



## TransMontaigne Tanks

Tampa, Florida

**The Geopier Impact® system successfully**  
**Safety and vibration limits were chief**  
**considerations due to the nature and**  
**proximity of the existing facility and site**  
**- the Geopier Impact® system delivered**

**Description:** Support for a gasoline tank with a diameter of 120 feet and a capacity of 4.75 million gallons; plus a diesel storage tank with a diameter of 140 feet and a capacity of 6.5 million gallons. Both have a height of 56 feet. The existing grade at the site is generally flat with approximately one foot of grade-raise fill, and the ringwall bearing 1 foot below grade on a 6-inch mud mat.

**Subsurface Conditions:** The soil conditions generally consist of loose to medium dense sand to silty or clayey sand with interbedded soft to very stiff clay layers extending to a depth of approximately 55 to 60 feet, overlying limestone to the maximum explored depth of 60 feet. Very loose conditions were encountered in the 10 to 20 foot depth range. Groundwater was encountered at a depth of approximately 3 feet.

**Geopier Solution:** A concern was expressed regarding the amount of settlement estimated by the Geotechnical Engineering firm. Rapid Impact Compaction was considered, however; the Geopier Impact® system offered a greater degree of improvement, particularly in light of the density of the upper 10 feet of sand and the fines content of the underlying problem soil layer. The site presented a



tight work environment. Successfully addressing safety and vibration issues were key elements. In addition, groundwater was shallow, particularly on one of the tank sites and at high tide. By utilizing the dry displacement Impact® system, work continued effectively in these conditions without creating excess water or spoils that would require disposal.

### PROJECT TEAM

**Owner:**

TransMontaigne Terminals, Inc.

**Geotechnical Engineer:**

Universal Engineering Services

**Structural Engineer:**

Chicago Bridge and Iron

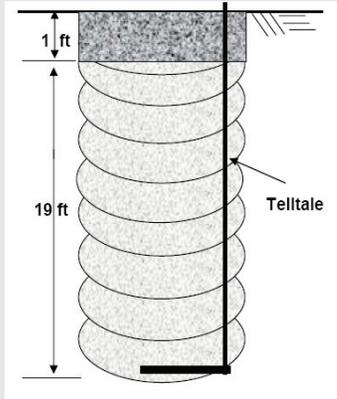
**Geopier Installer:**

Peterson Contractors, Inc.

**Geopier Designer:**

GFC-Southeast Coast

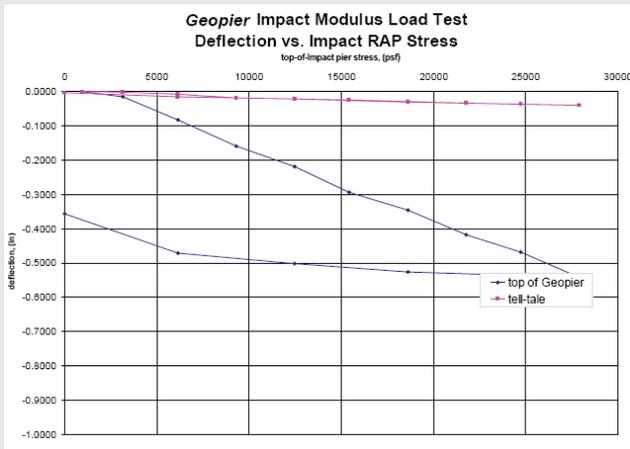
## MODULUS TEST PIER SETUP



The non-production RAP used for modulus testing extended to a depth of 20 feet below grade to encounter medium dense sand. Following RAP installation, a one foot thick concrete cap was placed over the RAP. Deflection measurements were taken on cap during modulus test performance.

Modulus test results showed approximately 0.35 inches of movement at top-of-pier stress level of 18,602 psf.

## MODULUS TEST RESULTS



The results of the modulus test indicate that the top of the Impact pier deflected approximately 0.35 inches at a stress of 18,602 psf (100% of design top-of-Impact-pier stress), indicating an Impact pier modulus of 374 pci. The site-specific test value exceeded the design Impact Pier modulus of 175 pci, confirming the superior performance of the Impact system solution.