

Flexural Strength of Micropile Threaded Connections

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Abstract

Permanent steel casing micropiles are an advantageous foundation system that can provide high geotechnical capacities in tension and compression. However, when lateral and flexural loads are imposed, these micropiles display a limited capacity due to early bending failure of the steel casing threaded connection that couple the casing segments. The proposed research project aims to develop an analytical model capable of predicting the joint bending strength and failure mode of micropile threaded connections based on its geometric detail and material properties while considering the presence of center reinforcement and combined axial and bending loads. For this purpose, a series of four-point bending tests on micropile specimens with different geometric details were carried out to characterize the longitudinal (axial) and radial displacements at the box-end of the connection. The specimens were loaded in pure bending until failure of the threaded joint occurred while the displacements produced by the applied load were monitored using digital image correlation (DIC). This presentation summarizes partial results obtained from the experimental program.

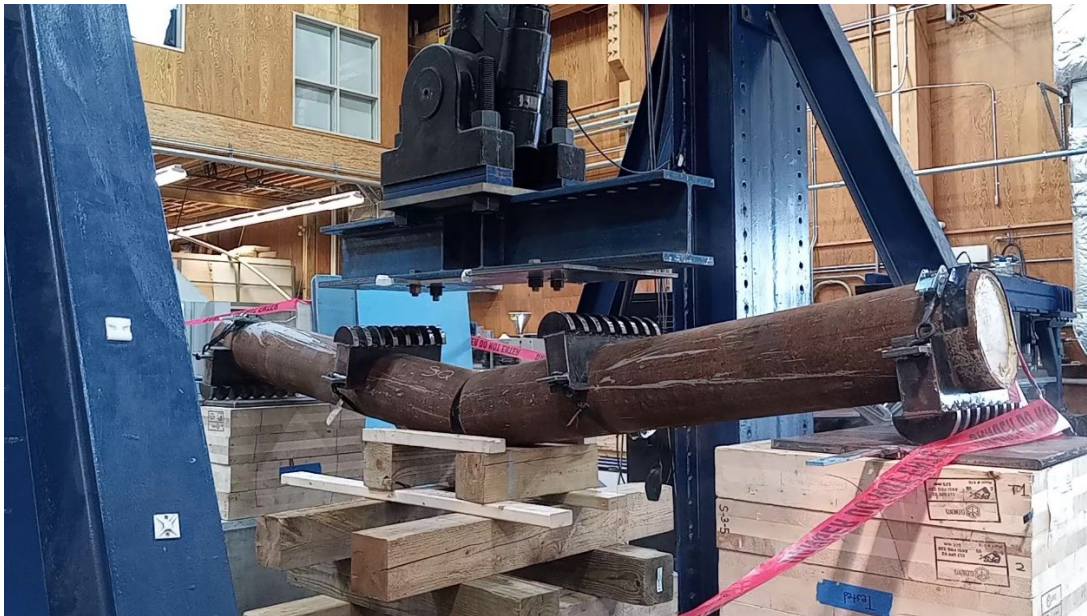


Figure 1 Four-point bending test: Failed micropile

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