SECTION 114100 - WALK-IN BOX AND REFRIGERATION SYSTEMS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. RELATED DOCUMENTS
          1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
       2. SUMMARY
          1. Section Includes:

Prefabricated walk-in refrigerated boxes and standard doors.

Specialty doors.

Door jamb heater cable – boxes below 33°F

Lighting

Air pressure relief vents – boxes below 33°F

Refrigeration systems

Temperature Alarm

Fasteners for heavy duty and single leaf sliding door.

Retain "Owner-Furnished Equipment" paragraph below if Owner furnishes foodservice equipment items, or revise to suit Project.

* + - * 1. Owner-Furnished Equipment: Where indicated, Owner will furnish equipment for installation by Contractor.
        2. Related Requirements:

Retain subparagraph below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 114000 - “Foodservice Equipment.”

Section 079200 - “Joint Sealants.”

* + - 1. COORDINATION
         1. Coordinate walk-in box layout and installation with other work, including layout and installation of lighting fixtures, controls and refrigeration piping.
         2. Coordinate locations and requirements of utility service connections.
         3. Coordinate sizes, locations, and requirements of the following:

Overhead equipment supports.

Equipment bases.

Floor depressions.

Insulated floors.

Floor areas with positive slopes to drains.

Floor sinks and drains serving evaporator coils.

Roof curbs, equipment supports, and penetrations.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at **[Project site] <Insert location>**.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product. Include the following:

Manufacturer’s catalog sheets, standard schematic drawings, and installation instructions for each item specified.

If a product other than that specified by brand name is submitted, include service connection data.

List all accessories and components required for each walk-in box.

Clearly note all clearance requirements for access and maintenance.

Provide Equipment Schedule clearly listing all utility service connections for water, drainage, and power; include roughing-in dimensions.

Retain "Shop Drawings" paragraph below with "Fabricated Equipment" Article. The term "fabricated equipment" is commonly used to describe custom, shop-fabricated, stainless steel kitchen, bakery, pantry, and cafeteria units, and other food-handling and -processing equipment such as tables and components, counters, shelves, and sinks.

* + - * 1. Shop Drawings: Include plans, elevations, sections, roughing-in dimensions, fabrication details, utility service requirements, and attachments to other work.

Provide in drawing scale not less than 1/4” = 1’-0” for all plans and elevations, and not less than 1/2” = 1’0” for all sections and details.

Include complete wiring diagrams of all power connections and control wiring.

Detail floor assembly systems.

* + - * 1. Samples for Initial Selection: For units with factory-applied color finishes.

Delete "Samples for Initial Selection" paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain "Samples for Verification" paragraph below with or without above.

* + - * 1. Samples for Verification: For each factory-applied color finish required, in manufacturer's standard sizes.
        2. Warranty: List all standard and extended product warranties relevant to this project.

Generally, retain "Coordination Drawings" paragraph below to facilitate the coordination and installation of foodservice equipment with the work of other trades.

* + - * 1. Coordination Drawings: For foodservice facilities.

Indicate locations of foodservice equipment and connections to utilities.

Key equipment using same designations as indicated on Drawings.

Include plans at ¼” = 1’0” scale or larger and elevations at 3/8” =1’-0” scale or larger; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.

Retain subparagraph below if required.

Include details of seismic bracing for equipment.

* + - 1. CLOSEOUT SUBMITTALS
         1. Operation and Maintenance Data: For foodservice equipment to include in emergency, operation, and maintenance manuals.

Include the following:

Product Schedule: For each foodservice equipment item, include the following:

Designation indicated on Drawings.

List manufacturer's name, model, and serial number of each piece of equipment.

List factory-authorized service agencies including addresses and telephone numbers.

List date of warranty activation.

Certification: Affidavit certifying that the Food Service Equipment meets the contract requirements and is operating properly.

* + - 1. FIELD CONDITIONS
         1. Field Measurements: Verify actual dimensions of construction contiguous with foodservice equipment by field measurements before fabrication. Indicate measurements on Coordination Drawings.
      2. WARRANTY

When warranties are required, verify with Owner's Representative that warranties stated in this article are not less than remedies available to Owner under prevailing local laws.

* + - * 1. Refrigeration Compressor Warranty: Manufacturer agrees to repair or replace compressors that fail in materials or workmanship within specified warranty period.

Failure includes, but is not limited to, inability to maintain set temperature.

Manufacturer’s Warranty Period: one (1) year parts and labor (up to 3.5 HP for single condensing units only) service warranty with a minimum of five (5) years parts warranty on all original equipment manufacturers parts.

Dealer Warranty of (1) year to include, sealed portions of condensing units and include refrigeration loss.

* + - * 1. Walk-in panels (ceiling, vertical walls and floor); Carry a ten (10) year warranty for all pre-fabricated panels.
        2. Standard duty doors: Carry a ten (10) year warranty for the door & frame, and door panels.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS

Always retain "NSF Standards" paragraph below. See "Health and Sanitation Requirements" Article in the Evaluations for a discussion of equipment certification for compliance with NSF standards.

* + - * 1. NSF Standards: Provide equipment that bears NSF Certification Mark or UL Classification Mark certifying compliance with applicable NSF standards.

UL lists certified products on its website in the "Online Certifications Directory" section. Certified products include those that bear the "Listed" and "Classified" versions of the UL EPH Mark. If UL certification is not required for certain equipment or if another testing agency's certification is acceptable, revise "UL Certification" paragraph below.

* + - * 1. UL Certification: Provide electric and fuel-burning equipment and components that are evaluated by UL for fire, electric shock, and casualty hazards according to applicable safety standards, and that are UL certified for compliance and labeled for intended use.
        2. Refrigerants shall comply with the Energy Independence and Security Act of 2007/title III/Subtitle A (EISA), and all related revisions and amendments, no CFC refrigerants shall be used.
        3. Regulatory Requirements: Install equipment to comply with the following:

Retain applicable codes in subparagraphs below or revise to include other codes to suit Project.

ASHRAE 15, "Safety Code for Mechanical Refrigeration."

NFPA 70, "National Electrical Code."

Retain "Seismic Restraints" paragraph below if required. If retaining, verify requirements of authorities having jurisdiction, detail seismic restraints on Drawings, and revise to suit Project.

* + - * 1. Seismic Restraints: Comply with SMACNA's "Kitchen Ventilation Systems and Food Service Equipment Fabrication and Installation Guidelines," Appendix A, "Seismic Restraint Details," unless otherwise indicated.
      1. PREFABRIATED WALK-IN REFRIGERATED BOXES AND STANDARD DOORS
         1. Acceptable Manufacturers:

Bally Refrigerated Boxes Inc., 135 Little Nine Drive, Morehead City, NC 28557, (800) 242-2559, www.ballyrefboxes.com

Kolpak Inc., 2915 Tennessee Avenue, N., Parson, TN 38363, (800) 826-7036, www.kolpak.com

American Panel Corp., 5800 S.E. 78th Street, Ocala FL 34472, (800) 327-3015, www.americanpanel.com

Master-Bilt Products, 908 Highway 15N, New Albany, MS 38652, (800) 647-1284, www.master-bilt.com

Nor-Lake, Inc., 727 2nd, Street, Hudson, WI 54016, (800) 955-5253, www.norlake.com

Approved equivalent.

* + - * 1. Prefabricated Panels

Construction: Interior and exterior metal surfaces precisely formed in standard width increments with insulation sandwiched between and bonded to metal surfaces.

No internal wood or structural support members maybe foamed into the prefabricated panels.

Nominal Panel Thickness: 4 inch panel standard **<5 inch and 6 inch panels are available for use when floor is recessed and covered corners are achieved by tile and grout or concrete wearing floor and/or coved trim is added to allow the floor system to meet NSF requirements.>**

Insulation: 4 inches rigid urethane, foamed-in-place, conform to the energy code of US Department of Energy.

Minimum R Values for Freezer. **<Confirm freezer floor thickness with OGS, 6” insulated floor panels are optional.>**

Walls and Ceiling: R32.

Floors: R28.

Minimum R Value for Coolers:

Walls and Ceilings: R25.

Floors: No insulation is required.

Panel Edges: Molded urethane tongue and groove construction with permanently foamed-in-place flexible PVC gasket on interior and exterior of tongue edges.

Panel Locking Devices: Positive locking, wrench operated type consisting of cam action hooked locking arm in one panel and opposing steel rod positioned in adjoining panel.

Maximum Distance Between Locking Devices: 46 inches on center.

Uniform Distributed Floor Loading (Standing Weight): Minimum 600 lbs per square foot.

Heavy Reinforced Floor: Reinforced foamed in place floor panels with secondary non-wood based means of support and non-wood based underlayment for a minimum 1,000 lbs per square foot, standing weight.

Heavy Reinforced Floor: Reinforced foamed in place floor panels with 1/8 aluminum diamond plate and secondary ¾” non-wood based underlayment for a 200 lbs. per square foot rolling load.

Provide horizontal and vertical trim panels to match finish of walk-in box for closing all openings between the walk-in box and surrounding building structure, walls or ceiling.

* + - * 1. Standard Door Systems:

In-fitting and flush-mounted door as sized in the Product information.

Interior and exterior finish material to match that of the walk-in box in metal type, thickness, and insulation.

Interior and exterior .125 aluminum diamond tread plate, 48” high on door and door frame.

Minimum R Value for Freezer Doors: R32.

Minimum R Value for Cooler Doors: R25.

NSF certified door gaskets; thermoplastic type with magnetic core for the sides and head of door; adjustable double sweep sill gasket.

Heavy “U” channel structural steel frame around perimeter of the door opening, and reinforced for the door hardware.

Vapor-proof LED interior lamp, wired to junction box at door.

Hardware:

Aluminum door latch with finish to match hinges, complete with cylinder lock.

Provisions for padlocking.

Manual interior safety release device which permits exist from within box when door is locked on exterior with cylinder or padlock.

Hinges: three (3) cam-action self-closing type constructed of aluminum with stainless steel or zinc plated steel pins.

Strip Curtain: PVC material, size a minimum of 6” x 0.80” thick with 2” overlap. USDA-LT-Reinforced, cut to size of opening, complete with wall mounting hardware.

Window: 14 inch x 14 inch heated, three pane glass with heat reflective treated glass

Use subparagraph below for boxes if prefabricated floor panels are not being installed.

* + - * 1. Floor Screeds:

Floor screeds finish material to match that of the walk-in box material, 4 inch high with foamed-in-place urethane insulation, molded urethane tongue and groove construction with permanently foamed in-place flexible PVC gasket in interior and exterior tongue edges.

Panel locking devices to adjoining panels.

Anchor flat bottom of panel to smooth level building floor, with continuous anchor clips; where thermal break is required, coordinate the installation of a redwood thermal break (to be installed by others)

All inside corners between the floor and screed are to be coved cornered. Provide additional trim as required to create the cove.

Use subparagraph below for boxes with ceiling sections that are over 17’-0” in length. Coordinate with team leader on type and location of required supports.

* + - * 1. Ceiling Support Assembly:

Ceiling support hangers for multi-span ceiling panels. Designed to support ceiling panels only with limited installation personnel. Supply with clips, angles and threaded rods for field installation.

Self-supporting ceiling with use of steel channel for multi-span ceiling panels. Supply with steel channel, load bearing steel channel (mounted over box wall sections), bracing and ceiling clips as required for complete field installation.

* + - 1. SPECIALITY DOORS
         1. Acceptable Door Manufacturers:

ASI Technologies Inc., 5848 N. 95th Court, Milwaukee, WI 53225, (800) 558-7068, www.asidoors.com

Jamison Door Co., P.O. Box 70, Hagerstown, MD 21741, (800) 532-3667, www.jamisondoor.com

* + - * 1. Heavy Duty Door:

Door Dimensions in Clear: \_\_\_\_\_\_\_inches wide x \_\_\_\_\_\_\_\_inches high x \_\_\_\_\_\_door panel thickness.

Door Panel

Two surfaces bonded together with polyester plastic resin.

Each surface having an outer layer of polyester plastic with white pigment, and balance of pan consisting of glass fiber reinforced with plastic.

Steel blocking for hardware attachment.

Door protected front and back with 4 foot high, **<16 gauge stainless steel, or 1/8” Aluminum Diamond plate>** kick plates. Secure kick plates with adhesive (penetration by fasters not acceptable.)

Insulation: 4 inches polyurethane, foamed-in-place

Minimum R Value for Freezer Door: R32

Minimum R Values for Coolers Door: R25

Gaskets:

At sides and top of door lip, grease resistant synthetic skin with resilient sponge core.

Sill: Adjustable double sweep of nylon reinforced neoprene.

Frame:

Flat face door frame consisting of 16 gauge, **<smooth white steel, or stainless steel>** formed to a thickness of 1-5/8”; with high density polyethylene backing at all anchor locations. (No wood construction.)

Back of frame completely sealed with polyester plastic.

Face of door flush with face of frame casing.

Metal clad exposed surface of frame with 16 gauge stainless steel.

Door Hardware:

Extra Heavy Duty Hinge: Dent Industries Inc., Bethlehem PA, Model D38, Polished 17 inch cast aluminum, reversible, self-rising type, wear-resistant cast metal cams, stainless steel finish. Stainless steel hinge pin with 3/16 inch stainless steel cross pin peened on each end, stainless steel vandal resistant fasteners.

Minimum, Three (3) hinges per door.

Door Latch, Strick and Safety Release: Kason Industries, Newnan, GA, Model 55, Heavy Duty Latch with Model 0055. With padlock provision and vandal resistant fasteners

Freezer latch: Inside release Model 5582 - fiberglass rod and neoprene washer as cold barrier, rubber-coated inside release.

Cooler latch: Inside release Model 0055

Door Closure: Where door is over 36 inches wide include Kason Industries, Newnan, GA, Model 1097 Spring Action Door Closer, high tension spring closure. Vandal resistant closure.

Strip Curtain: PVC material, size a minimum of 6” x 0.80” thick with 2” overlap. USDA-LT-Reinforced, cut to size of opening, complete with vandal resistant wall mounting hardware.

Window: 14 inch x 14 inch heated, three pane glass with heat reflective treated glass

* + - * 1. Single Leaf Sliding Door:

Door Panel: Two molded fiberglass, reinforced polyester shells surfaced with white polyester gel coating bonded into a seamless unit, aluminum extruded structure. Frame and casings constructed of aluminum extrusions with painted finish.

Insulation: 4 inch polyurethane, foamed-in-place

Minimum R Value for Freezer Door: R32

Minimum R Value for Cooler Door: R25

Gaskets:

Jambs and Head: Grease resistant thermal plastic rubber with resilient sponge core.

Sill: Adjustable double nylon reinforced neoprene sweep.

Hardware:

Chrome plated pull handle, mounted in vertical position, Dent Industries, Model D-175, tamperproof fasteners

Door protected front and back with 4 foot high, **<16 gauge stainless steel, or 1/8” Aluminum Diamond plate>** kick plates. Secure kick plates with adhesive (penetration by fasters not acceptable.)

Track System: Corrosion resistant extruded rigid aluminum outer rail with track ramps, large diameter nylon-clad, hardened steel ball bearing rollers, anti-lift feature and micro-leveling.

Extra heavy duty floor guide and heavy duty tight seal floor guide at leading edge.

Padlock kit, lock supplied by others.

Manual interior safety release system.

Strip Curtain: PVC material, size at minimum of 6” x 0.80” thick with 2” overlay. USDA- LT-Reinforced, cut to size of opening, complete with vandal resistant wall mounting hardware.

Window: 14 inch x 14 inch heated three pane glass with heat reflective treated glass.

All fasteners to be vandal resistant

Operation:

Manual

Electric operated power drive system with controls mounted in NEMA 4 rated enclosure.

Power drive mounted to end of overhead track, with corrosion resistant drive chain, and chain disconnect.

Opening and closing speed at 12 inches per second.

Full electric overload protection with adjustable overload clutch, door position limit switch

**<Lanyard pull cord switches or three button control panels>**

* + - 1. DOOR JAMB HEATER CABLE – BOXES BELOW 33 DEGREES F
         1. Heater Cable:

Easily accessible anti-sweet electric heater cable. Weather proof, single gang electric box, mounted on exterior of walk-in door.

Heater cable size to prevent frost and ice build-up around door jamb.

Place heater cable in door jamb, sides top and under door sill.

Provide with thermostatic control.

* + - 1. LIGHTING
         1. Minimum lighting intensity requirements inside walk-in cooler and freezer:

Part 14-1 of the NYS Public Health Code for Food Service Establishments, (Section 14-1.174 /2) requires a light intensity of 20 foot candles, 30” above the floor of the walk-in box.

* + - * 1. Walk-in boxes under 15’-0” in interior height:

LED, Low profile light, Kason 1808 Series designed for damp, wet, cooler, and freezer environments

Operating temperature -40 degrees F to 77 degrees F

Aluminum housing, impact resistant lexan lens, surface mount

4000K color temperature

Provide with Kason 1901 Series Motion Sensor, provide with all components required to tie into light fixtures.

**<Provide Tamper resistant fasteners where required.>**

* + - * 1. High bay light fixtures:

LED, Kason Model 1820 Series designed for damp, wet, cooler, and freezer environments with high ceiling

Operating temperature -20 degrees F to 104 degrees F

Dia cast aluminum housing and polycarbonate lenses, surface mount

Provide with Kason 1901 Series Motion Sensor, provide with all components required to tie into light fixtures.

**<Provide tamper resistant fasteners where required.>**

* + - 1. AIR PRESSURE RELIEF VENTS – BOXES BELOW 33 DEGREES
         1. Equip boxes with electric defrost or hot gas defrost type evaporators with electrically heated air pressure relief vents to allow air to either enter the box or exhaust from the box.
      2. REFRIGERATION SYSTEM
         1. Refrigeration system are to be installed as complete operational systems, components to include but not limited to: compressor / condensing unit (Hermetic, Semi-Hermetic or Scroll), evaporator coil with defrost (hot gas or electric) heaters for the evaporators in compartments at temperatures under 35 degrees F, refrigeration piping, fittings, hangers and insulation, thermostatic expansion valve, liquid line sight glass, dehydrator filter / drier, solenoid valve, thermostat, dual pressure control, time clock drain line heater.
         2. Refrigeration piping to be as per ASTM Standard B280, type “L” pre-cleaned, seamless copper tubing. Shop drawings are to indicate size of refrigeration lines, run and placement of oil separators. Silver soder and /or SIL-FOS shall be used for all refrigerant piping, soft soder is not acceptable.

Standing pressure test is required. The solder connections should have no gaps, all flanges and threaded connections tight, all control valves installed in correct directions and set, with valve covers on.

Leak test – Charge a trace amount of refrigerant into the system, starting at 0 psig until the pressure reads 10 psig. When the trace refrigerant is allowed into the system, dry nitrogen is then pushed in the system to a test pressure recommended by the system manufacturer. Pressure test both the low pressure side and high pressure side of the refrigeration system.

Allow the standing pressure test to be left on the equipment for:

Refrigeration run under 10”-0” with compressors sized under ½ hp for up to / over 1 hour.

Refrigeration run over 10’-0” with compressors sized over ½ hp for up to / over 24 hours.

* + - * 1. Entire line system is to be insulated (hangers, seams, butt joints and termination points) and sealed to protect against air intrusion. Suction line to be insulated with 1” of closed cell, fiber-free foam insulation. Where pipe meets pipe supports provide a jacketed or insulation insert (spacer / spool) piece to reduce crushing of insulation. Continuous insulation required through all penetrations. Insulation tape is to match manufacturer of insulation.
        2. Air cooled refrigeration systems located out-doors where temperature falls below 35 degrees F require a low ambient temperature kit, consisting of: crankcase heater, head pressure control and rain proof housing.
        3. Copper tubing drain lines are to be run from the evaporator coil to air gap connection outside the walk-in box, complete with trap. Drain lines are to be pitched at a minimum of ½” = 1’0” and insulated unless stated otherwise by the manufacturer’s installation recommendations. Drain lines contained in a compartment under 35 degrees are to be spiral wrapped in heat trace and installed by the refrigeration manufacturers requirements.

Heat trace is to be energized at all times, with the electrical input requirement of 20 watts per foot in a 28 degree F room and 30 watts per foot for a -20 degree F room.

When drain lines run from freezer compartment to cooler compartment, the drain line is to contain a trap at the warmer side (cooler) of the compartment wall before connecting to the cooler evaporator drain line. Where drain line exist the walk-in box, the drain line is to contain a trap before the air gap connection at the floor drain.

* + - * 1. Where multiple condensing units are required, a single compressor / condenser rack, multi circuit / compressor outdoor system is acceptable.

System shall be pre-engineered, factory assembled, and air cooled system.

Contained in a single weatherproof housing, built on a steel frame that has been prime and finish coat painted.

The refrigeration unit shall be equipment with all components required for complete operation, where the unit is ready for final connections and start-up. Revise list below to suit Project. Indicate quantities and locations of accessories on Drawings.

* + - 1. TEMPERATURE ALARMS
         1. Provide for each walk-in a combination digital alarm and thermometer.

LED display to control, temperature setting, lights and high / low alarm.

Remote low voltage sensor.

Fully adjustable high and low set points.

Switchable display for Fahrenheit and Celsius.

Alarm horn with mute switch.

Safe and alarm lights.

Battery backup with battery test switch.

* + - 1. DESIGN INFORMATION
         1. Outside Box Dimension (Shown on Drawings) <Fill in the blanks.>

Length: \_\_\_\_\_\_\_

Width: \_\_\_\_\_\_\_\_

Height: \_\_\_\_\_\_\_

Interior Operating Temperature:\_\_\_\_\_\_\_\_\_\_\_

* + - * 1. Floors:

Available floor types: <State floor finish and materials>

* + - * 1. Wall and Ceiling Panels:

Interior Surfaces: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exterior Concealed Surfaces: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ceiling Interior Surface:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Doors:

Door Types:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Door Size (Clear opening): \_\_\_\_\_\_\_\_\_ x \_\_\_\_\_\_\_\_\_

Lighting (Coordinate with Electrical Team) \_\_\_\_\_\_\_\_\_\_\_\_\_

1. EXECUTION
   * + 1. INSTALLATION
          1. Install box in accordance with the manufacturer’s printed installation instructions and approved shop drawings, unless otherwise shown or specified.

Install closure trim where panels and adjacent construction abut.

* + - * 1. Mount lighting, pressure relief vents and temperature alarms on refrigerator and make provision for connection by Electrical Work Contractor.
        2. Install refrigeration systems in accordance with the manufacturer’s printed installation instructions.

Allow minimum of 36” of clear space round condensing units and minimum 18” of clear space around evaporator coil for servicing. Mount evaporator coil from wall of insulated panel at distance required by evaporator coil manufacturer.

* + - * 1. Mount condensing units on steel frame, confirm location for final placement.
        2. Mount evaporator - hang evaporator coil from the box ceiling or an overhead structure with nonconductive hanger rods per manufacturer’s instructions.
      1. PENETRATIONS THROUGH PREFABRICATED WALK-IN PANELS
         1. Size field penetrations through boxes for refrigeration piping and electric conduit ½ inch larger than the outside diameter of pipe (including insulation) or conduit, unless otherwise specified.
         2. Carry insulation on refrigerant piping through penetrations of box.
         3. Pack space around refrigerant piping, hanger rods, conduit etc., with spray foam insulated and sealed with Type 1D sealant.
      2. FIELD QUALTIY CONTROL
         1. Inspect complete installation prior to start-up.
         2. Supervise initial start-up of refrigeration system. Make all necessary adjustments to system.
         3. Operate system for sufficient length of time to prove the system can achieve and maintain design temperature of box.
      3. CLEANING AND PROTECTING
         1. After completing installation of equipment, repair damaged finishes.
         2. Protect equipment from damage during remainder of the construction period.

Insert "Maintenance Service" Article if required for foodservice equipment.

* + - 1. DEMONSTRATION
         1. **[Engage a factory-authorized service representative to train] [Train]** Owner's maintenance personnel to adjust, operate, and maintain foodservice equipment.

END OF SECTION 114100