



CONTROLLED MODULUS COLUMN

Rigid Inclusions

PROLOGIS PORTS PULASKI WAREHOUSE

Jersey City, NJ



Owner:

Prologis, L.P.

General Contractor:

RC Andersen, LLC

Duration of Work:

23 weeks

Subsurface Conditions:

Dynamically compacted fill over peat soil overlaying varved silts and clay

Approximate Key Quantities:

CMC Rigid Inclusions 11,900

PROJECT OVERVIEW

This project involved the construction of an 878,000 square foot distribution center built by Prologis, a global provider of industrial real estate. The warehouse is adjacent to the Pulaski Skyway in Jersey City, New Jersey. The former landfill site was placed on the US Environmental Protection Agency's National Priorities List (superfund) requiring extensive remediation after it was discovered that various chemicals in the landfill were spontaneously combusting. To improve the highly contaminated in-situ soils and support the foundations, Menard proposed Controlled Modulus Column (CMC) Rigid Inclusions as an alternative to traditional pile foundations.

GROUND CONDITIONS

The ground conditions of the former landfill

site were very irregular. Borings showed a typical geologic profile of 10 to 15 feet of dynamically compacted fill underlain by approximately 10 feet of soft organics and peat. Underneath this layer were varved silts and clays extending to bedrock at depths typically around 60 feet. The top fill layer consisted mainly of waste/debris from the old landfill at depths of 5 to 20 feet. The soil profile varied significantly across the site due to the heterogeneous nature of the varied silt and clay layers. This led to complicated embedment criteria and difficult drilling conditions across the site. CMC Rigid Inclusions were installed at depths ranging from approximately 35 to 80 feet, and groundwater was typically encountered at depths between 3 and 10 feet.

THE SOLUTION

Thousands of CMC Rigid Inclusions were installed to support the building slab, interior columns of the warehouse, perimeter wall footings, and a utility farm outside the warehouse footprint. Installed concurrently with 6 drill rigs, the CMC Rigid Inclusions were designed to withstand a bearing pressure of 800 psf under the floor slab and 1,330 psf under the footings. The settlement criteria for the warehouse was between 1.1 and 1.8 inches total for the footing and between 1.4 and 2.2 inches total for the floor slab. A ½ inch differential settlement criteria was maintained.

The use of CMC Rigid Inclusions was more economical than traditional foundation supports

and offered substantial savings by allowing the client to eliminate the reinforced slab and pile caps. Additionally, this ground improvement solution was environmentally sound due to the minimal spoils associated with the displacement drilling of CMC Rigid Inclusions.

SUMMARY

To support an expansive warehouse being built on a former landfill at a superfund site requiring extensive remediation, Menard installed CMC Rigid Inclusions to improve the contaminated in-situ soils and support the high-surface loads.

