



QUICK RESPONSE

*Saving life and property through effective licensing, plan review,
and inspection of fire protection systems.*

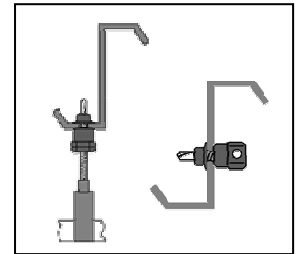
January 2007

Hanger Attachment Points

There are two separate issues to consider when attaching hangers to structural members. One is the adequacy of the hanger assembly and the other is the adequacy of the structural member to support the sprinkler piping per **NFPA** requirements. Although a hanger assembly is listed for fire sprinkler use, the structural component (e.g. bar joist, purlin or metal roof deck) that sprinkler system piping hanger is attached to, must be capable of supporting the required loads.

NFPA 13(99) 6-2.1.3 *Sprinkler piping shall be substantially supported from the building structure, which must support the added load of the water-filled pipe plus a minimum of 250 lb (114 kg) applied at the point of hanging.*

Today's purlins present limited hanger installation locations. The flanges have a minimal load carrying capacity. Most manufacturers' engineering data specifies that their purlin flanges are not capable of supporting fire sprinkler piping. When hanging from the flange of a purlin, substantiation demonstrating the ability of the hanger assembly and the purlin is required.



Beam clamps may be used on the bottom chord of bar joists if listed for this point of attachment and if the point of attachment can support the weight of water filled pipe plus 250 pounds. Typically, bar joists are designed to be top loaded with the top chord in compression and the bottom chord in tension. Torque forces are greater when the piping is attached to the bottom chord. With heavier joists, the difference in load carrying capacity of the top chord versus the bottom chord is minimal. However, with lighter (more common) joists, the difference is significant. Again, substantiation demonstrating the ability of the hanger assembly and the structural member is required.

Metal decking may be used as a point of attachment for sprinkler system hangers provided the two criteria, adequacy of the hanger assembly and the adequacy of the point of attachment using the metal decking, are substantiated. One may infer by **NFPA 13(99) 6-2.1.3 Exception** that a metal deck cannot be used to support system piping unless it complies with this exception. However, this is not the intent. Hanging from a non-conventional point of support or other elements may also be utilized and **NFPA 13** does not prohibit their use provided a registered professional engineer certifies that it will be adequately supported (**NFPA 13(99) 6-1.1 Exception No. 1**).



Quick Response is presented monthly by the
Minnesota State Fire Marshal – Fire Protection Section

www.fire.state.mn.us