

D.C. Meyer Masonry, Ashland

Intervention key words: Scaffolding

Industry: Construction, masonry

Risk factor(s): Slips/trips/falls, contusions, musculoskeletal disorders

Situation: D.C. Meyer Masonry is a commercial masonry company. Typical masonry operations use welded-tube frame scaffolding or manual-crank tower scaffolding. Both systems present a variety of safety risks. To build and raise them, welded-tube frame and manual crank tower scaffolds require extensive exertion. This increases possibility of back and repetitive motion injuries, falls and pinched fingers.

Employees carry tube-frame scaffold sections from the truck to the building site. In addition, they carry heavy wood planks moved and adjusted before, during and after completing a project. As the height of the wall increases, the employees continue to build scaffold. They must lift into place additional scaffold framing. Employees need to install lift pins, cross members, guardrails and toe boards. They relocate and adjust framing each time the scaffold's configuration changes.

This effort increases ergonomic risk factors as well as risks for falls, contusions, pinches, lacerations and other injuries. The increased time spent carrying, building, adjusting and disassembling the tube-frame scaffold reduces employee productivity.

Manual-crank tower scaffolding eliminates some of the risk factors associated with tube-frame scaffolds and slightly improves productivity. Employees assemble the system at ground level, including the planking, guardrails and toe boards. As work progresses, the ability to crank the scaffold allows employees to work as the height of the wall grows. However, cranking the scaffold is difficult work with repetitive motion.

Solution: D.C. Meyer purchased hydro-mobile scaffolding. Similar to manual-crank scaffolding in construction, hydraulic-lifting mechanisms raise and lower the platform. This reduces the potential risk factors associated with building, moving and cranking the scaffolding.

D.C. Meyer bought four motorized hydraulic units and 24 tower sets. Employees place units at the building site using forklifts and then attach components.

The new scaffolding reduced many risk factors due to manual exertion, awkward body postures and lifting heavy planking. It will also reduce slip/trip/fall hazards.

In addition to improved safety, this intervention increased employee productivity and quality. The hydro-mobile scaffold allows employees to lay more blocks each hour because it eliminated the labor required to build tube frame or crank scaffold.

The ergonomic improvements reduce fatigue and keep the scaffold at optimum working heights making it easier for bricklayers to work more efficiently and improve the quality of their work.

The total intervention cost was \$113,000. To help offset the costs, BWC SafetyGRANTS provided \$40,000.

Results

The incident rate (standardized per 200,000 hours worked) decreased from 16.80 the two years prior to the intervention to 5.32 the two years following, a 68-percent improvement.

- D.C. Meyer had only one injury during 2006. This injury occurred on a job site using tube and frame scaffolding. There was no monetary impact or lost days associated with this incident.
- Productivity improvement – On jobs that use hydro-mobile scaffolding, each mason lays about double the number of blocks they lay on tube and frame scaffold jobs.

Scaffold type	Tube frame	Hydro – mobile
Cost per unit	\$5.26	\$2.31
Avg. units per mason/day	58	118
Job profitability	< 1%	26%

- Jobs are estimated on a per unit basis. The lower per unit cost helps the company bid future work at lower costs and win more projects.
- Return on investment:

	Cost per unit	Number of units (on an average. job)	Total labor cost
Tube/frame	\$5.26	65,000	\$341,900
Hydro-mobile	\$2.31	65,000	\$150,150
		Difference	\$191,750

- The hydro-mobile units cost \$113,000. Safety grant funds provided \$40,000. Using the above example of labor-cost savings equaling \$191,750 on a project that lasted about six months, the average monthly savings would be \$31,958. Therefore, it would take about 2.29 months to pay off the equipment. (i.e., \$73,155/\$31,958 = 2.29)