

Helping contractors save money and enhance productivity

## Edwards Engineering Saves 1,200 Man-Hours in Federal Building Retrofit with Metraflex Metraloop Expansion Joints



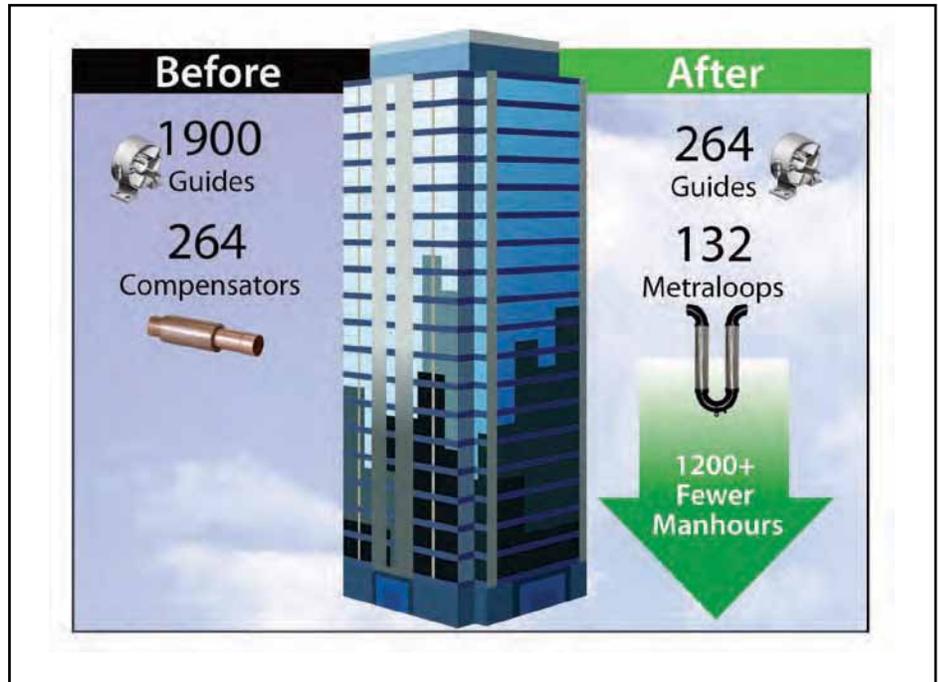
Eager for an alternative to the nearly impossible task of installing 1,900 guides in the renovation of an occupied building, Edwards Engineering found the “perfect solution” by using Metraflex Metraloop expansion joints to simplify installation and reduce labor costs. By using Metraloop joints, Edwards needed only a fraction of the guides, saving over 1,200 man-hours in labor and minimizing the interruption to the people working in the building.

Edwards Engineering of Elk Grove Village, IL, began the renovation of the John C. Kluczynski Federal Building in Chicago in July 2010. Approximately \$11 million in funds from the American Recovery and Reinvestment Act was budgeted to replace the 36-year-old building’s mechanical equipment and riser pipes as part of an overall upgrade to meet new federal guidelines for energy consumption. The 45-story steel-frame Kluczynski Building contains 1,200,000 square feet of space and is one of a three-building complex that also includes a U.S. Post Office and the Everett McKinley Dirksen United States Courthouse.

### Minimizing Disruption in an Occupied Building

“One of the major challenges to upgrading the mechanical system and risers is doing it while the building is occupied,” explained Michael Johnson, Edwards executive vice president. “The system needs to be installed with the least amount of flame and using installation methods that produce as little odor as possible, minimizing disruption to work spaces.

“There are 44 risers in three tiers, for a total of 132 risers in the building,” he continued, “and all the copper risers needed compensators to accommodate over three inches of calculated



By switching to Metraflex Metraloop expansion joints instead of a combination of guides and traditional compensators, Edwards Engineering used a fraction of the number of guides and half the number of movement compensators, saving over 1,200 man-hours in the renovation of Chicago’s Kluczynski Federal Building.

expansion. This meant thousands of guides would be welded to the building frame, which was in direct conflict with minimizing odor and flame.” The drawings called for 264 bellows compensators, two compensators per riser. Per manufacturers’ recommendations, over 1,900 guides would be required to complete the installation.

With the building occupied and the work of federal employees to continue with minimal interruption, finding locations to install all these guides was next to impossible. Risers were not always close enough to structural steel to easily install guides in proper locations. Edwards revisited the drawings to find alternatives to the compensators and guides originally specified. “We needed to determine a much better solution, since welding thousands of guides was really not feasible,” explained Johnson.

“We found the Metraloop expansion loop would easily handle the three-inch movement, plus require significantly fewer guides,” said Johnson. “The Metraloop installation requires only one Metraloop per riser and two guides per Metraloop, for a total of only 264 guides—a fraction of the number of guides previously required.

“The ability of the Metraloop joint to absorb non-linear expansion also assisted in the installation of the piping risers,” he continued. “In addition, the dramatic reduction in the number of guides that needed to be installed meant less interruption where people were working and significantly less labor required to weld all those guides onto the building steel.” Edwards Engineering estimated a savings of 9–12 hours of

## METRAFLEX

continued from page 21

labor per riser times 132 risers, or approximately 1,200+ man-hours.

The flexible Metraloop expansion joint has virtually no anchor loads and requires minimal guiding. Because they are capable of 360-degree movement, Metraloops help compensate for building settlement, thermal expansion, and contraction, protecting the integrity of a piping system during a seismic event.

### *Rapid Response Keeps Project on Track*

Once Edwards determined Metraloops were the best option to reduce impact in the buildings retrofit, they worked with Metraflex to confirm their calculations and expedite the first shipment of Metraloops to the worksite. "We needed to install 2"-4" Metraloop joints and needed to start the installations as soon as possible once we determined the existing drawing specification could not easily be accommodated," explained Johnson. "Metraflex was able to ship the first 24 Metraloops within four days."

As the multi-phase mechanical retrofit continues and more risers have been replaced, the Metraloop expansion joints continue to simplify installation and reduce labor costs. "This was really the perfect solution to our problem," stated Johnson. "If we had to install all those guides, it would have required a lot of disruption and a lot of time. The Metraloop joints have removed the complexity and streamlined the riser installations."

*For more information, visit [www.metraflex.com/metraloop](http://www.metraflex.com/metraloop), or contact Metraflex at [info@metraflex.com](mailto:info@metraflex.com) or 800-631-4347.*

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