DSA IR 16-6

COMPOSITE BASES FOR HVAC UNITS: 2022 CBC

Disciplines: Structural

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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 DSA requirements for acceptance of heating, ventilation, and air conditioning (HVAC) units with composite bases used on construction projects under DSA jurisdiction.

SCOPE

This IR is applicable to the design and detailing of HVAC units with composite bases. This document does not address the use of composite bases with HVAC units that require seismic certification per American Society of Civil Engineers Standard 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7), Section 13.2.2.

BACKGROUND

HVAC units may be packaged with a base constructed of composite material (e.g., glass-mat reinforced thermal plastic). The composite base commonly serves three purposes: (1) as a base for the HVAC unit and mounting surface for internal components such as compressors, (2) as a drain pan, and (3) as a shipping pallet.

Wind and seismic force design requirements for nonstructural components, including HVAC units installed on composite bases are defined in ASCE 7 Chapters 13, 26, and 30 as modified by California Building Code (CBC) Section 1617A.1.18.

1. ALL HVAC UNITS

The following requirements are applicable for all HVAC units with composite bases:

1.1 The composite base must be assembled by the manufacturer and shipped as an integral part of the equipment.

1.2 The HVAC unit must be listed or certified by a qualified independent testing and certification agency such as Underwriters Laboratories (UL), Intertek, etc. The listing shall indicate that the composite base is suitable for exposure to ultraviolet light, for immersion in water, and for use in exterior climatic conditions and operating temperatures.

1.3 The curb or sleeper supporting the HVAC unit must be constructed to match and fit the composite base as supplied by the manufacturer.

2. HVAC UNITS WEIGHING LESS THAN 400 POUNDS

In addition to the requirements of Section 1 above, the HVAC unit must be anchored to resist seismic and wind forces per ASCE 7 Chapters 13, 26, and 30 and CBC Chapter 16A. However, such anchorage need not be detailed in the construction documents. HVAC anchorage details may be provided by the manufacturer or its authorized representative to the project design professional and project inspector. See Appendices A and B below for example anchorage of units weighing less than 400 pounds.

COMPOSITE BASES FOR HVAC UNITS: 2022 CBC

3. HVAC UNITS WEIGHING 400 POUNDS OR MORE

In addition to the requirements of Section 1 above, the following shall also be applicable:

3.1 The project design professional shall specify and approve HVAC unit(s) with composite base(s) on the project.

3.2 The design professional in general responsible charge or the professional engineer delegated responsibility shall provide calculations justifying the adequacy of the unit anchorage to transfer all wind and seismic forces required by ASCE 7 Chapters 13, 26, and 30 and CBC Chapter 16A. Screws or bolts embedded into the composite material shall not be considered effective to transfer wind or seismic loads. Lateral loads may be transferred through the composite base by means of bearing clips or other connections that bear on the composite material.

3.3 In accordance with California Administrative Code (CAC) Section 4-317(b), the design professional in general responsible charge or the professional engineer delegated responsibility for the structural or mechanical system for the project shall provide details on the construction documents specifying all anchorage requirements determined by Section 3.2 above.

3.4 The HVAC unit support and anchorage shall comply with ASCE 7 Section 13.2.1 and CBC Section 1705A.14.2 when applicable.

3.5 If the HVAC unit is mounted on a metal curb, the metal curb shall be rated for gravity and lateral loads and detailed on the construction documents. If the metal curb load rating is based on a valid Department of Health Care Access and Information (HCAi) Office of Statewide Health Planning and Development (OSHPD) Preapproval of Manufacturer's Certification (OPM), the OPM number and anchorage detail(s) shall be shown on the construction documents.

REFERENCES:

2022 California Code of Regulations (CCR) Title 24
Part 1: California Administrative Code (CAC), Section 4-317.
Part 2: California Building Code (CBC), Chapter 16A, Section 1617A.1.18.

This IR is intended for use by DSA staff and by design professionals to promote statewide consistency for review and approval of plans and specifications as well as construction oversight of projects within the jurisdiction of DSA, which includes State of California public schools (K–12), community colleges and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is subject to revision at any time. Please check DSA's website for currently effective IRs. Only IRs listed on the webpage at www.dgs.ca.gov/dsa/publications at the time of project application submittal to DSA are considered applicable.

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Appendix A: Photo of Example of Anchorage for Units Weighing Less than 400 Pounds

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Appendix B: Example Detail of Anchorage for Units Weighing Less than 400 Pounds