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But how did it get here?

Next time you drive under a bridge, glance up and notice the steel or concrete structure that's holding it up. The design engineer gave a great deal of thought to the weight of that tractor trailer that's right above your head to ensure that, once they're in place, those girders have the strength to carry that truck and any other loads that drive across the bridge.

But while the bridge is being constructed, that steel and concrete is subjected to an entirely different set of stresses as they're being erected and put into final position. The loads imposed as the crane lifts the girder into place are completely different from the ones that girder is designed to ultimately carry. The stresses on a temporary connection that hold a beam in place until it's permanently attached need to be as carefully considered as the ones that will be there for the next 50 years.



The new MLK Connector over Illinois Rte. 3 in St. Clair County is an eight-span, continuous horizontally curved composite steel girder bridge that crosses an active roadway and two railway tracks. In other words, it's complex. So the Department of Transportation required that a Structural Engineer prepare a steel erection plan prior to construction to consider and account for the stresses imposed through the construction period.

The engineers at WHKS considered how many girders to erect at one time, how, and in what sequence they should be bolted together, the stresses that would be induced during erection and construction, the changing loads on the various elements as construction progressed and new members were added, the effects of wind load on the partially completed structure and the placement of the lifting cranes.

Any mistakes as steel girders are lifted over active rail and roadways could have catastrophic results. So every step of the process was checked and rechecked. But after several weeks of intense, but incident-free steel erection, the girders were in place and safely supporting the loads that the design engineer had envisioned.

