

٢٠٠٠ : ٢٠٠٠

<p>             ۱. <b>مقدمه:</b> (نقشه‌نگاری سده دوازدهم)              ۲. <b>روش‌ها:</b> روش‌های مختلف برای جمع‌آوری داده‌ها              ۳. <b>نتایج:</b> نتایج حاصل از تحلیل داده‌ها              ۴. <b>نتیجه‌گیری:</b> نتیجه‌گیری نهایی از پژوهش           </p>	<p>             ۱. <b>مقدمه:</b> (نقشه‌نگاری سده دوازدهم)              ۲. <b>روش‌ها:</b> روش‌های مختلف برای جمع‌آوری داده‌ها              ۳. <b>نتایج:</b> نتایج حاصل از تحلیل داده‌ها              ۴. <b>نتیجه‌گیری:</b> نتیجه‌گیری نهایی از پژوهش           </p>
<p>             ۱. <b>مقدمه:</b> (نقشه‌نگاری سده دوازدهم)              ۲. <b>روش‌ها:</b> روش‌های مختلف برای جمع‌آوری داده‌ها              ۳. <b>نتایج:</b> نتایج حاصل از تحلیل داده‌ها              ۴. <b>نتیجه‌گیری:</b> نتیجه‌گیری نهایی از پژوهش           </p>	<p>             ۱. <b>مقدمه:</b> (نقشه‌نگاری سده دوازدهم)              ۲. <b>روش‌ها:</b> روش‌های مختلف برای جمع‌آوری داده‌ها              ۳. <b>نتایج:</b> نتایج حاصل از تحلیل داده‌ها              ۴. <b>نتیجه‌گیری:</b> نتیجه‌گیری نهایی از پژوهش           </p>

1.  $\frac{a_1}{a_2} = \frac{a_1}{a_2} \cdot \frac{a_2}{a_2} = \frac{a_1 a_2}{a_2^2}$
2.  $\frac{a_1}{a_2} = \frac{a_1}{a_2} \cdot \frac{a_2}{a_2} = \frac{a_1 a_2}{a_2^2}$
3.  $\frac{a_1}{a_2} = \frac{a_1}{a_2} \cdot \frac{a_2}{a_2} = \frac{a_1 a_2}{a_2^2}$

[illegible]

سورة: ٢٠٠

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سُرود ھجیر	قُر ھجیر	اَقر										دَقر (قُرو)	رَسر اَقر
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												لَا يَسْتَرْجِعُ وَلَا يَسْتَوِي

سَمْعٌ : مَوْخَزٌ ، وَتَمٌّ ، دَسَّسَ هُوَذَايْ ، دَسَّجُواوُ دَسَّرَاوَمَوَصَرُ اِنْسَجَعُو .

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**CONSTRUCTION OF WASTE MANAGEMENT CENTRE - GA. KANDUHULHUDHOO**  
**Bill of Quantities**

Length of Collection Bay Area	27.35
Width of Collection Bay Area	4.3
Total length of Collection Bay Area 3.5m high walls	46.05
Number of G.I Pipe Columns in Collection Bay Area	8
Number of RC Columns in Collection Bay Area	15
Total length of Collection Bay Area 1.5m high walls	16
Total length of Perimeter Wall	45.40
Number of Columns in Perimeter Wall	23
Length of Compost Slab	15
Width of Compost Slab	5
Length of Concrete Screed	15
Width of Concrete Screed	5

No	Item	Unit	Quantity	Rate	Amount
<b>1</b>	<b>Preliminaries</b>				
1.1	Mobilization to site	LS	1		
1.2	Site management cost including set up of temporary services for contractor's services as maybe necessary	LS	1		
1.3	Setup sign boards on site as specified	LS	1		
1.4	Clean up site upon completion of works	LS	1		
1.5	Demobilization	LS	1		
<b>2</b>	<b>Site Clearance</b>				
2.1	Allow for all site clean up work including removal of vegetation.	LS	1		
<b>3</b>	<b>Earth works</b>				
	<i>Allow for all excavation work for foundations as follows</i>				
3.1	Collection bay foundation	m3	5.23		
3.2	Perimeter wall	m3	4.77		
3.4	Flood light pole	m3	0.13		
3.5	Ground levelling works for ground slab works	m2	267.61		
3.6	Leachate collection tank	m3	6.00		
3.7	Setting up a ground water well in the location shown	LS	1		
<b>4</b>	<b>Concrete works</b>				
	<i>Collection Bay Area</i>				

4.1	Provide 100mm concrete floor screed for collection bay area according to the slope shown in drawing with a drain at the Sorting Area. Reinforcement for the slab shall be R6@150 BW single layer	m3	11.76		
4.2	Wall Footing of Collection Bay Area walls cast according to drawing. Reinforcement shall be as shown on drawing	m3	3.28		
4.3	Middle Beams of Collection Bay Area walls cast according to drawing. Reinforcement shall be as shown on drawing.	m3	0.98		
4.4	Lintel for Collection Bay Area walls cast according to drawing. Reinforcement shall be as shown on drawing.	m3	0.98		
4.5	Columns for Collection Bay Area walls cast according to drawing. Reinforcement shall be as shown on drawing.	m3	1.45		
4.6	Concrete column for sorting area platform cast according to drawing.	m3	0.612		
4.7	Provide 150mm thick reinforced concrete slab for sorting area platform cast according to drawing. Reinforcements shall be as shown on drawing.	m3	1.2		
	<i>Compost Slab</i>				
4.8	Compost slab panels cast according to the slopes shown on drawing. Reinforcement shall be as shown on drawings.	m3	7.50		
4.9	B1 beams of compost slab cast according to drawing. Reinforcement shall be as shown on drawing.	m3	1.72		
4.10	B2 beams of compost slab cast according to drawing. Reinforcement shall be as shown on drawing.	m3	0.37		
4.11	B3 beams of compost slab with a mortar layer at an adequate slope, cast according to drawing. Reinforcement shall be as shown on drawing. Rate shall include reinforcement work, formwork, casting and mortar works.	m3	1.35		
4.12	Provide 100mm concrete floor screed for composting area. Reinforcement for the slab shall be R6@150 BW single layer	m3	7.50		
4.13	Leachate collection tank with primary and secondary tanks as shown on drawing. Rate shall include all formwork, casting and placing of the tank	Nos	1		
	<i>Perimeter Wall</i>				
4.14	Perimeter wall column	m3	1.33		
4.15	Perimeter wall beam	m3	1.74		
	<i>Other</i>				

4.16	Foundation for flood light pole	m3	0.29		
4.17	Ground water well casting work	LS	1		
<b>5</b>	<b>Structural steel works</b>				
	<i>Collection Bay Area</i>				
5.1	Provide 75mm G.I pipe as structural columns for collection bay area. Rate shall include all fixings at both ends of the pipe for necessary connections as shown on drawing	Nos	8.00		
5.2	Provide truss as shown on the drawing. Rate shall include all cuttings, weldings, applying of protective coating for welded joints, and setting up the truss	m	6.15		
	<i>Perimeter Wall</i>				
5.3	Perimeter fence using 50mm G.I pipe as shown on drawing. Rate shall include all cuttings, weldings, applying of protective coating for welded joints, and, setting up the fence.	m	45.40		
	<i>Other</i>				
5.4	Perimeter fence using 50mm G.I pipe as shown on drawing. Rate shall include all cuttings, weldings, applying of protective coating for welded joints, and, setting up the fence.	m	45.40		
5.5	Provide 75mm G.I pipe as flood light fixing poles. Rate shall include installation charges as shown on drawing.	Nos	2		
<b>6</b>	<b>Masonry works</b>				
	<i>Collection Bay Area walls of thickness 150mm</i>				
6.1	3500mm high walls for Collection Bay Walls	m3	22.21		
6.2	1500mm high walls for Collection Bay section separation	m3	2.40		
	<i>Perimeter walls of thickness 150mm</i>				
6.3	1000mm high wall for perimeter wall	m3	5.79		
	<i>Other</i>				
6.4	2000mm high walls of thickness 150mm for Pump House (1700mm high wall above ground level with 300mm below ground level)	m3	1.76		
<b>7</b>	<b>Plastering works</b>				
	<i>Collection Bay Area</i>				
7.1	25mm plastering on 3500mm high walls for Collection Bay Outer Walls	m2	350.45		
7.2	25mm plastering on 1500mm high walls for Collection Bay section separation	m2	51.30		

	<i>Perimeter Wall</i>				
7.3	25mm plastering on 1000mm wall for perimeter wall	m2	98.51		
	<i>Other</i>				
7.4	2000mm high walls of thickness 150mm for Pump House (1700mm high wall above ground level with 300mm below ground level)	m2	12.58		
<b>8</b>	<b>Painting works</b>				
	<i>Collection Bay Area Walls</i>				
8.1	Apply emulsion paint coating on 3500mm high walls for Collection Bay Outer Walls	m2	350.45		
8.2	Apply emulsion paint coating on 1500mm high walls for Collection Bay section separation	m2	51.30		
	<i>Collection Bay Area Steel Members</i>				
8.3	Apply emulsion paint coating on G.I columns of collection bay	LS	1		
8.4	Apply emulsion paint coating on the roof trusses	LS	1		
8.5	Apply paint coating on the metal sliding door of the Hazardous waste storage room	LS	1		
8.6	Apply paint coating on the two metal folding doors of the equipment room	LS	2		
	<i>Perimeter Wall</i>				
8.7	Apply emulsion paint coating on 1000mm high wall for perimeter fence	m2	98.51		
	<i>Perimeter Wall Steel members</i>				
8.7	Apply emulsion paint coating on G.I members of perimeter fence	LS	1		
8.9	Apply emulsion paint coating on G.I members and MS Sheets of gates	LS	1		
	<i>Other</i>				
8.10	Apply paint coating on flood light pole	LS	2		
8.11	Apply emulsion paint coating on the removable timber covers of the leachate collection tanks	LS	2		
8.12	Apply emulsion paint coating on 2000mm high walls of thickness 150mm for Pump House (1700mm high wall above ground level with 300mm below ground level)	m2	12.58		
<b>9</b>	<b>Roofing works</b>				
	<i>Collection Bay Area</i>				
9.1	Lysaght roofing sheet for collection bay area. Rate shall include all necessary laps, fastening, fixtures and sealing of joints	m2	131.28		
9.2	Roof flashing. Rate shall include fastening and sealing of joints	m	35.95		

9.3	Timber beams - 150 x 75mm. Rate shall include for all fixing and joints.	m	82.05		
9.4	Timber rafters - 100 x 50mm. Rate shall include for all fixing and joints	m	30.39		
9.5	Timber battens - 50 x 38mm. Rate shall include for all fixing and joints.	m	45.58		
	<i>Other</i>				
9.6	Lysaght roofing sheet for Pump House. Rate shall include all necessary laps, fastening, fixtures and sealing of joints	m2	4.00		
9.7	Pump House Timber rafters - 100 x 50mm. Rate shall include for all fixing and joints	m	4.00		
9.8	Pump House Timber battens - 50 x 38mm. Rate shall include for all fixing and joints.	m	6.67		
<b>10</b>	<b>Electrical works</b>				
	<i>Collection Bay Area</i>				
10.1	Provide 3 phase 13 A power sockets in equipment room. Rate shall include connection to circuit breaker using 4sqmm power supply cable and all necessary accessories	Nos	4		
10.2	Provide 100W ceiling mount energy saving light in equipment room, provide the switches near circuit breaker inside the equipment room. Rate shall include connection to circuit breaker	Nos	1		
10.3	Provide 100W ceiling mount energy saving light in hazardous waste storage room, provide the switches near circuit breaker inside the equipment room. Rate shall include connection to circuit breaker	Nos	1		
10.4	Provide and mount a Ceiling fan inside the Equipment Room as indicated. Rate shall include provision of switch near the circuit breaker inside the equipment room, connection to circuit breaker and all necessary accessories	Nos	1		
10.5	Supply and fix electric meter, 4 pole MCCB, Single Phase distribution board and 3 Phase distribution board as shown on drawing. Earth link and connection to earth rod with proper earth pit should be provided as well	LS	1		
10.6	Provide and mount a exhaust fan inside the Equipment Room and Hazardous Waste Storage Room. Rate shall include provision of switch near the circuit breaker inside the equipment room, connection to circuit breaker and all necessary accessories	LS	2		



10.7	Provide weather proof switch for all lights	LS	1		
10.8	Provide 25 sqmm 4 core power supply cable from nearest distribution box to waste yard distribution board	m	1000		
	<i>Other</i>				
10.9	Provide 13 A power socket for well water pump inside the Pump House, provide the switch for the pump near circuit breaker inside the equipment room. Rate shall include connection to circuit breaker.	Nos	1		
10.10	Provide 200 W flood light for illuminating the waste yard. Rate shall include connecting each light to a switch near circuit breaker inside the equipment room and providing power to the switch	Nos	2		
10.11	Provide well water pump. Rate shall include its fixing inside the Pump House	Nos	1		
<b>11</b>	<b>Plumbing works</b>				
11.1	Provide connection from pump to ground water well. Rate shall include all necessary pipes, bends, fittings and footvalve and others as maybe required.	LS	1		
11.2	Provide outlet pipes as shown on drawing. Rate shall include connection to pump, bends, fittings and others as maybe necessary.	LS	1		
11.3	Provide PVC taps at ends of outlet pipes.	Nos	2		
11.4	Supply 25mm diameter flexible hose	m	25.0		
<b>12</b>	<b>Doors and windows</b>				
	<i>Metal Doors</i>				
12.1	Provide lockable metal sliding gates for entrance to hazardous waste storage room. Rate shall include all cuts, welds, applying protective coating to welded joints, painting the door and proper fixing of the door. Rate shall include fabrication and fixing of guide rails and wheels as well.	Nos	1		
12.2	Provide lockable metal folding gates for entrance to Equipment room. Rate shall include all cuts, welds, applying protective coating to welded joints, painting the door and proper fixing of the door. Rate shall include fabrication and fixing of guide rails and wheels as well.	Nos	2		

12.3	Provide lockable metal gates for entrance to waste yard as specified in the drawing. Rate shall include all cuts, welds, applying protective coating to welded joints, painting the frame and properly fixing the door to the fence.	Nos	2		
	<i>Timber Doors</i>				
12.4	Provide a lockable timber door of dimensions 1000mm x 1000mm with double door frames and fixed timber louvers for the ground water pump room hut. Rates shall include all materials, hinges and fixings.	Nos	1		
<b>13</b>	<b>Other Works</b>				
	<i>Collection Bay Area</i>				
13.1	Provide a 5" vinyl roof gutter with 2" x 3" downspout. Rates shall include all materials and fastenings.	LS	1		
13.2	Provide 12" x 12" ceramic tiles for the top and the sides of the concrete slab for sorting area platform	m2	9.80		
	<i>Perimeter Wall</i>				
13.3	50 x 50 PVC coated mesh. Rate shall include properly securing the mesh to G.I steel frame	m2	95.34		
	<i>Compost Slab</i>				
13.4	Provide HDPE membrane below compost slab, Concrete screed and collection bay floor slab	m2	267.61		
13.5	Provide expansion joint in slab and fill the joint with polyethylene joint filler form and silicone as shown on drawing	m	15.00		
13.6	Provide two timber removable covers for the leachate collection tank of size 1000x2000mm. Rates shall include all materials, fastenings and handles.	LS	2		
13.7	Connection of compost slab drain to primary tank of the leachate tank including ball valve	LS	1		

**TOTAL**

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CONSTRUCTION OF WASTE COLLECTION CENTRE - GA. KANDUHULHUDHOO  
Bill of Quantities  
SUMMARY SHEET

Bill No	Item	Amount
1	Preliminaries	
2	Site clearance	
3	Earth works	
4	Concrete works	
5	Masonry works	
6	Plastering works	
7	Painting works	
8	Roofing works	
9	Structural steel works	
10	Electrical works	
11	Plumbing works	
12	Doors and windows	
13	Others	
Sub Total		
GST 6%		
GRAND TOTAL		



مَجَرُورُ 2 : دَسَرُورِ مَجَرُورِ دِي مَجَرُورِ

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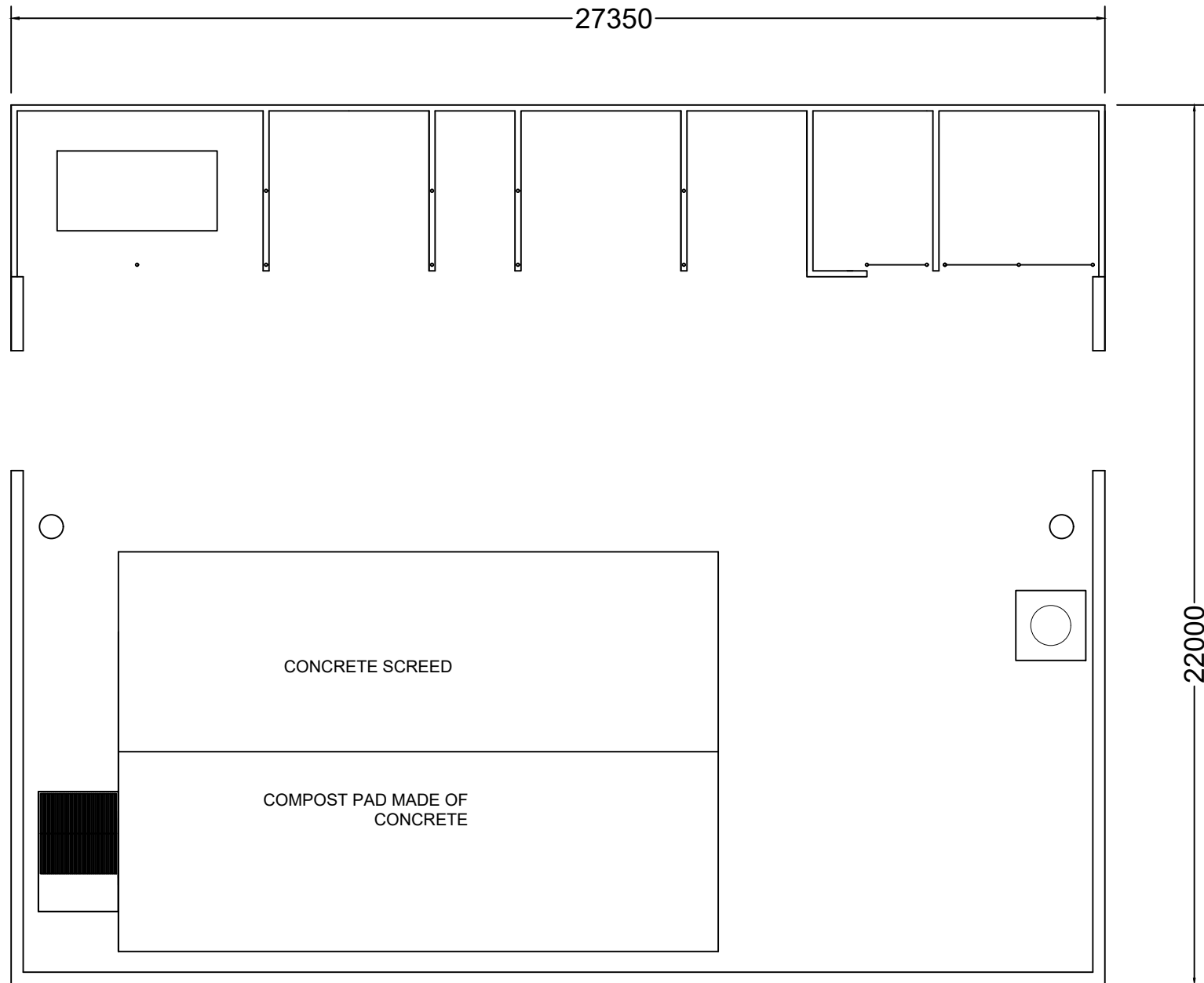
PROJECT:

**CONSTRUCTION OF  
AN ISLAND WASTE MANAGEMENT CENTRE  
at GA. Kanduhulhudhoo**

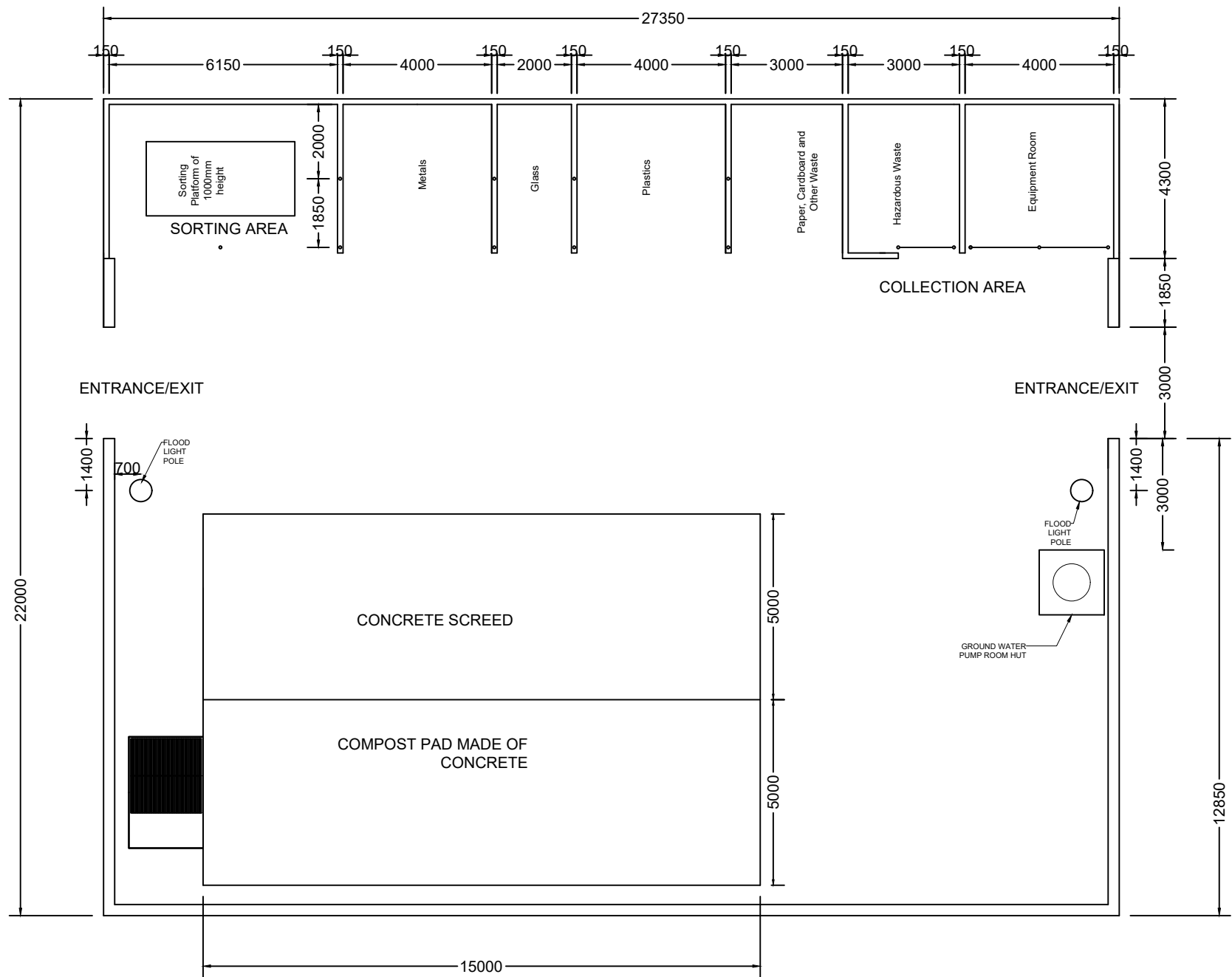
PREPARED BY:

**WASTE MANAGEMENT AND POLLUTION CONTROL DEPARTMENT**  
MINISTRY OF ENVIRONMENT AND ENERGY

JUNE 2017

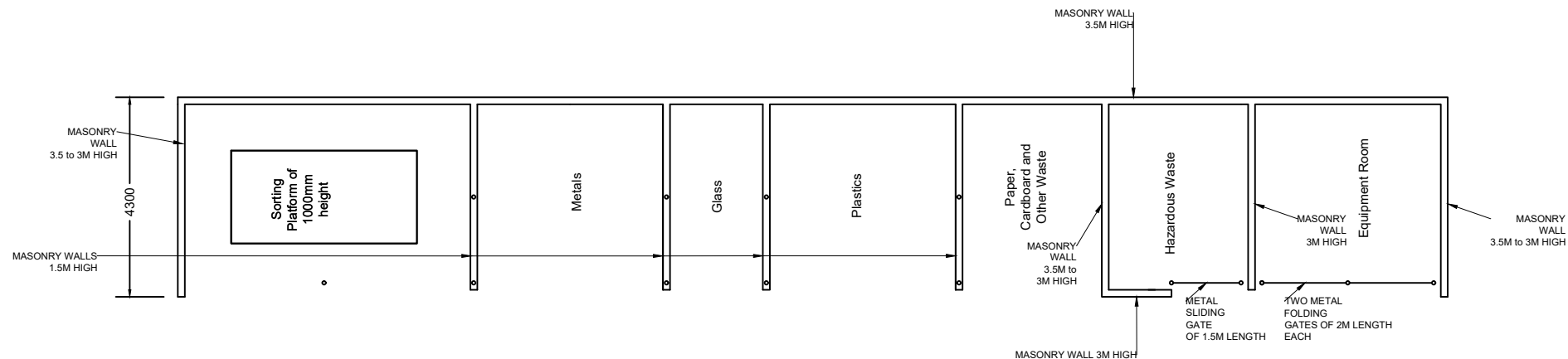


SITE LAYOUT

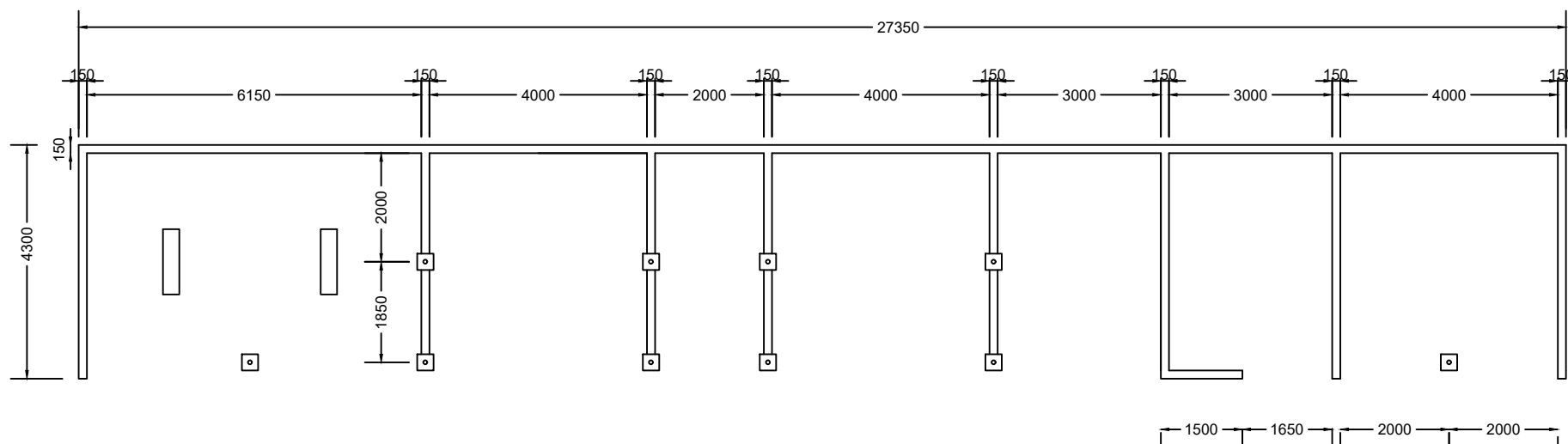


SITE LAYOUT



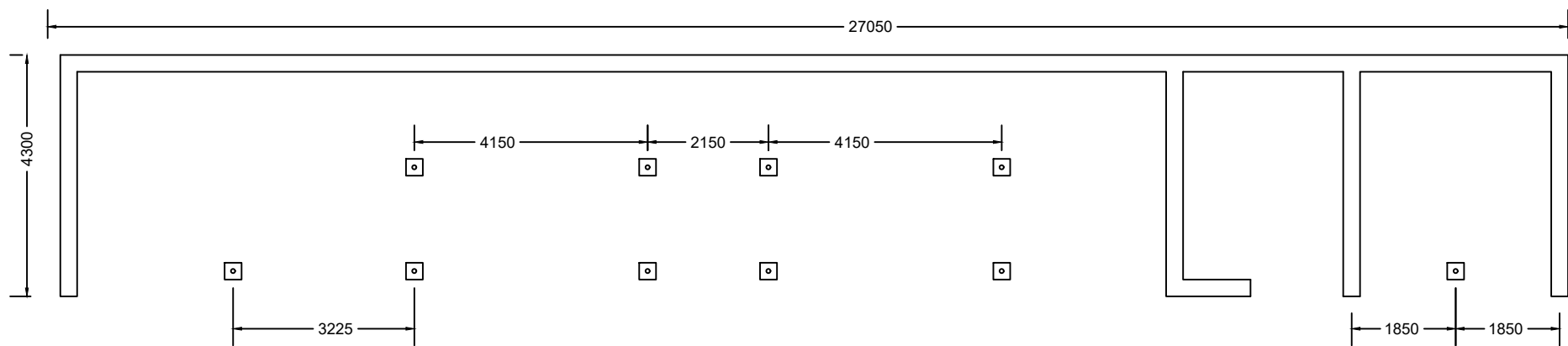


## COLLECTION BAY - PLANS

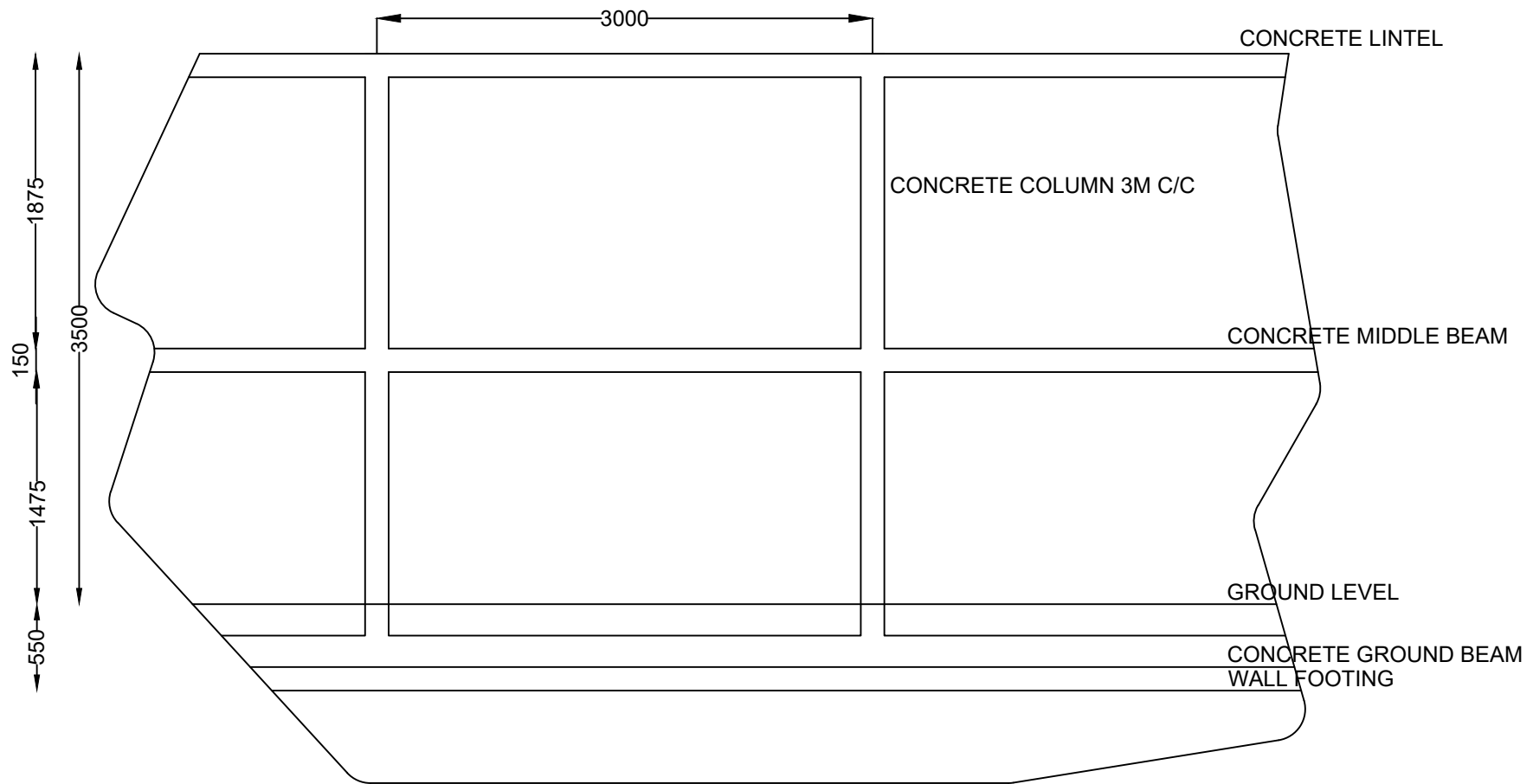


FLOOR PLAN

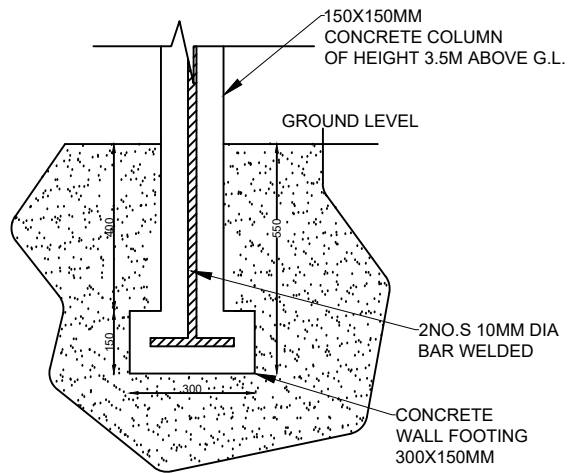
## COLLECTION BAY - FLOOR PLAN



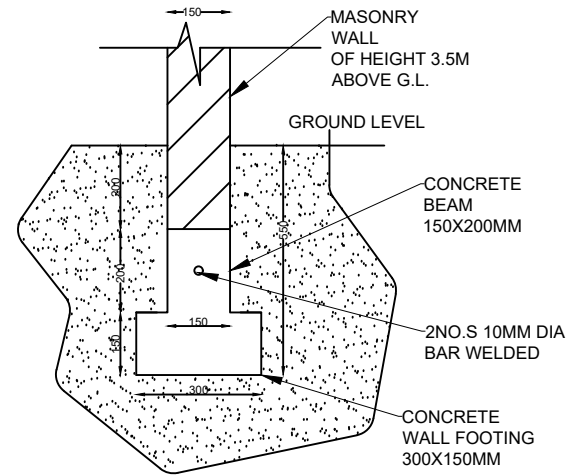
COLLECTION BAY - FOUNDATION PLAN



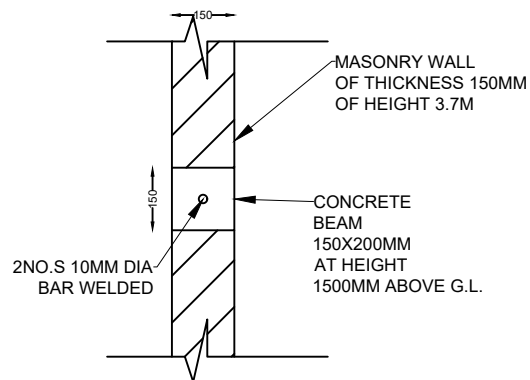
COLLECTION BAY - WALL



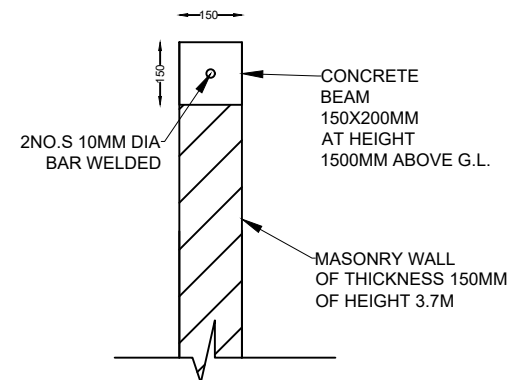
COLUMN DETAILS



BEAM AND WALL FOOTING DETAILS

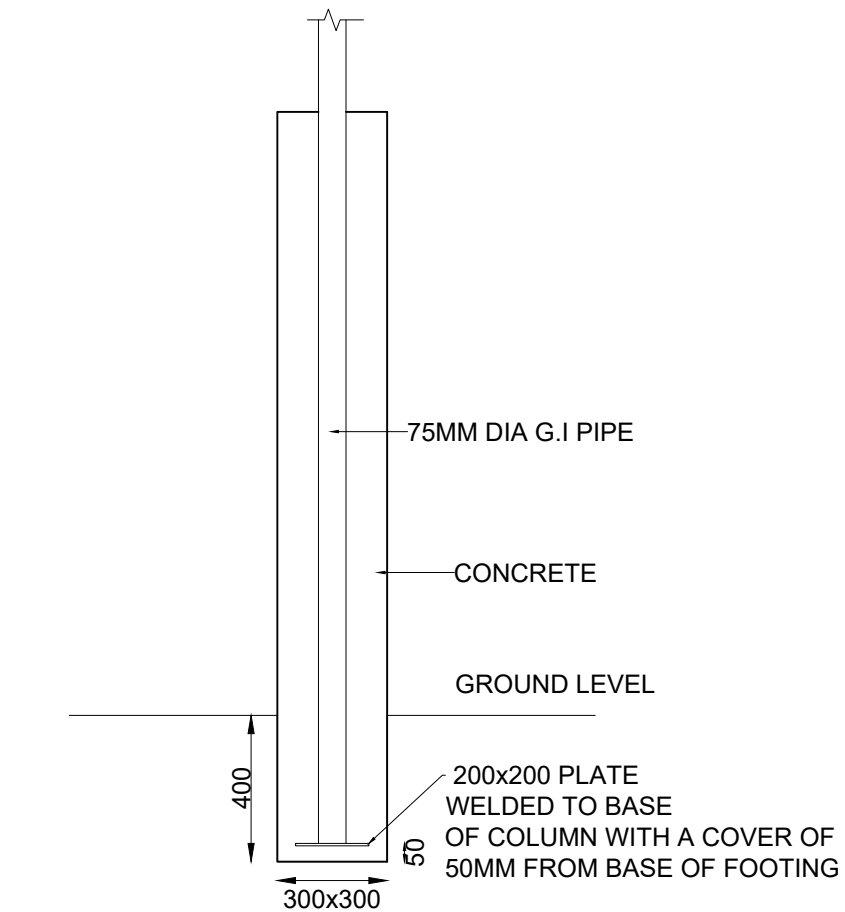


MIDDLE BEAM DETAILS



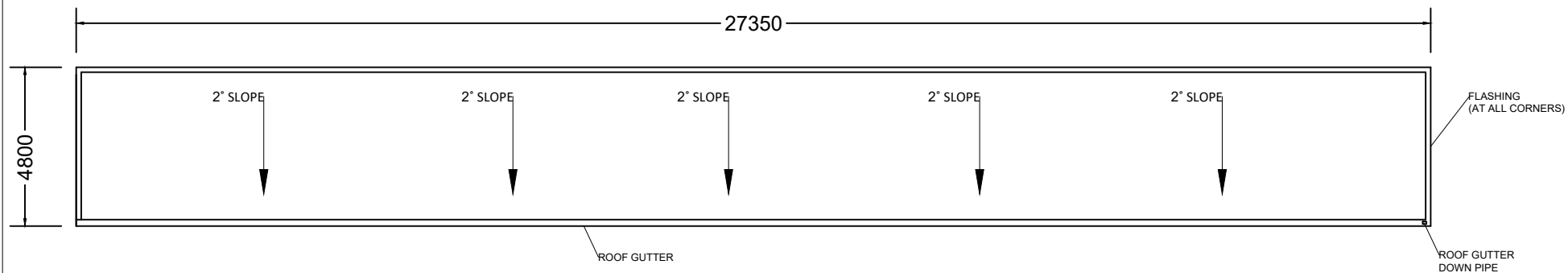
LINTEL DETAILS

## COLLECTION BAY - WALL DETAILS



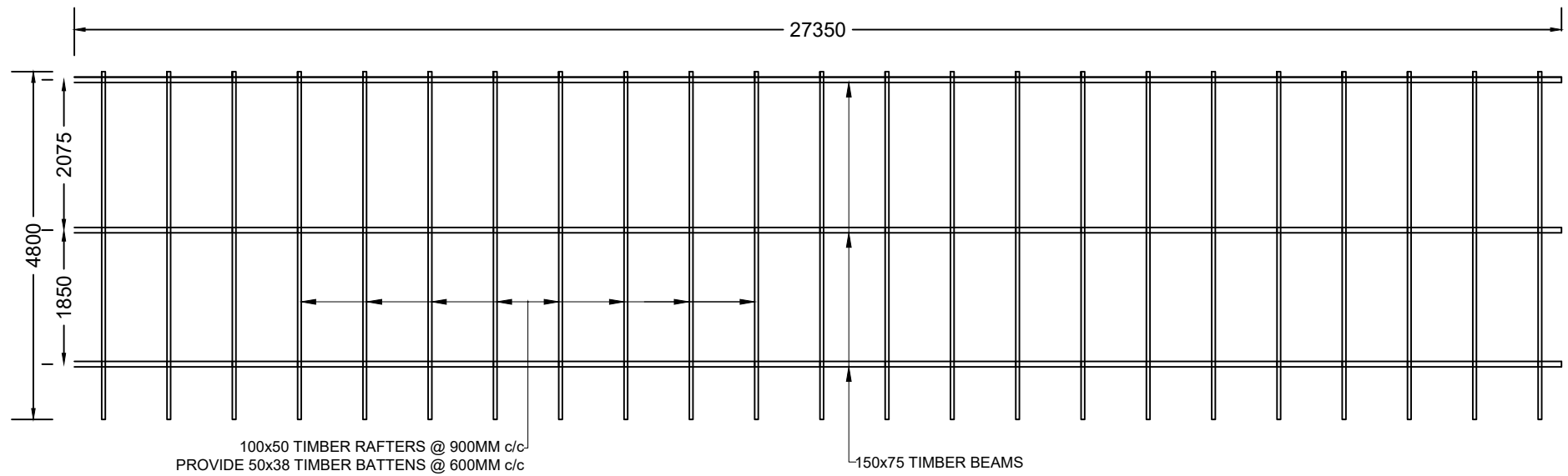
COLLECTION BAY  
G.I. PIPE COLUMN FOUNDATION

## COLLECTION BAY - G.I PIPE COLUMN FOUNDATION DETAILS



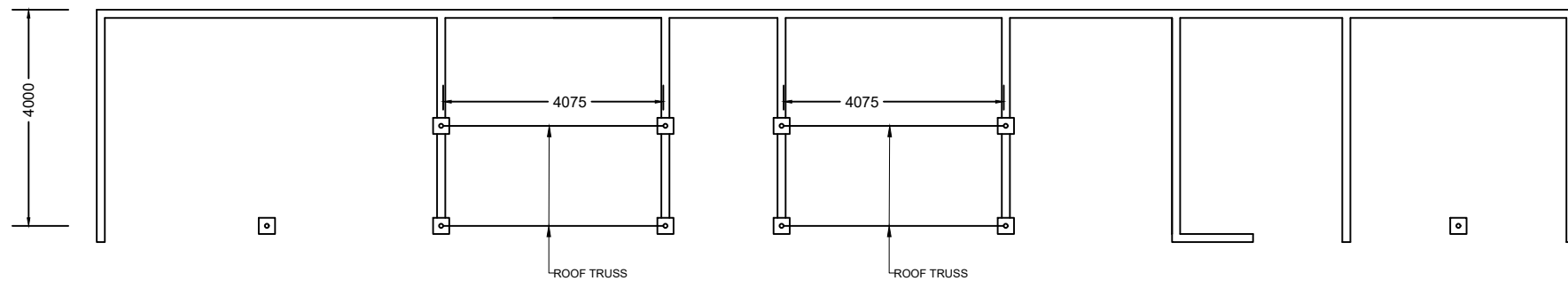
ROOF PLAN

## COLLECTION BAY - ROOF PLAN

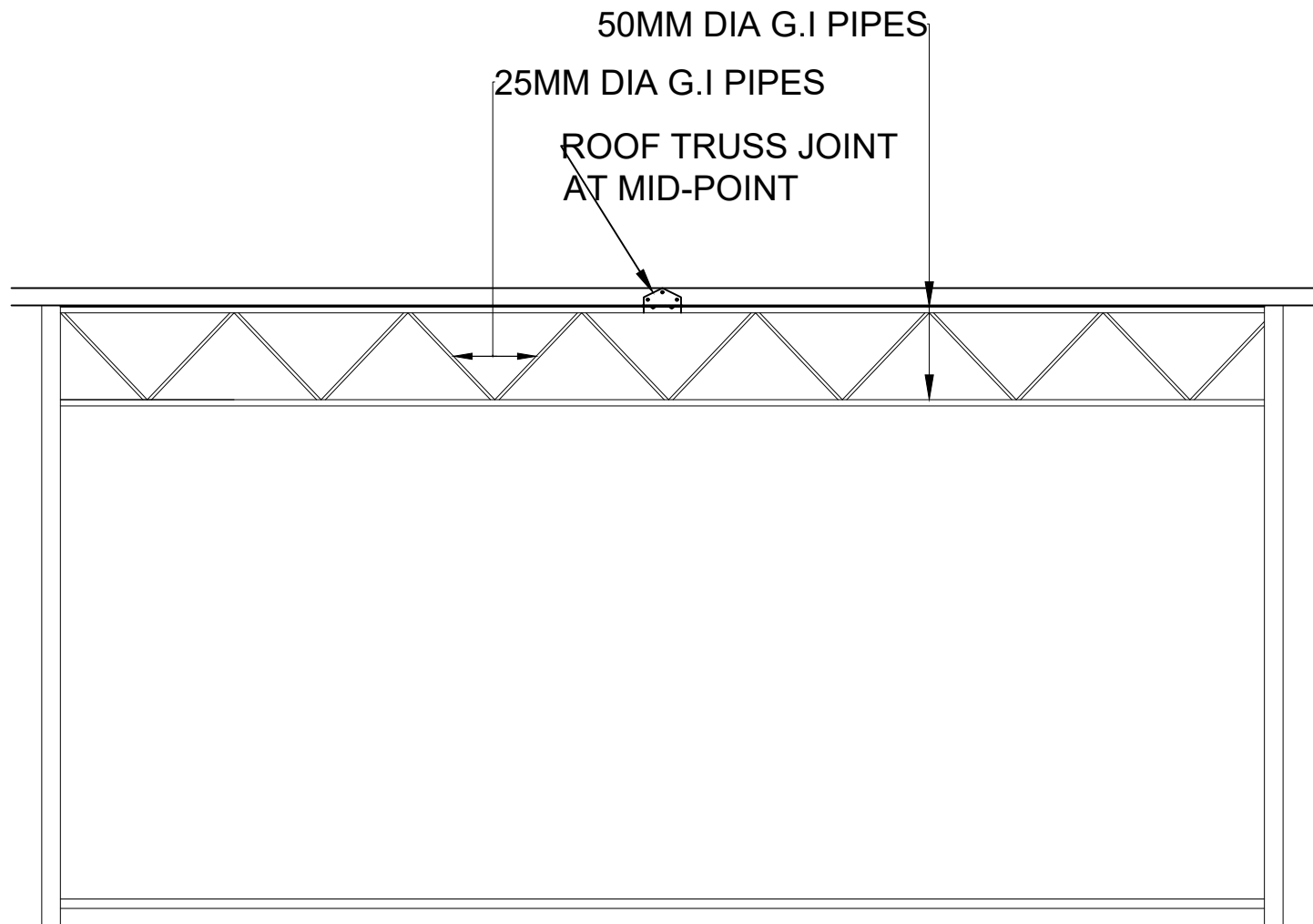


## COLLECTION BAY - ROOF FRAMING PLANS

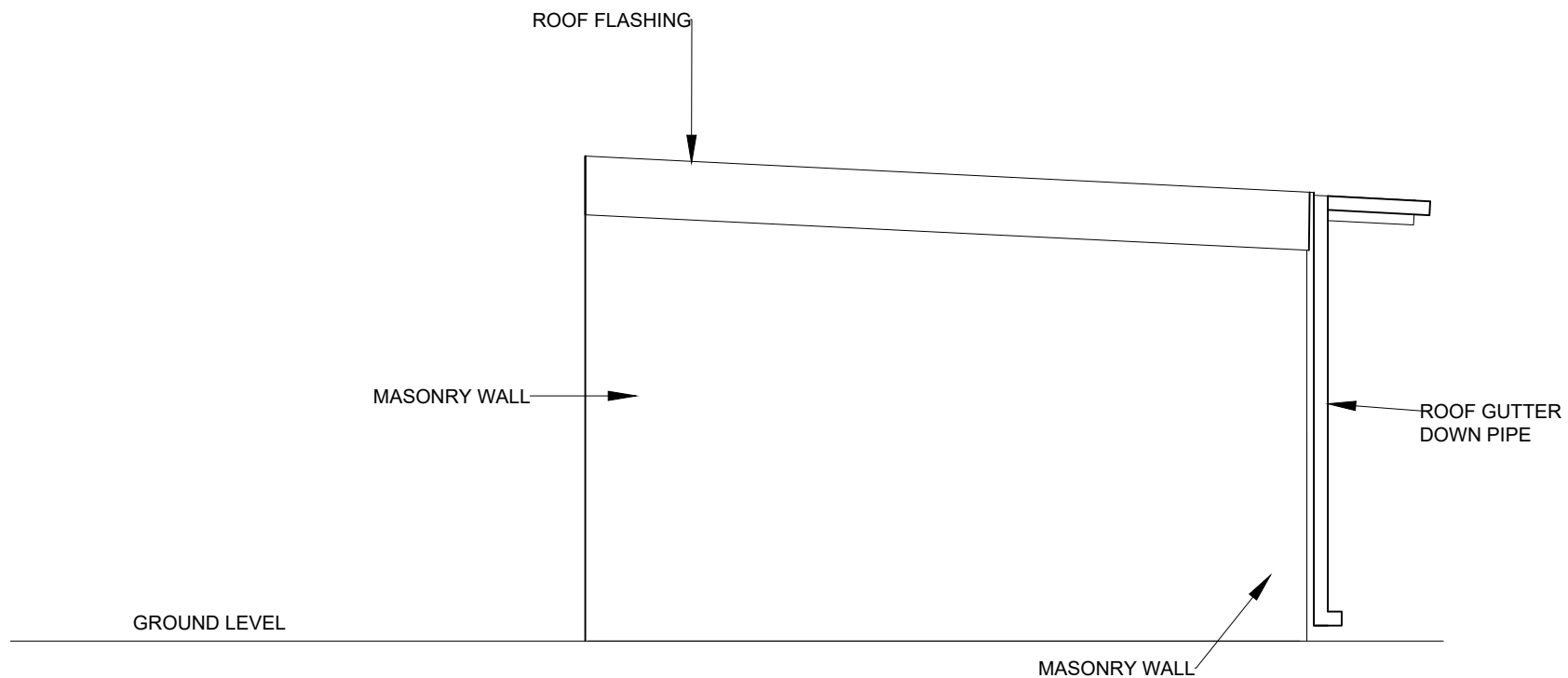




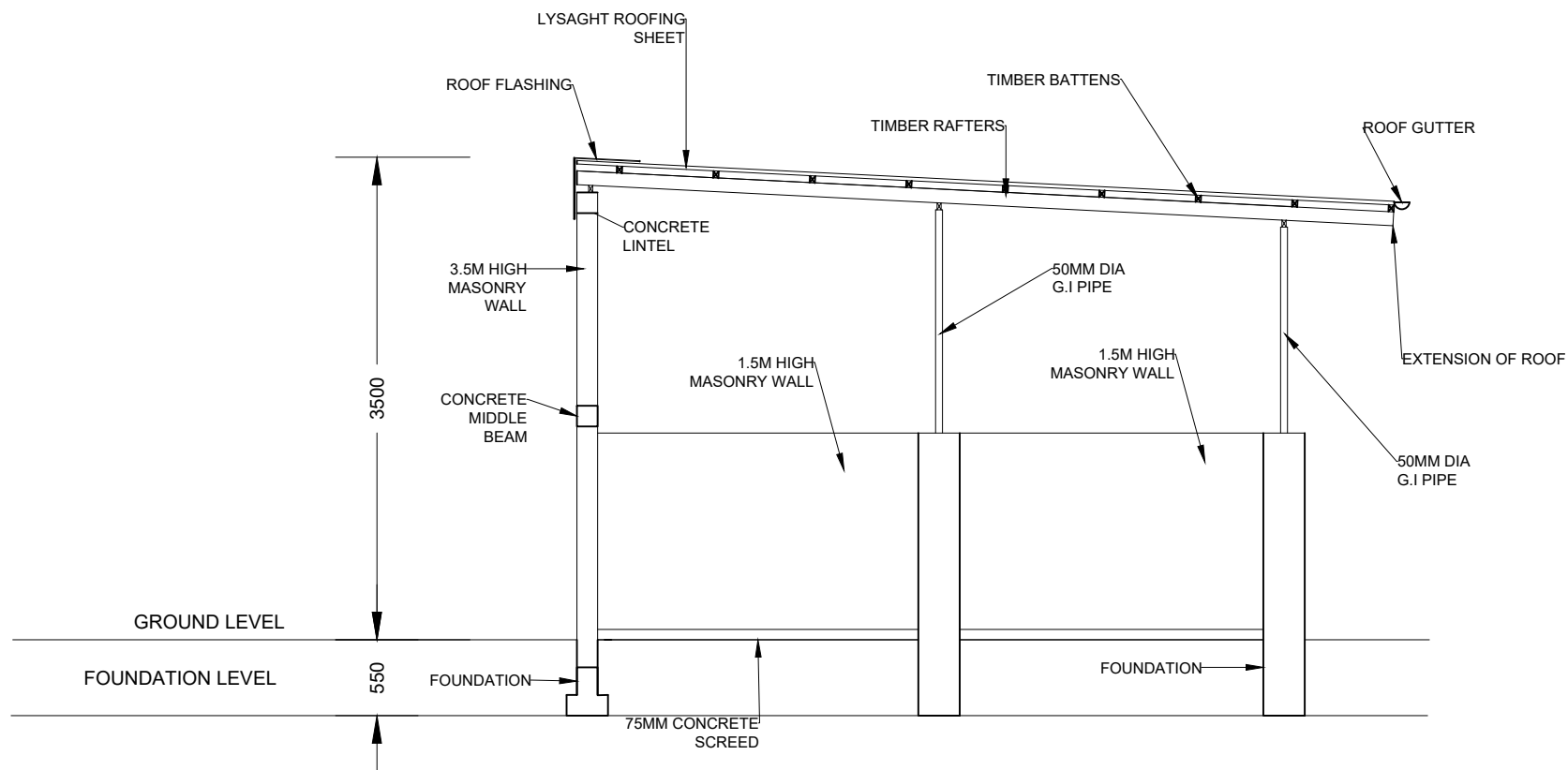
COLLECTION BAY - ROOF TRUSS PLAN



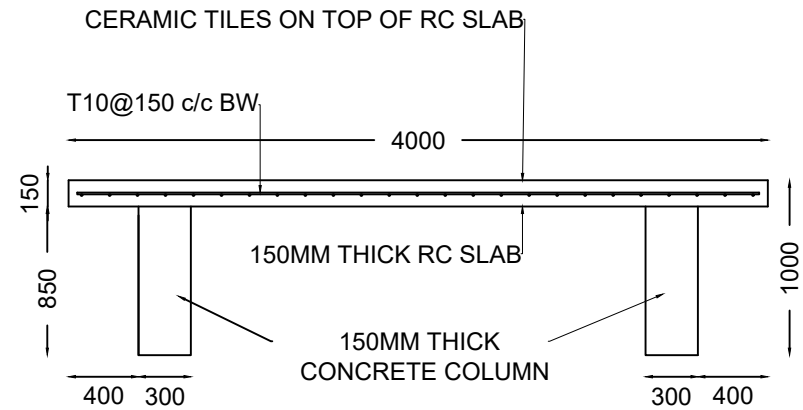
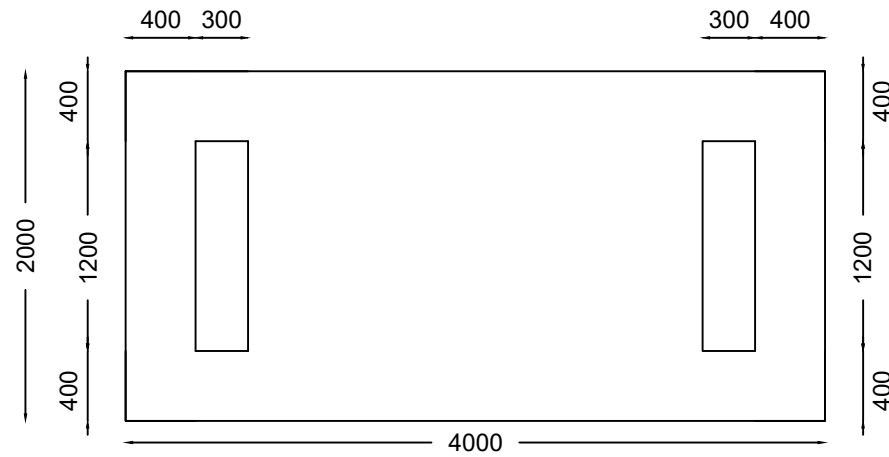
COLLECTION BAY - TRUSS DETAILS



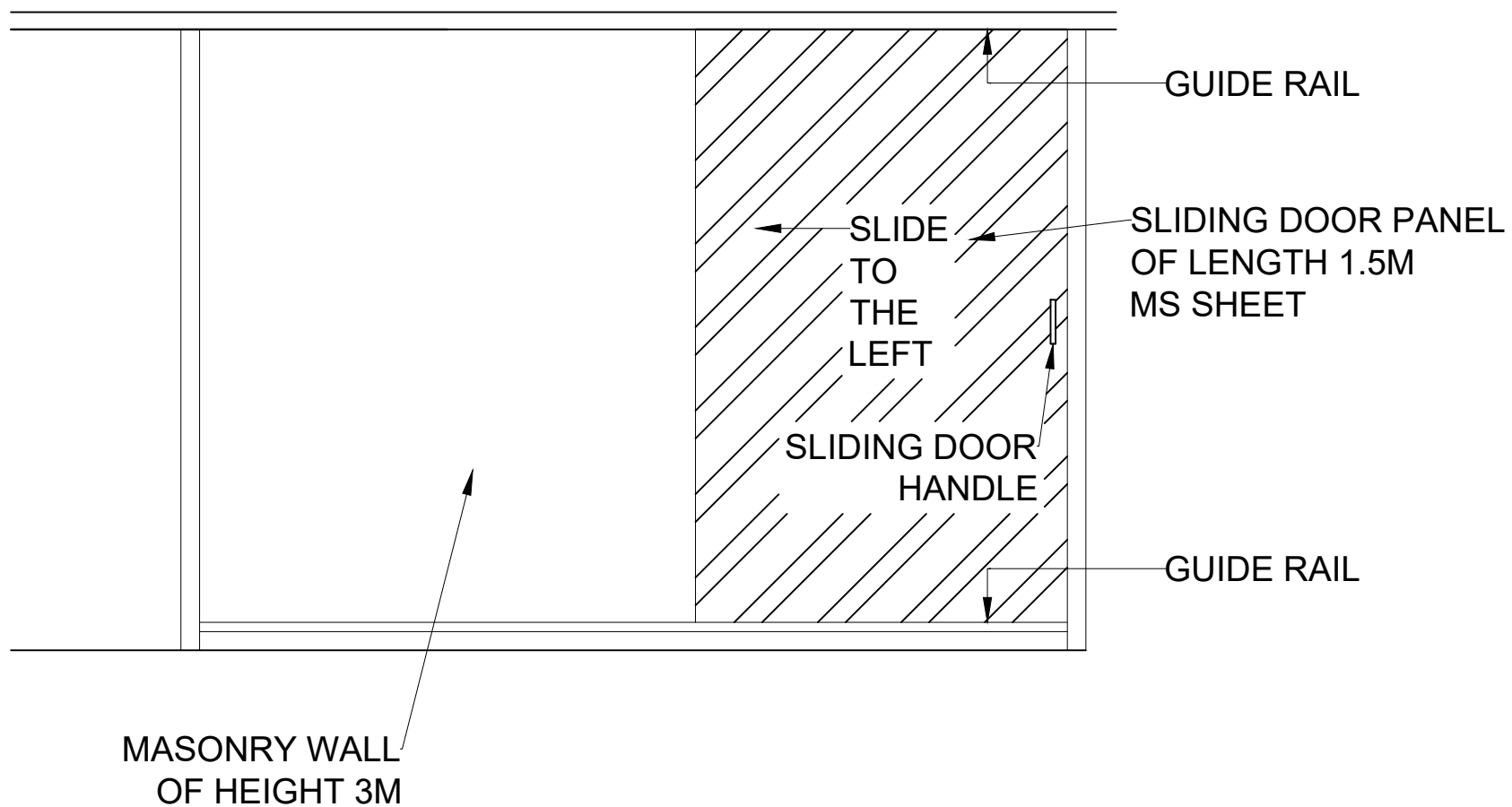
COLLECTION BAY - SIDE ELEVATION



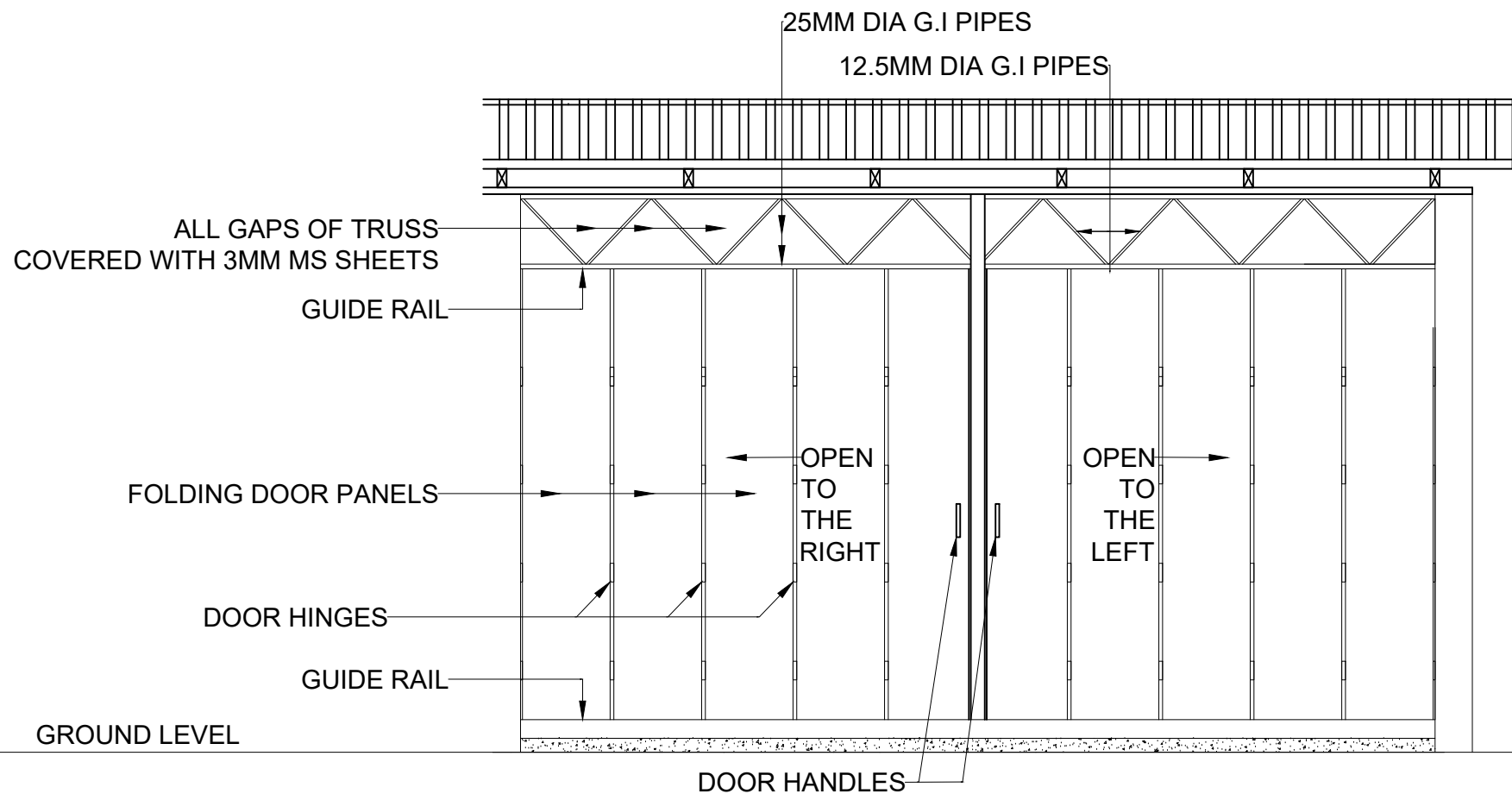
COLLECTION BAY - CROSS SECTION



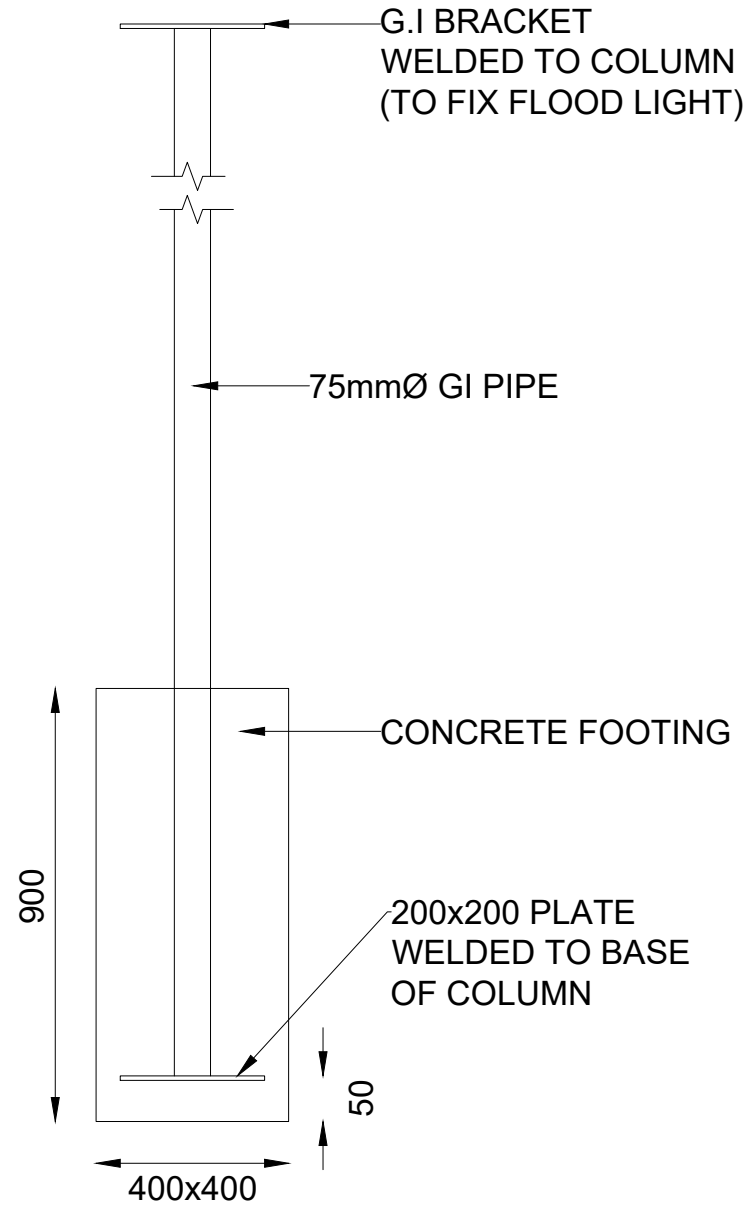
**SORTING AREA - SORTING PLATFORM DETAILS**



HAZARDOUS WASTE STORAGE ROOM - METAL SLIDING DOOR DETAIL

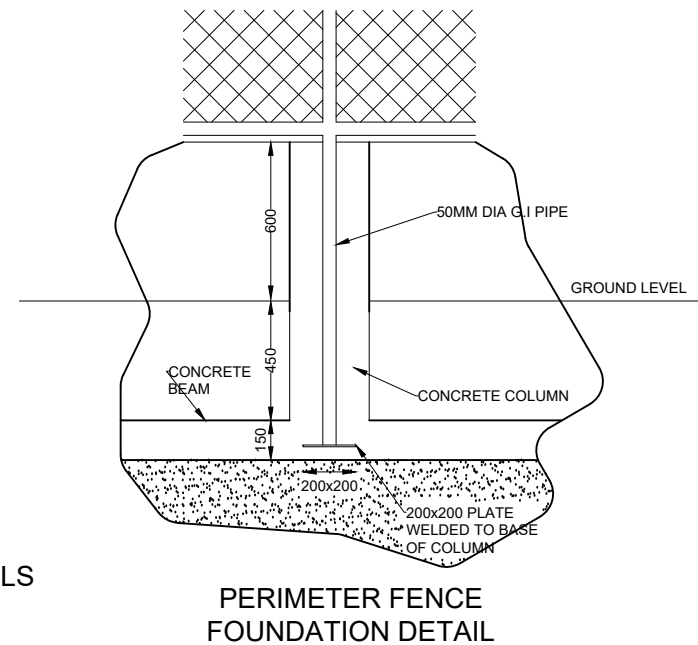
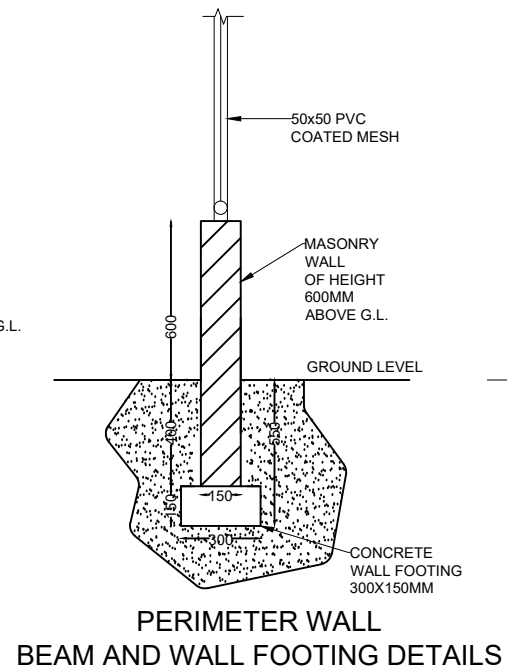
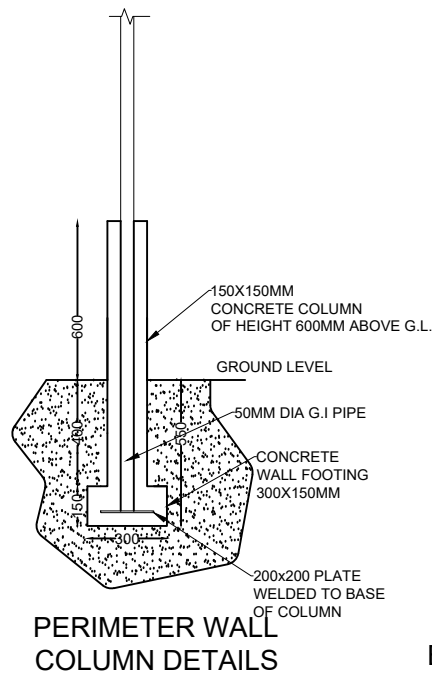


## EQUIPMENT ROOM - METAL SLIDING DOOR DETAIL

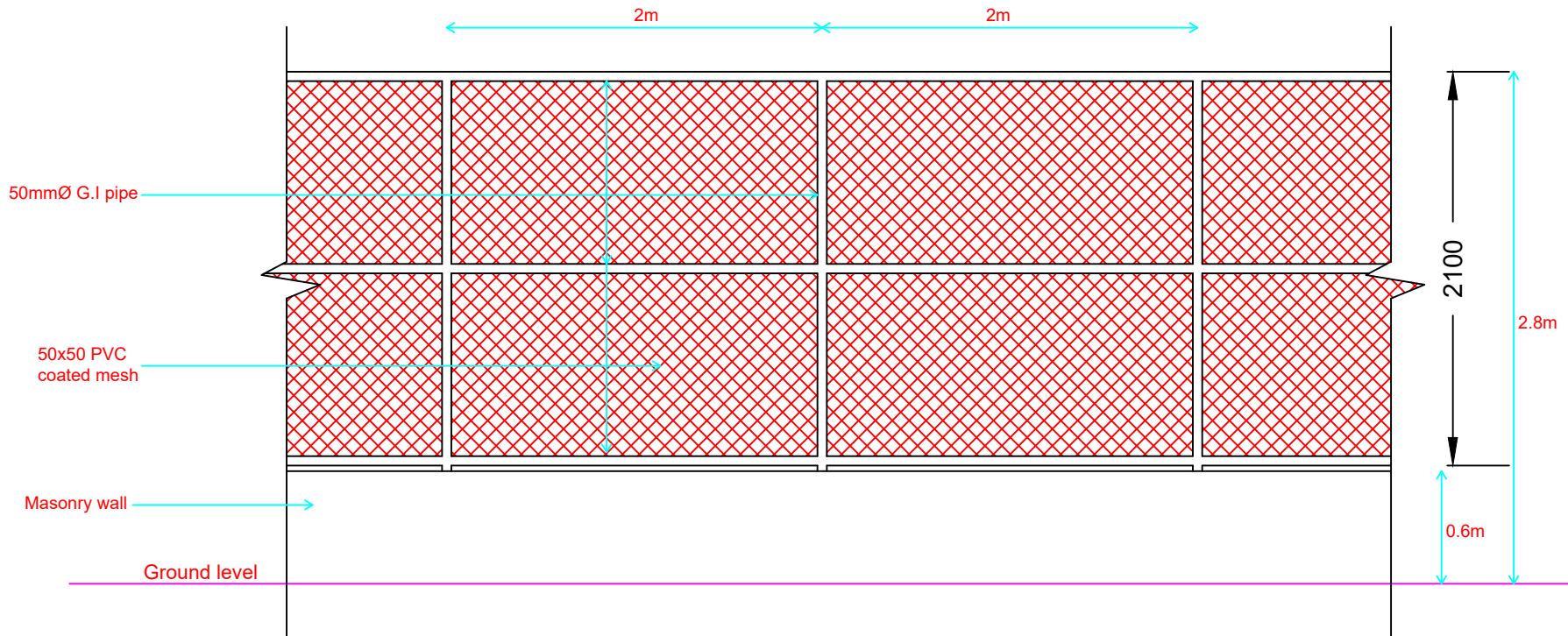


FLOOD LIGHT FOUNDATION DETAILS





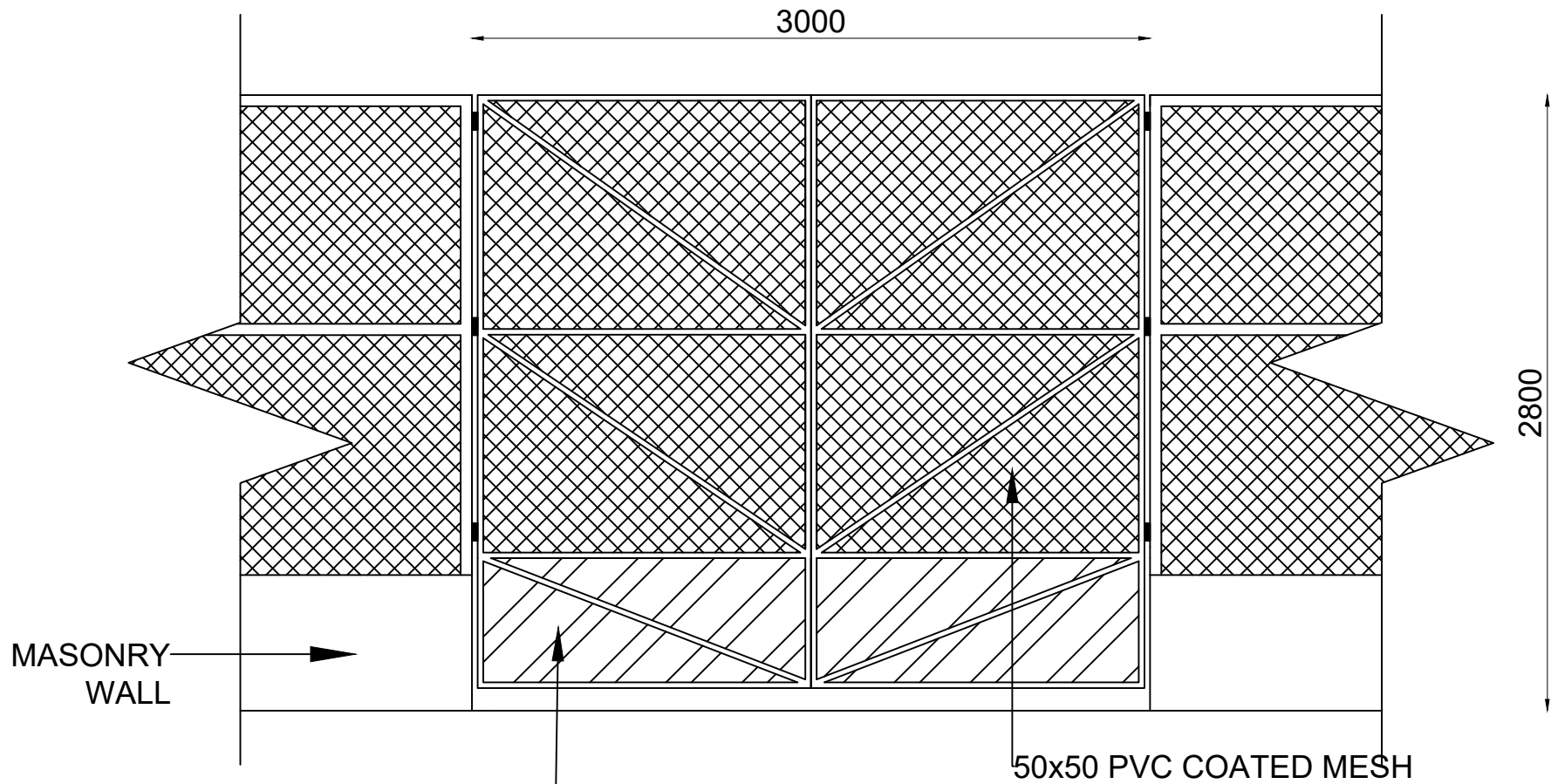
## BOUNDARY WALL - BEAM AND COLUMN DETAILS



## PERIMETER FENCE

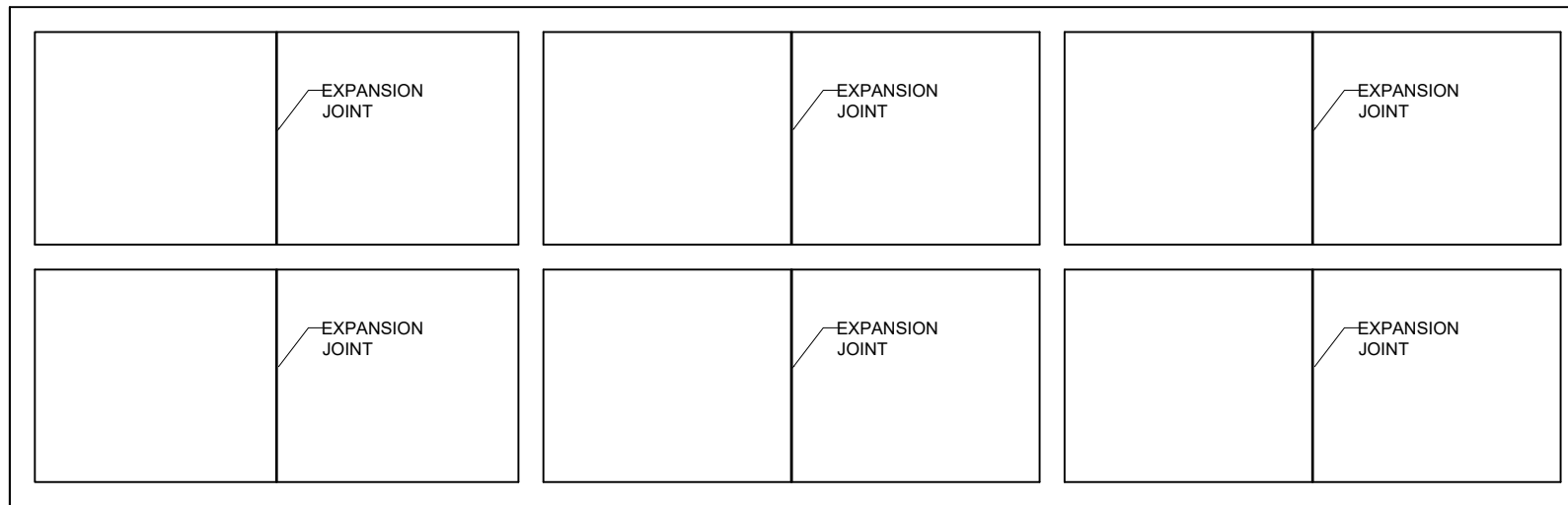
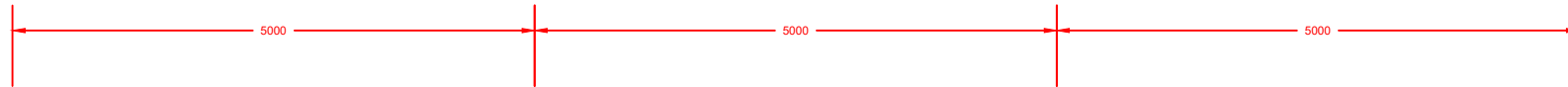
NOTE: ALL WELDS  
ARE 5mm FILLET  
WELD AROUND  
MEMBER

## FENCE DETAILS

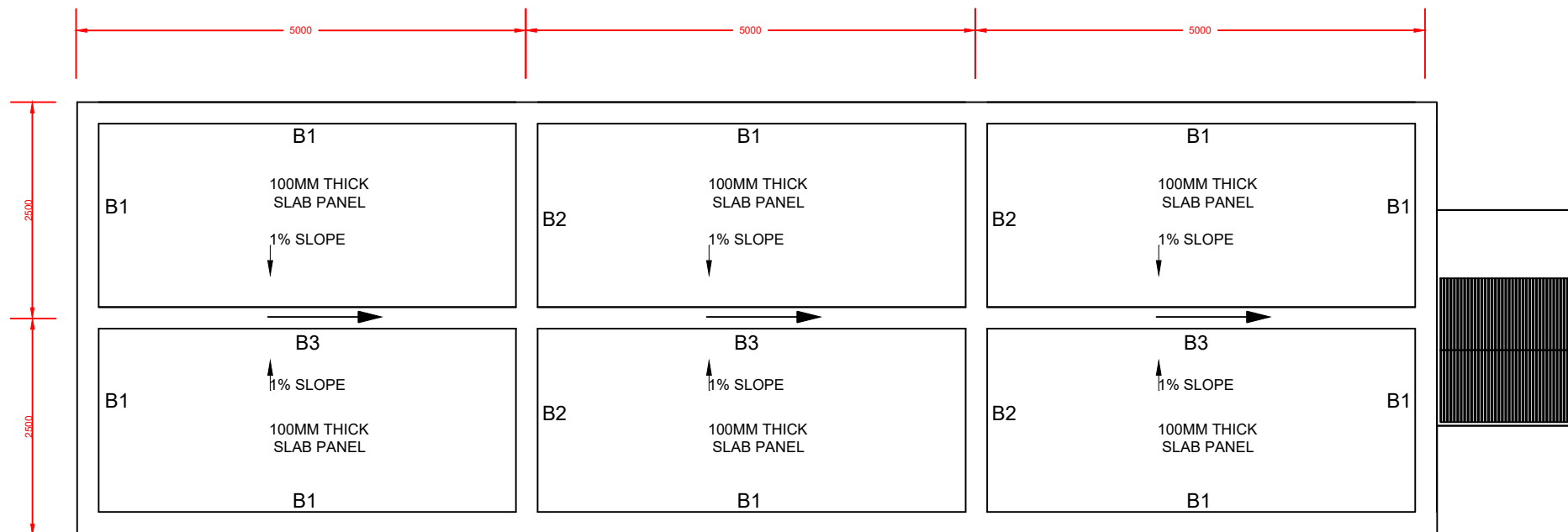


NOTE:  
 - DOOR IS MADE FROM 25MM DIA GI  
 PIPE  
 - ALL WELDS ARE 5MM FILLET WELDS  
 AROUND MEMBER

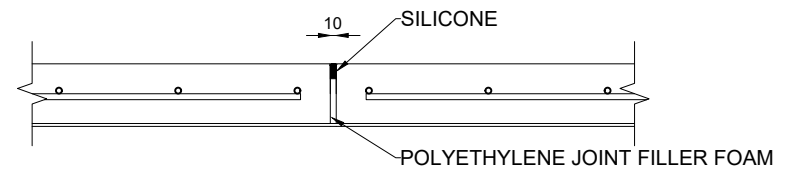
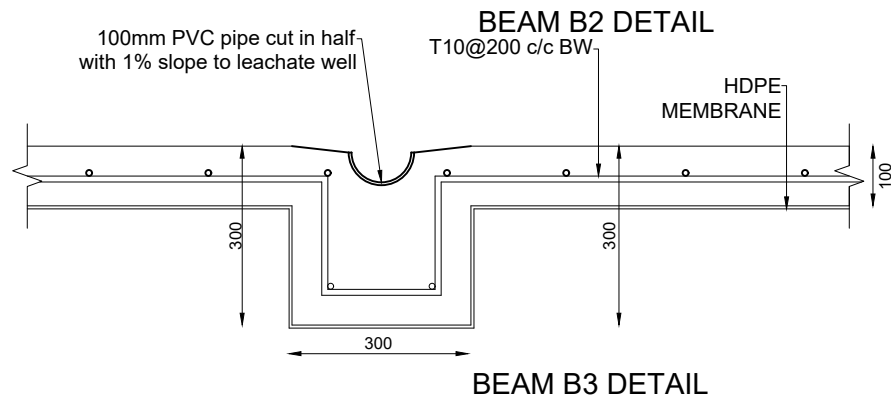
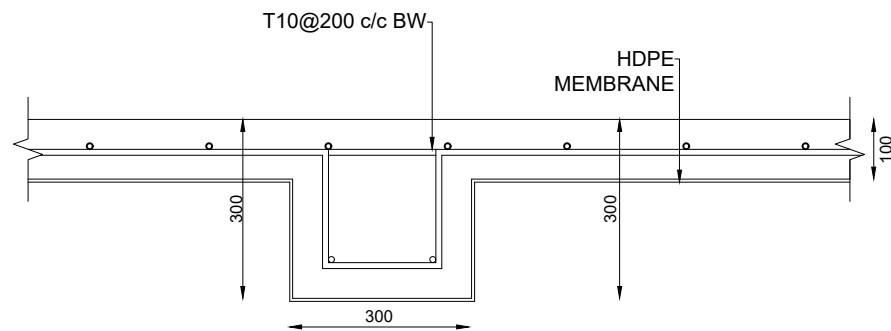
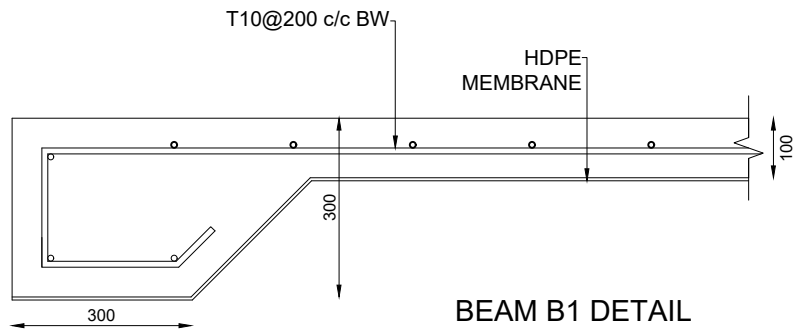
MAIN GATE



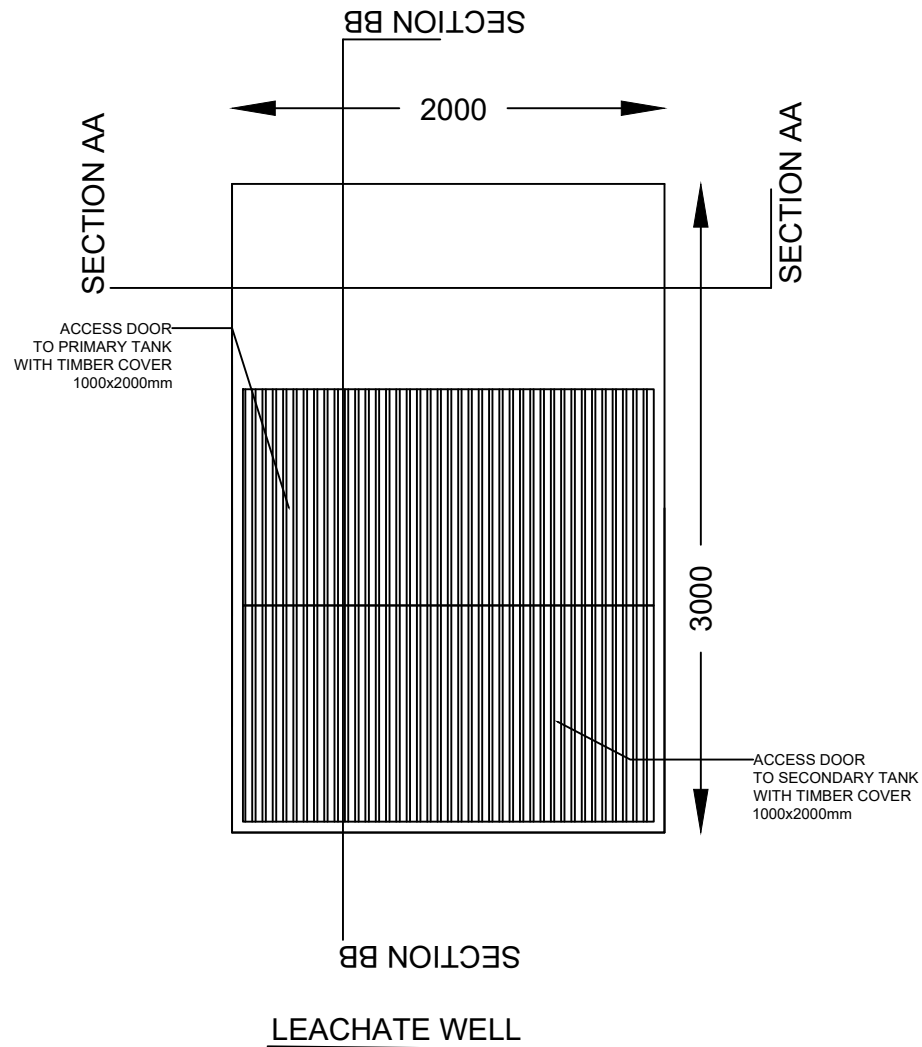
## COMPOST SLAB - JOINTS AND SPACINGS



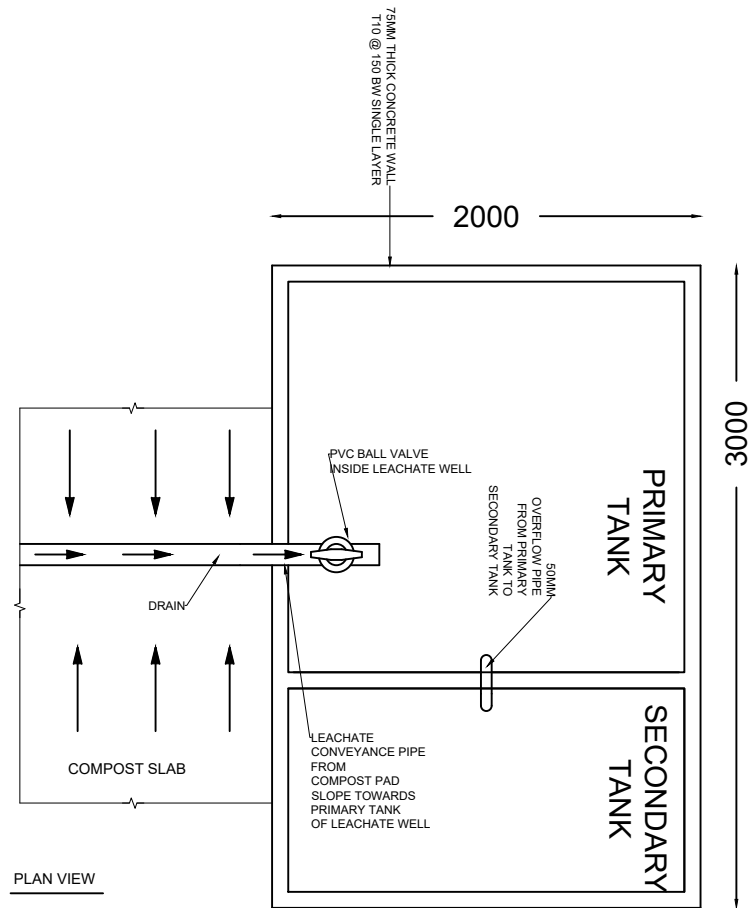
COMPOST SLAB - PLAN



## COMPOST SLAB BEAM DETAILS

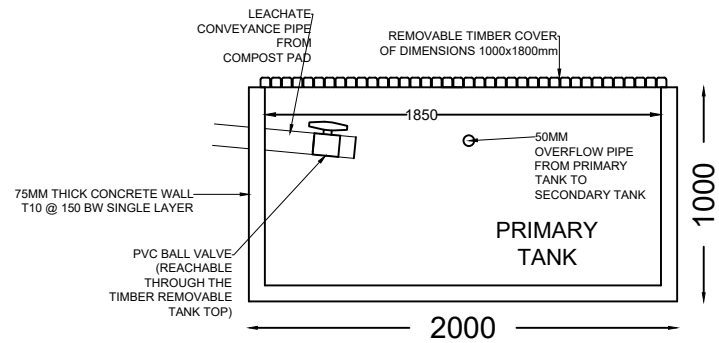


LEACHATE COLLECTION TANK

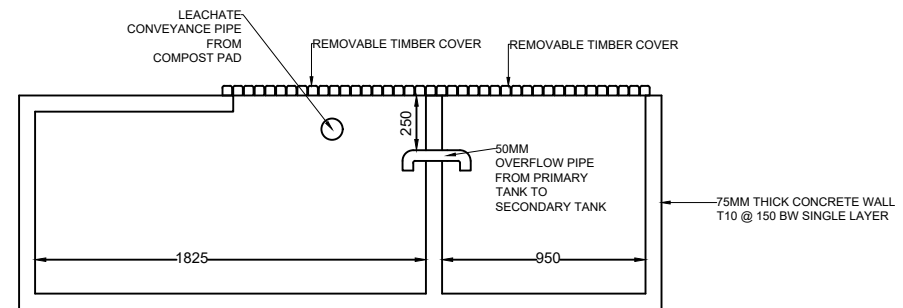


PLAN

LEACHATE WELL DETAILS



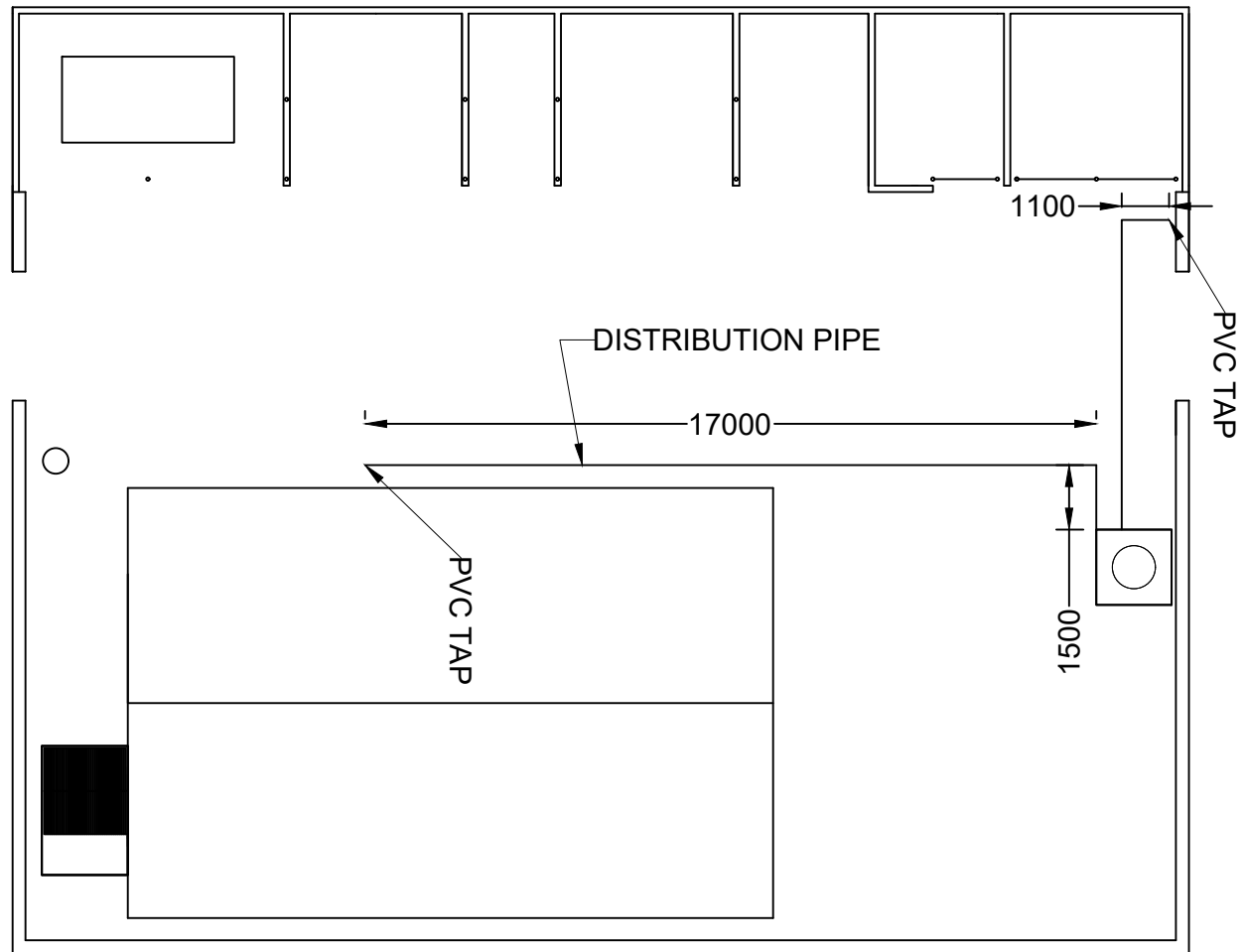
SECTION AA



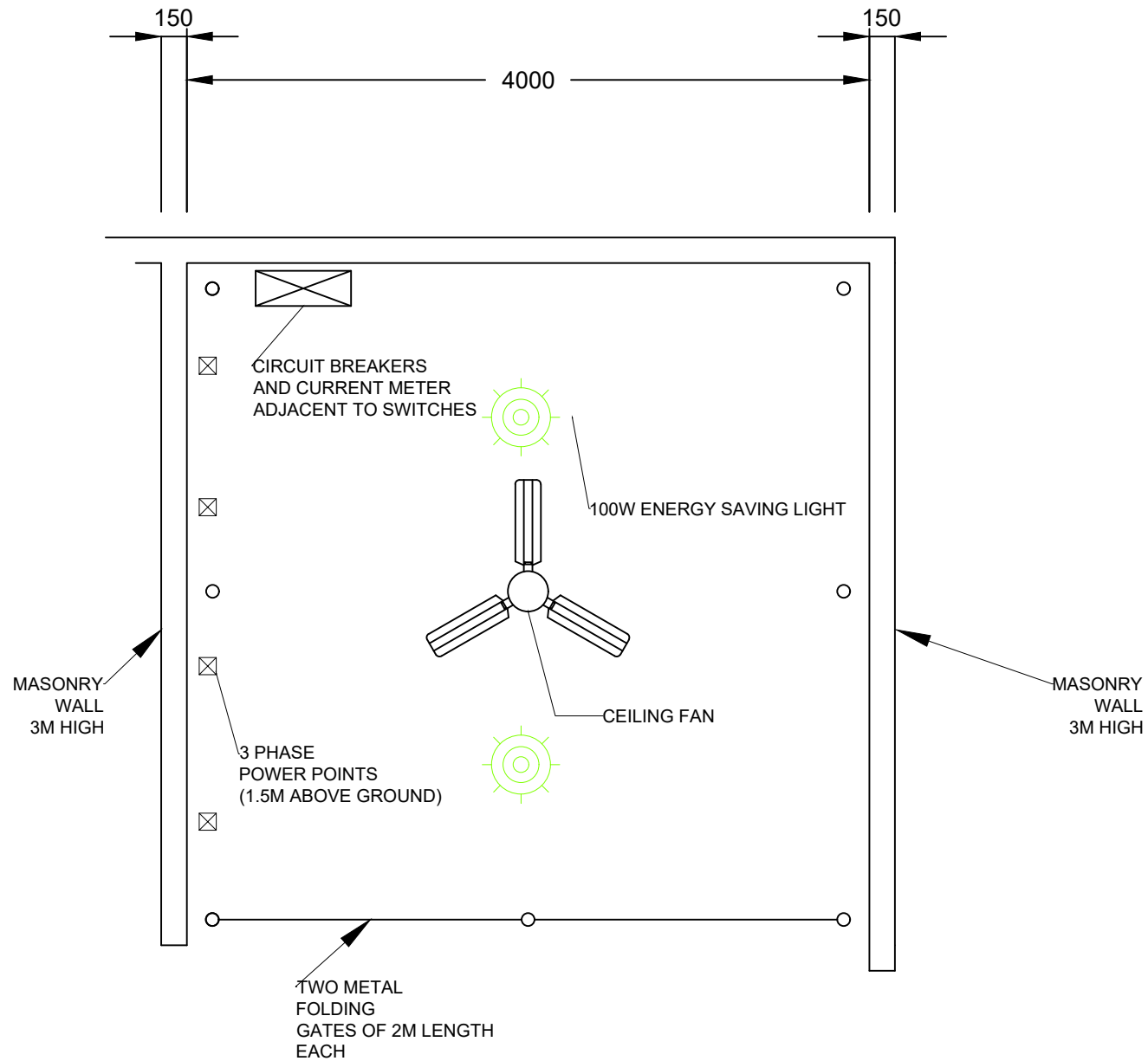
SECTION BB

# LEACHATE COLLECTION TANK - DETAILS

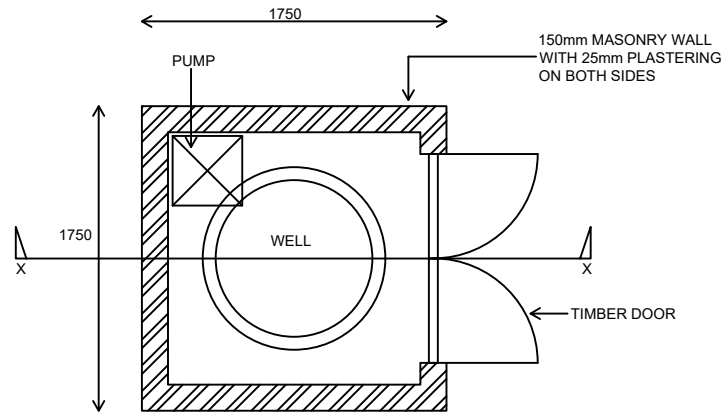




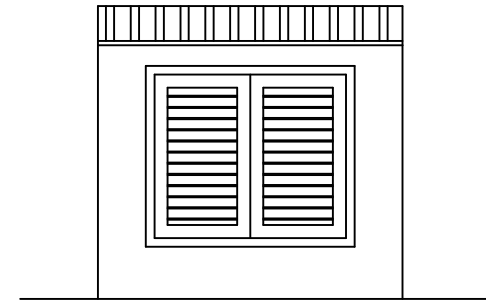
## PLUMBING LAYOUT



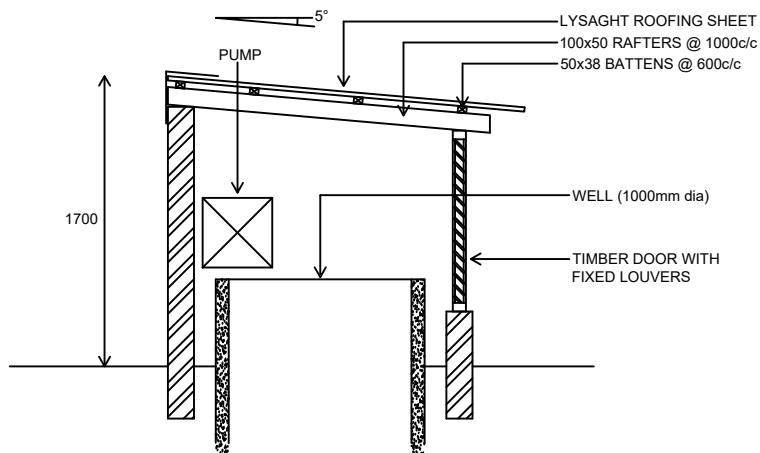
## ELECTRICAL LAYOUT - EQUIPMENT ROOM



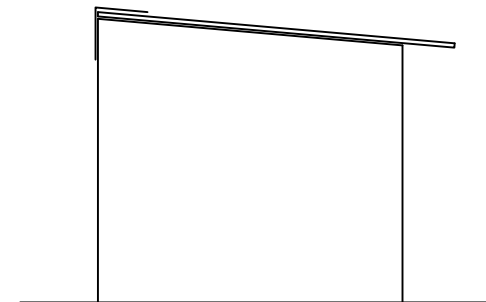
PUMP ROOM HUT



FRONT ELEVATION



SECTION X-X



SIDE ELEVATION

## GROUND WATER PUMP ROOM HUT DETAILS







## 3 : دسہ لاکھ روپے کا خرچہ

### **Working Site**

The site should be kept clean during the construction work period and should be thoroughly cleaned once the works are completed. Works should be carried out on site in a safe manner to all the workers on site and the people living in the vicinity of site. Disturbance to the neighborhood should be kept to a minimum. Electricity and water supply to the site, during construction period, should be provided by the contractor

### **Concrete**

Cement conforming to BS12 standards should be used for all concrete, masonry and plastering works. The cement intended for use should be fresh and should not have any traces of hardened cement in the bag.

1. All concrete works should be done using one brand of cement
2. Sand and aggregate used for concrete works should be well graded.
3. Concrete should be mixed in the ratio 1:2:3 which are 1 part cement, 2 parts sand and 3 parts aggregate.
4. All foundations should be cast on a lean concrete layer. The lean concrete should be placed on well compacted ground.
5. Concrete should be mixed using a concrete mixer. Concrete should not be mixed by hand. When pouring concrete into the formwork, the mix should be compacted using a mechanical vibrator.
6. Aggregate used for concrete works should not be larger than 20mm.
7. Sand and aggregate used for concrete works should be clear from dust, mud and other debris.
8. All reinforcement bars used for the concrete works should be free from rust and grease that could weaken the bonding between the reinforcement bar and the concrete. Care should be taken to use continuous bars rather than short segments joined by laps.

### **Masonry Works**

1. All masonry work should be done using Cement confirming to BS12 standards.
2. Masonry blocks should be made from imported sand or local white sand sourced from a permitted sand borrow area. The sand should be free from organic matter and other debris.
3. Masonry blocks should be made from mortar mixed at 1:5 ratio with 1 part cement to 5 part sand.
4. Average size of sand particles should not exceed 5mm.

### **Plastering Works**

1. All plastering work should be done using Cement confirming to BS12 standards.
2. Plaster mix should be made from imported or local sand white sand sourced from a permitted borrow area. The sand should be free from organic matter and other debris.
3. Plaster mix should be made by mixing Cement and Sand at a ratio of 1:3 with 1 part Cement to 3 part Sand.
4. Average size of sand particles should not exceed 5mm.

### **Structural Steel work**

1. All steel pipes obtained for the work should be new pipes and free from rust.
2. Thickness of pipes should not be less than 2.5mm

**Electrical works**

1. All materials used for electrical wiring should comply with MEA standards.

**Roofing works**

1. All materials used for roofing work should be newly purchased for the project.
2. All screws or bolts used for roof fixing should be G.I or Zinc finish screws.



