

LEGEND		
Symbol		
Piping		
- HW -	Hot water supply line	Galvanized steel pipe and black steel pipe (schedule)
- HW -	Hot water return line	
- H -	Low temperature water supply line	
- HR -	Low temperature water return line	
- CH -	Cold & hot water supply line	Galvanized steel pipe and V.L.P. copper pipe (L-type and H-type)
- CH -	Cold & hot water return line	
- C -	Cold water supply line	
- CR -	Cold water return line	
- CW -	Chilled water supply line	Galvanized steel pipe and V.L.P.
- CR -	Chilled water return line	Galvanized steel pipe and V.L.P.
- HS -	High pressure steam supply line	Black steel pipe
- HR -	High pressure steam return line	
- MS -	Medium pressure steam supply line	
- MR -	Medium pressure steam return line	Black steel pipe
- LS -	Low pressure steam supply line	
- LR -	Low pressure steam return line	
- EV -	High pressure expansion pipe	Galvanized steel pipe and black steel pipe (schedule)
- LV -	Low pressure expansion pipe	Black steel pipe and galvanized steel pipe
- AP -	Air purge pipe	Galvanized steel pipe, copper pipe and hard polyvinyl pipe
- GP -	Gas pipe	Galvanized steel pipe
- OS -	Oil supply line	Black steel pipe
- OR -	Oil return line	
- OV -	Oil vent pipe	Black steel pipe and galvanized steel pipe
- AS -	Acidulant supply line (L-type and H-type)	
- AR -	Acidulant return line	
- AB -	Alloy through base	
Valves & Joints		
Symbol	Description	Notes
○—○	Gate Valve, globe valve, butterfly valve, and ball valve	JIS 10 kg/cm ² and JIS 5 kg/cm ²
○—○	Check valve	
○—○	Pressure-reducing valve with by-pass	10 kg/cm ² and 0.2 kg/cm ²
○—○	Thermostatic valve with by-pass	
○—○	Solenoid valve with by-pass	
○—○	Automatic 3-way valve with by-pass	
○—○	Automatic 3-way valve with by-pass	
○—○	Ball valve	
○—○	Constant flow rate valve	
○—○	Automatic air release valve	
○—○	Expansion joint	
○—○	Flexible joint	
○—○	Piping hardware	
○—○	Expansion loop	
○—○	Blow-up joint	
○—○	Ball joints	

Symbol	Destination	
Gauges & Instruments		
○—○	Pressure gauge	
○—○	Thermometer	
○—○	Steam trap	
○—○	Oil separator	
○—○	Steam separator	
○—○	Trap (low pressure)	
○—○	Trap (high pressure)	
○—○	Humidifier	
○—○	Thermostat	
○—○	Humidifier	
○—○	Filter	
○—○	Smoke detector	
○—○	Oil strainer (duplex)	
Air-conditioning apparatus		
○—○	Cast iron radiator	Baseboard heater and convactor (with outside valves & traps)
○—○	Cast iron radiator type of indication	Nr. of fin type or model tapping size
○—○	Wall heater	
○—○	Induction type	Type, serial number, rate of heat radiation and number of unit shall be indicated in the machine & instruments table.
○—○	Ceiling fan convactor (fan coil unit)	
○—○	Fan convactor type of indication	Rate of heat radiation tapping size
○—○	Radiator	Baseboard heater and convactor (with outside valves & traps)
○—○	Convactor type radiator type of indication	Rate of heat radiation H x W x L Tapping size
○—○	Fan coil unit	
○—○	Fan coil unit type of indication	
○—○	Wall radiator	
○—○	Baseboard radiator type of indication	Rate of heat radiation H x L x length of element Tapping size
○—○	Fan convactor	

Air-ducts & Accessories	
- AM -	High-velocity air-duct
○ - AL -	Low-velocity air-duct (Supply)
○ - AR -	Low-velocity air-duct (Return)
- V -	
- VE -	
- S -	Smoke duct
○	High-velocity duct and vertical
○	Low-velocity duct and vertical
○	High-velocity duct and vertical
○	Low-velocity duct and vertical
○	Return duct and vertical
○	Smoke duct and vertical
○	Supply duct (ventilation)
○	Exhaust duct (ventilation)
○	Volume control damper
○	Fire damper
○	Fire & volume damper
○	Smoke detector relayed damper
○	Smoke detector & fire damper
○	Thermal detector relayed damper
○	Thermal detector & fire damper
○	Motor drive damper
○	Piston diffuser
○	Piston diffuser & fire damper
○	Split damper
○	AIR-OUTLET (square)
○	AIR-OUTLET (round)
○	AIR-OUTLET WITH SILENCER BOX
○	AIR-INTAKE (round)
○	AIR-INTAKE (square)
○	AIR-OUTLET
○	AIR-OUTLET with silencer box (with baffle plate)
○	AIR-INTAKE
○	AIR-INTAKE with silencer box (with baffle plate)
○	Smoke exhaust
○	Lined silencer
○	Canvas connection
○	GV WITH
○	GV WITH
○	SILENCER, WALL
○	GV WITH
○	GV WITH

Air-outlets, air-intakes	
○ AR	General type diffuser, with A.G. / Damper
○ RA	Round type
○ SA	Special type
○ VMS	Air-outlet, horizontal type
L.S	Baffle line (S)
L.D	(D)
MS	Beam light type diffuser
S	Nozzle with damper or without damper
IS	Special type nozzle
SK	Square type louver with damper or without damper
PK	Parker louver
SL	Settled louver with shutter or without shutter
SV	
H	Calm type exhaust
E	Air-intake (nozzle type) with screen & shutter (square type)
R	
SL	
○	AIR-OUTLET
○	AIR-INTAKE (outside)

1. Location, Air-outlet, Designation of air-intake Air-outlet, Designation of air-intake, Size

CM

Table with 2 columns: Section Number and Description. Includes sections for Boilers, Heating System, Combustion Equipment, Water Supply and Circulation, and Water Circulation Tank.

Table with 2 columns: Section Number and Description. Includes sections for Volume Control, Operation Control, Cooling Method, Vibration-Free Foundation, Insulation, and Heat Exchangers.

Table with 2 columns: Section Number and Description. Includes sections for Expansion Tanks, Piping Materials, Heat Exchangers, Expansion Tanks, and Piping.

Table with 2 columns: Section Number and Description. Includes sections for Radiator Installation, All Air System Air-Conditioning, Self-Contained Air-Conditioning Unit, and Types of Fan-Coil Units.

Table with 2 columns: Section Number and Description. Includes sections for Insulation, Allowable Moisture Standards, Ventilation System, and Fabrication & Fitting of Ducts.

Table with 2 columns: Section Number and Description. Includes sections for Automatic Control System, General Functionary Control, and Various Equipment Accessories and Others.

Table with 2 columns: Section Number and Description. Includes sections for Oil Storage Tank, Oil Service Tank, Level Gauging, Flow Meters, Piping Method, Piping Materials, and Expansion Joints.

Table with 2 columns: Section Number and Description. Includes sections for Types of Cooling Tower, Cooling Tower Water Piping, Piping Method, Piping Materials, Heat Exchangers, and Insulation of Piping.

Table with 2 columns: Section Number and Description. Includes sections for Types of Piping, Piping Materials, Piping, and Insulation.

Table with 2 columns: Section Number and Description. Includes sections for Types of Fan-Coil Units, Electrical Heaters, Types of Humidification, Filters, and Fibrous Performance.

Table with 2 columns: Section Number and Description. Includes sections for Types of Duct, Expansion Joints, Ampere, and Types of Filter.

Table with 2 columns: Section Number and Description. Includes sections for High-Pressure Boilers, Turbine Refrigeration Machines, Section Type Refrigeration Machine, Air-Conditioning, Exhaust Fan, Dry Filter, and Cold and Hot Water Tanks.

Table with 2 columns: Section Number and Description. Includes sections for Types of Chilling Machine, Heat Pump Type, and Types of Energy.

Table with 2 columns: Section Number and Description. Includes sections for Heat Exchangers, Heat Exchangers, Heat Exchangers, and Heat Exchangers.

Table with 2 columns: Section Number and Description. Includes sections for Heat Exchangers, Heat Exchangers, Heat Exchangers, and Heat Exchangers.

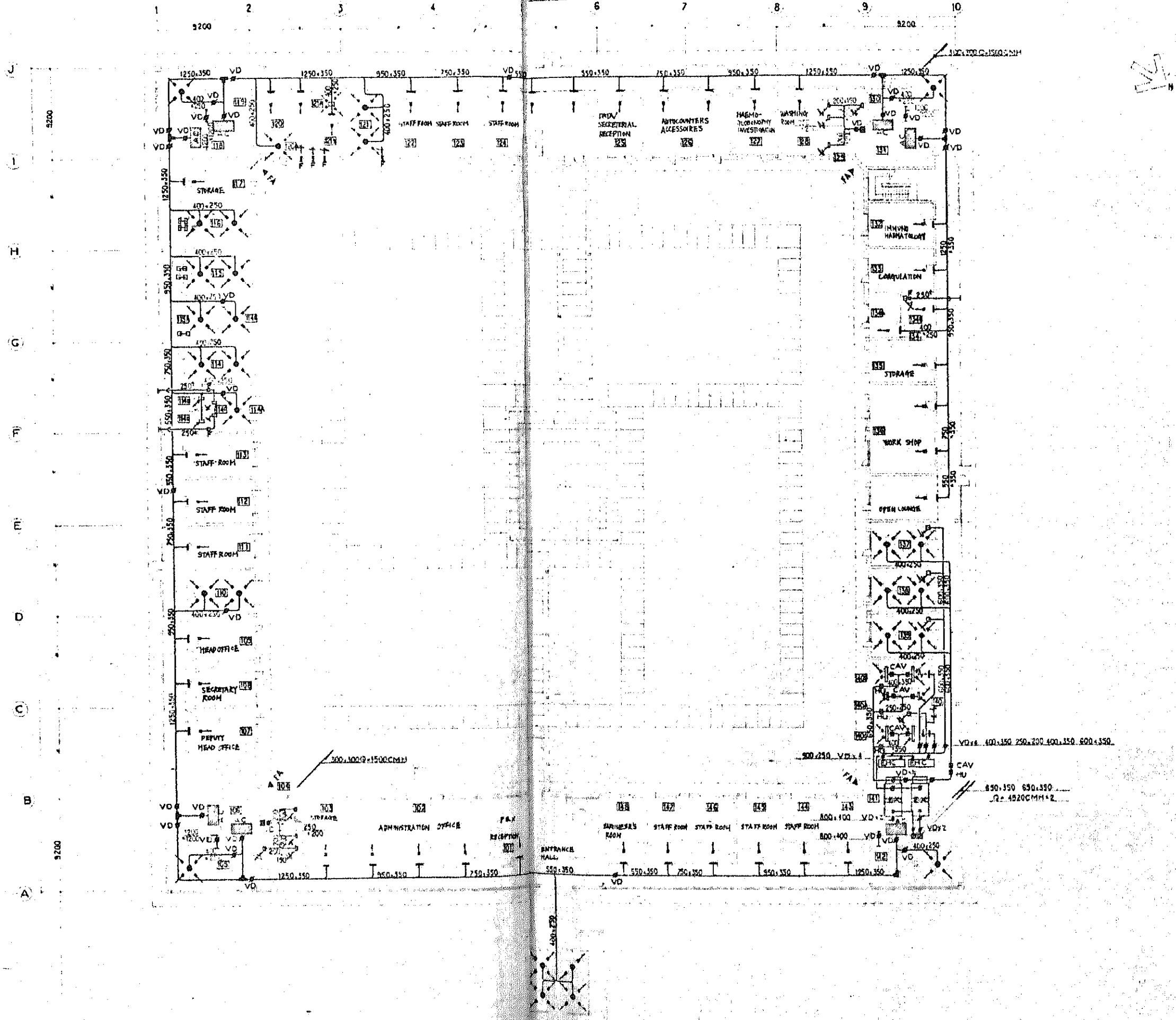
Table with 2 columns: Section Number and Description. Includes sections for Types of Fan-Coil Units, Electrical Heaters, Types of Humidification, Filters, and Fibrous Performance.

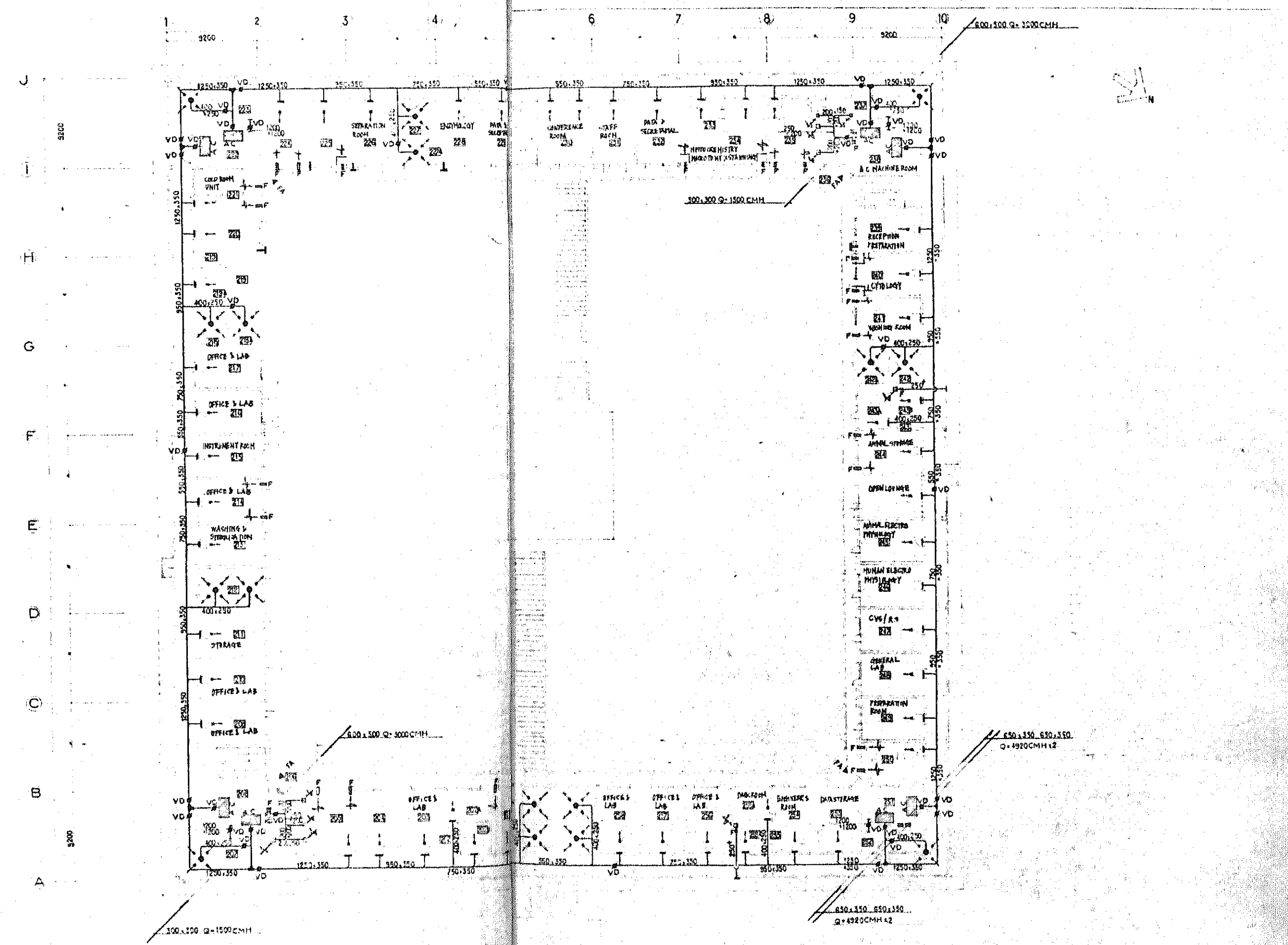
Table with 2 columns: Section Number and Description. Includes sections for Types of Duct, Expansion Joints, Ampere, and Types of Filter.

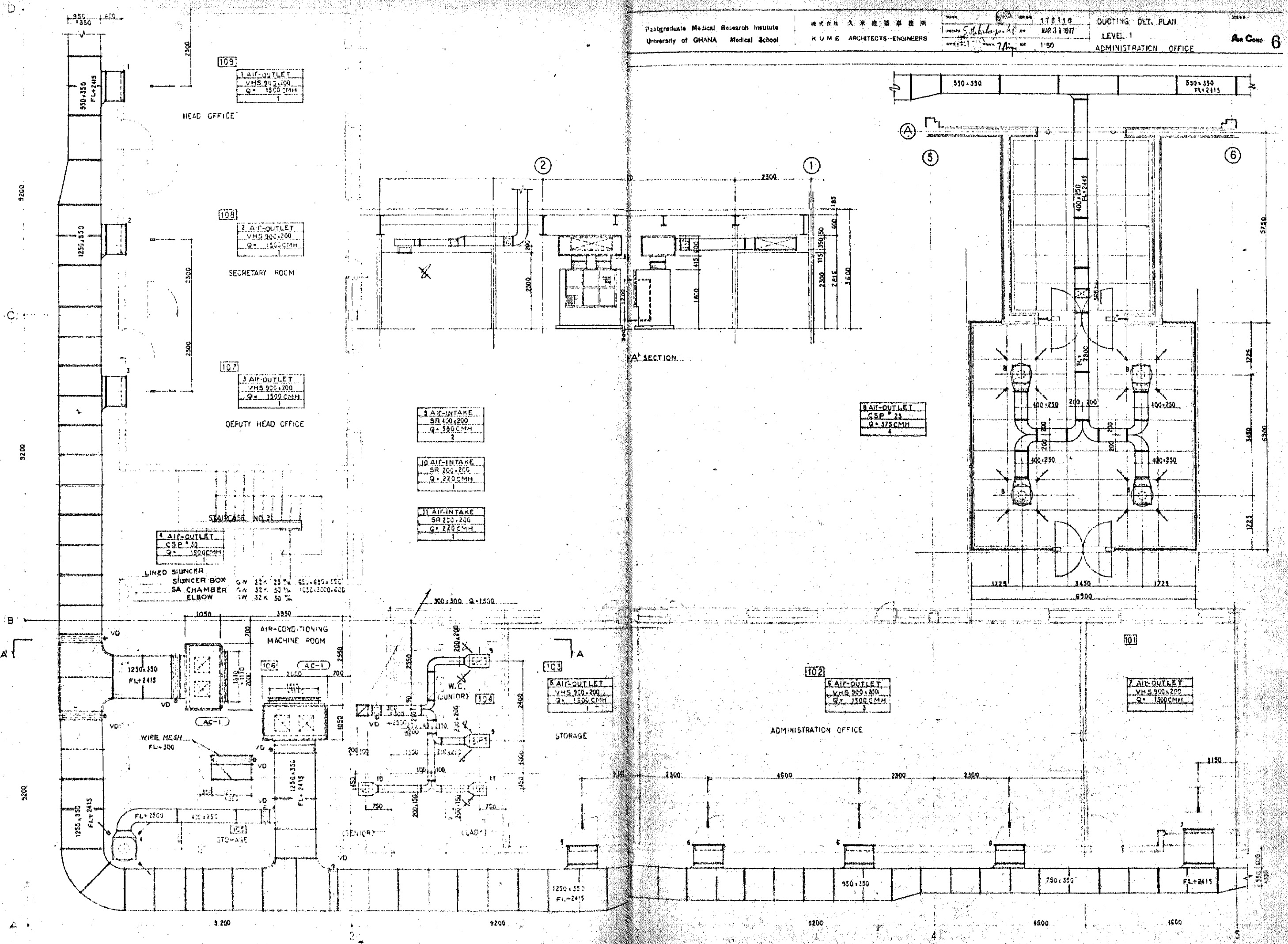
Table with 2 columns: Section Number and Description. Includes sections for High-Pressure Boilers, Turbine Refrigeration Machines, Section Type Refrigeration Machine, Air-Conditioning, Exhaust Fan, Dry Filter, and Cold and Hot Water Tanks.

MACHINERY LIST

SYMBOL	APPELLATION	MACHINE TYPE	EQUIPMENT SPECIFICATION	QUANTITY	OUTPUT	VOLTAGE	PHASE	STARTING SYSTEM	INTER LOCK	REMARKS
AC 1	GENERAL ROOM AIR CONDITIONER	AIR COOLED PACKAGED AIR CONDITIONER	AIR FLOW RATE 21 000 CMH OUTSIDE AIR TEMP. 33 °C REFRIGERANT R-22 COOLING CAPACITY 5.000 kcal/hr EXTERNAL STATIC PRESSURE 40 mmHg AIR FILTER COARSE FILTER	1	FAN 3.7	415	3	DIRECT		VIBRATION ISOLATION PAT B'
		(CONDENSER UNIT)	BLOWER TYPE PROPELLER OUTER DIMENSIONS 1300 * 2248 * 1110		FAN 0.4 * 2					VIBRATION ISOLATION PAT B'
AC 2	CONSTANT TEMP. ROOM AIR CONDITIONER	AIR COOLED PACKAGED AIR CONDITIONER	AIR FLOW RATE 1010 CMH OUTSIDE AIR TEMP. 33 °C REFRIGERANT R-22 COOLING CAPACITY 0.300 kcal/hr HEATING CAPACITY 0.850 kcal/hr AIR FILTER WASHABLE FILTER	2	COMP 2.2 FAN 0.4 HEATER 4.0 * 2	415	3	DIRECT		VIBRATION ISOLATION PAT B'
		(CONDENSER UNIT)	BLOWER TYPE PROPELLER OUTER DIMENSIONS		FAN 0.3					VIBRATION ISOLATION PAT B'
AC 3	ANIMAL HOUSE AIR CONDITIONER	AIR COOLED PACKAGED AIR CONDITIONER	AIR FLOW RATE 4500 CMH OUTSIDE AIR TEMP. 33 °C REFRIGERANT R-22 COOLING CAPACITY 22.000 kcal/hr	2	COMP 7.5 HEATER 1.5 * 2	415	3	DIRECT	(A)	VIBRATION ISOLATION PAT B'
		(CONDENSER UNIT)	BLOWER TYPE PROPELLER OUTER DIMENSIONS		FAN 0.4					VIBRATION ISOLATION PAT B'
AC 4	ROOM AIR CONDITIONER	SPLIT TYPE AIR CONDITIONER	AIR FLOW RATE 540 CMH REFRIGERANT R-22 COOLING CAPACITY 4000 kcal/hr AIR FILTER WASHABLE FILTER	1	FAN 0.04	240	1	DIRECT		REMOTE CONTROL SWITCH ROOM THERMO PIPING KIT
		CONDENSING UNIT	BLOWER TYPE PROPELLER OUTER DIMENSIONS		COMP 1.5 FAN 0.06	240	1			
EX 1	TOTAL HEAT EXCHANGER	ROTARY AIR TO AIR TOTAL HEAT EXCHANGER	EXCHANGE THERMAL 17920 kcal/hr AIR VOLUME RATIO 1:1 SUPPLY AIR EFFICIENCY 90 %	1	4920 CMH 90 %					
		SUPPLY FAN	TURBO FAN (DS) NO. 2 1/2 AIR VOLUME 4920 CMH	2	4920 CMH	415	3	DIRECT		
		EXHAUST FAN	TURBO FAN (DS) NO. 2 1/2 AIR VOLUME 4920 CMH	2	4920 CMH	415	3	DIRECT		
		OUTER DIMENSIONS								
EHC 1	R-F EXHAUST CHAMBER	HEPA, CHACCOAL FILTER UNIT	AIR FLOW RATE 4920 CMH PRE FILTER ELEMENT POLYESTER MAIN FILTER ELEMENT GLASS PAPER CHACCOAL FILTER CHACCOAL FILTER EFFICIENCY 100 DOP 99.97 %	2						
CAV 1	CONSTANT AIR VOLUME		AIR FLOW RATE 1250 CMH STATIC PRESSURE RANGE 10 mmHg ~ 35 mmHg	4						
CAV 2	CONSTANT AIR VOLUME		AIR FLOW RATE 450 CMH STATIC PRESSURE RANGE 10 mmHg ~ 35 mmHg	2						
CAV 3	CONSTANT AIR VOLUME		AIR FLOW RATE 3920 CMH STATIC PRESSURE RANGE 10 mmHg ~ 35 mmHg	1						
ET 1	REFILL TANK	RECTANGULAR TANK	NOMINAL CAPACITY 200 LIT QUALITY LS-304, R 1.0 MEASURE 600-600-600	2						
UC 1	UNIT COOLER	CHILLING UNIT	CHILLED WATER 10 L/MIN TEMP. SUPPLY 20 °C, RETURN 25 °C COMPRESSOR HERMETIC, ROTARY	2	COMP 0.4 FAN 0.06	100	1	DIRECT	(B)	
P 1	CHILLED WATER PUMP	LINE PUMP	BORE 25 * DISCHARGE 10 L/MIN HEAD 18 M	2	PUMP 0.25	100	1	DIRECT	(B)	
HU 1	HEATER UNIT NO 1	ELECTRIC HEATER	AIR FLOW RATE 2500 CMH HEATING CAPACITY 6880 kcal/hr CONTROL 4 STEP CONTROL	2	HEATER 2.0 * 4	415	3	DIRECT	(A)	
HU 2	HEATER UNIT NO 2	ELECTRIC HEATER	AIR FLOW RATE 920 CMH HEATING CAPACITY 2580 kcal/hr CONTROL 2 STEP CONTROL	1	HEATER 1.5 * 2	415	3	DIRECT	(A)	
HU 3	HEATER UNIT NO 3	ELECTRIC HEATER	AIR FLOW RATE 3920 CMH HEATING CAPACITY 8600 kcal/hr CONTROL 4 STEP CONTROL	1	HEATER 2.0 * 5	415	3	DIRECT	(A)	
F 1	EXHAUST FAN	CENTRIFUGAL FAN	SINGLE INLET NO. 2 AIR FLOW RATE 3000 CMH EXTERNAL STATIC PRESSURE 20 mmHg	2	FAN 0.75	415	3	DIRECT		
FU 1	FILTER UNIT	HEPA FILTER UNIT	AIR FLOW RATE 1250 CMH FILTER ELEMENT GLASS PAPER FILTER EFFICIENCY 100 DOP 99.97 %	4						
F 2	EXHAUST FAN	AXIAL BLOWER	BORE SIZE 255 * AIR FLOW RATE 750 CMH EXTERNAL STATIC PRESSURE 9 mmHg	36	FAN 0.1	240	1	DIRECT		
F 3	EXHAUST FAN	AXIAL BLOWER	BORE SIZE 370 * AIR FLOW RATE 1500 CMH EXTERNAL STATIC PRESSURE 15 mmHg	1	FAN 0.3	240	1	DIRECT		
FU 2	FILTER UNIT	HEPA FILTER UNIT	AIR FLOW RATE 450 CMH FILTER ELEMENT GLASS PAPER FILTER EFFICIENCY 100 DOP 99.97 %	2						







109
1 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

108
2 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

107
3 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

4 AIR-OUTLET
CSP 150
Q = 1800 CMH

LINED SUNNER
SUNNER BOX GW 15K 25% 650x650x150
SA CHAMBER GW 32K 50% 1050x2000x600
ELBOW GW 32K 50%

5 AIR-INTAKE
SR 400x200
Q = 580 CMH

10 AIR-INTAKE
SR 200x200
Q = 220 CMH

11 AIR-INTAKE
SR 200x200
Q = 220 CMH

8 AIR-OUTLET
CSP 23
Q = 375 CMH

103
6 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

102
9 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

101
7 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

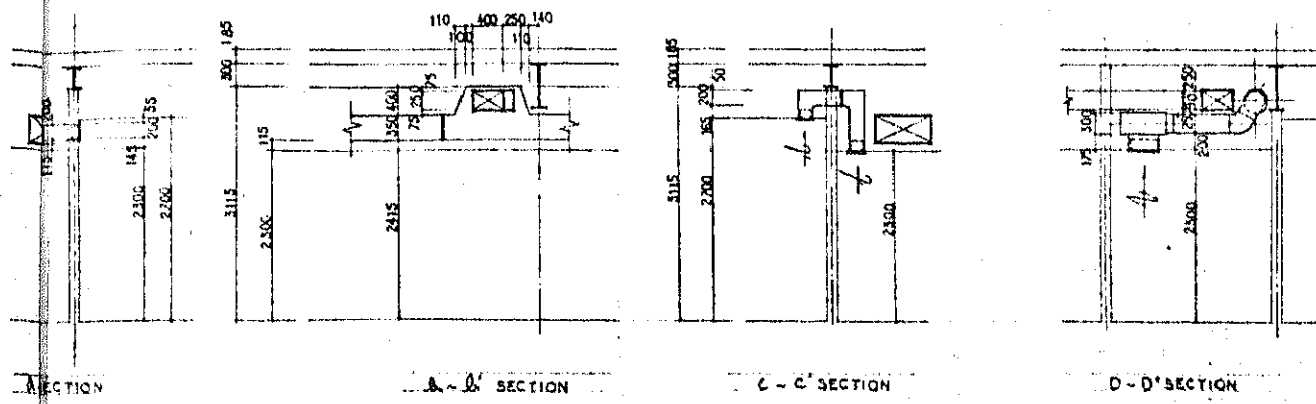
1 200

2 9200

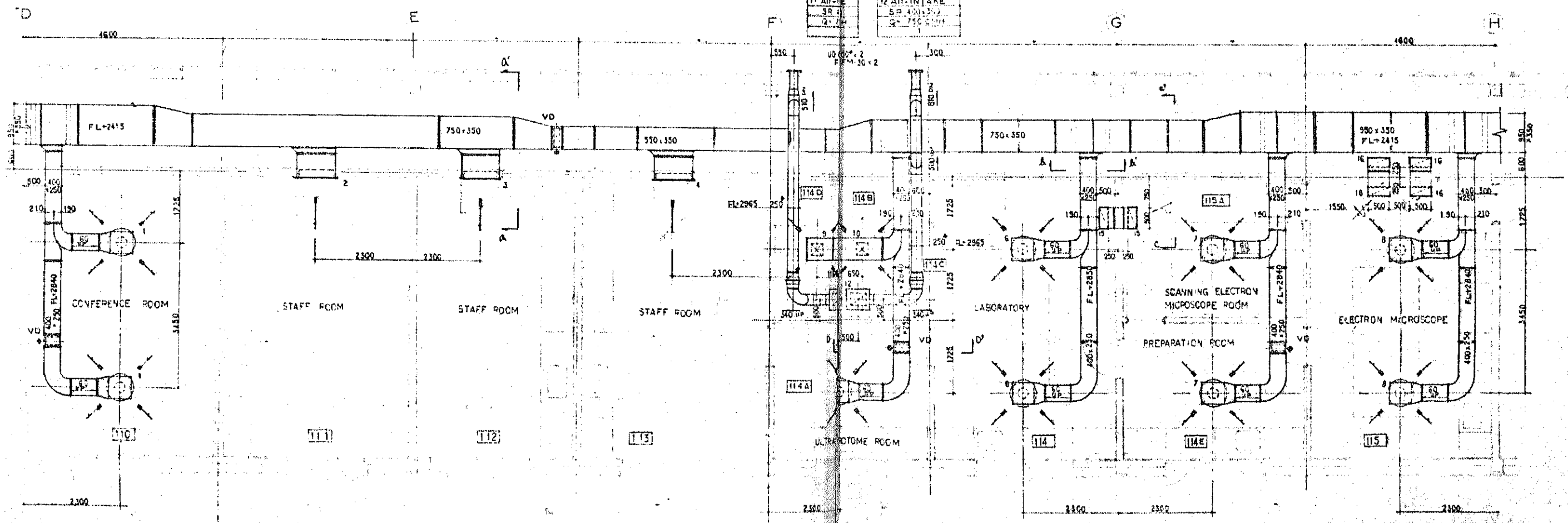
3 9200

4 6600

5 1500



9 AIR-OUTLET VMS 200x200 Q = 375 CMH	10 AIR-OUTLET VMS 200x200 Q = 375 CMH
11 AIR-INTAKE SR 500x200 Q = 750 CMH	12 AIR-INTAKE SR 500x200 Q = 750 CMH



1 AIR-OUTLET CSB 25 Q = 750 CMH

2 AIR-OUTLET VMS 200x200 Q = 375 CMH
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3 AIR-OUTLET VMS 200x200 Q = 375 CMH
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4 AIR-OUTLET VMS 200x200 Q = 375 CMH
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5 AIR-OUTLET VMS 200x200 Q = 375 CMH
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6 AIR-OUTLET CSB 25 Q = 750 CMH

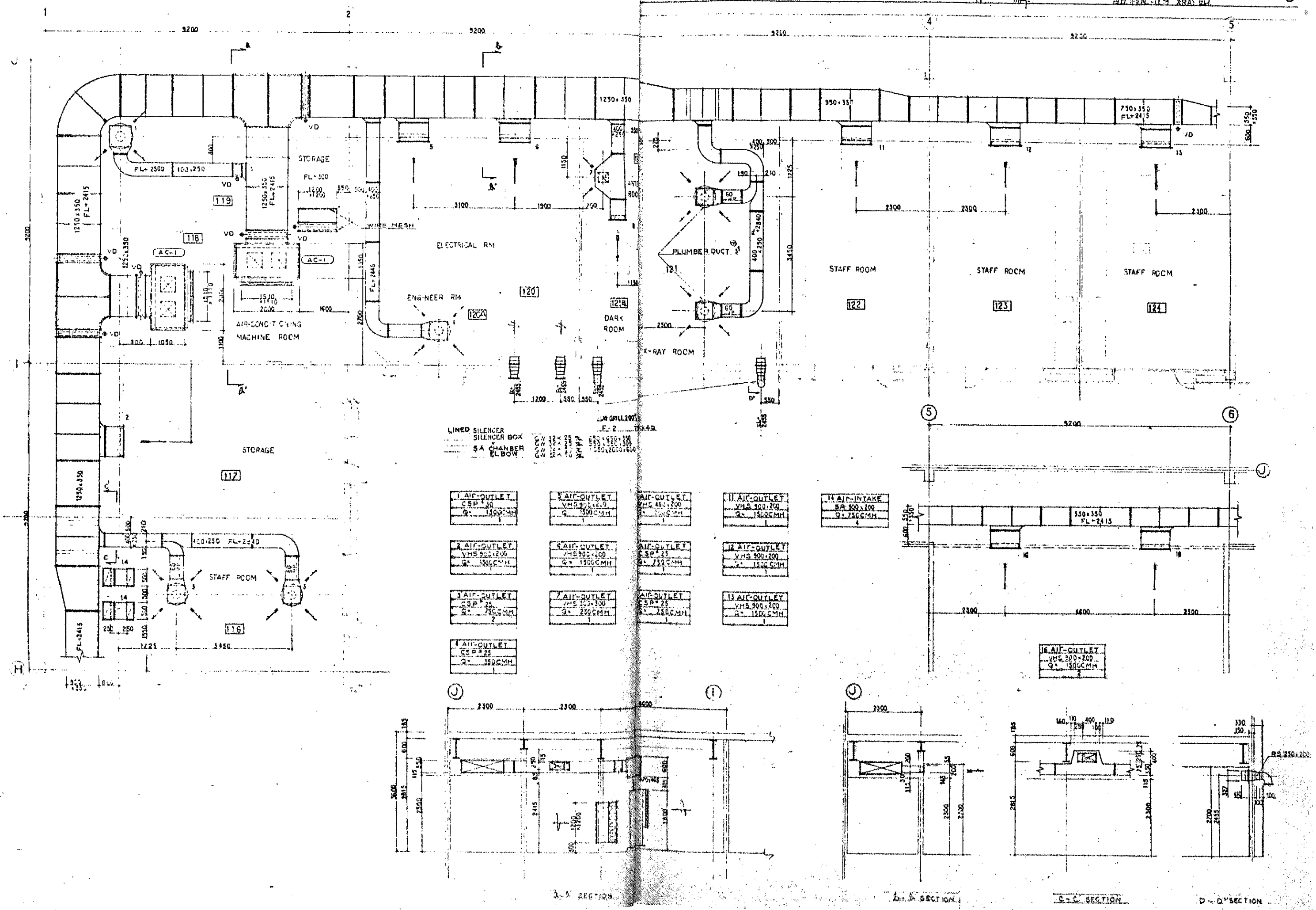
7 AIR-OUTLET CSB 25 Q = 750 CMH

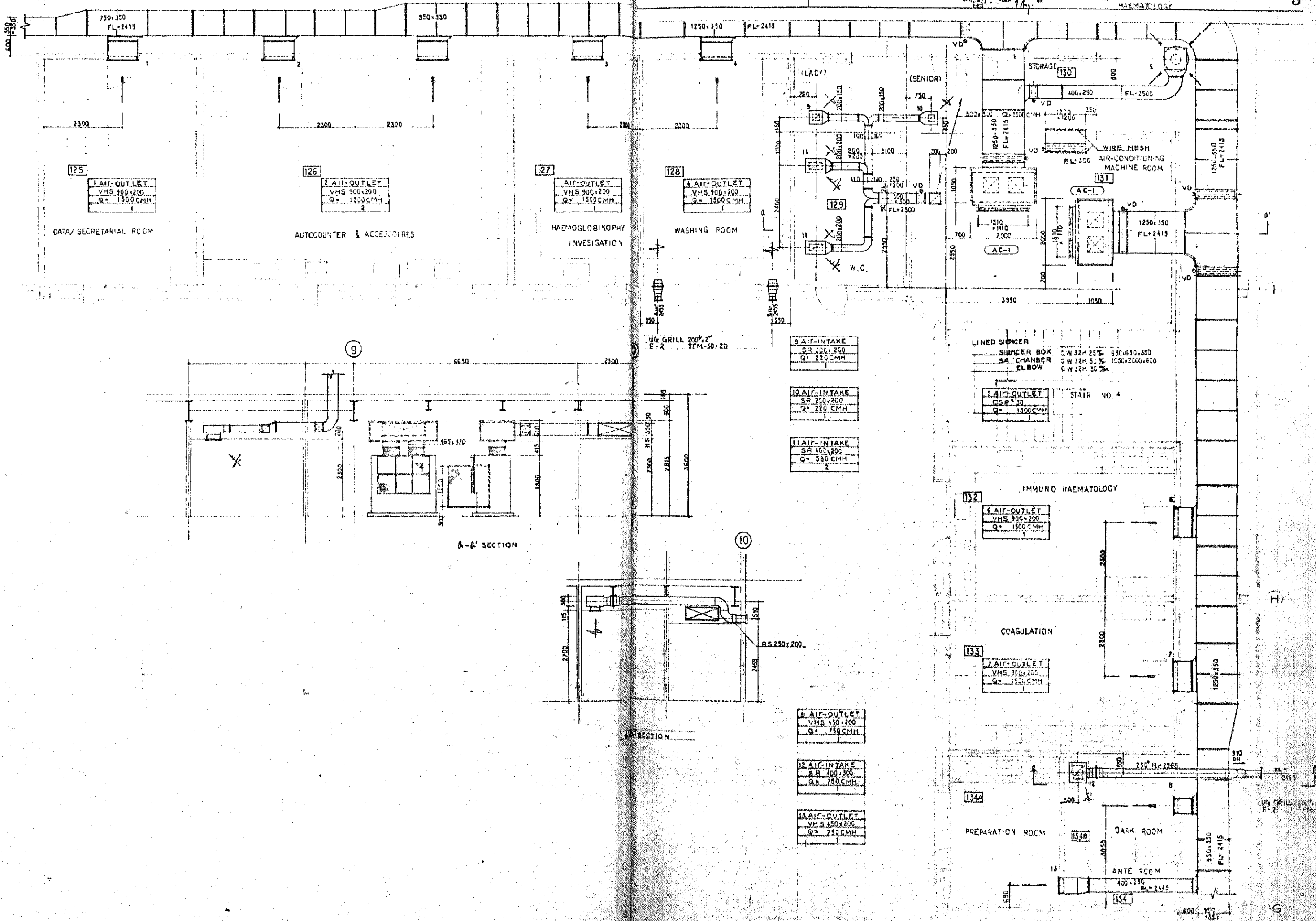
8 AIR-OUTLET CSB 25 Q = 750 CMH

13 RETURN PASS SR 500x200 Q = 750 CMH

14 RETURN PASS SR 500x200 Q = 750 CMH

LINED BRASS LINER BOX CW 12 x 25% 550 x 550 x 100





125
1 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

126
2 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

127
AIR-OUTLET
VHS 900x200
Q = 1500 CMH

128
4 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

9 AIR-INTAKE
SR 200x200
Q = 220 CMH

10 AIR-INTAKE
SR 200x200
Q = 220 CMH

11 AIR-INTAKE
SR 400x200
Q = 380 CMH

5 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

6 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

7 AIR-OUTLET
VHS 900x200
Q = 1500 CMH

8 AIR-OUTLET
VHS 400x200
Q = 750 CMH

12 AIR-INTAKE
SR 400x300
Q = 750 CMH

13 AIR-OUTLET
VHS 150x200
Q = 750 CMH

LINED SILENCER
SILENCER BOX 650x650x350
SA CHAMBER 1050x2000x600
ELBOW 90° 320x500

STAIR NO. 4

IMMUNO HAEMATOLOGY

COAGULATION

PREPARATION ROOM

DARK ROOM

ANTE ROOM

A-A SECTION

9-9 SECTION

1 AIR-OUTLET
VMS 900x200
Q = 1500 CMH

2 AIR-OUTLET
VMS 900x200
Q = 1500 CMH

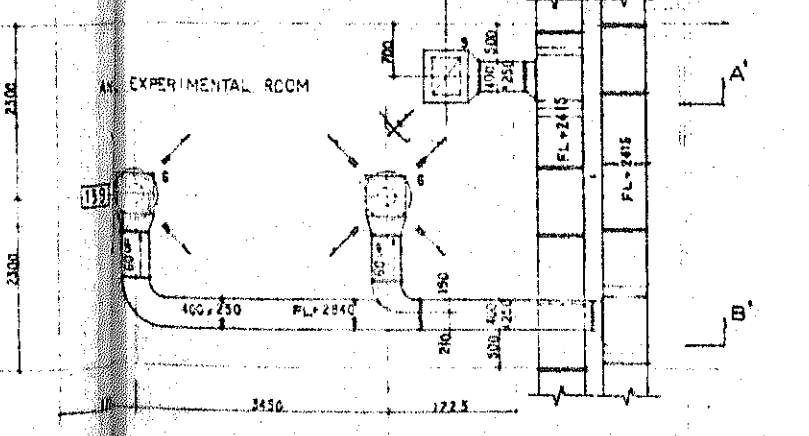
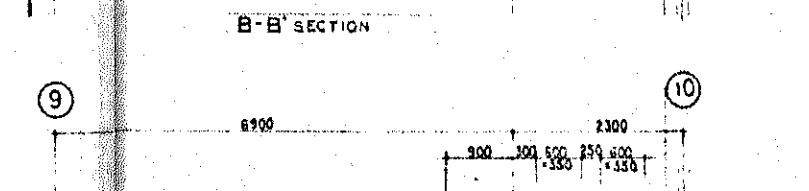
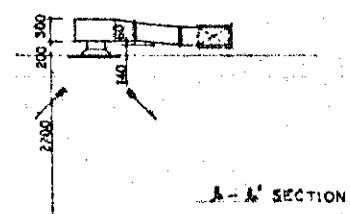
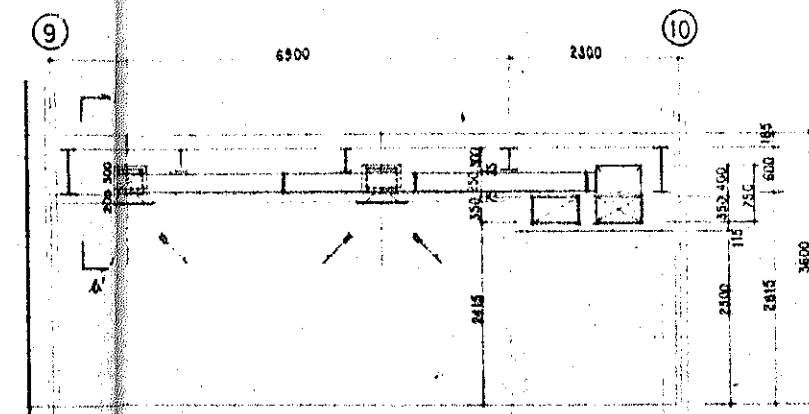
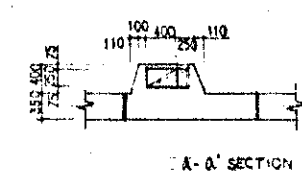
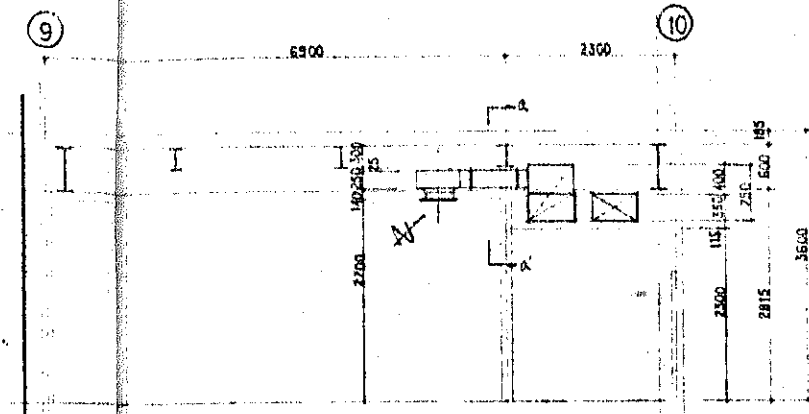
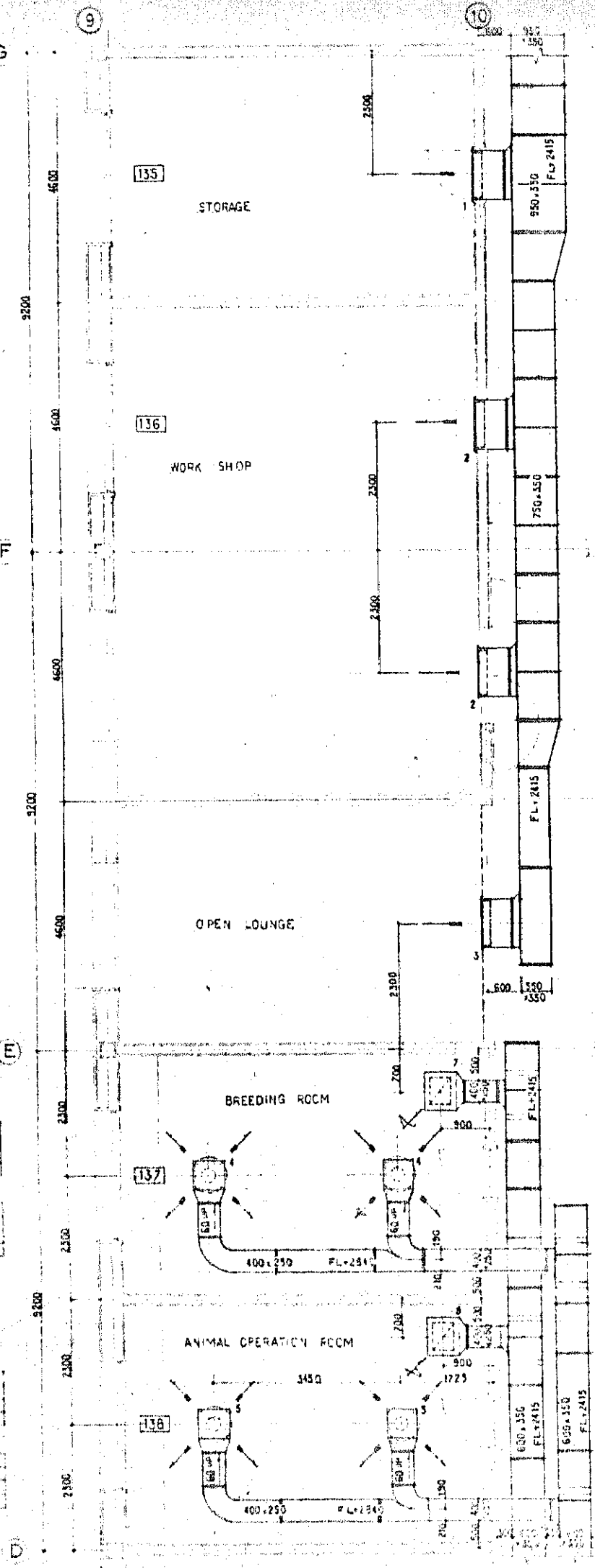
3 AIR-OUTLET
VMS 900x200
Q = 1500 CMH

4 AIR-OUTLET
CSB # 25
Q = 640 CMH

7 AIR-INTAKE
SR 350x150
Q = 1200 CMH

5 AIR-OUTLET
CSB # 25
Q = 640 CMH

6 AIR-INTAKE
SR 350x150
Q = 1200 CMH

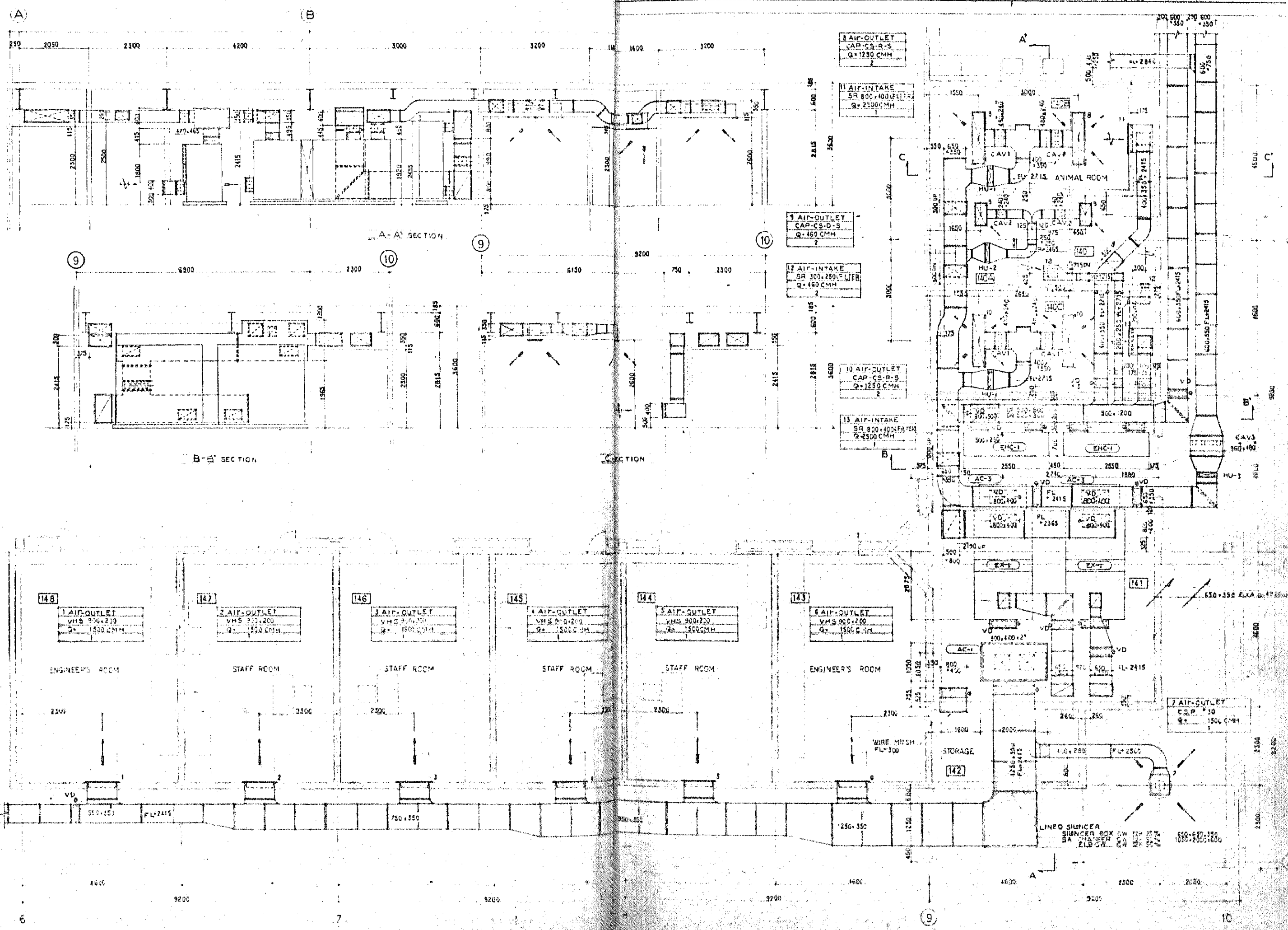


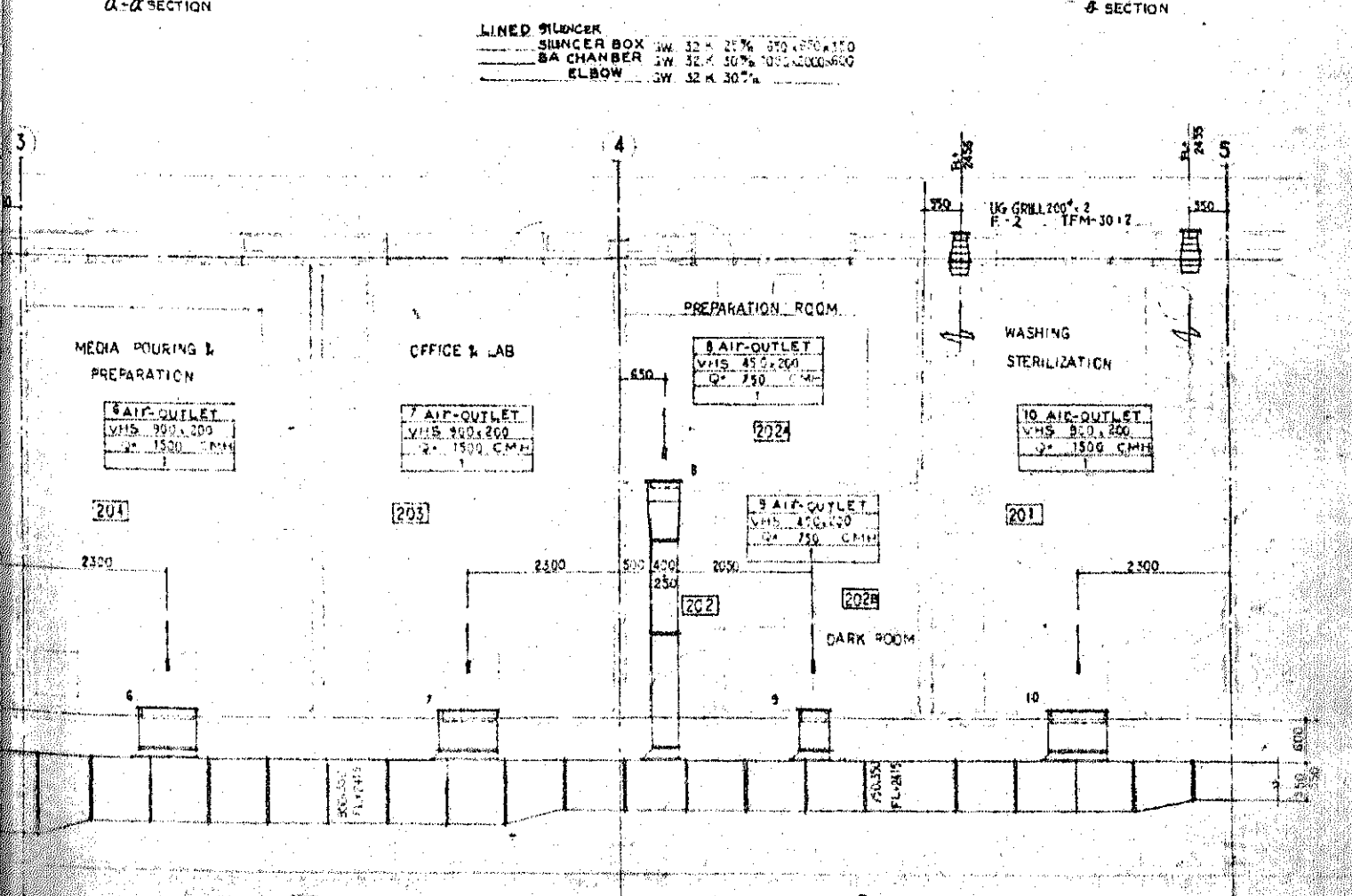
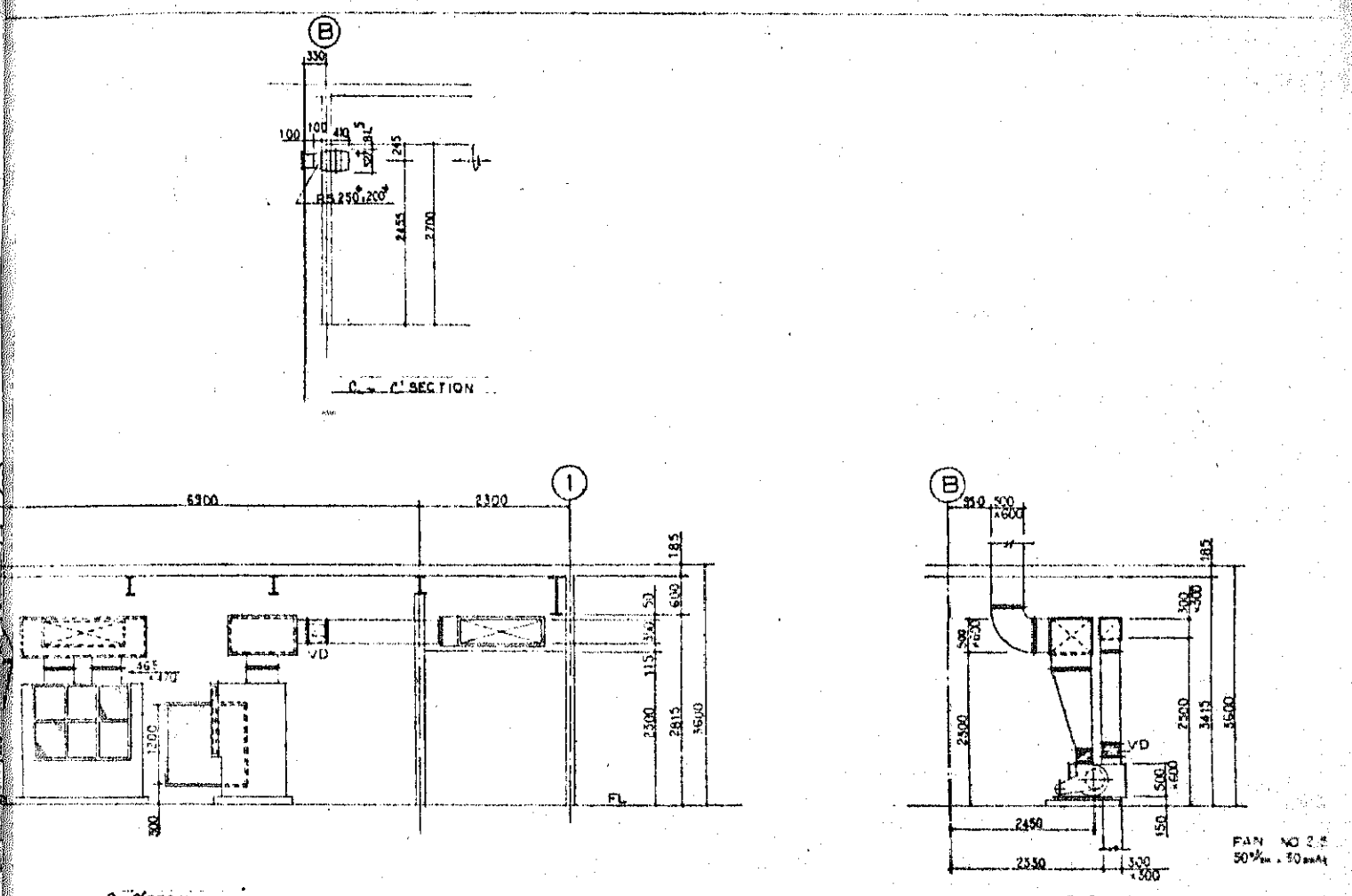
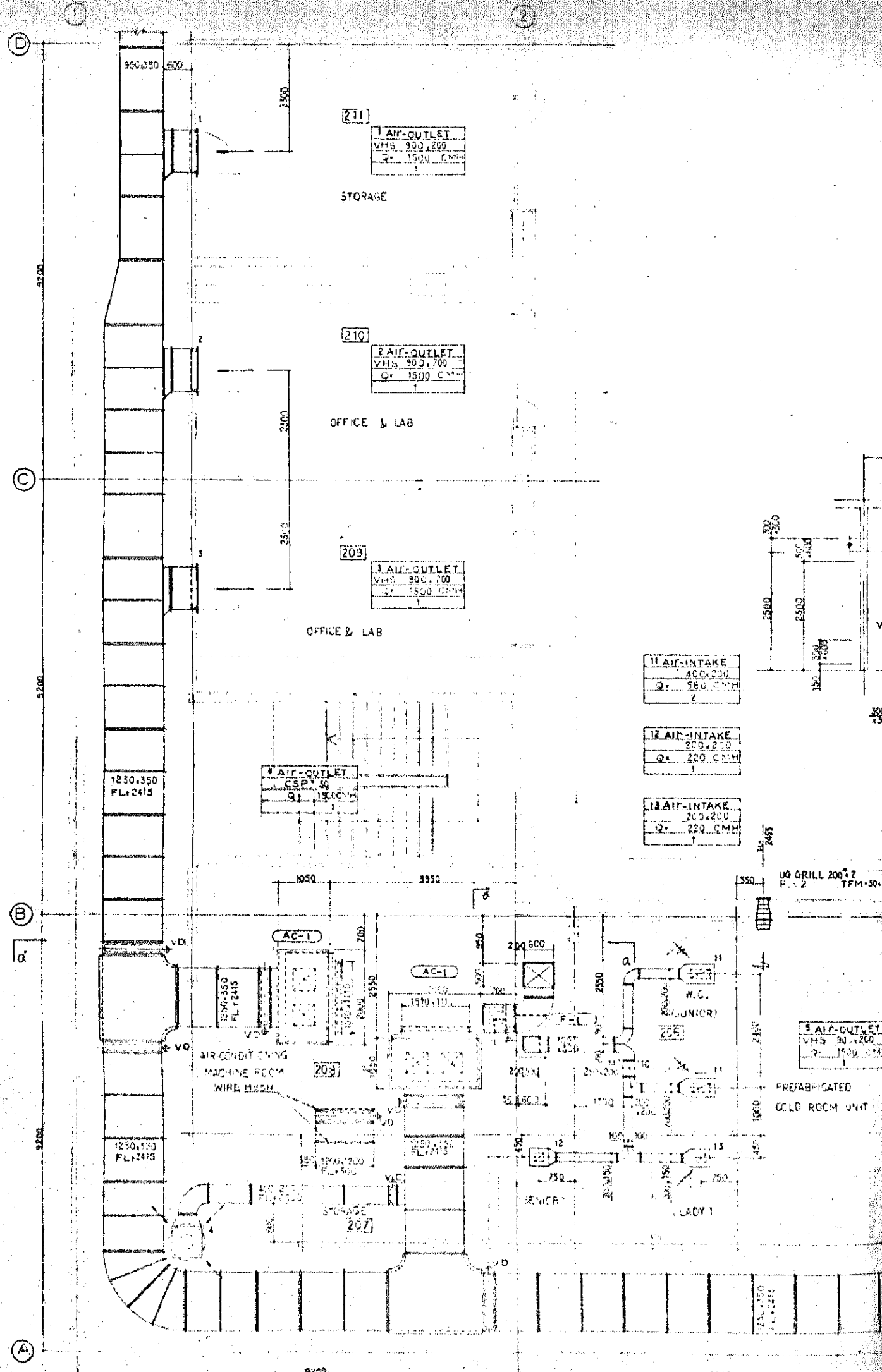
5 AIR-OUTLET
CSB # 25
Q = 640 CMH

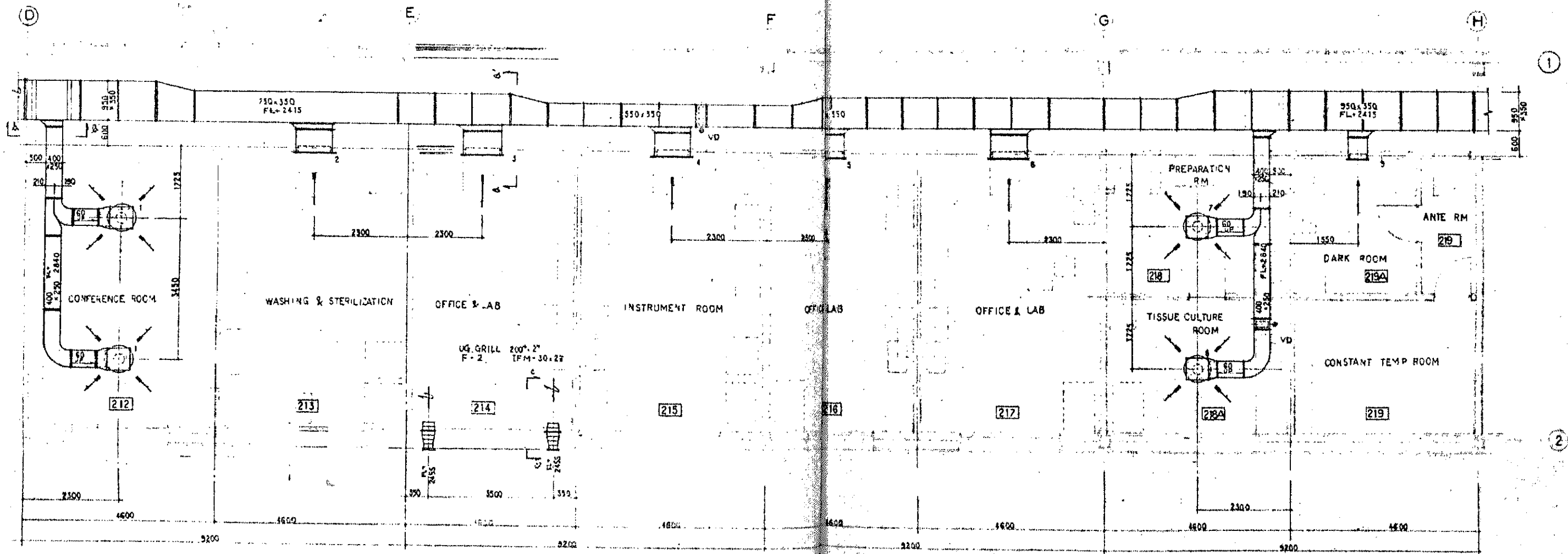
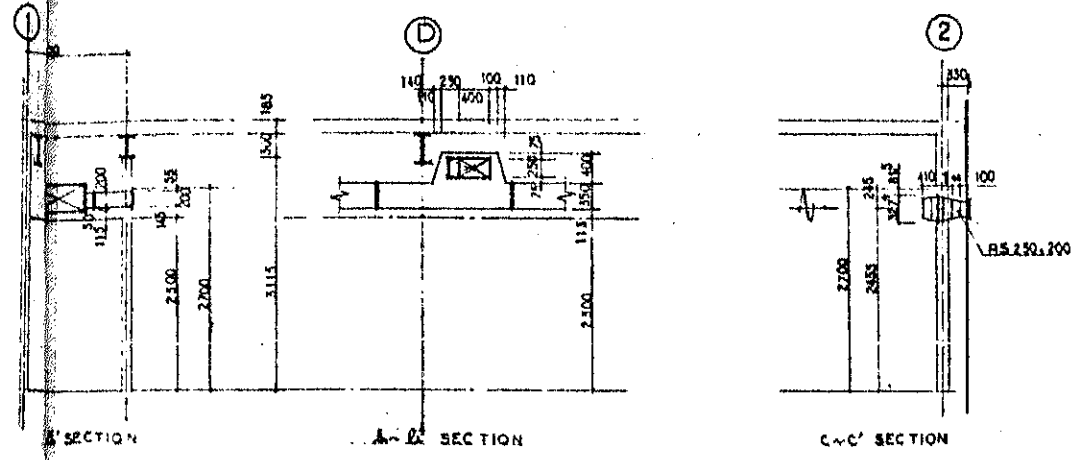
8 AIR-INTAKE
SR 350x150
Q = 1200 CMH

4 AIR-OUTLET
CSB # 25
Q = 640 CMH

LINED SURFACE SIMPNER BOARD 22.5 x 550 x 300







1 AIR-OUTLET
CSP# 23
VMS 300-200
Q = 750 CMH

2 AIR-OUTLET
VMS 300-200
Q = 750 CMH

3 AIR-OUTLET
VMS 300-200
Q = 750 CMH

4 AIR-OUTLET
VMS 300-200
Q = 750 CMH

5 AIR-OUTLET
VMS 300-200
Q = 750 CMH

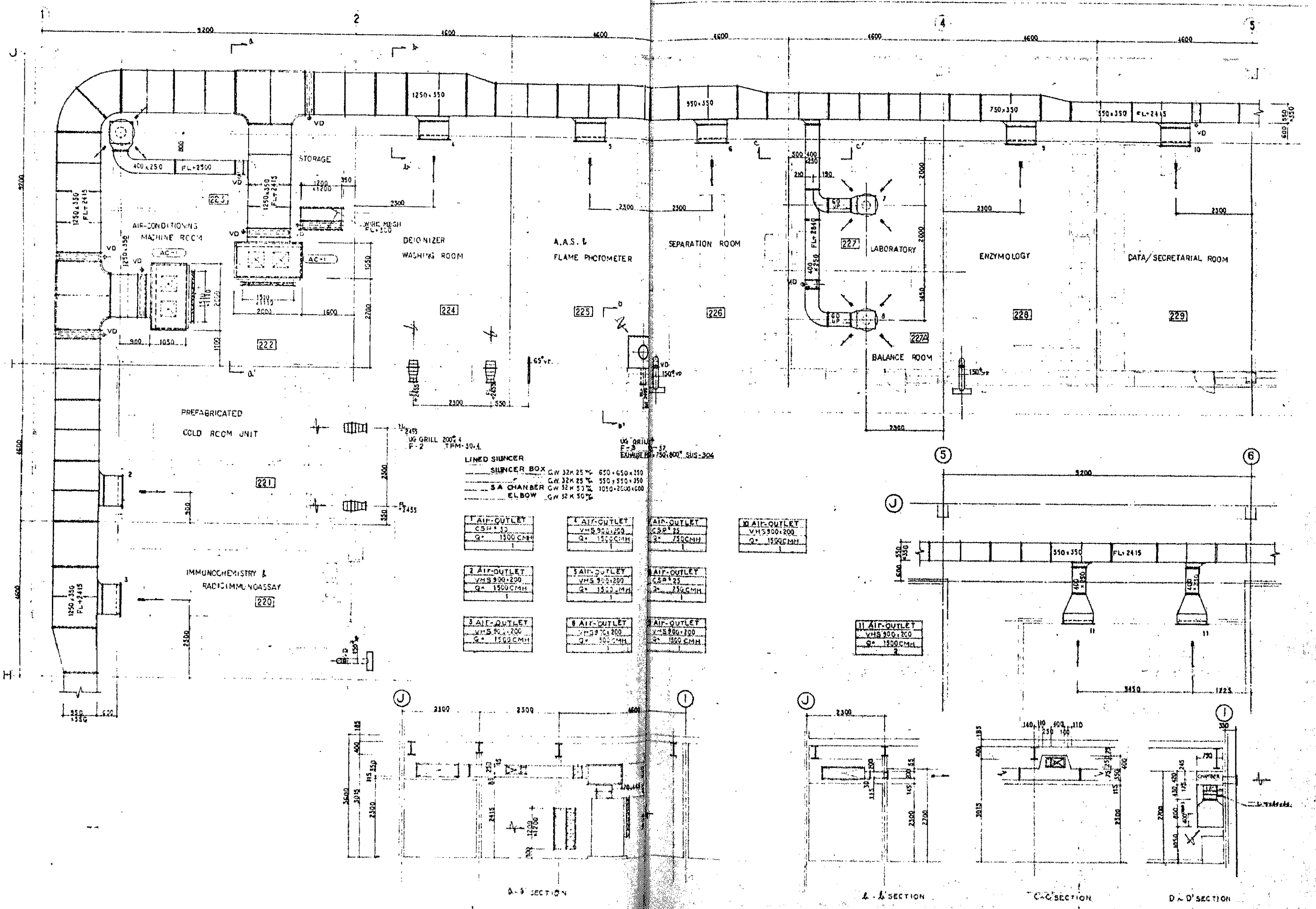
6 AIR-OUTLET
VMS 300-200
Q = 750 CMH

7 AIR-OUTLET
CSP# 23
VMS 300-200
Q = 750 CMH

8 AIR-OUTLET
VMS 300-200
Q = 750 CMH

9 AIR-OUTLET
CSP# 23
VMS 300-200
Q = 750 CMH

LINED SURGERY
SURGERY BOX GW 120 x 2200 550 x 550 x 300



LINED SILENCER

SILENCER BOX	CW 32K 25%	650 x 650 x 350
SA CHAMBER	CW 32K 25%	550 x 550 x 350
ELBOW	CW 32K 50%	1050 x 2000 x 600

1 AIR-OUTLET

CSH # 10	VMS 900 x 200	Q = 1500 CMH
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2 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
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3 AIR-OUTLET

CSH # 25	VMS 900 x 200	Q = 1500 CMH
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10 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
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2 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
---------------	--------------

3 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
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4 AIR-OUTLET

CSH # 25	VMS 900 x 200	Q = 1500 CMH
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3 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
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6 AIR-OUTLET

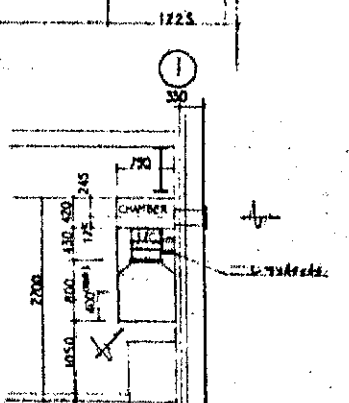
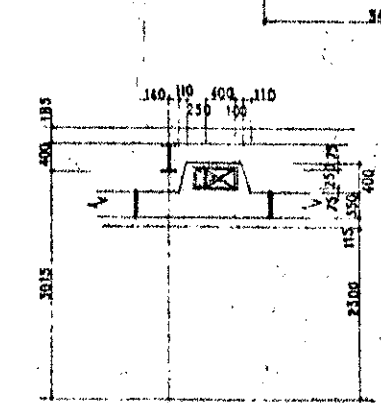
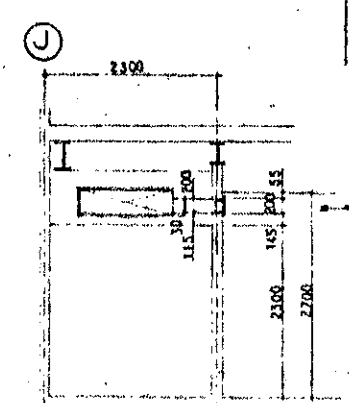
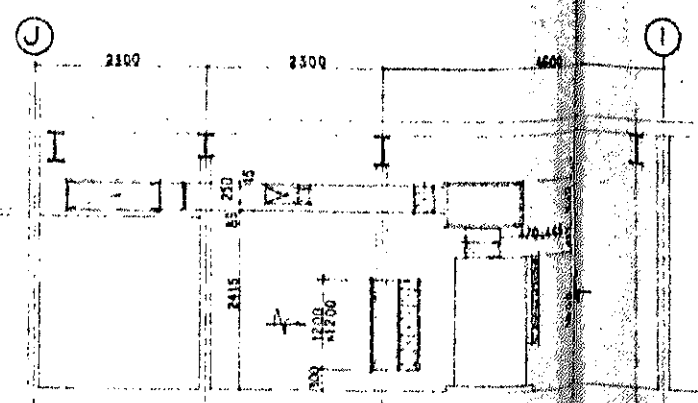
VMS 900 x 200	Q = 500 CMH
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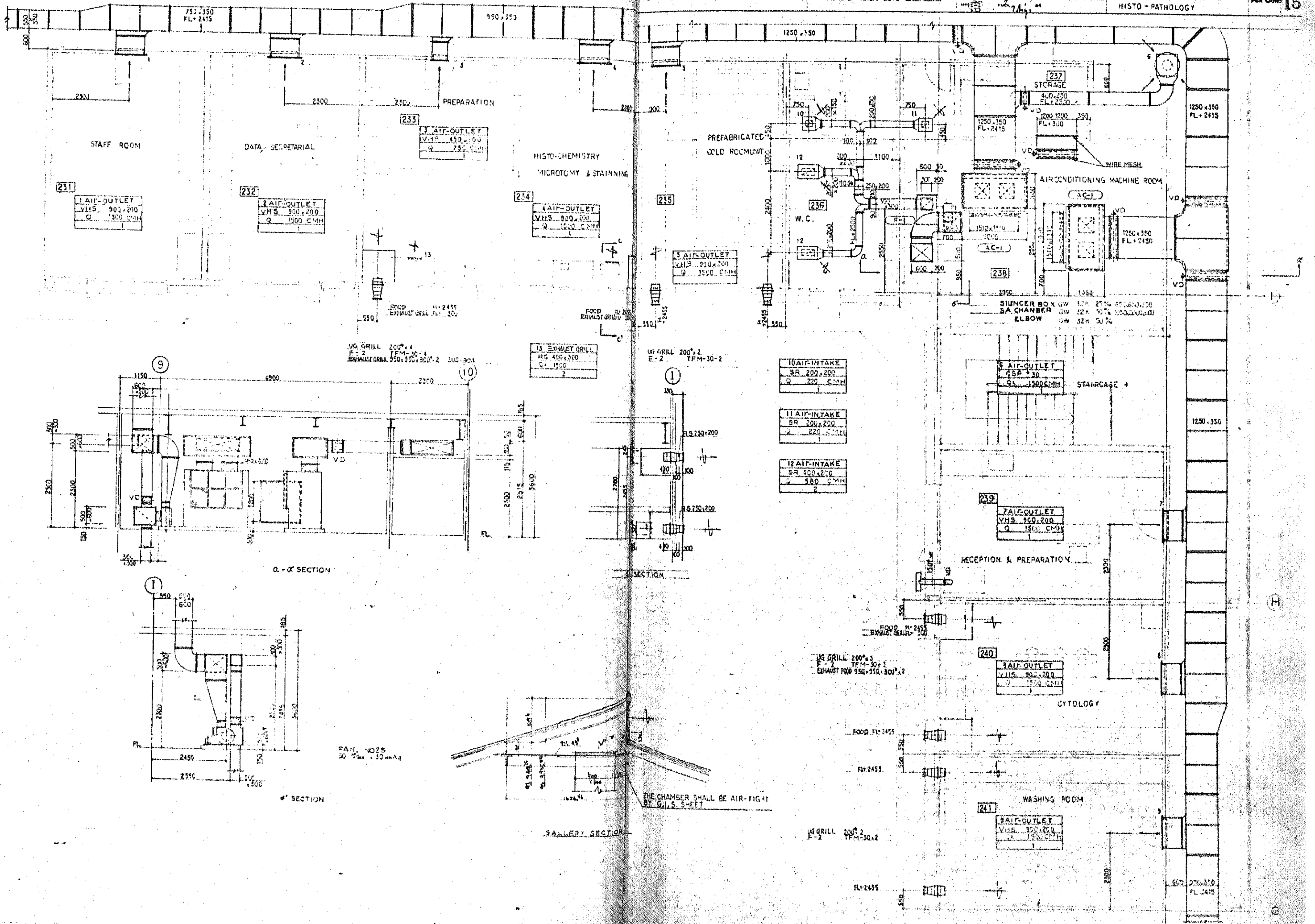
5 AIR-OUTLET

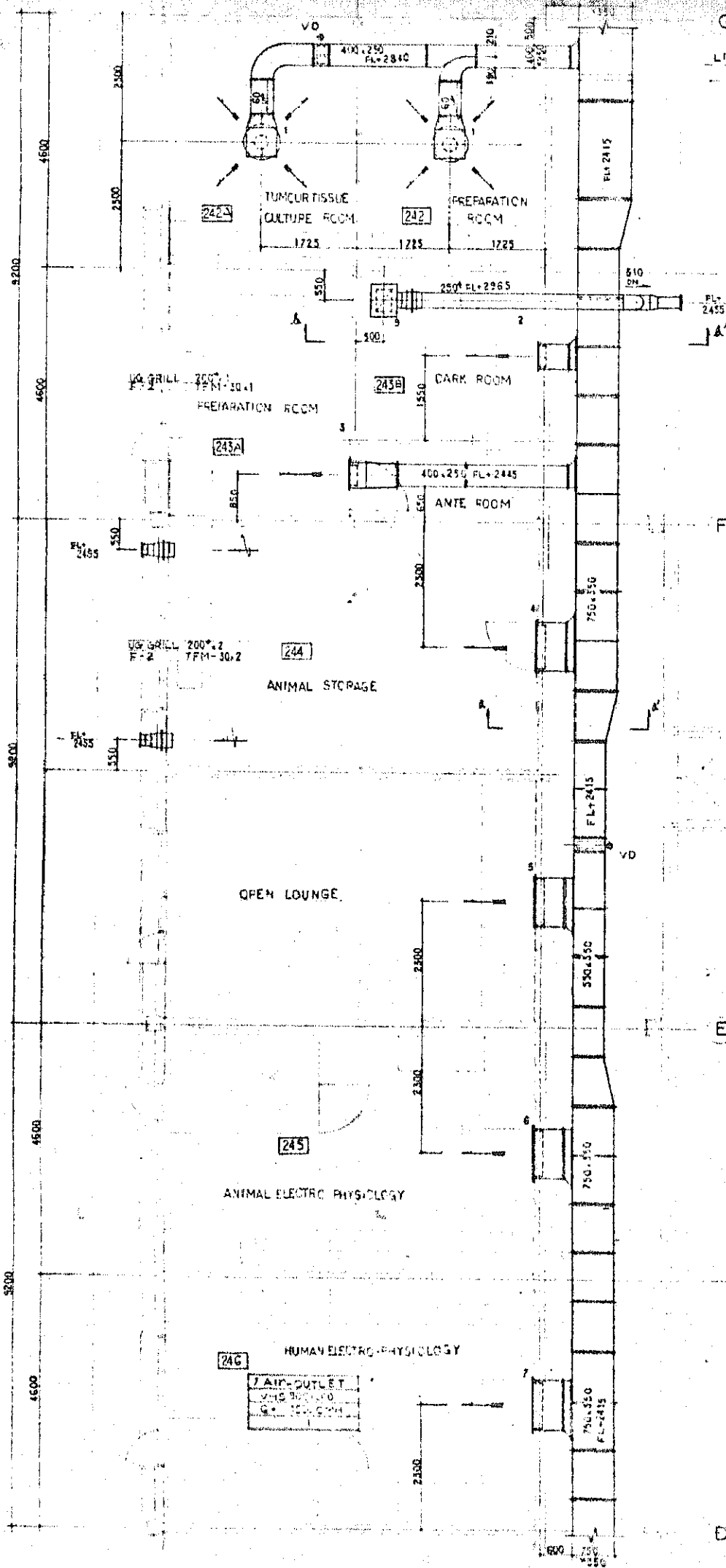
VMS 900 x 200	Q = 1500 CMH
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11 AIR-OUTLET

VMS 900 x 200	Q = 1500 CMH
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LINED SLURGER
SLURGER BOX 400x250

1 AIR-OUTLET
CSP 45
Q = 750
2

3 AIR-INTAKE
SR 400x300
Q = 1500 CMH
1

2 AIR-OUTLET
VHS 450x200
Q = 750 CMH
1

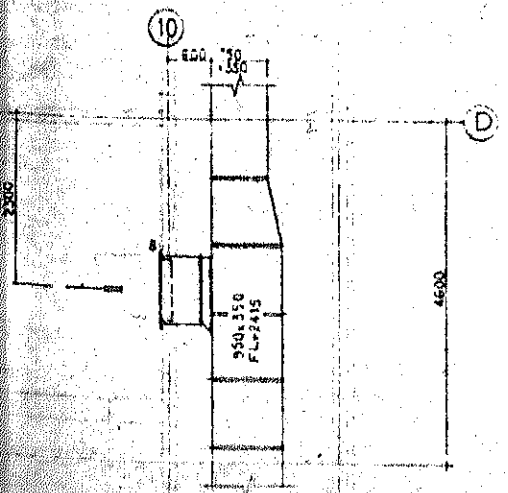
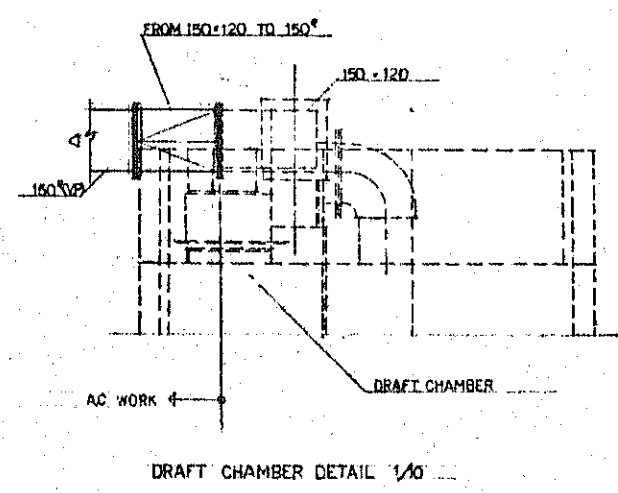
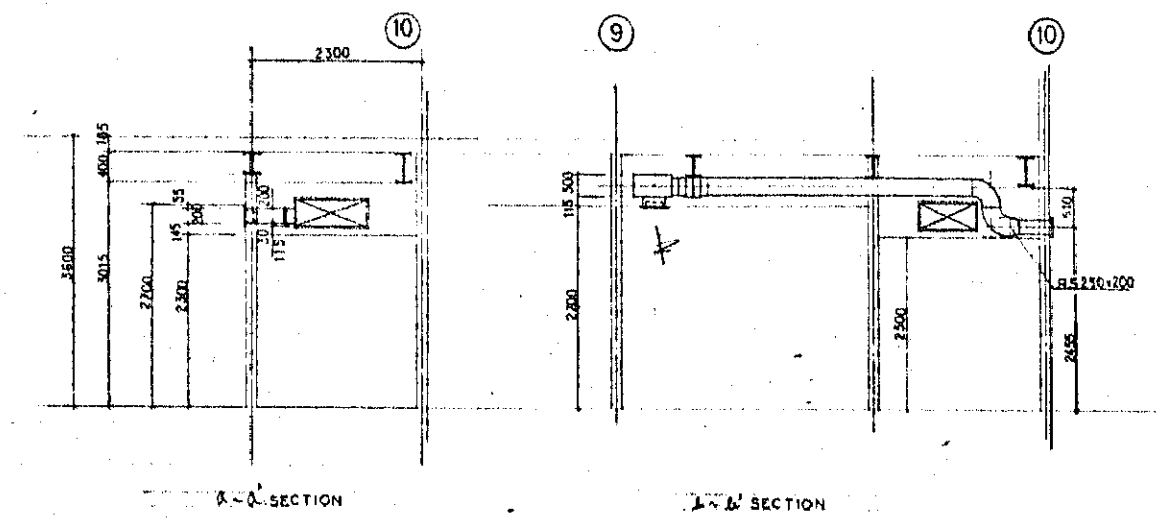
3 AIR-OUTLET
VHS 450x200
Q = 750 CMH
1

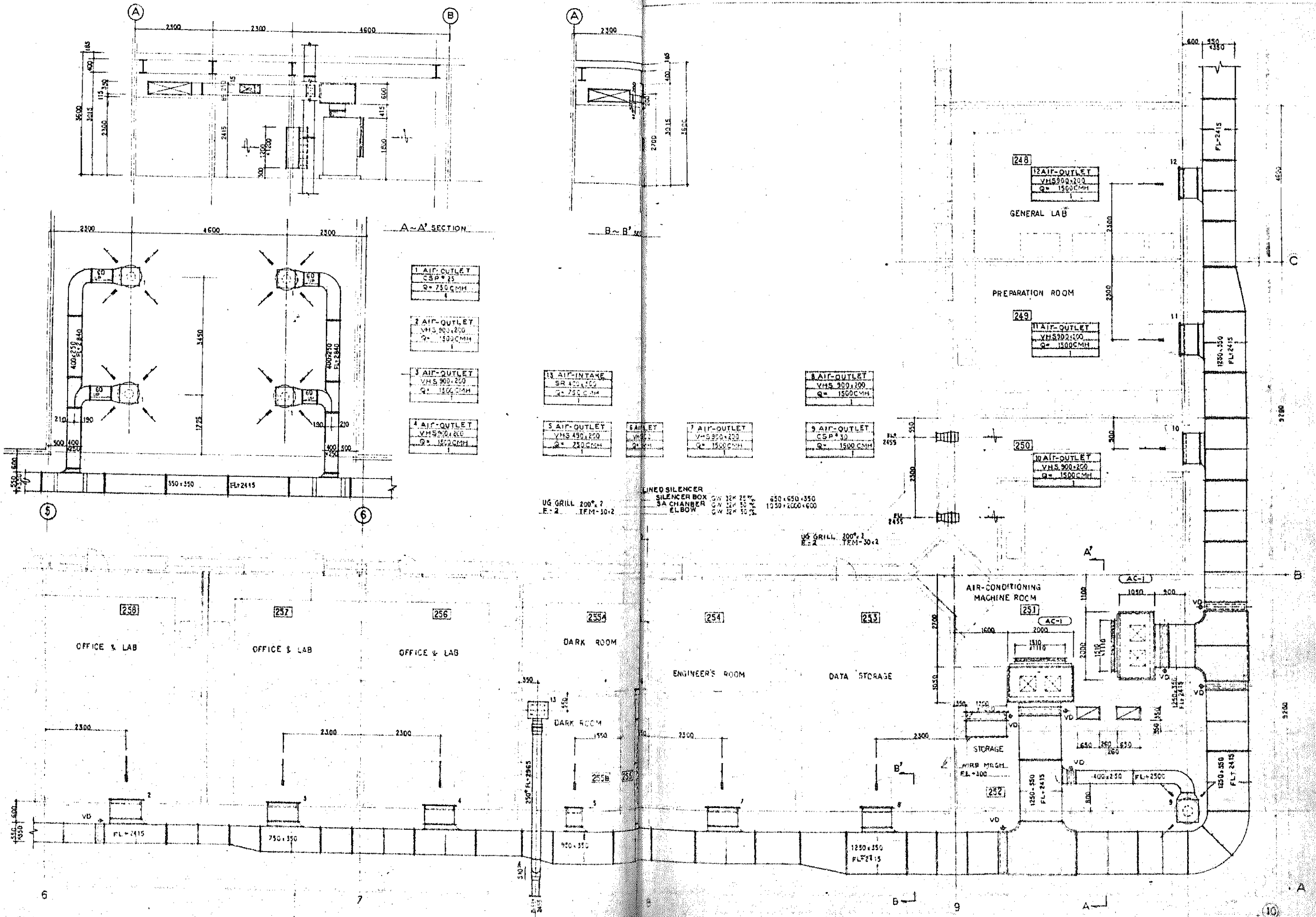
1 AIR-OUTLET
VHS 900x200
Q = 1500 CMH
1

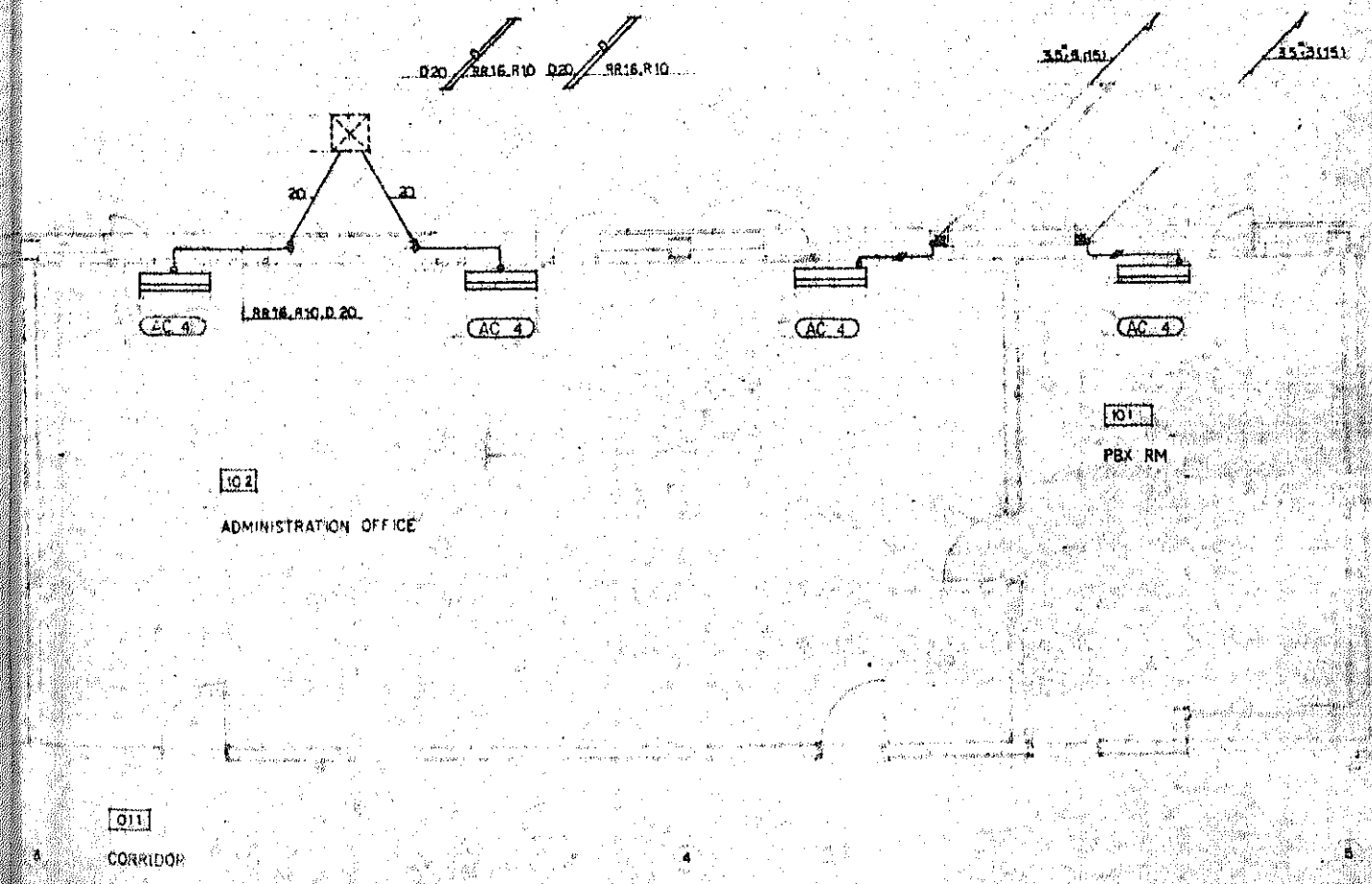
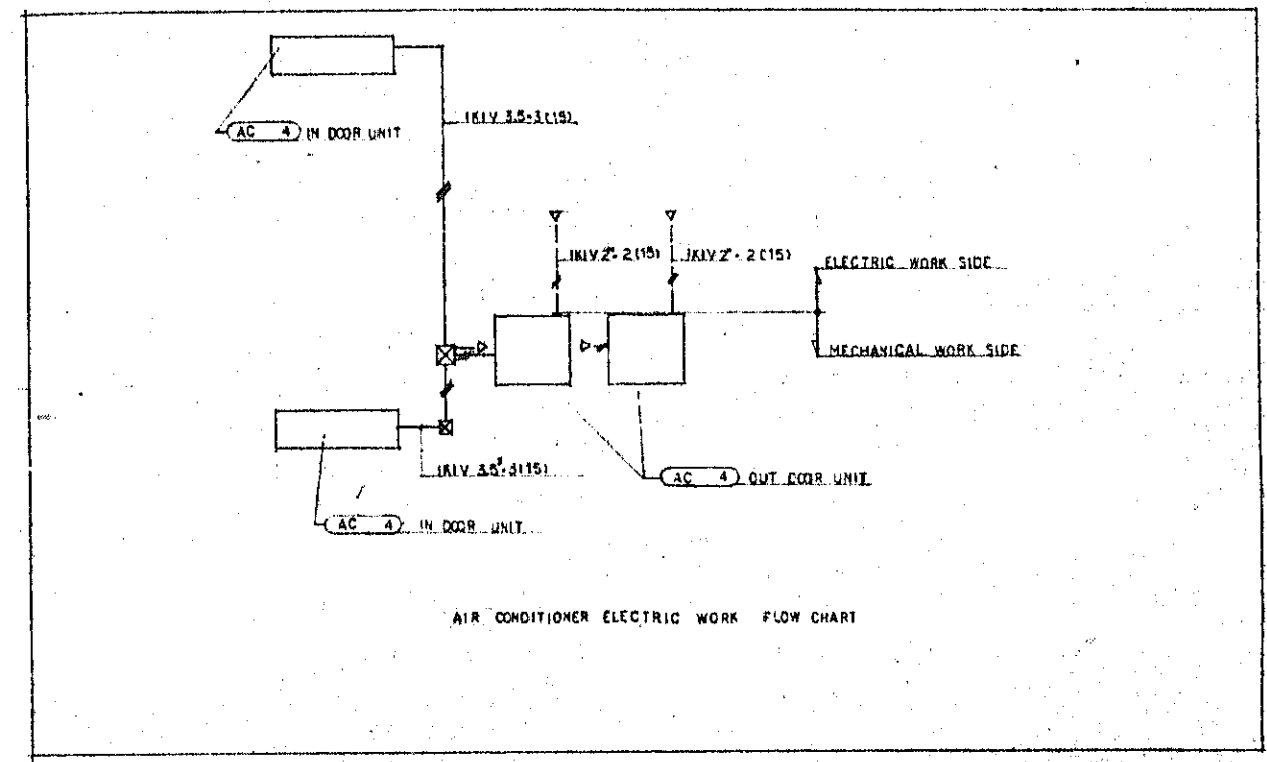
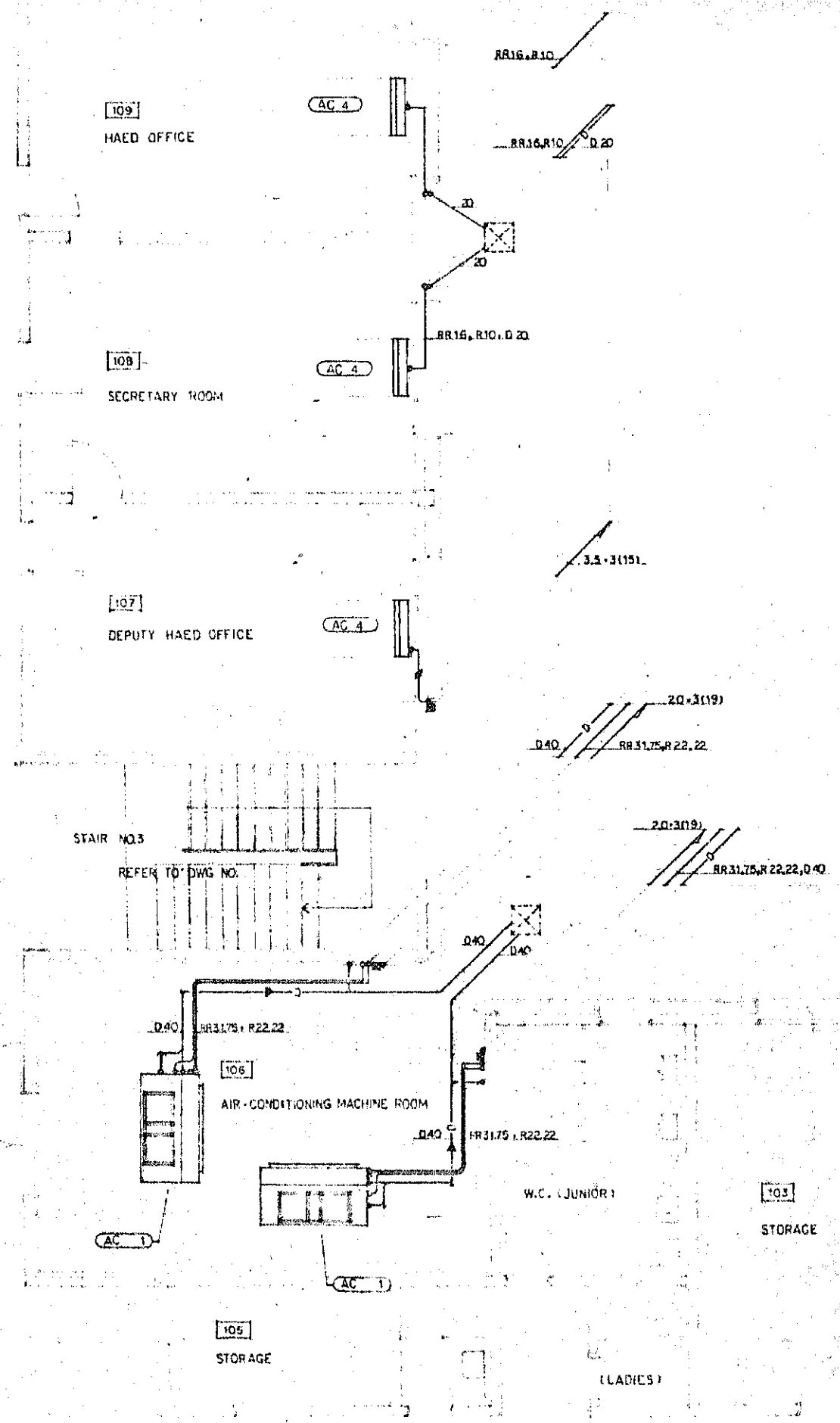
3 AIR-OUTLET
VHS 900x200
Q = 1500 CMH
1

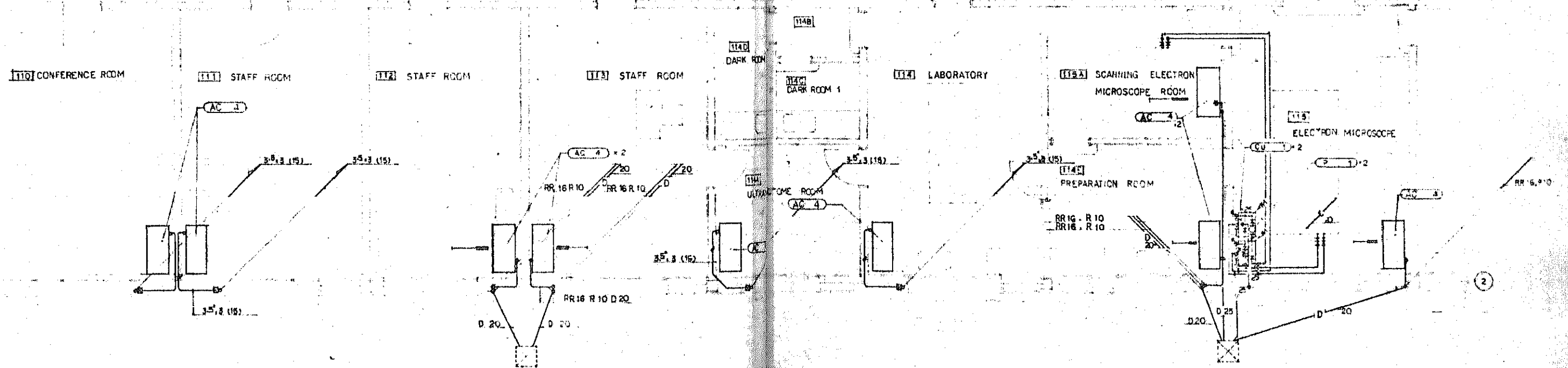
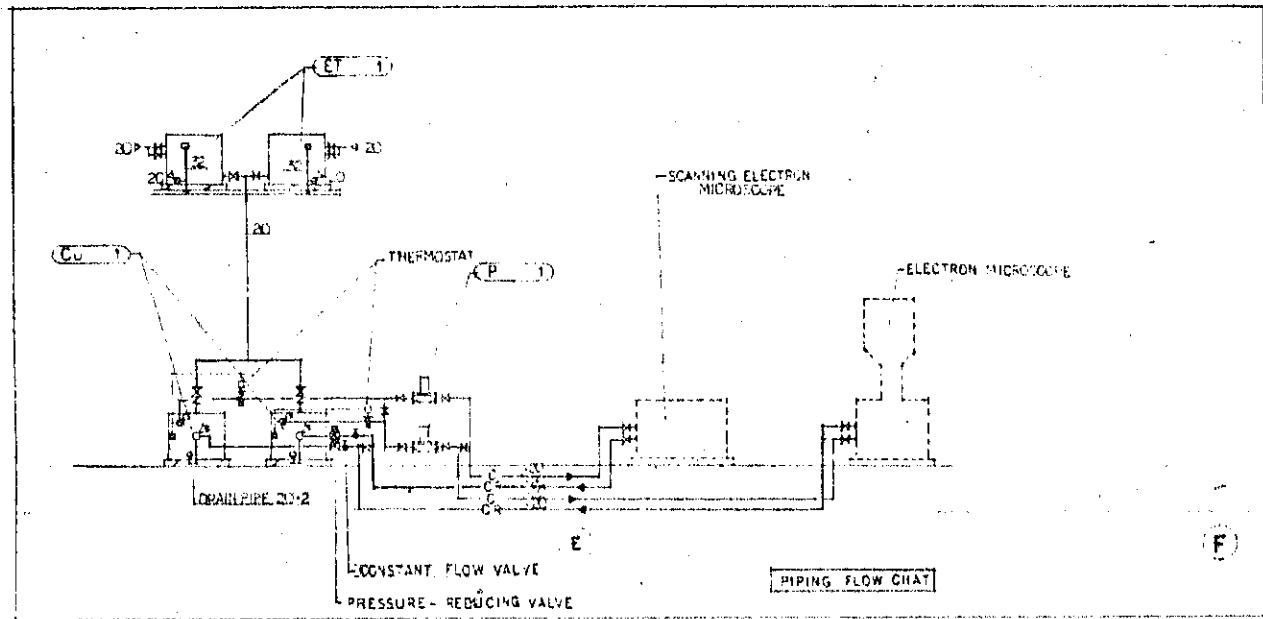
4 AIR-OUTLET
VHS 900x200
Q = 1500 CMH
1

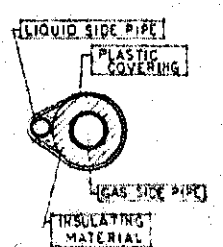
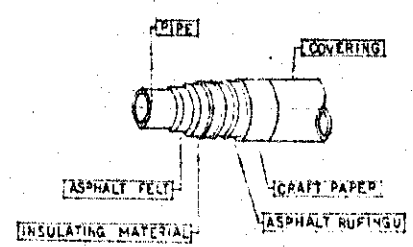
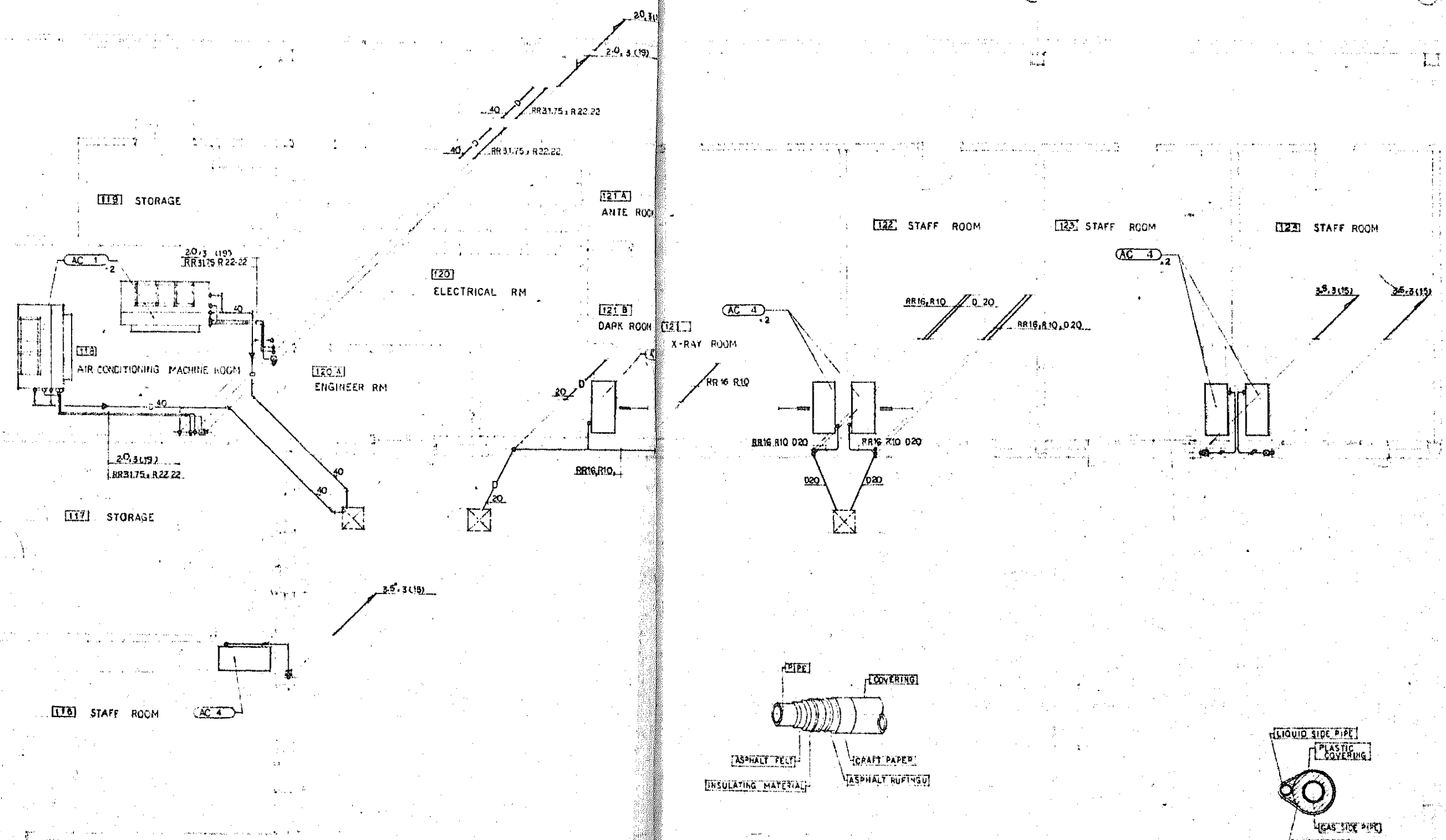
1 AIR-OUTLET
VHS 900x200
Q = 1500 CMH
CVS / R5











	INSULATING MATERIAL	COVERING
INTERIOR PIPING		VINYL TAPE
INTERIOR OPEN PIPING	HEAT ENDURANCE POLYETHYLENE FORM 32%	WATER PROOF HEMP + BLOWN ASPHALT
EXTERIOR OPEN PIPING		WATER PROOF HEMP + PLASTIC COVERING

1 2 3 4 5 6 7 8 9 10

J
I
H
G
F
E
D
C
B
A

KEY PLAN

