

Seismic Analysis and Retrofit of Existing Department of Defense Structures in Accordance with the Unified Facilities Criteria

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The seismic analysis and retrofit design of existing Department of Defenses (DoD) structures in accordance with the Unified Facilities Criteria (UFC) includes special challenges often not found in non-government owned existing structures. In addition to complying with the current versions of ASCE/SEI Standard 31 (ASCE 31-03), *Seismic Evaluation of Existing Buildings* and ASCE/SEI Standard 41 (ASCE 41-06), *Seismic Rehabilitation of Existing Buildings*, DOD structures must comply with other requirements such as Anti-Terrorism and Force Protection (AT/FP) measures that may either compliment or be at odds with seismic requirements.

During any major renovation project, the seismic evaluation of DoD structures is required. Even in moderate regions of seismicity outside the West Coast, seismic evaluation and retrofit requirements can be triggered by ICSSC RP6, *Standards of Seismic Safety for Existing Federally Owned and Leased Buildings* as referenced by the UFC documents when they may not have been triggered under the International Building Code and/or the International Existing Building Code.

While engineers and designers may be comfortable with the use of ASCE 31-03 and 41-06 for the seismic analysis and retrofit design of existing buildings, the UFC AT/FP requirements may be foreign to them. Care must be taken to meet both the seismic and AT/FP requirements. Potential retrofit solutions can achieve the performance objectives of both the seismic and AT/FP requirements. However, on occasion, the seismic and AT/FP requirements can compete on both engineering and “political” fronts.

Design teams must also be aware of the financial implications of the DoD seismic evaluation and retrofit requirements. A/E and Design Build teams not familiar with the DOD criteria can be blindsided by the additional costs associated with the seismic requirements that exceed those typically associated with “code level” design. This can often lead to issues with both the overall project budget and the design budget if the initial estimates and fees were not developed with the knowledge of potential seismic issues.

This paper will examine the seismic evaluation and retrofit of existing DOD structures from a code perspective while also discussing the implications of competing design criteria and the financial impacts to the overall project budget.

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