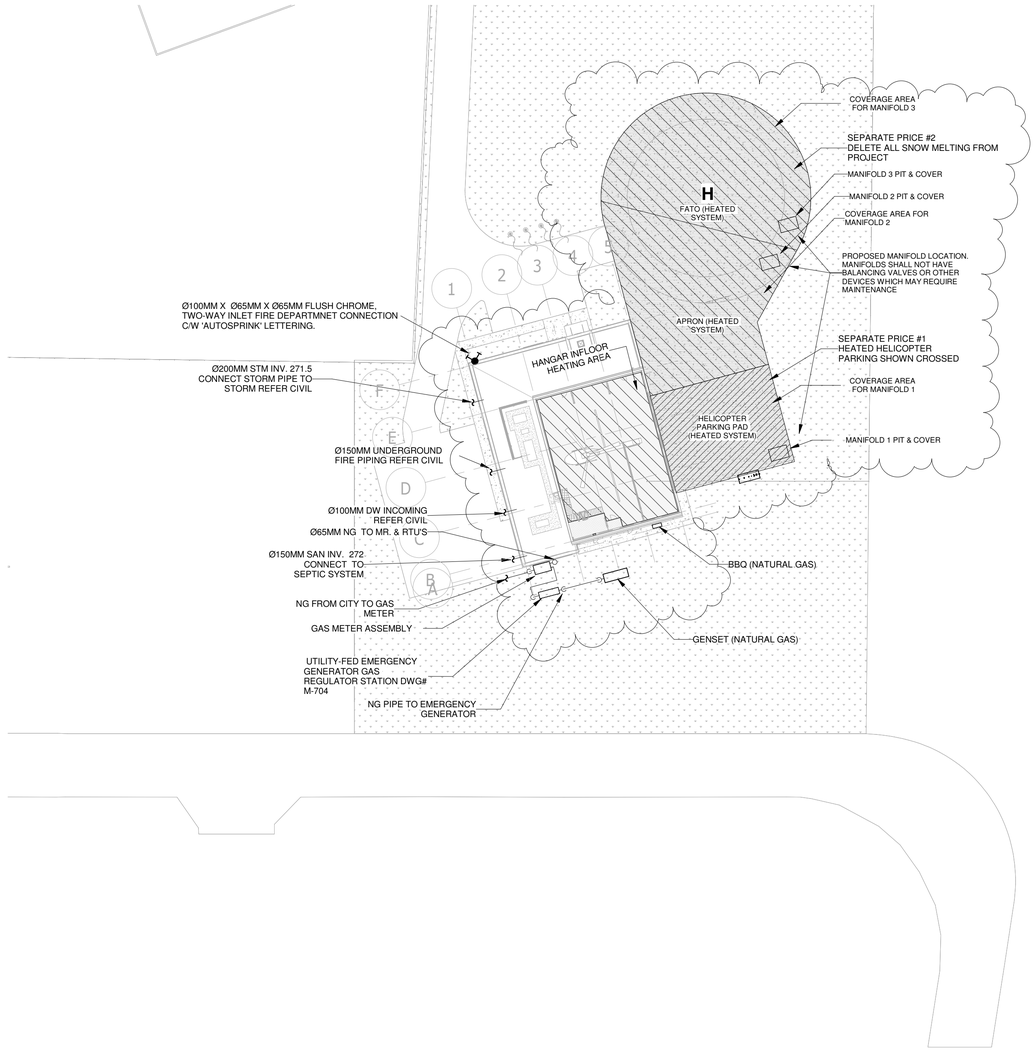

1 SITE PLAN M

SCALE: 1 : 500

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YORK REGIONAL POLICE HELICOPTER HANGAR

350 GARFIELD WRIGHT BOULEVARD
TOWN OF EAST GWILLIMBURY

Key Plan

NO.	ISSUED	DATE
7	ISSUED FOR ADDENDUM 14	2024-11-27
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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: 1 : 500

Sheet Title:
MECHANICAL SITE PLAN

Drawing No.
M-100

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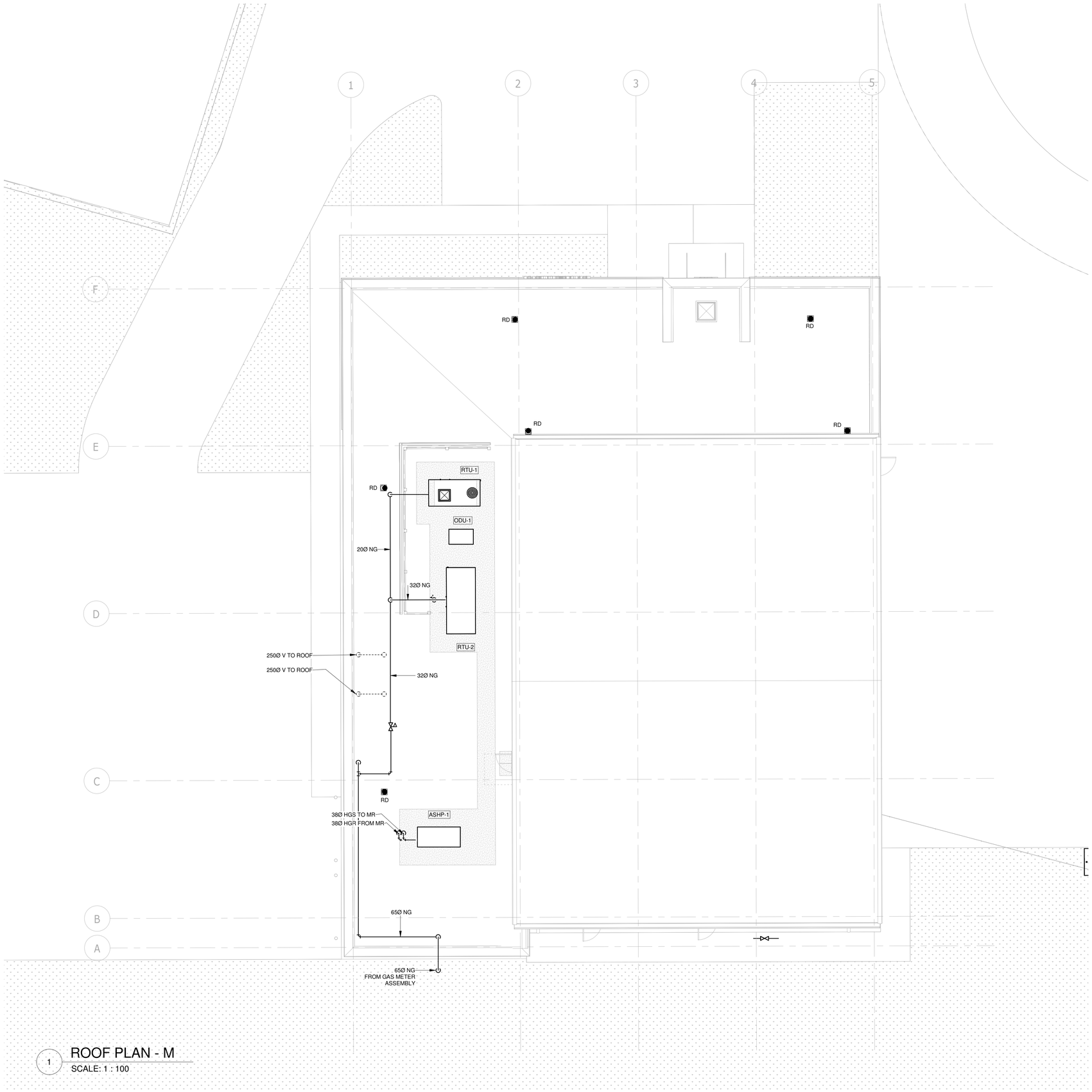

1 ROOF PLAN - M
SCALE: 1 : 100

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YORK REGIONAL POLICE HELICOPTER HANGAR

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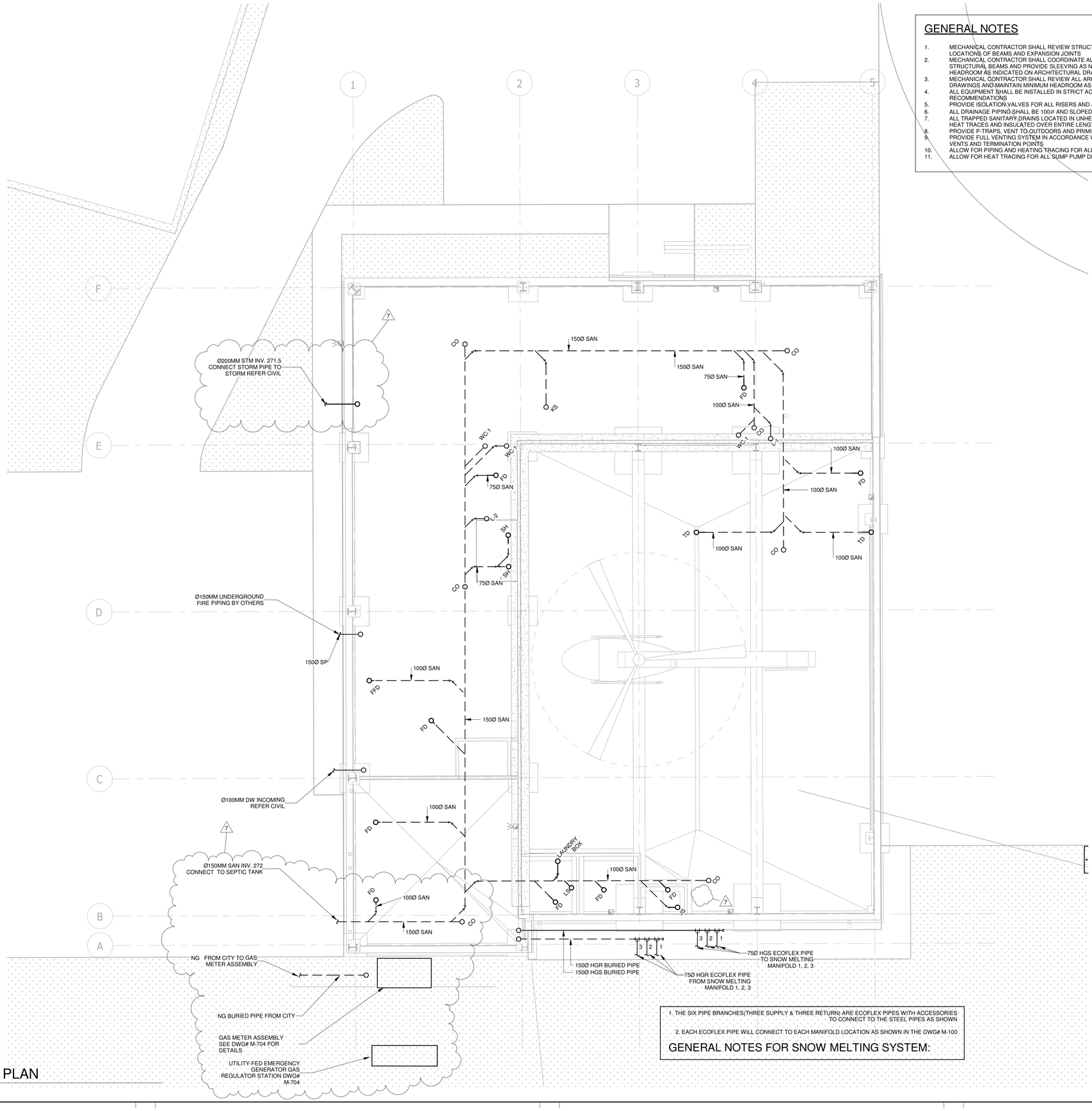
Checked by: Ali Nakhaei-Zadeh
Original Issue Date: 2024-07-31
Project No: TT-24-005
Scale: 1 : 100

Sheet Title:
ROOF PLAN

Drawing No.
M-150

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 STRUCTURAL BEAMS AND PROVIDE SLEEVING AS 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. 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 100ø 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
11. ALLOW FOR HEAT TRACING FOR ALL SUMP PUMP DISCHARGE PIPING



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

GENERAL NOTES FOR SNOW MELTING SYSTEM:

1 FOUNDATION PLAN
SCALE: 1 : 100

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

Sheet Title:
FOUNDATION PLAN

Drawing No.
M-250

GENERAL NOTES

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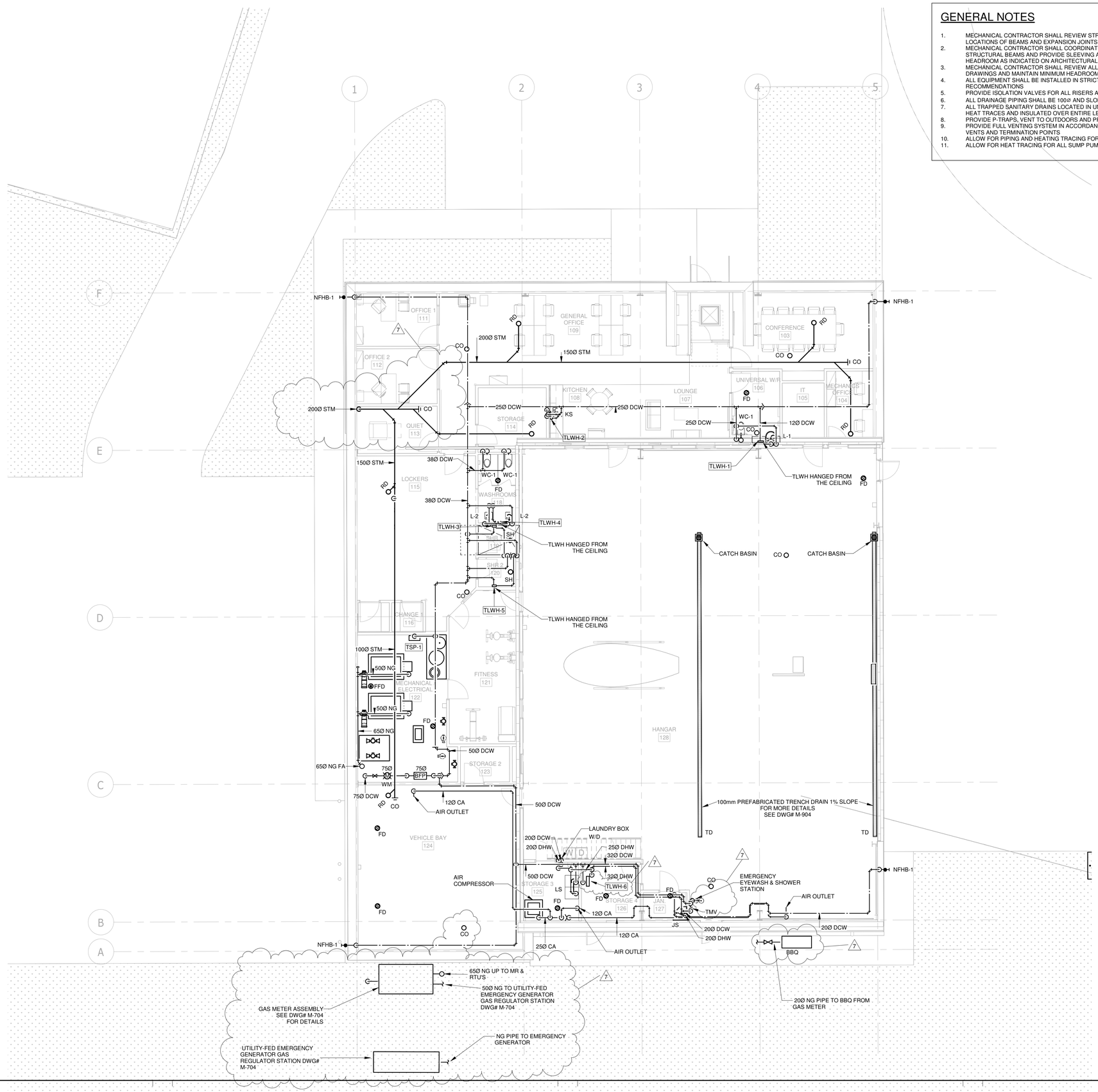

PLUMBING NEW WORK - LEVEL 1

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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

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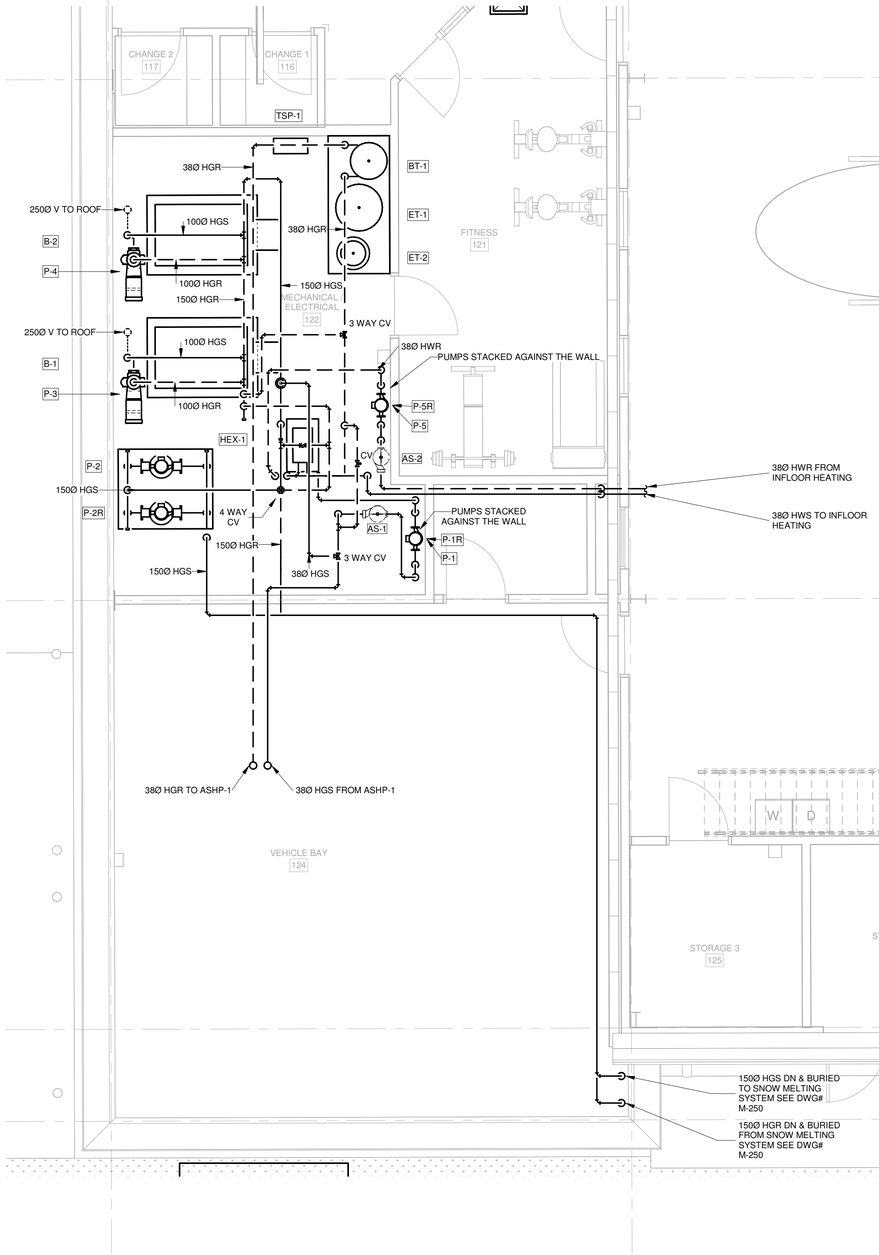

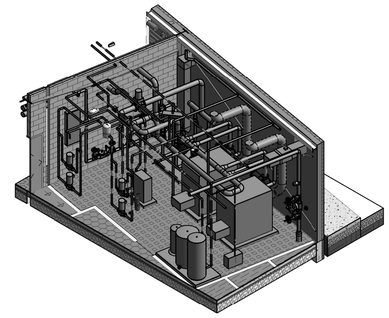

2 MECH ROOM 3D VIEW 1
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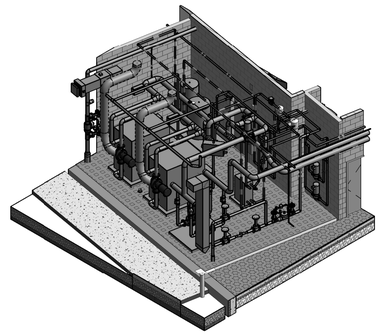

3 MECH ROOM 3D VIEW 2
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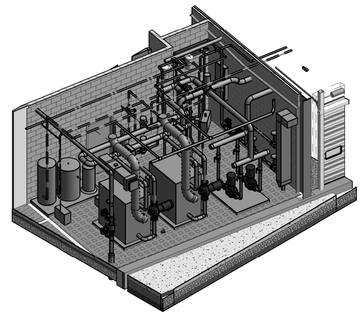

4 MECH ROOM 3D VIEW 3
SCALE:

GENERAL NOTES:

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.

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Project No: TT-24-005
Scale: 1 : 50

Sheet Title:
MECHANICAL ROOM PIPING

Drawing No.
M-252

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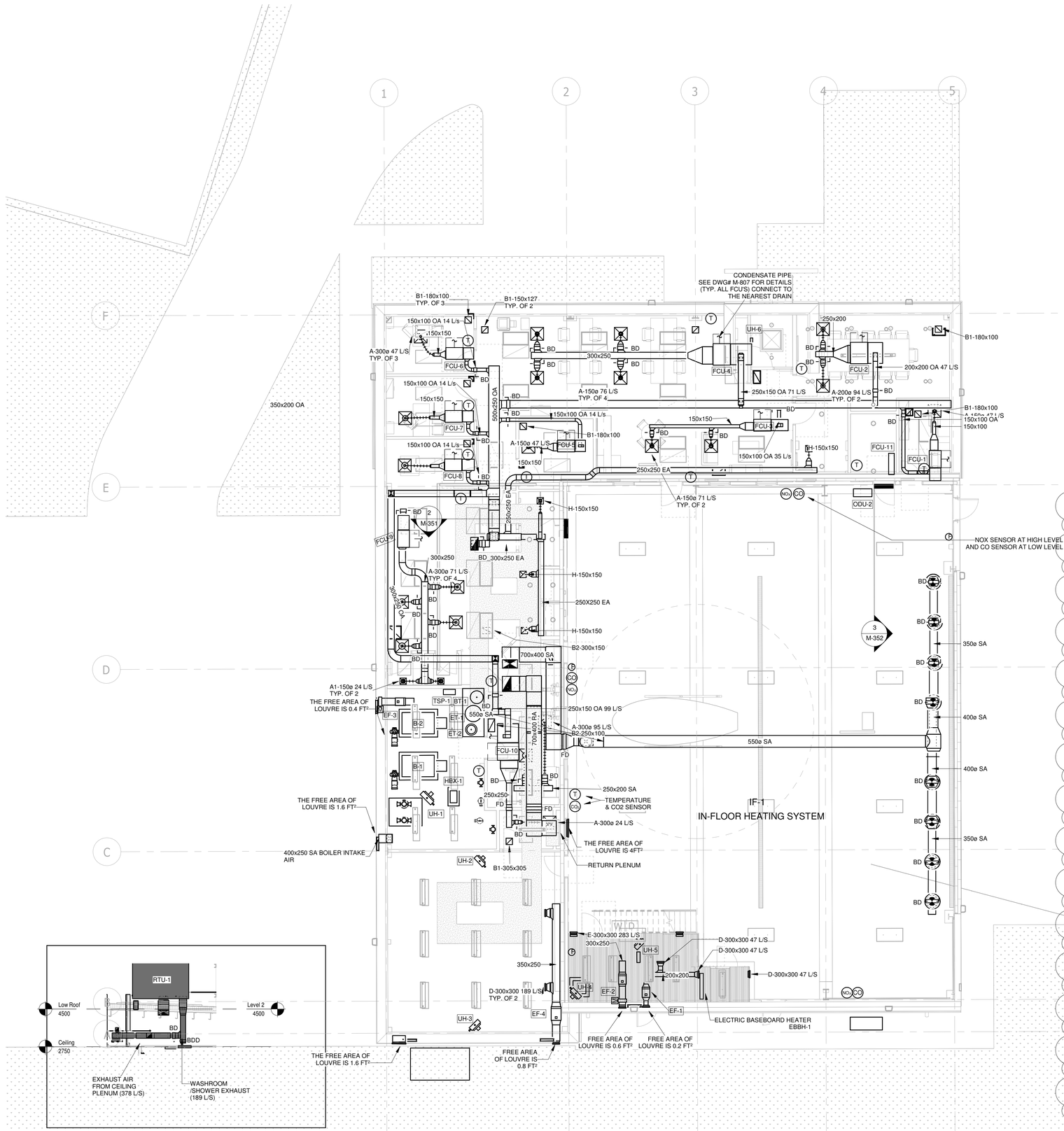

2 RTU-1 SCHEMATIC CONCEPT
SCALE: 1 : 100

1 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 freezestat 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)	SETPTOINT RAH (20%)	OAT (C)	SETPOINT RAH (30%)	OAT (C)	SETPOINT RAH (40%)
-25	-15.6 C	-19.4	-11.1 C	-15.6	-8.2 C
-26.1	-11.7 C	-20.3	-7.8 C	-16.1	-4.9 C
-28.3	-8.3 C	-22.2	-4.4 C	-17.2	-1.9 C
-32.2	-5.6 C	-25	-1.9 C	-19.4	0.8 C
-35	-3.9 C	-27.2	-0.6 C	-20.6	2.3 C
-40	-3.3 C	-31.1	-0.3 C	-23.3	3.3 C

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 annunciation.

1.1.5. Occupancy is determined based on lighting controls occupancy sensors.

1.2. Safeties and Limits

1.2.1. Fan speed modulation is disabled until fan run status is received.

1.2.2. The minimum speed for the VFD is 50% (30 hz – confirm min speed with balancer).

1.2.3. Supply air temperature control is disabled until fan run status is received.

1.2.4. Damper control is disabled until fan run status is received.

1.2.5. Simultaneous heating and cooling is not permitted.

1.2.6. 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

1.4. 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 16 Deg C (or 18 Deg C when ASHP is OFF) .

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 (Free Cooling Mode): 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. Unit turns on for the following triggers: C02 > LIMIT, 50% RETURN FAN, 50% SUPPLY FAN. CO > LIMIT, 100% RETURN FAN, 80% SUPPLY FAN, NOX > LIMIT, 100% RETURN FAN, 80% SUPPLY FAN OR TEMP < 16 DEG C, OFF, 18 DEG C, 100% FAN.

1.4.9. Frost Temperature Setpoint: The frost temperature setpoint varies with the exhaust air humidity and outdoor air t emperature as shown in the table below:

OAT (C)	SETPTOINT RAH (20%)	OAT (C)	SETPOINT RAH (30%)	OAT (C)	SETPOINT RAH (40%)
-25	-15.6 C	-19.4	-11.1 C	-15.6	-8.2 C
-26.1	-11.7 C	-20.3	-7.8 C	-16.1	-4.9 C
-28.3	-8.3 C	-22.2	-4.4 C	-17.2	-1.9 C
-32.2	-5.6 C	-25	-1.9 C	-19.4	0.8 C
-35	-3.9 C	-27.2	-0.6 C	-20.6	2.3 C
-40	-3.3 C	-31.1	-0.3 C	-23.3	3.3 C

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.

7

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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

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Project No: TT-24-005
Scale: 1 : 100

Sheet Title:
VENTILATION NEW WORK - LEVEL 1

Drawing No.
M-351

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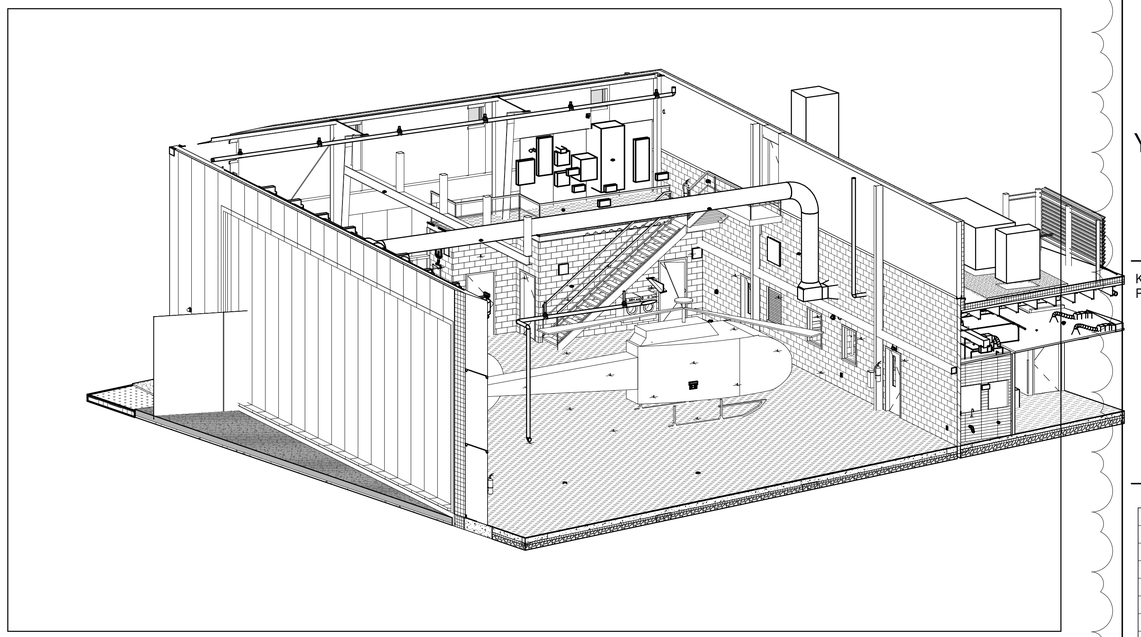

2 HANGAR VENTILATION ISOMETRIC 2

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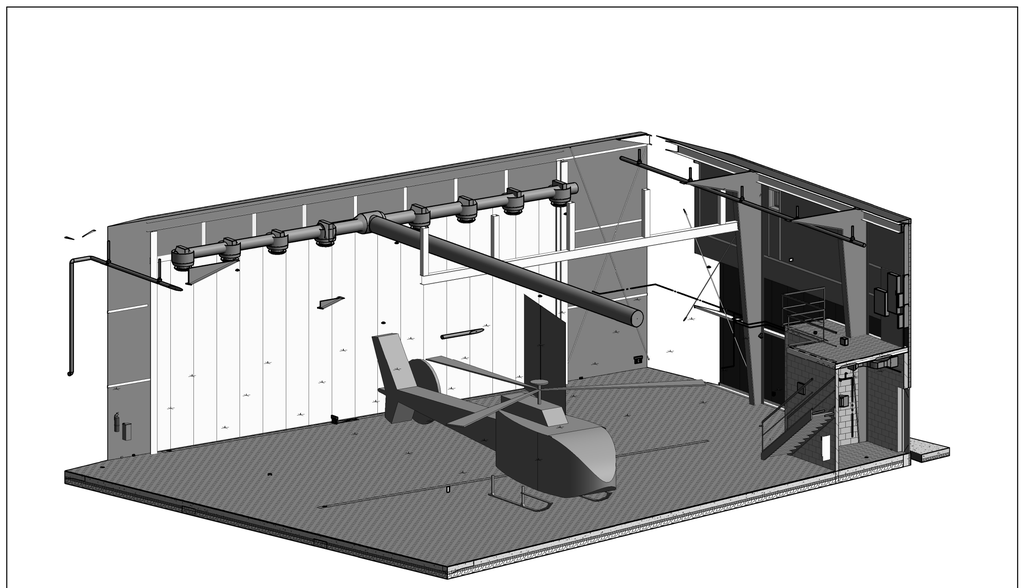

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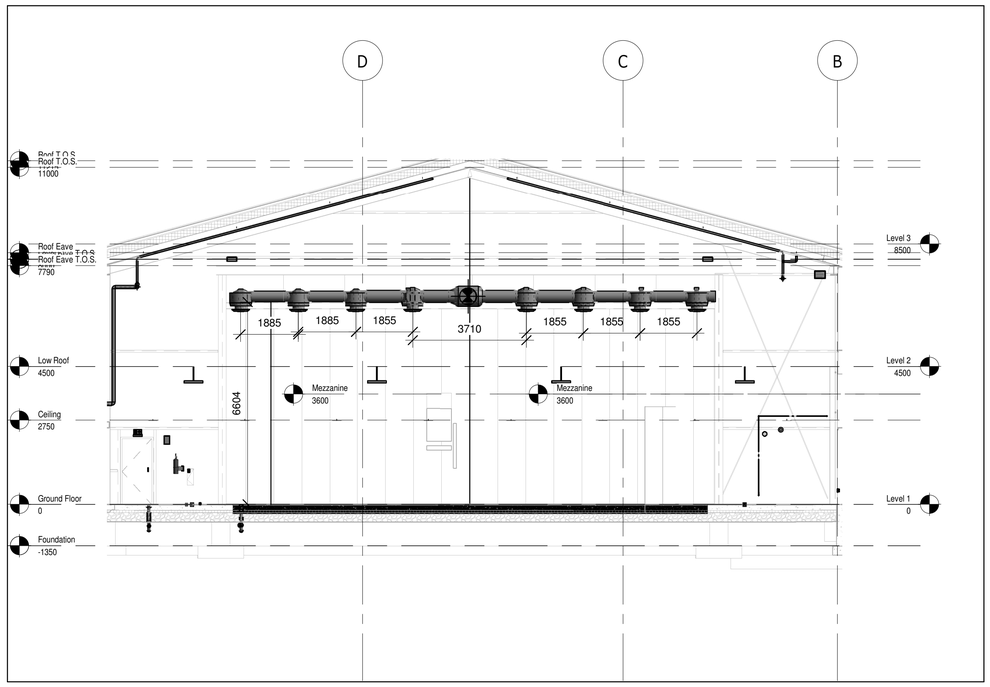

3 HANGAR VENTILATION SECTION VIEW

SCALE: 1 : 100

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TOWN OF EAST GWILLIMBURY

Key Plan

NO.	ISSUED	DATE
2	ISSUED FOR ADDENDUM 14	2024-11-27
1	ISSUED FOR ADDENDUM 3	2024-09-23

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Sheet Title:

VENTILATION NEW WORK - ISOMETRIC VIEWS

Drawing No.

M-352

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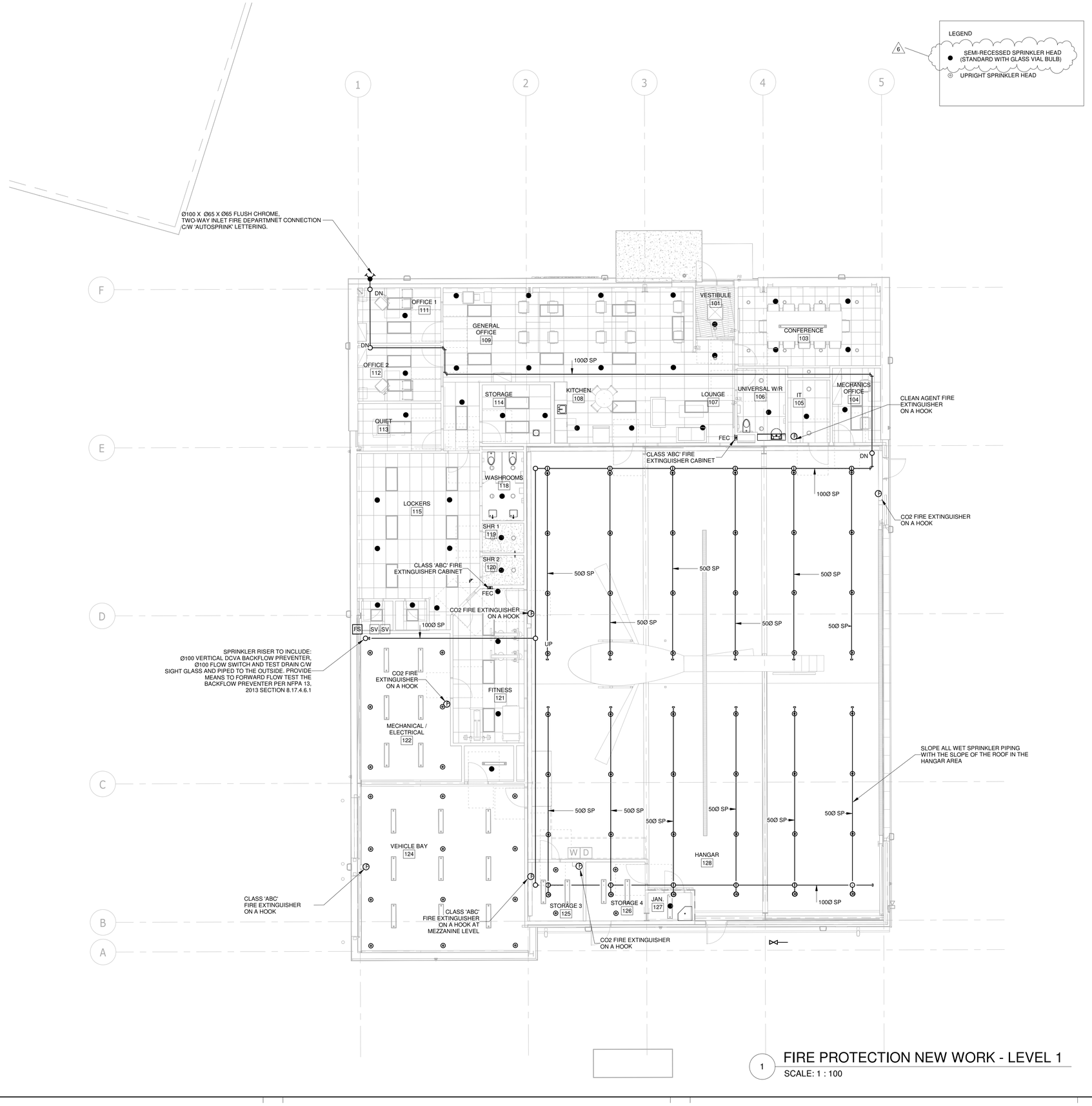

1 FIRE PROTECTION NEW WORK - LEVEL 1
SCALE: 1 : 100

GENERAL NOTES - FIRE PROTECTION

1. SPRINKLER SYSTEM DESIGN AND INSTALLATION TO BE IN ACCORDANCE WITH NFPA 13-2013, THE ONTARIO BUILDING CODE-2012, THE ONTARIO FIRE CODE-2012, AND LOCAL AUTHORITY REQUIREMENTS.
2. ADHERE TO AND OBTAIN ALL PERMITS, LICENSES AND GOVERNMENT REQUIREMENTS, IF APPLICABLE.
3. CUTTING OF STRUCTURAL AND/OR ARCHITECTURAL MEMBERS TO BE DONE ONLY WITH THE WRITTEN APPROVAL OF THE ARCHITECT AND/OR STRUCTURAL ENGINEER.
4. ALL ELECTRICAL WIRING OF SPRINKLER DEVICES IS BY OTHERS. COORDINATE ALL ELECTRICAL ITEMS WITH ELECTRICAL CONTRACTOR AND ENSURE PROPER COORDINATION.
5. PROVIDE STOCK OF EXTRA SPRINKLERS IN ACCORDANCE WITH NFPA-13, 6.2.9.
6. COORDINATION IS TO TAKE PLACE BETWEEN THE SPRINKLER CONTRACTOR AND ALL OTHER TRADES.
7. THE SPRINKLER CONTRACTOR IS TO FIELD SURVEY THE SITE, INCLUDING STRUCTURAL STEEL AND MECHANICAL/ELECTRICAL SERVICES PRIOR TO FABRICATION AND INSTALLATION.
8. CONFLICTS OR DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE DESIGN CONSULTANTS.
9. INSTALL HIGH TEMPERATURE SPRINKLERS AROUND ALL HEAT SOURCES IN ACCORDANCE WITH NFPA 13-2013.
10. INSTALL GUARDS ON SPRINKLERS IN WAREHOUSE, MECHANICAL, ELECTRICAL AND STORAGE ROOMS.
11. INSTALL LOW POINT DRAINS ON ALL TRAPPED SECTIONS OF PIPING IN ACCORDANCE WITH NFPA 13-2013.
12. PROVIDE TAGS AND SIGNAGE AS PER NFPA 13-2013.
13. SPRINKLER SYSTEMS ARE TO BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH NFPA 13-2013.
14. CONTRACTOR SHALL VERIFY FLOWS AND PRESSURES VIA A FIRE HYDRANT FLOW TEST PERFORMED BY A LICENSED COMPANY, AT THE SITE PRIOR TO ANY DESIGN, HYDRAULIC CALCULATIONS AND INSTALLATION OF ANY FIRE PROTECTION SYSTEMS.
15. CONTRACTOR SHALL PROVIDE AND INSTALL NEW FIRE EXTINGUISHERS ON HOOKS OR IN CABINETS AS SHOWN ON THE DRAWINGS.
16. CONTRACTOR SHALL INSTALL THE FOLLOWING TYPES OF FIRE EXTINGUISHERS OR EQUIVALENT:

    FIRE EXTINGUISHER CABINETS--BOH AND OFFICE AREAS: NATIONAL FIRE EQUIPMENT LTD OR EQUIVALENT, MODEL 102F C/W A CLASS 'ABC' 5LB DRY CHEM FIRE EXTINGUISHER

    FIRE EXTINGUISHER ON HOOK--VEHICLE BAY: NATIONAL FIRE EQUIPMENT LTD OR EQUIVALENT, MODEL SF-ABC680, 10LB CLASS 'ABC' DRY CHEM FIRE EXTINGUISHER

    CLEAN AGENT FIRE EXTINGUISHER ON HOOK--IT ROOM: NATIONAL FIRE EQUIPMENT LTD OR EQUIVALENT, MODEL CA07, 7.5LB CLEANGUARD FK-5-1-12 CLEAN AGENT FIRE EXTINGUISHER

    CO2 FIRE EXTINGUISHER ON HOOK--MECHANICAL ROOMS, HANGER AREA, PAINT ROOM: NATIONAL FIRE EQUIPMENT LTD OR EQUIVALENT, STRIKE FIRST, MODELS SF-10CO2A (MECH. RM & PAINT RM) AND SF-20CO2A (HANGER BAY) CO2 FIRE EXTINGUISHER

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6	ISSUED FOR ADDENDUM 14	2024-11-27
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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

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FIRE PROTECTION NEW WORK - LEVEL 1

Drawing No.
M-551

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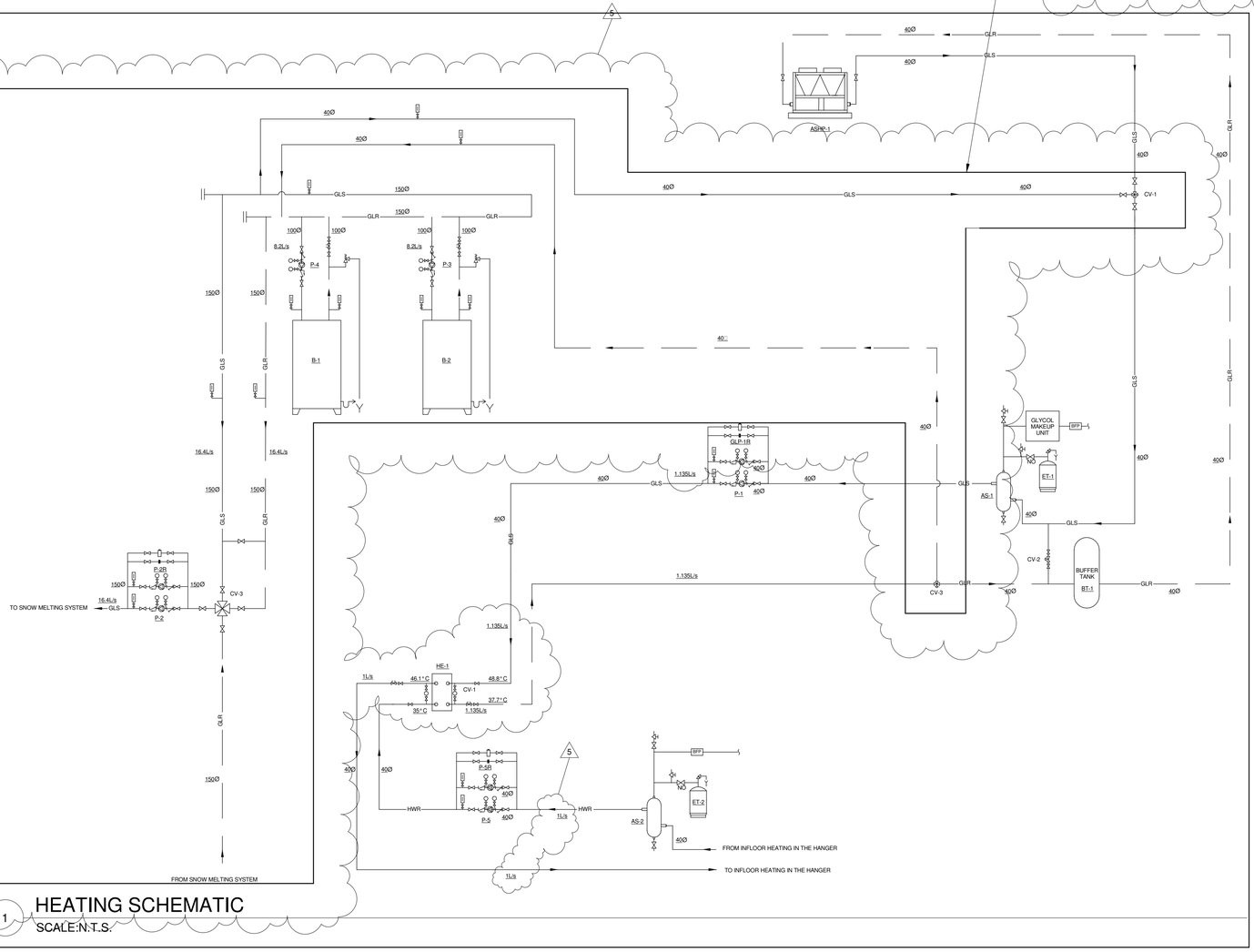
SEQUENCE OF OPERATION FOR ASHP (IN FLOOR HEATING)

WHEN SPACE TEMPERATURE FALLS BELOW 18C (64F) (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 20C (68F) (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. WHEN OUTDOOR AIR TEMPERATURE IS BELOW -10 DEG C (ADJUSTABLE):
   - 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.
   - D) ASHP IS DISABLED

BASE PRICE AND SEPARATE PRICE NO.1
EXCLUDE IN SEPARATE PRICE NO.2



1 HEATING SCHEMATIC
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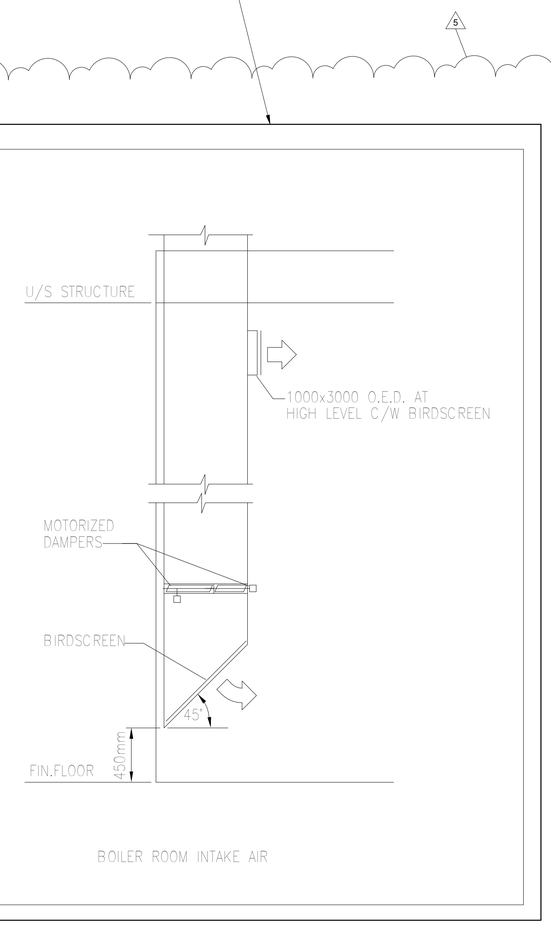

2 BOILER INTAKE SCHEMATIC
SCALE:N.T.S.

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Sheet Title:
HEATING SCHEMATIC

Drawing No.
M-702

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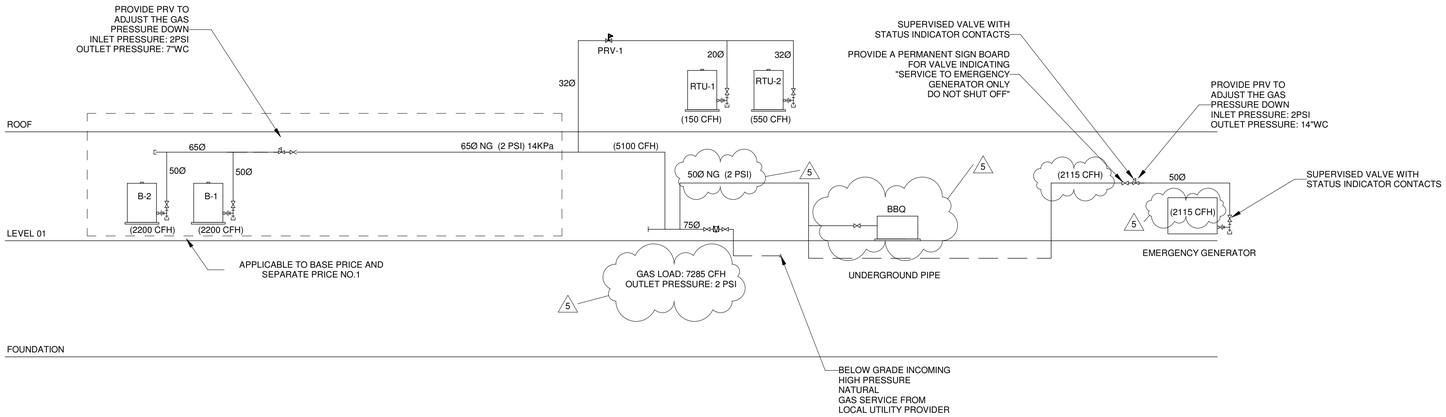
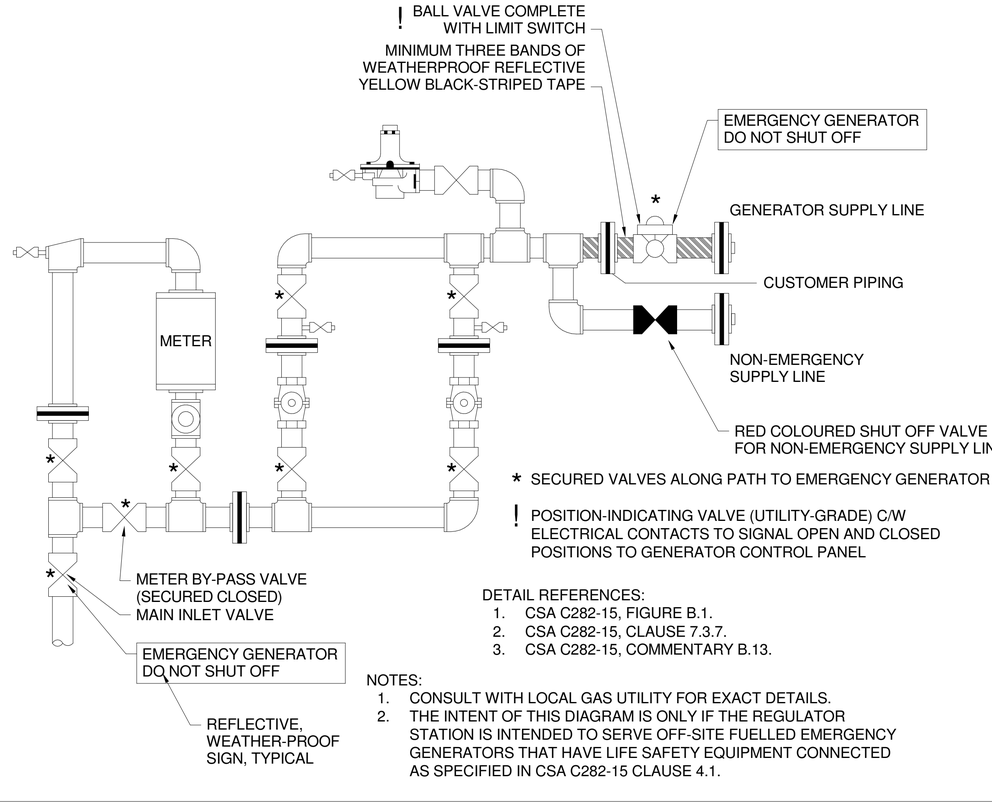


NOTE:

EARTHQUAKE ACTIVATED AUTOMATIC SHUT-OFF VALVE TO BE INSTALLED AS PER SPECIFICATION (23 11 23)

1 GAS SCHEMATIC

SCALE:N.T.S.



2 UTILITY-FED EMERGENCY GENERATOR GAS REGULATOR STATION

SCALE: 1 : 1

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Key
Plan

NO.	ISSUED	DATE
5	ISSUED FOR ADDENDUM 14	2024-11-27
4	ISSUED FOR ADDENDUM 10	2024-10-15
3	ISSUED FOR ADDENDUM 6	2024-09-30
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Sheet Title:

GAS SCHEMATIC

Drawing No.

M-704

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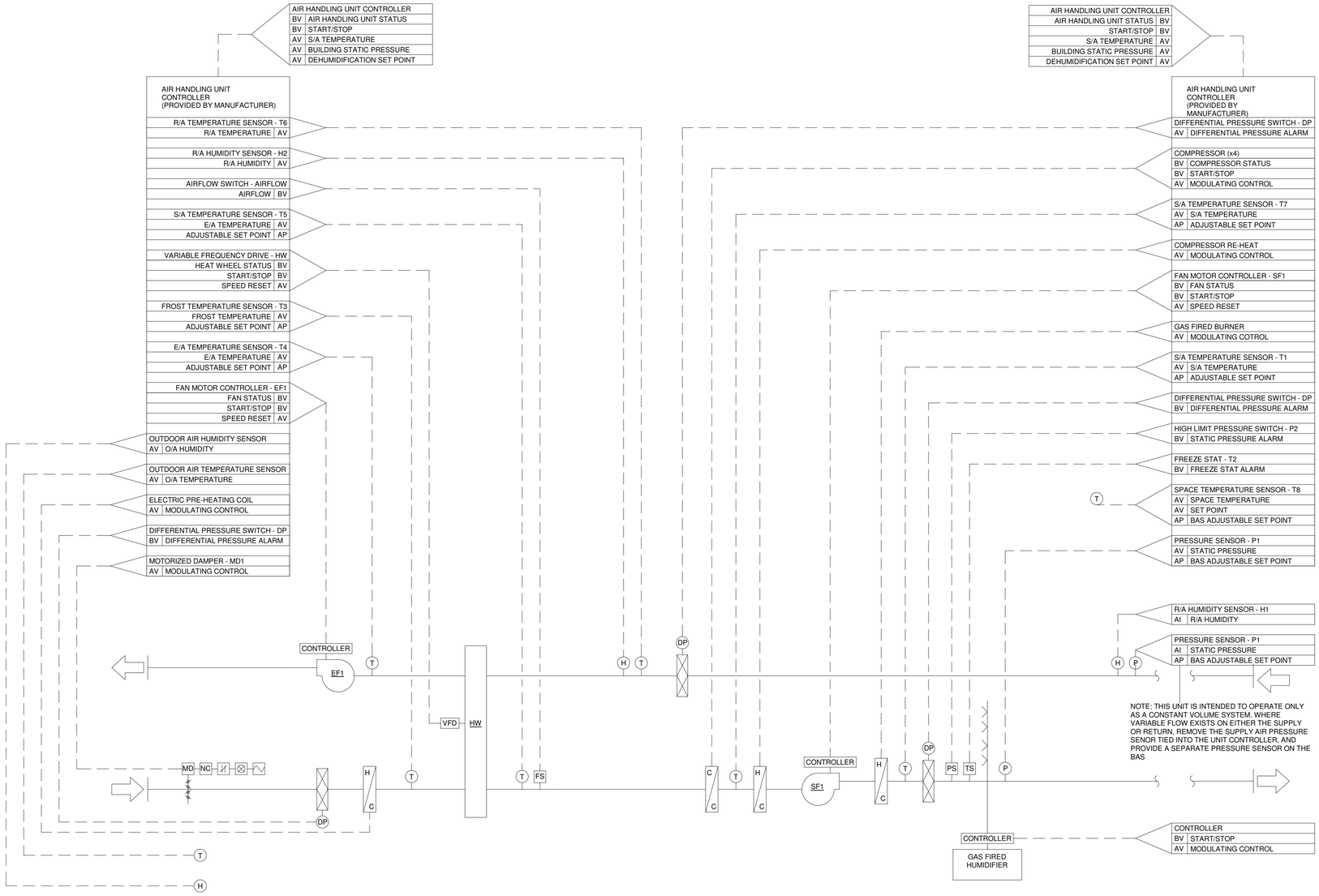

OPERATING MODE:

1. THE SYSTEM SHALL BE ENABLED BY THE BAS ACCORDING TO THE FOLLOWING MODE:
   - CONTROL MODE (OFF, AUTO, COOL ONLY, FAN ONLY, HEAT ONLY)
   - OCCUPANCY MODE (AUTO, TENANT, OVERRIDE, OCCUPIED, UNOCCUPIED)
   - CHANGE OVER MODE (RETURN AIR, SPACE TEMPERATURE, NETWORK SIGNAL)
   - COOLING AND HEATING DISCHARGE AIR TEMPERATURE CONTROL
   - SCHEDULING
   - BUILDING STATIC PRESSURE CONTROL

INITIAL SET UP:

1. THE SYSTEM SHALL BE A 100% OUTDOOR AIR SYSTEM.
2. THE ROOF TOP UNIT SHALL BE SUPPLIED WITH A BACNET/MSTP CONTROLLER CAPABLE OF INTERFACING WITH THE BAS.
3. THE ROOF TOP UNIT SHALL BE CAPABLE OF PROVIDING THE FOLLOWING FUNCTIONS:
   - MECHANICAL COOLING VIA DX COOLING COIL AND CONDENSING UNIT.
   - MECHANICAL HEATING VIA GAS FIRED HEATING COIL AND BURNER.
   - MECHANICAL HOT GAS RECOVERY VIA COMPRESSOR RE-HEAT COIL. RE-HEAT SHALL BE AVAILABLE WHEN THERE IS A CALL FOR MECHANICAL COOLING.
   - ELECTRIC PRE-HEATING FOR FROST CONTROL MODE OF OPERATION.
4. THE ROOF TOP UNIT SHALL BE PROVIDED WITH A MANUFACTURER SUPPLIED SPACE TEMPERATURE SENSOR (T8) CAPABLE OF MAINTAINING THE SPACE TEMPERATURE SET POINT. THE SPACE TEMPERATURE SENSOR (T1) SHALL INCLUDE THE FOLLOWING:
   - (DESCRIBE SPECIFIC FEATURES ABOUT THE SPACE TEMPERATURE SENSOR)
5. MD1 SHALL BE NORMALLY CLOSED.
6. HEAT WHEEL SHALL BE DISABLED.
7. ELECTRIC PRE-HEATING COIL SHALL BE DISABLED.
8. GAS FIRED BURNER SHALL BE DISABLED.
9. COMPRESSOR SHALL BE DISABLED.
10. GAS FIRED HUMIDIFIER SHALL BE DISABLED.
11. FANS SHALL OPERATE AT A FIELD DETERMINED AIRFLOW & STATIC PRESSURE AS PER THE VALUES INDICATED ON THE DRAWINGS DURING SYSTEM BALANCING AND COMMISSIONING.
12. AFTER THE SYSTEM BALANCING AND COMMISSIONING IS COMPLETE, OBTAIN THE AIRFLOW DIFFERENTIAL BETWEEN THE SUPPLY FAN AND THE EXHAUST FAN.
13. P1 SHALL BE LOCATED APPROXIMATELY TWO-THIRDS DOWNSTREAM/UPSTREAM OF THE FAN. FINAL LOCATION SHALL BE COORDINATED WITH THE BALANCING CONTRACTOR AND THE CONTROLS CONTRACTOR.
14. (SYSTEM SHALL BE ENABLED BASED ON COOLING AND HEATING DISCHARGE AIR TEMPERATURE CONTROL AND CHANGE OVER MODE BASED ON NETWORK SIGNAL FOR SUMMER COOLING MODE AND WINTER HEATING MODE COOLING).
15. FANS SHALL BE ENABLED/DISABLED LOCALLY AT THE UNIT OR REMOTELY THROUGH THE BAS.

FAN CONTROL:

1. ON COMMAND TO START MD1 SHALL OPEN. UPON PROOF OF MOTORIZED DAMPER POSITION FANS SHALL BE ENABLED.
2. FAN SHALL MODULATE TO MAINTAIN THE STATIC PRESSURE SET POINT DETERMINED BY P1.
3. EXHAUST FAN SHALL RUN AT CONSTANT SPEED.

ECONOMIZER (FREE COOLING) CONTROL:

1. N/A

DEHUMIDIFICATION CONTROL:

1. DEHUMIDIFICATION IS ENABLED WHEN:
   - O/A DEWPOINT IS GREATER THAN SET POINT.
   - O/A DEWPOINT SHALL BE SET TO (15°C DRY BULB, 15°C WET BULB).

HEAT WHEEL CONTROL:

1. HEAT WHEEL IS ENABLED WHEN:
   - ROOF TOP UNIT IS IN OPERATION AND ECONOMIZER (FREE COOLING) CONTROL IS NOT REQUIRED OR AVAILABLE.

FROST PREVENTION CONTROL SEQUENCE:

1. FIRST STAGE.
   - T3 SHALL BE SET TO (-15°C DRY BULB).
   - ELECTRIC PRE-HEATING COIL SHALL BE ENABLED TO MAINTAIN THE T3 SET POINT.
2. SECOND STAGE OF FROST PROTECTION.
   - N/A

COMPRESSOR RE-HEAT CONTROL SEQUENCE:

1. COMPRESSOR RE-HEAT IS ENABLED WHEN:
   - DEHUMIDIFICATION SEQUENCE IS REQUIRED AND AVAILABLE.

TEMPERATURE CONTROL:

1. THE AIR HANDLING SYSTEM SHALL MAINTAIN THE FOLLOWING S/A TEMPERATURE SET POINTS:
   - SUMMER COOLING MODE: (18°C DRY BULB). O/A TEMPERATURE IS GREATER THAN (20°C DRY BULB).
   - WINTER HEATING MODE: (24°C DRY BULB). O/A TEMPERATURE IS LESS THAN (18°C DRY BULB).
2. O/A TEMPERATURE IS GREATER THAN (20°C DRY BULB).
   - T1 SHALL BE SET TO (18°C DRY BULB).
   - ELECTRIC PRE-HEATING COIL SHALL BE DISABLED.
   - GAS FIRED BURNER SHALL BE DISABLED.
   - GAS FIRED HUMIDIFIER SHALL BE DISABLED.
   - HEAT WHEEL SHALL MODULATE ITS SPEED TO MAINTAIN THE T1 SET POINT.
   - IF THE T1 SET POINT IS NOT SATISFIED AND ADDITIONAL COOLING IS REQUIRED, COMPRESSORS SHALL BE ENABLED TO MAINTAIN THE T1 SET POINT. COMPRESSORS SHALL BE STAGED ON/OFF AS REQUIRED.

COMPRESSOR RE-HEAT SHALL BE ENABLED TO MAINTAIN THE T1 SET POINT.

1. O/A TEMPERATURE IS BETWEEN (12°C DRY BULB & 20°C DRY BULB).
   - T1 SHALL BE SET TO (20°C DRY BULB).
   - ELECTRIC PRE-HEATING COIL SHALL BE DISABLED.
   - GAS FIRED BURNER SHALL BE DISABLED.
   - COMPRESSOR SHALL BE DISABLED.
   - GAS FIRED HUMIDIFIER SHALL BE DISABLED.
   - HEAT WHEEL SHALL MODULATE ITS SPEED TO MAINTAIN THE T1 SET POINT IF AVAILABLE.
   - IF THE T1 SET POINT IS NOT SATISFIED AND ADDITIONAL COOLING IS REQUIRED, COMPRESSORS SHALL BE ENABLED TO MAINTAIN THE T1 SET POINT. COMPRESSORS SHALL BE STAGED ON/OFF AS REQUIRED.
   - COMPRESSOR RE-HEAT SHALL BE ENABLED TO MAINTAIN THE T1 SET POINT.
4. O/A TEMPERATURE LESS THAN (18°C DRY BULB).
   - T1 SHALL BE SET TO (24°C DRY BULB),
   - COMPRESSOR SHALL BE DISABLED.
   - HEAT WHEEL SHALL MODULATE ITS SPEED TO MAINTAIN THE T1 SET POINT. SET POINT CAN BE OVERRIDDEN BY HEAT WHEEL FROST PROTECTION CONTROL SEQUENCE.
   - IF THE T1 SET POINT IS NOT SATISFIED AND ADDITIONAL HEATING IS REQUIRED, THE GAS FIRED BURNER SHALL BE ENABLED TO MAINTAIN THE T1 SET POINT.

HUMIDITY CONTROL:

- H1 SHALL BE SET TO (30% R.H.).
- GAS FIRED HUMIDIFIER SHALL BE ENABLED TO MAINTAIN H1 AT/BELOW SET POINT.

FIRE ALARM MODE:

1. FANS SHALL (SHUT DOWN) DURING FIRE ALARM.

SMOKE VENTING MODE:

1. N/A

100% RE-CIRCULATION MODE:

1. N/A

FAN FAILURE:

1. UPON SUPPLY FAN OR EXHAUST FAN FAILURE THE FOLLOWING SHALL OCCUR:
   - REMAINING OPERATIONAL FAN SHALL BE DISABLED.
   - MD1 SHALL BE CLOSED.

SAFETY SHUT DOWN:

1. HIGH LIMIT DUCT STATIC PRESSURE SENSOR P2 AT THE SUPPLY AIR MAIN SHALL BE INTERLOCKED WITH THE SUPPLY FAN AND THE EXHAUST FAN. FANS WILL BE DISABLED WHEN P2 EXCEEDS 3 IN/WC.
2. FREEZE STAT T2 SHALL BE INTERLOCKED WITH THE SUPPLY AND EXHAUST FAN AND DISABLE THE FANS WHEN T2 DROPS BELOW 4°C. FANS MUST BE MANUALLY RESET PRIOR TO RESTARTING. CLOSE ALL DAMPERS.

HEAT WHEEL FAILURE:

1. N/A

OPTIMIZATION:

1. N/A

SYSTEM ALARMS & PRIORITY AT BAS:

- FAN FAILURE : COMMANDED ON/STATUS OFF
- HIGH SUPPLY AIR TEMPERATURE: T1 IS GREATER THAN 20°C FOR MORE THAN 30 MINUTES IN SUMMER COOLING MODE
- LOW SUPPLY AIR TEMPERATURE: T1 IS LOWER THAN 22°C FOR MORE THAN 30 MINUTES IN WINTER HEATING MODE
- FREEZE STAT: T2 IS EQUAL TO OR LOWER THAN 4°C
- HIGH RETURN AIR TEMPERATURE: T3 IS GREATER THAN 26°F FOR MORE THAN 30 MINUTES IN SUMMER COOLING MODE
- LOW RETURN AIR TEMPERATURE: T3 IS LOWER THAN 18°C FOR MORE THAN 30 MINUTES IN WINTER HEATING MODE
- HIGH RETURN AIR HUMIDITY: H1 IS GREATER THAN 10% R.H. ABOVE DEHUMIDIFICATION MODE SET POINT FOR MORE THAN 30 MINUTES
- LOW RETURN AIR HUMIDITY: H1 IS LOWER THAN 5% R.H. BELOW DEHUMIDIFICATION MODE SET POINT FOR MORE THAN 30 MINUTES

SYSTEM TRENDS AT BAS:

- ROOF TOP UNIT STATUS
- TEMPERATURE SET POINT
- BUILDING STATIC PRESSURE
- DEHUMIDIFICATION SET POINT

1 ROOF TOP UNIT - 100% OUTDOOR AIR WITH HOT GAS RE-HEAT AND HEAT WHEEL - RTU-1 - OFFICE SPACE

SCALE:N.T.S.

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Scale: N.T.S.

Sheet Title:
MECHANICAL CONTROL SEQUENCES I

Drawing No.
M-750

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ROOFTOP UNITS - DOAS (DEDICATED OUTDOOR AIR SUPPLY)

TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	AIRFLOW		OUTDOOR AIR %	FANS			FILTERS			SOUND POWER 0 INLET/OUTLET/RADIATED (DB)							VFD	ELECTRICAL				WEIGHT (kg)	NOTES
					TOTAL AIRFLOW...	OUTDOOR AIRFLOW...		TYPE	SERIES	FAN SPEED...		HEATING COIL (KW)	COOLING COIL (KW)	63 HZ	125 HZ	250 HZ	500 HZ	1000 HZ	2000 HZ	4000 HZ		FLA	MCA	MOCP	V/Ph/Hz		
RTU-1	DAIKIN	DPSH03B	ROOF	OFFICE	567	567	100	SWSI AF	II	2200	2 IN. MERV 8	8.78	11.3	78	77	85	80	82	81	76	YES	35.8	40.6	50	208/3/60	754	THE ROOF CURBS SUPPLIED BY THE MANUFACTURER AND INSTALLED BY THE MECHANICAL CONTRACTOR.
RTU-2	DAIKIN	DAHA11A	ROOF	HANGAR	1652	1652	100	SWSI AF	I	1441	2 IN. MERV 8	93.8	-	83	84	80	81	76	73	67	YES	23.7	27.1	40	208/3/60	866	THE ROOF CURBS SUPPLIED BY THE MANUFACTURER AND INSTALLED BY THE MECHANICAL CONTRACTOR.

VRF FAN COIL UNIT

TAG	ASSOCIATED CONDENSER	MANUFACTURER	MODEL	TYPE	SERVICE	REFRIGERANT	AIRFLOW (L/S)	AIRFLOW (L/S)	AIRFLOW (L/S)	AIRFLOW (L/S)	COOLING						HEATING			SOUND (DBA)		ELECTRICAL			WEIGHT (kg)	NOTES
							LOW SPEED	MEDIUM SPEED	HIGH SPEED	E.S.P (Pa)	TOTAL CAPACITY (KW)	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/M/L)	POWER	MCA	MOCP	V/Ph/Hz		
FCU-1	ODU-1	DAIKIN	FXSQ07TBVJU	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	208/1/60	24.9	
FCU-2	ODU-1	DAIKIN	FXSQ24TBVJU	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	208/1/60	60	
FCU-3	ODU-1	DAIKIN	FXSQ07TBVJU	HORIZONTAL, DUCTED	KITCHEN/LOUNGE	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	208/1/60	24.9	
FCU-4	ODU-1	DAIKIN	FXSQ24TBVJU	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	208/1/60	60	
FCU-5	ODU-1	DAIKIN	FXSQ07TBVJU	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	208/1/60	24.9	
FCU-6	ODU-1	DAIKIN	FXSQ07TBVJU	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	208/1/60	24.9	
FCU-7	ODU-1	DAIKIN	FXSQ07TBVJU	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	208/1/60	24.9	
FCU-8	ODU-1	DAIKIN	FXSQ09TBVJU	HORIZONTAL, DUCTED	QUIET RM	R-410A	109	125	150	0.10	2.78	2.05	26.7	19.4	12.8	12.2	3.08	21.1	29.4	33/30/28	61	0.8	15	208/1/60	24.9	
FCU-9	ODU-1	DAIKIN	FXSQ12TBVJU	HORIZONTAL, DUCTED	LOCKER RM	R-410A	117	134	158	0.20	3.52	2.84	26.7	19.4	12.8	12.2	3.96	21.1	29.4	34/32/30	62	0.8	15	208/1/60	24.9	
FCU-10	ODU-1	DAIKIN	FXSQ24TBVJU	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	208/1/60	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	208/1/60	14.96	

EXHAUST FANS

TAG	QUANTITY	MANUFACTURER	MODEL	SERVICE	AIRFLOW (L/S)	SOUND POWER							E.S.P (PA)	MOTOR CHARACTERISTICS						WEIGHT (KG)	NOTES
						63 HZ	125 HZ	250 HZ	500 HZ	1000 HZ	2000 HZ	4000 HZ		FAN SPEED (RPM)	VFD	BHP	FLA	MOCP	V/PH/HZ		
EF-1	1	PENNBARRY	Z8H - INLINE - SC	JANITOR/STORAGE 4	95	59	60	56	52	48	43	38	0.5	1218	NO	0.04	1.6		115/1/60	7	
EF-2	1	PENNBARRY	SQX135	STORAGE 3	283	70	64/71	63/68	61/62	60/66	56/65	50/59	0.5	1053	NO	0.14	5.8		115/1/60	14	Spark resistance...
EF-3	1	PENNBARRY	SQX100	MECHANICAL ROOM	182	73/76	62/73	67/71	65/66	64/65	68/64	53/52	0.5	1525	YES	0.1	7.2		115/1/60	20	
EF-4	1	PENNBARRY	SQX122	VEHICLE BAY	378	61/71	64/68	62/63	61/62	65/62	57/56	52/51	0.5	1525	NO	0.5	9.8		115/1/60	34	

TANKLESS ELECTRIC WATER HEATER

TAG	QUANTITY	MANUFACTURER	MODEL	SERVICE	FLUID				ELECTRICAL			WEIGHT (kg)	REMARKS
					OUTPUT CAPACITY (KW)	TYPE	FLOW RATE (L/S)	TEMP. RISE (C)	MCA (A)	MOCP (A)	V/Ph/Hz		
TLWH-1	1	RHEEM	RETEX-04	LAVATORY	3.5	WATER	0.03	8.9	29	30	120/1/60	2.0	
TLWH-2	1	RHEEM	RETEX-11	KITCHEN	11.8	WATER	0.09	10	46	50	240/1/60	3.9	
TLWH-3	1	RHEEM	RETEX-13	SHOWER	13.0	WATER	0.13	6.7	54	60	240/1/60	3.9	
TLWH-4	1	RHEEM	RETEX-04	LAVATORY	3.5	WATER	0.03	8.9	29	30	120/1/60	2.0	
TLWH-5	1	RHEEM	RETEX-13	SHOWER	13.0	WATER	0.13	6.7	54	50	240/1/60	3.9	
TLWH-6	1	EEMAX	PR027240	LS/WASHER/JAN.SINK	27.0	WATER	0.44	33.3	113	3X40	240/1/60	6.2	

BOILER

TAG	MANUFACTURER	MODEL	LOCATION	GAS				FLUID				ELECTRICAL			WEIGHT (kg)	REMARKS
				OUPUT CAPACITY...	BOILER EFF (%)	MIN GAS PRES. (IN)	MAX GAS PRES. (IN)	TYPE	FLOW RATE (GPM)	E.F.T (F)	L.F.T (F)	MCA	MOCP	V/Ph/Hz		
B-1	DE DIETRICH	GT 430-8A...	MECH RM	432	96	7	14	40% GLYCOL	130	120	95	9.8	15	120/1/60	1470	BASE PRICE
B-2	DE DIETRICH	GT 430-8A...	MECH RM	432	96	7	14	40% GLYCOL	130	120	95	9.8	15	120/1/60	1470	
B-3	ABSOLUTE SPIRE	SP-500	MECH RM	133	96.5	7	14	40% GLYCOL	130	120	95	-	15	120/1/60	205	SEPARATE PRICE NO. 1
B-4	ABSOLUTE SPIRE	SP-500	MECH RM	133	96.5	7	14	40% GLYCOL	38	180	155	-	15	120/1/60	205	
B-5	NO BOILER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SEPARATE PRICE NO.2
B-6	NO BOILER	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

ELECTRIC UNIT HEATER

TAG	MANUFACTURER	MODEL	LOCATION	MOUNTING CONFIGURATION	HEATING CAPACITY (kW)	AIRFLOW (L/s)	MOTOR KW	FAN RPM	ELECTRICAL			WEIGHT (kg)	NOTES
									FLA	MOCP	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	REZNOR	EHC	VESTIBULE	RECESSED	3.00	76							

SNOW MELTING SYSTEM

TAG	AREA (M2)	HEATING LOAD (KW)	FLOW (L/S)	HEAD LOSS (M)	FLUID TYPE	DELTA T	LOOP TYPE	SPACING	COMMENT
SM-1	1,582	998	21	34	40% PROP. GLYCOL	13.9C	25.4MM UPONER HEPEX	229MM CTRS TUBES	BASE PRICE
SM-2	335	211	3.45	34	40% PROP. GLYCOL	13.9C	25.4MM UPONER HEPEX	229 CTRS TUBES	SEPARATE PRICE NO.1
SM-3	0	0	0	0	NONE	-	-	-	SEPARATE PRICE NO.2

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

PRICING OPTIONS

1. BASE PRICE: SNOW MELTING (FULL APRON)
2. SEPARATE PRICE #1: SNOW MELTING (PARKING ONLY)
3. SEPARATE PRICE #2: NO SNOW MELTING

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Key Plan

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8	ISSUED FOR ADDENDUM 14	2024-11-27
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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

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PUMPS

TAG	MANUFACTURER	MODEL	DISCHARGE SIZE	VFD	FLOW (GPM)	HEAD (FT)	EFF. (%)	FLUID	POWER (HP)	SPEED @ 100% (RPM)	MCA (A)	MOCP (A)	V/PH/HZ	DESIGN OPTIONS
P-1	ARMSTRONG	SERIES 4380	2 IN.	YES	20	115	18.3	40% PG	10	4209	3.4	10	575/3/60	
P-1R	ARMSTRONG	SERIES 4380	2 IN.	YES	20	115	18.3	40% PG	10	4209	3.4	10	575/3/60	
P-2	ARMSTRONG	V2A9A-RC	2 IN.	YES	170	180	60.4	40% PG	20	3600	18.6		575/3/60	NOT REQ. (SEP PRICE #2)
P-2R	ARMSTRONG	V2A9A-RC	2 IN.	YES	170	180	60.4	40% PG	20	3600	18.6		575/3/60	NOT REQ. (SEP PRICE #2)
P-3	ARMSTRONG	V2B7A-CC	4 IN.	YES	130	45	70.2	40% PG	3	1800	3.05		575/3/60	NOT REQ. (SEP PRICE #2)
P-4	ARMSTRONG	V2B7A-CC	4 IN.	YES	130	45	70.2	40% PG	3	1800	3.05		575/3/60	NOT REQ. (SEP. PRICE #2)
P-5	ARMSTRONG	SERIES 4380	2 IN.	YES	20	75	41.4	WATER	2	3326	3.4	10	575/3/60	
P-5R	ARMSTRONG	SERIES 4380	2 IN.	YES	20	75	41.4	WATER	2	3326	3.4	10	575/3/60	

7

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

HEAT EXCHANGER

TAG	LOCATION	MODEL	HEAT EXCH. (KBTU/H)	HOT SIDE				COLD SIDE				PLATE MATERIAL
				FLOW RATE (L/S)	INLET TEMP (C)	OUTLET TEMP (C)	P. DROP (PSI)	FLOW RATE (L/S)	INLET TEMP (C)	OUTLET TEMP (C)	P. DROP (PSI)	
HEX-1	MECH RM	AQ2T-BFG	233.9	1.6	50	38	4.7	1.5	35	46	3.7	ALLOY 340/0.5 MM

CONDENSERS

TAG	LOCATION	MODEL	MANUFACTURER	COMB RATIO	AIRFLOW RATE (L/S)	COOLING		HEATING		REFRIGERANT	MOCP (A)	MCA (A)	V/PH/HZ	WEIGHT (KG)
						AMB. TEMP (C)	CAPACITY (KW)	AMB. TEMP (C)	CAPACITY (KW)					
ODU-1	ROOF	RXYQ144XBYCA	DAIKIN	92.6	4475	35	40	-20	29.4	R-410A	30	22.3	575/3/60	360

GRILLES AND DIFFUSERS

TAG	BASIIS OF DESIGN		TYPE	VOLUME CONTROL	DIMENSIONS				MATERIAL	NOTES
	MANUFACTURER	MODEL			LENGTH (mm)	WIDTH (mm)	DIAMETER (mm)	NECK DIAMETER (mm)		
A	EH PRICE	SPD	SQUARE PLAQUE DIFFUSER	YES	600	600		REFER TO FLOOR PLANS	STEEL	
A1	EH PRICE	SPD	SQUARE PLAQUE DIFFUSER	YES	300	300		REFER TO FLOOR PLANS	STEEL	
B1	EH PRICE	80 DAL	EGG CRATE GRILLE	YES	300	300			ALUMINUM	
B2	EH PRICE	80 DAL	EGG CRATE GRILLE	YES	600	300			ALUMINUM	
D	EH PRICE	620 DAL	LOUVERED FACE SUPPLY GRILLE	YES	300	300			ALUMINUM	
D1	EH PRICE	620 DAL	LOUVERED FACE SUPPLY GRILLE	YES	600	300			ALUMINUM	
E	EH PRICE	630 DAL	LOUVERED FACE RETURN GRILLE	YES	300	300			ALUMINUM	
E3	EH PRICE	630 DAL	LOUVERED FACE RETURN GRILLE	YES	800	750			ALUMINUM	
F	NAILOR	RPLP	ROUND PUNKAH LOUVERJET NOZZLE		305	213	254			
H	EH PRICE	REGG	EGG CRATE EXHAUST GRILLE				200			

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	

PLUMBING FIXTURES SCHEDULE

UNIT TAG	DESCRIPTION	MANUFACTURER	MODEL	WASTE	VENT	DCW	DHW	TRAP	REMARKS
WC-1	Afwall 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	40	SEE DWG# 8/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						
EW	EMERGENCY EYEWASH & SHOWER	HAWS	8300.158	32	-	32	32	-	SEE DWG# M-903 FOR DETAILS

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

OUTDOOR CONDENSERS

TAG	LOCATION	MODEL	MANUFACTURER	AIRFLOW RATE (L/S)	INDOOR CONDITIONS TEMP. (C)		OUTDOOR CONDITIONS TEMP. (C)		REFRIGERANT	MCA	MOCP	V/PH/HZ	WEIGHT (KG)
ODU-2	HANGAR	AURORA WALL...	DAIKIN	1141	26.7 DB/19.4 WB	21.1 DB / 15.6 WB	35 DB/24 WB	8.3DB/6.1 WB	R-410A	18.8	20	208/1/60	60

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

ELECTRIC BASEBOARD HEATER

TAG	MANUFACTURER	PART NUMBER	DESCRIPTION	POWER (W)	V/PH/HZ	WEIGHT (KG)	REMARKS
EBBH-1	OUELLET	OPR0500	HEAVY DUTY STEEL DRAFT BARRIER	500	240/1/60	6.4	

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Checked by: Ali Nakhaei-Zadeh
Original Issue Date: 2024-07-31
Project No: TT-24-005
Scale: N.T.S.

Sheet Title:
MECHANICAL SCHEDULES II

Drawing No.
M-901

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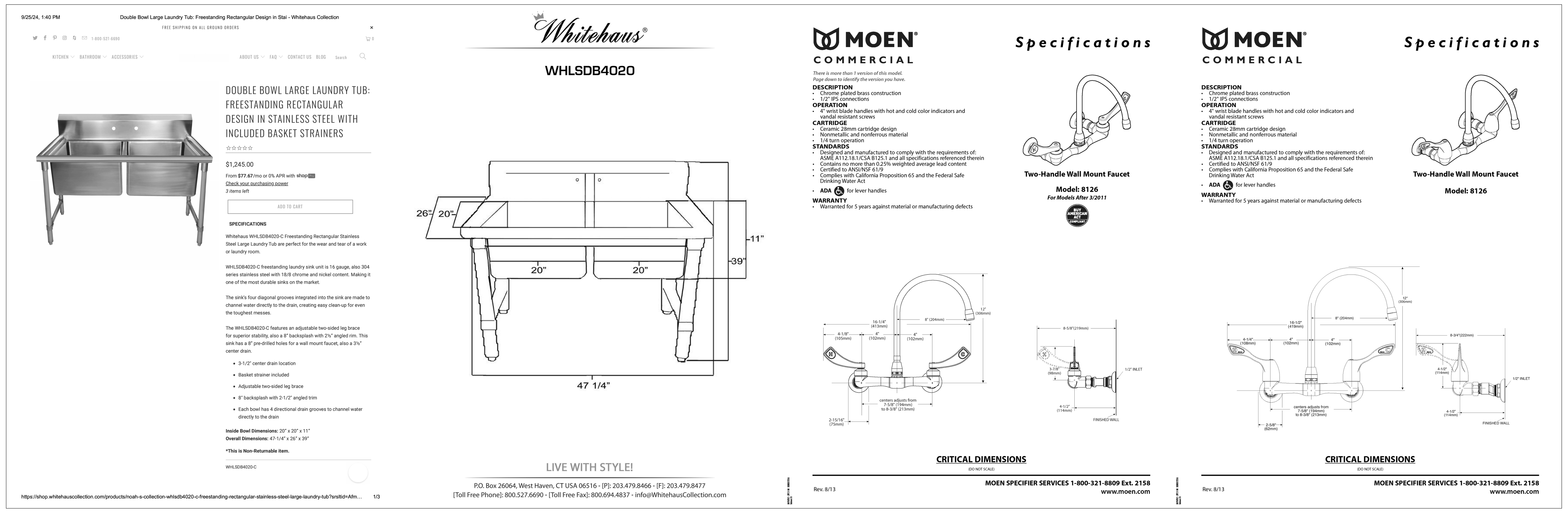

1 LAUNDRY SINK LS & FAUCET
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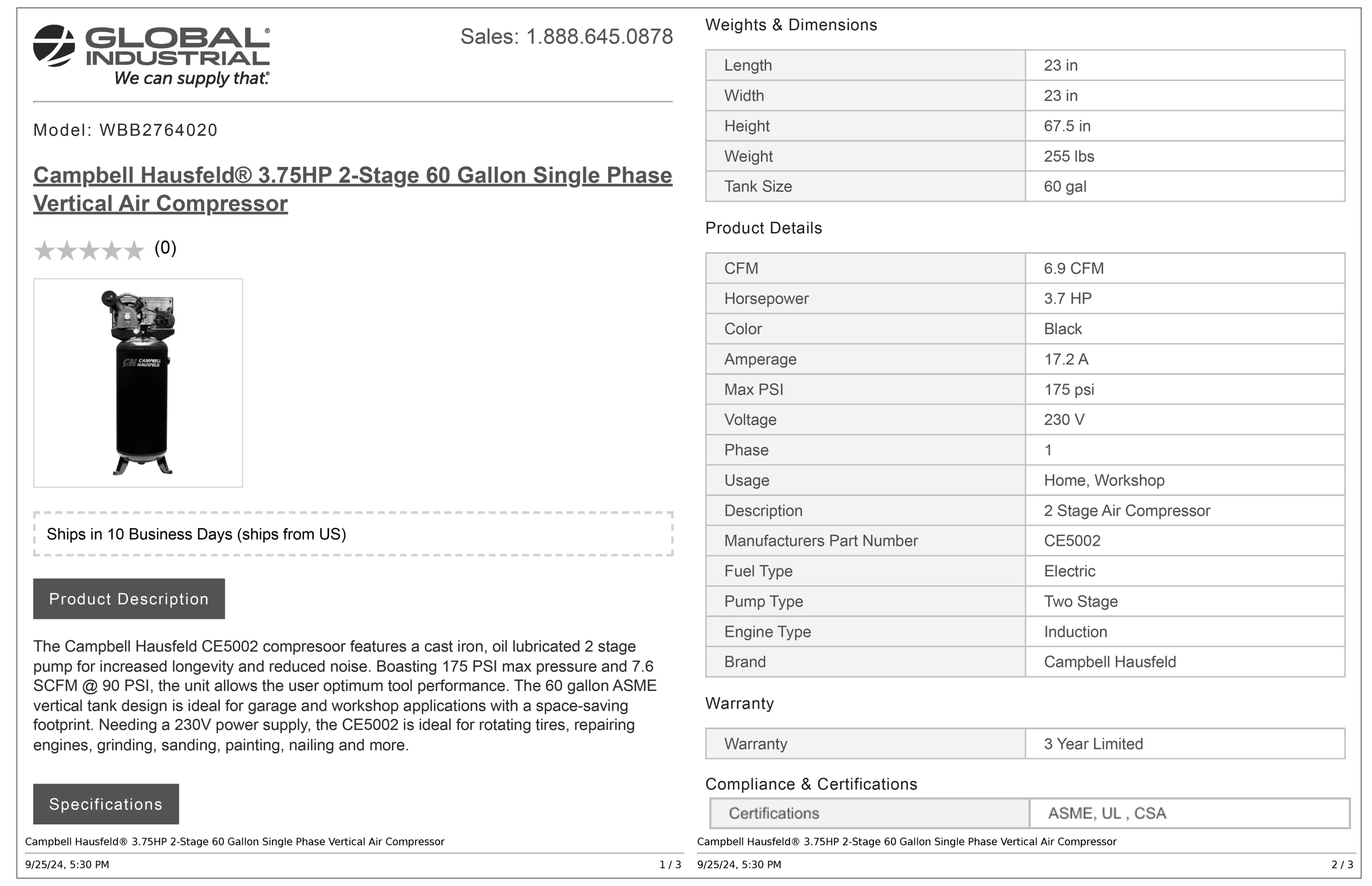

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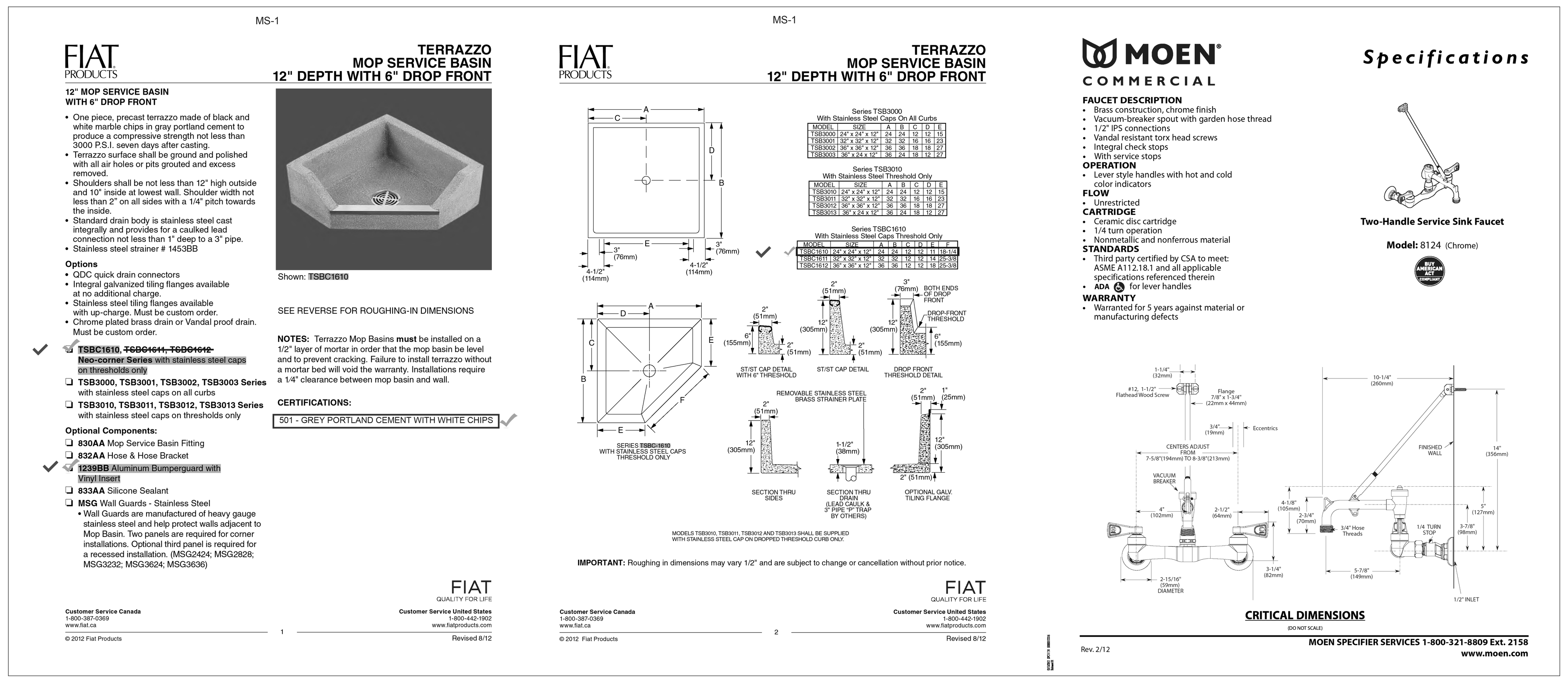

3 JANITOR SINK JS & FAUCET
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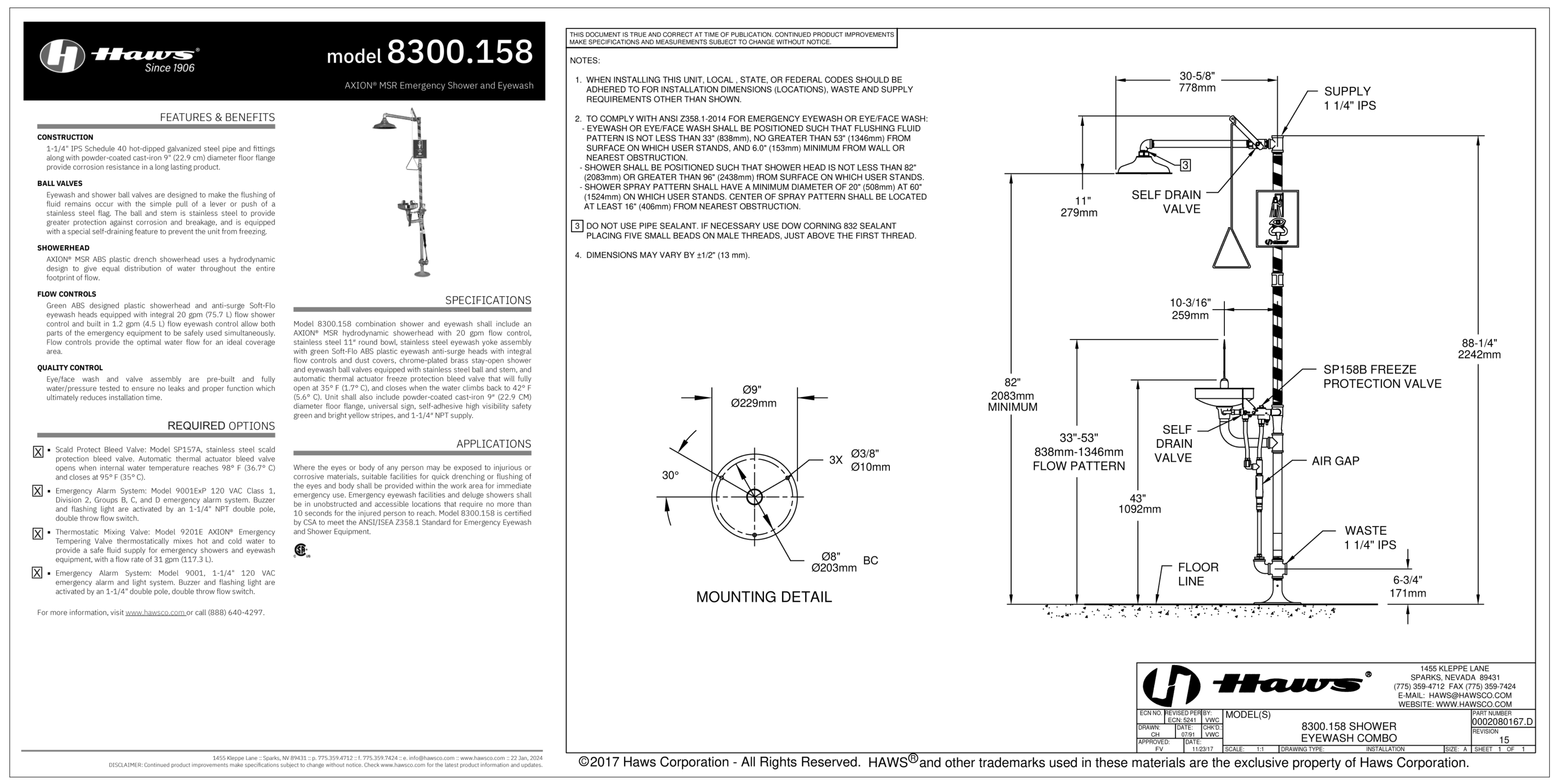

4 EMERGENCY EYEWASH & SHOWER
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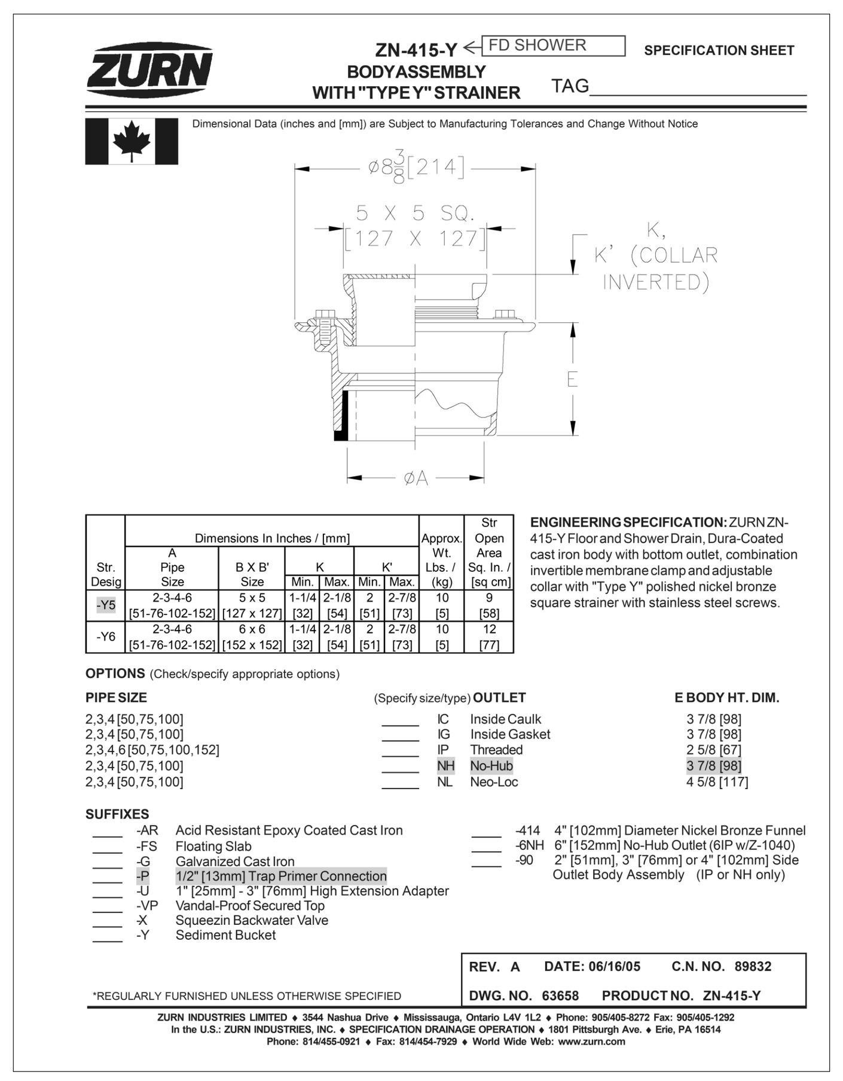

5 SHOWER FLOOR DRAIN
SCALE:N.T.S.

3

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Scale: N.T.S.

Sheet Title: MECHANICAL SCHEDULES IV

Drawing No. M-903

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