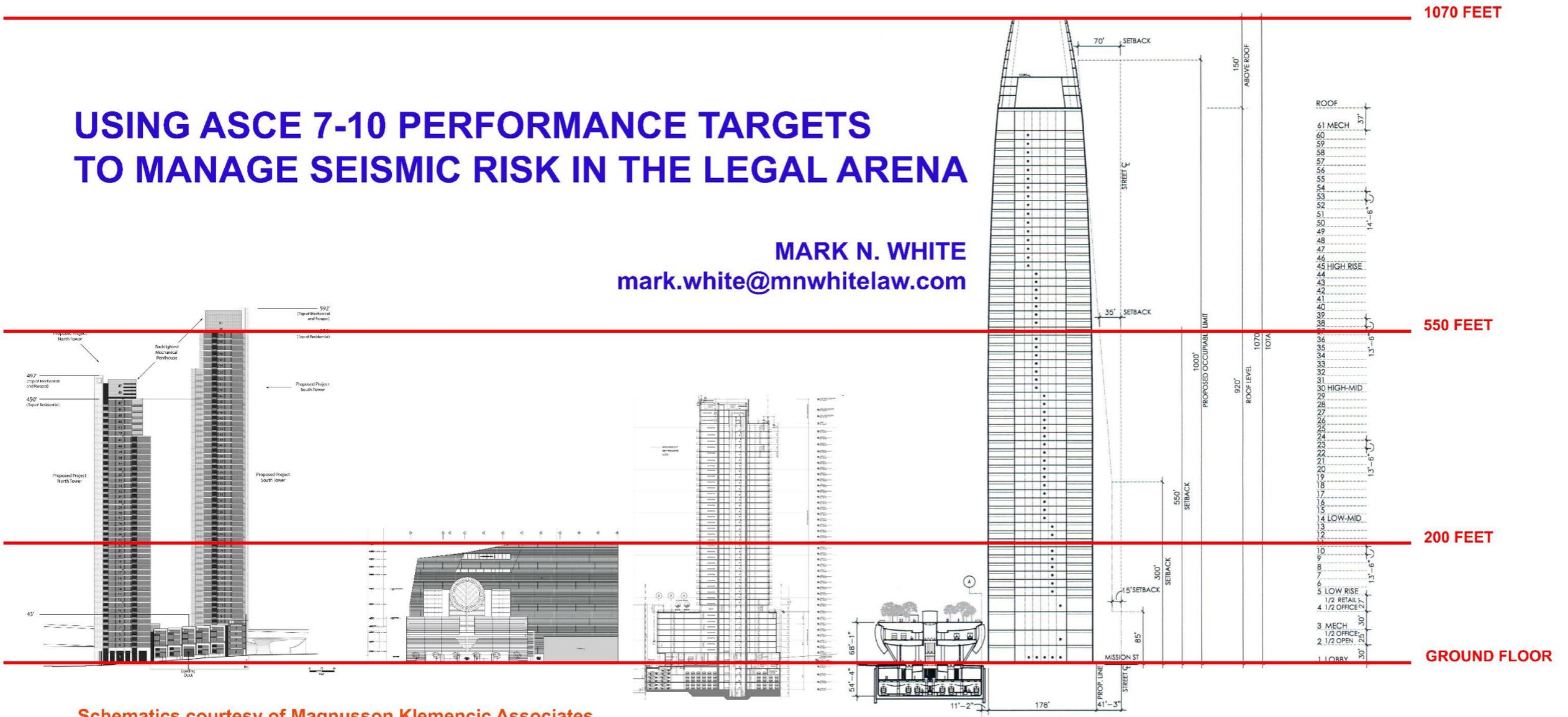


USING ASCE 7-10 PERFORMANCE TARGETS TO MANAGE SEISMIC RISK IN THE LEGAL ARENA

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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.