



SUBJECT

Special Seismic Certification Preapproval Program (OSP)
(Note this revision supersedes PIN 55 dated 6/02/2016)

PIN: 55
Effective: 2/24/2014
Revised: 8/03/2022



PURPOSE

Special seismic certification (SSC) is required by ASCE 7-16 (ASCE 7) with the 2019 California Building Code (CBC) specifying equipment and components that must remain operable following the design earthquake ground motion. Manufacturers shall provide a “Certificate of Compliance” indicating compliance with the above requirements.

The Department of Health Care Access and Information (HCAI), also known as the Office of Statewide Health Planning and Development (OSHPD), established a voluntary Special Seismic Certification Preapproval Program (OSP) to streamline special seismic certifications. The OSP program expedites hospital construction for facility owners, consultants, contractors, and manufacturers by providing preapproval of SSC equipment and components assuring structural stability and functionality.

This Policy Intent Notice (PIN) provides a summary of the processes and procedures for the OSP Program and generic issues related to special seismic certification.

BACKGROUND

The OSP Program has reduced the time required for project specific special seismic certification reviews and the number of deferred approvals significantly. Shake table tests, which are required for an OSP, have revealed deficiencies in almost every category of tested equipment and components. Identification of potential vulnerability of equipment and components has led to systematic improvement in manufacturing, design, construction, quality control, and quality assurance for virtually all equipment and components.

Over time, the OSP Program has grown to encompass a large number and variety of equipment and components, with thousands of equipment and components from domestic and foreign manufacturers receiving approval.

To address questions about the OSP Program from the diverse group of manufacturers and users who participate in the process, this policy intent notice has compiled the various requirements of the OSP Program and generic special seismic certification requirements into a single resource document.

POLICY

Scope

1. OSP is a voluntary program for equipment manufacturers.
2. The OSP Program is limited to:
 - a. Components that require special seismic certification in accordance with CBC Section 1705.13.3 or 1705A.13.3, or
 - b. Components that require special seismic certification in accordance with ASCE 7 Section 13.2.2.
3. An OSP is issued on the basis of shake table tests in accordance with International Code Council-Evaluation Service Acceptance Criteria 156 (ICC-ES AC156) or equivalent shake table testing criteria approved by the building official. CBC Section 1705A.13.3 requires that active or energized equipment and components be certified exclusively on the basis of approved shake table tests.

Special seismic certification by analysis and experience data permitted by the ASCE 7 Section 13.2.2 Item # 2 (components with hazardous contents) are outside the scope of the OSP Program. Applications for special seismic certification based on analysis for a specific project will be reviewed on a case-by-case basis and approval will be applicable to that project only.

Certification Basis

4. CBC Section 1705A.13.3 requires a minimum of two equipment and components to be tested for a product line with similar structural configuration. Where a range of products are tested, the two equipment and components shall be either the largest and a small unit, or other approved alternative representative equipment and components.

Exception: When a single product (and not a product line with more than one product with variations) is certified and the manufacturing process is International Standards Organization (ISO) 9001 certified, performing only one test is permitted. Changes in software, color, branding, and components exempt from certification requirements by exception to CBC Section 1705A.13.3.1 only, without any change in components, supports, and attachments are accepted as a single product.
5. All tests shall be performed by an independent approved laboratory/testing agency having accreditation to the ISO accreditation standard 17025 or shall be under the responsible charge of an independent California licensed engineer in accordance with CBC Section 1703.4 or 1703A.4. Test reports shall be reviewed and accepted by an independent California licensed structural engineer.
6. Where normal operating conditions of equipment involve variation of contents or configuration, each operating condition or configuration shall be simulated in the tests as required by ICC-ES AC156 Section 4.5.4.

7. If uni-axial or bi-axial tests are used for certification, a test at 45-degrees to two horizontal orthogonal directions is required in addition to tests in two horizontal and vertical directions in accordance with ICC-ES AC156 Sections 6.4 and 6.4.1.
8. For a multi-component system, where components are structurally separate, each component can be certified independently.
9. For a multi-component system, where active or energized components are certified by tests, connecting elements, attachments, and supports can be justified by supporting analysis provided all force-resisting members between the mounting brackets to the supporting structure are of equivalent stiffness and strength to what is used in the component certification test as required by ICC-ES AC 156 Section 4.5.2.
10. For components with special seismic certification, flexible connections are required to mechanical, electrical, and plumbing distribution lines to accommodate relative displacements between the distribution lines and the component.
11. In accordance with ICC-ES AC 156 Section 4.5.2, if several mounting configurations are used, they shall be simulated in the test. Use of specific test results is limited to the tested mounting type and configuration.
12. In accordance with ICC-ES AC 156 Section 4.5.2, where individual components of a multi-component system are certified by test, the stiffness of the supporting structure in the component to point of anchorage shall be replicated in the test setup. Alternately, the input motions for the test setup may be modified to account for this stiffness using a rational analytical method.
13. Test results of a surface mounted component with rigid and isolated supports can be used to justify installation with intermediate (semi-rigid) support conditions, provided mounting orientation (e.g., installation is wall mounted, etc.) is similar and the only difference is in the attachments.
14. Prior to testing components for special seismic certification, it is recommended that the manufacturer's representative and the California licensed Structural Engineer in responsible charge for the OSP have a pre-test meeting with HCAI, to review:
 - a. Test plan that will justify the scope of approval.
 - b. Scope of pre-approval.
 - c. Test standard and reporting requirements.
 - d. Requirements for certificate of compliance and label.

15. Where a listing of major sub-components are required by ICC-ES AC 156 Section 5.2.2.1, sub-component identification, one level down from the main component, in the component/sub-component hierarchy, may be considered adequate for the purposes of the OSP Program, provided the component identification conforms to the following criteria:

- a. Identification numbers for the sub-component (also known as part or model number) uniquely identify configuration, manufacturers, and materials of sub-components inside.
- b. The primary vendors of the manufacturer for the sub-component manufacturer need to be identified, not their sub-vendors.

Exception: Components exempt from certification requirements by exception to CBC Section 1705A.13.3.1 need not be listed.

16. Multiple products or product lines can be submitted through a single OSP application. Grouping of the products for approval is up to the applicant.

Implementation for HCAI Projects

17. The registered design professional shall specify on the construction documents the requirements for special seismic certification for equipment and components in accordance with CBC Section 1705.13.3 or 1705A.13.3.

18. The manufacturer of **each** equipment/component that requires special seismic certification shall submit a **certificate of compliance** as required by CBC Sections 1704.5, 1704A.5, and ASCE 7 Section 13.2.2 on **each** project. OSP submittals meet the certificate of compliance requirement. Evidence demonstrating compliance with certification requirements shall be submitted for approval to HCAI after review and acceptance by a registered design professional.

For equipment and components with an OSP:

- a. Provide the OSP number on the drawings – a copy of the OSP application and supporting documents is not required on the construction documents.
- b. Specify the model number of the equipment and components used on the construction documents as it appears in the OSP.
- c. OSP's do not certify supports and attachments. The registered design professional must provide support and attachment details and calculations for the equipment and components in accordance with CBC/ASCE 7.
- d. For custom equipment, such as custom air handling units, that do not have model numbers assigned in the OSP, submittal to HCAI shall include:
 - i. Schematic drawings equivalent to those in the OSP,
 - ii. Listing of major sub-assemblies and sub-components, and
 - iii. average area/floor loading.

19. Each equipment/component shall have a label as required by CBC Section 1703.5 or 1703A.5.

20. In accordance with CBC Section 1705.12.4 or 1705A.12.4, the special inspector shall verify:
- a. **Label** for conformance with the certificate of compliance.
 - b. **Anchorage and mounting** for conformance with the certificate of compliance and construction documents.
21. Construction documents for OSHPD 2 buildings without sub-acute beds shall explicitly state that the skilled nursing facility or intermediate care facility does not admit patients needing sustained electrical life-support equipment as required by CBC Section 1705.13.3.1.
22. Imaging equipment needed for diagnostic services of emergency/trauma patients, a minimum of one such equipment.

Validity

23. All OSP approvals are valid for a period of 6 years beyond the approval date. For expired OSP approvals see Appendix B.
24. An OSP is void when:
- a. Design, construction, or quality control/quality assurance method is materially altered as defined in the California Administrative Code (CAC) Section 7-111, or
 - b. Component strength, stiffness, size, weight, materials, support, orientation, or manufacturer are changed/altered and are no longer equivalent to what was approved in the OSP.
25. For an OSP to remain valid:
- a. Seismic enhancements made to test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.
 - b. Component **supports** shall adhere to the following:
 - i. *Spring vibration isolator and snubber supports* shall be at the same mounting locations or at additional locations than tested, with either the tested isolators used within the OSP, or alternate HCAI approved cyclic tested isolators, whose capacities equal or exceed the component seismic demands per ASCE 7-16 §13.3.
 - ii. Supports, *other than spring vibration isolators*, e.g., air conditioning unit curbs, coil support frames, suspended imaging equipment supports, etc., shall be at the same mounting locations or at additional locations than tested, with a minimum equivalent stiffness, i.e., rigid or flexible as tested, whose capacities equal or exceed the component seismic demands per ASCE 7-16 §13.3.
 - c. Component **attachments** from the component and/or supports to the hospital structure shall be at the same mounting locations or at additional locations than tested, unless supports allow for a reduced number of attachments, whose capacities equal or exceed the component seismic demands per ASCE 7-16 §13.3.
 - d. Component **mounting orientation** shall be equivalent to the tested orientation, e.g., base/floor mounted, wall, ceiling, duct, etc.

26. Manufacturers can make limited changes to their certified products with OSP without retesting, provided:
- a. The units after the alteration are within the test/approval limits,
 - b. Manufacturers and materials of major sub-assemblies and sub-components are not altered, and
 - c. Configuration is similar to the tested units.
- Retesting will only be required when design, construction, or quality control/quality assurance are materially altered in a manner that affects post-earthquake structural integrity or functionality of the unit or system.

Existing Components and their Maintenance

27. Existing components that have been installed in a facility and/or their maintenance do not trigger special seismic certification requirements in accordance with CEBC Section 302A.4
28. Relocation of existing components **within the same facility** does not trigger special seismic certification requirements provided the existing components meet the requirements as follows:
- a. Strength and stiffness of the supports and attachments are not altered.
 - b. Configuration is not changed.
 - c. Installation is at the same or lower level (e.g., ground level component is not moved to the roof level, etc.), so that seismic design forces including in-structure amplification are not increased.
 - d. Relocation (existing and new location) is shown on the drawing.
29. Nonstructural Performance Category (NPC) upgrade does not trigger special seismic certification requirements since NPC requirements in CAC Chapter 6 are limited to anchorage for position retention only.
30. Subcomponent replacement within existing components shall adhere to the following:
- a. If the existing component does not have special seismic certification, replaced subcomponents do not require certification.
 - b. If the existing component does have special seismic certification, replaced subcomponents shall adhere to the requirements within 2019 CBC §1705A.13.3.1 Exception #7, with the label remaining valid.

OSP Application Submittal Requirements

31. An OSP application, along with the Group 1 and Group 2 documents below, shall be submitted electronically via the eServices Portal, located on the HCAI website at the following link:

<https://esp.HCAI.ca.gov/CitizenAccess/>

32. Attachments for OSP application will be separated into two groups.

- Group 1- Attachments that will be posted on the HCAI website:
 - List of equipment and components that shall be certified:
 - Identification numbers (model numbers or part numbers).
 - Size ranges (length, width, and height ranges).
 - Weight ranges.
 - S_{DS}, limited to one value for each z/h, per distinct product line.
 - z/h, limited to 1 and 0.
 - List of major sub-assemblies and sub-components to be certified, when required by ICC-ES AC 156 Section 5.2.2.1.
 - Description of Unit Under Test (UUT) in accordance with ICC-ES AC 156 (for information only):
 - Detailed description of UUT including UUT configuration, listing of major sub-assemblies and sub-components, and any other applicable product differentiation.
 - Description of mounting method and configuration, including fastenings as applicable.
 - Photograph of the component set-up on the shake table.
 - Shake table test seismic parameters.
 - Resonance frequencies in each of the three directions.
 - Statement to verify that units were full of content during tests, if applicable.
 - Statement to verify that the units maintained structural integrity and functionality, after the ICC-ES AC 156 test.
- Group 2 - Attachments that are required for review but will not be posted at HCAI website:
 - Copy of test facility test report(s).
 - Verification of similarities for interpolated units in the form of manufacturer's catalog and/or schematic cut sheets.

- Where a listing of major sub-assemblies and sub-components are not required by ICC-ES AC 156 Section 5.2.2.1 or identification numbers are used as proxy for materials, a certification by the manufacturer that explicitly addresses all four items listed below shall be included:
 1. Part numbers for the unit or system uniquely identify the configuration, manufacturers, and materials of the sub-components within the unit or system (the part number uniquely identifies the unit or system).
 2. Sub-component manufacturers and materials within the two tested units used for interpolation are the same*.
 3. Sub-component manufacturers and materials within the interpolated units are the same* as the two tested units used for interpolation.
 4. Configuration of the interpolated units is similar to the two tested units used for interpolation.

**Two materials are considered the “same” when they have a similar ASTM standard (or equivalent), material, and grade that define their mechanical properties within a given range. For example, if one subcomponent is built using ASTM A36 and another of ASTM A1018, they are considered to be constructed of the “same” material.*

Original signed
Chris Tokas

8/03/2022
Date

APPENDIX A

2019 CALIFORNIA BUILDING CODE SECTIONS

CHAPTER 2 DEFINITIONS

SECTION 202 - DEFINITIONS

ACTIVE EQUIPMENT/COMPONENT. *[OSHPD 1, 1R, 2, 4 & 5] Equipment/Component containing moving or rotating parts, electrical parts such as switches or relays, or other internal components that are sensitive to earthquake forces and critical to the function of the equipment.*

[A] APPROVED AGENCY. An established and recognized agency regularly engaged in conducting tests, furnishing inspection services, or furnishing product certification when such agency has been approved by the building official.

CERTIFICATE OF COMPLIANCE. A certificate stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.

DESIGNATED SEISMIC SYSTEM. Those nonstructural components that require design in accordance with Chapter 13 of ASCE 7 and for which the component importance factor, I_p , is greater than 1 in accordance with Section 13.1.3 of ASCE 7.

[A] LABEL. An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an approved agency and that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency (see Section 1703.5 and "Inspection certificate," "Manufacturer's designation" and "Mark").

[A] LABELED. Equipment, materials, or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material, or product meets identified standards or has been tested and found suitable for a specified purpose.

SIGNIFICANT LOSS OF FUNCTION. **[OSHPD 1 & 4]** Significant loss of function for equipment or components means the equipment or component cannot be restored to its original function by competent technicians after a design earthquake because the equipment or component require parts that are not normally stocked by the owner or not readily available.

SPECIAL INSPECTION. Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with this code and the approved construction documents.

Continuous special inspection. Special inspection by the special inspector who is present when and where the work to be inspected is being performed.

Periodic special inspection. Special inspection by the special inspector who is intermittently present where the work has been or is being performed and at the completion of the work.

SURFACE MOUNTED COMPONENT. [OSHPD 1, 1R, 2, 4 & 5] *As referenced in CBC Section 1705A.13.3.1 Exceptions, component directly attached to only one continuous flat surface of wall, floor or roof, without supports. Surface mounted components are directly attached to a surface by attachments (without any supports) and are not rigidly connected to anything else (e. g. distribution system, other components, etc.).*

CHAPTER 16

STRUCTURAL DESIGN

SECTION 1613 EARTHQUAKE LOADS

1613.4 Component Importance Factors. [OSHPD 1R, 2 & 5] *Nonstructural components designated below shall have a component importance factor, I_p , equal to 1.5:*

- 1. For components that are required for life-safety purposes after an earthquake, including emergency and standby power systems, mechanical smoke removal systems, fire protection sprinkler systems and fire alarm control panels.*
- 2. For medical equipment, required for patient life support.*

CHAPTER 17

SPECIAL INSPECTIONS AND TESTS

SECTION 1704 - SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION

1704.5 Submittals to the building official. In addition to the submittal of reports of *special inspections* and tests in accordance with Section 1704.2.4, reports and certificates shall be submitted by the owner or the owner's authorized agent to the building official for each of the following:

1. Certificates of compliance for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of an approved fabricator in accordance with Section 1704.2.5.1.
2. Certificates of compliance for the seismic qualification of nonstructural components, supports and attachments in accordance with Section 1705.13.2.
3. Certificates of compliance for designated seismic systems in accordance with Section 1705.13.3.
4. Reports of preconstruction tests for shotcrete in accordance with Section 1908.5.
5. Certificates of compliance for open web steel joists and joist girders in accordance with Section 2207.5.
6. Reports of material properties verifying compliance with the requirements of AWS D1.4 for weldability as specified in Section 26.5.4 of ACI 318 for reinforcing bars in concrete complying with a standard other than ASTM A 706 that are to be welded.

7. Reports of mill tests in accordance with Section 20.2.2.5 of ACI 318 for reinforcing bars complying with ASTM A 615 and used to resist earthquake induced flexural or axial forces in the special moment frames, special structural walls or coupling beams connecting special structural walls of seismic force-resisting systems in structures assigned to Seismic Design Category B, C, D, E or F.

SECTION 1705 - REQUIRED SPECIAL INSPECTIONS AND TESTS

1705.12.4 Designated seismic systems. For structures assigned to Seismic Design Category C, D, E or F, the special inspector shall examine designated seismic systems requiring seismic qualification in accordance with Section 13.2.2 of ASCE 7 and verify that the label, anchorage and mounting conform to the certificate of compliance.

1705.13.3 Designated seismic systems. For structures assigned to Seismic Design Category C, D, E or F and with designated seismic systems that are subject to the requirements of Section 13.2.2 of ASCE 7 for certification, the registered design professional shall specify on the approved construction documents the requirements to be met by analysis, testing or experience data as specified therein. Certificates of compliance documenting that the requirements are met shall be submitted to the building official as specified in Section 1704.5.

1705.13.3.1 Special seismic certification. [OSHPD 1R, 2 & 5]

1. *Special seismic certification shall be required for life-safety components, such as emergency and standby power systems, mechanical smoke removal systems, and fire sprinkler/fire protection systems.*
2. *Medical, mechanical and electrical equipment and components required for life support for patients shall have special seismic certification in accordance with Section 1705A.13.3.*

CHAPTER 17A SPECIAL INSPECTIONS AND TESTS SECTION 1703A – APPROVALS

1703A.1 Approved agency. An approved agency shall provide all information as necessary for the building official to determine that the agency meets the applicable requirements.

1703A.1.1 Independence. An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclose to the building official and the registered design professional in responsible charge possible conflicts of interest so that objectivity can be confirmed.

1703A.1.2 Equipment. An approved agency shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated.

1703A.1.3 Personnel. An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and special inspections.

1703A.4 Performance. Specific information consisting of test reports conducted by an approved agency in accordance with the appropriate referenced standards, or other such information as necessary, shall be provided for the building official to determine that the product, material or assembly meets the applicable code requirements.

[OSHPD 1 & 4] Tests performed by an independent approved testing agency/laboratory or under the responsible charge of a competent approved independent Registered Design Professional shall be deemed to comply with requirements of this section. Test reports for structural tests shall be reviewed and accepted by an independent California licensed structural engineer.

1703A.5 Labeling. Products, materials or assemblies required to be labeled shall be labeled in accordance with the procedures set forth in Sections 1703A.5.1 through 1703A.5.4.

1703A.5.1 Testing. An approved agency shall test a representative sample of the product, material, or assembly being labeled to the relevant standard or standards. The approved agency shall maintain a record of the tests performed. The record shall -provide sufficient detail to verify compliance with the test standard.

1703A.5.2 Inspection and identification. The approved agency shall periodically perform an inspection, which shall be in-plant if necessary, of the product or material that is to be labeled. The inspection shall verify that the labeled product, material or assembly is representative of the product, material or assembly tested.

1703A.5.3 Label information. The label shall contain the manufacturer's identification, model number, serial number or definitive information describing the performance characteristics of the product, material or assembly and the approved agency's identification.

1703A.5.4 Method of labeling. Information required to be permanently identified on the product, material or assembly shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed.

SECTION 1705A - REQUIRED SPECIAL INSPECTIONS AND TESTS

1705A.12.4 Special Inspection for Special Seismic Certification. For structures assigned to Seismic Design Category D, E or F, the special inspector shall examine *equipment and components* requiring *special seismic certification* in accordance with *Section 1705A.13.3 or ASCE 7 Section 13.2.2* and verify that the label, anchorage and mounting conforms to the certificate of compliance.

1705A.13.3 Special Seismic Certification. For structures assigned to Seismic Design Category D, E or F, *equipment and components* that are subject to the requirements of Section 13.2.2 of ASCE 7 for *special seismic certification*, the registered design professional shall specify on the approved construction documents the requirements to be met by analysis or testing as specified therein. Certificates of compliance documenting that the requirements are met shall be submitted to the building official as specified in Section 1704A.5.

Active or energized equipment and components shall be certified exclusively on the basis of approved shake table testing in accordance with ICC-ES AC 156 or equivalent shake table testing criteria approved by the building official. Minimum of two equipment and components shall be

tested for a product line with similar structural configuration. Where a range of products are tested, the two equipment and components shall be either the largest and a small unit, or approved alternative representative equipment and components.

Exception: *When a single product (and not a product line with more than one product with variations) is certified and manufacturing process is ISO 9001 certified, one test shall be permitted.*

For a multi-component system, where active or energized components are certified by tests, connecting elements, attachments, and supports can be justified by supporting analysis.

1705A.13.3.1 [OSHDP 1 & 4] *Special seismic certification shall be required for the following systems, equipment, and components:*

- 1. Emergency and standby power systems.*
- 2. Elevator equipment (excluding elevator cabs).*
- 3. Components with hazardous contents.*
- 4. Exhaust and Smoke control fans.*
- 5. Switchgear and Switchboards.*
- 6. Motor control centers.*
- 7. Imaging equipment needed for diagnostic services of emergency/trauma patients, a minimum of one such equipment.*
- 8. Air conditioning units excluding Variable/Constant Air Volume (VAV/CAV) boxes up to 75 lbs.*
- 9. Air handling units.*
- 10. Chillers, including associated evaporators, and condensers.*
- 11. Cooling Towers.*
- 12. Transformers.*
- 13. Electrical substations.*
- 14. UPS and batteries.*
- 15. Panelboards as defined in the California Electrical Code (CEC) Article 100.*
- 16. Industrial Control panels as defined in the California Electrical Code (CEC) Article 100.*
- 17. Power isolation and correction systems.*
- 18. Motorized surgical lighting systems.*
- 19. Motorized operating table systems.*
- 20. Internal communication servers, routers, and switches failure of which could impair the continued operation of the facility.*
- 21. Medical gas and vacuum systems.*
- 22. Electrical busways as defined in UL 857.*

23. *Electrical control panels powered by the life safety branch in accordance with the California Electrical Code (CEC) Article 517.32 or the critical branch in accordance with the California Electrical Code (CEC) Article 517.33.*

Exceptions:

1. *Equipment and components weighing not more than 50 lbs. supported directly on structures or surface mounted on equipment or components that are not required to have special seismic certification by this section.*
2. *Mobile equipment and components.*
3. *Pipes, ducts, conduits, and cable trays, excluding in-line equipment and components.*
4. *Underground tanks.*
5. *Electric motors, base-mounted horizontal pumps, and compressors.*
6. *Base-mounted vertical pumps up to 20 hp.*
7. *Certified subcomponents up to operating weight of 10 lbs.*
8. *Components where importance factor, I_p , is permitted to be 1.0 by this code.*
9. *Emergency generators up to 25 kilowatts.*
10. *Equipment and Components used for clinical trials only.*
11. *Elevator machines and governors.*
12. *Temporary and Interim equipment.*

For Exceptions 5, 6, and 7:

Exempt subcomponents, which are an integral part of equipment that require special seismic certification, shall be tested attached to the equipment. Exempt subcomponents shall be permitted to be substituted without testing, provided that the substituted subcomponent relative to the certified subcomponent has:

1. *Similar configuration with equivalent function.*
2. *Supports and attachments of similar configuration with equivalent strength and stiffness.*
3. *Same attachment location.*
4. *Changes in dimensions, center of gravity, and mass, of not more than 10 percent of the certified subcomponent and still meets Exception 5, 6, or 7.*
5. *Manufacturing process with ISO 9001 certification.*

ASCE STANDARD ASCE/SEI 7-16

AMERICAN SOCIETY OF CIVIL ENGINEERS MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

CHAPTER 11 SEISMIC DESIGN CRITERIA 11.2 DEFINITIONS

ATTACHMENTS: Means by which nonstructural components or supports of nonstructural components are secured or connected to the seismic force-resisting system of the structure. Such attachments include anchor bolts, welded connections, and mechanical fasteners.

COMPONENT: A part of an architectural, electrical, or mechanical system.

COMPONENT, NONSTRUCTURAL: A part of an architectural, mechanical, or electrical system within or without a building or nonbuilding structure.

DESIGNATED SEISMIC SYSTEMS: Those nonstructural components that require design in accordance with Chapter 13 and for which the component importance factor, I_p , is greater than 1.0.

SUPPORTS: Those members, assemblies of members, or manufactured elements, including braces, frames, legs, lugs, snubbers, hangers, saddles, or struts, and associated fasteners that transmit loads between nonstructural components and their attachments to the structure.

CHAPTER 13 SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS 13.2 GENERAL DESIGN REQUIREMENTS

13.2.2 Special Certification Requirements for Designated Seismic Systems. Certifications shall be provided for designated seismic systems assigned to Seismic Design Categories C through F as follows:

1. Active mechanical and electrical equipment that must remain operable following the design earthquake ground motion shall be certified by the manufacturer as operable whereby active parts or energized components shall be certified exclusively on the basis of approved shake table testing in accordance with Section 13.2.5 or experience data in accordance with Section 13.2.6 unless it can be shown that the component is inherently rugged by comparison with similar seismically qualified components. Evidence demonstrating compliance with this requirement shall be submitted for approval to the authority having jurisdiction after review and acceptance by a registered design professional.

2. Components with hazardous substances and assigned a component importance factor, I_p , of 1.5 in accordance with Section 13.1.3 shall be certified by the manufacturer as maintaining containment following the design earthquake ground motion by (1) analysis, (2) approved shake table testing in accordance with Section 13.2.5, or (3) experience data in accordance with Section 13.2.6. Evidence demonstrating compliance with this requirement shall be submitted for approval to the authority having jurisdiction after review and acceptance by a registered design professional.
3. Certification of components through analysis shall be limited to nonactive components and shall be based on seismic demand considering R_p/I_p equal to 1.0.

**ACCEPTANCE CRITERIA FOR SEISMIC CERTIFICATION BY
SHAKE-TABLE TESTING OF NONSTRUCTURAL COMPONENTS
ICC-ES AC156
3.0 DEFINITIONS**

3.13 Subassemblies: A grouping or assemblage of sub-components and/or structural elements that require attachment to the component's primary force resisting system to achieve structural stability.

3.19 Unit Under Test (UUT): The component item to be certification-tested.

APPENDIX B

FREQUENTLY ASKED QUESTIONS

1. Can equipment listed within an expired HCAI Special Seismic Certification Preapproval (OSP) be used on 2019 CBC HCAI projects?

Yes, provided the following conditions are met:

- a) Ground motions at the site under the 2019 CBC do not exceed the upper bound ground motions for the expired OSP.
- b) Verification showing the equipment meets all the requirement of the 2019 CBC including quality control, testing, and labeling as required by 2019 CBC Chapter 17A.

Note: If subcomponents or manufacturers have changed, documentation of shake table testing of the new component is required and shall be included with the HCAI project submittal to be reviewed and approved by HCAI, prior to installation.

2. A project designed to meet the requirements of the 2016 CBC was submitted for review on October 10, 2019. The subject project, because of its size (comprised by several increments) is currently under review. The OSP number for equipment to be installed under the subject project expired on December 31, 2019. Can this equipment still be permitted and installed under this project with the expired OSP number?

Yes.

3. Can equipment not listed within an OSP be used on HCAI projects?

Yes, provided a project specific submittal is approved by HCAI, prior to installation. Project specific submittals shall be approved by a licensed California Structural Engineer. The submittal requirements are as follows:

- a) Equipment shake table test report(s).
 - i. For equipment that is interpolated or extrapolated between two tested units, the submittal shall include both equipment tests for the two bookend test units.
- b) Structural calculations for the equipment support and attachments.
- c) Construction drawings depicting equipment installation on project plans, attachment details, and equipment model number, weight, and dimensions.
- d) Equipment satisfies the labeling requirements in 2019 CBC §1703A.

4. Do site/project specific approvals require shake table testing and documentation similar to the requirements for an OSP?

All project (site/project specific) submittals are required by law to meet the requirements of the code under which that project is submitted and be approved by HCAI, prior to installation. That means, equipment requiring special seismic certification, needs substantiation by shake table testing that the component will remain functional and structurally stable for the ground motions specified for the specific site. As part of the seismic certification/qualification substantiation, the signed shake table test reports by the testing lab and any computational substantiation for the

component used/specified for the specific project is required to be submitted under the stamp and signature of the SEOR or his delegate SEOR. Documentation need not necessarily conform with all the requirements of the OSP program unless the manufacturer would like it to be converted to an OSP at a later time.

5. What is a “component”?

Component and nonstructural component are defined in ASCE 7-16 Section 11.2, which are shown in Appendix A of this PIN.

Component: A part of an architectural, electrical, or mechanical system.

Component, nonstructural: A part of an architectural, mechanical, or electrical system within or without a building or nonbuilding structure.

6. What is a “sub-assembly”?

Subassembly is defined in ICC-ES AC 156 Section 3.13, which is shown in Appendix A of this PIN.

Sub-assemblies: A grouping or assemblage of sub-components and/or structural elements that require attachment to the component’s primary force resisting system to achieve structural stability.

7. What is a “sub-component”?

A portion of the equipment or component that is uniquely identified by a part number (also known as model number or identification number).

8. What is a “system”?

A group or combination of interrelated, interdependent, or interacting elements, equipment, or components forming a collective entity. Also, referred to as multi-component system.

9. How does someone establish equivalence?

Please see the CBC Section 104.11.

The material, method or work offered, is for the purpose intended, at least the equivalent of that prescribed in code in quality, strength, effectiveness, fire resistance, durability and safety.

10. Definition of “component” in ASCE 7-16 Section 11.2 seems to refer to equipment, component, sub-component, and sub-assembly. Is that correct?

Yes.