LOAD REDUCING BACKFILL

KEY PLAYERS
OWNER: Sports & Exhibition Authority of Pittsburgh
ENGINEER: Pittsburgh Arena Development LP
CONTRACTOR: Noralco Corporation
APPLICATOR: MixOnSite

PROJECT SPOTLIGHT

CONSOL ENERGY CENTER

PITTSBURGH, PA

BACKGROUND INFORMATION

Constructed in 2009, the Consol Energy Center is the regional epicenter for athletic events, concerts and family shows in western Pennsylvania. Home of the Pittsburgh Penguins and hosting more than 150 events per year, this state-of-the-art arena even attracts national collegiate tournaments.

Consol Energy Center was the first NHL arena to achieve LEED Gold certification. Through conservation of materials, sustainability and environmental quality, Consol Energy Center has set the standard for which sporting arenas are evaluated.

PROJECT DETAILS

The concrete package called for the production and placement of low density cellular concrete as a backfill adjacent to the foundation walls. The cellular concrete was produced on-site using a mobile batch plant, silo and foam generating equipment. The mix design included cement, water and preformed foam generated from our AERLITE-iX foam liquid concentrate to produce a 40 pcf material with a compressive strength of 100 psi.

The arena was constructed during the winter months, often in below freezing temperatures, on a congested construction site. Material placement was limited to 3 feet lifts, and production rates were approximately 100 cubic yards per hour.

Cellular concrete was pumped over 1,000 ft to backfill an area adjacent to an existing historical church foundation wall. A total of 10,335 cubic yards of cellular concrete was placed on this project.

AERIX ADDED VALUE

The cellular concrete effectively reduced the loads on the new foundation walls during and after construction. Additionally, the cellular concrete could be excavated easily in the future to access water, sewer or electrical lines embedded in the fill, if necessary.

Completed Consol Energy Center


The congested site and winter weather presented challenges throughout construction


Cellular Concrete used for load reducing backfill adjacent to the foundation walls

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