



## CASE STUDY - WAREHOUSE MEZZANINE COLUMN SUPPORT USING HS030 SOIL STABILIZER

During the construction of a newly built industrial warehouse, a redesign of a mezzanine structure introduced a critical structural issue. Several steel support columns were installed outside their originally designed concrete footings due to a layout change that was not coordinated with the foundation plan. The building owner required a solution that would increase bearing capacity beneath the existing slab and column bases without removing the concrete floor or significantly delaying the construction schedule.

HMI partnered with a professional concrete leveling contractor to design and implement a soil stabilization solution using HS030 Single-Component Soil Stabilizer, allowing construction to proceed with minimal disruption.



### THE PROBLEM

The warehouse floor consisted of a 6-inch concrete slab on grade with 16-inch by 16-inch steel columns spaced 25 feet, with each column supporting up to 118,000 lbs of load. The original design included isolated 30-inch thick concrete footings beneath each column to support these loads.

Following a mezzanine layout change, many column locations were shifted by 1 to 2 feet without adjusting the corresponding footing locations. As a result, column loads were transferred only through the slab to the underlying subgrade. Shortly after the mezzanine installation, cracking was observed in the slab around multiple columns, indicating overstress and inadequate support.

With construction ongoing, a rapid remediation solution was required to stabilize the columns without slab removal or foundation reconstruction.



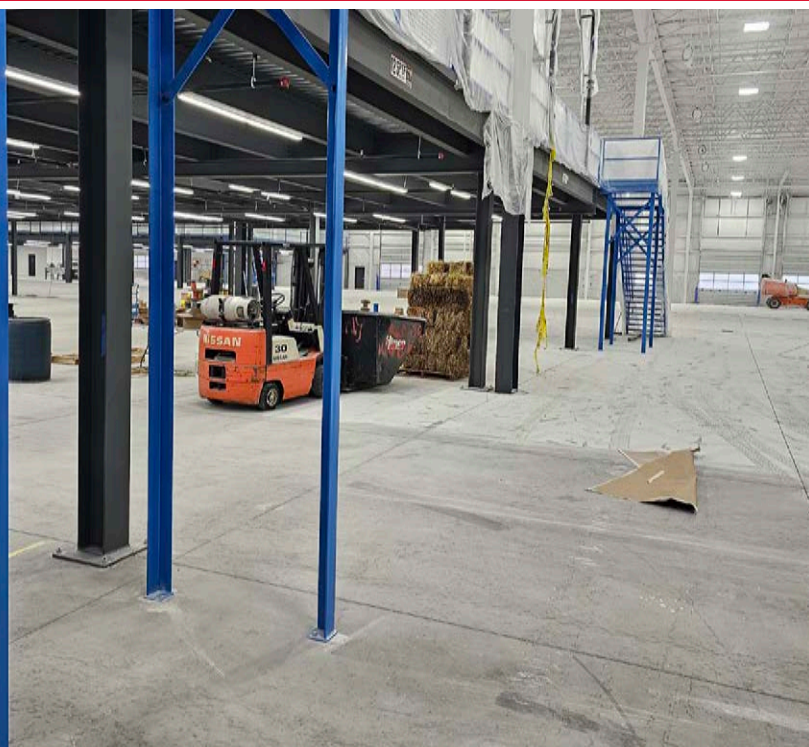




## THE SOLUTION

After assessing the column loads, soil conditions, and constructability constraints, HMI recommended HS030 Single-Component Soil Stabilizer through permeation grouting to solidify and strengthen the subgrade beneath the affected column bases. HS030 is a single component catalyzed polyurethane resin designed to permeate into the weak permeable soils to bind and solidify the soil particles together. Injection of HS030 around the existing columns in a specified pattern would create a solidified composite soil/resin mass that would be the new foundation for the column.

Installation was completed in approximately four days using 6,400 pounds of HS030. The material was applied using pumping equipment, modified for soil improvement, through small-diameter access holes drilled through the slab. A catalyst was added to HS030 to customize a reaction solidification set time of 2 hours after the material had been injected into the surrounding soils, forming a reinforced load-support zone beneath each column without inducing slab lift.



## THE RESULTS & SUMMARY

By strengthening the subgrade directly beneath the column bases, HS030 provided a faster and more cost-effective alternative to traditional methods. The project was completed without slab removal and minimal disruption to the warehouse construction timeline, demonstrating HS030's effectiveness and ease of application for high-load industrial soil stabilization applications.