 1:200

<p>FIRE FIGHTING SYMBOLS</p> <p>ABC (MULTIPURPOSE) EXTINGUISHER</p> <p>DRY POWDER EXTINGUISHER</p> <p>AB CLASS AFF EXTINGUISHER</p> <p>AB CLASS AFF CO2 EXTINGUISHER</p> <p>KITCHEN CLASS EXTINGUISHER</p> <p>LEGEND</p> <p>CHARGE</p> <p>PLACEMENT HEIGHT</p>	<p>PLUMBING SYMBOLS</p> <p>VERTICAL PIPE DOWN</p> <p>WATER SUPPLY PIPE</p> <p>WASTE DRAINAGE PIPE</p> <p>SANITARY DRAINAGE PIPE</p> <p>METER INSIDE PIT</p> <p>SHUT OFF VALVE</p> <p>MANHOLE WITH GRATING COVER</p>	<p>(ROOM LIST)</p> <p>① WASH UNIT</p> <p>② TOILETS (MEN)</p> <p>③ TOILETS (WOMEN)</p>
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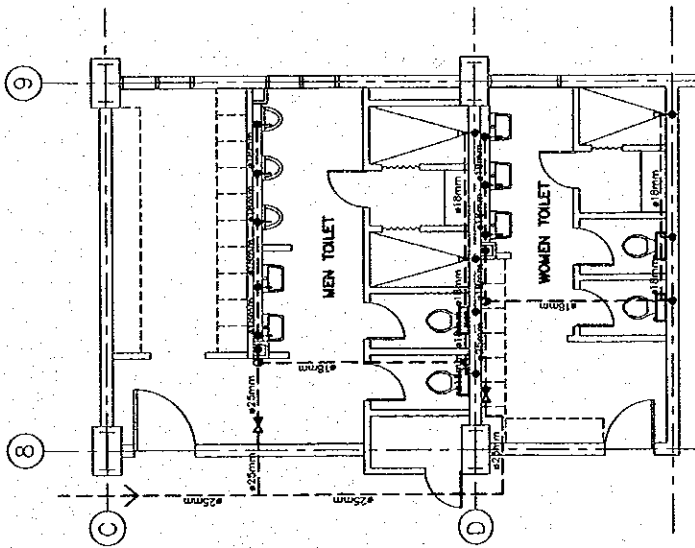
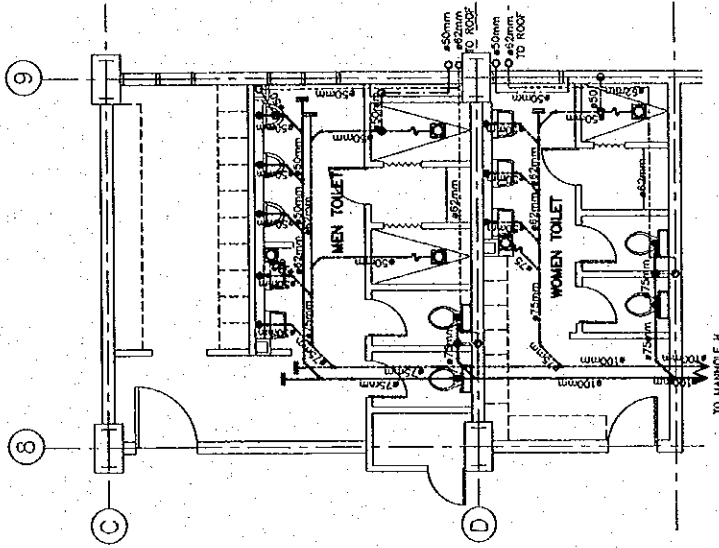
- NOTES**
- 1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

MANHOLE IDENTIFICATION	GRATE LEVEL	BOTTOM LEVEL	DEPTH (m)
1	0+01.50	0-0.05	1.00
2	0+01.50	0-0.05	1.00
3	0+01.50	0-1.25	1.40
4	0+01.50	0-0.55	1.00
5	0+01.50	0-1.40	1.55
6	0+01.50	0-0.85	1.00

Prepared by	H. Iruw	02/07/18	Checked by	S. Endo	18 July 18
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Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	21/23



PLUMBING SYMBOLS

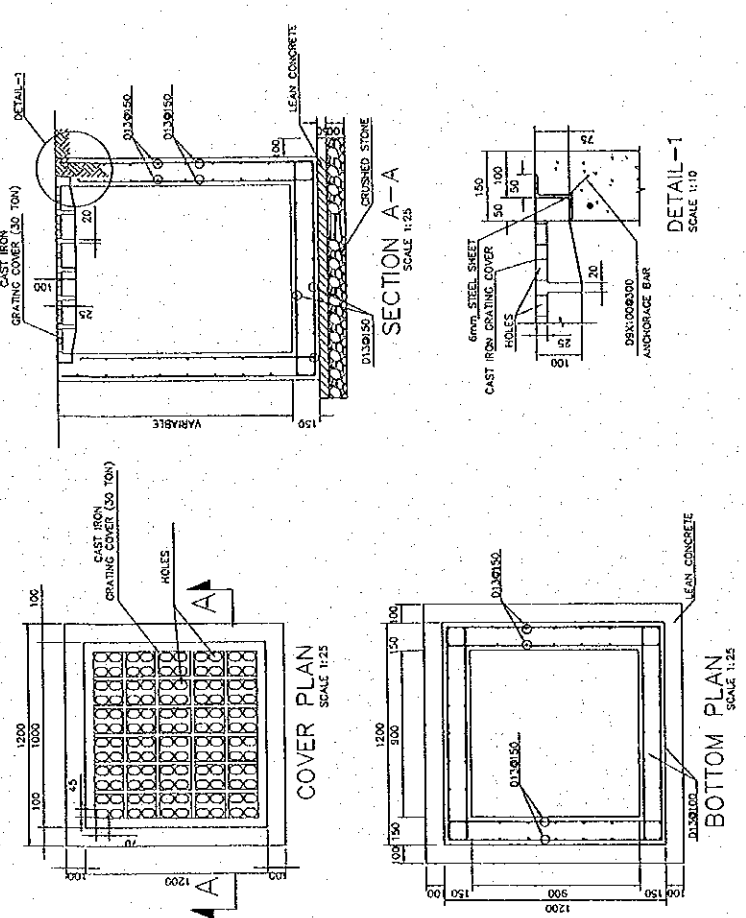
○	WATER SUPPLY PIPE
○	WASTE DRAINAGE PIPE
○	WASTE VENTILATION PIPE (IN UNDERGROUND PIT)
○	SANITARY DRAINAGE PIPE
○	SANITARY VENTILATION PIPE
—	VERTICAL PIPE DOWN
—	VERTICAL PIPE UP
—	METER INSIDE PIT
—	VALVE INSIDE PIT
—	SHUT OFF VALVE
—	FLOOR DRAIN

- NOTES**
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

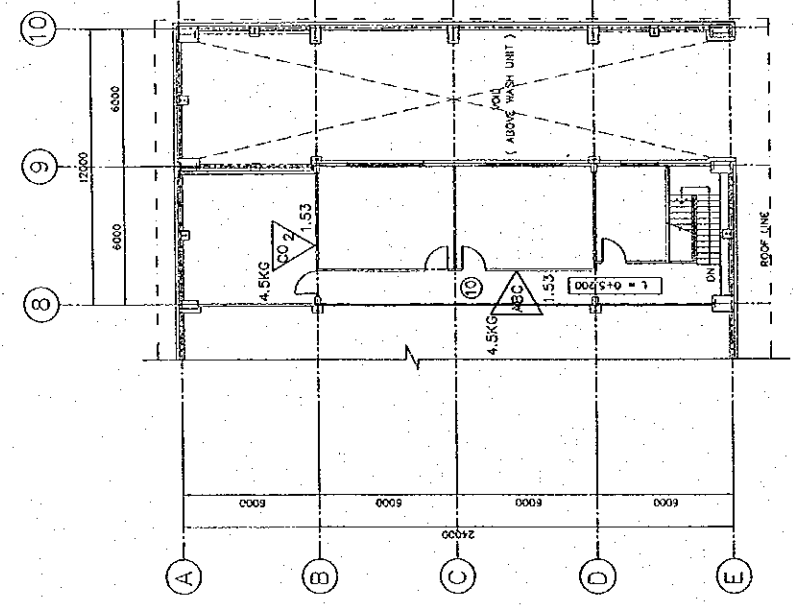
Prepared by	H. Iruw	02/07/18	Checked by	S. Endo	18 July, 02'
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Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	PIPE WORK	Page N°. 22/23



DETAIL OF MANHOLE



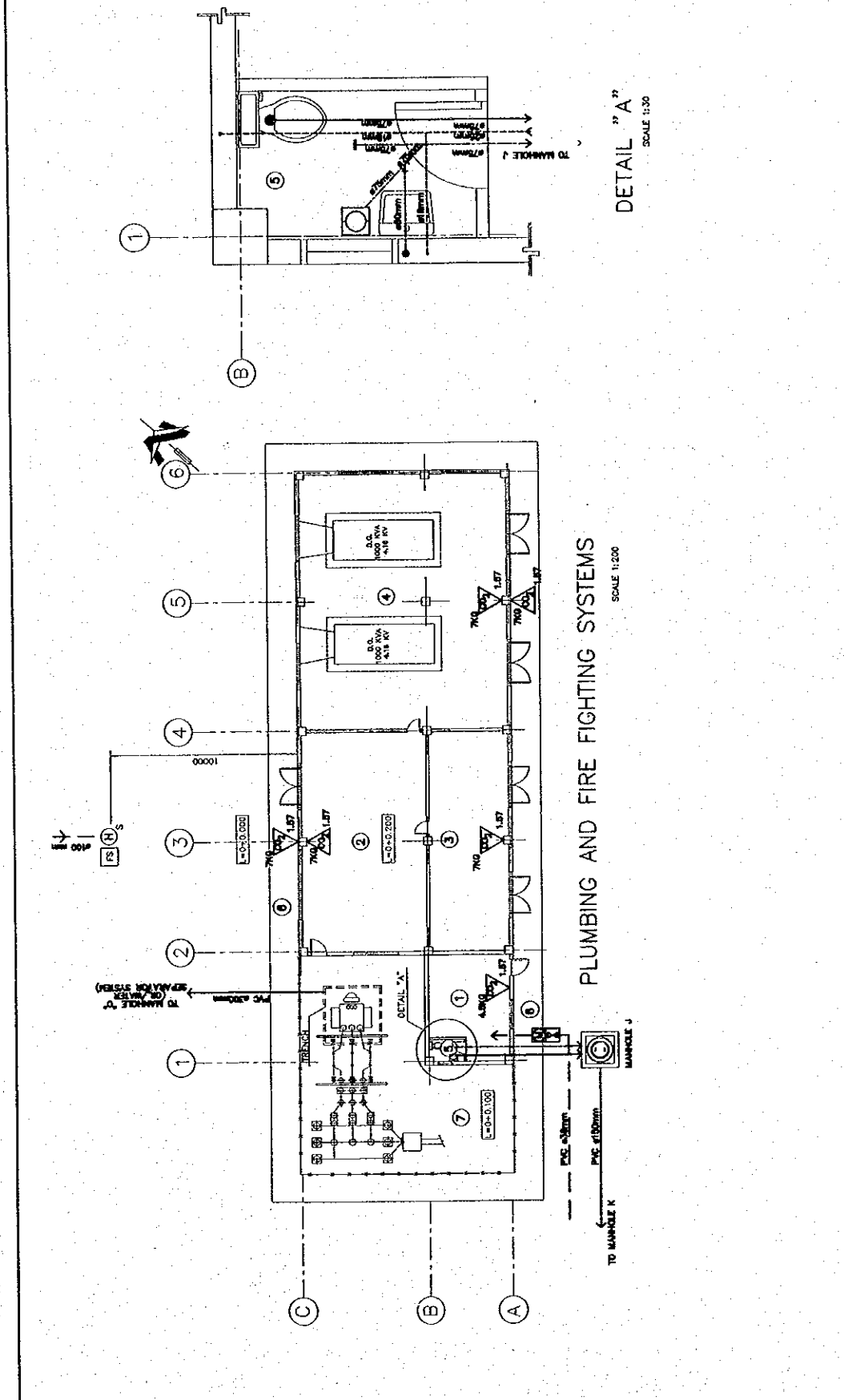
FIRE FIGHTING SYSTEM
SECOND FLOOR

SYMBOLS	LEGEND
	ABC CLASS DRY POWDER EXTINGUISHER
	BC CLASS CO ₂ EXTINGUISHER
	ORANGE
	PLACEMENT HEIGHT

Prepared by	Checked by
A. Iroh	S. Endo
02/07/18	18 July, 02'



Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	23/23



DETAIL 'A'
SCALE 1:30

<p>PLUMBING SYMBOLS</p> <ul style="list-style-type: none"> ● VERTICAL PIPE DOWN ○ METER INSIDE PIT □ VALVE INSIDE PIT ⊗ FLOOR DRAIN — WATER SUPPLY PIPE - - - WASTE DRAINAGE PIPE — SANITARY DRAINAGE PIPE 	<p>NOTES</p> <ol style="list-style-type: none"> 1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC 2) WATER SUPPLY PIPES TO BE PVC 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON 	<p>FIRE FIGHTING SYMBOLS</p> <ul style="list-style-type: none"> △ CLASS CO2 EXTINGUISHER ⊙ FIRE HYDRANT STAND TYPE □ FIRE STATION CABINET <p>LEGEND</p> <ul style="list-style-type: none"> W WEIGHT IN KGS P PLACEMENT HEIGHT 	<p>(ROOM LIST)</p> <ol style="list-style-type: none"> 1) OFFICE ROOM 2) SWITCHGEAR ROOM 3) TRANSFORMER ROOM 4) GENERATOR ROOM 5) TOILET 6) SIDEWALK 7) TRANSFORMER YARD
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Prepared by	A. Irujo	02/07/19	Checked by	S. Endo	18 July, 02'
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0201
Quantity Item	Manhole	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N°: UT-01-003

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	A. Iruka	02/07/18	4	S. Endo	18 July, 2018	④ ST	19 July 2018	
1								
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Manhole	Page No.	2/4 Rev.
			References/
Manhole of Wastewater			
Bottom			
<i>Dimension</i>			
Height	0.15		
	1.4		
	0.150		
Total	1.700		
Width	0.075		
	0.075		
	0.9		
	0.075		
	0.075		
Total	1.200		
B	0.075		
	0.075		
	0.900		
	0.075		
	0.075		
Total	1.200		
Area	1.440 m ²		
Volume	2.448 m ³		
<i>Reinforcement Bar</i>			
	Length	Nos.	Length m/kg Weight (kg)
Side(1)	1.15	36	41.4 0.995 41.193
Side(2)	1.15	36	41.4 0.995 41.193
Side(3)	1.65	31	50.6 0.995 50.347
Side(4)	1.65	31	50.6 0.995 50.347
Bottom (1)	1.15	18	20.7 0.995 20.5965
Bottom (2)	1.15	18	20.7 0.995 20.597
			224.273 kg
<i>Concrete Work</i>			
Deducted Volume			
Pipe		150 mm	
		0.0026 m ³	
Total		0.0026 m ³ (A)	
Concrete Volume			
(Side)		0.828 m ³	
(Bottom)		0.216 m ³	
		1.044 m ³ (B)	
(B)-(A)		1.041 m ³	
<i>Form Work</i>			
Deducted Area			
	0.942 m ²	(C)	
(Side-Outside)		8.16	
(Side-Inside)		5.04	
(Bottom)		1.44	
Total		14.64 m ² (D)	
(D)-(C)		13.698 m ²	
<i>Lean Concrete</i>			
d		0.1 m	
Width		0.15 m	
Concrete Volume		0.225 m ³	
<i>Crushed Stone</i>			
d		0.15 m	
Volume		0.338 m ³	
Prepared by		Checked by	
H. Irola		S. Enclo	
02/07/18		18 July, 2018	

Project	Detailed Design on Port Reactivation Project In La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Manhole	Page No.	3/4 Rev.
			References/
Upper			
<i>Reinforcement Bar</i>			
	Length	Nos.	Length m/kg Weight (kg)
	1.15	18	20.7 0.995 20.5965
	1.15	18	20.7 0.995 20.5965
	Deducted		41.193 kg
			28.505 kg
<i>Concrete Work</i>			
Deducted Volume			
	Diameter of Cover	0.8m	
	Thickness	0.075m	
	Width	0.05m	
	Cover and under	0.0665m ³	
	Volume	0.2160m ³	
		0.1495m ³	
<i>Form Work</i>			
Deducted Area			
	Cover	0.38465m ³	
	Bottom	0.81m ²	
	Cover Lower	0.16m ²	
	Cover Upper	0.19m ²	
		0.779m ²	
<i>Excavation</i>			
		0.3m	
		4.388m ³	
<i>Backfilling</i>			
		1.377 m ³	
<i>Cast Iron Ring</i>			
		2.51 m	
	Cover	1 Nos	
	Step	4 Nos	
Summary of Quantity for Pit			
	Excavation	4.388 m ³	
	Backfilling	1.377 m ³	
	Crushed Stone	0.338 m ³	
	Lean Concrete	0.225 m ³	
	Reinforcement Bar : Upper (D13)	28.51 kg	
	Reinforcement Bar : Lower (D13)	224.27 kg	
	Form (Upper)	0.779 m ²	
	Form (Lower)	13.698 m ²	
	Concrete (Upper) : 18N	0.149 m ³	
	Concrete (Lower) : 18N	1.041 m ³	
	Cast Iron Ring : L 50x50x6	2.51 m	
	Cover (φ 8 0 0)	1 Nos	
	Step (100 x 300 x 100) D13	4 Nos	
Prepared by		Checked by	
H. Iwata		S. Endo	
02/07/18		18 July, 2018	

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0202
Quantity Item	Grease Trap	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N° UT-01-003

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iruw	02/07/18	4	S. Endo	18 July 02	IP ST	19 July 02	
1								
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union			Calc. File No.	
Section	UTILITY WORK			Calc. Index No.	
Subject	Grease Trap			Page No.	2/4 Rev.
					References/
Grease Trap					
Bottom	<i>Dimension</i>				
	Height	0.075			
		1.125			
		0.150			
	Total	1.350			
	Width	0.05			
		0.05			
		0.375			
		0.1			
		0.175			
		0.05			
		0.05			
	Total	0.850			
	B	0.050			
		0.050			
		0.450			
		0.050			
		0.050			
	Total	0.650			
	Area	0.553 m ²			
	Volume	0.746 m ³			
Reinforcement Bar					
	Length	Nos.	Length	m/kg	Weight (kg)
	Side(1)	0.60	16	9.6	0.995
	Side(2)	0.80	16	12.8	0.995
	Side(3)	1.25	10	12.5	0.995
	Side(4)	1.25	12	14.6	0.995
	Bottom (1)	0.60	5	3	0.995
	Bottom (2)	0.80	7	5.6	0.995
	Middle(1)	1.10	10	11.0	0.995
	Middle(2)	0.60	18	10.8	0.995
					79.484 kg
Concrete Work					
	Deducted Volume				
	Pipe		75 mm		
			0.0004 m ³		
	Total		0.0004 m ³ (A)		
	Concrete Volume				
	(Side)		0.166 m ³		
	(Bottom)		0.083 m ³		
			0.249 m ³ (B)		
	(B)-(A)		0.248 m ³		
Form Work					
	Deducted Area				
		0.471 m ²	(C)		
	(Side-Outside)		4.05		
	(Side-Inside)		1.13		
	(Bottom)		0.55		
	Total		5.725 m ² (D)		
	(D)-(C)		5.2565 m ²		
Prepared by				Checked by	
H. Irda				S. Endo	
02/07/18				18 July 2018	

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.																																																																																																																																																																																					
Section	UTILITY WORK	Calc. Index No.																																																																																																																																																																																					
Subject	Grease Trap	Page No.	3/4 Rev.																																																																																																																																																																																				
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0301
Quantity Item	Catch Basin	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N° BD-03-032

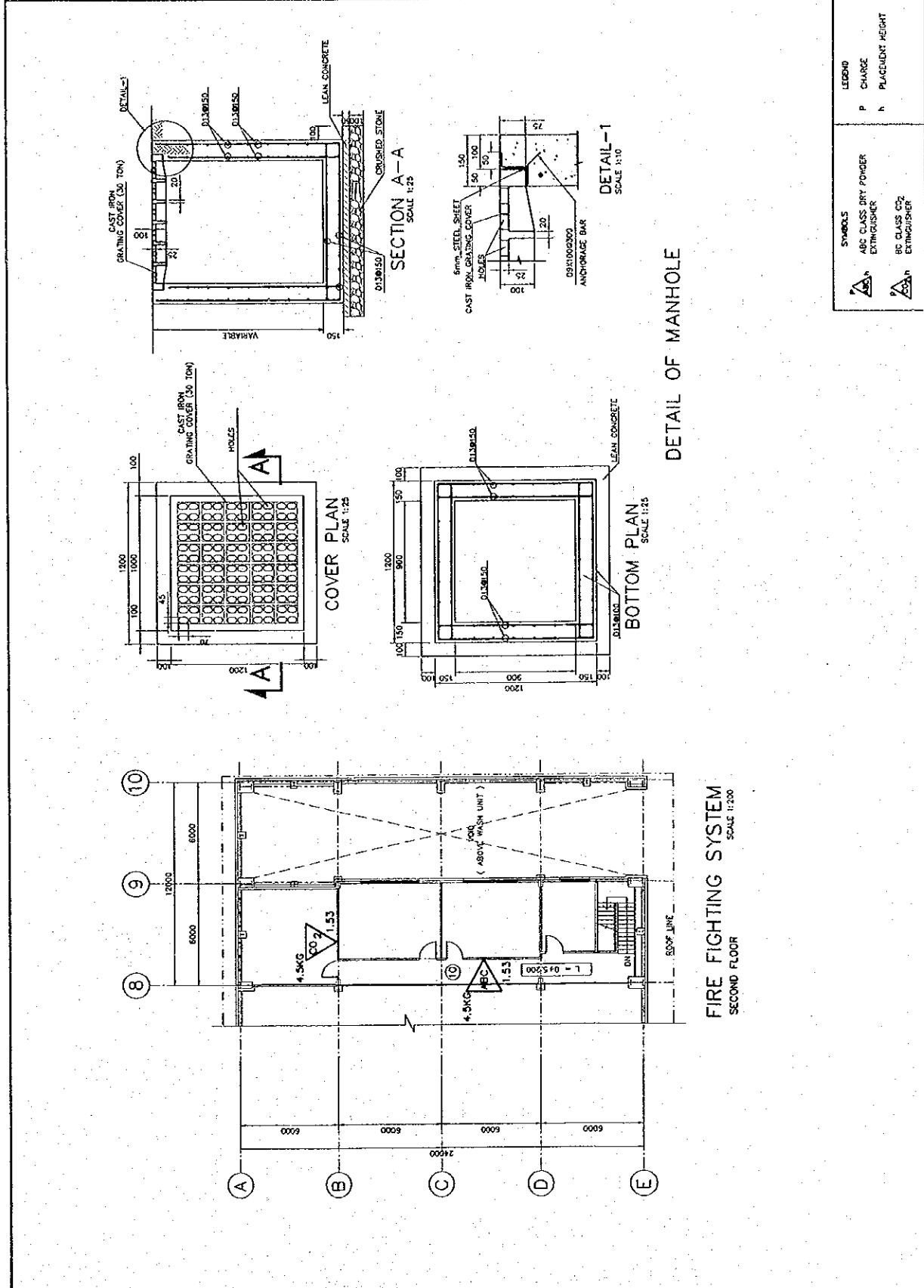
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iroh	02/07/18	4	S. Endo	18 July 2018	via ST	19 July 2018	
1								
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Catch Basin	Page No.	2/4 Rev.
			References/
Catch Basin			
Bottom			
<i>Dimension</i>			
Height		0.075	
		1.083	
		0.150	
Total		1.308	
Width		0.1	
		0.05	
		0.9	
		0.05	
		0.1	
Total		1.200	
B		0.100	
		0.050	
		0.900	
		0.050	
		0.100	
Total		1.200	
Area		1.440 m ²	
Volume		1.884 m ³	
Reinforcement Bar			
	Length	Nos.	Length m/kg Weight (kg)
Side(1)	1.150	33	37.8 0.995 37.62294
Side(2)	1.150	33	37.8 0.995 37.62294
	1.26	31	38.6 0.995 38.386
	1.03	23	23.4 0.995 23.298
Bottom (1)	1.15	15	17.6 0.995 17.545
Bottom (2)	1.15	15	17.6 0.995 17.545
			172.020 kg
Concrete Work			
Deducted Volume			
Pipe		75 mm	
		0.0009 m ³	
Total		0.0009 m ³ (A)	
Concrete Volume			
(Side)		0.687 m ³	
(Bottom)		0.216 m ³	
		0.903 m ³ (B)	
(B) - (A)		0.902 m³	
Form Work			
Deducted Area			
	0.471 m ²	(C)	
(Side-Outside)	6.2784		
(Side-Inside)	3.90		
(Bottom)	1.44		
Total	11.6172 m ² (D)		
(D) - (C)	11.1462 m ²		
Lean Concrete			
d		0.05 m	
Width		0.1 m	
Concrete Volume		0.098 m³	
Prepared by		Checked by	
H. Fabe		S. Endo	
02/07/18		18 July, 02	

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.																																																																																																													
Section	UTILITY WORK	Calc. Index No.																																																																																																													
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Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	CATCH BASIN	Page N°	4/4



	SYMBOLS	ABC CLASS DRY POWDER EXTINGUISHER
	LEGEND	BC CLASS CO2 EXTINGUISHER
	CHARGE	P
	PLACEMENT HEIGHT	h

DETAIL OF MANHOLE

FIRE FIGHTING SYSTEM
SECOND FLOOR

Prepared by	H. Irub	02/07/18	Checked by	P. Endo	18 July, 2018
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0401
Quantity Item	Oil /Water Separator-1 (M&R Shop)	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N° UT-01-004

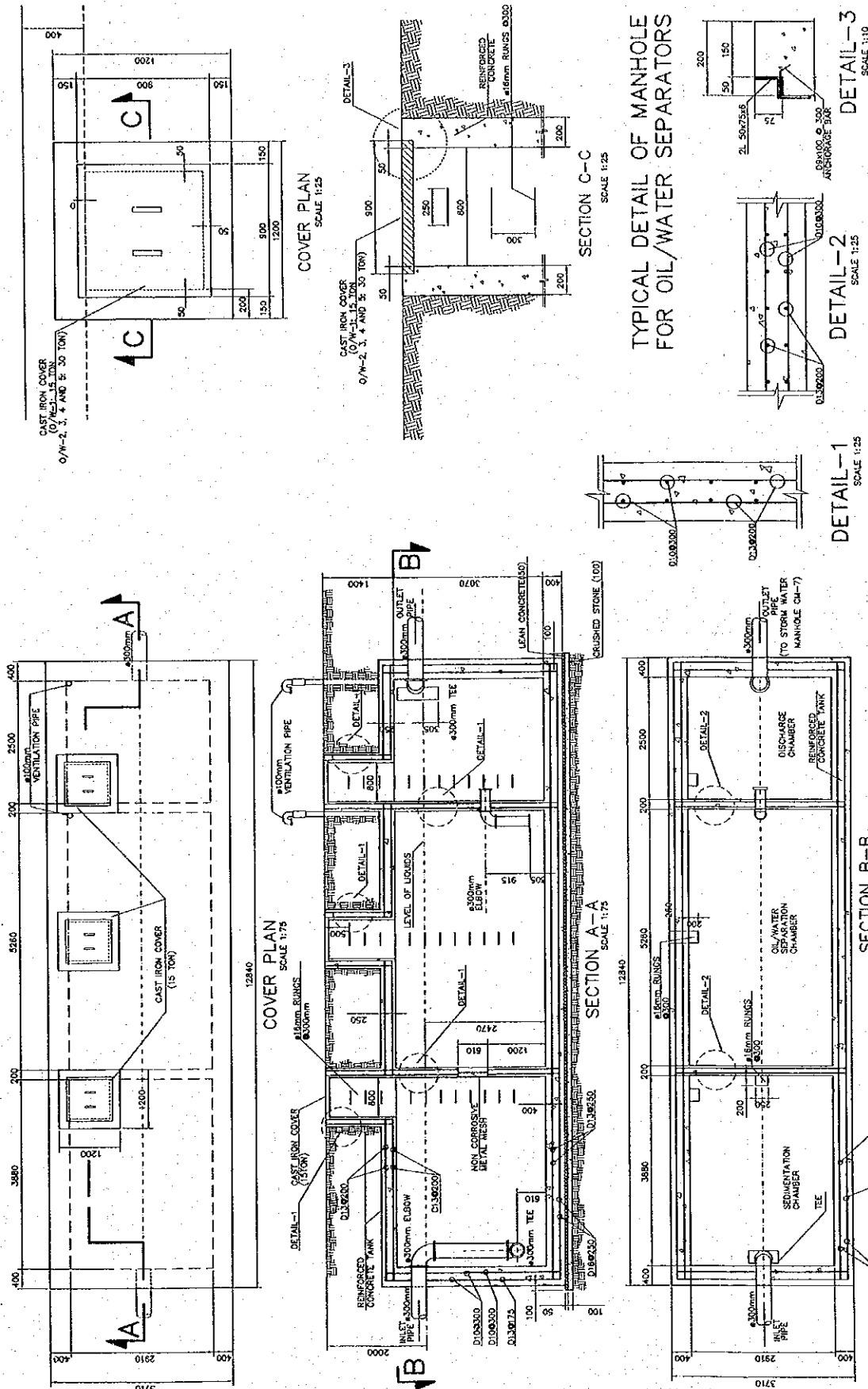
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	A. Iroh	02/07/18	4	S. Endo	18 July, 2018	ST	20 July, 2018	
1	<i>OTP</i>							
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/water Separator-1 (M&R Shop)	Page No.	2/4 Rev.
			References/
Quantity Calculation of Oil/Water Separator			
			Red is Input Data
(Dimension of Oil/Water Separator)			
		Longitudinal	
		m	
<i>Input Data</i>	Thickness of Wall (Out-1)	0.4	
	Length of Room 1	3.88	
	Thickness of Wall (In-1)	0.2	
	Length of Room 2	5.26	
	Thickness of Wall (In-2)	0.2	
	Length of Room 3	2.5	
	Thickness of Wall (Out-2)	0.4	
		Side	
	Thickness of Wall (Out-1)	0.4	
	Length of Room	2.91	
	Thickness of Wall (Out-2)	0.4	
		Vertical	
	Thickness of Bottom	0.4	
	Depth of Room	3.07	
	Thickness of Upper	0.25	
(Dimension of Manhole)			
<i>Input Data</i>	Width	0.8	
	Thickness of Wall	0.2	
	Height of Manhole	1.15	
		B (m)	L (m)
		Area (m²)	
	Area of Bottom	3.71	12.84
			47.6364
	Thickness of Lean Concrete	0.05 m	
	Thickness of Crushed Stone	0.1 m	
	Volume of Lean Concrete	2.38 m ³	
	Area of Crushed Stone	54.42 m ²	0.2 m
	Volume of Crushed Stone	5.44 m ³	
(Earth Work)			
	Slope	1	0.5
<i>Excavation</i>			
	Area of O/W Separator	273.17 m ³	
	Side-1	99.70 m ³	
	Side-2	27.94 m ³	
	Corner	167.67 m ³	
	Total Volume	568.47 m ³	
<i>Backfilling</i>			
	Oil Separator	177.21 m ³	
	Manhole	4.97 m ³	
	Total Volume	386.30 m ³	
(Manhole)			
<i>Concrete Work</i>			
	Concrete Volume for Manhole	3.128 m ³ /no.	
	Number of Manhole	3 Nos.	
	(A) Total Concrete Volume	9.384 m³	
<i>Form Work</i>			
	Area of Form (Outside)	4.80 m ²	
	Area of Form (Inside)	4.48 m ²	
	Number of Manhole	3	
	Total Area of Form	27.84 m²	
		Prepared by	
		Checked by	
	H. Iruk	02/07/18	S. Endo
			18 July 2018

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/water Separator-1 (M&R Shop)	Page No.	3/4 Rev.
			References/
(Oil Separator)			
<i>Concrete Work</i>			
- Deducted Concrete Volume by Pipe and Othes			
	Diameter of Pipe	300 mm	
	Number of Pipe	3 Nos.	
	Height of Non Corrosive	0.61 m	
	Width of Non Corrosive	0.25 m	
	Deducted Concrete Volume by Pipe	0.071 m ³	
	Deducted Concrete Volume by Non Corrosive	0.031 m ³	
	Deducted Concrete Volume by Manhole	0.489 m ³	
	(B) Total Deducted Concrete Volume	0.581 m³	
- Concrete Volum of O/W Separator			
	Concrete Volume (Bottom)	19.055 m ³	
	Concrete Volume (Side-1)	10.899 m ³	
	Concrete Volume (Side-2)	29.570 m ³	
	Concrete Volume (Upper)	11.909 m ³	
	(C) Total Concrete Volume	71.432	
	(C)-(D)	70.851	
<i>Reinforcement Bar</i>			
	D10	1262.5 m	0.56 kg/m 707 kg
	D13	2330.54 m	0.995 kg/m 2319 kg
	D16	488.4 m	1.56 kg/m 637 kg
			3.66 Ton
<i>Form Work</i>			
- Deducted Form			
	Deducted Form by Pipe	0.424 m ²	
	Deducted Concrete Volume by Non Corrosive	0.305 m ²	
	Deducted Concrete Volume by Manhole	1.920 m ²	
	(D) Total Deducted Form	2.649 m²	
	Form (Outside-1)	27.60 m ²	
	Form (Outside-2)	95.53 m ²	
	Form (Bottom)	47.64 m ²	
	Form, Room-1 (Inside-1)	17.87 m ²	
	Form, Room-1 (Inside-2)	23.82 m ²	
	Form, Room-2 (Inside-1)	17.87 m ²	
	Form, Room-2 (Inside-2)	32.30 m ²	
	Form, Room-3 (Inside-1)	17.87 m ²	
	Form, Room-3 (Inside-2)	15.35 m ²	
	Form, Room-1 (Upper)	11.29 m ²	
	Form, Room-2 (Upper)	15.31 m ²	
	Form, Room-3 (Upper)	7.28 m ²	
	(E) Total Form	329.71 m²	
	(E)-(D)	327.06 m²	
Summary of Quantity			
	Excavation	568.47 m ³	
	Backfilling	386.30 m ³	
	Concrete Volume	80.24 m ³	
	Form	354.90 m ²	
	Lean Concrete Volume	2.38 m ³	
	Crushed Stone	5.44 m ³	
	Reinforcement Bar	3.66 Ton	
	Cast Iron Cover	3 Nos	
	Ring for Cover	10.8 m	
	Non Corrosive Metal Mesh (610 x 250mm)	1 No	
	Steps (D16), 0.75m	42 Nos	
	Ventilation Pipe φ100 x 2m	2 Nos	
Prepared by		Checked by	
H. Iroh		S. Endo	
02/07/10		18 July, 2010	



Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	OIL/WATER SEPARATOR-1 (M&R Shop)	Page N°.	4/4



Prepared by	H. Iruw	02/07/18	Checked by	S. Indo	18 July 2018
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0402
Quantity Item	Oil /Water Separator-2 (Route-A)	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N° UT-01-005

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Jrola	02/08/09	4	S. Endic	9 May 09	[Signature]	10 May 09	
1	[Signature]							
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.
Section	UTILITY WORK	Calc. Index No.
Subject	Oil/Water Separator-2 (Route-A)	Page No. 2/4 Rev.

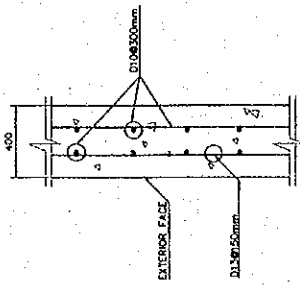
(Dimension of Oil/Water Separator)					References/
	Longitudinal	m			
<i>Input Data</i>	Thickness of Wall (Out-1)	0.4			
	Length of Room 1	7.85			
	Thickness of Wall (In-1)	0.2			
	Length of Room 2	13.2			
	Thickness of Wall (In-2)	0.3			
	Length of Room 3	2.5			
	Thickness of Wall (Out-2)	0.4			
	Side				
	Thickness of Wall (Out-1)	0.4			
	Length of Room	5.9			
	Thickness of Wall (Out-2)	0.4			
	Vertical				
	Thickness of Bottom	0.4			
	Depth of Room	2.36			
	Thickness of Upper	0.25			
	(Dimension of Manhole)				
<i>Input Data</i>	Width	0.8			
	Thickness of Wall	0.3			
	Height of Manhole	2.214			
		B (m)	L (m)	Area (m ²)	
	Area of Bottom	6.7	24.75	165.825	
	Thickness of Lean Concrete	0.05 m			
	Thickness of Crushed Stone	0.1 m			
	Volume of Lean Concrete	8.29 m ³			
	Area of Crushed Stone	178.57 m ²		0.2 m	
	Volume of Crushed Stone	17.86 m ³			
	(Earth Work)				
	Slope	1	0.5		
	<i>Excavation</i>				
	Area of O/W Separator	959.61 m ³			
	Side-1	202.73 m ³			
	Side-2	54.01 m ³			
	Corner	992.88 m ³			
	Total Volume	2209.23 m ³			
	<i>Backfilling</i>				
	Oil Separator	499.13 m ³			
	Manhole	13.02 m ³			
	Total Volume	1697.08 m ³			
	(Manhole)				
	<i>Concrete Work</i>				
	Concrete Volume for Manhole	7.26192 m ³			
	Number of Manhole	3 Nos.			
	(A) Total Concrete Volume	21.78576 m ³			
	<i>Form Work</i>				
	Area of Form (Outside)	5.60 m ²			
	Area of Form (Inside)	7.8848 m ²			
	Number of Manhole	3			
	Total Area of Form	40.4544 m ²			

	Prepared by	Checked by
	H. Irwin	S. Endo
	02/08/09	9 Aug, 09

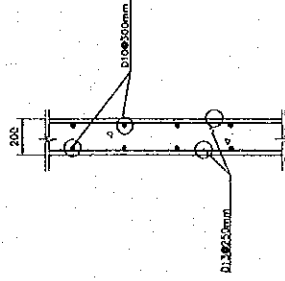
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/Water Separator-2 (Route-A)	Page No.	3/4 Rev.
			References/
(Oil Separator)			
<i>Concrete Work</i>			
- Deducted Concrete Volume by Pipe and Othes			
Diameter of Pipe	300	mm	
Number of Pipe	3	Nos.	
Height of Non Corrosive	0.61	m	
Width of Non Corrosive	0.25	m	
Deducted Concrete Volume by Pipe	0.071	m ³	
Deducted Concrete Volume by Non Corrosive	0.031	m ³	
Deducted Concrete Volume by Manhole	0.480	m ³	
(B) Total Deducted Concrete Volume	0.581	m³	
Concrete Volum of O/W Separator			
Concrete Volume (Bottom)	66.330	m ³	
Concrete Volume (Side-1)	15.434	m ³	
Concrete Volume (Side-2)	45.218	m ³	
Concrete Volume (Upper)	41.456	m ³	
(C) Total Concrete Volume	168.438		
(C)-(B)	167.857		
<i>Reinforcement Bar</i>			
D10	2333.760	m	0.56 1.307
D13	6366.300	m	0.995 6.334
D16	5527.500	m	1.56 8.623
			16.26 Ton
<i>Form Work</i>			
- Deducted Form			
Deducted Form by Pipe	0.424	m ²	
Deducted Concrete Volume by Non Corrosive	0.305	m ²	
Deducted Concrete Volume by Manhole	1.920	m ²	
(D) Total Deducted Form	2.649	m²	
Form (Outside-1)	40.33	m ²	
Form (Outside-2)	149.00	m ²	
Form (Bottom)	165.83	m ²	
Form, Room-1 (Inside-1)	27.85	m ²	
Form, Room-1 (Inside-2)	37.05	m ²	
Form, Room-2 (Inside-1)	27.85	m ²	
Form, Room-2 (Inside-2)	62.30	m ²	
Form, Room-3 (Inside-1)	27.85	m ²	
Form, Room-3 (Inside-2)	11.8	m ²	
Form, Room-1 (Upper)	46.32	m ²	
Form, Room-2 (Upper)	77.88	m ²	
Form, Room-3 (Upper)	14.75	m ²	
(E) Total Form	688.80	m²	
(E)-(D)	686.15	m²	
Summary of Quantity			
Excavation	2209.23	m ³	
Backfilling	1697.08	m ³	
Concrete Volume	159.64	m ³	60
Form	726.60	m ²	
Lean Concrete Volume	8.29	m ³	
Crushed Stone	17.86	m ³	
Reinforcement Bar	16.26	Ton	
Cast Iron Cover	3	Nos	
Ring for Cover	10.8	m	
Non Corrosive Metal Mesh (610 x 250mm)	1	No	
Steps (D16), 0.75m	41	Nos	
Ventilation Pipe φ100 x 2m	3	Nos	
Prepared by		Checked by	
H. Irula		S. Ende	
02/08/09		9 Aug 02	



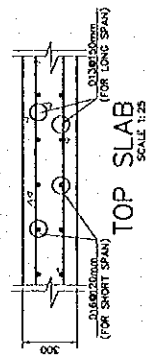
Project:	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°:	
Section:	UTILITY WORK	Calc. Index N°:	
Subject:	OIL/WATER SEPARATOR-2 (Route-A)	Page N°:	4/4



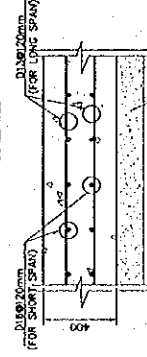
EXTERIOR WALL
SCALE 1:25



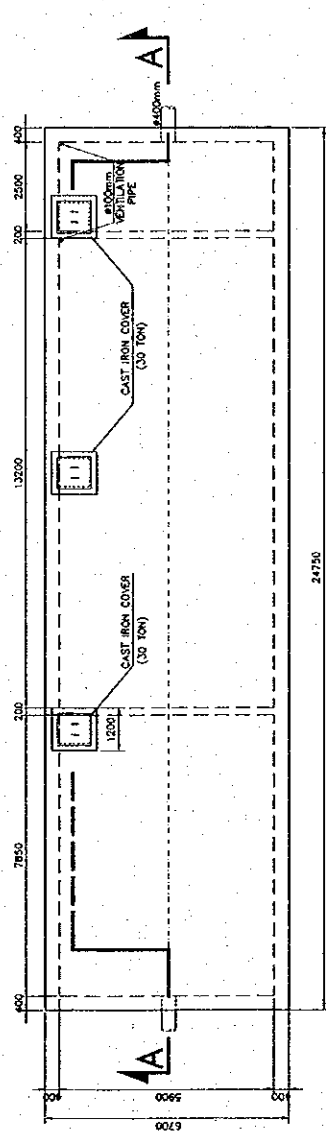
INTERIOR WALL
SCALE 1:25



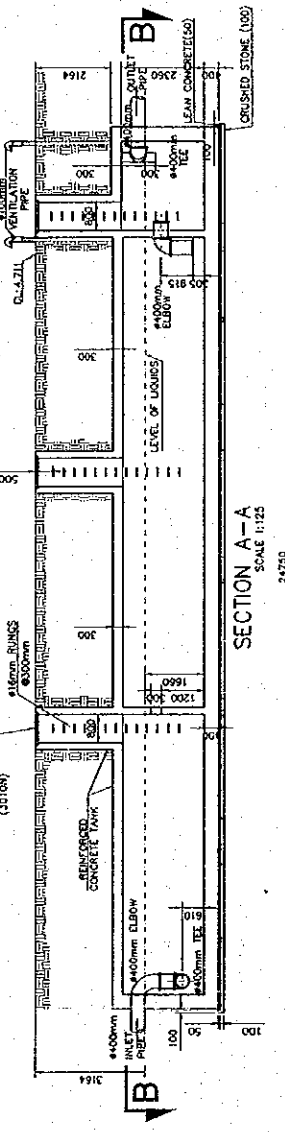
TOP SLAB
SCALE 1:25



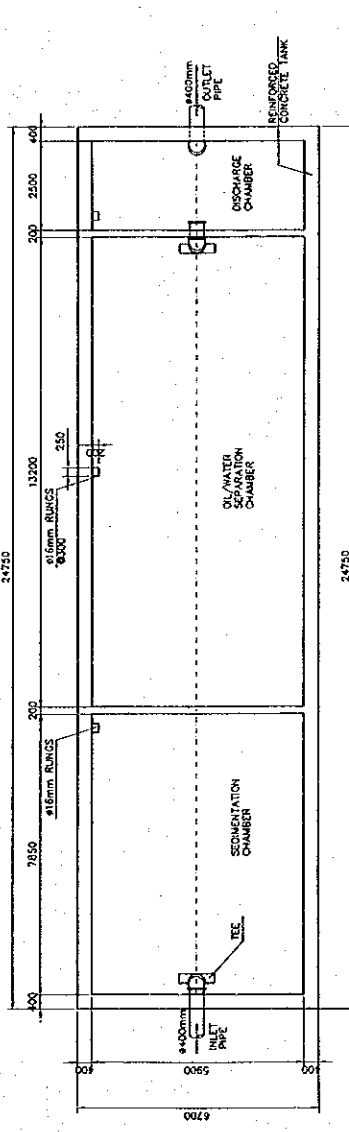
BOTTOM SLAB
SCALE 1:25



COVER PLAN
SCALE 1:125



SECTION A-A
SCALE 1:25



SECTION B-B
SCALE 1:25

OIL/WATER SEPARATOR- 2 (ROUTE A)

Prepared by	H. Inua	02/08/09	Checked by	S. Endo	9 Aug, 02
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QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Wastewater System	Pay Item No. (BOQ)	4C0403
Quantity Item	Oil /Water Separator-3 (Route-B)	Unit	No.

Calculation Procedure Applied

Concrete volume was computed with two decimal for section sectional area and zero decimal for total.

The length of reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed multiplying the area to the thickness of them.

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing N° UT-01-006

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iryu	02/08/09	4	P. Endo	9 Aug, 02	W. Ito	10 Aug 02	
1								
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.
Section	UTILITY WORK	Calc. Index No.
Subject	Oil/Water Separator-3 (Route-B)	Page No. 2/4 Rev.

(Dimension of Oil/Water Separator)				
		Longitudinal		
		m		
<i>Input Data</i>	Thickness of Wall (Out-1)	0.4		
	Length of Room 1	8.75		
	Thickness of Wall (In-1)	0.2		
	Length of Room 2	14.95		
	Thickness of Wall (In-2)	0.2		
	Length of Room 3	2.5		
	Thickness of Wall (Out-2)	0.4		
		Side		
	Thickness of Wall (Out-1)	0.4		
	Length of Room	6.55		
	Thickness of Wall (Out-2)	0.4		
		Vertical		
	Thickness of Bottom	0.4		
	Depth of Room	2.36		
	Thickness of Upper	0.3		
		(Dimension of Manhole)		
<i>Input Data</i>	Width	0.8		
	Thickness of Wall	0.2		
	Height of Manhole	2.607		
		B (m)	L (m)	Area (m²)
	Area of Bottom	7.35	27.4	201.39
	Thickness of Lean Concrete	0.05 m		
	Thickness of Crushed Stone	0.1 m		
	Volume of Lean Concrete	10.07 m³		
	Area of Crushed Stone	215.45 m ²		0.2 m
	Volume of Crushed Stone	21.55 m³		
		(Earth Work)		
	Slope	1	: 0.5	
		Excavation		
	Area of O/W Separator	1253.27 m ³		
	Side-1	242.57 m ³		
	Side-2	64.13 m ³		
	Corner	1376.59 m ³		
	Total Volume	2936.57 m³		
		Backfilling		
	Oil Separator	616.25 m ³		
	Manhole	11.26 m ³		
	Total Volume	2309.05 m³		
		(Manhole)		
		Concrete Work		
	Concrete Volume for Manhole	7.09104 m ³ /no.		
	Number of Manhole	3 Nos.		
	(A) Total Concrete Volume	21.27512 m³		
		Form Work		
	Area of Form (Outside)	4.80 m ²		
	Area of Form (Inside)	9.3024 m ²		
	Number of Manhole	3		
	Total Area of Form	42.3072 m²		

References/

	Prepared by	Checked by	
	H. Iru	S. Endo	9 Aug, 02

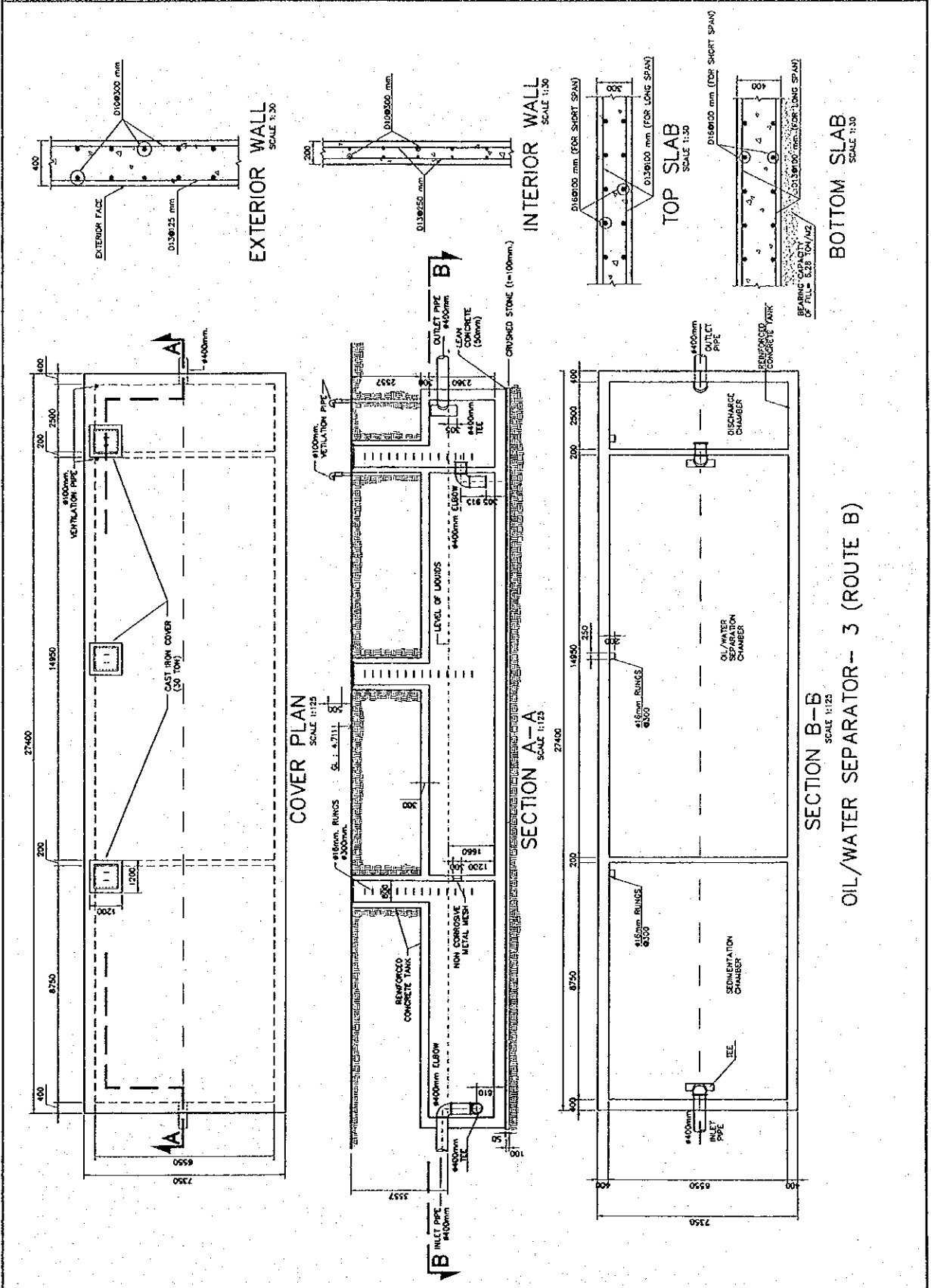
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/Water Separator-3 (Route-B)	Page No.	3/4 Rev.

(Oil Separator)					References/
Concrete Work					
Deducted Concrete Volume by Pipe and Othes					
Diameter of Pipe	300	mm			
Number of Pipe	3	Nos			
Height of Non Corrosive	0.61	m			
Width of Non Corrosive	0.25	m			
Deducted Concrete Volume by Pipe	0.071	m ³			
Deducted Concrete Volume by Non Corrosive	0.031	m ³			
Deducted Concrete Volume by Manhole	0.576	m ³			
(B) Total Deducted Concrete Volume	0.677	m ³			
Concrete Volume of O/W Separator					
Concrete Volume (Bottom)	89.556	m ³			
Concrete Volume (Side-1)	16.968	m ³			
Concrete Volume (Side-2)	50.221	m ³			
Concrete Volume (Upper)	60.417	m ³			
(C) Total Concrete Volume	208.162				
(C)-(D)	207.485				
Reinforcement Bar					
D10	2584.480	m	0.56	1.447	
D13	9822.580	m	0.995	9.773	
D16	8055.600	m	1.56	12.567	
				23.79	Ton
Form Work					
Deducted Form					
Deducted Form by Pipe	0.424	m ²			
Deducted Concrete Volume by Non Corrosive	0.305	m ²			
Deducted Concrete Volume by Manhole	1.920	m ²			
(D) Total Deducted Form	2.649	m ²			
Form (Outside-1)	44.98	m ²			
Form (Outside-2)	167.69	m ²			
Form (Bottom)	201.39	m ²			
Form, Room-1 (Inside-1)	30.92	m ²			
Form, Room-1 (Inside-2)	41.30	m ²			
Form, Room-2 (Inside-1)	30.92	m ²			
Form, Room-2 (Inside-2)	70.56	m ²			
Form, Room-3 (Inside-1)	30.92	m ²			
Form, Room-3 (Inside-2)	11.8	m ²			
Form, Room-1 (Upper)	57.31	m ²			
Form, Room-2 (Upper)	97.92	m ²			
Form, Room-3 (Upper)	16.38	m ²			
(E) Total Form	802.08	m ²			
(E)-(D)	799.43	m ²			
Summary of Quantity					
Excavation	2936.57	m ³			
Backfilling	2309.05	m ³			
Concrete Volume	228.76	m ³		60	
Form	841.74	m ²			
Lean Concrete Volume	10.07	m ³			
Crushed Stone	21.55	m ³			
Reinforcement Bar	23.79	Ton			
Cast Iron Cover	3	Nos			
Ring for Cover	10.8	m			
Non Corrosive Metal Mesh (610 x 250mm)	1	No			
Steps (D16), 0.75m	45	Nos			
Ventilation Pipe φ100 x 2m	2	Nos			

Prepared by	H. Iruka	02/08/09	Checked by	S. Ende	9 Aug, 02
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Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File No.	
Section:	UTILITY WORK	Calc. Index No.	
Subject:	OIL/WATER SEPARATOR-3 (Route-B)	Page No.	4/4



SECTION B-B
SCALE 1:125
OIL/WATER SEPARATOR-3 (ROUTE B)

Prepared by	H. Iwata	02/08/09	Checked by	S. Fujita	9 Aug, 09
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QUANTITY CALCULATION COVER SHEET								
Project	Detailed Design on Port Reactivation Project in La Union Province			Project Code	JC1N004/2N001			
Work Section Title	Wastewater System			Pay Item No. (BOQ)	4C0404			
Quantity Item	Oil /Water Separator-4			Unit	No.			
Calculation Procedure Applied								
<p>Concrete volume was computed with two decimal for section sectional area and zero decimal for total.</p> <p>The length of reinforcement-bar was computed summarizing all distance of bar.</p> <p>Lean concrete and crushed stone was computed multiplying the area to the thickness of them.</p> <p>Area of form was computed using geometric formula.</p>								
References, Calculation Base and Revisions								
<p>Drawing N° UT-01-007</p>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iruga	02/08/09	4	P. Endo	9 Aug, 02	W. S. S.	10 Aug 02	
1	<i>[Signature]</i>							
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.
Section	UTILITY WORK	Calc. Index No.
Subject	Oil/Water Separator-4 (Route-C)	Page No. 2/4 Rev.

(Dimension of Oil/Water Separator)				
Longitudinal		m		
<i>Input Data</i>	Thickness of Wall (Out-1)	0.4		
	Length of Room 1	9.15		
	Thickness of Wall (In-1)	0.2		
	Length of Room 2	15.75		
	Thickness of Wall (In-2)	0.2		
	Length of Room 3	2.5		
	Thickness of Wall (Out-2)	0.4		
Side				
	Thickness of Wall (Out-1)	0.4		
	Length of Room	6.25		
	Thickness of Wall (Out-2)	0.4		
Vertical				
	Thickness of Bottom	0.4		
	Depth of Room	2.36		
	Thickness of Upper	0.3		
(Dimension of Manhole)				
<i>Input Data</i>	Width	0.8		
	Thickness of Wall	0.2		
	Height of Manhole	2.453		
		B (m)	L (m)	Area (m ²)
	Area of Bottom	7.65	28.6	218.79
	Thickness of Lean Concrete	0.05 m		
	Thickness of Crushed Stone	0.1 m		
	Volume of Lean Concrete	10.94	m ³	
	Area of Crushed Stone	233.45	m ²	0.2 m
	Volume of Crushed Stone	23.35	m ³	
(Earth Work)				
	Slope	1	0.5	
<i>Excavation</i>				
	Area of O/W Separator	1322.03	m ²	
	Side-1	246.34	m ²	
	Side-2	64.98	m ²	
	Corner	1437.12	m ²	
	Total Volume	3070.47	m ³	
<i>Backfilling</i>				
	Oil Separator	669.50	m ³	
	Manhole	10.60	m ³	
	Total Volume	2390.37	m ³	
(Manhole)				
<i>Concrete Work</i>				
	Concrete Volume for Manhole	6.67216	m ³ /no.	
	Number of Manhole	3	Nos.	
	(A) Total Concrete Volume	20.01648	m ³	
<i>Form Work</i>				
	Area of Form (Outside)	4.80	m ²	
	Area of Form (Inside)	8.8096	m ²	
	Number of Manhole	3		
	Total Area of Form	40.8288	m ²	

References/

Prepared by	Checked by
A. Irola	P. Endo
02/09/09	9 pages

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/Water Separator-4 (Route-C)	Page No.	3/4 Rev.

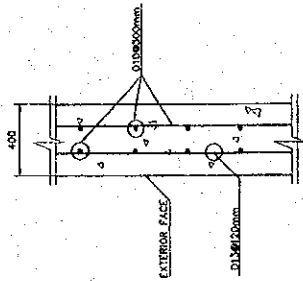
(Oil Separator)			
<i>Concrete Work</i>			
- Deducted Concrete Volume by Pipe and Othes			
Diameter of Pipe	300	mm	
Number of Pipe	3	Nos.	
Height of Non Corrosive	0.61	m	
Width of Non Corrosive	0.25	m	
Deducted Concrete Volume by Pipe	0.071	m ³	
Deducted Concrete Volume by Non Corrosive	0.031	m ³	
Deducted Concrete Volume by Manhole	0.576	m ³	
(B) Total Deducted Concrete Volume	0.677	m³	
- Concrete Volum of O/W Separator			
Concrete Volume (Bottom)	87.516	m ³	
Concrete Volume (Side-1)	17.676	m ³	
Concrete Volume (Side-2)	52.486	m ³	
Concrete Volume (Upper)	65.637	m ³	
(C) Total Concrete Volume	223.316		
(C)-(D)	222.639		
<i>Reinforcement Bar</i>			
D10	2680.000	m	0.56 1.501
D13	10575.600	m	0.995 10.523
D16	9845.550	m	1.56 15.359
			27.38 Ton
<i>Form Work</i>			
- Deducted Form			
Deducted Form by Pipe	0.424	m ²	
Deducted Concrete Volume by Non Corrosive	0.305	m ²	
Deducted Concrete Volume by Manhole	1.920	m ²	
(D) Total Deducted Form	2.649	m²	
Form (Outside-1)	46.82	m ²	
Form (Outside-2)	175.03	m ²	
Form (Bottom)	218.79	m ²	
Form, Room-1 (Inside-1)	32.33	m ²	
Form, Room-1 (Inside-2)	43.19	m ²	
Form, Room-2 (Inside-1)	32.33	m ²	
Form, Room-2 (Inside-2)	74.34	m ²	
Form, Room-3 (Inside-1)	32.33	m ²	
Form, Room-3 (Inside-2)	11.8	m ²	
Form, Room-1 (Upper)	62.68	m ²	
Form, Room-2 (Upper)	107.89	m ²	
Form, Room-3 (Upper)	17.13	m ²	
(E) Total Form	854.65	m²	
(E)-(D)	852.01	m²	
Summary of Quantity			
Excavation	3070.47	m ³	
Backfilling	2390.37	m ³	
Concrete Volume	242.66	m ³	69
Form	892.83	m ²	
Lean Concrete Volume	10.94	m ³	
Crushed Stone	23.35	m ³	
Reinforcement Bar	27.38	Ton	
Cast Iron Cover	3	Nos	
Ring for Cover	10.8	m	
Non Corrosive Metal Mesh (610 x 250mm)	1	No	
Steps (D16), 0.75m	43	Nos	
Ventilation Pipe φ100 x 2m	2	Nos	

References/

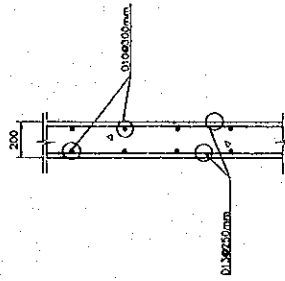
	Prepared by	Checked by	
	H. Iruw	S. Ende	9 Aug 02



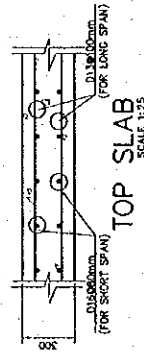
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	OIL/WATER SEPARATOR-4 (Route-C)	Page N°	4/4



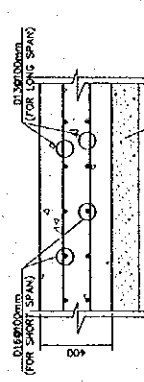
EXTERIOR WALL
SCALE 1:25



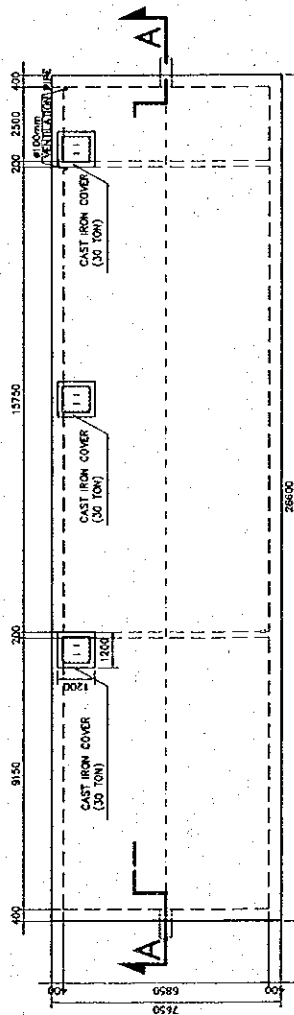
INTERIOR WALL
SCALE 1:25



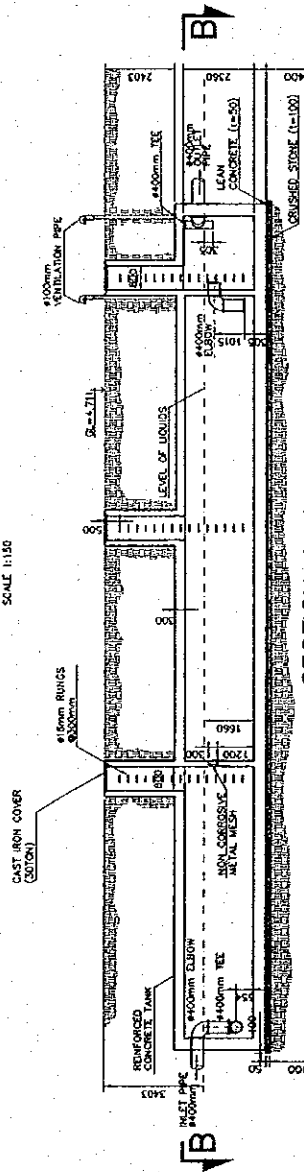
TOP SLAB
SCALE 1:25



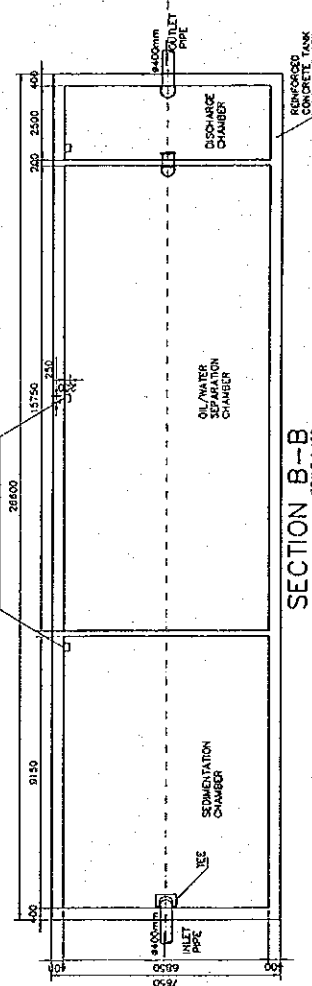
BOTTOM SLAB
SCALE 1:25



COVER PLAN
SCALE 1:100



SECTION A-A
SCALE 1:150



SECTION B-B
SCALE 1:150

OIL/WATER SEPARATOR-4 (ROUTE-C)

Prepared by	H. Iruka	02/08/09	Checked by	P. Endo	P. Paj, 02/
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QUANTITY CALCULATION COVER SHEET								
Project	Detailed Design on Port Reactivation Project in La Union Province			Project Code	JC1N004/2N001			
Work Section Title	Wastewater System			Pay Item No. (BOQ)	4C0405			
Quantity Item	Oil /Water Separator-5			Unit	No.			
Calculation Procedure Applied								
<p>Concrete volume was computed with two decimal for section sectional area and zero decimal for total.</p> <p>The length of reinforcement-bar was computed summarizing all distance of bar.</p> <p>Lean concrete and crushed stone was computed multiplying the area to the thickness of them.</p> <p>Area of form was computed using geometric formula.</p>								
References, Calculation Base and Revisions								
<p>Drawing N° UT-01-008</p>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	A. Iroh	02/09/09	4	S. Endo	9 Aug 02	ST	10 Aug 02	
1	<i>[Signature]</i>							
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/Water Separator-5 (Route-D)	Page No.	2/4 Rev.

(Dimension of Oil/Water Separator)				
Longitudinal				
<i>Input Data</i>	Thickness of Wall (Out-1)	m		
	Length of Room 1	8.75		
	Thickness of Wall (In-1)	0.2		
	Length of Room 2	14.95		
	Thickness of Wall (In-2)	0.2		
	Length of Room 3	2.5		
	Thickness of Wall (Out-2)	0.4		
Side				
	Thickness of Wall (Out-1)	0.4		
	Length of Room	6.55		
	Thickness of Wall (Out-2)	0.4		
Vertical				
	Thickness of Bottom	0.4		
	Depth of Room	2.36		
	Thickness of Upper	0.3		
(Dimension of Manhole)				
<i>Input Data</i>	Width	0.8		
	Thickness of Wall	0.2		
	Height of Manhole	2.067		
		B (m)	L (m)	Area (m ²)
	Area of Bottom	7.35	27.4	201.39
	Thickness of Lean Concrete	0.05 m		
	Thickness of Crushed Stone	0.1 m		
	Volume of Lean Concrete	10.07 m³		
	Area of Crushed Stone	215.45 m ²	0.2 m	
	Volume of Crushed Stone	21.55 m³		
(Earth Work)				
	Slope	1	0.5	
	<i>Excavation</i>			
	Area of O/W Separator	1136.93 m ³		
	Side-1	220.05 m ³		
	Side-2	58.18 m ³		
	Corner	1167.52 m ³		
	Total Volume	2582.68 m³		
	<i>Backfilling</i>			
	Oil Separator	616.25 m ³		
	Manhole	8.93 m ³		
	Total Volume	1957.50 m³		
(Manhole)				
	<i>Concrete Work</i>			
	Concrete Volume for Manhole	5.62224 m ³ /no.		
	Number of Manhole	3 Nos.		
	(A) Total Concrete Volume	16.86672 m³		
	<i>Form Work</i>			
	Area of Form (Outside)	4.80 m ²		
	Area of Form (Inside)	7.5744 m ²		
	Number of Manhole	3		
	Total Area of Form	37.1232 m²		

References/

	Prepared by	Checked by	
	H. Iruka	S. Endo	9 Aug 10

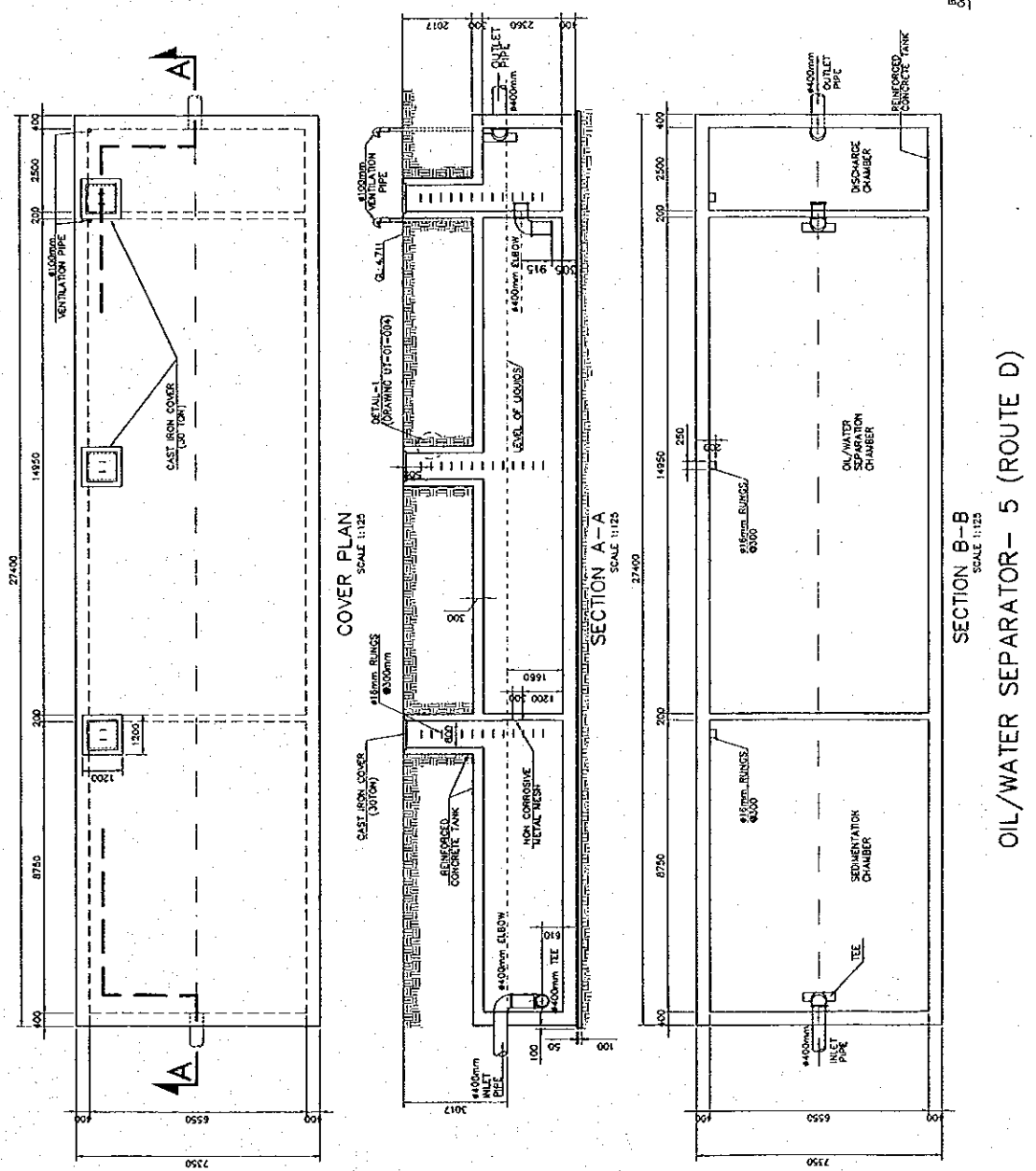
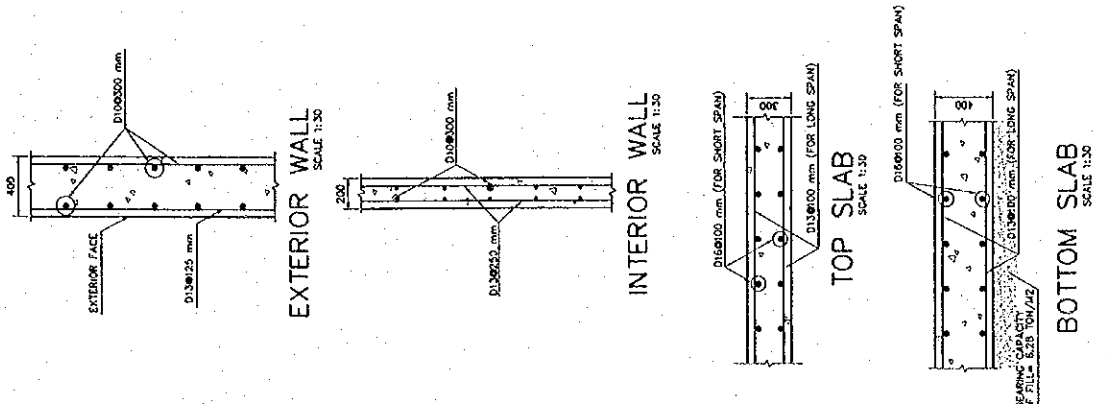
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Oil/Water Separator-5 (Route-D)	Page No.	3/4 Rev.

	References/
(Oil Separator)	
<i>Concrete Work</i>	
- Deducted Concrete Volume by Pipe and Othes	
Diameter of Pipe	300 mm
Number of Pipe	3 Nos.
Height of Non Corrosive	0.61 m
Width of Non Corrosive	0.25 m
Deducted Concrete Volume by Pipe	0.071 m ³
Deducted Concrete Volume by Non Corrosive	0.031 m ³
Deducted Concrete Volume by Manhole	0.576 m ³
(B) Total Deducted Concrete Volume	0.677 m³
- Concrete Volume of O/W Separator	
Concrete Volume (Bottom)	80.556 m ³
Concrete Volume (Side-1)	16.968 m ³
Concrete Volume (Side-2)	50.221 m ³
Concrete Volume (Upper)	60.417 m ³
(C) Total Concrete Volume	208.162
(C)-(D)	207.485
<i>Reinforcement Bar</i>	
D10	2555.680 m 0.56 1.431
D13	9788.020 m 0.995 9.739
D16	8055.600 m 1.56 12.567
	23.74 Ton
<i>Form Work</i>	
- Deducted Form	
Deducted Form by Pipe	0.424 m ²
Deducted Concrete Volume by Non Corrosive	0.305 m ²
Deducted Concrete Volume by Manhole	1.920 m ²
(D) Total Deducted Form	2.649 m²
Form (Outside-1)	44.98 m ²
Form (Outside-2)	167.69 m ²
Form (Bottom)	201.39 m ²
Form, Room-1 (Inside-1)	30.92 m ²
Form, Room-1 (Inside-2)	41.30 m ²
Form, Room-2 (Inside-1)	30.92 m ²
Form, Room-2 (Inside-2)	70.56 m ²
Form, Room-3 (Inside-1)	30.92 m ²
Form, Room-3 (Inside-2)	11.8 m ²
Form, Room-1 (Upper)	57.31 m ²
Form, Room-2 (Upper)	97.92 m ²
Form, Room-3 (Upper)	16.38 m ²
(E) Total Form	802.08 m²
(E)-(D)	799.43 m²
Summary of Quantity	
Excavation	2582.68 m ³
Backfilling	1057.50 m ³
Concrete Volume	224.35 m ³
Form	836.56 m ²
Lean Concrete Volume	10.07 m ³
Crushed Stone	21.55 m ³
Reinforcement Bar	23.74 Ton
Cast Iron Cover	3 Nos
Ring for Cover	10.8 m
Non Corrosive Metal Mesh (610 x 250mm)	1 No
Steps (D16), 0.75m	39 Nos
Ventilation Pipe φ100 x 2m	2 Nos

	Prepared by	Checked by	
	A. Irul	S. Endo	9 Nov, 02



Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File No.	
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Subject	OIL/WATER SEPARATOR-5 (Route-D)	Page No.	4/4



Prepared by	<i>H. Irub</i>	Checked by	<i>S. Endo</i>
	02/03/09		9 Aug, 02