

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation, administrative and procedural requirements for prefabricated walk-in freezers and coolers.

1.2 RELATED SECTIONS

- .1 Section 01 01 50 - Submittal Procedures.
- .2 Section 01 01 50 - Construction/Demolition Waste Management And Disposal.
- .3 Section 01 01 50 - Quality Control.
- .4 Section 01 01 50 - Closeout Procedures

1.3 REFERENCES

- .1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B16.26, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .2 ANSI/ASME B16.29, Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings-DWV.
- .2 American National Standards Institute/National Fire Protection Association (ANSI/NFPA)
 - .1 ANSI/NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials.
- .3 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .3 ASTM A480/A480M, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
 - .1 Finish for sheet: No. 4 Finish-General purpose polished finish, one or both sides.
 - .4 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM B88M, Standard Specification for Seamless Copper Water Tube [Metric].
 - .6 ASTM B280, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
 - .7 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

- .8 ASTM E162, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13, Sealing Compound, One-Component, Elastomeric, Chemical Curing.
- .5 Canadian Standards Association (CSA International)
 - .1 CSA C22.2 No.137, Electric Luminaires for Use in Hazardous Locations.
- .6 National Sanitation Foundation (NSF)
- .7 Underwriters' Laboratories of Canada
 - .1 CAN/ULC-S704, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .2 CAN/ULC-S705.1, Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 01 50 - Submittal Procedures.
- .2 Indicate:
 - .1 Construction details of equipment by drawings and manufacturers' literature.
 - .2 Roughing-in requirements for mechanical and electrical services.
 - .3 Installation details.
- .3 Provide operation and maintenance data for incorporation into manual specified in Section 01 01 50 - Closeout Procedures.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 01 50 - Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal any and all packaging/crating material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Unused caulking material must be disposed of at an official hazardous material collections site as approved by Departmental Representative.
- .6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 MATERIALS

- .1 Stainless steel sheet: to ASTM A167 A240/A240M, type 304 with No. 4 finish.
- .2 Galvanized steel sheet: commercial grade to ASTM A653/A653M, with zinc coating (galvanized) to ASTM A653/A653M.
- .3 Mild steel sheet: cold rolled to Society of Automotive Engineers (SAE) 1010 to 1020 suitably prepared for specified finish.
- .4 Aluminum sheet: utility sheet with "stucco" pattern finish on exterior panels and smooth finish on interior panels.
- .5 Galvalume: steel sheet with aluminum zinc alloy coating with baked on polyester finish.
- .6 Sealant: to colour to match panel. Minimize use of sealant as possible for sealed unit.
- .7 Rubber gaskets to be used between panels
- .8 Isolating coating: to manufacturer's recommendations.
- .9 Panels
 - .1 Insulation for panels and screeds: to Class 3, poured type foamed-in-place polyurethane (urethane), 100 mm thick. Panels to consist of interior and exterior zinc coated precision die formed galvanized steel panels pans, foamed in place urethane insulation between interior and exterior pans, and thoroughly checked for gauge and accuracy. Panels to be of same size wherever possible and to be interchangeable with panels of like size. Metal pans to be treated on the inside with a preparation coating of bonding agent to ensure a stable adhesion with the chemical bonding capabilities of the insulation.
 - .2 Wall and ceiling panels are to be 100 mm thick and contain 100% foamed in place insulation and will not have any internal wood or metal structural members. To ensure tight fitting joints, all panel edges are to have foamed in place urethane tongues and grooves and a flexible vinyl gasket foamed in place on the interior and exterior of all edges.
 - .1 R-value of R27 for Coolers, retaining 75% of the R-value after 5 years
 - .2 R-value of R-32 for Freezers, retaining 75% of the R-value after 5 years
 - .3 Wall and ceiling panels are to be finished with a baked white polyester enamel finish on all interior and exterior exposed surfaces. Galvanized surfaces are permitted on exterior roof and unexposed walls
 - .4 All interior vertical corners shall be coved with a 13 mm radius, where specified under individual item or per NSF standards
 - .5 Panel Fastening - Panel joints to be tongue and groove type to ensure proper alignment and to eliminate any vapour or frost transmission. All panel joints to be drawn tight with factory installed cam-action speed lock

assemblies Locking device to be accessible from the inside to facilitate installation in confined areas and to be provided with press-fit caps to cover wrench holes. Joints between panels to be sealed at interior and exterior edges with a PVC gasket or an odorless nontoxic, synthetic polymerized sealant corrections grade, to maintain continuity and to be uniform and smooth

2.2 FABRICATION

- .1 Overall dimensions: as indicated. Confirm on site.
- .2 Panel sections: precision die formed metal pans accurately spaced and insulated. Panel edges and corners to have tongue and grooves, formed-in-place, to assure airtight, vapour proof joints using gaskets or sealants.
- .3 Door panels: insulated and finished as per exterior and interior panels with 914 x 1980 mm clear door opening, reinforced to prevent door panels from twisting, racking or warping. Ensure that doors will close and seal opening. Equip each door panel with:
 - .1 One, in fitting flush mounted type, door (swing as indicated) to fit door opening, insulated and finished same as panels, having 1220 high x 1.6 mm thick stainless steel push/kick-plates on both exterior and interior and having soft thermoplastic gasket with magnetic steel core at top and both sides, adjustable rubber wiper gasket at bottom. Gaskets to be oil, fat, water and sunlight resistant and be replaceable.
 - .2 Hinges, spring loaded, self-closing type, with stainless steel pin and nylon cam-type bearing, of brushed chrome.
 - .3 One latch, to match hinges, for opening door by breaking force of trigger-action door closer and magnetic gasket; Kason Secure Guard. Latch to have cylinder type lock, have inside safety release handle capable of opening door from within regardless of whether door is padlocked or not. Illuminated panic switches
 - .4 One foot treadle to match hinges and latch, for opening door without use of hands
 - .5 One trigger-action positive door closer, located on exterior, to assist in positive closing of door.
 - .6 Sills with built-in thermostatically controlled heater cables inside perimeter of door and beneath sill plate and jambs of door opening. Heaters to have fused protection within panels
 - .1 Sills to be removable for replacement of heater cable
 - .2 Integral Ramp where required to be to be prefabricated 1.6 mm stainless steel ramps with 2.0 mm galvanized reinforcing and urethane foamed in place insulation.
 - .1 Wearing surface to have 100 mm wide rectangular non-skid strips, width of the ramp – non-removable. Sill to be built into ramp/pre-fabricated floors
 - .2 Ramp to be heated where in use for a Freezer
 - .7 Threshold plates: 2.0 mm stainless steel and removable.

- .8 One 50 mm diameter flush-face dial-type thermometer to provide temperature readings from -51°C to 27°C and mounted on handle side of door opening approximately 1525 mm from floor. Cover sensing bulb with protective stainless steel moulding.
- .9 One incandescent vapour-tight luminaire, with guard, mounted not less than 1980 mm from floor on interior of panel, operated from toggle switch with pilot light, mounted 1372 mm from floor on exterior of panel, adjacent to latch. All factory pre-wired and terminating in vapour-tight junction box that light is mounted on.
- .10 Each door to have a kickplate of 1.98 mm stainless steel 915 mm high and full width of door. Mount on the interior and exterior face of each door
- .11 355 x 355mm triple-pane heated viewport with heated glass and frame heater
- .12 Sliding doors: manual, direction as noted, lock and inside release, finish as panels; backing in panels to accommodate mounting track
- .4 Ceiling panels: reinforced internally or externally as required, to support evaporator. Where external reinforcement is needed and through fasteners are used, fasteners to be of low heat conducting material such as teflon. Insert fasteners in teflon sleeves to prevent compressing of insulation.
- .5 Screeds: same construction materials and finish as wall panels or channel shaped PVC to accommodate wall panels in fully secured position. Length and configuration to match wall and corner panels. Reinforce screeds internally at 584 mm centres to accommodate fastening to building and/or wearing floor. Reinforcing and floor fastenings to form an integral part of panel locking devices system.
- .6 Interior floor panels: 1.2 mm minimum, core galvanized steel. Exposed interior floors to be rust resistant
 - .1 Will withstand a minimum weight of 5,000 lbs per square foot of static weight
- .7 Panel thickness[es] and finish[es] for exterior and interior panels [exposed to normal view] except floor panels: [0.5 mm minimum stainless steel] [0.8 mm core galvanized steel, factory painted, colour [white]] [1.0 mm plain or stucco patterned aluminum].
- .8 Locking devices: panel sections to have cam- action locking devices, spaced at maximum 950 mm vertically, 600 mm horizontally. Male and female lock pockets.
- .9 Lighting: to CSA 22.2 No.137 Class III Hazardous Locations
 - .1 Each entrance door section is to be provided with an vapour proof lamp on the interior. An operating toggle switch and pilot light to be mounted on the exterior. An inlet box to be provided for 115V, 60 cycle, single phase AC service. All lights, switching and heater cables pre-wired at factory to single junction box
 - .2 Individual room lighting to be supplied as indicated. Specifications to provide a light level of 25FC 915 mm above finished floor. Normal temperature coolers 35°F (+2°C) low temperature fluorescent. Storage

- freezers -10°F (-23°C) low temperature fluorescent, remote ballast. Low temperature freezers -20°F (-30°C) mercury vapour type (HID)
- .3 All light fixtures, interconnecting conduit and wiring, roof and wall penetrations and wiring to junction boxes is to be provided by the FEC for final connection by the Electrical Contractor
 - .10 Digital Thermometer and Alarm – at each door, for each refrigerated storage room (Walk-in)
 - .1 Digital thermometer and alarm to be furnished for each cold storage room. The capillary to be extended away from the door and protected for its full length with stainless steel moulding securely fastened to the room wall
 - .2 Digital thermometers to be supplied with an integrated alarm system providing both visual and audio alarm signal
 - .3 When the door does not open into an ambient area, the digital thermometer and alarm are to be factory installed, as specified above, in a remote wall panel with an ambient face that will not interfere with other equipment and functions and is identified with a nameplate of the room being monitored. The sensor capillary to be extruded as required and, when necessary, run in electrical conduit. Provide escutcheon plates on each side of each partition penetrated
 - .4 Power source failure alarm with adjustable set point for temperature.
 - .5 Jack for remote alarm telephone dialer and enunciator panel.
 - .6 Digital thermometer with minus 15°C to plus 30°C range.
 - .7 Built-in battery and charger
 - .8 All weather housing cover, non-removable, for exterior units
 - .11 Removable closure panels: extend from lower edge of erected prefabricated ceiling panels to finished building ceiling. Extend cover strips or angles from building floor to ceiling closure panels between exposed ends of walk-in boxes and building wall. Closure panels, cover strips or angles to match exposed exterior wall panels.
 - .12 Rub rails : 70 x 200 x 1.6 mm stainless steel on exposed exterior panels, mounted 300 mm from center of rail to finished building floor. Where rub-rail is at external corner, mitre joint and weld. Box open ends. Top and vertical ends where rail makes contact with wall panels are to be sealed. Two rub rails are required on interior of garbage refrigerator mounted 600 and 300 mm from respective centers to refrigerator floor. Rub rails are not required at doors, door panels or within 200 mm of internal angles of walls.
 - .13 Two-way pressure relief port: in freezer wall panel away from direct air stream flowing from coil. Embed anti-sweat heater cables in frame of port so intake and exhaust ports will not freeze. Terminate wiring in junction box on interior panel over top of port.
 - .14 Walk-in alarm system: self-contained with visual and audible alarm - Modularm 75LC with Communicator or equivalent. Include following:

- .1 Custom Remote Annunciator Panel with components as required for alarm units for each walk-in; integral dry contacts for connection/monitoring in remote location. Method of alarm annunciation to connect to existing.
 - .1 Stainless Steel panel sized to accommodate components; refer to site for space allocation;
 - .2 provide fully wired panel with additional dry contact for tie in to out of work area (remote) monitoring
 - .3 Individual audio and visual alarm indicator for each monitored point to easily identify issue location
 - .4 Rechargeable battery backup with recharging circuitry for power failure operation
- .2 Temperature alarm system – interconnection with all refrigeration system components for Walk-ins;
 - .1 Power source failure alarm with adjustable set point for temperature.
 - .2 Jack for remote alarm telephone dialer and enunciator panel.
 - .3 Digital thermometer with minus 15°C to plus 30°C range.
 - .4 Built-in battery and charger
 - .5 All weather housing cover, non-removable, for exterior units
 - .6 Interconnected to panel in Staff Office
- .3 Door Ajar notification/monitor at each walk-in door
 - .1 Door contact (magnetic) at each walk-in door (sliding and swing)
 - .2 Interconnected to panel in Staff Office
- .4 Panic Button notification at each walk-in door
 - .1 At each door at each walk-in provide an Illuminated Panic Button
 - .2 Interconnected to panel in Staff Office

2.3 REFRIGERATION EQUIPMENT (FOR REMOTE INSTALLATION)

- .1 All remote refrigeration systems to be furnished and installed by one contractor, unless otherwise specified. Refrigeration work to be in strict accordance with the Provincial regulations regarding refrigeration plants and the current Mechanical Refrigeration Code
- .2 Refrigeration equipment: with refrigerant HFC/HCFC, fully automatic in operation, and to conform to following minimum requirements work includes furnishing all labour, materials, tools, equipment and services necessary to provide a complete equipment refrigeration package. The contract documents are intended to include everything required for completion of all work. It includes, but is not limited to the following:
 - .1 All mechanical refrigeration items for remote refrigeration systems, except for items included with standard manufactured or fabricated equipment; all weather
 - .2 All compressor units, condensers, refrigerant, refrigerant piping, control valves and accessories and line insulation. Compressor units are to be air

- cooled, unless otherwise specified. Units up to 1.5 hp are to be hermetic (sealed). Units 1.5 hp and over are to be semi hermetic. Refrigerants in compliance with CFC regulations and the Montreal Protocol. Refrigerants R404A or their programmed replacements at installation date are to be used. Design unit for 16 h to 18 h operation at specified evaporating temperature, in 32.2°C ambient temperature.
- .3 All cold storage room and remote equipment evaporators with thermostatic expansion valves, evaporator drain lines or condensate evaporators where specified
 - .4 Motor Starters
 - .5 Thermostats
 - .6 Integrated defrost management system for remote refrigeration systems
 - .7 Steel angle racks for motor compressor or condensing units. All compressors to be adequately mounted to eliminate vibration noises. Rack to be suitably braced to ensure stability. Rack to be painted with grey enamel. Rack sized to accommodate all compressors as specified
 - .8 Pre determined or positioned cold storage room evaporator hangers and line penetration locations
 - .9 Building wall and/or floor sleeves. Cut and patch building work as required for installation:
 - .10 Evaporator: forced-convection, unit-cooler type, suspended from ceiling panels, with forced-air discharged parallel to ceiling. Assemble air circulating motor, multifin and tube type coil [and grille] within protective housing also, contain expansion valve, with strainer, heat exchanger and inlet and outlet connections within same housing complete with safety screen. Air circulation motors: lifetime sealed. Entire unit-cooler assembly readily accessible for cleaning. Provide drip pan and drain connection. Equip unit coolers with mounting brackets for installation and controls for safe and satisfactory operation. When Walk-In is used for freezer applications, provide an automatic system for defrosting unit cooler, including heaters and time control. Provide disconnect switch within 600 mm of evaporator motor.
 - .11 Stainless steel cover as shown to cover exposed refrigeration lines
 - .12 Stainless steel cover as exterior unit sized to cover exposed drain lines from evaporator to drain
- .3 Refrigerant tubing:
- .1 Conform to ASTM B88M and ASTM B280 requirements.
 - .2 Relief valve discharge pipe on outdoor installations shall be copper tube type "L" with brazed joints, with welded .
 - .3 Fittings:
 - .1 Conform to ANSI/ASME B16.26 and ANSI/ASME B16.29.
 - .2 Long radius type for elbows and return bends.
- .4 Warranty extended 5 year on parts and labour

2.4 HEATER CABLES

- .1 Provide necessary heater cables and insulating wrap as required for evaporator drain lines.

2.5 SOURCE QUALITY CONTROL

- .1 Ensure equipment is manufactured and installed by company having personnel skilled in manufacturing and installing of prefab walk-in freezers and coolers and having continuous proven experience within last five years.
- .2 Departmental Representative may conduct shop inspection of equipment fabrication prior to delivery to site.

2.6 ITEMIZED EQUIPMENT

- .1 **Walk-in Cooler (Freezer); -1°C operating temperature**
 - .1 Size: approximately 5100 x 3600 x 2591mm AFF
 - .1 Verify size with site conditions; height and width to match existing overall size and site conditions
 - .2 One (1) swing door: approximately 914 x 1981mm, hinge on right
 - .3 Lighting as required for use light levels; LED
 - .4 With integral floor and door ramp
 - .1 **Refrigeration System**
 - .1 One (1) evaporator, 208v 1 phase
 - .2 One (1) condensing/compressor unit – air cooled, remote outdoor unit, 208v 3 phase
 - .3 Refer to site for existing systems locations; allow for site determined line runs
 - .4 Potential to reuse existing site services – verify with site
- .2 **Stainless steel work:**
 - .1 Provide stainless steel cover over exposed evaporator drain line outside of walk-in box; removable with correctional tools only

Part 3 Execution

3.1 REMOVAL OF EXISTING

- .1 Walk-in Units and Refrigeration Systems
 - .1 Ensure removal of all food and shelving/dunnage units from walk-ins, by others, prior to commencement of work
 - .2 Pump down and fully remove refrigerant from refrigeration systems; dispose of refrigerant as required by code; fully remove systems and piping as required
 - .3 Dismantle existing walk-in boxes and any trim / closure panels as required

- .4 Dispose of all removed panels in accordance with applicable sections and code
- .5 Supervise floor work to ensure level surface for addition of new walk-in box
- .2 Meat Rail
 - .1 Unit to be removed from K-N3A building door to the walk-ins.
 - .2 Building damage in removal and penetrations for mounting rails is to be patched and finished to match adjacent finish.

3.2 INSTALLATION

- .1 Provide appropriate protection apparatus.
- .2 Erect work true-to-line, plumb, square and level with joints aligned. Fit joints and intersecting members accurately and in true planes adequately fastened.
- .3 Clear drain holes in floor, in freezer area, and ensure that underslab vapour barrier is punctured to allow drainage to drains and vent pipes.
- .4 Insulate to prevent electrolysis between metal and concrete by applying coating of asphaltic paint to metal surface, applied in accordance with manufacturer's instructions. Insulation to be dry before assembling floor panels in place.
- .5 Unless otherwise indicated, install units within 25 mm of building walls, with minimum 25 mm clearance between top of unit and room ceiling. Fasten screeds to building and/or wearing floor in accordance with manufacturer's instructions.
- .6 Caulk around perimeter of floor panels/screeds after installation on building floor.
- .7 Fill space between perimeter of floor panels and edge of floor depression with concrete or non-shrink grout and trowel flush with building floor.
- .8 Cut or drill holes in panels, as required, to accommodate electrical and mechanical services, runs or connections. Insert teflon sleeves into holes and seal. After installation of services, fill remaining space with insulation.
- .9 Cap wrench access holes with an in-fitting, flush, stainless steel removable plug.
- .10 Install removable, with correctional tools, closure panels, cover strips, and angles.
- .11 Supervise installation of thresholds, heaters and urethane insulation for floors.

3.3 CLEANING AND ADJUSTING

- .1 Upon completion of Work:
 - .1 Clean equipment and apparatus in accordance with Section 01 01 50 - Quality Control.
 - .2 Remove protective coverings and test and adjust operating equipment.
 - .3 Re-finish damaged coatings and finishes.

END OF SECTION

EXISTING SITE PHOTOS



Part 1 General

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 - .2 Ramp to be heated where in use for a Freezer
 - .7 Threshold plates: 2.0 mm stainless steel and removable.

- .8 One 50 mm diameter flush-face dial-type thermometer to provide temperature readings from -51°C to 27°C and mounted on handle side of door opening approximately 1525 mm from floor. Cover sensing bulb with protective stainless steel moulding.
- .9 One incandescent vapour-tight luminaire, with guard, mounted not less than 1980 mm from floor on interior of panel, operated from toggle switch with pilot light, mounted 1372 mm from floor on exterior of panel, adjacent to latch. All factory pre-wired and terminating in vapour-tight junction box that light is mounted on.
- .10 Each door to have a kickplate of 1.98 mm stainless steel 915 mm high and full width of door. Mount on the interior and exterior face of each door
- .11 355 x 355mm triple-pane heated viewport with heated glass and frame heater
- .12 Sliding doors: manual, direction as noted, lock and inside release, finish as panels; backing in panels to accommodate mounting track
- .4 Ceiling panels: reinforced internally or externally as required, to support evaporator. Where external reinforcement is needed and through fasteners are used, fasteners to be of low heat conducting material such as teflon. Insert fasteners in teflon sleeves to prevent compressing of insulation.
- .5 Screeds: same construction materials and finish as wall panels or channel shaped PVC to accommodate wall panels in fully secured position. Length and configuration to match wall and corner panels. Reinforce screeds internally at 584 mm centres to accommodate fastening to building and/or wearing floor. Reinforcing and floor fastenings to form an integral part of panel locking devices system.
- .6 Interior floor panels: 1.2 mm minimum, core galvanized steel. Exposed interior floors to be rust resistant
 - .1 Will withstand a minimum weight of 5,000 lbs per square foot of static weight
- .7 Panel thickness[es] and finish[es] for exterior and interior panels [exposed to normal view] except floor panels: [0.5 mm minimum stainless steel] [0.8 mm core galvanized steel, factory painted, colour [white]] [1.0 mm plain or stucco patterned aluminum].
- .8 Locking devices: panel sections to have cam- action locking devices, spaced at maximum 950 mm vertically, 600 mm horizontally. Male and female lock pockets.
- .9 Lighting: to CSA 22.2 No.137 Class III Hazardous Locations
 - .1 Each entrance door section is to be provided with an vapour proof lamp on the interior. An operating toggle switch and pilot light to be mounted on the exterior. An inlet box to be provided for 115V, 60 cycle, single phase AC service. All lights, switching and heater cables pre-wired at factory to single junction box
 - .2 Individual room lighting to be supplied as indicated. Specifications to provide a light level of 25FC 915 mm above finished floor. Normal temperature coolers 35°F (+2°C) low temperature fluorescent. Storage

- freezers -10°F (-23°C) low temperature fluorescent, remote ballast. Low temperature freezers -20°F (-30°C) mercury vapour type (HID)
- .3 All light fixtures, interconnecting conduit and wiring, roof and wall penetrations and wiring to junction boxes is to be provided by the FEC for final connection by the Electrical Contractor
- .10 Digital Thermometer and Alarm – at each door, for each refrigerated storage room (Walk-in)
- .1 Digital thermometer and alarm to be furnished for each cold storage room. The capillary to be extended away from the door and protected for its full length with stainless steel moulding securely fastened to the room wall
 - .2 Digital thermometers to be supplied with an integrated alarm system providing both visual and audio alarm signal
 - .3 When the door does not open into an ambient area, the digital thermometer and alarm are to be factory installed, as specified above, in a remote wall panel with an ambient face that will not interfere with other equipment and functions and is identified with a nameplate of the room being monitored. The sensor capillary to be extruded as required and, when necessary, run in electrical conduit. Provide escutcheon plates on each side of each partition penetrated
 - .4 Power source failure alarm with adjustable set point for temperature.
 - .5 Jack for remote alarm telephone dialer and enunciator panel.
 - .6 Digital thermometer with minus 15°C to plus 30°C range.
 - .7 Built-in battery and charger
 - .8 All weather housing cover, non-removable, for exterior units
- .11 Removable closure panels: extend from lower edge of erected prefabricated ceiling panels to finished building ceiling. Extend cover strips or angles from building floor to ceiling closure panels between exposed ends of walk-in boxes and building wall. Closure panels, cover strips or angles to match exposed exterior wall panels.
- .12 Rub rails : 70 x 200 x 1.6 mm stainless steel on exposed exterior panels, mounted 300 mm from center of rail to finished building floor. Where rub rail is at external corner, mitre joint and weld. Box open ends. Top and vertical ends where rail makes contact with wall panels are to be sealed. Two rub rails are required on interior of garbage refrigerator mounted 600 and 300 mm from respective centers to refrigerator floor. Rub rails are not required at doors, door panels or within 200 mm of internal angles of walls.
- .13 Two-way pressure relief port: in freezer wall panel away from direct air stream flowing from coil. Embed anti-sweat heater cables in frame of port so intake and exhaust ports will not freeze. Terminate wiring in junction box on interior panel over top of port.
- .14 Walk-in alarm system: self-contained with visual and audible alarm - Modularm 75LC with Communicator or equivalent. Include following:
- .1 Integrate system with existing panel in Food Services office

- .1 Verify type of system with existing unit prior to ordering
- .2 Custom Remote Annunciator Panel with components as required for alarm units for each walk-in; located in Staff Office; with integral dry contacts for connection/monitoring in remote location.
 - .1 Stainless Steel panel sized to accommodate components; refer to site for space allocation;
 - .2 provide fully wired panel with additional dry contact for tie in to out of work area (remote) monitoring
 - .3 Individual audio and visual alarm indicator for each monitored point to easily identify issue location
 - .4 Rechargeable battery backup with recharging circuitry for power failure operation
- .3 Temperature alarm system – interconnection with all refrigeration system components for Walk-ins;
 - .1 Power source failure alarm with adjustable set point for temperature.
 - .2 Jack for remote alarm telephone dialer and enunciator panel.
 - .3 Digital thermometer with minus 15°C to plus 30°C range.
 - .4 Built-in battery and charger
 - .5 All weather housing cover, non-removable, for exterior units
 - .6 Interconnected to panel in Staff Office
- .4 Door Ajar notification/monitor at each walk-in door
 - .1 Door contact (magnetic) at each walk-in door (sliding and swing)
 - .2 Interconnected to panel in Staff Office
- .5 Panic Button notification at each walk-in door
 - .1 At each door at each walk-in provide an Illuminated Panic Button
 - .2 Interconnected to panel in Staff Office

2.3 REFRIGERATION EQUIPMENT (FOR REMOTE INSTALLATION)

- .1 All remote refrigeration systems to be furnished and installed by one contractor, unless otherwise specified. Refrigeration work to be in strict accordance with the Provincial regulations regarding refrigeration plants and the current Mechanical Refrigeration Code
- .2 Refrigeration equipment: with refrigerant HFC/HCFC, fully automatic in operation, and to conform to following minimum requirements work includes furnishing all labour, materials, tools, equipment and services necessary to provide a complete equipment refrigeration package. The contract documents are intended to include everything required for completion of all work. It includes, but is not limited to the following:
 - .1 All mechanical refrigeration items for remote refrigeration systems, except for items included with standard manufactured or fabricated equipment; all weather
 - .2 All compressor units, condensers, refrigerant, refrigerant piping, control valves and accessories and line insulation. Compressor units are to be air

- cooled, unless otherwise specified. Units up to 1.5 hp are to be hermetic (sealed). Units 1.5 hp and over are to be semi hermetic. Refrigerants in compliance with CFC regulations and the Montreal Protocol. Refrigerants R404A or their programmed replacements at installation date are to be used. Design unit for 16 h to 18 h operation at specified evaporating temperature, in 32.2°C ambient temperature.
- .3 All cold storage room and remote equipment evaporators with thermostatic expansion valves, evaporator drain lines or condensate evaporators where specified
 - .4 Motor Starters
 - .5 Thermostats
 - .6 Integrated defrost management system for remote refrigeration systems
 - .7 Steel angle racks for motor compressor or condensing units. All compressors to be adequately mounted to eliminate vibration noises. Rack to be suitably braced to ensure stability. Rack to be painted with grey enamel. Rack sized to accommodate all compressors as specified
 - .8 Pre determined or positioned cold storage room evaporator hangers and line penetration locations
 - .9 Building wall and/or floor sleeves. Cut and patch building work as required for installation:
 - .10 Evaporator: forced-convection, unit-cooler type, suspended from ceiling panels, with forced-air discharged parallel to ceiling. Assemble air circulating motor, multifin and tube type coil [and grille] within protective housing also, contain expansion valve, with strainer, heat exchanger and inlet and outlet connections within same housing complete with safety screen. Air circulation motors: lifetime sealed. Entire unit-cooler assembly readily accessible for cleaning. Provide drip pan and drain connection. Equip unit coolers with mounting brackets for installation and controls for safe and satisfactory operation. When Walk-In is used for freezer applications, provide an automatic system for defrosting unit cooler, including heaters and time control. Provide disconnect switch within 600 mm of evaporator motor.
 - .11 Stainless steel cover as shown to cover exposed refrigeration lines
 - .12 Stainless steel cover as exterior unit sized to cover exposed drain lines from evaporator to drain
- .3 Refrigerant tubing:
- .1 Conform to ASTM B88M and ASTM B280 requirements.
 - .2 Relief valve discharge pipe on outdoor installations shall be copper tube type "L" with brazed joints, with welded .
 - .3 Fittings:
 - .1 Conform to ANSI/ASME B16.26 and ANSI/ASME B16.29.
 - .2 Long radius type for elbows and return bends.
- .4 Warranty extended 5 year on parts and labour

2.4 HEATER CABLES

- .1 Provide necessary heater cables and insulating wrap as required for evaporator drain lines.

2.5 SOURCE QUALITY CONTROL

- .1 Ensure equipment is manufactured and installed by company having personnel skilled in manufacturing and installing of prefab walk-in freezers and coolers and having continuous proven experience within last five years.
- .2 Departmental Representative may conduct shop inspection of equipment fabrication prior to delivery to site.

2.6 ITEMIZED EQUIPMENT

- .1 **Walk-in Cooler (Freezer); -1°C operating temperature**
 - .1 Size: approximately 4150 x 3450 x 2285mm AFF with notched ceiling section at LH side for existing drop ceiling location (approximately 900 x 900 x 200mm)
 - .1 Verify size with site conditions
 - .2 One (1) swing door: approximately 914 x 1981mm, hinge on right
 - .3 Lighting as required for use light levels; LED
 - .4 With integral floor and door ramp
- .1 **Refrigeration System**
 - .1 One (1) evaporator, 208v 1 phase
 - .2 One (1) condensing/compressor unit – air cooled, remote outdoor unit, 208v 3 phase
 - .3 Refer to site for existing systems locations; allow for site determined line runs

Part 3 Execution

3.1 REMOVAL OF EXISTING

- .1 Walk-in Unit and Refrigeration System
 - .1 Ensure removal of all food and shelving/dunnage units from walk-ins, by others, prior to commencement of work
 - .2 Pump down and fully remove refrigerant from refrigeration systems; dispose of refrigerant as required by code; fully remove systems and piping as required
 - .3 Dismantle existing walk-in boxes and any trim / closure panels as required
 - .4 Dispose of all removed panels in accordance with applicable sections and code
 - .5 Supervise floor work to ensure level surface for addition of new walk-in box

3.2 INSTALLATION

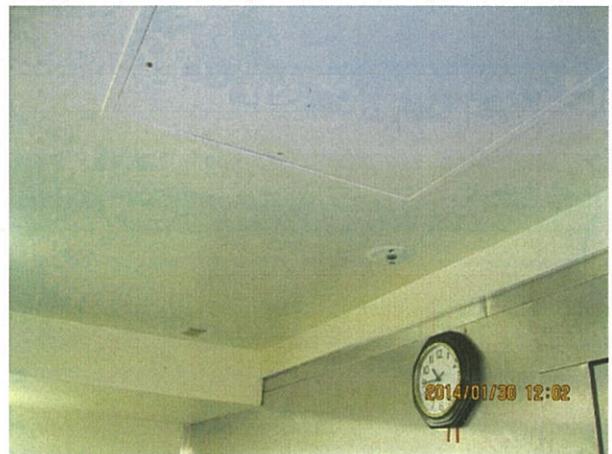
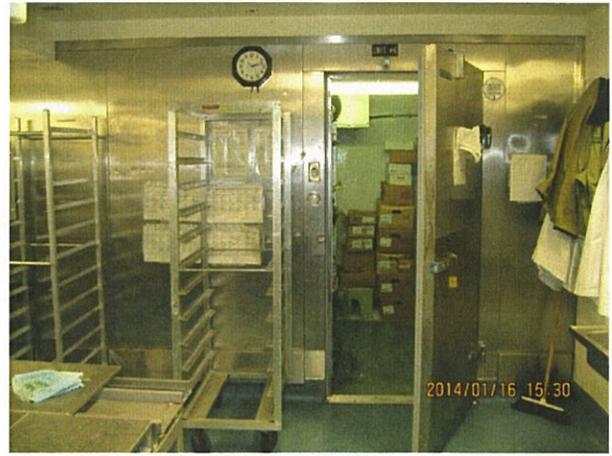
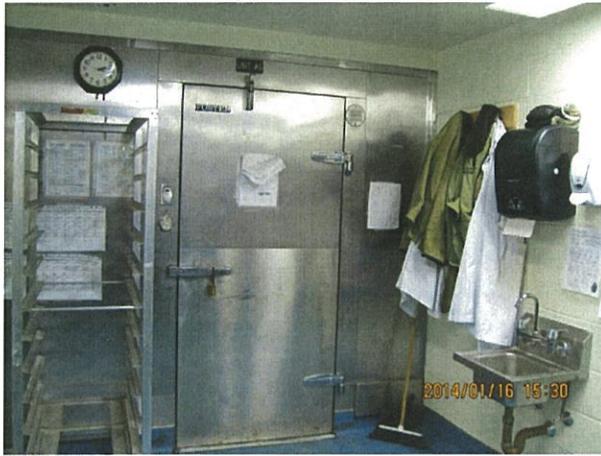
- .1 Provide appropriate protection apparatus.
- .2 Erect work true-to-line, plumb, square and level with joints aligned. Fit joints and intersecting members accurately and in true planes adequately fastened.
- .3 Clear drain holes in floor, in freezer area, and ensure that underslab vapour barrier is punctured to allow drainage to drains and vent pipes.
- .4 Insulate to prevent electrolysis between metal and concrete by applying coating of asphaltic paint to metal surface, applied in accordance with manufacturer's instructions. Insulation to be dry before assembling floor panels in place.
- .5 Unless otherwise indicated, install units within 25 mm of building walls, with minimum 25 mm clearance between top of unit and room ceiling. Fasten screeds to building and/or wearing floor in accordance with manufacturer's instructions.
- .6 Caulk around perimeter of floor panels/screeds after installation on building floor.
- .7 Fill space between perimeter of floor panels and edge of floor depression with concrete or non-shrink grout and trowel flush with building floor.
- .8 Cut or drill holes in panels, as required, to accommodate electrical and mechanical services, runs or connections. Insert teflon sleeves into holes and seal. After installation of services, fill remaining space with insulation.
- .9 Cap wrench access holes with an in-fitting, flush, stainless steel removable plug.
- .10 Install removable, with correctional tools, closure panels, cover strips, and angles.
- .11 Supervise installation of thresholds, heaters and urethane insulation for floors.

3.3 CLEANING AND ADJUSTING

- .1 Upon completion of Work:
 - .1 Clean equipment and apparatus in accordance with Section 01 01 50 - Quality Control.
 - .2 Remove protective coverings and test and adjust operating equipment.
 - .3 Re-finish damaged coatings and finishes.

END OF SECTION

EXISTING SITE PHOTOS



Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation, administrative and procedural requirements for prefabricated walk-in freezers and coolers.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .3 Section 01 45 00 - Quality Control.
- .4 Section 01 78 00 - Closeout Submittals.

1.3 REFERENCES

- .1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B16.26, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .2 ANSI/ASME B16.29, Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings-DWV.
- .2 American National Standards Institute/National Fire Protection Association (ANSI/NFPA)
 - .1 ANSI/NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials.
- .3 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .3 ASTM A480/A480M, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
 - .1 Finish for sheet: No. 4 Finish-General purpose polished finish, one or both sides.
 - .4 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM B88M, Standard Specification for Seamless Copper Water Tube [Metric].
 - .6 ASTM B280, Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
 - .7 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

- .8 ASTM E162, Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13, Sealing Compound, One-Component, Elastomeric, Chemical Curing.
- .5 Canadian Standards Association (CSA International)
 - .1 CSA C22.2 No.137, Electric Luminaires for Use in Hazardous Locations.
- .6 National Sanitation Foundation (NSF)
- .7 Underwriters' Laboratories of Canada
 - .1 CAN/ULC-S704, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .2 CAN/ULC-S705.1, Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate:
 - .1 Construction details of equipment by drawings and manufacturers' literature.
 - .2 Roughing-in requirements for mechanical and electrical services.
 - .3 Installation details.
- .3 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 19 - Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal any and all packaging/crating material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Unused caulking material must be disposed of at an official hazardous material collections site as approved by Departmental Representative.
- .6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 MATERIALS

- .1 Stainless steel sheet: to ASTM A167 A240/A240M, type 304 with No. 4 finish.
- .2 Galvanized steel sheet: commercial grade to ASTM A653/A653M, with zinc coating (galvanized) to ASTM A653/A653M.
- .3 Mild steel sheet: cold rolled to Society of Automotive Engineers (SAE) 1010 to 1020 suitably prepared for specified finish.
- .4 Aluminum sheet: utility sheet with "stucco" pattern finish on exterior panels and smooth finish on interior panels.
- .5 Galvalume: steel sheet with aluminum zinc alloy coating with baked on polyester finish.
- .6 Sealant: to colour to match panel. Minimize use of sealant as possible for sealed unit.
- .7 Rubber gaskets to be used between panels
- .8 Isolating coating: to manufacturer's recommendations.
- .9 Panels
 - .1 Insulation for panels and screeds: to Class 3, poured type foamed-in-place polyurethane (urethane), 100 mm thick. Panels to consist of interior and exterior zinc coated precision die formed galvanized steel panels pans, foamed in place urethane insulation between interior and exterior pans, and thoroughly checked for gauge and accuracy. Panels to be of same size wherever possible and to be interchangeable with panels of like size. Metal pans to be treated on the inside with a preparation coating of bonding agent to ensure a stable adhesion with the chemical bonding capabilities of the insulation.
 - .2 Wall and ceiling panels are to be 100 mm thick and contain 100% foamed in place insulation and will not have any internal wood or metal structural members. To ensure tight fitting joints, all panel edges are to have foamed in place urethane tongues and grooves and a flexible vinyl gasket foamed in place on the interior and exterior of all edges.
 - .1 R-value of R27 for Coolers, retaining 75% of the R-value after 5 years
 - .2 R-value of R-32 for Freezers, retaining 75% of the R-value after 5 years
 - .3 Wall and ceiling panels are to be finished with a baked white polyester enamel finish on all interior and exterior exposed surfaces. Galvanized surfaces are permitted on exterior roof and unexposed walls
 - .4 All interior vertical corners shall be coved with a 13 mm radius, where specified under individual item or per NSF standards
 - .5 Panel Fastening - Panel joints to be tongue and groove type to ensure proper alignment and to eliminate any vapour or frost transmission. All panel joints to be drawn tight with factory installed cam-action speed lock

assemblies Locking device to be accessible from the inside to facilitate installation in confined areas and to be provided with press-fit caps to cover wrench holes. Joints between panels to be sealed at interior and exterior edges with a PVC gasket or an odorless nontoxic, synthetic polymerized sealant corrections grade, to maintain continuity and to be uniform and smooth

2.2 FABRICATION

- .1 Overall dimensions: as indicated.
- .2 Panel sections: precision die formed metal pans accurately spaced and insulated. Panel edges and corners to have tongue and grooves, formed-in-place, to assure airtight, vapour proof joints using gaskets or sealants.
- .3 Door panels: insulated and finished as per exterior and interior panels with 914 x 1980 mm clear door opening, reinforced to prevent door panels from twisting, racking or warping. Ensure that doors will close and seal opening. Equip each door panel with:
 - .1 One, in fitting flush mounted type, door (swing as indicated) to fit door opening, insulated and finished same as panels, having 1220 high x 1.6 mm thick stainless steel push/kick-plates on both exterior and interior and having soft thermoplastic gasket with magnetic steel core at top and both sides, adjustable rubber wiper gasket at bottom. Gaskets to be oil, fat, water and sunlight resistant and be replaceable.
 - .2 Hinges, spring loaded, self-closing type, with stainless steel pin and nylon cam-type bearing, of brushed chrome.
 - .3 One latch, to match hinges, for opening door by breaking force of trigger-action door closer and magnetic gasket; Kason Secure Guard. Latch to have cylinder type lock, have inside safety release handle capable of opening door from within regardless of whether door is padlocked or not. Illuminated panic switches
 - .4 One foot treadle to match hinges and latch, for opening door without use of hands
 - .5 One trigger-action positive door closer, located on exterior, to assist in positive closing of door.
 - .6 Sills with built-in thermostatically controlled heater cables inside perimeter of door and beneath sill plate and jambs of door opening. Heaters to have fused protection within panels
 - .1 Sills to be removable for replacement of heater cable
 - .2 Integral Ramp where required to be to be prefabricated 1.6 mm stainless steel ramps with 2.0 mm galvanized reinforcing and urethane foamed in place insulation.
 - .1 Wearing surface to have 100 mm wide rectangular non-skid strips, width of the ramp – non-removable. Sill to be built into ramp/pre-fabricated floors
 - .2 Ramp to be heated where in use for a Freezer
 - .7 Threshold plates: 2.0 mm stainless steel and removable.

- .8 One 50 mm diameter flush-face dial-type thermometer to provide temperature readings from -51°C to 27°C and mounted on handle side of door opening approximately 1525 mm from floor. Cover sensing bulb with protective stainless steel moulding.
- .9 One incandescent vapour-tight luminaire, with guard, mounted not less than 1980 mm from floor on interior of panel, operated from toggle switch with pilot light, mounted 1372 mm from floor on exterior of panel, adjacent to latch. All factory pre-wired and terminating in vapour-tight junction box that light is mounted on.
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- .12 Sliding doors: manual, direction as noted, lock and inside release, finish as panels; backing in panels to accommodate mounting track
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 - .8 Pre determined or positioned cold storage room evaporator hangers and line penetration locations
 - .9 Building wall and/or floor sleeves. Cut and patch building work as required for installation:
 - .10 Evaporator: forced-convection, unit-cooler type, suspended from ceiling panels, with forced-air discharged parallel to ceiling. Assemble air circulating motor, multifin and tube type coil [and grille] within protective housing also, contain expansion valve, with strainer, heat exchanger and inlet and outlet connections within same housing complete with safety screen. Air circulation motors: lifetime sealed. Entire unit-cooler assembly readily accessible for cleaning. Provide drip pan and drain connection. Equip unit coolers with mounting brackets for installation and controls for safe and satisfactory operation. When Walk-In is used for freezer applications, provide an automatic system for defrosting unit cooler, including heaters and time control. Provide disconnect switch within 600 mm of evaporator motor.
 - .11 Stainless steel cover as shown to cover exposed refrigeration lines
 - .12 Stainless steel cover as exterior unit sized to cover exposed drain lines from evaporator to drain
- .3 Refrigerant tubing:
- .1 Conform to ASTM B88M and ASTM B280 requirements.
 - .2 Relief valve discharge pipe on outdoor installations shall be copper tube type "L" with brazed joints, with welded .
 - .3 Fittings:
 - .1 Conform to ANSI/ASME B16.26 and ANSI/ASME B16.29.
 - .2 Long radius type for elbows and return bends.
- .4 Warranty extended 5 year on parts and labour

2.4 HEATER CABLES

- .1 Provide necessary heater cables and insulating wrap as required for evaporator drain lines.

2.5 SOURCE QUALITY CONTROL

- .1 Ensure equipment is manufactured and installed by company having personnel skilled in manufacturing and installing of prefab walk-in freezers and coolers and having continuous proven experience within last five years.
- .2 Departmental Representative may conduct shop inspection of equipment fabrication prior to delivery to site.

2.6 ITEMIZED EQUIPMENT

- .1 **Walk-in Cooler (Freezer); -1°C operating temperature**
 - .1 Size: approximately 2375 x 4250 x 2285mm AFF
 - .1 Verify size with site conditions
 - .2 One (1) swing door: approximately 914 x 1981mm, hinge on right
 - .3 Lighting as required for use light levels; LED
 - .4 With integral floor and door ramp
- .1 **Refrigeration System**
 - .1 One (1) evaporator, 208v 1 phase
 - .2 One (1) condensing/compressor unit – air cooled, remote outdoor unit, 208v 3 phase
 - .3 Refer to site for existing systems locations; allow for site determined line runs

Part 3 Execution

3.1 REMOVAL OF EXISTING

- .1 Walk-in Unit and Refrigeration System
 - .1 Ensure removal of all food and shelving/dunnage units from walk-ins, by others, prior to commencement of work
 - .2 Pump down and fully remove refrigerant from refrigeration systems; dispose of refrigerant as required by code; fully remove systems and piping as required
 - .3 Dismantle existing walk-in boxes and any trim / closure panels as required
 - .4 Dispose of all removed panels in accordance with applicable sections and code
 - .5 Supervise floor work to ensure level surface for addition of new walk-in box

3.2 INSTALLATION

- .1 Provide appropriate protection apparatus.

- .2 Erect work true-to-line, plumb, square and level with joints aligned. Fit joints and intersecting members accurately and in true planes adequately fastened.
- .3 Clear drain holes in floor, in freezer area, and ensure that underslab vapour barrier is punctured to allow drainage to drains and vent pipes.
- .4 Insulate to prevent electrolysis between metal and concrete by applying coating of asphaltic paint to metal surface, applied in accordance with manufacturer's instructions. Insulation to be dry before assembling floor panels in place.
- .5 Unless otherwise indicated, install units within 25 mm of building walls, with minimum 25 mm clearance between top of unit and room ceiling. Fasten screeds to building and/or wearing floor in accordance with manufacturer's instructions.
- .6 Caulk around perimeter of floor panels/screeds after installation on building floor.
- .7 Fill space between perimeter of floor panels and edge of floor depression with concrete or non-shrink grout and trowel flush with building floor.
- .8 Cut or drill holes in panels, as required, to accommodate electrical and mechanical services, runs or connections. Insert teflon sleeves into holes and seal. After installation of services, fill remaining space with insulation.
- .9 Cap wrench access holes with an in-fitting, flush, stainless steel removable plug.
- .10 Install removable, with correctional tools, closure panels, cover strips, and angles.
- .11 Supervise installation of thresholds, heaters and urethane insulation for floors.

3.3 CLEANING AND ADJUSTING

- .1 Upon completion of Work:
 - .1 Clean equipment and apparatus in accordance with Section 01 45 00 - Quality Control.
 - .2 Remove protective coverings and test and adjust operating equipment.
 - .3 Re-finish damaged coatings and finishes.

END OF SECTION