

COMPOSITE BASE FOR HVAC UNITS

IR 16-6

References:

California Code of Regulations (CCR), Title 24;
Part 1, 2001 California Administrative Code, Section 4-317(b)
Part 2, 2001 California Building Code (CBC), Section 1632A
Part 2, 2010 CBC, Section 1615A.1.12, 1615.10.10*
ASCE 7-05 Chapters 6 and 13.

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Discipline: Structural

This Interpretation of Regulations (IR) is intended for use by the Division of the State Architect (DSA) staff, and as a resource for design professionals, to promote more uniform statewide criteria for plan review and construction inspection of projects within the jurisdiction of DSA which includes State of California public elementary and secondary schools (grade 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 reviewed on a regular basis and is subject to revision at any time. Please check the DSA web site for currently effective IRs. Only IRs listed in the document at <http://www.dgs.ca.gov/dsa/Resources/IRManual.aspx> at the time of plan submittal to DSA are considered applicable.

* Indicates alternative 2010 CBC sections that may be used by community colleges, per 2010 CBC, Section 1.9.2.2.

Purpose: The purpose of this Interpretation of Regulations (IR) is to clarify seismic anchorage requirements for HVAC units which use a composite base, in construction projects under DSA jurisdiction.

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

1. Requirements for All HVAC Units: These 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), Inc., or Intertek ELT Semko. The listing shall indicate that the composite base is suitable for exposure to ultra violet light, for immersion in water, and for use in exterior climatic conditions and operating temperatures.

Composite bases shall be rated for indoor air smoke and flame spread per UL94, Test 94-5V.

- 1.3** The curb or sleeper supporting the HVAC unit must be constructed to match or fit the composite base as recommended or 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 wind or seismic forces per ASCE 7-05, Chapters 6 and 13 (2001 California Building Code (CBC) Chapter 16A, Divisions III and IV). However, such anchorage need not be detailed in the construction documents per ASCE 7-05, Section 13.1.4 and 2010 CBC Section 1615A1.12 (1615.10.10*). For projects submitted under the 2001 CBC, refer to Part 1, Section 4-317(b). HVAC anchorage details shall be provided by the manufacturer or its authorized representative to the project design professional and project inspector. An acceptable anchorage detail is shown on Appendix A and Appendix B.

3. HVAC Units Weighing 400 Pounds or More: In additions to the requirements of Section 2 above, the following shall also be applicable:

- 3.1** The project design professional specifies and approves its use.
- 3.2** A licensed design professional shall provide calculations to verify that wind or seismic forces do not cause overturning of the HVAC unit.
- 3.3** Details and calculations shall be provided by the design professional in general responsible charge for the project for transfer of wind and seismic loads between the HVAC unit and supporting structure. 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 composite base by means of bearing clips or other connections that bear on the composite material.
- 3.4** If the HVAC unit with a composite base is mounted on a metal curb, the metal curb must be rated for gravity and lateral loads and detailed on the construction documents. If the metal curb has a valid OSHPD anchorage pre-approval, the OPA number and anchorage detailing must be shown on the construction documents.

APPENDICES

Appendix A – Photograph of unit showing Seismic Restraint Clips

Appendix B – Drawing showing attachment method for composite base to metal roof curb

Appendix A

Example of Seismic Anchorage

(Only for HVAC Units Weighing Less Than 400 LBS. See Section 3 above for Units Weighing 400 LBS or More)



Appendix B

Example of Seismic Anchorage

(Only for HVAC Units Weighing Less Than 400 LBS. See Section 3 above for Units Weighing 400 LBS or More)

