Transport - Aviation

Hancock International Airport - Deicing Storage Tanks

UNITED STATES

Syracuse, NY

Owner
Syracuse Regional Airport Authority

Engineer
CME Associates, Inc.

General contractor
The Wesson Group, LLC

Dates of work
March 2019 April 2019

Main figures

Controlled Modulus Columns
434 EA.

Description

Winter temperatures regularly fall below freezing in Syracuse, NY, making it essential for the deicing tanks at Hancock International Airport to be in top condition. This prompted the Syracuse Regional Airport Authority to demolish its existing storage lagoons and construct two 3,000,000-gallon prestressed concrete deicing storage tanks. Each tank would be 113 ft in diameter and 40 ft high.

The $8.2 million project also called for upgrades of pumping stations, new access roads, utilities and other structures.

Due to the loose and compressible nature of the soils at the site, excessive settlement was predicted unless ground improvement was provided. Menard USA was contracted to support the new deicing tanks – the selected technique was Controlled Modulus Column (CMC)® rigid inclusions.

Ground conditions

The existing lagoons consisted of fill and swamp material with buried organics over soft compressible clayey silt over silty sand. The CMCs would terminate in glacial till approximately 46 ft below grade. Borings were generally taken along the berms of the existing lagoons. One tank was moved post-bid and no borings were available in this new area. Menard completed additional borings after drainage of the lagoons to obtain additional geotechnical information in this new location for the tank.

Solution

Deep foundations were originally considered for ground improvement. However, Menard provided an economical and time-saving solution with CMCs. Menard's solution included 434 CMCs installed to a maximum depth of 46 ft. The slab loads were designed with an allowable bearing floor pressure of 3,200 psf. The design provided for approximately 3 in of post-construction settlement, meeting the performance criteria of the new deicing storage tanks.

Due to the scope of this project, the design required approval from both the tank builder and the geotechnical engineer of record, with whom Menard worked closely throughout the project. Menard overcame Syracuse's harsh winter conditions and successfully installed 434 CMCs to support two new deicing tanks.