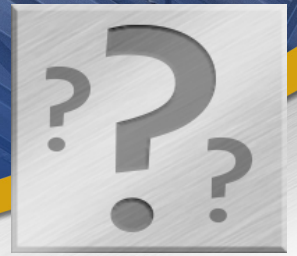




NEW MILLENNIUM
BUILDING SYSTEMS
Building a better steel experience.

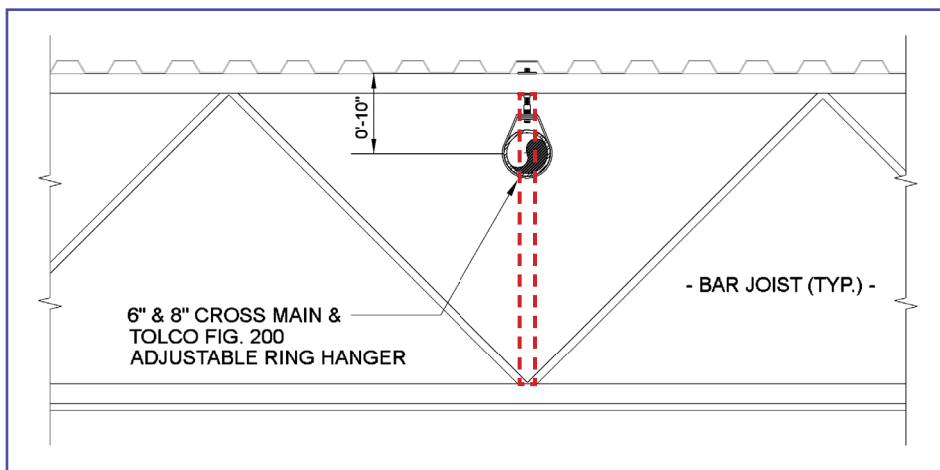


DID YOU KNOW?

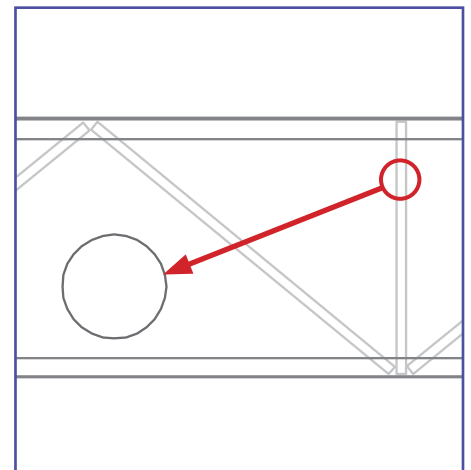
April, 2018

Sprinkler Solution Saves Steel

Trying to squeeze the project development timeline can introduce unintended clashes, putting construction times and project costs at risk. Without the creative thinking of the steel joist design engineer, this sprinkler hanging system could have cost the warehouse owner an additional 20 tons of steel.



In an effort to save time on a warehouse construction project, the sprinkler system was designed prematurely. The drawing did not include a vertical web member (indicated here in red) with which the sprinkler clashed.



The sprinkler hanging system required some creative thinking after the clash was discovered. But moving it to a different location created a whole new set of problems.

The sprinkler system for a warehouse construction project was designed before the loading information from the Engineer of Record was supplied. When New Millennium's design engineer Martha Johnson reviewed the drawings, she noticed they didn't conform to the actual joist webbing configuration for the project.

While the sprinkler system was correctly shown hanging concentrically from the joist chord angles, applying force to both of the angles equally, it overlooked a serious clash. The web pattern drawing did not show a vertical member that should have been positioned there. "Out of a desire to speed the project timeline, the joists had not yet been fully specified, and the webbing configuration was incorrect," says Martha.

Several solutions considered

"Unfortunately, an over-eagerness to design the sprinkler system early caused a clash. Rather than saving time, we had to spend more time trying to fix the problem," Martha says.

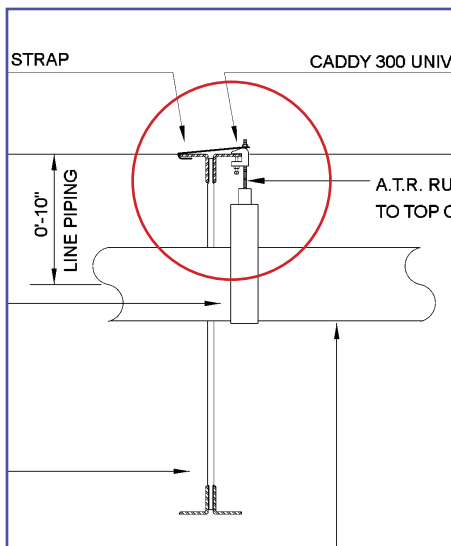
Several options were considered, including one that would hang the system from just one of the top chord angles instead of concentrically across both. While it had the potential to be a workable solution, Martha considered it unsafe because the top chord would have been too shallow to support it. "The project called for steel joists that were just 20 inches deep, with small top chord angles, and would therefore not support this type of non-concentric attachment," Martha says.

continued...

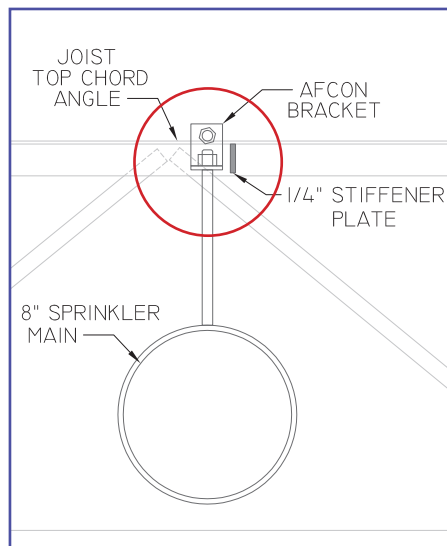
Saving 20 tons

To make this option acceptable, there seemed to be only one solution: upsizing the top chord so that the system could safely hang from one angle without bending it. But Martha was not satisfied with that. "Increasing the top chord would have added 20 tons to the job, and that would be an unacceptable cost increase that we wanted to protect our client from," Martha says. "Above all, we want to save the owner money while staying within code."

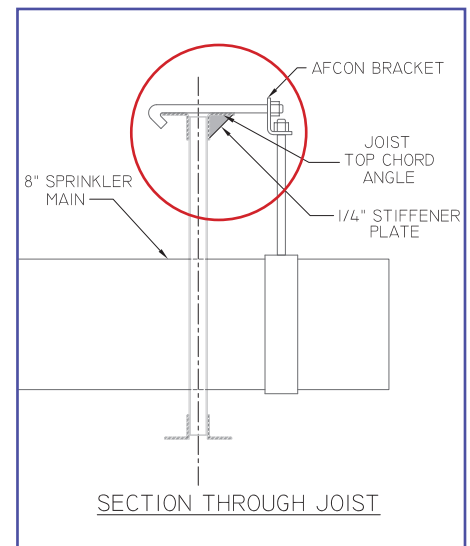
So, the team thought long and hard about this issue and had conference calls with the larger group. Finally, the non-concentric solution that moved the system away from the vertical member clash was approved but with the addition of a 1/4-inch stiffener plate to the chord angle. "The stiffeners help ensure the outstanding leg wouldn't bend. This way, we were able to keep the joists shallow and saved the project from the addition of 20 more tons of steel," Martha says.



This warehouse erection drawing detail shows a sprinkler hanging system option that would have potentially bent the chord angle without heavier steel joists.



This detail shows the 1/4-inch stiffener added to help prevent the outstanding top chord leg from bending from the combined weight of the pipes and water.



The addition of the 1/4\"/>



NEW MILLENNIUM
BUILDING SYSTEMS

Build a better steel experience... visit our website for complete information:

www.newmill.com