

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

UTILITY WORKS
QUANTITY CALCULATION REPORT

Utility Works

JICA LIBRARY



J1169708(3)

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

UTILITY WORKS
QUANTITY CALCULATION REPORT

OCTOBER 2002 NIPPON KOEI

JICA
609
728
SSF
BRARY

SSF
CR (4)
02-130

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.



1169708【3】

WATER SUPPLY SYSTEM

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			
<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^o 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</p>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	<i>H. Inok</i>	02/07/16	22	<i>S. Sando</i>	02/07/16	<i>W. JT</i>	30 July 02	
1	<i>CH</i>							
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/																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
<table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th rowspan="2">Description</th> <th colspan="24">Quantity</th> <th rowspan="2">Subtotal</th> </tr> <tr> <th>01</th><th>02</th><th>03</th><th>04</th><th>05</th><th>06</th><th>07</th><th>08</th><th>09</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th><th>17</th><th>18</th><th>19</th><th>20</th><th>21</th><th>22</th><th>23</th><th>24</th> </tr> </thead> <tbody> <tr> <td>480101</td> <td>PVC pipe, diameter 12 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480102</td> <td>PVC pipe, diameter 18 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.00</td> </tr> <tr> <td>480103</td> <td>PVC pipe, diameter 25 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.00</td> </tr> <tr> <td>480104</td> <td>PVC pipe, diameter 31 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480105</td> <td>PVC pipe, diameter 38 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480106</td> <td>PVC pipe, diameter 50 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480107</td> <td>PVC pipe, diameter 75 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480108</td> <td>PVC pipe, diameter 100 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480109</td> <td>PVC pipe, diameter 150 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480110</td> <td>PVC pipe, diameter 200 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480111</td> <td>Galvanized iron pipe, diameter 63 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480112</td> <td>Galvanized iron pipe, diameter 75 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480113</td> <td>Ductile iron pipe, diameter 100 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480114</td> <td>Ductile iron pipe, diameter 150 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> <tr> <td>480115</td> <td>Ductile iron pipe, diameter 300 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1.00</td> </tr> </tbody> </table>				Item	Description	Quantity																								Subtotal	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	480101	PVC pipe, diameter 12 mm																										1.00	480102	PVC pipe, diameter 18 mm																										4.00	480103	PVC pipe, diameter 25 mm																										4.00	480104	PVC pipe, diameter 31 mm																										1.00	480105	PVC pipe, diameter 38 mm																										1.00	480106	PVC pipe, diameter 50 mm																										1.00	480107	PVC pipe, diameter 75 mm																										1.00	480108	PVC pipe, diameter 100 mm																										1.00	480109	PVC pipe, diameter 150 mm																										1.00	480110	PVC pipe, diameter 200 mm																										1.00	480111	Galvanized iron pipe, diameter 63 mm																										1.00	480112	Galvanized iron pipe, diameter 75 mm																										1.00	480113	Ductile iron pipe, diameter 100 mm																										1.00	480114	Ductile iron pipe, diameter 150 mm																										1.00	480115	Ductile iron pipe, diameter 300 mm																										1.00
Item	Description	Quantity																								Subtotal																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480101	PVC pipe, diameter 12 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480102	PVC pipe, diameter 18 mm																										4.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480103	PVC pipe, diameter 25 mm																										4.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480104	PVC pipe, diameter 31 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480105	PVC pipe, diameter 38 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480106	PVC pipe, diameter 50 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480107	PVC pipe, diameter 75 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480108	PVC pipe, diameter 100 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480109	PVC pipe, diameter 150 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480110	PVC pipe, diameter 200 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480111	Galvanized iron pipe, diameter 63 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480112	Galvanized iron pipe, diameter 75 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480113	Ductile iron pipe, diameter 100 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480114	Ductile iron pipe, diameter 150 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
480115	Ductile iron pipe, diameter 300 mm																										1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																															
<table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th rowspan="2">Description</th> <th colspan="12">Administration Building</th> <th rowspan="2">Subtotal</th> </tr> <tr> <th>01</th><th>02</th><th>03</th><th>04</th><th>05</th><th>06</th><th>07</th><th>08</th><th>09</th><th>10</th><th>11</th><th>12</th> </tr> </thead> <tbody> <tr> <td>480101</td> <td>PVC pipe, diameter 12 mm</td> <td>32.85</td><td>31.60</td><td>12.60</td><td>3.70</td><td>11.10</td><td>36.05</td><td>42.75</td><td>27.50</td><td>12.90</td><td>8.45</td><td></td><td></td><td>223.20</td> </tr> <tr> <td>480102</td> <td>PVC pipe, diameter 18 mm</td> <td>5.20</td><td>18.70</td><td>2.00</td><td>24.40</td><td>8.90</td><td>3.50</td><td>4.10</td><td></td><td></td><td></td><td></td><td></td><td>66.80</td> </tr> <tr> <td>480103</td> <td>PVC pipe, diameter 25 mm</td> <td>11.60</td><td>11.80</td><td>0.50</td><td>16.50</td><td>4.00</td><td>14.90</td><td>14.90</td><td>7.40</td><td>10.00</td><td>5.76</td><td></td><td></td><td>91.30</td> </tr> <tr> <td>480104</td> <td>PVC pipe, diameter 31 mm</td> <td>4.00</td><td>11.20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>16.20</td> </tr> <tr> <td>480105</td> <td>PVC pipe, diameter 38 mm</td> <td>2.70</td><td>2.70</td><td>2.70</td><td>2.08</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>10.18</td> </tr> <tr> <td>480106</td> <td>PVC pipe, diameter 50 mm</td> <td>1.00</td><td>2.50</td><td>17.09</td><td>1.50</td><td>1.50</td><td>1.30</td><td>16.50</td><td>1.80</td><td>12.40</td><td>1.10</td><td></td><td></td><td>66.60</td> </tr> <tr> <td>480107</td> <td>PVC pipe, diameter 75 mm</td> <td>12.40</td><td>22.70</td><td>2.50</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>37.60</td> </tr> <tr> <td>480108</td> <td>PVC pipe, diameter 100 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480109</td> <td>PVC pipe, diameter 150 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480110</td> <td>PVC pipe, diameter 200 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480111</td> <td>Galvanized iron pipe, diameter 63 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480112</td> <td>Galvanized iron pipe, diameter 75 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480113</td> <td>Ductile iron pipe, diameter 100 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480114</td> <td>Ductile iron pipe, diameter 150 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> <tr> <td>480115</td> <td>Ductile iron pipe, diameter 300 mm</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0.00</td> </tr> </tbody> </table>				Item	Description	Administration Building												Subtotal	01	02	03	04	05	06	07	08	09	10	11	12	480101	PVC pipe, diameter 12 mm	32.85	31.60	12.60	3.70	11.10	36.05	42.75	27.50	12.90	8.45			223.20	480102	PVC pipe, diameter 18 mm	5.20	18.70	2.00	24.40	8.90	3.50	4.10						66.80	480103	PVC pipe, diameter 25 mm	11.60	11.80	0.50	16.50	4.00	14.90	14.90	7.40	10.00	5.76			91.30	480104	PVC pipe, diameter 31 mm	4.00	11.20											16.20	480105	PVC pipe, diameter 38 mm	2.70	2.70	2.70	2.08									10.18	480106	PVC pipe, diameter 50 mm	1.00	2.50	17.09	1.50	1.50	1.30	16.50	1.80	12.40	1.10			66.60	480107	PVC pipe, diameter 75 mm	12.40	22.70	2.50										37.60	480108	PVC pipe, diameter 100 mm													0.00	480109	PVC pipe, diameter 150 mm													0.00	480110	PVC pipe, diameter 200 mm													0.00	480111	Galvanized iron pipe, diameter 63 mm													0.00	480112	Galvanized iron pipe, diameter 75 mm													0.00	480113	Ductile iron pipe, diameter 100 mm													0.00	480114	Ductile iron pipe, diameter 150 mm													0.00	480115	Ductile iron pipe, diameter 300 mm													0.00																																																																																																																																																																																																																											
Item	Description	Administration Building												Subtotal																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		01	02	03	04	05	06	07	08	09	10	11	12																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
480101	PVC pipe, diameter 12 mm	32.85	31.60	12.60	3.70	11.10	36.05	42.75	27.50	12.90	8.45			223.20																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480102	PVC pipe, diameter 18 mm	5.20	18.70	2.00	24.40	8.90	3.50	4.10						66.80																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480103	PVC pipe, diameter 25 mm	11.60	11.80	0.50	16.50	4.00	14.90	14.90	7.40	10.00	5.76			91.30																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480104	PVC pipe, diameter 31 mm	4.00	11.20											16.20																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480105	PVC pipe, diameter 38 mm	2.70	2.70	2.70	2.08									10.18																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480106	PVC pipe, diameter 50 mm	1.00	2.50	17.09	1.50	1.50	1.30	16.50	1.80	12.40	1.10			66.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480107	PVC pipe, diameter 75 mm	12.40	22.70	2.50										37.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480108	PVC pipe, diameter 100 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480109	PVC pipe, diameter 150 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480110	PVC pipe, diameter 200 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480111	Galvanized iron pipe, diameter 63 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480112	Galvanized iron pipe, diameter 75 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480113	Ductile iron pipe, diameter 100 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480114	Ductile iron pipe, diameter 150 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
480115	Ductile iron pipe, diameter 300 mm													0.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
<table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th rowspan="2">Description</th> <th colspan="3">CFS</th> <th colspan="3">M&RS</th> <th colspan="2">Power Station</th> <th rowspan="2">Total</th> </tr> <tr> <th>Count</th><th>Subtotal</th><th></th> <th>Count</th><th>Subtotal</th><th></th> <th>Count</th><th>Subtotal</th> </tr> </thead> <tbody> <tr> <td>480101</td> <td>PVC pipe, diameter 12 mm</td> <td>43.60</td><td>43.60</td><td>51.00</td> <td></td><td>51.00</td><td>5.00</td><td>5.00</td> <td>322.80</td> </tr> <tr> <td>480102</td> <td>PVC pipe, diameter 18 mm</td> <td>10.10</td><td>18.00</td><td>28.10</td> <td>3.30</td><td>58.50</td><td>3.00</td><td>3.00</td> <td>175.90</td> </tr> <tr> <td>480103</td> <td>PVC pipe, diameter 25 mm</td> <td>7.30</td><td>130.00</td><td>139.10</td> <td>6.00</td><td>170.00</td><td>6.00</td><td>6.00</td> <td>412.40</td> </tr> <tr> <td>480104</td> <td>PVC pipe, diameter 31 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>15.20</td> </tr> <tr> <td>480105</td> <td>PVC pipe, diameter 38 mm</td> <td>8.00</td><td>8.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>118.60</td> </tr> <tr> <td>480106</td> <td>PVC pipe, diameter 50 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>66.60</td> </tr> <tr> <td>480107</td> <td>PVC pipe, diameter 75 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>37.60</td> </tr> <tr> <td>480108</td> <td>PVC pipe, diameter 100 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>123.42</td> </tr> <tr> <td>480109</td> <td>PVC pipe, diameter 150 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>2,979.27</td> </tr> <tr> <td>480110</td> <td>PVC pipe, diameter 200 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>50.39</td> </tr> <tr> <td>480111</td> <td>Galvanized iron pipe, diameter 63 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>30.20</td> </tr> <tr> <td>480112</td> <td>Galvanized iron pipe, diameter 75 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>26.00</td> </tr> <tr> <td>480113</td> <td>Ductile iron pipe, diameter 100 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>27.60</td> </tr> <tr> <td>480114</td> <td>Ductile iron pipe, diameter 150 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>564.95</td> </tr> <tr> <td>480115</td> <td>Ductile iron pipe, diameter 300 mm</td> <td></td><td>0.00</td><td></td> <td></td><td>0.00</td><td></td><td>0.00</td> <td>975.24</td> </tr> </tbody> </table>				Item	Description	CFS			M&RS			Power Station		Total	Count	Subtotal		Count	Subtotal		Count	Subtotal	480101	PVC pipe, diameter 12 mm	43.60	43.60	51.00		51.00	5.00	5.00	322.80	480102	PVC pipe, diameter 18 mm	10.10	18.00	28.10	3.30	58.50	3.00	3.00	175.90	480103	PVC pipe, diameter 25 mm	7.30	130.00	139.10	6.00	170.00	6.00	6.00	412.40	480104	PVC pipe, diameter 31 mm		0.00			0.00		0.00	15.20	480105	PVC pipe, diameter 38 mm	8.00	8.00			0.00		0.00	118.60	480106	PVC pipe, diameter 50 mm		0.00			0.00		0.00	66.60	480107	PVC pipe, diameter 75 mm		0.00			0.00		0.00	37.60	480108	PVC pipe, diameter 100 mm		0.00			0.00		0.00	123.42	480109	PVC pipe, diameter 150 mm		0.00			0.00		0.00	2,979.27	480110	PVC pipe, diameter 200 mm		0.00			0.00		0.00	50.39	480111	Galvanized iron pipe, diameter 63 mm		0.00			0.00		0.00	30.20	480112	Galvanized iron pipe, diameter 75 mm		0.00			0.00		0.00	26.00	480113	Ductile iron pipe, diameter 100 mm		0.00			0.00		0.00	27.60	480114	Ductile iron pipe, diameter 150 mm		0.00			0.00		0.00	564.95	480115	Ductile iron pipe, diameter 300 mm		0.00			0.00		0.00	975.24																																																																																																																																																																																																																																																																																																														
Item	Description	CFS				M&RS			Power Station		Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		Count	Subtotal		Count	Subtotal		Count	Subtotal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480101	PVC pipe, diameter 12 mm	43.60	43.60	51.00		51.00	5.00	5.00	322.80																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480102	PVC pipe, diameter 18 mm	10.10	18.00	28.10	3.30	58.50	3.00	3.00	175.90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480103	PVC pipe, diameter 25 mm	7.30	130.00	139.10	6.00	170.00	6.00	6.00	412.40																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480104	PVC pipe, diameter 31 mm		0.00			0.00		0.00	15.20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480105	PVC pipe, diameter 38 mm	8.00	8.00			0.00		0.00	118.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480106	PVC pipe, diameter 50 mm		0.00			0.00		0.00	66.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480107	PVC pipe, diameter 75 mm		0.00			0.00		0.00	37.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480108	PVC pipe, diameter 100 mm		0.00			0.00		0.00	123.42																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480109	PVC pipe, diameter 150 mm		0.00			0.00		0.00	2,979.27																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480110	PVC pipe, diameter 200 mm		0.00			0.00		0.00	50.39																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480111	Galvanized iron pipe, diameter 63 mm		0.00			0.00		0.00	30.20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480112	Galvanized iron pipe, diameter 75 mm		0.00			0.00		0.00	26.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480113	Ductile iron pipe, diameter 100 mm		0.00			0.00		0.00	27.60																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480114	Ductile iron pipe, diameter 150 mm		0.00			0.00		0.00	564.95																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
480115	Ductile iron pipe, diameter 300 mm		0.00			0.00		0.00	975.24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Prepared by		Checked by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
A. Iru		S. Endo																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
02/07/16		02/July/16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								



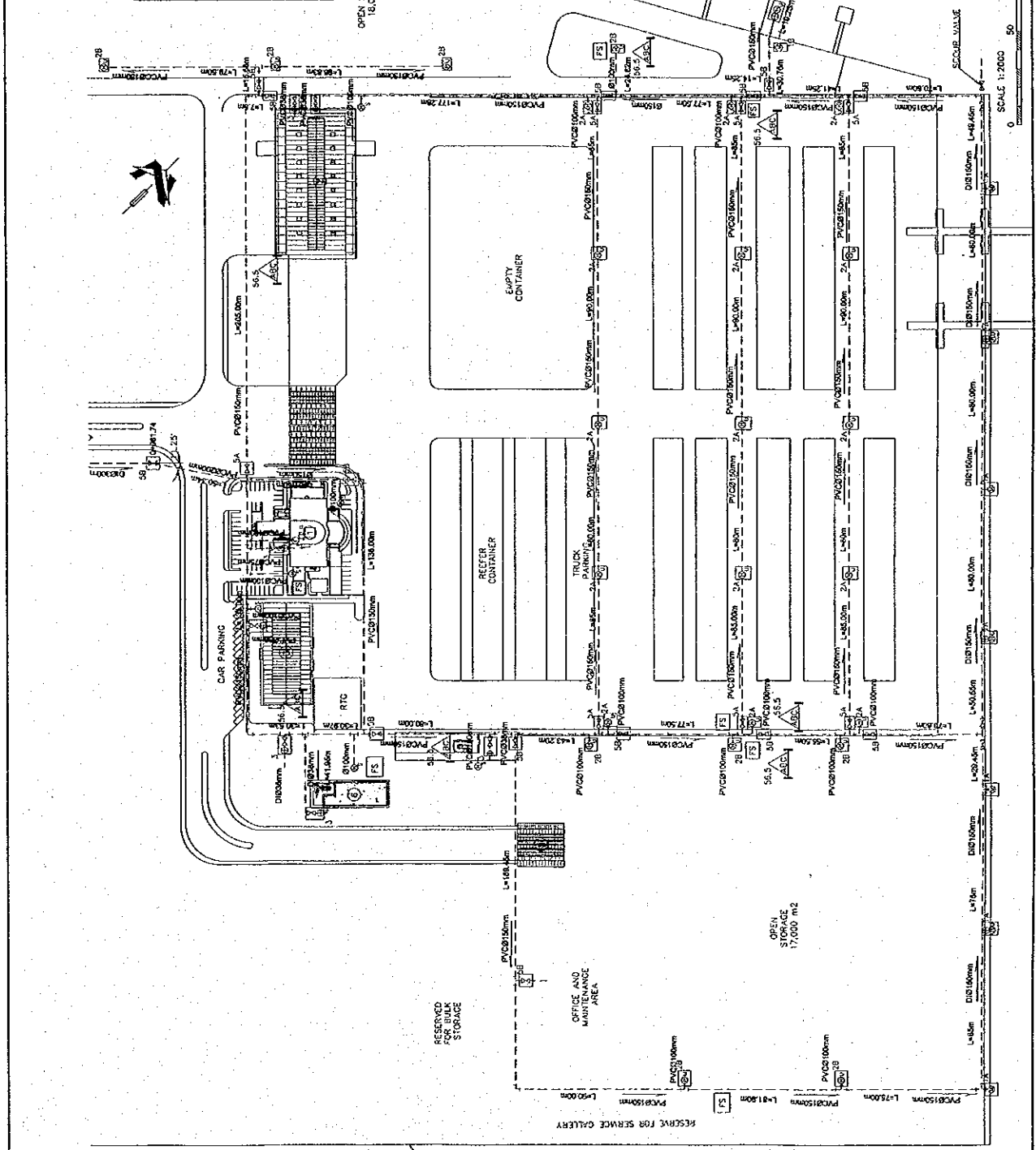
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	PIPE WORK	Page N°. 3/22

TYPE	CONTENTS	CAST IRON MANHOLES	CAST IRON COVERS
1A	FIRE MONITOR AND GATE VALVE OR HYDRANT AND METER	30 TON.	30 TON.
1B	FIRE MONITOR AND GATE VALVE OR HYDRANT AND METER	30 TON.	30 TON.
2A	UNDERGROUND HYDRANT	35 TON.	35 TON.
2B	UNDERGROUND HYDRANT	15 TON.	15 TON.
3	VALVE AND METER FOR BUILDINGS	5 TON.	5 TON.
4	UNDERGROUND FAUCET	30 TON.	30 TON.
5A	WATER SUPPLY GATE VALVE	30 TON.	30 TON.
5B	WATER SUPPLY GATE VALVE	15 TON.	15 TON.

- (BUILDING LIST)
- ADMINISTRATION BUILDING
 - CONTAINER FREIGHT STATION
 - MAINTENANCE AND REPAIR SHOP
 - CONTAINER GATE
 - CARGO GATE
 - POWER SUPPLY STATION
 - PARKING SHEDS
 - FUEL STATION

- (SYMBOLS)
- METER
 - MONITOR
 - HYDRANT
 - VALVE
 - ABC CLASS DRY CHEMICAL WHEEL EXTINGUISHER
 - FIRE STATION CABINET
 - INLET FOR FIRE FIGHTING

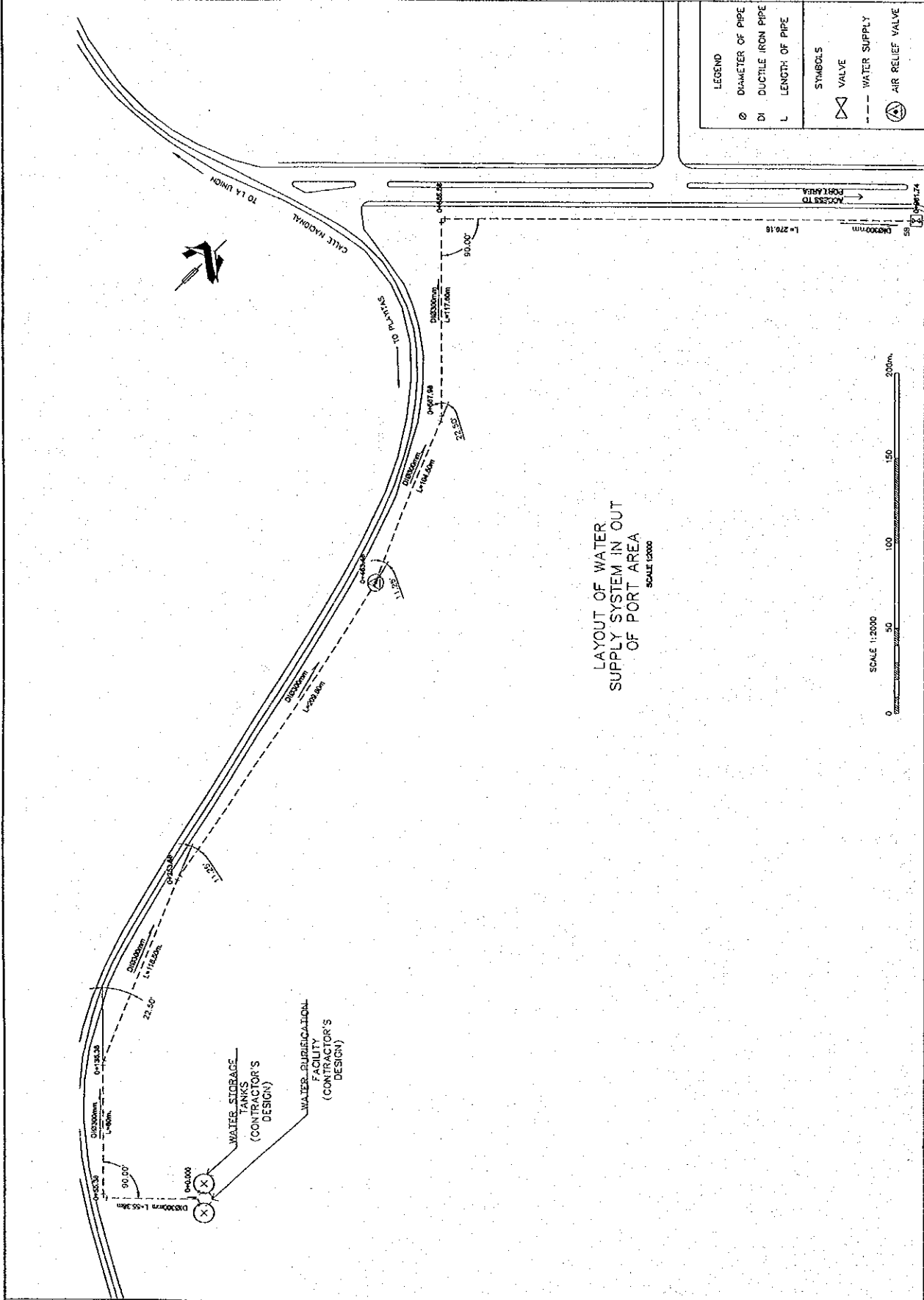
- (LEGEND) *
- C CHARGE
 - U UNDERGROUND HYDRANT
 - S STAND TYPE HYDRANT
 - DI DUCTILE IRON PIPE
 - PVC POLYVINYL CHLORIDE PIPE
 - L LENGTH OF PIPE LINE



Prepared by	H. Irule	Checked by	J. Endos
	01/07/16		16 July/02



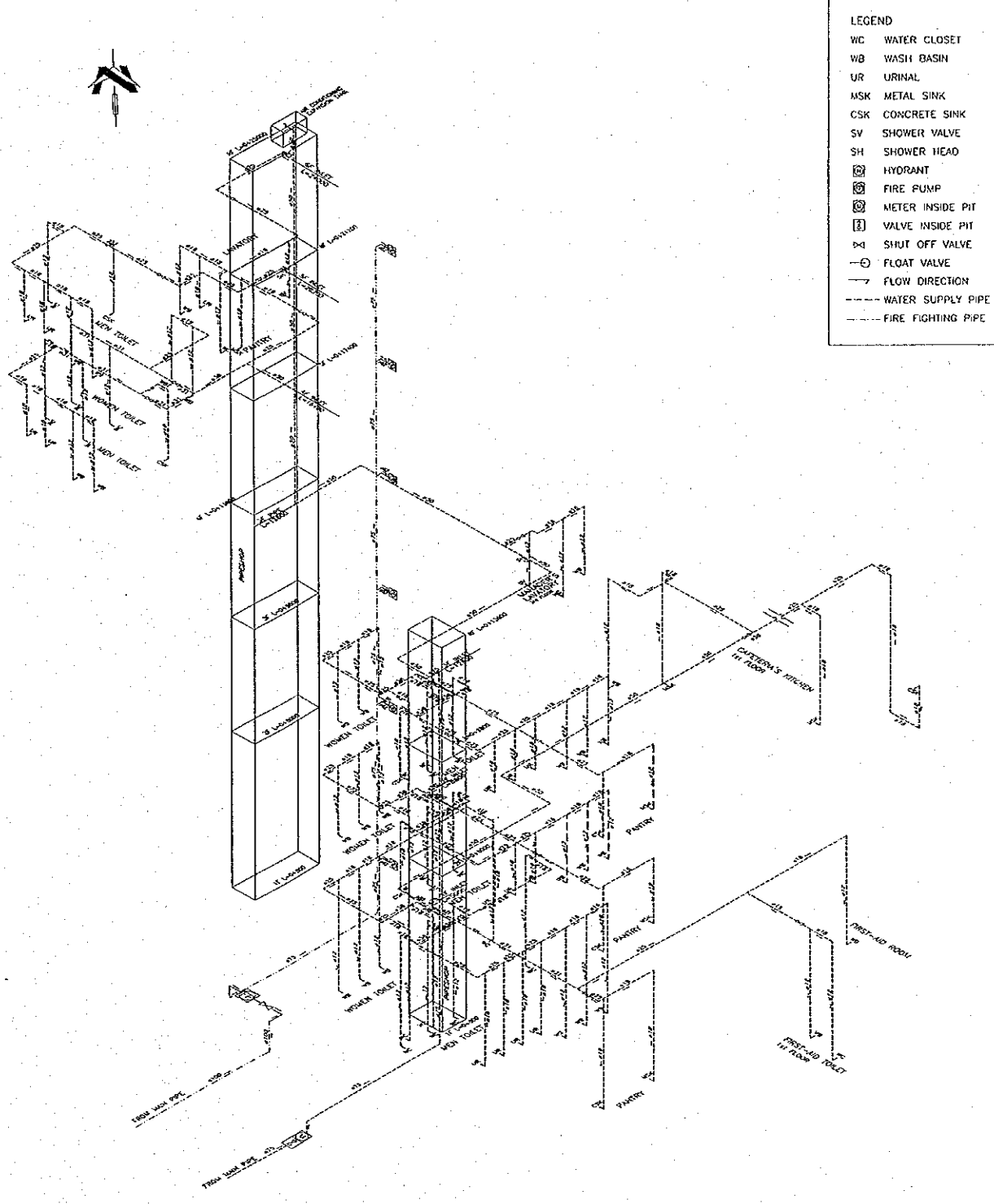
Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	PIPE WORK	Page N°	4/22



Prepared by	H. Iruja	02/02/16	Checked by	S. Eido	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°. 5/22



WATER SUPPLY PLUMBING ISOMETRIC
NOT TO SCALE

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

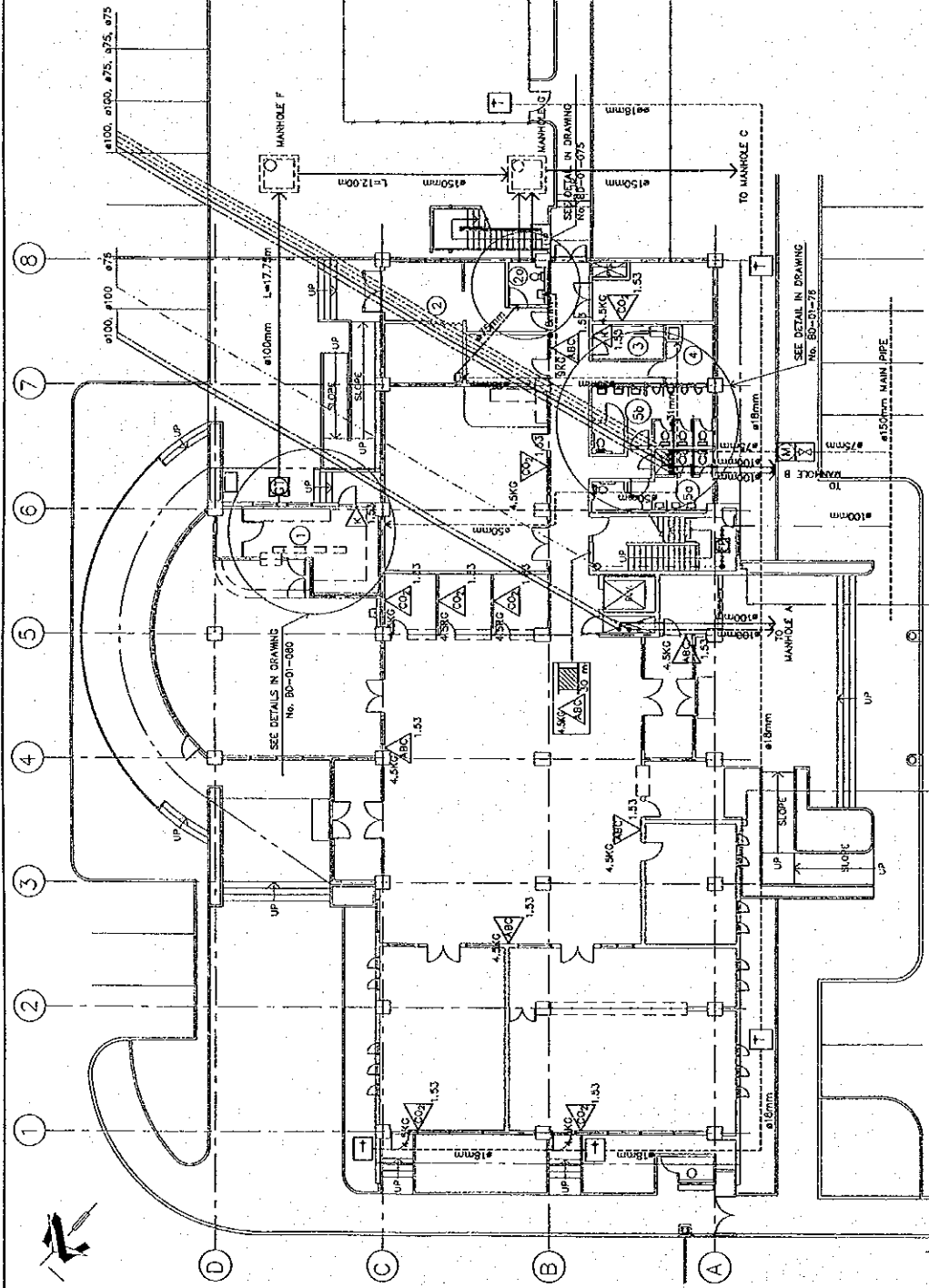


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	PIPE WORK	Page N°, 6/22

- ROOM LIST
- 1 CAFETERIA'S KITCHEN
 - 2 FIRST AID ROOM
 - 2a FIRST AID LAVATORY
 - 3 PANTRY
 - 4 JANITOR'S ROOM
 - 5a TOILET (WOMEN)
 - 5b TOILET (MEN)

- 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 PLACEMENT HEIGHT
 - m LENGTH OF HOSE (meters)



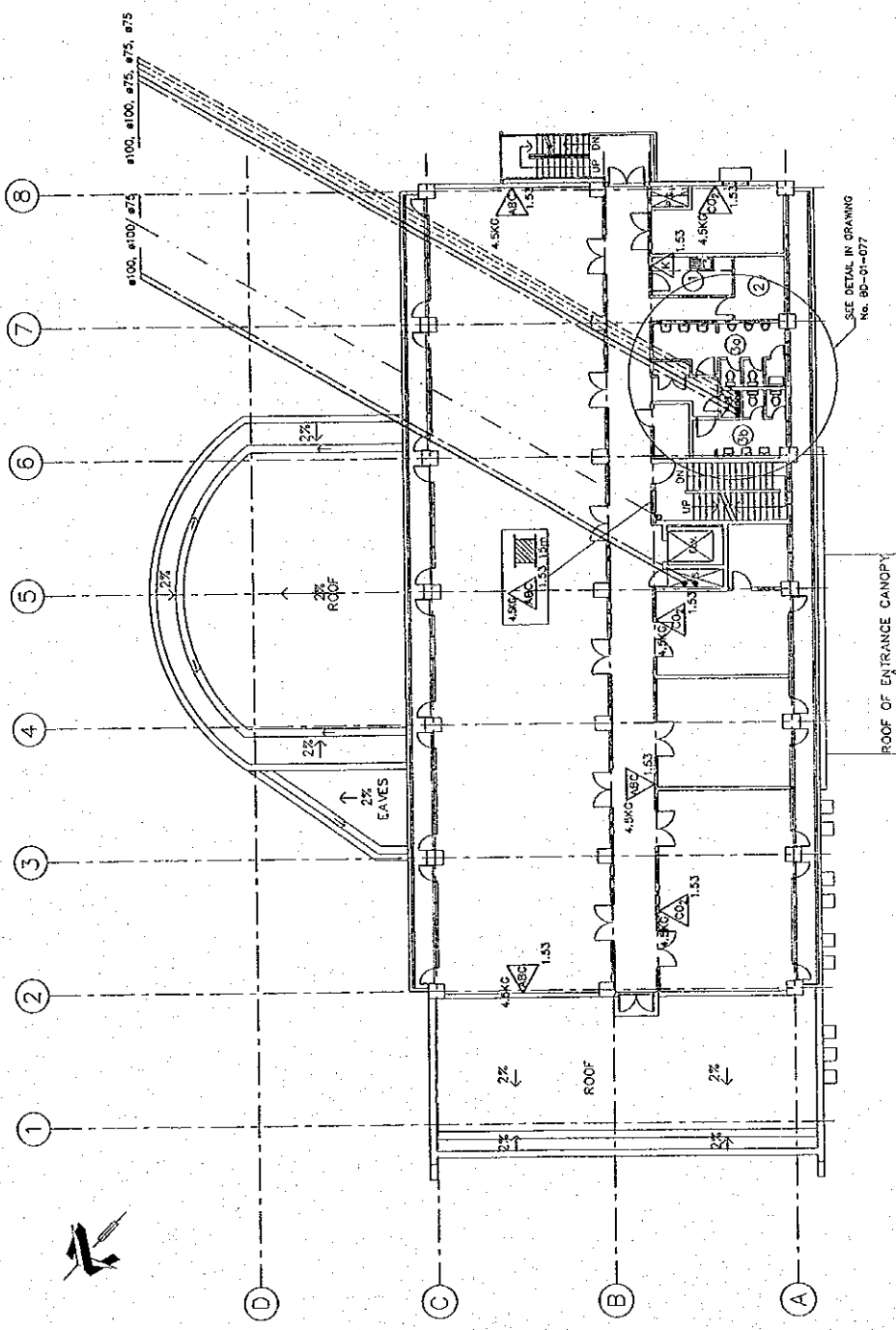
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
FIRST FLOOR
SCALE 1:200

Prepared by	H. Irub	02/07/16	Checked by	S. Endo	16 July, 2016
-------------	---------	----------	------------	---------	---------------



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°.	7/22

<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 ROSE RACK AND EXTINGUISHER</p> <p>LEGEND</p> <p>c CHARGE</p> <p>h PLACEMENT HEIGHT</p> <p>m LENGTH OF HOSE (meters)</p>
--	--	--	--



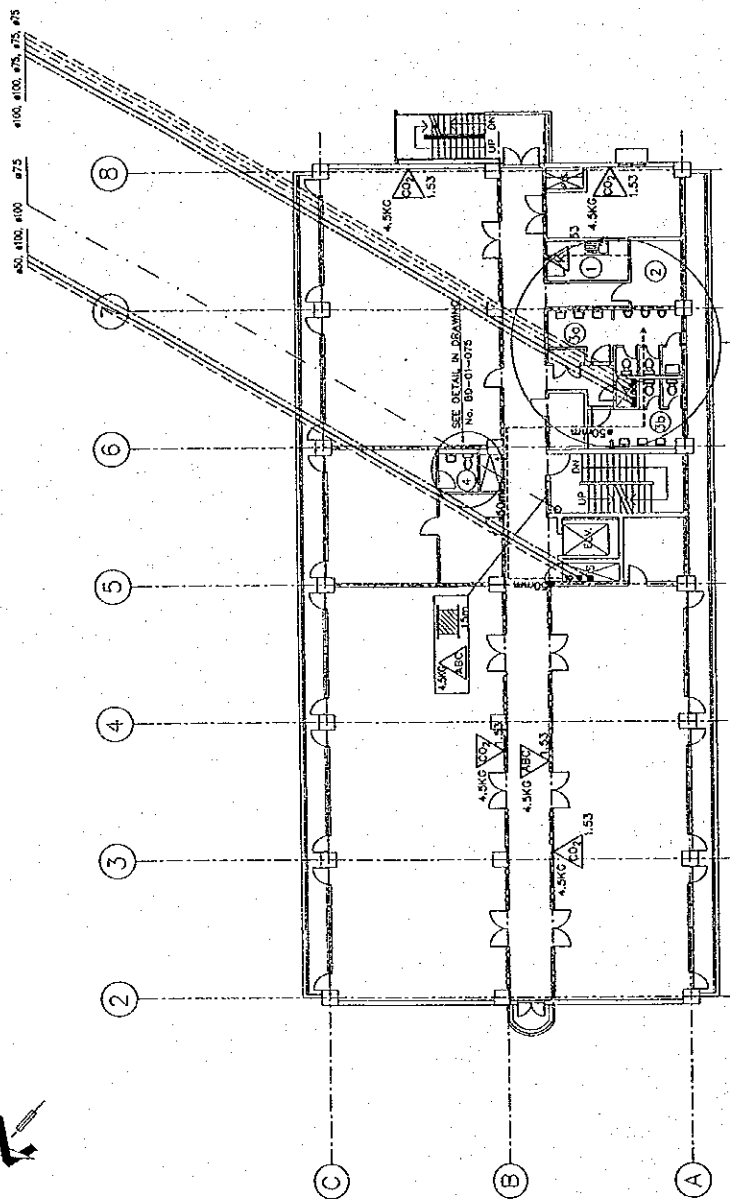
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
SECOND FLOOR
SCALE 1:200

Prepared by	H. Iruw	02/07/16	Checked by	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°	8/22

<p>ROOM LIST</p> <p>PANTRY</p> <p>JANITOR'S ROOM</p> <p>TOILET (MEN)</p> <p>TOILET (WOMEN)</p> <p>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>
--	--	--	--



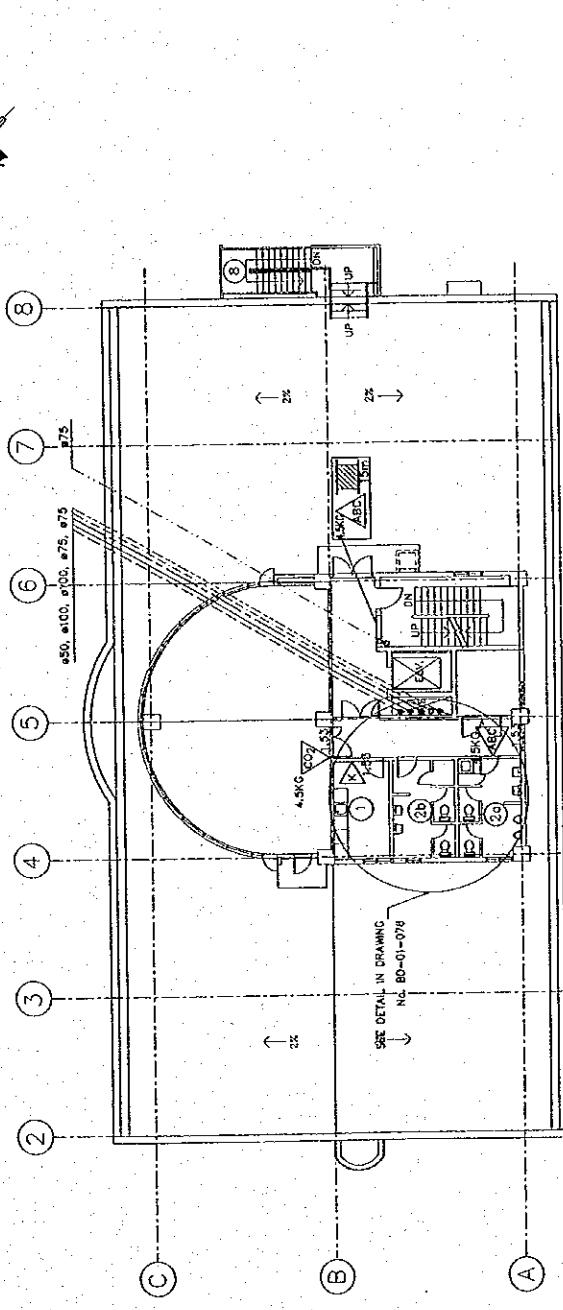
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
THIRD FLOOR
SCALE 1:200

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

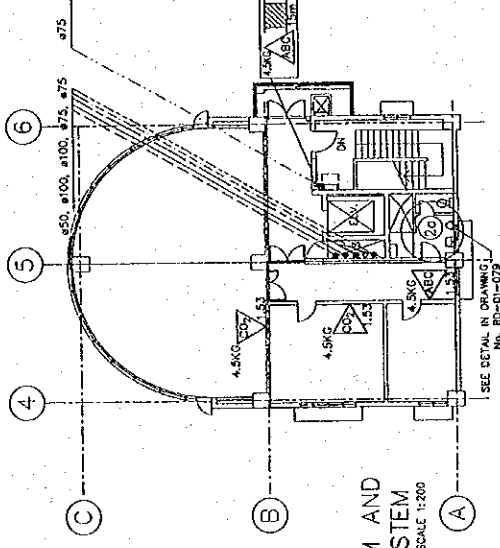


Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File No.	
Section:	UTILITY WORK	Calc. Index No.	
Subject:	PIPE WORK	Page No.	9/22

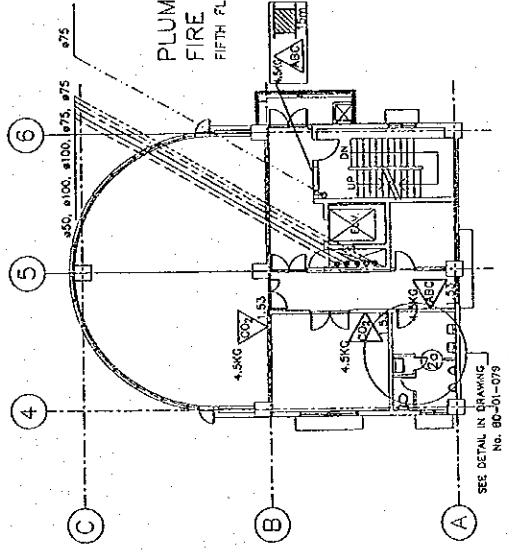
ROOM LIST PANTRY TOILET (MEN) TOILET (WOMEN)	PLUMBING SYMBOLS VERTICAL PIPE DOWN VERTICAL PIPE UP METER INSIDE PIT VALVE INSIDE PIT SHUT OFF VALVE HOSE FAUCET INSIDE PIT CHECK VALVE CLEAN OUT FIRE PUMP GREASE TRAP WATER SUPPLY PIPE WASTE DRAINAGE SANITARY DRAINAGE WASTE VENT PIPE SANITARY VENT PIPE FIRE 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 CHARGE PLACEMENT HEIGHT LENGTH OF HOSE (meters)
---	---	---	---



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

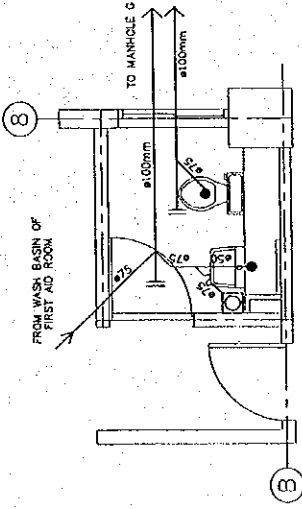


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	10/22

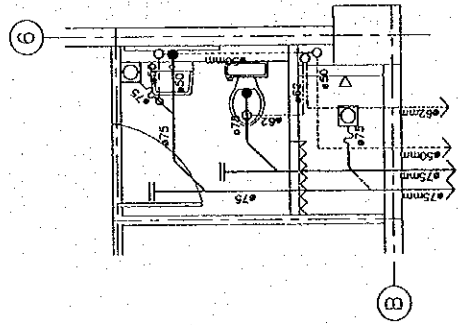


PLUMBING SYMBOLS	
●	VERTICAL PIPE DOWN
○	VERTICAL PIPE UP
⊗	METER INSIDE PIT
⊙	VALVE INSIDE PIT
⊕	SHUT OFF VALVE
⊖	HOSE FAUCET INSIDE PIT
⊗	FLOOR/SHOWER DRAIN
⊕	CLEAN OUT
⊖	TRAP
⊗	GREASE TRAP
⊙	WATER SUPPLY PIPE (AT CEILING LEVEL)
⊖	WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
⊕	WASTE VENTILATION PIPE (AT CEILING LEVEL)
⊖	SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
⊕	SANITARY DRAINAGE PIPE (AT CEILING LEVEL)
⊖	VENTILATION PIPE (AT CEILING LEVEL)

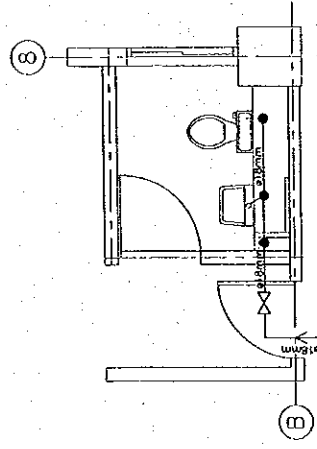
NOTES	
1)	SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2)	WATER SUPPLY PIPES TO BE PVC
3)	FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



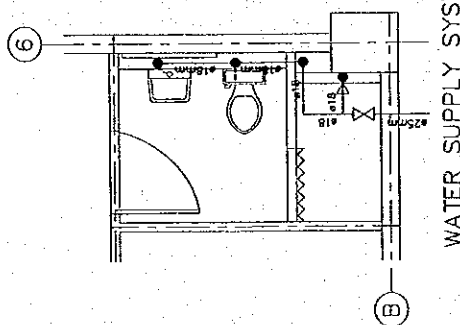
WASTEWATER SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50



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. Irela	02/07/16	Checked by	S. Endo	16 July 02
-------------	----------	----------	------------	---------	------------



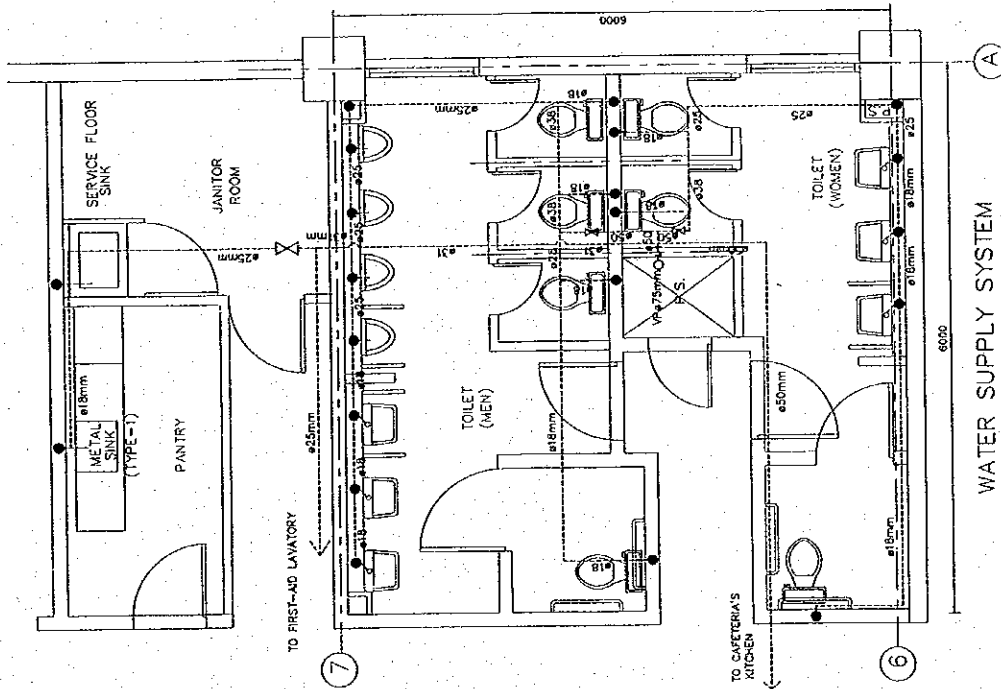
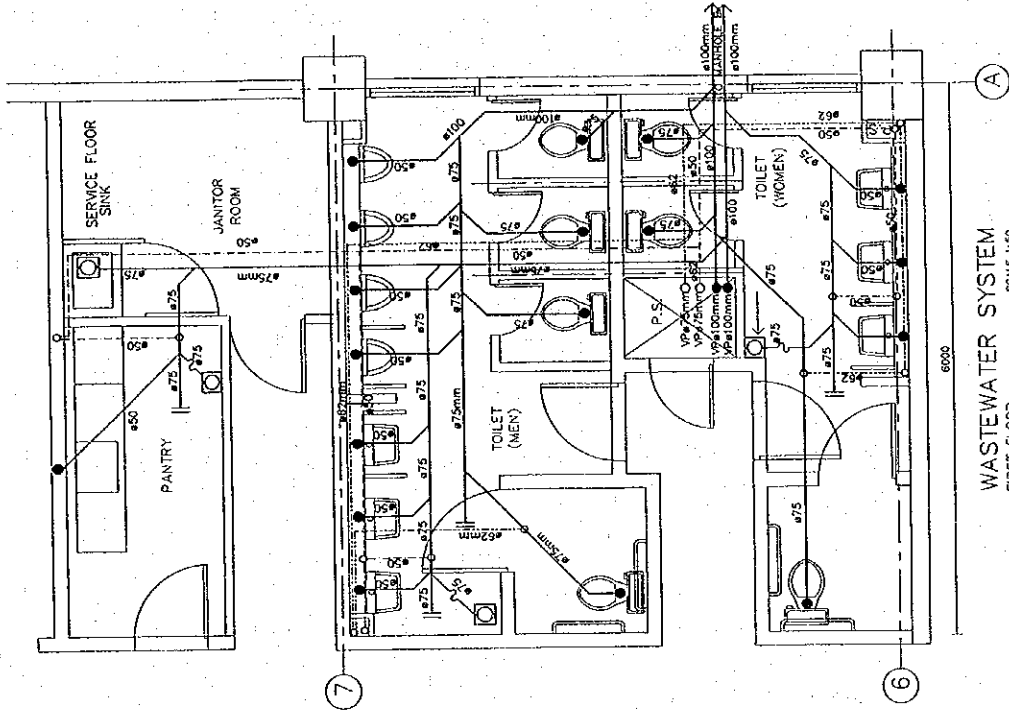
Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°
Section:	UTILITY WORK	Calc. Index N°
Subject:	PIPE WORK	Page N° 11/22

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 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 A. Irola 02/07/16 Checked by 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°.	12/22

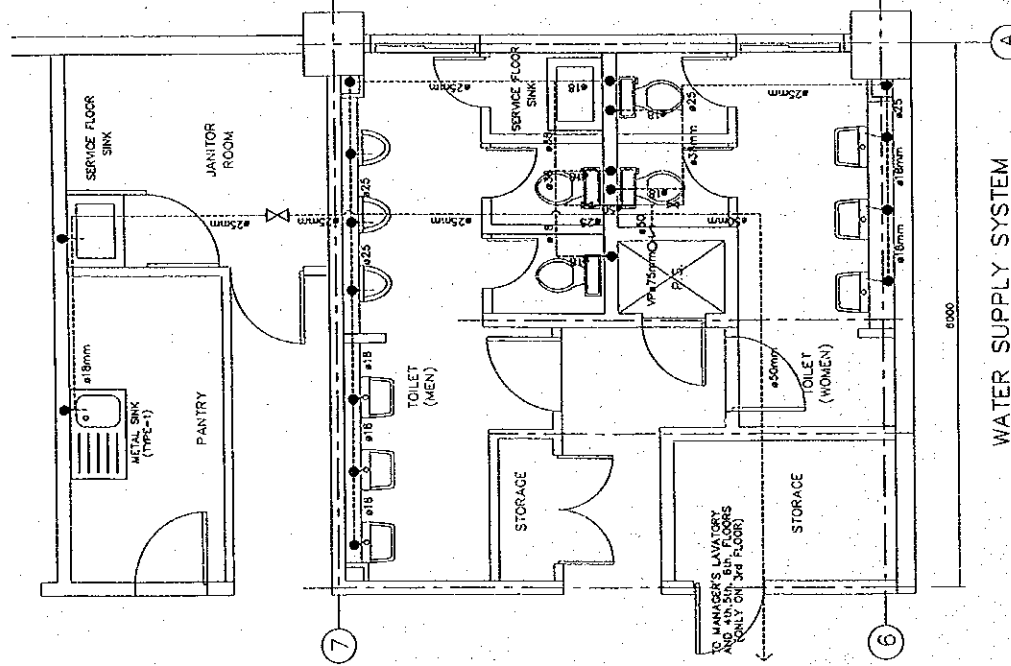
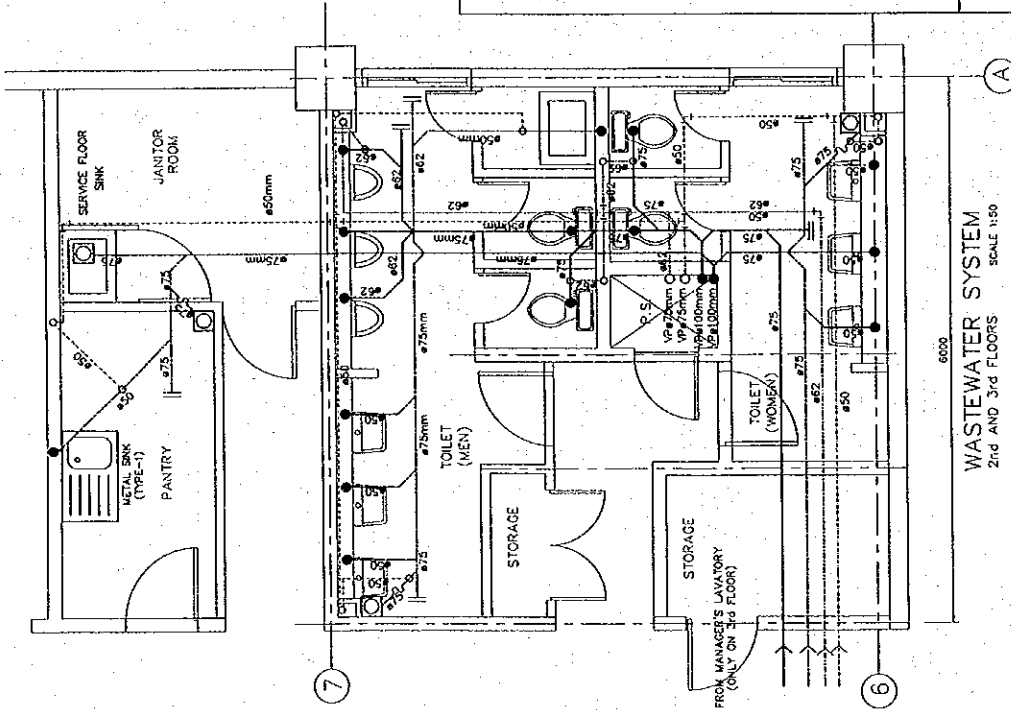


PLUMBING SYMBOLS

●	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	H. Iruka	02/07/16	Checked by	S. Endo	16 July, 2016
-------------	----------	----------	------------	---------	---------------

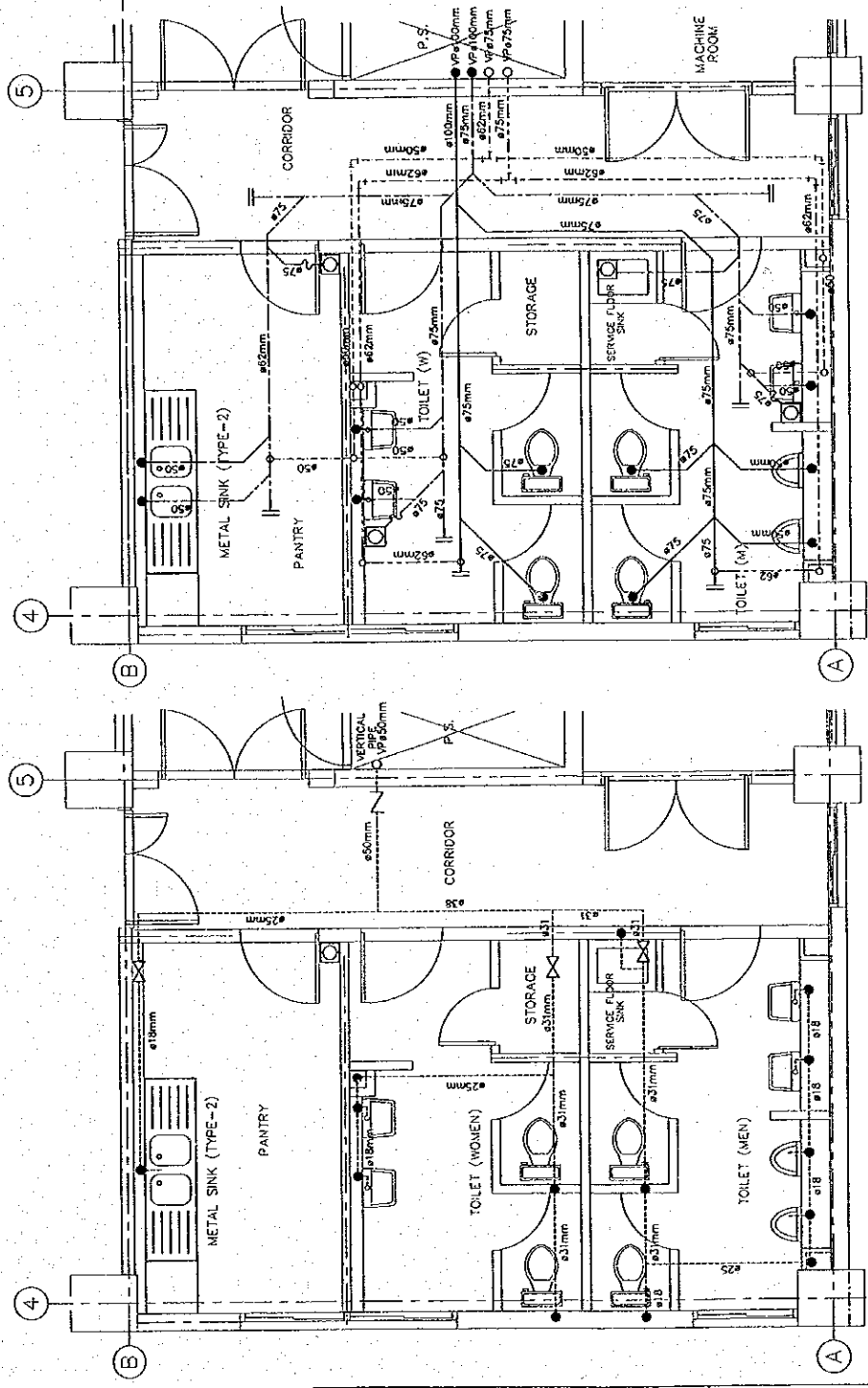


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°
Section:	UTILITY WORK	Calc. Index N°
Subject:	PIPE WORK	Page N° 13/22



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 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
FOURTH FLOOR
SCALE 1:50

WATER SUPPLY SYSTEM
FOURTH FLOOR
SCALE 1:50

Prepared by	H. Iruw	02/07/16	Checked by	S. Endo	16 July, 08
-------------	---------	----------	------------	---------	-------------



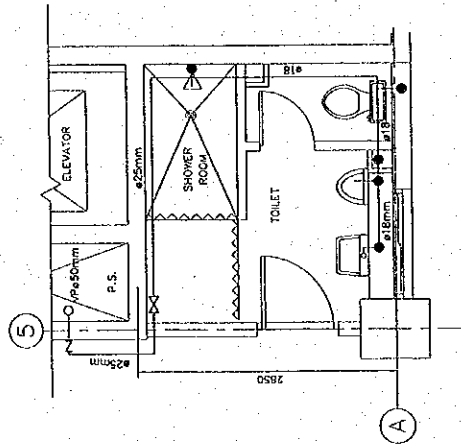
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	PIPE WORK	Page N°. 14/22



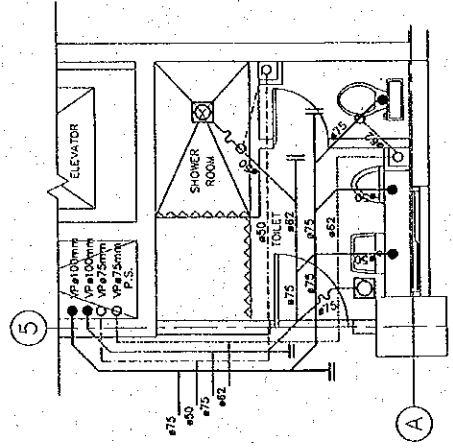
PLUMBING SYMBOLS

●	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 VENTILATOR PIPE (AT CEILING LEVEL)

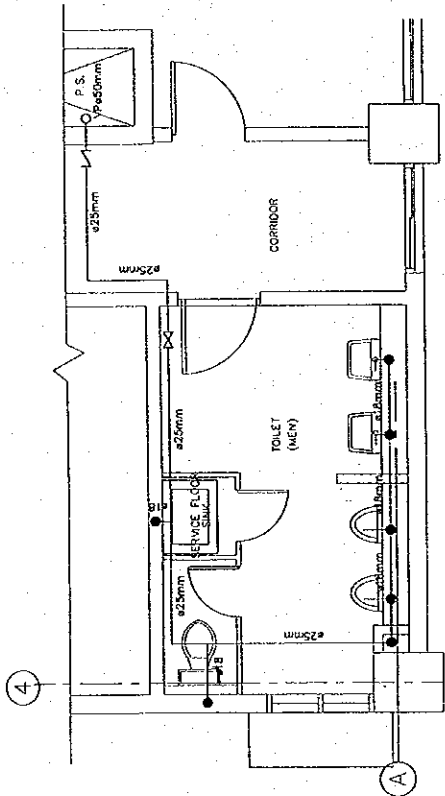
- NOTES
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



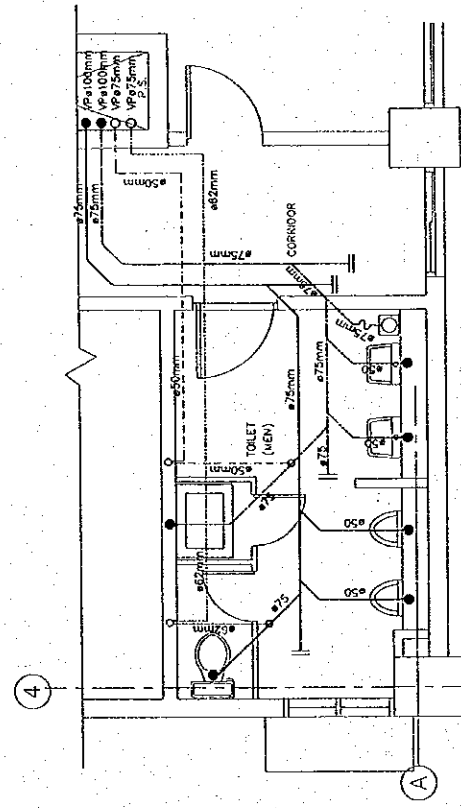
WATER SUPPLY SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WASTEWATER SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

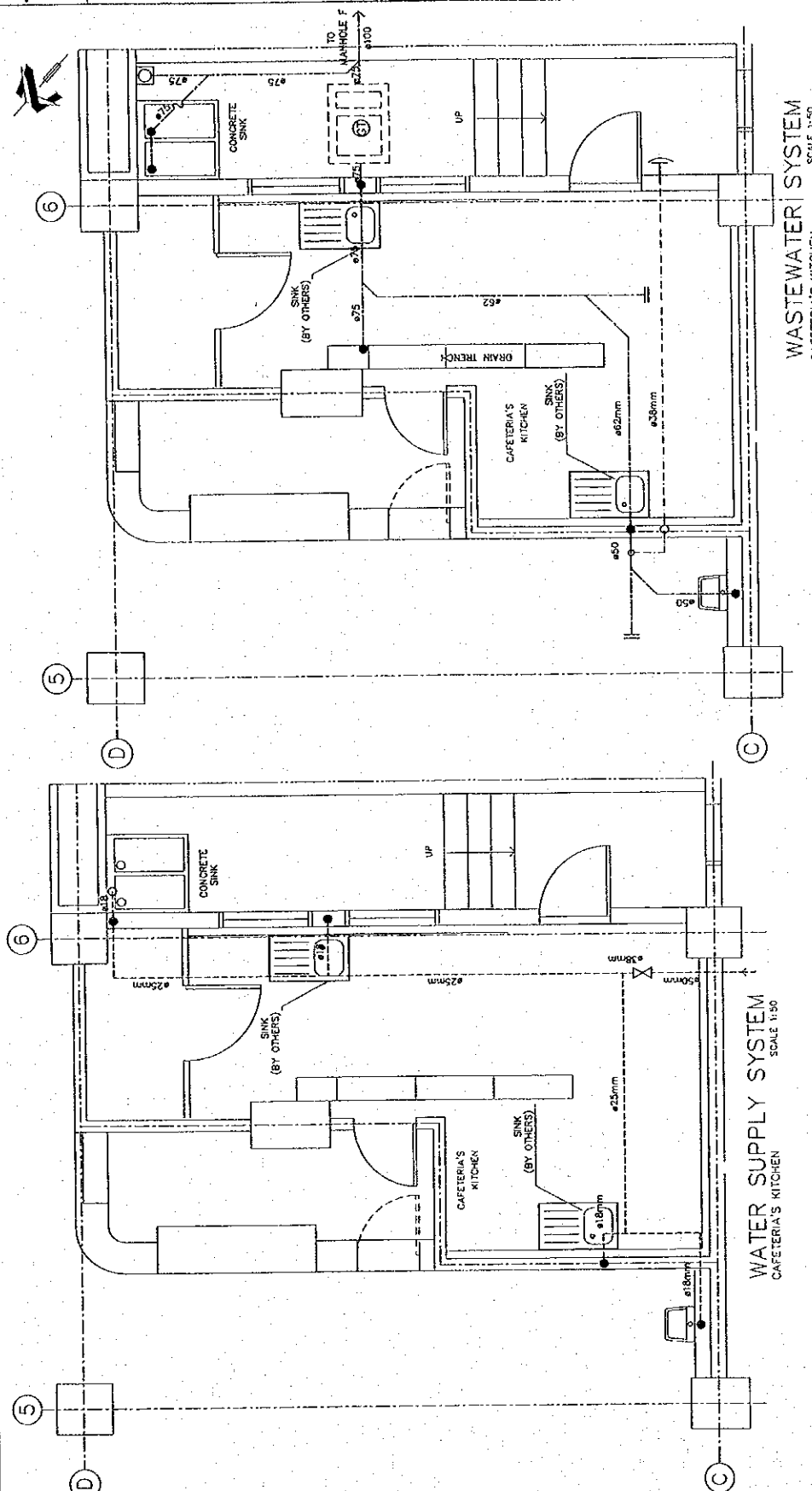


WASTEWATER SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

Prepared by	A. Irula	02/07/16	Checked by	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



NOTES

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

PLUMBING SYMBOLS

	VERTICAL PIPE DOWN		FLOOR/SHOWER DRAIN
	VERTICAL PIPE UP		CLEAN OUT
	TRAP		GREASE TRAP
	SHUT OFF VALVE		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)

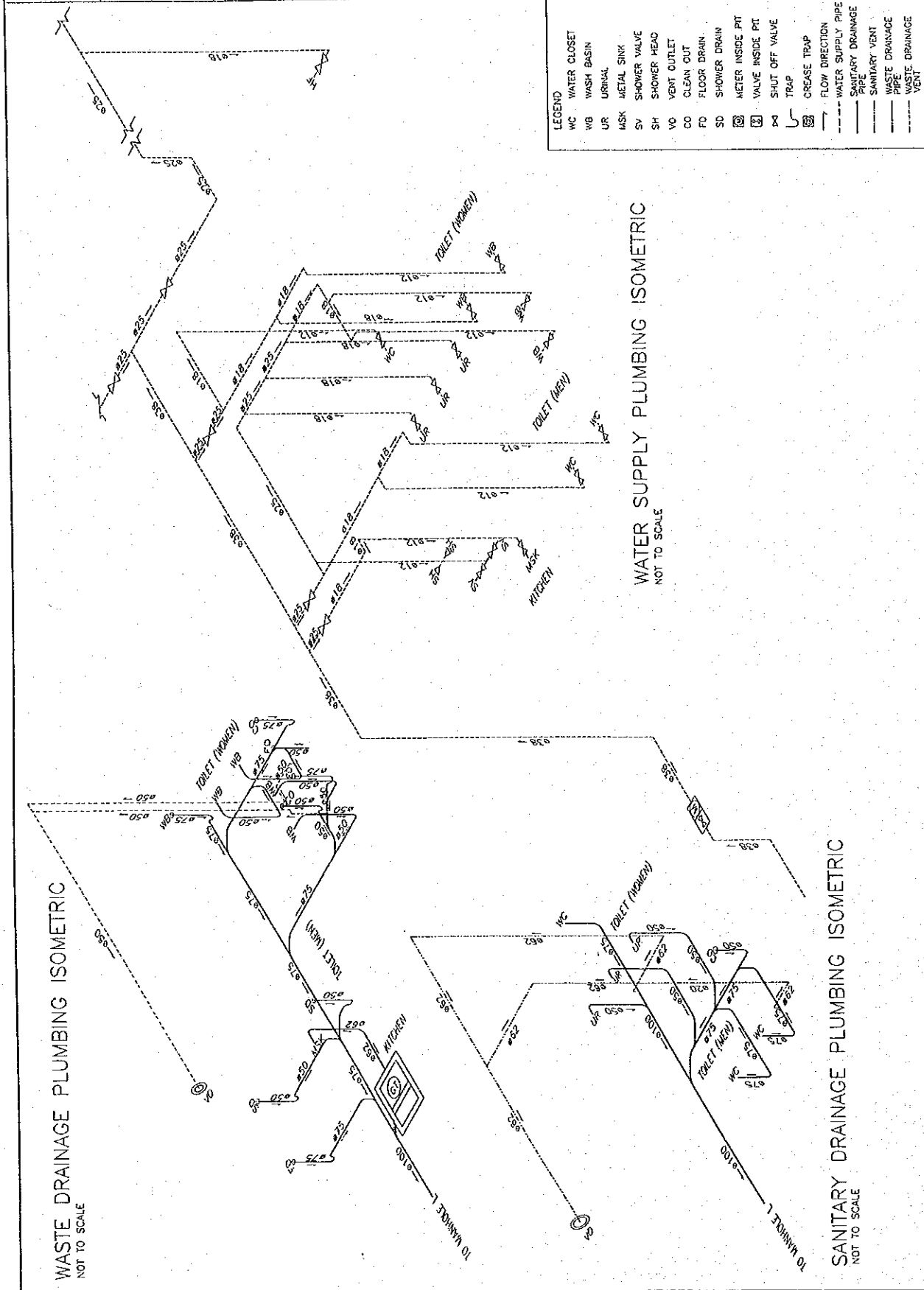
Prepared by	H. Irola	02/07/16	Checked by	S. Sando	16 July 2016
-------------	----------	----------	------------	----------	--------------



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°	16/22

LEGEND

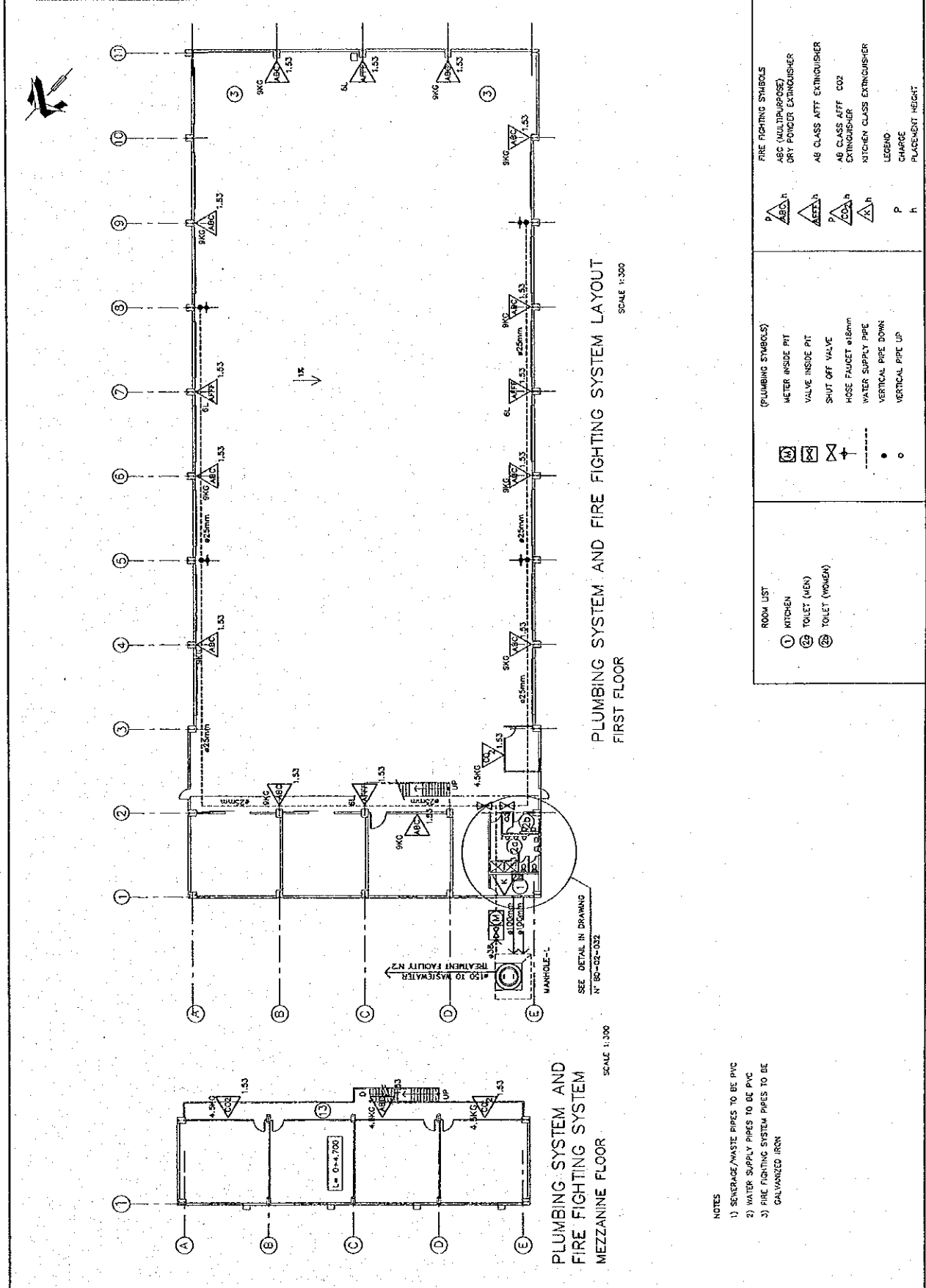
WC	WATER CLOSET
WB	WASH BASIN
UR	URNAL
MSK	METAL SINK
SV	SHOWER VALVE
SH	SHOWER HEAD
VC	VENT OUTLET
CO	CLEAN OUT
FD	FLOOR DRAIN
SD	SHOWER DRAIN
⊗	METER INSIDE PIT
⊠	VALVE INSIDE PIT
⊕	SHUT OFF VALVE
⊖	TRAP
⊗	GREASE TRAP
→	FLOW DIRECTION
---	WATER SUPPLY PIPE
---	SANITARY DRAINAGE
---	SANITARY VENT
---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



Prepared by	H. Iroko	02/07/16	Checked by	S. Ender	16 July, 2016
-------------	----------	----------	------------	----------	---------------



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



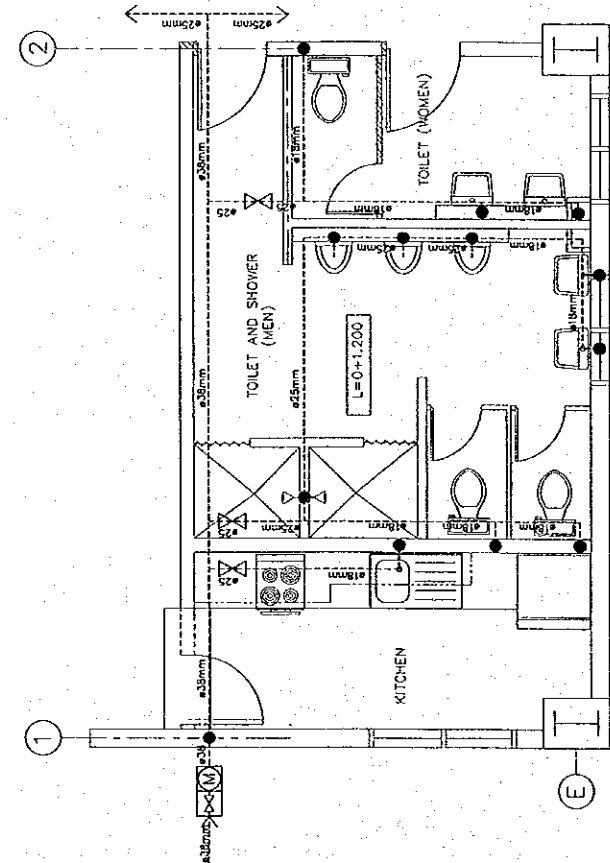
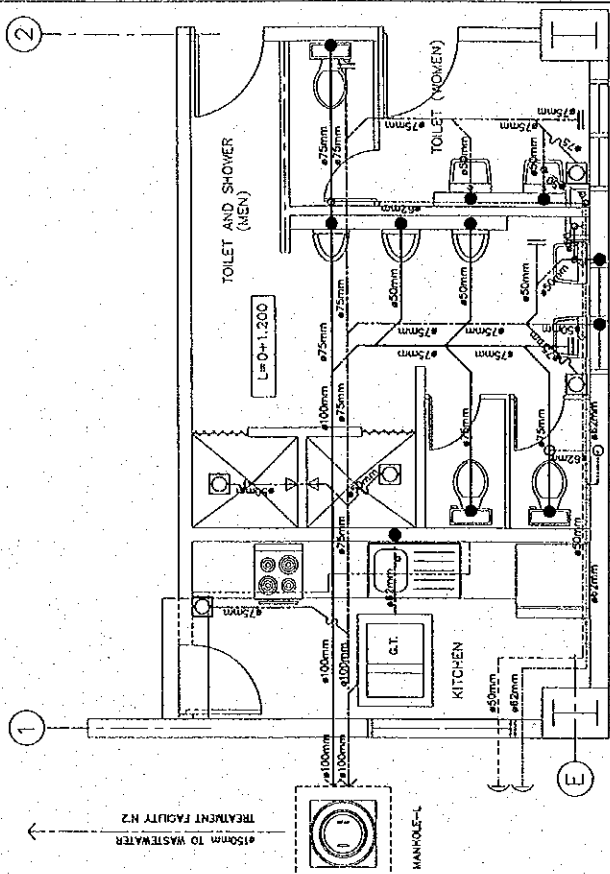
<p>ROOM LIST</p> <p>① KITCHEN ② TOILET (MEN) ③ TOILET (WOMEN)</p>	<p>(PLUMBING SYMBOLS)</p> <p>METER INSIDE PIT VALVE INSIDE PIT SHUT OFF VALVE HOSE FAUCET ø18mm WATER SUPPLY PIPE VERTICAL PIPE DOWN VERTICAL PIPE UP</p>	<p>FIRE FIGHTING SYMBOLS</p> <p>ABC (MULTIPURPOSE) ORY POINT EXTINGUISHER AB CLASS AFFF EXTINGUISHER AB CLASS AFFF CO2 EXTINGUISHER KITCHEN CLASS EXTINGUISHER</p> <p>LEGEND P CHARGE h PLACEMENT HEIGHT</p>
--	--	---

- 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. Iruka	02/07/16	Checked by	S. Endo	16 July, 01
-------------	----------	----------	------------	---------	-------------



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°	18/22



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 PIT
	VALVE INSIDE PIT
	SHUT OFF VALVE
	FLOOR/SHOWER DRAIN
	VENT OUTLET

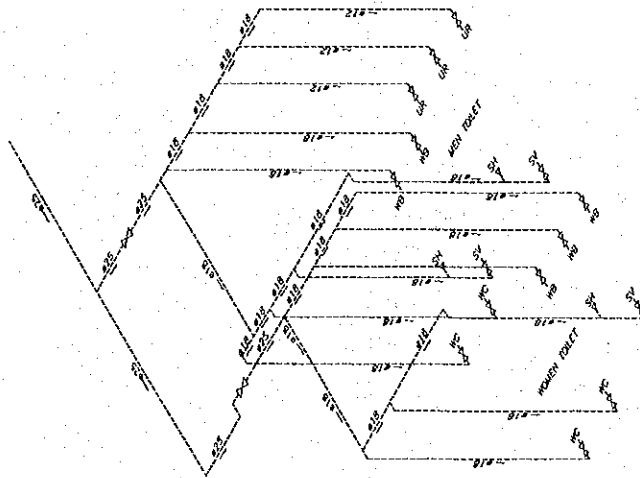
Prepared by	A. Irula	02/07/16	Checked by	S. Enelo	16 July, 03
-------------	----------	----------	------------	----------	-------------



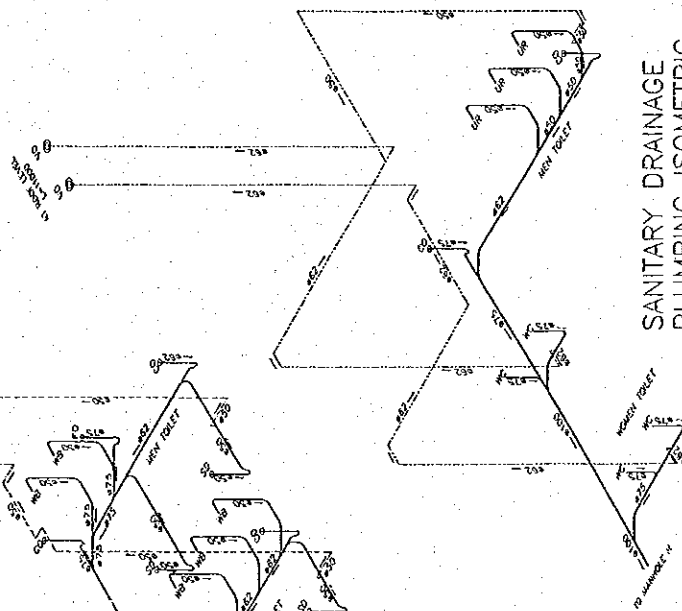
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	19/22

LEGEND

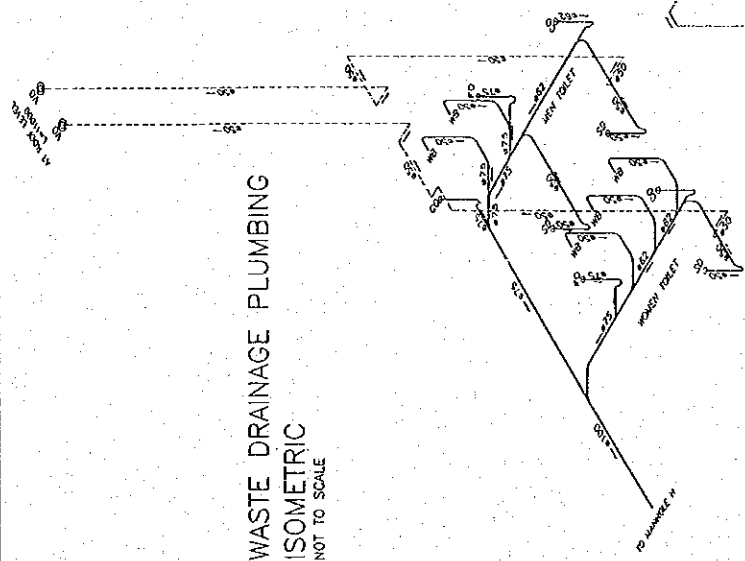
WC	WATER CLOSET	WATER SUPPLY PIPE
WB	WASH BASIN	SANITARY DRAINAGE PIPE
UR	URINAL	SANITARY VENT PIPE
MSK	METAL SINK	WASTE DRAINAGE PIPE
SV	SHOWER VALVE	WASTE VENT PIPE
SH	SHOWER HEAD	
VO	VENT OUTLET	
CO	CLEAN OUT	
FD	FLOOR DRAIN	
SD	SHOWER DRAIN	
MIP	METER INSIDE PIT	
IV	VALVE INSIDE PIT	
SOV	SHUT OFF VALVE	
T	TRAP	
GT	GREASE TRAP	
FD	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

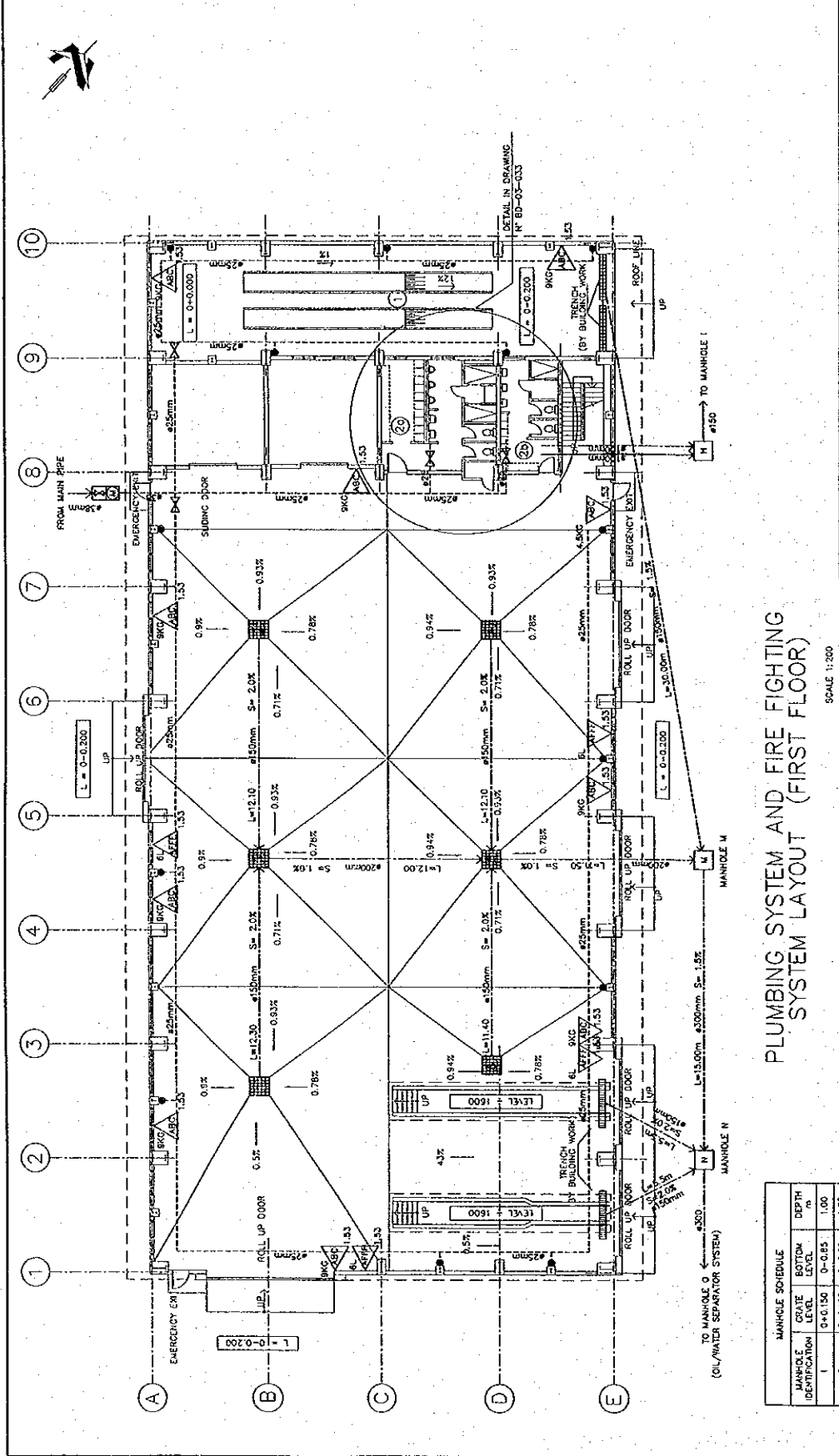


WASTE DRAINAGE PLUMBING ISOMETRIC
NOT TO SCALE

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



PLUMBING SYMBOLS

VERTICAL PIPE DOWN: ●
 WATER SUPPLY PIPE: ———
 WASTE DRAINAGE PIPE: - - - - -
 SANITARY DRAINAGE PIPE: ——— (with 'S' symbol)
 METER INSIDE PIT: [M]
 VALVE INSIDE PIT: [V]
 SHUT OFF VALVE: [X]
 MANHOLE WITH GRATING COVER: [H]

FIRE FIGHTING SYMBOLS

ABC (MULTIPURPOSE) EXTINGUISHER: [ABC]
 DRY POWDER EXTINGUISHER: [DP]
 AB CLASS AFF EXTINGUISHER: [AB]
 AB CLASS AFF CO2 EXTINGUISHER: [AB-CO2]
 MITCHEN CLASS EXTINGUISHER: [M]
 LEGEND: [L]
 CHARGE: [C]
 PLACEMENT HEIGHT: [H]

(ROOM LIST)

WASH UNIT: ①
 TOILETS (MEN): ②
 TOILETS (WOMEN): ③

PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM LAYOUT (FIRST FLOOR)

SCALE 1:200

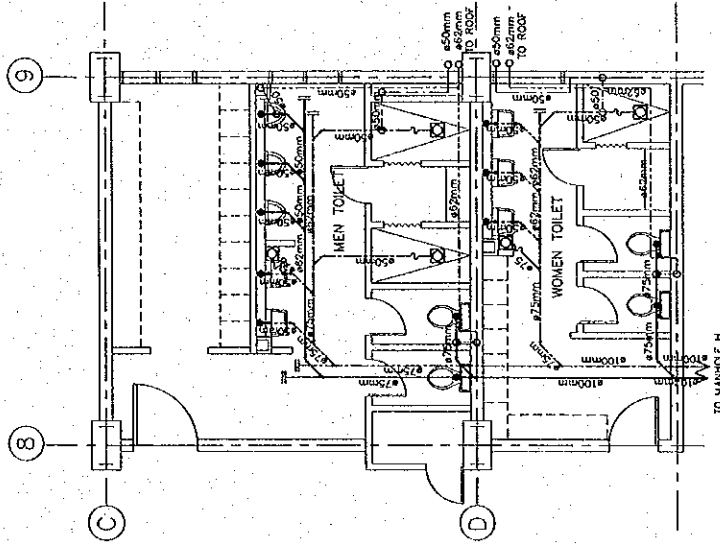
- NOTES**
- 1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

MANHOLE IDENTIFICATION	GRATE LEVEL	BOTTOM LEVEL	DEPTH m
1	0+0.150	0-0.85	1.00
2	0+0.140	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	A. Iruka	02/07/16	Checked by	S. Endo	16 July, 2016
-------------	----------	----------	------------	---------	---------------



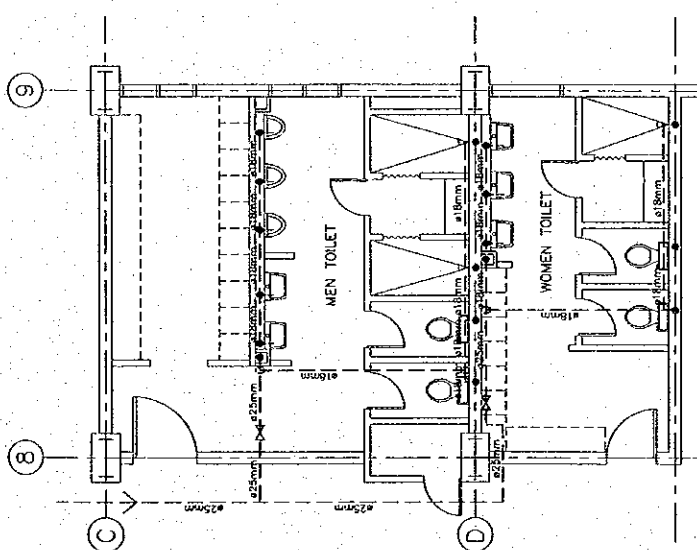
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	PIPE WORK	Page N°.	21/22



PLUMBING SYMBOLS

●	VERTICAL PIPE DOWN	---	WATER SUPPLY PIPE
○	VERTICAL PIPE UP	---	WASTE DRAINAGE PIPE
⊗	METER INSIDE PIT	---	WASTE VENTILATION PIPE (IN BACKGROUND)
⊕	VALVE INSIDE PIT	---	SANITARY DRAINAGE PIPE
⊘	SHUT OFF VALVE	---	SANITARY VENTILATION PIPE
⊚	FLOOR DRAIN	---	

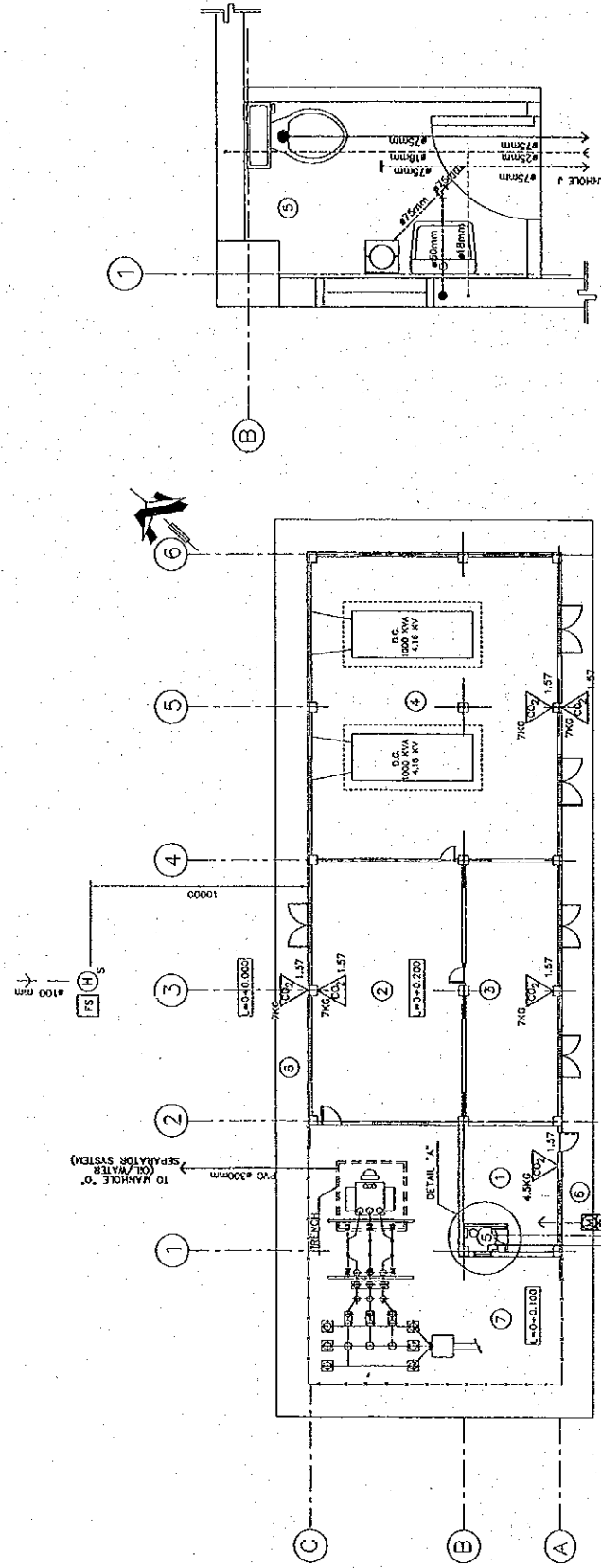
- NOTES
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



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

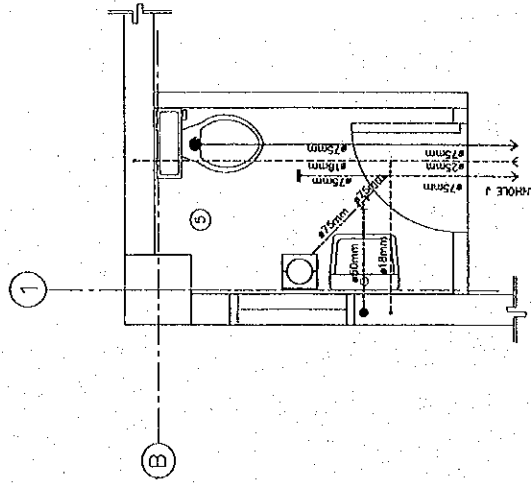


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	PIPE WORK	Page N°	22/22



PLUMBING AND FIRE FIGHTING SYSTEMS

SCALE 1:200



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 	<p>PLUMBING SYMBOLS</p> <ul style="list-style-type: none"> --- WATER SUPPLY PIPE - - - WASTE DRAINAGE PIPE — SANITARY DRAINAGE PIPE 	<p>NOTES</p> <ol style="list-style-type: none"> WASTE AND SANITARY DRAINAGE PIPES TO BE PVC WATER SUPPLY PIPES TO BE PVC FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON 	<p>FIRE FIGHTING SYMBOLS</p> <p>AS CLASS CO2 EXTINGUISHER</p> <p>△ 100% ④ 5% FS</p> <p>LEGEND</p> <p>P WEIGHT IN KGS R PLACEMENT HEIGHT</p>	<p>(ROOM LIST)</p> <ol style="list-style-type: none"> OFFICE ROOM SWITCHGEAR ROOM TRANSFORMER ROOM GENERATOR ROOM TOILET SIDEWALK TRANSFORMER YARD
--	---	---	--	--

Prepared by	H. Irola	02/07/16	Checked by	S. Endo	16 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)	4B02			
Quantity Item	Valves and Meters			Unit	N ^o			
Calculation Procedure Applied								
Quantity Calculation was divided per type of appurtenance according with the BOQ item list								
References, Calculation Base and Revisions								
Drawings N ^o 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 Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Ergala	02/07/15	23	S. Erdo	15 July 02	[Signature]	20 July 02	
1	[Signature]							
2								
3								

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.

Pay Item	Description	Quantity										Total	References/
		Count											
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	
A. Irola	02/07/15	S. Endo	15 July, 02



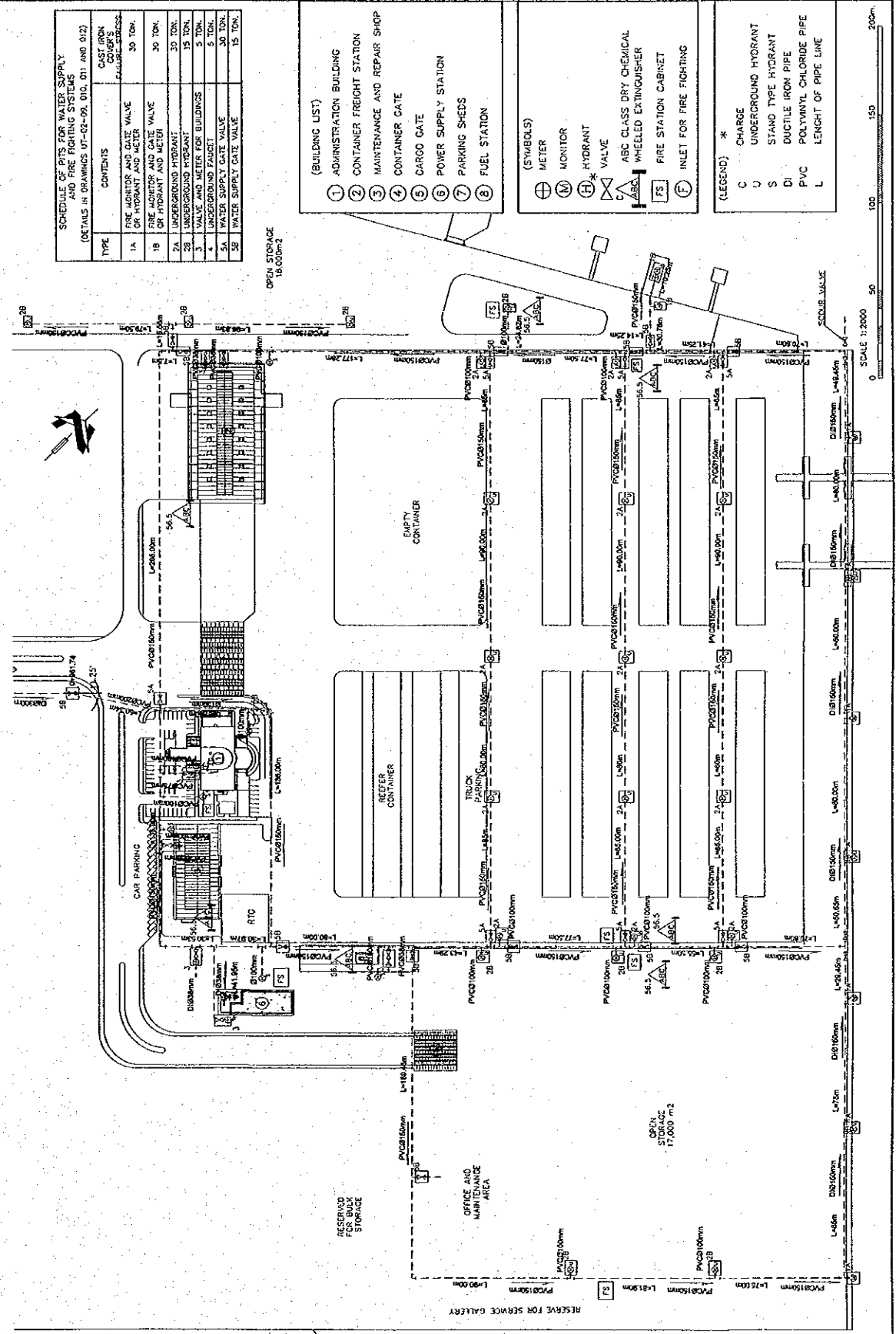
Project:	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	VALVES AND METERS	Page N°. 3/23

TYPE	CONTENTS	CAST IRON MANUFACTURE
1A	FIRE MONITOR AND GATE VALVE OR HYDRANT AND METER	30 TON.
1B	FIRE MONITOR AND GATE VALVE OR HYDRANT AND ACTION	30 TON.
2A	UNDERGROUND HYDRANT	15 TON.
3	VALVE AND METER FOR BUILDINGS	5 TON.
4	UNDERGROUND FAUCET	5 TON.
5A	WATER SUPPLY GATE VALVE	30 TON.
5B	WATER SUPPLY GATE VALVE	15 TON.

- (BUILDING LIST)
- ADMINISTRATION BUILDING
 - CONTAINER FREIGHT STATION
 - MAINTENANCE AND REPAIR SHOP
 - CONTAINER GATE
 - CARGO GATE
 - POWER SUPPLY STATION
 - PARKING SHEDS
 - FUEL STATION

- (SYMBOLS)
- METER
 - MONITOR
 - HYDRANT
 - VALVE
 - ABC CLASS DRY CHEMICAL WHEEL EXTINGUISHER
 - FIRE STATION CABINET
 - INLET FOR FIRE FIGHTING

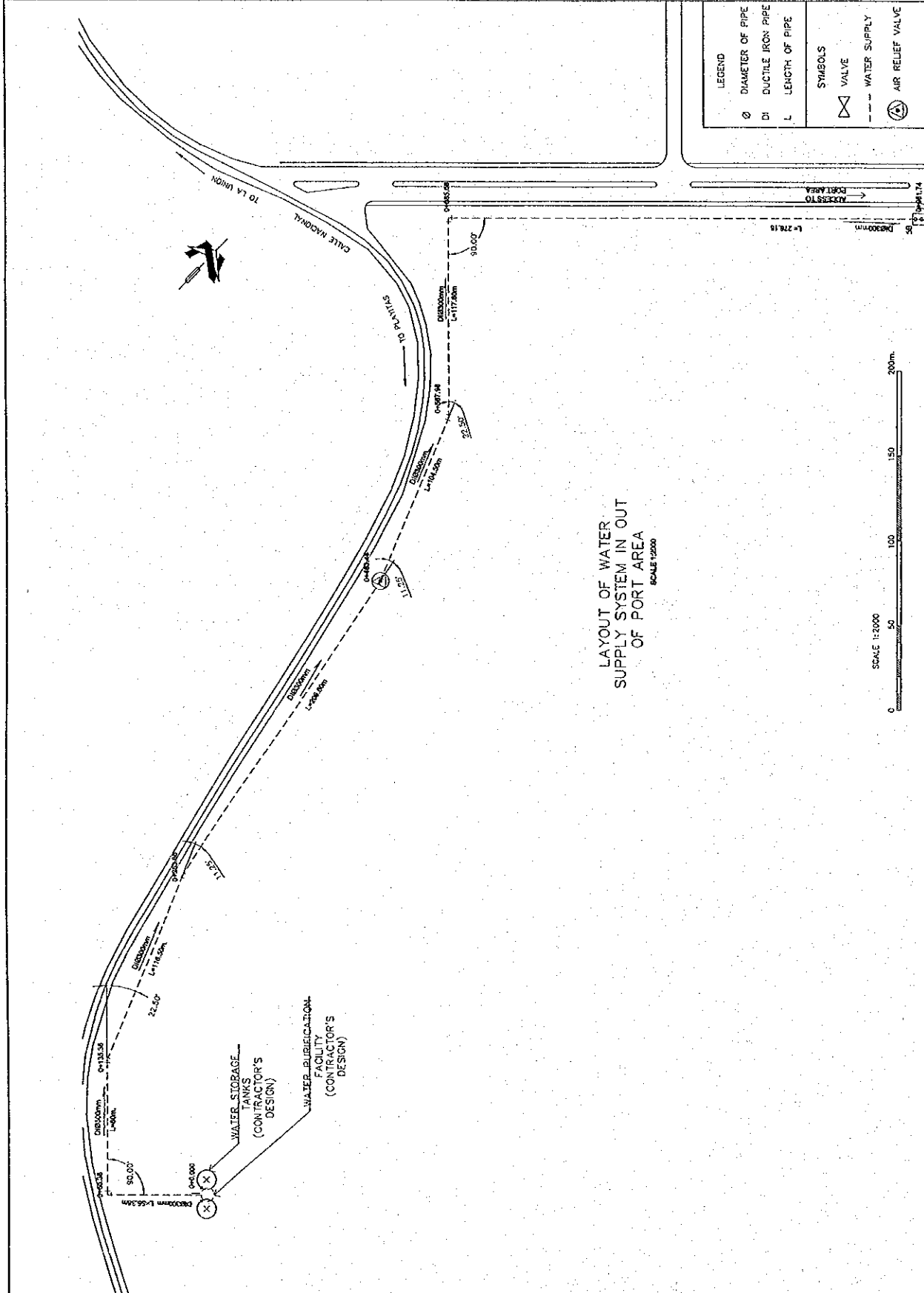
- (LEGEND) *
- C CHARGE
 - U UNDERGROUND HYDRANT
 - S STAND TYPE HYDRANT
 - DI DUCTILE IRON PIPE
 - PVC POLYVINYL CHLORIDE PIPE
 - L LENGTH OF PIPE LINE



Prepared by	H. Iruka	02/03/15	Checked by	S. Endo	15 July, 02'
-------------	----------	----------	------------	---------	--------------

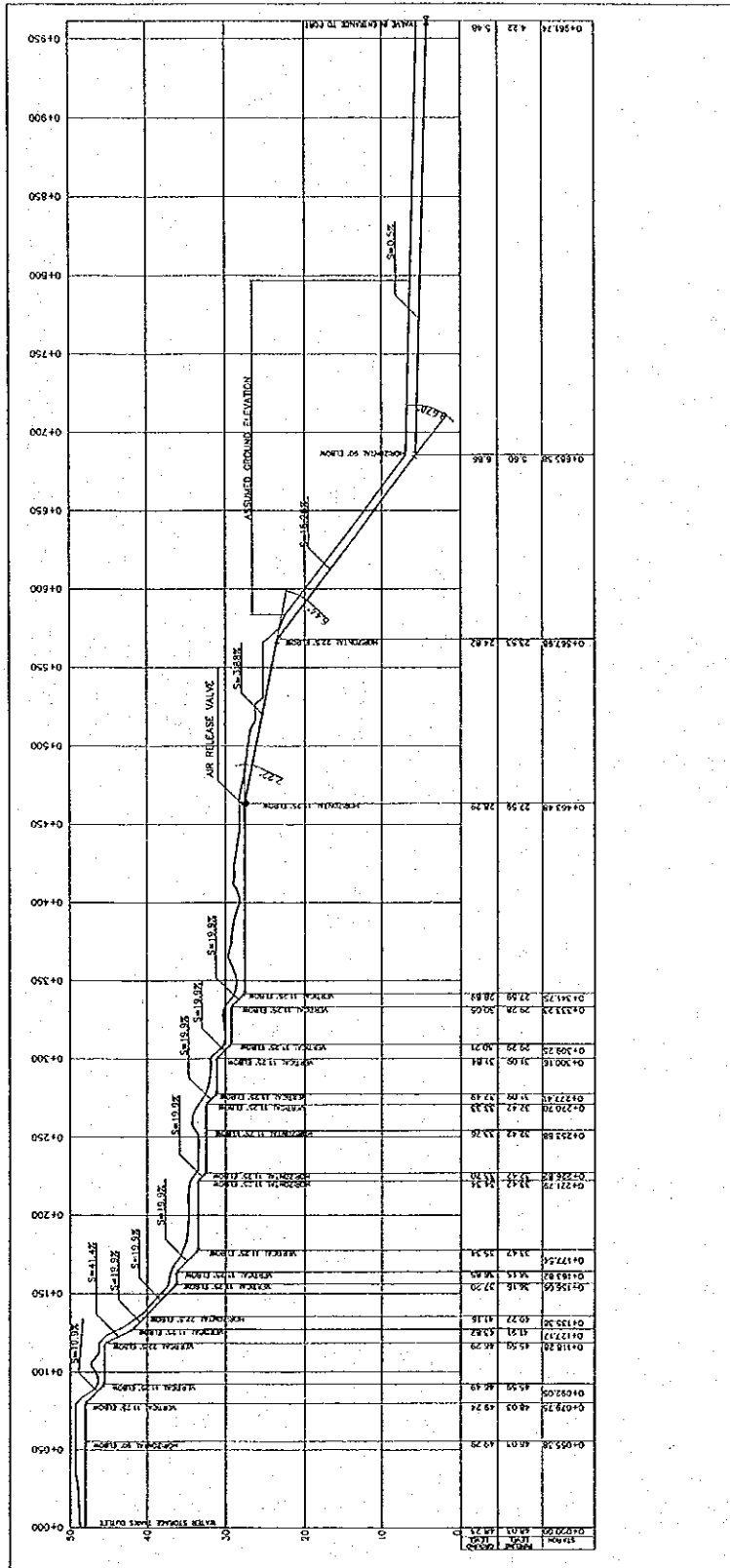


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	VALVES AND METERS	Page N°	4/23





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°.	5/23



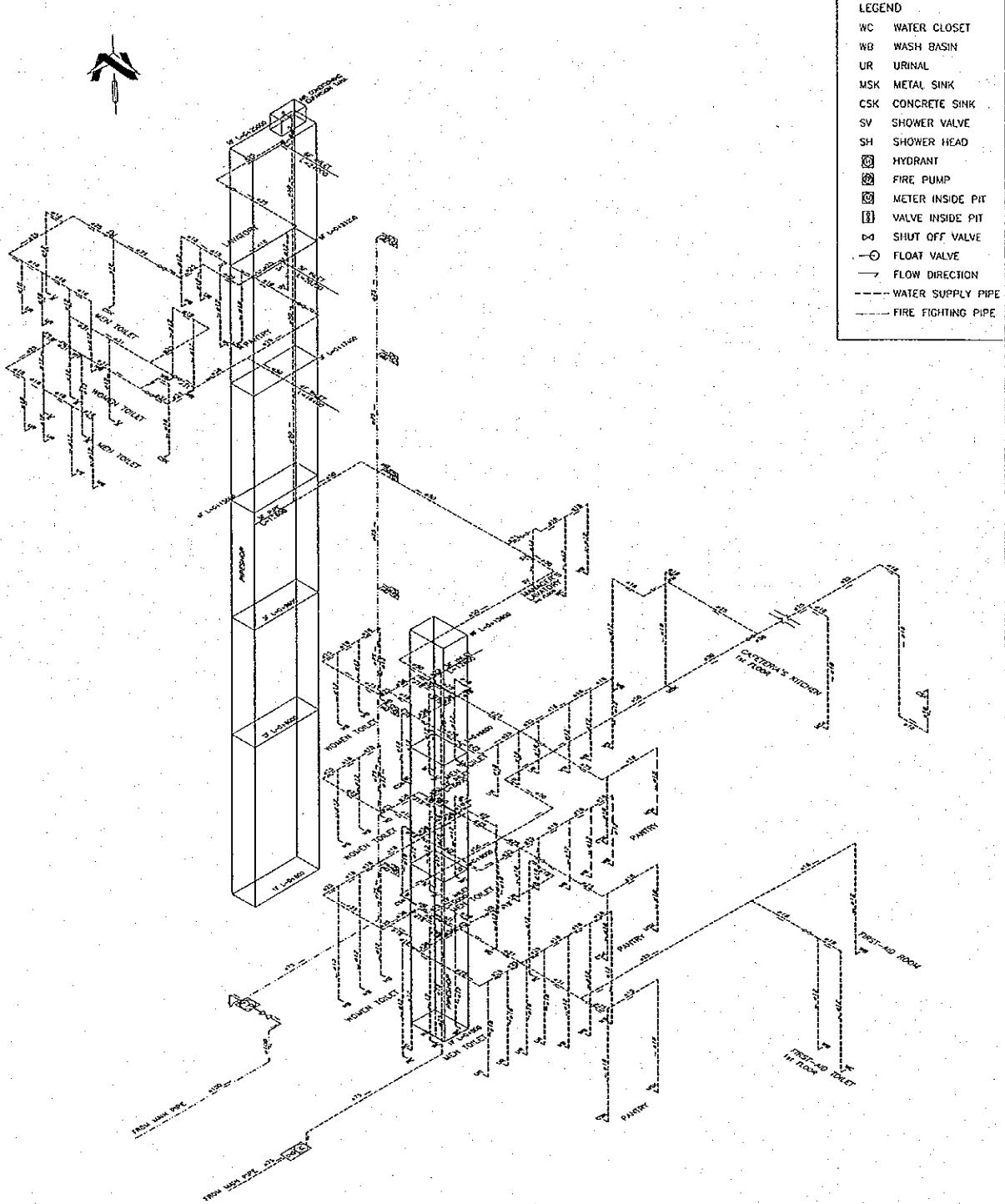
PROFILE OF WATER SUPPLY PIPE IN OUT OF PORT AREA

HORIZONTAL SCALE 1:2500
VERTICAL SCALE 1:500

Prepared by	H. Irulaw	02/07/15	Checked by	S. Eido	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°.	6/23



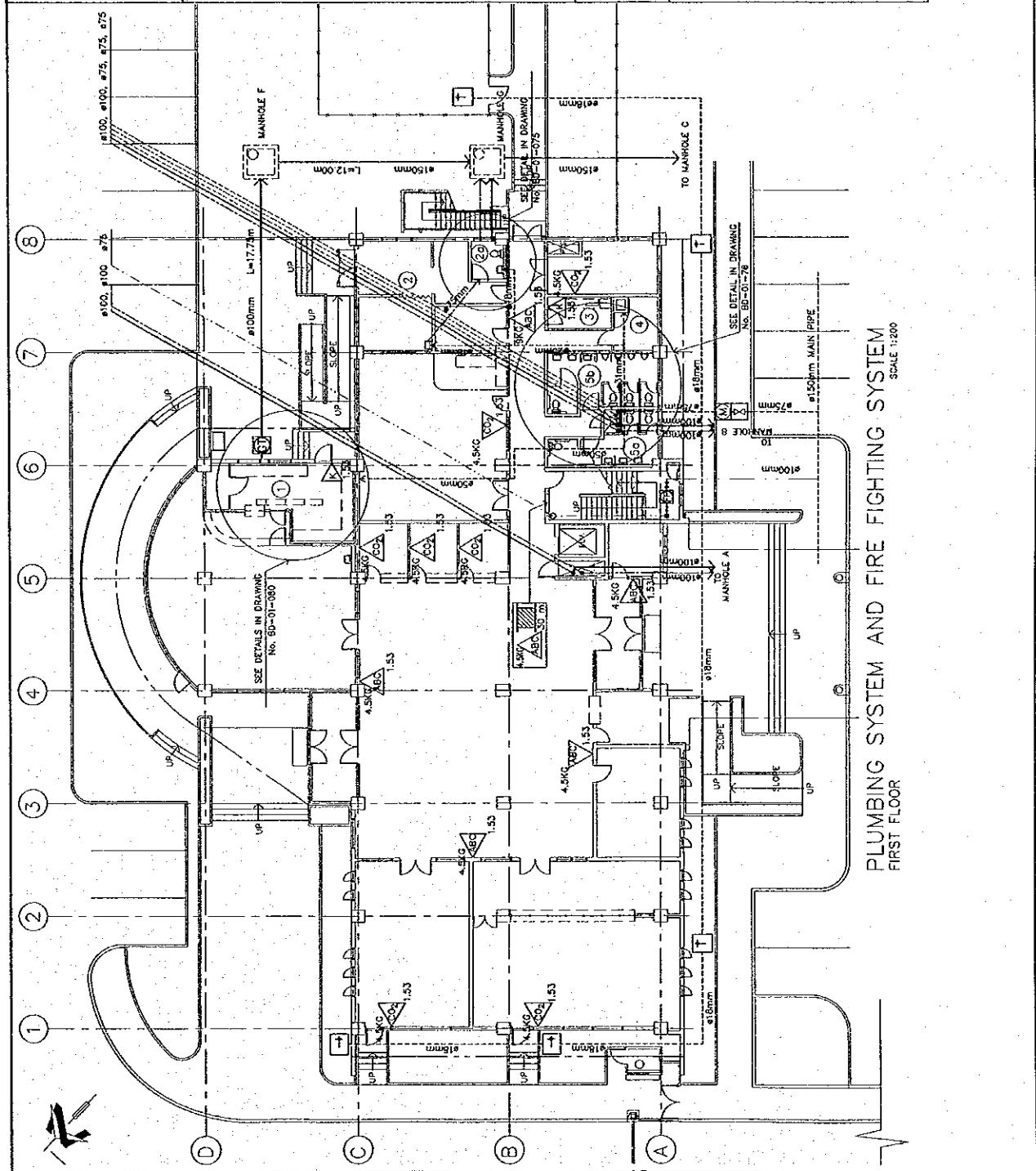
WATER SUPPLY PLUMBING ISOMETRIC
NOT TO SCALE

Prepared by	<i>A. Irola</i>	02/07/15	Checked by	<i>S. Endo</i>	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:	VALVES AND METERS	Page N°.	7/23

<p>ROOM LIST</p> <ul style="list-style-type: none"> ① CAFETERIA'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> <p>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>	<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> <p>ABC CLASS DRY POWDER EXTINGUISHER BC CLASS CO2 EXTINGUISHER KITCHEN CLASS EXTINGUISHER RECESSED CABINET WITH HOSE RACK AND EXTINGUISHER</p> <p>LEGEND</p> <p>c CHARGE h PLACEMENT HEIGHT m LENGTH OF HOSE (meters)</p>
--	--	---	--



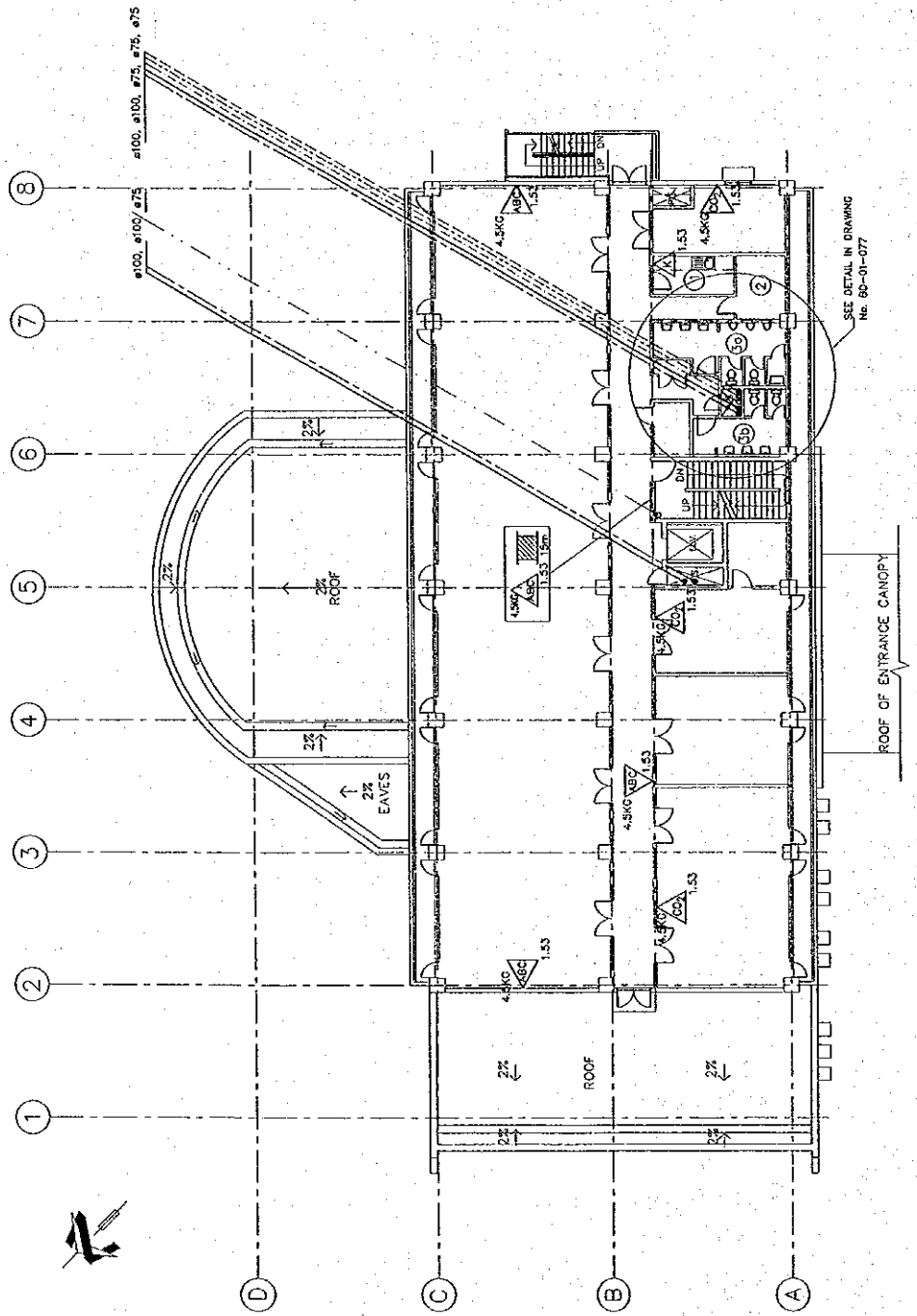
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
 SCALE 1:200
 FIRST FLOOR

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



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°. 8/23

<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>
--	---	--	--



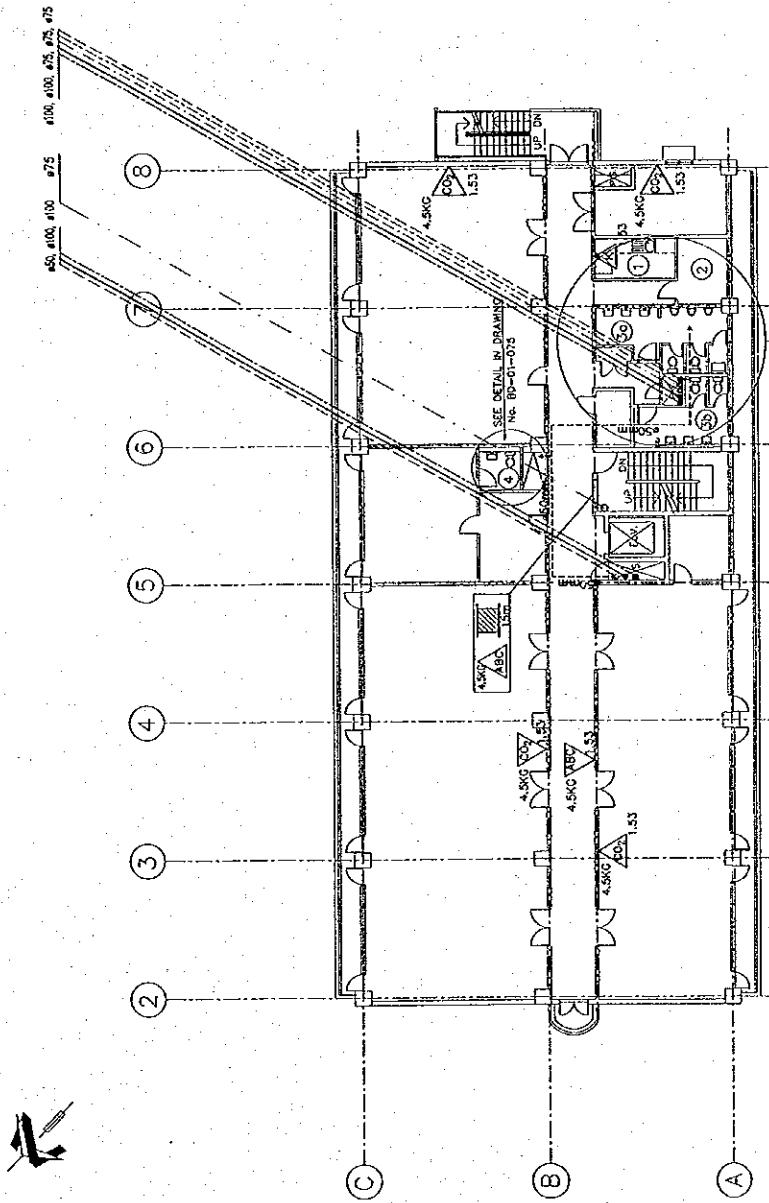
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
SECOND FLOOR
SCALE 1:200

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



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

<p>ROOM JUST</p> <p>PANTRY</p> <p>JANITOR'S ROOM</p> <p>TOILET (MEN)</p> <p>TOILET (WOMEN)</p> <p>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>
--	--	--	--



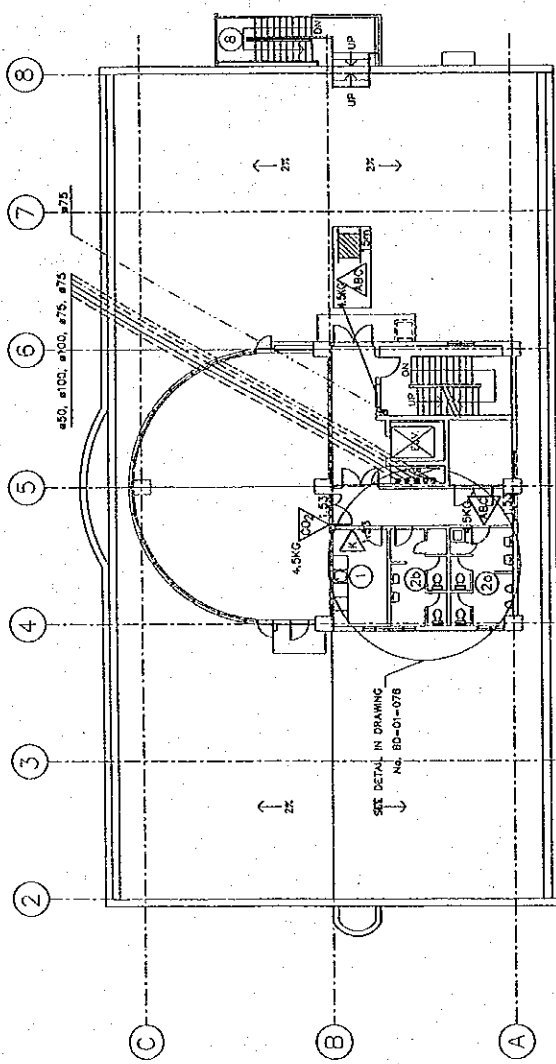
PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM
THIRD FLOOR
SCALE 1:200

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

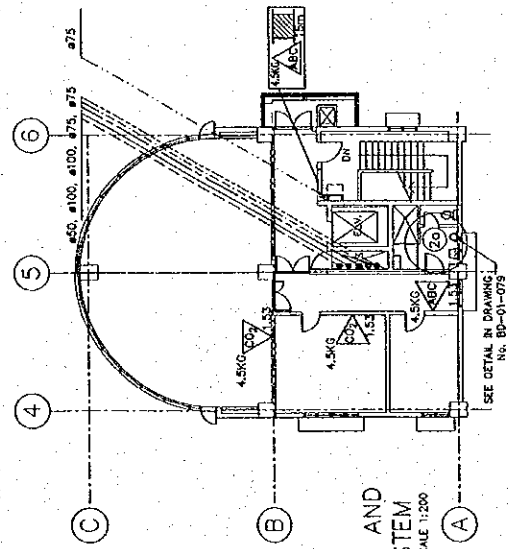


Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	VALVES AND METERS	Page N°. 10/23

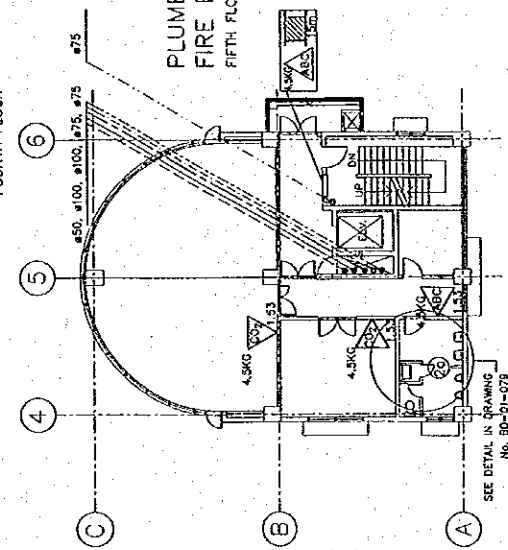
<p>ROOM LIST</p> <p>① PANTRY</p> <p>② TOILET (MEN)</p> <p>③ TOILET (WOMEN)</p>	<p>PLUMBING SYMBOLS</p> <p>VERTICAL PIPE DOWN</p> <p>VERTICAL PIPE UP</p> <p>METER INSIDE PIT</p> <p>VALVE INSIDE PIT</p> <p>SHUT OFF VALVE</p> <p>HOSE FAUCET INSIDE PIT</p> <p>CHECK VALVE</p> <p>CLEAN OUT</p> <p>FIRE PUMP</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>	<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 ROSE RACK AND EXTINGUISHER</p> <p>LEGEND</p> <p>c CHARGE</p> <p>h PLACEMENT HEIGHT</p> <p>m LENGTH OF HOSE (meters)</p>
--	--	---



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. Iruka	02/07/15	Checked by	S. Endo	15 July, 02
-------------	----------	----------	------------	---------	-------------

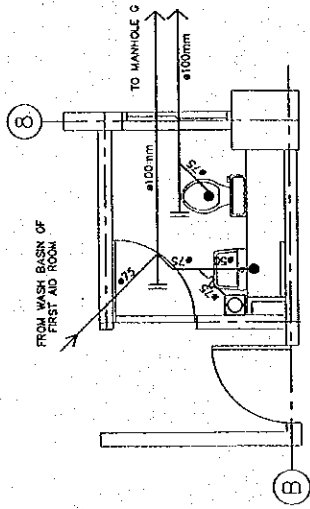


Project:	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°:	
Section:	UTILITY WORK	Calc. Index N°:	
Subject:	VALVES AND METERS	Page N°:	11/23

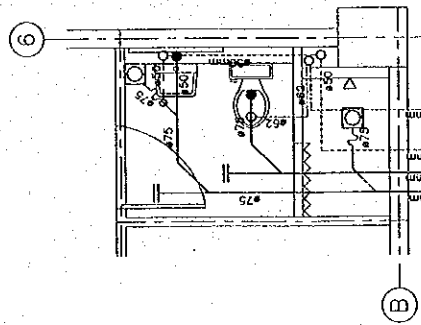


PLUMBING SYMBOLS	
●	VERTICAL PIPE DOWN
○	VERTICAL PIPE UP
⊗	METER INSIDE PIT
⊙	VALVE INSIDE PIT
⊕	SHUT OFF VALVE
⊖	HOSE FAUCET INSIDE PIT
⊗	FLOOR/SHOWER DRAIN
⊙	CLEAN OUT
⊕	TRAP
⊖	GREASE TRAP
—	WATER SUPPLY PIPE (AT CEILING LEVEL)
—	WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
—	WASTE VENTILATION PIPE (AT CEILING LEVEL)
—	SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
—	SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL)

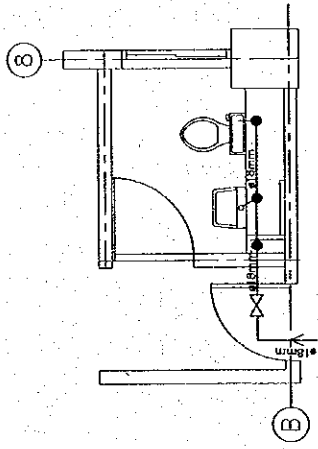
NOTES
1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
2) WATER SUPPLY PIPES TO BE PVC
3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



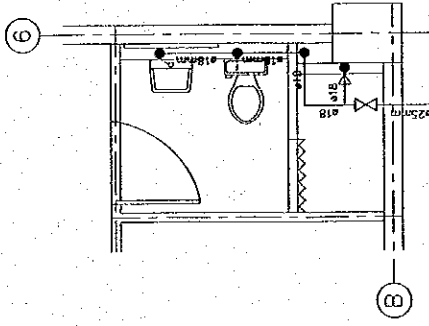
WASTEWATER SYSTEM
FIRST AID LAVATORY
FIRST FLOOR
SCALE 1:50



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	H. Iruka	02/07/15	Checked by	S. Endo	15 July, 2015
-------------	----------	----------	------------	---------	---------------



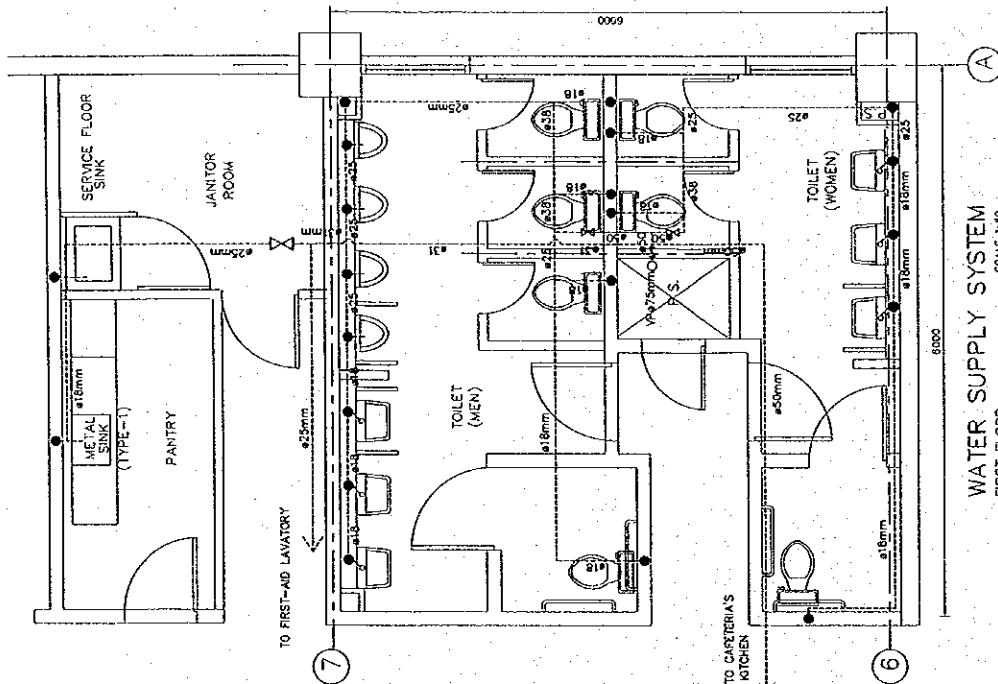
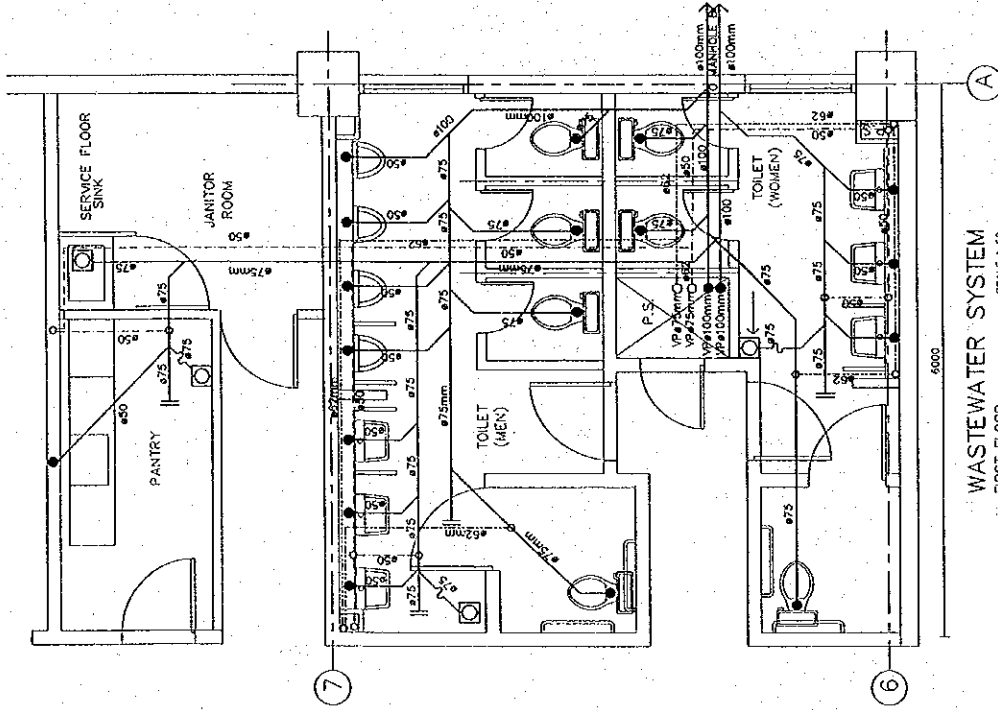
Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.
Section:	UTILITY WORK	Calc. Index N°.
Subject:	VALVES AND METERS	Page N°. 12/23



PLUMBING SYMBOLS

●	○	⊗	Z	X	⊕	T	~	---	---	---	---	
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 PIPE 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. Iruka	02/07/15	Checked by	J. Endo	15 July, 02
-------------	----------	----------	------------	---------	-------------

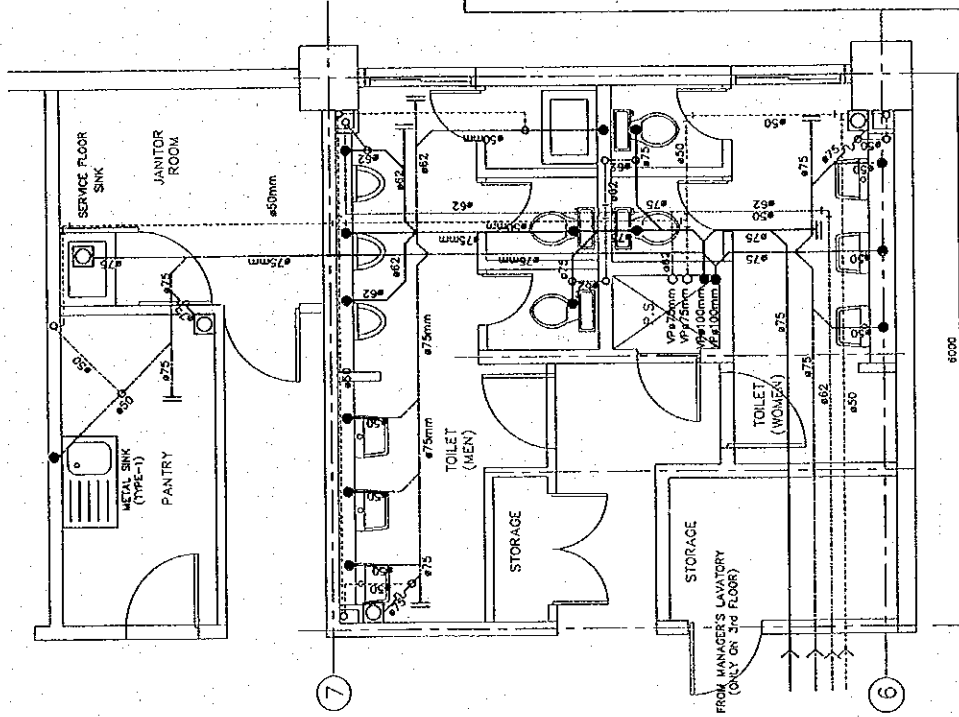


Project	Detailed Design on Port Reactivation Project in La Union Province of the Republic of El Salvador	Calc. File N°.	
Section:	UTILITY WORK	Calc. Index N°.	
Subject:	VALVES AND METERS	Page N°.	13/23

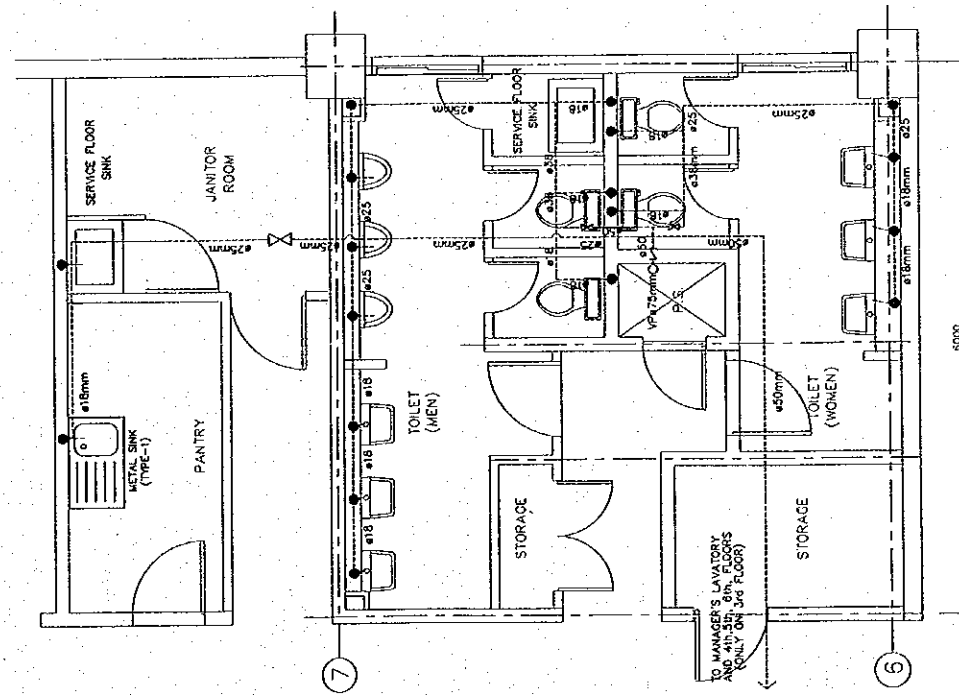


- PLUMBING SYMBOLS**
- VERTICAL PIPE DOWN
 - VERTICAL PIPE UP
 - ⊕ METER INSIDE PIT
 - ⊗ CHECK VALVE
 - ⊘ SHUT OFF VALVE
 - ⊚ FLOOR/SHOWER DRAIN
 - ⊔ CLEAN OUT
 - ⊓ GREASE TRAP
 - ⊚ TRAP
 - WATER SUPPLY PIPE (AT CEILING LEVEL)
 - WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
 - WASTE VENTILATION PIPE (AT CEILING 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



WASTEWATER SYSTEM
SCALE 1:50
2nd AND 3rd FLOORS



WATER SUPPLY SYSTEM
SCALE 1:50
2nd AND 3rd FLOORS

Prepared by	H. Iruka	02/07/15	Checked by	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.	14/23

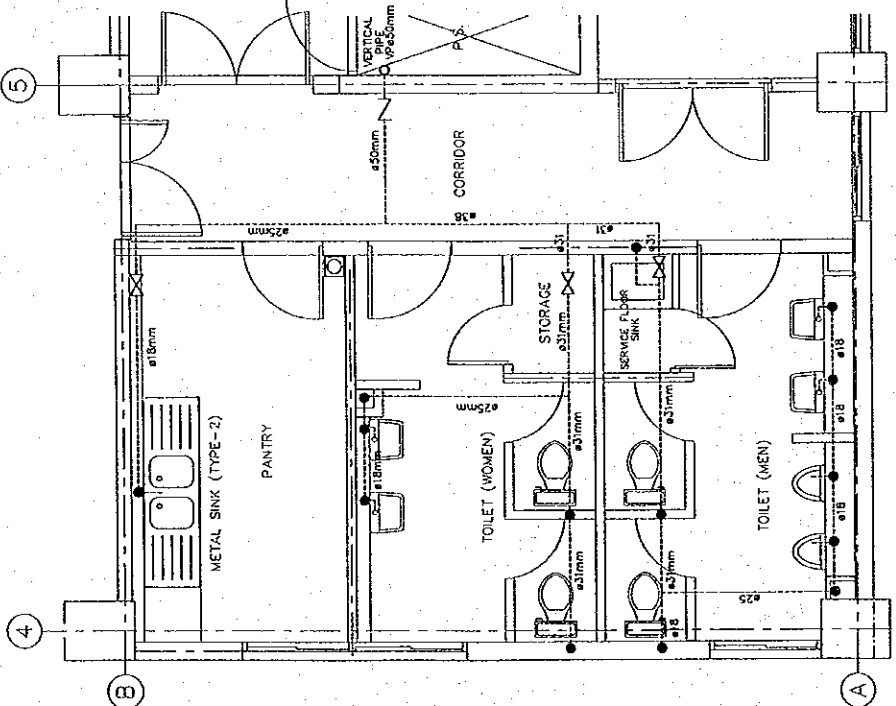
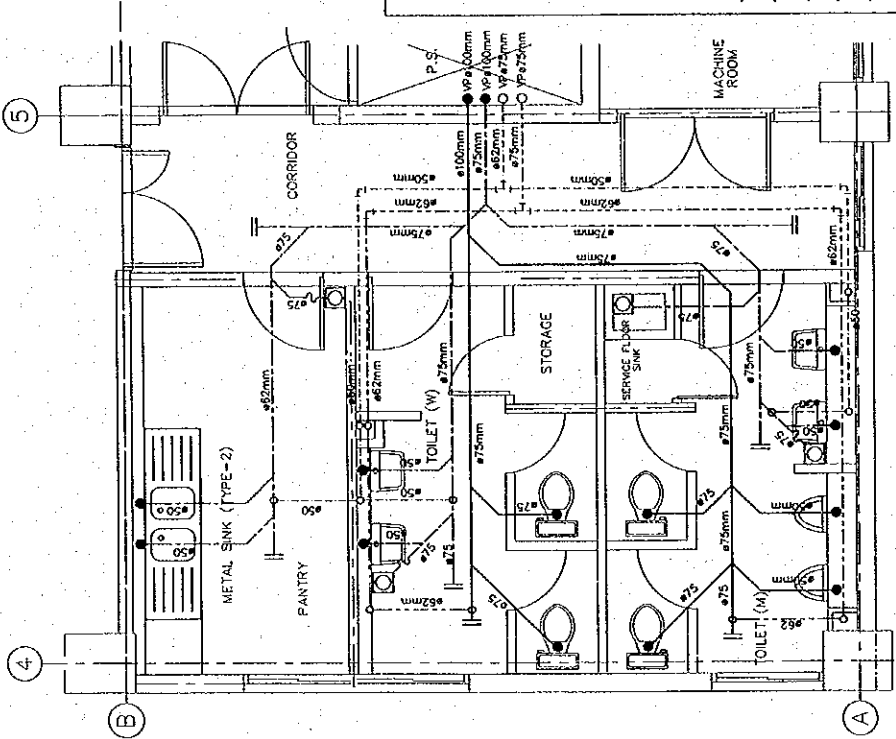


PLUMBING SYMBOLS

- 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 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. Iroh	02/07/15	Checked by	S. Endo	15 July, 2015
-------------	---------	----------	------------	---------	---------------



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°.	15/23

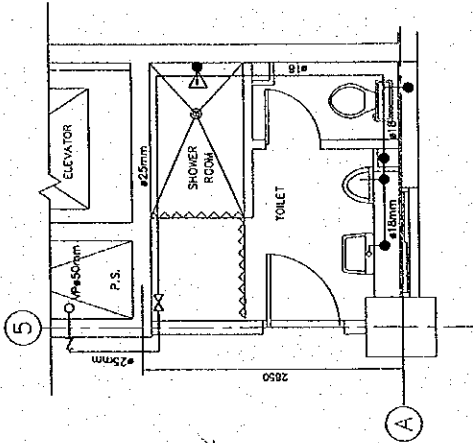


PLUMBING SYMBOLS

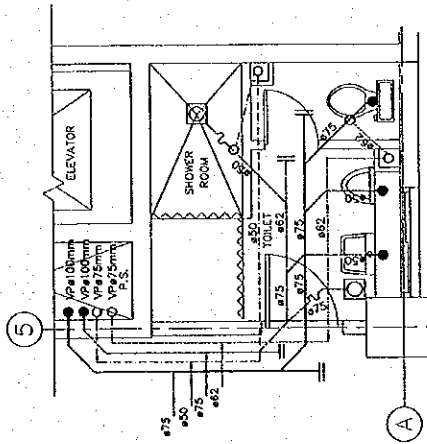
- VERTICAL PIPE DOWN
- VERTICAL PIPE UP
- ⌒ TRAP
- △ SHOWER HEAD
- ⊗ SHUT OFF VALVE
- ⊕ FLOOR/SHOWER DRAIN
- ⊥ CLEAN OUT
- ⊞ CHECK VALVE
- WATER SUPPLY PIPE (AT CEILING LEVEL)
- WASTE DRAINAGE PIPE (UNDER SLAB LEVEL)
- WASTE VENTILATION PIPE (AT CEILING LEVEL)
- SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL)
- SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL)

NOTES

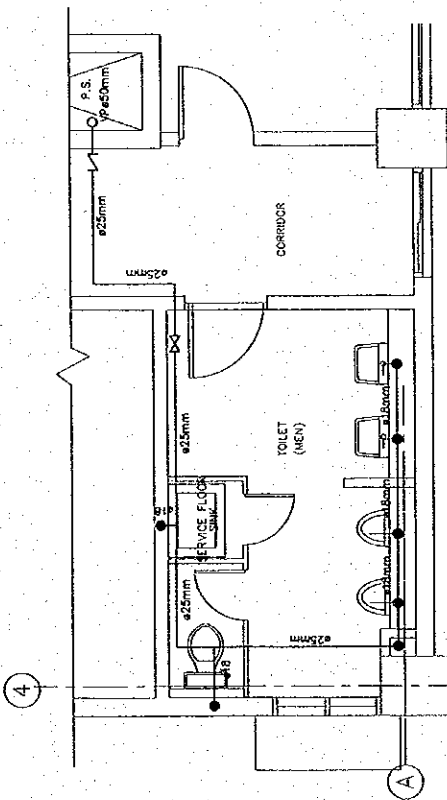
- 1) SANITARY AND WASTE DRAINAGE PIPES TO BE PVC
- 2) WATER SUPPLY PIPES TO BE PVC
- 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON



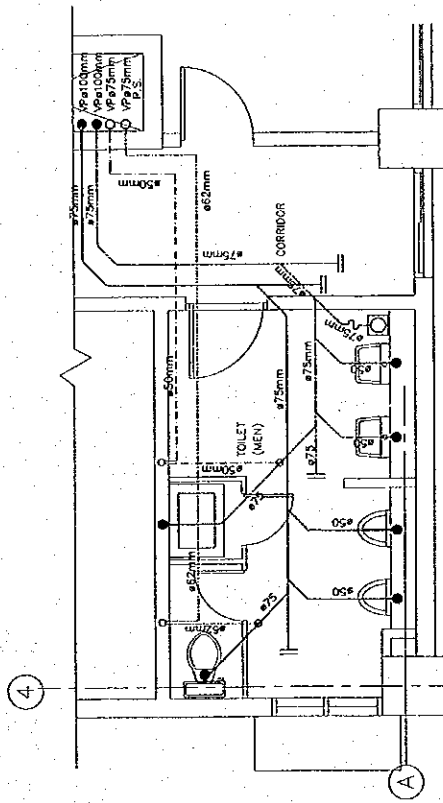
WATER SUPPLY SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WASTEWATER SYSTEM
LAVATORY SIXTH FLOOR
SCALE 1:50



WATER SUPPLY SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

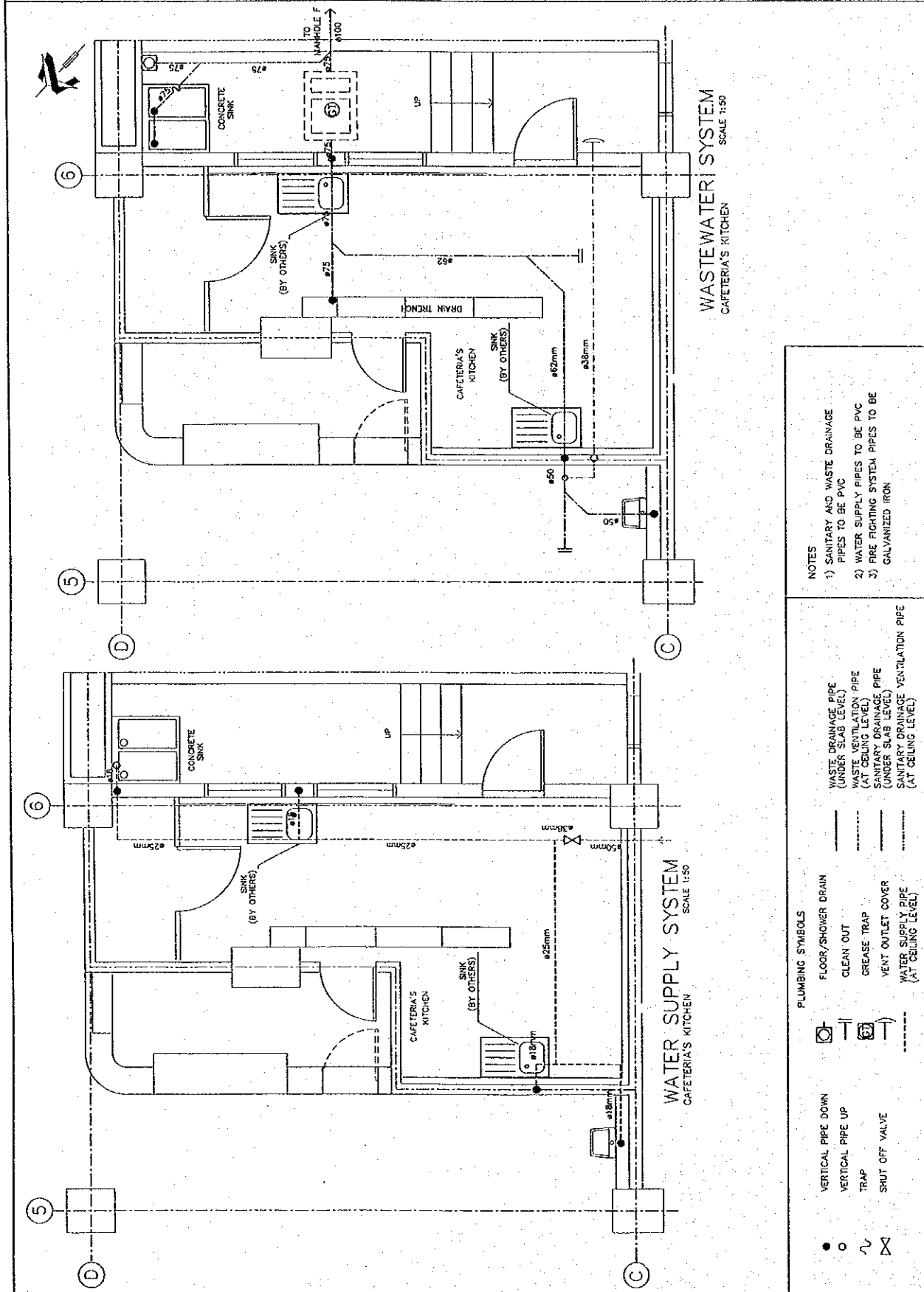


WASTEWATER SYSTEM
LAVATORY FIFTH FLOOR
SCALE 1:50

Prepared by	H. Iruka	02/07/15	Checked by	S. Sando	15 July, 2015
-------------	----------	----------	------------	----------	---------------



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°	16/23



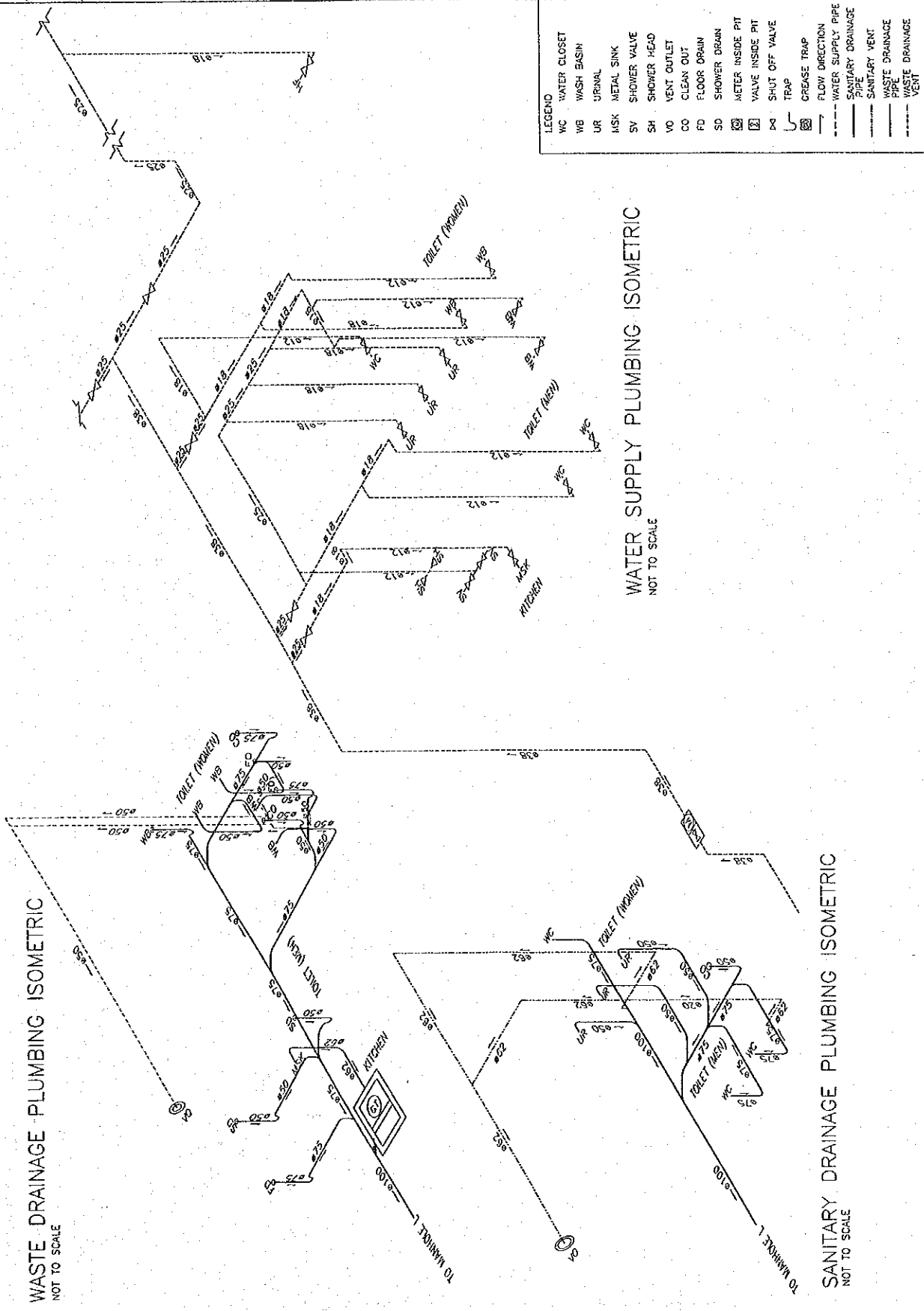
<p>PLUMBING SYMBOLS</p> <p> VERTICAL PIPE DOWN VERTICAL PIPE UP TRAP SHUT OFF VALVE </p>		<p> FLOOR/SHOWER DRAIN CLEAN OUT GREASE TRAP VENT OUTLET COVER WATER SUPPLY PIPE (AT CEILING LEVEL) </p>		<p> WASTE DRAINAGE PIPE (UNDER SLAB LEVEL) WASTE VENTILATION PIPE (AT CEILING LEVEL) SANITARY DRAINAGE PIPE (UNDER SLAB LEVEL) SANITARY DRAINAGE VENTILATION PIPE (AT CEILING LEVEL) </p>	
<p>NOTES</p> <p>1) SANITARY AND WASTE 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>					

Prepared by	H. Iruka	02/07/15	Checked by	S. Ender	15 July, 2015
-------------	----------	----------	------------	----------	---------------



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°.	17/23

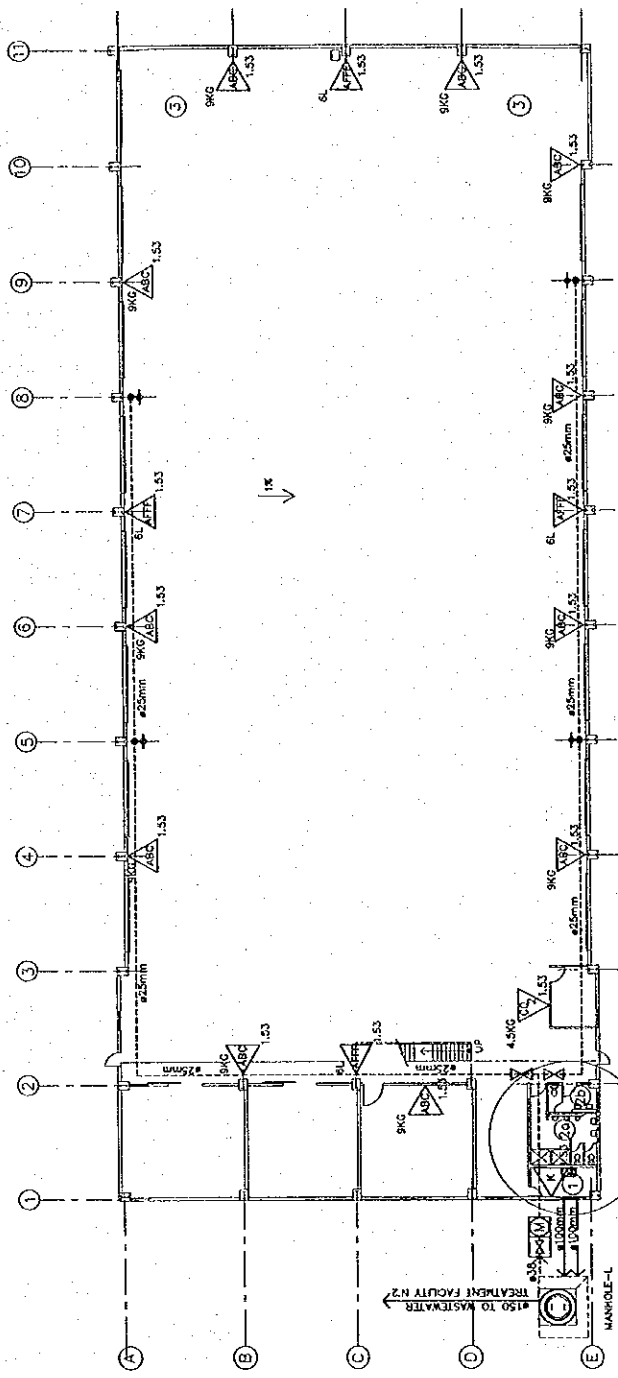
LEGEND	WC WATER CLOSET
WB WASH BASIN	UR URINAL
MSK METAL SINK	SV SHOWER VALVE
SH SHOWER HEAD	VO VENT OUTLET
CO CLEAN OUT	FD FLOOR DRAIN
SD SHOWER DRAIN	METER INSIDE PIT
VALVE INSIDE PIT	SHUT OFF VALVE
TRAP	GREASE TRAP
FLOW DIRECTION	WATER SUPPLY PIPE
SANITARY DRAINAGE PIPE	SANITARY VENT PIPE
WASTE DRAINAGE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



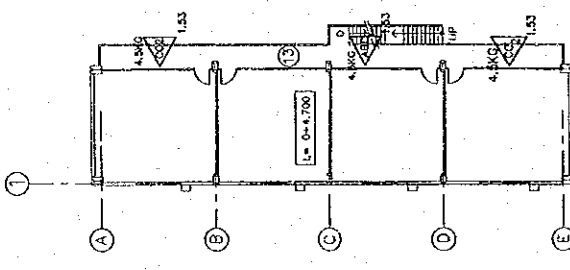
Prepared by	A. Irula	02/07/15	Checked by	S. Endo	15 July, 2015
-------------	----------	----------	------------	---------	---------------



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



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



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

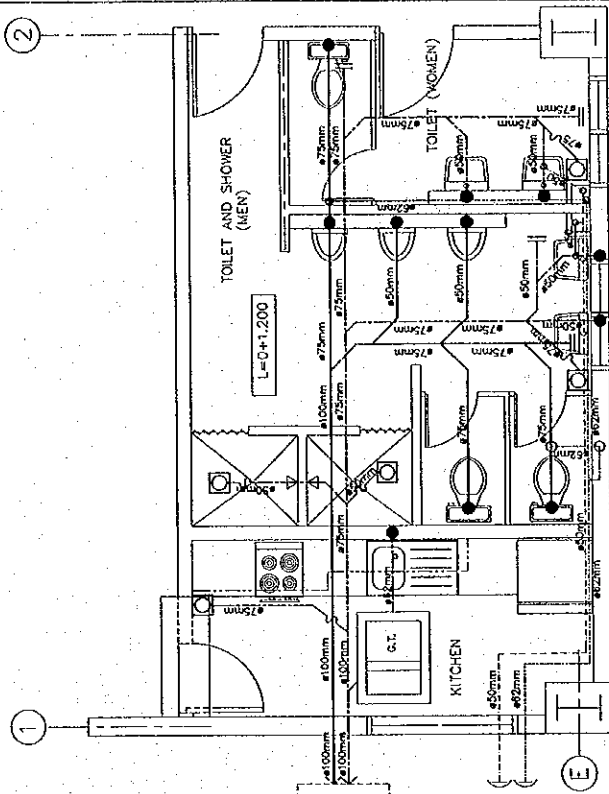
<p>ROOM LIST</p> <ul style="list-style-type: none"> ① KITCHEN ② TOILET (MEN) ③ TOILET (WOMEN) 	<p>(PLUMBING SYMBOLS)</p> <ul style="list-style-type: none"> METER INSIDE PIT VALVE INSIDE RT SHUT OFF VALVE HOSE FAUCET ø15mm WATER SUPPLY PIPE VERTICAL PIPE DOWN VERTICAL PIPE UP 	<p>FIRE FIGHTING SYMBOLS</p> <ul style="list-style-type: none"> ABC (MULTIPURPOSE) DRY POWDER EXTINGUISHER AB CLASS AFFF EXTINGUISHER AB CLASS AFFF EXTINGUISHER AB CLASS AFFF CO2 EXTINGUISHER KITCHEN CLASS EXTINGUISHER <p>LEGEND</p> <ul style="list-style-type: none"> P CHARGE h PLACEMENT HEIGHT
---	--	--

- NOTES
- 1) SEWERAGE/WASTE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

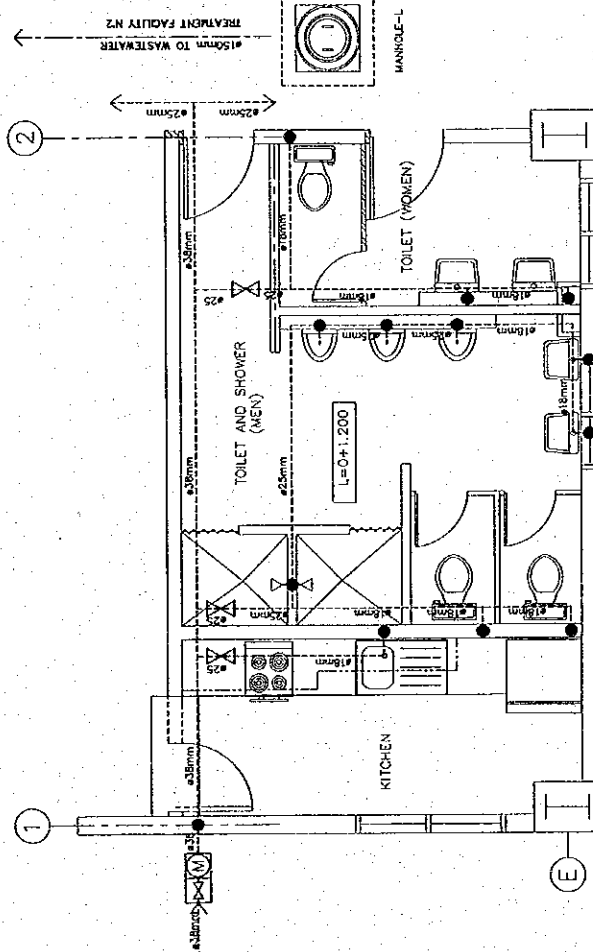
Prepared by	H. Irola	02/07/15	Checked by	J. Ender	15 July, 02
-------------	----------	----------	------------	----------	-------------



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°	19/23



WASTEWATER SYSTEM
SCALE 1:50



WATER SUPPLY 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 PIT
	VALVE INSIDE PIT
	SHUT OFF VALVE
	FLOOR/SHOWER DRAIN
	VENT OUTLET

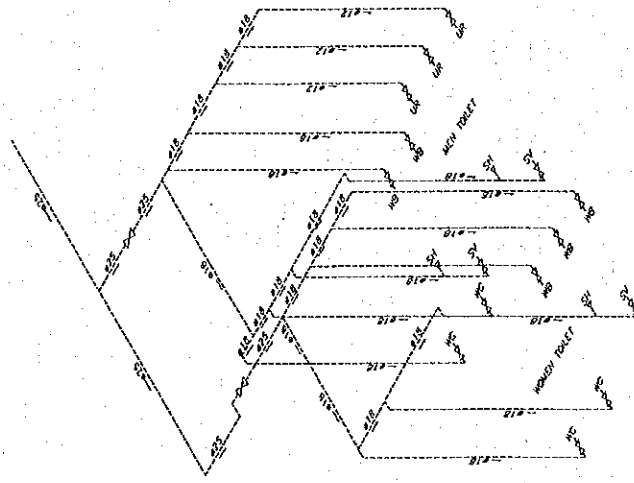
Prepared by	H. Iruwa	02/07/15	Checked by	S. Endo	15 July, 02
-------------	----------	----------	------------	---------	-------------



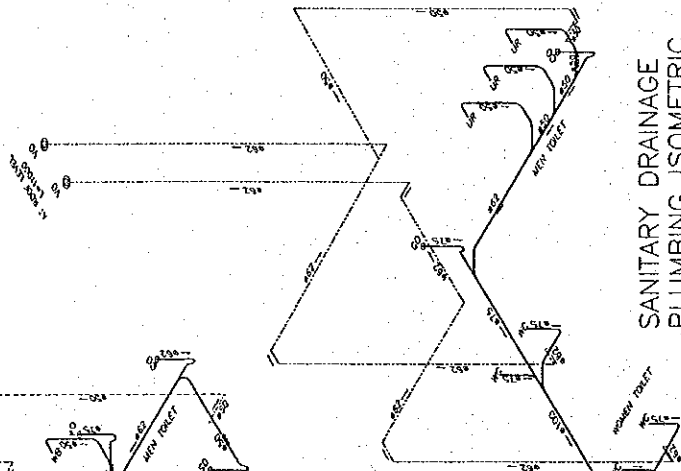
Project	Detailed Design on Port Reactivation Project In La Union Province of the Republic of El Salvador	Calc. File N°	
Section:	UTILITY WORK	Calc. Index N°	
Subject:	VALVES AND METERS	Page N°	20/23

LEGEND

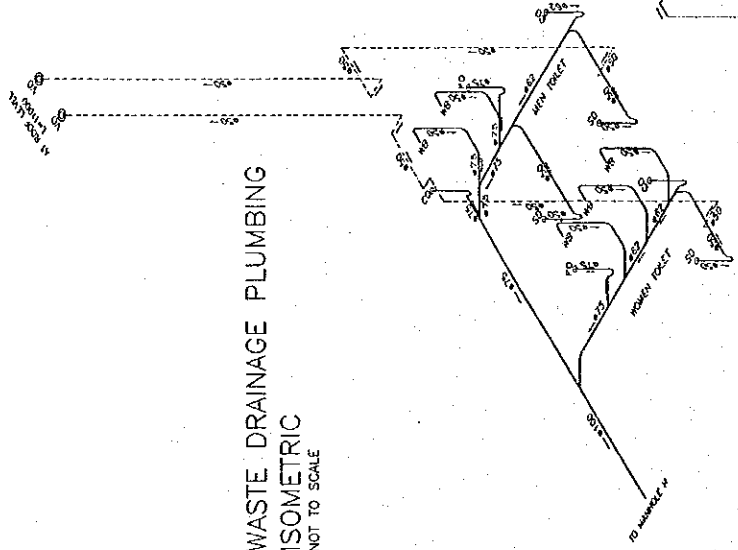
WC	WATER CLOSET
WB	WASH BASIN
UR	URINAL
MSK	METAL SINK
SV	SHOWER VALVE
SH	SHOWER HEAD
VO	VENT OUTLET
CO	CLEAN OUT
FD	FLOOR DRAIN
SD	SHOWER DRAIN
⊗	METER INSIDE PIT
⊠	VALVE INSIDE PIT
⊞	SHUT OFF VALVE
⊟	TRAP
⊠	GREASE TRAP
→	FLOW DIRECTION
---	WATER SUPPLY PIPE
---	SANITARY DRAINAGE PIPE
---	SANITARY VENT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



WATER SUPPLY PLUMBING ISOMETRIC
NOT TO SCALE



SANITARY DRAINAGE PLUMBING ISOMETRIC
NOT TO SCALE

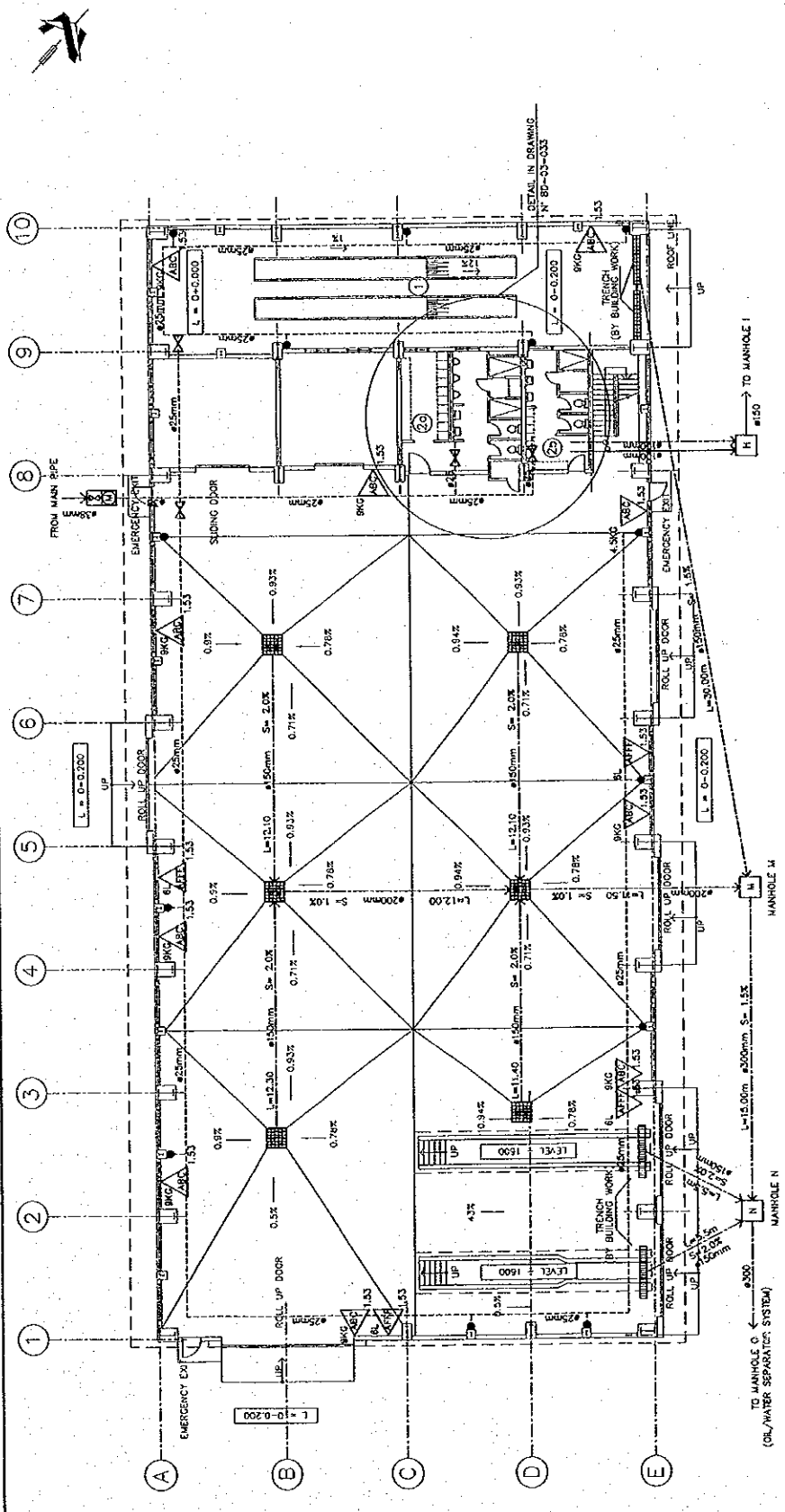


WASTE DRAINAGE PLUMBING ISOMETRIC
NOT TO SCALE

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



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



<p>PRE FIGHTING SYMBOLS</p> <p>ABC (MULTIPURPOSE) DRY POWDER EXTINGUISHER</p> <p>AB CLASS AFF EXTINGUISHER</p> <p>AB CLASS AFF CO2</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>VALVE 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>
---	--	--

PLUMBING SYSTEM AND FIRE FIGHTING SYSTEM LAYOUT (FIRST FLOOR)

SCALE 1:200

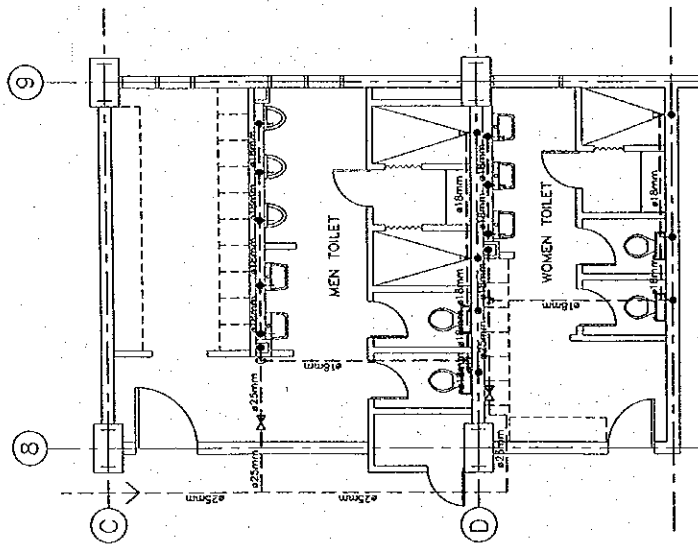
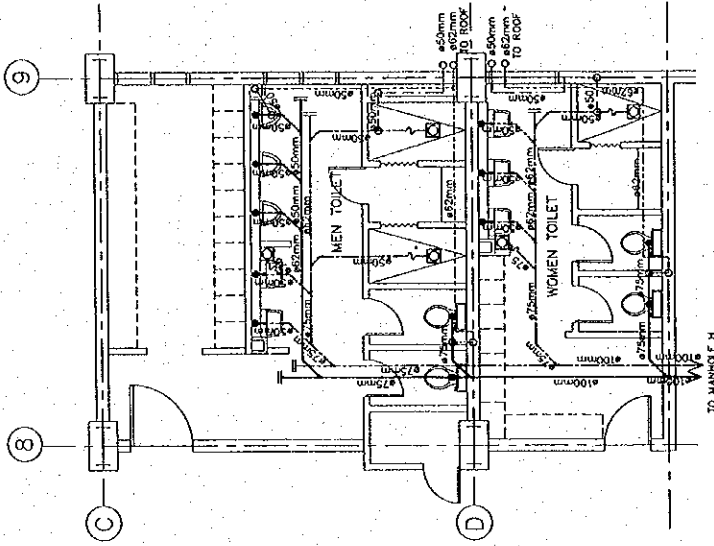
- NOTES
- 1) WASTE AND SANITARY DRAINAGE PIPES TO BE PVC
 - 2) WATER SUPPLY PIPES TO BE PVC
 - 3) FIRE FIGHTING SYSTEM PIPES TO BE GALVANIZED IRON

MANHOLE IDENTIFICATION	GRATE LEVEL	BOTTOM LEVEL	DEPTH
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 H. Irula 02/07/15 Checked by 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°.	22/23



PLUMBING SYMBOLS

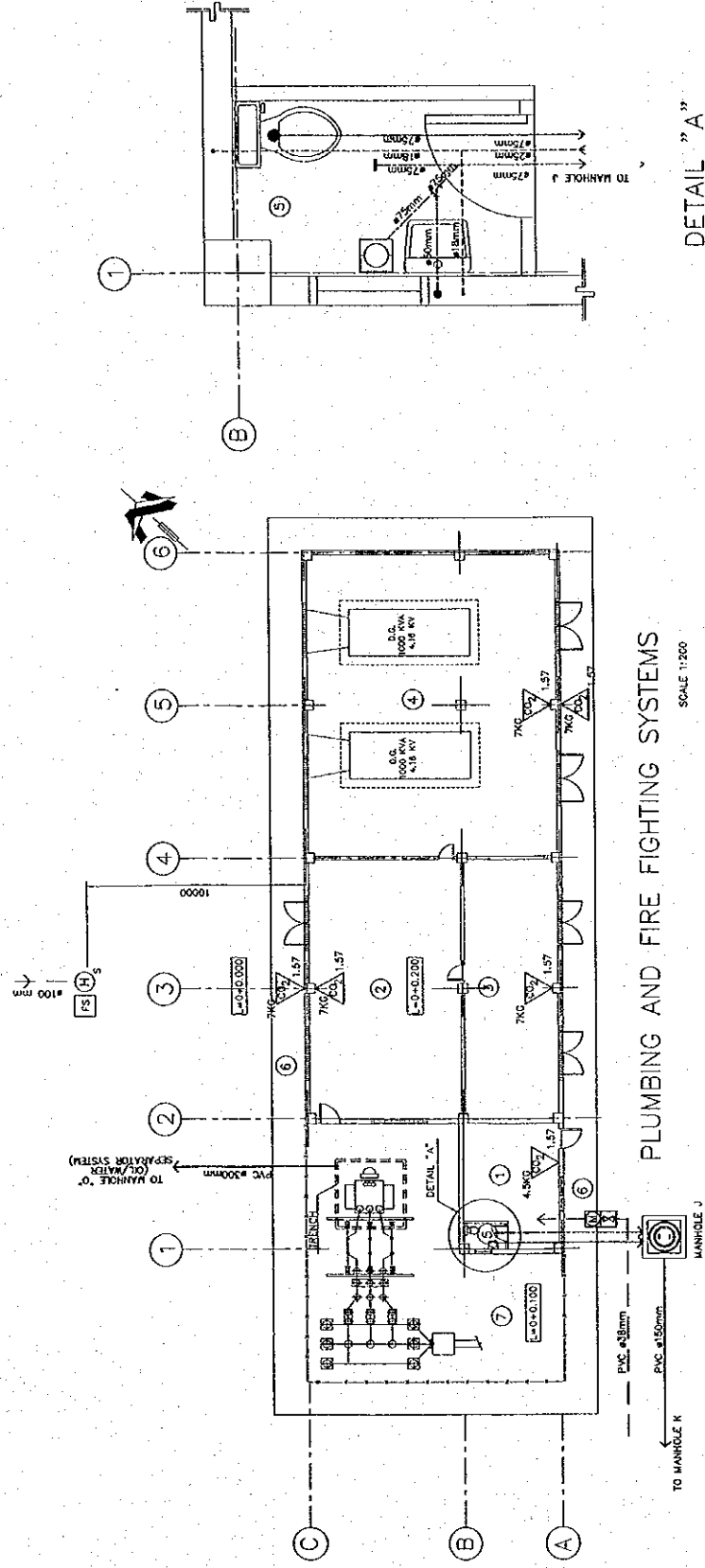
	VERTICAL PIPE DOWN		WATER SUPPLY PIPE
	VERTICAL PIPE UP		WASTE DRAINAGE PIPE
	LETTER INSIDE PIT		WASTE VENTILATION PIPE (IN UNDERGROUND PIT)
	VALVE INSIDE PIT		SANITARY DRAINAGE PIPE
	SHUT OFF VALVE		SANITARY VENTILATION PIPE
	FLOOR DRAIN		

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

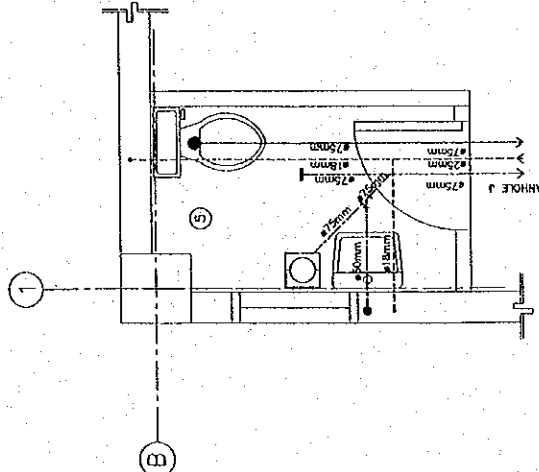
Prepared by	A. Irula	02/09/15	Checked by	S. Esda	15 July, 2015
-------------	----------	----------	------------	---------	---------------



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.	23/23



PLUMBING AND FIRE FIGHTING SYSTEMS
SCALE 1:200



DETAIL "A"
SCALE 1:30

<p>PLUMBING SYMBOLS</p> <ul style="list-style-type: none"> ● VERTICAL PIPE DOWN --- WATER SUPPLY PIPE --- METER INSIDE PIT --- WASTE DRAINAGE PIPE --- VALVE INSIDE PIT --- SANITARY DRAINAGE PIPE ○ FLOOR DRAIN 	<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"> △ ABC CLASS CO2 EXTINGUISHER ⊙ FIRE HYDRANT STAND TYPE □ FIRE STATION CABINET <p>LEGEND</p> <ul style="list-style-type: none"> ⊙ WEIGHT IN KGS ⊙ SIDEWALK ⊙ PLACEMENT HEIGHT 	<p>(ROOM LIST)</p> <ul style="list-style-type: none"> ① OFFICE ROOM ② SWITCHGEAR ROOM ③ TRANSFORMER ROOM ④ GENERATOR ROOM ⑤ TOILET ⑥ SIDEWALK ⑦ TRANSFORMER YARD
--	--	--	--

Prepared by	H. Iruka	02/07/15	Checked by	S. Esola	15 July, 2015
-------------	----------	----------	------------	----------	---------------

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 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-02-009

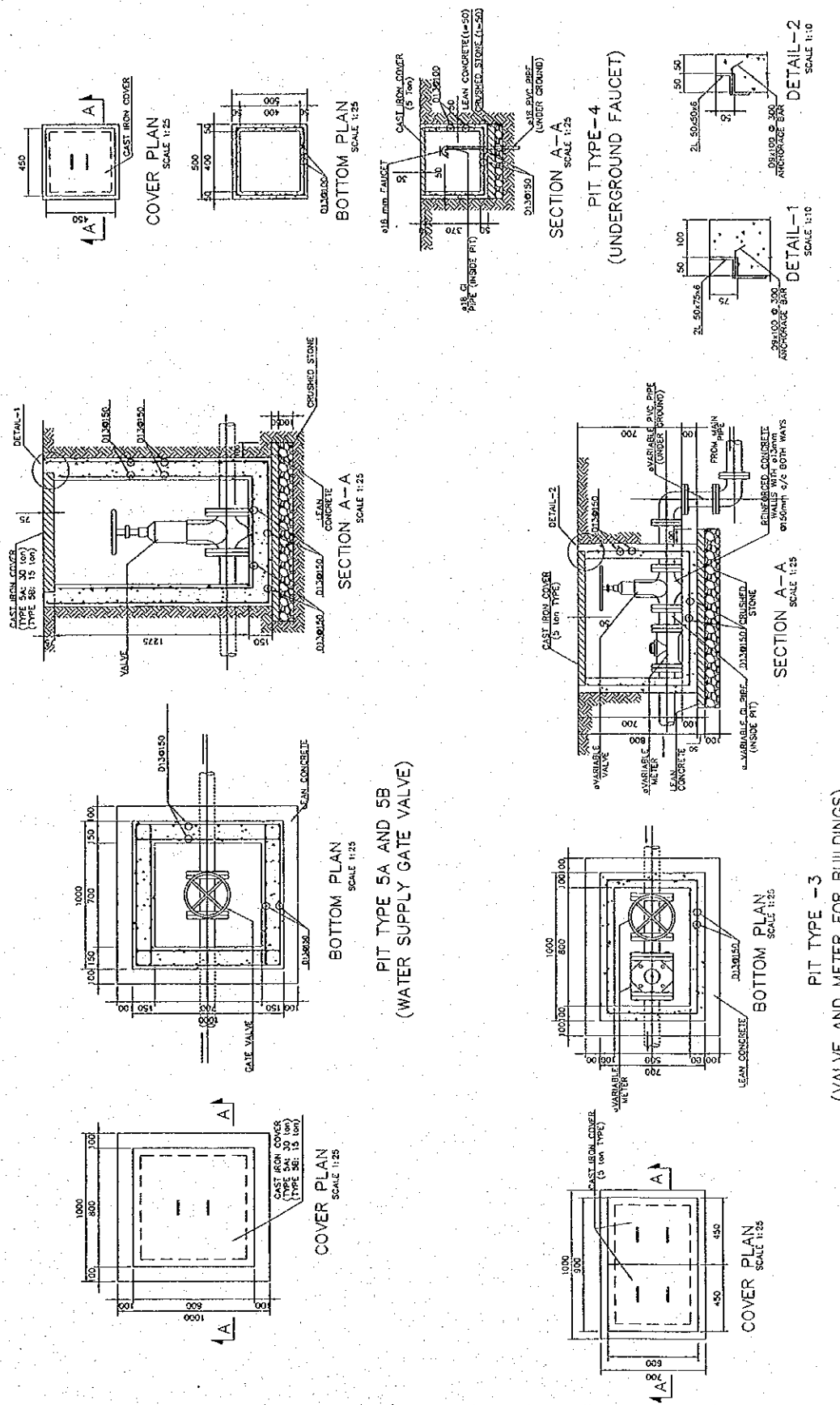
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	H. Iruka	02/07/15	4	S. Endo	15 July 02	W. FF	20 July 02	
1	<i>CA</i>							
2								
3								

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			
<i>Dimension</i>			
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 m ²		
Volume	0.113 m ³		
Reinforcement 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	75mm		
	0.0001 m ³		
Total	0.0001 m ³ (A)		
Concrete Volume			
(Side)	0.060 m ³		
(Bottom)	0.013 m ³		
	0.073 m ³ (B)		
(B)-(A)	0.072 m ³		
Form Work			
Deducted Area			
	0.471 m ²	(C)	
(Side-Outside)	0.9		
(Side-Inside)	0.59		
(Bottom)	0.25		
Total	1.742 m ² (D)		
(D)-(C)	1.271 m ²		
Lean Concrete			
d	0.05 m		
Width	0.1 m		
Concrete Volume	0.025 m ³		
Crushed Stone			
d	0.05 m		
Volume	0.021 m ³		
Prepared by		Checked by	
A. Irub		S. Gado	
02/07/15		15 July, 02	

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/																																																																												
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"><i>Excavation</i></td> <td style="width:30%; text-align: right;">0.2 m</td> <td style="width:30%;"></td> <td style="width:10%;"></td> </tr> <tr> <td></td> <td style="text-align: right;">0.270 m³</td> <td></td> <td></td> </tr> <tr> <td><i>Backfilling</i></td> <td style="text-align: right;">0.112 m³</td> <td></td> <td></td> </tr> <tr> <td><i>Cast Iron Ring</i></td> <td style="text-align: right;">1.60 m</td> <td></td> <td></td> </tr> <tr> <td><i>Cover</i></td> <td style="text-align: right;">1 Nos</td> <td></td> <td></td> </tr> <tr> <td><i>Mass Concrete Support</i></td> <td style="text-align: right;">0.012 m³</td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">0.006 m³</td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">0.018 m³</td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: center;">Summary of Quantity for Pit</td> </tr> <tr> <td><i>Excavation</i></td> <td style="text-align: right;">0.270</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Backfilling</i></td> <td style="text-align: right;">0.112</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Crushed Stone</i></td> <td style="text-align: right;">0.021</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Lean Concrete</i></td> <td style="text-align: right;">0.0245</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Reinforcement Bar : Lower (D13)</i></td> <td style="text-align: right;">9.55</td> <td style="text-align: right;">kg</td> <td></td> </tr> <tr> <td><i>Form (Lower)</i></td> <td style="text-align: right;">1.271</td> <td style="text-align: right;">m²</td> <td></td> </tr> <tr> <td><i>Concrete (Lower) : 18N</i></td> <td style="text-align: right;">0.072</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Mass Concrete Support</i></td> <td style="text-align: right;">0.018</td> <td style="text-align: right;">m³</td> <td></td> </tr> <tr> <td><i>Cast Iron Ring : L 50x50x6</i></td> <td style="text-align: right;">1.60</td> <td style="text-align: right;">m</td> <td></td> </tr> <tr> <td><i>Cover (900 x 600 x 50)</i></td> <td style="text-align: right;">1</td> <td style="text-align: right;">nos</td> <td></td> </tr> </table>				<i>Excavation</i>	0.2 m				0.270 m ³			<i>Backfilling</i>	0.112 m ³			<i>Cast Iron Ring</i>	1.60 m			<i>Cover</i>	1 Nos			<i>Mass Concrete Support</i>	0.012 m ³				0.006 m ³				0.018 m ³			Summary of Quantity for Pit				<i>Excavation</i>	0.270	m ³		<i>Backfilling</i>	0.112	m ³		<i>Crushed Stone</i>	0.021	m ³		<i>Lean Concrete</i>	0.0245	m ³		<i>Reinforcement Bar : Lower (D13)</i>	9.55	kg		<i>Form (Lower)</i>	1.271	m ²		<i>Concrete (Lower) : 18N</i>	0.072	m ³		<i>Mass Concrete Support</i>	0.018	m ³		<i>Cast Iron Ring : L 50x50x6</i>	1.60	m		<i>Cover (900 x 600 x 50)</i>	1	nos	
<i>Excavation</i>	0.2 m																																																																														
	0.270 m ³																																																																														
<i>Backfilling</i>	0.112 m ³																																																																														
<i>Cast Iron Ring</i>	1.60 m																																																																														
<i>Cover</i>	1 Nos																																																																														
<i>Mass Concrete Support</i>	0.012 m ³																																																																														
	0.006 m ³																																																																														
	0.018 m ³																																																																														
Summary of Quantity for Pit																																																																															
<i>Excavation</i>	0.270	m ³																																																																													
<i>Backfilling</i>	0.112	m ³																																																																													
<i>Crushed Stone</i>	0.021	m ³																																																																													
<i>Lean Concrete</i>	0.0245	m ³																																																																													
<i>Reinforcement Bar : Lower (D13)</i>	9.55	kg																																																																													
<i>Form (Lower)</i>	1.271	m ²																																																																													
<i>Concrete (Lower) : 18N</i>	0.072	m ³																																																																													
<i>Mass Concrete Support</i>	0.018	m ³																																																																													
<i>Cast Iron Ring : L 50x50x6</i>	1.60	m																																																																													
<i>Cover (900 x 600 x 50)</i>	1	nos																																																																													
Prepared by		Checked by																																																																													
A. Irua		S. Endo																																																																													
02/07/15		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	PIT TYPE-3	Page No.	4/4



Prepared by	H. Irula	02/09/15	Checked by	S. Saida	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)	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 reinforcement-bar was computed summarizing all distance of bar.

Lean concrete and crushed stone was computed ~~multiplying~~ ^{by} the area to the thickness of them.
multiplying

Area of form was computed ^{by} using geometric formula.

References, Calculation Base and Revisions

Drawing N° UT-02-009

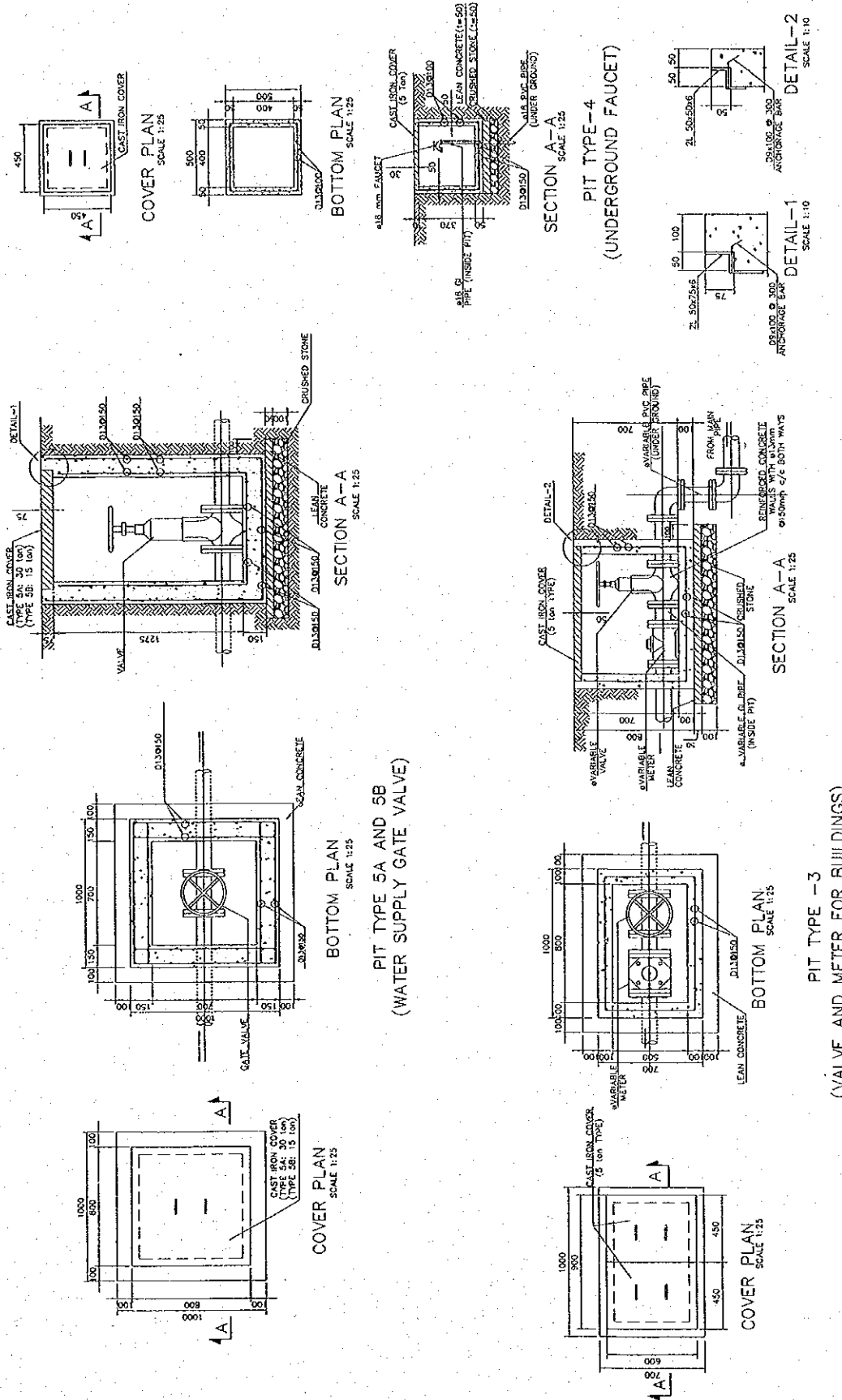
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	A. Irula	02/07/15	4	S. Endo	15 July, 02	W. S. S.	30 July 02	
1								
2								
3								

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			
<i>Dimension</i>			
Height	0.05		
	0.75		
	0.800		
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 m ²		
Volume	0.560 m ³		
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	3	3.2 0.995 3.174
Bottom (2)	0.95	4	4 0.995 3.996
			22.205 kg
Concrete Work			
Deducted Volume			
Pipe	75 mm		
	0.0004 m ³		
Total	0.0004 m ³ (A)		
Concrete Volume			
(Side)	0.272 m ³		
(Bottom)	0.000 m ³		
	0.272 m ³ (B)		
(B) - (A)	0.272 m ³		
Form Work			
Deducted Area			
	0.471 m ²	(C)	
(Side-Outside)	2.72		
(Side-Inside)	1.95		
(Bottom)	0.70		
Total	5.37 m ² (D)		
(D) - (C)	4.899 m ²		
Lean Concrete			
d	0.05 m		
Width	0.1 m		
Concrete Volume	0.054 m ³		
Crushed Stone			
d	0.1 m		
Volume	0.108 m ³		
		Prepared by	Checked by
		H. Irua	S. Eido
		02/07/15	15 July, 2015

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/																																																																																																																																																								
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"><i>Excavation</i></td> <td style="width:10%; text-align: center;">0.3 m</td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> <td style="width:10%;"></td> </tr> <tr> <td></td> <td style="text-align: center;">1.235 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Backfilling</i></td> <td></td> <td style="text-align: center;">0.513 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Cast Iron Ring</i></td> <td></td> <td style="text-align: center;">3.20 m</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Cover</i></td> <td></td> <td style="text-align: center;">1 Nos</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Mass Concrete Support</i></td> <td></td> <td style="text-align: center;">0.012 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">0.006 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">0.018 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="8" style="text-align: center;">Summary of Quantity for Pit</td> </tr> <tr> <td>Excavation</td> <td></td> <td style="text-align: center;">1.235 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Backfilling</td> <td></td> <td style="text-align: center;">0.513 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Crushed Stone</td> <td></td> <td style="text-align: center;">0.108 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Lean Concrete</td> <td></td> <td style="text-align: center;">0.054 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Raiforcement Bar : Lower (D13)</td> <td></td> <td style="text-align: center;">22.21 kg</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Form (Lower)</td> <td></td> <td style="text-align: center;">4.899 m²</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Concrete (Lower) : 18N</td> <td></td> <td style="text-align: center;">0.272 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mass Concrete Support</td> <td></td> <td style="text-align: center;">0.018 m³</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cast Iron Ring : L 50x50x6</td> <td></td> <td style="text-align: center;">3.20 m</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cover (450 x 450 x 30)</td> <td></td> <td style="text-align: center;">1 nos</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				<i>Excavation</i>	0.3 m								1.235 m ³							<i>Backfilling</i>		0.513 m ³						<i>Cast Iron Ring</i>		3.20 m						<i>Cover</i>		1 Nos						<i>Mass Concrete Support</i>		0.012 m ³								0.006 m ³								0.018 m ³						Summary of Quantity for Pit								Excavation		1.235 m ³						Backfilling		0.513 m ³						Crushed Stone		0.108 m ³						Lean Concrete		0.054 m ³						Raiforcement Bar : Lower (D13)		22.21 kg						Form (Lower)		4.899 m ²						Concrete (Lower) : 18N		0.272 m ³						Mass Concrete Support		0.018 m ³						Cast Iron Ring : L 50x50x6		3.20 m						Cover (450 x 450 x 30)		1 nos					
<i>Excavation</i>	0.3 m																																																																																																																																																										
	1.235 m ³																																																																																																																																																										
<i>Backfilling</i>		0.513 m ³																																																																																																																																																									
<i>Cast Iron Ring</i>		3.20 m																																																																																																																																																									
<i>Cover</i>		1 Nos																																																																																																																																																									
<i>Mass Concrete Support</i>		0.012 m ³																																																																																																																																																									
		0.006 m ³																																																																																																																																																									
		0.018 m ³																																																																																																																																																									
Summary of Quantity for Pit																																																																																																																																																											
Excavation		1.235 m ³																																																																																																																																																									
Backfilling		0.513 m ³																																																																																																																																																									
Crushed Stone		0.108 m ³																																																																																																																																																									
Lean Concrete		0.054 m ³																																																																																																																																																									
Raiforcement Bar : Lower (D13)		22.21 kg																																																																																																																																																									
Form (Lower)		4.899 m ²																																																																																																																																																									
Concrete (Lower) : 18N		0.272 m ³																																																																																																																																																									
Mass Concrete Support		0.018 m ³																																																																																																																																																									
Cast Iron Ring : L 50x50x6		3.20 m																																																																																																																																																									
Cover (450 x 450 x 30)		1 nos																																																																																																																																																									
		Prepared by	Checked by																																																																																																																																																								
		A. Irda	S. Eirde																																																																																																																																																								
		02/07/15	15 July 2022																																																																																																																																																								



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:	PIT TYPE-4	Page N°.	4/4



Prepared by

H. Irola

02/07/15

Checked by

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.			
<u>Calculation Procedure Applied</u>								
<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>								
<u>References, Calculation Base and Revisions</u>								
<p>Drawing N° UT-02-009</p>								
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	A. Iruja	02/07/15	4	S. Endo	15 July, 02	ST	20 July 02	
1	<i>[Signature]</i>							
2								
3								

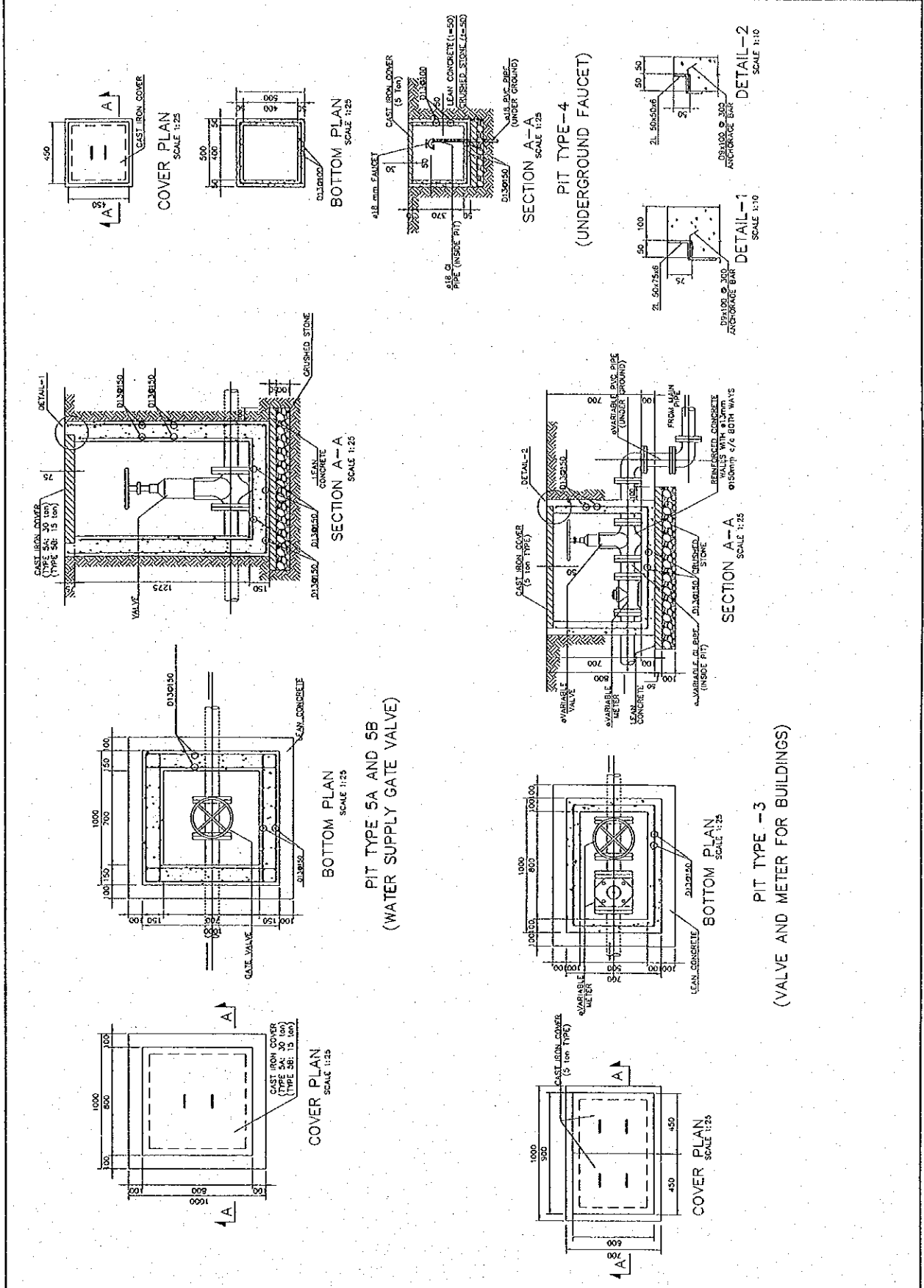
Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pit Type 5	Page No.	2/4 Rev.
			References/
Water Supply Gate Valve (Type-5A & 5B)			
Bottom			
<i>Dimension</i>			
Height	0.075		
	1.275		
	0.150		
Total	1.500		
Width	0.1		
	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 m ²		
Volume	1.500 m ³		
Reinforcement 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 m ³	
Total		0.0009 m ³ (A)	
Concrete Volume			
(Side)		0.615 m ³	
(Bottom)		0.150 m ³	
(B) - (A)		0.765 m ³ (B)	
		0.764 m ³	
Form Work			
Deducted Area			
	0.471 m ²	(C)	
(Side-Outside)		6	
(Side-Inside)		3.57	
(Bottom)		1.00	
Total		10.57 m ² (D)	
(D) - (C)		10.099 m ²	
Lean Concrete			
d		0.05 m	
Width		0.1 m	
Concrete Volume		0.072 m ³	
Crushed Stone			
d		0.1 m	
Volume		0.144 m ³	
Prepared by		Checked by	
H. Irwin		S. Endo	
02/07/15		15 July, 02	

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	UTILITY WORK	Calc. Index No.	
Subject	Pit Type 5	Page No.	3/4 Rev.

	References/																																																																					
<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;"><i>Excavation</i></td> <td style="width:20%; text-align: right;">0.3 m</td> <td style="width:20%;"></td> </tr> <tr> <td></td> <td style="text-align: right;">2.789 m³</td> <td></td> </tr> <tr> <td><i>Backfilling</i></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">1.073 m³</td> <td></td> </tr> <tr> <td><i>Cast Iron Ring</i></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">2.80 m</td> <td></td> </tr> <tr> <td><i>Cover</i></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">1 Nos</td> <td></td> </tr> <tr> <td><i>Mass Concrete Support</i></td> <td></td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">0.012 m³</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">0.006 m³</td> <td></td> </tr> <tr> <td></td> <td style="text-align: right;">0.018 m³</td> <td></td> </tr> <tr> <td colspan="3" style="text-align: center;">Summary of Quantity for Pit</td> </tr> <tr> <td><i>Excavation</i></td> <td style="text-align: right;">2.789 m³</td> <td></td> </tr> <tr> <td><i>Backfilling</i></td> <td style="text-align: right;">1.073 m³</td> <td></td> </tr> <tr> <td><i>Crushed Stone</i></td> <td style="text-align: right;">0.144 m³</td> <td></td> </tr> <tr> <td><i>Lean Concrete</i></td> <td style="text-align: right;">0.072 m³</td> <td></td> </tr> <tr> <td><i>Reinforcement Bar : Lower (D13)</i></td> <td style="text-align: right;">126.98 kg</td> <td></td> </tr> <tr> <td><i>Form (Lower)</i></td> <td style="text-align: right;">10.099 m²</td> <td></td> </tr> <tr> <td><i>Concrete (Lower) : 18N</i></td> <td style="text-align: right;">0.764 m³</td> <td></td> </tr> <tr> <td><i>Mass Concrete Support</i></td> <td style="text-align: right;">0.018 m³</td> <td></td> </tr> <tr> <td><i>Cast Iron Ring : L. 50x50x6</i></td> <td style="text-align: right;">2.80 m</td> <td></td> </tr> <tr> <td><i>Cover (800 x 800 x 75)</i></td> <td style="text-align: right;">1 nos</td> <td></td> </tr> </table>	<i>Excavation</i>	0.3 m			2.789 m ³		<i>Backfilling</i>				1.073 m ³		<i>Cast Iron Ring</i>				2.80 m		<i>Cover</i>				1 Nos		<i>Mass Concrete Support</i>				0.012 m ³			0.006 m ³			0.018 m ³		Summary of Quantity for Pit			<i>Excavation</i>	2.789 m ³		<i>Backfilling</i>	1.073 m ³		<i>Crushed Stone</i>	0.144 m ³		<i>Lean Concrete</i>	0.072 m ³		<i>Reinforcement Bar : Lower (D13)</i>	126.98 kg		<i>Form (Lower)</i>	10.099 m ²		<i>Concrete (Lower) : 18N</i>	0.764 m ³		<i>Mass Concrete Support</i>	0.018 m ³		<i>Cast Iron Ring : L. 50x50x6</i>	2.80 m		<i>Cover (800 x 800 x 75)</i>	1 nos		
<i>Excavation</i>	0.3 m																																																																					
	2.789 m ³																																																																					
<i>Backfilling</i>																																																																						
	1.073 m ³																																																																					
<i>Cast Iron Ring</i>																																																																						
	2.80 m																																																																					
<i>Cover</i>																																																																						
	1 Nos																																																																					
<i>Mass Concrete Support</i>																																																																						
	0.012 m ³																																																																					
	0.006 m ³																																																																					
	0.018 m ³																																																																					
Summary of Quantity for Pit																																																																						
<i>Excavation</i>	2.789 m ³																																																																					
<i>Backfilling</i>	1.073 m ³																																																																					
<i>Crushed Stone</i>	0.144 m ³																																																																					
<i>Lean Concrete</i>	0.072 m ³																																																																					
<i>Reinforcement Bar : Lower (D13)</i>	126.98 kg																																																																					
<i>Form (Lower)</i>	10.099 m ²																																																																					
<i>Concrete (Lower) : 18N</i>	0.764 m ³																																																																					
<i>Mass Concrete Support</i>	0.018 m ³																																																																					
<i>Cast Iron Ring : L. 50x50x6</i>	2.80 m																																																																					
<i>Cover (800 x 800 x 75)</i>	1 nos																																																																					
Prepared by		Checked by																																																																				
A. Irula		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:	PIT TYPE-5	Page N°.	4/4



Prepared by	H. Iruka	02/07/15	Checked by	N. Endo	15 July, 02
-------------	----------	----------	------------	---------	-------------