

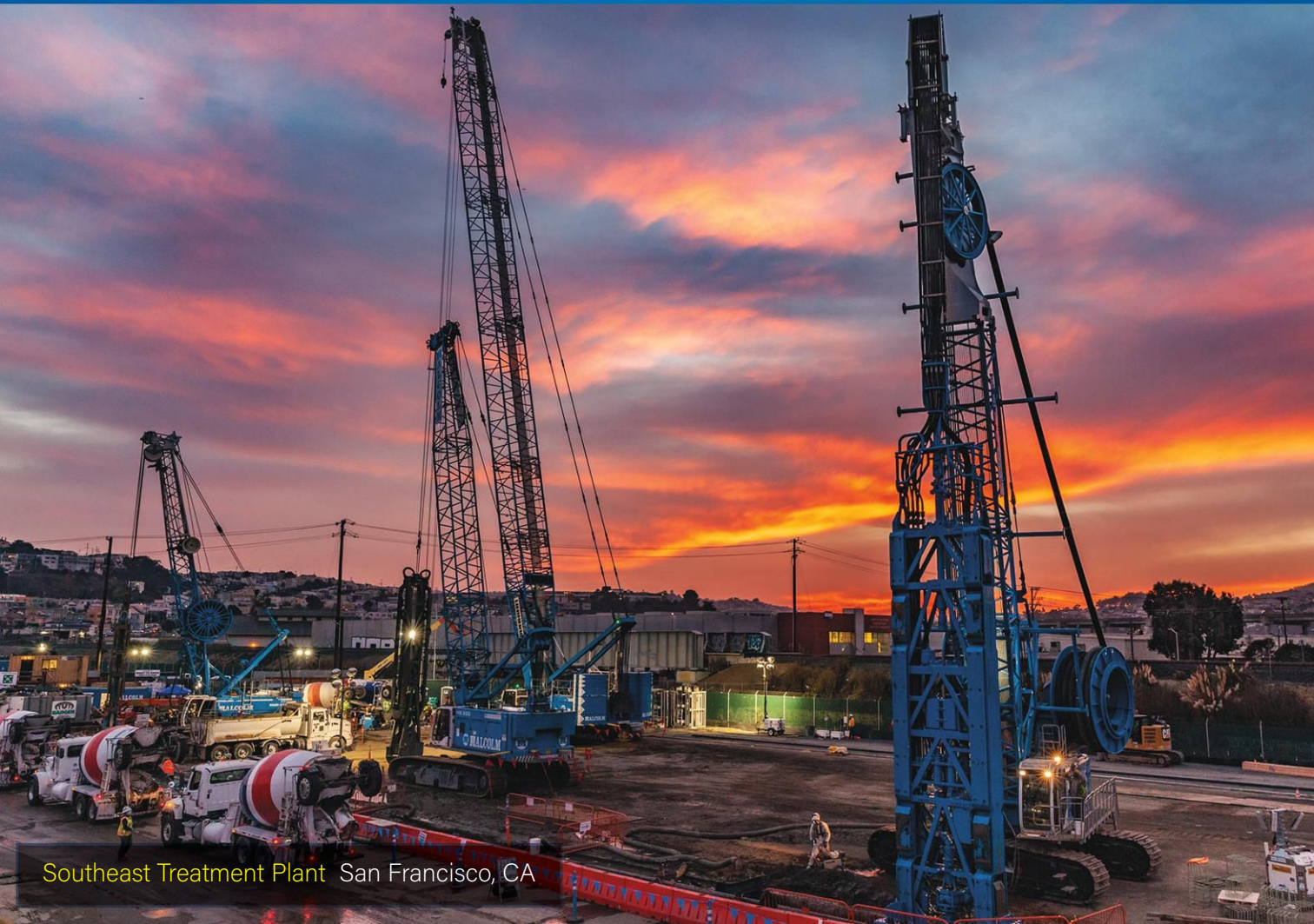


MALCOLM

Diaphragm Wall

Malcolm's unmatched experience and specialized resources drive the construction state-of-practice, evolving new solutions to meet the demands of our clients. Our Diaphragm Wall techniques can be utilized for virtually every shoring or cut-off wall project need in most difficult ground conditions. We combine the most modern equipment fleet with construction and engineering experience for all types of retention systems. When you have projects that require a higher level of expertise, contact us at malcolmdrilling.com

Deep Foundations
Design Build/Assist
Retention Systems
Ground Improvement
Dewatering



Southeast Treatment Plant San Francisco, CA

pictures are becoming much clearer. The underground market has seen some significant increases worldwide, particularly in the transportation and

water sectors. Pent-up demand has led to an increase in infrastructure investment, much of which includes underground construction.

What major challenges are firms facing right now?

Lawrence: In a post-COVID world, market uncertainty for project funding, and conversely the potential for unexpected megaprojects emerging, provides a somewhat confused market outlook. Additionally, underground risk ownership and risk-shedding dynamics have emerged. Are we really traveling back to the bad old days of the 1970s and '80s? Design-build and P3 projects have encouraged some of this dynamic within the industry. Early contractor involvement and progressive design-build projects seem to be approaches that serve to counter these industry concerns.

Verdusco: The main limits to growth for underground construction firms come from the job market. ... We need people to do the hard and, yes, sometimes messy work of construction. But we're not producing enough of them. ... Construction firms have to get creative to recruit and retain, but people are the critical ingredient.

What new skills or types of jobs will be needed to build and modernize our underground infrastructure?

Lawrence: It is often stated that tunneling is both an art and a science. There will always be a need to understand how tunnels are designed and built. Future skills in doing both will lead to more practical designs, and a better understanding of the theory behind the design will improve the quality and efficiency of underground construction.

Rispin: Industry growth is fueling demand for jobs across the industry—engineers, management, skilled trades—and evolving capacity in digitalization and automation. The needs are diverse and concerted strategic efforts are underway to educate potential entrants to the industry of the challenges needing to be met, the meaningful benefits to society [that] can be realized and the personal fulfillment in building the needed projects. ♦



Malcolm Drilling crews utilize a cutter soil mixing (CSM) technique for temporary shoring activities.



King Street Garage Success Story

SEALED AND PAINTED AZ SHEET PILES PROVIDE A LIGHT AND WATERTIGHT BELOW-GRADE PARKING GARAGE SOLUTION – SEATTLE, WASHINGTON

PROBLEM

- With much of the city being located at or just above sea level, problems can arise due to groundwater and liquefiable soils.
- Obstacles, lateral spreading, construction noise and vibration at the site may impact nearby building and utility infrastructures.
- Presence of a significant amount of abandoned piles and wood debris.

SOLUTION

- AZ 24-700 sheet piles were installed quickly and successfully and helped reduce initial dewatering requirements.
- Interlocks were welded from the bottom of the excavation to the top of the sheet piles to create a continuous, impervious steel wall.
- A savings of approximately 10% in construction time was realized by the contractor when using AZ sheet piles.

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Read the complete case study

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PHOTO: ADAM LAU

Slide Rail Offers Big Benefits for Utility Tunnel Expansion at Utah State University

At Utah State University (USU), crews led by general contractor Jacobsen Construction are working to expand a utility tunnel running beneath the main campus in Logan. The cast-in-place concrete structure, currently about 2 miles long and measuring 10 ft tall and 9.5 ft wide, houses USU's steam distribution system, among other essential utilities.

National Trench Safety (NTS), which has participated in several phases of these infrastructure upgrades, recently designed a shoring strategy for a large excavation running directly through the campus' main intersection. The team was challenged to devise a safe solution to execute shoring and tunnel construction without interrupting service to the 13 utilities crossing through the 160-ft-long, 18-ft-wide, 20-ft-deep trench.

To meet the project requirements, NTS specified a slide rail system manufactured by Germany-based SBH. The nine-bay system was installed by Edge Construction, the excavation contractor, and incorporated three sections of 20-ft sheeting guides that allowed for multiple operations to occur simultaneously to expedite the work.

The ability to shore a large, clear-span trench also eased Jacobsen Construction's ability to self-perform the concrete

pours for the floor, walls and ceiling of the tunnel extension. Ultimately, this shoring solution helped the general contractor meet the project's tight construction schedule and minimize disruptions to both campus activities and utility service.

To learn more the innovative, economical, time-saving shoring solutions available from National Trench Safety, visit www.ntsafety.com. ♦



Slide rail shoring systems require no interior wales or beams, which opens up more space for crews to perform excavation and other activities in a trench safely and efficiently.

PHOTO: COURTESY OF NATIONAL TRENCH SAFETY

Resourcefulness Overcomes Supply Chain Challenges and Puts Construction Ahead of Schedule

A stunning new 34-story office tower is taking shape in the fast-growing community of Bellevue, Wash., home to one of the strongest office markets in the nation today. General contractor Skanska USA Building selected Malcolm Drilling to help design a temporary shoring pit for the high-rise project, which includes four levels of underground parking extending 60 ft below grade.



Malcolm Drilling helped to design and install an elaborate water system in this temporary shoring pit during construction of a future high-rise in Bellevue, Wash.

Construction officially kicked off in 2021, with Malcolm Drilling utilizing two vertical drill rigs to install 165 soldier piles, followed by the installation of 64,000 sq ft of lagging and 650 tieback/tie-rod anchors.

While typical soldier piles, tiebacks and lagging were used for three sides of the project, a sophisticated strategy was needed for more challenging work taking place at the north wall. Utilizing the foundation walls of an adjacent structure, the shoring system was installed segmentally down four levels. Careful planning and coordination were essential for crews to safely maneuver materials and equipment inside of an active parking garage as well as tight spaces including staircases, storage rooms and utility areas.

The inherent complexity of supporting deep excavation work on this project was further compounded by the global supply chain issues stemming from the pandemic, and also wildfires that forced local lumber mills to close. The resourcefulness required to locate and arrange transport for hard-to-find materials was key to enabling Malcolm Drilling, in partnership with City Transfer Inc., to turn over the excavation to Skanska USA Building two months ahead of schedule. ♦

PHOTO: COURTESY OF MALCOLM DRILLING