



2016 - 2018



Sukut Construction
OC Waste and Recycling

104

In-Place Inclinerometers Bi-Axial

45

Vibrating Wire Piezometers

6

Inclinometer Casings

6

GPS Units

PROJECT DESCRIPTION

The Frank R. Bowerman Landfill is an advanced and state-of-the-art facility designed to handle municipal solid waste. Located in Irvine, CA, this landfill opened in 1990 and is the ninth largest in the U.S. The property covers around 725 acres of Irvine hillside, with 534 acres allocated for waste disposal. Sixense was contracted to supply and install the geotechnical instrumentation to monitor, in near real-time, the performance of the construction of the Soil Buttress and Composite Liner Projects on landfill. This was in accordance with the Geotechnical Instrumentation and Monitoring Plan (GIMP) that was developed by the Engineer, Geosyntec.

MONITORING

The monitoring included several types of instruments typically used to measure slope stability. The variables scheduled to be monitored were horizontal displacements and water pressure in the ground by bi-axial In-Place Inclinerometers and Vibrating Wire Piezometers (IPI & VWPZ). Sixense planned to supply and install a total of 104 IPI Bi-axial sensors, 45 VWPZ (700 Kpa), distributed in six (6) inclinometer casings (1000 lf of 2.75" ABS casing in total). The instruments on each borehole were connected to Sixense's self-sufficient Automatic Data Acquisition System (ADAS), which collected and transmitted the data via a cell phone connection. The information was available through their web-based platform, Geoscope, a few minutes after being collected. Sixense also planned to supply and install a total of six GPS units, including five rovers and one base. According to the technical requirements outlined, the system would be progressively relocated during the construction activities. Sixense performed the initial installation and provided directions to the General Contractor to carry out the subsequent relocations. The configuration of the instruments at their new location was conducted remotely. Each sensor was equipped with an ADAS which collected and transmitted the data via a cell phone connection. The information was also available through Sixense's web-based platform Geoscope, a few minutes after being collected. The detection of the slope failure plane was conducted by Time-Domain Reflectometry techniques (TDR Cable). They were installed at three boreholes with an average depth of 400'/each. The cables were monitored manually with a read-out unit provided by the owner, OC Waste and Recycling.

PROJECT COMPLETION





The Frank R. Bowerman Landfill

Geotechnical instrumentation and monitoring solutions

Irvine - UNITED STATES

The Bowerman site exemplifies environmental and engineering excellence. Several environmental protection systems and demonstrations of engineering leadership are featured at Frank R. Bowerman Landfill, including a nature reserve, landslide mitigation area, heat vents, drainage improvements and erosion and sediment control systems. Sixsense Northern America is proud to have been a part of this unique project, ensuring safety and giving our clients peace of mind during the construction of the Soil Buttress and Composite Liner Projects.

