Deep Soil Mixing

Jade Signature
Miami, FL

MALCOLM
Ground Improvement

CONSTRUCTION PERIOD
September 2013 to February 2014

CLIENT
Owner: Fortune International
General Contractor:
Suffolk Construction

SERVICES
35,000 CY Deep Soil Mixing
(DSM) For Bottom Seal Plug

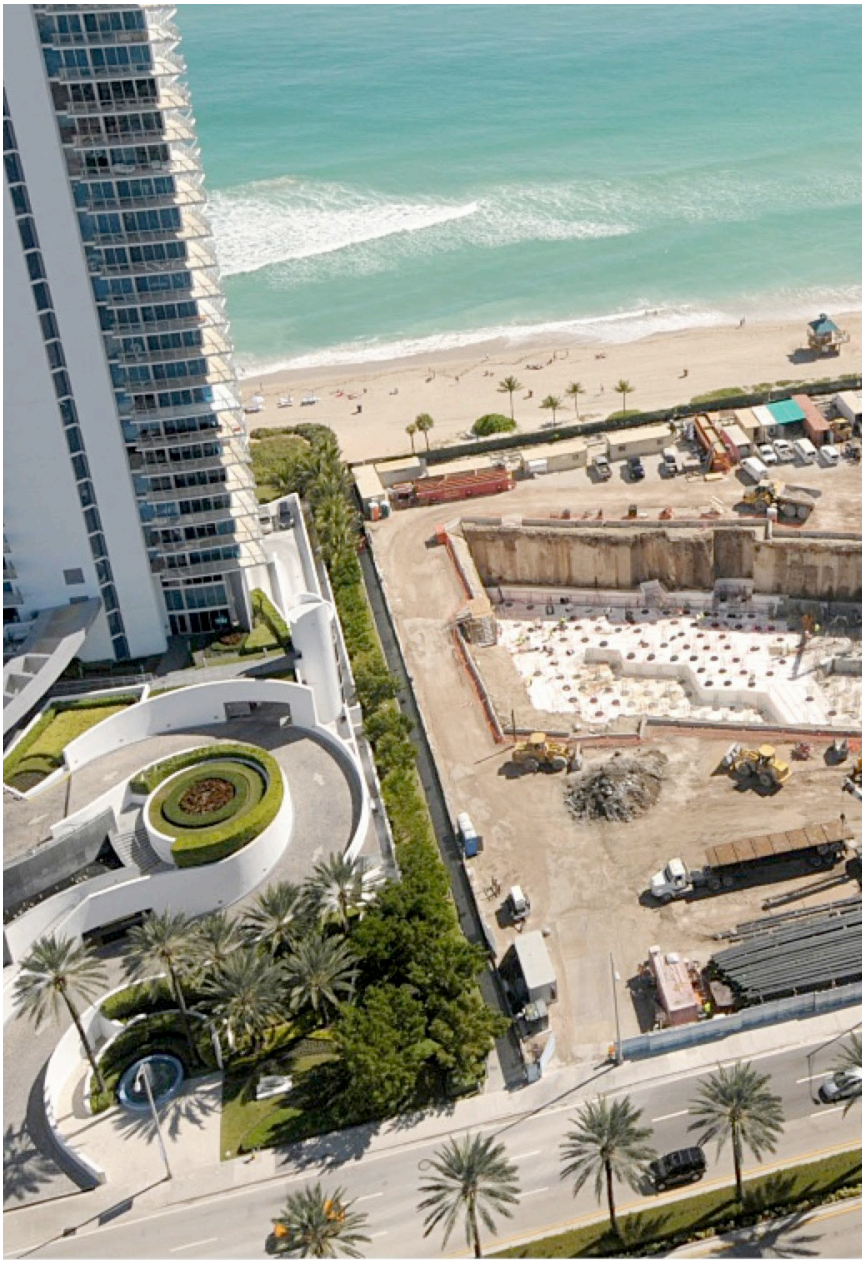
1,950 LF DSM Cutoff and
Excavation Support Wall

Benefits of DSM

- Allows for dry, deep excavations below the water table where dewatering is not possible.
- Does not require a native impermeable soil layer.
- Reliable and repeatable system key for schedule dependability and project performance.

Project Overview

An international team of architects, engineers and designers have collaborated to design “The Jade Signature” a premier luxury condominium located on the Atlantic Ocean coastline in Sunny Isles Beach, Florida. One of the many unique aspects of this project is the 3 levels of underground parking, a first of its kind in the low lying coastal areas of South Florida which are notorious for the porous limestone.



CONTACT MALCOLM
This job was managed by the South-East Regional Office in Miami, FL. For a complete list of office locations and technologies, visit **Malcolmdrilling.com**

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Construction Details

The DSM bottom seal plug is comprised of overlapping soil mix columns extending to specific design depths below the bottom of the planned building excavation to ensure plug stability. In building this DSM plug, every square inch of the approximately 2 Acre site was treated with DSM. A DSM perimeter wall was installed to act as both as support of excavation and hydrostatic cutoff. Heavy, closely spaced steel beams were used to support the wall without requiring internal bracing or tiebacks. An internal, unreinforced DSM wall was installed around the tower footprint, the deepest section of the excavation. After installation of CFA piles for building support, the site was excavated in a dry condition.

Ground Conditions

The project site is directly adjacent to the Atlantic Ocean and is low lying (preliminary grading brought the site to approximately +5 NGVD), with groundwater located almost immediately below the surface. Approximately 15 feet of beach sand, a 10 foot layer of peat overlaying various layers of limestone and sand, all of which is highly conductive allowing water to flow freely through, the site. Of particular concern was the thick highly organic peat layer which had a negative impact on the cementitious materials which are integral to the DSM installation process.

Quality Control

The soil mixing tools ensure that the entire diameter of the soil mix column is broken up and mixed with grout creating excellent homogeneity of the soil-cement plug below the excavation. Electronic monitoring data is provided in real time to operators of both the DSM drill rigs and grout plants. This data is recorded and analyzed by Malcolm's engineering team to check for conformance with the project's installation criteria. Core samples are extracted once the soil mix has cured on both random and specifically targeted DSM columns to ensure a high quality DSM plug has been installed well in advance of the excavation.