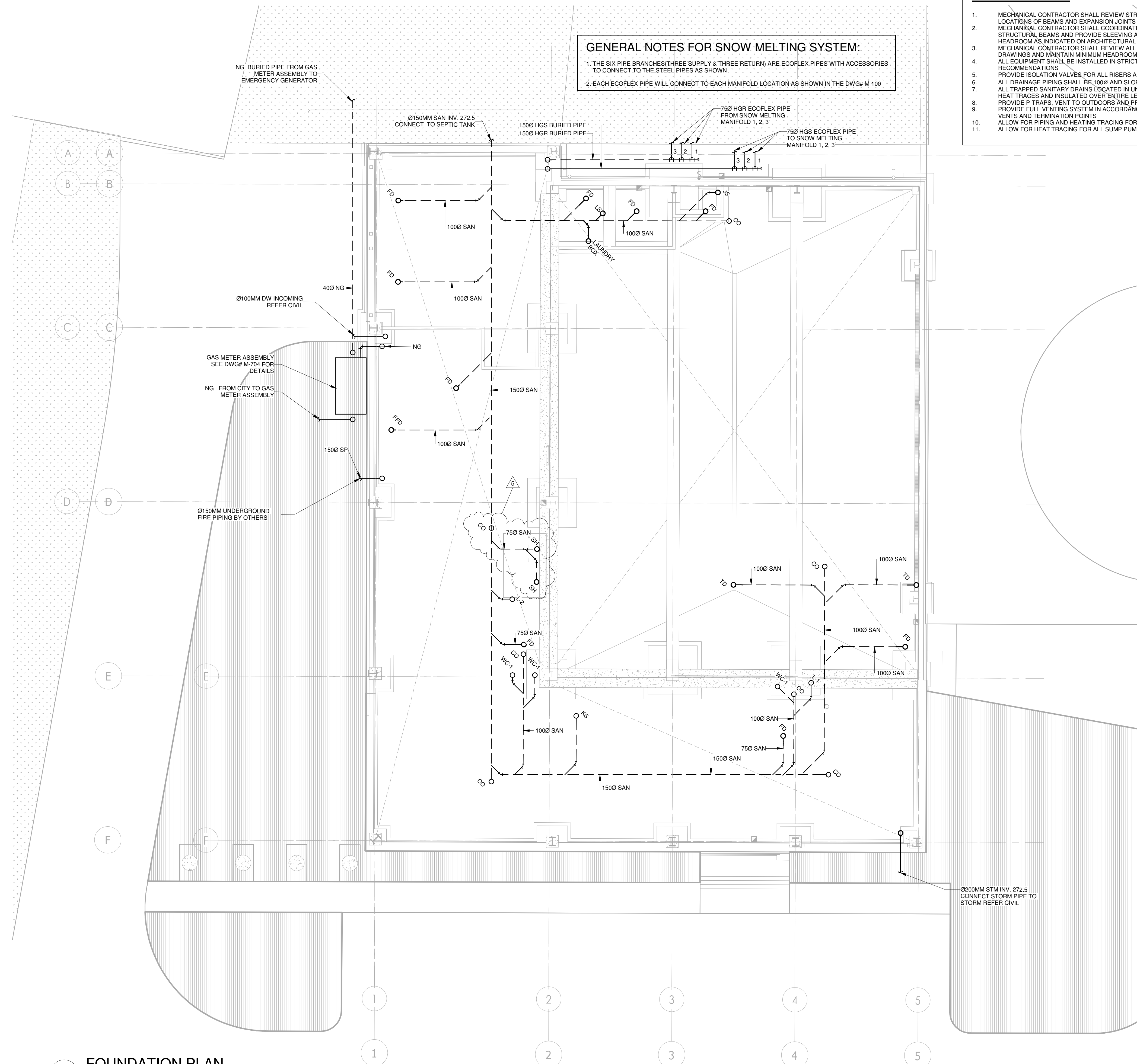


YORK REGIONAL POLICE  
HELICOPTER HANGAR

350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

### Key Plan



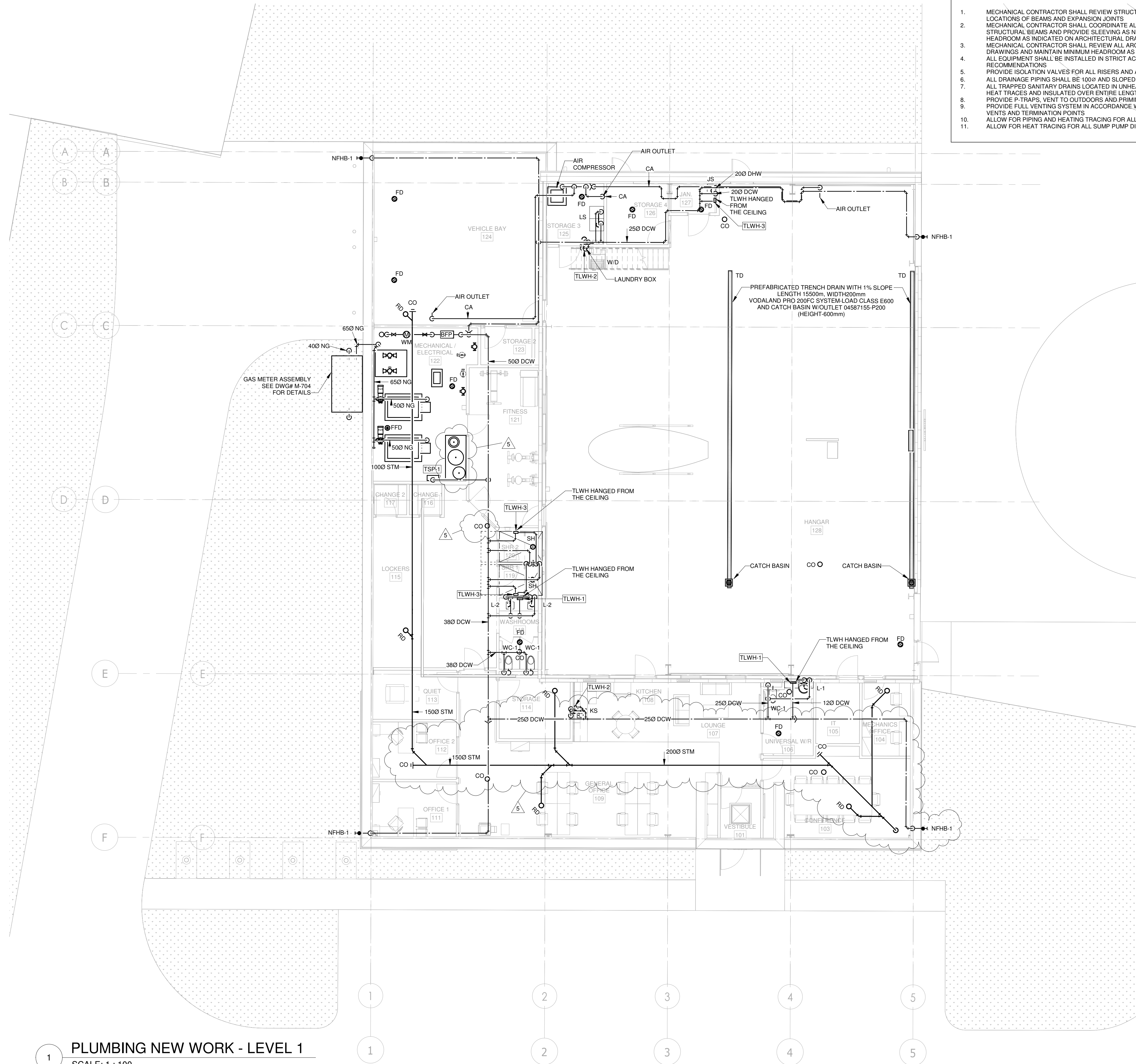
## GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL REVIEW STRUCTURAL DRAWINGS REGARDING SIZE AND LOCATIONS OF BEAMS AND EXPANSION JOINTS
2. MECHANICAL CONTRACTOR SHALL COORDINATE ALL PIPING AND DUCTWORK WITH ARCHITECTURAL BEAMS AND PROVIDE ACCESS NECESSARY TO MAINTAIN MINIMUM HEADROOM AS INDICATED ON ARCHITECTURAL DRAWINGS
3. MECHANICAL CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL AND INTERIOR DESIGN DRAWINGS AND MAINTAIN MINIMUM HEADROOM AS INDICATED
4. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS
5. PROVIDE ISOLATION VALVES FOR ALL RISERS AND AT EACH FIXTURE
6. ALL DRAINAGE PIPING SHALL BE 100% AND SLOPED AT 1% UNLESS NOTED OTHERWISE
7. TRAP AND SANITARY DRAINS 100% SLOPED AT 1% SLOPE SHALL BE ELECTRICALLY HEAT TRACES AND INSULATED OVER ENTIRE LENGTH
8. PROVIDE P-TRAPS, VENT TO OUTDOORS AND PRIMING TO ALL FLOOR DRAINS
9. PROVIDE FULL VENTING SYSTEM IN ACCORDANCE WITH OBC PART 7. COORDINATE ALL VENTS AND TERMINATION POINTS
10. ALLOW FOR PIPING AND HEATING TRACING FOR ALL TRAP PRIMERS
11. ALLOW FOR HEAT TRACING FOR ALL SUMP PUMP DISCHARGE PIPING

GENERAL NOTES FOR SNOW MELTING SYSTEM:

1. THE SIX PIPE BRANCHES(THREE SUPPLY & THREE RETURN) ARE ECOFLEX PIPES WITH ACCESSORIES TO CONNECT TO THE STEEL PIPES AS SHOWN
2. EACH ECOFLEX PIPE WILL CONNECT TO EACH MANIFOLD LOCATION AS SHOWN IN THE DWG# M-100

10/7/2024 11:32:01 AM  
Autodesk Docs://2402 - YRP Helicopter Hangar/TT-24-005-YRP-QCG ME Model\_P24.rvt



### GENERAL NOTES

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4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS
5. PROVIDE ISOLATION VALVES FOR ALL RISERS AND AT EACH FIXTURE
6. ALL DRAINAGE PIPING SHALL BE 100% AND SLOPED AT 1% UNLESS NOTED OTHERWISE
7. ALL TRAPPED SANITARY DRAINS LOCATED IN UNHEATED SPACE SHALL BE ELECTRICALLY HEAT TRACES AND INSULATED OVER ENTIRE LENGTH
8. PROVIDE P-TRAPS, VENT TO OUTDOORS AND PRIMING TO ALL FLOOR DRAINS
9. PROVIDE FULL VENTING SYSTEM IN ACCORDANCE WITH OBC PART 7. COORDINATE ALL VENTS AND TERMINATION POINTS
10. ALLOW FOR PIPING AND HEATING TRACING FOR ALL TRAP PRIMERS
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# PARKIN

Parkin Architects Limited  
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## YORK REGIONAL POLICE HELICOPTER HANGAR

350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

Key  
Plan

NO.	ISSUED	DATE
5	ISSUED FOR ADDENDUM 8	2024-10-07
4	ISSUED FOR ADDENDUM 6	2024-09-30
3	ISSUED FOR ADDENDUM 3	2024-09-23
2	ISSUED FOR TENDER	2024-09-09
1	ISSUED FOR BUILDING PERMIT	2024-07-31

### Issues

All measurements are to be checked and verified on site by the contractor before proceeding with work

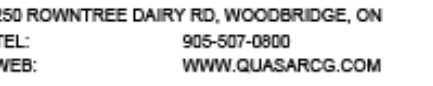
Do not scale drawings

Drawn by: Fizzah Khan/ Iulian Turiga  
Checked by: Ali Nakhaei-Zadeh  
Original Issue Date: 2024-07-31  
Project No: TT-24-005  
Scale: As indicated

Sheet  
Title:  
**PLUMBING NEW WORK -  
LEVEL 1**

Drawing  
No:  
**M-251**

**1 PLUMBING NEW WORK - LEVEL 1**  
SCALE: 1 : 100



350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

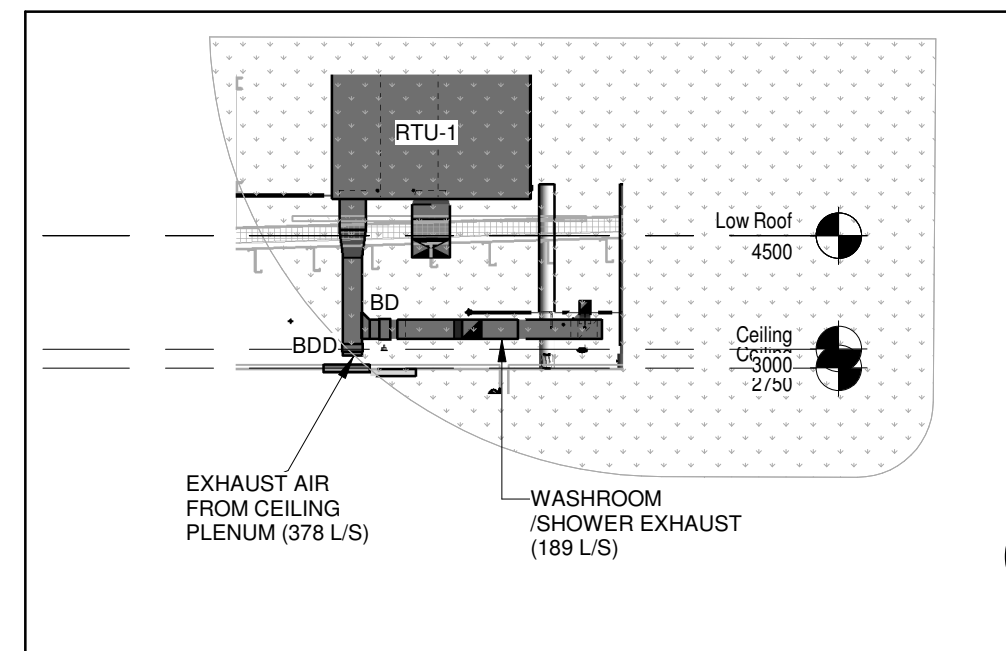
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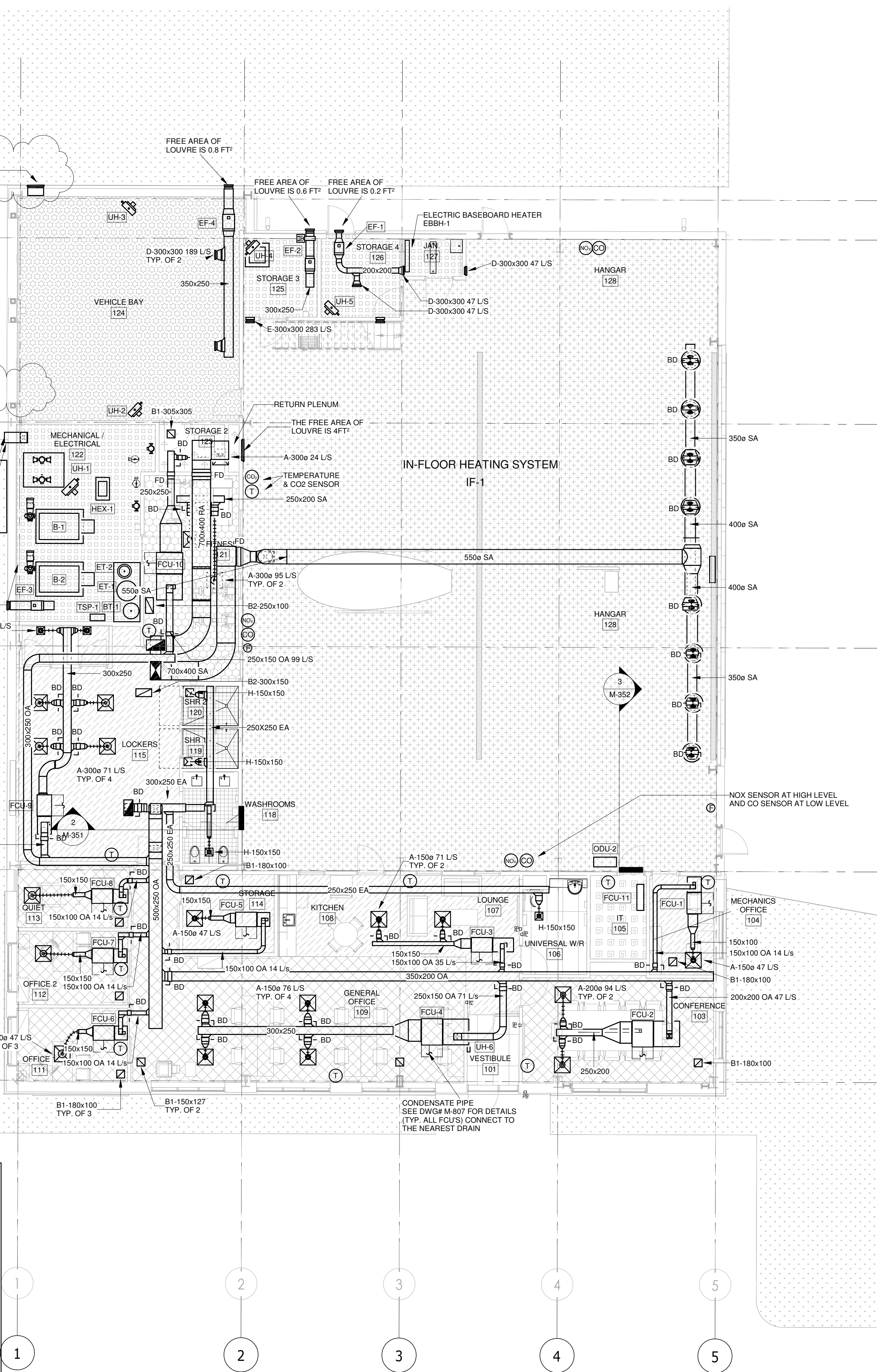


1. CONTRACTOR TO PROVIDE ALL MANIFOLDS AND CONNECTIONS AND PIPING FOR INFLOOR HEATING
2. CONTRACTOR TO PROVIDE PROPOSED MANIFOLD LOCATIONS AND SHOP DRAWING FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.





RTU-1 SCHEMATIC CONCEPT  
SCALE: 1 : 100



VENTILATION NEW WORK - LEVEL 1  
SCALE: 1 : 100

- 1. SEQUENCE OF OPERATION RTU-1**
- 1.1. General**
- 1.1.1. The rooftop unit provides heating, cooling and ventilation air to the spaces via the fan coils. The unit exhaust fan is used to exhaust air from the washrooms. Scheduling should be coordinated with the washroom exhaust fan.
- 1.1.2. The unit is a constant volume unit and consists of supply fan, an exhaust fan, a heat wheel with bypass dampers, a gas fired burner and a DX cooling coil.
- 1.2. Safeties and Limits**
- 1.2.1. A freestat is hardwired to shutdown the fans and close the dampers when the sensed temperature drops below 2 Deg C. A 5 minute time delay is provided on start-up to bypass the limit and allow time for the heating system to come under control. Once the timer has expired the unit will trip if it detects an air temperature of less than 2 Deg C. Once tripped the limit must be reset manually. Provide a reset button on the control panel. Protection will work when the fan is in either 'hand' or 'auto'.
- 1.2.2. Supply air temperature control is disabled until fan run status is received.
- 1.2.3. Simultaneous heating and cooling is prohibited.
- 1.2.4. Minimum on/off run times are provided for both the DX staging and gas burner. Coordinate with manufacturer to ensure proper time delays.
- 1.2.5. If the heat wheel is off for more than 1 day the controller will rotate the wheel at minimum speed for a minimum of 5 minutes.
- 1.3. Modes of Operation**
- 1.3.1. The occupied and unoccupied modes are determined by a time of day schedule.
- 1.4. Occupied Mode**
- 1.4.1. Overview: The unit will provide heating, cooling and ventilation to the spaces via the fan coil units. The unit will control to maintain the supply air temperature at setpoint.
- 1.4.2. Supply Air Temperature Setpoint: The unit delivers neutral air for the fan coils. The setpoint will be set to 16 Deg C (heating) and 18 Deg C (cooling).
- 1.4.3. Supply Fan + OA Damper: The outside air damper is open, and the supply fan runs continuously.
- 1.4.4. Exhaust Fan + EA Damper: The exhaust air damper is open, and the exhaust fan runs continuously.
- 1.4.5. Heat Wheel + Bypass Dampers: When the outdoor air temperature is below 12 Deg C the heat wheel will modulate to either maintain the supply air temperature at setpoint or to provide frost control. When the outdoor air temperature is more than 2 Deg C above the return air temperature the heat wheel will operate at maximum speed. Otherwise when the outdoor air temperature is above 12 Deg C and less than the exhaust air temperature the heat wheel will be off. When the heat wheel is rotating the bypass dampers will be closed. When the heat wheel is off the dampers will be fully open. The controller will provide frost protection for the heat wheel. The controller will slow the wheel down and stop it if necessary to maintain the frost temperature slightly above the frost setpoint which varies with the exhaust air humidity and outdoor air temperature as shown in the table below.
- | OAT (C) | SETPOINT<br>RAH (20%) | OAT (C) | SETPOINT<br>RAH (20%) | OAT (C) | SETPOINT<br>RAH (20%) |
|---------|-----------------------|---------|-----------------------|---------|-----------------------|
| -25     | -15.6                 | -19.4   | -11.1                 | -15.6   | -8.2                  |
| -26.1   | -11.7                 | -20.3   | -7.8                  | -16.1   | -4.9                  |
| -28.3   | -8.5                  | -22.2   | -4.6                  | -17.2   | -1.9                  |
| -32.2   | -5.8                  | -25     | -1.9                  | -19.4   | 0.8                   |
| -35     | -3.9                  | -27.2   | -0.6                  | -20.6   | 2.3                   |
| -40     | -3.3                  | -31.1   | -0.3                  | -23.5   | 3.3                   |
- 1.4.6. DX System: DX cooling will be controlled to maintain the supply air temperature at setpoint.
- 1.4.7. Gas Burner: The gas burner will be controlled to maintain the supply air temperature at setpoint.
- 1.5. Unoccupied Mode**
- 1.5.1. Overview: The unit is off.
- 1.5.2. Supply Fan + OA Damper: The damper is closed and the supply fan is off.
- 1.5.3. Exhaust Fan + EA Damper: The damper is closed and the exhaust fan is off.
- 1.5.4. DX System: DX cooling is off.
- 1.5.5. Gas Burner: The gas burner is off.
- 1.6. Urgent Alarms**
- 1.6.1. Low temperature safety alarm is tripped.
- 1.7. Non-Urgent Alarms**
- 1.7.1. Fan is commanded on and status is not received (2 minute delay).
- 1.7.2. The unit is running and the supply air temperature is below 8 Deg C or above 24 Deg C.
- 1.7.3. Fan is commanded off and status is received (10 minute delay).
- 1.8. Maintenance Alarms**
- 1.8.1. Filter differential is above setpoint.
- 1.8.2. Manual overrides are placed on the system.
- 1.9. Operational Trends (5-minute intervals, 7-days)**
- 1.9.1. All inputs and outputs.
- 1.9.2. Supply air temperature setpoint.
- 1.10. Performance Trends (daily intervals, 5-years)**
- 1.10.1. Supply Air Temperature Index: Daily average of the percentage of time the supply air temperature is within normal limits (between the cooling setpoint (plus 1 Deg C) and heating setpoint (minus 1 Deg C)).
- 1.10.2. Airflow Cooling Intensity: Daily average of the amount of time in the cooling mode.
- 1.10.3. Airflow Heating Intensity: Daily average of the amount of time in the heating mode.
- 1.10.4. Daily Airflow Hours: The total number of hours the unit operated during the day.

- 1.0 SEQUENCE OF OPERATIONS RTU-2**
- 1.1. General**
- 1.1.1. The rooftop unit provides heating, cooling (free cooling only), and ventilation to the hangar. When gas detection sensors (CO/NOx) detect the presence of gas, the unit will operate at full volume and 100% outside air regardless of the mode of operation, until gas levels drop to suitable levels.
- 1.1.2. The unit consists of a supply fan, exhaust fan, mixing dampers, energy recovery wheel, and a gas fired burner.
- 1.1.3. The unit is a variable volume unit and the supply and exhaust fans have been provided with variable frequency drives.
- 1.1.4. Provide an alarm strobe/horn in the space for local high gas alarm announcement.
- 1.2. Safeties and Limits**
- 1.2.1. The DDC controller will shutdown and lockout the unit if the supply air temperature drops below 4 Deg C when the unit is running. Once shutdown the operator must correct the problem and manually restart the unit. Low temperature protection is hardwired to the starter and will work when the fans are being controlled in either hand or auto.
- 1.2.2. Fan speed modulation is disabled until fan run status is received.
- 1.2.3. The minimum speed for the VFD is 50% (30 hz - confirm min speed with balancer).
- 1.2.4. Supply air temperature control is disabled until fan run status is received.
- 1.2.5. Damper control is disabled until fan run status is received.
- 1.2.6. Simultaneous heating and cooling is not permitted.
- 1.2.7. If the heat wheel is off for more than 1 day the controller will rotate the wheel for a minimum of 5 minutes.
- 1.3. Modes of Operation**
- 1.3.1. The occupied and unoccupied modes of operation are determined by a time-of-day schedule or via the occupancy button located at the main entrance. When pressed, the occupancy button will set the occupied mode for 4 hours (adjustable).
- 1.4. Occupied Mode**
- 1.4.1. Overview: The unit will provide heating, cooling (free cooling only), and ventilation to the space. The unit will control to maintain the space temperature at setpoint.
- 1.4.2. Space Temperature Setpoints: The heating setpoint will be set to 22 Deg C and the cooling setpoint set to 24 Deg C.
- 1.4.3. Gas Detection Setpoints: The CO setpoint is 25 ppm. The NOx setpoint is 1 ppm.
- 1.4.4. Supply Fan: The supply fan runs continuously at full speed.
- 1.4.5. Exhaust Fan: The power exhaust fan runs in conjunction with the fresh air damper. Once the damper is open above 30% the power exhaust fan will start and it's speed will be set in accordance with the amount of fresh air being provided.
- 1.4.6. Mixed Air Dampers: The dampers will control to maintain the minimum amount of fresh air to the space, gas detection sensors below setpoint and free cooling when available and required. The minimum fresh air limit is set to 20% (balancer to confirm). If any gas detection sensor is above setpoint, the dampers will be set to 100% outdoor air (gas detection overrides all other control strategies). Free cooling will provide the only stage of cooling for the unit. When free cooling is available the mixed air dampers will modulate to maintain the space temperature at setpoint. Free cooling will be available when the outdoor air temperature is below 18 Deg C.
- 1.4.7. Gas Burner: The gas burner will be controlled to maintain the space temperature at setpoint.
- 1.4.8. Heat Wheel + Bypass Dampers: When the outdoor air temperature is below 12 Deg C the heat wheel will modulate to either maintain the space temperature at setpoint or to provide frost control. When the outdoor air temperature is more than 2 Deg C above the return air temperature the heat wheel will operate at maximum speed. Otherwise when the outdoor air temperature is above 12 Deg C and less than the return air temperature the heat wheel will be off. When the heat wheel is rotating the bypass dampers will be closed. When the heat wheel is off the dampers will be fully open. The control system will provide frost protection for the heat wheel. The controller will slow the wheel down and stop it if necessary to maintain the frost temperature slightly above the frost setpoint.
- 1.4.9. Frost Temperature Setpoint: The frost temperature setpoint varies with the exhaust air humidity and outdoor air temperature as shown in the table below.
- | OAT (C) | SETPOINT<br>RAH (20%) | OAT (C) | SETPOINT<br>RAH (20%) | OAT (C) | SETPOINT<br>RAH (20%) |
|---------|-----------------------|---------|-----------------------|---------|-----------------------|
| -25     | -15.6                 | -19.4   | -11.1                 | -15.6   | -8.2                  |
| -26.1   | -11.7                 | -20.3   | -7.8                  | -16.1   | -4.9                  |
| -28.3   | -8.5                  | -22.2   | -4.6                  | -17.2   | -1.9                  |
| -32.2   | -5.8                  | -25     | -1.9                  | -19.4   | 0.8                   |
| -35     | -3.9                  | -27.2   | -0.6                  | -20.6   | 2.3                   |
| -40     | -3.3                  | -31.1   | -0.3                  | -23.5   | 3.3                   |
- 1.5. Unoccupied Mode**
- 1.5.1. Overview: The rooftop unit is off. During the unoccupied mode the RTU will start up to provide heating/cooling as required to maintain the space temperature at the unoccupied setpoints and for gas detection ventilation. If the space temperature drops below the heating setpoint or rises above the cooling setpoint the unit will be enabled to provide unoccupied heating/cooling. A deadband of 2 Deg C is applied to return the unit to the off state. If the gas detection sensors (either CO or NOx) rise above setpoint, the unit will be engaged to ventilate the space.
- 1.5.2. Space Temperature Unoccupied Setpoints: The unoccupied heating setpoint is set to 18 Deg C. The unoccupied cooling setpoint is set to 28 Deg C.
- 1.5.3. Gas Detection Setpoints: The CO setpoint is 25 ppm. The NOx setpoint is 1 ppm.
- 1.5.4. Supply Fan: When the outdoor air temperature is below 5 Deg C, the fan will run continuously at 50% speed, otherwise the fan is off (5 Deg C differential). During unoccupied cooling or heating, the fan will run at 100% speed. During unoccupied gas detection ventilation, the fan will run at 100% speed.
- 1.5.5. Exhaust Fan: The exhaust fan controls as per the occupied mode.
- 1.5.6. Mixed Air Dampers: The fresh air damper is closed and the return damper is open at all points in time except: 1) When gas is detected - dampers go to 100% fresh air, 2) The unit is running for temperature control and free cooling is permitted and required.
- 1.5.7. Gas Heating: Controlled as per the occupied mode. Heating is off when the unit is off.
- 1.5.8. Heat Wheel Control: Controlled as per the occupied mode. The heat wheel is off when the unit is off and/or when the unit is simply circulating air.
- 1.6. Urgent Alarms**
- 1.6.1. Low temperature limit.
- 1.6.2. Low space temperature.
- 1.6.3. CO level above 50 ppm. Alarm strobe/horn in space is activated.
- 1.6.4. NOx level above 3 ppm. Alarm strobe/horn in space is activated.
- 1.7. Non-Urgent Alarms**
- 1.7.1. Fan is commanded on and status is not received (2 minute delay).
- 1.7.2. The supply air temperature drops below 7 Deg C.
- 1.7.3. The supply air temperature rises above 43 Deg C.
- 1.7.4. Fan is commanded off and status is on (10 minute delay).
- 1.8. Maintenance Alarms**
- 1.8.1. Filter alarm.
- 1.8.2. Manual overrides are placed on the system.
- 1.9. Operational Trends (5-minute intervals, 7-days)**
- 1.9.1. All inputs and outputs.
- 1.9.2. Supply air temperature setpoint.
- 1.10. Performance Trends (daily intervals, 5-years)**
- 1.10.1. Space Temperature Index: Daily average of the percentage of time the space temperature is within normal limits (between the cooling setpoint (plus 1 Deg C) and heating setpoint (minus 1 Deg C)).
- 1.10.2. Airflow Heating Intensity: Daily average of the amount of time in the heating mode.
- 1.10.3. Daily Airflow Hours: The total number of hours the unit operated during the day.

YORK REGIONAL POLICE  
HELICOPTER HANGAR

350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

Key  
Plan

NO.	ISSUED	DATE
5	ISSUED FOR ADDENDUM 8	2024-10-07
4	ISSUED FOR ADDENDUM 6	2024-09-30
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Issues

All measurements are to be checked and verified on site by the contractor before proceeding with work

Do not scale drawings

Drawn by: Fizzah Khan/ Iulian Turiga  
Checked by: Ali Nakhaei-Zadeh  
Original Issue Date: 2024-07-31  
Project No: TT-24-005  
Scale: 1 : 100

Sheet  
Title:

VENTILATION NEW  
WORK - LEVEL 1

Drawing  
No.  
M-351



250 ROWNTREE DAIRY RD, WOODBRIDGE, ON  
TEL: 905-507-0800  
WEB: WWW.QUASARCG.COM

YORK REGIONAL POLICE  
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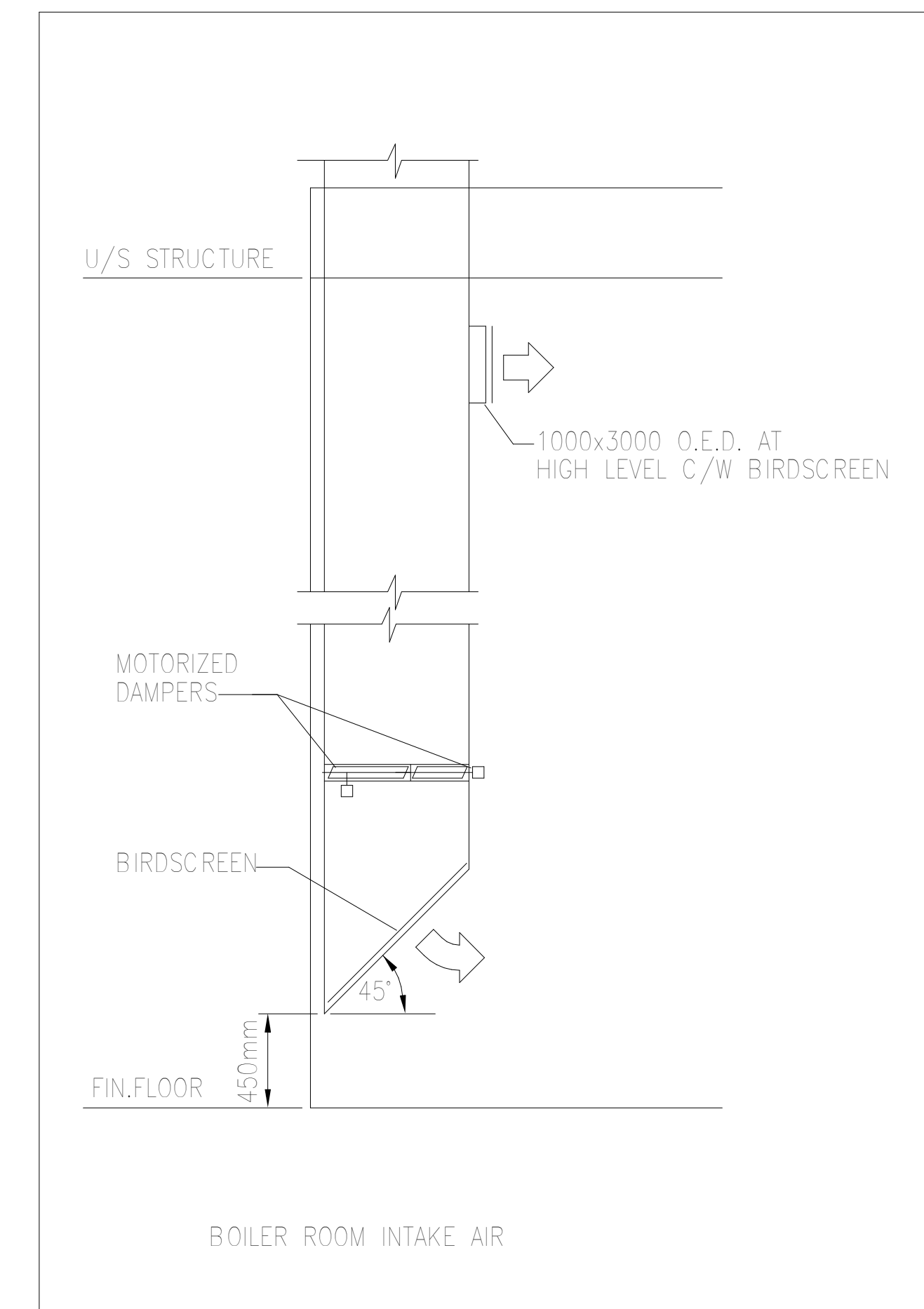
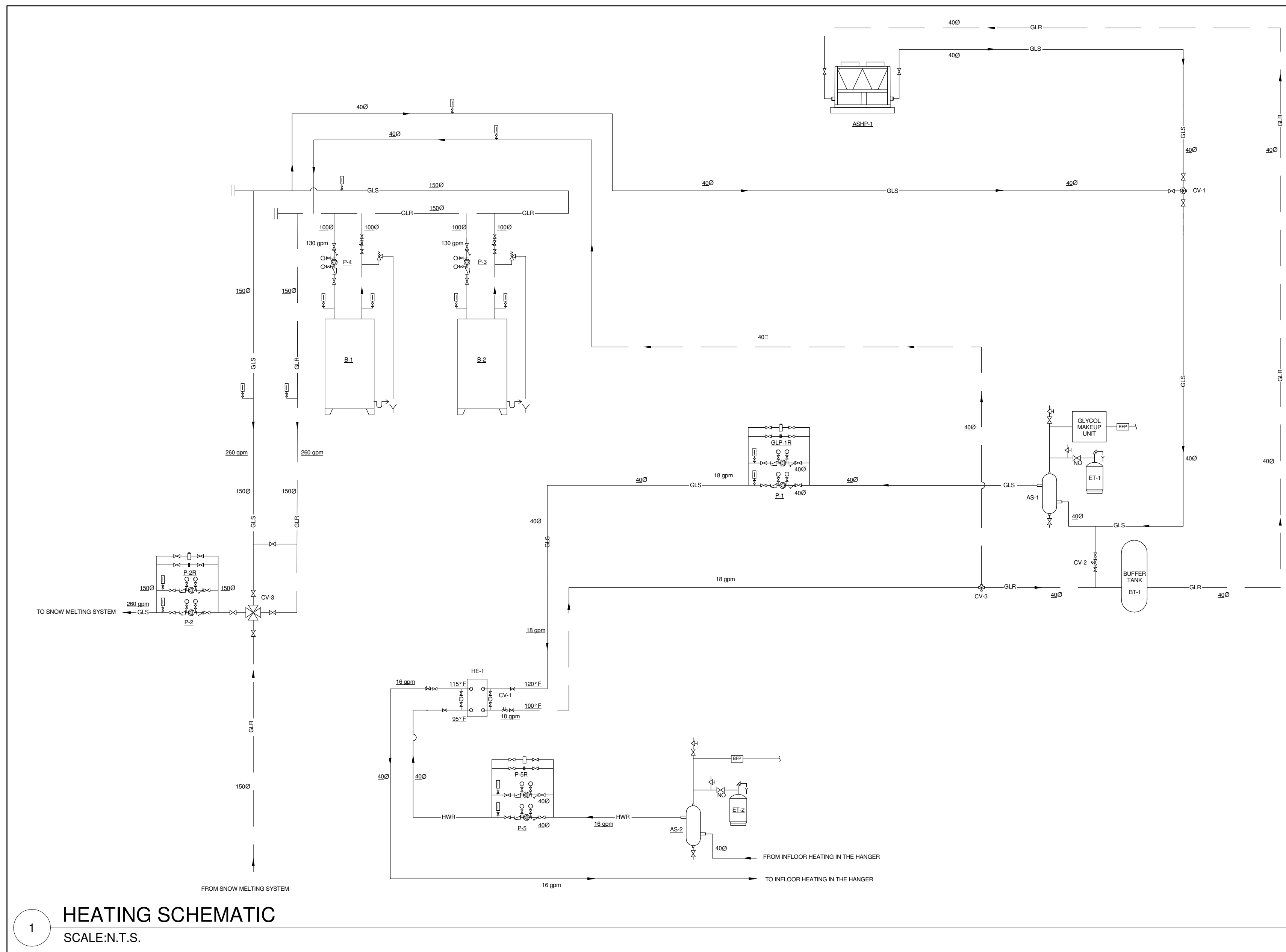
350 GARFIELD WRIGHT  
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## Key Plan

### SEQUENCE OF OPERATION FOR ASHP (IN FLOOR HEATING)

**WHEN SPACE TEMPERATURE FALLS BELOW 20C (68F) (ADJUSTABLE):**

1. ENABLE PUMP P-5 OR P-5R, P-1 OR P-1R SHALL BE ENABLED (BAS SHALL CYCLE PUMPS AFTER EVERY 30 HOURS OF OPERATION TO ENSURE EVEN WEAR)
2. ASHP SHALL BE ENABLED
3. WHEN SPACE TEMPERATURE REACHES 21.1C (70F) (ADJUSTABLE):
  - A) PUMPS P-5 AND P-5R SHALL BE DISABLED.
  - B) AIR SOURCE BOILER (ASHP-1) SHALL BE DISABLED
  - C) PUMPS P-1 AND P-1R SHALL BE DISABLED
4. IF ASHP BOILER IS NOT ABLE TO PROVIDE THE REQUIRED HEAT FOR IN FLOOR HEATING AT LOW AMBIENT TEMPERATURE:
  - A) THE THREE WAY VALVE CV-3 WILL DIRECT THE FLOW BETWEEN THE BOILERS TO HEAT EXCHANGER VIA ASSOCIATED BOILER'S PUMP AND P-1 & P-1R
  - B) THE PORT AT CV-1 (ASHP SIDE) WILL BE CLOSED AND LET THE FLOW FROM BOILER(S) DIRECT TO PUMPS P-1 & P-1R.
  - C) THE BOILERS AND THE ASSOCIATED PUMPS WILL BE ACTIVATED TO ALLOW THE DESIGN REQUIREMENTS TO BE REACHED.

[illegible]

## Issues

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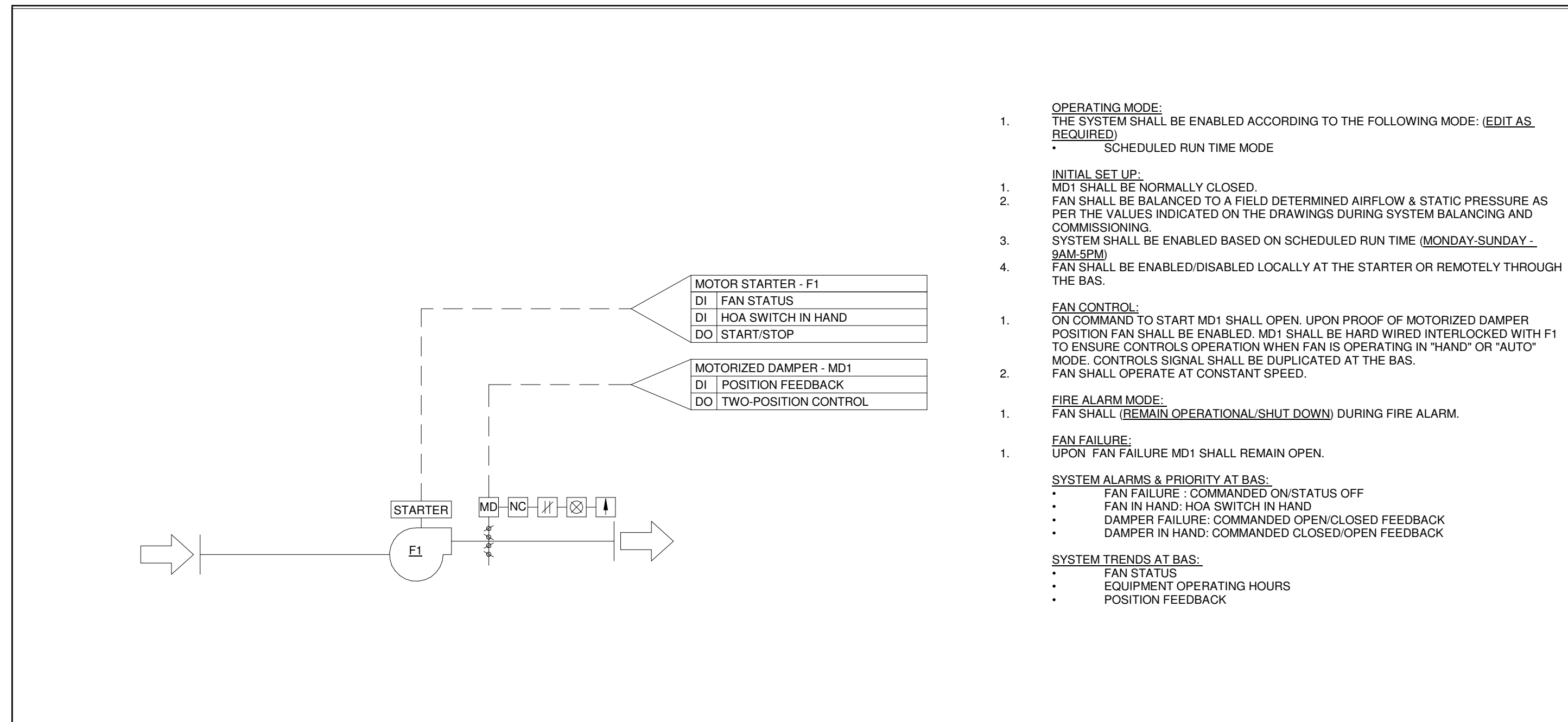
## HEATING SCHEMATIC

Drawing  
No. **M-702**

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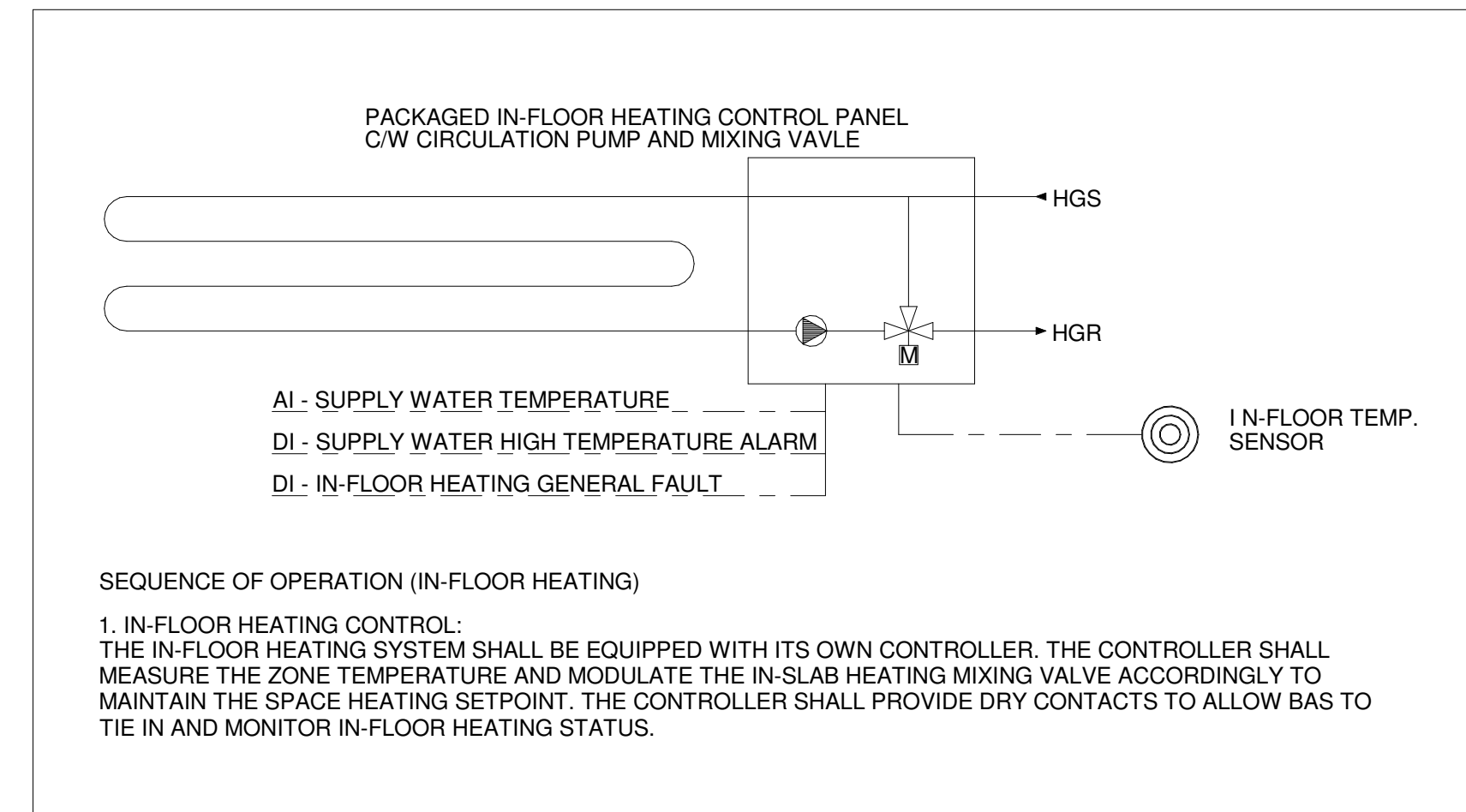
350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

## Key Plan



## CONSTANT SPEED FAN - DAMPER INTERLOCK CONTROL SEQUENCE

SCALE:N.T.S.



## IN-FLOOR HEATING CONTROLS

SCALE: 1 : 1

## SNOW MELTING SYSTEM SEQUENCE OF OPERATION

1. WHEN OUTDOOR TEMPERATURE DROPS BELOW 0°C, THE WARM WEATHER SHUT OFF (WWCO) IS CANCELLED AND THE CONTROL SHALL BE ACTIVE.
2. THE CONTROL SHALL ENABLE THE SNOW MELT PUMP TO OPERATE MODULATING THE 4-WAY VALVE TO INJECT HEAT INTO THE SLAB TO MAINTAIN IDLING TEMPERATURE OF 0°C (ADJUSTABLE).
3. IF SUPPLY WATER TEMPERATURE IS NOT AT SET POINT, THE CONTROL SHALL INITIATE THE LEAD BOILER PUMP TO START AND FIRE THE BOILER.
4. THE BOILER AND 4-WAY VALVE SHALL INJECT HEAT INTO THE SLAB UNTIL THE IDLE TEMPERATURE IS SATISFIED.
5. ONCE THE SLAB IS UP TO TEMPERATURE, THE OILER SHALL SHUT DOWN. THE BOILER PUMP WILL OPERATE FOR 3 MINUTES THEN SHUT DOWN.
6. THE FOUR WAY VALVE WILL MODULATE TO MAINTAIN SET POINT SUPPLY WATER TEMPERATURE AS LONG AS THE SNOW MELT SYSTEM IS ACTIVE.
7. IF SNOW IS DETECTED ON ANY OF THE SNOW/ICE SENSORS, THE CONTROL SHALL INITIATE A SNOW MELT DEMAND. THE SLAB SURFACE SET POINT SHALL BE INCREASED TO 4°C TO MELT SNOW.
8. THE FOUR WAY VALVE SHALL MODULATE OPEN TO INJECT HEAT INTO THE SLAB. ONCE THE SUPPLY WATER TEMPERATURE DROPS BELOW SETPOINT. THE LEAD BOILER WILL FIRE AND MODULATE TO MEET DEMAND. IF AFTER 5 MINUTES SET POINT IS NOT ACHIEVED, THE STANDBY BOILER (3) SHALL STAY ON UNTIL THE 3RD BOILER IS TURNED ON. ONCE ALL BOILERS ARE RUNNING, THEY WILL MODULATE IN UNISON, AND INCREASE MODULATION TO MEET DEMAND. ONCE DEMAND IS REACHED AND BOILERS MODULATE DOWN BELOW 50%, THE LAG BOILER SHALL RUN FOR 15 MINUTES, THEN STAGE OFF.
9. WHEN SNOW/ICE SENSOR DETECTS NO MOISTURE ON ITS SURFACE IT WILL CONTINUE MELTING DEMAND FOR 4 HOURS TO ENSURE SLAB IS CLEAR CONTROL WILL DROP SLAB BACK TO IDLING MODE AND MAINTAIN SLAB AT 0°C.
10. WHEN OUTDOOR TEMPERATURE DROPS BELOW -15°C, CONTROLS WILL INITIATE COLD WEATHER CUT OFF (CWCO).
11. CONTROL SYSTEMS WILL DUTY CYCLE PRIMARY SNOW MELT PUMPS AFTER EVERY 30 HOURS OF OPERATION TO ENSURE EVEN WEAR. PRIMARY PUMPS WILL BE EXERCISED ONCE PER WEEK DURING OFF CYCLES FOR 5 MINUTES.
12. CONTROL SYSTEM WILL DUTY CYCLE BOILERS AND BOILER PUMPS AFTER EVERY 30 HOURS OF OPERATION TO ENSURE EVEN WEAR.
13. CONTROL SYSTEM SHALL BE CAPABLE TO TRANSMIT INFORMATION REGARDING MELTING MODE, WWCO, CWCO, FAULT ON SENSOR, PUMP OPERATION, BOILER OPERATION AND FAULT. CONTROL SYSTEM TO OPEN PROTOCOL SYSTEM VIA MODEM.

[illegible]

## Issues

All measurements are to be checked and verified on site by the contractor before proceeding with work

Do not scale drawings

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Checked by: Ali Nakhaei-Zadeh  
Original Issue Date: 2024-07-31  
Project No: TT-24-005  
Scale: 1 : 1

Sheet  
Title:

## MECHANICAL CONTROL SEQUENCES II

Drawing  
No. **M-751**





350 GARFIELD WRIGHT  
BOULEVARD  
TOWN OF EAST GWILLIMBURY

## Key Plan

6	ISSUED FOR ADDENDUM 8	2024-10-07
5	ISSUED FOR ADDENDUM 7	2024-10-03
4	ISSUED FOR ADDENDUM 6	2024-09-30
3	ISSUED FOR ADDENDUM 3	2024-09-23
2	ISSUED FOR TENDER	2024-09-09
1	ISSUED FOR BUILDING PERMIT	2024-07-31
NO.	ISSUED	DATE

## Issues

All measurements are to be checked and verified on site by the contractor before proceeding with work

Do not scale drawings

Drawn by: Fizzah Khan / Iulian Turiga  
Checked by: Ali Nakhaei-Zadeh  
Original Issue Date: 2024-07-31  
Project No: TT-24-005  
Scale:

Sheet  
Title:

## MECHANICAL SCHEDULES

Drawing  
No. **M-900**

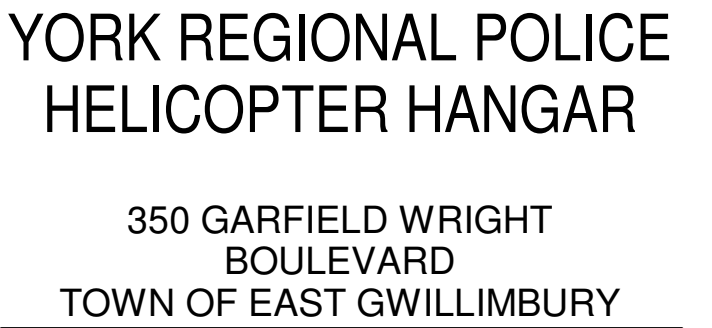
VRF FAN COIL UNIT																										
TAG	ASSOCIATED CONDENSER	MANUFACTURER	MODEL	TYPE	SERVICE	REFRIGERANT	AIRFLOW (L/S)	AIRFLOW (L/S) MEDIUM SPEED	AIRFLOW (L/S) HIGH SPEED	AIRFLOW (L/S)	TOTAL CAPACITY (KW)	COOLING				HEATING			SOUND (DBA)		ELECTRICAL			WEIGHT (kg)	NOTES	
							LOW SPEED			E.S.P (Pa)		SENSIBLE CAPACITY (KW)	SET POINT DB (°C)	SET POINT WB (°C)	S.A.T. DB (°C)	S.A.T. WB (°C)	CAPACITY (KW)	SET POINT DB (°C)	S.A.T. DB (°C)	PRESSURE (H/MIL)	POWER	MCA	MOPP			V/Ph/Hz
FCU-1	ODU-1	DAIKIN	FXS067TBVJU	HORIZONTAL, DUCTED	CONFERENCE RM	R-410A	109	125	133	0.10	2.20	1.61	26.7	19.4	12.8	12.2	2.49	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-2	ODU-1	DAIKIN	FXS024TBVJU	HORIZONTAL, DUCTED	MECHANICS OFFICE	R-410A	242	292	350	0.10	7.03	5.01	26.7	19.4	12.8	12.2	7.91	21.1	29.4	36/32/29	64	1.8	15	208/160	60	
FCU-3	ODU-1	DAIKIN	FXS007TBVJU	HORIZONTAL, DUCTED	KITCHEN/CUINGE	R-410A	109	125	133	0.10	2.20	1.61	26.7	19.4	12.8	12.2	2.49	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-4	ODU-1	DAIKIN	FXS024TBVJU	HORIZONTAL, DUCTED	GENERAL OFFICE	R-410A	242	292	350	0.10	7.03	5.01	26.7	19.4	12.8	12.2	7.91	21.1	29.4	36/32/29	64	1.8	15	208/160	60	
FCU-5	ODU-1	DAIKIN	FXS007TBVJU	HORIZONTAL, DUCTED	QUARTER MASTER	R-410A	133	125	133	0.10	1.70	1.38	26.7	19.4	12.8	12.2	1.90	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-6	ODU-1	DAIKIN	FXS007TBVJU	HORIZONTAL, DUCTED	OFFICE 1	R-410A	133	125	133	0.10	1.70	1.38	26.7	19.4	12.8	12.2	1.90	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-7	ODU-1	DAIKIN	FXS007TBVJU	HORIZONTAL, DUCTED	OFFICE 2	R-410A	133	125	133	0.10	1.70	1.38	26.7	19.4	12.8	12.2	1.90	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-8	ODU-1	DAIKIN	FXS007TBVJU	HORIZONTAL, DUCTED	QUIET RM	R-410A	109	125	133	0.10	1.69	1.28	26.7	19.4	12.8	12.2	3.08	21.1	29.4	33/30/28	61	0.8	15	208/160	24.9	
FCU-9	ODU-1	DAIKIN	FXS012TBVJU	HORIZONTAL, DUCTED	LOCKER RM	R-410A	134	117	138	0.10	2.78	2.84	26.7	19.4	12.8	12.2	3.43/30/29	62	0.11	8.2	208/160	24.9				
FCU-10	ODU-1	DAIKIN	FXS024TBVJU	HORIZONTAL, DUCTED	FITNESS RM	R-410A	242	292	350	0.10	7.03	5.01	26.7	19.4	12.8	12.2	7.91	21.1	29.4	36/32/29	64	1.8	15	208/160	60	
FCU-11	ODU-2	DAIKIN	FTX24WVJU9R	WALL MOUNTED, NON-DUCTED	IT ROOM	R-410A	0	0	155	0.00	6.21	4.62	26.7	19.4	12.8	12.2	7.03	21.1	-273.2	51/44/37	0	18.8	0	208/160	14.96	

TANKLESS ELECTRIC WATER HEATER													
TAG	MANUFACTURER	MODEL	SERVICE		FLUID			ELECTRICAL				WEIGHT (kg)	REMARKS
				OUPUT CAPACITY (KW)	TYPE	FLOW RATE (L/S)	TEMP. RISE (C)	AMPS (A)	MCA	MOCP	V/Ph/Hz		
TLWH-1	RHEEM	RETEX-04	LAVATORY	3.5	WATER	0.03	8.9	29			120/1/60	2.0	
TLWH-2	RHEEM	RETEX-11	KITCHEN/WASHER	11.8	WATER	0.09	10	46			240/1/60	3.9	
TLWH-3	RHEEM	RETEX-13	SHOWER/JAN RM	13.0	WATER	0.13	6.7	54			240/1/60	3.9	

BOILER																	
TAG	MANUFACTURER	MODEL	LOCATION	GAS				FLUID				ELECTRICAL				WEIGHT (kg)	REMARKS
				OUPUT CAPACITY (KW)	BOILER EFF (%)	MIN GAS PRES. (IN)	MAX GAS PRES. (IN)	TYPE	FLOW RATE (GPM)	E.F.T (F)	L.F.T (F)	AMP	MCA	MOCp	V/Ph/Hz		
B-1	DE DIETRICH	GT 430-8A PLUS	MECH RM	432	96	7	14	40% GLYCOL	130	120	95	9.8			120/1/60	1470	CONDENSING
B-2	DE DIETRICH	GT 430-8A PLUS	MECH RM	432	96	7	14	40% GLYCOL	130	120	95	9.8			120/1/60	1470	CONDENSING

ELECTRIC UNIT HEATER													
TAG	MANUFACTURER	MODEL	LOCATION	MOUNTING CONFIGURATION	HEATING CAPACITY (kW)	AIRFLOW (L/s)	MOTOR KW	FAN RPM	ELECTRICAL			WEIGHT (kg)	NOTES
									FLA	MOPP	V/Ph/Hz		
UH-1	SIGMA	058H	MECH RM	WALL MOUNT	10.76	94	0.093	1550	1.8	15	120/1/60	21.8	
UH-2	SIGMA	047H	VEHICLE BAY	WALL MOUNT	7.62	190	0.093	1550	1.8	15	120/1/60	18.1	
UH-3	SIGMA	047H	VEHICLE BAY	WALL MOUNT	7.62	190	0.093	1550	1.8	15	120/1/60	18.1	
UH-4	SIGMA	047H	PAINT ROOM	WALL MOUNT	7.62	190	0.093	1550	1.8	15	120/1/60	18.1	
UH-5	SIGMA	047H	MAINTENANCE STG	WALL MOUNT	7.62	190	0.093	1550	1.8	15	120/1/60	18.1	
UH-6	RECTIBO		VESTIBULE	WALL MOUNT	2.00						240/1/60	10.0	

IN FLOOR HEATING								
TAG	AREA (M2)	TOTAL LOAD (KW)	FLOW (L/S)	HEAD LOSS (M)	FLUID TYPE	DELTA T	LOOP TYPE/SIZE	SPACING
IF-1	405	45	2	4	100% WATER	11 C	12.7MM UPONO HEPEX	305MM CTRS TUBES

[illegible]

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Drawn by: Fizzah Khan/ Iulian Turiga  
Checked by: Ali Nakhaei-Zadeh  
Original Issue Date: 2024-07-31  
Project No: TT-24-005  
Scale: N.T.S.

MECHANICAL  
SCHEDULES II

Autodesk Docs://2402 - YRP Helicopter Hanger/TT-24-005-YRP-QCG ME Model\_R24.rvt

AIR SOURCE HEAT PUMP														
TAG	MODEL	REFRIGERANT	OUTDOOR AMB. TEMP C (F)	HEAT CAPACITY (KW)	FLUID TYPE	FLOW RATE (L/S)	R. TEMP (C)	S. TEMP (C)	P. DROP (PSI)	POWER (KW)	MCA	FLA	MOCP	V/PH/HZ
ASHP-1	ASB-25	R-507	-23.4 (-10)	48.7	40% PG	1.1	38	50	0.3	23	87.6	73.3	125	575/3/60

CONDENSERS													
TAG	LOCATION	MODEL	MANUFACTURER	COMB RATIO	AIRFLOW RATE (L/S)	COOLING		HEATING		REFRIGERANT	MCA	V/PH/HZ	WEIGHT (KG)
						AMB. TEMP (C)	CAPACITY (KW)	AMB. TEMP (C)	CAPACITY (KW)				
ODU-1	ROOF	RXYQ144AATJB	DAIKIN	92.6	-	35	40	-20	29.4	R-410A	47.8	575/3/60	350

EXPANSION TANKS								
	LOCATION	SERVICE	BASIS OF DESIGN		VOLUME (L)	MAX DESIGN PRESSURE (KPA)	WEIGHT (KG)	REMARKS
			MANUFACTURER	MODEL				
ET-1	MECHANICAL ROOM	GLYCOL SYSTEM	PATTERSON	NLA-400	400	862.0 kPa	136	
ET-2	MECHANICAL ROOM	INFLOOR HEATING	PATTERSON	NLA-85	87	862.0 kPa	41	

BUFFER TANK								
TAG	MODEL	PART NUMBER	DESCRIPTION	TANK VOLUME (L)	MAX. DESIGN TEMP. (F)	MAX DESIGN PRES. (PSIG)	WEIGHT (KG)	REMARKS
BT-1	HBT-120	55621200	2-PORT HOT WATER BUFFER TANK	454.2	450	125	0.3	TANK SHOULD BE INSULATED

PLUMBING FIXTURES SCHEDULE									
UNIT TAG	DESCRIPTION	MANUFACTURER	MODEL	WASTE	VENT	DCW	DHW	TRAP	REMARKS
WC-1	Awali Millenium Flowise Elongated Flushometer Toilet	AMERICAN STANDARD	3353.101	100	40	25	-	INT	
L-1	LAV. MEZZO SEMI COUNTERTOP (UNIVERSAL WASHROOM)	AMERICAN STANDARD	9960.001	40	32	12	12	40	
L-2	LAVATORY (LOCKER ROOM)	INTEGRAL SOLID POLYMER	40	32	12	12	12	40	SEE DWG# B/A-201 FOR DETAILS
LS	LAUNDRY SINK (PAINT ROOM)	WHITEHAUS COLLECTION	WHLSDB4020-C	40	32	12	12	40	
KS	KITCHEN SINK	KINDRED	QSL2020/8/3	40	32	12	12	40	
JS	JANITOR'S MOP SINK	STERN-WILLIAMS CO	SB902T35T40BP	75	40	12	12	75	
SH	SHOWER TRIM KIT	MOEN	TL183						
NOTES: VALUES IN MM. REFER TO SPECIFICATIONS DWG# M-902 FOR PLUMBING FIXTURE DETAILS ALL PLUMBING FIXTURES COMPLETE WITH FAUCET. REFER TO DWG# M-902 FOR MORE DETAILS									