

Nucor Facility Steel and Concrete Restored in 18 Days

McGill Restoration ran double shifts to restore structural integrity to steel beams at the Nucor Pickle House Facility to ensure work was completed during the plant's scheduled seasonal shutdown. Additionally, the team replaced concrete sub-pit beneath acid bath stations. The job required quick turnaround while working with challenging space constraints throughout the narrow facility.

THE CHALLENGE

Restore Steel and Concrete in Acid Bath Facility

The Nucor Pickle House is a specialized facility for galvanizing steel. The long, narrow building is 110 ft long x 19.6 ft wide and it holds a series of acid baths for the galvanizing process. The acid bath stations are housed in a building with vertical and overhead steel beams and a concrete sub-pit beneath the basins for any overspill, leaks, or runoff.

Years of vaporized acid and chemical exposure to overhead structural beams caused protective coating failure and corrosion—to the point of section loss—to the steel. The structural integrity was threatened and required complete cleaning, installation of supplemental steel to restore stability, and application of a robust chemical-resistant coating to deter future chemical contact.

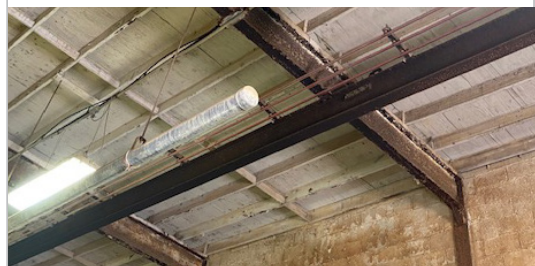
Additionally, the concrete sub-basin beneath the acid baths was deteriorating, requiring the entire concrete surface to be replaced and relined with a chemical-resistant liner.

The narrow structure offered limited room for equipment and workers. Each bath would remain in place, further limiting floorspace to stage materials and equipment while also requiring working off the ground over the bath stations.

Lastly, it was imperative the work was completed on a tight timeline. Nucor is a large-scale steel supply company with facilities nationwide, and they schedule rotating outages for site repairs. McGill Restoration was limited by the timeframe allotted—22 calendar days—and had to complete the entire job with no room for error or extensions so the facility could return to full operational status on time.

THE BIGGEST CHALLENGES FACING McGILL RESTORATION INCLUDED:

- ⊗ Restoring integrity to corroded beams, both vertical and overhead
- ⊗ Replacing the concrete sub-basin
- ⊗ Installing new coatings to resist chemical exposure
- ⊗ Working in a narrow space with limited room for equipment and maneuvering
- ⊗ Meeting a tight deadline to prevent business interruptions



THE SOLUTION

Implement a Strategic Plan to Complete All Work in Short Time Window

McGill Restoration went above and beyond, sourcing unique equipment to compensate for space limitations while implementing a double-shift schedule to meet the difficult deadline. The entire project was completed in 18 calendar days.

TO ACHIEVE RESULTS WHILE STAYING ON SCHEDULE, MCGILL RESTORATION HAD TO:

- ✓ Plan and source specialized equipment for elevated work
- ✓ Work with vendors to select chemical-resistant coatings for long-term protection
- ✓ Execute intensive site prep to protect all equipment that would remain in place
- ✓ Test different approaches to place equipment and work on overhead beams

PLAN EQUIPMENT AND ADAPT TO CHALLENGES ON THE FLY

The Nucor plant manager was concerned about meeting the timeline after the first several days of work as spatial challenges had slowed the workflow. McGill Restoration used an adaptable mindset and rather than pressing forward, the team reassessed and tested different ideas until they found a way to hoist beams quickly and effectively. Overcoming this challenge made it possible to complete the job in 18 days, well ahead of the deadline.



COMPLETE PREPARATION AND STEEL CLEANING

The overhead steel beams showed corrosion from years of chemical exposure and they required intensive cleaning ahead of new welding and material installation. The McGill Restoration crew neutralized the beams utilizing a neutralization solution, then sandblasted the entire steel surface area to remove the failed coating, rust and corroded steel to ensure any section loss was addressed, and to start with a fresh slate.

“This project was in an unusual space and situation, and there were some curveballs thrown in along the way. McGill Restoration handled everything quite well. They stayed on top of the timeline and made changes as needed, especially with manpower—they met every challenge.”

—Bryant Major, Project Manager, Nucor

STEEL RESTORATION AND HIGH-PERFORMANCE INDUSTRIAL COATING APPLICATION

Corroded steel on the beams weakened the overall rigidity and structural abilities of the steel. McGill Restoration responded to the section loss by welding and installing supplemental steel, designed by a structural engineer specializing in steel work. The additional steel returned structural integrity to the beams and the building.

COMPLETING STEEL SANDBLASTING AND WELDING REQUIRED:

- ✓ Small footprint boom with long reach to access the beams
- ✓ Unique hoist system to raise and clamp beams into place for welding
- ✓ Equipment staging and movement to work through narrow corridor
- ✓ Double shifts for continual work without concern of flash rusting and rework

After completing the welding, the beams were ready for a new industrial coating. The constant exposure to highly corrosive chemicals called for a robust and durable and chemical-resistant coating.

McGill Restoration worked with expert coating manufacturers to select a Novolac epoxy system application to protect all exposed steel. The McGill Restoration coating crews worked rapidly to apply the coating with precision to avoid chemical resistance. The resulting protection has an extended lifespan, limiting the need for near-future work to the pickle house steel.



“Working in this business—and I have been for more than 30 years—you’re lucky if you can find a partner like McGill. They get stuff done, they do it on budget, safely, and on time!”

—Jack Partridge, Maintenance Lead, Nucor



CONCRETE SUB-BASIN RESTORATION

Chemical contact was not limited to overhead steel structures at the Nucor facility. The concrete sub-basin positioned directly below the acid wash stations was designed to catch any overspill, leaks, or runoff chemicals. The constant chemical exposure and contact ate through the uncoated concrete making repairs to the basin extreme and necessary.

The McGill Restoration crews removed and replaced concrete in the 4' x 6' chamber; and following completion of the demo and installation of new concrete in the sub-pit, they added new chemical-resistant, reinforced industrial lining to protect the concrete from future chemical contact and damage.

TO RESTORE EACH SUB-BASIN, MCGILL RESTORATION HAD TO:

- ✓ Remove old, failed concrete in narrow sub-pit basin chamber
- ✓ Install and cure new concrete in the narrow sub-pit
- ✓ Apply chemically resistant, reinforced industrial coating to protect concrete surfaces

"I was really impressed with McGill Restoration's professionalism and collaboration—with all aspects of their work, actually. It was our first time using them, and this was an unusual project requiring a couple teams to work together. Ordinarily I'd have worried about this, but their team showed up—they did the leg work in the planning stages and were onsite, too. They collaborated really well with us and with the outside PE on this project, which made everything go smoothly."

—Jack Partridge, Maintenance Lead, Nucor

THE RESULT

Renewed Structural Integrity and Quick Return to Operational Status

By successfully completing the overhead steel beam restoration and sub-basin concrete replacement, the McGill Restoration team returned structural integrity and chemical resistance throughout the pickle house. All work was completed ahead of schedule, wrapping the job a full four days before the deadline. The Nucor Pickle House returned to operational status knowing their facility was structurally sound and safe to protect workers and continue processing steel for the foreseeable future.



The McGill Way: Nucor Pickle House Industrial Facility Restoration



Completed in 18 days
by working double
shifts and adapting to
solve problems



Application of
high-performance
industrial coating to
protect steel beams



Total restoration of
overhead steel beams
with supplemental
steel installation



Complete concrete
removal, replacement
and lining in sub-pit
basin

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