

Micropiles

Problem:

Many existing structure foundations require underpinning or seismic retro-fitting due to changed conditions such as increased loadings, scour vulnerability and changes in seismic codes. Conventional foundation systems do not easily facilitate the underpinning of existing structure foundations without the need to demolish and reconstruct the superstructure.

For new construction, there can be constructability problems with the construction of conventional foundation elements when the foundation units must be constructed through and into difficult ground conditions such as boulders, voids and karst.

Solution:

The long-term performance of micropiles has been proven after 25+ years of use in Europe, North America and Japan. The use of micropiles has grown significantly since their conception in the 1950s and in particular since the mid-1980s. Micropiles have been used mainly as elements for foundation support to resist static and seismic loading conditions and less frequently as in-situ reinforcements for slope and excavation stability.

Implementation of micropile technology on U.S. transportation projects has been hindered by the lack of practical design and construction guidelines. In response to this need, FHWA has produced the Micropile Design and Construction Guidelines Implementation Manual and a Micropile Design and Construction NHI course.

Benefits:

The purpose in developing and delivering the FHWA Micropile Design and Construction Implementation Manual and the NHI Micropile Design and Construction training course is to provide “practitioner oriented” technical guidance needed to: do micropile design, produce construction specifications, conduct construction inspection and integrity testing, develop cost estimates and select contracting methods; to facilitate and speed the implementation and cost-effective use to micropiles on transportation projects.

Additional Resources:

“Micropile Design and Construction Guidelines Implementation Manual” FHWA-SA-97-070

“Drilled and Grouted Micropiles, State-of-Practice Review” FHWA-RD-96-016/019

FHWA’s Geotechnical website:

<http://www.fhwa.dot.gov/bridge/geo.htm>

NHI Micropile Design and Construction course # 132078

<http://www.nhi.fhwa.dot.gov>

For more information, contact:

Barry Siel, FHWA Resource Center

Phone: (303) 716-2294

Email: barry.siel@fhwa.dot.gov