MSU Regency Athletic Complex

Denver, Colorado

As an alternative to the originally proposed removal and replacement program, Keller performed dynamic compaction to improve the density of the fill material and provide a more uniform condition across the site.

The project

The Metropolitan State University (MSU) of Denver planned to develop a new sports complex on a 393,000 SF site that had previously been used for a range of industrial manufacturing purposes. The soil profile consisted of 7 to 22 ft of miscellaneous urban fill with significant amounts of debris over natural sand and clay underlain by bedrock.

The challenge

The upper layers of uncontrolled fill were highly variable in composition, density, and strength. The anticipated bearing pressures would have resulted in up to 9 in. of settlement, with substantial risk of differential settlement due to the site variability.

The solution

As an alternative to the originally proposed removal and replacement program, Keller performed dynamic compaction to improve the density of the fill material and provide a more uniform condition across the site. This would minimize the potential for differential and total settlements. Keller used a 16-ton tamper, dropped from heights between 30 and 50 ft. A series of passes across the site resulted in significant site densification as demonstrated by a 9 to 12 in. reduction in site elevation, with localized zones of 24 in. of reduction.

The overall Regency Athletic Complex project was the 2016 recipient of the American Council of Engineering Companies (ACEC) of Colorado Grand Conceptor Award.

Project facts

Owner(s)
Metropolitan State University of Denver

Keller business unit(s)
Keller

Main contractor(s)
Saunders Construction, Inc.

Engineer(s)
CTL Thompson, Inc.

Solutions
Bearing capacity / settlement control

Markets
Institutional
Education

Techniques
Dynamic compaction

Email address
info@keller-na.com

Phone number
1 (800) 456-6548