

## A CASE HISTORY

**Project:**

Pineland Baptist Church  
Burlington, Ontario

**Geotechnical Engineer:**

V.A. Wood  
Associates, Ltd.

**Structural Engineer and**

**Underpinning Contractor:**  
W.C. Pietz

**Job Description:**

The Pineland Baptist Church had a two-story addition built in 1981. A creek that would have flowed close to the addition was diverted. The geotechnical investigation indicated 12 feet of clayey silt fill containing some organics and wood fragments. Below the clayey silt was weathered shale atop a solid shale stratum.

A spread footing located in the clayey silt fill had not provided an adequate foundation for the addition. Significant cracking was evident in the brick facing on the southeast corner of the addition. Vertical cracks in the original structure were determined to be the result of the addition settling and rotating out, away from the rest of the structure.

Seven two-helix SS175 anchors were used to underpin the settling addition. The maximum design load per anchor was 30.25 kip. Installation torque of 9,000 to 10,000 ft.-lb. was enough to penetrate the shale. The anchors were loaded until a positive displacement ( $1/8$ " approx.) was seen with a transit-level. The building could have been lifted back to a level position had the brick facing not been repointed.

The proposal submitted by the underpinning contractor was roughly half the cost of alternate systems.

