

## TAILINGS DAM CONSTRUCTION OVER UNSTABLE SOILS

by

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**Abstract.** The operation of a taconite pelletizing plant for Eveleth Mines in Forbes, Minnesota necessitated construction of a 600 acre pond for recycling water used in the processing operations. A second requirement was to create a disposal area for the processed waste rock. The location for the pond contained swamp areas and peat deposits extending as deep as 40 feet. These soils could not, in their undisturbed state, support the proposed 120 foot high dam. A 4-mile perimeter, 120 foot high staged constructed dam was designed. The peat was gradually displaced by advancing a wall of coarse tailings dam. The necessary height and configuration of the displacement wall was continuously adjusted based on measured strength and compressibility properties of the swamp deposits. The dam was constructed entirely from natural by-products of the taconite processing operation. Coarse tailings were used to create the perimeter dam, and fine tailings were slurry pumped into the tailings pond to create a seal for the pond. Underlying soil and water pressures within buried swamp deposits and fine tailings are continuously monitored to assess stability.

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