

4. Equipment List



Sep. 22. 94

EQUIPMENT LIST (1/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	QTY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (KW)	WEIGHT (kg)
[Waste feeding system]							
R-101	Sludge Pump	1	Mohno Type Pump : 0.075~0.215m ³ /h X 16K Feeder: 1 m ³ /h, screw type	Cast iron Carbon steel	Sludge	1.5 kW 2.2 kW	900
R-102	Crusher	1	Double Cutter 2m ³ /h X 1.6W X 1L X 1H Cutter: φ250X280W	Alloy Carbon steel	Solid waste	* 5.5 kW	1,000
F-101	Conveyor	1	Case Conveyor 1m ³ /h X 8.5 mL X 10mH	Carbon steel	Solid waste	* 2.2 kW	3,500
F-102	Feeder	1	Screw Feeder 0.05~0.5m ³ /h 2-φ250 X 2.2mL	Carbon steel	Solid waste Sludge	* 1.5 kW	1,500
F-107	Slide Gate	1	Air Cylinder φ 500				180
T-109	Hopper	1	1m ³ X φ 1.3m X 1.1mH	Carbon steel	Sludge		700
T-110	Hopper	1	0.8m ³ X φ 1.3m X 0.8mH	Carbon steel	Industrial Waste		700

REMARKS : MARK WITH * MEANS EQUIPMENT UNDER LOADED OPERATION.

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EQUIPMENT LIST (2/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (KW)	WEIGHT (kg)
[Waste feeding system]							
T-111	Hopper	1	0.5m ³ X ϕ 1m X 1mH Load cell 3-200kg	Carbon steel	Crushed Industrial waste		500
F-104	Hoist	1	Hoisting. 6mH travelling. 10mL Bucket type 2t		Solid waste Sludge	* 7.2 kW * 0.9 kW * 2.2 kW	1,140
T-101	Low Sulfur-Oil Tank	1	Cylindrical 2m ³ X ϕ 1.2 X 2.5mH air breather, drain pipe, manhole	Carbon steel	L.S.O	—	1,000
T-102	Waste Oil Tank	1	Cylindrical 2m ³ X ϕ 1.2 X 2.5mH air breather, drain pipe, manhole	Carbon steel	Waste Oil	—	1,000
T-103	Waste Liquid Tank	1	Cylindrical 2m ³ X ϕ 1.2 X 2.5mH air breather, drain pipe, manhole	Carbon steel	Waste Liquid	—	1,000

EQUIPMENT LIST (3/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	QTY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kw)	WEIGHT (kg)
[Incinerator]							
S-101	Incinerator	1	Rectangular 50kg/h 1.0 X 0.8 X 8mH Air chamber, air nozzle, manhole, instrument nozzles,	C.S.+Insulation	Flue Gas	—	14,000 (Steel) 35,700 (Brick)
F-109	Explosion Damper	1		C.S.	Flue Gas		550
S-102	Electrical Heater	1	Heating Coil	—		* 150	5,000
S-103	Start-up Burner	1	Air Injection 50 X 10 ⁴ kcal/h control panel, valve unit, flame detector, pilot burner	—	0.1 kVA		800
S-113, 114	Sand Burner	2	50l/h				21
S-115, 116	Spray Nozzle	2					25
S-117, 118	Burner	2	Air Injection Control panel, valve unit, flame detector, pilot burner				600

EQUIPMENT LIST (4/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kw)	WEIGHT (kg)
[Incinerator]							
F-103	Screw Conveyor	1	Screw Conveyor 70kg/h X ϕ 300 X 3mL Water cooling shaft & jacket	Carbon steel	Incombustible	* 1.5 kW	1,200
F-108	Slide Gate	1	Air Cylinder, Water Jacket				250
R-103	Fluidizing Air Fan	1	Turbo 10m ³ /min X 3500mmAq	Carbon steel	Air	* 30 kW	1,420
R-116	Suction Damper	1				* 0.4 kW	10
R-104	Secondary Fan	1	Turbo 15m ³ /min X 500mmAq damper	Carbon steel	Air	* 3.7 kW	220
T-104	Sand Hopper	1	Cylindrical 0.5m ³ X ϕ 0.8m X 1.2mH	Carbon steel	Sand		100
F-110	Rotary Valve	1	° 200 rotary valve			* 0.4 kW	300
F-105	Hoist	1	0.5t Hoisting. 12mH Traverring. 6mL		Sand	* 2.2 kW	150

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EQUIPMENT LIST (5/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kw)	WEIGHT (kg)
[Gas Treatment]							
F-111	Rotary Valve	1	* 200 Rotary Valve			* 0.4 kW	300
S-104	Gas Cooler	1	Water Injection & gas cooler: $\phi 1.13 \times 4mH$ Inlet 720Nm ³ /h X 850deg.C gas 600Nm ³ /h X 20deg.C air 109 ℓ /h X 20deg.C water Outlet 1470Nm ³ /h X 380deg.C	C.S.+Insulation	Flue Gas	—	2,500 (Casting) 6,500 (Brick)
S-119	Spray Nozzle	1	109 ℓ /h		Water		10
S-112	Air Heater	1	1mW X 0.7mL X 3mH Inlet 1470Nm ³ /h X 380deg.c gas 1250Nm ³ /h X 20deg.c air	C.S.	Flue Gas		2,200
S-105	Cyclone	1	Cyclone 1,500Nm ³ /h 250deg.C	S.S.304	Flue Gas		1,150
F-112	Double Flap Damper	1	$\phi 200$			* 0.1 kW	100

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EQUIPMENT LIST (6/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kw)	WEIGHT (kg)
[Gas Treatment]							
S-106	Bag Filter	1	Bag Filter, pulse air jet 1,600Nm ³ /h 250deg.C	PFTE	Flue Gas		2,400
F-114	Rotary Valve	1	200 Rotary Valve			* 0.4 kW	300
S-107	Gas Absorber	1	Spray 1,900Nm ³ /h 250deg.C → 80deg.C stack 20mH X φ 250	S.S.316	Flue Gas	—	5,750
R-109	Circulation Pump (1)	1	Centrifugal 0.13m ³ /min X 3kg/cm ²	C.I.	Circulating Water	* 2.2 kW	50
R-113	Caustic Soda pump	1	Diaphragm 10L/h X 4kg/cm ²	SS316 PFTE —	Caustic Soda (20 %wt)	* 0.1 kW	30
T-105	Caustic Soda Tank	1	Cylindrical 2m ³ X φ 1.2m X 2.5mH level meter, manhole	C.S.	Caustic Soda (20 %wt)	—	1,000
S-108	Cooling Tower (2)	1	Air Cooling 130L/min X 37 → 32deg.C	FRP	Circulating	* 0.25 kW	45
R-105	Air Fan	1	Turbo 25m ³ /min X 200mmAq damper	C.S.	Air	* 2.2 kW	130

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EQUIPMENT LIST (7/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kW)	WEIGHT (kg)
[Gas Treatment]							
R-106	Induced Draft Fan	1	Radial 250deg.C 65m ³ /min X 800mmAq	C.S.	Flue Gas	* 30 kW	710
R-117	Suction Damper	1	damper			* 0.4 kW	10
R-107	Circulation pump (2)	1	Centrifugal 0.15m ³ /min X 3kg/cm ²	C.I.	Circulating	* 2.2 kW	50
R-110	Injection Pump	1	Centrifugal 0.2 m ³ /min X 3kg/cm ²	C.I.	City Water Waste Liquid	* 1.5 kW	50
T-108	Hopper	1	0.3 m ³ X φ0.5m X 1.5mH	C.S.	S.Lime		200
F-113	Rotary Valve	1	φ 200	C.S.	S.Lime	* 0.4 kW	300
F-106	Feeder	1	5 ~ 30kg/h Table Feeder	C.S.	S.Lime	* 0.75 kW	350

EQUIPMENT LIST (8/92)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	QTY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kw)	WEIGHT (kg)
[Utility]							
R-108	Compressor	1	Screw, package type 1.05m ³ /min X 8.5kg/cmf unloader	-	Air	* 7.5 KW	440
T-106	Air Tank	1	Pressure Vessel 1m ³ X 0.8m X 2mH pressure switch	C.S.	Air	-	440
S-109	Air Dryer	1	Refrigeration 0.83m ³ /min	-	Air	* 0.15 KVA	35
S-110	Cooling Tower (1)	1	Air Cooling 39L/min X 44 → .32deg.c	FRP	City Water	0.05 KW	21
T-107	Water Tank	1	Cylindrical 2m ³ X ϕ 1.2m X 2.5mH level meter, manhole	C.S.	City Water	-	1,000
R-114	Cooling Water Pump(1)	1	Centrifugal 50L/min X 20m	C.I.	City Water	* 0.75 KW	47
R-111	Oil Pump	1	Gear 50L/h X 4kg/cmf	C.I.	L.S. Oil Waste Oil	* 0.2 KW	30
R-112	Oil Pump	1	Gear 50L/h X 4kg/cmf	C.I.	L.S. Oil Waste Oil	* 0.2 KW	30
R-115	Cooling Water Pump(2)	1	Centrifugal 50L/min X 20m	C.I.	City Water	* 0.75 KW	47

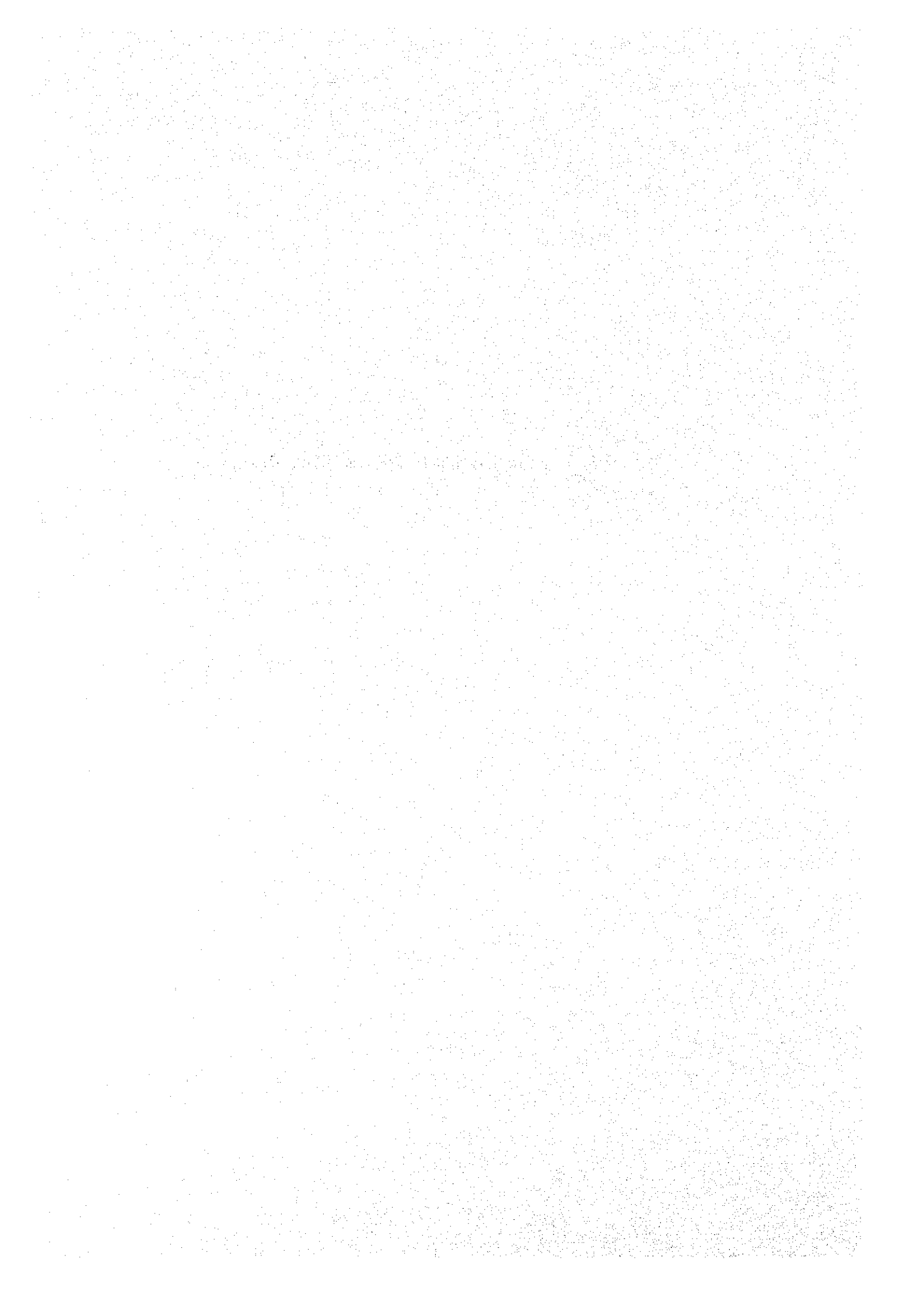
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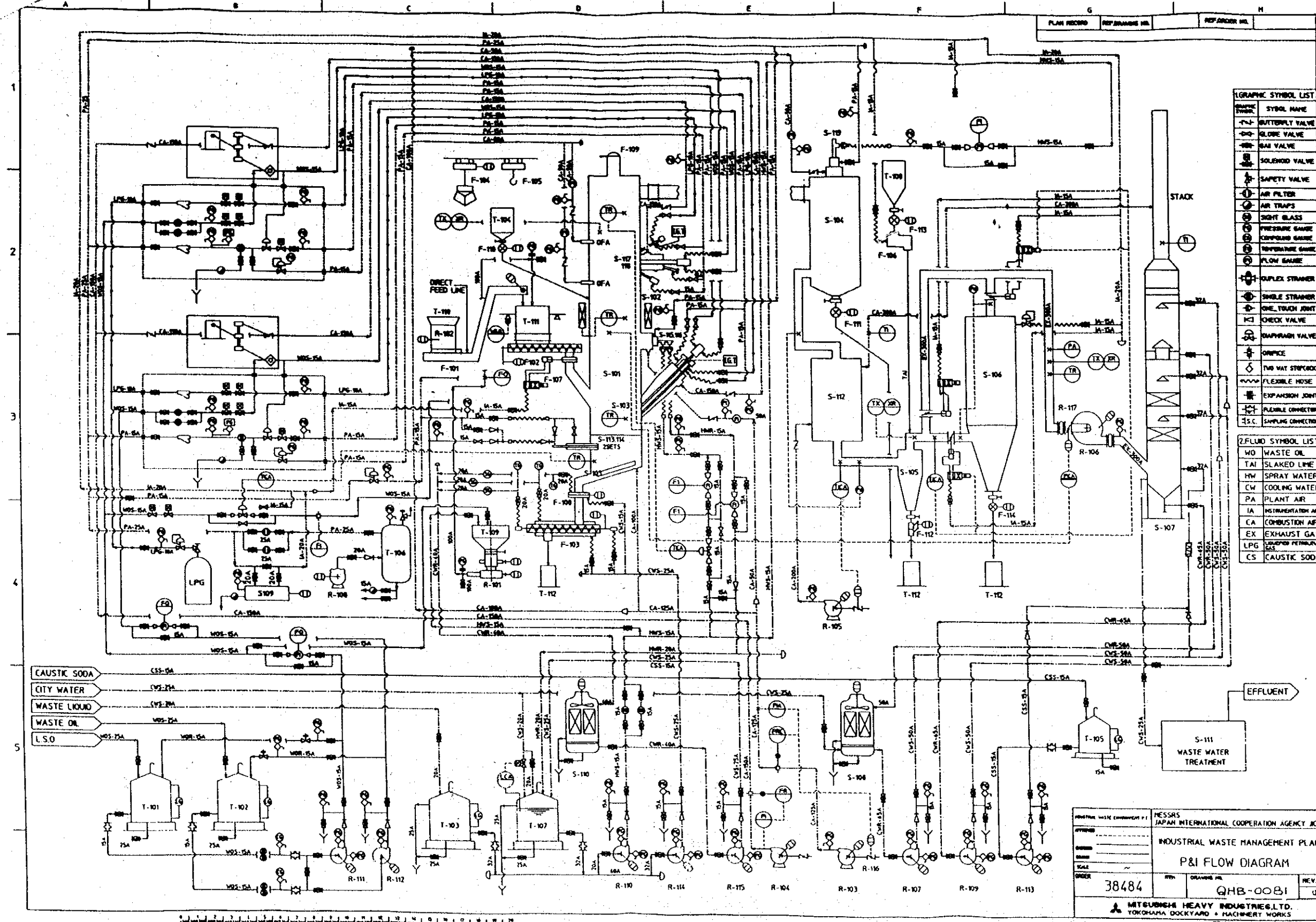
EQUIPMENT LIST (9/9)

EQUIPMENT ITEM NUMBER	EQUIPMENT NAME	Q'TY	SPECIFICATION	MATERIAL	FLUID NAME	MOTOR CAPACITY (kW)	WEIGHT (kg)
[Others]							
S-111	Waste Water Treatment	1	12m ³ /h	--	Effluent	* 15 kVA	
T-113	Steel Structure	1	For Incineration Plant 3.5W X 12.5L X 12mH	C.S.			26,000
T-112	Container	3	For 1-sand 0.2m ³ SS 1-ash(cyclone, heater) 1-ash(bag filter)				300
T-115	Miscellaneous	1	Duct, Chute, platform, stair, & Leader support				8,000
T-116	Pipings	1	1-Compressed air 1-LSO & Waste oil 1-City water 1-Cooling water 1-LPG 1-Waste water treatment 1-Caustic soda 1-Waste liquid				3,000

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5. P & I Flow Diagram, System Flow Diagram





GRAPHIC SYMBOL LIST

SYMBOL NAME	SYMBOL NAME
FLY BUTTERFLY VALVE	FLY BUTTERFLY VALVE
GLOBE VALVE	GLOBE VALVE
BAI VALVE	BAI VALVE
SOLENOID VALVE	SOLENOID VALVE
SAFETY VALVE	SAFETY VALVE
AIR FILTER	AIR FILTER
AIR TRAPS	AIR TRAPS
SIGHT GLASS	SIGHT GLASS
PRESSURE GAUGE	PRESSURE GAUGE
COMPOUND GAUGE	COMPOUND GAUGE
TEMPERATURE GAUGE	TEMPERATURE GAUGE
FLOW GAUGE	FLOW GAUGE
DUPLIX STRAINER	DUPLIX STRAINER
SINGLE STRAINER	SINGLE STRAINER
ONE TOUCH JOINT	ONE TOUCH JOINT
CHECK VALVE	CHECK VALVE
DIAPHRAGM VALVE	DIAPHRAGM VALVE
ORIFICE	ORIFICE
TWO WAY STOPCOCK	TWO WAY STOPCOCK
FLEXIBLE HOSE	FLEXIBLE HOSE
EXPANSION JOINT	EXPANSION JOINT
FLEXIBLE CONNECTOR	FLEXIBLE CONNECTOR
S.C. SAMPLING CONNECTION	S.C. SAMPLING CONNECTION

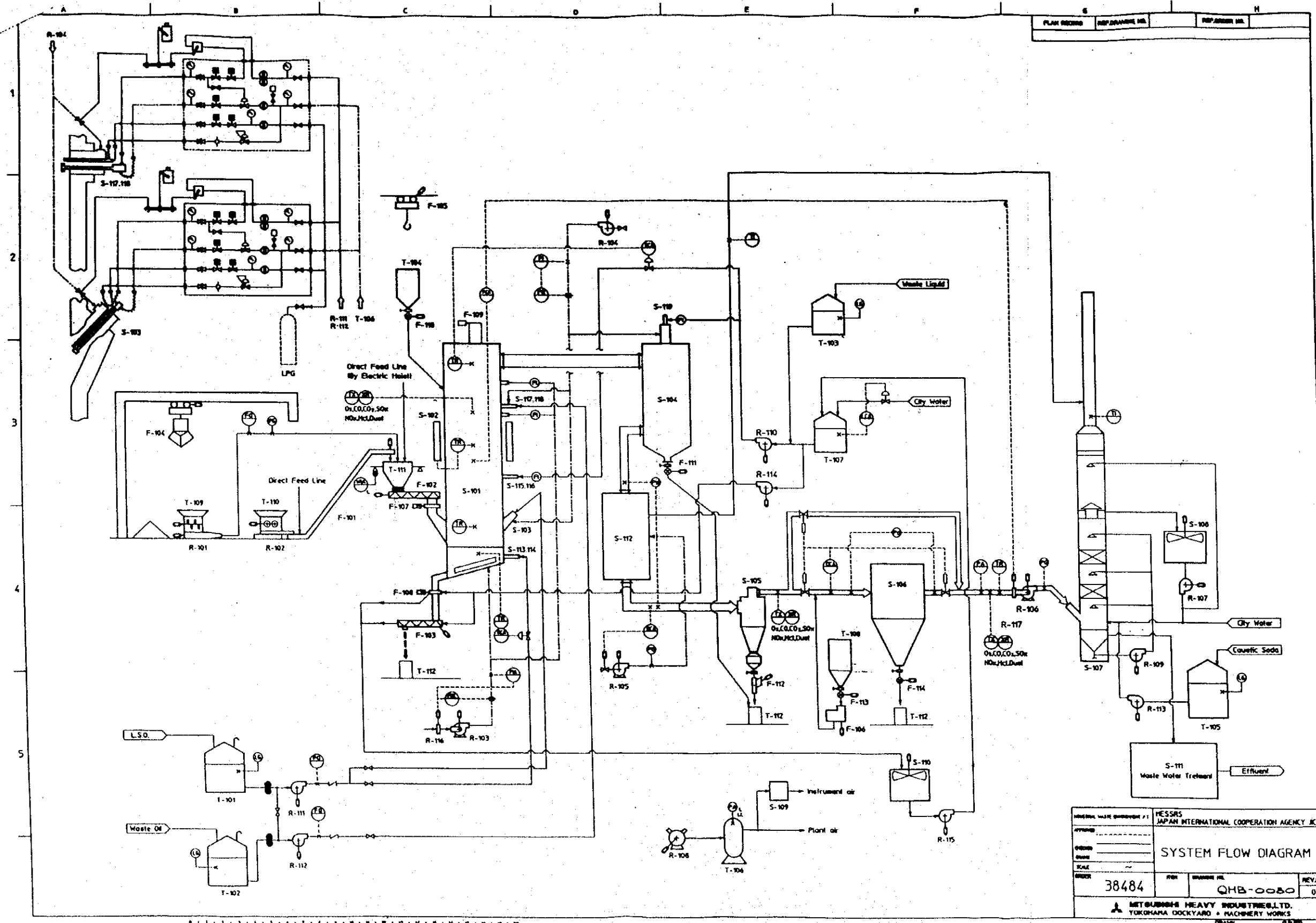
FLUID SYMBOL LIST

WO	WASTE OIL
TAI	SLAKED LIME
HW	SPRAY WATER
CW	COOLING WATER
PA	PLANT AIR
IA	INSTRUMENTATION AIR
CA	COMBUSTION AIR
EX	EXHAUST GAS
LPG	LIQUID PETROLEUM GAS
CS	CAUSTIC SODA

INDUSTRIAL WASTE MANAGEMENT P&I
 ORDER: 38484
 DRAWING NO: QHB-0081
 REVISION: U
 ISSUED

MESSRS JAPAN INTERNATIONAL COOPERATION AGENCY JICA
 INDUSTRIAL WASTE MANAGEMENT PLANT
 P&I FLOW DIAGRAM

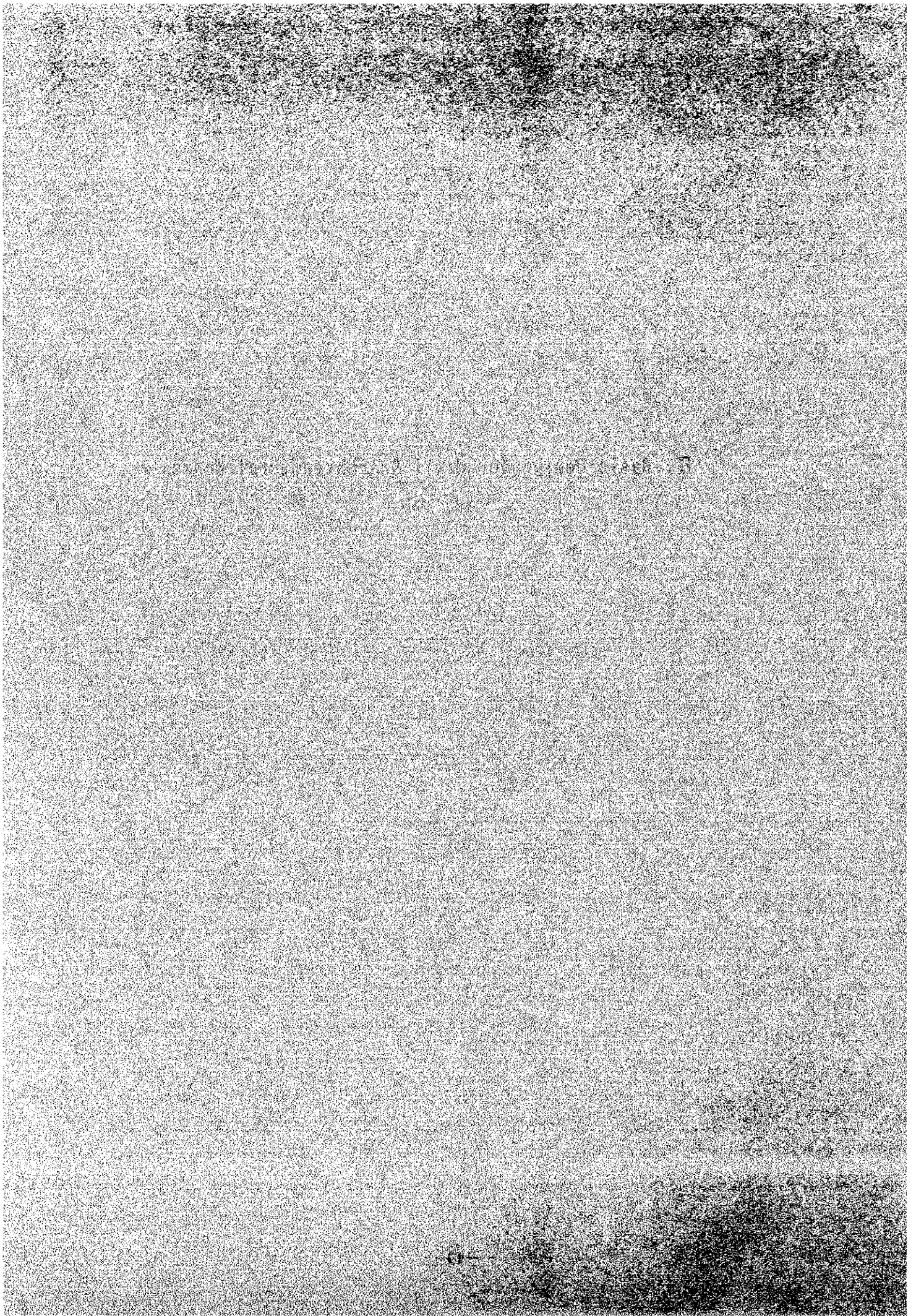
MITSUBISHI HEAVY INDUSTRIES, LTD.
 TOKYO MARU DOCKYARD & MACHINERY WORKS



製図	
校核	
設計	
監製	
主任	
係長	
班長	
作業員	
検査員	
材料	
倉庫	
事務	
その他	

DESIGN NO.	38484	REV. NO.	0
PROJECT NO.	QHB-0050	DATE	
HESSRS. JAPAN INTERNATIONAL COOPERATION AGENCY ICA SYSTEM FLOW DIAGRAM MITSUBISHI HEAVY INDUSTRIES LTD. YOKOHAMA DOCKYARD MACHINERY WORKS			

6. Basic Design for Civil & Architectural Works



1. Estimated Bill of Quantity for Civil and Architectural Works

Kinds of Works	Bldg and Plant		MAIN BUILDING		STRUCTURE FOR INCINERATOR		W. W. TREATMENT & OIL TANK	
1. EARTH WORK								
1) Soil excavation	57.7	M3	61.6	M3	69.5	M3		
2) Leveling	65.6	M2	66.0	M2	74.7	M2		
3) Back filling with bought soil	42.0	M3	42.9	M3	36.0	M3		
4) Disposal of soil	15.7	M3	18.7	M3	33.5	M3		
5) Crushed stone	3.3	M3	4.0	M3	4.0	M3		
2. CONCRETE WORK								
1) Reinforced concrete	92.9	M3	33.8	M3	33.5	M3		
2) Blinding concrete	3.3	M3	4.0	M3	4.0	M3		
3) Ordinary form work	441.5	M2	153.3	M2	112.8	M2		
4) Deformed reinforcement	12.1	T	4.4	T	4.4	T		
3. EXTERNAL WALL								
1) Fair face brick t=230mm	167.3	M2	42.2	M2	—			
2) Plaster t=25mm	138.5	M2	24.8	M2	—			
4. INTERNAL WALL								
1) Half brick t=230mm	12.9	M2	—		—			
2) Plaster t=25mm	250.4	M2	67.0	M2	—			

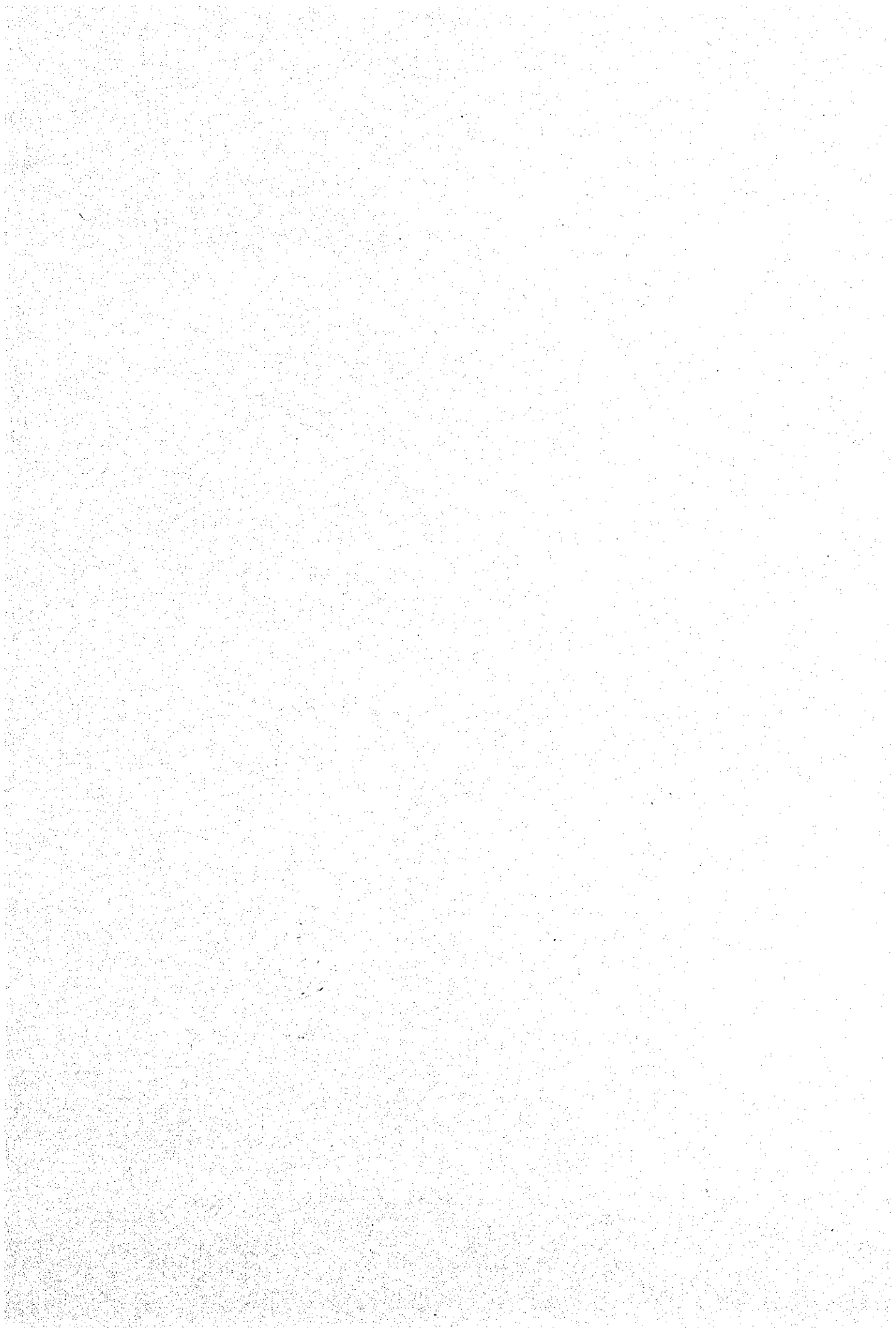
2. Estimated Costs for Civil and Architectural Works

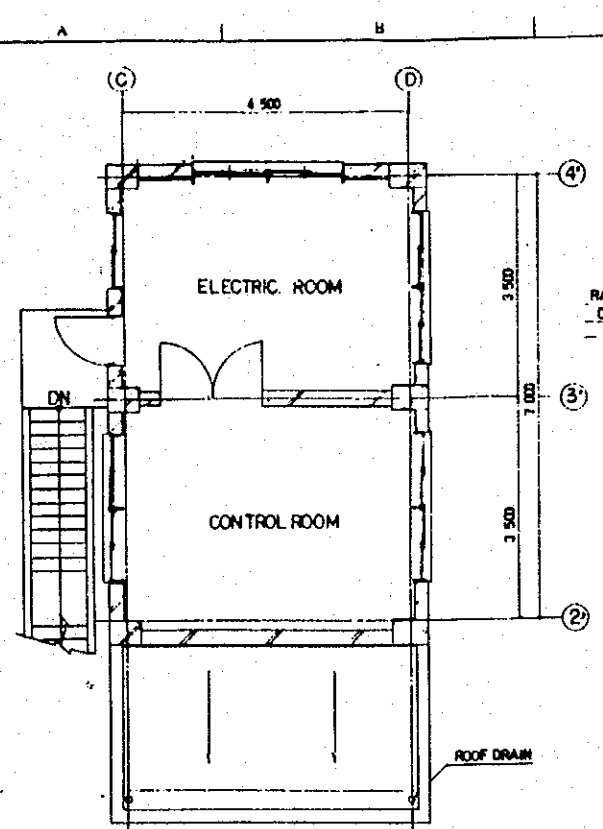
(Unit:Real)

	JICA (FOUNDATION)	CETESB (BUILDING)	REMARKS
1. MAIN BUILDING	18,000	74,000	
2. OIL TANKS AND WASTE WATER TREATMENT PLANT	30,000	—	
3. INCINERATOR	43,000	14,000	
4. BUILDING SERVICE	—	70,000	Ventilation Air Conditioner Lighting
5. INFRASTRUCTURE	30,000	—	Pavement
Sub Total	121,000	158,000	
6. TEMPORARY WORK	12,100	15,800	10%
7. OH, TAX etc.	26,600	34,760	20%
TOTAL	159,700	208,560	
	368,260		

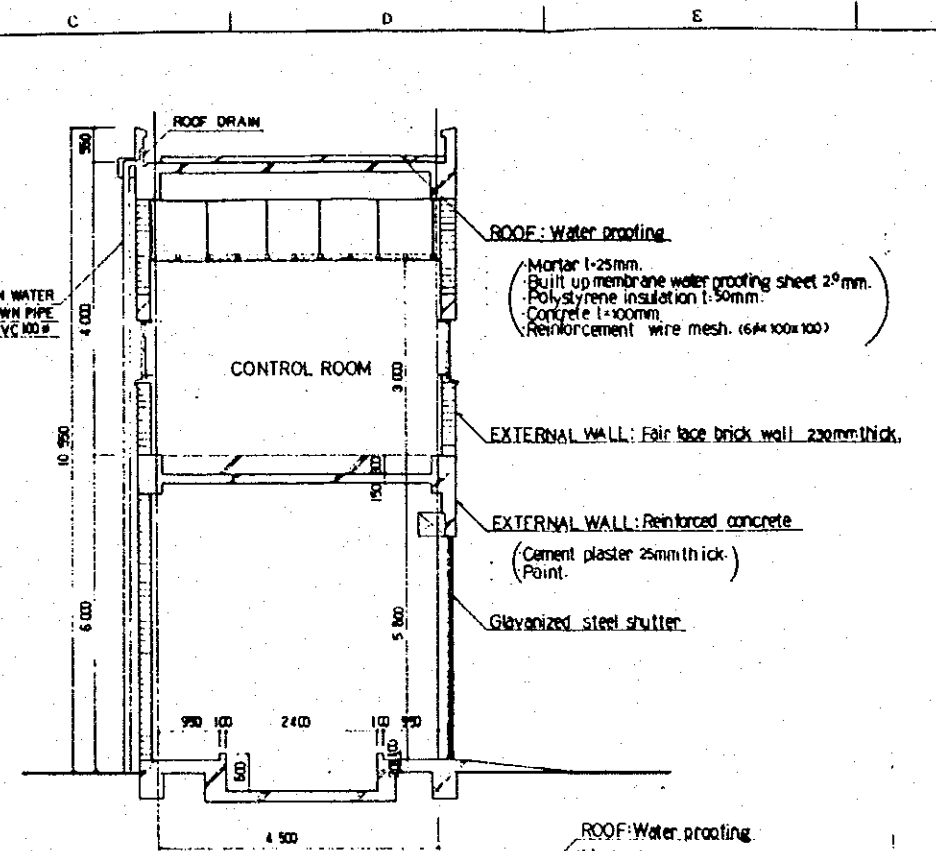
Remarks : 1. Structure of Main building is reinforced concrete and brick wall construction.

2. Scope of works for JICA and CETESB is assumed by Mitsubishi such as JICA own Foundation works CETESB own Building works.

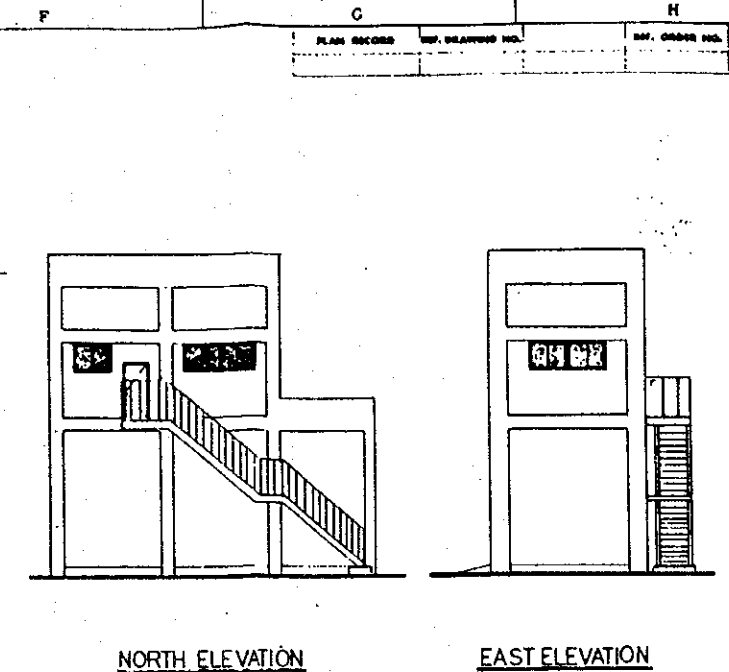




2F PLAN

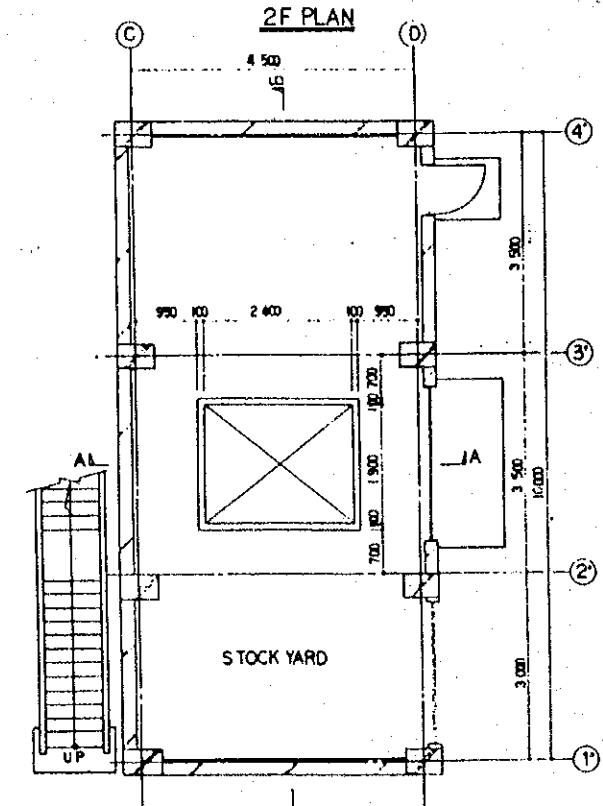


A-A SECTION

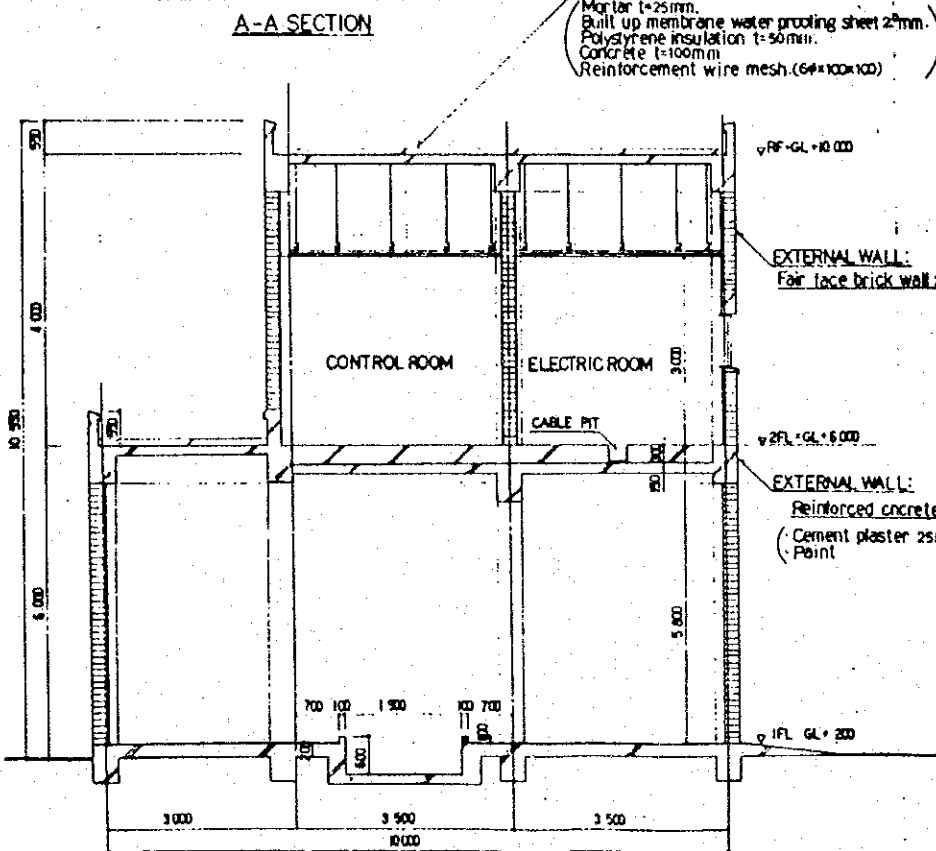


NORTH ELEVATION

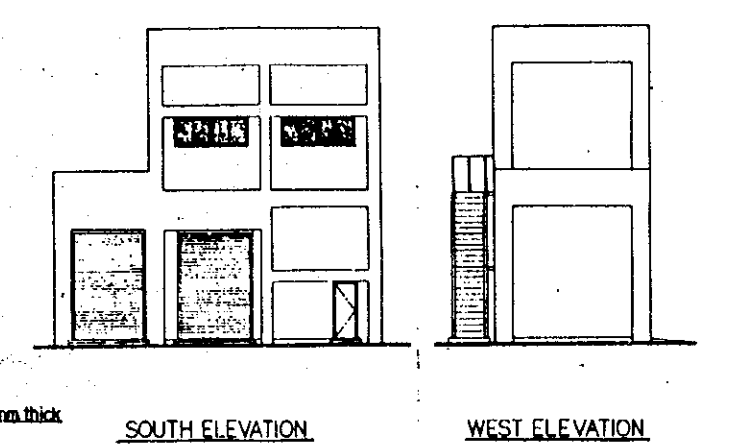
EAST ELEVATION



1F PLAN



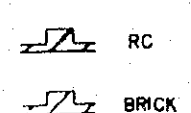
B-B SECTION



SOUTH ELEVATION

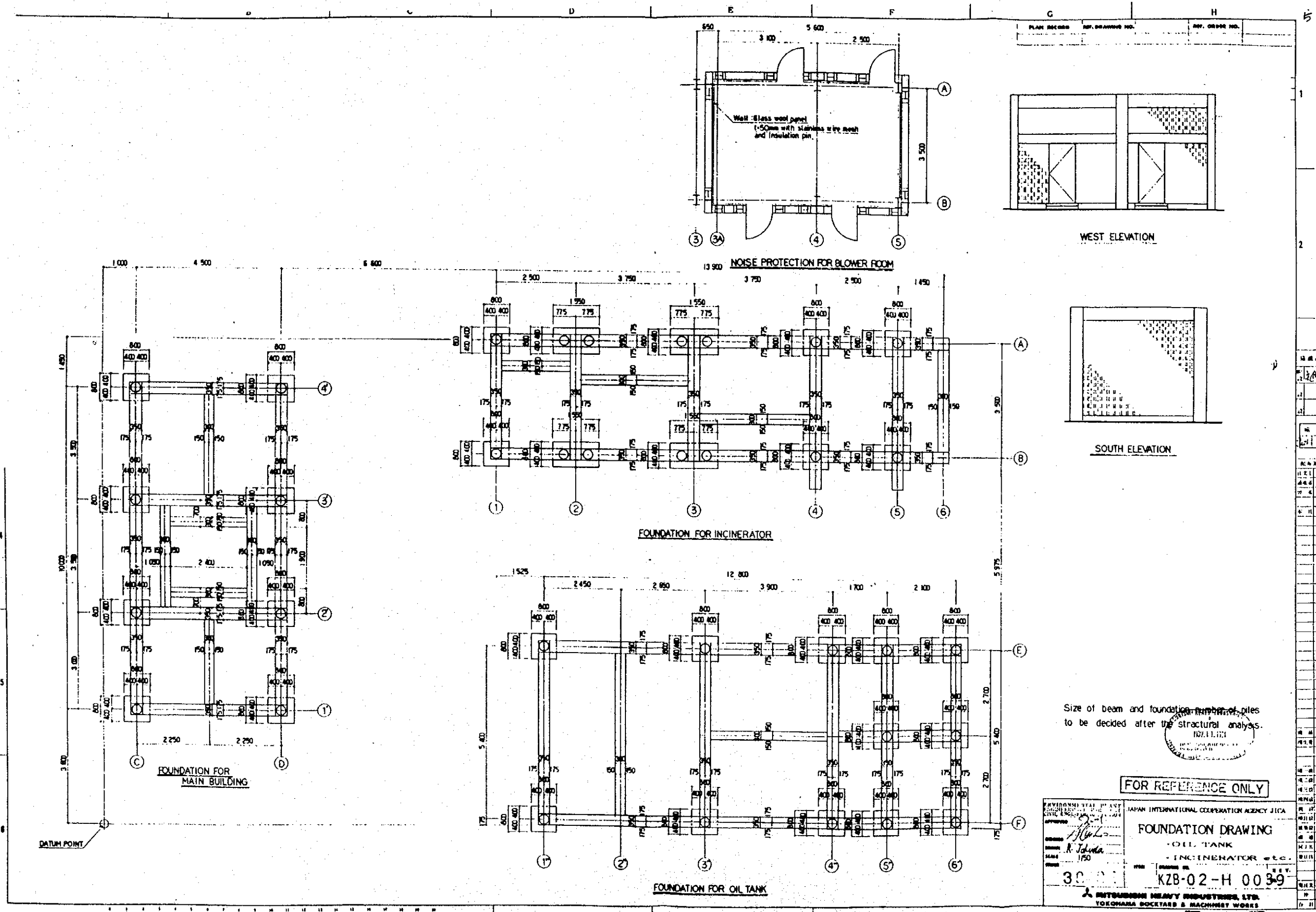
WEST ELEVATION

External finishing schedule		Internal finishing schedule	
Roof	Water proofing Mortar 1-25mm, Built up membrane water proofing sheet 2.0mm, Polystyrene insulation 1-50mm, Concrete 1-100, Reinforcement wire mesh (6#x100x100)	1F Machine room	Floor: Concrete steel trowel finish Wall: Perforated aluminum sheet exposed
Wall	Reinforced concrete Cement plaster 25mm thick Paint Fair face brick wall 230mm	2F Electric room	Ceiling: Deck plate exposed
Window	Aluminum anodized window 1-50mm, 0.5mm	Control room	Floor: Vinyl tile 1-2.5mm Wall: Gypsum board with V.P. Ceiling: Acoustical ceiling board
Door	Galvanized steel flush door 1-75mm with OP		
Shutter	Galvanized steel shutter		

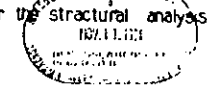


FOR REFERENCE ONLY

ENVIRONMENTAL PLAN
 JAPAN INTERNATIONAL COOPERATION AGENCY JICA
 MAIN BUILDING PLAN
 38484 KZB-02-H 0038
 NOV. 11. 1984
 YOKOHAMA DOCKYARD & SHIPREPAIR WORKS

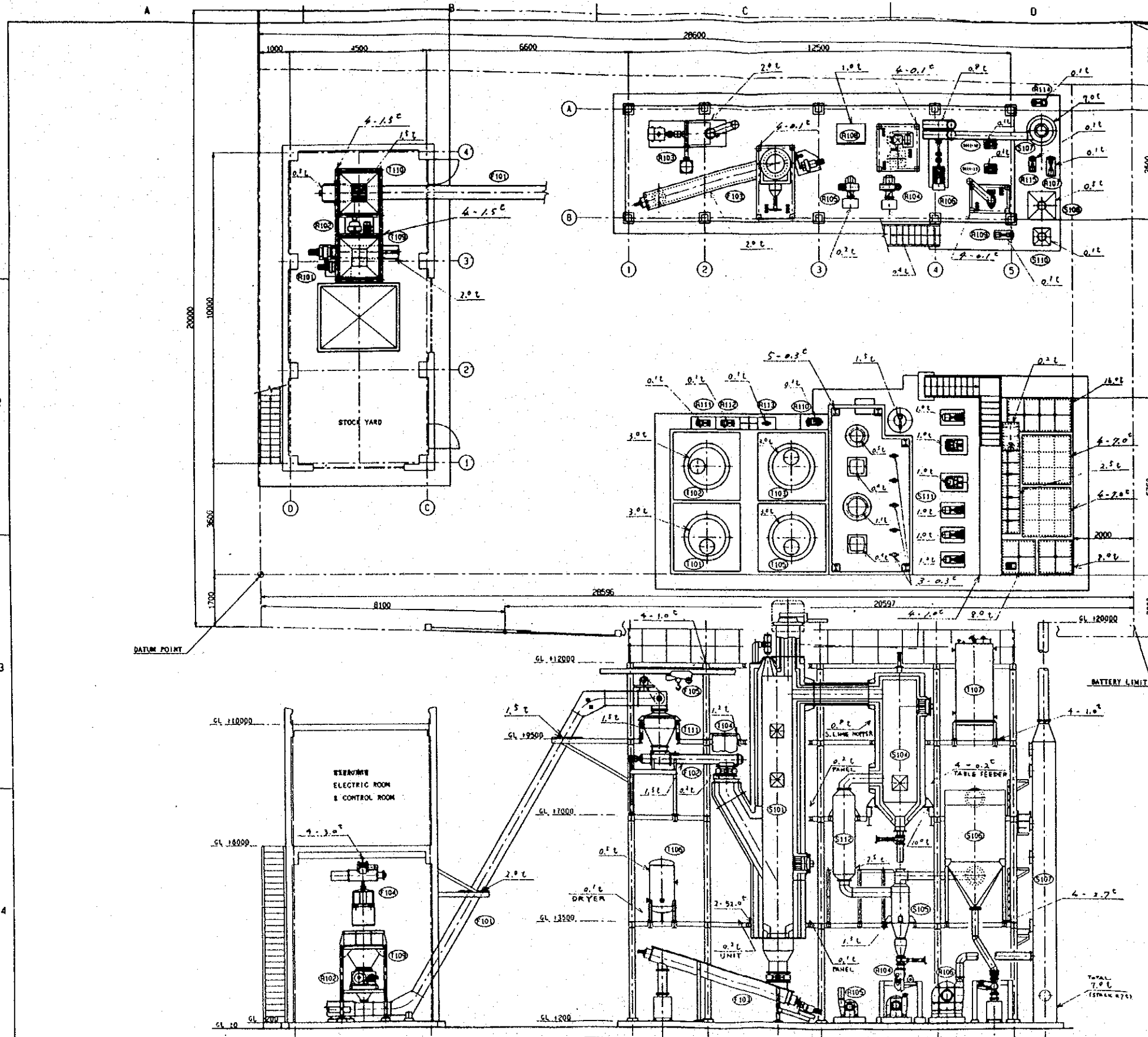


Size of beam and foundation piles to be decided after the structural analysis.

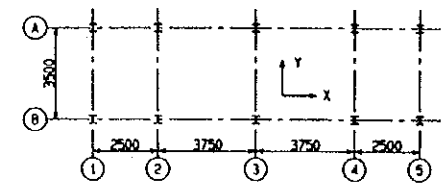


FOR REFERENCE ONLY

ENVIRONMENTAL PLANT PROJECT	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
FOUNDATION DRAWING	
- OIL TANK	
- INCINERATOR etc.	
DATE: 1/50	NO. 30
	KZB-02-H 0039
MITSUBISHI HEAVY INDUSTRIES, LTD. YOKOHAMA ROCKETARY & MACHINERY WORKS	



PLAN RECORD	REF. DRAWING NO.	REF. ORDER NO.
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COLUMN	B. LOADING DATA				SHORT LOAD			
	R.L.	L.L.	M.L.	WIND L.	R.L.	L.L.	M.L.	WIND L.
CA1	2.0	2.0	2.0	13	20.3	21	21	21
CA2	3.3	5.0	15.0	17	20.3	21	21	21
CA3	4.0	5.0	21.0	18	20.3	21	21	21
CA4	3.3	4.0	9.0	17	20.3	21	21	21
CA5	2.0	2.0	3.0	13	20.3	21	21	21
CB1	2.0	2.0	1.5	13	20.3	21	21	21
CB2	3.3	5.0	12.0	17	20.3	21	21	21
CB3	4.0	5.0	22.0	18	20.3	21	21	21
CB4	3.3	4.0	11.0	17	20.3	21	21	21
CB5	2.0	2.0	3.5	13	20.3	21	21	21

NOTE:
 R.L.: DEAD LOAD
 L.L.: LIVE LOAD
 M.L.: MACHINE LOAD

APPROVED	IWM PROJECT/JICA-CETESB		
CHECKED	LOADING DATA		
SCALE	1/50	ITEM	GS.005
ORDER	38484	DRAWING NO.	QH8-001-0176
MITSUBISHI HEAVY INDUSTRIES, LTD. YOKOHAMA DOCKYARD & MACHINERY WORKS			

