



Conduct of Engineering Formal Clarification or Interpretation Request

Assigned by Responder: Clarification Interpretation Tracking number CIR-16-004

Clarify	To make the CoE document or its references understandable and free from confusion
Interpret	To formally provide an acceptable method of compliance with the document or references

1.0 Request

Brief Title: Clarification of Design Approach of Commercially Fabricated Buildings using in multiple-State Jurisdictions			
Affected Document Title, Number, and Rev. No. ASCE7-10, Chapter 11, Section 11.1.3			
Section/Article/Para and Existing Wording			
11.1.3 Applicability Structures and their nonstructural components shall be designed and constructed in accordance with the requirement of the following sections based on the type of structure or component:			
a. Buildings: Chapter 12			
b. Nonbuilding Structures: Chapter 15			
c. Nonstructural Components: Chapter 13			
d. Seismically Isolated Structures: Chapter 17			
e. Structures with Damping Systems: Chapter 18			
Buildings whose purpose is to enclose equipment or machinery and whose occupants are engaged in maintenance or monitoring of that equipment, machinery or their associated processes shall be permitted to be classified as nonbuilding structures designed and detailed in accordance with Section 15.5 of this standard.			
Inquiry (describe ambiguity or issue)			
For ASCE 7 Risk Category I, II and III (Table 1.5-1) structures and designated as ML-4 structures that are not included as credited SSCs in nuclear or radiological safety documentation: How should commercially fabricated building-like structures that are not one of the type categories described in Chapter 12 be designed/treated?			
Requestor (LANL employee)	Z Number	Organization	Date
Douglas E. Volkman	099106	ES-EPD	07/05/2016

2.0 Response by Safety (or Security) Management Program Owner Representative (SMPOR/POC)

<p>As a general clarification, the designation of a commercial building that is marketed nationally is termed “commercial building structure.” Typically, these structures are factory built, transported to the site on trailers and are anchored to engineered foundations. At LANL, the intended purpose for these commercial building structures is to serve as storage facilities, control facilities for experimental work, weather proofing structures for materials, equipment or piping systems, security portals for entry access, etc. These structures are sometimes occupied, but not continuously. The occupancy is limited for the special purpose of the facility.</p> <p>Commercial building structures are those that have building geometries and framing systems that may be different from the broader class of occupied structures addressed in ASCE 7, Chapter 12. If this is the case, these buildings are treated as those structures that are designed and detailed in accordance with ASCE 7 Section 15.5 for non-building structures similar to buildings, as stipulated in Section 11.1.3. However, if a nationally marketed structure type does not fit into the categories listed in Chapter 12 or in Section 15.5, ASCE 7 Section 15.6 covering non-building structures not similar to buildings shall be used as the default structure type under the listing of “All other self-supporting structures, tanks, or vessels not covered above or by reference standards that are not similar to buildings.”</p> <p>The limited nature of the occupancy associated with these buildings reduces the life safety risk associated with their performance in natural phenomena hazards such as wind and earthquakes, and therefore appropriately applies to these classes of structures as implied in the text of ASCE 7, Section 11.1.3. This clarification of the provisions of ASCE 7-10, Section 11.1.3, to cover both Section 15.5 and the default structure reference of Section 15.6 is necessary to cover commercial</p>

building structures in which hybrid structural systems, such as when structural steel and cold formed members are used concurrently, or other non-listed structural types that are commonly fabricated and marketed nationally.

This clarification is in keeping with ASCE 7-10, Section 11.1.4 Alternate Materials and Methods of Construction, which states that “alternate materials and methods of construction to those prescribed in the seismic requirements of this standard shall not be used unless approved by the authority having jurisdiction. Substantiating evidence [as described in this clarification] shall be submitted demonstrating that the proposed alternate will be at least equal in strength, durability, and seismic resistance for the purpose intended.” This clarification is applicable only to ASCE 7 Risk Category I, II and III (Table 1.5-1) structures and designated as ML-4 structures that are not included as credited SSCs in nuclear or radiological safety documentation.

Name	Z Number	Signature	Date
Michael W. Salmon	115793	Signature on file	7/5/16

3.0 SMPO Approval (Standards Manual and code and regulation matters only, otherwise N/A)

Comments:

These structures are comparatively small with respect to normal building structures and have inherent strength that is not always accounted for in normal engineering calculations. Given that they are transported to the site on trailers, they are essentially load tested while in transport through road vibration and wind resistance. This provides added assurance of acceptable performance.

Approval signifies approval by the “authority having jurisdiction”, the Laboratory Building Official, for use of Commercial Building Structures consistent with ASCE -10, Section 11.1.4, Alternate Materials and Methods of Construction, for the following vendors: MSSI, ARMAG, and US Chemical. Approval assumes that Commercial Building Structures are engineered and that all such structures have design documents that have been appropriately stamped by a registered professional engineer.

Name	Z Number	Signature	Date
Lawrence K. Goen	106351	Signature on file	7-5-16

Distribution (may be electronic): Requestor, SMPOR, SMPO, CENG-OFF Program POC