MITSUBISHI ELECTRIC

Changes for the Better

Lossnay

Lossnay Job Reference

CONTENTS

Fu-An Building HOY Architects & Associates 富邦建設 福安紀念館

Building information

- Site : 台灣 台北市 Taipei, R.O.C.
- Architectural design Co. : 華業建築師事務所
- Air conditioning design Co. : 築友工程顧問有限公司
- Construction operations Co. : 富邦建設股份有限公司
  HOY Architects & Associates
- Air conditioning installation Co. : 東元電機股份有限公司
  TECO Electric & Machinery Co. Ltd
- Completion : 2005
- Structure : 地上11層地下2層
  11 above-ground floors and two below-ground floors
- Building area (m^2) : 295
- Total floor area (m^2) : 4,602
- Air conditioning method : Air cooled heat pump type VRF + ICE + HRV (Lossnay)

Appearance

Care has been taken to preserve and maintain the ecological environment by preserving the existing environment as much as possible and increasing plants that butterflies and birds stay. In order to maintain the physical environment, energy consumptions have been reduced by adopting energy saving, high efficiency, automatically controlled devices and substitution energies (solar power generation, utilization of rain water and so on) and utilizing natural energies.
Giving priority to the energy saving, the bearing, shapes of buildings and openings on them, or others, have been determined selectively. Moreover, to reduce loads on the air-conditioning, equipments such as blind boards or the like and solar power panels have been installed on the southern face.
Regarding air-conditioning equipment, the power consumption at peak hours has been reduced using VRF air-conditioning system selectively and combining the heat regeneration, which utilizes ice, and total heat-exchange ventilators, in addition to the measures to reduce loads on the southern face as mentioned above. Furthermore, it is designed to provide healthy and pleasant environments by monitoring and measuring indoor air constantly with CO_2 sensors.

Equipment list

( ) shows item No.

Ceiling concealed type Lossnay

LGH-50RX3	3 units	(HEX-50)
LGH-80RX3	8 units	(HEX-80)

Ceiling concealed type VRF indoor unit

PDFY-P20VM-A	1 unit	(F1)
PDFY-P80VM-A	16 units	(F8)
PEFY-P125VMH-A	7 units	(F12)
PEFY-P140VMH-A	5 units	(F14)
PEFY-P200VMH-A	10 units	(F20)

Air cooled heat pump type VRF outdoor unit

PUHY-P355VBM-B1	9 units	(VRS-35)
PUHY-P560VBM-B1	3 units	(VRS-56)

Ice storage unit

STY-P17UM-A	11 units	(STY-17)

MA remote controller

PAR-20MAA	3 units	(TS)

Lossnay installed in attic.

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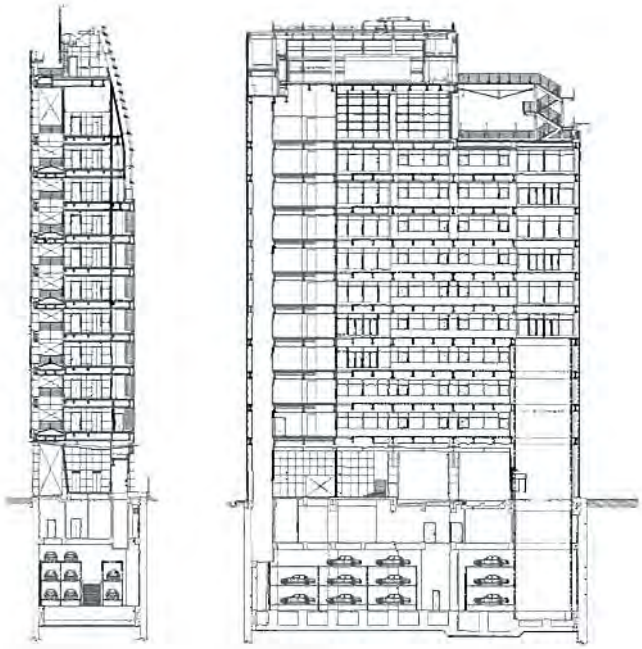
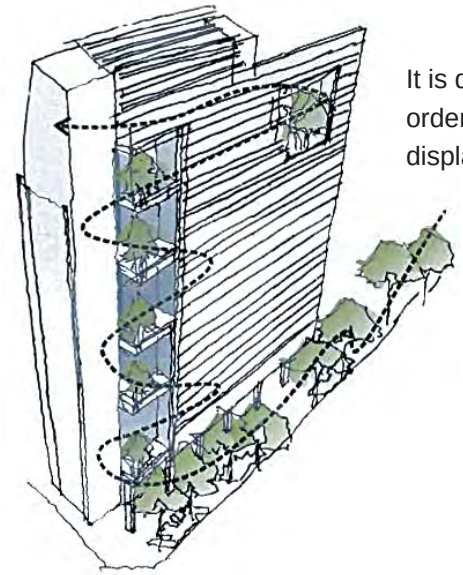
Equipments like blind boards or the like have been installed on the southern face. Solar power panels have also been installed in order to reduce the heat irradiation into rooms by direct sun-light and utilize natural resources.



Lengthwise cross section

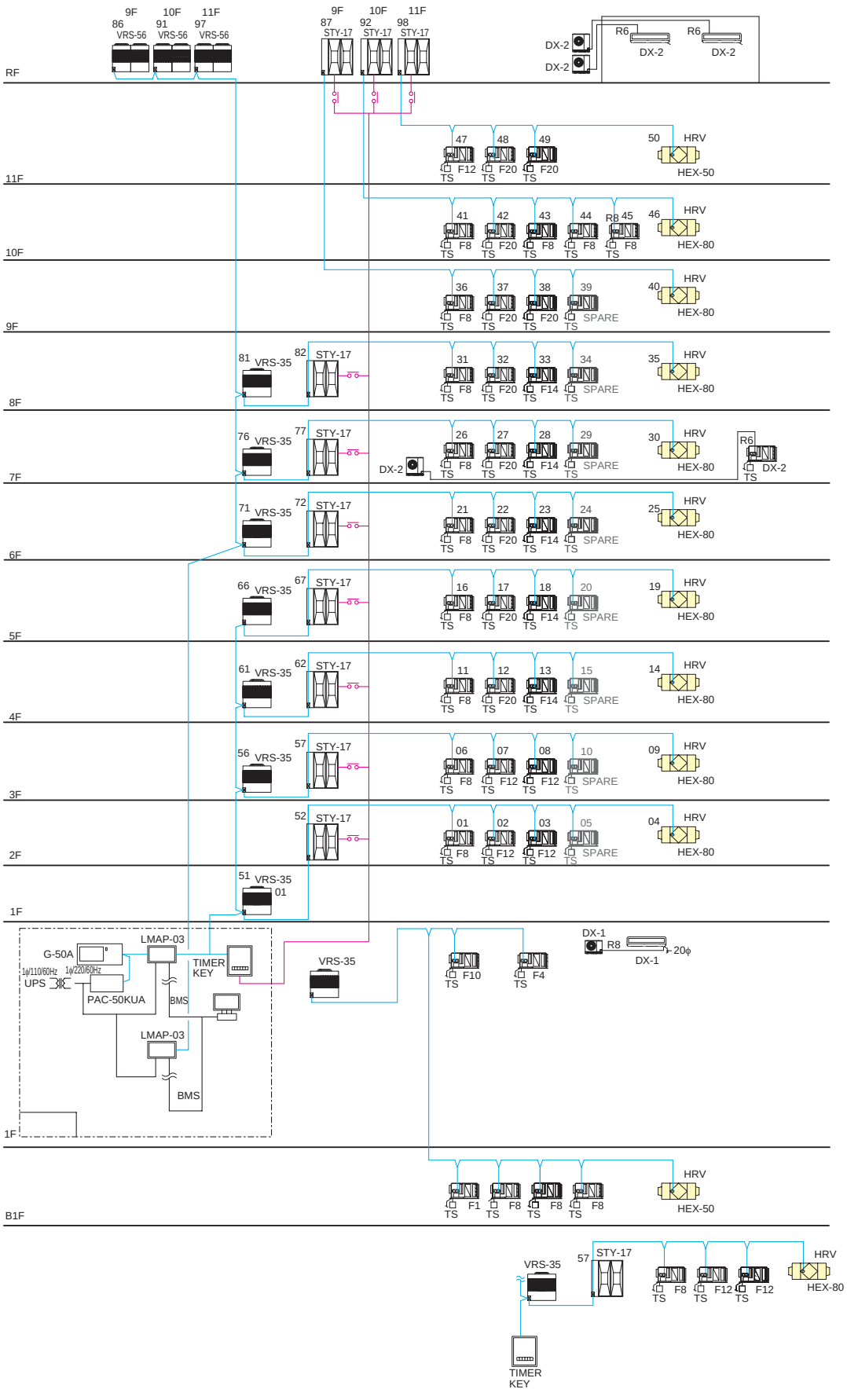
Sideways cross section



It is designed to grow plants on stereoscopic and multistage beds in order to increase the green areas by its development. Ecological display corridors will be constructed in the building and on the roof.

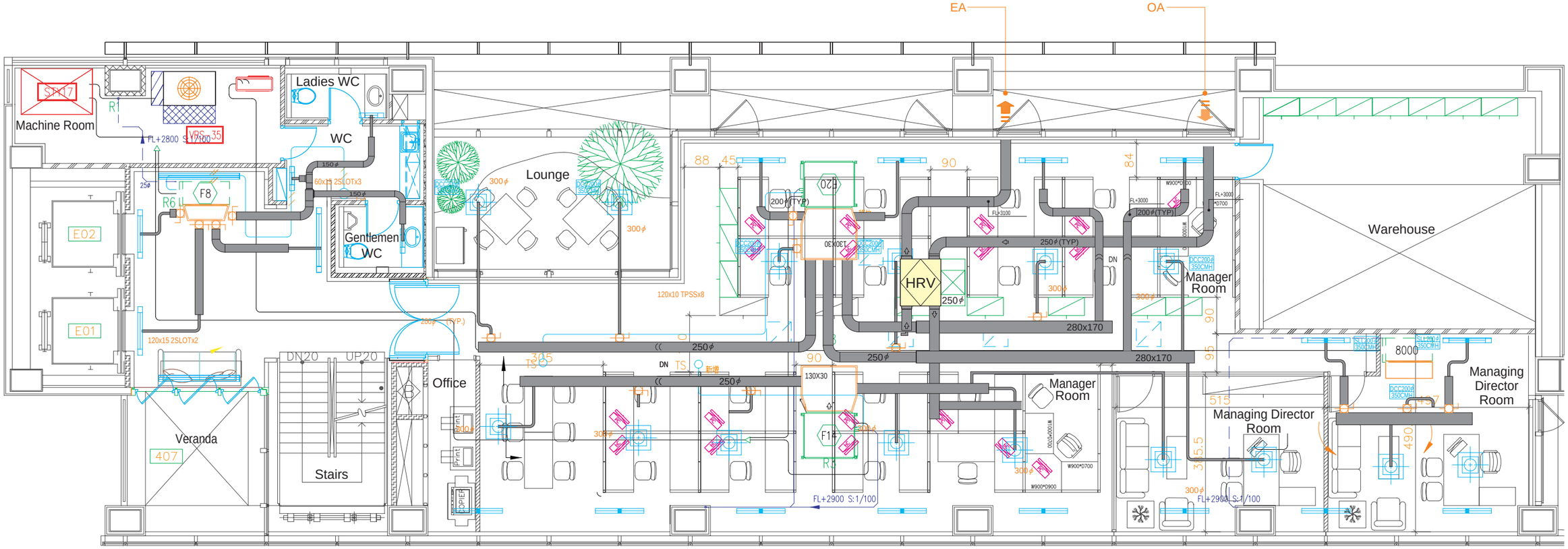
Fu-An Building HOY Architects & Associates 富邦建設 福安紀念館

Air conditioning system design



Fu-An Building HOY Architects & Associates 富邦建設 福安紀念館

Air conditioners lay out



Unit : mm

Opus International Consultants

Building information

- Site : Christchurch, New Zealand.
- Architectural design Co. : Opus International Consultants Ltd
- Air conditioning design Co. : Beattie Air Conditioning Ltd
- Construction operations Co. : C.B.D. Construction Ltd
- Air conditioning installation Co. : Beattie Air Conditioning Ltd
- Completion : March, 2006
- Structure : 2 Story Office
  BlockConcrete / Glass / Steel Roof
- Building area (m^2) : 3,200
- Total floor area (m^2) : Ground Floor 900 / 1-st Floor 1,300
- Air conditioning method : Air cooled heat pump type VRF
  + HRV (Lossnay)

Appearance

The Climate in Christchurch New Zealand is very unique as it can be very Hot in Summer as much as 38degC and in Winter it can Snow with temperatures as low a minus 10degC.
This building has designed and installed the air conditioning and ventilation systems for Opus International Consultants.
Three outdoor units are connected to many indoor units located on both floors of this building. Each of these three systems has the ability to heat and cool simultaneously and this provides the flexibility of controling cope with the large number of zones required.
The Air Conditioning equipment chosen was from the Air cooled heat pump type VRF, R2 Simultaneous Heating and cooling range that has been used in conjunction with Lossnay air to air heat recovery ventilators. The heat exchangers recover heat from the building's exhaust air and use it to preheat incoming fresh air to meet Building Code requirements.
These Lossnay heat recovery ventilators have an efficiency of approximately 85% and thereby eliminating the need for any electric reheating of the fresh air in winter and provide higher efficiencies in summer.

Equipment list

Ground floor

Ceiling concealed type Lossnay

LGH-100RX4	3 units

Ceiling cassette type VRF indoor unit

PLFY-P20VCM	6 units
PLFY-P32VCM	3 units
PLFY-P40VCM	3 units

Air cooled heat pump type VRF outdoor unit

PURY-P650YGM	1 unit

VRF multi controller

PAC-YT51CRA	13 pieces

Sprit type packaged air conditioner

PCA-RP3GA	1 unit

First floor

Ceiling concealed type Lossnay

LGH-100RX4	4 units

Ceiling cassette type VRF indoor unit

PMFY-P20VBM	7 units
PLFY-P32VCM	2 units
PLFY-P40VCM	24 units
PDFY-P50VM	3 units

Air cooled heat pump type VRF outdoor unit

PURY-P600YGM	1 unit

VRF multi controller

PAC-YT51CRA	12 pieces

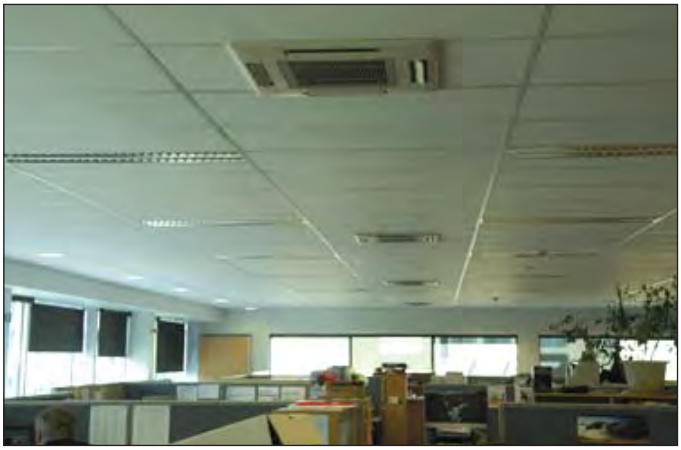
Plant room

VRF contloller

G-50A	1 piece
PAC-YG10HA	1 piece

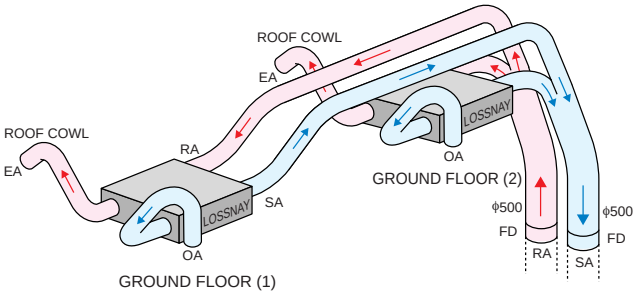
Opus International Consultants

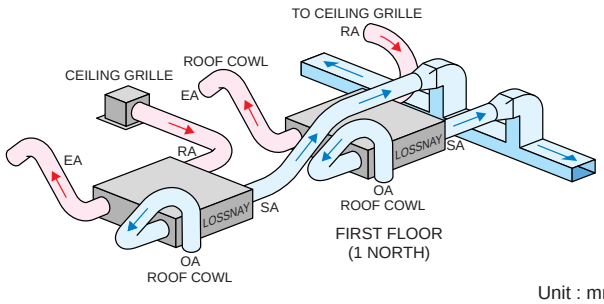
Reception, ground floor



Office, first floor

Air conditioning system design



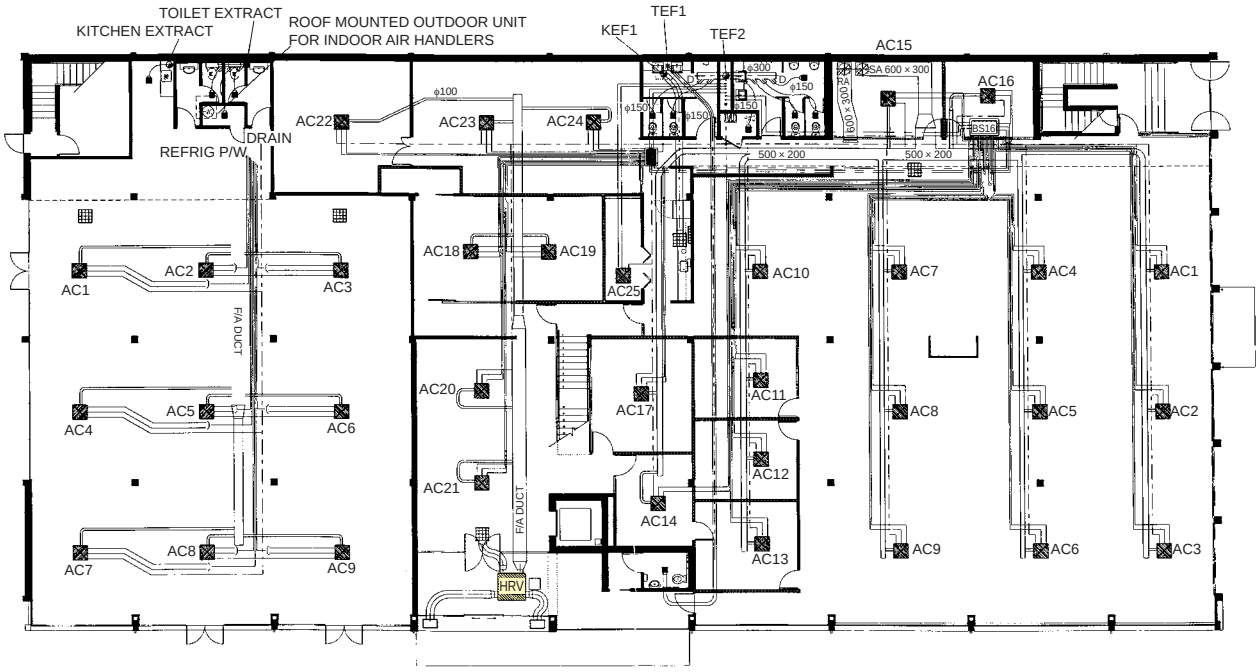


Unit : mm

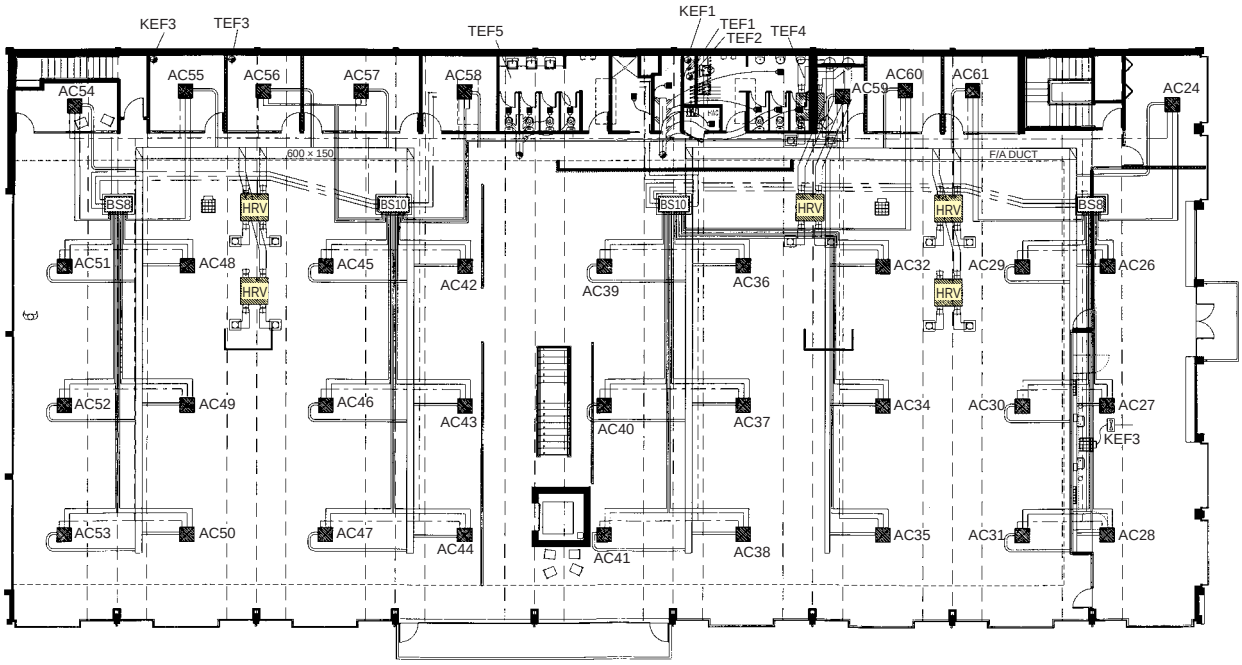
Opus International Consultants

Air conditioners lay out

Ground Floor



First Floor



Unit : mm

Ministry of Finance Building

Building information

- Site : Hanoi, Viet Nam
- Architectural design Co. : SAfi Deita Joint-venture co.
- Air conditioning design Co. : HP Ha Noi
- Construction operations Co. : General of Ha Noi contruction 4th co.
- Air conditioning installation Co. : TEMEX Co. LTD
- Completion : May, 2006
- Structure : 12above-ground floors and one below-ground floors
- Total floor area (m^2) : 23,000
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

This is the Financial Department's working office and is one of the biggest projects in Hanoi using the air cooled heat pump type VRF and HRV (Heat recovery ventilations). It is one of the intelligent building using connected BMS and the first project which are installed VRF combined HRV in Viet Nam.

Equipment list

● Ceiling concealed type Lossnay and remote controller

LGH-50RX4	1 unit
LGH-100RX4	84 units
LGH-150RX4	11 units
PZ-52SF	14 pieces

● Ceiling concealed type VRF indoor unit

65 units

● Ceiling cassette type VRF indoor unit

445 units

● Air cooled type VRF outdoor unit

65 units

● VRF controller

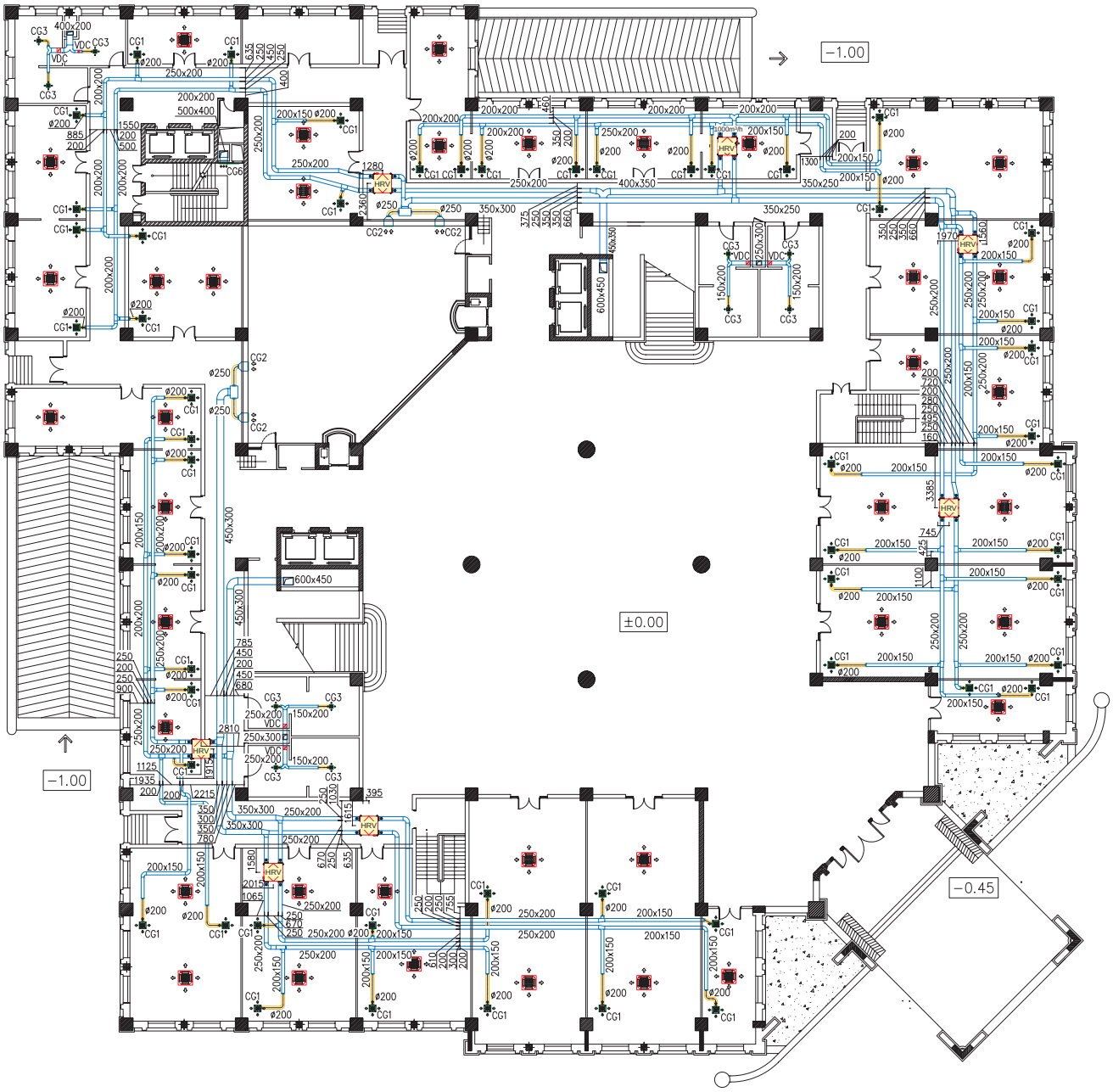
G-50A	2 pieces
PAC-SC50KUA	3 pieces
PAC-SF46EPA	2 pieces
PAC-YG10HA	2 pieces

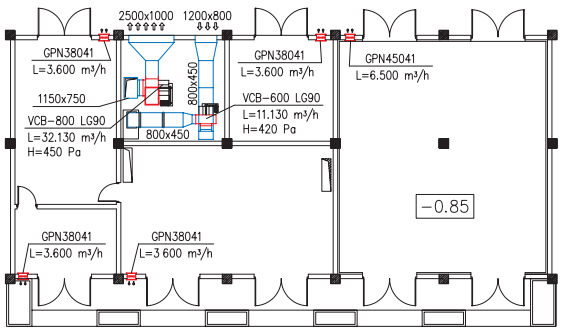
Cassette-type indoor unit installed in the ceiling.

Ministry of Finance Building

Air conditioners lay out

First floor - fourth floor



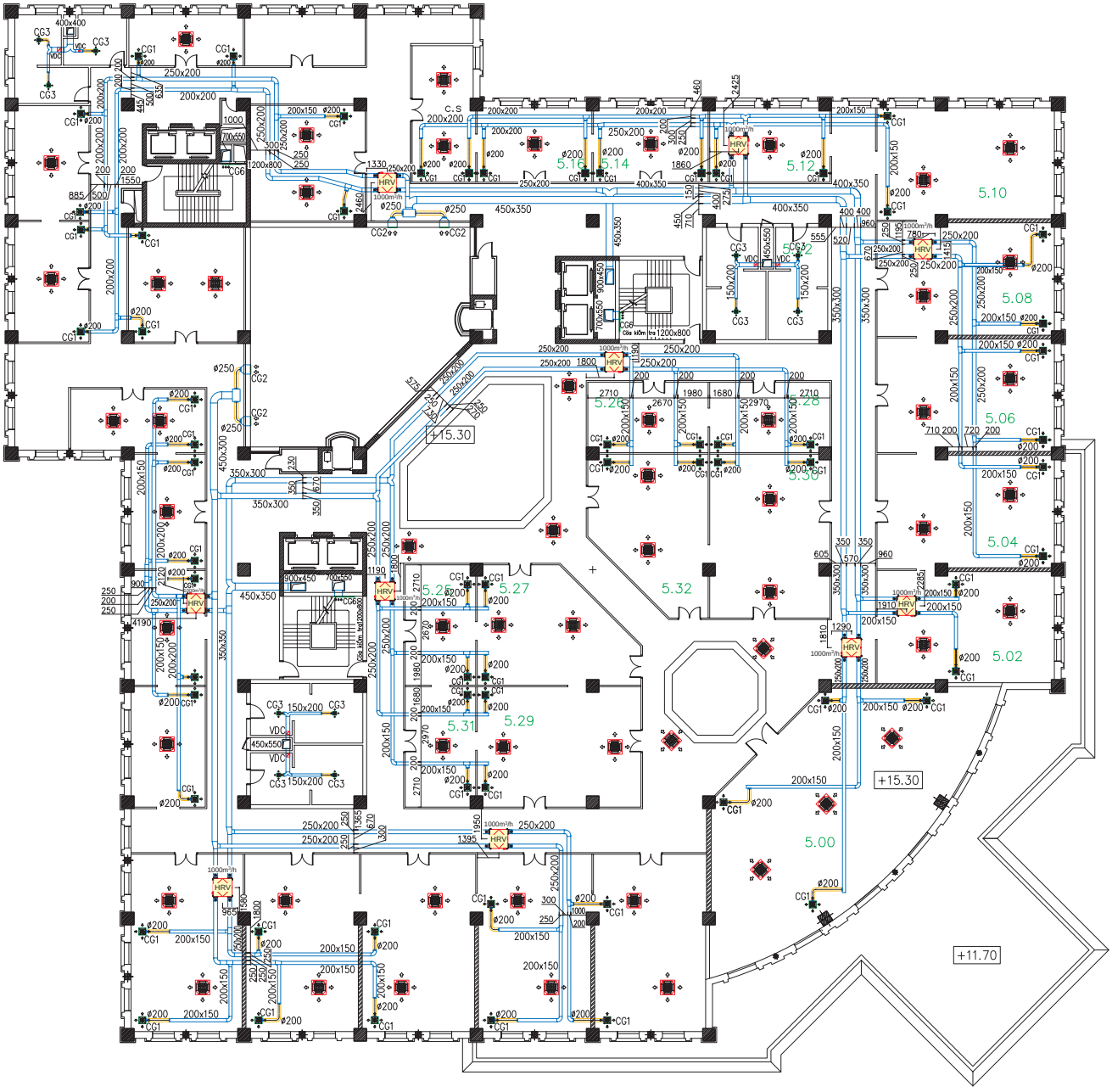


Unit : mm

Ministry of Finance Building

Air conditioners lay out

Fifth floor - eighth floor



Unit : mm

Cork Country Council (Cork Ireland)

Building information

- Site : Cork Ireland
- Air conditioning installation Co. : Frank Roche Services
- Completion : December, 2002
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

In this building, outdoor air is supplied directly to an outdoor air processing unit (OA processing unit) without passing through an indoor air-conditioning unit, and entering each room via the floor surface. 24 l/sec (86.4 m^3/h) is expelled from each grille, with four grilles installed per room. Heating and cooling are provided by VRFs, and ceiling cassette-type indoor units are installed in the limited ceiling space.

Equipment list

● Ceiling concealed type Lossnay (OA processing unit)

GUF-50RD	5 units
GUF-100RD	10 units

● Ceiling cassette type VRF indoor unit

PLFY-P32VKM	14 units
PLFY-P40VKM	6 units
PLFY- P50VKM	19 units
PLFY-P63VKM	1 unit
PLFY-P80VKM	1 unit
PMFY-P20VBM	33 units

● Air cooled heat pump type VRF outdoor unit

PURY-P200YMF	4 units
PURY-P250YMF	10 units

● VRF multi controller

PAR-F27MEA	44 pieces
G-50A	2 pieces

● VRF BC controller

CMB-P104V	4 pieces
CMB-105V	2 pieces
CMB-P106V	4 pieces
CMB-P108V	3 pieces
CMB-P1010V	2 pieces
CMB-P1013V	1 piece

Weather cover is fixed the wall, it connected with duct.

Fresh air supply grille.

Galway Financial Cetre

Building information

- Site : Galway Ireland
- Air conditioning installation Co. : Kelly Refrigeration
- Completion : 2002
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

In the building, an air cooled heat pump type VRF is used with the heat recovery ventilator Lossnay.

Equipment list

- **Ceiling concealed type Lossnay**

LGH-35RX$_3$	28 units

- **Ceiling cassette type VRF indoor unit**

PLFY-P32VBM	14 units

- **Ceiling concealed type VRF indoor unit**

PEFY-P40VMM	54 units

- **Air cooled heat pump type VRF outdoor unit**

PURY-P250YMF	14 units

- **VRF multi controller**

PAR-F27MEA	50 pieces
MJ-103MTRA	2 pieces

Brinks Bank Security Company (Co Cork)

Building information

- Site : Mallow Ireland
- Air conditioning installation Co. : Frank Roche Services
- Completion : December, 2002
- Air conditioning method : Split type air conditioner + HRV (Lossnay)

Appearance

The building is very air-tight due to the severe climate, and there are very few windows out of concern for security. This building requires mechanical ventilation. Lossnays are therefore used which are capable of conserving energy while providing ventilation. Heating and cooling are provided by split-type air conditioners.
A Lossnay was installed in the building's warehouse, with ducts leading to the offices providing ventilation.

Equipment list

- **Ceiling concealed type Lossnay**

LGH-100RX$_3$	1 unit

- **Sprit type packaged air conditioner**

PLA-P5AA PUH-P5YGAA	3 systems

- **Wall mounted type room air conditioner**

MSH-C18TV MUH-C18TV	1 set

Lossnay unit is suspended from ceiling.

Ena Culture-Center

Building information

- Site : Ena-City, Gifu, Japan
- Architectural design Co. : OKA SEKKEI.ARCHITECTS AND ENGINEERS
- Air conditioning design Co. : SANKI ENGINEERING CO.LTD
- Construction operations Co. : JDC Coporation
- Air conditioning installation Co. : SANKI ENGINEERING CO.LTD
- Completion : March, 1984
- Structure : RC 3-stories
- Building area (m^2) : 14,380
- Total floor area (m^2) : 6,103
- Air conditioning method : Absorption chiller + Cooling tower + Boiler + HRV (Lossnay)

Appearance

The Ena Culture-Center is a functional multi-use facility including the Cultural Building with a large hall capable of seating over 900 people, a library of interest to all generations with four viewing rooms, and the Central Community Center with 12 multi-purpose rooms.

Equipment list

( ) shows item No.

- **Commercial type Lossnay**

LP-800SQ$_4$ [Custom made] (HX-1)
Similar as the model LU-502 with fans
Supply air volume : 7,500m^3/h Static pressure : 1.0Pa
Exhaust air volume : 8,200m^3/h Static pressure : 2.0Pa

LP-2500S [Custom made] (HX-2)
Similar as the model LU-504 with fans
Supply air volume : 25,000m^3/h Static pressure : 2.0Pa
Exhaust air volume : 25,000m^3/h Static pressure : 2.6Pa

LP-800SQ$_4$

- **Absorption chiller**

2 units

- **Boiler**

1 unit

- **Cooling tower**

2 units

- **Air handling unit**

6 units

- **Smoke exhaust fan**

3 units

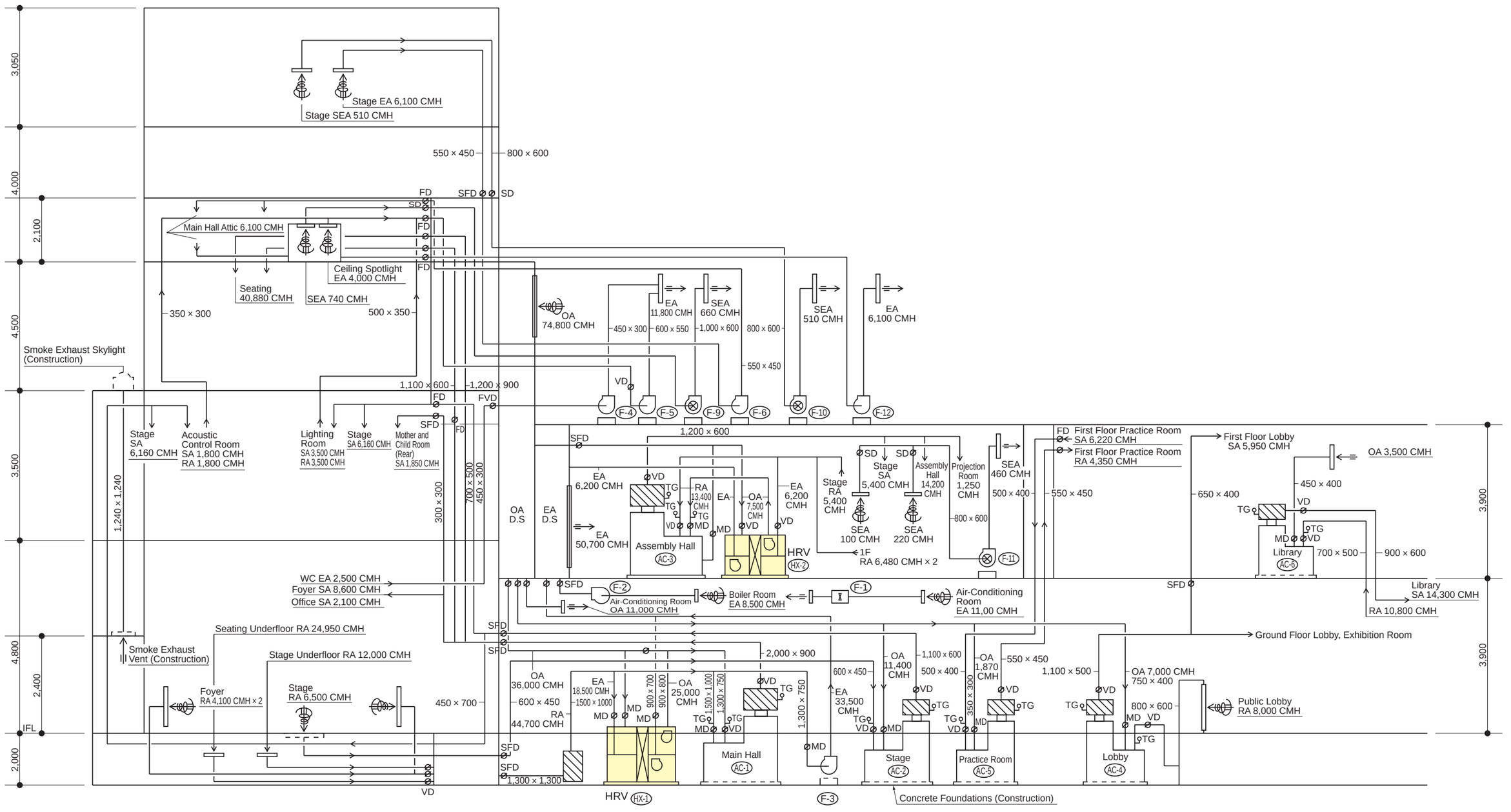
- **Ventilator**

22 sets

LP-2500S

Ena Culture-Center

Air conditioning system design

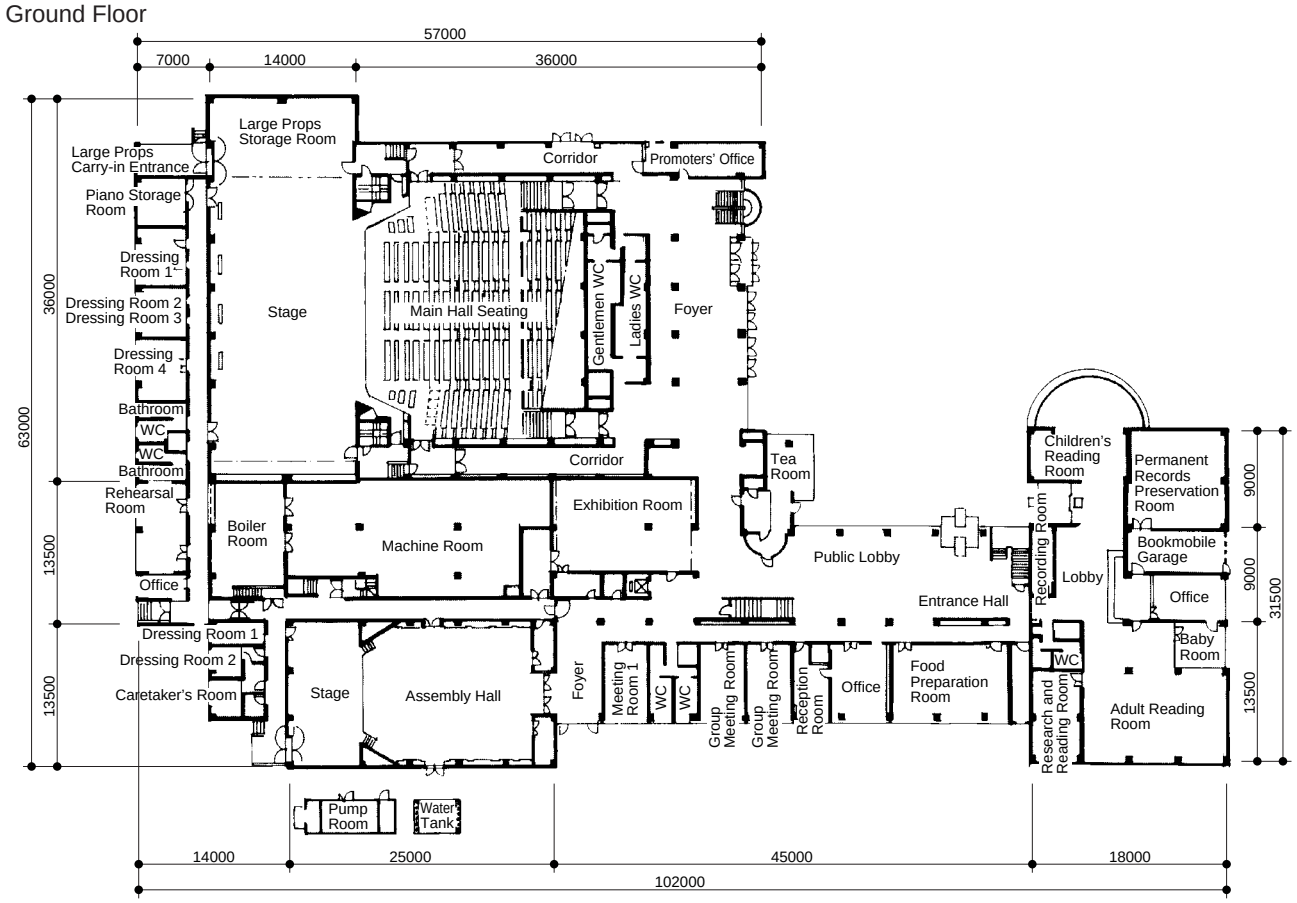


Unit : mm

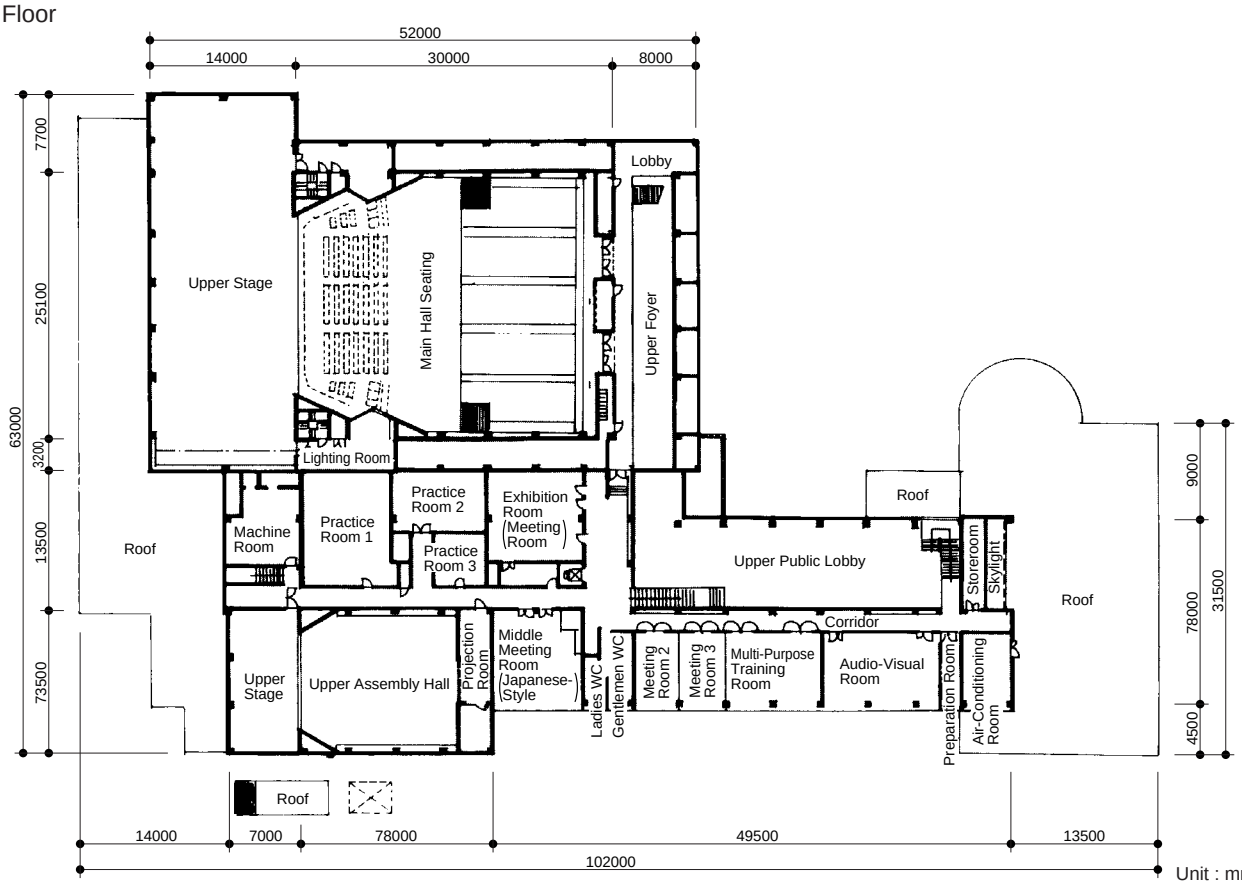
Ena Culture-Center

Lay out

Ground Floor



First Floor

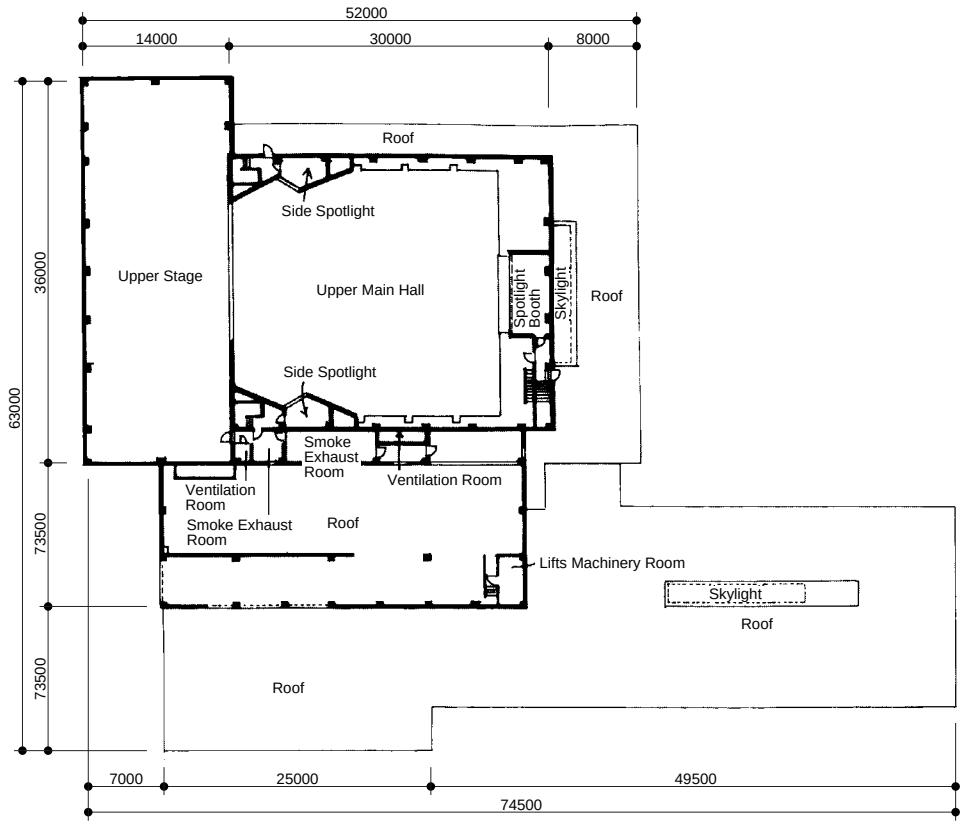


Unit : mm

Ena Culture-Center

Lay out

Second Floor



Unit : mm

基督教台灣信義會真理堂全人關懷大樓

Building information

- Site : Taipei, R.O.C.
- Architectural design Co. : 潘冀建築事務所
- Construction company name : 大三億營造股份有限公司
- Air conditioning installation Co. : 元利機電工程
- Completion : 2006
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

Equipment list

● Ceiling concealed type Lossnay

LGH-80RX4	2 units
LGH-200RX4	8 units

● Wall mounted type room air conditioner

MS-12SN	1 unit

● Sprit type packaged air conditioner

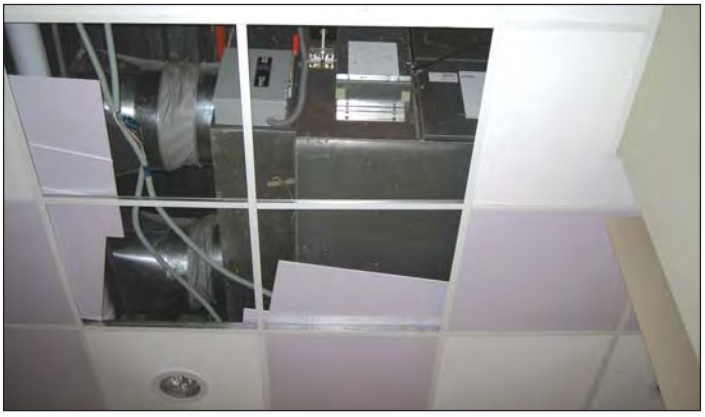
PK-2.5FLA	2 units

● Ceiling concealed type VRF indoor unit

PEFY-P20	8 units
PEFY-P32	1 unit
PEFY-P40	4 units
PEFY-P50	17 units
PEFY-P63	54 units

● Air cooled heat pump type VRF outdoor unit

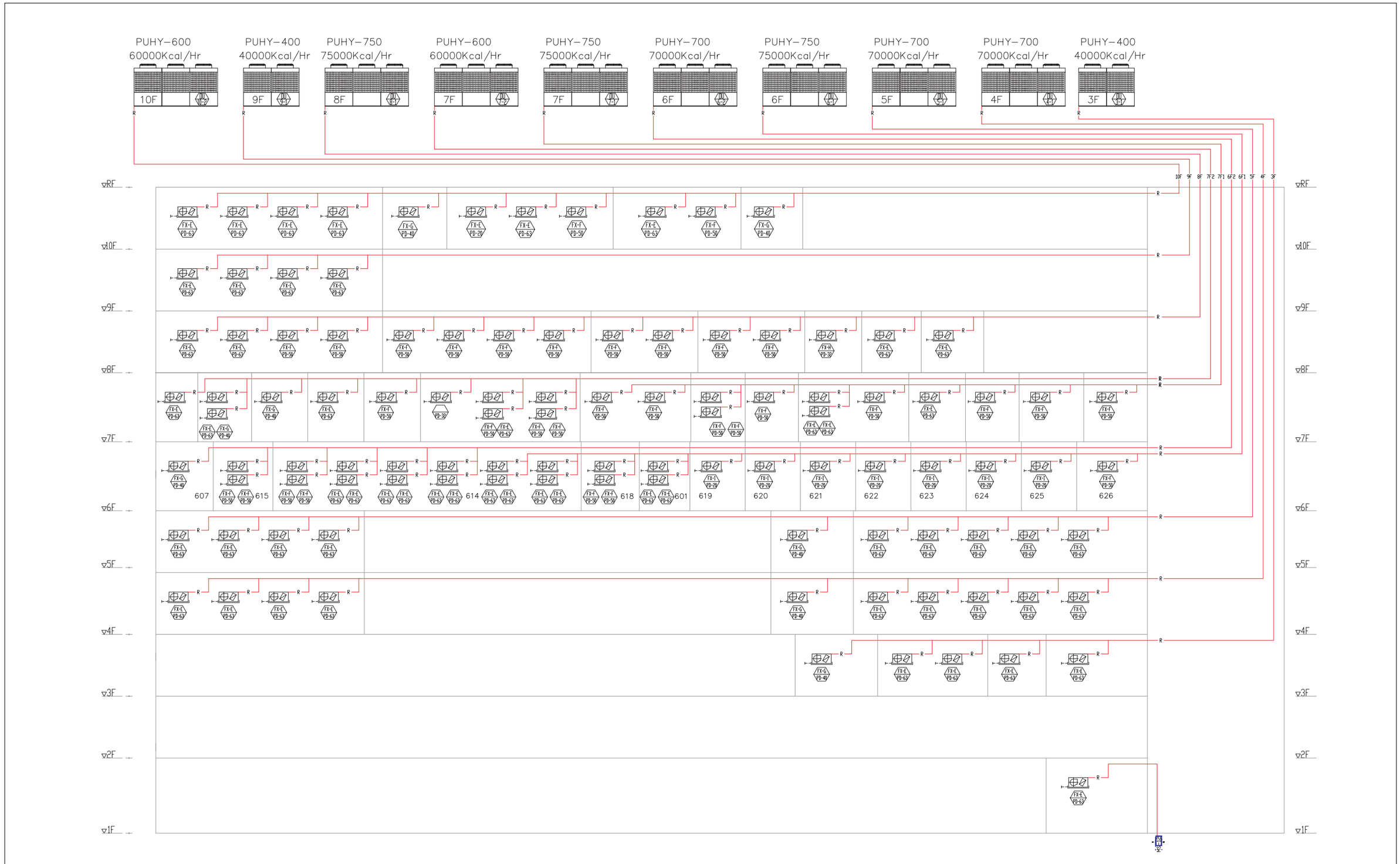
PUHY-P400	2 units
PUHY-P600	2 units
PUHY-P700	3 units
PUHY-P750	3 units



Lossnay installed in attic.

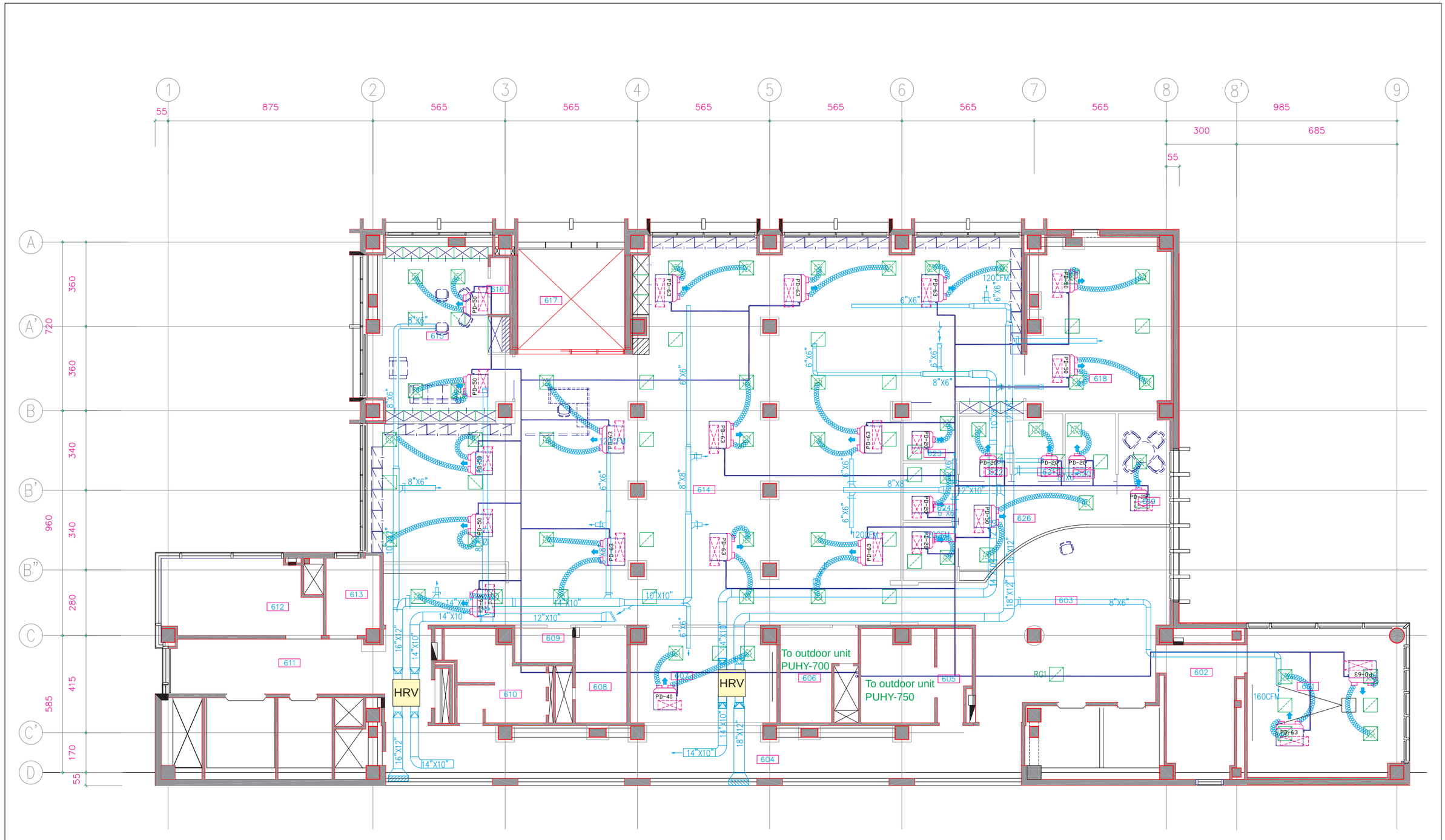
基督教台灣信義會真理堂全人關懷大樓

Air conditioning system design



基督教台灣信義會真理堂全人關懷大樓

Air conditioners lay out



Unit : mm

Mackenzie University (Rev. Modesto Carvalhosa Building)

Building information

- Site : Sao Paulo, Brazil
- Architectural design Co. : L.C.Esher & F.Spadoni
- Air conditioning design Co. : Termoplan
- Contruction operations Co. : Construtura MATEC
- Air conditioning installation Co. : Reclima
- Completion : 2006
- Structure : Library, adminstration and classrooms (12,600 students every day).
  Concrete, glass and steel building structure.
- Building area (m^2) : 12,500
- Total floor area (m^2) : 1,562
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

This building has 8 floors, 54 classrooms, each class room has two City Multi VRF ceiling concealed indoor units and outside air is supplied from a Lossnay LGH unit installed in corridor ceiling. Each classroom has outside air supply independent and interlocked with VRF indoor units operation. This system replaced original idea to install a centralized fan for each floor using a inverter control and CO_2 sensors to economize energy. Lossnay system proved to be more able to reduce installed capacity and flexibility to achieve lower loads at partial operation. Lossnay auto mode was important to improve economy at winter season, when unit can decide to use common ventilation or heat recovery improving the air conditioning performance and always keeping the indoor air quality at the maximum.

Equipment list

Ceiling concealed type Lossnay

LGH-25RX4	1 unit
LGH-35RX4	1 unit
LGH-50RX3	3 units
LGH-65RX4	8 units
LGH-100RX4	1 unit
LGH-150RX4	57 units
Air volume	93,800 m^3/h

Wall mounted type VRF indoor unit

PKFY-P20VAM	1 unit
PKFY-P25VAM	3 units
PKFY-P32VGM	5 units
PKFY-P40VGM	1 unit
PKFY-P50VGM	1 unit
PKFY-P63VFM	1 unit

Ceiling suspended VRF indoor unit

PCFY-P63VGM	1 unit
PCFY-P100VGM	3 units

Ceiling cassette type VRF indoor unit

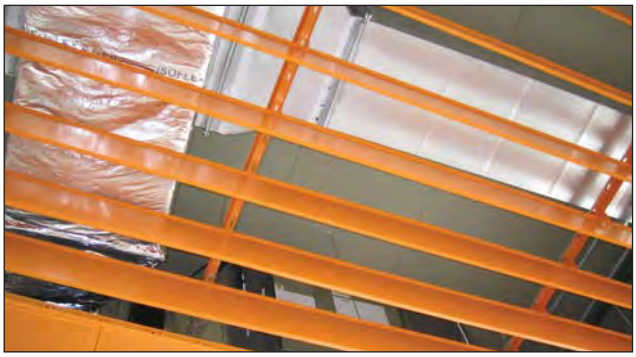
PLFY-P32VLMD	2 units
PLFY-P80VLMD	4 units

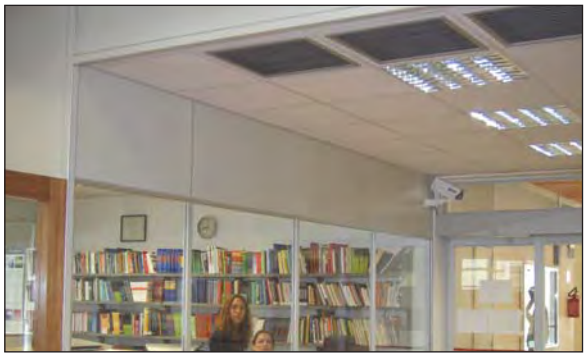
Ceiling concealed type VRF indoor unit

PEFY-P140VMH	18 units
PEFY-P200VMH	2 units
PEFY-P250VMH	2 units
PDFY-P80VM	3 units
PDFY-P100VM	2 units
PDFY-P125VM	91 units
Totally	140 VRF indoor units (523.8 USRT)

Air cooled heat pump type VRF outdoor unit

PUHY-P350YGM	1 unit
PUHY-P450YGM	1 unit
PUHY-P650YGM	1 unit
PUHY-P750YSGM	7 units
PUHY-P800YSGM	6 units
PUHY-P850YSGM	6 units
Totally	22 outdoor units (530.96 USRT)

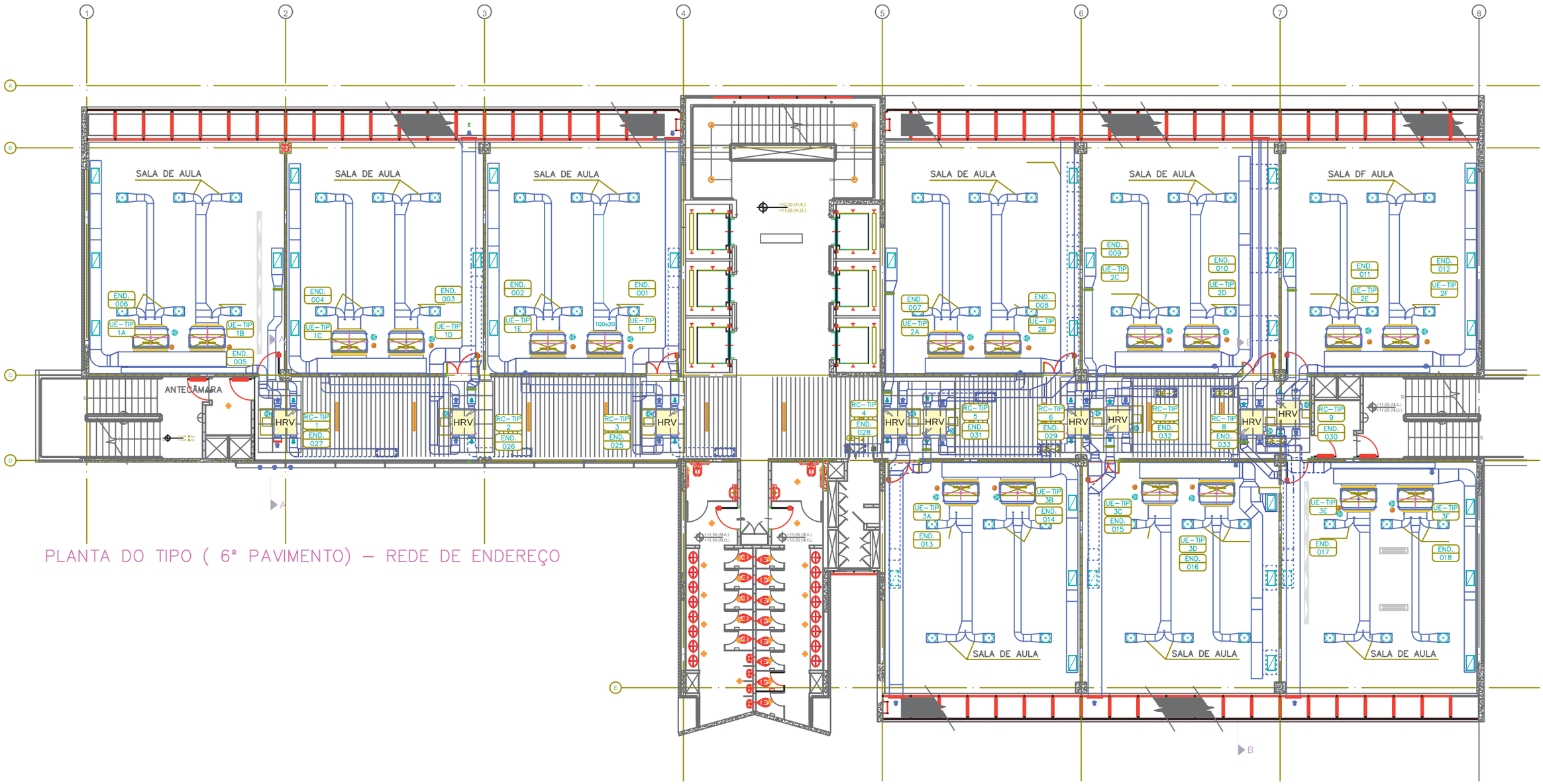




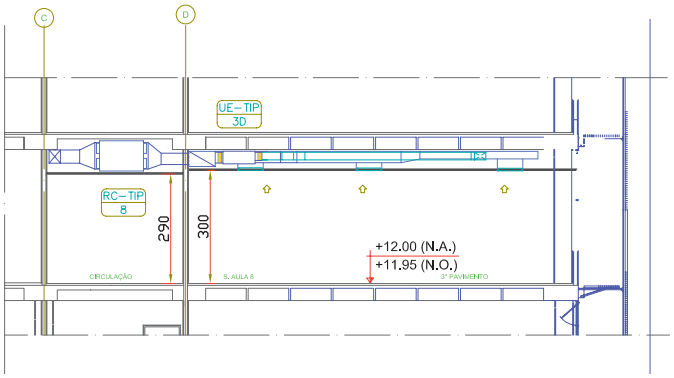
Mackenzie University (Rev. Modesto Carvalhosa Building)

Air conditioners lay out

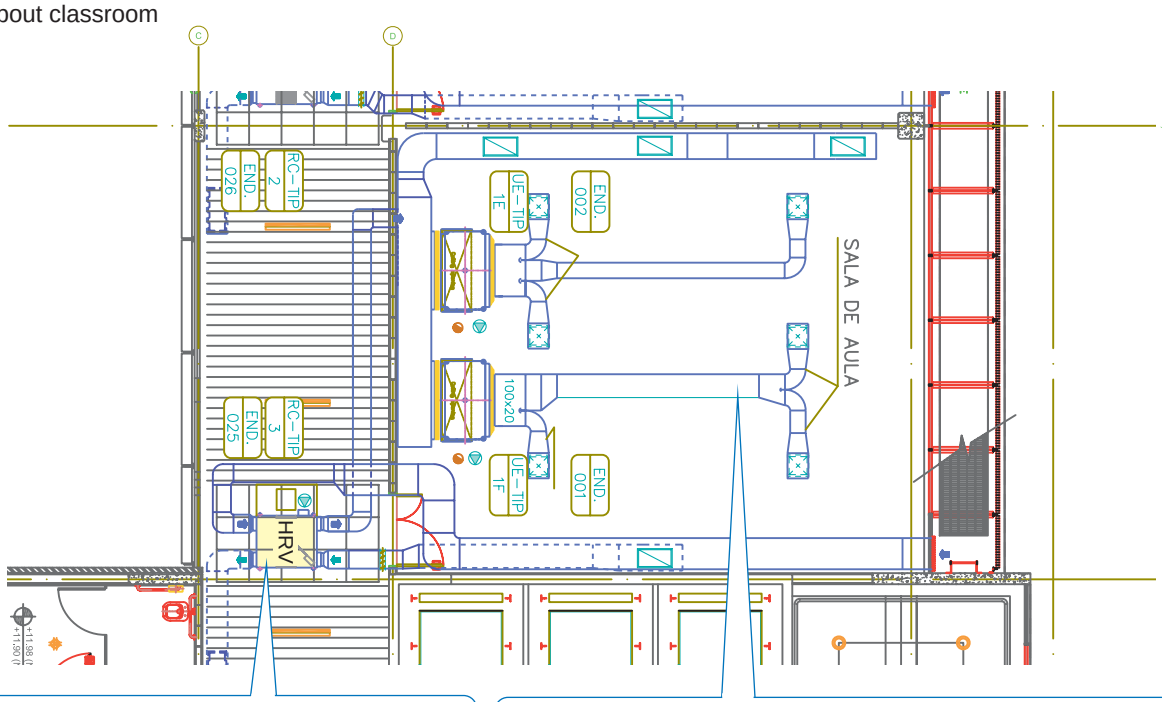
Typical floor installation

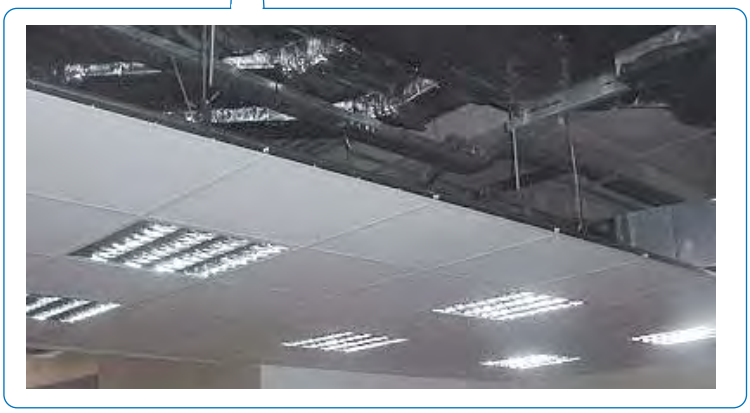


Mackenzie University (Rev. Modesto Carvalhosa Building)



Details about classroom





GLOBO Parco Commercial

Building information

- Site : Milan, Italy
- Completion : August, 2001 ····· First Installation
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay, OA processing unit)

- Completion : December, 2004 ····· Second Installation
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

The air conditioning system in this building uses an air cooled heat pump type VRF with heat recovery ventilator Lossnay considering the following points. The outdoor air undergoing heat exchange by the Lossnay, is mixed with the cooled air from the VRF indoor unit and is supplied to the sales floor via ducts. Maintenance is considered to be done in one place, where the indoor unit and the Lossnay unit are installed.

- A chiller system using water was avoided due to environmental concerns.
- Inspection of indoor units and air conditioners on sales floors in the sopping center was avoided due to security concerns.
- A small catwalk was used, to ensure the maximum use of parking area.

Weather covers are fixed the wall, it connected with ducts.

Sales floor.

Equipment list for building GLOBO2

● Air cooled heat pump type VRF indoor unit

PUHY-P250YMF-B	69 units
PUHY-P200YMF-B	14 units

● Ceiling Concealed type VRF indoor unit

PDFY-P80VM	96 units
PEFY-P100VMMA	13 units
PEFY-P125VMMA	73 units

● Wall mounted type VRF indoor unit

PKFY-25VAM	14 units
PKFY-32VAM	4 units
PKFY-40VAM	8 units

● Ceiling concealed type Lossnay

LGH-200RS$_2$	50 units

● OA processing unit

GUF-100RDH	5 units

● Controller

MJ-310	1 unit
MJ-103	6 units

GLOBO Parco Commercial

Equipment list for building GLOBO3

● **Commercial type Lossnay**

LU-500	15 units

● **Air cooled heat pump type VRF outdoor unit**

PUHY-8MYA	
PUHY-10MYA	
Totally	110 units

● **VRF controller**

TG-2000	1 piece
G-50	3 pieces
PAC-SC50KUA	3 pieces
PAC-SF48MA	110 pieces

Catwalk

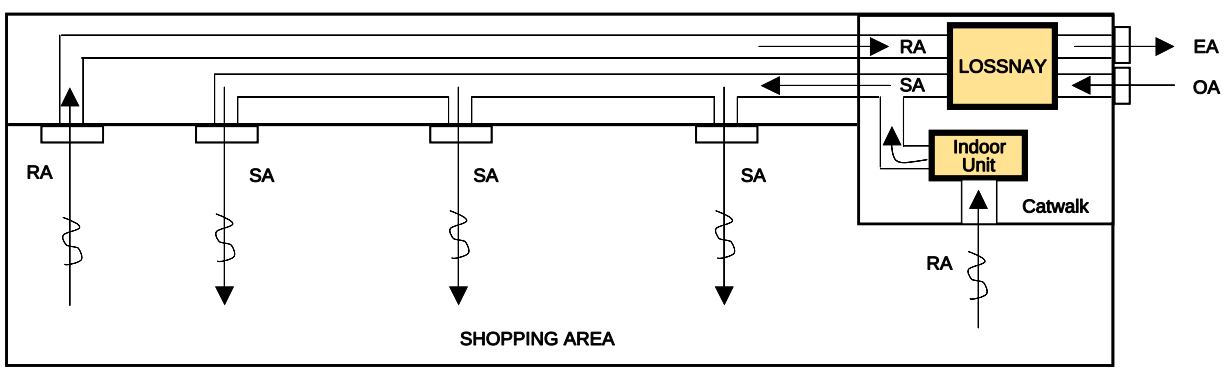
VRF Indoor unit

Walkway

Walkway

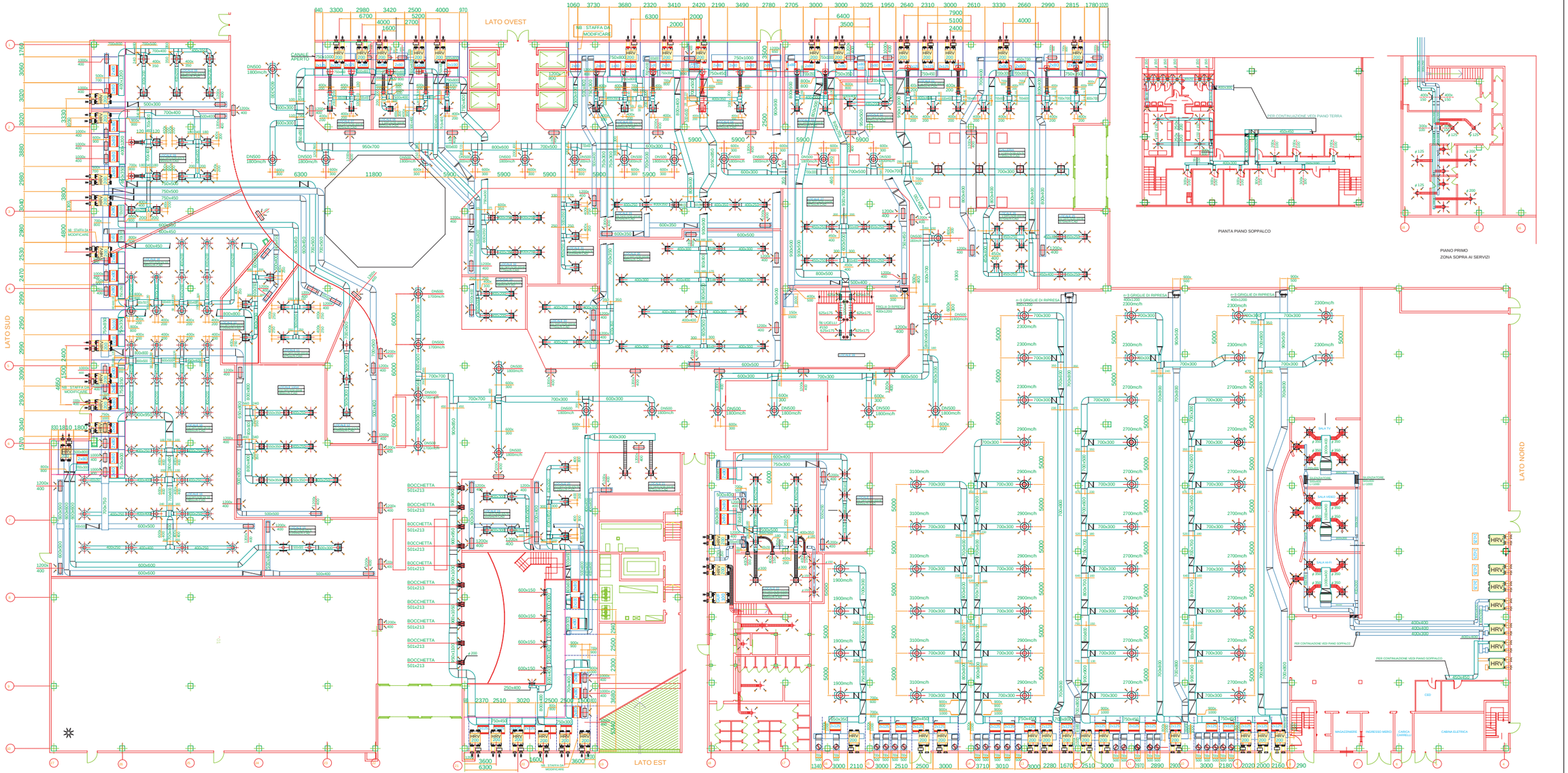
Commercial type Lossnay LU-500

Air conditioning system design



GLOBO Parco Commercial

Air conditioners lay out



太欣半導體內湖辦公室

Appearance

Building information

- Site : 台灣 台北市 Taipei, R.O.C.
- Architectural design Co. : 圓靜建築師事務所
- Air conditioning design Co. : 元太空調技師事務所
- Construction operations Co. : 營造股份有限公司
- Air conditioning installation Co. : 台灣三菱電機股份有限公司
  Mitsubishi Electric Taiwan Co., Ltd.
- Completion : September, 1994
- Structure : 地下四層RC　地上11層SC
  4 below-ground floors RC and 11 above-ground floors SC
- Building area (m^2) : 877
- Total floor area (m^2) : 9,647
- Air conditioning method : Air cooled heat pump type VRF + Chiller + Air handing unit + HRV (Lossnay)

Equipment list

( ) shows item No. [ ] shows location.

● Ceiling concealed type Lossnay

LGH-100RX3	8 units	(OAV21-91)	[2-9F]
	9 units	(OAV22-92,23)	[2-9F]
LGH-80RX3	9 units	(OAV33-113)	[3-11F]
	2 units	(OAV102-112)	[10-11F]
LGH-50RX3	2 units	(OAV101-111)	[10-11F]
	9 units	(OAV34-114)	[3-11F]

● Ventilator

Various models	21 units	(EF-)	[B1-B4F, 1-11F]

● Ceiling concealed type VRF indoor unit

PDFY-P100VM-A	150 units	(V10)	[2-11F]
PDFY-P80VM-A	32 units	(V8)	[2-9F]

● Split type air conditioner

PL-2.5	1 unit	(OAC-1)	[Waiting room]

● Air cooled heat pump type VRF outdoor unit

PUHY-750YSEM	9 units	(VR-31-111)	[3-8F, RF]
PUHY-650YSEM	3 units	(VR-102-112, 21)	[2F, RF]
PUHY-500YEM	8 units	(VR-22-92)	[2-8F, RF]
PUHY-400YEM	8 units	(VR-23-93)	[2-8F, RF]

● Air cooled chiller

MTAW-120D(KAS)	1 unit	(ACH-11)	[RF]
MTAW-100D(KAS)	1 unit	(ACH-B11)	[RF]

● Air handling unit

40RW-024	1 unit	(AH-B11)	[B1F]
40HW-024	1 unit	(AH-11)	[1F]
40HW-012	1 unit	(AH-12)	[1F]
40HW-008	1 unit	(PAH-11)	[1F]

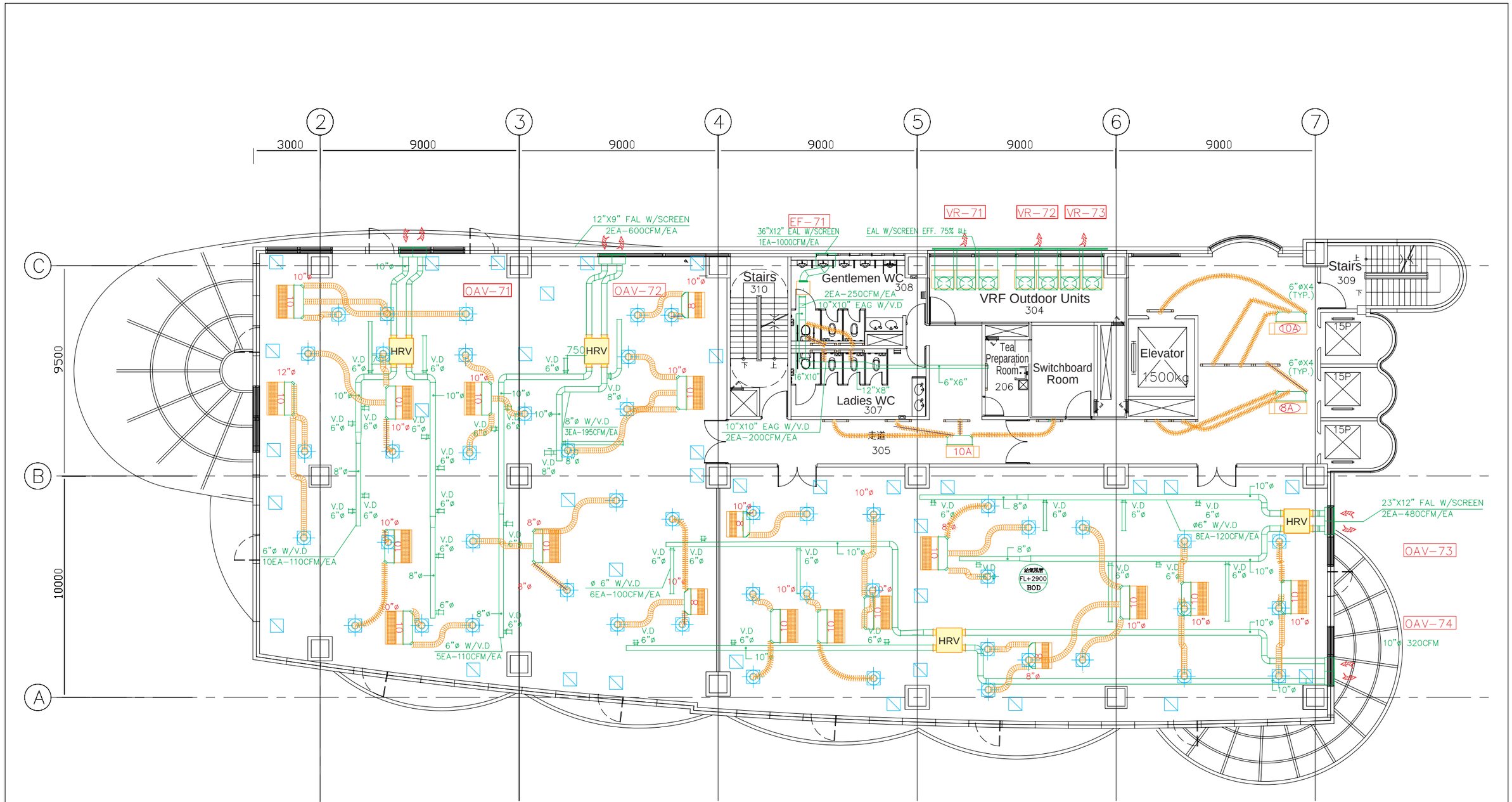
● Fan coil unit

	8 units	(F/C-12A)	[B1F, RF]
	33 units	(F/C-10A)	[1-11F]
	22 units	(F/C-8A)	[B4F, B1F, 1F]
	3 units	(F/C-6A)	[B1F]

Lossnay installed in attic.

太欣半導體內湖辦公室

Air conditioners lay out



7-th floor air conditioning system design

Unit : mm

Shanghai Japanese School 日本人学校浦东校区

Building information

● Site : 中国 上海市 Shanghai, China

● Total floor area (m^2) : 15,700

Appearance

The indoor air quality for living and working environment is key issue, the forcible governmental regulation has been established in Shanghai recently. The introduction of fresh air into air conditioned rooms is getting essential, and the fresh air intake load is comparatively high counting for about 9.2kcal(10.7W)/hr.m^3 in the summer and for about 11.8kcal(13.7W)/hr.m^3 in the winter.
The fresh air intake load in the summer of class room accommodating 41 students counts for about 10,185kcal(11,845W), and that in the winter for about 13,040kcal(15,166W). Construction of the fresh air intake system provides a great influence on the initial cost and running cost.
This school has 4 floors above the ground where the operation of air conditioning for class rooms and PC rooms are featured by crowded peoples, staying long time and high indoor CO_2 concentration and exposed to Tabasco smoke. Therefore, the fresh air intake is required for rooms with various operating functions to upgraded the indoor air quality. It is strongly required creating a favorable comfort learning environment for many teachers and students.
The fresh air intake 27m^3/hr per person in the classroom, PC rooms, staff room, etc., and 36m^3/hr per person in the meeting rooms are stipulated with ASHRAE 62 Standards. We installed 88 units of the heat recovery ventilators, Lossnay and introduced the fresh air to each class room and office room. And at the same time, the room exhaust air containing energy of 67% is recovered.
In addition, the supply fresh air velocity is designed within the range of 2-5m/s, and the return air velocity is designed for ≦ 1.5m/s according to the GB-50019-2003. Thus providing very low airflow noise and very comfortable to human body.

Equipment list

● Ceiling concealed type Lossnay and controller

LGH-25RX4	2 units
LGH-35RX4	19 units
LGH-50RX4	6 units
LGH-65RX4	3 units
LGH-80RX4	4 units
LGH-100RX4	54 units
Totally	88 units
PZ-41SLB	88 pieces

● Wall mounted type room air conditioner

MSH-J11DV	2 units

● Sprit type packaged air conditioner

PLH-2AKH-S	1 unit

● Wall mounted type VRF indoor unit

PKFY-P50VGM	4 units

● Ceiling cassette type VRF indoor unit

PLFY-P20VLMD	4 units
PLFY-P40VLMD	1 unit
PLFY-P32VAM	1 unit
PLFY-P40VAM	3 units
PLFY-P50VAM	5 units
PLFY-P63VAM	14 units
PLFY-P80VAM	38 units
PLFY-P100VAM	91 units
PLFY-P125VAM	36 units
Totally	197 indoor units

● Air cooled heat pump type VRF outdoor unit

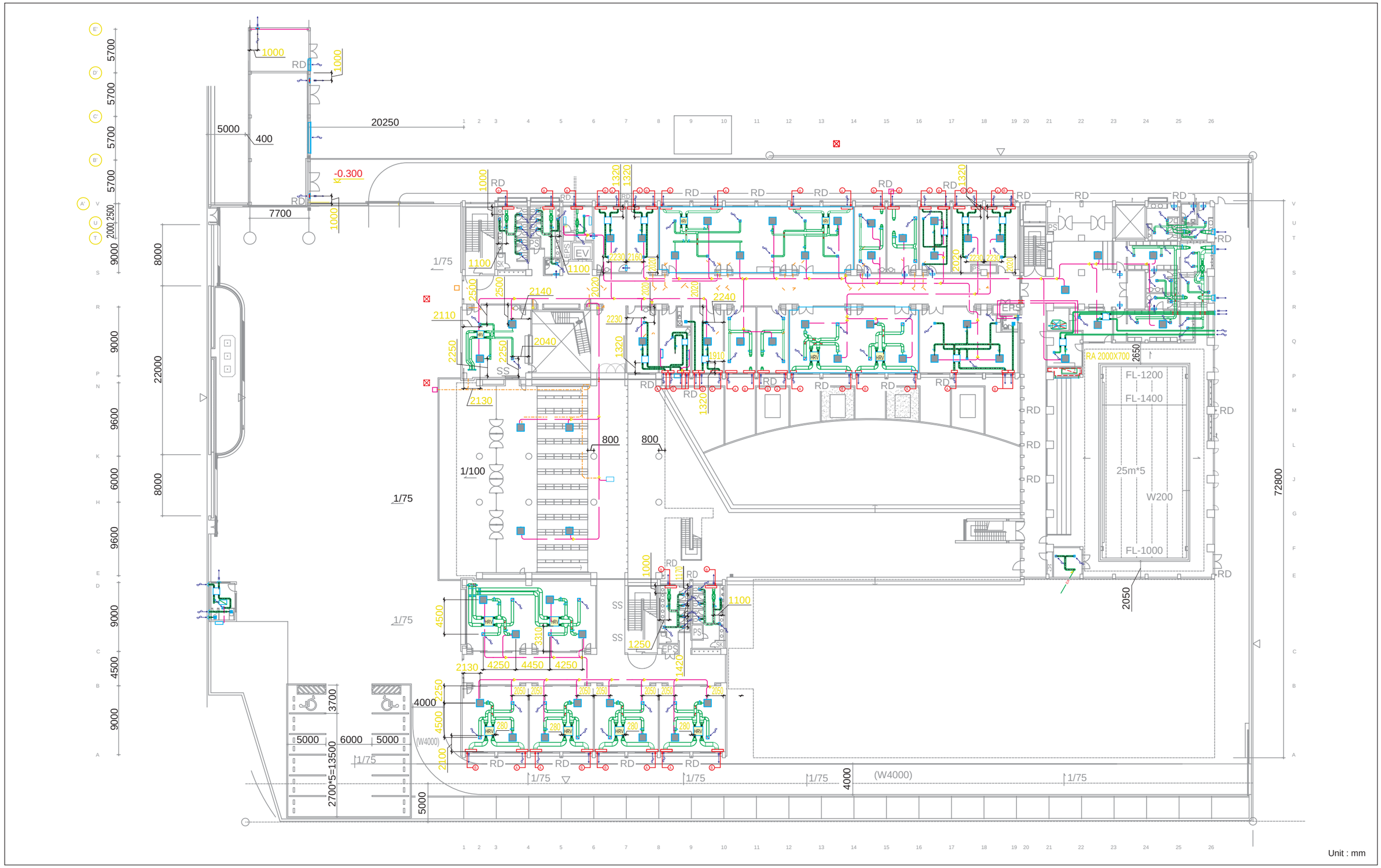
PUHY-P250YC	2 units
PUHY-P350YC	1 unit
PUHY-P400YC	1 unit
PUHY-P500YC	1 unit
PUHY-P550YC	2 units
PUHY-P600YC	2 units
PUHY-P650YC	3 units
PUHY-P700YCS	1 unit
PUHY-P750YCS	3 units
PUHY-P900YCS	2 units
PUHY-P950YCS	1 unit
PUHY-P1000YCS	2 units
PUHY-P1150YCS	1 unit
PUHY-P1200YCS	1 unit
Totally	28 outdoor units

● VRF controller

PAC-SC50KUA	8 pieces
PAR-20MAA	197 pieces
G-50A	8 pieces

Shanghai Japanese School 日本人学校浦东校区

Air conditioners lay out



Unit : mm

Fondazione Del Monte

Building information

- Site : Bologna centre, Italy
- Air conditioning design Co. : Taddia & Sarti Impianti
- Air conditioning installation Co. : Taddia & Sarti Impianti
- Completion : July, 2002
- Building area (m^2) : 1,500
- Total floor area (m^2) : 380 (4 floors)
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

This is an old, historical building located in the center of Bologna Town. It only had heating, so cooling and ventilation were added during the renovations. The air conditioning had to be installed without changing the look of the building, so the following points were kept in mind during design.
The age of the building meant limited space for mechanical rooms as well as ceilings, so there was not much space for installing the air conditioning units. A distributed system was therefore adopted, using many individual units, with a Lossnay (an OA processing unit with humidifier) installed in the basement supplying fresh air to all rooms via ducts. Floor standing type VRFs were mainly used for cooling and heating.

Equipment list

● Ceiling concealed type Lossnay
(OA processing units are installed this building.)

GUF-100RDH	7 units

● Floor standing type VRF indoor unit

PFFY-P20VLEM	7 units
PFFY-P32VLEM	8 units
PFFY-P40VLEM	15 units
PFFY-P50VLEM	4 units
PFFY-P63VLEM	6 units

● Wall mounted type VRF indoor unit

PKFY-P20VAM	7 units
PKFY-P25VAM	1 unit

● Ceiling concealed type VRF indoor unit

PEFY-P25VMM	1 unit

● Air cooled heat pump type VRF outdoor unit

PUHY-P250YMF	7 units

● VRF multi controller

PAC-SF41SCA	3 pieces
PAR-20MAA	56 pieces

HESPERIA TOWER

Building information

- Site : Barcelona, Spain
- Architectural design Co. : Richard Rogers & Alonsoy Balaguer
- Air conditioning design Co. : Grupo JG
- Construction operations Co. : Construcciones Castro
- Air conditioning installation Co. : Climava
- Completion : 2005
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

This building is made up of a hotel and commercial center. The hotel has 280 rooms on 21 floors. Heat recovery ventilator Lossnay are installed on each floor, the ducts are connected the Lossnay unit and supply the fresh air to the hotel room via the duct.
Meeting rooms are air conditioned using air cooled heat pump type VRF.

Equipment list

- **Ceiling concealed type Lossnay**

LGH-100RX$_4$	21 units

- **Air cooled heat pump type VRF outdoor unit**

PUHY-P-YGM	8 units
Total capacity	250 kW

Lossnay unit is suspended from ceiling.

Sorolla Hotel / Sorolla center

Building information

- Site : Street Camp del Turia, Benlloch (Valencia), Spain
- Architectural design Co. : Guadalmedina
- Construction operations Co. : ICS/Saing
- Air conditioning installation Co. : Ballester
- Completion : November, 2006
- Air conditioning method : Air cooled heat pump type VRF + HRV (Lossnay)

Appearance

They choose LGH in big meeting rooms of the hotel, because this room need a big quantity of air flow.
R2 system was chosen because the Hotel is 5*, and with more than one orientation.
Y system was applied in the office because they could divide system by wall orientation.

Equipment list

- **Ceiling concealed type Lossnay**

LGH-35RX$_3$	1 unit
LGH-80RX$_3$	6 units
LGH-100RX$_3$	10 units
Totally	17 units

- **Air cooled heat pump type VRF outdoor unit**

PURY-P200YEM	1 unit
PURY-P250YEM	12 units
PURY-P400YEM	2 units
PURY-P500YEM	11 units
PUHY-P315YEM	1 unit
PURY-P400YEM	1 unit
PURY-500YEM	1 unit
Totally	29 outdoor units

Lossnay units are suspended from ceiling.

MITSUBISHI ELECTRIC CORPORATION
Nakatsugawa Works, 1-3 Komaba-cho, Nakatsugawa-shi, Gifu, Japan 508-8666

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