



*Left top and bottom: Field replacement at Wien Stadium. Above center: Wien Stadium during a game. Below center: Inside the air supported tennis center. Right: One of the test pits made during the investigation of sinkholes in the football field.*

## Columbia University – Baker Field

New York, New York

Baker Field, a 26 acre tract of land located at the northern tip of Manhattan at 218th Street and Broadway, is home to several Columbia University athletics facilities, including Wien Stadium, Columbia Soccer Stadium, Columbia Softball Complex, Andy Coakley baseball field, the Dick Savitt Tennis Center, the Gould-Remmer and 1929 Boathouses, and the Chrystie Field House. Mueser Rutledge Consulting Engineers (MRCE) has provided geotechnical and foundation engineering services at the Wien Stadium and the Dick Savitt Tennis Center.

### Savitt Tennis Center

The center is located within Columbia's Bakers Field Athletic Complex along the west shoreline, in a beautifully landscaped area of Baker Field (218th Street, west of Broadway) which overlooks the Hudson and Harlem rivers. It has six cushioned hard courts, all of which are covered by a state-of-the-art air dome. For the construction of the air supported tennis center MRCE provided geotechnical engineering services with previous experience with the occurrence of sinkholes under the football field. Services included:

- Performed a subsurface investigation which included borings and test pits and provide foundation for recommendations for the tennis center and stabilization of the adjacent hillside.
- Developed contract drawings for stabilization of hillside and underpinning of football stadium light poles.
- Provided field inspection for foundation subgrades, geogrid placement, slope stability, and underpinning.

### Wien Stadium

Opened in 1984, this 17,000-seat facility is home to Columbia's football, field hockey, lacrosse, and track and field teams. Following the installation of Astro Turf XL, Wien Stadium became a state-of-the-art facility. Most of the field is underlain by granular soils overlying coarse rock fill. These conditions are conducive to sinkhole formations when exposed to surface water infiltration. Placement of an impermeable liner was recommended to prevent surface water infiltration. An underdrain system below the turf provides filed drainage and minimizes surface water infiltration.

The Astro Turf XL allows the field to be used by varsity and club teams, as well as providing a consistent practice surface for the teams in all types of weather. Unlike conventional Astro Turf, the field surface is cushioned, not rigid. MRCE services included:

- Geophysical investigation, locating anomaly in the rock fill which was used as a tool to located potential sink formation.
- Test pits and inspection of flowable fill where sinkhole formations developed.