

Case Study



SMOKESTACK REPLACEMENT “Big Willy”

An Urgent Need

Linwood Mining & Minerals is one of the largest limestone mining operations in the United States. The lime plant and quarry offer customers a complete line of calcium carbonate, lime products, and construction-grade aggregates.

Linwood was looking for a fast, cost-efficient solution to replace a 50-year-old smokestack named “Big Willy.” The aging smokestack was partially blocking the stack’s gas outlet. Linwood needed to act quickly as their rotary kilns could not run without an open outlet. In addition, the State’s DNR Air Permit requires the plant to operate using a smokestack that meets precise height and diameter specifications.

As urgency mounted, Linwood sought a solution provider that understood all phases of the project needed to happen quickly and cohesively – from design to fabrication, excavation to foundation and installation. It was also crucial for the provider to be flexible. Since Linwood would have to shut down production, it meant the fabrication and installation of the new smokestack had to fit a very specific timeline.

Linwood found the McCarthy-Bush Industrial Solutions Group (ISG) to be the best fit to take care of their immediate needs. ISG meet the following criteria:

- had access to the skills needed to fulfill all project requirements.
- had experience coordinating complex timelines.
- would be Linwood’s single point of contact throughout the entire project.

Challenge

An aging smokestack disrupted Linwood Mining & Minerals’ operations and their ability to swiftly meet customer needs.

Solution

Replace the smokestack with a highly cohesive, multi-phase solution.

Benefit

Time and cost-efficiencies were achieved using a flexible, single-source solution provider.

Results

Very little downtime meant customer orders weren’t impacted, and the new smokestack will support the mine’s operations for decades to come.

A Multi-Phase, Single-Source Solution

DEMOLITION

ISG participated in the initial demolition of “Big Willy,” then performed an inspection of the remaining stack. Once the integrity of the existing stack was verified, the State DNR issued Linwood a short-term variance to operate while the new smokestack was being built.

Meanwhile, ISG helped clean up the site and investigated the soil surrounding the stack’s stump so that the sub-base and concrete base could be properly designed. Since there were no engineered drawings for the original smokestack, ISG designed new.

SITE WORK

After engineering confirmed the new blueprints, the site was prepared for the new foundation. This included removing and disposing unsuitable soils and then utilizing aggregate fill from Linwood to replace and strengthen the ground for the new foundation. Next, crane pads were installed to accommodate the erection of the new smokestack.

FABRICATION

Once Linwood confirmed their order with ISG, design on the new smokestack commenced and was complete within six weeks. Within eight additional weeks, fabrication was complete. The smokestack is made primarily of ½”, 3/8”, and ¼” A-36 carbon steel construction then blasted and painted for rust protection. Upon completion, the fabricated stack was transported on-site.

INSTALLATION

Installation of the new “Big Willy” took two days and was a continuous and coordinated effort by Linwood and ISG. Before the smokestack could be raised, ISG first installed and leveled a custom anchor bolt assembly ring. Then, they installed over 25,000 lbs. of reinforcing steel and placed 260 CY of concrete in a continuous pour to complete the foundation. The forms were stripped, and the foundation was backfilled after the new stack was in place. This reduced the time the kiln needed to be shut down.

A Satisfied Customer

Projects like this require a wide range of expertise that the McCarthy-Bush Industrial Solutions Group has access to. From the concrete footing to the designing and fabrication of the stack, and most importantly, the ability to work safely in hazardous conditions like ones that naturally occur at a mining facility.

“The true success of what we accomplished goes to Industrial Solutions Group and the people who did the work. It is through their skills, experience, and expertise this whole project was done quickly, safely, and very efficiently,” said Mark Looman, Vice President Lime & Carbonates, Linwood Mining & Minerals.



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