

LOCTITE

Adhesives for more
reliable assemblies

APPLICATION CASE HISTORY

No. 254

Loctite® Fixmaster® Deep Pour Grout Repairs Concrete Floor Base in Hot Roll Steel Mill

Repair ensures long application life under tough conditions

Situation:

A worldwide leader in rolled steel technology was having problems with the concrete floor wearing and crumbling along the edge of the de-scale pit under the hot rolled steel production line. The problem was due to dime-sized de-scale particles coming off, under pressure from the hot rolled process steel, and hitting with direct force against the edge of the de-scale pit. Maintenance personnel had tried unsuccessfully to repair the 75-square foot area by applying concrete patch compound with binder additives. The repair of the floor was critical because the wearing area was less than 18" away from the foundation on which the rolling steel production equipment was set. If allowed to continue, the wearing could cause a weakening of the stable equipment base. This, in turn, could adversely affect the finished product quality, and ultimately cause a production shutdown to replace the entire foundation, costing hundreds of thousands of dollars in downtime.

During a Loctite MRO Plant Survey, the Loctite Adhesives and Sealants Specialist identified the flooring as an application that could be repaired using Loctite® products. They had less than 36 hours to repair the floor before the equipment was up and running again during the scheduled production equipment downtime.

Solution:

Loctite® Fixmaster® Deep Pour Grout is an aggregate-filled epoxy system for pours up to 6" deep, including self-leveling applications under rails and sole plates. This high-strength material bonds to steel, concrete, and itself, and withstands high torque loading.

The entire front edge of the de-scale pit area was chiseled down approximately 6" to properly prepare the application surface. A piece of one-eighth inch thick steel plate was tack welded along the edge of the pit to act as a retaining crib to contain the self-leveling Fixmaster Deep Pour Grout and serve as a front edge support buffer.

The inside seams of the plate along the edge of the pit were sealed with Loctite® Superflex® Non-Corrosive RTV Silicone Clear compound to contain the poured material while in liquid form prior to cure. The Fixmaster Deep Pour Grout was then mixed and applied by pouring directly into the cribbed/support area. The pour was made to a depth of 5", purposely leaving a 1" gap at the top. After a 24-hour cure time, the remaining 1" to the top of the floor edge and steel crib plate was completed by mixing and troweling a layer of Nordbak® Wearing Compound. Nordbak Wearing Compound is a high-performance epoxy system containing large ceramic beads and fine silicon carbide particles, which protect against sliding abrasion to 250°F. This was to form an additional buffer or shield to protect the underlying material.



Results:

Normally, the Fixmaster product and the Nordbak product each require a 24-hour cure time. But as the hot roll steel production equipment was still quite warm, it produced an oven-curing effect at approximately 110°F in the area of the application, thus, decreasing the epoxy cure time. This allowed the repair to be made during the short window of scheduled production equipment downtime. In addition, the repair was deemed successful when the floor failed to crumble once the equipment was up and running again and, after many months of production time, was still holding strong.

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