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**ACHIEVING
CONCRETE
DREAMS**

WHEN A **GIRDER FAILS**

AN INNOVATIVE SHORING SOLUTION SAVES THE DAY
– IN ONLY FOUR DAYS.

BY LUKE GRIFFIS, P.E., S.E.



What do you do when a large glulam roof girder fails at your warehouse and you need to repair it? Generally, you could install a temporary shoring tower under the girder, hydraulically jack the girder back into place, and complete the repairs. But what if there is an extremely sensitive clean room beneath the girder that cannot be disturbed and therefore there is no space to install a typical shoring tower? When this situation arose recently at a warehouse in Sacramento, California, the owner reached out to

Pinnacle Emergency Management to oversee an expeditious repair.

Frank Towse of Skyline Scaffold and Luke Griffis of D.H. Charles Engineering were brought in to devise and design an innovative shoring solution to the problem. Since shoring from beneath was not an option, the decision was made to shore from above. This meant putting the shoring on the roof of the warehouse and suspending hangers down through the roof to support the girder. Quickly a plan was put into action to span a large steel I-beam from

the existing interior steel column to the exterior concrete wall. With a span of 65 feet and a design load of 30,000 pounds to support, a large W24x162 steel I-beam needed to be procured. This presented a challenge in itself. Since a beam of roughly 70 feet long was required, it would be too long to transport to the jobsite in one piece on short notice. Two shorter W24x162 steel I-beams were located and shipped to the jobsite, where they were welded together to create the single 75-foot-long shoring beam that weighed over 6 tons. At this point the



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shoring beam was craned onto the roof and into position directly above the damaged roof girder.

The suspension hangers to support the underside of the girder were comprised of 1-inch-diameter, high strength, all-thread rods and double c-channel beams. Initially the double c-channel beams were to be fabricated and welded from standard structural steel shapes. Due to the lead time for fabrication, however, pre-engineered EFCO 9x9 Super Stud beams were used instead of the channel beams. Having the beams readily available in nearby Stockton made it the obvious choice to save time and money.

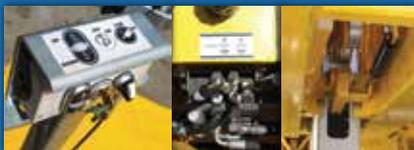
Ultimately, it only took four days to have the shoring system designed and



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installed. The shoring system allowed for the roof girder to be repositioned into its original location and repaired and for a new column to be added for additional support. Thanks to the team of scaffold specialists from the industry who were able to pool their resources and knowledge of shoring, the job was completed safely and quickly. Now the only question is: “What do you do with a 75-foot-long 6-ton beam after you no longer need it?”



About the Author



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