

## Massive Sinkhole Repair Requires Unique Solution

It was a not-so-silent night on Dec. 24, 2016 in Fraser, Mich., when an 11-ft-dia sewer interceptor collapsed, creating an enormous sinkhole in the middle of a busy residential



Malcolm achieves tangent wall success on a challenging sinkhole project in Fraser, Mich.

neighborhood. The destruction immediately displaced an entire subdivision, closed a major roadway and condemned three houses.

The impact of this failed section of sewer line resulted in a worksite nearly the size of a football field. A rectangular structure constructed by large tangent pile walls (touching piles, not overlapping) was needed to surround and support this site before the sewer line replacement process could begin. Malcolm Drilling provided the expertise, skills and state-of-the-art equipment required to efficiently and effectively install the necessary 260 tangent piles in only five weeks.

Utilizing a Bauer BG 40, a Leffer oscillator and a tireless crew, Malcolm installed each pile using the temporary fully cased method, which provided the extra soil stabilization necessary to mitigate issues such as heaving sands and underground voids. Temporary fully cased piling is not often utilized in the Midwest, but it was key to achieving the depth, size and ultimate strength in the completed wall structure. Each pile was 70 ft deep, 3 ft in dia and reinforced the full length of the shaft. In an effort to expedite repair of this massive sinkhole, Malcolm crews worked 20 hours a day, six days a week and completed the tangent wall in June 2017. Construction is expected to be completed on this project in the fall of 2017. ♦

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In a joint venture, Combined Group Contracting builds the \$528-million main link of the \$ 2,462.5-million Sheikh Jaber Al Ahmed Causeway in Kuwait.

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