



Innovative Tile and Stone
Installation Systems

St. Anthony Falls Bridge, I-35W

Project Spotlight: January 2009



LOCATION:

Minnesota

GENERAL CONTRACTORS:

JV between Flatiron Constructors Boulder, CO
Manson Construction, Seattle, WA

TILE CONTRACTOR:

Bricklayers and Allied Craftsmen Local Union No. 1 Minnesota/North
Dakota, Minneapolis, MN

TILE SUPPLIER:

Handmade by 'Casting the Future Outreach Program'

TILE INSTALLATION SYSTEM:

LATICRETE International, Inc., Bethany, CT

LATICRETE DISTRIBUTOR:

Kate Lo Tile and Stone, Plymouth, MN

St. Anthony Falls Bridge, I-35W

By Eric Carson



At 6:05 p.m. on August 1, 2007, during the height of commuter travel, the city of Minneapolis was shocked to its collective core when the St. Anthony Falls Bridge carrying Interstate Highway 35W across the Mississippi River suddenly collapsed.

The steel-truss bridge was opened for traffic in 1967 and maintained by the Minnesota Department of Transportation (Mn/DOT). Stretching 1,097-feet north to south, the eight-lane bridge carried 141,000 vehicles each day, making it the fifth busiest bridge in all of Minnesota.

The 35W Bridge was in the process of minor repairs and under close supervision by the Mn/DOT, but not yet considered an imminent threat to travelers. At the time, over 1,000 bridges in Minnesota, including the 35W Bridge, were considered to be "Structurally Deficient," the rating right before more immediate steps are taken.

But on that one horrific Wednesday in mid-Summer all that changed. The sudden and deadly collapse of the 35W Bridge rocked Minnesota, quickly changing the way that the highway/bridge infrastructure is inspected on a national basis.

While the injured and families of the victims struggled with this horrible disaster, the clean-up and recovery work at the site began almost immediately. Just three days after the collapse, the Mn/DOT began accepting technical proposals and entries from major bridge contractors to begin the process of building a new bridge to re-connect the Downtown East and Marcy-Holmes neighborhoods at the southeast end of the city's famed "Mississippi Mile."

On October 8, 2007, Colorado-based Flatiron Constructors, Inc., consistently ranked among the top bridge and highway builders in North America, together in a joint venture with Manson Construction Company, had their \$234 million design-build project proposal selected by the Minnesota State Legislature.

And just three weeks later, on November 1, 2007, Flatiron and the Seattle-based Manson Construction Company, with the Johnson Bros. in a key support role, began the initial steps in realizing a new state-of-the-art bridge designed by Figg Bridge Engineers, Inc., an internationally recognized bridge design specialist based in Tallahassee, Florida.

LATICRETE, a global leader in the manufacturing of innovative systems for the installation of tile and stone, played a pivotal role in the completion of an outreach program for grade school students in the Minneapolis/St. Paul area. With time always a critical factor in major construction projects, particularly one involving a main causeway to a major city, LATAPOXY® 310 Stone Adhesive was selected for over 2,000 handmade crushed glass tiles that were dedicated by the students.

When the plan to mechanically anchor over 2,000 square feet of 6" x 16" tiles on the wall of a major walkway on the 2nd Street Bridge proved far too time-consuming, LATAPOXY 310 Stone Adhesive turned out to be the perfect solution. LATAPOXY 310 Stone Adhesive is an ICC approved high strength construction epoxy adhesive for spot bonding large format tile and stone on vertical surfaces, for interior or exterior applications. LATAPOXY 310 Stone Adhesive offered major advantages in terms of speed and productivity over the original mechanical anchoring plan and proved remarkably easier to work with by eliminating the need for drilling, cutting kerfs, and/or setting pins. LATAPOXY 310 Stone Adhesive allowed for quick, easy plumb adjustment while the tiles were in place to compensate for uneven thicknesses, and will not fail or deteriorate over time, even in harsh Minnesota winters.

Without the need to create a system behind the scenes to ensure the long-term application of the tiles, LATAPOXY 310 Stone Adhesive turned what could have easily been a two-month job into a two week project. Each tile received strategically placed dollops of this high-strength epoxy and was simply placed in a row along the wall designated for this special project.

"LATAPOXY 310 Stone Adhesive worked really, really well," said Dave Mensing of the Bricklayers and Allied Craftworkers Local Union No. 1 Minnesota/North Dakota. "It would have taken 20 minutes to set one stone by mechanical anchoring. In that same time we set close to 30 stones with LATAPOXY 310 Stone Adhesive. It was many, many times faster. It narrowed the project time down to just weeks."

Unlike the original St. Anthony Falls Bridge for I-35W, the FIGG design called for redundant systems to ensure that if one portion of the bridge fails, the entire structure

won't collapse, and several structural enhancements were then added to provide superior durability.

Using high performance concrete, the new bridge has a minimum lifespan of 100 years and includes "Smart Bridge Technology" in the form of 323 strategically placed sensors that will monitor the performance of the bridge and collect real-time data for constant review by the University of Minnesota's Department of Engineering.

After 11 months of 24-hour construction with up to 600 contractors on-site at times, the new St. Anthony Falls Bridge was completed three months ahead of schedule and opened for traffic on the morning of September 18, 2008.

The amazing accomplishments by the Flatiron/Manson-led contracting team are tempered by the memories of one of the Twin Cities darkest hours. Through the outreach program called "Casting the Future," spearheaded by FIGG, an excellent hands-on educational opportunity was provided. Originally targeted to get as many as 500 fifth graders from local schools involved and provide educational opportunities, the overwhelming response more than tripled that number, resulting in 1,800 grade school students participating in the outreach program.

The students had the chance to visit the site, learn about concrete and careers in construction, and each made their own crushed glass aggregate tiles which they then personalized with their own heartfelt messages. North of the bridge, FIGG designed a panel for an abutment where these tiles made by Twin City students would be installed on a major walkway leading to the University of Minnesota.

"We were very happy to get the people of Minnesota their transportation system back," said Alan Phipps, Design Manager for FIGG on the 35W project. "We think it turned out very nice. And the tile installation went well. It looks great. We had a huge response to the outreach program, and now they all have been able to leave their name and a short message permanently."

The original plan was to mechanically fasten all the tiles to the panels on the abutment, but with the sheer volume of tiles the task seemed more daunting than originally planned. Searching for a better solution, FIGG placed a call to Dave Mensing of the Bricklayers and Allied Craftworkers Local Union No. 1 Minnesota/North Dakota.

As it turns out, Mensing and a team of masons from Local No. 1 had just completed a volunteer project at a Disabled Veterans Camp in which they had utilized the revolutionary stone adhesive from LATICRETE. Because of this, Mensing and others strongly suggested scrapping the original plan of mechanical anchoring each tile and instead utilizing LATAPOXY® 310 Stone Adhesive for the major time and labor saving benefits the product offers.

A successful mock-up using the exposed crushed glass aggregate tiles over a concrete base further convinced Mensing that LATAPOXY 310 Stone Adhesive was the right solution for the permanent, problem-free installation of these special tiles made by area students.

"When they called, the first thing I thought of was—let's try that LATAPOXY 310 Stone Adhesive from LATICRETE," says Mensing. "The original plan would have taken a massive amount of time and even damaged the tiles. This past spring we had Tom Brodersen, the LATICRETE sales representative, in for a demonstration and thought it was a fascinating product. We couldn't believe how well it worked."

To grout the special crushed glass tiles made by hand by grade school students in the Twin Cities, LATICRETE provided, through Kate-Lo Tile & Stone, a wholesale distributor in nearby Plymouth, MN, a system consisting of LATICRETE 1500 Sanded Grout (the color Sauterne), mixed with LATICRETE 1776 Grout Enhancer. This LATICRETE grouting system will eliminate shading and blotching caused by minerals and organic particles found in water, and inhibit the growth of stain-causing mold and mildew with antimicrobial protection from Microban®.

While the tragic circumstances of the project made it impossible for there to be any sense of real joy, the engineering and construction communities truly responded for the people of Minneapolis in an urgent time of need. The tireless efforts put in under extreme duress and a brutal Minnesota winter helped bring some closure in many ways for the Twin Cities, and once again showed the true mettle of the American spirit.

