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**BILL DUBON
ENGINEERING MANAGER
ITW RED HEAD**



ITW Red Head designs anchor to hold against seismic stress

It is one of the least expensive components of a construction project. Tiny in comparison to nearly everything else that makes up a skyscraper, bridge or road, it nevertheless plays a giant role in a structure’s integrity. It is the wedge anchor.

Consider the Hoover Dam and the Golden Gate Bridge: two iconic structures of the 20th century. Both depend on wedge anchors designed by ITW Red Head, an Addison, Illinois-based division of Illinois Tool Works Inc (ITW).

When it comes to construction involving concrete, anchors hold it all together and have done so since their first manufacture 100 years ago. Now, advanced technology has yielded a new anchor designed to hold during an earthquake, disastrous wind or other freak seismic occurrence.

Trubolt+® is a seismic wedge anchor manufactured by ITW Red Head®. To verify code compliance for this innovative product, ITW Red Head turned to ICC-Evaluation Service® (ICC-ES®).

ITW Red Head is a manufacturer of mechanical and adhesive anchoring systems used in residential and commercial construction, and industrial applications.

Bill Dubon, engineering manager for ITW Red Head, came to ICC-ES® because “it’s the fastest way to let our market know we meet the ACI (American Concrete Institute) standards for expansion mechanical anchors.” The report ESR-2427 was re-issued June 1, 2009.

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ICC Evaluation Service®, a subsidiary of the International Code Council®, provides technical evaluation of building products, components, methods and materials.

“ICC-ES® is proud to play a part in bringing innovative products like the Trubolt+ to the marketplace. ICC-ES® works with responsible companies such as ITW to develop criteria for innovative products in a transparent process and to provide independent review of their data. The result is a technical report that code officials, engineers, architects and the construction industry can rely on,” said Mike Beaton, senior vice president of ICC-ES®.

Earthquakes have been in the news lately with the tragedies in China and, more recently, Indonesia. Before these headlines hit, engineers at ITW Red Head were thinking about how concrete reacts to seismic events. “We began thinking about this three years ago. We looked at safety situations that had occurred and the most obvious failures. One of the most common failures occurs in seismic events. Our focus is on constructing buildings to better withstand such failures. We weren’t looking at it from the demands of the market, but from the desire to make buildings safer,” Dubon said. For Dubon, the research hit home. “I was in Mexico City in 1985 when the earthquakes reached 8.1 on the Richter scale. Buildings collapsed all around me, it was unbelievable!”

ITW Red Head reviewed 40 years of forensic research on structural failure when considering this new product, now patent-pending. “We studied how and why failures occurred,” said Dubon, “and then, we treaded into uncharted territory: to make an anchor that can withstand tension and shear simultaneously.”

“ITW Red Head has a rich heritage as an innovator in concrete anchors,” said Dubon about his division, which celebrates its 100th anniversary in 2010. Acquired by ITW 20 years ago, it has confined itself solely to concrete fasteners while its parent company manufactures an incredible variety of products.

ITW, 2 years younger than this particular division, “has always been at the leading edge of technology,” said Dubon. “Today it is 875 companies strong and acquires 50 new companies per year.” He added: “What is striking about ITW is that when it acquires a company, it doesn’t assimilate it. Each company is independently operated. We are cemented that way. We have the strength to operate like a small company but have access to wider resources.”

To develop Trubolt+, ITW Red Head technical staff collaborated with the ITW Technology Center with 80 engineers and 55,000 square feet in nearby Glenview, Illinois.

The first seismic wedge anchors, made of carbon steel, were one half-inch in diameter. Now the company makes anchors in a half dozen diameters, with some of them in stainless steel as well.

The concrete fasteners are manufactured in Michigan City, Indiana, also in close proximity to ITW Red Head’s headquarters. “We make American-made anchors,” Dubon said proudly.

The Trubolt+ seismic wedge anchor is an example of how technology is quietly changing our lives. News like this might not make big headlines. But, like the thousands of small anchors that help compose a giant skyscraper, it all adds up to something tremendous.

To find out more about this product, view **ESR-2427: ITW Red Head Trubolt + wedge anchors for cracked and uncracked concrete** www.icc-es.org/reports/pdf_files/ICC-ES/ESR-2427.pdf .

All ICC-ES Evaluation Reports can be accessed and downloaded free of charge at www.icc-es.org/Evaluation.Reports/index.shtml and are readily searchable based on attributes such as product type, manufacturer or report number.

** This article is intended to provide information on a new or innovative building product or system for which an ICC-ES Evaluation Report has recently been issued. It should not be construed as a product endorsement or a recommendation for its use.*

