SECTION 11 41 00
FOOD STORAGE EQUIPMENT

SPEC WRITER NOTES:
1. Delete between // // if not applicable to project.
2. Delete other items or paragraphs in the section that are not applicable and renumber the paragraphs.
3. Select self-contained refrigeration equipment according to usage requirements and available space.

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies self-contained refrigeration equipment as follows:

1. // Automatic ice making and dispensing stations.//
2. // Automatic ice making and ice and water dispensing stations.//
3. // // Refrigerators // freezers // dual-temperature units //, reach-in and pass-through.//
4. // // Refrigerators // freezers //, roll-in and roll-through.//

1.2 RELATED WORK

A. Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS: Seismic Restraint of Equipment.

B. Section 22 11 00, FACILITY WATER DISTRIBUTION: Plumbing Connections.

C. Section 26 05 21, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW): Electrical Connections.

1.3 QUALITY CONTROL

A. Installer Qualifications: Factory-trained refrigeration technicians and experienced with food service refrigeration equipment installation or supervised by an experienced food service equipment installer.

SPEC WRITER NOTE: UL Environmental and Public Health (EPH) Classification Mark is currently used to certify compliance with NSF/ANSI standards. Equipment evaluated by UL before 2001 may bear the UL Food Service Product Certification Mark.

B. NSF Compliance: Equipment bears NSF Certification Mark or UL Classification Mark:

1. Refrigerators and Freezers: Evaluated according to NSF/ANSI 7.
2. Ice Makers: Evaluated according to NSF/ANSI 12.

C. UL Listing: Equipment is listed and labeled by UL:

1. Refrigerators and Freezers: Evaluated according to UL 471.
2. Ice Makers: Evaluated according to UL 563.

SPEC WRITER NOTE: Retain paragraph and subparagraphs below if required for project location.

D. Seismic Restraint:

1. Comply with requirements in Section 13 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.
2. Comply with applicable guidelines for seismic restraint of kitchen equipment contained in SMACNA's "Kitchen Ventilation Systems and Food Service Equipment Guidelines Publication 1767," Appendix A.

E. In-Use Service: At least one factory-authorized service agency for equipment shall be located in the geographical area of the installation and shall have the ability to provide service within 24 hours after receiving a service call.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer’s Literature and Data:

1. Include manufacturer's address and telephone number.
2. Include catalog or model numbers and illustrations and descriptions of refrigeration equipment and accessories.
3. Proof of appliances being Energy Star qualified.

C. Installation Drawings: Show dimensions, details of installation, coordination with plumbing and electrical work, and other work required for a complete installation.

D. Operating Instructions: In accordance with requirements in .

1.5 WARRANTY

A. Warrant food service equipment to be free from defects in materials and workmanship in accordance with requirements of "Warranty of Construction", FAR clause 52.246-21, except warranty period for refrigeration compressors shall be five years.

1.6 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. NSF International/American National Standards Institute (NSF/ANSI):

7-09.....Commercial Refrigerators and Freezers

12-09.....Automatic Ice Making Equipment

C. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): Publication 1767 Kitchen Ventilation Systems & Food Service Equipment Fabrication and Installation Guidelines, 2001.

D. Underwriters Laboratories Inc. (UL):

471-10.....Commercial Refrigerators and Freezers, 8th Edition: Revised 2004

563-09.....Ice Makers, 7th Edition: Revised 2006

PART 2 - PRODUCTS

SPEC WRITER NOTE:
1. Symbols below correspond with "Room Equipment Guide" identification system. Verify project requirements before specifying equipment that deviates from "Room Equipment Guide."
2. Edit symbols to coordinate with identification shown on drawings.

2.1 AUTOMATIC ICE MAKING AND DISPENSING STATIONS

A. General Requirements: Automatic ice makers and dispensers as follows:

1. Stainless-steel exterior, front and sides.
2. Air-cooled compressor.
3. Insulated storage bin with agitator.
4. Cube-type ice.
5. Dispensing area located between 813 and 1016 mm (32 and 40 inches) above the floor.
6. Ice dispenser.
7. Accessories:
   a. Stainless-steel stand with 152 mm (6 inch) stainless-steel legs.
   b. Water filter with 0.1 liter/second (1.67 gallons per minute) maximum flow rate.

SPEC WRITER NOTE: Select capacity according to anticipated use; actual use should not exceed 80 percent of capacity of unit.

8. Provide Energy Star qualified appliances.

B. Automatic Ice Making and Dispensing Units:

SYMBOL	CAPACITY	
K3010	226-kg (500-lb) ice production 45-kg (100-lb) bin storage	
K3020	113-kg (250-lb) ice production 27-kg (60-lb) bin storage	

2.2 AUTOMATIC ICE MAKING AND ICE AND WATER DISPENSING STATIONS

A. General Requirements: Automatic ice makers and dispensers as follows:

1. Stainless-steel exterior, front and sides.
2. Air-cooled compressor.
3. Insulated storage bin with agitator.
4. Cube-type ice.
5. Dispensing area located between 813 and 1016 mm (32 and 40 inches) above the floor.
6. Ice dispenser.
7. Water dispenser.
8. Accessories:
   a. Stainless-steel stand with 152 mm (6 inch) stainless-steel legs.
   b. Water filter with 0.1- liter/second (1.67 gallons per minute) maximum flow rate.

SPEC WRITER NOTE: Select capacity according to anticipated use; actual use should not exceed 80 percent of capacity of unit.

9. Provide Energy Star qualified appliances.

B. Automatic Ice Making and Ice and Water Dispensing Units:

SYMBOL	CAPACITY	
K3030	113-kg (250-lb) ice production 27-kg (60-lb) bin storage	
K3040	226-kg (500-lb) ice production 45-kg (100-lb) bin storage	

2.3 REFRIGERATORS, FREEZERS, AND DUAL-TEMPERATURE UNITS, REACH-IN AND PASS-THROUGH

A. General Requirements:

1. Exterior Finish: Stainless steel, door, sides, and top.

2. Interior Finish: Stainless steel.
3. Doors: // Full // Half // height with door locks.
4. Door Hinge: // As shown on drawings // [_____] //.
5. Refrigeration System: Self-contained, air cooled, top mounted.
6. Accessories:
   a. 152 mm (6 inch) high casters.
   b. Cord and plug.
   c. Stainless-steel back.
7. Provide Energy Star qualified appliances.

B. Shelves: // Three // Four // Five // Six // chrome-plated wire shelves per full section // or three chrome-plated wire shelves per half section //.

C. Tray Slides: Universal Angle type.

D. Mobile Food Tray File: Consisting of loading cart in lower compartment of each refrigerator section and transfer carriages. Locking device automatically locks loading cart in position when placed in refrigerator or on the transfer carriage.
1. Loading Cart:
   a. Material: Frame and slides fabricated from stainless steel or aluminum alloy angles, channels, or bars.
   b. Slides: Minimum of 10 pairs, removable, and adjustable on 25 mm (1 inch) centers. Each pair accommodates one 457 by 660 mm (18 by 26 inch) standard cafeteria tray or pan.
2. Transfer Carriage:
   a. Base Construction: Stainless-steel sheet, angle, channel, or bar frame or platform with channels to guide and retain mobile food rack.
   b. Handle: Inverted-U type, attached to one end of base of cart and located with top a minimum of 914 mm (36 inches) above the floor. Fabricated from tubular stainless steel having an outside diameter of 25 mm (1 inch) and a minimum wall thickness of 1.7 mm (0.065 inch). Attached to cart to permit withdrawal of the trays or pans from either end of the mobile food rack when in place on cart.
   c. Casters: 127 mm (5 inch), ball-bearing swivel casters with neoprene wheels.

E. Temperature:
1. Normal: 1.6 degrees C (35 degrees F).

2. Low: -23.3 degrees C (-10 degrees F).

3. Dual: +1.6 degrees C and -23.3 degrees C (+ 35 and -10 degrees F).

SPEC WRITER NOTE:
1. Select unit style and temperature according to functional requirements.
2. Select number of sections according to operation requirement and available floor space.

F. Reach-in and Pass-Through Refrigerator, Freezer, and Dual-Temperature Units:

SYMBOL	TEMPERATURE	STYLE	SIZE	FOOD STORAGE
K3600	Low	Reach-in	0.6 cubic meter (20 cubic feet) One section	Tray slides
K3610	Low	Reach-in	0.6 cubic meter (20 cubic feet) One section	Shelves
K3620	Low	Pass-through	0.6 cubic meter (20 cubic feet) One section	Tray slides
K3630	Low	Pass-through	0.6 cubic meter (20 cubic feet) One section Two compartments	Upper Compartment: Tray slides Lower Compartment: Mobile food-tray file with loading cart and two transfer carriages
K3640	Dual	Reach-in	0.6 cubic meter (20 cubic feet) One section Two compartments Bottom Compartment: Low temperature	Tray slides
K3650	Dual	Pass-through	0.6 cubic meter (20 cubic feet) One section Two compartments Bottom Compartment: Low temperature	Tray slides

SYMBOL	TEMPERATURE	STYLE	SIZE	FOOD STORAGE
K3700	Normal	Reach-in	0.6 cubic meter (20 cubic feet) One section	Tray slides
K3710	Normal	Reach-in	0.6 cubic meter (20 cubic feet) One section Two compartments	Upper Compartment: Tray slides Lower Compartment: Mobile food-tray file with loading cart and one transfer carriage
K3720	Normal	Reach-in	0.6 cubic meter (20 cubic feet) One section	Shelves
K3740	Normal	Pass-through	0.6 cubic meter (20 cubic feet) One section Two compartments	Tray slides
K3750	Normal	Pass-through	0.6 cubic meter (20 cubic feet) One section Two compartments	Upper Compartment: Tray slides Lower Compartment: Mobile food-tray file with loading cart and one transfer carriage
K3760	Normal	Pass-through	0.6 cubic meter (20 cubic feet) One section	Shelves
K3800	Normal	Reach-in	1.3 cubic meters (45 cubic feet) Two sections	Tray slides

SYMBOL	TEMPERATURE	STYLE	SIZE	FOOD STORAGE
K3810	Normal	Reach-in	1.3 cubic meters (45 cubic feet) Two sections Two compartments per section	Upper Compartment: Tray slides Lower Compartments : Mobile food-tray files with loading cart and two transfer carriages per compartment
K3820	Normal	Reach-in	1.3 cubic meters (45 cubic feet) Two sections	Shelves
K3840	Normal	Pass-through	1.3 cubic meters (45 cubic feet) Two sections	Tray slides
K3850	Normal	Pass-through	1.3 cubic meters (45 cubic feet) Two sections Two compartments per section	Upper Compartments : Tray slides Lower Compartments : Mobile food-tray file with loading cart and two transfer carriages per compartment
K3860	Normal	Pass-through	1.3 cubic meters (45 cubic feet) Two sections	Shelves
K3900	Normal	Reach-in	1.8 cubic meters (65 cubic feet) Three sections	Tray slides

SYMBOL	TEMPERATURE	STYLE	SIZE	FOOD STORAGE
K3910	Normal	Reach-in	1.8 cubic meters (65 cubic feet) Three sections Two compartments per section	Upper Compartments : Tray slides Lower Compartment: Mobile food-tray file with loading cart and three transfer carriages per compartment
K3920	Normal	Reach-in	1.8 cubic meters (65 cubic feet) Three sections	Shelves
K3940	Normal	Pass-through	1.8 cubic meters (65 cubic feet) Three sections	Tray slides
K3960	Normal	Pass-through	1.8 cubic meters (65 cubic feet) Three sections	Shelves

2.4 REFRIGERATORS AND FREEZERS, ROLL-IN AND ROLL-THROUGH

A. General Requirements:

1. Exterior Finish: Stainless steel, door, sides, and top.
2. Interior Finish: Stainless steel.
3. Doors: Full height with locks.
4. Door Hinge: // As indicated on drawings // [_____] //.
5. Refrigeration System: Self-contained, air cooled, top mounted.
6. Accessories:
   a. Cord and plug.
   b. Stainless-steel back.
7. Provide Energy Star qualified appliances.

B. Loading Racks: With minimum of 20 pairs of slides and four 127 mm (5 inch) high swivel casters.

1. Slides: Removable and adjustable on 25 mm (1 inch) centers. Each pair accommodates one 457 by 660 mm (18 by 26 inch) tray or pan, or two 356 by 457 mm (14 by 18 inch) trays or pans.

C. Temperature:

1. Normal: 1.6 degrees C (35 degrees F).

2. Low: -23.3 degrees C (-10 degrees F).

SPEC WRITER NOTE:
1. Select unit style and temperature according to functional requirements.
2. Select number of sections according to operation requirement and available floor space.

D. Roll-in and Roll-Through Refrigerator and Freezer Units:

SYMBOL	TEMPERATURE	STYLE	SIZE	LOADING RACKS
K3660	Low	Roll-in	2 cubic meters (70 cubic feet) Two sections	Two
K3657	Low	Roll-through	2 cubic meters (70 cubic feet) Two sections	Two
K3680	Low	Roll-in	2.8 cubic meters (100 cubic feet) Three sections	Three
K3690	Low	Roll-through	2.8 cubic meters (100 cubic feet) Three sections	Three
K3781	Normal	Roll-through	1 cubic meter (35 cubic feet) One section	-
K3790	Normal	Roll-in	1 cubic meter (35 cubic feet) One section	One
K3880	Normal	Roll-through	2 cubic meter (70 cubic feet) Two sections	Two
K3881	Normal	Roll-through	2 cubic meters (70 cubic feet) Two sections	-
K3890	Normal	Roll-in	2 cubic meters (70 cubic feet) Two sections	Two
K3980	Normal	Roll-through	2.8 cubic meters (100 cubic feet) Three sections	Three
K3981	Normal	Roll-through	2.8 cubic meters (100 cubic feet) Three sections	-

SYMBOL	TEMPERATURE	STYLE	SIZE	LOADING RACKS
K3990	Normal	Roll-in	2.8 cubic meters (100 cubic feet) Three sections	Three
K3391	Normal	Roll-in	2.8 cubic meters (100 cubic feet) Three sections	-

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install self-contained refrigeration equipment level and plumb; arranged for safe and convenient operation; with access clearances required for maintenance and cleaning; and according to manufacturer's written instructions.

SPEC WRITER NOTE: Retain paragraph below if required for project location.

B. Install seismic restraints for equipment.

3.2 CLEAN-UP

A. At completion of the installation, clean and adjust self-contained refrigeration equipment as required to produce ready-for-use condition.

B. Where stainless-steel surfaces are damaged during installation procedures, repair finishes to match adjoining undamaged surfaces.

3.3 INSTRUCTIONS

A. Instruct personnel and transmit operating instructions in accordance with requirements in.

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