

ENR

Engineering News-Record

ATLANTA FIRE LEAVES TRAFFIC NIGHTMARE

NUKE COSTS BANKRUPT WESTINGHOUSE

MARKETS, NOT TRUMP, SET COAL'S FUTURE

FAILURES PUT FOCUS ON CARBON-GRID PRECAST

BLIND SPOTS

HOW WE MISINTERPRET NEAR MISSES AND SAFETY TROUBLE SIGNS (P. 14)



OBJECTS IN MIRROR ARE MORE
HAZARDOUS THAN THEY APPEAR

As this multilayered photograph indicates, lunar habitation could undoubtedly require a variety of underground solutions.

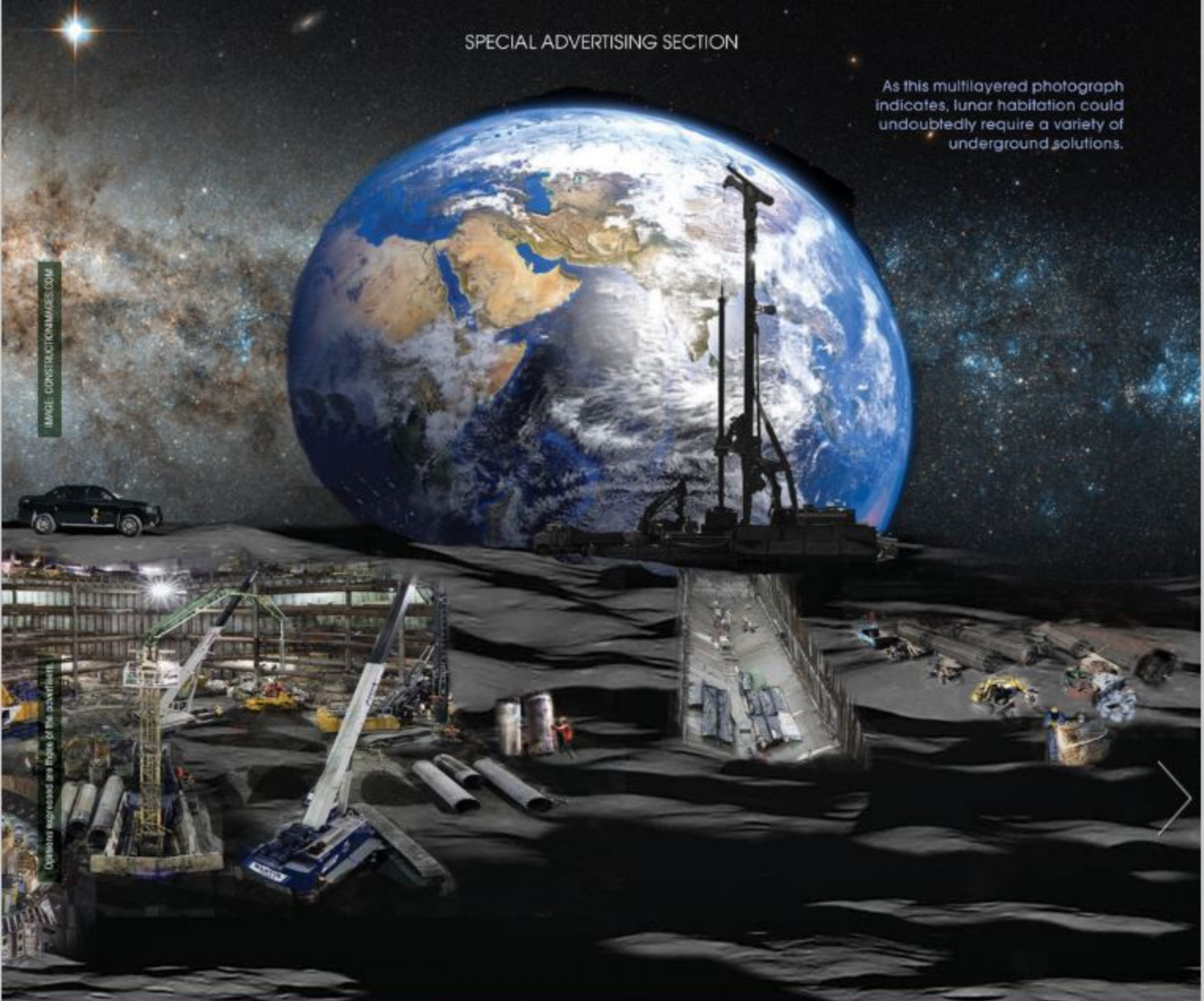


IMAGE: CONSTRUCTIONIMAGES.COM

Optimous increases are typical of the environment

Underground Today I

Underground Innovations

From drilling shafts for new airport construction to waterproofing subgrade spaces, underground contractors play critical roles in all types of construction

By Karin Tetlow

WHAT'S INSIDE

- Projects to Watch
- Hybrid Foundation System Put to the Test
- BIM Used for Earth Retention System
- Waterproofing a Negative-Side Foundation Wall
- Polymer Box Collars Save Time
- Top-Down Construction Using Sheet Piles

Waterproofing a Negative-Side Foundation Wall

The foundations and retaining walls at an underground parking garage for an apartment building were leaking badly despite applications of a sealing product. The leaking was due to the daily sprinkler watering of gardens around the exterior of the structure. Xypex crystalline waterproofing materials were chosen to seal out water seepage due to their effectiveness for negative-side applications. Applications consisted of repairing larger cracks with Xypex Patch'n Plug hydraulic cement followed by a two coats of white Xypex Concentrate crystalline waterproofing to provide a brighter, more light-reflecting finish. The garage is now leak free.

For nearly 50 years, the groundbreaking crystalline technology of Xypex Chemical Corp. has been serving concrete users around the world. Basic to the development of the technology was a thorough understanding of concrete's chemical and physical makeup. Concrete is porous with tunnel-like capillaries that permit the passage of water and other liquids. Researchers recognized the opportunity for a chemical treatment that would fill these capillaries to prevent the penetration of water and other liquids from any direction. By means of diffusion, the reactive chemicals in Xypex products use water as a migrating medium to enter and travel



Xypex waterproofing materials successfully sealed this leaking underground parking garage.

down the capillaries of the concrete. This process precipitates a chemical reaction between Xypex, moisture and the byproducts of cement hydration, forming a new non-soluble crystalline structure. This integral structure fills the capillary tracts, rendering the concrete waterproof. ♦

PHOTO: COURTESY OF XYPEX

Steel Sheeting Frame System Provides Soil Support

A Gulf Coast Florida water treatment plan was undergoing construction to increase its capacity. Included in the utility contractor's poured-in-place lift station package were drilled shaft foundation piers that called for an excavation of approximately 24 sq ft and 14 ft deep in what the contractor had classified as a Type C-60 soil.

Surrounding the excavation site were wastewater processing tanks used by the existing wastewater treatment plant. These tanks needed to be reasonably protected from soil disturbance during the excavating process. The contractor therefore required a four-sided system that could meet the pit size while providing a free-span excavation.

The contractor contacted National Trench Safety (NTS) to discuss the project. After reviewing potential options, the contractor elected to use a steel sheeting guide frame system. The contractor had previous experience renting this system and was very pleased with its function. The system is composed of steel sheeting frames that are positioned along the top of the excavation connected by corner posts. Steel sheets are then inserted through the frames and pushed to depth to provide the necessary soil support for the excavation. The system helps to prevent soil raveling, which was important on this project to ensure that the integrity of the existing tanks was maintained.

The system performed very well, and the contractor was once again very satisfied with the equipment as well as with the service level and timely deliveries provided by NTS. ♦



NTS supplies a steel sheeting guide frame system for excavation support.

PHOTO: COURTESY OF NTS

The World Standard in Concrete Waterproofing by Crystallization

**NO
EQUAL**



Electron Microscope Images are the property and copyright of Xypex Chemical Corporation.



Concrete
(Untreated)



Xypex Crystallization
(Initiated)



Xypex Crystallization
(Mature)

XYPEX integral crystalline technology waterproofs concrete foundation structures as they're poured and cannot be damaged during installation or backfilling. Unlike membranes, Xypex is added to the concrete at the time of batching avoiding application errors. This sustainable technology also contributes to LEED credits. **When you select Xypex Crystalline Technology**, you've chosen the best... more than 40 years of independent testing, experience in over 90 countries, unmatched product and service standards... *and still no equal.*

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