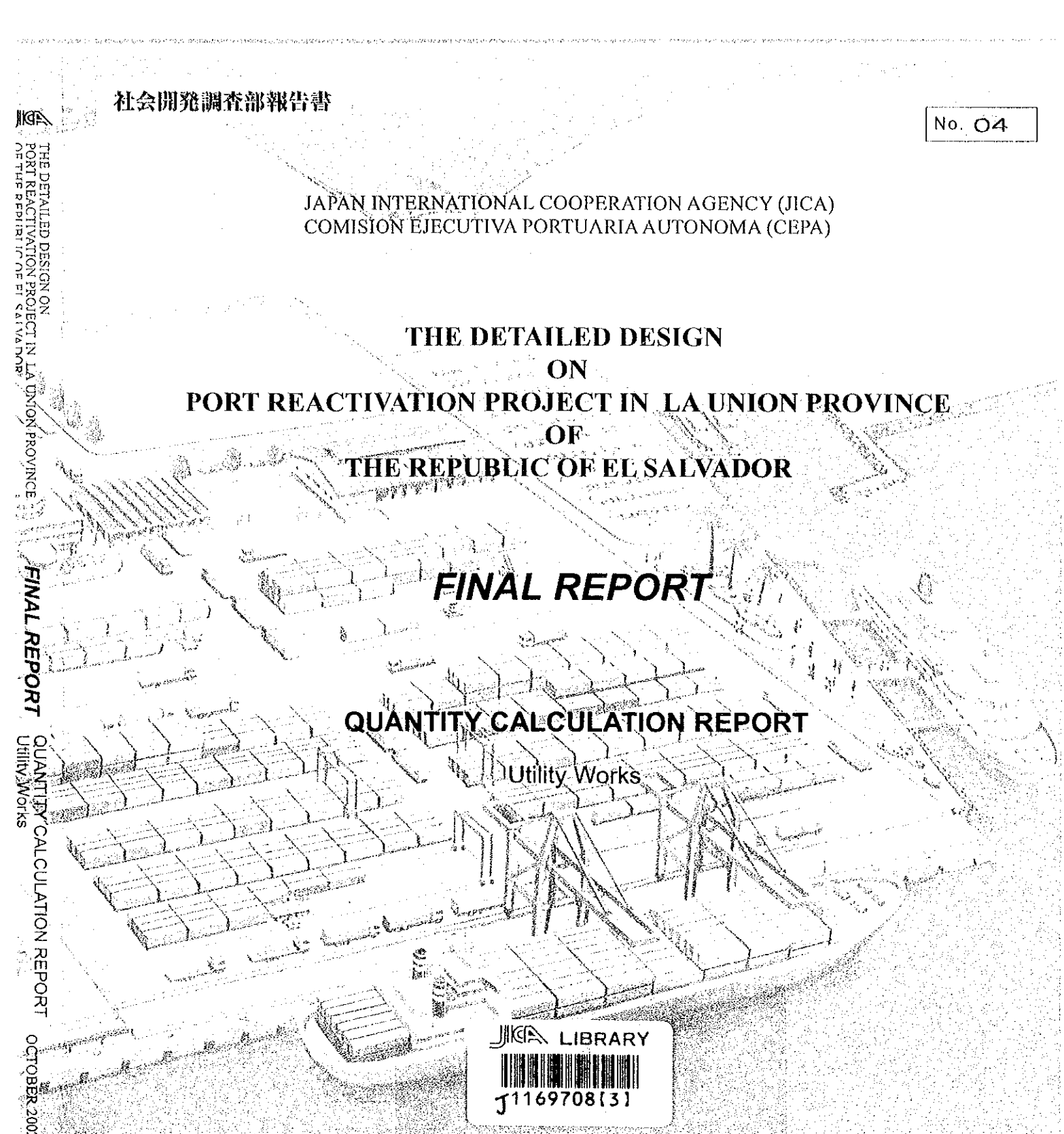
社会開発調査部報告書

No. 04

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

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



FINAL REPORT

QUANTITY CALCULATION REPORT

Utility Works

OCTOBER 2002

NIPPON KOEI CO., LTD.

THE DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR
FINAL REPORT
QUANTITY CALCULATION REPORT
Utility Works
OCTOBER 2002
NIPPON KOEI

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

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

FINAL REPORT

QUANTITY CALCULATION REPORT

Utility Works

OCTOBER 2002

NIPPON KOEI CO., LTD.

WATER SUPPLY SYSTEM

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	**Water Supply System**	**Pay Item No. (BOQ)**	4B01
Quantity Item	**Pipe Work**	**Unit**	m

Calculation Procedure Applied

Quantity Calculation was divided per location of pipes first and then per type of material and diameter of pipe.

The quantity of each type of pipe was established by summarizing the quantity of each type per location.

References, Calculation Base and Revisions

Drawings Nº UT-02-002 to 003
BD-01-068, BD-01-071 to 080
BD-02-030 to 032
BD-03-030 to 033
BD-06-017

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	H. Iruk	02/07/16	22	S. Endo	02/07/16	[illegible]	30 July 02	
1	[illegible]							
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. 2/22	Rev.

References/

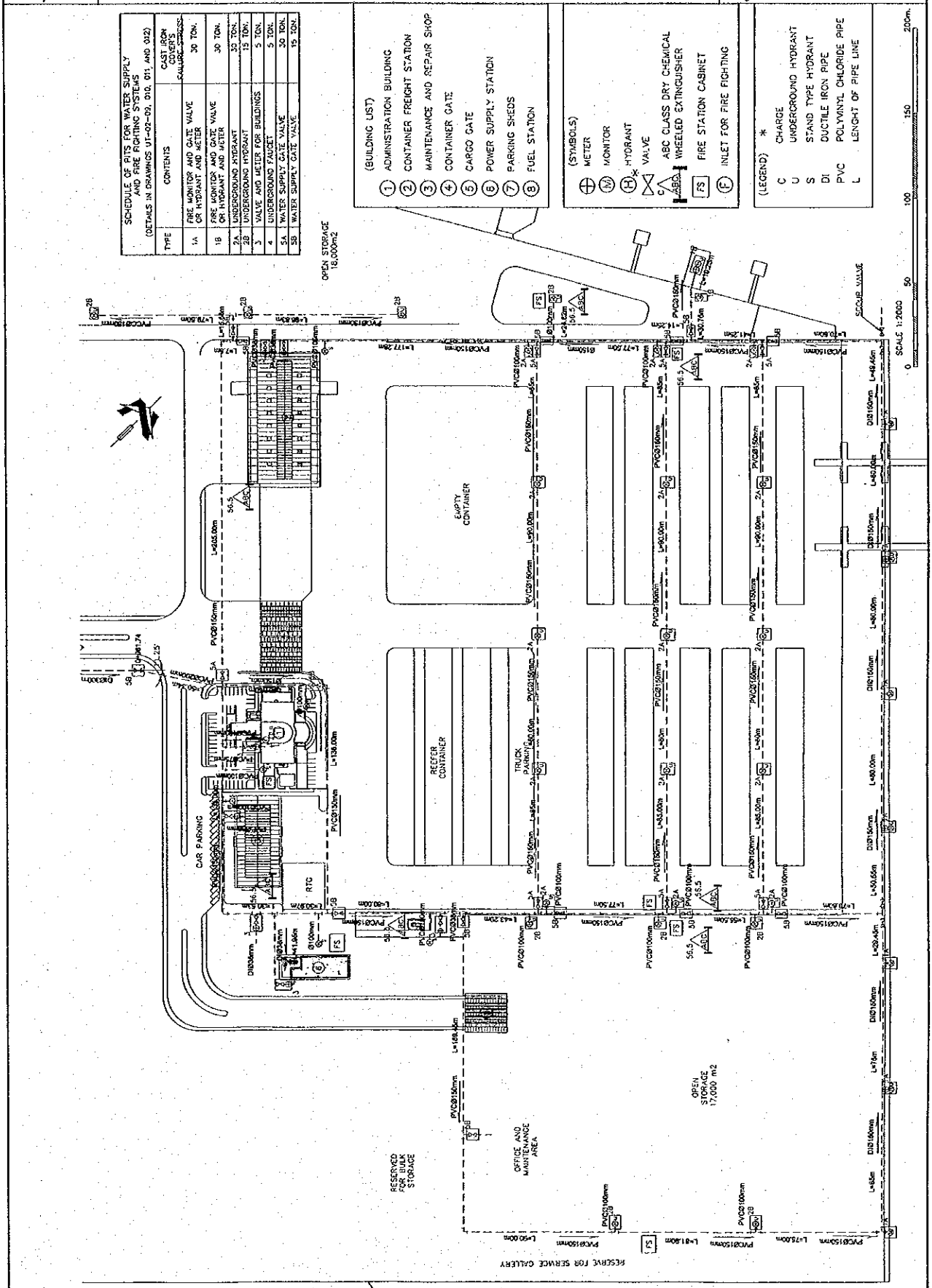
Item	Description	Outdoors Count																									Subtotal
4B01	PIPE WORK																										
4B0101	PVC pipe, diameter 12 mm																										0.00
4B0102	PVC pipe, diameter 18 mm																										0.00
4B0103	PVC pipe, diameter 25 mm																										0.00
4B0104	PVC pipe, diameter 31 mm																										0.00
4B0105	PVC pipe, diameter 38 mm	18.00	53.50	14.00	10.00	5.00																					100.50
4B0106	PVC pipe, diameter 50 mm																										0.00
4B0107	PVC pipe, diameter 75 mm																										0.00
4B0108	PVC pipe, diameter 100 mm	22.30	16.30	15.50	22.70	5.00	11.00	6.00	24.52																		123.42
4B0109	PVC pipe, diameter 150 mm	30.00	91.50	75.00	480.00	270.00	141.20	41.25	30.76	30.25	135.00	177.20	55.50	189.45	43.25	136.20	3.56	79.50	56.03	289.00	15.56	30.37	38.53	135.00	61.50	340.00	2,979.27
4B0110	PVC pipe, diameter 200 mm	50.39																									50.39
4B0111	Galvanized Iron pipe, diameter 63 mm	6.20	24.00																								30.20
4B0112	Galvanized Iron pipe, diameter 75 mm	21.00	5.00																								26.00
4B0113	Ductile Iron pipe, diameter 100 mm	10.50	17.10																								27.60
4B0114	Ductile Iron pipe, diameter 150 mm	529.45	25.50																								554.95
4B0115	Ductile Iron pipe, diameter 300 mm	13.50	55.30	48.00	118.50	289.50	184.50	117.50	276.16																		975.24

Item	Description	Administration Building Count											Subtotal
4B01	PIPE WORK												
4B0101	PVC pipe, diameter 12 mm	32.85	31.60	12.60	3.70	3.70	11.10	36.05	42.75	27.50	12.90	8.45	223.20
4B0102	PVC pipe, diameter 18 mm	5.20	18.70	2.00	24.40	8.90	3.50	4.10					66.80
4B0103	PVC pipe, diameter 25 mm	11.60	11.80	0.50	10.50	4.00	14.90	14.90	7.40	10.00	5.70		91.30
4B0104	PVC pipe, diameter 31 mm	4.00	11.20										15.20
4B0105	PVC pipe, diameter 38 mm	2.70	2.70	2.70	2.00								10.10
4B0106	PVC pipe, diameter 50 mm	1.00	2.50	17.00	1.50	1.50	1.30	16.50	1.80	12.40	1.10		56.60
4B0107	PVC pipe, diameter 75 mm	12.40	22.70	2.50									37.60
4B0108	PVC pipe, diameter 100 mm												0.00
4B0109	PVC pipe, diameter 150 mm												0.00
4B0110	PVC pipe, diameter 200 mm												0.00
4B0111	Galvanized Iron pipe, diameter 63 mm												0.00
4B0112	Galvanized Iron pipe, diameter 75 mm												0.00
4B0113	Ductile Iron pipe, diameter 100 mm												0.00
4B0114	Ductile Iron pipe, diameter 150 mm												0.00
4B0115	Ductile Iron pipe, diameter 300 mm												0.00

Item	Description	CFS Count			CFS Subtotal	M&RS Count			M&RS Subtotal	Power Station Count	Power Station Subtotal	Total
4B01	PIPE WORK											
4B0101	PVC pipe, diameter 12 mm	43.60			43.60	51.00			51.00	5.00	5.00	322.80
4B0102	PVC pipe, diameter 18 mm	10.10	18.00		28.10	16.20	3.30	58.50	78.00	3.00	3.00	175.90
4B0103	PVC pipe, diameter 25 mm	7.30	1.80	130.00	139.10	6.00	170.00		176.00	6.00	6.00	412.40
4B0104	PVC pipe, diameter 31 mm				0.00				0.00		0.00	15.20
4B0105	PVC pipe, diameter 38 mm	8.00			8.00				0.00		0.00	118.60
4B0106	PVC pipe, diameter 50 mm				0.00				0.00		0.00	56.60
4B0107	PVC pipe, diameter 75 mm				0.00				0.00		0.00	37.60
4B0108	PVC pipe, diameter 100 mm				0.00				0.00		0.00	123.42
4B0109	PVC pipe, diameter 150 mm				0.00				0.00		0.00	2,979.27
4B0110	PVC pipe, diameter 200 mm				0.00				0.00		0.00	50.39
4B0111	Galvanized Iron pipe, diameter 63 mm				0.00				0.00		0.00	30.20
4B0112	Galvanized Iron pipe, diameter 75 mm				0.00				0.00		0.00	26.00
4B0113	Ductile Iron pipe, diameter 100 mm				0.00				0.00		0.00	27.60
4B0114	Ductile Iron pipe, diameter 150 mm				0.00				0.00		0.00	554.95
4B0115	Ductile Iron pipe, diameter 300 mm				0.00				0.00		0.00	975.24

Prepared by		Checked by	
H. Iru	02/07/16	S. Endo	02/July/16

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°. 3/22	



		Prepared by		Checked by	
		H. Iruke	02/07/16	S. Endo	16 July/02

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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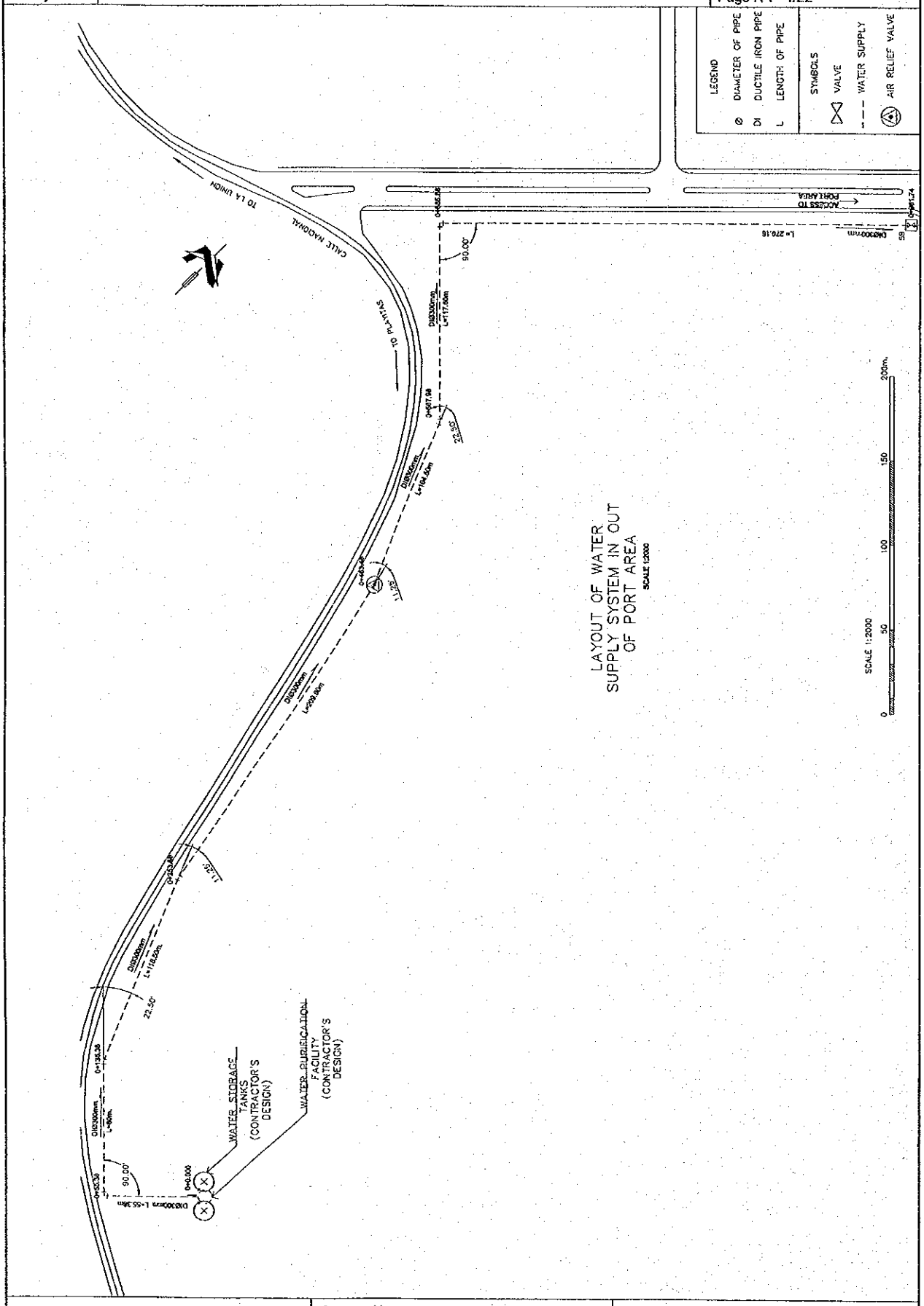

		Prepared by		Checked by	
		H. Iruta	02/07/16	S. Endo	16 July/02

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File Nº.	
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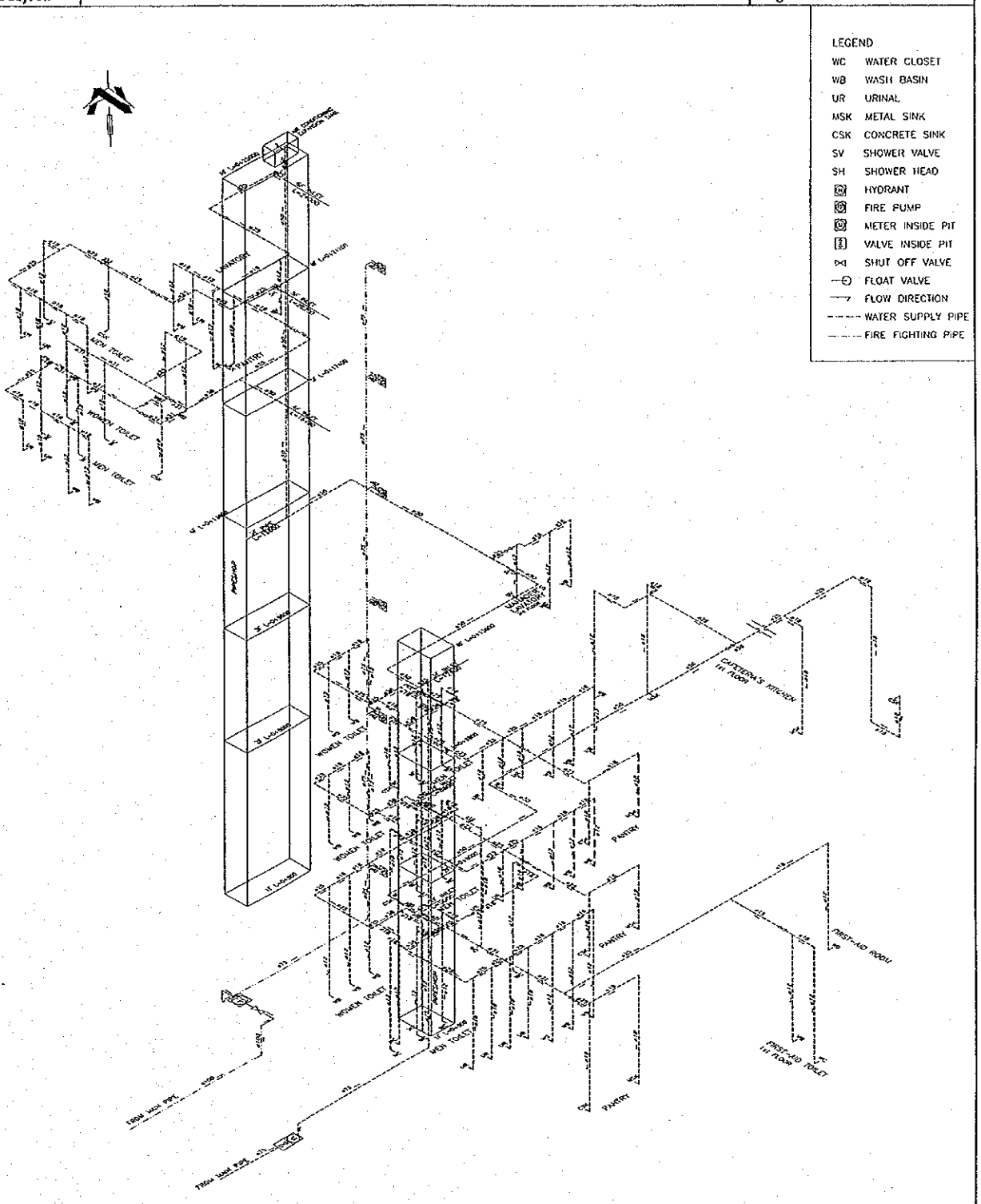

WATER SUPPLY PLUMBING ISOMETRIC

NOT TO SCALE

	Prepared by		Checked by	
	H. Iroh	02/07/16	S. Endo	16 July/02

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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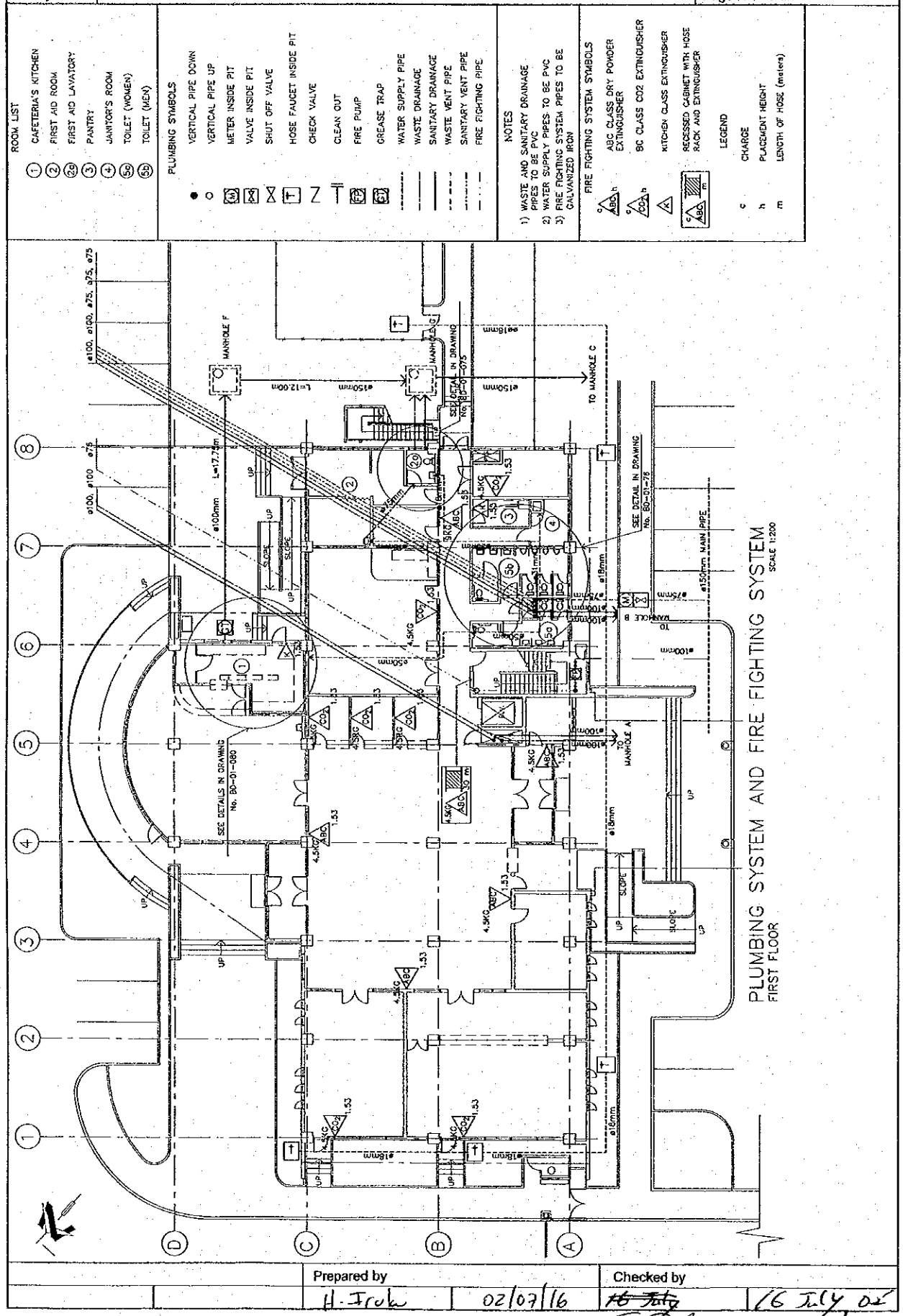
Subject:	PIPE WORK	Page N°.	6/22



	Prepared by		Checked by	
	H. Iruk	02/07/16	~~16 July~~ S. Endo	16 July, 02

Project	Detailed Design on Port Reactivation Project in La Unión Province of the Republic of El Salvador	Calc. File N°.	
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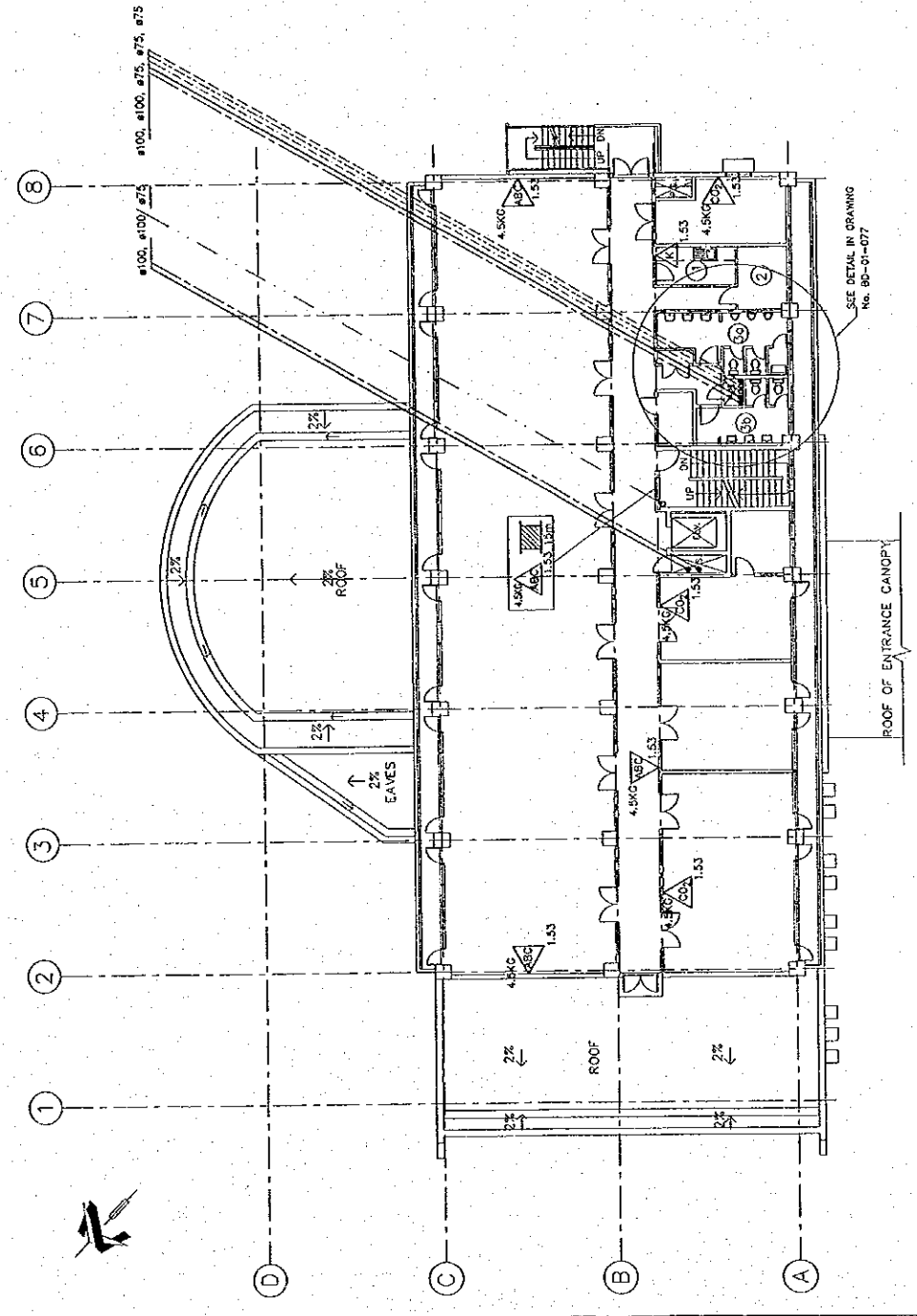
ROOM LIST
① PANTRY
② JANITOR'S ROOM
③ TOILET (MEN)
④ TOILET (WOMEN)
⑤ MANAGER'S LAVATORY

PLUMBING SYMBOLS
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

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

FIRE FIGHTING SYSTEM SYMBOLS
ABC ABC CLASS DRY POWDER EXTINGUISHER
CO2 BC CLASS CO2 EXTINGUISHER
K KITCHEN CLASS EXTINGUISHER
RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND
c CHARGE
h PLACEMENTE HEIGHT
m LENGTH OF HOSE (meters)



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

	Prepared by		Checked by	
	H. Iroha	02/07/16	S. Endo	16 July 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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ROOM LIST

①	PANTRY
②	JANITOR'S ROOM
③a	TOILET (MEN)
③b	TOILET (WOMEN)
④	MANAGER'S LAVATORY

PLUMBING SYMBOLS

- 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

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

FIRE FIGHTING SYSTEM SYMBOLS

- ABC CLASS DRY POWDER EXTINGUISHER
- BC CLASS CO2 EXTINGUISHER
- KITCHEN CLASS EXTINGUISHER
- RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND

- c: CHARGE
- h: PLACEMENTE HEIGHT
- m: LENGTH OF HOSE (meters)

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

	Prepared by		Checked by	
	H. Iro/c	02/07/16	S. Endo	16 July 02

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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ROOM LIST

①	PANTRY
②ⓞ	TOILET (MEN)
②ⓑ	TOILET (WOMEN)

PLUMBING SYMBOLS

- 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

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

FIRE FIGHTING SYSTEM SYMBOLS

- ABC CLASS DRY POWDER EXTINGUISHER
- BC CLASS CO2 EXTINGUISHER
- KITCHEN CLASS EXTINGUISHER
- RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND

- c CHARGE
- h PLACEMENTE HEIGHT
- m LENGTH OF HOSE (meters)

	Prepared by		Checked by	
	H. Irula	02/07/16	S. Endo	16 July, 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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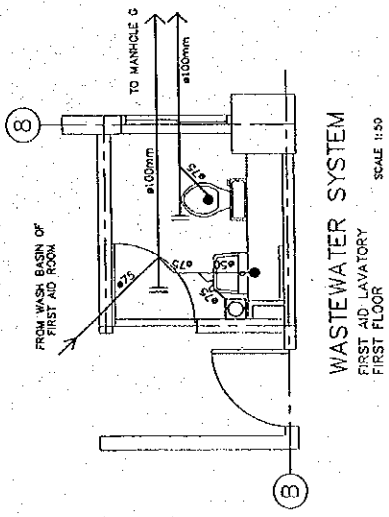
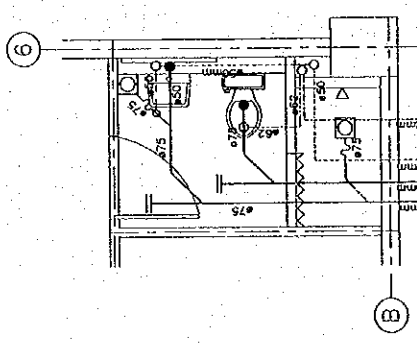
PLUMBING SYMBOLS

- 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
- GREASE 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)

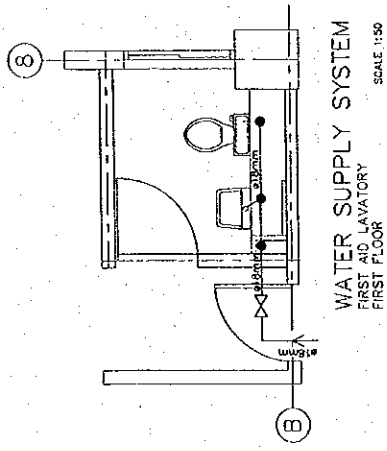
NOTES
1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



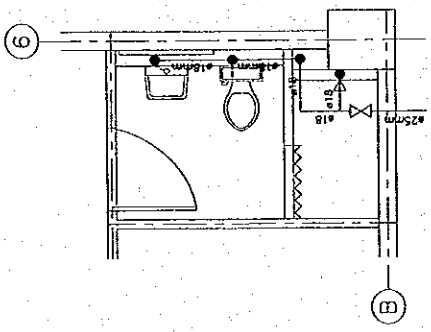
WASTEWATER SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50



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		Checked by	
	H. Iraola	02/07/16	S. Endo	16 July 16

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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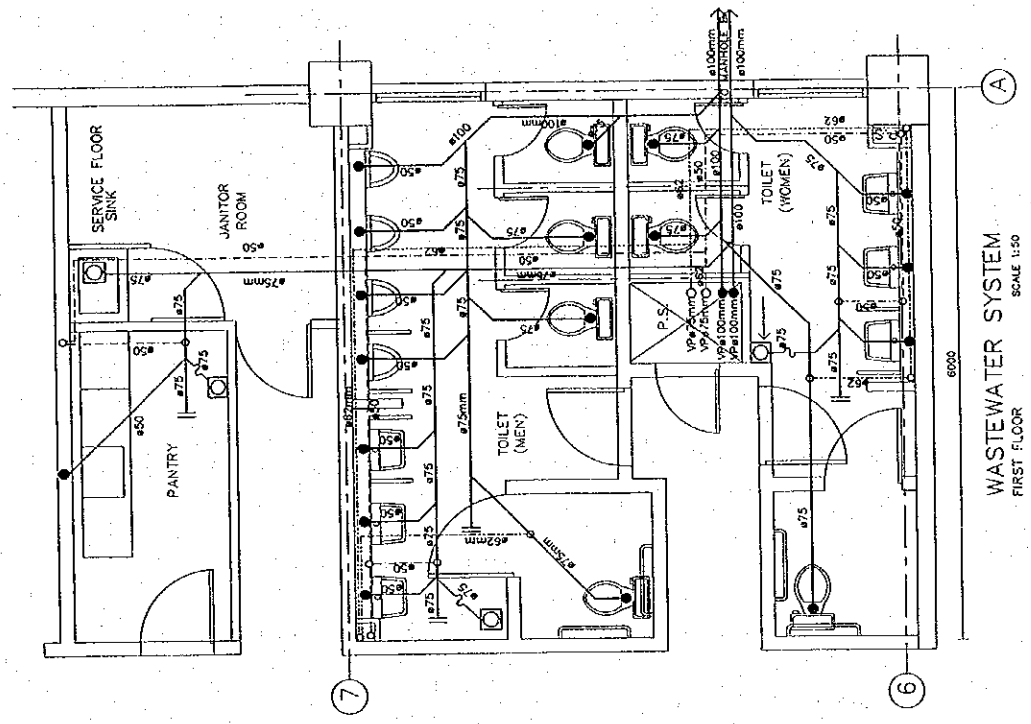
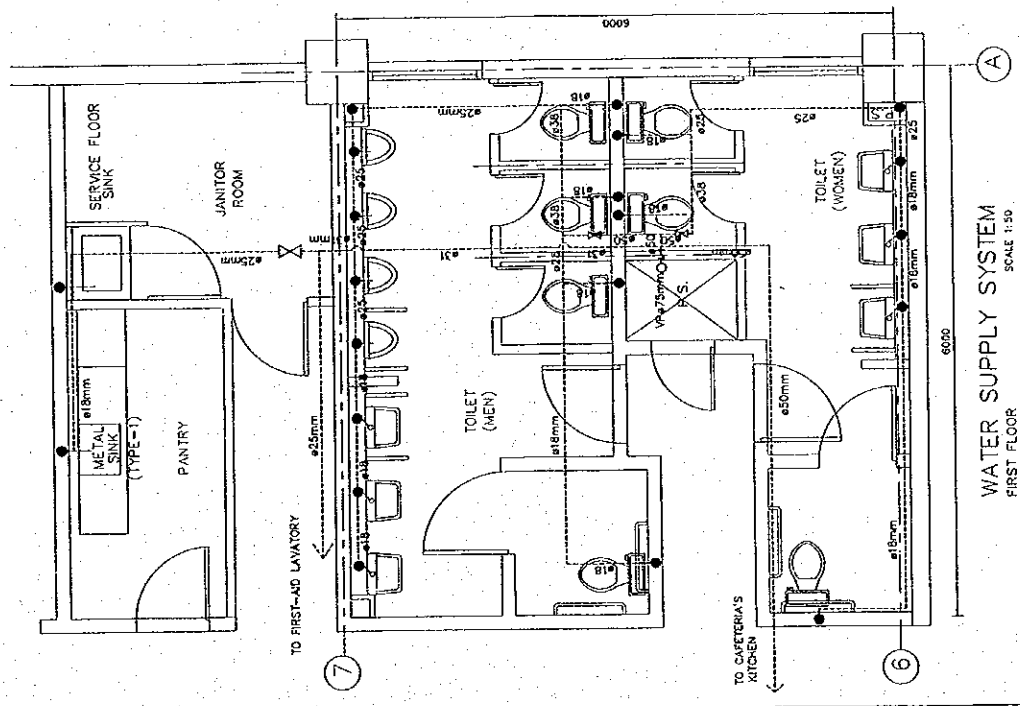
PLUMBING SYMBOLS

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- METER INSIDE PIT
- CHECK VALVE
- SHUT OFF VALVE
- FLOOR/ SHOWER DRAIN
- CLEAN OUT
- 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



WASTEWATER SYSTEM
FIRST FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
FIRST FLOOR
SCALE 1:50

	Prepared by		Checked by	
	H. Iruta	02/07/16	S. Endo	16 July, 16

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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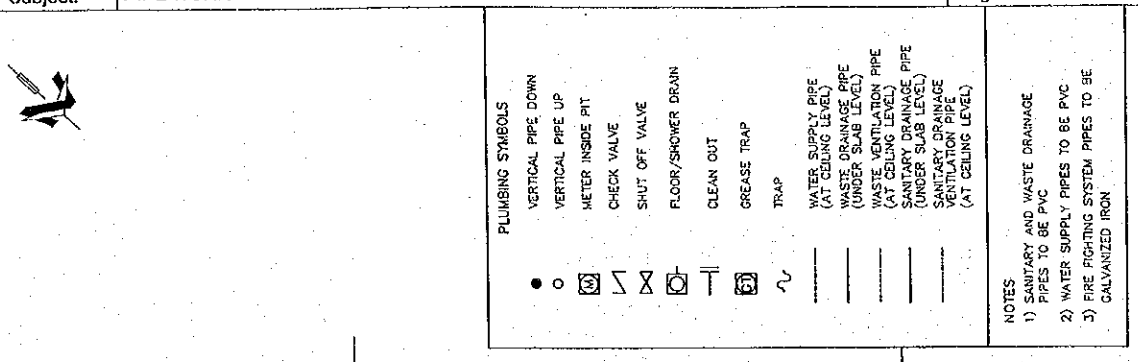

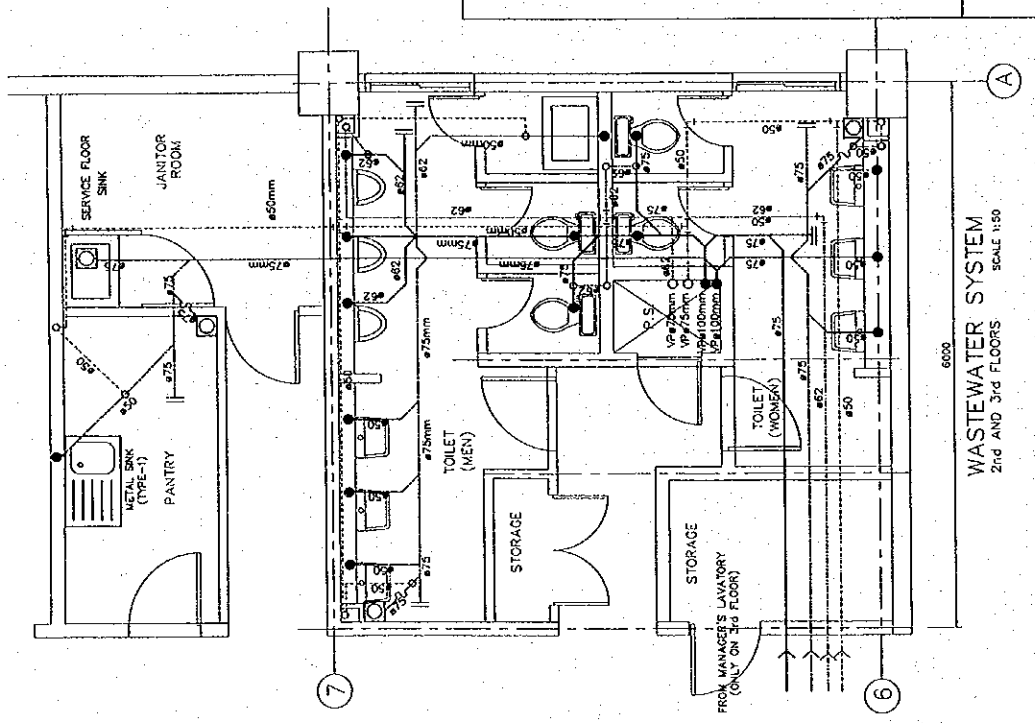

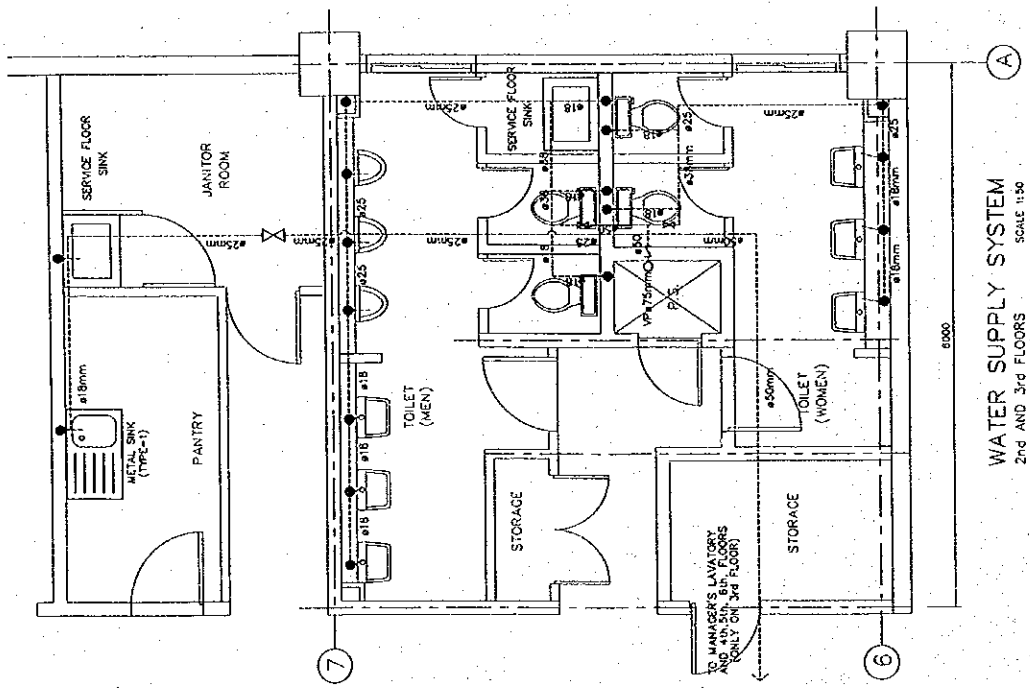

	Prepared by		Checked by	
	H. Iruka	02/07/16	S. Endo	16 July, 02'

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File Nº.	
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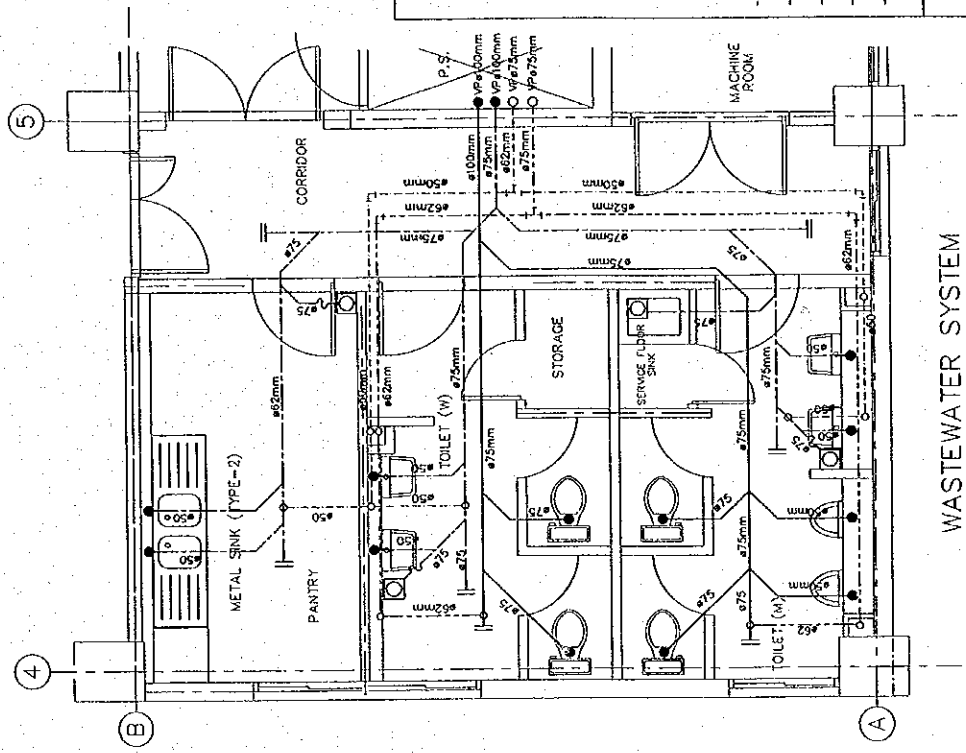
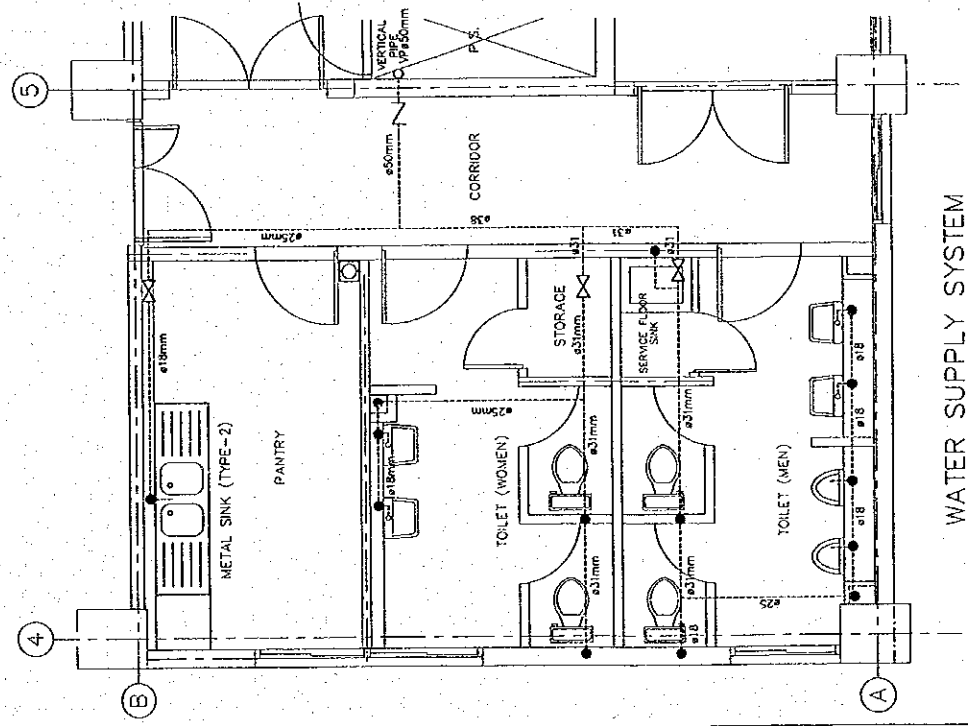
PLUMBING SYMBOLS

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- METER INSIDE PIT
- 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



WASTEWATER SYSTEM
FOURTH FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
FOURTH FLOOR
SCALE 1:50

	Prepared by		Checked by	
	H. Iruta	02/09/16	S. Endo	16 July, 09

Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
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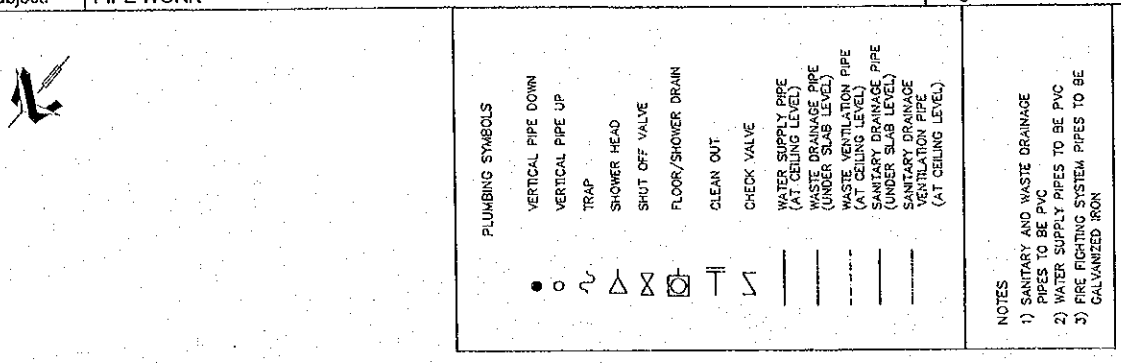
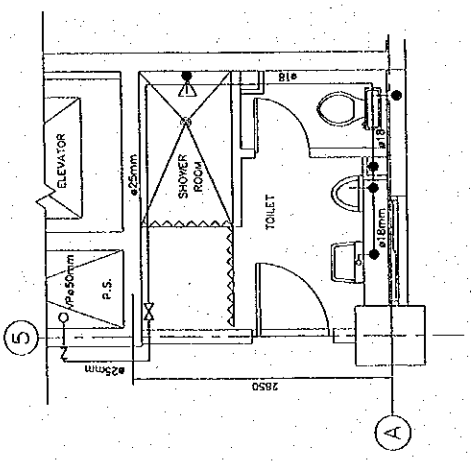
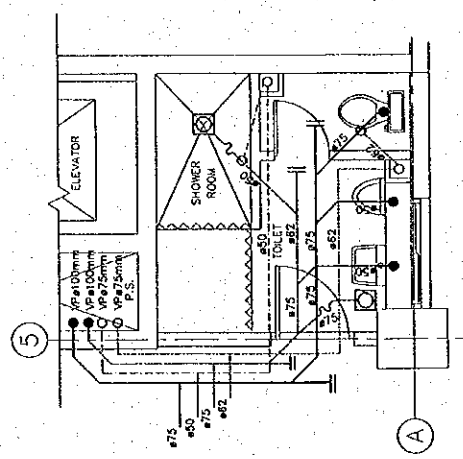
Subject:	PIPE WORK	Page N°. 14/22	

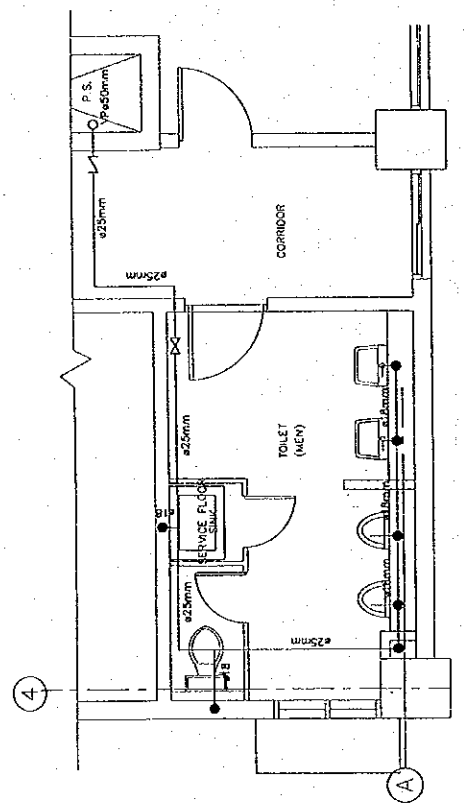




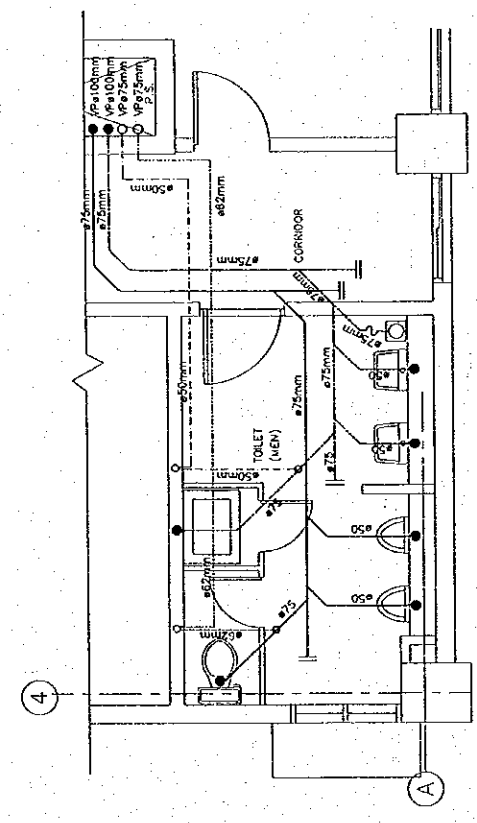
WATER SUPPLY SYSTEM
LAVATORY SIXTH FLOOR SCALE 1:50



WASTEWATER SYSTEM
LAVATORY SIXTH FLOOR SCALE 1:50



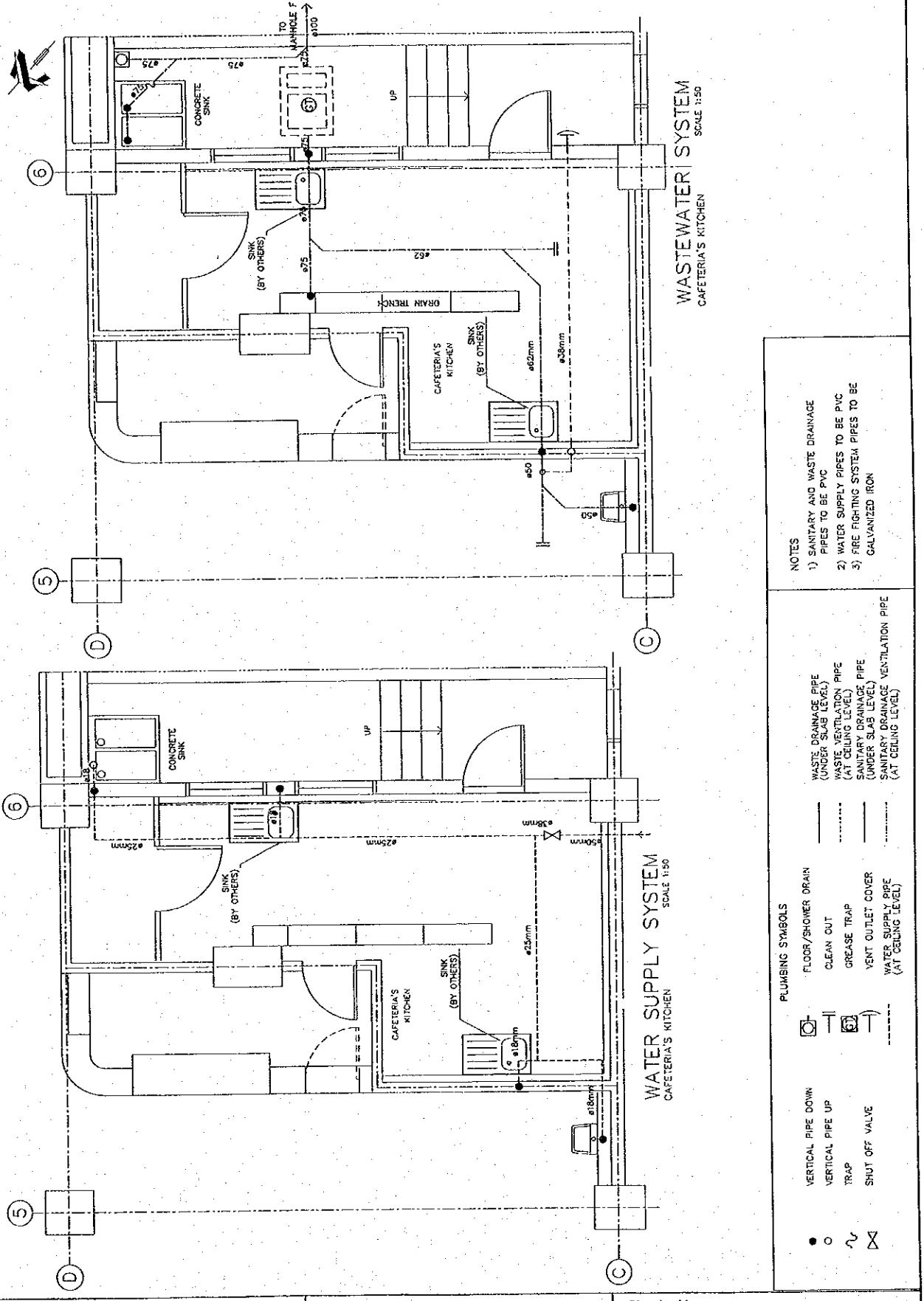
WATER SUPPLY SYSTEM
LAVATORY FIFTH FLOOR SCALE 1:50



WASTEWATER SYSTEM
LAVATORY FIFTH FLOOR SCALE 1:50

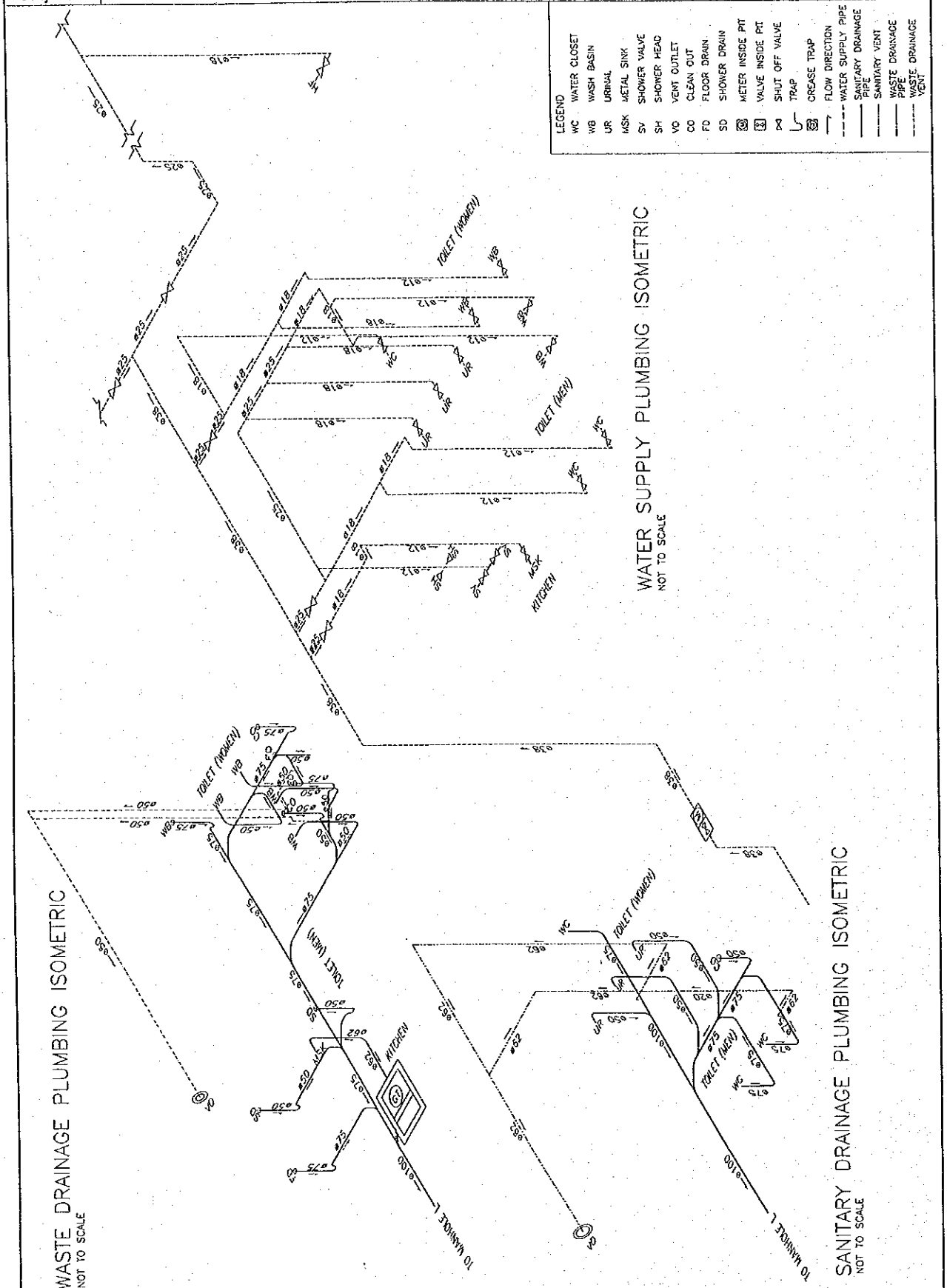
		Prepared by		Checked by	
		H. Irula	02/07/16	S. Endo	16 July 02

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°. 15/22	



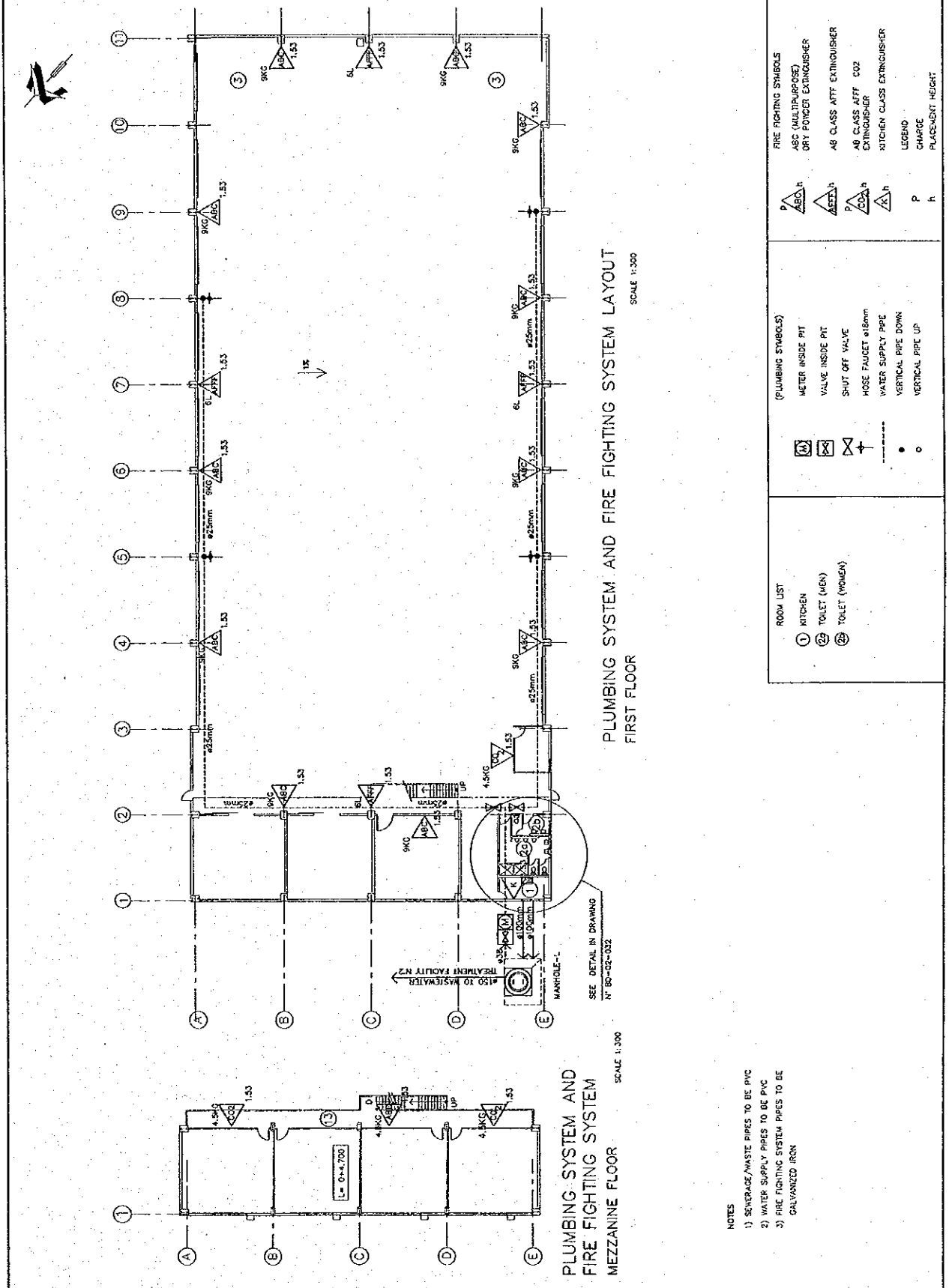
	Prepared by		Checked by	
	H. Ivula	02/07/16	S. Endo	16 July 01

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. 16/22	



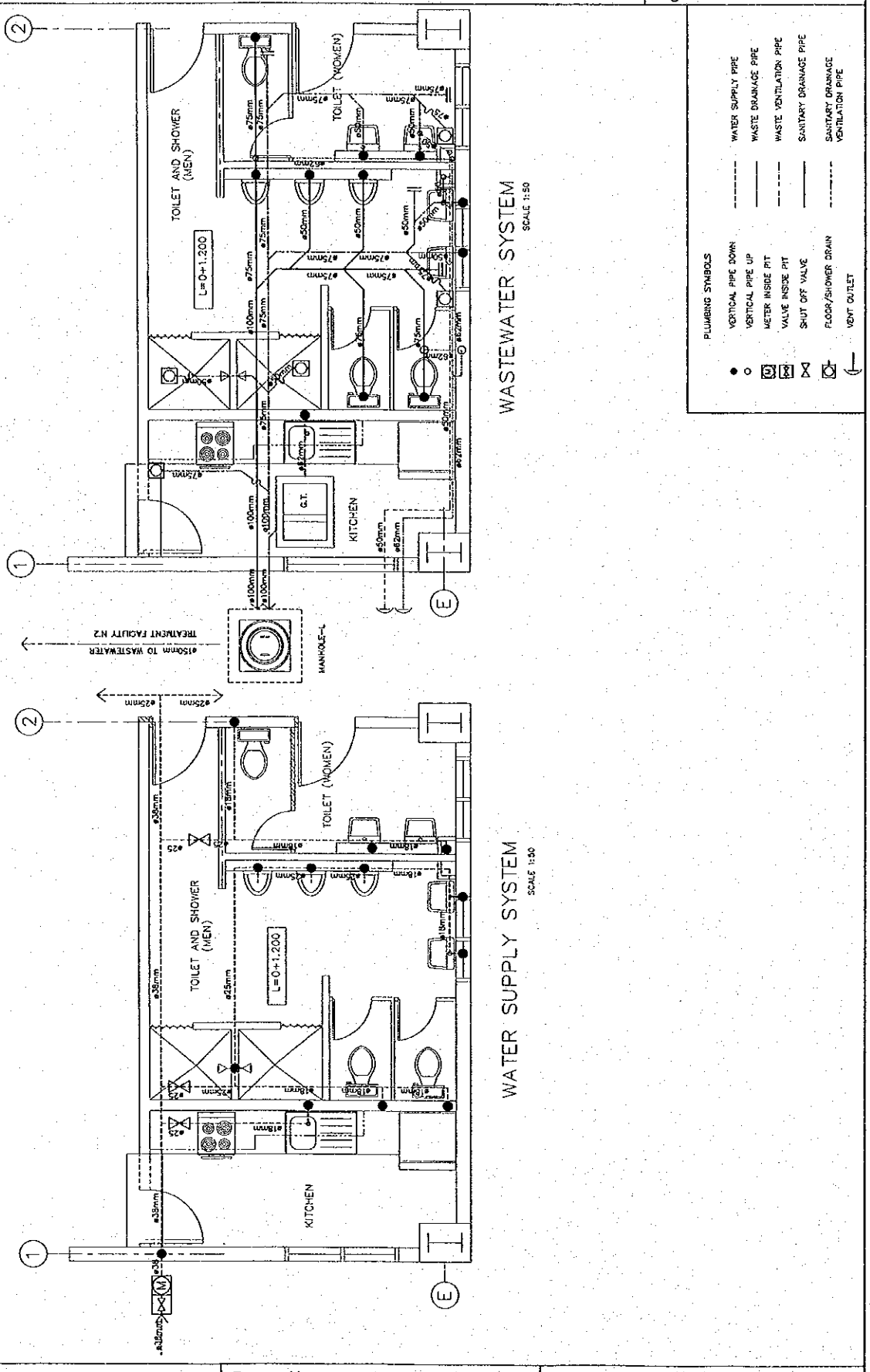
		Prepared by		Checked by	
		H. Iroke	02/07/16	S Endo	16 July, 02

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°. 17/22	



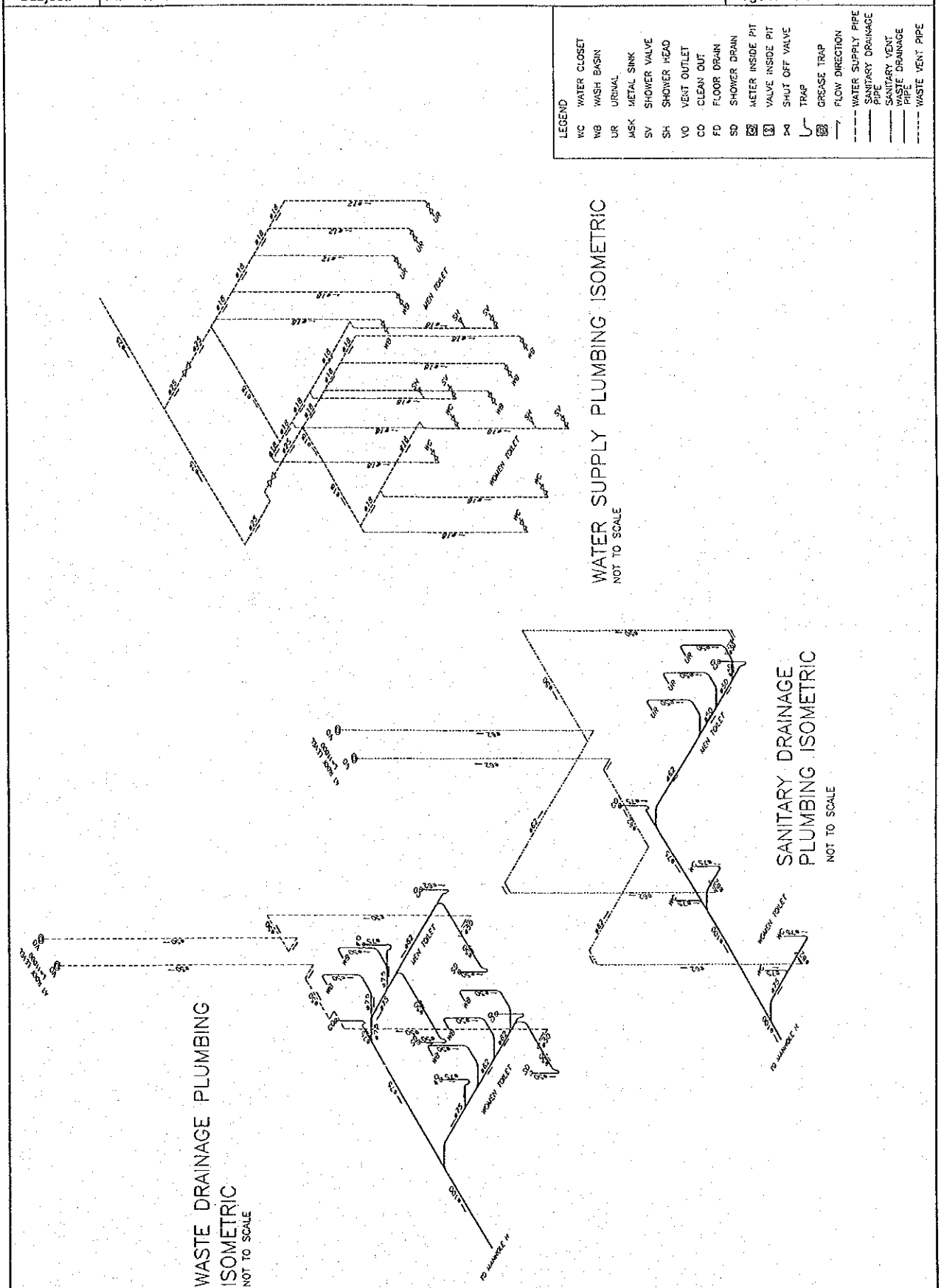
	Prepared by	Checked by
	H. Iruka 02/07/16	S. Endo 16 July, 16

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. 18/22	



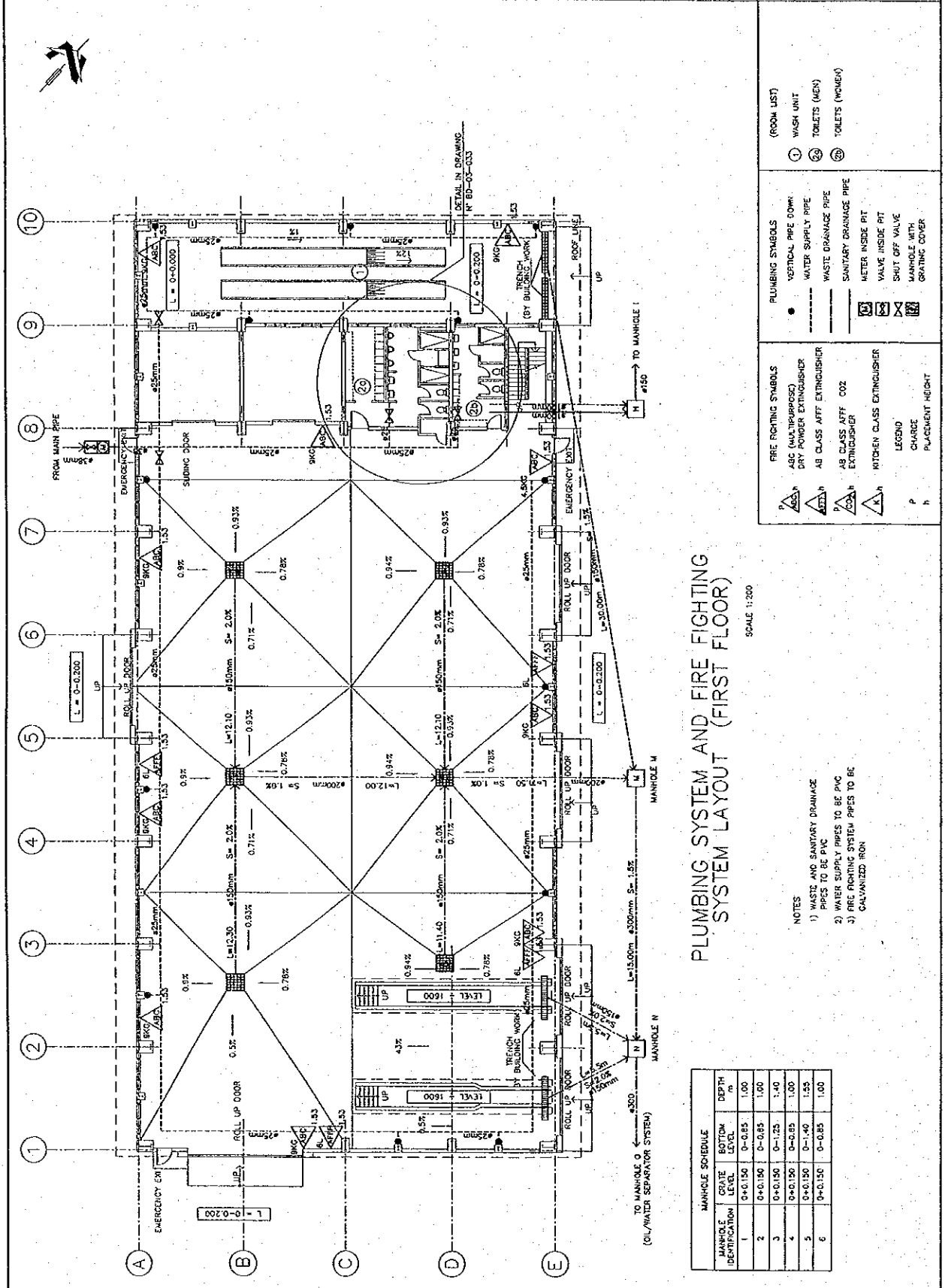
		Prepared by		Checked by	
		H. Iraha	02/07/16	S. Endo	16 July, 03

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°. 19/22	



		Prepared by		Checked by	
		H. Iruta	02/07/16	S. Endo	16 July, 02

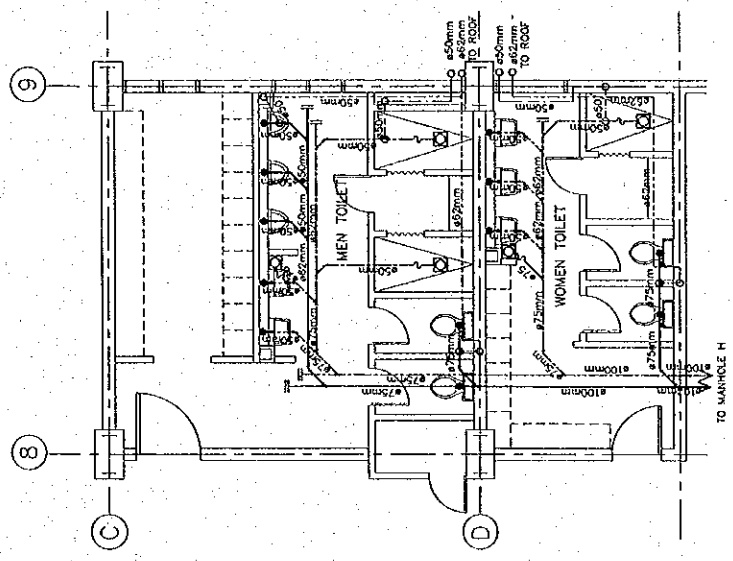
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°. 20/22	



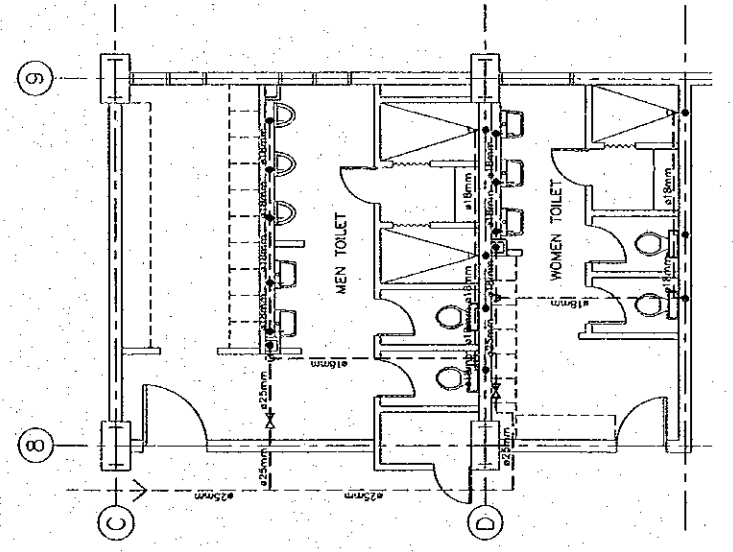
MANHOLE SCHEDULE			
MANHOLE IDENTIFICATION	CRATE LEVEL	BOTTOM LEVEL	DEPTH m
1	0+0.150	0-0.85	1.00
2	0+0.150	0-0.85	1.00
3	0+0.150	0-1.25	1.40
4	0+0.150	0-0.85	1.00
5	0+0.150	0-1.40	1.55
6	0+0.150	0-0.85	1.00

		Prepared by		Checked by	
		H. Iruta	02/07/16	S. Endo	16 July, 02

Project	Detailed Design on Port Reactivation Project in La Unión Province of the Republic of El Salvador	Calc. File Nº.	
Section:	UTILITY WORK	Calc. Index Nº.	
Subject:	PIPE WORK	Page Nº. 21/22	



WASTEWATER PLUMBING SYSTEM
ESC. 1:75



WATER SUPPLY PLUMBING SYSTEM
ESC. 1:75

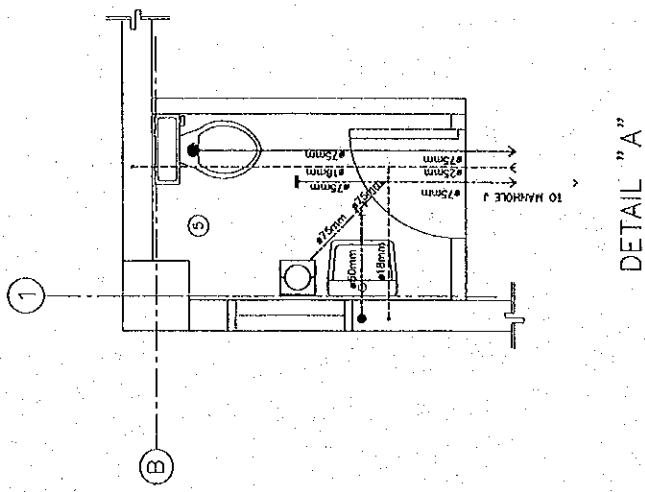
PLUMBING SYMBOLS

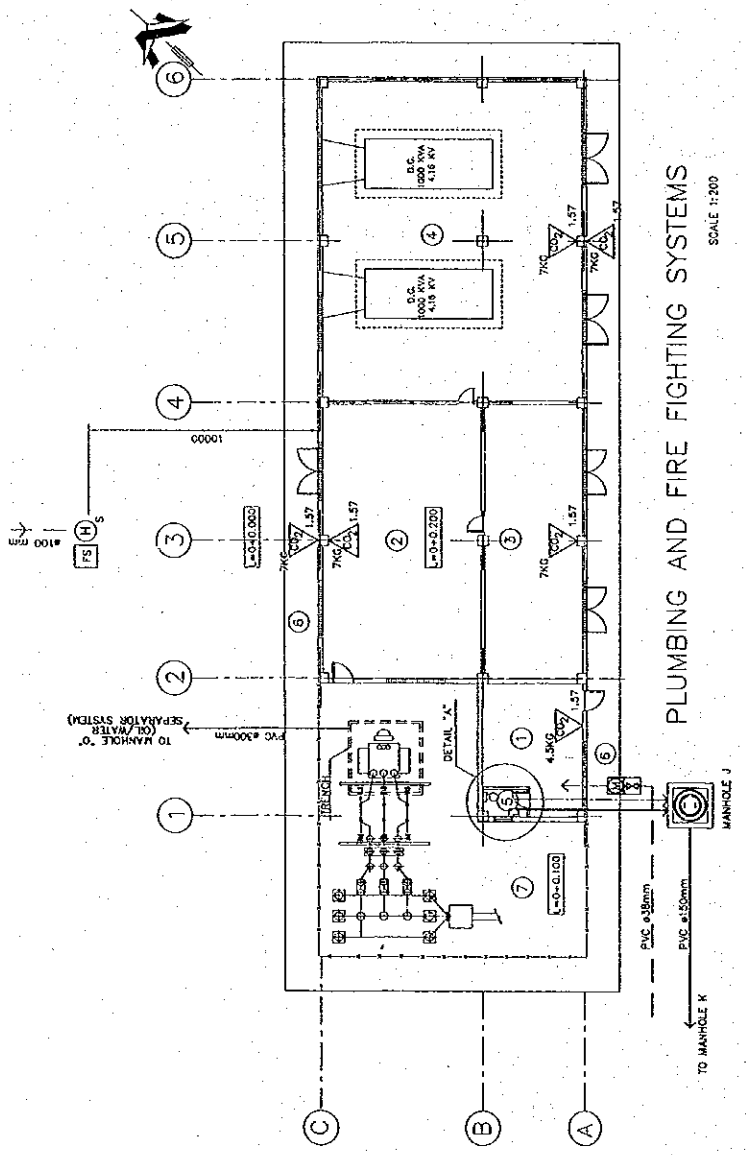
- VERTICAL PIPE DOWN — WATER SUPPLY PIPE
- VERTICAL PIPE UP — WASTE DRAINAGE PIPE
- METER INSIDE PIT — WASTE VENTILATION PIPE (IN UNDERGROUND PIT)
- VALVE INSIDE PIT — SANITARY DRAINAGE PIPE
- SHUT OFF VALVE — SANITARY VENTILATION PIPE
- FLOOR DRAIN

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		Checked by	
	H. Iida	02/07/16	S. Endo	16 July, 02

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. 22/22	





(ROOM LIST)
1. OFFICE ROOM
2. SWITCHGEAR ROOM
3. TRANSFORMER ROOM
4. GENERATOR ROOM
5. TOILET
6. SIDEWALK
7. TRANSFORMER YARD

FIRE FIGHTING SYMBOLS
- AB CLASS CO2 EXTINGUISHER
- FIRE HYDRANT STAND TYPE
- FIRE STATION CABINET

LEGEND
- P: WEIGHT IN KGS
- h: PLACEMENT HEIGHT

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

PLUMBING SYMBOLS
- VERTICAL PIPE DOWN
- METER INSIDE PIT
- VALVE INSIDE PIT
- FLOOR DRAIN
- WATER SUPPLY PIPE
- WASTE DRAINAGE PIPE
- SANITARY DRAINAGE PIPE

		Prepared by		Checked by	
		H. Irola	02/07/16	S. Endo	16 July, 16

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	**Water Supply System**	**Pay Item No. (BOQ)**	4B02
Quantity Item	**Valves and Meters**	**Unit**	Nº

Calculation Procedure Applied

Quantity Calculation was divided per type of appurtenance according with the BOQ item list

References, Calculation Base and Revisions

Drawings Nº UT-02-002
UT-02-003
UT-02-004
BD-01-068, BD-01-071 to 080
BD-02-030 to 032
BD-03-030 to 033
BD-06-017

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	H Iglu	02/07/15	23	S. Endo	15 July 02	[illegible]	20 July 02	
1								
2								
3								

NIPPON KOEI CO.,LTD.

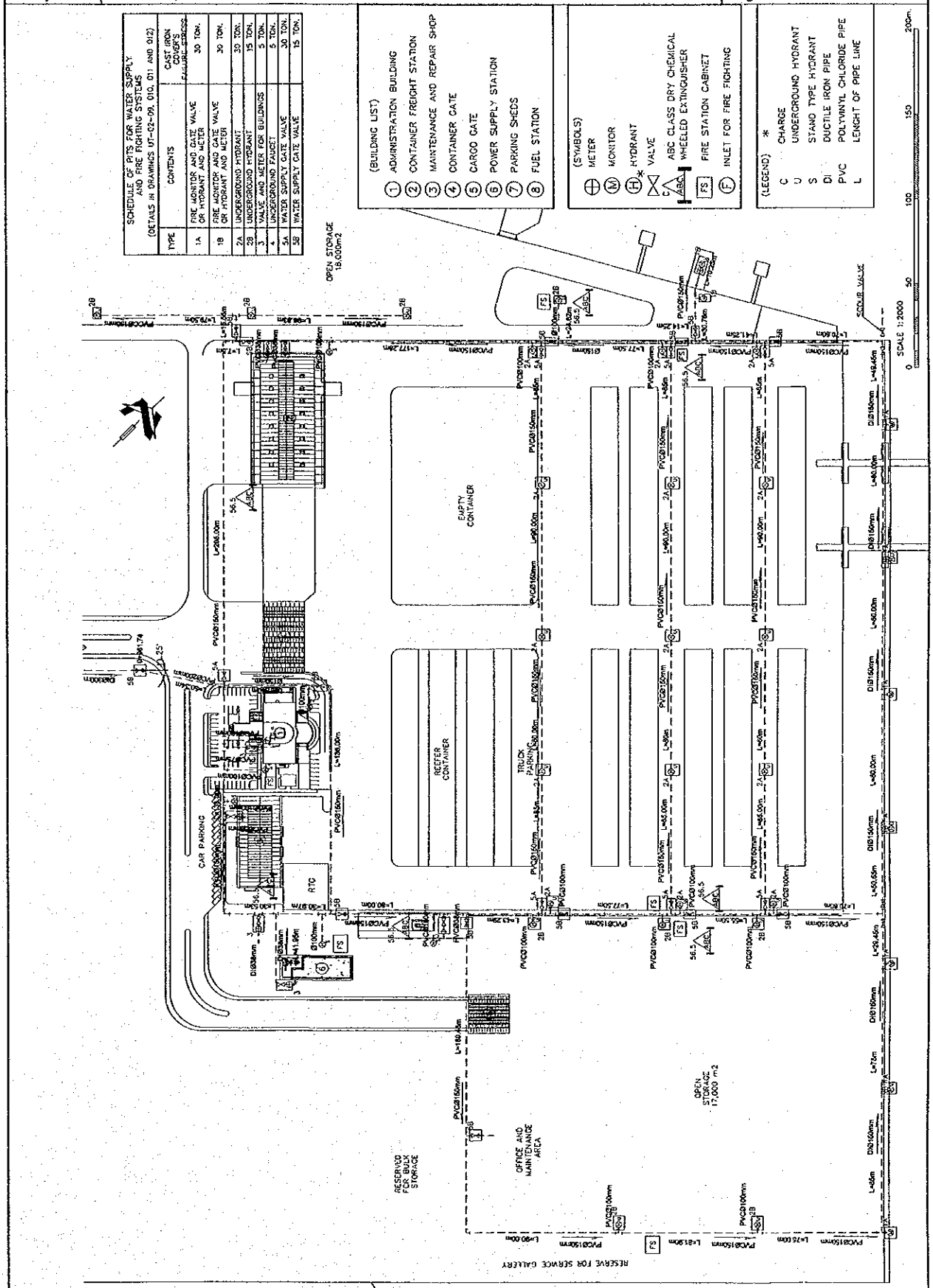
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Valves and Meters	Page No. 2/23	Rev.

References/

Pay Item	Description	Quantity										
		Count										Total
4B02	VALVES AND METERS											
4B0201	Gate Valve, Bronze, threaded, diameter 25 mm	2	1	1	1	1	1	1	2	2	3	15
4B0202	Gate Valve, Bronze, threaded, diameter 31 mm	2										2
4B0203	Gate Valve, Bronze, threaded, diameter 38 mm	6										6
4B0204	Gate Valve, Bronze, threaded, diameter 50 mm	1	2	2	2							7
4B0205	Gate Valve, Bronze, threaded, diameter 75 mm	1										1
4B0206	Gate Valve, Cast Iron, flanged, diameter 100 mm	2										2
4B0207	Gate Valve, Cast Iron, flanged, diameter 150 mm	23	2	1								26
4B0208	Gate Valve, Cast Iron, flanged, diameter 300 mm	2	1									3
4B0209	Swing Check Valve, diameter 50 mm	1	1	1								3
4B0210	Swing Check Valve, diameter 63 mm	1	1	1								3
4B0211	Air Release Valve	1										1
4B0212	Float Operated Valve, diameter 50 mm	1										1
4B0213	Meter, ductile iron, diameter 38 mm	6										6
4B0214	Meter, ductile iron, diameter 75 mm	1										1

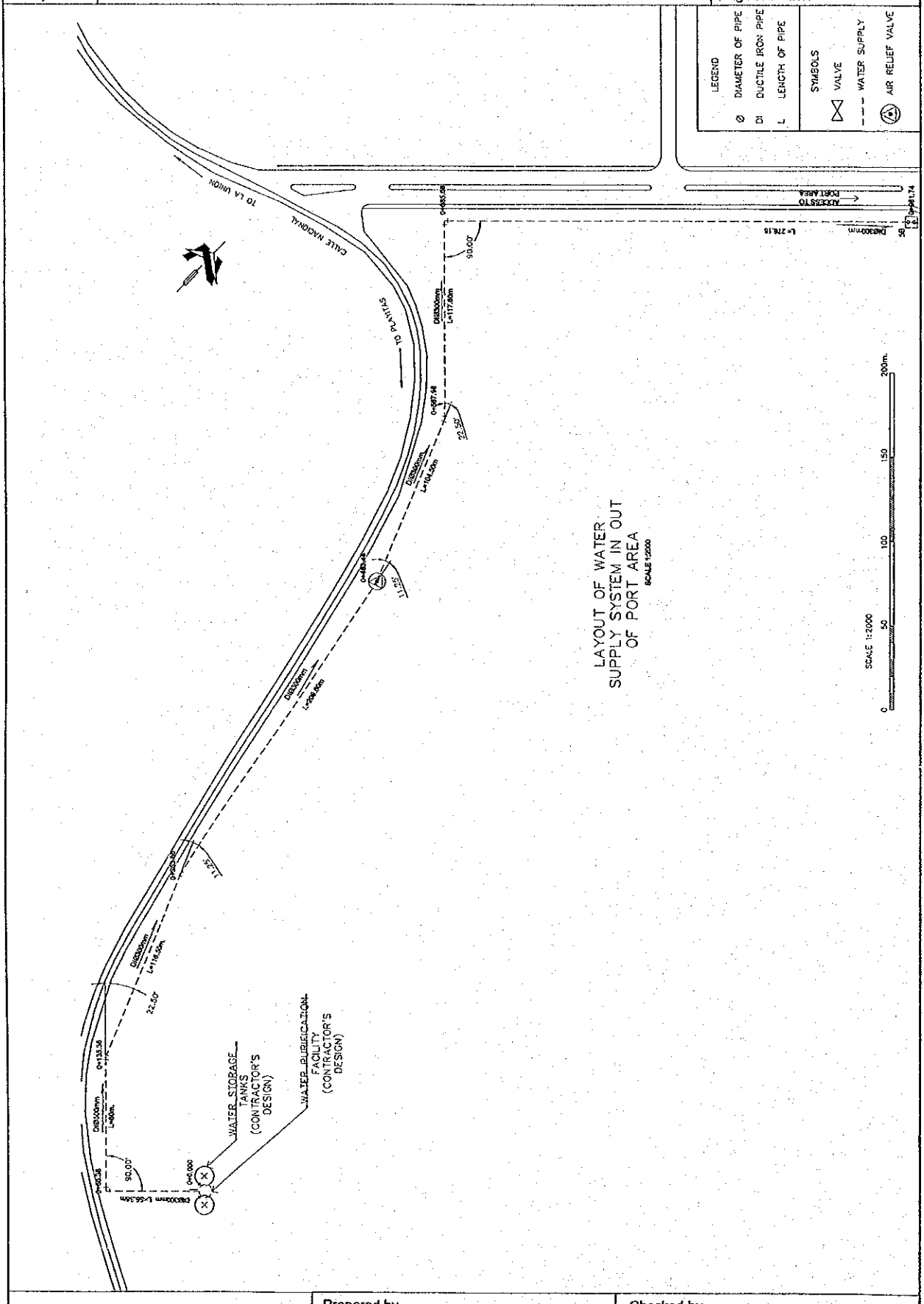
	Prepared by		Checked by	
	H. Irola	02/07/15	S. Endo	15 July, 02

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:	VALVES AND METERS	Page N°. 3/23	



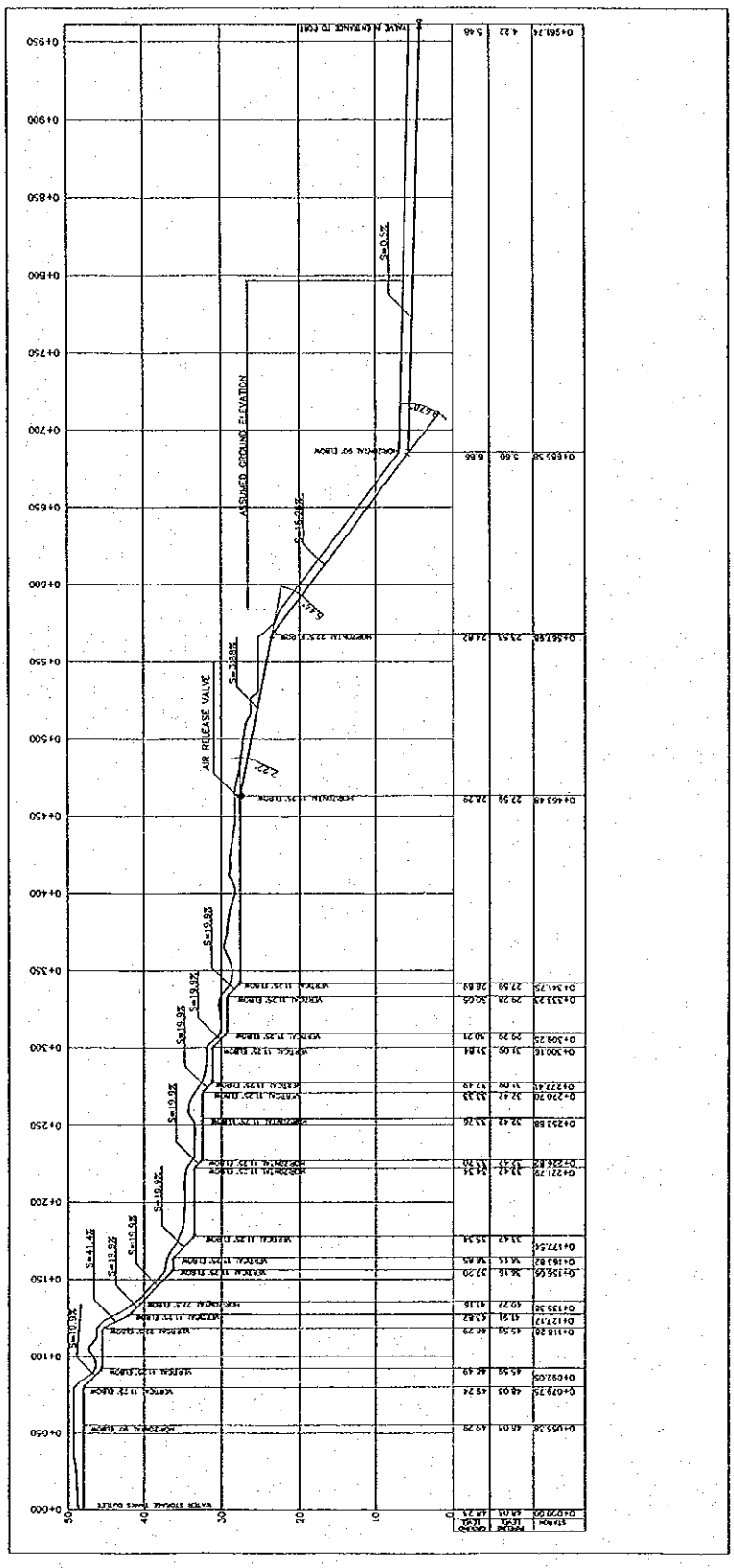
	Prepared by	Checked by
	H. Iruta 02/07/15	S. Endo 15 July, 02

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:	VALVES AND METERS	Page N°. 4/23	



	Prepared by		Checked by	
	H. Iruk	02/07/15	S. Endo	15 July, 02

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:	VALVES AND METERS	Page Nº. 5/23	



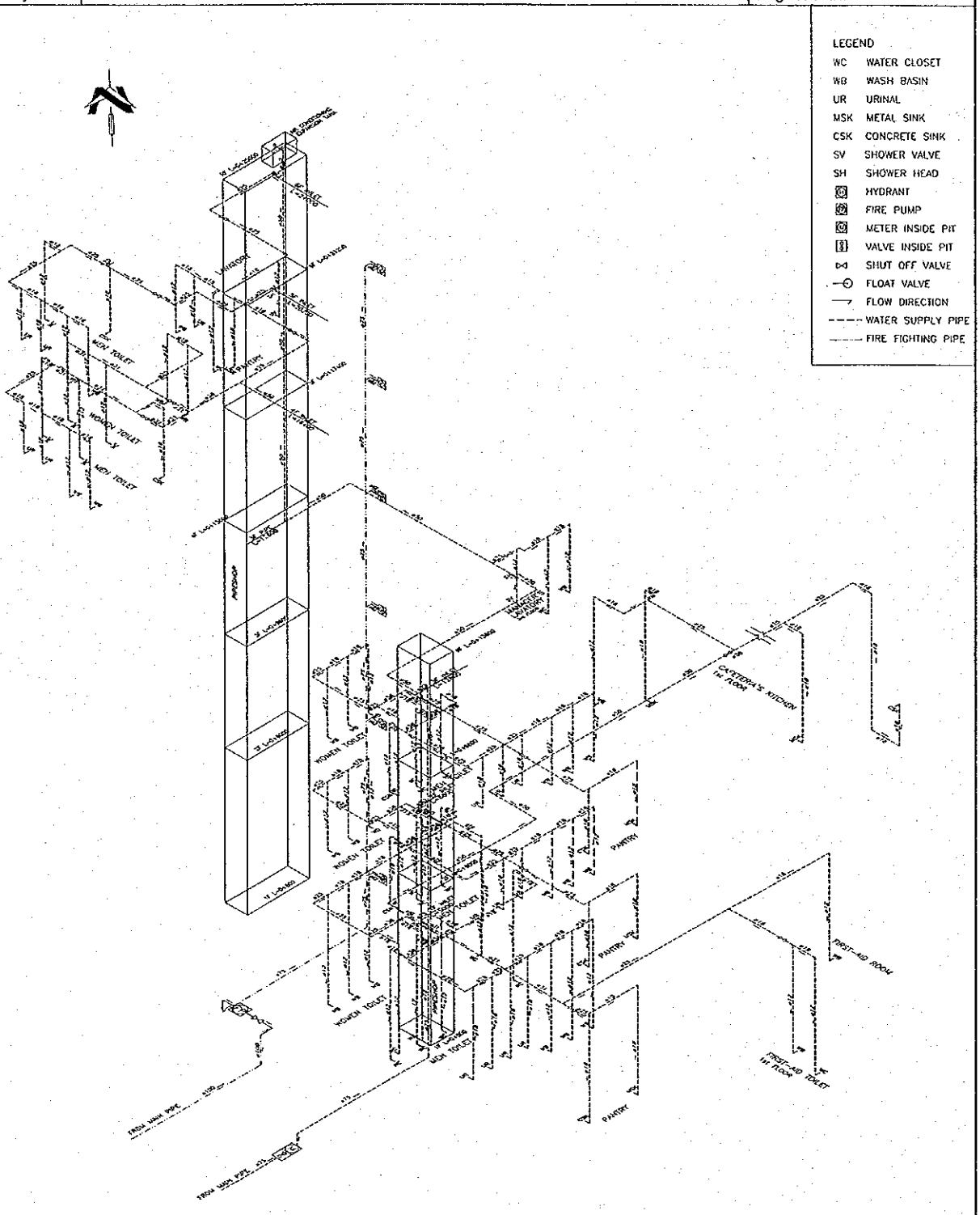
PROFILE OF WATER SUPPLY PIPE IN OUT OF PORT AREA

HORIZONTAL SCALE 1:2500
VERTICAL SCALE 1:500

SYMBOLS
GATE VALVE
AIR RELIEF VALVE
DUCTILE IRON ø300mm WATER SUPPLY PIPE

	Prepared by		Checked by	
	H. Irula	02/07/15	S. Endo	15 July, 02'

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:	VALVES AND METERS	Page Nº. 6/23	

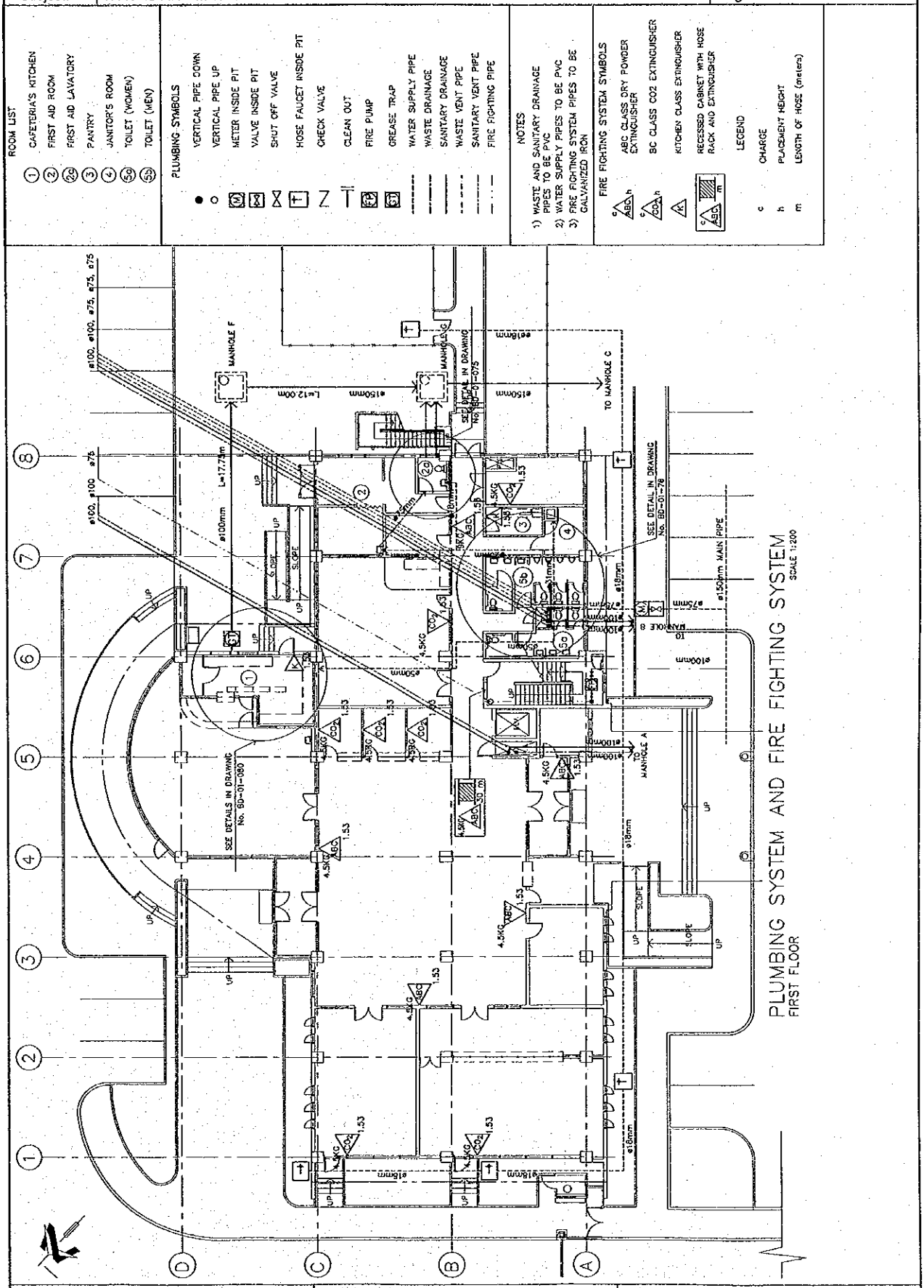


WATER SUPPLY PLUMBING ISOMETRIC

NOT TO SCALE

		Prepared by		Checked by	
		H. Iruta	02/07/15	S. Endo	15 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:	VALVES AND METERS	Page N°. 7/23	



	Prepared by		Checked by	
	H. Iruk	02/07/15	S. Endo	15 July, 05

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:	VALVES AND METERS	Page Nº. 8/23	

ROOM LIST

① PANTRY
② JANITOR'S ROOM
③ TOILET (MEN)
③b TOILET (WOMEN)
④ MANAGER'S LAVATORY

PLUMBING SYMBOLS

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

NOTES

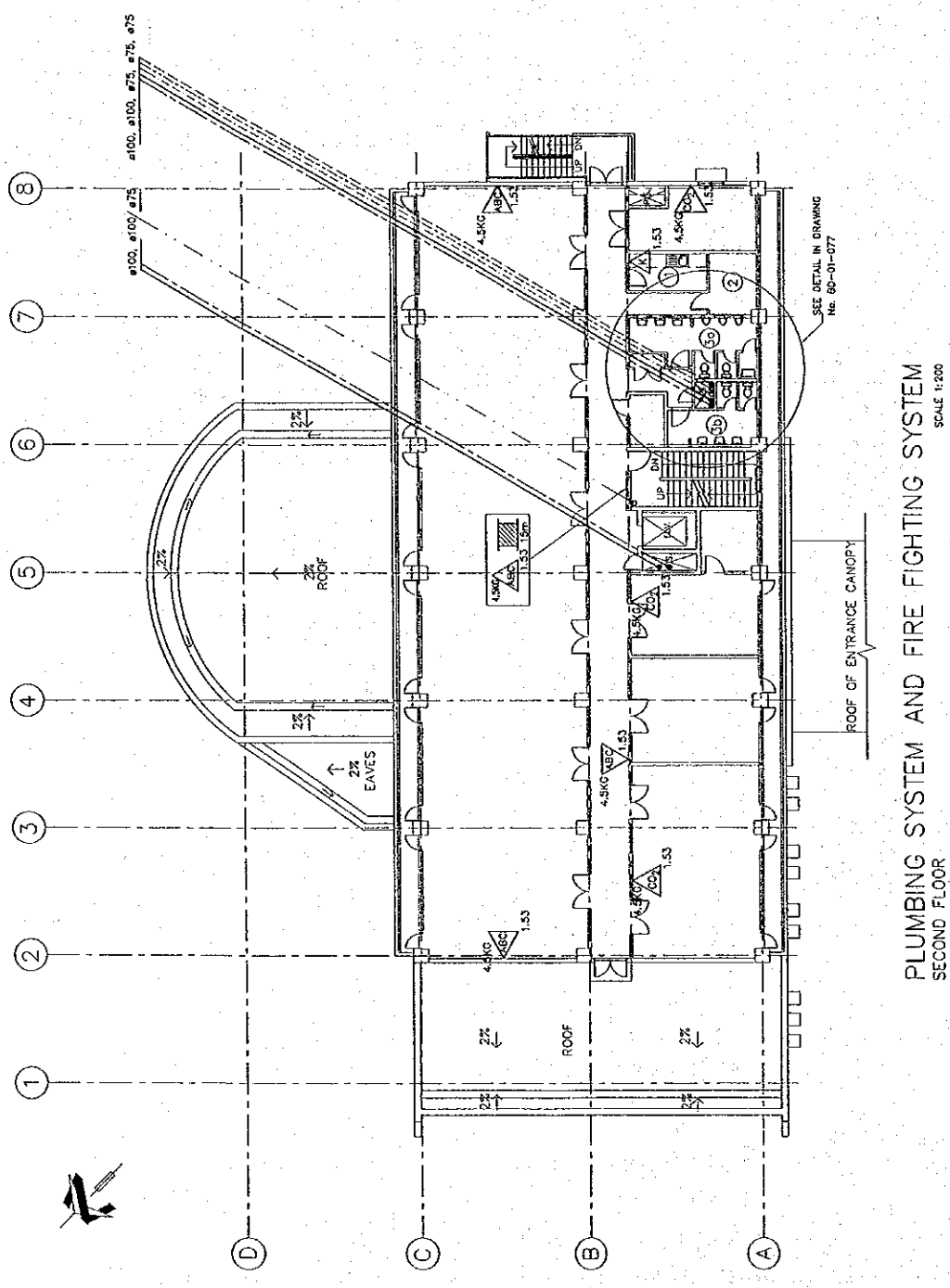
1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

FIRE FIGHTING SYSTEM SYMBOLS

ABC CLASS DRY POWDER EXTINGUISHER
BC CLASS CO2 EXTINGUISHER
KITCHEN CLASS EXTINGUISHER
RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND

c CHARGE
h PLACEMENTE HEIGHT
m LENGTH OF HOSE (meters)



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

		Prepared by		Checked by	
		H. Iruta	02/07/15	S. Endo	15 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:	VALVES AND METERS	Page N°. 9/23	

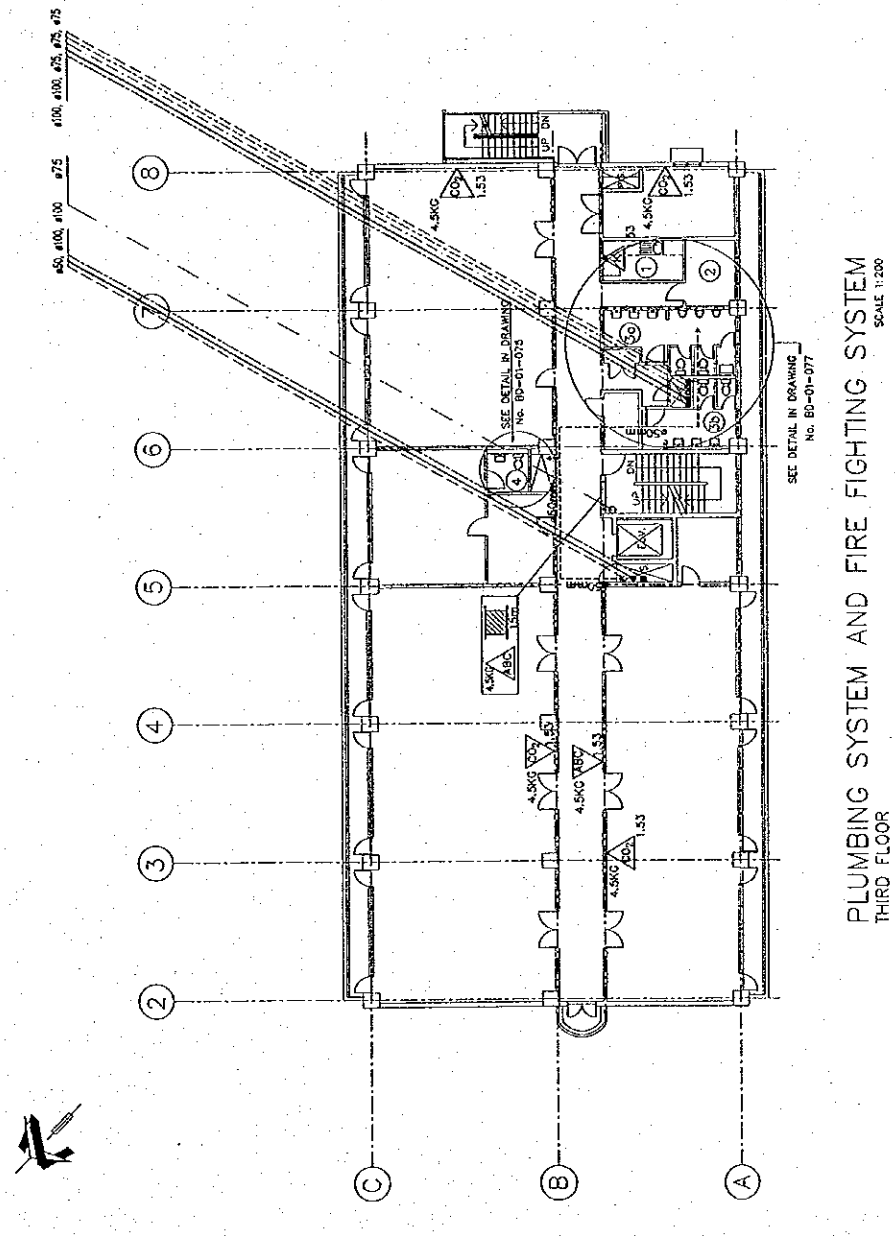
ROOM LIST
① PANTRY
② JANITOR'S ROOM
③ TOILET (MEN)
③ TOILET (WOMEN)
④ MANAGER'S LAVATORY

PLUMBING SYMBOLS
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

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

FIRE FIGHTING SYSTEM SYMBOLS
ABC CLASS DRY POWDER EXTINGUISHER
BC CLASS CO2 EXTINGUISHER
KITCHEN CLASS EXTINGUISHER
RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND
c CHARGE
h PLACEMENTE HEIGHT
m LENGTH OF HOSE (meters)



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

	Prepared by		Checked by	
	H. Iruka	02/07/15	S. Endo	15 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:	VALVES AND METERS	Page N°.	10/23

ROOM LIST

①	PANTRY
2ⓜ	TOILET (MEN)
2ⓦ	TOILET (WOMEN)

PLUMBING SYMBOLS

- 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

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

FIRE FIGHTING SYSTEM SYMBOLS

- ABC CLASS DRY POWDER EXTINGUISHER
- BC CLASS CO2 EXTINGUISHER
- KITCHEN CLASS EXTINGUISHER
- RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER

LEGEND

- c CHARGE
- h PLACEMENTE HEIGHT
- m LENGTH OF HOSE (meters)

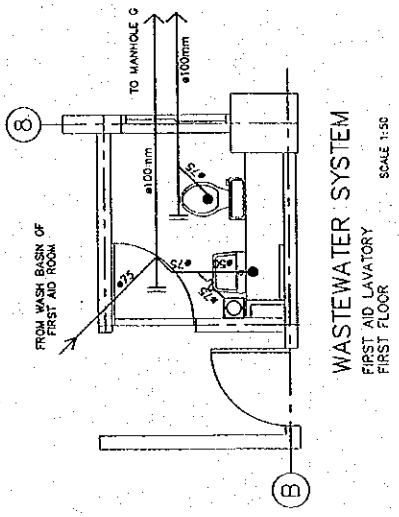
		Prepared by		Checked by	
		H. Iruta	02/07/15	S. Endo	15 July, 02

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:	VALVES AND METERS	Page Nº. 11/23	

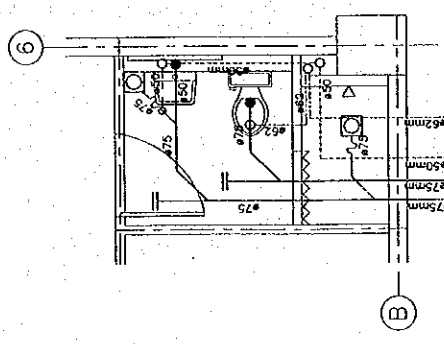
PLUMBING SYMBOLS

- 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
- GREASE 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)

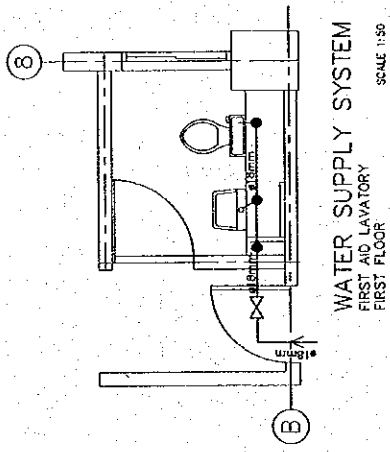
NOTES
1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



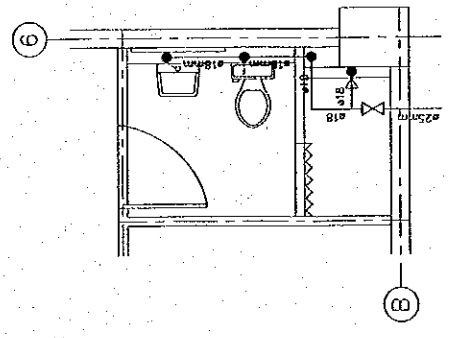
WASTEWATER SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50



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



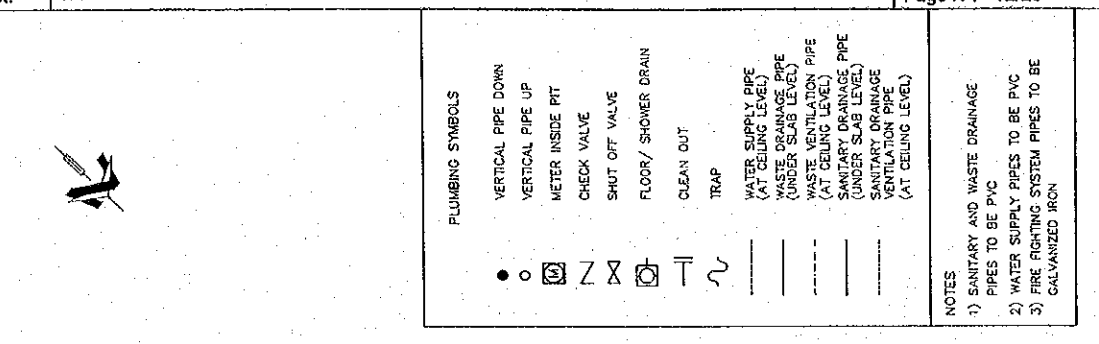
WATER SUPPLY SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50

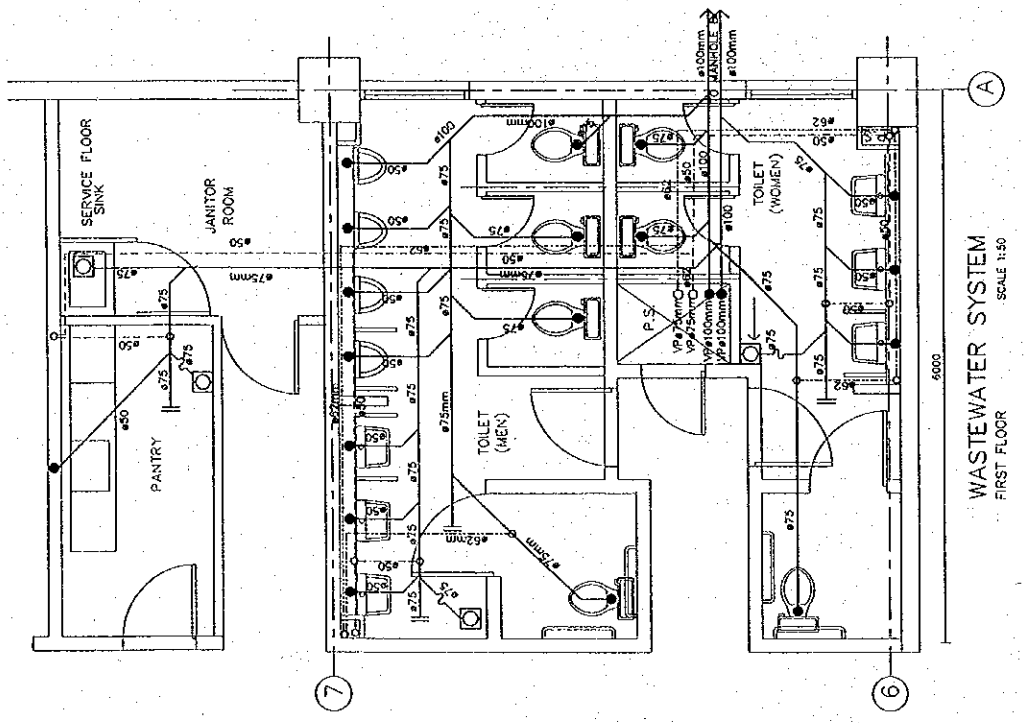


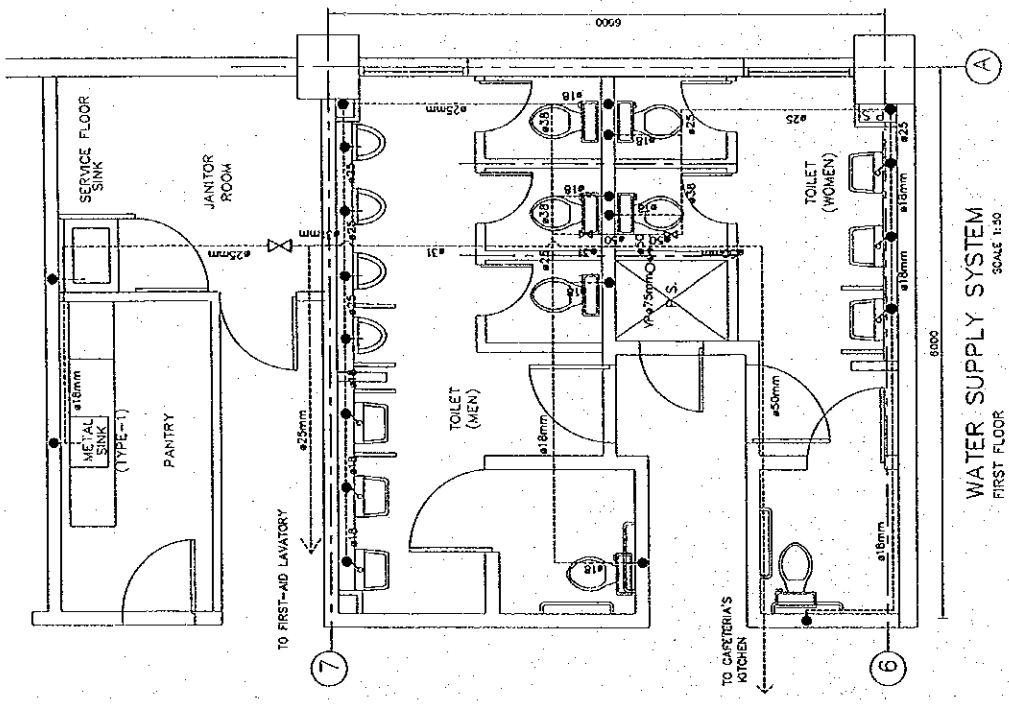
WATER SUPPLY SYSTEM
MANAGER'S LAVATORY
THIRD FLOOR
SCALE 1:50

		Prepared by		Checked by	
		H. Ikeda	02/07/15	S. Endo	15 July, 15

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:	VALVES AND METERS	Page N°.	12/23

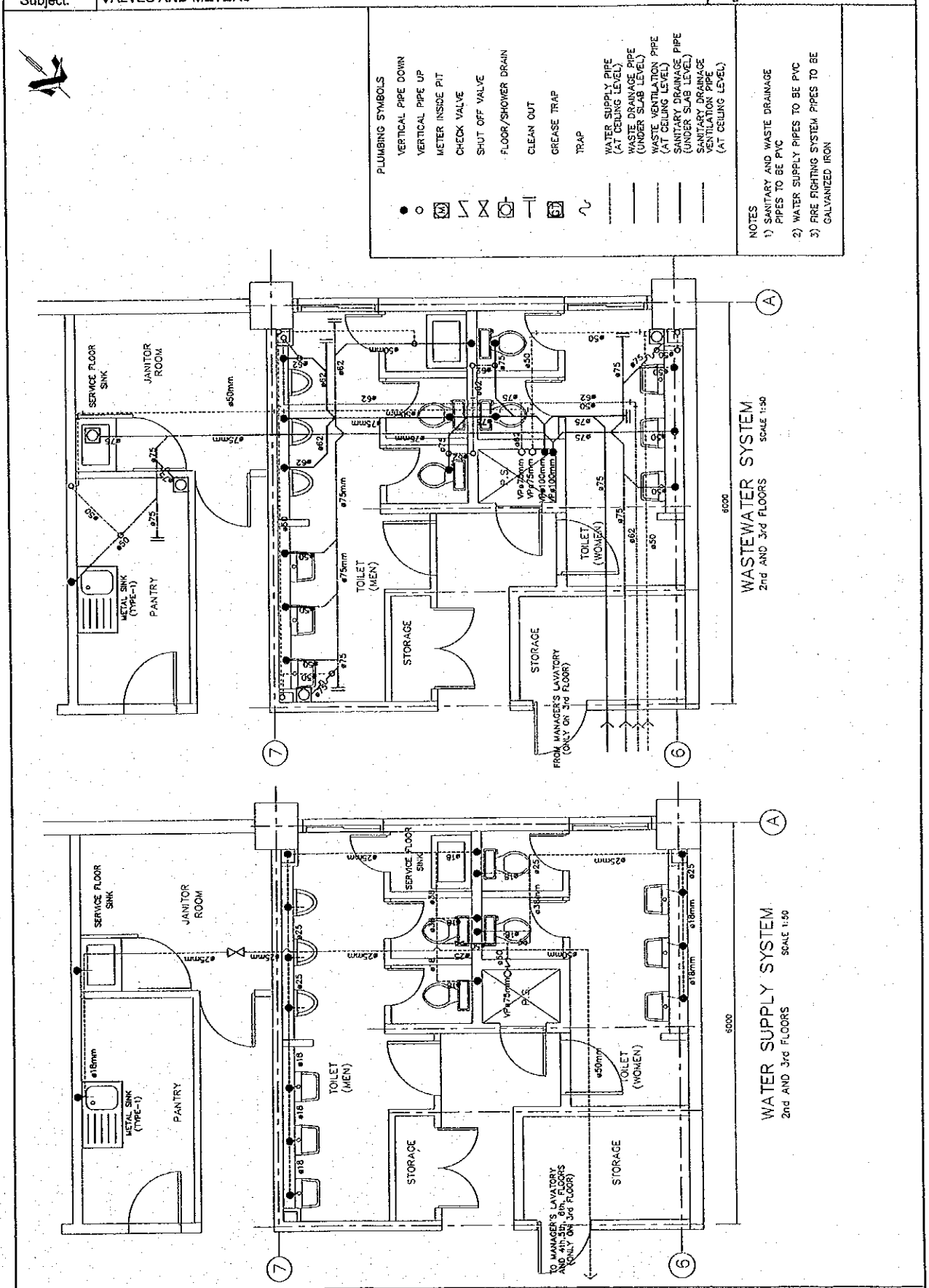






		Prepared by		Checked by	
		H. Irula	02/07/15	J Enda	15 July, 02

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:	VALVES AND METERS	Page Nº. 13/23	



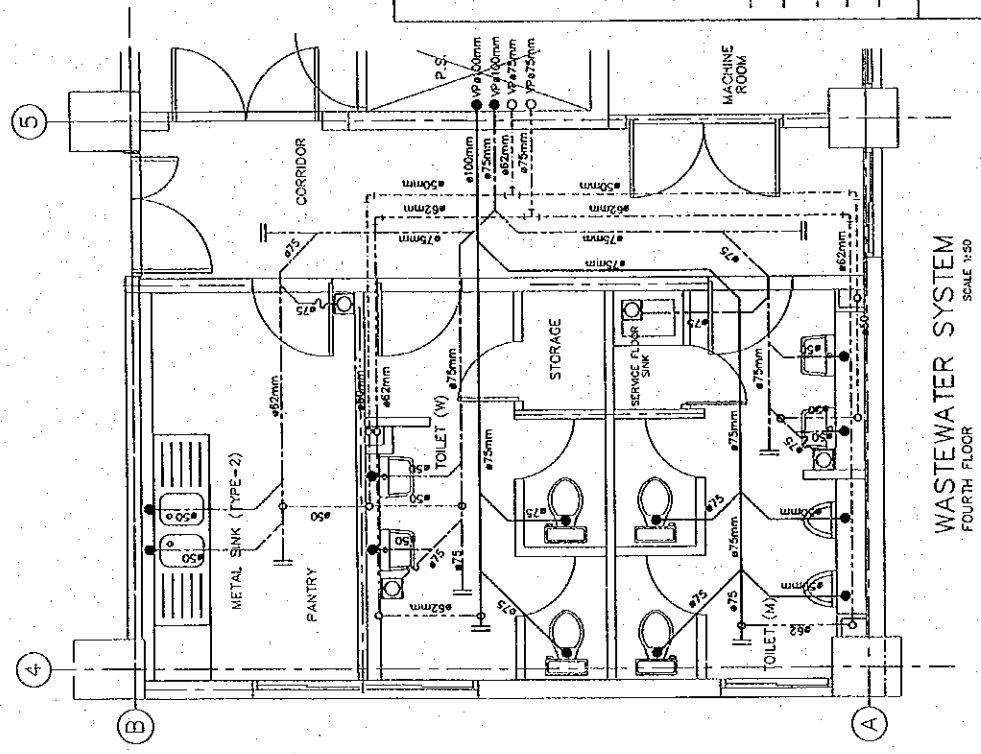
	Prepared by		Checked by	
	A. Irula	02/07/15	S. Endo	15 July, 02

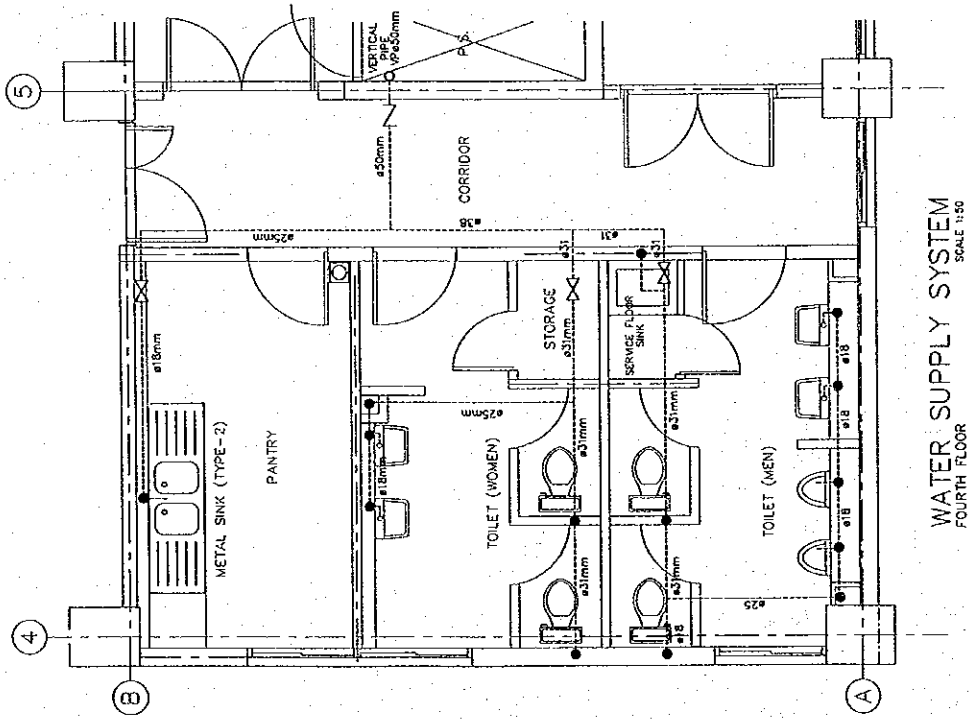
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	VALVES AND METERS	Page N°. 14/23	

PLUMBING SYMBOLS

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- METER INSIDE PIT
- 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





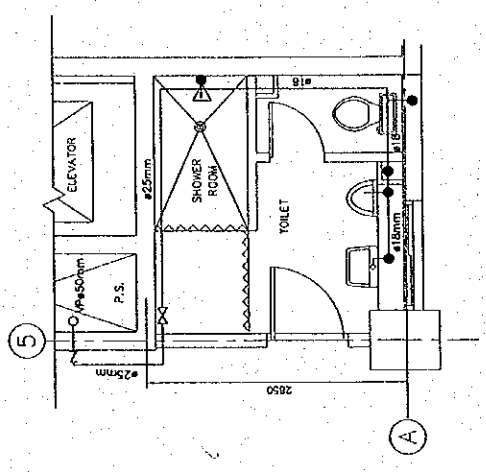
	Prepared by		Checked by	
	H. Iruk	02/07/15	S. Endo	15 July, 15

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:	VALVES AND METERS	Page Nº. 15/23	

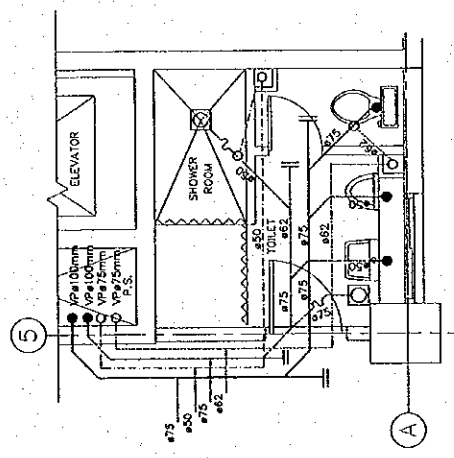
PLUMBING SYMBOLS

- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- TRAP
- SHOWER HEAD
- SHUT OFF VALVE
- FLOOR/SHOWER DRAIN
- CLEAN OUT
- CHECK VALVE
- 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)

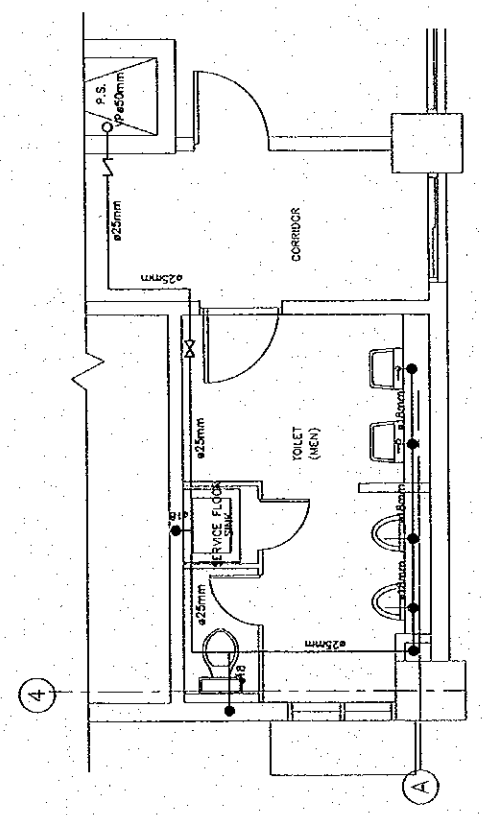
NOTES
1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



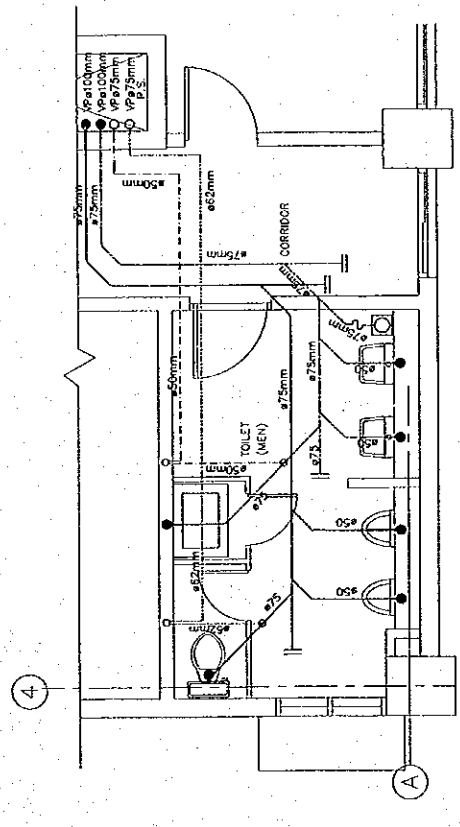
WATER SUPPLY SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WASTEWATER SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



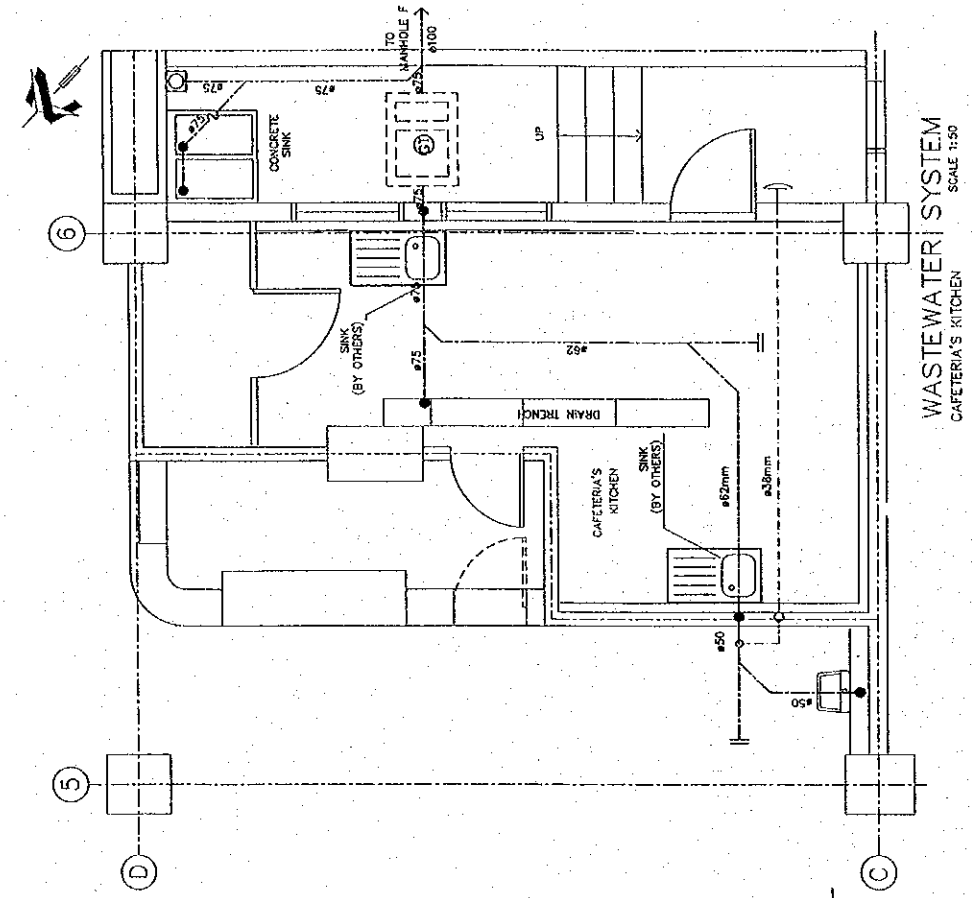
WATER SUPPLY SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

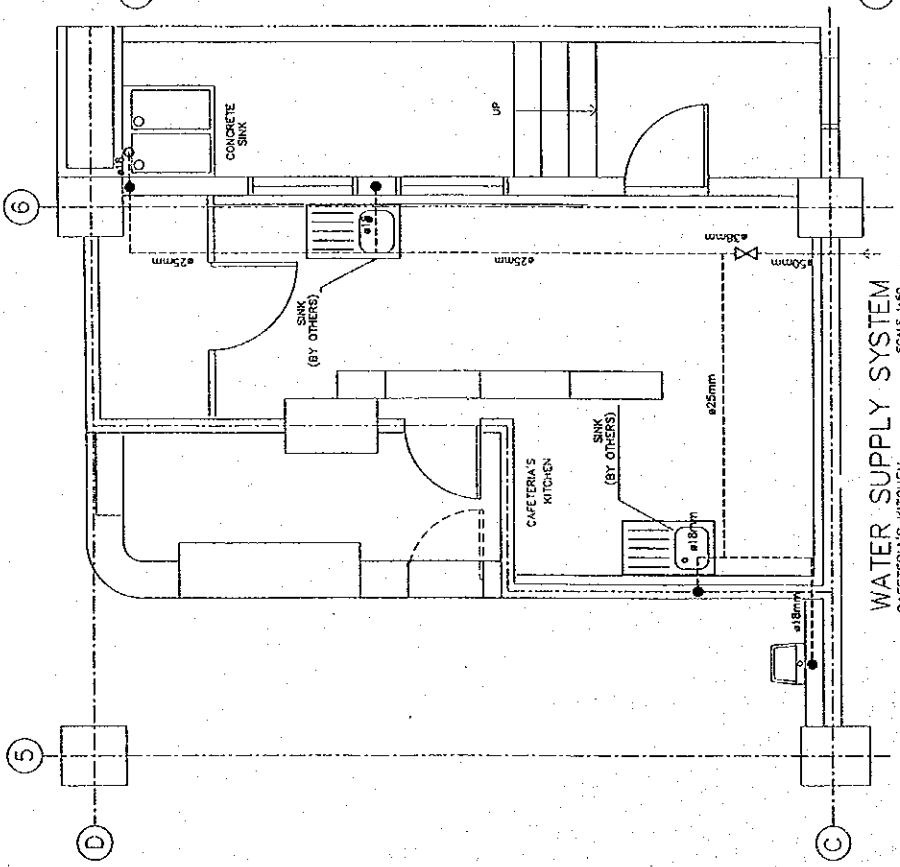


WASTEWATER SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

	Prepared by		Checked by	
	H. Irula	02/07/15	S. Endo	15 July, 2015

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:	VALVES AND METERS	Page Nº. 16/23	





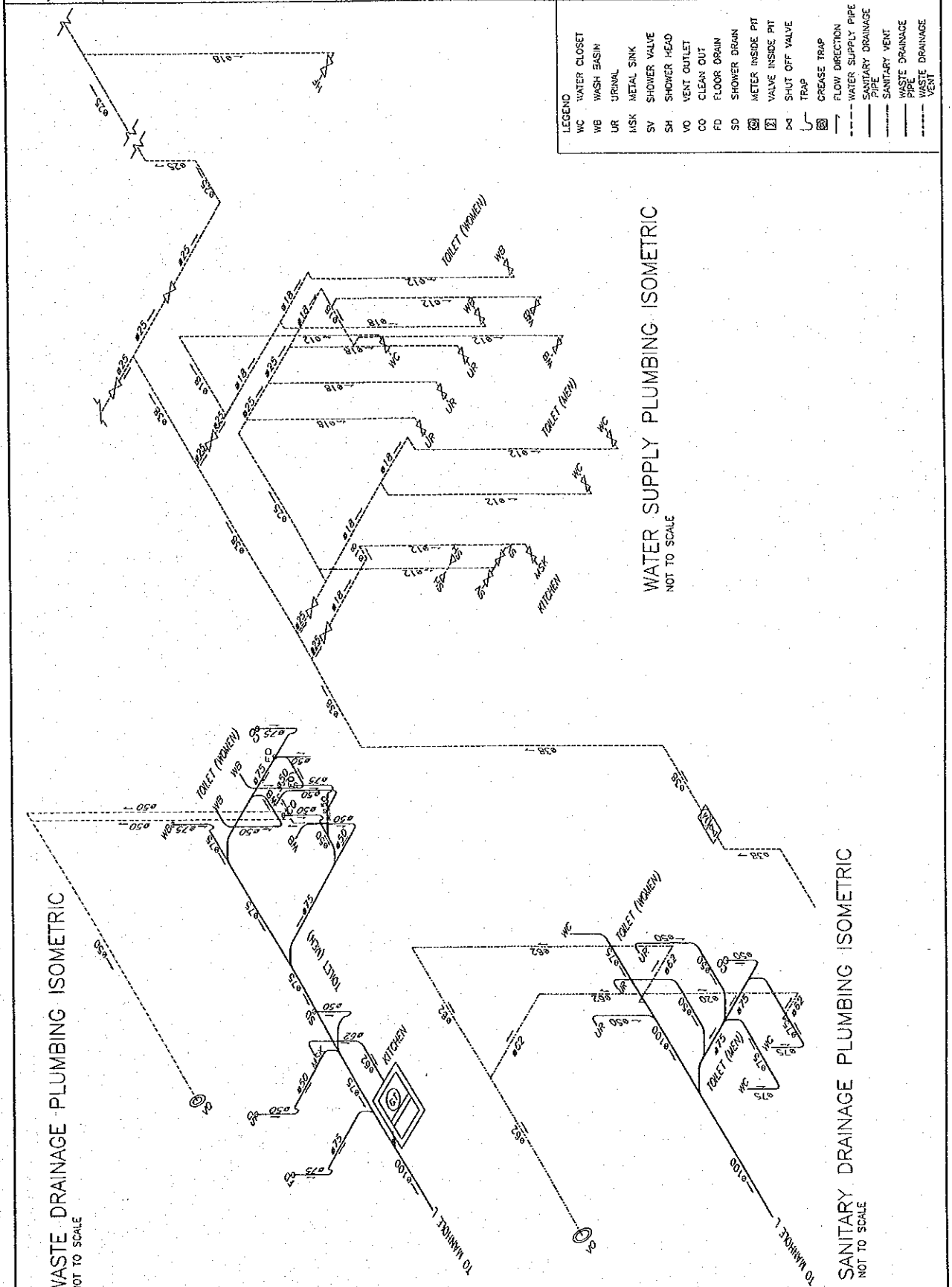
NOTES
1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

PLUMBING SYMBOLS

VERTICAL PIPE DOWN	FLOOR/SHOWER DRAIN	WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)	
VERTICAL PIPE UP	CLEAN OUT	WASTE VENTILATION PIPE (AT CEILING LEVEL)	
TRAP	GREASE TRAP	SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)	
SHUT OFF VALVE	VENT OUTLET COVER	SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL)	
		WATER SUPPLY PIPE (AT CEILING LEVEL)	

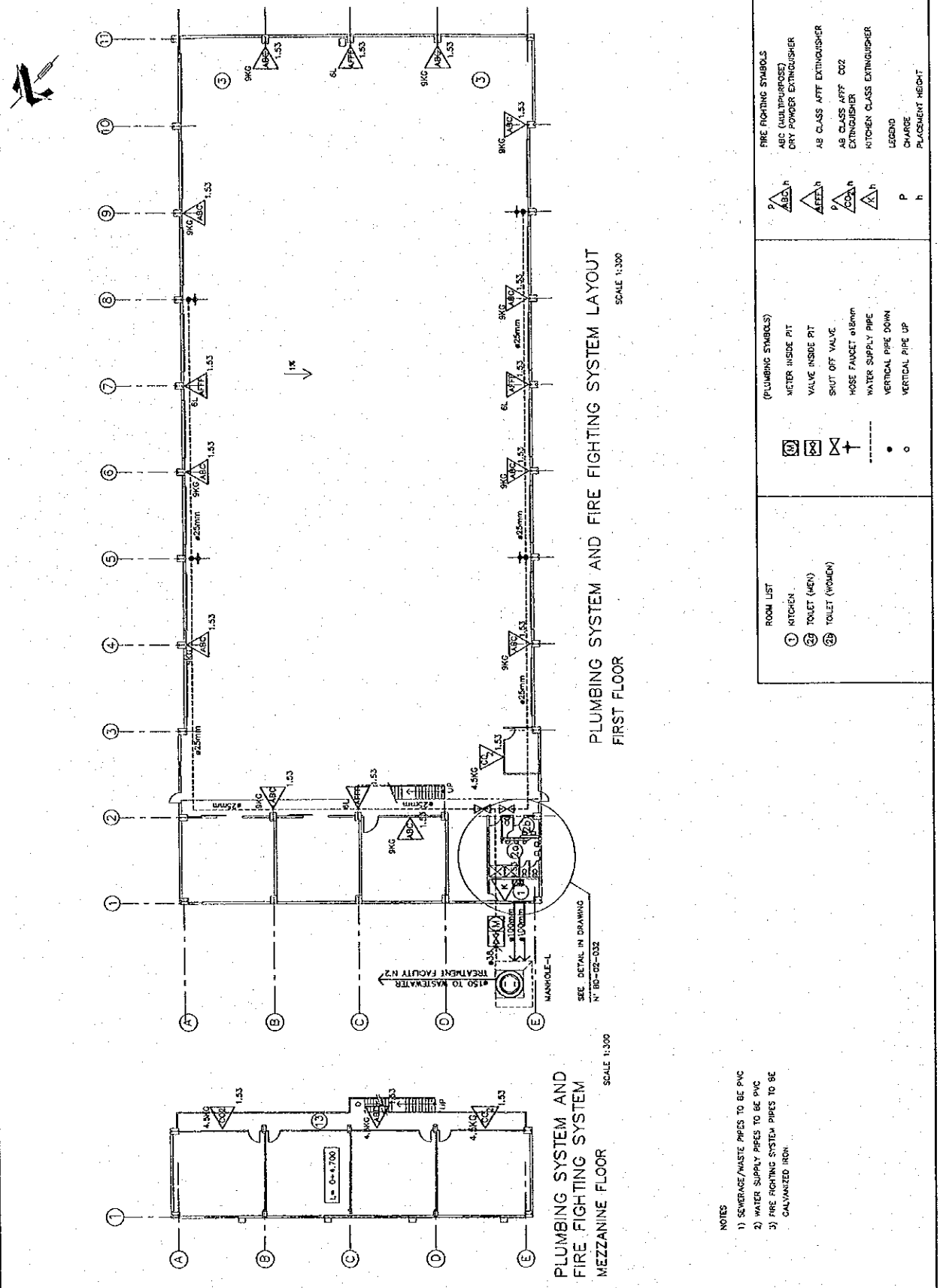
		Prepared by	Checked by	
		H. Irola 02/07/15	S. Endo 15 July, 15	

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:	VALVES AND METERS	Page Nº. 17/23	



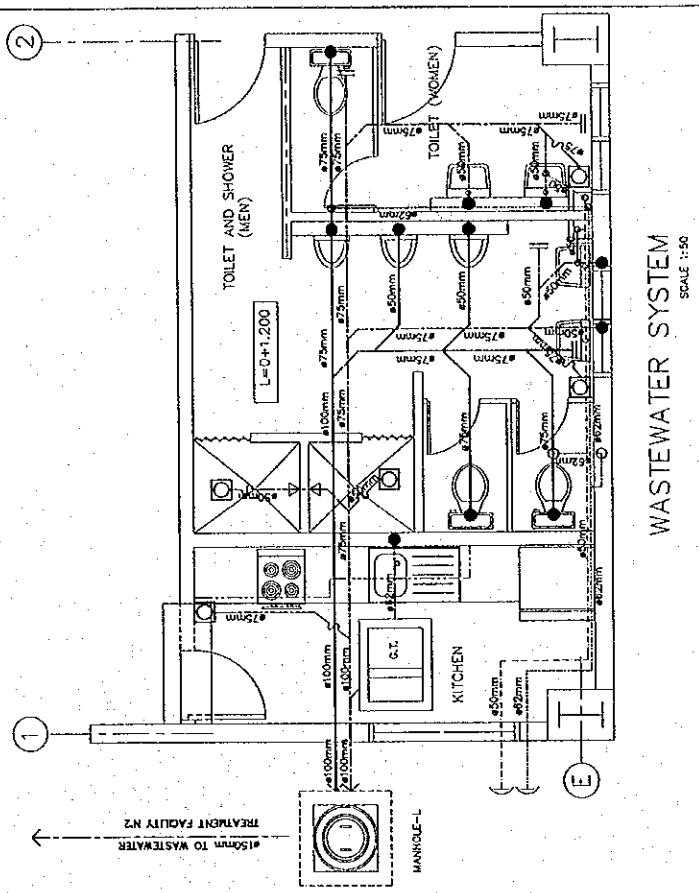
	Prepared by		Checked by	
	H. Iruta	02/07/15	S. Endo	15 July, 02

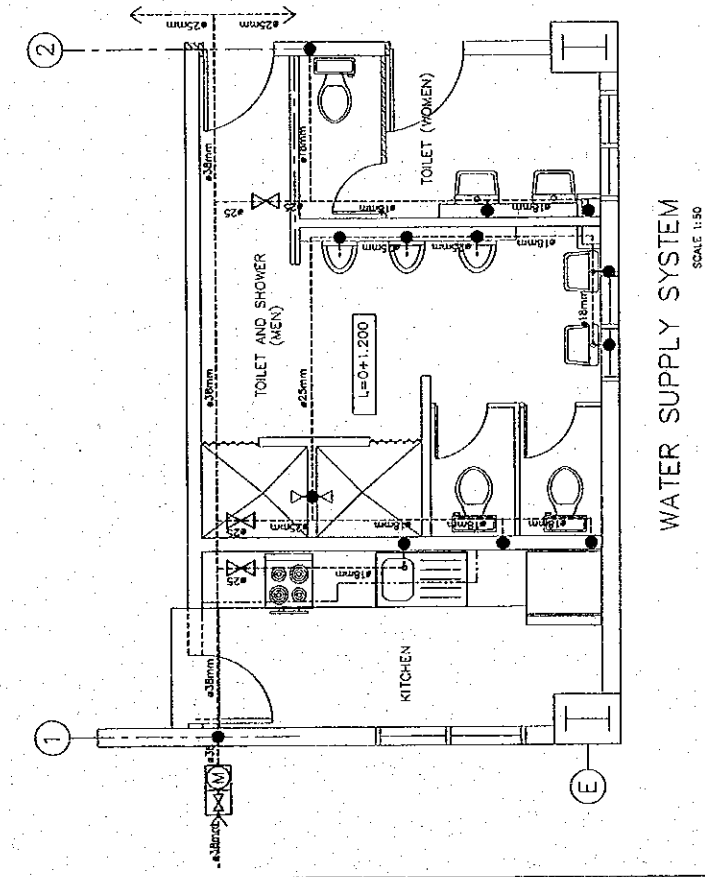
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	VALVES AND METERS	Page N°. 18/23	



	Prepared by		Checked by	
	H. Irola	02/07/15	S. Endo	15 July, 02

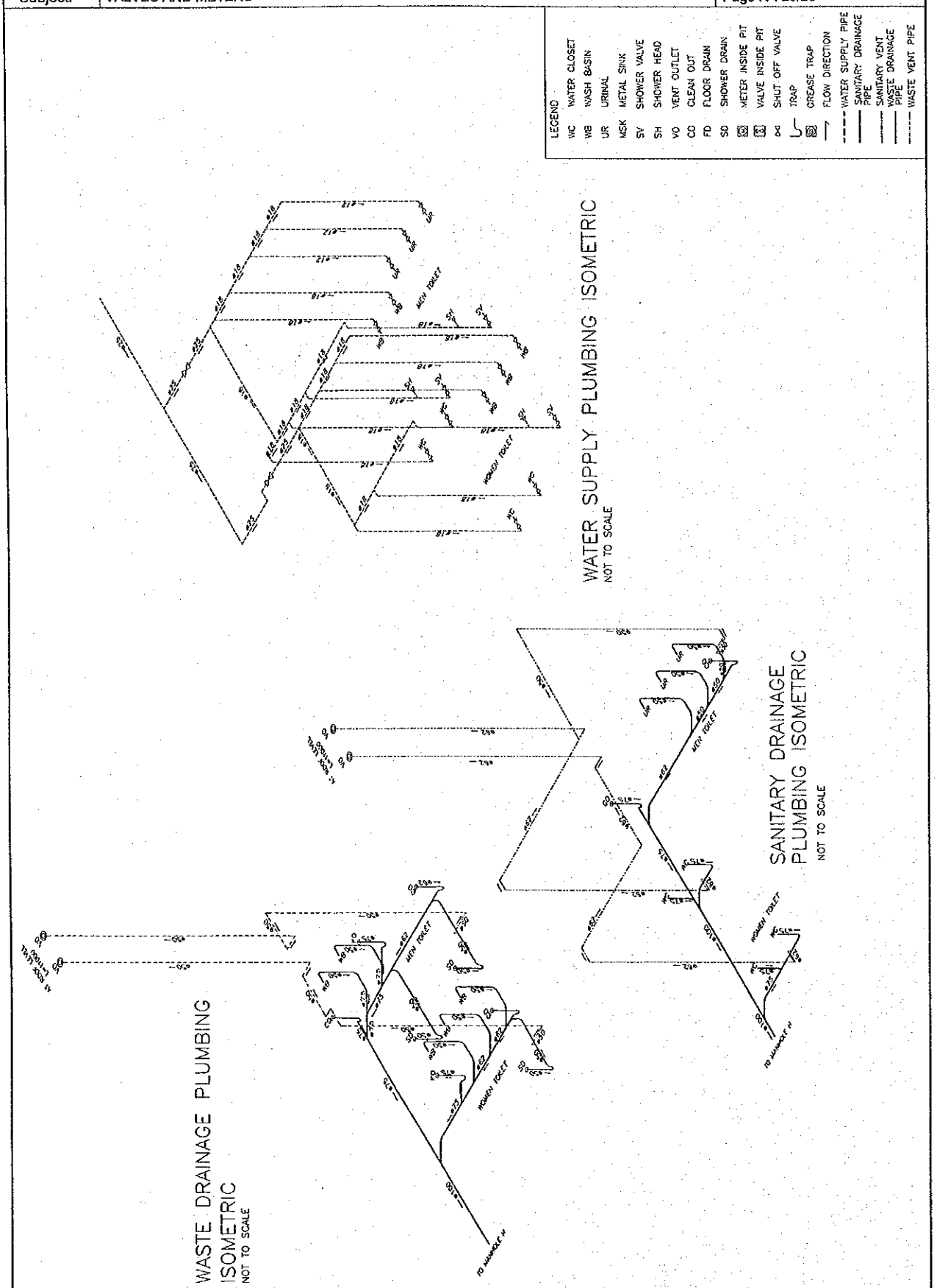
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File Nº.	
Section:	UTILITY WORK	Calc. Index Nº.	
Subject:	VALVES AND METERS	Page Nº. 19/23	





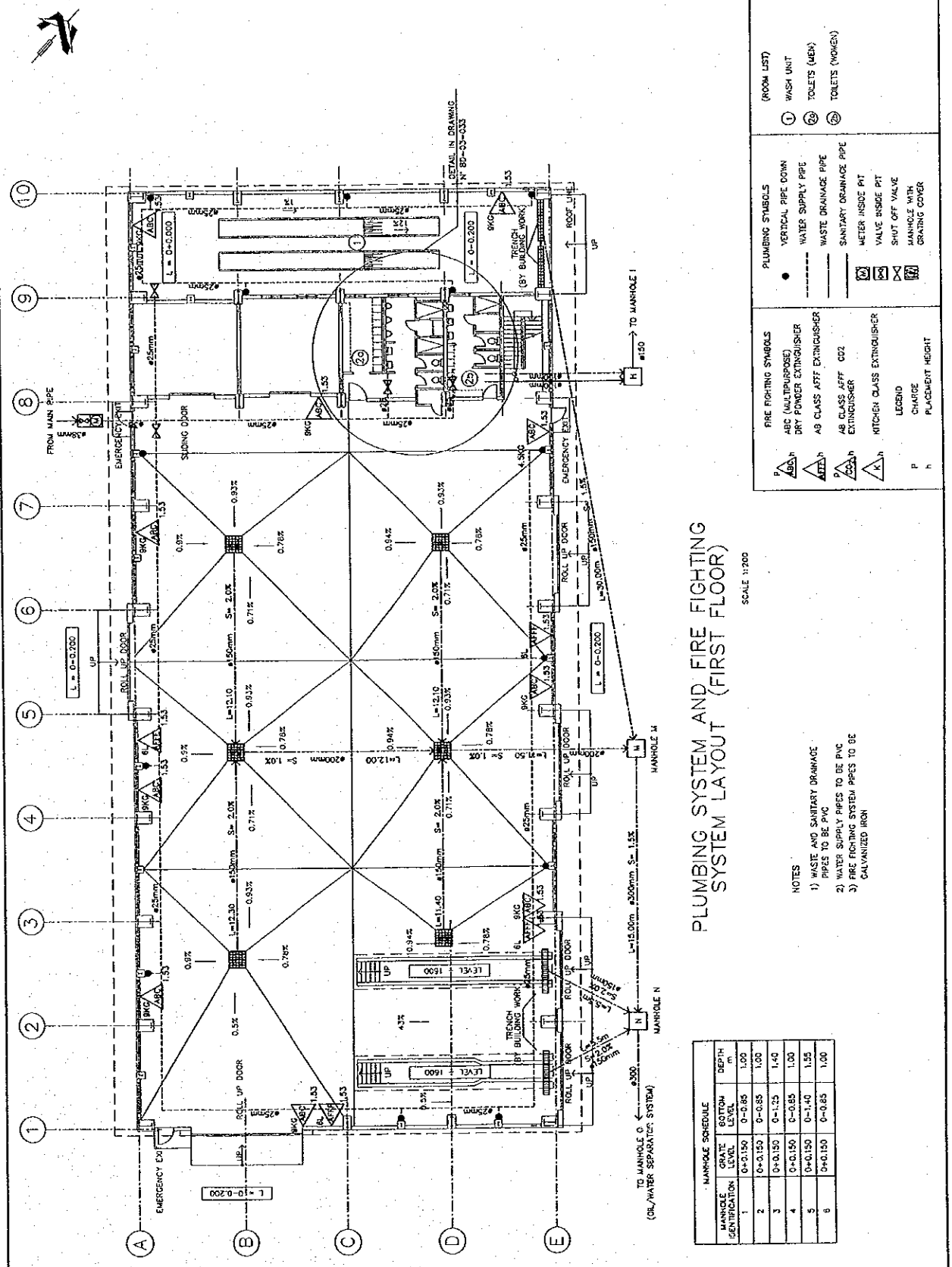
		Prepared by		Checked by	
		H. Irula	02/07/15	S. Endo	15 July, 02

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:	VALVES AND METERS	Page Nº. 20/23	



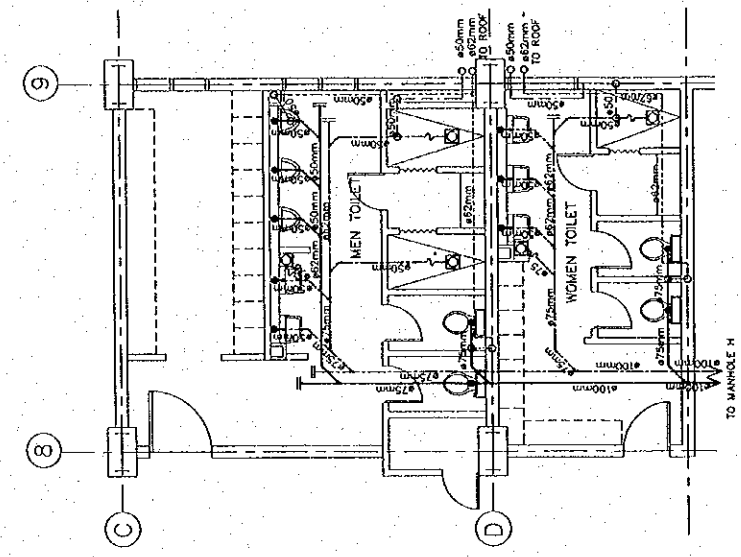
		Prepared by		Checked by	
		H. Iida	02/07/15	S. Endo	15 July, 02

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:	VALVES AND METERS	Page N°. 21/23	



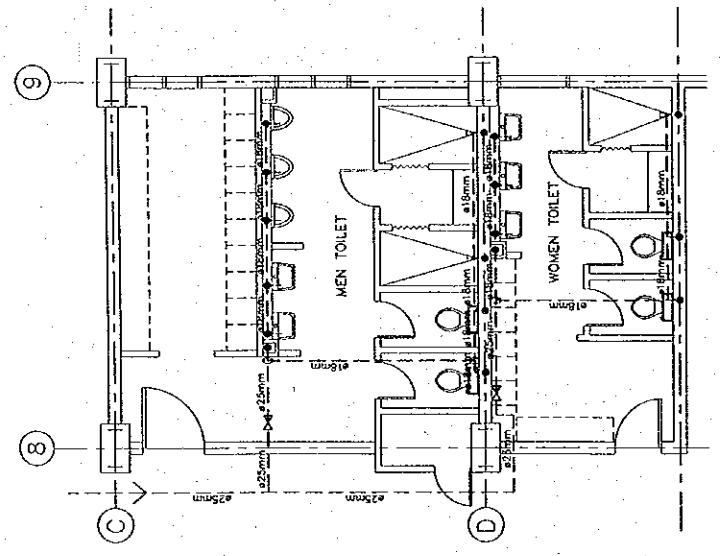
	Prepared by	H. Iruta	Checked by	S. Endo
		02/09/15		15 July, 02

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:	VALVES AND METERS	Page Nº. 22/23	



WASTEWATER PLUMBING SYSTEM

ESC. 1:75



WATER SUPPLY PLUMBING SYSTEM

ESC. 1:75

PLUMBING SYMBOLS

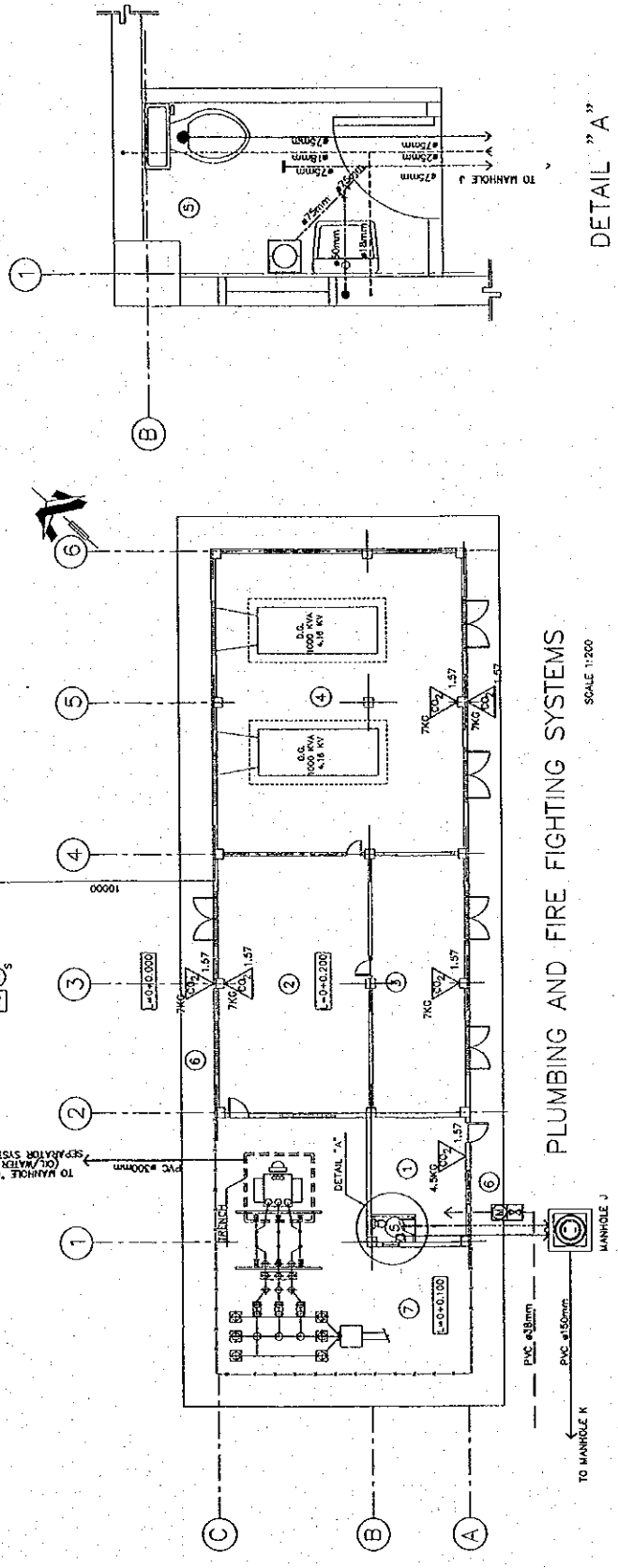
- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- METER INSIDE PIT
- VALVE INSIDE PIT
- SHUT OFF VALVE
- FLOOR DRAIN
- WATER SUPPLY PIPE
- WASTE DRAINAGE PIPE
- WASTE VENTILATION PIPE (IN UNDERGROUND PIT)
- SANITARY DRAINAGE PIPE
- SANITARY VENTILATION PIPE

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		Checked by	
		H. Isida	02/09/15	S. Endo	15 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:	VALVES AND METERS	Page N°. 23/23	



	Prepared by		Checked by	
	H. Irula	02/07/15	S. Endo	15 July, 02

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	**Water Supply System**	**Pay Item No. (BOQ)**	4B0301
Quantity Item	**Pits and Manhole (Type-3)**	**Unit**	No.

Calculation Procedure Applied

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

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

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

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing Nº UT-02-009

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	H. Irula	02/07/15	4	S. Endo	15 July, 02	[illegible]	20 July 02	
1	[illegible]							
2								
3								

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pit Type 3	Page No. 2/4	Rev.

References/

Valve and Meter for Building (Type-3)

Bottom

Dimension

Height	0.03	
	0.37	
	0.050	
Total	0.450	
Width	0.025	
	0.025	
	0.4	
	0.025	
	0.025	
Total	0.500	
B	0.025	
	0.025	
	0.400	
	0.025	
	0.025	
Total	0.500	
Area	0.250	m2
Volume	0.113	m3

Rainforcement Bar

	Length	Nos.	Length	m/kg	Weight (kg)
Side(1)	0.450	8	3.6	0.995	3.582
	0.40	6	2.4	0.995	2.388
Bottom (1)	0.45	4	1.8	0.995	1.791
Bottom (2)	0.45	4	2	0.995	1.791
					9.552 kg

Concrete Work

Deducted Volume		
Pipe	75	mm
	0.0001	m3
Total	0.0001	m3 (A)
Concrete Volume		
(Side)	0.060	m3
(Bottom)	0.013	m3
	0.073	m3 (B)
(B)-(A)	**0.072**	**m3**

Form Work

Deducted Area		
0.471	m2	(C)
(Side-Outside)	0.9	
(Side-Inside)	0.59	
(Bottom)	0.25	
Total	1.742	m2 (D)
(D)-(C)	**1.271**	**m2**

Lean Concrete

d	0.05	m
Width	0.1	m
Concrete Volume	**0.025**	**m3**

Crushed Stone

d	0.05	m
Volume	0.021	m3

	Prepared by		Checked by	
	H. Iruta	02/07/15	S. Endo	15 July, 02

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pit Type 3	Page No. 3/4	Rev.

References/

Excavation

0.2 m

0.270 m3

Backfilling

0.112 m3

Cast Iron Ring

1.60 m

Cover 1 Nos

Mass Concrete Support

0.012 m3

0.006 m3

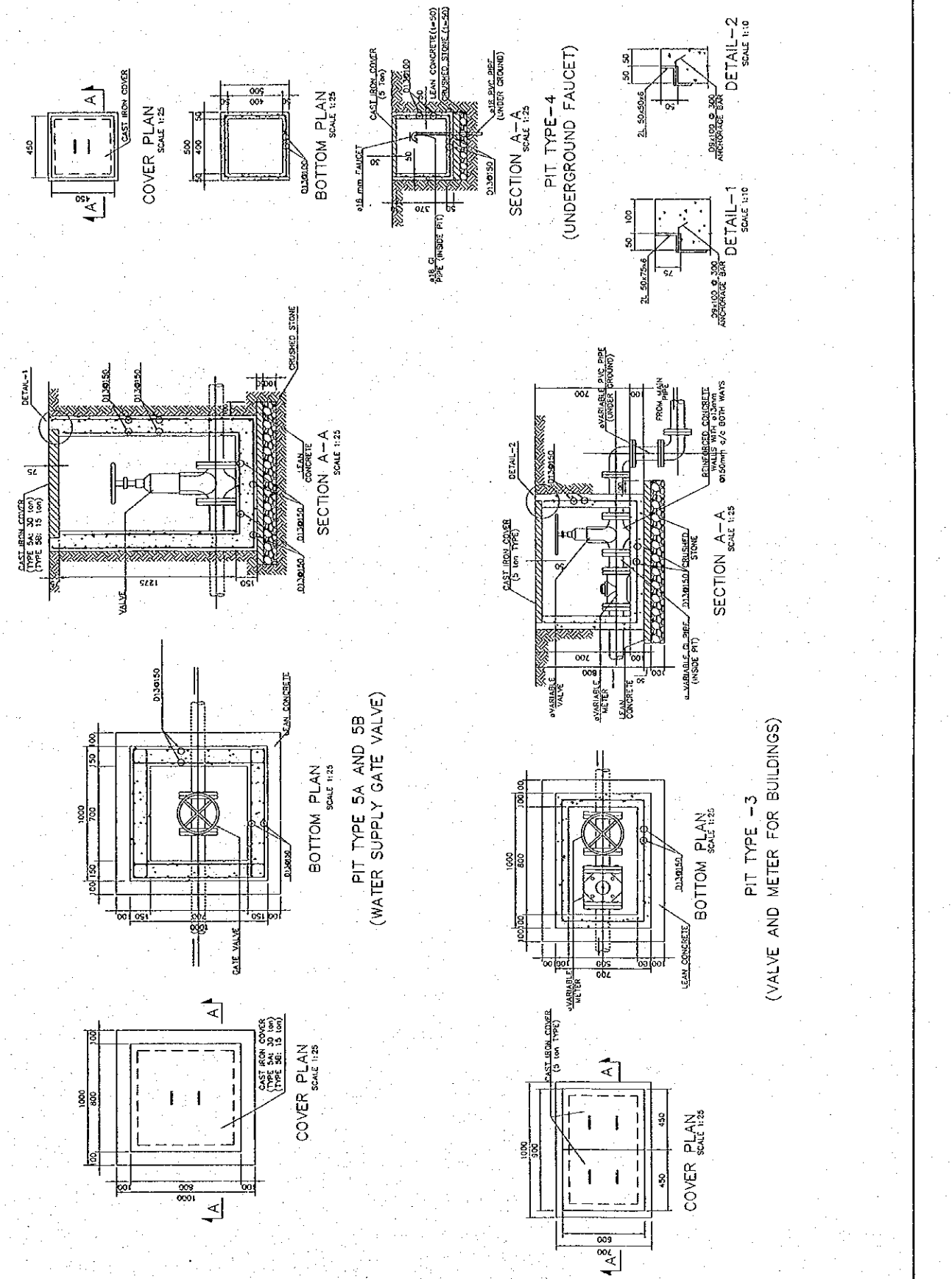
0.018 m3

Summary of Quantity for Pit

Excavation	0.270	m3
Backfilling	0.112	m3
Crushed Stone	0.021	m3
Lean Concrete	0.0245	m3
Raiforcement Bar : Lower (D13)	9.55	kg
Form (Lower)	1.271	m2
Concrete (Lower) : 18N	0.072	m3
Mass Concrete Support	0.018	m3
Cast Iron Ring : L 50x50x6	1.60	m
Cover (900 x 600 x 50)	1	nos

		Prepared by		Checked by	
		H. Irula	02/07/15	S. Endo	15 July 02

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:	PIT TYPE-3	Page Nº. 4/4	



	Prepared by		Checked by	
	H. Ircla	02/07/15	S. Ercla	15 July, 02

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	**Water Supply System**	**Pay Item No. (BOQ)**	4B0302
Quantity Item	**Pits and Manhole (Type-4)**	**Unit**	No.

Calculation Procedure Applied

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

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

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

Area of form was computed by using geometric formula.

References, Calculation Base and Revisions

Drawing Nº UT-02-009

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	A. Ircula	02/07/15	4	S. Endo	15 July, 02	~~HS~~ IF	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	Pit Type 4	Page No. 2/4	Rev.

References/

Underground Faucet (Type-4)

Bottom

Dimension

Height	0.05	
	0.75	
	0.000	
Total	0.800	
Width	0.05	
	0.05	
	0.8	
	0.05	
	0.05	
Total	1.000	
B	0.050	
	0.050	
	0.500	
	0.050	
	0.050	
Total	0.700	
Area	0.700	m2
Volume	0.560	m3

Reinforcement Bar

	Length	Nos.	Length	m/kg	Weight (kg)
Side(1)	0.650	10	6.5	0.995	6.4675
	0.75	9	6.5	0.995	6.4675
Bottom (1)	0.65	8	5.2	0.995	5.174
Bottom (2)	0.95	4	4	0.995	4.096
					22.205 kg

Concrete Work

Deducted Volume			
Pipe	75	mm	
	0.0004	m3	
Total	0.0004	m3	(A)
Concrete Volume			
(Side)	0.272	m3	
(Bottom)	0.000	m3	
	0.272	m3	(B)
(B)-(A)	0.272	m3	

Form Work

Deducted Area			
	0.471	m2	(C)
(Side-Outside)	2.72		
(Side-Inside)	1.95		
(Bottom)	0.70		
Total	5.37	m2	(D)
(D)-(C)	4.899	m2	

Lean Concrete

d	0.05	m
Width	0.1	m
Concrete Volume	0.054	m3

Crushed Stone

d	0.1	m
Volume	0.108	m3

Prepared by		Checked by	
H. Irula	02/07/15	S. Endo	15 July, 02

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pit Type 4	Page No. 3/4	Rev.

References/

Excavation

0.3 m
1.235 m3

Backfilling

0.513 m3

Cast Iron Ring

3.20 m

Cover 1 Nos

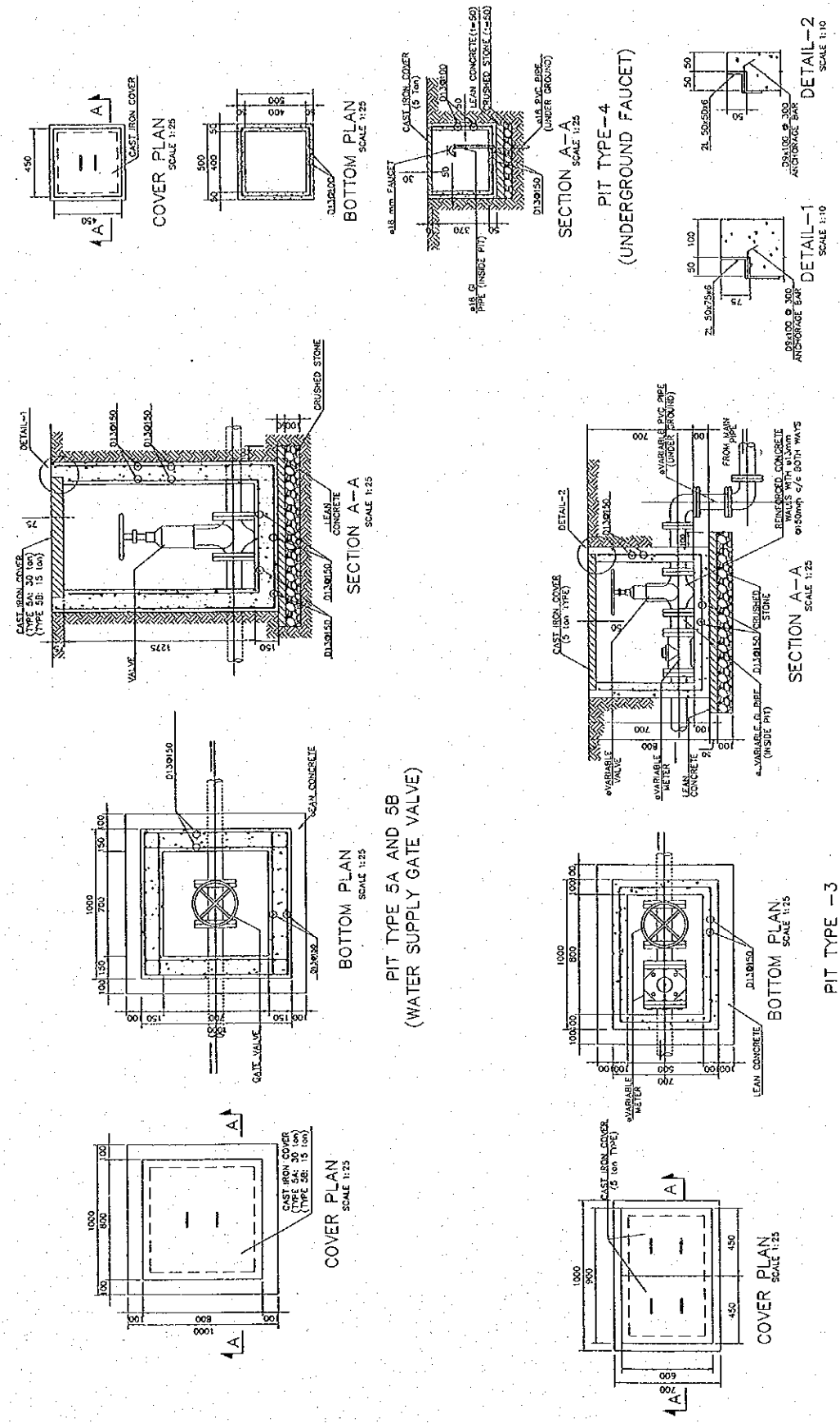
Mass Concrete Support

0.012 m3
0.006 m3
0.018 m3

Summary of Quantity for Pit		
Excavation	1.235	m3
Backfilling	0.513	m3
Crushed Stone	0.108	m3
Lean Concrete	0.054	m3
Raiforcement Bar : Lower (D13)	22.21	kg
Form (Lower)	4.899	m2
Concrete (Lower) : 18N	0.272	m3
Mass Concrete Support	0.018	m3
Cast Iron Ring : L 50x50x6	3.20	m
Cover (450 x 450 x 30)	1	nos

Prepared by		Checked by	
H. Irula	02/07/15	S. Endo	15 July, 02

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:	PIT TYPE-4	Page Nº. 4/4	



		Prepared by		Checked by	
		H. Irula	02/07/15	S. Endo	15 July, 02

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	**Water Supply System**	**Pay Item No. (BOQ)**	4B0303 & 4B0304
Quantity Item	**Pit Type-5**	**Unit**	No.

Calculation Procedure Applied

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

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

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

Area of form was computed using geometric formula.

References, Calculation Base and Revisions

Drawing Nº UT-02-009

Rev	Prepared		No. of	Checked		Reviewed		Superseded
	by	Date	Pages	by	Date	by	Date	by Calc No.
0	H. Iruta	02/07/15	4	S. Endo	15 July, 02	[illegible]	30 July 02	
1								
2								
3								

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References/

Water Supply Gate Valve (Type-5A & 5B)

Bottom

Dimension

Height	0.075	
	1.275	
	0.150	
Total	1.500	
Width	0.1	
	0.05	
	0.7	
	0.05	
	0.1	
Total	1.000	
B	0.100	
	0.050	
	0.700	
	0.050	
	0.100	
Total	1.000	
Area	1.000	m2
Volume	1.500	m3

Rainforcement Bar

	Length	Nos.	Length	m/kg	Weight (kg)
Side(1)	0.950	36	34.2	0.995	34.029
Side(2)	0.950	36	34.2	0.995	34.029
	1.45	13	18.4	0.995	18.275
	1.23	13	15.5	0.995	15.439
Bottom (1)	0.95	14	13.3	0.995	13.234
Bottom (2)	0.95	13	12	0.995	11.973
					126.979 kg

Concrete Work

Deducted Volume			
Pipe	75	mm	
	0.0009	m3	
Total	0.0009	m3	(A)
Concrete Volume			
(Side)	0.615	m3	
(Bottom)	0.150	m3	
	0.765	m3	(B)
(B)-(A)	0.764	m3	

Form Work

Deducted Area			
	0.471	m2	(C)
(Side-Outside)	6		
(Side-Inside)	3.57		
(Bottom)	1.00		
Total	10.57	m2	(D)
(D)-(C)	10.099	m2	

Lean Concrete

d	0.05	m
Width	0.1	m
Concrete Volume	0.072	m3

Crushed Stone

d	0.1	m
Volume	0.144	m3

Prepared by		Checked by	
H. Iruta	02/07/15	S. Endo	15 July, 02

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References/

Excavation

0.3 m
2.789 m3

Backfilling

1.073 m3

Cast Iron Ring

2.80 m

Cover 1 Nos

Mass Concrete Support

0.012 m3
0.006 m3
0.018 m3

Summary of Quantity for Pit

Excavation	2.789	m3
Backfilling	1.073	m3
Crushed Stone	0.144	m3
Lean Concrete	0.072	m3
Raiforcement Bar : Lower (D13)	126.98	kg
Form (Lower)	10.099	m2
Concrete (Lower) : 18N	0.764	m3
Mass Concrete Support	0.018	m3
Cast Iron Ring : L 50x50x6	2.80	m
Cover (800 x 800 x 75)	1	nos

Prepared by		Checked by	
H. Iruta	02/07/15	S. Endo	15 July, 02

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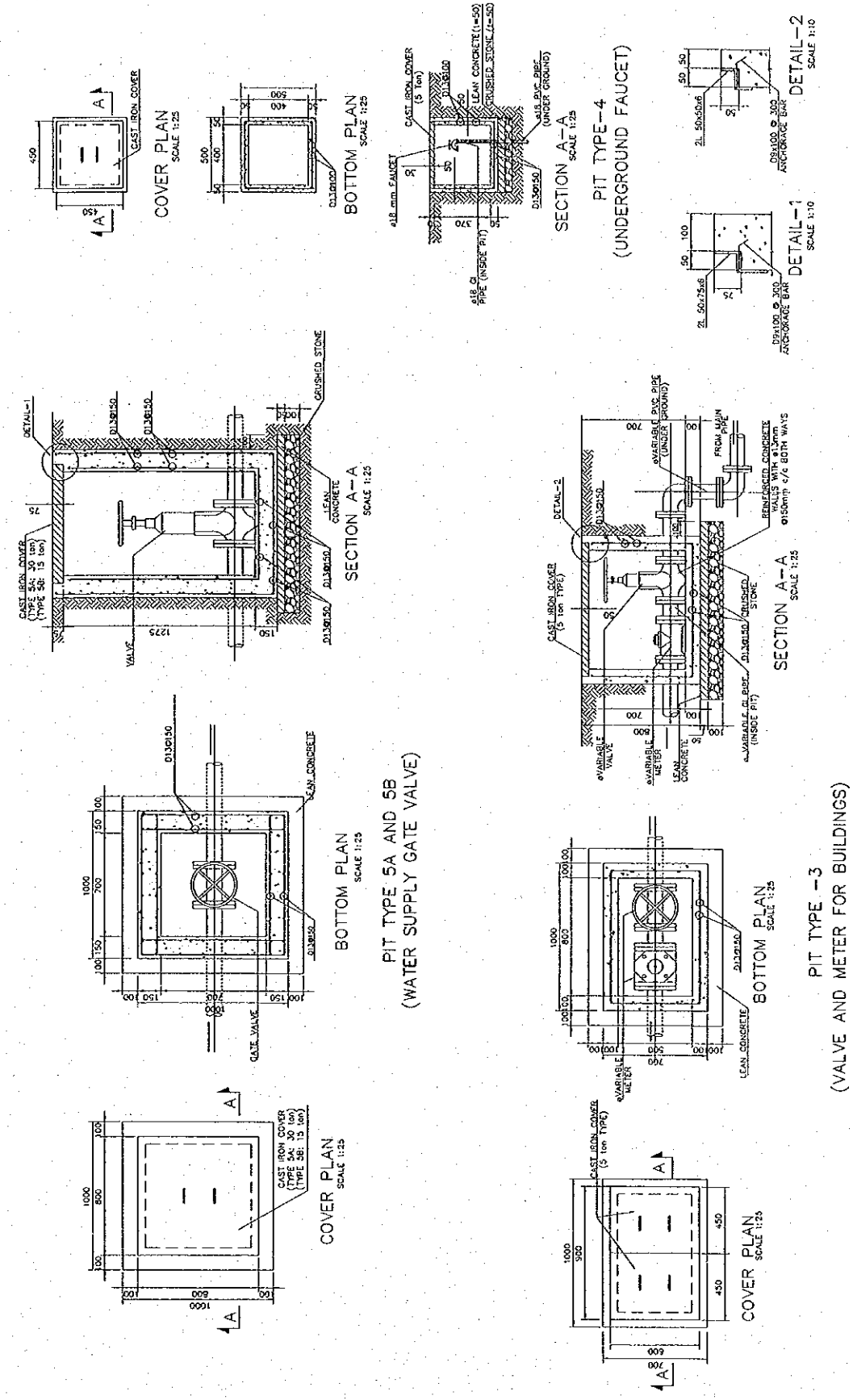

		Prepared by		Checked by	
		H. Iruta	02/07/15	S. Endo	15 July, 02