

RENTAL UPDATE

by Jeff Griffin ■ Senior Editor

TRENCH SAFETY

Becomes Major Rental Niche

Organizations involved in construction rely heavily on rented equipment.

Indeed, on some projects today most or even all the machines on a job site are rental units, and the trend toward renting equipment applies to most types of projects, including underground utility construction. Compact trenchers, loader-backhoes and skid-steer loaders have long been carried by general rental centers, and as utility construction has become more complex, equipment rental specialists emerged to offer larger machines and specialized tools and equipment to meet the needs of niche markets.

The trend toward specialized rental stores is found among national and regional rental organizations and independents who are finding niche markets who want to take advantage of the benefits offered by renting.

Trench Safety Options

Protecting personnel working in excavations is not a new idea.

Long before government safety regulations intervened, concerned project owners and contractors developed methods for reducing the risk of cave-ins.

Sloping trench walls to prevent their collapse and supporting walls with wooden timbers and screw jacks were the primary methods of trench safety.

Both are acceptable under OSHA standards. However limited space makes trench sloping impractical or impossible and installation of timbers itself can be dangerous, and both procedures can be labor intensive and time consuming.

Engineering is the primary difference between old timber methods and improvised shields and modern shoring and shielding products. Today's products are engineered and manufactured specifically as trench protective devices. Components fit together easily and quickly, and workers do all assembly above ground. Product quality and time savings essentially make modern shoring and shielding equipment the most cost-effective ways to provide trench protection.

Site and soil conditions and trench widths and depths determine what types of shoring or shielding equipment are best suited for job conditions. There is a wide variety of shoring and shielding products, some combining features of both types of protection. Today's shielding and shoring products are designed as systems which can accommodate utility excavations of virtually any size and depth required for underground construction and repair work.

Trench shoring supports the walls of an excavation and is used to prevent their movement and collapse. A modern shoring system is engineered to pre-load trench walls, providing a positive restraint to soil movement. A basic aluminum hydraulic shoring system may include cross-brace cylinders, vertical rails called up-rights and horizontal rails called walers. They may be used either

with or without backing, depending on soil conditions. Cylinder extensions can adapt shoring components to various widths.

Multiple functions

Shoring does more than provide a safe environment for workers in a trench. Because it restrains the movement of trench walls, shoring also stops shifting of adjacent soil formations containing buried utilities or on which sidewalks, streets, building foundations or other structures are built.

Trench Shields, also called trench boxes, are placed in unshored excavations to protect personnel if excavation walls collapse. They provide no support to trench walls or surrounding soil, but for specific depths and soil conditions, will withstand the lateral weight of a collapsing trench wall. Rectangular shields are available in two-, three- and four-side configurations. Shielding systems use quick-connect cross braces called spreaders; some are a fixed length – others are adjustable. Round shields also are available.

Slide Rail Shoring Systems are becoming increasingly popular with contractors and owners of projects requiring installation of long runs of large-diameter pipelines and provide an effective alternative when installations must be made adjacent to existing utilities and structures and when it is necessary for trench to remain open.

Each system is comprised of steel panels similar to trench shield side walls and vertical steel posts which are installed simultaneously as the trench or pit is excavated by sliding the panels into integrated rails on the posts – either double or triple rails depending on needed depth – then pushing the panels and posts incrementally down to grade as the pit is dug. Slide rail systems can be used in a variety of configurations such as a four-sided pit or linear multi-bay application.



For example, United Rentals Inc., the world's largest equipment rental company, services several specialized markets with branches carrying pumps and portable generators, aerial equipment, traffic control equipment and trench safety products.

"Since the late '90s, United Rentals has focused on specialty rentals, including trench safety, pump and power," says Paul McDonnell, regional vice president – trench, pump and power. "However, in January 2005 we restructured and placed the specialty branches, including trench safety and pump and power, into a single division. The restructuring has improved organization and operations, standardized services and provided better visibility for the equipment and services we offer."

Right approach

United Rentals' approach is working.

In a relatively short period of time, the company has quietly become the world's largest supplier of trench shielding and shoring equipment. The first trench safety branch opened in 2005.

"We now have 64 trench safety rental branches," says McDonnell. "They carry the latest technologies in steel and aluminum trench shields, aluminum trench shores, steel sheet pile with modular walling systems, steel crossing plates and custom slide rail systems."

In addition to shielding and shoring, United Rentals trench safety branches carry confined space ventilators, detectors and other trench safety related equipment. Trench safety locations offer delivery service, 24-hour emergency service and competent person training programs.

McDonnell says United Rentals trench safety branches can accommodate any trench safety need with products available ranging from steel trench boxes to modular systems for projects requiring extensive excavation in poor soils conditions. For example, United Rentals is providing slide rail protective systems for the installation of 60-inch-diameter pipe for the Point of Mountain Aqueduct water project in the Salt Lake Valley in Utah. Two linear slide rail systems – each with approximately 400 feet of panels – are in use at different locations along the 12-mile pipeline route. They are among the largest slide rail systems ever used.

Another large project using a slide rail system is in Southern California where 17,500 feet of new water lines are being placed in the ground. At any given time,

440 linear feet of trench requires shoring, and the slide rail system allows crews to be more productive than is possible with other types of trench protection.

All sizes

The need for trench safety equipment is not limited to large projects such as these. Any time an excavation in unstable soil exceeds a depth of five feet, the Occupational Safety and Health Administration (OSHA) requires specific steps be taken to protect personnel working in the trench, and United Rentals trench safety branches routinely provide trench boxes and shields for small projects.

"We have trench safety systems for literally any type of project and the trained personnel to assist project owners, engineers and contractors select the best, most cost-effective solutions to their trench safety requirements," McDonnell continues. "Matching safety equipment to each job not only protects personnel, it increases productivity."

McDonnell believes United Rentals trench safety operations put the company in a unique position, providing unmatched product selection and distribution.

"We are able to act quickly to make new technologies available to our customers," he continues, "and just as important we are educating the industry about the importance of trench safety and the cost benefits of working safely."

United Rentals safety programs cover equipment operation and use as well as job-specific training and clear explanations of OSHA requirements. In addition to its own programs, United Rentals has assisted the National Institute for Occupational Safety and Health (NIOSH) developing trench safety training modules.

Established by the same act that established OSHA, NIOSH conducts research and develops workplace safety and health programs, including information, education, and training. NIOSH, with the assistance of industry representatives including United Rentals, has developed trench safety programs available on CD and as web-based training.

"United Rentals trench safety personnel shared their knowledge with us during development of these training programs, and their assistance was very valuable," says Patrick J. Coleman, research epidemiologist, NIOSH Spokane (WA) Research Laboratory. The training programs cover safe trenching operations, the four basic types of trench collapse, soil conditions, and types of trench safety systems. Also covered is the need for competent person training."

CDs are available by contacting Coleman at (509) 354-8000, or on the NIOSH web site, www.cdc.gov/niosh/docs/2006-133D.

Web-based training also can be accessed on the site.

McDonnell says the trench safety, pump and power division is the fastest growing segment in the United Rentals.

The company expects to open between 30 to 35 new branches this year, of which one third will be in the trench, pump and power division.

FOR MORE INFORMATION

Trench safety rentals:

United Rentals, (203) 622-3131,
www.unitedrentals.com