



# SUBSURFACE CONSTRUCTORS INCORPORATED



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WE TAKE THE NEWEST  
TECHNOLOGY  
AND RUN IT INTO THE GROUND.

GROUND IMPROVEMENT   **AGGREGATE PIERS**   VIBRO COMPACTION   DRILLED SHAFTS   EARTH RETENTION   DRIVEN PILE   AUGERCAST PILE   MICROPILE

## Ethanol Storage Facility / Liquid Tanks

### PROJECT DESCRIPTION

#### Vibro Stone Columns Using Recycled Concrete to Support Large Diameter Liquid Storage Tanks

This project involved the construction of five, 4,000,000 gallon ethanol/liquid storage tanks on top of marginal soils and old waste materials. The soils on which the large tank were to be founded consisted mostly of fill soils with cinders, brick and wood fragments, and varying amounts of paper, cardboard, plastic and rubber. Subsurface designed and installed a ground improvement layout of approximately 3,500 vibro stone columns to support the tanks and mitigate settlement.

The use of approximately 9,000 tons of recycled crushed concrete made this project unique and resulted in not only considerable cost saving to the owner, but a sustainable method of ground improvement. Additionally, Subsurface' method of ground improvement significantly reduced the amount of pre-drilling required, thus reducing the waste spoil that would have to be hauled off-site; therefore, the carbon footprint was significantly reduced at the site.

### PROJECT TEAM

**Owner:**  
Gateway Terminals, LLC.

**Geotechnical Engineer:**  
Shively Geotechnical

**General Contractor:**  
L. Keeley

**Ground Improvement Design/Builder:**  
Subsurface Constructors, Inc.



TODAY'S INNOVATION WITH 1906 ROOTS.