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CODE APPLICATION NOTICE (CAN)
H&S Code §129851

SUBJECT

Engineering Judgments

CAN: 2-703.3

Effective: 05/20/2009

Revised: 09/21/2020



CODE SECTION

Section 703.3 and Section 104.11 2019 California Building Code (CBC)

703.3 Methods for determining fire resistance. The application of any of the methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263. The required fire resistance of a building element, component or assembly shall be permitted to be established by any of the following methods or procedures:

1. Fire-resistance designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements as prescribed in Section 721.
3. Calculations in accordance with Section 722.
4. Engineering analysis based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E119 or UL 263.
5. Alternative protection methods as allowed by Section 104.11.
6. Fire-resistance designs certified by an approved agency.

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104.11 Alternative materials, design and methods of construction and equipment.

The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved.

[DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] Alternative system shall satisfy ASCE 7 Section 1.3, unless more restrictive requirements are established by this code for an equivalent system.

[OSHPD 1, 1R, 2, 4 & 5] Alternative systems shall also satisfy the California Administrative Code, Section 7-104.

104.11.1 Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

PURPOSE

The purpose of this Code Application Notice (CAN) is to establish guidelines for the preparation, submittal, and review of Engineering Judgments (EJ).

BACKGROUND

All elements of a tested and listed fire-resistance-rated assembly, including the assembly in which the system is installed, constitute a specific and inseparable engineered unit that must be utilized and constructed as such. Fire-resistance-rated systems and designs are tested and listed by independent testing agencies and the specific elements of each design become part of the listing.

During plan review and prior to the issuance of a building permit an engineering analysis (Engineering Judgement or EJ) based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E119 or UL 263 is an approach that is allowed by code and therefore, does not constitute an Alternate Method of Construction.

An EJ based on a comparison of building element designs having fire-resistance ratings as determined by the test procedures set forth in standards other than ASTM E119 or UL 263 is an approach that is allowed by code; however, an EJ based on standards other than ASTM E119 or UL 263 shall be reviewed in accordance with Section 104.11 as an alternative materials, design and methods of construction and equipment.

Beyond the listed systems and EJs approved in plan review, there is often a need for a means to properly address unanticipated construction configurations that fall outside of the envelope of tested. Such conditions often cannot be redesigned and must not be ignored; therefore, the construction industry addresses these types of occurrences through the issuance of EJs that recommend alternative methods to ensure performance during fire conditions. Because these recommendations are not based upon identical fire testing of the specific design in question, it is important that they be developed in accordance with sound engineering practice to ensure that life safety and structural integrity concerns are not compromised. Engineering Judgments are not a substitute for tested, listed assemblies; therefore, tested, listed assemblies must be used when they are available for the specific condition(s).

INTERPRETATION

Engineering Judgments, whether submitted during initial project plan review or after plan approval, shall be prepared using the following guidelines:

- EJs shall be prepared and signed by the manufacturer's qualified technical personnel or by a registered Professional Engineer, Fire Protection Engineer, or an approved independent testing agency that provides listing services for firestop systems in concurrence with the manufacturer.
- Existing tested, listed systems that are comparable in application or cover equivalent conditions shall be used as the basis for EJs.
- When necessary, independent testing laboratories (i.e., UL, OPL, etc.) or empirical evidence from recognized engineering resources, accepted engineering principles, fire science, and fire testing guidelines (e.g. ASTM E2032 *Standard Guide for Extension of Data from Fire Endurance Tests* conducted in accordance with ASTM E119 or ASTM E2750 *Standard Guide for Extension of Data from Firestop Penetration System Tests* conducted in accordance with ASTM), shall be used to support interpretations and/or interpolations that are used as a basis for the EJ.
- The preparer of an EJ shall be knowledgeable regarding the elements of the construction to be protected, probable behavior of that construction, and the recommended system protecting it.
- The EJ shall apply only to the specific conditions and configurations for which it was produced and shall be based upon reasonable performance expectations for the recommended fire-resistance-rated system for the specific application.
- EJs are approved for a specific condition on a project-by-project basis and shall not be used for another project or condition without thorough and appropriate review of all aspects of the EJ as it relates to that project's circumstances.
- EJs shall be presented in a narrative format that clearly describes all aspects of the design, including, but not limited to the hourly rating required, a complete description of all critical elements for the fire-resistance-rated system configuration, any non-standard conditions, clear directions for the installation of the recommended system and the fire-resistance-rated design(s) that the EJ is based on. Detailed drawings shall be included when deemed necessary to clearly illustrate the assembly. EJs shall clearly state that the recommended system is an engineering judgment and is NOT a listed system.
- EJs shall indicate the facility name, address, title of project, OSHPD project number, and include the issuer's name, title, address, telephone number, and signature.

DOCUMENTATION

- All EJs that are not in compliance with Item 4 of Section 703.3 shall be submitted for review and approval in accordance with Title 24, Part 1, Section 7-104 “Alternate Method of Compliance” (AMC).

- An AMC approved by the Office after start of construction that constitutes a material change to approved construction documents shall be submitted to the Office in accordance with Title 24, Part 1, Section 7-153(a) “Changes in the Work” in the form of an Amended Construction Document (ACD). Multiple EJs that have been approved as AMCs may be submitted as a single ACD.

Original signed	9/02/2020
Paul Coleman	Date