



Project Profile



Multi-discipline design/ build team creates new primary crusher dump wall at underground sand mine

AIL Mining was recently involved in a multi-party design/build effort on a new primary crusher dump wall for Pattison Sand Company in Iowa.

About Pattison Sand Company

Pattison produces incredibly pure and extremely clean quartz sand used by the oil and natural gas industries. Its underground mining facilities are state of the art, and its land reclamation program is a model for the industry. Pattison's sand products are some of the highest quality available.

Close collaboration was paramount

The wall needed to come together quickly, so close collaboration was paramount throughout the complete project cycle. The AIL Mining team, with our MSE Structural Wall System, rose to the challenge.

Project at a glance:

Project Name: Pattison Sand Primary Dump Wall

Location: Clayton, IA

Owner: Pattison Sand Company

Engineering Consultants: Survey and Civil: Mohn Surveying

Engineering Consultants: Structural (Dump Slab): Shive-Hattery

Engineering Consultants: Geotechnical: Terracon

Crusher/Dump Manufacturer: TCI Manufacturing

Wall Product: MSE Structural Wire Wall

Application: Primary Crusher/Dump Wall

Dimensions: Length 53.9 m (177'), Height 13.4 m (44')

Wall Installation Time: Four weeks



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With weekly meetings throughout the design phase, AIL Mining engineers worked closely with Pattison, TCI Manufacturing and a project team of survey, geotechnical, civil and structural engineering consultants to provide a layout that was best for the safety of the drivers and the mine's efficiency. We were also on-site at critical junctures during the design process and construction.

Digging deeper to get off on the right footing

The mine's processing plant was already operational, so the new wall needed to be built within a limited space with fixed points. The site also had a deeper frost depth that required a 1.5 m (5') embedment of the wall. Special considerations had to be made for the wall's interface with the dump hopper's foundation and superstructure. AIL Mining, working with other members of the design/build team, was able to come up with cost-efficient solutions for the majority of challenges that were faced.

The finished product chosen for the wall was our MSE Wire Faced Wall that utilizes hot-dipped galvanized steel for the wall face and soil reinforcing. The wall was designed with no batter to accommodate Komatsu HD465-7 Off-Highway Trucks, and Komatsu HM400-3 and CAT 740 Articulated Dump Trucks serving a 110-ton live load dump hopper. A drone-shot video of the dump hopper in action can be seen on Pattison Sand Company website and TCI Manufacturing website.

“We were very pleased with how well AIL Mining integrated with the multi-disciplinary team on this project and how well the wall works with TCI's equipment and within our site.”

— Chance Harvey, Director of Engineering, Pattison Sand Company

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