ClimateCraft

# Engineering Notes

## International Building Code
## Seismic Compliance for Healthcare and Critical Facilities

ClimateCraft continues to lead the industry in providing customers with equipment that satisfies the statutory requirements for compliance with the earthquake provisions of the International Building Code. By undergoing the rigorous and independent analysis required for custom air handling equipment, many of its numerous configurations have received certification of compliance and are operating in healthcare and other critical facilities nationwide. In addition, having received Special Seismic Certification Pre-Approval (OSP) from the California Office of Statewide Health Planning and Development (OSHPD), it can now satisfy the special requirements for healthcare facilities in that state.

### What is the ICC?

The International Code Council (ICC) is a non-profit organization dedicated to developing codes and standards used in the design, build and compliance process, including the International Building Code (IBC). This code requires seismic certification and installation details on critical buildings such as:

- hospitals and health care facilities,
- fire and police stations,
- emergency preparedness locations,
- utilities,
- large public assembly buildings,
- facilities considered critical for national defense and more.

This code requires key systems, including most HVAC systems, in critical buildings to survive and remain functional under earthquake conditions.

### What is the IBC?

The International Building Code (IBC) is one of 14 International Codes developed by the International Code Council (ICC) as part of a unified set of U.S. model codes. The IBC is the building structural code. Because it is the structural code, it historically is not a document reviewed by the MEP professional, however, the ICC has changed this dynamic by including key requirements for mechanical and electrical equipment within the IBC. Individual states may also have additional compliance requirements that must be considered, such as those of the California Office of Statewide Health Planning and Development, a state agency that approves all healthcare construction in the state.

Even though it is a statutory requirement in all 50 states, understanding within the building and building design communities of its impacts on mechanical and electrical systems is generally inconsistent, often due to insufficient communication from the state regulatory agencies. This lack of understanding can pose unwelcome liability issues and even place building occupancy at risk. A working knowledge of the IBC and federal, state and local regulations related to it is now mandatory.

### What is Meant by Compliance?

A key requirement outlined in the IBC is resistance to seismic forces for both structural and critical non-structural building components, such as HVAC systems. Within the IBC, Section 1621, “Architectural, Mechanical and Electrical Seismic Design Requirements” and Chapter 17, “Structural Tests and Special Inspections” present the specific design criteria.

These chapters, in conjunction with the American Society of Civil Engineers Standard 7 (ASCE 7), are used for determining compliance, severity, test and certification requirements, inspections, etc. for use by the design professional of record.

In the code, the responsibility for identifying critical nonstructural components, such as a custom air handler, that must stay on line and functional after a seismic event, has been given to the design professional of record. Once a component has been identified as critical and non-exempt, the component must be independently certified and labeled as able to withstand a site specific Seismic Design Force, stated in terms of a G force requirement, and to stay online and functional. In the case of California healthcare construction, the component must also be approved by the Office of Statewide Health Planning & Development (OSHPD).

### Does the IBC Also Affect Renovation?

The only correct answer is “It can.” It is the responsibility of the engineer of record to determine from the project’s structural drawings if the structure is required to be updated to current Code standards. If the answer is yes, critical nonstructural elements, such as an air handling system, will also have to comply with the code.

### When Must a Custom Air Handler be Certified as Compliant?

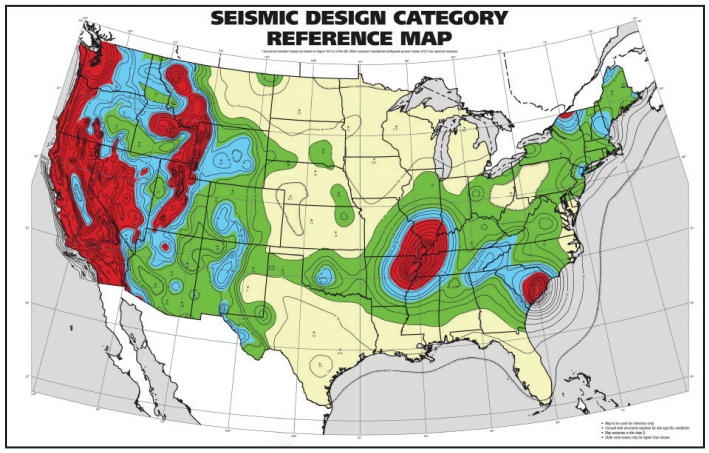
The IBC outlines basic steps for the design professional to follow in determining the requirements for certified seismic compliance. The following factors are then used to determine the building’s Seismic Design Category and the equipment’s requirement for compliance:

- General Site Conditions
- Occupancy Category
- Component Importance Factor
- Seismic Design Category
- Compliance
- Seismic Force

For details on any of these individual requirements, please reference IBC, Section 1621, “Architectual, Mechanical and Electrical Seismic Design Requirements.”

## What is the Impact on Critical Facilities?

The most common facility category facing seismic design requirements is hospitals, especially those providing surgery or emergency treatment. Critical equipment in such facilities located in the areas identified on the map (below) as blue, green or red are subject to IBC seismic compliance requirements.




The above map is based on SDS values assuming Soil Site Class D. (Map compliments of The VMC Group)

## How is Compliance Identified?

It is critical that the building professional not only be aware of the requirements of the IBC, but also to be aware of sources of compliant equipment at time of document preparation. Waiting until after bid documents are prepared, or relying on assurances of anticipated compliance by equipment ship date, can cause serious delays in the construction schedule and possibly even costlier delays in building occupancy. In order to be confident that their project will go ahead as planned, architects, engineers, and owners must know at the very start of the design process that their project will comply.

- Certificate of Compliance– A document issued by the equipment manufacturer that outlines the scope of compliance in terms of product capability, seismic severity and installation, and shows the name of the Seismic Qualification Agency. This should be required as part of supplier prequalification for any project.
- Special local, state or federal requirements– Understanding of additional local approval requirements is critical. For example, the State of California places special emphasis on seismic capabilities and all healthcare construction must be approved by the California Office of Statewide Health Planning and Development (OSHPD). Once approved, OSHPD issues the manufacturer a Special Seismic Certification Pre-Approval (OSP) and posts the pertinent information on their website.

## Where Can I Turn for Compliant Equipment?

ClimateCraft can provide owners of healthcare, and other critical use facilities with custom air handling equipment certified compliant to the seismic requirements of the IBC, today. Following completion of rigorous structural analysis and shake table test regimens, ClimateCraft has received a Certificate of Compliance from The VMC Group, a certified Seismic Qualification Agent, with their listing by Seismic Source, an International Code Council (ICC) Accredited Listing Agent and an OSHPD Special Seismic Certification Pre Approval for California healthcare projects. These approvals give the design professional confidence from the very beginning of the design process that the specified equipment will be available with the required compliance documents, and give state approval authorities, such as California's OSHPD, the assurance that submitted equipment complies with state statutes.

**Certificate of Compliance**
**Seismic Certification Label**
**California Building Code**

OSHPD Special Seismic Certification Pre-Approval:
**OSP-0063-10**

Product Name: Air Handling Unit with Seismic Upgrade Option
Product Type: Air Handling Unit
Seismic Performance Characteristics: $S_{DS}$ (g) = 1.93, z/h = 1.0, $1_P$ = 1.5
Manfacturer's Identifcation Number: CAHxxXyyE-S
Anchorage Pre-Approval: None
Unit Serial Number: SNxxxxx

THE VMC GROUP
The Power of Together™
Certified Seismic Qualification Agency

ClimateCraft
Manufacturer of Equipment

ClimateCraft

IBC CERTIFIED
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**Seismic Certification Label**
**International Building Code**

**Reference Certificate of Compliance:** VMA-45678-01C
**Product Type:** Custom Air Handlers
**Model Number:** CAH Series-II
**Seismic Performance Characteristics:** $S_{DS}$ (g) = 1.93 z/h = 1.0 $I_p$ = 1.5
Examine Seismic Labels Attached To Any Non-Factory Components To Verify System Compliance
**www.IBCApproval.com** **VMA-45678-01B Rev 01**

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