



**Project: Brentwood High School and Middle School
Campus Additions and Renovations**

2221 High School Dr and 9127 White Avenue, Brentwood, Mo. 63144

Architect: W B Ittner Inc.
611 North 10th Street, St. Louis, Mo. 63101

Structural Engineer: KPFF
1630 Des Peres Road Ste. 100, St. Louis, Mo. 63131

General Contractor: K & S Associates
12963 Maurer Industrial Dr, St. Louis, MO. 63127

Deep Foundation Contractor: Quality Waterproofing and Foundation Repair
200 S. Elam Ave., Valley Park, Mo. 63088

Quality Waterproofing 's commercial division was approached by K & S Associates to design an underpinning and soil retention system for the elevator shaft at Brentwood High School. Performance Piers assisted Quality Waterproofing with the value engineered proposal.

First, we determined the loads of the tiebacks based on the soil report. Performance Piers also requested the loads for the column pads that would need to be supported with helical piles. The loads for the columns came back at 45 kips working load. The 3.5" material was chosen for this application because of the load and also there would be a short period the pile would be unbraced until the shotcrete was place.

The loads for the tiebacks retaining the underpinning is 15 kips working load for each tieback. A total of (6) tiebacks was required to retain the underpinning. The 1.5" RCS material was chosen for this application.

The next was to determine the loads and soil screw depth for the soil retention. Based on the soil the 1.5" RCS material was chosen along with a shotcrete facing.

The final design would require (3) 90 kip ultimate capacity piles, (6) tiebacks to an ultimate capacity of 30 kips and (6) soil screws to retain an area of 20' wide by 10' in depth and approximately (4) yards of shotcrete. The project also required coordination with 3 other subcontractors and (3) different mobilizations.

The project went very smooth and at the completion of the project Quality Waterproofing was commended by K and S Associates for their flexibility, communication and professionalism with all parties involved to complete the project in a timely manner.

