DSA IR A-14

WALK-IN FREEZERS AND COLD STORAGE BOXES: 2025 CBC

Disciplines: All

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Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

PURPOSE

This Interpretation of Regulations (IR) clarifies requirements for the review and acceptance of walk-in freezers (WIF) and cold storage boxes (CSB) on projects under DSA jurisdiction.

SCOPE

This IR is applicable to the design and construction of WIF/CSB for K-12 public schools and community colleges in California. The WIF/CSB can be installed inside of a school building, outside adjacent to a school building, or as a standalone exterior structure.

BACKGROUND

DSA does not review the design and fabrication of pre-manufactured equipment (if meeting the requirement of this IR) but does check anchorage of equipment to resist gravity and lateral loads. WIF/CSB are typically constructed from prefabricated wall and roof panels interconnected with cam-locks. Some WIF/CSB may be designed with different interconnection systems for the panels. DSA will accept WIF/CSB as pre-manufactured equipment for public school construction projects if the construction conforms to the indoor or outdoor installation requirements of this IR. Otherwise, WIF/CSB shall be designed to meet the requirements of the California Building Code (CBC) for new buildings.

1. REQUIREMENTS FOR INDOOR INSTALLATION

Indoor installations may be accepted as pre-manufactured equipment without demonstrating structural adequacy if the WIF/CSB unit meets requirements in this section.

1.1 Design Requirements

1.1.1 WIF/CSB units shall be confined on three sides by walls capable of resisting seismic forces from the WIF/CSB units as prescribed in CBC Section 1613A. The seismic design for the full-height restraining walls shall comply with American Society of Civil Engineers (ASCE) Standard 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7), Chapter 13 for architectural components based on "Interior nonstructural walls and partitions - All other walls and partitions" as listed in Table 13.5-1. The WIF/CSB unit shall be placed against the walls as close as possible.

1.1.2 At the fourth side containing the door, supplemental lateral bracing shall be provided in accordance with Section 2.3.1 below. Supplementary bracing shall not block or interfere with doorways or means of egress.

1.1.3 Mechanical anchorage at the base is required to resist the forces described in Section 1.1.1 above, unless the WIF/CSB unit is installed in a depressed slab or within concrete floor curbs that provide at least 4 inches of bearing. Lateral restraint against sliding shall be provided by the unit bearing directly against the depressed slab or concrete curbs.

2. REQUIREMENTS FOR OUTDOOR INSTALLATION

Outdoor installation may be accepted as pre-manufactured equipment without demonstrating structural adequacy if the WIF/CSB unit meets the limitations and requirements in this section. If these conditions are not met, the WIF/CSB unit shall be designed in accordance with Section 3 below.

2.1 Dimensional Limitation

WIF/CSB units shall not exceed 500 square feet of enclosed floor area and 10 feet in height. If multiple units are used, a structural separation shall be provided conforming to ASCE 7 Section 12.12.2.

2.2 Roof Snow Load Limitation

Roof snow load (p_f or p_s) shall not exceed 20 pounds per square foot (psf) or the manufacturer's recommendation, whichever is smaller.

2.3 Design Options

Outdoor WIF/CSB units shall comply with one of the following options:

2.3.1 Supplemental Lateral Bracing Option

Provide supplemental lateral bracing on all four sides. The seismic design shall follow Section 3.1 below. Lateral bracing (e.g., steel lateral frames, full-height cantilevered steel columns, etc.) shall be installed at corners of the unit, with spacing not exceeding 25 feet; provide additional lateral bracing as needed to reduce to 25 feet maximum unbraced distance. The lateral bracing shall be placed as close to the unit as possible. The lateral bracing shall be designed to demonstrate compliance with the required wind and seismic forces for new buildings per CBC Sections 1609A and 1613A, respectively.

2.3.2 Abutting a Building Option

2.3.2.1 When located adjacent to a building, the WIF/CSB unit shall be provided with supplemental lateral bracing on all four sides of the unit per Section 2.3.1 above with a structural separation conforming to ASCE 7 Section 12.12.2 between the adjacent building and the lateral bracing.

2.3.2.2 Bracing may be omitted on the side adjacent to the building if the WIF/CSB is placed against the building with a continuous gap of not less than ½ inch along the full length and height of the unit of that side. The building exterior wall system shall be evaluated to verify that it can resist the wind and seismic forces transferred from the abutting WIF/CSB unit, in accordance with CBC Sections 1609A and 1613A, respectively. Impact loading shall be considered when appropriate.

Exception: Evaluation of the exterior wall system may be omitted if the WIF/CSB unit is attached to lateral braces on the other three sides, and those braces are designed to resist the prescribed forces acting perpendicular to the adjacent building wall, including maintaining adequate seismic clearance.

2.3.3 Fencing Option

2.3.3.1 For standalone installations, the WIF/CSB unit shall be enclosed (i.e., fenced) to prevent access by students and teachers. The fence shall be located at a distance from the unit that is equal to or greater than the unit's height on all four sides

2.3.3.2 For installations where the unit abuts a building, the three exposed sides of the unit shall be enclosed in accordance with Section 2.3.3.1 above. The exterior building wall adjacent to the WIF/CSB unit shall be evaluated in accordance with Section 2.3.3.2 above.

2.4 Anchorage

WIF/CSB units installed outside of a building shall be anchored at the base to resist the required wind and seismic forces required for new buildings per CBC Sections 1609A and 1613A, respectively.

3. REQUIREMENTS FOR WIF/CSB DESIGNED AS NEW BUILDING

When the requirements of Section 2 above are not met, WIF/CSB shall demonstrate structural adequacy for gravity and lateral loads as required for a new building in accordance with this section.

3.1 Structural Design

Structural design, including foundation, shall follow the provisions set forth in CBC Chapter 16A. When the seismic force-resisting system of the WIF/CSB is not defined or permitted in Table 12.2-1 of ASCE 7, the seismic design shall comply with ASCE 7 Chapter 15 for nonbuilding structures using a system based on “All other self-supporting structures…” as listed in Table 15.4-2.

3.2 Product Acceptance

3.2.1 Product evaluation report complying with *IR A-5: Product and Material Acceptance Based on a Valid Evaluation Report* must be submitted as a supporting document. The report shall establish material capacities for all panels used in WIF/CSB. Capacities shall include the panels’ out-of-plane flexural strength, in-plane shear strength, and axial compression strength, in both vertical and horizontal applications. The report must indicate whether the capacities listed are for ultimate strength, strength design, or allowable stress design. The product evaluation report shall also include the manufacturer’s quality assurance program.

3.2.2 If the product evaluation report does not address the lateral capacities of the WIF/CSB, specifically shear walls or diaphragms, the WIF/CSB shall be provided with lateral bracing in accordance with Section 2.3 above. All other provisions of the product evaluation report that are not related to lateral capacities shall remain applicable.

3.2.3 Connections made by a proprietary locking mechanism (e.g., Cam Locks) shall not be relied upon as part of the seismic force-resisting system. Shear force transfer at panel joints and edges shall be made by sheet metal (20 ga. minimum) angles or plates with screw fasteners.

4. FIRE AND LIFE SAFETY REQUIREMENTS

Protection by the automatic fire sprinkler system is required for WIF/CSB units that are installed or constructed within a building, or installed outdoors and attached to a building protected, or required to be protected, by an automatic fire sprinkler system. DSA will review WIF/CSB units installed indoors, or outdoors and attached to a building.

That portion of the automatic fire sprinkler system serving WIF/CSB must be designed for operation in low-temperature settings to prevent water from freezing resulting in damage to the system piping.

4.1 Site Plans

When WIF/CSB are installed outdoors or adjacent to buildings, site plans shall be submitted showing all approved fire lanes, and routes of egress travel along the exit discharge from adjacent buildings to the public way or to an approved safe dispersal area. DSA will review the site plan to ensure that fire access lanes or egress routes are not obstructed by the WIF/CSB units.

4.2 Fire Sprinkler Supports

When fire sprinklers are required, fire sprinkler pipes shall be supported by approved hangers or brackets specifically designed for attachment to the roof and wall panels of WIF/CSB. These hangers and brackets shall have a product evaluation report in accordance with IR A-5, demonstrating their acceptance and capacity for use with WIF/CSB wall and roof panels. Alternatively, through-bolts with washers may be used to attach sprinkler pipes to the roof and wall panels of WIF/CSB if justified by supporting calculations.

5. ACCESS COMPLIANCE REQUIREMENTS

Commercial kitchens used only by employees are generally considered to be work areas containing workstations. Pre-manufactured walk-in coolers and freezers used only by employees within a commercial kitchen are considered work area equipment not requiring compliance with accessibility provisions, per CBC Section 11B-206.2.8 Exc. 2. An accessible route must still be provided to the outside of the cooler or freezer door as required by Sections 11B-206.2.8 and 11B-203.9.

However, if pre-manufactured WIF/CSB are used by students as part of their education curriculum, or if they are used by the general public, they are not considered to be a part of an employee-only work area and therefore must meet all accessibility requirements of the California Building Code.

REFERENCES:

California Code of Regulations (CCR), Title 24
Part 2: California Building Code (CBC), Chapter 2 Definition of Work Area Equipment, Chapter 11B, Section 11B-206.2.8 and 11B-203.9, Chapter 16A
American Society of Civil Engineers, ASCE 7, Chapters 12, 13, and 15