Mearl Geofoam®

Low-Density Cellular Concrete Solutions For Geotechnical Construction

cellular concrete SOLUTIONS

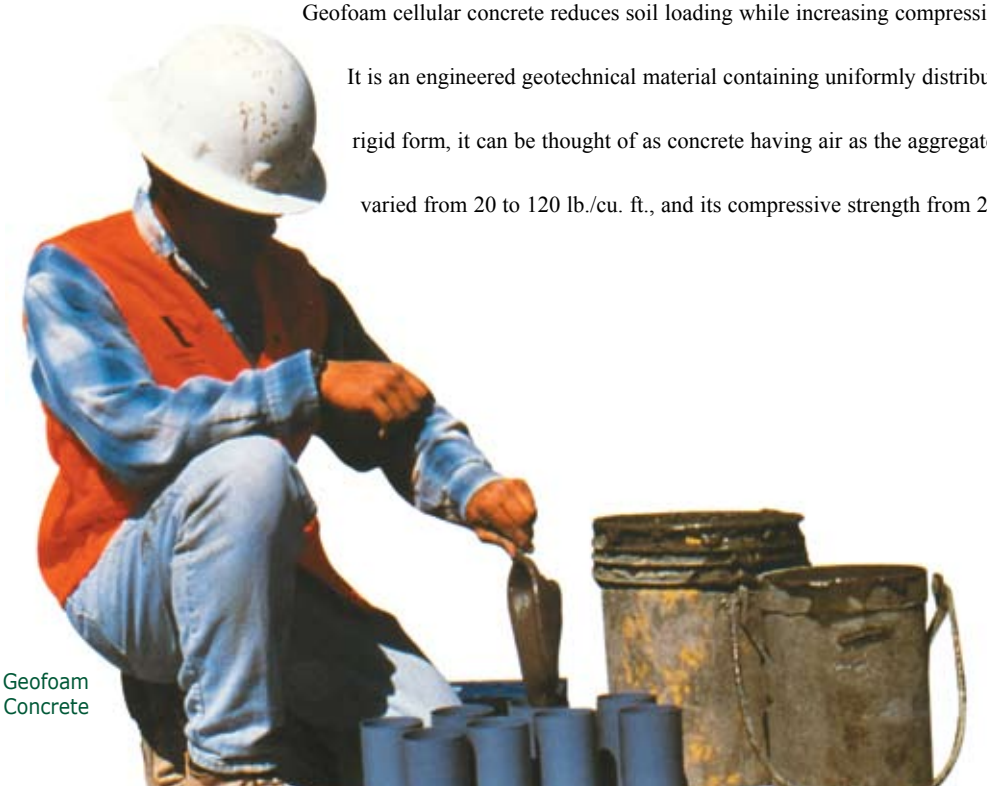
Mearl Geofoam®

Low-Density Cellular Concrete

Quick, Permanent Load Reduction

Cellular Concrete Solutions™ makes the task of adding long-lasting load reduction quick and easy with Mearl Geofoam® low-density cellular concrete — an effective combination of our advanced Geofoam foaming agent and cement slurry. Cellular Concrete Solutions focuses on providing solutions to challenging problems, offering technical and application support, and formulating the use of cellular concrete to your specific project. Geofoam cellular concrete reduces soil loading while increasing compressive and shear strength.

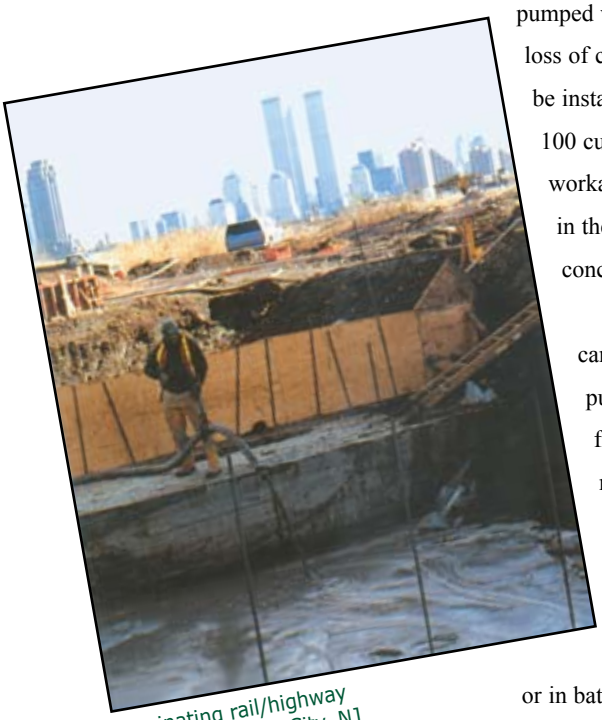
It is an engineered geotechnical material containing uniformly distributed air voids. In its rigid form, it can be thought of as concrete having air as the aggregate. Its density can be varied from 20 to 120 lb./cu. ft., and its compressive strength from 20 to 3000 psi.



Taking samples of Geofoam Cellular Concrete

Formed Rapidly On Site

Mearl Geofoam cellular concrete can be produced quickly and easily on site by mixing a preformed foam having the consistency of shaving cream into a portland cement slurry. The combination can withstand vigorous mixing and has been pumped well over a mile with little loss of cellular structure. It can be installed at rates of more than 100 cu. yd./hr., has excellent workability, and typically sets in the same time as normal concrete.



Eliminating rail/highway settling in Jersey City, NJ

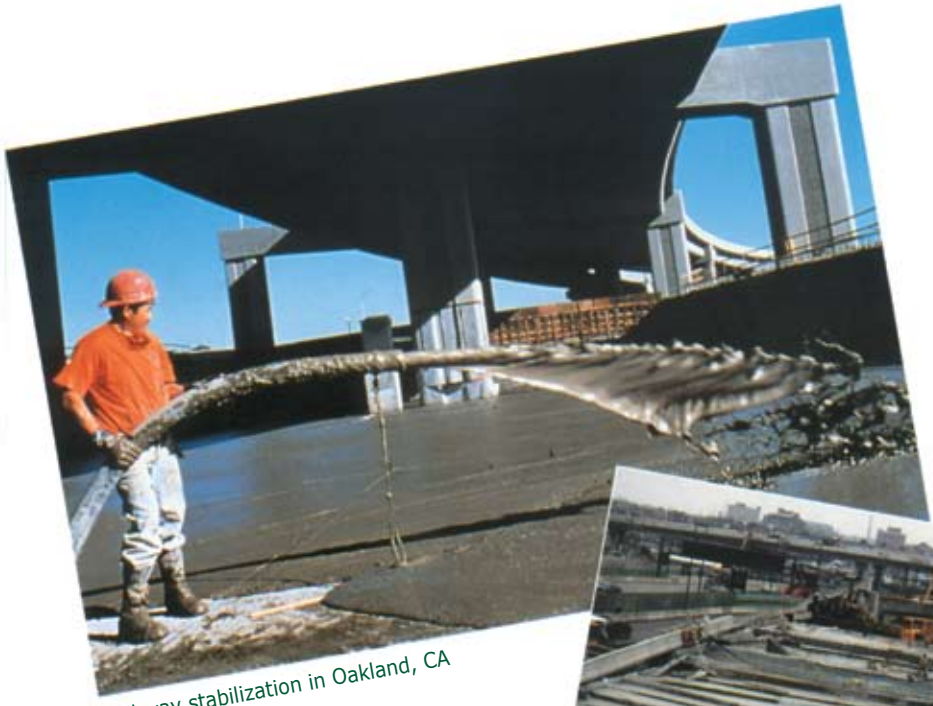
Geofoam concrete can be made on site or purchased ready to place from participating ready mix suppliers. The combination of Geofoam liquid concentrate, water and compressed air is produced continuously or in batches by a foam generator calibrated to produce the right amount of foam for the density desired. The foam is the last ingredient added to the mixer and does not expand or contract after addition. The cement paste, which coats the bubbles and fills the spaces between them, stabilizes the foam as it hardens.

Meeting Diverse Needs

Mearl Geofoam cellular concrete has been used throughout the United States and around the world for more than 50 years. It has provided permanent solutions for a broad range of geotechnical needs on hundreds of projects, including:

- **Eliminating rail/highway settling in Jersey City, NJ.** Geofoam cellular concrete prevented ground settlement as a light rail transit system passed beneath the New Jersey Turnpike in Jersey City. The six-foot rail embankment rests on compressible clay soil. Downdrag loads on the turnpike pile foundations were avoided by replacing enough soil with 4,500 cu. yd. of lightweight concrete fill, thereby avoiding net pressure increase.
- **Load balancing for a Northampton, MA supermarket.** In order to construct a 70,000-sq. ft. Super Stop and Shop supermarket in Northampton on relatively weak, compressible soil, the contractor removed 15,000 cu. yd. of earth and replaced it with Geofoam cellular concrete. The weight of the cellular concrete and the supermarket building (structure, equipment, goods and people) approximated that of the soil removed, so the subsoil bore little additional load.

Load balancing for a Northampton, MA supermarket



Highway stabilization in Oakland, CA

Ramp load relief at Logan Airport, Boston, MA

• **Highway stabilization in Oakland, CA.** About 8,300 linear feet of the Cyprus Replacement Project, a freeway built to replace the one destroyed by the 1989 San Francisco earthquake, was on poor soil that could cause roadway subsidence. Geofoam cellular concrete was chosen to provide the needed load relief. Contractors poured 110,000 cu. yd. of cellular concrete in a layer about 2-1/2 feet thick beneath roadways and in thicknesses of up to eight feet at bridge approaches. The cellular concrete had an average cured strength of 150 psi and an average density of 24 to 36 lb./cu ft. Typical or standard fill would have weighed about 120 lb./cu. ft.

• **Tunnel backfill in Beverly Hills, CA.** In constructing the 46,000 foot Los Angeles North Outfall Replacement Sewer, engineers needed an extremely lightweight annular grout that could be pumped long distances. They selected Geofoam cellular concrete to meet both requirements. About 84,000 cu. yd. of cellular concrete was used in transferring the radial soil load from the temporary tunnel supports to the central 150-inch-diameter, prestressed concrete cylinder pipe. In meeting the set specifications, we created a special mix (80% air, 130 psi compressive strength and a weight just 25% that of conventional concrete). Cellular Concrete Solutions™ offers special equipment for high-output, continuous mixing and pumping that placed concrete at a rate of 105 cu. yd./hour at distances to 10,000 feet.

Tunnel backfill in Beverly Hills, CA

• **Load reduction in Boston, MA.** Renovations to Commonwealth Pier 5 threatened to cause structural failure because of additional foundation loading. The pier structure, which dates to 1901, had suffered more than two feet of settlement and one foot of lateral movement. The threat of excessive foundation loading was avoided by replacing up to 11 feet of soil with 78,000 cu. yd. of Geofoam cellular concrete. The concrete greatly reduced the weight of the over-burden, improved shear strength compared to the soil it replaced, and increased resistance to lateral movement. The cellular concrete also allowed additional loading of up to 70 psf for each foot of replaced depth.

• **Bridge load relief at Logan Airport, Boston, MA.** The first over-pass coming out of the Ted Williams Tunnel just outside of Boston's Logan Airport needed a total of 30,000 cu. yd. of fill for paired retaining walls on either side of the span. This amount of standard fill would most likely have caused roadway subsidence. The problem was eliminated by filling the space between the walls with Geofoam cellular concrete having densities of 30 and 42 lb./cu. ft., which reduced loading by about 100 lb./cu. ft.

• **Reduced downdrag at Pier 12 in Brooklyn, NY.** After the sheet pile bulkheads of Pier 12 in Brooklyn were repaired to counter the effects of corrosion, the area was backfilled with low-density Geofoam cellular concrete to reduce down-drag on the pier.

Mearl Geofoam®

Features

- Lightweight
- High slump (virtually self-leveling)
- Broad range of densities and compressive strengths
- Excellent freeze-thaw resistance
- Low water absorption and low permeability
- Insulating
- Pervious Mearl Geofoam also available

Benefits

- Provides insulation (can contain up to 80% air)
- Rapid installation
- Economical load reduction versus alternatives to cellular concrete
- Long-lasting and stable
- Places easily by pump or gravity
- Positive fill (flows to fill all spaces available)
- Absorbs shock waves

Geofoam, an engineered foaming agent with the consistency of shaving cream, before it is mixed with cement slurry.

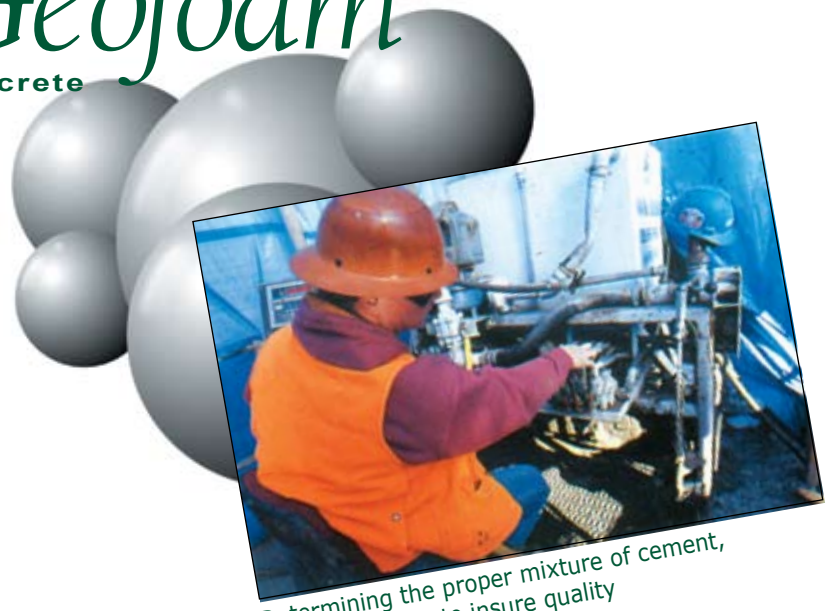
Total Technical Support

Cellular Concrete Solutions supports the use of Geofoam cellular concrete with a full range of formulating and application services. Our experts work closely with engineers and contractors, to help them ensure that each cellular concrete installation is properly designed and executed. This includes preparing trial batches of mixes meeting a contractor's stated specifications, and creating or modifying the equipment that generates the cellular concrete. Training of specialty concrete subcontractors and job site visits help ensure that placements go smoothly.

This support is based on more than 65 years of experience. Cellular Concrete Solutions was the first to offer a stable, preformed, cellular concrete foam able to withstand pumping and the first to develop continuous mixing and pumping equipment for cellular concrete. Other innovations include *Mearl Geofoam 60 Pervious*, our pervious product that won Most Innovative Product award at the World of Concrete; and our newest product, *Mearl Transport*, that enables our foam to transport mine tailings without the use of water. Cellular Concrete Solutions is the industry leader in the use of cellular concrete for specific load reduction, tunnel backfill and highway underlayment projects.

Mearl Geofoam®

Low-Density Cellular Concrete



Determining the proper mixture of cement, water and foam to insure quality

Range of uses

- **Replaces unstable soil to reduce subsistence of roadways, bridge ramps, buildings and other structures.**
- **Backfill (annular grout) for tunnels, water lines and sewers.**
- **Provides shock absorption in earthquake zones (cellular concrete is recommended by the U.S. Bureau of Reclamation in fault zones)**
- **Reduces loads above underground structures**
- **Fills voids within silos, abandoned mines, underground tanks and pipelines.**
- **Reduces hydrostatic pressure on retaining walls.**

For more information on the use of Geofoam low-density cellular concrete . . . contact:

Cellular Concrete Solutions™
Mearlcrete Division
7020 Snowdrift Road, Suite 102
Allentown, PA 18106
Tollfree 888-235-5015
Tel 610-398-7833
Fax 610-398-7050

Email:
info@cellular-concrete.com

Website:
www.cellular-concrete.com

cellular concrete SOLUTIONS

BR-101-0110