



CASE STUDY

Project: Lasix Eye Centre Abbotsford, B.C.	Geotechnical Engineer: Geopacific Consultants Burnaby, B.C.	Structural Engineer: Lang Structural Eng. Abbotsford, B.C.	Contractor: Pinnacle Contracting Ltd. Abbotsford, B.C.
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Job Description:

Renovation of this existing commercial space from a retail outlet to a Laser Eye Clinic, necessitated formation of a larger mezzanine floor supported on pilings, through an existing main floor structural slab, as the remainder of the building is pile supported.

Access was to be made through commercial entryway to the existing store and 30-35 foot long pilings were placed inside the building using a custom designed hydraulic auger head and drill platform. Head height was limited to 8-9 feet in piled areas and pile capacity was between 15,000-60,000lbs (67.5 – 270kN).



Soils:

Soils were found to be fills comprised of blacktop sections, large stumps and concrete debris mixed with granular fills. Depth to adequate undisturbed bearing ground of dense sands and gravels was 25-30 feet.



Repair:

HELICAL PULLDOWN™ Micropiles were selected due to smaller and lightweight equipment that could operate off the existing floor slab and access the building through the existing entry doors to the store. Yet the piles are capable of high capacities.

Piles were SS5 square shaft anchors embedded in a 6 inch microsil fiber reinforced grout column. Lead section of pile shaft was 6-8-10 inch triple helical assembly, also initially pulling a 6" displacement disc with a 10' long 6" diameter PVC sleeve into position. Through that sleeve, the remainder of the column was screwed down to target soils of adequate capacity.



Installation torques over the terminal three feet of insertion reached 5500 ft/ lbs

Control of piling insertion was done as is typical, through use of continuous torque monitoring during pile insertion and direct measurement of grout volumes placed into the sleeve during the process. Geotechnical engineering, overseeing and pile certification was performed by: Matt Kokan P.E. of Geopacific Consultants of Burnaby, B.C.

Production Piling and Installation:

All production pilings were installed using the same procedures as outlined above, each in turn. The grout mix used was a proprietary silica fume grout, manufactured by Baselite Concrete Industries of Vancouver, B.C., for Vickars Developments. It is known as Pulldown Pile grout Type A. The grout is mixed on site and reinforced with polyfibers and added to the pvc sleeve as the pile is being formed during installation.

Pile installation equipment as pictured is a custom built portable piling rig powered by a portable hydraulic pump with hydraulic differential pressure gauges registering input hydraulic pressures and therefore installation torques. The apparatus is controlled using a foot pedal for insertion or retrieval of screw anchors or pilings. It requires 72" of headroom and 30" minimum doorway width of access.



Hand held units for interior works have similar capacity. However they can be carried in sections and snapped together in restricted areas. That feature allows use in such tight spaces as, closets, small bathrooms and crawlspaces.