

Permanent SBMAs for support of sheet pile wall at Hodenpyl Dam, Michigan, USA

Client: Consumers Energy by AG&E

Specialist Anchor Contractor: Gerace Construction Company

Specialist Consultant: SBMA Ltd

Overview

Permanent Single Bore Multiple Anchors (SBMA) were installed to support a sheet pile wall at Hodenpyl Dam, Michigan, USA.

Project

Hodenpyl Dam is one of a series of dams located along the Manistee River. Constructed between 1923 and 1925 it consists primarily of earth embankments. Cantilever retaining walls of varying heights were constructed along the east and west sides of the tailrace channel and these suffered displacement necessitating a remedial solution.

Ground Conditions

High plasticity cohesive soils with sand lenses.

Solution

A post-grouted SBMA scheme comprising 13 production anchors (Phase I) and 20 production anchors (Phase II) were installed to arrest inward and downstream movement of the right downstream retaining wall at Hodenpyl Dam, MI. A row of conventional anchors were installed previously and experienced continual load loss: a phenomenon common to conventional anchors in soft clay.

In Phase I an innovative testing setup and program were developed



to allow extended creep testing of the sacrificial anchor followed by testing to 2.8 times the ultimate design load. The apparent debonding and creep were minimal on all anchors, even the sacrificial anchor which was tested to almost three times the design load.

Construction

Phase I anchors were typically 600kN working loads comprising 4 units of 3.1m length and overall lengths up to 31m. Phase II anchors were 900kN working load comprising 6 units of 3.1m length and overall lengths up to 52m.

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