

## Architectural / Engineering Specifications

The following specifications are designed for use as a guide to Architectural, Engineering, and Food Service Consultant specification writers, on projects utilizing outdoor walk-in refrigeration equipment. Where items appear in brackets [ ] a selection of one of the alternatives is required by the specifier. Due to our policy of ongoing product improvement, Polar King International reserves the right to change specifications without notice.

### 1.0 GENERAL

- 1.1 The equipment provided shall be factory prefabricated and have unitized design. The equipment will allow installation without assembly and relocation without disassembly. The equipment shall require an on-site contractor, responsible for pouring of concrete pad, connection of electrical power supply to each refrigeration system, and for flashing of unit to building wall (if required). Walk-in shall be Polar King (Polar King International, Inc., Fort Wayne, Indiana) Model No. \_\_\_\_.
- 1.2 The walk-in shall bear the label of the following National Certification Agencies:
- A. National Sanitation Foundation (NSF STD #7)
  - B. Underwriters Laboratory (Major Refrigeration Components)
  - C. Underwriters Laboratory (Major Electrical Components)
  - D. Underwriters Laboratory (Class I Urethane)
- 1.3 The walk-in shall comply with the following model building codes:
- A. International Conference of Building Officials (ICSO)
  - B. Southern Building Code Congress International (SBCCI)
  - C. Building Officials Congress Association (BOCA)
  - D. National Electric Code (NEC)

### 2.0 SIZE AND CAPACITY

- 2.1 The walk-in shall be built to specified interior and exterior dimensions, as shown on the plans and drawings.
- 2.2 The walk-in shall have sufficient refrigeration to maintain **[+35° F] [0° F] [-10°F] [-20° F]** temperature inside the **[cooler] [freezer]** compartment when the ambient temperature is 100° F, the average number of door openings is **[1] [2] [3] [4] [10]** per hour, and there is **[no] [\_\_\_\_BTUH]** load from warm products entering unit. The refrigeration system shall be wired to run on **[208V/60HZ/1PH] [230V/60HZ/1PH] [208-230V/60HZ/3PH]** power.
- 2.3 The walk-in shall have sufficient refrigeration to maintain **[0° F] [-10° F] [-20° F]** temperature inside the **[freezer]** compartment when the ambient temperature is 100° F, the average number of door openings is **[1] [2] [3] [4] [10]** per hour, and there is **[no] [\_\_\_\_BTUH]** load from warm products entering unit. The refrigeration system shall be wired to run on **[208V/110V/60HZ/1PH] [230V/110V/60HZ/1PH] [208-230V/110V/60HZ/3PH]** power.



### **3.0 STRUCTURE**

- 3.1 The walk-in structure shall be constructed with a fiberglass interior and exterior and a minimum 4" urethane core. The interior and exterior fiberglass shell shall be completely seamless and will form a one-piece structure. The exterior shall be rust, dent and scratch resistant. The exterior shall be coated with an industrial enamel finish. The interior shall have an Anti-Microbial Interior Finish.
- 3.2 Partition walls shall be constructed in the same manner as the exterior walls with a minimum 4" urethane core.

### **4.0 FLOOR**

- 4.1 A 4" insulated (R-28) prefabricated floor shall be supplied. The floor shall be reinforced with woven fiberglass matting on top of a ½" plywood sub floor bonded to the urethane core forming a watertight seal. A skid resistant surface coating will be applied to the floor surface. The floor shall be constructed for permanent elevation 1-½" above grade. The elevation provides for air circulation under the floor to eliminate corrosion and the need for an insulated and / or ventilated slab. A welded, heavy-duty steel frame shall be encased in fiberglass and permanently bonded to the floor to ensure total portability without damage to the walk-in. The floor shall have the capacity to support 900 lbs. / sq. ft. of evenly distributed load.

### **5.0 INSULATION**

- 5.1 All insulation shall be rigid, unfaced, closed cell polyisocyanurate foam chemically bonded to the interior and exterior fiberglass to form a one-piece structure. Standard insulation thickness shall be 4" for coolers and 5" for freezers.
- 5.2 The thermal conductivity (K) shall not exceed .165 (BTU's/in/sq. ft./hr. F). The thermal resistance (R) factor shall not be less than 25 for coolers or 32 for freezers.
- 5.3 The insulation shall be U.L. Class 1 having a flame spread of not more than 25, fuel contributed of 0, and smoke developed of 185.

### **6.0 LIGHTING**

- 6.1 Unit shall be complete with **[incandescent] [fluorescent]** light fixtures factory installed and tested for proper operation prior to shipment. A **[100 watt incandescent bulb]** shall be used for each 50 sq. ft. of interior floor space and controlled by either a motion sensor in combination with a wall switch or timer operated wall switch. A **[23-watt compact fluorescent bulb]** shall be used for each 50 sq. ft. of interior floor space and controlled with a wall switch. A **[four foot, two bulb fluorescent fixture]** shall be used for each 50 sq. ft. of interior floor space and controlled by a wall switch. Lights shall be contained in a vapor-proof fixture.

### **7.0 DOORS**

- 7.1 Doors shall be constructed in the same manner, material and thickness as the walls.
- 7.2 All doors opening into a controlled temperature room shall be supplied with doorframe heaters, which shall supply sufficient heat to prevent condensation or frost accumulation.
- 7.3 Doors shall be provided with a magnetic gasket around the perimeter. Flush bottom doors shall be provided with adjustable vinyl sweep gasket. When door is closed, it shall form a positive airtight seal. Door gasket shall be installed in retainer strips for easy replacement in the field.
- 7.4 Doors shall incorporate a positive snap action latch with adjustable strike. The latch shall be equipped with cylinder lock and OSHA approved inside safety release mechanism to prevent entrapment. The hardware shall be chrome finished and mounted with stainless steel tamper-proof screws.

- 7.5 Doors shall be equipped with three heavy-duty door hinges. They shall be cam lift type, self-closing, with nylon bearings and door lift-off capability. Hardware shall be chrome finish.
- 7.6 Doors shall be equipped with [vinyl strip door] [vinyl swing doors] [spring assisted hinges].
- 7.7 Doors shall be equipped with automatic hydraulic cylinder type door closer.
- 7.8 Doors shall be hinged as shown on the drawings.
- 7.9 The following doors are required in the location as shown on the plans and drawings.

Standard Entry Doors	Optional Entry Doors	Product Loading Doors	Service Doors
A. [30" x 79"]	A. [48" x 79"]	A. [24" x 24"]	A. [36" x 80"]
B. [36" x 79"]	B. [54" x 79"]	B. [24" x 30"]	B. [36" x 84"]
	C. [60" x 79"]	C. [30" x 30"]	C. [42" x 84"]
			D. [48" x 84"]

- 7.10 Entry doorjamb shall include a vapor-proof switch and visible pilot light to indicate when lights are in the "ON" position.

**8.0 THERMOMETER**

- 8.1 Entry door shall be supplied with 2", flush face dial-type thermometer. Thermometer shall be NSF approved.

**9.0 HASP LOCK**

- 9.1 All entry doors not specified as thru-wall or partition type doors shall be equipped with a door hasp lock to prevent unauthorized entry into the walk-in. The hasp lock shall be supplied with an inside safety release mechanism.

**10.0 DOOR WEATHER HOOD**

- 10.1 A weather hood shall be supplied on all exterior doors.
- 10.2 The weather hood shall act to divert rain and ice from gasket area of all exterior doors. It shall match exterior wall finish and shall be factory mounted.

**11.0 OPTIONAL ACCESSORIES**

- 11.1 The following optional accessories are to be provided with the walk-in and shall be factory installed.

[11.2 Exterior Door Ramp]	[11.10 Temperature and / or Humidity Recorder]
[11.3 18 ga. Stainless Steel Door Kick Plate Set]	[11.11 Explosion Proof (Class I) Electrical System]
* [11.4 Spring Loaded Door Hinges]	[11.12 Fluorescent Lighting]
[11.5 Burglar Alarm System]	[11.13 Three-Way Light Switches]
[11.6 Strip Door Curtain]	[11.14 Pressure Relief Vent]
[11.7 Framed Wall Opening]	[11.15 Remote Mounting]
[11.8 Merchandising Doors]	[11.16 Nailer Trim]
[11.9 Temperature Alarm]	

[11.17 Refrigeration System Switch]	[11.26 Supplementary Compartment Heaters]
[11.18 Wire / Solid Shelving]	[11.27 Full Bar Security Hasp Lock]
[11.19 Floor Drain]	[11.28 Through Wall Door Threshold]
[11.20 Steel Service Door]	[11.29 Vinyl Swing Door]
[11.21 Hurricane Anchors]	[11.30 Shelf Mount Refrigeration]
[11.22 Exterior Flood Light]	[11.31 Salt Water Protection Package]
[11.23 Extra Heavy Duty Sealed Floor]	[11.32 Roof Flashing Kit]
[11.24 Pallet Duty Sealed Floor]	[11.33 Sidewall Flashing Kit]
[11.25 Custom Exterior Finishes]	[11.34 One Way Sloped Roof]

### Optional Accessories Descriptions

- 11.1 The following optional accessories are to be provided with the walk-in and shall be factory installed.
- 11.2 **Exterior Door Ramp:** Shall be sized the width of the door x [30"] [36"] [47"] long.
- 11.3 **18 ga. Stainless Steel Door Kick Plate Set:** Shall not be less than 18" high x width of door and of 18 ga. type 304 stainless steel with corners beveled and deburred. Plates applied to both sides of door.
- 11.4 **Spring Loaded Hinges:** A set of three per door shall be installed to provide positive closing of door.
- 11.5 **Burglar Alarm System:** Shall be Class II rated circuit magnetic type completely installed. System shall have contactor mounted in refrigeration system panel to accommodate electrical supply from the building's alarm system.
- 11.6 **Strip Door Curtain:** Shall be NSF approved and labeled and not less than 1/8" thick clear vinyl material. Individual panels of strip curtain shall overlap jamb and each other by not less than 1" and shall touch floor of walk-in.
- 11.7 **Framed Wall Opening:** Shall be of the dimensions shown and located as shown on the plans and drawings and shall be finished with same material and in same manner as the doorjamb.
- 11.8 **Merchandising Doors:** Shall be of the size and number shown on the plans and drawings. They shall be factory mounted and complete with magnetic gaskets, polished extruded aluminum frames, pull type door handles, self-closing hinges, tempered safety glass with heated glass on +32° F and below application, door and frame heaters and fluorescent light. Five-tier shelving shall be included as shown on plans and drawings.
- 11.9 **Temperature Alarm:** Shall be provided to activate when compartment temperature rises above the set point. Signal shall consist of warning light and buzzer located above door latch. Power shall be 120V/60HZ/1PH with battery backup in case of power failure.



- 11.10 **Temperature and/or Humidity Recorder:** Shall be factory mounted and located as shown on plans and drawings. Recorder shall be electric (120V/60HZ/1PH) 7-day clock, graph type with enclosure suitable for outside installation. Recorder shall be complete with graphs and ink.
- 11.11 **Explosion Proof (Class I) Electrical System:** Shall be provided in the interior of the unit [and on the exterior of the unit within ft. of the door opening]. Wiring and electrical components shall be factory installed in conformance with the National Electric Code.
- 11.12 **Fluorescent Lighting:** Shall be factory installed in unit. Fixtures shall be surface mount, 4 ft., two bulbs, -20° F ambient ballast type NSF approved and so labeled.
- 11.13 **Three-Way Light Switches:** Shall be flush mounted, vapor proof, and shall allow the lighting system to be turned "ON" or "OFF" at either switch location.
- 11.14 **Pressure Relief Vent (Cooler):** Shall include interior and exterior covers, 120V/60HZ/1PH antifreeze heater assembly, closable damper assembly to close when not venting, and a PVC sleeve to protect urethane foam in wall structure. A pressure relief vent standard on freezers.
- 11.15 **Remote Mounting:** Supplied by PK but not factory installed. Shown on plans and drawings. System shall be complete as specified in section 12.0 "Self-Contained Refrigeration System(s)" except for suction line piping and insulation, liquid line piping, and interconnecting wiring and conduit between condensing unit control panel and evaporator electrical panel. Refrigerant lines from evaporator shall be capped and the evaporator charged with dry nitrogen. Refrigerant lines from the condensing unit shall be piped to the exterior of the weather hood, capped with copper caps, and charged with dry nitrogen. Interconnecting wiring from shall be from clearly marked terminals on condensing unit to clearly marked terminals on the evaporator coil. A wiring diagram showing the required interconnecting wiring shall be furnished. **Suction line piping and insulation, liquid line piping, interconnecting wiring, conduit and refrigerant shall not be furnished.** All on-site refrigeration piping, refrigerant charging, and system start-up procedures shall be done according to ASHRAE recommended procedures and in conformance to local mechanical codes.
- 11.16 **Nailer Trim:** Shall be provided according to plans and drawings for attachment of siding, stucco, or other decorative material after the unit is set in place.
- 11.17 **Refrigeration System Switch:** Shall be factory mounted on the face of the evaporator coil. Switch shall allow refrigeration system to be turned off for short periods of time for personnel comfort. Switch shall be wired so as to shut off evaporator fans and cause system to pump down when switch is turned to "OFF" position.
- 11.18 **Wire/Solid Shelving:** Shall be adjustable, sectional type of size and number of tiers shown on the plans and drawings. Shelving shall be NSF approved and so labeled. Shelving system shall be free standing and shall include all necessary posts, shelves, shelf stops, post closures and floor plates required for complete system. Shelving shall be **[stainless steel] [plated] [acrylic coated steel]**.
- 11.19 **Floor Drain:** A floor drain shall be factory installed in the unit with drainpipe exiting sidewall of walk-in where shown on plans and drawings. Floor drain shall consist of 24" x 24" x 3/4" depressed floor pan catch basin, 1" diameter drain screen, 1" PVC pipe drain with internal trap and a 1" diameter x 2" long male extension beyond sidewall of unit for easy on-site connection.



- 11.20 **Steel Service Door:** Shall be factory installed in location shown on plans and drawings. Door to be used to provide exterior access to non-refrigerated compartment. Door shall be constructed of 18 ga. primed steel and equipped with security peephole, panic bar type inside release, ball bearing hinges, key locking latch and felt door sweep. Doorjamb shall be 16 ga. primed steel with foam weather strip and a parallel arm type hydraulic door closer.
- 11.21 **Hurricane Anchors:** Supplied by PK but not factory installed. The anchors shall be installed by placing the 1-1/8" x 2" flat steel bar into the 1-1/2" x 3", rectangular steel tubing permanently attached to floor of walk-in and bolting the anchor down to the concrete slab by placement of (1) 5/8" diameter Hilti Kwik Bolt II expansion anchor bolt (or equivalent) for each tie down plate.
- 11.22 **Exterior Flood Light:** Shall be mounted where shown on plans and drawings. Fixture shall be 110V/60HZ/1PH with one 150-watt incandescent flood lamp and photoelectric switch.
- 11.23 **Extra Heavy Duty Sealed Floor:** Shall have 3/4" plywood sub floor permanently bonded to the urethane insulation core. Floor shall have fiberglass matting bonded to sub-floor to form a watertight seal. Floor shall be slip resistant and suitable for heavy foot traffic, two or four wheel carts and keg storage. The floor shall have capacity to support 1000 lbs. / sq. ft. of evenly distributed load.
- 11.24 **Pallet Duty Sealed Floor:** Shall have 1-1/4" laminated decking permanently bonded to the urethane core. Floor shall have fiberglass matting bonded to sub-floor to form a watertight seal. Floor shall be slip resistant and able to support pallet jack traffic. The floor shall have capacity to support 5,000 lbs. / sq. ft. of evenly distributed load.
- 11.25 **Exterior Finishes:** Shall be factory installed including but not limited to: stucco, vinyl siding, wood fencing and brick.
- 11.26 **Supplementary Compartment Heaters:** Shall be included with the refrigeration system and shall be factory installed and wired. The heater shall be of sufficient capacity to maintain a +35 °F compartment temperature with a -40°F ambient temperature. The supplementary heater shall be complete with all required safety and operating controls.
- 11.27 **Full Bar Security Lock:** Shall be constructed of 1/4" case hardened steel and factory installed on doors which provide outdoor access to unit.
- 11.28 **Through Wall Door Threshold:** Shall be factory provided for installation by others. Shall be 1/2" high x 5" deep x width of door. Threshold shall be aluminum with PVC vinyl frost barrier. Cadmium plated wood screws for anchoring shall be included.
- 11.29 **Vinyl Swing Door:** Clear PVC vinyl panels made from 120-gauge material which meets USDA/FDA and NSF local standards for sanitary codes. Strong, stainless steel hinge and roller easily swing vinyl door open and closed in an effort to reduce cold air loss and/or warm air entry when the primary walk-in door is open. Usable temperature range of -30°F to 125°F.
- 11.30 **Shelf Mounted Refrigeration:** Condensing unit(s) to be installed on shelf as per drawing, as opposed to roof mounting.
- 11.31 **Salt Water Protection Package:** Shall consist of powder coated door hardware; copper fins on evaporator coil; Heresite coated condenser coil; saltwater electrical box and galvanized structural frame.



- 11.32 **Roof Flashing Kit:** Supplied by PK but not factory installed. Elastoform flashing kit shall consist of 12" wide rubber material; 45o cant strip (filler strip); splice adhesive (Firestone SA-1065 or equivalent) and predrilled termination bar. Additional items to be supplied by contractor include mechanical fasteners (screws or other type fasteners) for termination bar and silicone sealant.
- 11.33 **Sidewall Flashing Kit:** Supplied by PK but not factory installed. Shall consist of PVC flashing (1" x 5" L-shape PVC material painted to match the exterior color of the walk-in. Additional items to be supplied by the contractor include mechanical fasteners (screws or rivets), construction adhesive and silicone sealant.
- 11.34 **One Way Sloped Roof:** Roof shall slope away from building.

## **12.0 SELF CONTAINED REFRIGERATION SYSTEM(S)**

- 12.1 Packaged refrigeration system(s) shall be manufactured and factory installed by the walk-in unit manufacturer.
- 12.2 System(s) shall be complete and ready to operate without field assembly, installation, or start-up required.
- 12.3 Refrigerants shall be non-flammable type R-404a or other acceptable substitute when necessary.
- 12.4 Electrical controls including system breakers shall be supplied, installed and ready to operate with single point electrical connection by others.
- 12.5 Refrigeration system(s) shall be complete with the following: roof mount type horizontal discharge air cooled condenser, Copeland hermetic, semi-hermetic or scroll compressor (or equal) with overload protection and contactors (as required), weather hood finished to match exterior wall finish, fan guards, receiver tank with liquid shut off valve, suction line accumulator (on 3 HP systems and higher only), liquid line filter / drier and sight glass, high / low pressure control, liquid line solenoid valve, crankcase heater, low ambient controls to -20° F, room thermostat and U.L. labeled electrical control panel wired in accordance with N.E.C. standards.
- 12.6 Evaporator coils shall be furnished with electronically commutated fan motors and appropriate defrost for operating temperature range.
- 12.7 Electric defrost shall be included on all refrigeration systems operating at +32° F and below. Electric defrost shall be time initiated and temperature terminated with time override and fan delay to reduce room condensation. All condensate pans shall be piped to copper drain line complete with heat tape exiting the wall nearest to drain pan. Evaporators shall be located as shown on plans and drawings.
- 12.8 Refrigeration systems operating at +33° F and above shall be off-cycle air defrost. Defrost periods shall be time initiated and time terminated. All condensate pans shall be piped to PVC drain line exiting the wall nearest to drain pan. Evaporators shall be located as shown on plans and drawings.

## **13.0 PRESSURE RELIEF VENT**

- 13.1 All freezer compartments shall be supplied with a heated pressure relief vent. It shall include interior and exterior covers, 120V/60HZ/1PH antifreeze heater assembly, closable damper assembly to close when not venting and a PVC sleeve to protect urethane foam in wall structure.

## **14.0 Miami-Dade County Product Control Approval**

- 14.1 Polar King's line of walk-in coolers and walk-in freezers successfully passed the rigorous testing required to gain Miami-Dade County Product Control Approval. This mean all Polar King products are designed to comply with the high-velocity hurricane zone of the Florida building code. Miami-Dade approval allows acceptance of a product for use within these high-velocity hurricane zones. **Miami-Dade NOA No. 18-0516.05.**