

## Per 2013 NFPA 13, Control Seismic Force

*Always resist horizontal, possibly resist vertical*

© 2015 Kraig Kirschner  
AFCON

### **Chapter 9 directs that sway bracing be arranged to resist horizontal seismic force.**

Accordingly, it includes precisely defined seismic criteria corresponding to horizontal force and characteristics of bracing unique to each installation.

### **Horizontal seismic force is always applicable to NFPA 13 sway bracing.**

Some 2013 Chapter 9 paragraphs for reference are:

9.3.5.1.1 "... braced to resist both lateral and longitudinal horizontal seismic loads...."

9.3.5.1.3 "Horizontal loads...."

9.3.5.9 "Horizontal seismic loads"

### **Conversely, NFPA 13 does not ignore vertical seismic force.**

Vertical seismic force shall be additionally addressed as appropriate.

Some 2013 Chapter 9 paragraphs for reference are:

9.3.5.1.1 "...braced ... to prevent vertical motion resulting from seismic loads."

9.3.5.10 "...the braces shall be arranged to resist the net vertical reaction..."

### **When NFPA 13 requires bracing to resist vertical seismic force:**

Rigid braces listed in conformance to paragraph 9.3.5.4.1 shall be installed to resist vertical seismic force because they have known ability in compression. Tension-only sway braces listed in conformance to paragraph 9.3.5.4.2, such as cable, have no ability in compression and can not resist vertical seismic force. Since hangers, with or without rod stiffeners, are not sway braces, NFPA 13 requires the installation of an additional rigid sway brace to compliment the cable sway brace in this situation. The frame of reference for this rigid sway brace becomes 0° thru 60° rather than 30° thru 90°.

### **Sway bracing is critical to the performance of the NFPA 13 emergency system.**

Accordingly, the conservative bracing methodology in Chapter 9 insures the viability of the most important mechanical system in any building.



Kraig Kirschner is a third generation fire sprinkler contractor and a journeyman fitter. He is a Principal Member of NFPA 13 - Hanging and Bracing Technical Committee and serves on Standard Technical Panels of UL 203, UL 203A and FM 1950. Kraig is a Life Member of the National Fire Protection Association and was named Person of the Year in 2009 Fire Protection Contractor Magazine. He holds dozens of patents that enhance the installation and application of hangers and sway braces.