

# GREEN MOUNTAIN COFFEE ROASTERS TANK SUPPORT

Location: Williston, VT

Project Type: Tanks



**DUROTERRA**



## DIP ADVANTAGES

- Low vibrations allowing installation adjacent to existing facility
- High capacity of end-bearing piles in soft soils
- Rapid installation

## INTRODUCTION

As a part of the Green Mountain Coffee Roasters Williston facility expansion, a series of heavily-loaded tank foundations were required for the new Wastewater Pretreatment system. The tanks covered an approximate area of 42-ft by 48-ft and were positioned immediately adjacent to the existing plant.

## GEOTECHNICAL CONDITIONS

A 12-foot thick crust of medium dense sand and silt was encountered at the site. However, the medium dense crust was underlain by very soft to firm silty clay extending to depths of more than 50 feet. The silty clay exhibited SPT N-values ranging from WOH to 5 bpf. Competent glacial till was found below the clay at depths of 55 to 60 feet below grade. Groundwater was 5 to 10 feet below grade.



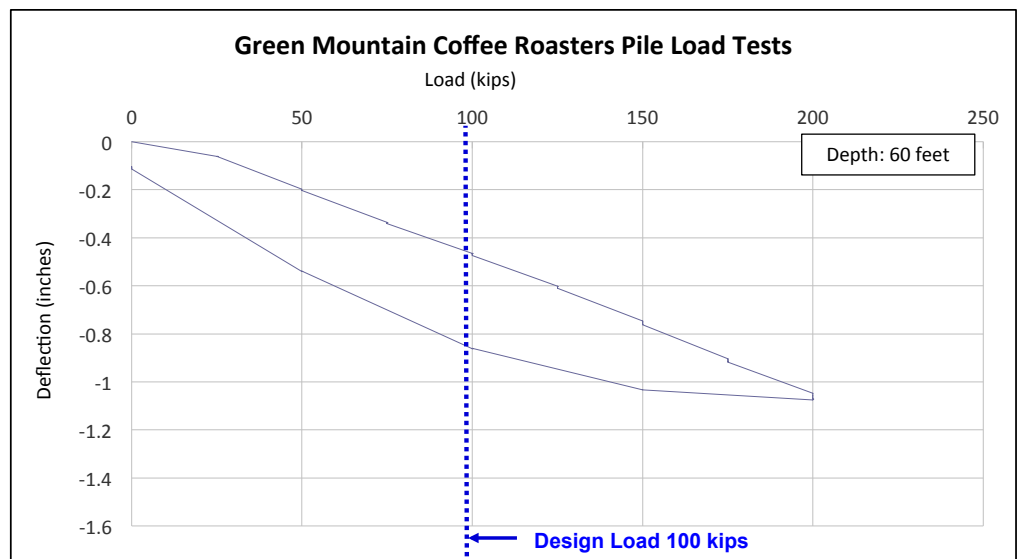
## PROJECT CHALLENGES

Providing support and settlement control for the heavy areal tank loads over the very soft clay.

## DESIGN & CONSTRUCTION SOLUTION

The design team was originally considering Geopier ground improvement for support of the large areal tank loads. However, alternative solutions were needed to address the deep, very soft clay soils. A Ductile Iron Pile solution was developed to provide support for tank foundations. Piles with working loads of 100 kips were designed to develop capacity in the glacial till at depths of 60 feet. Load testing of the DIP solution showed less than 0.5 inches of deflection at the 100% design load.

The test was performed to 200% where a deflection of slightly over 1 inch were recorded. The test results showed that even after loading to 200 kips, the amount of permanent deflection or set of the pile was only about 0.1 inches – thereby offering a highly controlled load-deflection response characterized by elastic shortening of the pile.



## PROJECT TEAM

**DIP Design/Build Partner:** Helical Drilling, Inc.  
**Geotechnical Engineer:** Knight Consulting Engineers, Inc.  
**General Contractor:** Engelberth Constructi Inc.  
**Structural Engineer:** Hixson Inc.