USING ASCE 7-10 PERFORMANCE TARGETS TO MANAGE SEISMIC RISK IN THE LEGAL ARENA

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Schematics courtesy of Magnusson Klemencic Associates
THE RISK CATEGORY SHOULD BE BASED ON THE CONSEQUENCES OF THE FAILURE OF THE STRUCTURE DURING AN MCE EARTHQUAKE
A structure (such as a missile command center) belongs in DOD Risk Category V when it has certain "national security" characteristics.

Because a Risk Category V structure must remain virtually elastic during an MCE earthquake, the "Maximum Probability" that a Risk Category V structure will

- sustain total or partial structural collapse is less than one percent; and

- endanger individual lives is minimal.
A structure belongs in Risk Category III if its failure during an earthquake has the potential

- to pose a substantial risk to human life; or
- to cause a "substantial economic impact"; or
- to cause "mass disruption of day-to-day civilian life."
During an MCE earthquake, the "Maximum Probability" that a Risk Category III structure will

- sustain total or partial structural collapse is 6 percent; and

- endanger individual lives is 15 percent.
A structure belongs in Risk Category IV if

- its failure during an earthquake has the potential to pose a substantial hazard to the community; or
- it is an "essential facility."
During an MCE earthquake, the "Maximum Probability" that a Risk Category IV structure will

- sustain total or partial structural collapse is 3 percent; and

- endanger individual lives is 10 percent.
During an MCE earthquake, the "Maximum Probability" that a Risk Category II structure will
- sustain total or partial structural collapse is 10 percent; and
- endanger individual lives is 25 percent.
Under the *Myrick* case, in California, adhering to minimum code standards does not immunize the owner from legal claims for poor structural performance during a foreseeable earthquake.

Before a foreseeable earthquake, owners will be expected to discuss with their structural consultants which Risk Category performance targets should be followed. Both should know what their testimony will be in any post-earthquake lawsuit.
What will be the testimony about any disconnects between performance targets chosen and the requirements of local codes and ordinances?
Sources:

DOD UFC section 3-310-04

ASCE 7-10 section 1.5 and Tables 1.5-1 and 1.5-2. See also Commentary section C1.51 ("The lives at risk from a structural failure include persons who may be outside the structure in question who are nonetheless put at serious risk by the failure of the structure") and Table C.1.3.1b.