



UNITED STATES

## Unilever Ice Cream Freezer Warehouse Memphis, TN



### Owner

Unilever

### Engineer

Raasch Associates, Inc.

### General contractor

The Whiting-Turner Contractor  
Company

### Dates of work

2010/08 2010/09

## Description

This project involved the construction of a new 16,500 sq-ft cold storage building at an ice cream plant in Memphis, TN. The originally conceived foundation under the rack-supported, insulated building involved a concrete floor slab under the rack legs over a layer of rigid insulation, over a heavy reinforced concrete mat supported on drilled shafts. Under the mat, a heating system was to be installed to keep the ground below the building from freezing under the constant -20°F temperature.

## Ground conditions

The soils on the site consisted of alluvial deposits of clay and silt over sand that served as a bearing layer between 40 and 70 ft deep. Some additional soil information was obtained using the results of cone penetration tests taken prior to field mobilization to refine the profile of the bearing layer.

## Solution

Since Controlled Modulus Column (CMC)<sup>TM</sup> rigid inclusion designs use a highly compacted mat of dense granular fill (Load Transfer Platform - LTP) to support large flat areas, this concept proved highly effective to replace the structural concrete mat under the insulation.

The heated stone layer, the insulation board, and a concrete mat floor were placed above the LTP to support the racking. The economy of the CMC rigid inclusion system, and the heat break afforded by the LTP, made both a better performing foundation and an improved design regarding long-term thermal isolation of the ground.

To support a freezer warehouse as an alternative to more costly drilled shafts, Menard designed an economical solution using CMC rigid inclusions that isolated the building from the ground and eliminated a layer of structural concrete.

## Main figures

Controlled Modulus Columns (CMC)<sup>TM</sup>  
375 EA.