Peel Region

Thursday, June 19, 2025

DOCUMENT - 2025-366T
HELIPORT RETROFIT IMPLEMENTATION AT 13653 MCLAUGHLIN ROAD, CHELTENHAM, PEEL REGIONAL POLICE FACILITY
ADDENDUM 1

Number of Pages: 2 +Attachments (18 pages)

- ***Specification Section 23 05 47 Vibration Isolation (6 – 8.5x11")***
- ***Specification Section 23 34 00 Fans (3 – 8.5x11")***
- ***Specification Section 23 81 29 Air Conditioning Ceiling Mounted System (8 – 8.5x11")***
- ***Revised Drawing M-102 Ground Floor Plan – New & Demolition HVAC (1 – 24x36")***

Referring to the above Document 2025-366T - Heliport Retrofit Implementation at 13653 McLaughlin Road, Cheltenham, Peel Regional Police Facility, please note the following changes:

1. **CLOSING DATE:**
   The closing date has been changed to read on or before:

   12:00 noon local time
   FRIDAY, JULY 4, 2025

2. **ADD:** the following Specifications

   - Section 23 05 47 Vibration Isolation.
   - Section 23 34 00 Fans
   - Section 23 81 29 Air Conditioning Ceiling Mounted System.

3. **ADD:** the following

   Mechanical:

   Drawing M102
   Relocate the gas detection sensors from the north wall of the hangar area to the east wall of Washroom 102. See attached sketch for reference.

   Add one set of gas detection sensors and install them on the east wall of the hangar area. Wire back to the master controller. See attached sketch for the location.

   Electrical:

   Drawing ES101 (Drawing not re-issued)

Working Note No. 10 to be deleted. Installation of auxiliary devices, accessories, and control wiring associated with motorized vehicle gate to be completed by gate/fencing installer.

Janice Smith
Procurement Advisor

1 GENERAL

1.1 Scope

1.1.1 Inertia bases.

1.1.2 Vibration isolators.

1.2 Reference Standard

1.2.1 Provide and install mechanical equipment so that Average Noise Criteria curves, as outlined in ASHRAE Guide, are not exceeded.

1.3 Submittals

1.3.1 Provide vibration isolation shop drawings showing isolator locations, load on each isolator, inertia slab dimensions.

1.4 General Requirements

1.4.1 Supply vibration isolation equipment and materials by one supplier. Consider side loading of equipment and inertia bases when calculating maximum loads on isolators.

1.4.2 Ensure equipment is sufficiently rigid for isolator point loading.

1.4.3 All elastomer elements within the restraint shall be bridge bearing neoprene.

1.5 Description

1.5.1 Provide vibration isolation on all motor driven equipment with motors of 0.37 kW and greater power output (as indicated on the motor nameplate) and on piping and ductwork, as specified herein. For equipment less than 0.37 kW, provide neoprene grommets at the support points.

1.5.2 Space isolators under equipment so that the minimum distance between adjacent corner isolators is at least equal to the height of the centre of gravity of the equipment. Include height of centre of gravity on shop drawings. Otherwise, design for increased forces on the supports, and submit design calculations with shop drawings for approval. In particular, chillers shall meet this requirement.

1.5.3 Coordinate with Section 23 33 00 for flexible connections for all ductwork connections to fans or plenums.

1.5.4 For all electrical connections to isolated equipment, provide a minimum 90 degree bend of flexible conduit.

1.5.5 Ensure isolation systems have a vertical natural frequency no higher than one third of the lowest forcing frequency, unless otherwise specified. Use dynamic stiffness for elastomers and do not exceed 60 durometer.

1.5.6 Provide horizontal limit springs on all fans (except vertical discharge) in excess of 1 kPa static pressure, and on hanger supported, horizontally mounted axial fans with more than 333 N thrust due to static pressure.

1.5.7 Isolators and restraining devices which are factory supplied with equipment shall meet the requirements of this section.

1.5.8 Provide concrete inertia bases where specified or required by equipment manufacturers located between all vibrating equipment and the vibration isolation elements. Provide inertia bases on centrifugal fans with static pressure in excess of 875 Pa and/or motor in excess of 40 HP and on base mounted pumps over 10 HP, except slab on grade installations. Refer to structural specifications for concrete work. Concrete work by General Contractor.

1.5.9 Provide concrete inertia bases or structural steel bases for all other motor driven equipment, unless the equipment manufacturer certified direct attachment capabilities.

1.5.10 Coordinate with Division 3 for the provision of housekeeping pads at least 100 mm high under all isolated equipment. Provide at least 175 mm clearance between drilled inserts and edge of housekeeping pads and follow structural consultant's instructions for drilled inserts.

1.5.11 Bolt all equipment to the structure. Do not bridge isolation elements.

1.5.12 For non-isolated equipment (e.g., floor-mounted tanks, heat exchangers, boilers etc.) design anchors and bolts for 2g applied horizontally through the centre of gravity.

1.5.13 For isolated equipment, design anchors, bolts, isolators and bases to withstand without failure or yielding a static load of 2g, minimum, acting through the centre of gravity. For larger isolators, where the 2g requirement cannot be met, provide additional restraint meeting the NBCC requirements.

1.5.14 Where impact forces may be significant, use ductile materials.

1.6 Qualifications/Submittals

1.6.1 All equipment shall be tested in an independent testing laboratory, or certified by a registered professional engineer, to demonstrate that equipment meets the requirements of this section, e.g. static load capability = 2 g, fail safe design, etc. If particular tests are carried out to represent an isolator type, the tests shall be valid for the full load range of the isolator. Submit such tests or certification on request.

1.6.2 Obtain all relevant equipment information and provide shop and placement drawings for all vibration isolation elements and steel bases for review before materials are ordered. Provide attachment to both the equipment and the structure meeting the specified forces involved. Attachment details to the structure to be approved by a Provincially registered professional engineer.

1.6.3 Submit samples of materials required to complete the work of this section for inspection and review if and when requested.

2 PRODUCTS

2.1 Isolators

2.1.1 Supply all of the vibration isolation equipment by one approved supplier with the exception of isolators which are factory installed and are standard equipment with the machinery.

2.1.2 All isolators shall be of the following types, supplied by the manufacturers named, or other acceptable manufacturers listed, or approved:

.1 Type 1 - Pad Isolator

Neoprene/steel/neoprene pad isolators, manufactured from "Bridge bearing quality neoprene", as defined by CSA Standard CAN3-S6-M78 Section 11.10. Select Type 1 pads for a 2.5 mm (0.1") static deflection or greater. Bolt down equipment mounted on neoprene pad isolators using neoprene grommets. Design is based on Vibron Vibropad VSV or Mason WMW, Super W.

.2 Type 4 – Hangers

Spring hangers, c/w 6 mm (0.25") thick sound pads sized for 0.5 mm (0.02") minimum deflection, or neoprene hangers. Design is based on Vibron Series VH, approved equal - Mason HD, HS. A neoprene element alone, without a hanger box, is acceptable provided no short circuiting occurs. Hangers shall allow for a minimum of 10° misalignment.

.3 Type 5 - Air Isolator

Rolling lobe air springs with air spring levelling valves. Design based on Vibron MAS with levelling valves.

2.1.3 Select isolators at the supplier's optimum recommended loading, and do not load beyond the limit specified in the manufacturer's literature.

2.1.4 Design springs in accordance with the Society of Automotive Engineers' Handbook Supplement 9 entitled "Manual on Design and Application of Helical and Spiral Springs - SAE - 1975".

2.1.5 Design springs "iso-stiff" (kx/ky = 1.0 to 1.5) with a working deflection between 0.3 and 0.6 of solid deflection.

2.1.6 Provide hot dipped galvanized housings and neoprene coated springs, or other acceptable weather protection, for all isolation equipment located out of doors or in areas where moisture may cause corrosion.

2.1.7 For all electrical connections to isolated equipment, provide a 90 degree bend of flexible conduit for 25 mm conduit and smaller or 90 degree Crouse-Hind EC couplings for larger conduit. Use connections long enough that the conduit will remain intact if the equipment moves laterally 300 mm from the installed position, and flexible enough to transmit less vibration to the structure than is transmitted through the springs.

2.2 Bases

2.2.1 Provide concrete inertia bases a minimum of 1.5 times the weight of the isolated equipment. Generally base thickness shall be 1/12 of the longest dimension of the base, but not less than 150 mm (6"). Include with base a steel channel concrete form with required steel reinforcement (as determined necessary by suppliers' registered professional engineer). Provide additional steel as required by sleeves or inserts to receive equipment anchor bolts. Use height saving brackets in all mounting locations to maintain a 50 mm (2") clearance below the base. Bases are Mason type K or approved

equal. Bases to be furnished with built-in motor slide rails, Motor location as specified/scheduled.

2.2.2 Construct structural steel bases sufficiently rigid to keep deflection and misalignment within acceptable limits as determined by the equipment manufacturer. Use height saving brackets in all mounting locations to provide a base clearance of 50 mm (2"). Bases are Mason type WF or approved equal. Bases to be furnished with built-in motor slide rails. Motor location as specified/scheduled.

2.2.3 Construct bases strictly in accordance with the isolation suppliers' drawings.

2.3 Flexible Duct Connectors

2.3.1 Refer to Section 23 3300.

2.3.2 Provide flexible duct connectors of Durodyne with Durolon fabric or approved equal.

2.4 Flexible Pipe Connectors

2.4.1 At the last elbow before piping leaves the mechanical room, and the first elbow entering, provide a bolted flanged 2000 mm long spool piece to facilitate the future installation of silencing equipment.

3 EXECUTION

3.1 **EXECUTION**

3.1.1 Execute the work in accordance with the specifications and, where applicable, in accordance with the manufacturer's instructions and only by workmen experienced in this type of work.

3.1.2 For all equipment mounted on vibration isolators, provide a minimum clearance of 50 mm to other structures, piping, equipment, etc.

3.1.3 Isolate all floor or pier mounted equipment on Type 2 isolators, unless otherwise specified.

3.1.4 Isolate all floor or pier mounted equipment on Type 3 isolators, unless otherwise specified. Isolate pumps rotating at more than 1170 RPM on Type 2 isolators. Use the lowest RPM scheduled for two speed equipment in determining isolator deflection.

3.1.5 For equipment mounted on a slab on grade, absorption chillers and in-line pumps, mount on Type 2 isolators, unless otherwise specified. Use Type 1 pads only where approved.

3.1.6 Isolate steam Pressure Reducing Stations (PRV's) and upstream and downstream piping for a distance of 15 m. Install PRV station pipe pedestals on 13 mm thick heat insulating pads, with heat insulating grommets on the hold down bolts and Type 1 pads below. The insulating pad shall be sufficient to maintain Type 1 pad within manufacturer's temperature limits. Submit shop drawing of detail.

3.1.7 Select Type 4 spring hangers for a minimum static deflection of 25 mm for all ceiling hung fans, and air handling units, emergency generator exhaust piping and silencers, steam PRV's and any other vibrating sources.

3.1.8 Provide Type 4 resilient hangers on all piping connected to a vibrating source, if the piping is in excess of 40 mm dia. Provide the hangers for a distance of 6.5 m for a 50 mm pipe and 11.5 m for a 250 mm pipe. Isolate all other pipe for a proportionate distance. Isolate all piping in mechanical rooms. If neoprene hangers are proposed for non-critical spaces, change to spring hangers at no additional cost in the event that the isolation proves inadequate.

3.1.9 Where piping connected to noise generating equipment is routed from the mechanical room through plumbing chases, position piping to avoid contact with the concrete structure, future framing, drywall and other finishes which may radiate noise. Submit proposed details to meet this requirement.

3.1.10 Where the weight of equipment located on type 3 isolators may change significantly due to draining or similar as in cooling towers or chillers, provide limit stops to limit spring extensions.

3.1.11 Provide spring isolators on piping connected to isolated equipment to a minimum as follows: up to 100 mm diameter, first 3 points of support; 125 mm to 200 mm diameter, first 4 points of support; 250 mm diameter and over, first 6 points of support. Static deflection of first point shall be twice deflection of isolated equipment.

3.1.12 Provide spring isolators on all piping in mechanical and boiler rooms.

3.1.13 For in-line pumps 18.6 kW and greater, provide two (2) type 2 isolators under each support foot. Provide Type 6 post-disaster anchors for all base mounted isolated equipment.

3.1.14 Where piping or exhaust stacks, etc., connected to or serving noise generating equipment, is routed from the mechanical room through walls and plumbing chases, position piping, stacks, etc. to avoid contact with the concrete structure, future framing, drywall and other finishes which may radiate noise. Submit proposed details to meet this requirement. <Provide 6.5 bar controls compressed air to Type 5 isolators.

3.1.15 Where a pump intake pipe or similar pipe configuration requires a pedestal support, construct inertia or steel base large enough to accommodate pedestal. Provide flexible pipe connections for all pipe connections to chillers.

3.1.16 Provide resilient elements in pipe anchors, where pipe anchors are specified within 11.5 m of a vibration source. Submit details before installation. Protect neoprene isolator components from overheating. Where piping connects new and existing buildings provide flexibility in piping by elbows, offsets, or 2 flexible pipe connectors 30 pipe dia. apart to isolate one building from another.

3.2 Duct Connections to Isolated Equipment

3.2.1 Provide 75 mm flexible duct connectors and a 40 mm metal to metal gap.

3.2.2 Provide stabilizing springs limiting movement at flexible connections to 25% of fabric width under steady state conditions and 40% at start up.

3.2.3 Flexible duct connections shall be installed so that duct size is not reduced by the deflection of the flexible connector.

3.3 Inspections

3.3.1 The supplier shall provide assistance to the contractor as necessary during the course of installation of isolation equipment. Prior to substantial completion, submit a report listing deficiencies to the specification.

END OF SECTION

1 GENERAL

1.1 Quality Assurance

1.1.1 Conform to AMCA Bulletins regarding construction and testing. Fans shall bear AMCA certified rating seal.

1.1.2 Wheels will be balanced in accordance with AMCA Standard 204-96.

1.1.3 Polyphase, squirrel cage, single speed NEMA/EEMAC Design A or B induction motors, between 1 hp and 200 hp whether in packaged equipment or not, shall comply with the current requirements of the Ontario Hydro Efficiency Standards Regulation, and specifically, CSA C390- 93 Energy Efficiency Test Methods for Three Phase Induction Motors.

1.2 Submittals

1.2.1 Shop Drawings:

.1 Refer to Section 23 05 01 – HVAC General Requirements.

.2 Submit shop drawings to the Consultant for review prior to ordering or installation.

.3 Shop drawings shall include:

.1 Manufacturer and model numbers
.2 Performance data
.3 Fan curves and sound data, with fan and system operating point plotted on curves.
.4 Calculations and technical data to support drive selection.
.5 Fan details, isolation and details
.6 Cabinet construction, gauge, access doors, fasteners
.7 Maintenance requirements
.8 Conformance to above reference standards

.4 One copy of all stamped reviewed shop drawings shall be included in maintenance manual.

1.2.2 Operation and Maintenance Data:

.1 Provide operation and maintenance literature indicating manufacturer and model of equipment, instructions for operation and maintenance of same, and parts list.

.2 Operation and maintenance data shall be included in the maintenance manual.

1.3 Job Conditions

1.3.1 Do not operate fans for any purpose, temporary or permanent until ductwork is clean, filters in place, bearings lubricated and fan has been run under close supervision.

1.4 Acceptable Manufacturers

1.4.1 Manufacturers of exhaust fans whose products are approved in principle, but subject to requirements of drawings and specifications are:

.1 Cook

.2 Greenheck

.3 S&P

.4 Penn

.5 Carnes

.6 Reversomatic

.7 Zonex

.8 Twin City

1.4.2 Alternatives: Equivalent fan selections shall not decrease motor power, increase noise level, increase tip speed by more than 10% or increase inlet air velocity by more than 20% from that specified.

2 PRODUCTS

2.1.1 General

2.1.2 Statically and dynamically balance fans so no objectionable vibration or noise is transmitted to occupied areas of the building.

2.1.3 Provide balanced variable sheaves.

2.1.4 Fans shall be capable of accommodating static pressure variations of +10% with no objectionable operating characteristics.

2.1.5 Unless otherwise noted, include all motors and drive combinations with electrical characteristics as detailed elsewhere.

2.1.6 Fan hubs and sheaves shall be keyed to shafts for fans over ¾ hp. Use of flat ground surface and set screws are not approved.

2.1.7 Select variable and adjustable pitch sheaves unless otherwise specified, so that required rpm is obtained with sheaves set at mid-position, and approximate speed adjustment of 25%.

2.1.8 Rate drive as recommended by manufacturer, but minimum 1.5 times power rating of the motor. Submit calculations and technical data with shop drawings, to support drive selection.

2.1.9 Fans shall bear the AMCA Certified Ratings Seal for both sound and air performance.

2.2 Recirculation Fan

2.2.1 Fan shall be direct driven in AMCA arrangement with 4 impellers secured to the motor shaft

2.2.2 Fan housing support frame to be constructed of heavy gauge metal with galvanized or baked enamel finish, designed with integral vanes for improved throw and shall have a galvanized inlet guard to protect the fan impeller from foreign materials entering fan inlet.

2.2.3 Fan has dual inlet, wheels, and motors to provide a smaller mounting height with high efficiency axial flow pattern.

2.2.4 Fan shall have wiring connection terminal strip with removable access panel.

2.2.5 Fan shall have integrated speed dial or potentiometer for local speed setting. Speed control to be field convertible to permit 0-10 VDC control signal option.

2.2.6 Fan impeller shall be mixed flow type.

2.2.7 The wheel and fan inlet cone shall be carefully matched and shall have precise running tolerances for maximum performance and operating efficiency.

2.2.8 Accessories:

.1 NEMA 3R lockable disconnect switch.

.2 Controls as indicated on drawing schedule.

3 EXECUTION

3.1 General

3.1.1 Install as per manufacturer's instructions.

3.2 Install fans as shown, with resilient or spring mountings and fan restraining snubbers and flexible electrical leads. Refer to 23 05 47.

3.3 Align shafts, belt drive and motor, adjust belt tension, ensure all set screws are tight, and check motor rotation before start-up.

3.4 Protect motors and fans during construction and rotate fans, by hand, every month between delivery and acceptance of building.

3.5 Install fans with flexible connections on inlet ductwork and on discharge ductwork in accordance with Section 23 33 00.

3.6 Adjust variable pitch fan/motor sheaves during balancing to achieve specified air quantities.

3.7 Recirculation Fan

3.8 Install in conformance with manufacturer's requirements and recommendations.

3.9 Provide U-Channel, 3/8" inch rod and vibration isolation for mounting.

3.10 Ensure that proper inlet and discharge clearances are followed as per manufacturer's requirements.

END OF SECTION

1 GENERAL

1.1 Scope

1.1.1 This section covers the supply and installation of ceiling-mounted Thermal Management system as shown and/or specified. In general, the portions of the work are:

.1 Indoor ceiling-mounted Unit

.2 Outdoor Condensing Unit

1.2 System Description

1.2.1 These specifications describe requirements for a ceiling-mounted Thermal Management system. The system shall be designed to control temperature conditions in rooms containing electronic equipment, with good insulation and vapor barrier. The system is also available with an optional humidity control system.

1.3 Quality Assurance

1.3.1 The units shall be listed by Electrical Laboratories (ETL) and bear the ETL label.

1.3.2 All wiring shall be in accordance with the National Electrical Code (N.E.C.).

1.3.3 The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard organization (ISO).

1.3.4 A factory charge of R-410A refrigerant shall be provided in the condensing unit.

1.3.5 A dry air holding charge shall be provided in the evaporator.

1.3.6 System efficiency shall meet or exceed 14.3 SEER.

1.3.7 Outdoor units shall withstand 1,000 hours of salt spray tested per procedure ASTM B117.

1.3.8 RoHS Compliant.

1.4 Delivery, Storage and Handling

1.4.1 Unit shall be stored and handled according to the manufacturer’s recommendation.

1.4.2 The wired controller shall be shipped inside the carton with the indoor unit and able to withstand 105ºF storage temperatures and 95% humidity.

1.5 Acceptable Manufacturers:

1.5.1 Acceptable alternatives shall be permitted with engineer's prior approval only. Contractor to submit a detailed summary form listing all variations to include size deviations, electrical load differences, functional and component changes, and savings to end user.

1.6 Warranty

1.6.1 The units shall have a complete system warranty of:

.1 Two (2) years Parts.

.2 Six (6) years Compressor.

1.7 Performance

1.7.1 Each system shall perform in accordance to the ratings shown in the schedule on the drawings.

1.7.2 Performance shall be based on 67º FWB, 80º FDB for the indoor unit and 95º FDB, 75º FWB for the outdoor unit.

2 PRODUCTS

2.1 Design requirements

2.1.1 The Thermal Management system shall be a Liebert® Mini-Mate2 factory-assembled unit. On direct expansion models, the refrigeration system shall be split, with the compressor located in a remote or close-coupled condensing unit.

2.1.2 The evaporator section shall be designed for above dropped-ceiling installation. Condensing units shall be designed for either outdoor or above-dropped-ceiling installation.

2.1.3 The system shall have a net total cooling capacity of 33,400 BTU/hr (9.8 kW) and a net sensible cooling capacity of 31,300 BTU/hr (9.2 kW), based on entering air conditions of 80°F (26.7 °C) dry bulb and 62.7°F (17.1°C) wet bulb. Net capacities shall include losses due to fan motor heat. The system cooling capacity shall be factory certified per ASHRAE 127-2007 testing.

2.1.4 The unit is to be supplied for operation on a 208/230 volt, 1 phase, 60 Hz power supply.

2.1.5 System shall be supplied with CSA Certification to the harmonized U.S. and Canadian product safety standard CSA C22.2 No 236/UL 1995 for “Heating and Cooling Equipment” and marked with the CSA c us logo (60Hz only).

2.1.6 The system model number(s) shall be:

.1 Evaporator MMD24EN

.2 Condensing Unit PFH027A-PLN

2.2 Evaporator Cabinet Construction

2.2.1 The cabinet and chassis shall be constructed of heavy gauge galvanized steel and shall be serviceable from one side. Mounting brackets shall be integral to the cabinet design. Internal cabinet insulation shall meet ASHRAE 62.1 requirements for Mold Growth, Humidity & Erosion, tested per UL 181 and ASTM 1338 standards.

2.3 Air Distribution

2.3.1 The air distribution system shall be constructed with a quiet, direct-drive fan assembly equipped with double-inlet blower, self-aligning ball bearings and lifetime lubrication. Fan motor shall be permanent-split capacitor, high-efficiency type, equipped with two speeds for airflow modulation. The microprocessor controller shall use the lower fan speed for precise dehumidification control. Fan speed shall also be user selectable from the wall controller.

2.3.2 System shall be suitable for supply and return air plenum or ducted supply and return air distribution.

2.4 Microprocessor Control

2.4.1 The control system shall be microprocessor-based, factory-wired into the system and tested prior to shipment. The wall-mounted controller shall include a 2-line by 16-character character liquid crystal display (LCD) providing continuous display of operating status and alarm condition and shall be capable of displaying values in °F or °C. An 8-key membrane keypad for setpoint/ program control, fan speed selection and unit On/Off shall be located below the display. Controller shall be password protected to prevent unauthorized set point adjustments. Field-supplied 4-conductor thermostat wire shall be used to connect the wall-mounted controller to the unit control board.

2.4.2 Temperature and humidity sensors shall be located in the wall controller, which shall be capable of being located up to 300 ft (91.4m) from the evaporator unit when using a remote temperature/humidity sensor in the conditioned space.

2.4.3 Monitoring

.1 The LCD shall provide On/Off indication, operating mode indication (cooling, heating, humidifying, dehumidifying), fan speed indication and current day, time, temperature and humidity (if applicable) indication. The monitoring system shall be capable of relaying unit operating parameters and alarms to the Vertiv™ Liebert® IS-UNITY-DP monitoring system.

2.4.4 Control Setpoint Parameters

.1 Temp. Setpoint 65-85°F (18-29°C)

.2 Temp. Sensitivity 1-9.9 °F (1-5°C)

.3 Humidity Setpoint 20-80% RH

.4 Humidity Sensitivity 1-30% RH

2.4.5 Unit Controls

.1 Compressor Short-Cycle Control

.2 The control system shall prevent compressor short-cycling by a 3-minute timer from compressor stop to the next start.

.3 Common Alarm and Remote On/Off

.4 A common alarm relay shall provide a contact closure to a remote alarm device. Two (2) terminals shall also be provided for remote On/Off control. Individual alarms shall be “enabled” or “disabled” from reporting to the common alarm.

2.4.6 Setback Control

.1 The control shall be user-configurable to use a manual setpoint control or a programmable, time-based setback control. The setback control will be based on a 5 day/2 day programmed weekly schedule with capability of accepting 2 events per program day.

2.4.7 Temperature Calibration

.1 The control shall include the capabilities to calibrate the temperature and humidity sensors and adjust the sensor response delay time from 0 to 90 seconds. The control shall be capable of displaying temperature values in °F or °C.

2.4.8 System Auto Restart

.1 For startup after power failure, the system shall provide automatic restart with a programmable (up to 9.9 minutes in 6-second increments) time delay. Programming can be performed either at the wall mounted controller or from the central, site-monitoring system.

2.5 Electrical Switches and Sensors

2.5.1 Disconnect Switch, Non-Locking

2.5.2 The non-automatic, non-locking, molded case circuit interrupter shall be factory mounted in the high voltage section of the electrical panel. The switch handle shall be accessible from the unit front.

2.6 Alarms

2.6.1 Unit Alarm

.1 The control system shall monitor unit operation and activate an audible and visual alarm in the event of the following factory preset alarm conditions:

.2 High Temperature

.3 Low Temperature

.4 High Humidity

.5 Low Humidity

.6 High Water Alarm - Lockout Unit Operation

.7 High Head Pressure

.8 Loss of Power

.9 Compressor Short Cycle

2.6.2 Custom Alarms (2x)

.1 Humidifier Problem

.2 Filter Clog

.3 Water Detected

.4 Smoke Detected

.5 Custom 1

.6 Custom 2

.7 User-customized text can be entered for the two (2) custom alarms.

2.6.3 Alarm Controls

.1 Each alarm (unit and custom) shall be individually enabled or disabled (except for high head pressure and high water in condensate pan) and can be programmed for a time delay of 0 to 255 seconds of continuous alarm condition to be recognized as an alarm. Each alarm can also be enabled or disabled to activate the common alarm (except high head pressure and high water in condensate pan).

2.6.4 Audible Alarm

.1 The audible alarm shall annunciate at the wall-mounted controller any alarm that is enabled by the operator.

2.6.5 Common Alarm

.1 A programmable common alarm shall be provided to interface user selected alarms with a remote alarm device. Alarms shall be enabled or disabled from reporting to the common alarm.

2.6.6 Remote Monitoring

.1 All alarms shall be communicated to the Liebert remote monitoring system with the following information: date and time of occurrence, unit number and present temperature and humidity.

2.7 Direct Expansion System Evaporator Components

2.7.1 Direct Expansion Coil

.1 The evaporator section shall include evaporator coil, thermostatic expansion valve and filter drier.

.2 The evaporator coil shall have 3.1 sq. ft. (0.29 sq. m) face area, 3 rows deep. It shall be constructed of copper tubes and aluminium fins. An externally equalized thermostatic expansion valve shall control refrigerant flow. The refrigerant piping

shall be spun-closed and filled with a nitrogen holding charge. Field relief of the Schrader valves shall indicate a leak-free system. Evaporator and condensing unit shall be field piped using copper lines, brazed, evacuated and field charged with R-407C refrigerant. The evaporator unit can be coupled directly with the condensing unit or mounted remote to the condensing unit.

.3 The coil assembly shall be mounted in a condensate drain pan with an internally trapped drain line. The evaporator drain pan shall include a factory-installed float switch to shut down the evaporator upon high water condition.

2.8 Outdoor Air-Cooled Prop Fan Condensing Unit

2.8.1 The condensing unit shall be designed for outdoor use with either roof or ground level mounting. The condensing unit is constructed of galvanized and galvanneal painted steel for corrosion resistance. Removable exterior panels shall allow access to the electric panel or refrigeration components for service or maintenance. Both inlet and outlet air grilles shall be heavy duty steel with a durable polyester coating.

2.8.2 Condensing unit components shall include a condenser coil, a direct-drive propeller-type fan, a scroll compressor, high-pressure switch, Liebert® Lee-Temp receiver and head pressure control valve, hot gas bypass system and liquid line solenoid valve. The condensing coil shall be constructed of copper tubes and aluminum fins.

2.8.3 The hot gas bypass circuit shall be provided to reduce compressor cycling and improve operation under low-load conditions. In split systems, the hot gas bypass shall be completely contained in the condensing unit. Field installed third refrigerant line shall not be acceptable. Hot gas bypass shall be automatically deactivated upon a call for dehumidification.

2.8.4 High pressure switch shall protect the unit from abnormal refrigerant pressure conditions and shall deactivate the compressor and annunciate an alarm at the wall controller. The blower shall continue to circulate air. The wall controller shall be used to manually restart the compressor function after the automatic pressure switch resets. Three high head pressure alarms in a rolling 12-hour period shall lock out the manual restart feature until power is cycled to the evaporator unit.

2.8.5 A pressure balancing valve shall be factory installed to reduce the chance of high pressure cut-out due to excessive refrigerant migration to the receiver due to changing outdoor temperatures during off-cycles.

2.8.6 The refrigerant piping shall be spun-closed and filled with a nitrogen holding charge. Field relief of the Schrader valves shall indicate a leak-free system. Evaporator and condensing unit shall be field piped using copper lines, brazed, evacuated and field charged with R-407C refrigerant. Condensing unit shall be designed for 95°F (35°C) ambient and be capable of operation to -30°F (-34.4°C).

2.8.7 The condenser coil shall be constructed of copper tubes and aluminum fins.

2.9 Factory-Installed Options

2.9.1 Steam Generating Humidifier

.1 The Thermal Management system shall be equipped with a steam generating humidifier that is controlled by the microprocessor control system. It shall be complete with disposable canister, all supply and drain valves, 1" (25.4mm) air gap on fill line, inlet strainer, steam distributor and electronic controls. The need to change canister shall be annunciated on the wall-mounted controller. The humidifier shall have a capacity of 4.3 lb/hr (2.0 kg/h). An LED light on the humidifier assembly shall indicate cylinder full, overcurrent detection, fill system fault and end of cylinder life conditions. The canister flush water shall not drain into the coil drain pan, due to risk of aggressive corrosion of the evaporator coil. The humidifier wand shall be mounted over the coil drain pan.

2.9.2 Electric Reheat

.1 The electric reheat shall be low-watt density, 304/304 stainless steel, finned-tubular and shall be capable of maintaining room dry bulb temperature conditions when the system is calling for dehumidification. The reheat section shall include a UL-approved safety switch to protect the system from overheating. A ground current detector shall be factory installed to shut-down the entire unit if a ground fault in the reheat system is detected.

2.9.3 Remote Monitoring and Control – IS-UNITY-DP And BMS

.1 The IS-UNITY-DP BMS Monitoring Solution shall provide SNMP v1/v2c/v3, BACnet IP, BACnet MSTP, Modbus TCP/IP, and Modbus RTU monitoring capability to the Vertiv™ Liebert® Mini-Mate2 system. Card shall employ Ethernet and RS-485 networks to monitor and manage a wide range of operating parameters pertaining to the cooling system. The Unity card shall provide access to the Liebert® Mini-Mate2 remotely via a web interface and shall support Vertiv™ Liebert® Nform connectivity. The Vertiv™ Liebert® IS-UNITY-DP card shall be factory mounted inside an enclosure on the outside of the Liebert® Mini-Mate2 unit and shall be factory wired for power and unit communications. Ethernet cable providing network access to the world-wide web or to a BMS shall be field wired.

2.10 Ship-Loose Accessories

2.10.1 Condensate Pump

.1 It shall be complete with integral float switch, pump, motor assembly and reservoir. A secondary float switch on the condensate pump shall tie into the unit to provide an alarm on the wall-mounted controller and shut down the unit upon high water in the basin of the pump. Condensate pump shall be powered from the Vertiv™ Liebert® Mini-Mate2. A separate electrical feed is not acceptable.

2.11 Electrical

2.11.1 The power supply to the condensing unit shall be as scheduled.

2.11.2 The control voltage between the indoor and outdoor unit shall be 16VDC non-shielded 2 conductor cable.

2.11.3 The control wiring shall be a two-wire multiplex transmission system, making it possible to connect multiple indoor units to one outdoor unit with one 2-cable wire, thus simplifying the wiring operation.

2.11.4 Control wiring shall be installed in a daisy chain configuration from indoor unit to indoor unit then to the branch selector box and outdoor unit. Control wiring shall run from the indoor unit terminal block to the specific controller for that unit.

2.12 Start-Up

2.12.1 The system must be installed by a Vertiv™ Liebert® factory trained contractor/dealer. The mechanical contractor's installation price shall be based on the systems installation requirements. The mechanical contractor bids with complete knowledge of the HVAC system requirements.

2.12.2 The manufacturer shall provide a factory trained service technician to start-up each unit. Manufacturer shall provide instruction to the owners' personnel on proper unit operation and maintenance.

3 EXECUTION

3.1 Indoor Unit

3.1.1 Install unit as per manufacturer's recommendations.

3.1.2 Allow easy access to change filters and maintain unit.

3.1.3 Provide a drain line from unit and tie into main drain line. Provide a condensate pump to allow drain line to be concealed within ceiling space. Unit drain shall be trapped internally.

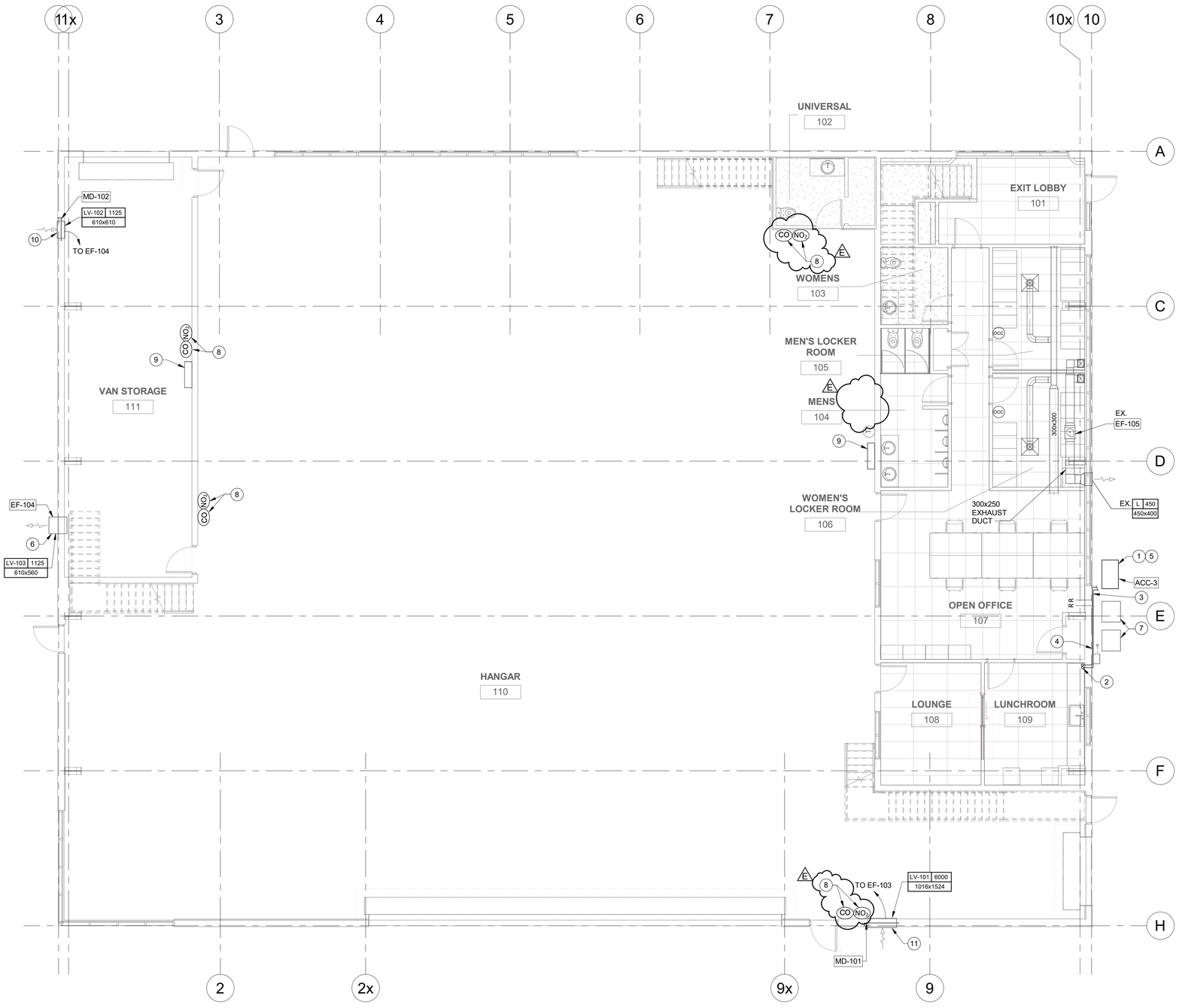
3.2 Condensing Unit

3.2.1 Mount outdoor unit in accordance with manufacturer's installation instructions. Install unit plumb and level, firmly anchored in location indicated, and maintain manufacturer's recommended clearances.

3.3 Demonstration

3.3.1 Participate in Demonstration to the Owner with the Consultant and third party commissioning Agent.

END OF SECTION



1 GROUND FLOOR PLAN - NEW & DEMO HVAC LAYOUT
SCALE: 1 : 75

GENERAL NEW MECHANICAL NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS AND/OR GENERAL CONTRACTOR FOR CEILING HEIGHTS TO ENSURE ALL SERVICES ARE CONCEALED WITHIN AVAILABLE CEILING SPACE. RUN ALL NEW SERVICES UP IN JOIST SPACE AND BETWEEN LIGHTS AS NOTED OR AS REQUIRED.
2. PREPARE INTERFERENCE DRAWINGS AND COORDINATE ALL SERVICES WITH ALL TRADES PRIOR TO INSTALLATION.
3. FIRE STOP ALL NEW PIPING THROUGH RATED WALLS AND FLOORS IN AREA OF WORK.
4. SUPPLY ACCESS DOORS FOR MECHANICAL DEVICES ABOVE ANY DRYWALL CEILINGS AND TURN OVER TO GENERAL CONTRACTOR FOR INSTALLATION.
5. LABEL CEILING GRID AT ACCESS TO MECHANICAL EQUIPMENT AND DEVICES WITH LAMACOID NAMEPLATE.

NEW WORKING NOTES:

1. PROVIDE NEW IT ROOM 207 CONDENSING UNIT (ACC-3) AND MOUNT ON 450mm (18") HEIGHT STANDS WITH ECOFEET OR SIMILAR BASE SUPPORT AS PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. NEW LIQUID/VAPOUR REFRIGERANT LINES FROM ACC-3 UP TO NEW A/C UNIT (CRU-3) IN IT ROOM 207.
3. PROVIDE INSULATION AND ALUMINUM JACKETING EQUAL TO 3M "VENTURECLAD" ON ALL REFRIGERATION PIPING EXTERIOR TO BUILDING (BOTH SUCTION AND LIQUID). RUN NEW PIPING ON RUBBER BLOCKS. REFER TO DETAIL.
4. RUN ALL POWER AND CONTROL WIRING TO NEW EQUIPMENT ALONG THE WALL WITH PROPER WALL SUPPORTS.
5. RUN NEW INSULATED REFRIGERANT PIPING THROUGH THE WALL TO THE EXTERIOR OF BUILDING AND CONNECT TO NEW CONDENSING UNIT (ACC-3). WEATHERSEAL ALL PIPING PENETRATONS.
6. PROVIDE NEW EXHAUST FAN EF-104 AND NEW EXHAUST LOUVER LV-103 INSTALL AT THE WALL PENETRATION C/W BACKDRAFT DAMPER. CONTRACTOR TO MAINTAIN THE WALL OPENING TO SUIT THE NEW EXHAUST FAN AND NEW LOUVER DIMENSION. FAN TO BE INTERLOCKED WITH NEW MOTORIZED DAMPER FOR THE LV-102, AND THE GAS DETECTION SYSTEM
7. EXISTING CONDENSING UNITS TO REMAIN.
8. PROVIDE CO/NO_2 SENSOR AND WIRE BACK TO MASTER CONTROLLER IN VAN STORAGE 111.
9. PROVIDE GAS DETECTION CONTROL PANEL.
10. EXISTING LOUVER LV-102 TO BE REMOVED AND REPLACED WITH NEW LOUVER C/W MOTORIZED DAMPER, SEE SCHEDULES FOR MORE INFORMATION,MORE INFORMATION, MOTORIZED DAMPER TO BE INTERLOCKED WITH GAS DETECTION SYSTEM, CONTRACTOR TO MAINTAIN THE WALL PENETRATION TO SUIT THE NEW LOUVER SIZE.
11. EXISTING LOUVER LV-101 TO BE REMOVED AND REPLACED WITH NEW LOUVER C/W MOTORIZED DAMPER, SEE SCHEDULES FOR MORE INFORMATION, MOTORIZED DAMPER TO BE INTERLOCKED WITH GAS DETECTION SYSTEM. CONTRACTOR TO MAINTAIN THE WALL PENETRATION TO SUIT THE NEW LOUVER SIZE.

No.	Date	Description	By
E	2025.06.17	ISSUED FOR ADDENDUM 2	MD
D	2025.05.30	ISSUED FOR TENDER	MD
C	2025.05.23	ISSED FOR TENDER REVIEW 100%DD	MD
B	2025.05.13	ISSUED FOR CLIENT REVIEW	MD
A	2025.02.21	ISSUED FOR 100% DETAILED DESIGN	MD

STAMPS:

DESIGNED BY | APPROVED BY

ENGINEER:
CIMA+
415 Baseline Road West
Bowmanville, ON L1C 5M2
T 905.697.4464 F 905.697.0443
www.cima.ca

CLIENT:
PEEL REGIONAL POLICE
13663 MCLAUGHLIN ROAD
CALEDONIA, ON L7C 3L7

PROJECT NAME:
HELIPORT RETROFIT

SHEET TITLE:
GROUND FLOOR PLAN - NEW & DEMOLITION HVAC

DISCIPLINE:
MECHANICAL

DRAFTER: SR	SCALE: AS NOTED
DESIGNER: MD	DATE: 25/02/21
APPROVER: MD	CHECKER: BRT
PROJECT No: Z0022639	DRAWING No: M-102
SHEET No: 2 of 6	