GEO-FOUNDATIONS
Contractors Inc.

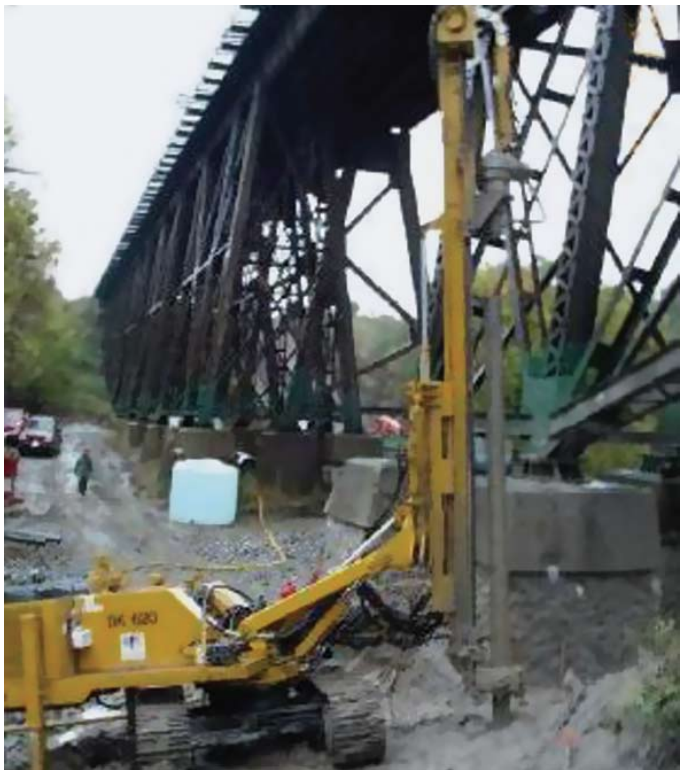
CN Fairchild Creek

Date: 2001
Technology: Soil Nailing

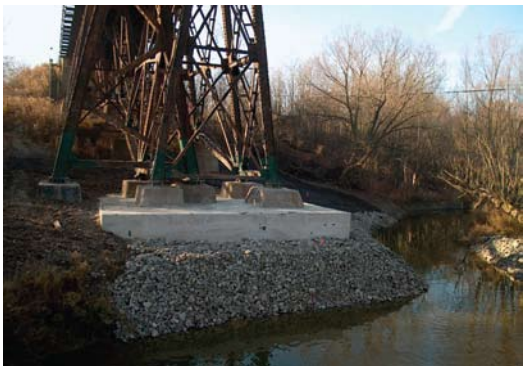
CN's Fairchild Creek Viaduct, which fords a valley with a creek at its base, is founded on groups of piers on spread foundations. The pier groups ascend the valley slopes on both sides of the creek. Creek bank erosion over many decades had decreased the factor of safety of the pier foundations on the south slope below acceptable limits. First constructed in the 1880's and later expanded in the 1910's, the footings near the base of the south slope were the focus of a slope stabilizing scheme completed by Geo-Foundations in 2001. The scheme involved construction of a micropiled and anchored concrete ring beam and soil nailing to both permanently stabilize the footings and increase the slope's resistance to rotational and creep movements.

A new, self-supporting, anchored ring beam structure was built to encapsulate and permanently stabilize the subject group of foundations. Micropiles, drilled using eccentric duplex and embedded 11 metres deep, formed a portion of the new reinforced concrete ring beam's foundation, while multiple raked soil anchors were drilled 20 metres deep into the slope to provide embedment into strata beyond known slip-surface limits.

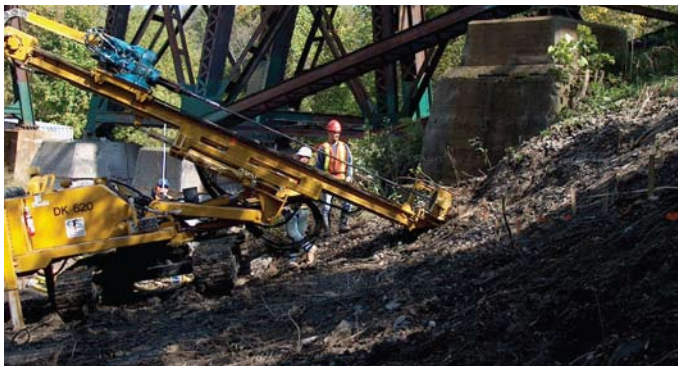
Soil nailing of the south bank consisted of four rows of 15-metre long nails on 1-metre lateral spacing to treat over 2200m^2 of slope face. A coated multi-strand polyester geogrid was installed in tension over the ground surface and anchored to the soil nail heads before being treated with topsoil and hydroseeding. Rip rap was installed over both banks of the creek, through the reconstruction area, to 2 metres above nominal water level.



DK620 drill rig installing slotted pipe micropiles



New ring beam encapsulating rehabilitated pier grouping



Soil nail installation at south creek bank

302 Main Street North, Acton, Ontario, Canada L7J 1W9
Toll Free: 1-888-846-7858 Phone: (519) 853-3216 Web: www.geo-foundations.com