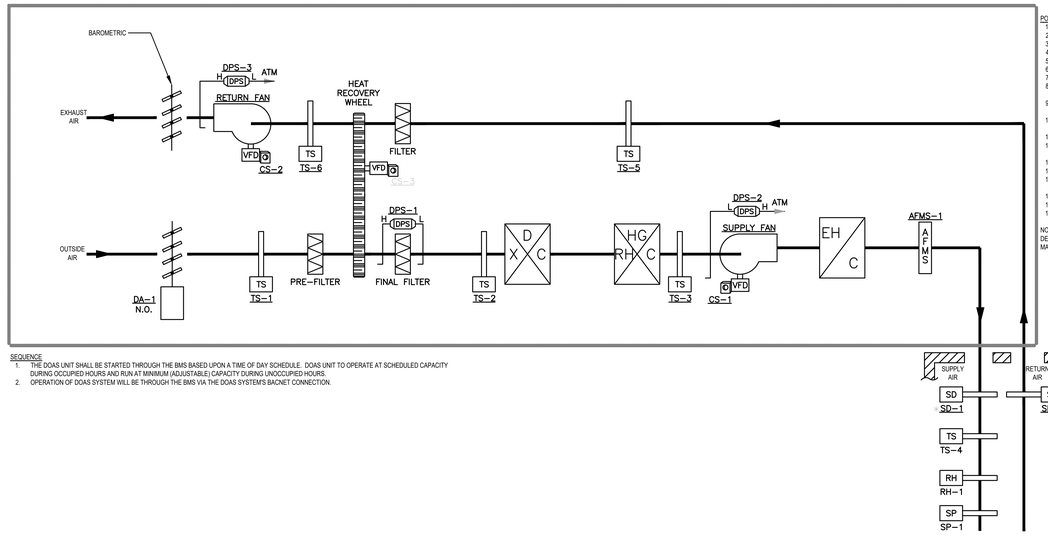
DOAS CONTROL DIAGRAM
TYPICAL FOR BUILDING VENTILATION AND UNITS:
(899-DOAS-R-01 AND 899-DOAS-R-02)

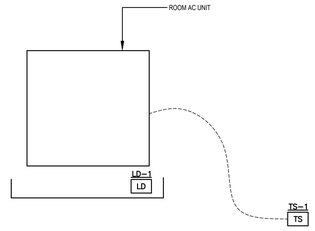


POINTS (VIA NETWORK INTERFACE)
1. OUTSIDE AIR DAMPER
2. OUTSIDE AIR TEMPERATURE SENSOR
3. DIRTY FILTER ON/OFF SWITCH
4. SUPPLY LEAVING WHEEL TEMPERATURE
5. ENTERING FAN TEMPERATURE SENSOR
6. SUPPLY FAN AIR PROVING VIA BACNET
7. AIRFLOW STATION (SUPPLY)
8. SMOKE DETECTOR (BY FIRE ALARM*) (SUPPLY)
9. DISCHARGE AIR TEMPERATURE (WIRED IN UNIT, MOUNTED IN SUPPLY DUCT)
10. DISCHARGE RELATIVE HUMIDITY (WIRED IN UNIT, MOUNTED IN SUPPLY DUCT)
11. BUILDING STATIC PRESSURE SENSOR
12. SMOKE DETECTOR (BY FIRE ALARM*) (RETURN)
13. RETURN AIR TEMPERATURE SENSOR
15. WHEEL VFD
16. EXHAUST LEAVING WHEEL TEMPERATURE SENSOR
17. RETURN FAN AIR PROVING VIA BACNET
18. CONDENSATE OVERFLOW SWITCH
19. BACNET/MSTP CARD

NOTE THAT ALL SENSORS, BESIDES SMOKE DETECTORS, ARE PROVIDED BY THE MANUFACTURER.

SEQUENCE
1. THE DOAS UNIT SHALL BE STARTED THROUGH THE BMS BASED UPON A TIME OF DAY SCHEDULE. DOAS UNIT TO OPERATE AT SCHEDULED CAPACITY DURING OCCUPIED HOURS AND RUN AT MINIMUM (ADJUSTABLE) CAPACITY DURING UNOCCUPIED HOURS.
2. OPERATION OF DOAS SYSTEM WILL BE THROUGH THE BMS VIA THE DOAS SYSTEM'S BACNET CONNECTION.

AC CONTROL DIAGRAM
TYPICAL FOR ALL SPACES AND UNITS:
(899-AC-1-01A TO 899-AC-1-01G; 899-AC-1-02A TO 899-AC-1-02G; 899-AC-1-03A TO 899-AC-1-03E; 899-AC-1-04D TO 899-AC-1-04G; 899-AC-1-05A TO 899-AC-1-05F)



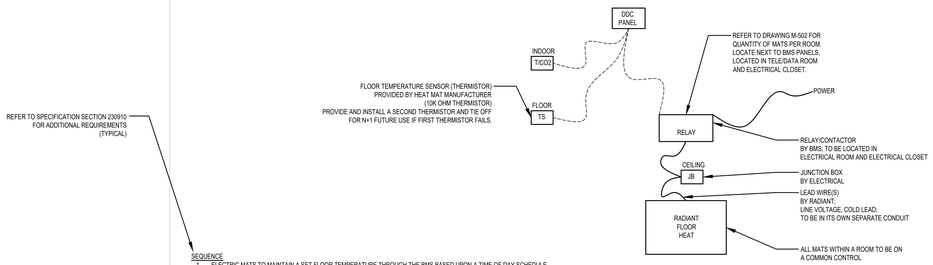
SEQUENCE
1. THE VRF AC UNIT SHALL BE STARTED THROUGH THE BMS BASED UPON A TIME OF DAY SCHEDULE. VRF AC UNIT TO OPERATE AT SCHEDULED CAPACITY DURING OCCUPIED HOURS AND RUN AT MINIMUM (ADJUSTABLE) CAPACITY DURING UNOCCUPIED HOURS.
2. ROOM VRF AC UNIT TO BE CONTROLLED BY MANUFACTURER PROVIDED SPACE THERMOSTAT. OCCUPANT TO HAVE ABILITY TO ADJUST TEMPERATURE +/- 2 DEG_F. (CASSETTE STYLE UNITS ARE NOT ADJUSTABLE BY THE OCCUPANT)
3. ROOM VRF UNITS WILL BE CONSTANT VOLUME-VARYING TEMPERATURE, TO ENSURE THAT SPACE VENTILATION AIR IS ALWAYS DELIVERED TO THE SPACE.
4. OPERATION OF VRF SYSTEM WILL BE THROUGH THE BMS VIA THE VRF SYSTEMS BACNET CONNECTION. REFER TO DRAWING M-701 TO M-703
5. UPON DETECTION OF A LEAK, THE AC UNIT WILL SHUT OFF AND THE BMS WILL RECEIVE AN ALARM.
(THE SECOND LEAK DETECTOR IS WIRED TO THE AC UNIT AND WILL SHUTDOWN THE UNIT.) THE BMS WILL PICK UP STATUS AS AN INTEGRATED POINT.

POINTS (VIA NETWORK INTERFACE)
1. STATUS (ON/OFF)
2. ROOM TEMPERATURE
3. OPERATION MODE (COOL/HEAT/ FAN/DRY)
4. FILTER SIGN AND RESET
5. REMOTE CONTROLLER PERMIT/PROHIBIT
6. FAN SPEED SETTING
7. ALARM
8. MALFUNCTION CODE
9. SECONDARY LEAK DETECTION IN SECONDARY PAN FOR ALARM ((4) CASSETTE STYLE UNITS WILL NOT HAVE A SECONDARY PANI 899-AC-1-04D, 899-AC-1-04F, 899-AC-1-05B, 899-AC-1-05D)

CU CONTROL DIAGRAM
TYPICAL FOR ALL UNITS:
(899-CU-R-01, 899-CU-R-02, 899-CU-R-03, 899-CU-R-04, 899-CU-R-05, 899-CU-R-06, 899-CU-R-07)

POINTS POINTS (VIA NETWORK INTERFACE)
1. STATUS (ON/OFF)

ELECTRIC MAT CONTROL DIAGRAM
TYPICAL FOR THE FOLLOWING ROOMS:
(INFANT 1 TO INFANT 4; TODDLER 1 TO TODDLER 4; STAFF LOUNGE; PRESCHOOL 1 TO PRESCHOOL 2; K-PREP 1 TO K-PREP 2; MOVEMENT MATTERS)



SEQUENCE
1. ELECTRIC MATS TO MAINTAIN A SET FLOOR TEMPERATURE THROUGH THE BMS BASED UPON A TIME OF DAY SCHEDULE.
2. OPERATION OF ELECTRIC MAT TO BE LOCKED OUT BY THE BMS WHEN THE ROOM AC UNIT(S) IS (ARE) IN COOLING.
3. COMBINATION SPACE TEMPERATURE AND CO2 SENSOR IS TIED INTO BMS DDC PANEL. RADIANT FLOOR HEAT IS ENABLED/DISABLED VIA BMS BASED ON OUTSIDE AIR TEMPERATURE (BELOW 55 DEG_F, ADJUSTABLE). WHEN ENABLED, THE RADIANT FLOOR HEAT SENSOR SHALL MAINTAIN FLOOR TEMPERATURE (85 DEG_F, ADJUSTABLE) AT SETPOINT VIA MANUFACTURER FURNISHED FLOOR TEMPERATURE SENSOR(S).

POINTS
1. STATUS
2. SPACE TEMPERATURE
3. SPACE CO2 LEVEL
4. ENABLED/DISABLE

OVERLLALL SEQUENCE

THE DOAS VENTILATION SYSTEM, VRF SPACE HEATING AND COOLING SYSTEM, AND RADIANT FLOOR HEAT ARE DECOUPLED SYSTEMS THAT WILL BE PROGRAMMED BY THE BMS TO WORK TOGETHER.
THE DOAS VENTILATION SYSTEM WILL PROVIDE ROOM NEUTRAL VENTILATION AIR, 70°F (ADJ.) AND DEHUMIDIFIED, BASED UPON A TIME SCHEDULE.
THE VRF SYSTEM WILL PROVIDE CONTINUOUS ROOM AIR CIRCULATION AND MAINTAIN SPACE TEMPERATURE BASED ON AN OCCUPANCY SCHEDULE.
THE ELECTRIC RADIANT MAT WILL MAINTAIN FLOOR TEMPERATURE AND ACT AS THE 1ST STAGE OF HEAT FOR THE SPACE. THE BMS WILL PREVENT SIMULTANEOUS HEATING AND COOLING.

A. DOAS PROVIDES VENTILATION AIR PER TIME SCHEDULE WITH SET LEAVING AIR TEMPERATURE AND HUMIDITY

1) THE DOAS UNIT SHALL BE CONTROLLED BY A DDC CONTROLLER FURNISHED, INSTALLED, AND WIRED BY THE DOAS UNIT MANUFACTURER.

2) THE BMS SHALL OPERATE ON A TIME OF DAY SCHEDULE TO PROVIDE CONTINUOUS VENTILATION TO THE SPACE DURING OCCUPANCY. VENTILATION TO OPERATE AT DESIGNED CAPACITY DURING OCCUPIED HOURS AND AT A REDUCED CAPACITY DURING UNOCCUPIED HOURS.

3) THE BMS CONTRACTOR SHALL PROVIDE A DDC POINT TO INDEX THE DOAS SYSTEM INTO A PURGE MODE. THIS WOULD TYPICALLY BE USED AS A PRE OR POST OCCUPANCY EVENT. THE OPERATOR SHALL HAVE THE ABILITY TO SCHEDULE THIS EVENT THROUGH THE BMS SCHEDULING PROGRAM OR BE ABLE TO INITIATE THE EVENT MANUALLY THROUGH THE BMS USER INTERFACE.

4) WHEN THE PURGE MODE IS INITIATED, THE DOAS UNIT SHALL START AND OPERATE FOR A PRESET PERIOD OF TIME. THE UNIT SHALL OPERATE AS DESCRIBED IN THE SEQUENCE OF OPERATIONS FOR THE UNIT.

5) IF DURING OCCUPIED MODE, A CO2 SENSOR IN A ROOM IS ALARMED AT THE BMS, THE BMS WILL BE PROGRAMMED TO INCREASE VENTILATION TO MAXIMUM CAPACITY UNTIL THE SYSTEM CAN BE RE-BALANCED TO PREVENT FURTHER CO2 ALARMS.

6) DURING UNOCCUPIED HOURS, ONLY ONE (1) OF THE TWO (2) DOAS UNITS WILL OPERATE (IN A LEAD/LAG SCHEDULE) AND THE ALD WHICH COMBINES THE DUCTED SYSTEMS WILL OPEN TO ALLOW ONE(1) UNIT TO PARTIALLY VENTILATE BOTH WINGS OF THE BUILDING.

7) DDC POINTS:

A) POINTS LISTED ABOVE.

B. VRF

1) THE VRF UNITS SHALL BE FURNISHED WITH LOCAL CONTROLS FOR STAND-ALONE OPERATION TO MAINTAIN SPACE TEMPERATURE., BASED ON AN OCCUPANCY SCHEDULE.

C. ELECTRIC RADIANT MAT

1) THE BMS CONTRACTOR SHALL FURNISH AND INSTALL BACNET DDC CONTROLS FOR AUTOMATIC CONTROL OF THE ELECTRIC RADIANT FLOOR HEAT.

2) RADIANT FLOOR HEAT IS ENABLED/DISABLED VIA BMS BASED ON OUTSIDE AIR TEMPERATURE (BELOW 55 DEG_F, ADJUSTABLE). WHEN ENABLED, THE RADIANT FLOOR HEAT SENSOR SHALL MAINTAIN FLOOR TEMPERATURE (85 DEG_F, ADJUSTABLE) AT SETPOINT VIA MANUFACTURER FURNISHED FLOOR TEMPERATURE SENSOR(S). FLOOR HEAT TEMPERATURE SETPOINT WILL BE RESET BASED ON SCHEDULED OOCUPANCY.

3) THE RADIANT FLOOR HEAT SHALL ALWAYS BE THE FIRST STAGE OF HEAT WITH THE VRF BEING THE SECOND STAGE OF HEAT. THE BMS SHALL PREVENT THE VRF FROM BEING INDEXED TO THE COOLING MODE WHILE THE RADIANT FLOOR HEAT IS ENABLED.

4) THE VRF HEAT SHALL BE USED TO MAINTAIN THE SPACE TEMPERATURE DURING THE UNOCCUPIED PERIODS.

5) DDC POINTS:

a. ZONE SPACE TEMPERATURE W/ HIGH/LOW ALARM
b. ZONE SPACE CO2 W/ HIGH ALARM
c. ZONE RADIANT FLOOR HEAT ENABLE/DISABLE

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2020 ENERGY CONSERVATION CODE OF NYS

This plan is approved only for work indicated on the application specification sheet. All other matters shown are not to be relied upon, or to be considered as either being approved or in accordance with applicable codes.

Alterations or additions to this engineering document by an unlicensed person is a violation of Chapter 16, Title VIII, Article 145 § 7209.2 of the New York State Education Law.

REGENERON
REAL ESTATE & FACILITIES MANAGEMENT

777 Old Saw Mill River Road
Tarrytown, NY 10591-6707
T: 914.847.7400
F: 914.847.7991
www.regeneron.com

Building #17
Campus Expansion Child Day-care Center

899 Old Saw Mill River Road
Mount Pleasant, NY 10591

Project No. B17-DAYCARE

Architect
Gensler
1700 Broadway, Suite 400
New York, NY 10019
(212) 492-1400 Phone
(212) 492-1472 Fax

Structural Engineer

Thornton Tomasetti
120 Broadway, 15th Floor
New York, NY 10271
(917) 661-7800 Phone
(917) 661-7801 Fax

MEP / IT / Security Engineer

Cosentini Associates
498 Seventh Avenue
New York, NY 10018
(212) 615-3600 Phone
(212) 615-3700 Fax

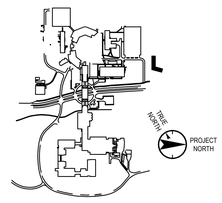
Civil Engineer

JMC
120 Bedford Road
Armonk, NY 10504
(914) 273-5225 Phone
(914) 273-2102 Fax

Landscape Architect

Langan
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
(212) 479-5400 Phone
(212) 479-5444 Fax

Key Plan



No.	Date	Description
0	05.20.2022	ISSUED FOR PERMIT
1	06.20.2022	100% CONSTRUCTION DOCUMENTS
2	07.01.2022	100% CONSTRUCTION DOCUMENTS-1

Plot Date: 07.01.2022

Professional Seal and Signature

Vendor Name: COSENTINI
Vendor Project No.: 210104
Discipline: Mechanical Drawn By: BC

MECHANICAL
CONTROL DIAGRAM
SHEET 2

Scale: NTS Floor:

M-705